KELLOGG GENERAL CATALOG
NUMBER 12, 1952

Contains the entire Kellogg product line available in 1952, telephones, switching equipment, PBX's, telephone piece parts, construction supplies, wire and cable, poles, tools etc. An interesting thing is that this catalog shows both the K-500 set (early version with rounded G-3 style handset) and the 1000 series Masterphone as being current models. The K-500 Western Electric knockoff is not shown. Produced in bound hard cover book form, 8 ½ X 11 inches, 30# coated stock printed by lithography in color.

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KELLOGG

DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

KELLOGG

SWITCHBOARD

AND SUPPLY

COMPANY

6650 SOUTH
CICERO AVENUE
•
CHICAGO 38, ILLINOIS

CUSTOMER INFORMATION

GUARANTEE

Goods properly used are fully warranteed for one year against any defect in material or workmanship and are subject to replacement.

Always notify a Kellogg office before making any return shipments. This will help to make the proper adjustment without delay.

TERMS

Terms of payment are net thirty (30) days after date of invoice, with the exception of some items of construction material which carry a cash discount if paid within ten (10) days after date of invoice.

Equipment contracts or proposals may also specify other terms.

New customers can be assured of prompt servicing of orders by sending necessary credit information with initial orders. C.O.D. or C.I.A. orders receive immediate attention.

Long Term Financing, to cover the cost of conversion to dial operation and for rehabilitation and extension of outside plant facilities, is available to qualified independent telephone companies through Kellogg Credit Corporation. Detailed information about Long Term Conversion Loans available on request.

ORDERS

To avoid errors or delays, catalog numbers as well as the name of each article should appear on the order. Possibilities of delay are decreased when complete information is given in the order.

Telephone or telegraph orders should be confirmed by mail immediately so that if a mistake is made in transmission of the order it can be checked and corrected. However, confirming orders should be marked "Confirming" to avoid the possibility of duplication.

Piece parts should be ordered by piece part number. Where itemized drawings are shown in the Piece Part Section the associated code number should be determined from the accompanying listing of piece part numbers.

CHANGES AND CANCELLATIONS

A reasonable charge is made for changes or cancellation of orders when engineering, special assembly or adjustment is involved. These charges are only sufficient to compensate for the actual loss in time or material.

SHIPMENTS

Always specify whether goods are to be shipped via freight, express or parcel post. When shipment is desired by freight specify the routing. In the absence of instructions Kellogg will select routes which will assure the best service.

CLAIMS FOR SHORTAGE, BREAKAGE OR NON-DELIVERY

All claims for breakage, damages and non-delivery should be made at once to the transportation company handling the shipment. Kellogg will gladly assist in presenting these claims.

Receipts from the transportation company specify that shipments are received in good condition, therefore shipments must be checked as they are received. Always have the agent of the transportation company make a notation on the bill of lading specifying any damage or shortage.

If packages or cases are in apparent good order, but contents are found to be damaged upon opening, call the freight agent or adjuster and have him mark the freight bill to show the concealed damage.

Claims for damage or non-delivery of parcel post shipments should be made to Kellogg as Kellogg insures this material and makes all adjustments.

RETURNING GOODS

Please notify Kellogg before making any return shipments. This will help to make the proper adjustment without delay.

The liability of the Kellogg Company is limited in all cases to the value of the goods claimed to be defective.

MARINE OR PARCEL POST INSURANCE

Unless otherwise directed, Kellogg will insure against non-delivery all shipments made by steamer or parcel post. A charge will be made to cover this cost.

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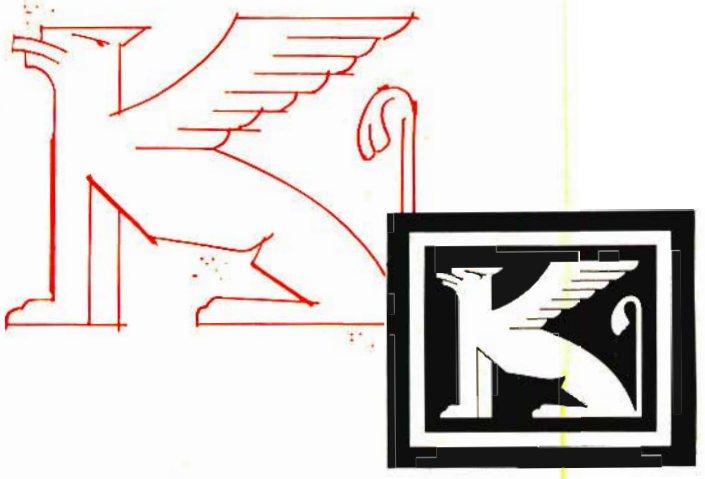
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FOREWORD

This catalog has been prepared in seven obvious sections, each in its own distinctive color for quick identification.

Each of the seven sections has its own index in alphabetical order by product name. A quick and ready reference is possible regardless of the item involved.

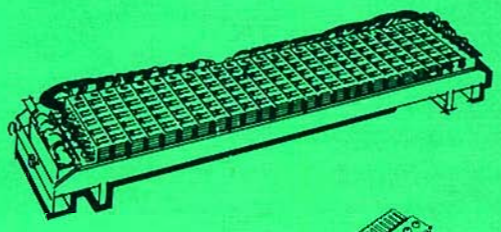
Considerable research has gone into this book and the result, we believe, is "the easiest to use" catalog possible. Wherever practical, suggestions from users have been incorporated . . . to give you the kind of catalog you have been wanting.

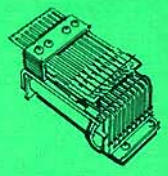


DIAL SWITCHING EQUIPMENT AND SWITCHBOARDS



- crossbar
- step-by-step
- relaymatic
- manual switchboards
- pbx
- test equipment
- special purpose switchboards

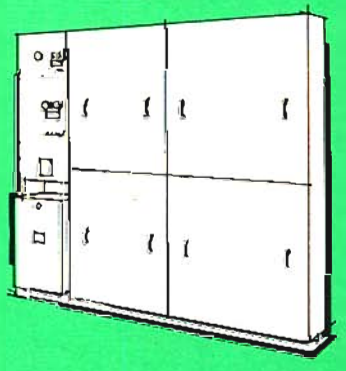














FOREWORD

DIAL AND MANUAL SWITCHBOARDS

The switchboard section of this catalog will give you an idea of what Kellogg can do for you in furnishing switchboards to meet any requirement. Your Local Kellogg Representative will be pleased to have an opportunity to furnish more detailed information.

CROSSBAR—Dial Switching Equipment

Crossbar switching allows you maximum expansion, instantaneous seizure of paths without hunting, PBX service without using consecutive numbers, high traffic capacity, extra long life and is easily adapted to national toll dialing.

STEP-BY-STEP—Dial Switching Equipment

Step-By-Step switching gives you long life and low cost operation . . . is expandable for increased station and traffic requirements, allows trunking flexibility . . . is easy to check and adjust (each switch is a separate unit) . . . is compact and space-saving.

RELAYMATIC—Dial Switching Equipment

Relaymatic all-relay switching is simple to install and easy to maintain . . . operates with any type of trunk line . . . allows you up to 10 party selective divided ringing . . . has adaptors available for grounded rural lines.

TOLL SWITCHBOARDS

With an ever growing demand for better and speedier long distance service, Kellogg Engineers have led in the development of modern Toll Switchboards.

MANUAL SWITCHBOARDS

The service provided by the Kellogg line of Manual Switchboards is the fastest and best devised. The Kellogg Manual Central Office Switchboards can be depended upon to provide better service at the lowest possible cost.

PBX AND PABX

The Kellogg and Federal line of Private Branch Exchange Switchboards provide PBX equipment that will meet the most exacting requirements of your subscribers.



KELLOGG CROSSBAR DIAL SWITCHING SYSTEM

*For any size exchange . . . up to ten thousand lines . . .

LARGE CROSSBAR OFFICE



Communication people have long been confronted with the problem in dial conversion planning of choosing a dial switching equipment affording an economical approach to meet the ever growing problem of community growth.

The Kellogg Crossbar central office equipment presents the solution to this problem.

The switch employed in the Crossbar system is the result of continuous research to make available to the Telephone Industry a dial switching system filling the requirements of all types of initial installations. At the same time provides for an economical and symmetrical expansion to meet unexpected growth so frequently encountered.

The Kellogg Crossbar system:

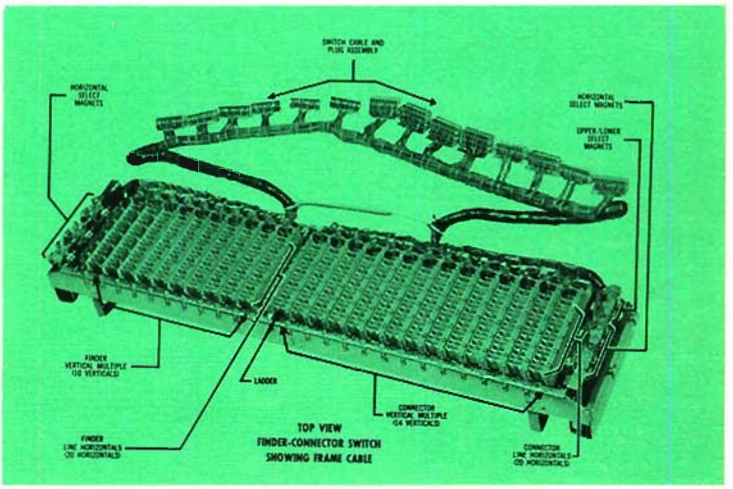
1. Eliminates many of the weaknesses inherent in other types of dial switching systems.
2. Combines features found in some types of other existing systems but not all present in any one system.
3. Provides features greatly needed in the Independent Telephone Industry but not available in other systems.

This innovation in dial switching equipment is undoubtedly the greatest advancement ever offered to the Independent Telephone Industry . . . It is different—basically different. . . . It is the simplest, most ruggedly built, most dependable dial switching equipment ever conceived or produced . . . It reduces maintenance expense to a negligible factor.

Years on end of intensive research in automatic central office equipment comprise the solid foundation of KELLOGG Crossbar . . . It is designed by telephone men who know the needs of the Independent Telephone Industry—specialists who work with these needs foremost in mind.

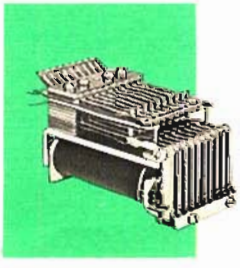
This one outstanding achievement has so many unequaled advantages that it introduces and makes possible a new era in dial switching equipment. It is the crowning accomplishment of MORE THAN HALF A CENTURY of continuous progress by KELLOGG in the service of Independent Telephone.

The KELLOGG CROSSBAR system is the peak of simplicity and incorporates a minimum of components. The system contains only three basic units—



TOP VIEW
FINDER-CONNECTOR SWITCH
SHOWING FRAME CABLE

The KELLOGG CROSSBAR SWITCH is a device consisting of a number of vertical stationary contact strips and a number of horizontal multiple strips with flexible contact springs. The strips are mounted in the switch at right angles. Thru relay armature action—connections between vertical and horizontal strips are made where the strips cross. These multi-path switches are used wherever automatic trunk connections are needed in the crossbar system.

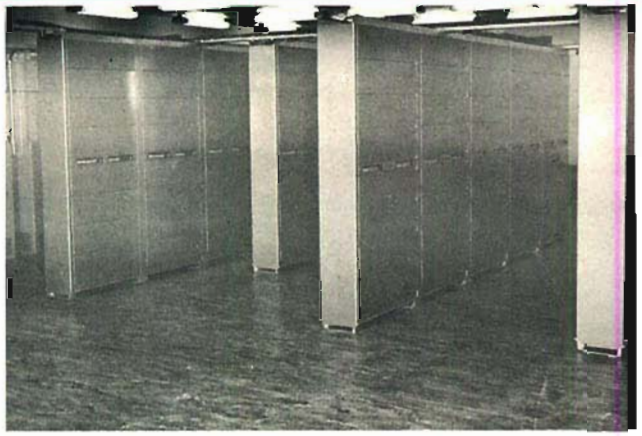


THE MAGNETIC IMPULSE COUNTER is a single core and coil assembly with ten separate armatures and their associated contacts. The armatures are arranged to respond respectively to the digits dialed. These counters are used as dial pulse registers. They are designed to handle high-speed inter-toll dialing pulses.



THE 4000 TYPE RELAYS are designed with "T" and "L" spring combinations. Each spring has twin precious metal contacts. The spring stack-ups are removable in pieces or as complete units.

KELLOGG CROSSBAR



Small Crossbar Office

KELLOGG Crossbar is manufactured in two basic types.

1. **Step-by-step Trunking — For Simplicity of Circuits.**
2. **Common Control — For Economy of Floor Space and Equipment.**

Various arrangements of the two basic systems offer terminal-per-line, terminal-per-station or number transfer.

Some of the advantages obtained with Kellogg Crossbar Equipment are . . .

Crossbar Equipment is Factory Wired

Frames wired for their ultimate capacity regardless of initial equipment. All Crossbar Switches and relay units are factory wired and ready for installation by merely plugging in.

P B X Service

Connector frames are pre-wired for P B X service. This service can be furnished or added to any 100 line group without equipment or wiring changes.

TRUNK NUMBERS NEED NOT BE CONSECUTIVE.

Drawer Mounted Crossbar Switches Individually Covered

Switches can be pulled out like file cabinet drawers for inspection. They need not be taken out of service for this operation.

No Multiple Wiring

The contact multiples are a built-in feature of the Kellogg Crossbar Switch.

Instanteous Seizure of Paths

Kellogg Crossbar switches operate in one movement in no more time or travel than it takes for the average relay to operate. This speed is such that Kellogg Crossbar can accommodate the high standards of nation-wide inter-toll dialing without altering the equipment.

Minimum Maintenance Costs

All connections established through precious metal contacts by relay type action only. No mechanical routining necessary. The maintenance of Kellogg Crossbar involves no more effort or cost than an equal amount of line relay equipment.

Lower Installation Costs for Additions

All Kellogg Crossbar units are factory tested and completely wired to plug-in terminals. No wiring or soldering is required to add Crossbar units.

Long Life

Minimum movement means minimum wear. Switches are constructed of simple, tough, long wearing parts. Each relay spring has twin precious metal contacts and is designed for minimum wear and maintenance.

High Traffic Capacity

Crossbar can handle more calls per unit of equipment than any other switching system. Each Crossbar switch has multiple paths. From 10 to 20 simultaneous calls can be placed through these switches.

Digit Absorption

Digits can be absorbed at any stage and as many times as required without mechanical limitations.

Voltage Range—46 to 52 Volts.

AVAILABLE OPTIONAL FEATURES

- Party Line Ringing
- Frequency Marking
- Post Pay or Prepay Coin lines
- P.B.X. Groups
- Reverting Call By Directory No. or Switch
- Busy Verification
- Full Intercept
- 2-5 Numbering
- Digit Absorbing
- All Types Inter-Toll Signalling and Supervision
- Conversation Timing
- 100% Line Lock Out
- Extra Large Trunk Groups
- Alarm Sending and Checking
- Local-Toll Discrimination
- Restricted Service
- Toll Trains
- Test Trains
- Subscriber Metering
- 100, 200 or 400 Line, Line Frames
- Low, Medium or High Type Frames
- Full Grading Facilities

ASSOCIATED SWITCHBOARDS

DSA and Toll Switchboards — Kellogg DSA and Toll Switchboards can be furnished to be used in connection with all types of Kellogg Crossbar Exchanges. Kellogg Toll Switchboards incorporate the latest Type No. 3 design, circuits and features.

Information, Repair and Service Observation Desks — These special service desks are of standard design and may be equipped as required.

Local and Toll Test Equipment — Completely equipped local and toll turrets, desks or panels can be provided as required. All test circuits are in accordance with the latest design. Each unit is equipped with standard facilities and instruments.

MAIN DISTRIBUTING FRAMES

Two types of Main Distributing Frames are available:

1. An "A" Type Frame which has all outside lines terminated on terminal blocks. The Switchboard Cables are terminated on protectors mounted on the vertical side of the frame.

2. A "B" Type Frame which has all outside lines terminated on protectors and the Switchboard Cables terminated on terminal blocks.

Any desired arrangement of distributing frame is available. Large exchanges are usually provided with separate main and intermediate distributing frames. A combination line and intermediate distributing frame is usually more practical for medium and small size offices. Unless otherwise desired, main and intermediate distributing frames will be furnished in heights to match the equipment to be furnished.

POWER EQUIPMENT

Central Office Battery — Central office battery of any well known manufacturer can be provided to furnish reserve of any specified rate.

Charging Equipment — Charging equipment of any well known manufacturer can be provided, capable of maintaining the office as required.

Ringing Equipment — Ringing Generators of the Electronic Static Vibrator or Rotary type can be furnished as required.

Types of Ringing Systems Available

Decimonic—(20, 30, 40, 50 and 60 Cycles)
Harmonic—(16⅔, 25, 33⅓, 50 and 66⅔ Cycles)
Synchromonic—(16, 30, 42, 54 and 66 Cycles)
Single Frequency—(20 Cycles)
Superimposed—(20 Cycles)
Single Frequency Code—(20 Cycles)

Note: Detailed specifications will be furnished upon request and receipt of full information pertaining to quantities of equipment and services desired. Write Kellogg Switchboard and Supply Co. or contact your Kellogg Local Representative.

KELLOGG Supplies FEDERAL STEP-by-STEP

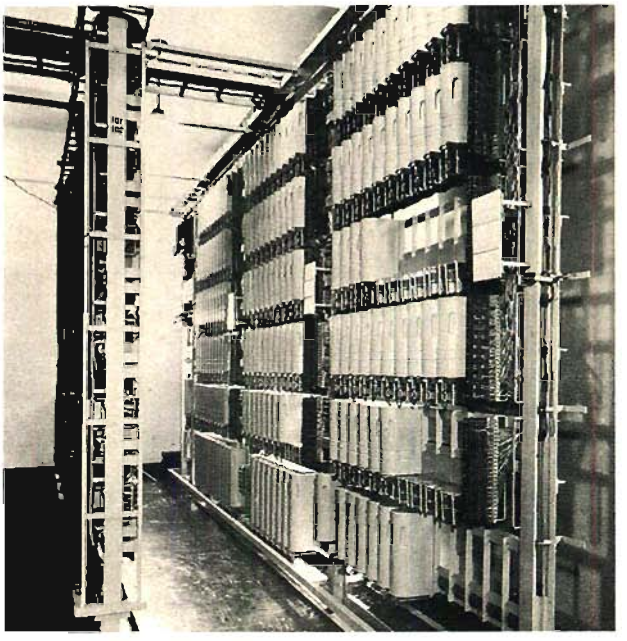
COMMUNITY AND CITY TELEPHONE SERVICE

For dial central office requirements of any size or nature and for larger Private Automatic Branch Exchanges — Federal's Step-by-Step Switching Equipment provides maximum dependability of performance and flexibility in arrangement for meeting variable service needs.

There is a Federal Step-by-Step system available for any size office. The CSX unit (Community Step Exchange) is arranged for small towns and communities while the MSX unit (Main Step Exchange) is designed for the medium and large exchange requirements.

In addition to the basic Step-by-Step equipment, Federal manufactures all required types of associated operating and test units for large and small offices.

MSX STEP-BY-STEP DIAL EXCHANGE SYSTEMS



MSX STEP-BY-STEP DIAL EXCHANGE SYSTEMS

The MSX type Step-by-Step Switching equipment is arranged for medium and large dial exchange requirements. The MSX type of equipment assembly, using the rugged and dependable line-finder, selector and connector switch units is completely adaptable for providing all of the usual service and operating facilities required of a modern dial central office.

LINE CAPACITY

The MSX type of switching equipment is designed to economically accommodate any required line capacity ranging from 500 or 600 lines to as many lines as the telephone service requirements of a large city may call for. The maximum line capacity of a Federal MSX single office unit is limited only by subscriber station loop dialing and transmission tolerances and by economic factors of outside plant distribution system.

TRUNKING

Intra-exchange trunking of any extent required for switching of peak traffic loads can be provided with the MSX arrangement of equipment. The wide trunking and traffic carrying flexibility of MSX equipment also applies to the number and size of trunk groups connecting with other exchanges.

SERVICE FACILITIES

All of the various service facilities previously described for the CSX equipment are available with the MSX, as well as the following additional services:

- Prepaid paystation automatic coin collect and return on local calls
- Message rate service for individual and two party lines
- Complete party line changed or vacant station number interception
- Toll switching train for providing high grade transmission and complete toll operator supervisory control of inward toll calls
- Readily adaptable to intertoll dialing

SWITCHING EQUIPMENT

The basic switching equipment consists of linefinders, selectors and connectors. The linefinders are mounted in shelves which are available with mounting capacity for 16, 20 or 30 linefinder switches. Use of either the 16, 20 or 30 switch capacity shelf depends on the peak originating traffic rate. The linefinder switches are simply jacked into the individual switch mounting positions on the shelf. Associated with the linefinder shelf assembly are the line circuit relays.

Frames or racks are available in two heights: 9 feet high and 11 feet 8 inches high.

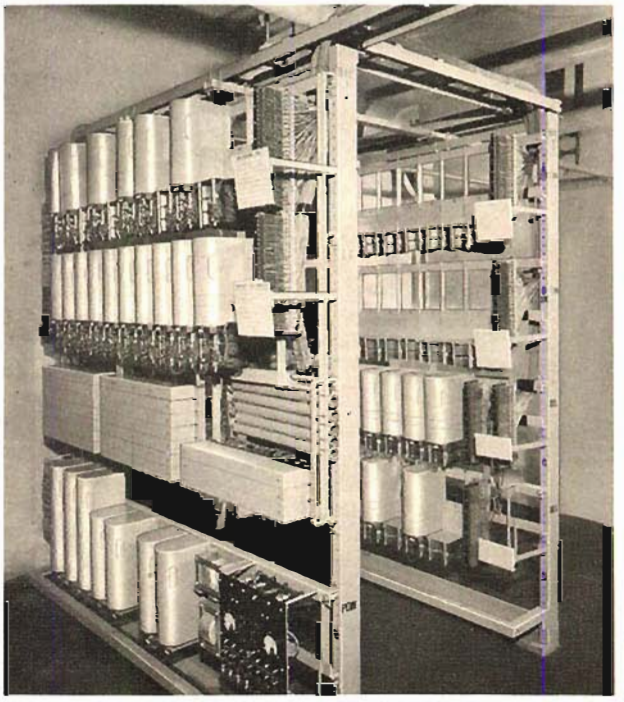
The distributing terminal assembly or trunk grading frame is located directly adjacent to and in line with the selector frame. Selector shelves and switches are usually mounted on left and right selector frames with one terminal distributing assembly provided for graded distribution of trunking outlets from bank levels of all selectors mounted on the two frames.

The connector switches are mounted on shelves which are available in capacities for 11, 16 or 21 switches for each 100 terminal group.

For the larger MSX installations, test distributors and test and verification connectors are usually provided.

The quantities of line finder, selector, and connector switches and associated shelves and frames required for a particular MSX installation depend on the number of lines and terminals the exchange is to be equipped for, number and size of trunk groups to toll board and to other exchanges and the amount of internal trunking as determined by reliable estimates of peak busy-hour traffic.

CSX — STEP-BY-STEP SWITCHING EQUIPMENT



In providing modern dial telephone service for smaller towns and communities, telephone operating companies can depend on Federal's Step-by-Step Community Dial Exchanges (CSX) for reliable and economical performance. This rugged step-by-step switching equipment is designed and built for:

- Long life, low cost operation
- Ease of maintenance
- Simplicity of equipment and circuits
- Compact, space saving arrangement of equipment
- Trunking flexibility
- Ready, low cost expandibility for increased station and traffic requirements

LINE CAPACITY RANGE

Federal's Community Step-by-step Exchanges (CSX) are arranged to economically meet service requirement ranging from 50 up to 900 subscriber lines. With party line service, the number of stations served by a CSX will substantially exceed the number of lines.

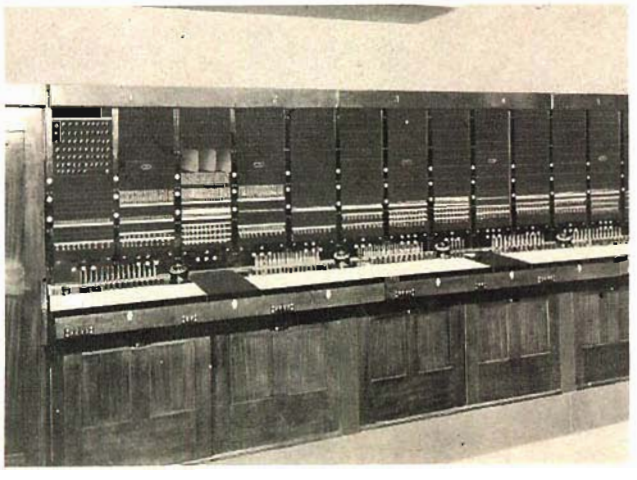
UNIVERSAL SWITCH FRAMES

Standard universal type frames or racks are used for mounting of the switch shelves. With the same type of frame used for mounting of any of the switch shelves maximum flexibility for effecting compact assembly of the switching equipment is thereby provided; permitting most economical utilization of floor space. The universal switch frame is 5 feet, 7½ inches long and can be supplied in three heights: 9 feet, 7 feet 6½ inches or 6 feet 9¾ inches.

The CSX provides all of the service facilities usually required of a modern dial switching exchange. Service facilities available include the following:

- Harmonic, code or superimposed ringing for party line stations
- Line lockout on faulty line or "receiver left off hook" conditions. Line lockout prevents tie up of line finder and selector links
- Automatic hunting selection of non-busy PBX or consecutively numbered groups
- Reverting call service for ringing and intercommunication between telephones on the same party line
- Facilities for enabling toll operator to verify a busy station and to "camp" on busy line for toll call completion
- Traffic registers or meters for recording amount of originating and terminating calls in line finder and connector groups and checking adequacy of switching paths for peak traffic
- Automatic sending of exchange trouble alarms to attended office
- Vacant or changed number interception

TOLL AND MISCELLANEOUS SWITCHBOARDS



In connection with dial step-by-step, exchange installations, Kellogg also offers completely modern DSA and Toll Switchboards incorporating the latest type 3 designs of circuits and equipment features. Toll switchboards can be supplied to fully meet any operating requirements. Operator positions can be equipped either for key sending or dialing completion of incoming toll calls, as may be desired.

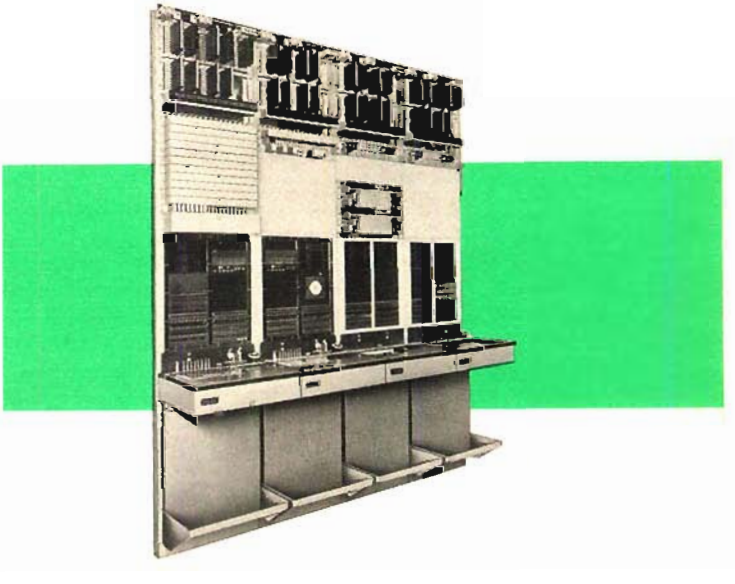
INFORMATION, REPAIR AND SERVICE OBSERVATION DESKS



Federal manually operated information, repair service and service observation desks of standard design and equipped as desired are available.

LOCAL AND TOLL TEST EQUIPMENT

Completely equipped local and toll test desks or panels can be provided as required. The test panels are arranged in accordance with the latest design and are equipped with all of the standard facilities and instruments for checking and measuring various subscriber line and toll trunk conditions.



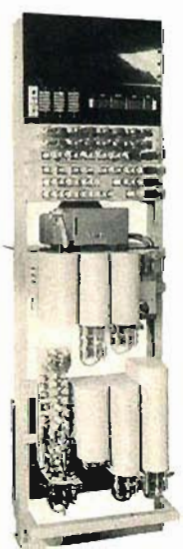
MAIN DISTRIBUTING FRAME AND POWER

M.D.F.

Any desired arrangement of distributing frame equipment is available in connections with an MSX installation. For large exchange installations, it is usually the practice to provide separate main and line intermediate distributing frames. However, for medium and smaller exchanges a combined main and line intermediate distributing frame is generally preferred.

POWER

For operation of a Federal Step-by-Step dial exchange, complete power equipment arranged to meet any exchange equipment load and ringing requirement is supplied. Battery floating and charging equipment, either constant voltage selenium dry disk rectifiers or motor driven generators, is provided as desired. With either rectifier or motor-generator operation, the exchange battery voltage is maintained at a constant voltage regardless of the exchange load. A storage battery is furnished with ampere-hour capacity sufficient to carry the exchange load for a reasonable period in the event of commercial power failure. Duplicate ringing current generators or converters with interrupters are provided for any ringing requirement. Automatic transfer to standby battery operated ringing converter, in case of commercial power failures, is provided.



FEDERAL AUTOMATIC TICKETING SYSTEM

Federal's new automatic ticketing equipment for small exchanges provides a means whereby the called and the calling party numbers, the time and the length of the call can be recorded automatically on conventional punched tape for use with IBM machine or special typewriter. This information is later used in billing the subscriber on toll calls.

The simplicity of design and the standard telephone components used provide for easy maintenance, requiring no specially trained personnel.

The complete system consists of a special clock common to the scanner and routing selector or repeater associated with the tape puncher. The clock is a continuously running device capable of imparting on demand the date (month and day) and time, accurate within ten seconds. The scanner transmits the signals to the tape puncher requiring the information. The routing selector is a standard step-by-step switching device with connections to a tape puncher and access to the clock via the scanner. The repeater is necessary when only a single group of trunks are used and no further switching is required to determine the direction of the call.

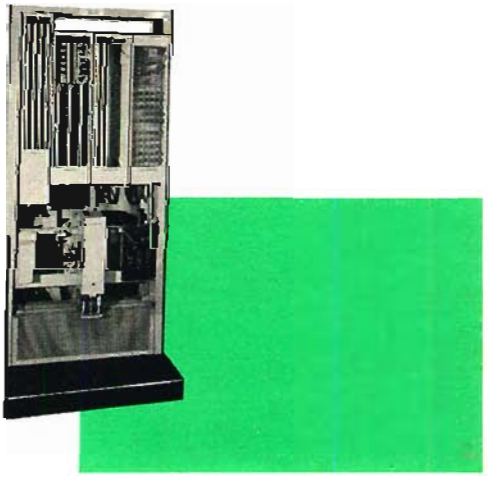
The subscriber, wishing to make a toll call, dials a prefix which directs the call to the routing selector. The subscriber then dials his own number which is recorded. He next dials the desired number which is also recorded. The time of answer and of disconnect are recorded automatically.

FEDERAL'S ELECTRONIC DIRECTOR

Developed by the IT&T system, this director is the first application of electronics to step-by-step central office systems serving multi-office areas. Its unusual efficient and economical operation results from the use of the same code in dialing a particular office regardless of where the call originates in the area or the digits necessary in routing a call.

The system consists of a number of registers, connected to existing first code selectors via A digit hunters, a common translator and translation field, a connector circuit to connect registers to translator, and a pulse generator. It replaces the A digit selector, director and the translation field of existing electro-mechanical director systems.

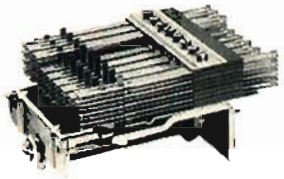
The freedom from wear and increased speed of electronic circuits make it possible to use a common translator which is connected to a particular register only when it is required. The circuits are designed to have long life and low maintenance costs, and are built from a number of standard circuit elements resulting in simplicity, reliability and ease of fault tracing.



KELLOGG RELAYMATIC SWITCHBOARDS



No. 7100 Relay



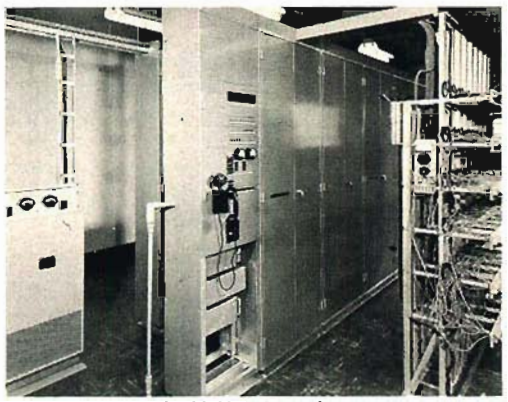
No. 7007 Relay

RELAYMATIC USES RELAYS ONLY!

Hundreds of operating companies everywhere have found by practical experience that relays are the most dependable means of switching automatically. Take the Relaymatic Switchboard, for example, which accomplishes the most complex switching operations smoothly, quietly, entirely by relays; there's just nothing to cause trouble! There are no plungers, gears or gadgets to oil, adjust or replace. And routine maintenance is easy! All you do is swing the doors open and all wiring and components are instantly accessible. Installation is simple because the installer is dealing only with relays . . . and telephone men *know* relays.

6-1 RELAYMATIC

The 6-1 Relaymatic is a Selector Type *All Relay* system using a Step-By-Step trunking Plan. This selector type Relaymatic is manufactured in sizes from 10 lines up and is furnished in low and medium height frames. The system is designed with all of the latest inter-toll dialing, signalling and supervision features and is arranged for easy expansion.



Typical 400 Line 6-1 Relaymatic

OPERATING FEATURES OF THE 6-1 RELAYMATIC

- Local line circuits are all of the metallic type.
- Trunks from toll board are arranged for operator verification.
- Calls are assigned to links progressively. This distributes the load equally among all links.
- 100% line lockout is provided.
- Revertive calls are made by dialing the directory number.
- Links on revertive calls are instantly released when the party answers.
- Dial Start Supervision is given toll operation.
- Flash busy of 60 IPM for line busy and 120 IPM for all paths busy is provided.
- 2-5 numbering facilities are provided.
- All inter-toll dialing features are available.
- The equipment is so designed that repeated calls are assigned different paths throughout the equipment.
- A time cut-off feature, if desired, limits conversations to a pre-determined talking period.
- All connections are secret and cannot be intruded upon by subscribers on other lines.
- All relays are of the angle armature type having springs equipped with precious metal contacts.
- Relay armatures and spring contacts are at the front of the relay for easy cleaning and inspection.
- Circuits and relays are designed throughout to give positive operation with minimum current consumption.

6-1 RELAYMATIC DIMENSIONS

FRAME	Capacity	Width	Height	Depth
Finder-Connector	100 lines 12 links	76⅞"	81⅞"	13⅜"
Finder-Connector	100 lines 15 links	76⅞"	98 5/16"	13⅜"
Finder-Connector	100 lines 17 links	76⅞"	107 5/16"	13⅜"
Selector	30 selectors	68⅞"	81⅞"	13⅜"
Selector	36 selectors	68⅞"	96 5/16"	13⅜"
Selector	40 selectors	68⅞"	107 5/16"	13⅜"

BROADSPAN TYPE RELAYMATIC

The Broadspan Relaymatics are manufactured in ultimate sizes of 30 and 100 lines. Although these systems are not expandable the units are compact and easily moved to new locations. The Broadspan type is ideal for locations where no national intertoll features are required and the toll trunks can be extended to a nearby manual office.



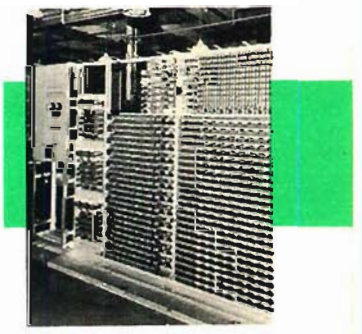
30-LINE, 6 LINK BROADSPAN RELAYMATIC

This switchboard has an ultimate capacity of 30 lines and 6 links. Any line may be converted into a trunk.

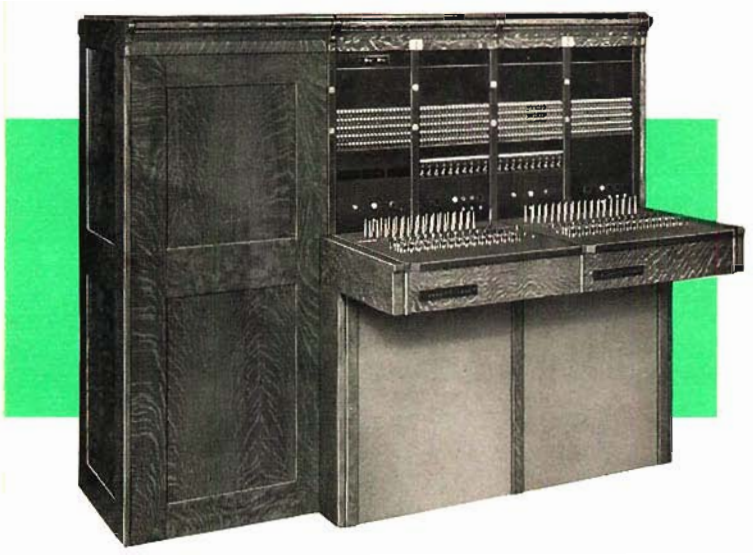
The line and connecting equipment is mounted in one bay, occupying a space 34 3/16 inches wide, 13 inches deep, and 81 inches high. This Relaymatic may be equipped with any number of lines in groups of 10 and links up the ultimate capacity.

100-LINE BROADSPAN RELAYMATIC

This Switchboard has an ultimate capacity of 100 lines and 15 links. The number of bays required is determined by the number or wired links and trunks.



MASTERBUILT SWITCHBOARDS (MULTIPLE TYPE)



Multiple-type Masterbuilt Switchboards are available in sizes to meet requirements of any exchange of from 300 lines to thousands of lines. They are soundly engineered, built by skilled craftsmen and made of the highest quality material throughout.

The Masterbuilt Switchboard is especially designed to include operating features which will provide the basic elements of good telephone service desired by subscribers. These features include 1) a quick answer; 2) a fast connection; 3) a satisfactory conversation; 4) instantaneous disconnect; and 5) a prompt recall.

Masterbuilt switchboards do not demand large investment in surplus idle equipment. In planning for future needs, either small or large, Masterbuilt users can be sure that their switchboards will have the flexibility to meet those needs economically and efficiently.

The positional equipment of any section or operator's position in a Masterbuilt switchboard may be removed and reinstalled where needed. All of the operator's equipment and cord equipment is installed in the keyshelf and relay gate in one demountable unit. This feature enables any Masterbuilt position, whether local, toll, or universal to be converted over night.

REVERTIVE RINGING TONE

Revertive ringing tone is that feature which provides to the calling party a tone each time the bell of the called party is rung. This tone indicates to the calling party that the operator has performed every possible function in connection with the call and the desired conversation is then dependent only on the answering of the telephone by the party called. This feature entirely does away with reports that the operator refuses to ring, and relieves the operator of all necessity for re-ringing on established connections.

INSTANTANEOUS DISCONNECT

Instantaneous disconnect entirely disassociates the cord circuit from the subscriber's line circuit the instant he restores his receiver to the switchhook. This connection applied not only to the talking conductors of the cord but also to the busy test so that after the completion of a call or the abandonment of an incompleted call the line of either party or both parties is immediately available for either an outgoing or an incoming call.

This feature materially reduces the cord holding time since the cord may immediately be used for another connection. The disconnect indication on the supervisory lamps is complete and unmistakable; however, in the event that the operator has other idle cords, it is not necessary for her to take down a disconnected cord pair immediately because the cords, if left in the subscriber's line jack can in no way interfere with the subscriber's service. This feature results in a saving of operator's time and subsequent calls. The number of busy tests is reduced by making both subscribers' lines immediately available for incoming service.

Instantaneous disconnect may be furnished on both cords or on the answering cord only. Traffic studies show that the majority of recalls come from the party who originates the first call. For this reason some traffic authorities believe that disconnect on the answering cord is sufficient. However, in some cases it has been proved that the savings in the number of busy tests and consequent second calls was more than enough to justify the installation of instantaneous disconnect on the calling cord as well.

LINE LAMP RECALL

Line lamp recall is that feature associated with instantaneous disconnect which permits a subscriber's recall to appear in the line lamp instead of on the cord supervisory lamp as would be the case without instantaneous disconnect in the cord circuits. The recall appearing in the line lamps is just as available to every operator as was the original call, and the subscriber receives the same prompt answer on all classes of calls.

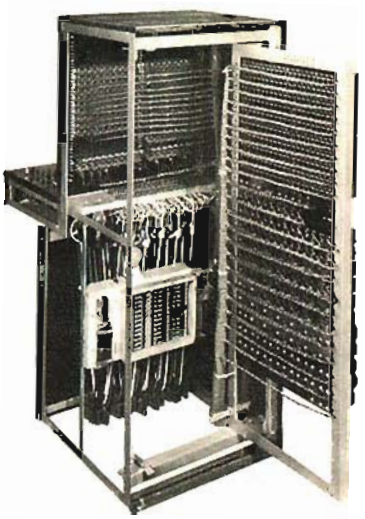
BUSY LINE LOCK-OUT

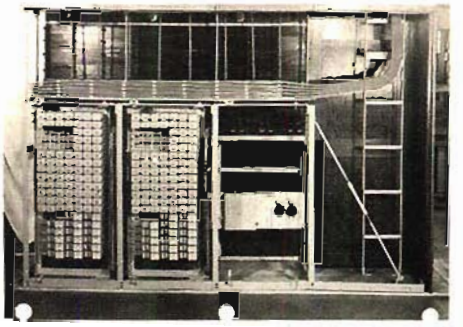
Busy line lock-out positively prevents a second call from being completed to a busy line so long as ringing or a conversation is in progress. With this feature, the operator gets the audible multiple busy test on a busy line, but even though she may plug into the jack, the cord is half open and the operator cannot start the machine ringing nor release her telephone set from the calling party until she withdraws the incorrectly inserted plug and reports the line as "busy." Under this condition the calling supervisory lamp remains burning as a visible indication of her error until rectified.

This feature may be considered as the last step in perfecting secret service. "Busy Line Lock-Out" prevents a third party from being connected into an established connection and prevents a second operator from listening in on any multiple appearance of a busy line. This feature also prevents careless operators from ringing on established connections in case a busy test is disregarded.

MASTERBUILT SWITCHBOARDS (MULTIPLE TYPE)

CONSTRUCTION FEATURES





RIGID STEEL FRAME

The complete switchboard is built upon the spot where it is to stand. The installer handles one piece of framework at a time, interlocking and bolting together the members. No riveting is necessary.

CORD EQUIPMENT

The cord equipment shipped completely, wired, assembled, and tested.

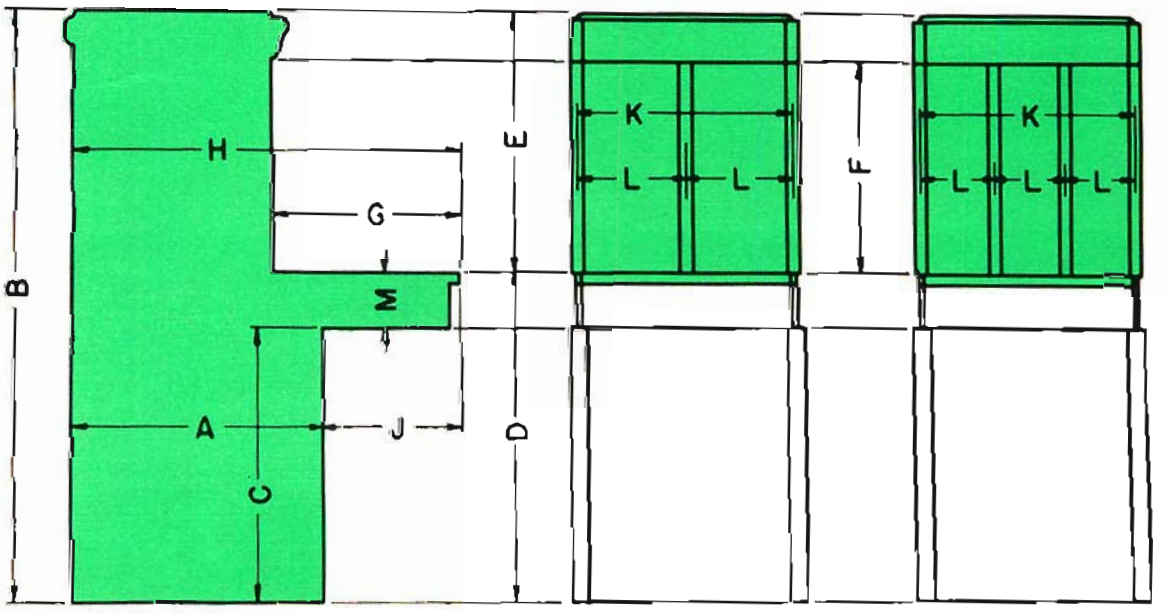
The only work for the installer is to slide the key shelf, connecting rack and cord rack into place, hang the gate, connect the power and hang and connect the cords to the operator's jack.

CONSTRUCTION AND ASSEMBLY

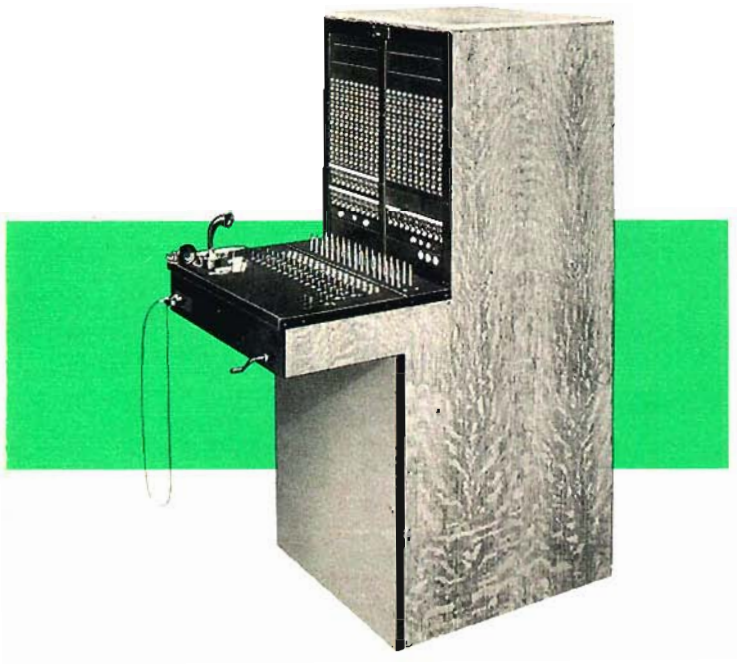
The swinging gate carries cord circuit relays, condensers, repeaters and coils. Merely swing open the gate and the line equipment, cords and both sides of the gate are accessible. Nothing obstructs the wiring.

CABINET DIMENSIONS

LOCAL BOARDS	A	B	C	D	E	F	G	H	J	K	L	M
6-800	2′1 1/16″	4′9 9/16″	2′2 5/8″	2′8″	25 5/16″	21 1/8″	19 3/8″	39 9/16″	14 1/8″	22 5/16″	11 1/32″	5 3/8″
12-1600	2′1 1/16″	6′ 7/8″	2′7 1/2″	3′0″	2′10 7/8″	2′7″	16 7/8″	3′1 1/16″	11 5/8″	22 5/16″	11 1/32″	4 1/2″
2800	2′1 1/16″	6′ 7/8″	2′7 1/2″	3′0″	2′10 7/8″	2′7″	16 7/8″	3′1 1/16″	11 5/8″	24 27/32″	8 3/32″	4 1/2″
4200	2′6 5/8″	7′6 3/16″	2′10 1/2″	3′4″	4′ 2 3/16″	3′4 3/16″	14 15/16″	3′4 11/16″	11 5/16″	24 27/32″	8 3/32″	5 1/2″



MASTERBUILT JUNIOR SWITCHBOARDS



TWO POSITION

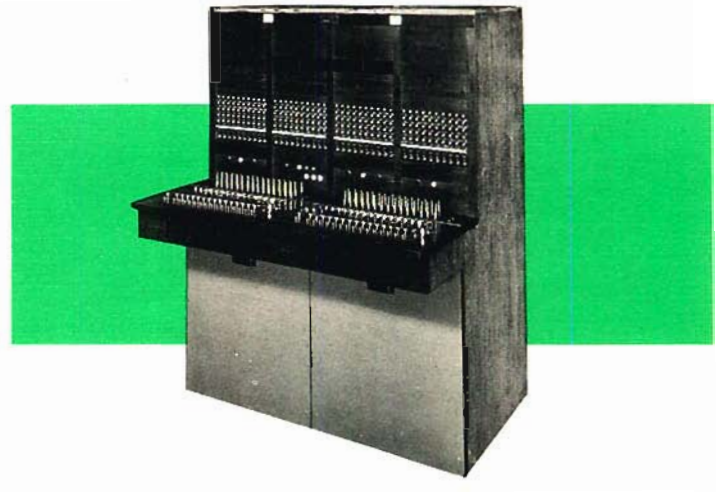
Each Masterbuilt Junior position has a capacity of 200 local lines, either magneto or common battery, and 40 drop signal or 30 lamp signal magneto rural or toll lines, 15 universal cord circuits with either manual or machine ringing and any type of party line service. The sections are complete individual units. Two sections may be placed together which provides double the capacity of one section. This also may be accomplished by using a two-position cabinet switchboard.

The cord circuits may be equipped with either manual or machine ringing and with any type of party line service desired. Pilot lamps, fuse alarm, cord and wire chief's tests, generator switching key, operator's telephone switching key, and night alarm key are all standard equipment. Code alarm and generator will be furnished when specified.

SINGLE POSITION

The Masterbuilt Junior switchboard is of the non-multiple type, equipped with universal cord and line circuits designed to provide either common battery or magneto service or a combination of the two. These switchboards are available in single position units up to 200 lines and in two position units with capacities up to 400 lines.

The Masterbuilt Junior is adapted to the installation where the anticipated growth will not require a multiple type switchboard. It provides modern manual service and the initial cost is only slightly more than for magneto equipment. Both magneto and common battery subscribers may be served with one switchboard and as subscribers are changed from magneto to common battery service the transfer is made by switching only two wires on the line relay.



OPERATING FEATURES

COMMON BATTERY OPERATION. Lamp lights when subscriber removes telephone from hookswitch.

MAGNETO OPERATION. Hand generator at subscriber's telephone provides means of signalling operator.

FULL UNIVERSAL LINE CIRCUITS. These circuits handle all types of local lines, magneto or common battery. To convert from local battery to common battery change just two connections on the line relay. No additional switchboard wiring or equipment is required to change to common battery.

RURAL OR TOLL LINE CIRCUITS. These are magneto, with either drop or lamp signal.

FULL UNIVERSAL CORD CIRCUITS. Adapt instantly to the line in which the plug is inserted, regardless of whether it is common battery or magneto. Nine different circuits are available to meet specific operating conditions.

PILOT CIRCUITS. Line pilots and supervisory pilots are provided for both common battery and magneto lines.

PARTY LINE RINGING. Code, two-party divided, or five-party harmonic ringing may be furnished as specified.

MANUAL RINGING OR MACHINE RINGING. Machine ringing is recommended for common battery lines because of great saving of operator's time. Revertive ringing tone is recommended with machine ringing only. The switchboard may be wired for machine ringing and the actual equipment added later to meet future needs. Single party, two-party divided, or five frequency harmonic ringing may be furnished as desired.

REVERTIVE RINGING TONE. Revertive ringing tone is audible to the calling subscriber when the called subscriber is being rung on a common battery line. Available when machine ringing is specified.

POSITIVE NIGHT ALARM. Controlled by a night alarm key.

CODE ALARM. Repeats code rings on rural or toll lines. It is used when the operator leaves the board. When code calls are made the operator does not need to answer. Subsequent calls will not be prevented from coming through. (This feature is optional.)

FUSE ALARM. The fuse alarm sounds whenever a switchboard circuit fuse "blows".

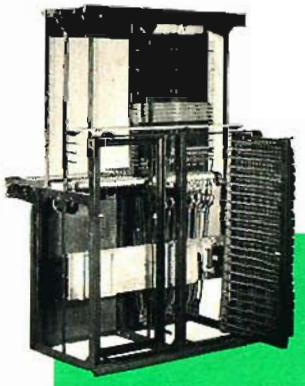
LINE JACKS. Masterbuilt Junior switchboards have only ten jacks per strip. This permits the operator to handle the plugs easily and efficiently. Congestion is eliminated, the operator's view is not obstructed and wear on cords is lessened.

POSITIVE LAMP SUPERVISION. Individual supervisory lamps with pilots to attract the operator's attention insure prompt recalls. On common battery connections supervisory signals automatically appear when the receiver is placed on the hook. On magneto connections it is necessary for the subscriber to ring off after placing the receiver on the hook.

REPEATING COILS. Repeating coils are necessary to provide the best universal cord circuits and are recommended under all conditions.

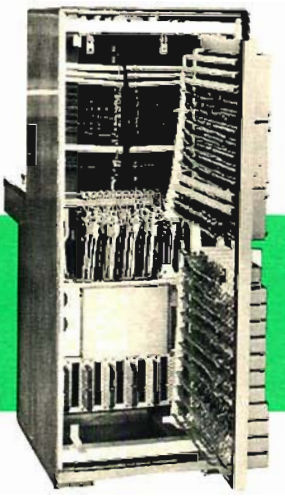
CAPACITY. The ultimate capacity per position is 200 local lines and 40 magneto lines. Two-position switchboards have an ultimate capacity of 400 non-multiple local lines and 80 magneto lines.

CONSTRUCTION FEATURES



FRAMEWORK. The framework of the Junior Masterbuilt is of rigid, all-steel construction. Rivets and spot-welding fasten each piece firmly in place.





SHELVES AND PANELS. The keyshelf and face equipment are made of black bakelite. This material is used because of its permanent lustre and its unusual wearing qualities. It contrasts with the equipment and sets off the cords, plugs, keys, jacks, and lamps. The keyshelf is hinged with a full length piano hinge and can be raised to provide easy access to the key equipment.

FACE EQUIPMENT. The face equipment of the Junior Masterbuilt has been arranged for simplicity and ease of operation. The black bakelite background prevents fatiguing glare. Jack thimbles are of bright nickel for visibility. Plugs have red or black fibre sleeves for quick identification and are positioned and spaced for maximum convenience. Cam keys have colored handles—miscellaneous keys are red and white and contrast with black mountings.

Each plug space in the Masterbuilt Junior switchboard has a plug well bushing to take up plug seat wear and prevent the wearing of holes around the plug seats. These bushings are replaceable.

SWINGING GATE. All repeating coils, condensers, relays, etc., are mounted on the swinging gate of the Masterbuilt Junior. A maple panel which mounts night alarm equipment, terminals for ringing current, battery supply, fuses, and telephone switching circuits is located at the back of the switchboard. This panel is conveniently located for easy access. Swinging the gate open exposes the line equipment, cords, line, trunk terminal blocks, and both sides of gate for inspection and cleaning.

CABINET. The cabinet of the Masterbuilt Junior switchboard is made of medium golden oak side panels and top. The cabinet has been modernized with old style trim and overlapping sides eliminated to present a smooth beveled top and flush sides. The kickboard is completely covered with a solid color battleship linoleum panel.

HOW TO ORDER

In ordering or requesting information on the Masterbuilt Junior the following information should be included:

1. Number of universal lines to be equipped. Any number of these universal lines may be wired for common battery operation as specified.

2. Number of rural lines to be equipped and whether they are to be equipped with drop and jack or lamp signals.

3. Number of cord circuits to be equipped. State whether manual or machine ringing is to be furnished and type of party line service. If ringing machine is to be furnished specify type.

4. If power equipment is to be furnished specify voltage and frequency of commercial current available.

5. Specify length of cable runs from switchboard to main distributing frame.

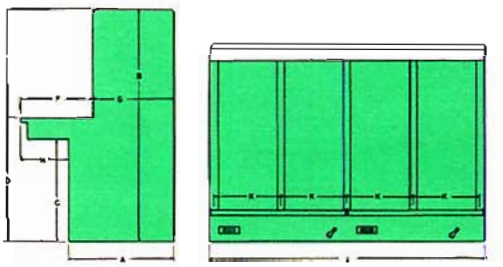
CABINET DIMENSIONS

The side view of a Masterbuilt Junior Switchboard is shown at the left. On the right is the front view of the Masterbuilt Junior face plate. The drawing shown is of the two position board.

All dimensions are in inches.

A	B	C	D	E
26¼	58⅜	27¾	30	25⅝
F	**G**	**H**	**J**	**K**
18	20¼	11⅞	*23⅛ **47	11½

*One position **Two position



EQUIPMENT

OPERATOR'S SET. Suspended or breastplate type operator's sets are available.

CABLE. Cable to the switchboard is terminated on terminal blocks provided at the back of the switchboard. Cable must be ordered separately.

GENERATOR. Switchboard may be furnished with or without 5-bar hand generator.

BLUE PRINTS. Two complete sets of blue prints covering all circuits used in the Masterbuilt Junior are furnished with each installation.

MASTERBUILT MAGNETO SWITCHBOARDS

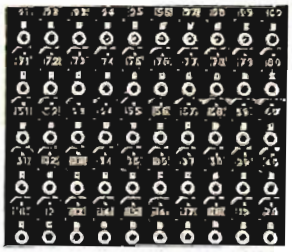
FRAMEWORK. The framework of the Masterbuilt magneto switchboard is of all steel construction, fabricated into one complete interlocking unit. Rivets and spot welding fasten each piece permanently in position. This construction not only provides ample strength to support the equipment and cabinet woodwork but adds permanence to the installation.



The Magneto switchboard is ideally suited for the small exchange having many long rural subscribers' loops and where operating conditions require an installation which is simple in operation and maintenance.

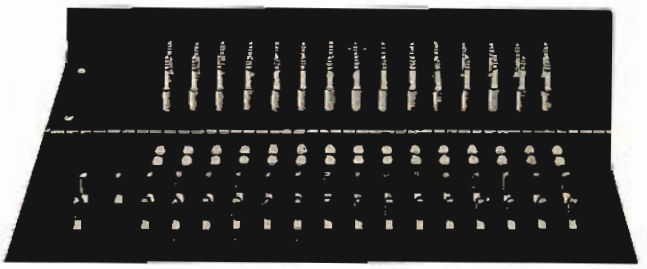
Three major features are part of every magneto switchboard. (1) "Magneto" is the simplest form of telephony; (2) local battery transmission, at its best, is the best transmission so far devised by telephone engineers; (3) magneto equipment will operate over distances and conditions of outside plant which prevent the use of any other type of switchboard. Every Kellogg magneto switchboard is designed so simple that it can be handled perfectly by persons of very limited training and experience.

The complete line of Kellogg magneto switchboards includes a board for every need, from a 10-line wall switchboard to a 200-line floor type board.



DROP SUPERVISION. Kellogg drop supervision magneto switchboards employ the same type drop for supervision as is used for each line. These drops are mounted on the face of the board. When the subscriber rings off the shutter falls. The "kick" of the Kellogg latch gives added assurance of operation.

Two types of drop supervision are available. The double drop type provides non-ring-through supervision in which the subscriber ringing off signals only the operator and not the party with whom he was connected. Single drop supervision permits ringing through.



LAMP SUPERVISION. On lamp supervision switchboards a lamp immediately lights when the subscriber "rings off," and continues to glow until the operator takes down the connection. In lamp supervision there are no moving parts on the keyshelf; the only maintenance required is the occasional replacement of the lamps.

LINE AND CORD CAPACITY

DROP SUPERVISION

Cabinet Code No.	Maximum Lines	Capacity Cords	Wired for Lines	Wired for Cords
50	50	10	50	10
150-E	150	15	100	15
150-F	150	15	150	15
200-E	200	15	100	15
200-F	200	15	150	15
200-G	200	15	200	15

LAMP SUPERVISION

Cabinet Code No.	Maximum Lines	Capacity Cords	Wired for Lines	Wired for Cords
150-EL	150	15	100	15
150-FL	150	15	150	15
200-EL	200	15	100	15
200-FL	200	15	150	15
200-GL	200	15	200	15

CORD CIRCUITS

DROP SUPERVISION

DR Double Drop—Same as type LR except drop instead of lamp supervision.

DRK Double Drop—Same as type LRK except drop instead of lamp supervision.

D Double Drop—Same as type L except drop instead of lamp supervision.

SR Single Drop—Includes repeating coil and is not non-ring through.

S Single Drop—Same as type SR less repeating coil.

LAMP SUPERVISION

LR Double Lamp—Includes repeating coil and should be used for interconnecting metallic and grounded lines. Permits either the calling or answering party to signal the operator for a recall without ringing the other party.

LRK Double Lamp—Same as type LR but also equipped with repeating coil cut-out key. Used for through toll connections on metallic toll lines.

L Double Lamp—Same as LR less repeating coil. Used with either all metallic or all grounded lines.

EQUIPMENT

CABINET—Three sizes are available. See table for dimensions.

OPERATOR'S SET—Suspended or breastplate type non-positional transmitter, and featherweight, watchcase type, head band receiver.

LINE DROPS—Code and regular alarm—resistance as specified.

DROPS AND CORDS—May be equipped as desired, up to ultimate capacity.

GENERATOR—5-bar, hand generator, wired to a switching key for switching to power generator.

CABLE—12 feet of line cable furnished, extended from top or bottom of switchboard cabinet and from the right or left hand side.

NIGHT ALARM—With bell and control key. An additional alarm with buzzer and key is furnished when line drops are equipped with armature contacts for indicating code rings on party lines.

WALL TYPE MAGNETO SWITCHBOARDS

TYPE 9-B-10 LINES

This 10-line switchboard is the smallest of the Kellogg wall types. Its operation is just as positive and just as dependable as the largest magneto switchboard and is recommended for use where requirements do not exceed 10 lines. It can be used for either grounded or metallic lines.



EQUIPMENT AND CONSTRUCTION

The line wires connect to binding posts on the top of the cabinet and terminate on combined drops and jacks in the face of the switchboard. The binding posts are specially arranged with air gap lightning arresters. Two pairs of connecting cords provide for two complete conversations at the same time between different lines; and in addition, the operator can also answer calls on other lines. A listening-in jack, associated with each pair of cords, enables the operator to supervise the connection without interference. A drop shutter falls when any connected subscriber rings off or makes a recall.

NIGHT ALARM

A night alarm buzzer and a switch come with this switchboard and can be mounted wherever convenient. They connect to two binding posts located on the side of the cabinet and operate from two dry cell batteries connected in series. When the switch is closed the buzzer operates every time a drop on the board falls.

Code ringing night alarm can be furnished extra. This feature, on party lines using code ringing, permits the attendant to go about other duties and still be able to distinguish between calls for the operator and calls for someone else on the same line.

OPERATOR'S SET

Any standard magneto telephone with hand generator and a ringer can be used for the operator's set, and connects to the switchboard through a cord attached to a switchboard plug. Shipping weight is approximately 25 pounds.

TYPE 48 — 15 LINES

This switchboard is designed specially for rural switching centers where the operator is not always close to the switchboard and a loud signal is desired. A double gong bell is wired across each line and operates similar to a telephone bell. These bells are located in the face of the switchboard.

CAPACITY

This switchboard has a capacity for 15 lines and 4 connecting cord circuits. Each line terminates on a combined drop-jack-bell unit and is arranged for either grounded or metallic systems. The board can be partially equipped for 3, 6, 9, 12, or 15 lines as desired.

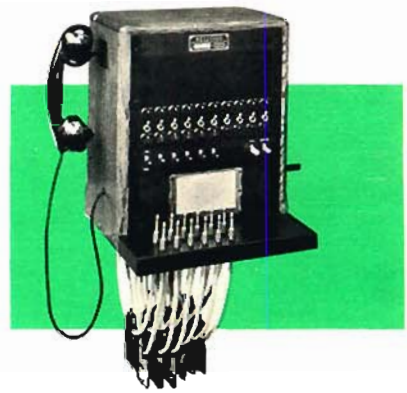
HOW TO ORDER

When ordering or requesting information on the Type 48 switchboard the following information should be furnished:

1. Number of lines to be equipped at present.
2. Resistance of drop coils.
3. Whether the 8 feet of line cable supplied is sufficient.

TYPE 30 — 30 LINES

This switchboard fits most cases where a wall board is required because it can handle up to its full capacity of 30 lines. This allows for sufficient expansion for those systems where less than 30 lines are now used.



CAPACITY

Ten drops and jacks are mounted in a row and space is available for three of these rows or a total of 30 lines. There is capacity for 6 cord circuits. It can be equipped with as few as 10 drops and jacks and 4 cord circuits, depending upon the number of lines needed and the amount of traffic handled at present. Additional equipment can be added as more lines are required.

OPERATOR'S SET. This switchboard comes equipped with an all-bakelite Masterphone handset, containing capsule type, non-positional transmitter and receiver units, supported by a hookswitch mounted on the cabinet.

HAND GENERATOR. A heavy duty generator is located inside the cabinet with the generator crank extending from the right side. If power ringing is to be used a generator switching key can be furnished to switch from the power ringing machine to the hand generator in an emergency.

CORD CIRCUITS. The cord circuits are of the single supervision type, equipped with a "clear out" drop and combined ringing and listening key. The supervisory drops and keys are located on the face of the board. The first pair of cords may be equipped with a repeating coil for connection between metallic and grounded lines.

NIGHT ALARM. The night alarm bell is mounted inside the cabinet and is furnished with a control key to turn it on or off. The bell will ring as long as the drop signal is down.

If desired any strip of line drops can be equipped with a code alarm. This circuit has a buzzer and control key and is entirely separate from the night alarm. The code operates in unison with the ring from the subscriber's telephone so the operator can distinguish between a station-to-station call on any one line or a call for the operator.

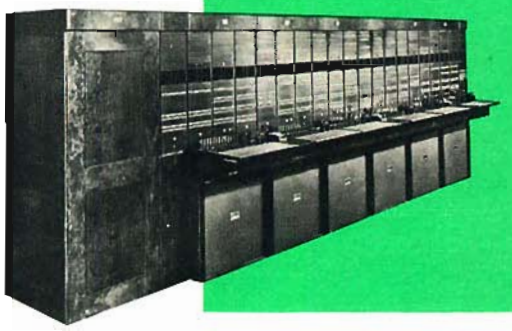
This switchboard is designed for use with either metallic or grounded lines. Shipping weight is 65 pounds.

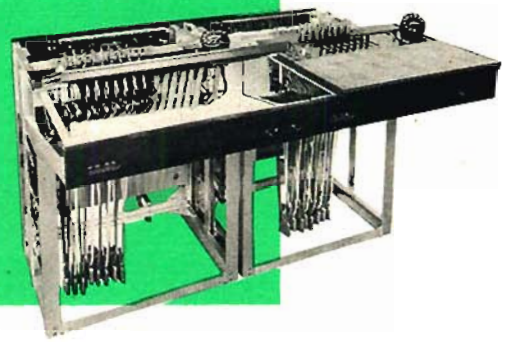
HOW TO ORDER

When ordering or requesting information on the No. 30 switchboard the following information should be furnished:

1. Number of lines to be equipped at present.
2. Number to be equipped with code alarm.
3. Number of cord circuits to be equipped at present: should the first pair be equipped with repeating coil?
4. Should the 8-foot line cable which comes with the switchboard extend from the top or the bottom of the cabinet? Whether the 8 feet of line cable furnished is a sufficient amount.

KELLOGG NO. 3 TOLL SWITCHBOARD





Kellogg toll switchboards are designed to provide the utmost in service and flexibility. They can be arranged for use in alignment with the local switchboard or in a separate line-up, and for use with either manual or dial exchanges.

Either universal-type cord circuits or cord circuits requiring that most of the relays be associated with the line and trunk circuits can be furnished. Any circuit requirement or special arrangements can be provided in these switchboards.

Shown above is a 6 position toll installation of Kellogg equipment. This switchboard employs a universal-type cord circuit. With this circuit less equipment and less floor and rack space is needed in the terminal room. The flexible "positional" units are easy to remove and change to meet varying traffic problems.

The steel frame of these switchboards comes knocked down. Cord circuit equipment comes in complete positional units—factory assembled, wired and tested. No wiring of relay gates and key shelves is required on the job.

Interchangeable positional units permit easy and fast rearrangement of equipment when traffic conditions change. It is not necessary to interrupt service or disturb the multiple.

The Kellogg No. 3 Toll Switchboard has been designed to meet the needs of present day expanding toll service. Intertoll dialing systems have considerably increased the toll traffic which required necessary modernization of toll switchboard equipment to serve the increased loads efficiently.

The equipment is separated into two general physical classifications: the switchboard located in the toll operating room and the toll relay rack equipment usually located in a separate equipment room.

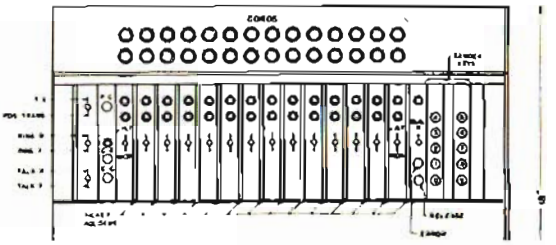
The No. 3 toll switchboard is arranged so that most of the work of giving service over many different types of lines and trunks is performed in the line equipment of the particular line or trunk involved, instead of in the cord circuit. The flexibility of the No. 3 switchboard can be appreciated when it is realized that any conceivable type of line or trunk circuit can be handled simply by including the necessary features in the terminating equipment associated with that line or trunk.

This arrangement permits the cord circuit to remain extremely simple using only three relays.

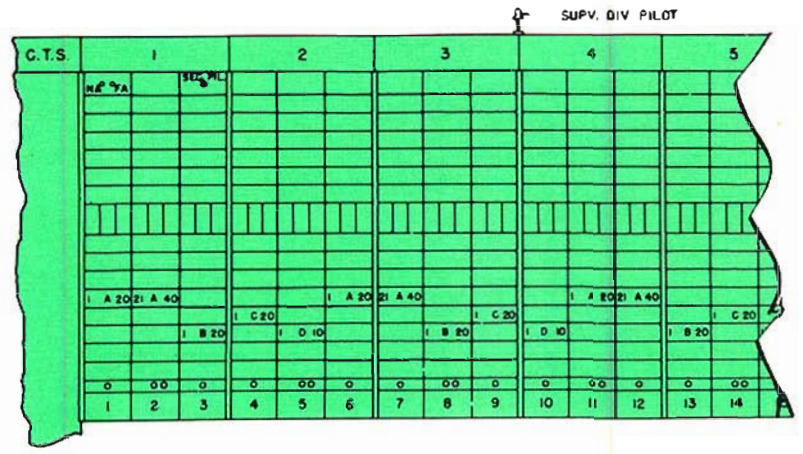
The overall design is made for flexibility, economy and reliability, which are achieved without sacrificing outstanding performance. The cost of Kellogg's No. 3 toll switchboards in comparison with older type toll switchboards is particularly favorable where additional positions are required for expansion.

The use of cord dialing provides a dial pilot lamp and other supervisory features. A dial pilot lamp is furnished to indicate when the switching equipment in the distant office, or any intermediate point, is ready to receive pulses. The operator starts dialing or continues to dial only when the dial pilot is lighted.

On larger installations Kellogg key senders can be furnished with any reasonable number of digits. In some cases intertoll dialing will require ten or more digits. The sender equipment is designed as a complete unit which contains registers, sender relays and control circuits capable of sending up to 14 digits by each sender. Key senders of course are optional and can be added when required.



NUMBER 3 TOLL SWITCHBOARDS



MULTIPLE ARRANGEMENTS

Five panel multiple is generally used except on large installations when it is considered an advantage to have a seven panel multiple.

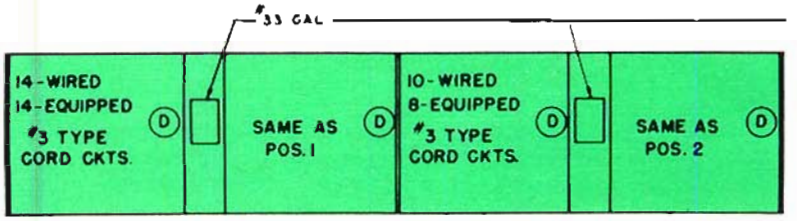
Ordinarily twenty per strip jacks are used for all multiple. However, ten per strip jacks are available and can be specified.

One ticket box is furnished for each C.L.R. position generally in the left hand panel. At delayed call positions three ticket boxes are furnished one in each panel.

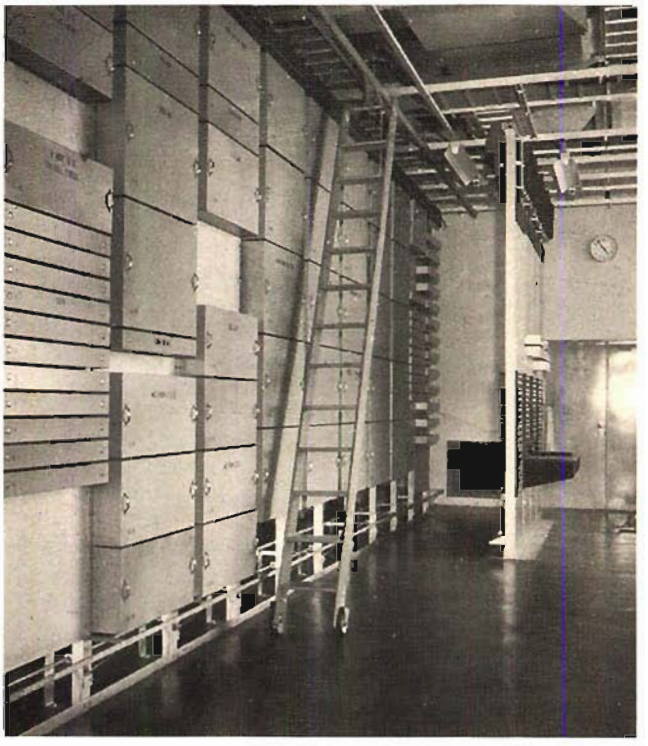
POSITIONAL UNIT

An individual ticket slot is mounted in the keyshelf adjacent to keys of each cord circuit.

Positional Equipment	Wired	Equipped
Cord Pairs	14	as required
Operator's Telephone	1	1
Dial or Sender Keys as specified	1	1
Common Control	1	1
Line and Fuse Pilots	3	3



Typical 11 ft. 6 in. relay rack.



GENERAL SERVICE FACILITIES

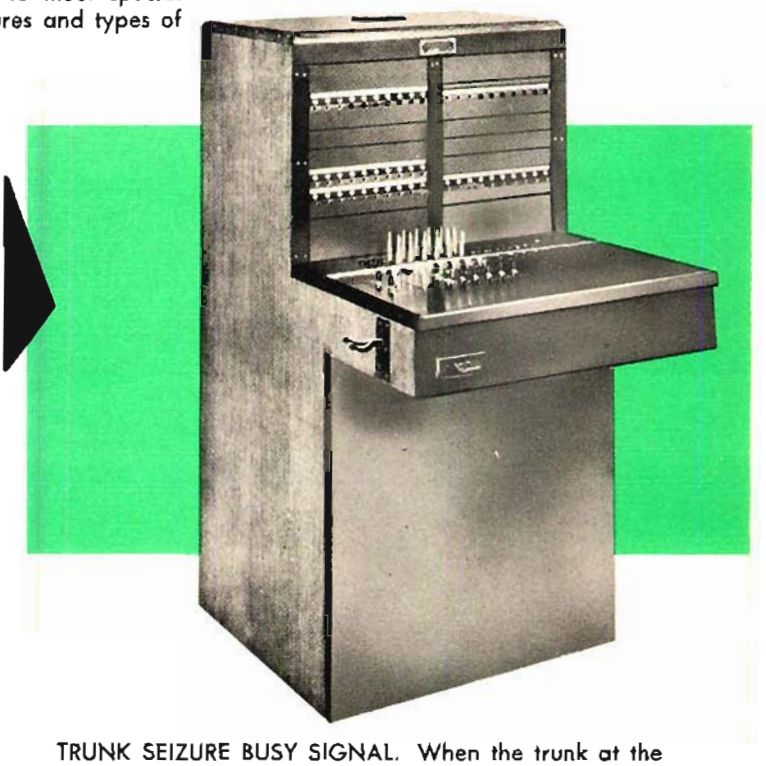
Ring Down Toll Lines • Inter-Toll Dial Lines • Combined Line and Recording Trunks (C.L.R.) Regular • Combined Line and Recording Trunk (CLR) Prepay Station • Toll Recording Trunks (for local manual service) • Community Dial Office Trunks (CDO) • Toll Terminal Lines (Common Battery) • Trunks to Toll Train (Toll Switching Trunks) • Toll Switching Trunks (Manual) • Incoming Trunks from Toll Auxiliary Selector • Inter-Position Trunks • Verification Trunk • Wire Chief's Test Cord • Service Assistant's Circuit (Supervisor's Circuit) • Kellogg Key senders or Dials • Inter-Desk Trunks • Intercept Trunks • Cord Test

TOLL RELAY RACK EQUIPMENT

All line and trunk relay equipment, key pulsing apparatus (with the exception of key pulsing key sets), and any miscellaneous equipment are mounted on the toll relay rack.

MASTERBUILT PBX SWITCHBOARDS

Kellogg Masterbuilt PBX switchboards are available in two types, each offering the maximum in dependability and flexibility of operation. The "K" type switchboard is designed for universal service and is adaptable for use in many different types of installation. The "J" type switchboard is designed to meet special demands of given installations, providing special service features and types of operation.



"K" TYPE PBX SWITCHBOARD

The type "K" is an all-purpose PBX switchboard. It furnishes whatever services are required by the subscriber and is so designed that it can connect to any type of central office equipment. It employs the same cord and trunk circuits whether for manual or dial operation. When connected to a common battery manual or dial central office this PBX provides in a jack-ended trunk all the advantages of through battery feed.

The supervision of this switchboard is under control of the PBX telephone, not the PBX operator, and all trunks, cords, and subscribers' lines are immediately available for other use as soon as each party hangs up, eliminating "false busies" and false ringing.

When connected to a dial exchange the PBX provides both through and attendant dialing. The central office connectors and the PBX trunks are released as soon as the calling PBX subscriber hangs up. The toll operator also gets standard supervision on connections to PBX stations.

OPERATING FEATURES OF "K" TYPE PBX SWITCHBOARDS

Operates with Common Battery Manual or Dial or Magneto Exchanges

Jack-ended trunk circuits and cord circuits will operate with either a manual or dial main exchange. Two relays and a dial are added for dial operation, no wiring changes are required. A simple line adapter is required for each trunk in the central office when the PBX is connected to a magneto main exchange.

THROUGH BATTERY FEED ON JACK-ENDED TRUNKS. This feature insures excellent transmission on both toll and local connections.

THROUGH TRUNK SUPERVISION. The toll operator receives a disconnect when the PBX station hangs up, insuring correct timing on toll calls. PBX stations may also place sequence calls to main exchange without the assistance of the PBX operator.

TRUNK RE-RING. As soon as the PBX station hangs up, the trunk circuit is available for incoming calls, whether or not the connection at the PBX has been removed.

THROUGH OR ATTENDANT DIALING. When the PBX is served by a dial main exchange PBX stations equipped with dial can dial their own numbers without assistance of the PBX attendant.

TRUNK SEIZURE BUSY SIGNAL. When the trunk at the main exchange (C.B. manual or dial) is seized it becomes "busy" at the PBX immediately, even though the line lamp is not yet lighted.

BALANCED BATTERY FEED. Connections between any two PBX stations are made with individual high impedance, bridged type battery feed relays for each line, permitting double lamp supervision.

AUTOMATIC TRUNK HOLDING. Trunk calls are held automatically until PBX station answers and hangs up—it is not possible to lose the trunk connection at the main exchange while the attendant is handling the call.

POSITIVE SUPERVISION. Positive lamp supervision is provided for all types of connections.

SINGLE NIGHT CONNECTIONS. Regular cord circuits can be connected to night trunk jacks with the "through" key operated—one PBX station may be connected to each PBX trunk for two-way main exchange service while PBX is unattended.

MULTIPLE NIGHT CONNECTIONS. Spider patching cords make it possible to connect up to five stations with each trunk for two-way service to main exchange when PBX is unattended. Battery cut-off key removes the possibility of battery drain during this period.

EQUIPMENT

Each type "K" PBX board is furnished with the following common equipment: one battery cut-off key, one hand generator with switching key, one night alarm and control key, one dial (if required), and one operator's telephone set.

CAPACITIES OF TYPE "K" PBX SWITCHBOARDS

Code No.	Lines	Line Relays	Trunks	Cords
K-50	50	up to 50	10	10
K-100	100	up to 100	10	15
K-200	200	up to 200	10	15

Each cabinet is wired to full capacity and may be equipped as desired.

ORDERING INFORMATION

In ordering the type "K" Masterbuilt PBK the following information should be provided:

Code number of the size switchboard desired, the cabinet finish, the number of lines to be equipped with and without relays.

Whether the board should be equipped with designation strips.

Number of cord circuits.

Number of trunk circuits.

Type of operator's set.

With or without dial and mounting.

Number of patching cords to connect one trunk to local lines (number of local lines).

Lines number from bottom up, left to right across the face of the board. Patching cords can be furnished to connect one trunk to either 2, 3, 4, or 5 PBX lines as desired.

TYPE "K" PBX SWITCHBOARDS AVAILABLE FROM BRANCH WAREHOUSE STOCKS

The Kellogg "K" Type PBX is maintained in the Kellogg Branches equipped with standard amounts of lines, trunks and cords.

Single Packaged units of line, trunks and cords are also maintained in branch warehouse stock. The additional units can be ordered with the stock switchboards and installed by the Purchaser.

Cabinets are furnished with dial and dial mounting, No. 52 operators set, designation strips for equipped lines and trunks and through or blocked supervision keys for equipped cords.

K-50-1 9L—Oak Finish
K-50-2 35-L—Walnut Finish

	Lines	Cords	Trunks
Wired	50	10	10
Equipped	10 (With Relays)	8	5
	30 (Less Relays)		

K-100-1 9L Oak Cabinet Finish
K-100-2 35-L Walnut Cabinet Finish

	Lines	Cords	Trunks
Wired	100	15	10
Equipped	20 (With Relays)	15	8
	60 (Less Relays)		

F.O.B. Points of Shipment

ADDITIONAL EQUIPMENT WHICH CAN BE INCLUDED IN THE ORDER TO BE INSTALLED BY THE PURCHASER

10 lines less relays
1 designation strip for 10 lines
1 cord circuit equipment
1 trunk circuit equipment
1 set maintenance tools
1 local line spider cord with plug
2 local lines spider cords with plugs
3 local lines spider cords with plugs
4 local lines spider cords with plugs
5 local lines spider cords with plugs

"J" TYPE PBX SWITCHBOARD

The Kellogg "J" type PBX switchboard offers all standard PBX switchboard operating features in addition to providing special trunk and cord circuit arrangements as desired. Any type of trunk circuit, for common battery dial or manual or for magneto service, can be provided.

This switchboard is housed in the same type cabinet and has the same construction features as the "K" type switchboard.

STANDARD OPERATING FEATURES OF THE "J" PBX SWITCHBOARD

TRUNK RE-RING. When a conversation is completed on a trunk connection another trunk call may come in on the same trunk even though the PBX operator has not removed the plug from the jack of the trunk for the first connection.

BALANCED BATTERY FEED. Connections between any two PBX stations or between a PBX station and a trunk are completed through the balanced windings of "battery feed" relay coils.

LOW CURRENT CONSUMPTION. All circuits are designed to consume a minimum amount of current. A battery cut-off key is provided to eliminate current drain when the switchboard is unattended.

POSITIVE SUPERVISION. On all "local-to-local" or "local-to-trunk" connections positive supervision is provided.

SINGLE NIGHT CONNECTIONS. Single night connections are made by using a "patching cord" with a plug on each end to connect the night jack of the trunk with the line jack of the desired line.

MULTIPLE NIGHT CONNECTIONS. Multiple night connections are obtained by means of "spider" cords with a plug on each of the several ends. One plug is inserted in the trunk night jack and one plug in each line jack of the stations when it is desired to furnish night service or when the PBX is unattended.

TRUNK SEIZURE BUSY SIGNAL. When the trunk at the main exchange (C.B. manual or dial) is seized it becomes busy at the PBX immediately, even though the line lamp is not yet lighted.

CAPACITIES OF "J" TYPE PBX SWITCHBOARDS

Code No.	Lines	Line Relays	Trunks	Cord Circuits
1055-JM	50	50	10	10
1055-JMR	50	50	8	10
1055-JCBR	50	50	10	10
1055-JA	50	50	10	10
1110-JM	100	100	10	15
1110-JMR	100	100	7	15
1110-JCBR	100	100	10	15
1110-JA	100	100	10	15
1210-JM*	200	100	10	15
1210-JMR*	200	100	10	15
1210-JCBR*	200	100	10	15
1210-JA*	200	100	10	15

*Cord circuits can be increased to 17 and trunks to 15 on special order. Trunks on JMR model are limited to 10.

NOTE: The above switchboards are available with four different types of trunks which are indicated by the code number suffix and which are explained below:

JM trunks—for service to magneto exchange.

JMR trunks—for service to magneto exchange with re-ring feature.

JCBR trunks—for service to common battery manual exchange with re-ring feature.

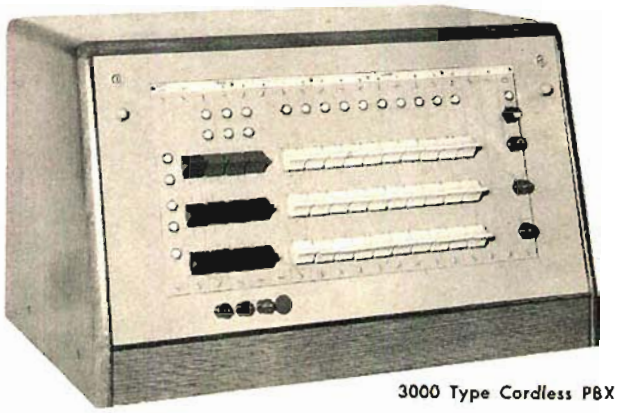
JA trunks—for service to dial exchange with re-ring features.

MASTERBUILT CORDLESS PBX SWITCHBOARDS

Kellogg Masterbuilt cordless PBX switchboards can be operated in connection with either a common battery manual, dial, or magneto main exchange, or one or more at the same time, without modification of circuits.

Kellogg Cordless PBX Switchboards are compact and modern in appearance. The 3000 type is furnished in limed oak. The 1000 and 2000 types are furnished in Oak or Walnut; other finishes can be furnished on special order.

All equipment in these switchboards is easily accessible. The cabinet can be lifted off as one piece, giving full access to relays, condensers, fuse panel, and connecting rack, mounted on a steel frame chassis which is fastened to the base board.



3000 Type Cordless PBX

OPERATING FEATURES OF CORDLESS PBX SWITCHBOARDS

OPERATES WITH C.B. MANUAL OR DIAL OR MAGNETO EXCHANGES. The trunk and connecting circuits are arranged for operation with all types of main exchanges. (When connected to a magneto main exchange a line adapter is required for each trunk in the central office.)

THROUGH BATTERY FEED ON TRUNKS. The circuits are arranged to provide talking battery to the PBX stations from the main exchange.

THROUGH OR ATTENDANT DIALING. These switchboards provide for through dialing from PBX stations or for attendant dialing for manual telephones when this service is desired.

BALANCED BATTERY FEED. Connections between any two PBX stations are made with a high impedance bridged type battery feed coil permitting lamp supervision.

TRUNK HOLDING. Trunk calls are held with trunk answering keys with the disconnect lamp serving as a holding signal.

LOW CURRENT CONSUMPTION. All circuits are designed to consume a minimum amount of current. A battery cut-off key is provided to conserve current when the switchboard is unattended.

POSITIVE SUPERVISION. Positive supervision is provided for answering, calling, and disconnect supervision.

NIGHT CONNECTIONS. Night connections are made to stations as desired with connecting circuits and battery cut-off key.

THROUGH TRUNK SUPERVISION. The through battery feed trunks provide through supervision to the main exchange from the PBX station, permitting prompt recall or disconnect at the main exchange.

3000 TYPE CORDLESS PBX SWITCHBOARD

3001—Ultimate Capacity	12 Lines
	4 trunks
	5 connecting ckts
3002—Ultimate Capacity	20 Lines
	5 trunks
	5 connecting ckts

PRINCIPAL FEATURES:

- Blocked supervision or through supervision by a turn key which is set at the option of the operator.
- Arranged for emergency talking on any line when all connecting circuits are in use.
- Uses regular subscriber telephone for operator set. Battery cut-off key.
- Sloping face of turret.
- Release or night key to disconnect trunk if call cannot be extended.
- Tab type key handles.
- Arranged for a total minimum line resistance of 600 ohms, including the subscriber's loop and the circuits are designed to operate within a range of 18 to 20 volts.
- A generator switch key is provided to connect to an external hand generator when required.

TYPE 3000 CORDLESS PBX SWITCHBOARDS AVAILABLE FROM BRANCH WAREHOUSE STOCKS

Cabinets are furnished with keys for through or blocked supervision, keys on each equipped trunk, 5 connecting circuits and less telephone (uses standard telephone for operator). Trunk circuits are arranged to operate C.B. or Dial.

3001-1 Limed Oak Finish only

	Lines	Trunks
Wired	12	4
Equipped	10 (With Relays)	3

F.O.B. Points of Shipment

3002-1 Limed Oak Finish only

	Lines	Trunks
Wired	20	5
Equipped	15 (With Relays)	4

F.O.B. Points of Shipment

ADDITIONAL EQUIPMENT WHICH CAN BE INCLUDED IN THE ORDER TO BE INSTALLED BY PURCHASER F.O.B. POINTS OF SHIPMENT.

1 line less relay
1 line with relay
1 line relay
1 trunk equipment
1 set maintenance tools

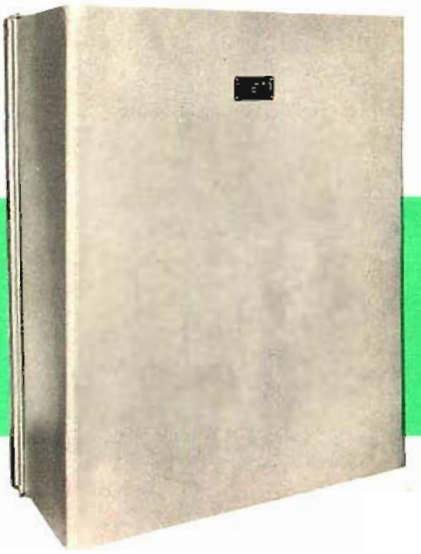
FEDERAL — NON-ATTENDED — PABX

Automatic Service For The Small Business Or Institution



6E PABX—Capacity:
2 trunks
6 extensions
1 local link
Dimensions: 18" x 18" x 8"
Weight 60 lbs.

11P2 PABX
Capacity:
3 trunks
10 extensions
2 local links
Dimensions:
26" x 21" x 9"
Weight 98 lbs.



FEATURES:

- Universal Trunk Answering
- Complete Secrecy
- Automatic Intercommunication
- Trunk Hold for Consultation Calls
- Trunk Transfer
- Easy Installation
- Small Size
- Light Weight

AUTOMATIC INTERCOMMUNICATION WITH GREATER ECONOMY AND EFFICIENCY

Small and Medium-sized business, banks and newspapers, and institutions such as hospitals and clinics will find in Federal's non-attended PABX, flexible and economic telephone equipment for automatic intercommunication throughout their establishments.

These PABX's are delivered to the customer equipped to capacity. When connected at partial capacity, according to a customer's requirements, additional lines and stations can be added without any change in the basic equipment.

OPERATING CHARACTERISTICS

Any Established trunk call may be transferred by the PABX station holding the trunk originating a consultation call (call-back) to the desired local extension by depressing and releasing the transfer-button, and dialing the desired extension. In case the called party is free and accepts the call, the original PABX station restores his receiver to the switch-hook.

The second local station then controls the trunk call and may again transfer it or make a consultation call.

Maximum trunk line loop resistance 700 ohms and 10,000 ohms is the minimum trunk line insulation resistance.

Dial speed of 8 to 12 I.P.S.

The permissible voltage variation is 20-30 volts.

Station line numbering is consecutive beginning at No. 1.

Continuous dial tone and interrupted busy tone are an integral part of the system as is the ringing current and ring-back signal which is approximately 20 cycles interrupted.

FEDERAL 25C PABX

The 25C PABX is arranged to furnish all of the features provided with the 6-E or 11-P2 and in addition may be supplied with an attendant's set.

The 25C PABX equipment is mounted on a self-supporting frame 7' high x 21" wide x 20" deep and is protected on both sides with dust tight covers. Due to its light weight, 225 lbs., no extra supports of any kind are required.

Trunk signals, both audible and visual, are utilized at the attendant's set and for night service the designated station ringing announces incoming trunk calls.

The attendant's set is a dial and key unit for desk mounting. This set is approximately 14" wide x 9" high x 9" deep and weighs 25 lbs.

Any standard CB dial telephone provided with a transfer button which grounds one side of the line will operate as an extension with Federal's 25C PABX.

The unit is furnished complete with 25 extension lines, 5 central office trunks and 3 local links.

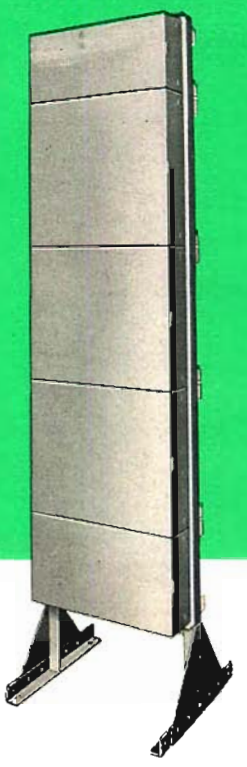
The attendant's set and applique features are optional and may be ordered as required.



Attendant's Switchboards

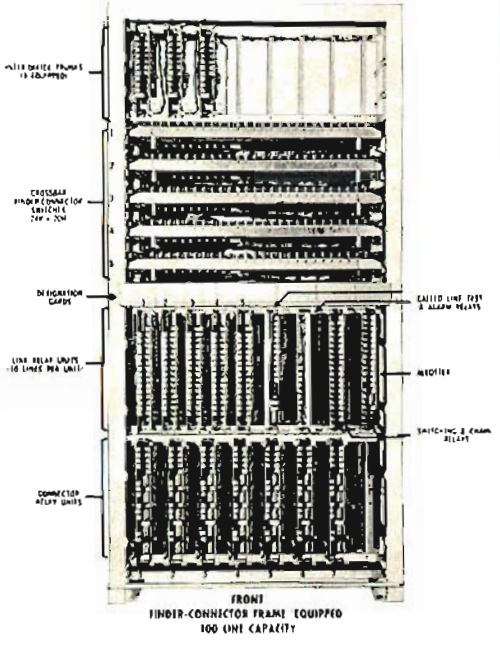
FEATURES:

- **Automatic Intercommunication**
- **Capacity: 5 Central Office Trunks**
  25 Extension Lines
  3 Local Links
  (Intercommunicating Paths)
- **Complete Secrecy**
- **Trunk Transfer**
- **Attended or Unattended Service**
- **5 Applique Systems Available**
  Code Calling
  Conference Service (2)
  Watchman's Service
  Toll Diversion (Restriction)



LARGE SIZE AND SPECIAL PURPOSE DIAL PBX SWITCHBOARDS

Kellogg Crossbar PABX



FRONT
FINDER-CONNECTOR FRAME EQUIPPED
100 LINE CAPACITY

KELLOGG CROSSBAR PABX

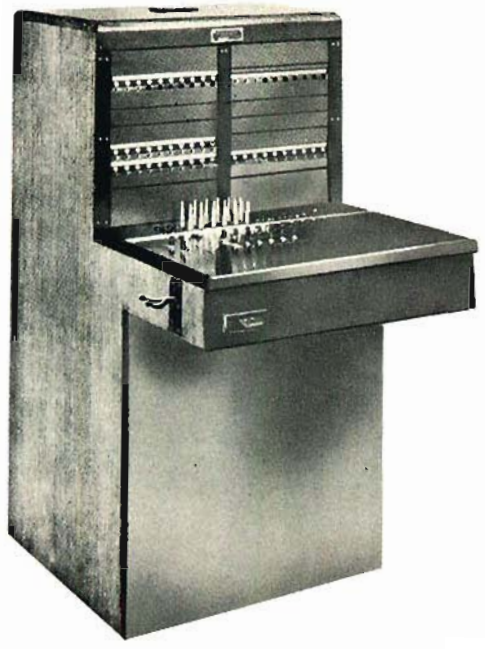
Kellogg Crossbar PABX Systems can be furnished in ultimate sizes of from 100 to 10,000 lines. The inherent advantages of Crossbar equipment are retained in the Kellogg Crossbar PABX units.

KELLOGG offers the widest possible line of dial PBX switchboards in sizes ranging from 50 to 10,000 lines, and engineered to meet all standard or special purpose PABX requirements.

Turret or Floor Type Attendant's Switchboards can be supplied in accordance with requirements.

Following are some of the numerous available features which can be supplied:

- Full Multiple Attendant's Switchboard
- Automatic Out-Dialing Trunks
- Grouped Extension Lines
- Extension Party Lines
- Conference Circuits
- Code Calling
- Watchman's Service
- Executive Right-of-Way
- Tie-Lines Dial or Manual
- Night Service
- Restricted Service





KELLOGG RELAYMATIC PABX

The Kellogg Relaymatic PABX can be adapted to provide any type of PBX service. The Standard All-Relay Type equipment is furnished. All of the advantages of All-Relay Type equipment are retained in the PBX and this type of equipment is particularly adaptable for all special feature requirements.

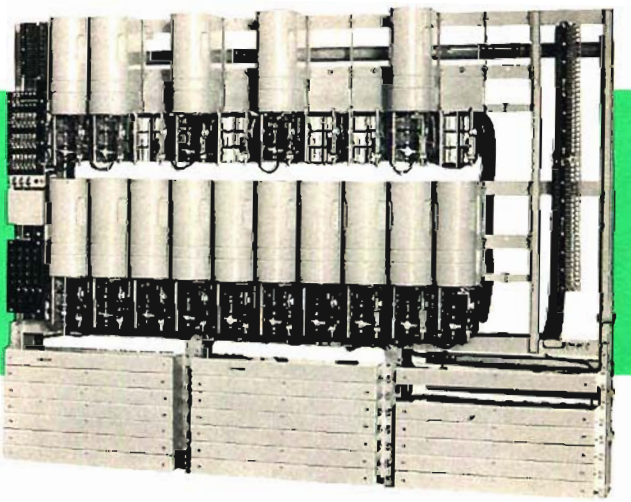
Note: Detailed Specifications will be furnished upon request and receipt of full information pertaining to quantities of equipment and services desired. Write Kellogg Switchboard and Supply Co. or contact your Kellogg Local Representative.

ATTENDANT'S SWITCHBOARDS

Both Kellogg and Federal Attendant's Switchboards are furnished using standard equipment the same as that provided with Central Office and Toll Switchboards. Attendant's Switchboards are available in single or multiple positions and are provided in accordance with requirements.

FEDERAL STEP-BY-STEP PABX

Federal Step-by-step PABX Systems can be furnished in ultimate sizes of from 100 to 10,000 lines. The same type of basic Step-by-step equipment used in Central Office Exchanges is supplied in FEDERAL Step-by-step Private Branch Exchanges.



TEST EQUIPMENT



JUNIOR TEST CABINET

The Kellogg Junior Test Cabinet is a small, compact unit suitable for mounting on or near the switchboard in small exchanges, or on the wire chief's desk in larger offices. This test cabinet may be used for tests for short circuits, grounds on either side of the line, for crosses, or for resistance measurements on line or apparatus.

These tests are made through three trunks, one wired for the main frame test shoe, one for the switchboard, and one for a pair of test clips. Any or all of these trunks may be equipped as required. Suitable cords, plugs, weights, and other apparatus are furnished to fit standard protectors and switchboard line jacks.

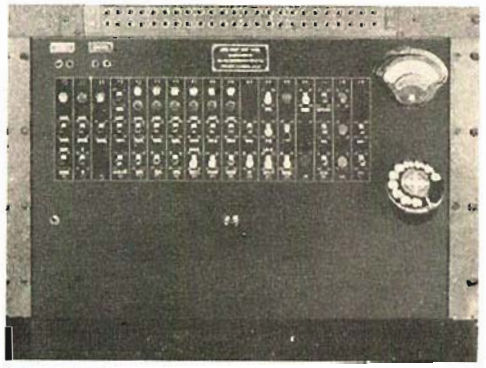
ORDERING INFORMATION

The following information should be included when ordering or requesting information on the junior test cabinet:

Make and type of switchboard (for switchboard trunk).
Make and type of main frame protection (for MDF trunk).
Type of ringing system (for master key).

Specify voltmeter scale desired if order wire key should be furnished, and if operator's telephone is desired.

JUNIOR TYPE R-O-CB TEST PANEL



The junior type R-O-CB test panel is the same as the junior type R-S-CB except it is equipped with a Weston double-scale meter with an 0 to 30 volt reading and an ohm reading.

WIRE CHIEF'S TEST TURRET

The Kellogg wire chief's test turret is designed as an aid to the wire chief in the average common battery exchange. With this equipment line, instrument, or exchange troubles may be quickly and easily located. Tests may be made for short circuits, grounds on either side of the line, for crosses or resistance measurements on lines or apparatus.

ORDERING INFORMATION

The following information should be included when ordering or requesting information on the wire chief's turret:

Make and type of switchboard.
Make and type of main frame protection.
Type of ringing system.

Whether set is to be equipped with bridge, howler, test shoe, or cords and plugs for local board.

Detailed specifications will be sent on request.

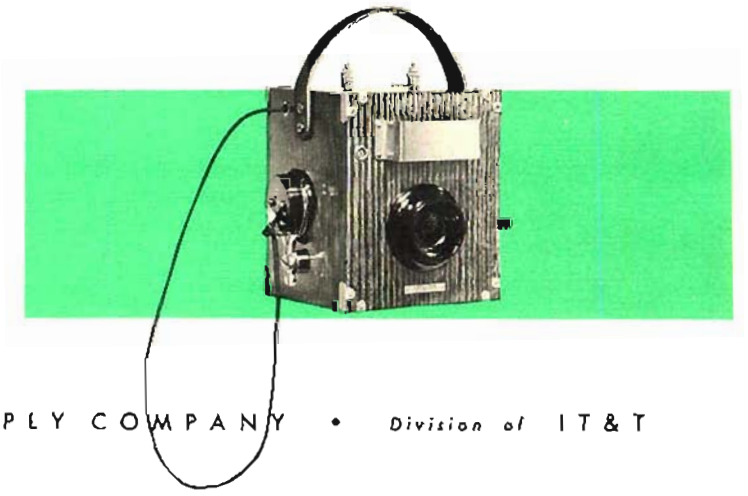


LINEMAN'S TEST SETS, NUMBERS 1016 AND 1025

Kellogg lineman's test sets are supplied in two types: a bridging type for magneto lines and common battery type for common battery lines. The bridging type is in reality a complete portable magneto telephone including dry cell batteries. The common battery type is a metal handset with test clips on the cord for connecting to the line under test.

NO. 1016

The No. 1016 test set is a complete portable telephone, sturdily constructed and designed to talk and ring over long or heavily loaded lines. It is equipped with a five-bar generator, 1600 ohm ringer, transmitter receiver, induction coil, hook-switch, and two dry cell batteries. Over all dimensions: 8 inches high; 7 inches wide, and 8¾ inches deep. Net weight: 15 pounds.





NO. 1025

The No. 1025 test set is a compact, easy to carry, metal handset equipped with test cords and two No. 27 universal test clips.



SPECIAL TESTING EQUIPMENT

Illustrated above is an example of special type testing equipment designed by expert Kellogg engineers and manufactured in the Kellogg plant to meet special requirements and applications of operating companies.

All types of special testing equipment can be supplied by Kellogg. Special trunk and line tests can be provided in addition to regular equipment or special arrangements of regularly used testing apparatus.

In requesting information on this equipment specify the type testing for which the equipment is to be used, the type of circuits or equipment to be tested, and all special features required from the equipment.

For small meters and linemen's tests sets see the Supply Section of this catalog.

WIRE CHIEF'S TEST PANELS FOR RACK MOUNTING

The test panel is arranged on a bakelite faced panel for mounting on a relay rack power board. It is wired and equipped with the following circuits:

TESTING CIRCUIT—complete with a Weston No. 24, double-scale voltmeter with readings of 0 to 30 volts, 10,000 ohms resistance, and 0 to 150 volts, 50,000 ohms resistance, and the necessary test keys, etc.

OPERATOR'S TELEPHONE CIRCUIT—with a Masterphone handset.

Two-Way Line Circuit.
Order Wire Circuit.
Ringing Circuit.

Note: This panel will be furnished with single-frequency ringing keys unless otherwise specified. If five-party ringing is used a master key is required. A two-party master key is not required on the panel as a reversing key is provided.

JUNIOR TYPE R-S-CB TEST PANEL

The junior type R-S-CB test panel is arranged on a bakelite faced panel for mounting on a relay rack power board. It is wired and equipped with the following circuits:

Testing Circuit—complete with a Weston No. 267 single-scale voltmeter with a reading of 0 to 30 volts, 10,000 ohms resistance, and the necessary test keys, etc.

Operator's Telephone Circuits — with a Masterphone handset.

Two Order Wire Circuits — wired but not equipped.

Ringing Circuit.

Note: This panel will be furnished with single-frequency ringing keys unless otherwise specified. If two or five-party ringing is used a master key is required.

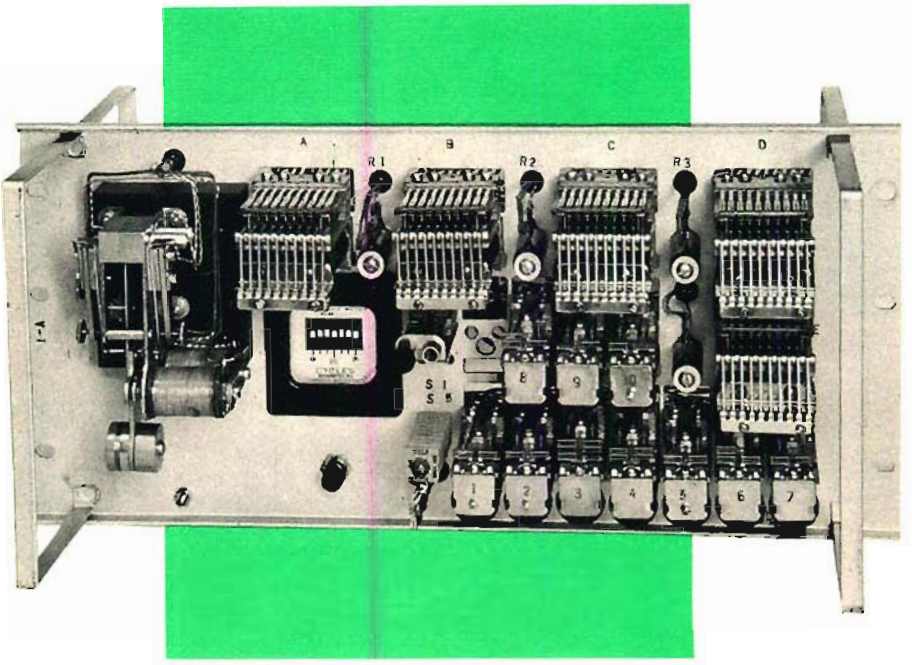
ORDERING INFORMATION for *both* Junior and wire chief's test panels.

The following information should be included when ordering or requesting information.

Make and type of switchboard.
Make and type of main frame protection.
Type of ringing system.

Whether set is to be equipped with bridge, howler, test shoe, or cords and plugs for local board.

Detailed specifications will be sent on request.



DIAL SPEED TESTER

The No. 1-A Dial speed tester is designed for testing and adjusting the speed of dials by telephone repair men from the subscriber's premises.

The Kellogg Dial speed tester can be accessed from a selector level or from any local testboard.

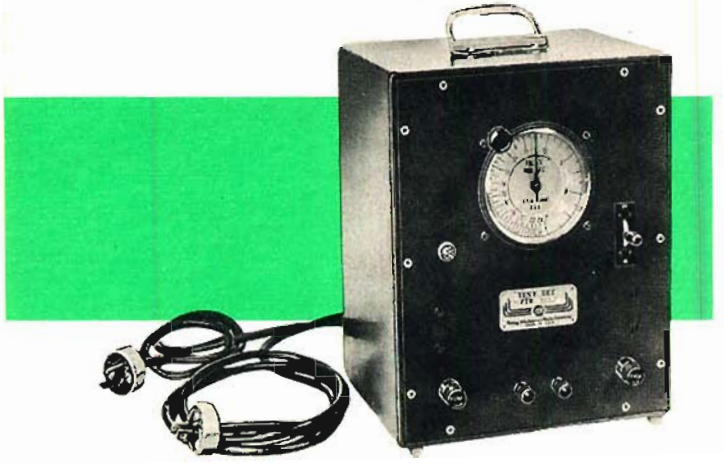
This device is easily understood and operated simply by dialing "O".

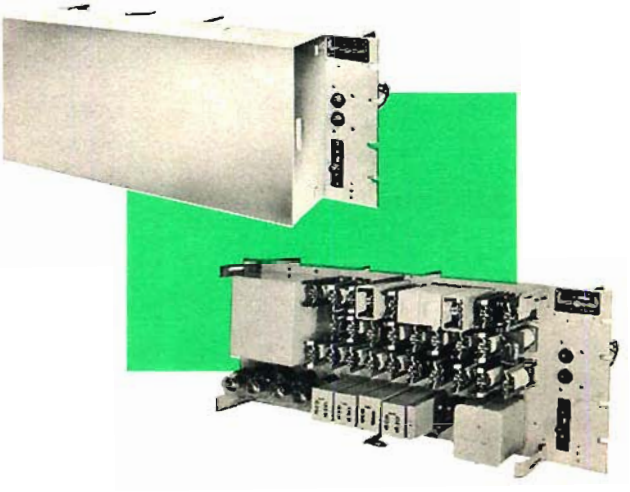
Can be installed on any standard "19" with relay rack, or adapter can be ordered upon request.

The equipment is protected by dust covers, both front and rear.

FTR-801 PORTABLE DIAL SPEED TEST SET

Provides a convenient and accurate means for testing the impulse speed of any automatic telephone dial. Indicated dial speed directly in pulses per second—with an accuracy of .005 of a second. Simple in design and construction—easy to operate—all parts readily accessible.





ELECTRONIC DIAL-SPEED TEST SET

Provides for simple and rapid dial speed testing from the field. Installed in the central office exchange, it enables a service man to call in from the subscriber's premises—dialing a code number which connects the test set into the circuit. When "O" is dialed, the set returns a tone signal that classifies the dial speed as fast, slow, or normal.

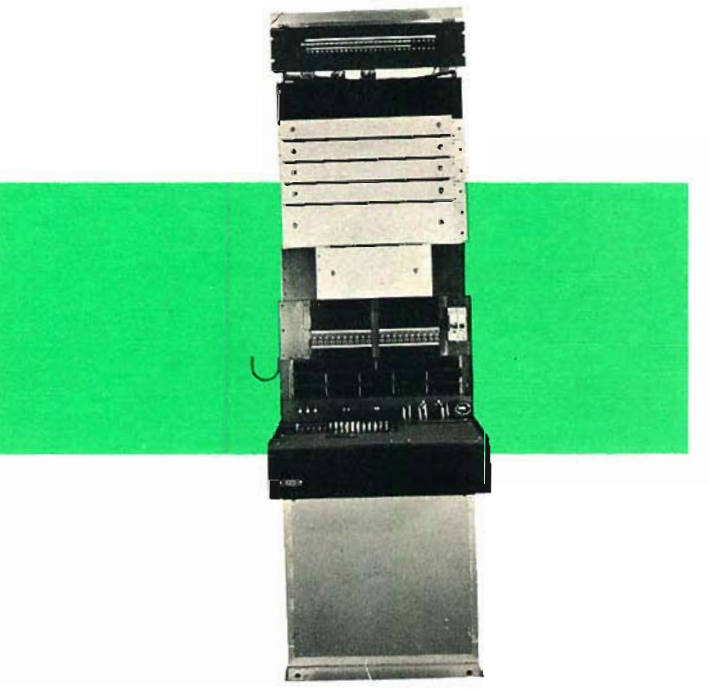
CURRENT FLOW TEST SETS

Designed to facilitate accurate current flow measurements for the testing of telephone circuits and components. Compact—lightweight—housed in attractive polished wood case. Complete with cord and test probes.



TOLL TEST PANELS

Toll test panels can be furnished for any number of line circuits in either wall or floor type cabinets or for relay rack mounting as requirements demand. Patching cords, circuits, and operator's telephone are furnished only as specified.



The toll test panel, in connection with the wire chief's testing equipment described above will permit routine tests and assist in locating line failures. The toll test panel is primarily a series of spring jacks, arranged in groups of 4, 6, 8, 10, 12 and sometimes more for testing, patching, talking, and ringing on toll lines. These jacks also form a rapid and convenient means of opening, shorting, and grounding the lines for test as well as for cutting in or out repeating coils, composite repeaters, or other toll line apparatus.

The usual minimum is six jacks to a line, each jack having a single conductor, and the group being arranged with two jacks for bridged listening, two for testing the line (out) and two for testing the drop (in).

Greater facility for patching and testing is accomplished by an increased number of jacks in each line. For the more complex toll circuits with simplex and composite equipment more than six jacks per line are required.

Because of the special nature of toll testing equipment, inquiries should include information on the ultimate line capacity desired, number of lines to be equipped, number of phantom circuits, number of jacks for each line, number of patching cords or cord circuits, and type of operator's set.

A drawing or description of the toll network would also assist Kellogg engineers in writing specifications. Recommendations on toll test equipment will be furnished without obligation.

Test panels are available as combined local and toll, local, or toll test panels.

ORDERING INFORMATION

Make and type of associated switchboard
Make and type of MDF protector
Type of ringing system
Number and type of test board trunks

Item to be included as listed below:

1. Howler
2. Sounder
3. 1000 Cycle Generator
4. 4 Cycle Interrupter
5. Insulation Breakdown
6. Bridge—portable
7. Test Board Tk. Ckts.
8. Toll Terminating Ckts.
9. Operator Headset
10. Operator Chair
11. Test Shoe Assembly
12. Test Clip Assembly
13. Patching Cords



PORTABLE AUTOMATIC TRAFFIC RECORDER

For use in automatic or manual offices. Gives a direct reading, in standard traffic density units (EBHC or CCS), for up to 200 separate circuits, switches, trunks or toll lines, in groups of 50 each.

SPECIAL PURPOSE SWITCHBOARDS

Kellogg manufactures, in addition to standard telephone equipment, all types of special purpose switchboards, communication systems, and other equipment. Kellogg's more than 55 years experience in building quality equipment and in designing and engineering special equipment is available to produce any equipment desired in the communications and low voltage, low current category.

The same ability to engineer telephone equipment is available to engineer any special purpose equipment that incorporates the same degree of precisions manufacture. It is this combination of precision workmanship and ruggedness that is typical of telephone equipment. Examples of the many variations of Kellogg's equipment and their uses in all type of businesses are contained in these pages under the general classification of "special purpose switchboards." The illustrations and descriptions contained here convey some idea as to the broad use of telephone type equipment in all sorts of industrial applications. The applications shown here do not represent the entire scope of Kellogg engineering but are shown for the purpose of indicating how telephone type equipment can be engineered for any special purpose or for any specific application.

EMERGENCY FIRE REPORTING SWITCHBOARDS

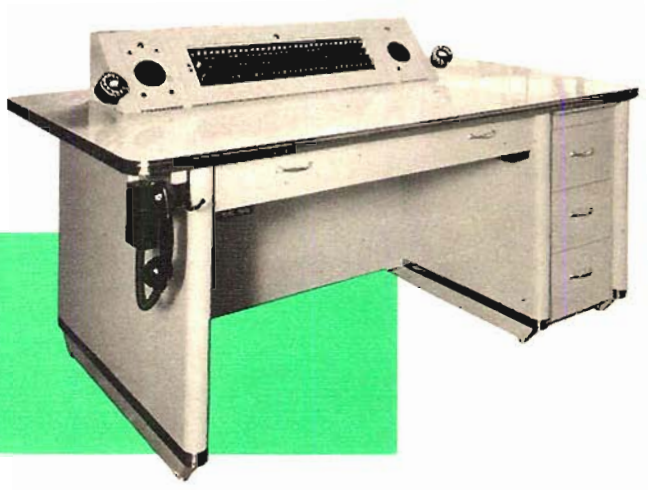
Regular floor type and cordless desk type fire reporting switchboards are specially designed to take care of communications between a large number of outlying stations and an operator. In this respect, fire reporting equipment is similar to watchman's reporting systems.

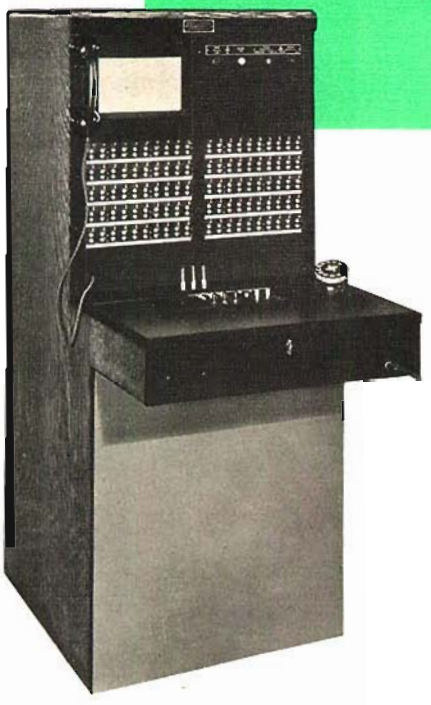
Standard sizes are 20-line cordless and 100-line floor type switchboards. Other capacities can be furnished wherever needed.

The cordless fire reporting board is equipped with 20 line circuits, a trunk circuit, hand generator, line-out-of-order alarm, and no-voltage alarm. The fire reporting lines terminates on lamp signals and are for communication between station and operator only.

The standard floor type switchboard incorporates many features contained in other commercial Kellogg boards — a swinging relay gate, oak cabinet, bakelite faced lamp and key shelf, etc. The capacity of this standard switchboard is 100 lines, 3 cord circuits, and 2 trunk circuits. It is equipped with an operator's handset, hand generator, night alarm, and power failure lamps.

Fire reporting equipment, in addition to the standard boards mentioned above, is available to meet a wide variety of conditions.





CORDLESS DISPATCHERS TURRET

(Especially adaptable for Power and Utility Companies)

The cordless Dispatchers Turret is your Company's common control point for dispatching and completing Company functions.

All trunks and line circuits are mounted on relay rack.

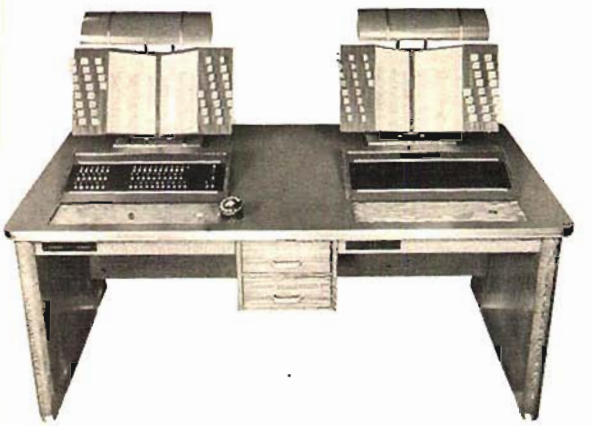
The desk is made of wood, with a beautifully hand rubbed finish, formica top and all chrome edging.

The desk can be furnished, upon request, in addition to the turret.

ORDERING INFORMATION

Number of and type of trunks.
Number of and type of lines.
Number of operators' circuits, type and color of finish.
General description as to what function this turret is to accomplish.





INFORMATION AND CHIEF OPERATOR'S EQUIPMENT

Kellogg information and chief operator's equipment is designed and engineered specially for particular installations. In general the equipment described below is included with most installations.

A flat top desk with tier of two drawers and sliding writing shelf at the right supports a turret type cabinet. The turret may be furnished in any wood or finish to match the switchboard, woodwork, or furniture.

All turrets have wirings, drillings, punchings, etc., for one operator's set, generator master key, night alarm, magneto through trunk to local switchboard, two-way line to wire chief's desk, two-way line to toll switchboard, and a two-way line to local switchboard. They are wired for 2 service observation lines, 3 incoming desk lines, 10 peg count meters, and 16 listening and monitoring circuits. All circuits are operated with keys which are mounted in the face of the turret.

In requesting information on this equipment information concerning the make and type of switchboard should be included.

ANNUNCIATOR UNITS

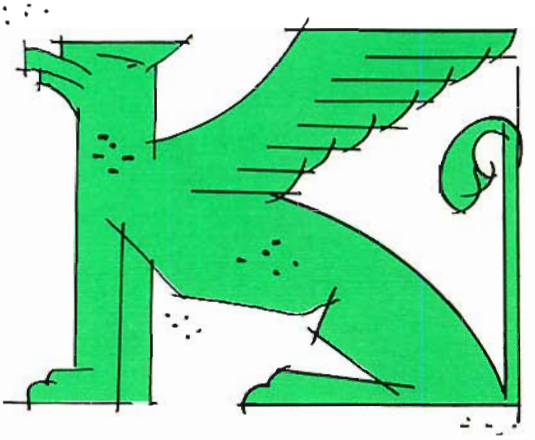
Annunciator equipment is used wherever visual signalling or visual control is required. It may be used in elevators, shops, hotels, fire reporting systems, watchman systems, and has innumerable other applications. Bells or buzzers may be connected in the circuits to provide audible signals.

Kellogg annunciator units ordinarily are designed for specific condtions. Either lamp or drop signals may be used. They may be assembled in steel cabinets for rack mounting, of a type to match existing panels; or may be turret type on metal or wood cabinets for desks or table mounting; or may be mounted in floor-type steel or wood cabinets. They may be self-contained, or be designed to fit into existing mounting frames or racks. Complete accessibility is provided and every precaution is taken to make each unit as near fireproof and dust-proof as the nature of the particular installation requires.

Annunciator units for power plants can be provided for operation with either continuous or momentary alarm with manual, automatic, remote lamp-reset features. Audible alarm of any size or voltage may be equipped with any of the reset features. Available in sizes of 40, 50, or 100 lines.



Kellogg





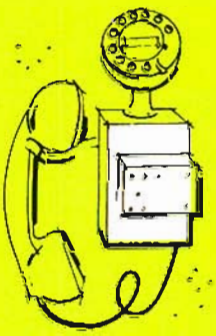




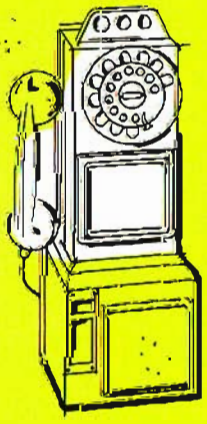
TELEPHONES

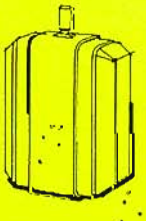
E
2





- common battery
- magneto
- wiring plans





FOREWORD

KELLOGG TELEPHONES AND WIRING PLAN SYSTEMS

MERCHANDISING TELEPHONE SERVICE

The appearance, styling and performance of the telephones installed in the residences and business establishments in any community reflect in great measure, the telephone user's opinion of his telephone service and the standing of the Telephone Company in the community.

In this section, Kellogg offers telephone instruments and wiring plan systems for the building and maintaining of good public relations.

TELEPHONE INSTRUMENTS

We proudly present the outstanding K-500 Desk and Wall telephone in both standard black and a choice of eight decorator colors. Special attention is called to the Kellogg 500 Series "Convenience Telephones" which are designed to meet home and office needs of your telephone users.

Other telephones of current demand, appearing in this section, are the still much in demand Kellogg 1000 Series Masterphone line, Side Mounting telephones, Weatherproof telephones and Magneto Desk and Wall models.

Paystations and accessories and telephones intended for use in explosive and other hazardous locations also appear in this section.

WIRING PLAN SYSTEMS

Of special interest to telephone companies is the Kellogg Four and Six Button K-1A1, easy-to-use, Key telephones which take no more desk space than conventional telephones. Complete descriptive and ordering information is furnished for most business applications.

We also call your attention to information furnished on Kellogg Key-BX Systems for business establishments with requirements calling for one to six Central Office trunks, and the Kellogg Inter-Tel System which provides excellent service for small individual line subscribers.

Also listed in this section is equipment for special and miscellaneous service applications under the headings Multiple Key Equipment and Telephone Switching Key Boxes.

KELLOGG

K-500

TELEPHONE

new standard of excellence

FOR THE INDEPENDENT TELEPHONE INDUSTRY

K-500 desk series





K-554 wall series

KELLOGG brings you the ultimate in telephone engineering achievement — the K-500 Telephone — an outstandingly superior instrument, designed to provide these altogether new performance advantages:

1. **Automatic controls for transmission equalization.**
2. **Superior speech quality and transmission.**
3. **Improved transmission, dialing and ringing performance on much longer common battery lines.**

Kellogg K-500 telephone speaks best for itself

With the introduction of the remarkable K-500 Telephone, Kellogg's tradition of leadership in the Independent Telephone Industry is brilliantly maintained . . . for over five decades Kellogg has consistently established new standards for telephones in the Independent Telephone Field. Kellogg introduced the Grabaphone, the first handset telephone in the United States, to the Telephone Industry in 1906 . . . leading again in 1934, Kellogg announced and marketed the first unit type desk telephone with all component apparatus combined in single housing and base assembly . . . and with the presentation of the famous 1000 Series Masterphone in 1945, Kellogg introduced a universal-design telephone for all classes of common battery, local battery and magneto services.

Now, with the K-500 Telephone, Kellogg offers the new standard of excellence to the Independent Telephone Field . . . designed, engineered and manufactured to surpass all previous instrument performance. After you have reviewed its technical advantages, we invite you to test this remarkable new instrument . . . let a field trial prove that the Kellogg K-500 Telephone speaks best for itself!

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

Ringing Services

The K-500 may be used for all classes of common battery manual or dial subscribers' services. Since the types and methods of ringing are variable in common battery systems, facilities are provided in the telephone set for the following ringing services.

A

Biased Ringers (non-polarized) systems.

(1) Individual lines.
(2) Two-party selective divided lines.
(3) Two-party selective message rate lines.
(4) Two-party selective automatic ticketing lines.
(5) Four-party semi-selective divided lines.
(6) Code ringing non-selective bridge or divided party lines.

B

Frequency Selective Ringers.

(1) One to five selective bridged party lines.
(2) One to ten selective divided party lines.
(3) Six to ten semi-selective bridged party lines.
(4) Eleven to twenty semi-selective divided party lines.

Kellogg K-501 Series Common Battery Telephone Sets (with #426A vacuum tube) are intended for use at common battery anti-sidetone stations on polarized ringing lines of the following classes of service:

Four-Party Selective (Manual and Dial)
Eight-Party Semi-Selective (Manual and Dial)

They are furnished wired for use on either negative ring or negative tip party but may be changed in the field for use on positive ring or positive tip party.

THE KELLOGG K-500 TELEPHONE

BRINGS YOU THESE *technical advantages*

Increased Transmitting and Receiving Efficiency

The anti-sidetone circuit is designed for maximum electrical efficiency. A new high in transmitting and receiving performance has been achieved through advanced design in the handset.

New Handset with Improved Transmitter and Receiver Capsules

The shorter handset design of the K-500 Telephone, in conjunction with the greatly improved capsules, provides the extended frequency bandwidth which gives improved speech quality.

Acoustic Peak Suppression

Because of the greater efficiency of the K-500 receiver, a click suppressor is used to protect the subscriber from loud acoustic peaks and simultaneously to protect the receiver from possible demagnetization by high electrical transients. The suppressor is attached directly to the receiver capsules.

Improved Dialing Performance

The K-500 dial provides improved speed regulation, more uniform pulse, and the "drive-bar" governor reduces the effects of dial forcing.

Efficient Anti-Sidetone Circuit with Automatic Controls

Automatic controls incorporated in the K-500 circuit provide the proper level of transmission by preventing the inherently higher gain from becoming uncomfortably loud on the short loop. As loop length progresses, this control action diminishes until when required, the full effect of additional gain in transmitting and receiving performance of 10 db (T+R) is available. This gain by design is equally divided between transmitting and receiving. Therefore, the K-500 Telephone provides improved quality performance on short loops where automatic volume control is effective as well as a greater margin of transmission efficiency and performance on long loops.

New Improved Ringer Design

Bias or harmonic ringers are provided for the K-500 Telephone. All employ a single coil on a laminated silicon steel core. Brass gongs are provided with resonators for reinforcing the low frequency tones. Performance adjustments and loudness controls are provided.

K-500 HIGH EFFICIENCY CIRCUIT THEORY OF ANTI-SIDETONE CIRCUITS

The high efficiency performance of the K-500 circuit is more easily explained by first considering the performance of the simpler 1000 Type circuit, shrown in *Figure 1*. When transmitting, the currents are as shown by the solid line brown arrows. These currents in windings A and B are opposing and therefore induce a relatively small current in winding C and in the receiver. The size of the current in winding A is fixed by the connecting telephone line, but that in winding B is dependent on the balancing network which is designed to secure the required sidetone reduction. It is desirable to reduce sidetone only to approximately the level at which the talker hears his own voice in normal conversation. During reception, the currents are as shown by the broken line brown arrows. The current from the distant telephone enters the circuit and passes mainly through the path including winding A and the transmitter, thereby inducing a current in winding C and the receiver. That part of the current which would otherwise flow through winding B and the balancing network is opposed by the induced voltage in winding B, and thus relatively little current flows in that branch and very little energy is wasted.

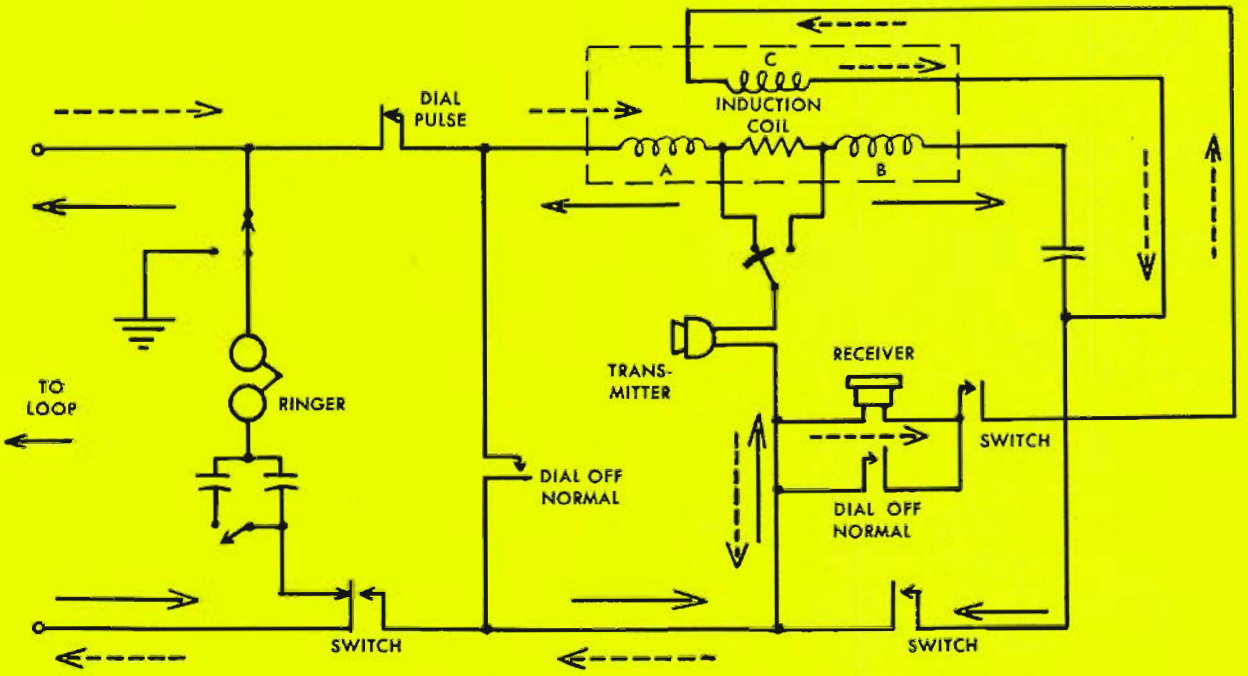


FIGURE 1 —Circuit Schematic 1000 Type Masterphone

control features

REGULATE K-500 PERFORMANCE

The improved circuit of the K-500 Telephone as shown schematically in *Figure 2*, automatically controls its transmitting and receiving efficiencies with respect to the length of the loop. On short loops, K-500 circuit efficiencies are about equal to telephones of recent design. On long loops, however, full advantage is taken of the 5 db increase in efficiency in the transmitter and in the receiver, thus permitting the use of still longer loops. The important automatic control is provided by the Line Varistor, the resistance of which decreases with an increase in the voltage applied to it. Since it shunts the line, it causes appreciable loss on short loops and almost none on longer loops.

K-500 Has Improved Balancing Network

The K-500 circuit also has a greatly improved balancing network, required by the increased efficiency of the transmitter and receiver. One of its elements is a second Varistor, the resistance of which changes with loop length to provide more uniform sidetone reduction over a wider range of loop resistance. In general, the new features of the K-500 circuit —plus the improved transmitter and receiver—provide substantially improved transmission performance over a wider range of loop lengths. In addition, K-500 transmission is more uniform throughout the exchange area, and ambient noise at the higher levels is less disturbing.

THE K-500 FEATURES THESE IMPROVED COMPONENTS

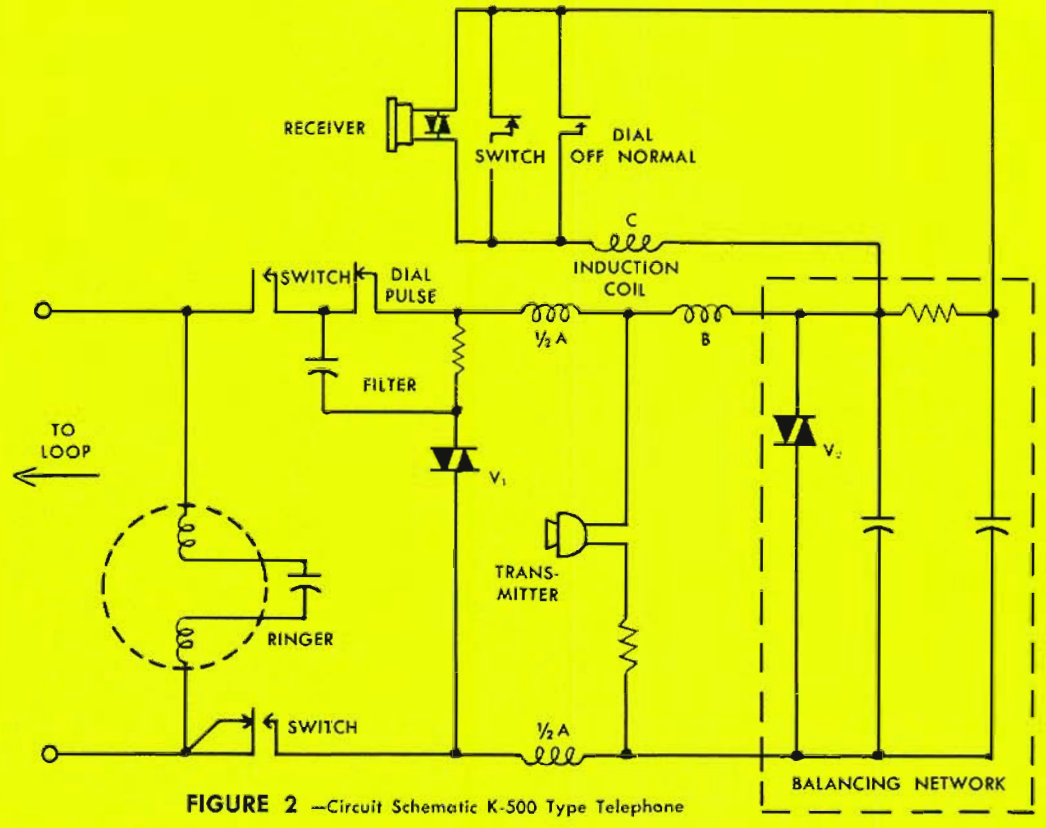
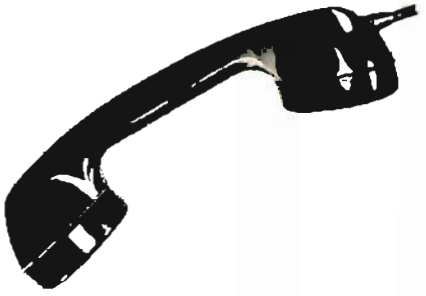


FIGURE 2 —Circuit Schematic K-500 Type Telephone



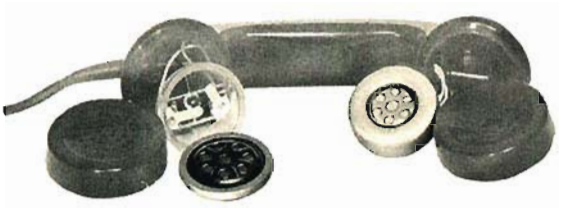
NEW SHORTER HANDSET

The new K-500 Handset is shorter, much lighter in weight and acoustically superior. Reduced distance between the receiver and transmitter places the transmitter closer to the user's mouth for increased transmission and increased signal-to-noise ratio. A new transmitter design with improved carbon granules and a receiver entirely new in principle provide the means for meeting more exacting performance requirements. Molded of high impact material, the K-500 handset will withstand rough usage.

RECEIVER

Entirely New in Principle

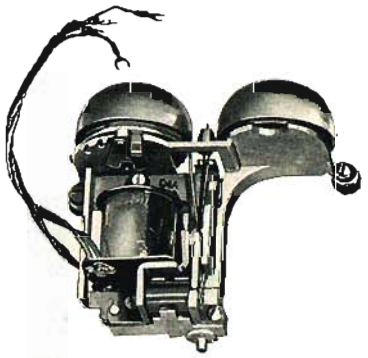
The K-500 receiver capsule employs a completely new design that uses a ring armature instead of the conventional disc armature. This newly designed armature permits considerable reduction in the effective mass of the diaphragm with a consequent increase in sound output over an extended frequency range. An effective increase of 5 db is thus obtained. In addition, this new receiver offers more protection against ambient noise and is not as sensitive to variations of the air distance between the ear cap and the user's ear. The receiver cap is acoustically designed to aid in the performance of the receiver.



TRANSMITTER

Improved Through Design

The K-500 transmitter capsule is a new design which, in conjunction with the transmitter holder assembly and transmitter cap of the new handset, provides an output that is fully 5 db above previous carbon granule transmitters, and is more **uni**form with frequency. These improvements stem from high**ly** refined design of the mechanical and acoustic elements, from the improved carbon granules and the shortened handset. Longer transmitter service life is insured by the protection provided by the control features in the subset circuit.



K-500 RINGER

Higher Impedance and Improved Performance

The K-500 ringer is a new, single-coil design with a higher impedance, allowing more ringers to be placed on a line with no increase in bridging loss or increase of unbalance on divided ringing circuits. The sound output is adjustable—by the subscriber—over a range of about 14 db with the highest value about 2 db above previous ringers. The two gongs have harmonically related frequencies, the fundamentals of which are reinforced by resonant air chambers below the gongs. This emphasis equals about 15 db gain in sound output. The magnetic circuits include a laminated coil core, the pole pieces and armature, the permanent magnet and a magnetic shunt. These are designed to provide adequate sensitivity to ringing signals and low sensitivity to transients or other operating surges. The structure design includes the magnetic circuit saturation feature, to limit the effects of high surge currents which might otherwise weaken the permanent magnet.

K-500 NETWORK

A Single Interconnection Unit



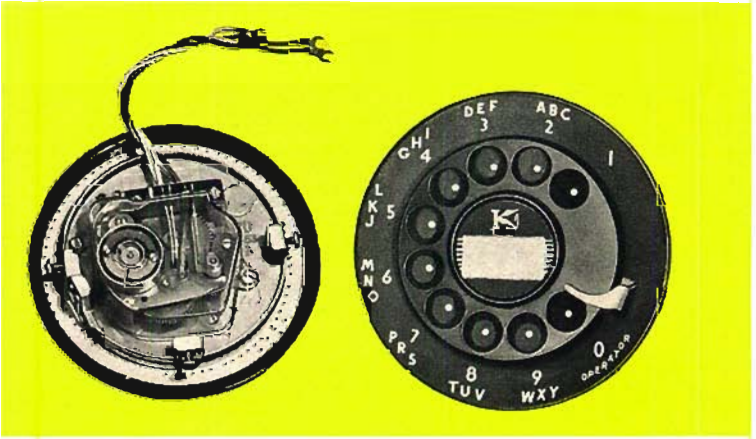
Enclosed in a single, sealed housing, the K-500 network unit contains many of the circuit elements: the induction coil, capacitors, resistors and varistors.

1. The induction coil is essentially a three-winding transformer with a split, balanced primary. It serves as a means of matching the various connected impedances and provides the basis for sidetone balance and neutralizing balance.

2. The four capacitors are for the ringer, the radio-interference-suppression network, and the sidetone balancing network. They are the metallized paper type, small in size, and self-clearing.

3. The resistors are of the carbon type. They are used in the transmitter circuit, the sidetone balancing network, and the dial suppression circuit.

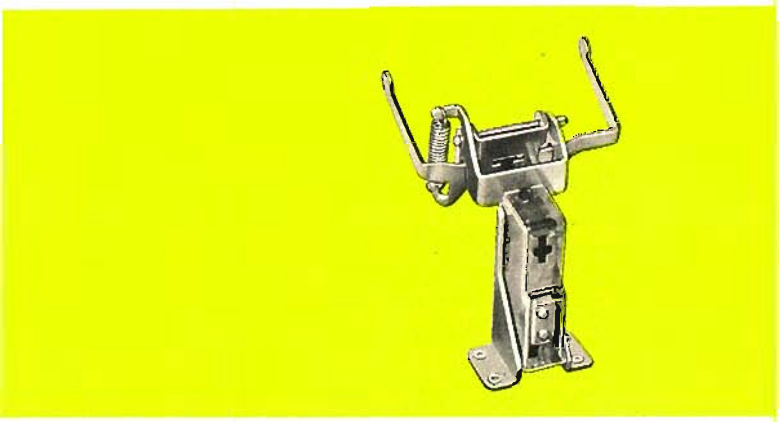
4. There are two silicon carbide varistors, thin wafer shaped elements, the dc and the ac resistances of which vary with the voltages impressed across them. One of them, V-1, serves to regulate transmission and the other, V-2, is a variable control for the balancing network.



K-500 DIAL

Uniform Performance Integrated with the Design

One of the advantageous elements of the new K-500 dial is a single-lobed cam which operates the pulsing springs, and assures more uniform dial pulses. This cam is driven by the motor spring acting through a gear train. The governor is an improved type providing better speed control. The governor is connected to the dial by a clutch which engages only on the self-return of the dial. Forcing of the dial on return is minimized by the governor's "drive-bar" feature. The K-500 number plate is an improved type, with characters located outside of the finger wheel, providing increased legibility and thus facilitating faster and more accurate dialing.

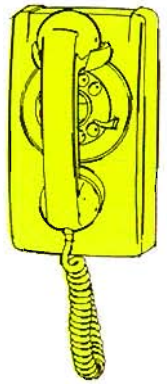


K-500 SWITCH

Protected and Reliable

The reduced weight of the K-500 handset required a novel switch design in order to insure positive action. The activating force to operate the K-500 switch is furnished by a coil spring, which is opposed by the counteracting force of the contact springs. As a result, the handset weight is required only to offset the difference of these two forces. On replacing the handset, the last interval of travel moves the coil spring linkage near its dead center position, thus reducing its force and assuring positive seating of the lightweight handset. In keeping with the encouraging performance of past designs, the switch springs are remote from the plunger mechanical elements, and are protected from mechanical interference, dust, foreign particles, and insects.





Kellogg K-500 Telephone

ORDERING INFORMATION

Kellogg K-500 Series

Kellogg K-500 denotes a standard common battery *desk style* telephone. Kellogg K-554 denotes a standard common battery *wall style* telephone. All K-500 Series telephones may be used for dial or manual Common Battery services. Kellogg high impedance ringers are standard for Biased, Harmonic, Synchromonic, Decimonic ringing services.

Prefix symbols are used for designating dial or manual services. Dial type telephones are always referred to as "DK-500" or "DK-554." Manual type telephones are always referred to as "MK-500" or "MK-554."

Suffix symbols are used for designating type of ringers desired, Biased, Harmonic, Synchromonic, Decimonic. Refer to following charts for ringers with and without ringer volume control.

Ringers are identified by using the following Suffix Symbols:

#130—Biased Ringer (with ringer volume control)

BA—For Polarized and Non-Polarized Ringing

#131—Frequency Selective Ringers (with ringer volume control)

HA-1	33⅓ cycle Harmonic		HB-1	30 cycle Synchromonic		HC-1	20 cycle Decimonic	
HA-2	50 " "		HB-2	42 " "		HC-2	60 " "	
HA-3	66⅔ " "		HB-3	54 " "		HC-3	30 " "	
HA-4	16⅔ " "		HB-4	66 " "		HC-4	40 " "	
HA-5	25 " "		HB-5	16 " "		HC-5	50 " "	

EXAMPLE: Code DK-500-HB-3 would be a K-500 type telephone with metropolitan type dial and a 54 cycle Synchromonic Ringer with ringer volume control.

Koiled Kords — If Handset of above K-500 telephones equipped with ringers having volume control are to be equipped with a Koiled Kord, the suffix symbol "(2)" should appear after the ringer suffix, per following example:
DK-554-HA-3(2)

Ringers are identified by using the following Suffix Symbols:
#**133**—Frequency Selective Ringers (less ringer volume control)

HA-1(3)	33⅓ cycle Harmonic	HB-1(3)	30 cycle Synchromonic	HC-1(3)	20 cycle Decimonic
HA-2(3)	50 " "	HB-2(3)	42 " "	HC-2(3)	60 " "
HA-3(3)	66⅔ " "	HB-3(3)	54 " "	HC-3(3)	30 " "
HA-4(3)	16⅔ " "	HB-4(3)	66 " "	HC-4(3)	40 " "
HA-5(3)	25 " "	HB-5(3)	16 " "	HC-5(3)	50 " "

EXAMPLE: Code DK-500-HB-3(3) would be a K-500 type telephone with metropolitan type dial and a 54 cycle Synchromonic Ringer, less ringer volume control.

Koiled Kords — If Handset of above K-500 telephone equipped with ringers less ringer volume control is to be equipped with a Koiled Kord, the suffix symbol "(6)" should appear after the ringer suffix, per following example:
DK-554-HA-3 (3) (6)

K-500

K-500 TELEPHONE REPLACEMENT COMPONENTS

	K-500 Desk	K-501 Desk	K-554 Wall
Cord Handset (standard)	3030	3030	3030
Cord, Mounting	3031	3031	X
Dial	19D or 19G	19D or 19G	19D or 19G
Handset	65C	65C	65C
Housing assembly, Desk	75401	75401	X
Housing assembly, Wall	X	X	79406
Kord, Koiled (optional)	1005	1005	1005
Net work	75335	75335	75335
Plug, Dummy	75419	75419	79456
Rack, Connecting	28	28	X
Ringer, Biased	130-BA	130-BA	130-BA
Ringer, Frequency	131 or 133	131 or 133	131 or 133
Switch, Cradle	75300	75300	79399
Tube, Vacuum	X	426A	X



KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

E-10

Kellogg has invaded the field of home decorating!



K-500 Full Color Desk Telephone



K-554 Full Color Wall Telephone

The Famous KELLOGG K-500 Telephone

Here's good news for you . . . and your "color-conscious" customers!

Yes, now you can offer your customers the famous K-500 telephone in eight full colored or two-tone colors. Fresh, modern shades of red, ivory, yellow, brown, grey, beige, blue and green are available. A symphony of colors that will match or contrast, and certainly complement, any decor.

This will be welcome news to your customers, for never before have they been so conscious of good design and smart coloring. They are demanding fashionable colors for their homes . . . from the smallest utensil to the most important furnishing . . . necessities as well as luxuries. And now you can bring color to their telephone!

Color will mean extra profit on every installation. *Color will also sell more extension phones!* And the goodwill that will result from offering your customers something really new and exciting will be invaluable.

Make sure you ask your Kellogg representative to show you samples of the eight new colors. He'll also tell you about our recent "color-preference" survey that will aid you in ordering your colored K-500's.

KELLOGG K-500 COLORED TELEPHONES

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

E-11

KELLOGG **K-500** TELEPHONE

COLORED TELEPHONES

Kellogg K-500 full color telephones may be ordered by showing the proper color suffix symbol directly after the Desk or Wall K-500 code number, thus code DK-500-BA indicates a standard black desk telephone, whereas DK-500-4-BA indicates a full colored desk yellow telephone, or DK-554-2-BA indicates a full colored wall red telephone. Following are the eight color suffix symbols to be used in ordering Desk and Wall K-500 telephones.

— 2 Red	— 4 Yellow	— 6 Blue	— 8 Gray
— 3 Brown	— 5 Green	— 7 Beige	— 9 Ivory

ORDERING INFORMATION

Ordering information for Biased, Harmonic, Synchromonic, Decimonic ringers may be obtained by referring to ordering data furnished for standard black K-500 telephones.

Kellogg K-500 full color telephones are of exactly the same styling as standard black except are furnished with colored housings, colored plunger retainers, colored dials with transparent finger rings and transparent plungers. Koiled Kords and mounting cords in color are standard.

REPLACEMENT COMPONENTS

	Desk Housing	Wall Housing	Handset	Dial	Dummy Plug	Koiled Kord	Mounting Cord
Red	75401-2	79406-2	65-2C	19-2G	75419-2	1010	3039
Brown	75401-3	79406-3	65-3C	19-3G	75419-3	1007	3032
Yellow	75401-4	79406-4	65-4C	19-4G	75419-4	1011	3040
Green	75401-5	79406-5	65-5C	19-5G	75419-5	1012	3041
Blue	75401-6	79406-6	65-6C	19-6G	75419-6	1013	3042
Beige	75401-7	79406-7	65-7C	19-7G	75419-7	1014	3043
Grey	75401-8	79406-8	65-8C	19-8G	75419-8	1008	3033
Ivory	75401-9	79406-9	65-9C	19-9G	75419-9	1009	3036

Note: Two-tone K-500 telephones are available equipped with black handset and dial. Housings are available in any of the standard eight colors indicated.

KELLOGG K-500 CONVENIENCE TELEPHONES

Makes Your Subscriber's Telephoning Easy and Convenient



DK-510-BA (2)

Two Lines—One Telephone, For Switching and Signaling

Clear plastic turn key located lower left corner for switching telephone to either of two incoming lines. Has four conductor mounting cord #3038 for this application.

Turn key may be depressed for buzzer signaling other locations. Has six conductor mounting cord #3044 for this application. These telephones equipped with Kellogg 65C Handset, with or without 19G dial. Ordering information as follows:

DK = Dial
MK = Manual

DK-510-BA MK-510-BA	Comes equipped with neoprene straight handset cord No. 3030, 4 conductor mounting cord No. 3038.
DK-510-BA(2) MK-510-BA(2)	Comes equipped with neoprene koiled handset cord No. 1005, 4 conductor cord No. 3038.
DK-510-BA(3) MK-510-BA(3)	Comes equipped with neoprene straight handset cord No. 3030, 6 conductor mounting cord No. 3044.
DK-510-BA(3)(2) MK-510-BA(3)(2)	Comes equipped with neoprene koiled handset kord, 6 conductor mounting cord No. 3044.

DK-502-BA (2) PRIVACY OF CONVERSATIONS





For privacy of telephone conversations pull up the left hand plunger of the K-502 telephone, which cuts off extensions on the line.

These telephones equipped with Kellogg 65C Handset, with or without No. 19G Dial, six conductor mounting cord No. 3044, No. 29 connecting rack.

Ordering information: Refer to ordering information, Biased and Frequency ringing standard K-500 telephones for code number of ringer. Indicate this type telephone by using code number 502, per example:

DK = Dial
MK = Manual

DK-502-BA(2) MK-502-BA(2)	Comes equipped with Neoprene Handset Koiled Kord No. 1005.
DK-502-BA MK-502-BA	Comes equipped with Neoprene Straight Handset Cord No. 3030.

DK-500-BA (9) LIFT PLUNGER, DIAL AND TALK



This Kellogg K-500 Desk Telephone provides "lift plunger to dial or talk" feature. When handset is removed, receiver circuit is placed across line. After it is determined that the line is not busy, the talking and dialing circuits are completed by raising the left plunger. Housing is engraved, "Lift Plunger to Dial or Talk".

These telephones equipped with Kellogg 65C Handset, with or without No. 19G Dial, three conductor Neoprene mounting cord No. 3031.

Ordering information: Refer to ordering information, Biased and Frequency ringing standard K-500 telephones for code number of ringer. Indicate this type telephone by using symbol "(9)" in code, per example:

DK = With Dial
MK = Less Dial

DK-500-BA(9)(2) MK-500-8A(9)(2)	Comes equipped with Neoprene Handset Koiled Kord No. 1005.
DK-500-BA(9) MK-500-BA(9)	Comes equipped with Neoprene Straight Handset Cord No. 3030.

DK-591-LR (2) PORTABLE EXTENSION, LESS RINGER



For extension purposes in homes and business offices. No ringer furnished in this telephone. Excellent revenue producer for telephone companies who offer extension telephones to their subscribers.

This telephone comes equipped with Kellogg 65C Handset, with or without No. 19G Dial, three conductor Mounting Cord No. 3031.

Ordering information is as follows:

DK = With Dial
MK = Less Dial

DK-591-LR(2) MK-591-LR(2)	Comes equipped with Neoprene Handset Koiled Kord No. 1005.
DK-591-LR MK-591-LR	Comes equipped with Neoprene Handset Straight Cord No. 3030.

DK-501-BA (2) VACUUM TUBE RINGING



This Kellogg K-501 type telephone is similar to the K-500 type except that a Western Electric No. 426A Electron Tube is employed in the ringer circuit on polarized ringing lines of the following classes of service:

4-Party Selective (Manual and Dial)
8-Party Semi-Selective (Manual and Dial)

Comes equipped with 65C Handset, with or without No. 19G Dial, 130-BA Biased Ringer, three conductor Neoprene Mounting Cord No. 3031.

Ordering information is as follows:

DK = With Dial
MK = Less Dial

DK-501-BA MK-501-BA	Comes equipped with Neoprene Straight Handset Cord No. 3030.
DK-501-BA(2) MK-501-BA(2)	Comes equipped with Neoprene Koiled Handset Kord No. 1005.
DK-501-BA(3) MK-501-BA(3)	Comes equipped with Neoprene Straight Handset Cord No. 3030 and "Lift to Talk" Switch.
DK-501-BA(3)(2) MK-501-BA(3)(2)	Comes equipped with Neoprene Koiled Handset Kord No. 1005, and "Lift to Talk" Switch.

DK-500-BA (7) PUSH BUTTON TYPE FOR FEDERAL PABX SYSTEMS



This telephone for use with Federal Telephone and Radio PABX Systems 6E, 11P, 25C. Equipped with push button mounted at lower right hand corner of the housing. Operation of push bu[illegible] places one side of line to ground through hook-swit

These telephones equipped with Kellogg 65C Handset, 19G Dial, 130-BA Ringer, three conductor neoprene mounting cord No. 3031.

Ordering information is as follows:

DK-500-BA(7)	Comes equipped with Neoprene Handset Koiled Kord No. 1005.
DK-500-BA(8)	Comes equipped with Neoprene Handset Straight Cord No. 3030.

TELEPHONES — 1000 SERIES MASTERPHONES





The Kellogg 1000 series desk and wall Masterphone provides the utmost in style, engineering, and quality performance.

ONE condenser for all circuit applications. Microfarad capacities of 0.5 or 1.0 mfd. provided by means of a simple switching unit.

Recognized for such outsanding advantages as ease of installation, low maintenance cost, dependable operation, and subscriber approval, this telephone provides the following features:

ONE base plate for both desk and wall Masterphones. Desk and wall housings interchangeable in a matter of seconds.

ONE universal anti-side tone triod circuit for all service applications. Never necessary to change permanent wiring.

Color codes, physical circuit changes, and complicated servicing completely eliminated.

PLUG-IN type induction coil, condenser, and dial plug. Complete elimination of soldering and unsoldering reduces maintenance costs to a minimum.

INDUCTION coil provides best ratio between side-tone reduction, and transmission and reception. Three way switch permits matching induction coil to long or medium loops, and reduces transmitter current supply on short loops.

TRANSMITTER provides greater electrical output and faithful articulation throughout a wide range of applied voltages. Reliable and dependable under varying temperature and humidity conditions.

CONTROLLED response receiver eliminates objectionable characteristics throughout the voice frequency range. High fidelity voice reproduction is assured.

RINGING circuit selector quickly adapts circuit to metallic or divided ringing. Simply shifting the slide line to the desired position changes the universal circuit to the line installation desired.

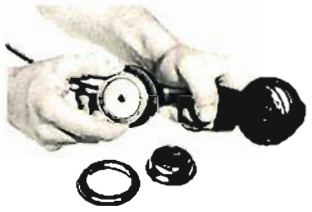
RINGER equipped with large two-tone gongs provides maximum sound output of pleasing quality. Micrometer adjustment screw simplifies adjustment for volume and tone control.

UNIVERSAL STANDARDIZATION OF MAJOR COMPONENT PARTS

Major components of the 1000 series Masterphone (handset, condenser, induction coils, and the interconnecting block) are adapted to all classes of common battery or magneto subscriber services in both desk and wall Masterphones.



HANDSET, NO. 46-C. Standard equipment on all 1000 series common battery and magneto instruments. Designed for increased efficiency, durability, and beauty. Receiver and transmitter are positioned to provide maximum transmission and reception. A four foot, three conductor straight handset cord is standard equipment.



TRANSMITTER, NO. 66521. Capsule type, designed for improved acoustic control. Provides greater electrical output, good non-positional qualities, and excellent response throughout a wide range of applied voltages.



RECEIVER, NO. 89-A. Capsule type, compact self-contained. Eliminates objectionable peaks or dips in the voice frequency range. A controlled response type which sustains improved high fidelity reproduction and articulation of voice frequencies.

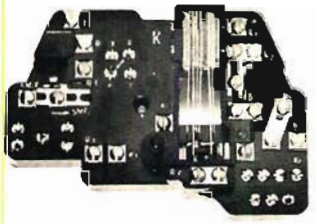


CONDENSER, NO. 225. Plug-in type. Standard for all common battery and magneto services. Furnishes necessary capacity for all circuit applications. A simple slide-link switching unit provides 0.5 and 1.0 microfarad as required for particular ringer application.



INDUCTION COIL, NO. 113-A. For all common battery services. Plug-in type. Provides best ratio between sidetone reduction, transmission, and reception regardless of the subscribers loop used. May be zoned to a particular loop.

INDUCTION COIL, NO. 114-A. Plug-in type for magneto service. This induction coil adapts the Kellogg universal triad circuit to any desired local battery application.



INTERCONNECTING BLOCK, NO. 64910. A molded one piece interconnecting block which encases the "grid" type universal anti-side tone triad circuit and associated hook switch connections. This interconnecting block is standard equipment on all common battery and magneto 1000 series Masterphones. No circuit wiring or soldered connections are visible when interconnecting block is attached to the base plate. Induction coil and condenser plug in to the interconnecting block like radio tubes; no soldering to terminals required. Three slide link adjustments on this block permit zoning of the induction coil, adapting of circuit to metallic or divided ringing, and changing microfarad capacity of condenser as required.

ORDERING INFORMATION

The number of types of 1000 Series Masterphones which Kellogg manufactures to meet the many requirements of telephone companies, and the many combinations of telephones, ringers, and dials make it impractical to list the code number of each telephone separately.

To simplify the ordering of the 1000 Series Masterphone a listing of each type of telephone, ringer, and dial is provided. The code number of each of these components is selected and all written as a unit to form the complete ordering code number of the telephone.

For example, D-1000-HB1-K is the code number for a standard common battery signaling and talking telephone having a dial with numbers only, a 30 cycle ringer of the synchomonic, frequency selective, type, and a Koiled Kord handset cord.

DIAL	TELEPHONE TYPE	RINGER	HANDSET CORD
D	1000	HB1	K

This chart indicates the manner in which the code number described above is formed. The code number of the telephone type is first determined from the listings below. The type of ringer is selected from the "Ringers" chart and its code number added to that of the telephone type. A dial, with numbers only is specified by prefixing the letter "D" to the telephone code number (Dials with numbers and letters or with the word "Operator" over the number "0" are specified as indicated under "Dials" below.) A Koiled Kord handset cord is specified by adding the letter "K" to the complete code number.

Unless otherwise specified a standard 4-foot straight handset cord and a 6-foot straight base cord on desk Masterphones is furnished with these telephones.

FOR DETAILED INFORMATION ON EACH OF THE PARTS OF THIS CODE NUMBER SEE THE LISTINGS BELOW UNDER THE HEADING "DIALS," "RINGERS," AND "TELEPHONES."

DIALS

Three different dials are available for the 1000 Series Masterphone. Code numbers for all telephones which are to be equipped with dial must be prefixed with the letter "D". If a dial other than the standard "number only" dial is desired, special note must be made on the order after the code number of the telephone, as shown below.

15-D dial. This standard dial is faced with the numbers 1 to 0.

15-DO dial. This dial has the numbers 1 to 0 and the word "Operator" faced on the plate along with the "0" digit. To order this dial add the note "with 15-DO dial" to the telephone code number.

15-G dial. This dial is faced with both letters and numbers. To order add the note "with 15-G dial" to the telephone code number. This dial is often referred to as a "Metropolitan Dial."

RINGERS

Ringers for the 1000 Series Masterphone are available in biased or frequency selective types for common battery service, and in biased, or straight line types for magneto service. Kellogg No. 120 type ringers are used for biased ringers, No. 123 type for straight line ringers, and No. 124 or 126 for frequency selective ringers. For detailed information on these ringers see "Ringers" in this section.

In ordering telephones the code number of the correct ringer should be added to the code number of the telephone as described above. If no ringer is desired add "LR" to the telephone code number.

SELECTION OF RINGERS. Frequency selective ringers should be selected for their frequency application. Kellogg 124 type ringers are furnished as standard unless order requests our 126 high impedance type. Biased and straight line ringers should be selected for the particular line application. BA ringers are recommended for all dial and heavily loaded manual lines, but should not be mixed with ringers of a resistance less than 2500 ohms. BB ringers are recommended if present ringers on a line have a resistance of over 1500 ohms and under 3000 ohms. BC ringers are recommended if present ringers on a line have a resistance of over 500 ohms to 1500 ohms. SA, SB, and SC ringers for magneto applications are selected in the same manner as indicated for biased ringers.

Biased Ringers — No. 120 Type

Code No.	Description
BA	High Impedance (4000 ohms)
BB	Medium Impedance (2500 ohms)
BC	Low Impedance (1000 ohms)

Frequency Selective Ringers — No. 124 and 126 Types

Harmonic Type		Synchromonic Type	
Code No.	Frequency	Code No.	Frequency
HA1	33⅓ cycles	HB1	30 cycles
HA2	50 cylces	HB2	42 cycles
HA3	66⅔ cycles	HB3	54 cycles
HA4	16⅔ cycles	HB4	66 cycles
HA5	25 cycles	HB5	16 cycles

Decimonic Type			
Code No.	Frequency	Code No.	Frequency
HC1	20 cycles	HC4	40 cycles
HC2	60 cycles	HC5	50 cycles
HC3	30 cycles		

Straight Line Ringers — No. 123 Type

Code No.	Description
SA	High Impedance (4000 ohms)
SB	Medium Impedance (2500 ohms)
SC	Low Impedance (1000 ohms)

TELEPHONES

COMMON BATTERY MASTERPHONES

Common Battery Signaling and Talking
1000-1100 Unit Types

Kellogg unit type common battery desk or wall Masterphones can be supplied with or without a dial. Biased and frequency selective ringers are available for any ringing application. The universal anti-side tone triad circuit can be quickly adapted to metallic or grounded ringing, and three conductor 6-foot base cord is standard on desk Masterphones for this purpose.

Select the type of telephone desired from the following chart. Specify the type of dial, if desired, and the type of ringer needed in accordance with "Ordering Information."

Code No.	Description
1000	Desk Type Masterphone
1001	Desk Type Masterphone with "press to talk" switch
1100	Wall Type Masterphone
1101	Wall Type Masterphone with "press to talk" switch



KELLOGG SIDE MOUNTING TYPE TELEPHONES

Bracket Type — For Manual Service

No. 9720. This telephone is arranged for a side mounting handset. Can be used for two piece installations with No. 706 series desk set boxes. Equipped with No. F-27-C handset, No. 164 hook switch, No. 106-A induction coil, and No. 187 condenser.



Bracket Type — For Dial Service

No. 9740. The No. 9740 telephone is primarily for extension sets but may be used for two piece installations with No. 706 desk set boxes. Equipped with No. F-27-C handset. No. 164 hook switch, No. 106-A induction coil, and No. 187 condenser.



KELLOGG WEATHERPROOF TYPE TELEPHONES

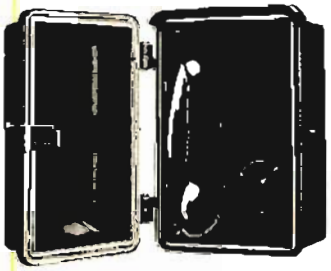
These Kellogg weatherproof telephones are designed to provide an efficient operating telephone for outdoor applications. The telephones are contained in a ventilated, cast iron housing with facilities provided for locking the door. Ample space is provided in the housing for additional equipment for special applications. The over-all dimensions are 12¼ inches high, 9¾ inches wide, and 8 inches deep. These telephones are available for either dial or manual service. The dial is supplied only when specified. When these telephones are used in exposed locations on outdoor applications, they should be used with an arrestor for the subscriber's protection.

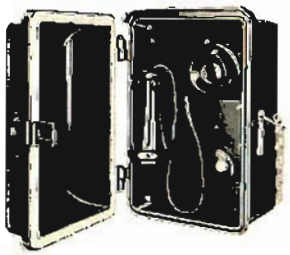
No. 4900. This telephone is arranged for dial. Has three-inch gongs on ringer. Equipped with No. 108-GA ringer, No. 170 hook switch, No. 103-GA induction coil, No. 186 condenser, and No. F-35-EC handset.

No. 4901-A. The No. 4901-A telephone is equipped with No. 108-A ringer, No. 178 hook switch, No. 103-A induction coil, No. 186 condenser, No. 121-C transmitter, and No. F-41-EA receiver.

No. 4902. The No. 4902 telephone is the same as the No. 4900 except it has a resistor in the circuit. Other components are identical to those of the No. 4900.

No. 4900—Handset Type





No. 4901—Hand Receiver Type

PAYSTATIONS

You may choose from various models in two complete series of modern "standard" paystations; both are "self-contained" types.

Both the "60" and the "90" series of paystations include assemblies to meet every requirement of central-battery paystation service. The "60" series paystation are equipped with Automatic Electric induction coils; the "90" series have Western Electric induction coils. Paystations of either series are equipped with handsets and dials as specified.

Magneto postpay service can be provided by a specially wired Type 64 paystation (coded 64M); a magneto-battery box and a ringer box are required for this service. This paystation can be converted to central battery manual, postpay; central-battery manual, prepay; or automatic prepay.

New paystations, designed to give you the same dependable service as before, are available in types providing either "two-nickel or dime" service or "dime only" service for local calls. Among the four new models are two prepay models. Types 62-55 and 92-55, for "two-nickel or dime" service; and two semi-postpay (reverse-battery) models, Types 66-10 and 96-10, for "dime only" service. ("Two-nickel" operation is not recommended on semi-postpay models, because the delay involved in depositing two coins while the called party waits on the line would result in the loss of many calls.)

HOW TO ORDER

1. Determine the type of service desired.
2. Choose the paystation series (60 or 90) that best meets your requirements.
3. Check the chart in the next column to find the type to order. If you anticipate a change in your central-office equipment, be sure to select a type of paystation that can be converted to suit your future requirements.
4. When ordering, specify the Type Number, operation (manual or automatic) *and* the type of service you require.
5. Pease specify type of extended dial number plate desired; if not otherwise specified, paystations will be equipped with Metropolitan extended number plate, as illustrated.
6. Specify the type or make of telephone components (handset, dial, etc.) with which the paystation is to be equipped.
7. Specify "self-locking coin receptacle", if open type is not desired.

Card holder, coin signal transmitter, locks, etc., will be furnished where required and need not be specified.

Special Assemblies Available

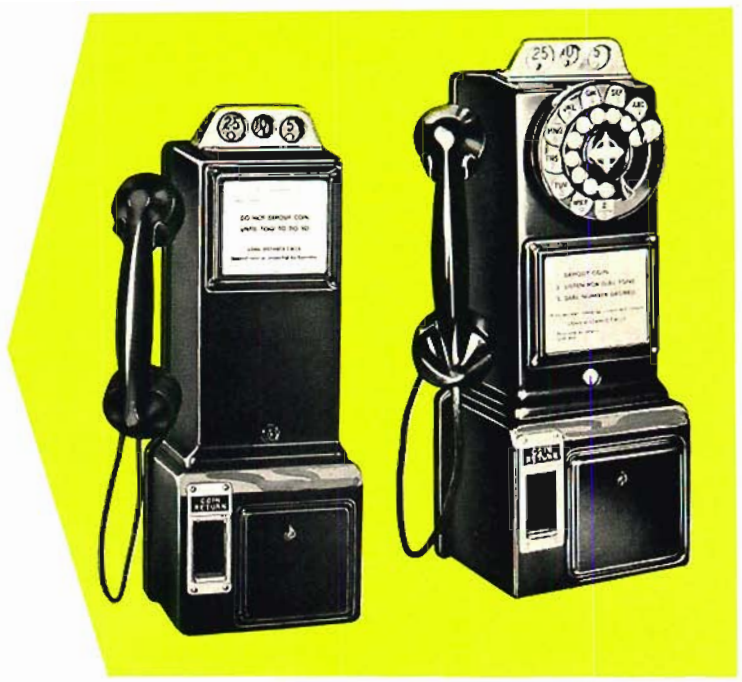
Paystations are assembled to your order and can be equipped with many special features. . . . To order any of these special assemblies, give Type Number of paystation desired as shown on chart, then specify, "Special with ....." giving special features desired.

SERVICE	OPERATION	THE "60" SERIES	THE "90" SERIES
PREPAY	Automatic	62	92
	Manual (please specify)	62	92
TEN CENTS (Prepay)	Automatic	62-55*	92-95*
POSTPAY	Manual	64	94
Convertible to Prepay	Magneto	64M	
SEMI-POSTPAY (Reverse-Battery)	Automatic	66	96
TEN CENTS (Semi-Postpay)	Automatic	66-10**	96-10**
POSTPAY Convertible to Semi-Postpay (Reverse-Battery)	Manual	68	98
SEMI-POSTPAY (Marginal-Relay)	Automatic		99

*"two-nickel or dime" service
**"dime only" service

ATTACHMENT AND COMPACT PAYSTATIONS

These paystations have no moving parts or electrical connections other than the telephone line. Signals to the operator are produced by coins striking gongs or chimes. These tones are transmitted to the central office through the transmitter of the telephone at which the paystation is located. These paystations cannot be used for pre-payment service as the coin is not under the control of the central office operator.



For Mounting Beside Wall-Type Telephones Type 11



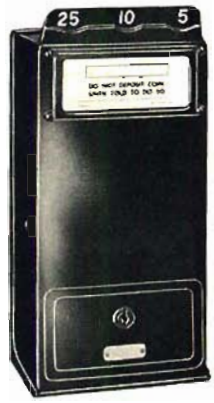
The Type 11 paystation will fit any regular wall telephone in present use. It is connected to the telephone by a mounting plate furnished with the paystation. Has nickel, dime and quarter slots. Shipping weight is 13 pounds.

Type 11 Side-Mounting Wall Paystation

Cash compartment has capacity of approximately $10.00. Dimensions — Height, 9 inches; width, 4½ inches; depth, 3 inches.

Type 11 A

As above, but cash compartment is larger — has capacity of approximately $13.50. Height is 11 inches.



For Use with Handsets

These paystations are equipped with a coin-signal transmitter, and may be used to provide modern handset service. They are supplied with "universal" mounting plate to permit either wall or shelf mounting.

Type 11J Paystation for Handset Telephone

A complete unit which may be used with either desk- or wall-type handset telephones — magneto or central battery. Cash compartment has a capacity of approximately $10.00. Shipping weight is 16 pounds. Dimensions—Height, 9 inches; width, 4½ inches; depth 3 inches.

Type 11AJ

As above, but cash compartment is larger — has capacity of approximately $13.50. Height is 11 inches.

Type 23J Handset Paystation



Has cradle hook and wiring for connecting in a handset (bracket not supplied unless specified), thus making a paystation unit which may be used with any standard ringer box containing induction coil, condensers, etc. Cash compartment has capacity of approximately $20.00. WHEN ORDERING, specify type of handset and ringer box which will be used. Shipping weight is 21 pounds. Dimensions — Height, 10½ inches; width, 6 inches; depth, 4½ inches.

special features AND ACCESSORIES

ANTI-STUFFING COIN RETURN

The Anti-Stuffing Coin Return can be ordered for new and existing paystations. *For new paystations,* please specify: "equip with Anti-Stuffing Coin Return."

Paystations now in service can be converted two ways to include this new device:



(1) *By replacing the paystation lower-housing assembly.* Write for additional information.

(2) *By ordering a separate kit.* For companies with their own repair shop facilities, a separate Anti-Stuffing Coin Return Kit will be supplied. Complete information to adapt your paystations with this kit are included.

TO ORDER

Specify Anti-Stuffing Coin Return Kit, No. P-70293. A special drilling is required to properly locate the hinge pin hole, and this may be ordered as:

Anti-Stuffing Coin Return Drill Jig, No. P-70294.

Type 2-A Coin Receptacle

Non-locking, for collecting coins in standard Autelco paystations. About $30.00 capacity. Furnished as standard unless other type receptacle is specified.

Type 6001-B — Self-Locking Coin Receptacle

To save the collector's time, and to minimize handling of money, "self-locking" receptacles can be supplied. These receptacles are equipped with a shutter over the coin opening, which opens to admit coins as the receptacle is inserted into the cash compartment of the paystation, but closes and locks as the receptacle is withdrawn. The collector neither sees nor handles any money—he merely removes one locked coin receptacle from the paystation and replaces it with an empty one. The receptacle is opened at the office, by breaking a lead seal. Receptacle, cover, and rail included. Coin capacity is about $30.00. Handle facilitates removal from paystation. When ordering *extra* self-locking receptacles, please specify "without rails."

Type P-51513 — Receptacle Carrying Case

This handy collector's case holds 9 self-locking coin receptacles. Constructed of sturdy fibre material, the case is equipped with a hasp so it may be sealed for shipment. Can be supplied with "snap-on" handle if requested.

Type 153-A — Corner Bracket

For mounting all paystations (except attachment and compact types) most accessibly in corner of telephone booth or other confined space. Sturdily made of cast iron, finished in black japan. Provision is made for line wires. Shipping weight, 18 pounds.

Type 139-A — Shelf Bracket

For mounting all paystations (except attachment and compact types) on a horizontal surface such as a shelf or counter. Attractively designed and finished in black japan. Shipping weight, 15 pounds.

Type P-51351 — Wood Backboard

For mounting paystation and ringer box.

Ringer Boxes

The "60" series of paystation require only a ringer in the ringer box and the "90" series require a ringer and ringing condenser. The induction coil and other circuit components are mounted within the paystation. WHEN ORDERING, please specify make of telephone equipment with which ringer box is to be used and the type of ringer desired.

When ordering paystations include the following components:

No. 46-C handset with straight cord
or
No. 47-C handset with Koiled Kord
No. 15-G Dial (Metropolitan)
or
No. 15-D Dial (number only)
No. 605 Type Ringer Box (Metal)
or
No. 706 Type Ringer Box (Bakelite)

For ordering information and complete description covering the above components refer to the index for the appropriate pages in this catalog.

TELEPHONES FOR HAZARDOUS LOCATIONS

These telephones are intended for use in hazardous locations where the surrounding atmosphere is, or may tend to become explosive in nature. They are so constructed, that the electrical portions of the telephone which sometimes spark slightly during operation, along with other current carrying parts, are enclosed in housings specially designed to meet the above described conditions.

These telephones for hazardous locations may be used with auxiliary loud bell, horn or siren signals which are especially suitable in locations where the noise level is high. The procedure for making or receiving calls with automatic or manual telephones of this nature is the same as that employed for ordinary telephones.



Figure 1:
Desk-Type Common-Battery Telephone for Hazardous Locations



Figure 2:
Wall-Type Common-Battery Telephone for Hazardous Locations

The base of the desk instrument is equipped with rubber feet to protect the surface upon which the instrument rests. The base of the wall-mounting instrument is equipped with a steel mounting plate which facilitates mounting to vertical surfaces (wall, pillar or panel). When mounted, the dial (or dial aperture) of the wall telephone, faces upward. A different cradle is provided on the wall instrument so that the handset may rest in a convenient horizontal position.

Both the desk and wall types are available with dials for automatic operation or without dials for manual operation. Where the dial mechanism is omitted, a metal plate covers the aperture normally occupied by the dial. All instruments incorporate a ringer with two-inch gongs.

The gongs which are outside of the housing, are fastened to the underside of the base. The associated clapper rod is activated through a special bushing in the base.

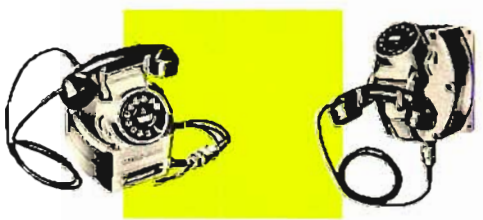
Two ¾" conduit hubs are provided on the base of every telephone instrument. One extends from one end of the base and the other appears on the underside of the base. The underside hub provides a convenient conduit entrance when it is desirable to panel-mount a wall-type telephone and bring the conduit through the panel to the instrument. A threaded plug is furnished with all instruments for sealing the unused hub.

The base section is reversible with respect to the top so that on a wall installation, for example, the incoming conduit may approach the end hub from above or below the telephone instrument. On a panel installation, where the conduit is brought through the panel to the underside hub, this (base reversing) feature permits the conduit to enter approximately 6" lower or higher on the panel without, of necessity, changing the panel location of the instrument.

Connection between the handset and the cover of both the wall and desk instruments, is made through a factory-sealed connector which threads into a hub in the cover. Connection between the desk instrument and the (required) line cut-off switch, which is usually mounted on any convenient vertical surface, is made through a flexible, heavily insulated line cord assembly equipped at each end with a factory-sealed connector. This line cord assembly is furnished with each desk instrument in standard 5-foot lengths but is available (upon request) in lengths up to 10 feet at no additional cost. One connector threads into the conduit hub in the instrument base and the other in a hub of the line cut-off switch.

Connection between the wall-mounting instrument and line cut-off switch is rigid as these units are assembled together with conduit. Consequently, no line cord assembly is furnished with the wall-mounting telephone.

Provision is made for employing either metallic or grounded ringing with these telephones.



ORDERING INFORMATION

Manual and Dial Types — Common Battery

Housing	Style Telephone	D.C. Resistance of Ringer	Size Hub	Conduit with Telephone Equipment Cat. No.
Kellogg Switchboard and Supply Company Interior				
Desk Use	Dial	4000 Ohms	....	ETDA21
	Manual		....	ETDM21
Wall or Panel Mounting	Dial	*	¾	ETWA21
	Manual			ETWM21

* 2500 or 1000 ohm ringer can be furnished at no extra charge. For further information on these telephones; auxiliary signals (such as loud ringers, horn signals, etc.); accessories required for the various types of telephone installations contact Kellogg for our complete bulletin on "Telephones for Hazardous Locations."

MAGNETO TELEPHONES





KELLOGG 1070-1170 SERIES MASTERPHONES

1070-1170 Unit Types with Self-Contained Hand Generator

Kellogg unit type magneto desk or wall Masterphones can be supplied in biased or straight line ringer for any ringing application. Biased ringers which prevent bell tapping are recommended where future conversion to dial equipment is contemplated. The universal anti-side tone triad circuit can be quickly adapted to metallic or grounded ringing, and a four conductor base cord is standard on desk Masterphones for this purpose. A self-contained Kellogg No. GN-38-B hand generator is a part of this telephone, and a separate generator box is not needed.

Select the particular type of telephone wanted from the following chart. Specify the type of ringer needed.

Code No.	Description
1070	Desk type Masterphone
1071	Desk type Masterphone with "press to talk" switch
1170	Wall type Masterphone
1171	Wall type Masterphone with "press to talk" switch



KELLOGG 5800 SERIES WALL TELEPHONES WITH HANDSET

This anti-side tone telephone is assembled into an attractively finished oak cabinet and is equipped with a handset. The No. 5809-M has a 3-bar generator and is designed for local lines having one or more telephones or for lightly loaded rural lines. The No. 5845 has an extra heavy duty, 6-bar, generator. All other 5800 series telephones, except the No. 5820-M, have 5-bar generators and are for use on long heavily loaded lines. The No. 5820-M telephone has a special pulsating and alternating current generator for secret signaling. The mounting space required for these telephones is 10 x 7½ inches.

Code No.	Ringer No.	Hook Switch	Ind. Coil	Cond.	Handset	Gen.
5812-M	78-D	165	105-A	——	F-27-C	53
5816-M	78-D	165	105-A	200	F-27-C	53
5820-M*	78-D	165	105-A	200	F-27-C	59
5845-M†	78-G	165	111-A	200	F-43-C	75
5859-M	78-G	165	105-A	——	F-27-C	53
5880-M	78-G	165	105-A	200	F-27-C	53

Ringer resistances — 78-A, 1000 ohms; 78-D, 1600 ohms; 78-G, 2500 ohms.

*Has No. 5 push button for secret signaling.
†Has large woodwork.

WIRING PLAN SYSTEMS

KELLOGG K-1A1 KEY TELEPHONE SYSTEM

GENERAL DESCRIPTION

The K-1A1 Key Telephone System is a switching system designed to provide a method of signaling customers' stations on one or more lines from a common battery Central Office or PBX without the assistance of an attendant or operator.

The K-1A1 System permits the subscriber to utilize the following features:

a. Answer and originate calls on from one to five Central Office, PBX, intercommunicating or private lines, or combinations thereof.

b. Hold calls on from one to five central office or PBX Lines.

c. Answer and originate calls on ringdown tie lines and automatic tie lines between stations of Key Telephone Systems.

d. Answer and originate calls on lines to distant individual station telephone sets.

e. Answer and originate calls on manual or dial intercommunicating lines between telephones in a K-1A1 Key Telephone System.





STATION APPARATUS

Key Telephone Sets are combined K-500 type telephone sets which include in a single housing the switching keys, line and busy lamps, subscriber set apparatus, ringer and the additional cord conductors required for keys and lamps. Where more than one line terminates in a set the ringer may be connected to any one of the lines, ringers in adjacent sets or externally mounted ringers being used for the balance of the lines. If desired, the set ringers may also be used as an audible signal common to a group of lines. The keys of the set serve to switch the talking circuit to any one line.

Two types of telephone sets are available as listed in the following tables:



DK-544-BA(2)
Key Telephone



DK-564-BA(2)
Key Telephone

K-544 TELEPHONE SETS
(4-BUTTON TYPES)

Dial	CODE Manual	Key * Features	Remarks
DK 544-BA		HPP(P)	With Straight Handset Neoprene Cord #3030
DK-544-BA(2)		HPP(P)	With Koiled Kord #1005
	MK-544-BA	HPP(P)	With Straight Handset Neoprene Cord #3030
	MK-544-BA(2)	HPP(P)	With Koiled Kord #1005

* H — Hold
P — Pickup
(P) — Pickup convertible for signaling
NOTE: K-544 Telephones are furnished with a 19 conductor mounting cord, code No. 839.

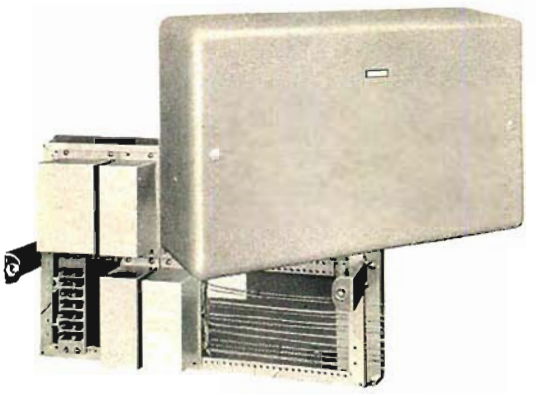
K-564 TELEPHONE SETS
(6-BUTTON TYPES)

Dial	CODE Manual	Key * Features	Remarks
DK-564-BA		HPP(P)(P)(P)	With Straight Handset Neoprene Cord #3030
DK-564-BA(2)		HPP(P)(P)(P)	With Koiled Kord #1005
	MK-564-BA	HPP(P)(P)(P)	With Straight Handset Neoprene Cord #3030
	MK-564-BA(2)	HPP(P)(P)(P)	With Koiled Kord #1005

* H — Hold
P — Pickup
(P) — Pickup convertible for signaling
NOTE: K-564 Telephones are furnished with a 34 conductor mounting cord No. 840.

RELAY EQUIPMENT

The K-1A1 Key Telephone System Relay Equipment is furnished in cabinet type units arranged for wall mounting. These units consist of an apparatus mounting and cover in which are mounted the individual feature Key Telephone units. The cabinet has overall dimensions as follows: Width, 26¼ inches; Height, 16⅛ inches; Depth, 9⅜ inches. The apparatus mounting has a hinged gate assembly affording easy access to the terminal side of the Key Telephone Units.



K-1A1 Key Telephone System

K-1A1 KEY TELEPHONE SYSTEMS

The K-1A1-2, K-1A1-3, K-1A1-4 Key Telephone Systems are equipped for 2, 3 or 4 Central Office or PBX lines respectively, and provide the following features:

a. Manual intercom circuit.
b. Lamp flashing circuit.
c. Incoming signal time-out circuit.
d. Ringing lamp circuit.
e. Battery feed noise suppression circuit.
f. Common signaling circuit.

K-1A1 TYPE KEY TELEPHONE SYSTEMS

CODE	INDIVIDUAL FEATURE UNITS Amt.	Code	FEATURES
K-1A1-2	1	K-201-B	Fuse mounting panel
	1	K-209-A	Lamp flashing and incoming signal time out
	1	K-211-A	Common equipment and manual intercom
	2	K-202-B	Central Office or PBX line circuit
K-1A1-3	1	K-201-B	Fuse mounting panel
	1	K-209-A	Lamp flashing and incoming signal time out
	1	K-211-A	Common equipment and manual intercom
	3	K-202-B	Central Office or PBX line circuit
K-1A1-4	1	K-201-B	Fuse mounting panel
	1	K-209-A	Lamp flashing and incoming signal time out
	1	K-211-A	Common equipment and manual intercom
	4	K-202-B	Central Office or PBX line circuit

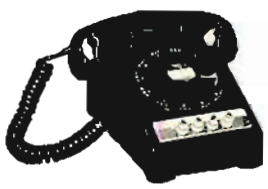
DIAL INTERCOMMUNICATION CIRCUIT

If Dial Intercommunication selective signaling is desired it is necessary to provide one (1) K-207-A Key Telephone Unit in addition to the equipment listed in the chart "K-1A1 Type Key Telephone Systems". The K-207-A Key Telephone Unit provides the apparatus for one (1) dial intercom line having access to a maximum of nine stations. Dial signaling on three such lines requires three K-207-A Units.

POWER SUPPLY

The relays used in the K-1A1 Key Telephone System which require a local battery supply are arranged to operate on 14 to 26 volts. Battery for lamp operation may be either 10 volts ac, 14 to 26 volts dc, or 48 volts dc. The power supply may be any one of the following sources:

a. Direct feed over cable pairs from Central Office.
b. Direct feed from a PBX or building battery.
c. Battery eliminator.
d. A local 24 volt storage battery floated over cable pair or charged from a local rectifier.





ORDERING INFORMATION

Kellogg K-1A1 Key Telephone Systems should be ordered as follows:

1 — Telephone Sets

Determine from the following the code number of the telephones required.

Telephones equipped with Biased, (BA) Ringer

Dial Types	Manual Types
DK-544-BA	MK-544-BA
DK-544-BA(2)	MK-544-BA(2)
DK-564-BA	MK-564-BA
DK-564-BA(2)	MK-564-BA(2)

Telephones (Less Ringers) to be equipped with Buzzer for Intercommunication Signaling.

Dial Types	Manual Types
DK-544-LR	MK-544-LR
DK-544-LR(2)	MK-544-LR(2)
DK-564-LR	MK-564-LR
DK-564-LR(2)	MK-564-LR(2)

NOTE: Order one (1) Buzzer Kit No. 202 for each telephone to be equipped with a buzzer.

Order one (1) Buzzer, Code K-7AW where the buzzer is to be externally mounted.

2. Lamps

Specify code number and quantity of Telephone Set Lamps required. Lamps should preferably be of same voltage rating as the power source.

For 10-volt Systems — Order Code #K-51A Telephone Set Lamps
For 24-volt Systems — Order Code #1632 — TD Telephone Set Lamps
For 48-volt Systems — Order Code #2448 — TD Telephone Set Lamps

3. Connecting Blocks

Specify one, Code #30 forty terminal connecting block for each Key Telephone.

4. Key Telephone Systems

Specify code number and quantity of K-1A1 type of Key Telephone Systems required, i.e.:

K-1A1-2 Key Telephone System
K-1A1-3 Key Telephone System
K-1A1-4 Key Telephone System

5. Dial Intercommunication Feature

If Dial Intercommunication is desired, specify quantity required (one for each line to be so equipped).

K-207-A Key Telephone Unit

6. Power

If Battery eliminator is desired, specify quantity of Lorain Products Company RT Power Units required.

Model RT-2 Power Supply Unit

SPECIFICATIONS

Size	Ringing Output	Talking DC Supply	Signaling DC & AC
8⅝"x17⅝"x3"	75-95 v 20 cy 50 ma	2.0 amp 20-30 volts or 28-40 volts	1.5 amp 10 v 60 cy 1.5 amp 20 v 60 cy

7. Inside Wiring Cable

Order following cable, and specify footage required, depending upon distances and number of stations per wiring place system.

21 pairs, approximate outside diameter, .606", #22 gauge

#22 Solid untinned copper, .015" wall Hazalene, twisted into pairs, pairs color coded, cabled together, cellophane tape, .040" Hazakrome jacket. (Same as W.E. Inside Wiring Cables.)

KEY BX — A NEW TYPE OF TELEPHONE SERVICE



A faster, more flexible and economical telephone service for offices — stores — banks — sales agencies — churches — factories — hospitals — theatres — hotels — schools.

Kellogg Key-BX provides any business subscriber with a specialized telephone system. It requires no operator, needs no centrally located switchboard. It handles outgoing, incoming and intercommunication calls—with every individual in the system his own attendant.

Each has access to all incoming and outgoing lines to the telephone exchange. Any individual can signal any other or talk to him over the intercommunication facilities. Conference calls between several persons or on incoming and outgoing trunk calls can be made.

Key-BX is an economical, efficient system that few companies, once they have experienced its benefits, would ever be without. This bulletin explains its features, how it operates and what information is necessary in determining the equipment required for various types of installations.



Kellogg Key—BX Key Box

There is one key box for each station.

A. Incoming and outgoing calls
B. Interoffice calls
C. Interoffice signaling
D. Transferring and Holding Incoming Calls

EASE OF OPERATION

A. Incoming and Outgoing Calls

Each line is numbered by a white numeral on its associated trunk key. Directly above each line is a lamp that flashes intermittently on incoming calls until the call is answered and remains lighted while the line is in use.

To answer an incoming call (flashing lamp) depress the associated trunk key and lift the handpiece from the cradle of the telephone. The trunk lamp remains lighted until the handpiece is returned to the cradle.

To make an outgoing call lift the handpiece from its cradle and depress the trunk key of any idle line. The trunk lamp lights, indicating to all other stations that the line is in use, and remains lighted until the handpiece is returned to the cradle.

B. Interoffice Calls

For interoffice calls the intercommunication lines are used. Each intercommunication line is numbered with a white numeral on its associated key. Directly above each intercom line is a lamp that remains lighted during the call to indicate that the line is in use.

To receive an interoffice call . . . Each Key Box is equipped with a buzzer operated by push-buttons from any other Key Box, that signals an incoming call and indicates the intercom line on which the call is to be taken (one buzz for intercom line No. 1, two buzzes for intercom line No. 2). Depress the associated key and pick up the handpiece of the telephone.

To originate an interoffice call depress the key of an idle intercommunication line (indicated by unlighted lamp) and pick up the handpiece. Using the push-button associated with the line of the person being called, signal by buzzer on which intercom line he is to answer.

C. Interoffice Signaling

In addition to signaling regular interoffice calls, the push-buttons on each Key Box may be used in transferring incoming trunk calls from one station to another, for arranging conference calls and in securing information while holding an incoming trunk call.

D. Transferring and Holding Incoming Calls

Each Key Box has a "hold key" for holding the call while arranging for transfer to another line or obtaining information pertinent to the call, via an intercommunication line to another station.

To transfer a call first operate the hold key. This holds the calling party on the line. Signal the desired station, using the push-button associated with the line of the person being called. Tell the person at that station the trunk on which he is to pick up the call.

To hold a call while securing information over an intercom circuit, operate the hold key and signal the proper person just as in transferring a call. After securing the information, push the button key of the trunk being held. This restores the connection with the calling party.

NOTE: Lamps which indicate incoming calls or trunk lines in use light on all Key Boxes in the Key-BX system. Thus, there is no confusion as to whether calls are being answered or whether lines are in use.

Shown are Kellogg Key-BX Key Boxes in the several sizes available. One Key Box is required for each station in the Key-BX System. These may be located on top of an executive desk, attached to the side of any office desk or work table or mounted on any suitable flat surface.

The various ultimate capacities of each Key Box make it easy to select the particular one that best meets initial and future requirements. These capacities range from 2 trunk lines, 2 intercommunication lines and 10 stations (or 3 trunks, 1 intercommunication and 10 stations) to 6 trunk lines, 2 intercommunication lines and 20 stations.

Each Key Box has individually numbered, black locking push-buttons with associated individual lamps for handling and supervising trunk calls. Blue, individually numbered locking push-buttons and associated supervisory lamps are provided for intercommunication with other individuals in the Key-BX System. A hold key is furnished for holding trunk calls while transferring call to another station or while information is obtained via the intercommunication facilities. Push-buttons enable signaling of any other individual in the System.

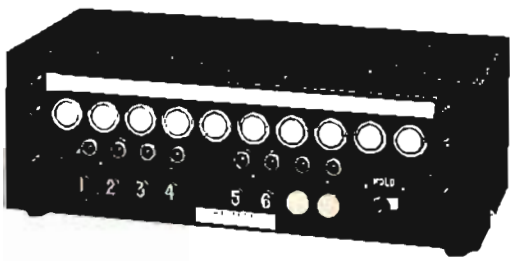
A designation strip associated with the station push-buttons identifies other individuals serviced by the System. Cable entrance knock-outs are provided at both ends of the Key Box and at the back. Housing is steel, with black wrinkle finish. Rubber feet eliminate need to attach the Key Box to the top of the desk.

NOTE: At the time the Key-BX System is ordered it should be specified whether desk-type or wall-type Masterphones are to be provided for each Key Box. Both types are available. Usage and location will indicate which is the more suitable.

18-M KEY BOX

For initial or future requirements not in excess of 6 trunk lines and 10 stations.

Face equipment: 6 black trunk line push-buttons, 2 blue intercommunication line push-buttons, associated lamps, hold key, designation strip and push-buttons for signaling other stations. Length 11 inches, height 3½ inches, depth 6½ inches.



19-M KEY BOX

For initial or future requirements not in excess of 6 trunk lines and 20 stations.

Face equipment: 6 black trunk line push-buttons, 2 blue intercommunication line push-buttons, associated lamps, hold key, designation strip and push-buttons for signaling other stations. Length 11 inches, height 4⅜ inches, depth 6½ inches.



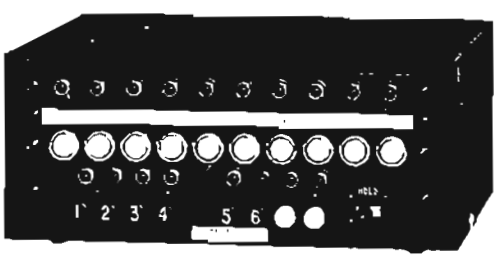
25-M KEY BOX

For initial or future requirements not in excess of 6 trunk lines and 10 stations.

Has the same ultimate capacity as the No. 18-M Key Box, but has the added feature of individual station "busy" lamps, located directly above the buzzer signal for each station. These lamps are visual indication to all individuals in the system as to which stations are talking on incoming, outgoing and intercommunication calls.

Face equipment: 6 black trunk line push-buttons, 2 blue intercommunication line push-buttons, associated lamps, hold key, designation strip, push-buttons for signaling other stations, individual station "busy" lamps.

Length 11 inches, height 4⅜ inches, depth 6½ inches.

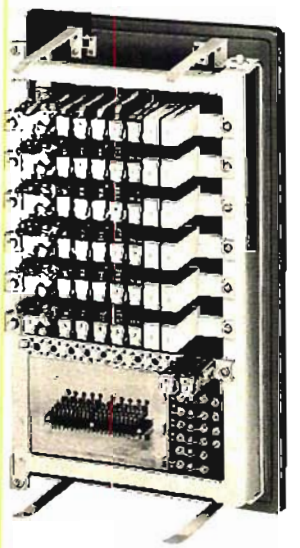


32-M KEY BOX

For initial or future requirements not in excess of 4 trunk lines and 20 stations. Individual station "busy" lamps located directly above the buzzer signal for each station. Station lamps are visual indication to all individuals in the System as to which stations are talking on incoming, outgoing and intercommunication calls.

Face equipment: 4 black trunk line push-buttons with associated trunk lamps, 4 blue intercommunication line push-buttons with associated lamps, hold key, designation strip, push-buttons for signaling other stations, individual "busy" lamps.





TRUNK RELAY EQUIPMENT FOR KEY B-X SYSTEMS is small, compact and easily mounted.

Shown is the trunk relay equipment cabinet used in the Kellogg Key-BX System. Space and mounting is no problem, because the cabinet is designed for location on any convenient office wall. To make installation and maintenance easy, all trunk relays and other necessary associated apparatus are factory mounted on a side-swinging steel relay gate.

No. 25-A Trunk Relay Cabinet, equipped with 6 No. 12 Plug-In Trunk Units and 2 Intercommunication Circuits.

The ultimate capacity of the cabinet is 6 trunks and 2 inter-communication circuits. For initial installation, it is equipped with 1 to 6 trunks and 1 or 2 intercommunication circuits as required.

The cabinet is of dust-proof construction. The slip-on wood cover attaches to the backboard with only four mounting screws. Finish is olive green. Width 16 inches, height 28 inches, depth 9¼ inches.

IN ORDERING specify No. 25-A Relay Cabinet for use with Key Boxes Nos. 18-M, 19-M, and 25-M. For Key Box No. 32-M, specify No. 25-D Trunk Relay Cabinet. Please indicate the number of trunks and intercommunication circuits required.

No. 25-A Trunk Relay Cabinet, equipped with 6 No. 12 Plug-In Trunk Units and 2 Intercommunication Circuits.

PLUG-IN TRUNKS SPEED INSTALLATION AND SERVICE

No. 12 Plug-In Trunk Unit. Additional trunk circuits may be installed in the Kellogg Trunk Relay Cabinet in a few minutes. Trunk circuits are plug-in type.

Business organizations requiring additional trunk facilities during the busy seasons find that with Key-BX the telephone company can supply this service quickly and easily. The telephone companies simply keep on hand a few additional unit type plug-in trunks for just such occasions.

Kellogg unit type plug-in trunks are completely wired at the factory and factory-tested. All relays and associated apparatus are mounted on a single plate and wired with a hand-made cable which attaches to a plug receptacle on the rear of the plate. Trunk units may be mounted on the relay gate and plugged into operation in just a few minutes. This same simplicity insures speedy and low-cost maintenance of all Key-BX systems.

Trunk Relay Equipment Cabinets are shipped complete with the desired number of trunk circuits.

For additional and spare trunks order Code No. 12 Plug-In Trunk Units.



Special telephones are not required with Kellogg Key-BX Systems. Any standard telephone, less ringer*, may be used.

However, for best performance Kellogg K-500 Telephones are suggested. Their circuit design minimizes disturbing office noises. Their efficient receiver and transmitter provide the easily understandable naturalness of ordinary face-to-face conversation. Kellogg Desk and Wall telephones are available in standard black or attractive colors for special office applications such as executive offices, matching color combinations, etc. Color information provided upon request.





	DESK	WALL
Less Dial	No. MK 591-LR	No. MK-554-LR
With Dial (Number & Letters)	No. DK-591-LR	No. DK-554-LR

*Telephone instrument ringer is not needed with Key-BX Systems. Each key box is equipped with individual selective signal buzzer which receives signal from any other Key-Box in system. There is also an individual lamp signal for each trunk. Signal "flashes" when incoming trunk calls are to be answered . . . "glows" during conversation. Each intercommunication circuit also has a lamp signal that glows during period intercom is in use.

OTHER ITEMS FOR KEY-BOX INSTALLATIONS



CHIME

Where an audible signal in addition to the "flashing" lamp on incoming trunk calls is desired, the Kellogg N-11 Chime provides a single pleasing tone. This 24 volt chime may be assigned to one or more trunks if needed. It is quickly and easily installed . . . specify number of chimes needed.

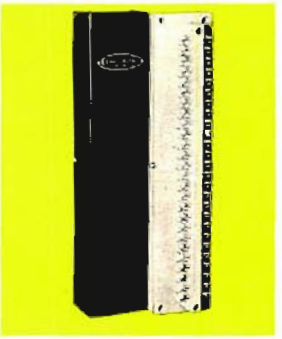


POWER

Ample talking and signaling power for any type of Key-BX installation can be provided with Lorain "T" units which are housed in attractive wall mounted cabinets.

Also available in No. 1027 Raytheon.

For more detailed information see "Power" Section of this catalogue.



JUNCTION BOX

This 26 pair capacity Junction Box can be used for termination and distribution of inside cables in Key-BX installations. Number of boxes required depends upon floor plan layout of the business establishment. Dimensions: Width 3¼ inches; Depth 2½ inches; Height 15 inches.

CABLE

Okonite: Okoseal brown plastic covered flexible switchboard cable may be used for Key-BX installations. Conductors are color coded. Conductor size No. 22-AWG. Specify quantity of cable required. Ordering information at right.

Key Box	Capacity	Okonite Plastic
No. 18-M	6-2-10	26 pair
No. 19-M	6-2-20	31 pair
No. 25M	6-2-10	31 pair
No. 32-M	4-4-20	51 pair



ORDERING INFORMATION

Determine your requirements for Kellogg non-attendant type, Key-BX, inter-communication systems from the following chart. Kellogg will quote prices and delivery of this equipment based upon your specific requirements.

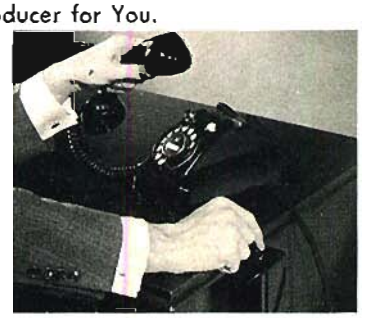
KEY-BX BOXES	No. 18M	No. 19M	No. 25M	No. 32M
Trunks to Exchange	6	6	6	4
Inter-com. Circuits	2	2	2	4
Stations	10	20	10	20
Station Busy Lamps	None	None	10	20
RELAY CABINETS	No. 25-A	No. 25-A	No. 25-A	No. 25-D
POWER EQUIPMENT	1 No. T3 Lorain Unit for Talking and Signaling			
CABLE Plastic	147-L 26 pr.	168-L 32 pr.	144-L 16 pr.	144-L 16 pr.
JUNCTION BOXES	No. 490-5426 Cook junction boxes			
AUDIBLE TONE SIGNALS Single Tone Chime	1 No. N-11 common to all trunks			
TELEPHONE INSTRUMENTS				
Desk, Manual, C.B.	No. MK 591-LR			
Desk, Dial, C.B.	No. DK 591-LR			
Wall, Manual, C.B.	No. MK 554-LR			
Wall, Dial, C.B.	No. DK 554-LR			

GENERAL ORDERING INFORMATION

1. Provide one Key-BX box for each equipped station in the Key-BX system.
2. Provide one relay cabinet for each installation. Specify the number of trunks and inter-communication circuits to be equipped.
3. Provide one Lorain T3 Power Unit for each installation.
4. Provide plastic covered cable as required. Determine number of feet required for particular installation.
5. Provide junction boxes as required.
6. Provide single tone chime if desired.
7. Provide one manual desk or wall K-500 telephone, or one dial or wall K-500 telephone for each station in the system.

KELLOGG INTER-TEL SYSTEM

For Individual Business Line Subscribers . . . and a Revenue Producer for You.



Features of the Kellogg INTER-TEL System

Incoming and Outgoing Calls

Outgoing telephone calls may be originated at any station the instant a line is available. Each telephone is equipped with a ringer to alert all stations on incoming calls. Incoming and outgoing calls in the Inter-Tel System may be handled in a quick and efficient manner by any individual within the organization. Inter-Tel supervision eliminates "cutting in" on other telephone conversations as experienced under present method of installing one or more extension telephones on the same line.

NON-ATTENDANT TELEPHONE SYSTEM

No designated individual necessary to handle incoming and outgoing calls. If desired however, any one person may act as attendant for all individuals in system.

HOLD FEATURE

A holding feature is provided at each station. The calling party may be held on the line while securing information from another station over the intercommunication circuit.

TRANSFERING INCOMING CALLS

Transferring incoming calls from any station to any other station is instantly accomplished. Each telephone is provided with push button for code signaling any other station in the system.

CONFERENCE CALLS

Conference calls between incoming calling party and several stations in the system can be provided in matter of seconds.

RINGER BRIDGED ACROSS LINE

Ringer bridged across line at each station to indicate incoming calls to be answered even though two stations may be talking over intercommunication facilities.

INSTANTANEOUS SUPERVISION

Instantaneous supervision of incoming and outgoing telephone calls at each Inter-Tel station permitting maximum usage of telephone service.

INTERCOMMUNICATION

Intercommunication calls may be originated between any station in the system.

EASE OF OPERATION

The Kellogg Inter-Tel System provides your individual line business subscribers with a highly efficient telephone service at the lowest cost per call. Speed-up and improve business subscriber's telephone service with this modern, efficient, and up-to-date method of handling telephone calls. Obtain for the telephone company and for your business subscribers maximum service results with Inter-Tel installations.

Review for yourself the operational features of the Kellogg Inter-Tel System.

INCOMING AND OUTGOING TELEPHONE CALLS

Two, Three, Four (or more) telephone instruments may be connected to a single central office line. All telephone bells will ring simultaneously on incoming calls. Calls may be answered at any telephone.

To Answer an Incoming Call: If key located in key box is not in the "answer" position as engraved on the key box, do so before lifting handpiece from cradle. Lift handpiece from cradle and answer call in normal manner. The red supervisory lamp located on all telephones in the system remains lighted until the handpiece is returned to the cradle.

To Make an Outgoing Call: Key should be in the normal or "answer" position before lifting handpiece from cradle of telephone. Remove handpiece and dial or indicate the desired number to the telephone operator. Red supervisory lamp on all telephones remains lighted until handpiece is returned to the cradle.

To Transfer a Call to Another Station: The only operation necessary is to code signal the desired station over the buzzer system provided in each telephone. Remain on the line until the calling and called party are connected before replacing handpiece on cradle of telephone. The red supervisory lamp remains lighted until conversation is completed and called party restores handpiece to cradle.

A push button is equipped in each telephone for code signaling other stations in the system. A buzzer is provided in each telephone for receiving code signals from other stations in the system. The buzzer system is of the common line signaling type.

Suggested code signal for transferring trunk calls from station answering an incoming call to the desired station is as follows:

First Station—1 short signal
Second Station—2 short signals
Third Station—3 short signals
Fourth Station—4 short signals

Any station receiving above signal on buzzer in their telephone will recognize from signal that they are wanted on trunk call. Before lifting handpiece to answer operate key to the "answer" position in the key box. At completion of call restore handpiece to cradle of telephone.

INTERCOMMUNICATION CALLS

The intercommunication circuit between all stations is of the common talking, common signaling type. To call another station operate key to "Intercom" position. Lift handpiece and signal desired station, preceding the standard code signal with a long signal, as follows:

First Station—1 long, 1 short signal
Second Station—1 long, 2 short signals
Third Station—1 long, 3 short signals
Fourth Station—1 long, 4 short signals

Any station receiving above signal on buzzer in their telephone will recognize from signal that they are wanted on an intercom call. Before lifting handpiece operate key to "Intercom" position in key box. At completion of call restore handpiece to cradle of telephone. Red supervisory lamp remains lighted during conversation period.

TO HOLD A CALL

To hold a party on the trunk while securing information over an intercom circuit operate the key to the"Hold" position in the key box, which removes the telephone from the line for intercom purposes. Signal the desired party using the suggested Intercommunication signal system, secure necessary information and return to the trunk by operating key to the "Answer" position. An intercom call may be made with the key in the "Hold" position. Red supervisory lamp remains lighted during conversation period.

CONFERENCE CALLS

A conference call can be arranged on the trunk by any station signaling any or all other stations. A predetermined signal can be used as a "General Call." Red supervisory lamp remains lighted during conversation period.

KELLOGG INTER-TEL SYSTEM COMPONENTS

INTER-TEL TELEPHONE (Code #1010BA)

Each Inter-Tel station installation consists of a Kellogg #1010BA Desk Masterphone with or without dial as required, equipped with a standard Kellogg individual line ringer, a sturdy buzzer mounted inside the telephone instrument, a push button mounted on the top right of the telephone for code signaling other stations in the system, a supervisory lamp mounted on the top left of the telephone which glows red when any station in the system is in use, and an eight conductor black fabric covered base cord attached to the telephone instrument at one end, which connects to a Kellogg Key Box at the other end.

The Key Box mounts on the side of a desk or on any other suitable flat surface. A three position locking key is provided in the key box for "Answering," "Holding," and "Transferring" incoming calls. Each operated position of the key is engraved on the cover of the key box indicating the "Answer," "Intercom," and "Hold" positions.



INTER-TEL TRUNK RELAY CABINET (Code #27)

Common to each Inter Tel System is a small one trunk relay cabinet #27 which terminates the incoming central office line. This small all-steel relay cabinet (3½ inches deep, 9 inches high, 7 inches wide) mounts on any flat surface and houses the necessary relays, condenser, choke coil, and other components to insure trouble free operation of the Inter-Tel system.



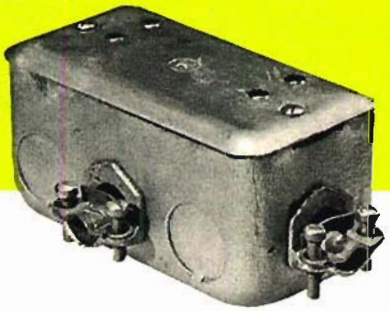
CABLE

The Kellogg Inter-Tel System requires a six pair cable between each individual Inter-Tel station and the centrally located trunk relay cabinet. For easy handling and installation we recommend Okonite, Okoseal brown plastic covered flexible cable. Conductor size No. 22 AWG, conductors are color coded as follows: Blue, Orange, Green, Brown, Gray, Red. Each colored conductor is twisted with its white mate.



JUNCTION BOX (Code #1)

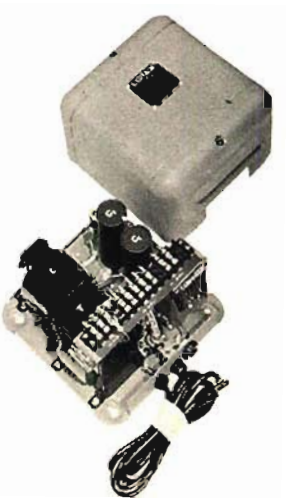
For connecting each Inter-Tel station key box in the system to the 6 pair plastic covered cable between stations in the Inter-Tel System, we recommend this compact convenient low cost junction box. Made of steel with a galvanized finish, this junction box measures 4 inches in length, 2½ inches in width, and 1⅞ inches in depth. Adequate knock-outs are provided on each side and on each end of the junction box for entrance of the plastic covered 6 pair cable. Proper size box connectors are furnished with each junction box. Attached to the inside of the removable steel cover of the junction box are two terminal strips each with 6 terminals for the necessary cable connections. Cover fastens to the junction box with two screws.



POWER

Ample talking and signaling power for any type of Inter-Tel installation can be provided with Lorain "T" units which are housed in attractive wall mounted cabinets. Also available in #1026 Raytheon.

For more detailed information, see "Power" section of this catalogue.





How to order your Kellogg Inter-Tel System

Determine your requirements for Kellogg Inter-Tel System from the following chart. When ordering specify all equipment necessary for the installation, by code or piece number, name, and quantity desired.

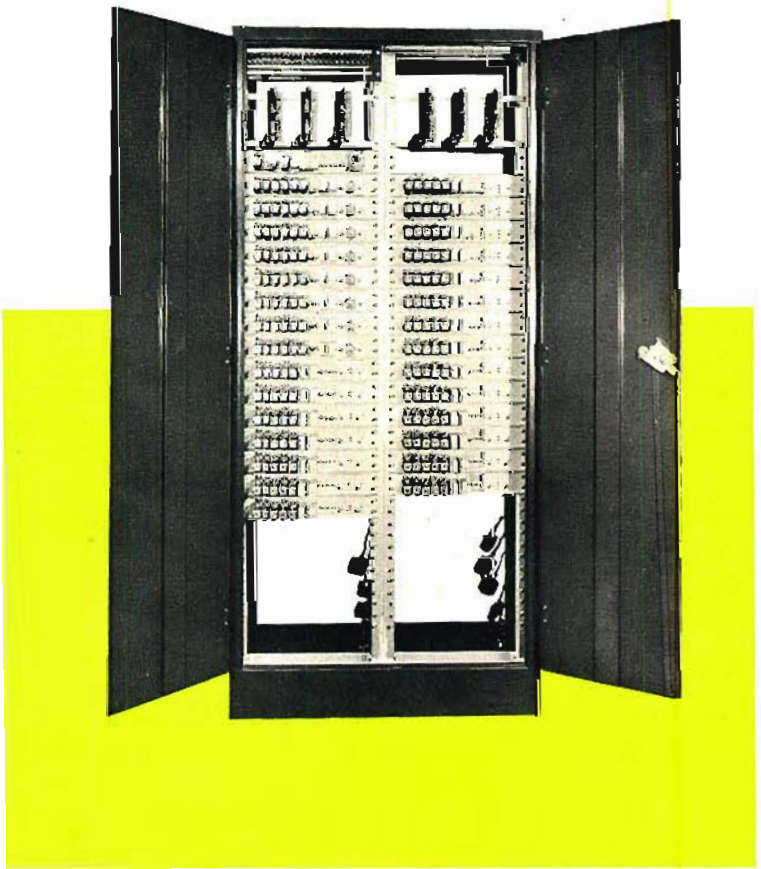
INTER-TEL SYSTEM COMPONENTS	SPECIFY FOR EACH STATION IN SYSTEM	SPECIFY FOR EACH SYSTEM INSTALLATION
INTER-TEL TELEPHONE	Specify one #1010BA Telephone for each station in system. Can be furnished with or without dial. Specify if dials are wanted.	
TRUNK RELAY CABINET		Specify one #27 Trunk Relay Cabinet for each system installation.
POWER		Specify one Lorain T-5 Unit for each system installation. Refer "Power" section for detailed information.
CABLE	Include in cable measurements sufficient quantity of 6 pair Okonite cable to connect each station Key Box to each station Junction Box.	Specify 6 pair Plastic Okonite Okoseal Cable. Indicate number of feet required for system installation.
JUNCTION BOXES		Specify Number of No. 1 Junction Boxes Required for Each Inter-Tel System Installation.
MISCELLANEOUS INSTALLATION MATERIALS	For cable clamps, mounting screws, flux solder refer to Supply Section of Kellogg #12 catalog. If floor moulding, fixtures etc., are desired write Kellogg for information on "Wire Mold".	

KELLOGG MULTIPLE KEY EQUIPMENT

A fast, flexible call and answer system providing special communication services where either or both Central Office Trunk calls or Station calls must reach one central point. It is not necessary to interconnect trunks with trunks or stations with stations.

For use by business establishments needing special telephone service but not requiring intercommunications between Station lines and/or Central Office Trunks. Multiple Key Equipment does provide, however, secret service for executive or other uses with exclusion feature.

Kellogg Multiple Key Cabinet, with Universal wiring for an ultimate of 40 Central Office Trunks and/or Station Line Units.



Multiple Key Equipment is recommended for such special service applications as,

- Air Line Reporting and Dispatching
- Answering Service Applications
- Credit Information Bureaus
- Fire Reporting and Dispatching
- Order Desk Services
- Police Reporting and Dispatching
- Taxi Cab Answering and Dispatching
- Telegraphic Service
- Trucking Company Answering and Dispatching

Multiple Key Equipment installations consist of the following items of major apparatus:

A steel, floor type relay cabinet for housing central office trunks and station line units. Universal wiring is provided in the cable form so that any number of trunks and/or stations may be provided to capacity of universal wiring.

One Key Turret provides sufficient key equipment for ultimate wiring of relay cabinet although several Key Turrets may be placed in multiple to handle heavy traffic loads. Key Turrets may be placed on any standard desk or table.

Necessary power equipment consisting of Battery Eliminator and Ringing Machine.

Required footage of cable from Key Turrets to relay cabinet.

Operational features of Multiple Key Systems are as follows:



Central Office Trunks

Maximum length of loop is 1000 ohms.

Two-way signaling and talking to and from dial or manual central office to Multiple Key Equipment.

Lamp supervision under control of telephone switch hook.

Holding features with lamp supervision.

Secret service for executive or other uses with exclusion feature. One or more trunk circuits may be equipped.

Station Line Units

Maximum length of loop is 1000 ohms.

Key Turret attendant can signal any station.

All stations may signal Key Turret attendant by removing handset from cradle of telephone.

Supervision under control of switch hook at stations.

Hold features—lamps or Key Turret continue to glow until released by both parties.

For additional descriptive and/or engineering information or assistance in determining requirements for specific installations, contact your Kellogg Sales Representative or the Apparatus Sales Department, Kellogg Switchboard and Supply Company, Chicago, Illinois.



TELEPHONE SWITCHING KEY BOXES FOR WIRING PLAN APPLICATIONS



Telephone Switching Key Boxes

Kellogg Key Boxes are used for connecting one telephone to two or more lines, or connecting several telephones to one line. These boxes are made of black molded bakelite and clip to a steel back plate which is fastened to the wall with two screws.

All equipment, consisting of a standard Kellogg No. 1000 type key, connecting racks, and all wiring, is mounted on the back plate. Extra terminals provided on connecting racks may be used to terminate bell, buzzer, or other circuits which are independent of the switching key.

Lines wires are connected to the key box through an opening in the bottom of the box. Boxes may be mounted in any position.

These key boxes are 5½ inches high, 3⅝ inches wide, and 1½ inches deep. Shipping weight each is one pound.

ORDERING INFORMATION

Kellogg offers the following telephone switching key boxes which are designed to meet the normal demands for wiring plans at subscribers' stations.

KELLOGG TELEPHONE SWITCHING KEY BOXES

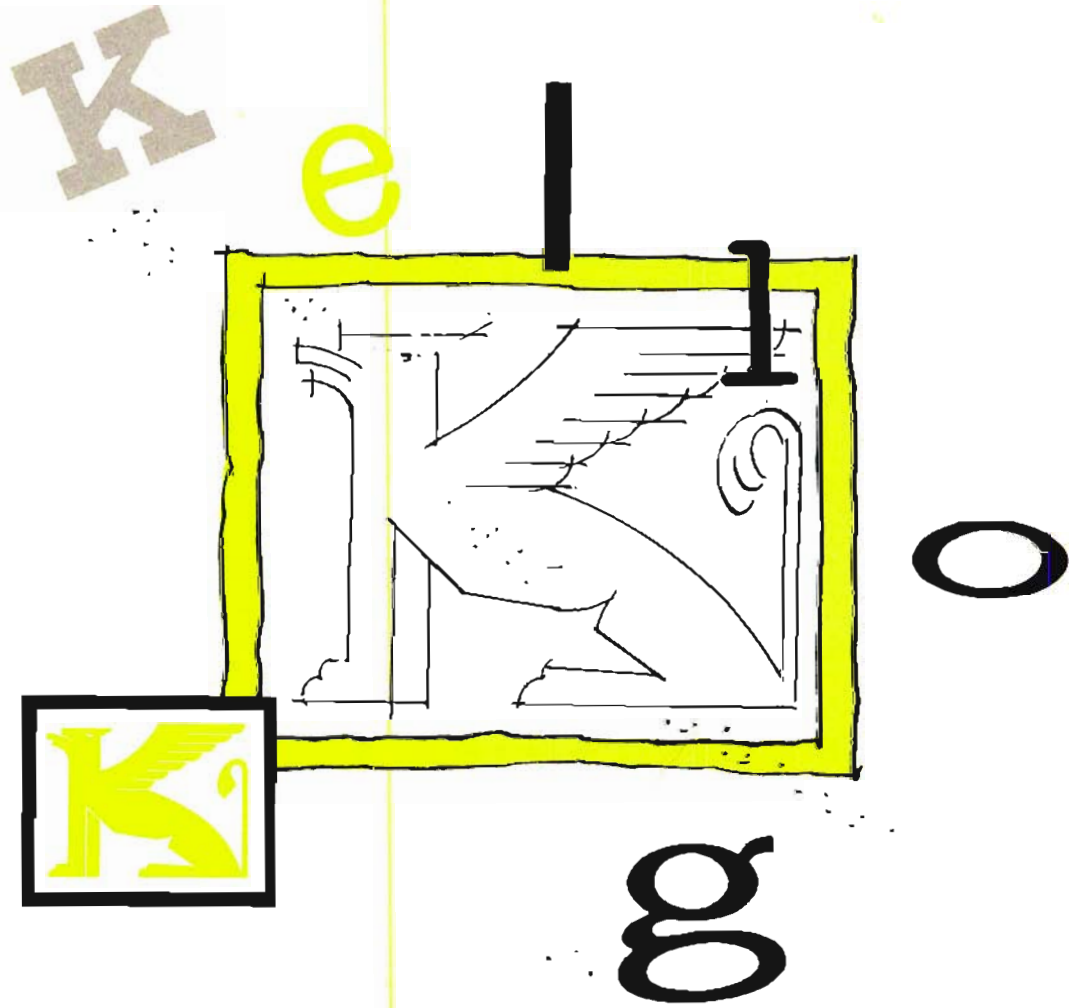
KELLOGG CODE NO.	CAPACITY	INTENDED FOR USE
12	2 Lines	Will switch a telephone to either of two incoming lines.
13	3 Lines	Will switch a telephone to one of three lines. Can be used in systems having two trunks and a separate circuit for intercommunication.
24	2 Lines	Will switch a telephone between two incoming trunk lines. This box is equipped with choke coil for holding one trunk line while using the other for intercommunication.

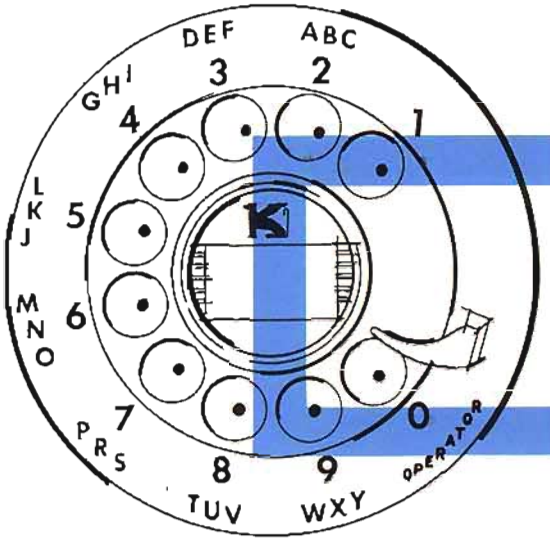
NOTE: In addition to above, Kellogg has equivalents for Key Boxes of other manfacturers, as follows:

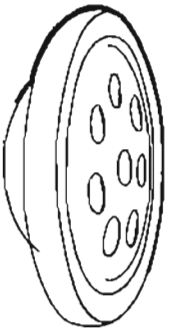
Kellogg #14—Equivalent Western Electric #6017E. Automatic Electric AY11.

Kellogg #30—Equivalent Western Electric #6017A.

Kellogg #31—Equivalent Automatic Electric #AY12.

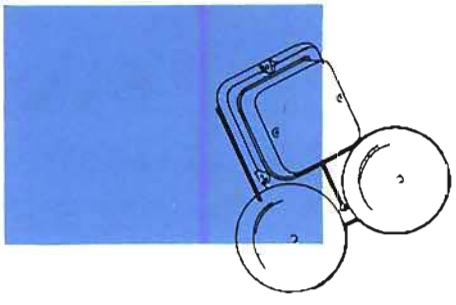


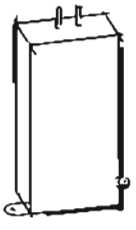


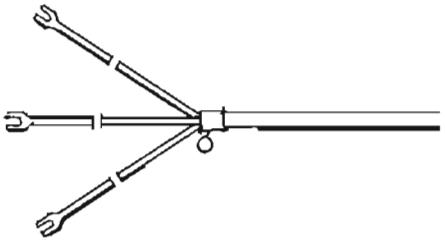


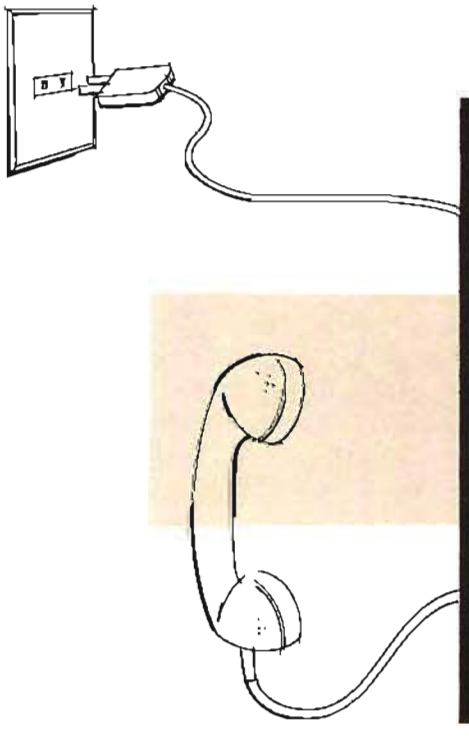
APPARATUS

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3









for

- **dial and manual switchboards**
- **common battery and magneto telephones**
- **wiring plans**

FOREWORD

KELLOGG TELEPHONE APPARATUS

This section contains a wide range of coded items of Kellogg manufacture. All items are in constant demand in the Telephone Industry. Many new coded items have been added to make this section of valuable aid to Purchasing Agents and rapidly growing telephone companies. We call your particular attention to the ease with which the items you need may be readily found. Ordering information is complete and specific.

If you have special requirements calling for items not shown in this section, we suggest that you contact the Kellogg Sales Department.



BARS, DISTRIBUTING

Used in switchboards for battery commons, ground strips, and fuse terminals. Made of durable brass, with round head brass machine screws for mounting. The No. 3 and No. 5 types have countersunk holes for mounting with wood screws.

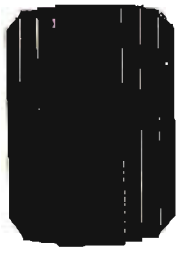




COUNTERSUNK MOUNTING HOLE TYPE BARS

Code No.	No. Term. Screws	Centers Spaced	DIMENSIONS OF BAR (INCHES) Length	Width	Thickness
		TYPE No. 3			
3	2	—	1 3/16	1/4	1/4
		TYPE No. 5			
5	5	1/2 in.	2 5/16	3/8	1/4
10	6	1/2 in.	3 1/16	3/8	1/4

For special types and sizes not shown, consult the Kellogg Sales Department.





BELLS, EXTENSION

No. 706

This attractive box has many uses, as an extension box for home or business applications, or as a main ringer box for pay stations. The exterior is a most beautifully designed black Bakelite creation, adaptable for either the home, a business office, or a telephone pay station; and like No. 605, is extremely convenient to service. It replaces No. 705.

An improved old favorite in modern dress, used in Common Battery and Local Battery applications. Black removable Bakelite cover; height 7¼ inches, width 5¼ inches, depth 2¼ inches. Ringer, Connecting Rack and Universal one-quarter, one-half, or one microfarad condensers mounted on metal plate. Available with low, medium or high impedance ringers. Furnished less condensers unless ordered by their code number.

STRAIGHT LINE TYPE RINGERS

Code No.	Ringer	Frequency (Cycles)	Type of Ringer
706-SA	123-SA	—	4000 ohm Str. Line
706-SB	123-SB	—	2500 ohm Str. Line
706-SC	123-SC	—	1000 ohm Str. Line

BIASED TYPE RINGERS

Code No.	Ringer	Frequency (Cycles)	Type of Ringer
706-BA	120-BA	—	4000 ohm
706-BB	120-BB	—	2500 ohm
706-BC	120-BC	—	1000 ohm

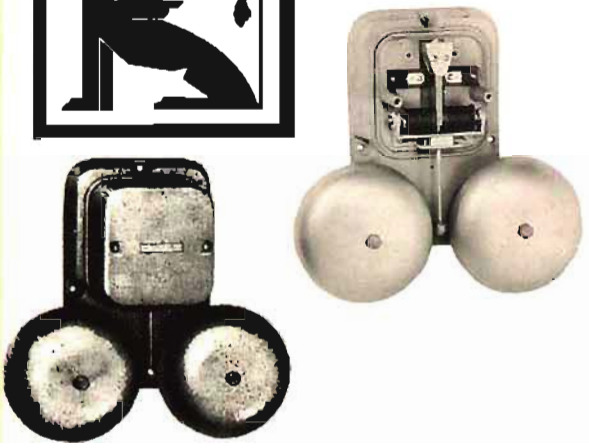
FREQUENCY SELECTIVE TYPE RINGERS

"Harmonic"			
706-HA-1	124-HA-1	33⅓	1000 ohm
706-HA-2	124-HA-2	50	1000 ohm
706-HA-3	124-HA-3	66⅔	1000 ohm
706-HA-4	124-HA-4	16⅔	2500 ohm
706-HA-5	124-HA-5	25	2500 ohm
"Synchromonic"			
706-HB-1	124-HB-1	30	2500 ohm
706-HB-2	124-HB-2	42	1000 ohm
706-HA-3	124-HB-3	54	1000 ohm
706-HB-4	124-HB-4	66	1000 ohm
706-HB-5	124-HB-5	16	2500 ohm
"Decimonic"			
706-HC-1	124-HC-1	20	2500 ohm
706-HC-2	124-HC-2	60	1000 ohm
706-HC-3	124-HC-3	30	2500 ohm
706-HC-4	124-HC-4	40	1000 ohm
706-HC-5	124-HC-5	50	1000 ohm
"Harmonic"—High Impedance			
706-HHA-1	126-HHA-1	33⅓	4000 ohm
706-HHA-2	126-HHA-2	50	4000 ohm
706-HHA-3	126-HHA-3	66⅔	4000 ohm
706-HHA-4	126-HHA-4	16⅔	4000 ohm
706-HHA-5	126-HHA-5	25	4000 ohm
"Synchromonic"—High Impedance			
706-HHB-1	126-HHB-1	30	4000 ohm
706-HHB-2	126-HHB-2	42	4000 ohm
706-HHB-3	126-HHB-3	54	4000 ohm
706-HHB-4	126-HHB-4	66	4000 ohm
706-HHB-5	126-HHB-5	50	4000 ohm
"Decimonic"—High Impedance			
706-HHC-1	126-HHC-1	20	4000 ohm
706-HHC-2	126-HHC-2	60	4000 ohm
706-HHC-3	126-HHC-3	30	4000 ohm
706-HHC-4	126-HHC-4	40	4000 ohm
706-HHC-5	126-HHC-5	50	4000 ohm

BELLS AND BUZZERS, NIGHT ALARM

Specially developed for night alarm use and special applications. Buzzers are 3 inches in diameter, 1¼ inches high. Bells have the same dimensions, with a 1¾ inch gong mounted on top, making a 4¾ inch overall length. Both will operate on either ac or dc with separate positions on the terminal strips market for proper connection.

Code No.	Description	Coil Resist. (Ohms)	Voltage
1-B	Bell	300	24-v., ac or dc
1-C	Bell	500	48-v., ac or dc
10-B	Buzzer	300	24-v., ac or dc
10-C	Buzzer	500	48-v., ac or dc



WEATHERPROOF LOUD-RINGING TYPE BELLS

These Kellogg bells command attention indoors or out, regardless of intruding noises. Ideal for use in noisy factories, foundries, nail mills, or forge shops. Gets results when used outdoors for taxi stands, coal or lumber yards, loading docks, heavy construction sites, police or fire alarms—wherever a loud-ringing bell to withstand the most rigorous conditions is needed. They are completely weatherproof and operate under every adverse climatic condition.

Designed for use with either common battery or magneto operation. Bells are housed in a heavy cast iron base with removal cast iron cover. Asphalt base under aluminum paint finish makes it corrosion-proof. 6-inch gongs; either straight line or harmonic ringers furnished. Over-all dimensions: 13 inches wide, 12½ inches high, 4½ inches deep.

STRAIGHT LINE TYPE

Code No.	Ringer	Condenser	Type Ringer
65-SA	107-A	See NOTE	1000 ohm
65-SD	107-D	See NOTE	1600 ohm
65-SG	107-G	See NOTE	2500 ohm
	BIASED TYPE		
65-BA	107-A	See NOTE	1000 ohm w/ Biasing Spring Attachment

NOTE: A condenser is furnished only if specified. For 1 mfd. specify No. 12 condenser. For 2 mfd. specify No. 124 condenser. For other extension bells, see Boxes, Desk Set.

FREQUENCY SELECTIVE TYPE

Code No.	Ringer	Ringer Freq. (Cycles)	Condenser	Type
65-HA-1	105-A-1	33⅓	No. 12	Harmonic
65-HA-2	105-A-2	50	No. 12	Harmonic
65-HA-3	105-A-3	66⅔	No. 12	Harmonic
65-HA-4	105-A-4	16⅔	No. 12	Harmonic
65-HA-5	105-A-5	25	No. 12	Harmonic
65-HB-1	106-A-1	30	No. 12	Synchromonic
65-HB-2	106-A-2	42	No. 12	Synchromonic
65-HB-3	106-A-3	54	No. 12	Synchromonic
65-HB-4	106-A-4	66	No. 12	Synchromonic
65-HB-5	106-A-5	16	No. 12	Synchromonic
65-HC-1	119-A-1	20	No. 12	Decimonic
65-HC-2	119-A-2	60	No. 12	Decimonic
65-HC-3	119-A-3	30	No. 12	Decimonic
65-HC-4	119-A-4	40	No. 12	Decimonic
65-HC-5	119-A-5	50	No. 12	Decimonic

BINDING POSTS

Extension Bell Type

No. 77

Made of cadmium plated soft steel, with terminal end tinned for soldering. Over-all dimensions 1¼ by 7/16 inches. Used in No. 706 extension bells with No. 6-32 round head machine screws.

Telephone Type

No. 11

Nickel plated brass with end tinned for soldering. No. 6 screw for spade terminals; No. 5 by ½ inch screw for wood mounting. Base size 5/16 by 1 inch.



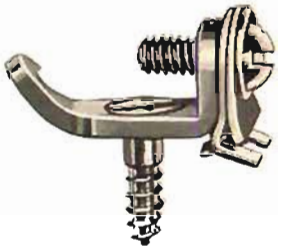
No. 59

Made same as No. 11, except connection is at right angles to base. Wood mounting screw No. 6 by ½ inch used. Size 5/16 by ¾ inch.



No. 63

Same as No. 59. Has a clip to take either spike or spade tips.



No 76

Same as No. 11, but with a special clip to take spike, pin or spade tips. A component in Nos. 12, 13, 14 connecting racks.



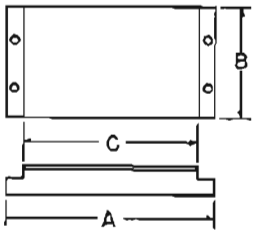


FIGURE "A"

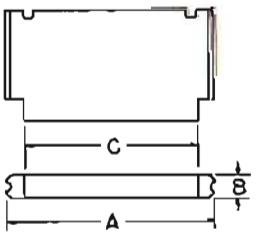


FIGURE "B"

BLANKS, JACK

Jack blanks are used to fill out the unequipped spaces on a switchboard face to improve its appearance. Listed below are some of the more popular blanks. For other available types, contact the Kellogg Sales Department.

DIMENSIONS (Inches)

Code No.	A	B	C	Figure
4-B	8¼	⅜	7-21/32	A
4-F	8¼	½	7-21/32	A
7-B	10¾	15/16	10¼	B
7-H	10⅜	1½	10¼	B
7-P	10¾	2⅜	10¼	B
7-R	10¾	4-11/16	10¼	B
7-W	10¾	1⅞	10¼	B
7-X	10¾	2	10¼	B
9-D	7-29/32	1¾	7-21/32	B
9-E*	7-29/32	4⅛	7-21/32	B
9-F	7-20/32	4⅛	7-21/32	B

*No. 9-E is made of wood with an ebonized face. All others are made of wood with a Bakelite face, dull rubbed to match the switchboard face.

BOXES, DESK SET

A heavy drawn steel cover, finished in attractive, durable black enamel, encases the Kellogg Desk Set Box if a common battery is used. A wood cover in black enamel finish is used to encase the equipment when used with a local battery or for special uses. It's extremely convenient to service; universal type terminals are used. Every part is accessible and replaceable using only a screwdriver.



Common Battery Two-Conductor Type

No. 605

Used as an extension bell or with 2-conductor telephones. If induction coil is desired, specify No. 99-A coil with your order. Gongs are 2½ inches.

Code No.	Ringer	2-Coil Resistance (ohms)	Frequency (cycles)	Condenser	Series Type Ringer
F-605-LR	....	...	...	177	No Ringer
F-605-BA	79-A	1000	...		Biased
PARTY-LINE RINGERS. ADJUSTABLE GONG POSTS & ARMATURE					
F-605-HA-1	72-A-1 Party	500	33⅓	177	Harmonic
F-605-HA-2	72-A-2 "	500	50	177	"
F-605-HA-3	72-A-3 "	500	66⅔	177	"
F-605-HA-4	72-A-4 "	2500	16⅓	177	"
F-605-HA-5	72-A-5 "	2500	25	177	"
F-605-HB-1	73-A-1 "	1000	30	177	Synchromonic
F-605-HB-2	73-A-2 "	1000	42	177	"
F-605-HB-3	73-A-3 "	1000	54	177	"
F-605-HB-4	73-A-4 "	1000	66	177	"
F-605-HB-5	73-A-5 "	2500	16	177	"
F-605-HC-1	74-A-1 "	2500	20	177	Decimonic
F-605-HC-2	74-A-2 "	1000	60	177	"
F-605-HC-3	74-A-3 "	1000	30	177	"
F-605-HC-4	74-A-4 "	1000	40	177	"
F-605-HC-5	74-A-5 "	1000	50	177	"

For other Desk Set Boxes, consult Kellogg Sales Department for estimate.



BOXES, GENERATOR

If you need items not shown in this section, please consult the Kellogg Sales Department for estimates without obligation.

A beautiful black-finished hardwood box. For Nos. 1040, 1041, 1050, 1140, 1141, and 1150 Magneto Masterphones.

Code No.	Generator
1203	15 (3-bar)
1205	53 (5-bar)
1206	75 (6-bar)

BOXES, KEY

For Switching Telephones



The most flexible, handy way to control more than one incoming call with one telephone!

These attractive, compact, streamlined key boxes are used for switching one telephone from one incoming line to the second or third. Made of black molded Bakelite, they clip to a steel back plate fastened to a wall or desk with two screws.

The entire assembly — standard Kellogg No. 1000 type key, connecting racks and wiring — is mounted on this back plate. The connecting racks provide extra terminals to terminate bell, buzzer, or other circuits independent of the switching key.

The line wires enter the box through the bottom. All boxes are mountable in any position.

The key boxes are 5½ inches high, 3⅝ inches wide, and 1½ inches deep.

No. 12 Key Box

For switching a telephone to either of two incoming lines. Key locks in two positions.

No. 13 Key Box

Built like No. 12, but switches a telephone to any one of three lines. Can be used with two trunks and separate "intercom" circuit. Key locks in all three positions.

No. 24 Key Box with Hold Key

Kellogg's most unusual and useful key box!

Used to switch a telephone between two incoming trunk lines and hold one while using the other circuit for "intercom". It is the regular No. 13 Kellogg key box with a No. 2-B choke coil to perform the useful holding function.

The key is a three-position unit. In normal position, it answers Line 1. Turned in another direction, it switches the telephone to Line 2, holds Line 1. Angled in the opposite direction, it switches the telephone to Line 2 for answering purposes.

BOXES, KEY—FOR KEY-BX SYSTEMS

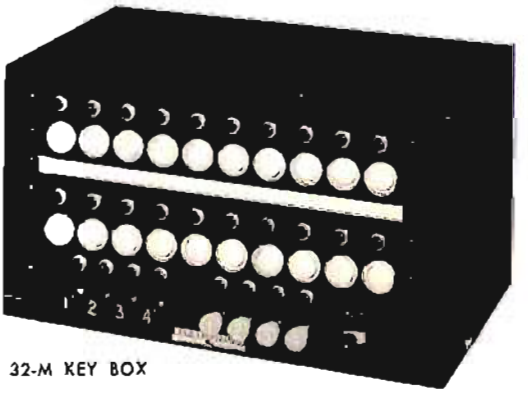
(See Wiring Plan Section)



18-M KEY BOX



19-M KEY BOX



32-M KEY BOX

KELLOGG Key-BX Key Box, the Heart of the Key-BX System

Facts, figures, decisions, flow faster with the Kellogg Key-BX systems; the economical way to speed up business transactions. Any person on the system can answer or transfer incoming calls, or obtain needed information instantly from another staff member.

Key-BX — A Key Box for Each Station . . . Speedier Communications!

Accurate, speedy, reliable telephone service . . . a better means to speedier action through *more* efficient improved telephone service. Mandatory in today's aggressive, competitive market. Kellogg Key-Box provides this specialized telephone system to handle efficiently all incoming, outgoing and "inter-com" calls . . . alone!

Operating Ease

Every call, indicated by a white numeral on its proper trunk key, is identified by a flashing lamp until the call is answered, then remains lighted while the line is in use. Inter-office calls are similarly handled. Each line of the "inter-com" section has a lamp that remains lighted while used. Push button keys transfer calls from one station to another, arrange conference calls, or secure information while holding an incoming trunk call.

Each Key Box has a "hold key" to hold a call while securing wanted information or transferring to another station. Lights indicate incoming calls or trunk lines in use, light *all* Key Boxes in the system; avoid confusion, or interruption. . . . The Key Boxes come in two basic types with variations in wiring arrangement. For instance, the 18-M and 19-M Key-BX key boxes have two four-party keys, a No. 1000 type cam key, and either 10 or 20 push button keys for signaling purposes. Housed in a strong framework with a wood base and metal cover, finished in black wrinkled enamel, these key boxes are a worthy addition to any office, enhancing the decor, improving efficiency . . . Two basic sizes of this key box are the standard 10 lines with 20 lines available, with four different key boxes optional, wired for four different combinations of trunks, intercommunicating lines, and total stations. . . .

Designed for long life under heavy use, the Key BX key box has service-proved parts in its construction. The four party keys used for circuits switching are the same keys as in the famous Kellogg switchboards. They have proved their strength, durability and dependability over many years of rugged service.

No. 18-M Key Box

For use with the 6-2-10 Key-Box system. Wired for 6 trunks to a common battery manual or dial exchange, 2 intercommunicating circuits, and 10 stations.

No. 19-M Key Box

Used with the 6-2-20 Key-BX system. Wired for 6 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 20 stations.

No. 20-M Key Box

Designed for use with the 3-1-10 Key-BX system. Wired for 3 trunks to a common battery manual or dial exchange, 1 intercommunication circuit, 10 stations.

No. 22-M Key Box

Developed for use with the 2-2-10 Key-BX system. This box is wired for 2 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 10 stations.

No. 25-M Key Box

For use with the 6-2-10 Key-BX system. Wired for 6 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 10 stations, 10 "busy" lamps, a relay and condenser.

No. 32-M Key Box

A new item, created for use with the 4-4-20 Key-BX system. It is wired for 4 trunks to a common battery manual or dial exchange, 4 intercommunication circuits, 20 stations, 20 "busy" lamps.



BRAID AND LEAD COVERED CABLES

Kellogg's own switchboard cable is manufactured from the best grades of selected raw materials by specially-designed machinery. It is furnished in several grades and sizes, each specifically developed as the best type for its own job.

The standard cable conductors consist of Tinned Copper, insulated with two (2) reverse servings of Cellulose Acetate Rayon and one (1) over-all serving of cotton in standard color codes. (See Color Chart)

Cables with Tinned Enamel conductors are available and may be supplied when so indicated.

The individual conductors are treated with four (4) coats of Flame and Moisture Resistance Lacquer. The bunched conductors are twisted prior to the application of six (6) servings of insulated paper. The outer covering consists of a close braid of cotton saturated with a grey flameproof paint. The over-all covering of all types of cable is listed with other descriptive matter in the charts which appear below.

Immediately below the cable charts appear the Cable Color Scheme Charts. A standard code is used with every Kellogg cable to identify each pair of conductors. Each cable listed in the charts includes a color code for that cable. By then referring to the Color Scheme Charts, its individual color code can be determined.

Short lengths of cable will be shipped in boxes. Longer lengths will be shipped on reels, which will be charged and billed to the account. Full credit will be allowed when they are returned in good condition, prepaid to the Kellogg factory.



Round Type — No. 22 A. W. G.

It's Tropicalized! Fungus, Moisture, Flame-Proof!

Gray flameproof cable paint over outer braid. Wire insulation 2-cellulose acetate yarn and 1-cotton wrap.

Code No.	Conductor Finish	Number Twisted Pairs	Spare Pairs	Singles	Spare Singles	Diameter Inches	Color Scheme
244	Tinned Lacquer	5	1	..	..	..	E-2
114-AXT	Tinned Lacquer	10	1	..	..	25/64	A
137-AXT	Tinned Lacquer	10	1	10	1	29/64	E
239	Tinned Lacquer	15	1	..	..	..	C
107-AXT	Tinned Lacquer	20	1	..	..	31/64	D
242	Tinned Lacquer	20	1	20	1	35/64	K
245	Tinned Lacquer	25	1	25	1	..	F-4
241	Tinned Lacquer	40	1	..	..	5/8	J
185	Tinned Lacquer	50	1	..	..	..	L
197	Tinned Lacquer	100	2	..	..	15/16	V

Round Type — No. 19 A. W. G.

Gray flameproof cable paint over outer braid. Wire insulation 2-cellulose acetate yarn and 1-cotton wrap.

Code No.	Conductor Finish	No. of Twisted Pairs	Spare Pairs	Diameter Inches	Scheme Color
237	Tinned Lacquer	10	1	15/32	A

BRAID COVERED SWITCHBOARD CABLE
Round Type — No. 22 A. W. G.

Gray flameproof cable paint over outer wrap. Wire insulation 2-Cellulose acetate yarn and 1-cotton wrap.

Code No.	Conductor Finish	Number Twisted Pairs	Spare Pairs	Singles	Spare Singles	Diameter Inches	Color Scheme	Remarks
199	Tinned Lacquer	25	1	25	1	19/32	F-4	
216	Tinned Lacquer	5	1	..	..	5/16	E-2	For Relaymatic & Misc. Mult.
210	Tinned Lacquer	7	..	..	..	..	W	
200	Tinned Lacquer	10	1	..	..	23/64	A	
208	Tinned Lacquer	10	1	10	1	13/22	E	
207	Tinned Lacquer	10	2	5	1	..	D-1	
209	Tinned Lacquer	15	1	15	1	..	D-4	
201	Tinned Lacquer	20	1	..	..	29/64	D	
215	Tinned Lacquer	20	1	10	1	15/32	H	
211	Tinned Lacquer	20	1	20	1	35/64	K	
202	Tinned Lacquer	25	1	..	..	..	F	
219	Tinned Lacquer	25	1	25	1	19/32	F-4	
214	Tinned Lacquer	30	1	..	..	35/64	K-2	For Magnetic Switchboards
203	Tinned Lacquer	40	1	..	..	5/8	J	
205	Tinned Lacquer	50	1	..	..	..	L	
206	Tinned Lacquer	100	2	..	..	..	V	
217	Tinned Lacquer	10 Trip	1 Trip	..	..	..	J-2	11 Triples
238	Tinned Lacquer	15	1	..	..	..	C	
240	Tinned Lacquer	5	1	5	1	15/32	F-6	
247	Tinned Lacquer	75	2	..	..	..	O-3	
246	Tinned Lacquer	100 Trip	4 Trip	..	..	1-1/32	F-9	104 Triples

Round Type — No. 24 A. W. G.

Wire insulation 2-cellulose acetate yarn and 1-cotton wrap. Gray flameproof cable paint over outer braid.

Code No.	Conductor Finish	Number Twisted Triples	Spare Triples	Diameter Inches	Color Scheme
246	Tinned Lacquer	100	4	1-1/32	O-4

Round Type — No. 22 A. W. G. Quadded Type

Gray flameproof cable paint over outer braid. 2-cellulose acetate yarn and 1-cotton wrap.

Code No.	Conductor Finish	Number of Quads	Diameter	Color Scheme
220	Tinned Lacquer	7	..	D-3
221	Tinned Lacquer	13	..	E-3
222	Tinned Lacquer	3	..	F-3

Flat Type — No. 22 A. W. G.

Gray flameproof cable paint over outer wrap. Wire insulation 2-cellulose acetate yarn and 1-cotton wrap.

Code No.	Conductor Finish	Number Twisted Pairs	Spare Pairs	Singles	Spare Singles	Diameter Inches	Color Scheme
204	Tinned Lacquer	40	1	..	..	$\frac{15}{32} \times \frac{13}{16}$	J See Note "A"
212	Tinned Lacquer	20	1	20	1	....	K See Note "B"

Note "A"—For line lamp mult. using 3/8" jacks. Also used with 7/16" jacks, Type "8" cable pressboard core.
Note "B"—For line lamp mult. using 3/8" jacks. Also used with 7/16" jacks, Type "88" cable pressboard core.

LEAD COVERED SWITCHBOARD CABLE

Round Type — No. 22 A. W. G.

Tinned lacquer copper wire conductors. This cable is constructed the same as the braid covered switchboard cable, except a lead sheath instead of a painted cotton braid covers the paper wrapping.

Code No.	Number Twisted Pairs	Spare Pairs	Diameter Inches	Color Scheme	Remarks
224	12	1		B	Lead Sheath 3/64"
225	15	1		C	Lead Sheath 3/64"
226	20	1		D	Lead Sheath 3/64"
227	25	1		F	Lead Sheath 3/64"
228	50	1		L	Lead Sheath 1/16"
229	100	2		V	Lead Sheath 1/16"

POWER CABLE, NO OVERALL BRAID

Ringing Circuits to Ringing Keys in Switchboard

For carrying ringing circuits through key cable. Made of No. 22 A. W. G. tinned lacquered conductors. Conductor insulation is two cellulose acetate rayon and one cotton wrap. Cable is made up of single conductors twisted into a cable. No overall braid on cable.

Code No.	Number of Singles	Diameter Inches	Color Scheme
234	5	7/64	C-2
235	9	5/32	B-2
236	6	9/64	B-3

Ringing Equipment to Ringing Keys in Switchboard

Designed for carrying power circuits from ringing equipment to key cable. Made of No. 20 A. W. G. tinned lacquer conductors. Conductor insulation is two cellulose acetate rayon and one cotton wrap followed by cotton braid. Cable made up of single conductors twisted into a cable. No overall braid on cable.

Code No.	Number of Singles	Diameter Inches	Color Scheme
230	5	13/64	C-2
231	7	7/32	M-2
232	3	11/64	B-4

POWER CABLES, LEAD COVERED

Ringing Equipment for Switchboards

Round type cable for leads from ringing equipment to switchboard. Made of No. 18 A. W. G. tinned copper wire conductors. Conductor insulation is rubber covering and cotton braid. Cable made up of single conductors twisted into a cable, paper taped and with lead sheathing covering. This cable is the same as No. 105, except has a lead sheath.

Code No.	Number of Singles	Diameter Inches	Color Scheme	Remarks
105-L	7	19/32	F-8	Lead and Gray Vinyl Sheath (3/64")

Ringing Equipment to Switchboard

For leads from ringing equipment to switchboard with filler cord. Made of No. 18 A. W. G. tinned lacquer wire conductors. Conductor insulation is rubber covering and cotton braid. Cable made up of single conductors twisted into a cable.

Code No.	Number of Singles	Diameter Inches	Color Scheme
59	5	27/64	Y
66	9	35/64	F-7
105	7	15/32	F-8

POWER CABLES, BRAID COVERED

For Generator Leads

No. 18 A. W. G.

Lacquered conductors. Wire insulation 2-cellulose acetate yarn and 1-cotton wrap. Gray flameproof cable paint over outer braid.

Code No.	No. of Twisted Pairs	No. of Singles	Diameter Inches	Color Scheme
248	5	..	..	O-4

CABLE COLOR SCHEME CHART NO. 1
CONSTRUCTION FOR SWITCHBOARD AND POWER CABLES

The regular numbered pairs and spares are twisted helically around the regular singles and spare single that form the core. The regular pairs are laid up with Pair #1 (White paired with Blue in the outside layer), and the other pairs listed in the Color Scheme specified, follow in sequence.

The highest numbered pair will appear in the center of the core of each cable. The spare pairs follow in numerical sequence . . . the last Spare Pair will have the highest number.

This chart shows each cable described and includes its own Color Scheme, which is detailed in Chart No. 2 following this Chart.

CABLE CODE NUMBERS — SWITCHBOARD CABLES					MISCELLANEOUS POWER CABLES		TWISTED PAIRS	TWISTED SPARE PAIRS OR TRIPLES	SINGLES	SPARE SINGLES	CONDUCTORS AWG.	COLOR SCHEMES (See Chart No. 2)	REMARKS
FLAT (BRAIDED)	ROUND (BRAIDED)		ROUND (Lead Covered)	ROUND (QUADDED)									
Lacq'd Tinned	Lacq'd Tinned	Tropl. Tinned Enam.	Lacq'd Tinned	Lacq'd Tinned	Lead Covered Tinned	Lacq'd Tinned							
	216						5	1			22	E #2	
		244					5	1			22	E #2	
				222			6	..			22	F #3	3-QUADS.
	210						7	..			22	W	
	200						10	1			22	A	
		114-AXT					10	1			22	A	TROPICALIZED (LAC.)
	237						10	1			19	A	
			224				12	1			22	B	
				220			14	..			22	D #3	7-QUADS.
	238						15	1			22	C	
		239					15	1			22	C	TROPICALIZED (LAC.)
			225				15	1			22	C	
	201		226				20	1			22	D	
		107-AXT					20	1			22	D	TROPICALIZED (LAC.)
	202		227				25	1			22	F	
				221			26	..			22	E #3	13-QUADS.
	214						30	1			22	K #2	
204	203						40	1			22	J	
		241					40	1			22	J	TROPICALIZED (LAC.)
	205		228				50	1			22	L	
		185					50	1			22	L	TROPICALIZED (LAC.)
	206		229				100	2			22	V	
		197					100	2			22	V	TROPICALIZED (LAC.)
	240						5	1	5	1	22	F #6	
	207						10	2	5	1	22	D #1	
	208						10	1	10	1	22	E	
		137-AXT					10	1	10	1	22	E	TROPICALIZED (LAC.)
	209						15	1	15	1	22	D #4	
	215						20	1	10	1	22	H	
212	211						20	1	20	1	22	K	
		242					20	1	20	1	22	K	TROPICALIZED (LAC.)
		245					25	1	25	1	22	F #4	TROPICALIZED (LAC.)
	219						25	1	25	1	22	F #4	
	217						10	1			22	J #2	
							Trips.	Trip.					
						232			3		20	B #4	
					59-L	59			5		18	Y	B.R.C. CONDS.
						234			5		22	C #2	
						230			5		20	C #2	
						236			6		22	B #3	
						231			7		20	M #2	
					105-L	105			7		18	F #8	B.R.C. CONDS.
						66			9		18	F #7	B.R.C. CONDS.
						235			9		22	B #2	
	246							4	300		24	F #9	
								Trips					
	247						75	2			22	O #3	
						248	5	..			18	O #4	

CABLE COLOR SCHEME CHART No. 2

These color schemes are for switchboard and power cable. All are based upon a standard color code. Therefore, this tabulation of a "Standard Twenty" and "Standard Singles" may be used as a reference for determining the color scheme of any Kellogg cable.

STANDARD COLOR SCHEME DESIGNATIONS

The following are the Standard Color Schemes. Use these colors for respective pairs and singles:

A, B, C, D, E, H, K, L, V, W, D #4, E #2, F #5, and K #2.

Cable specifying the above designations are less than 20 Pairs or 20 Singles. Use colors as shown for "Standard Twenty" Pairs or "Standard Twenty" Singles. To determine proper Spares, consult "Standard Spare Pairs" section immediately below the list of the Standard Twenty colors.

STANDARD TWENTY

1. Blue
2. Orange
3. Green
4. Black
5. Slate
6. Blue-White
7. Blue-Orange
8. Blue-Green
9. Blue-Black
10. Blue-Slate
11. Orange-White
12. Orange-Green
13. Orange-Black
14. Orange-Slate
15. Green-White
16. Green-Black
17. Green-Slate
18. Black-White
19. Black-Slate
20. Slate-White

STANDARD SINGLES

1. Blue-Red
2. Orange-Red
3. Green-Red
4. Black-Red
5. Slate-Red
6. Blue-White-Red
7. Blue-Orange-Red
8. Blue-Green-Red
9. Blue-Black-Red
10. Blue-Slate-Red
11. Orange-White-Red
12. Orange-Green-Red
13. Orange-Black-Red
14. Orange-Slate-Red
15. Green-White-Red
16. Green-Black-Red
17. Green-Slate-Red
18. Black-White-Red
19. Black-Slate-Red
20. Slate-White-Red

In the "Standard Twenty" group, the color of the mate wire to form a twisted pair shall be as follows:

First Group of Twenty	(White Mate)
Second " " "	(Red Mate)
Third " " "	(Red-White Mate)
Fourth " " "	(Brown Mate)
Fifth " " "	(Brown-White Mate)

STANDARD SPARE PAIRS

When the cable includes 1-spare pair, the color shall always be "Blue-Orange-White" with a "White" mate (21). When the cable includes 2-spare pairs, the second spare pair shall always be "Red" with a "White" (22). Other colors used are special (23).

Spare Pairs

21. Blue-Orange-White (White Mate)
22. Red (White Mate)
23. Blue-Orange-White (Red Mate)

Spare Singles

21. Orange-Black-White

Spare Triples

21. Red-White (White and Red Mates)
22. Black (White and Black-White Mates)
23. Red (Brown and Red-Brown Mates)
24. Red-White (Brown-White and Red-Brown-White Mates)

SPECIAL VARIATIONS

COLOR SCHEME "B-2"

One to 9 of "Standard Twenty" (tracer colors).

COLOR SCHEME "B-3"

One to 6 of "Standard Twenty".

COLOR SCHEME "B-4"

BROWN BRAID 1-2 and 5 of "Standard Twenty" (tracer colors).

COLOR SCHEME "C-2"

One to 5 of "Standard Twenty".

COLOR SCHEME "D-1"

One to 5 of "Standard Twenty" twisted with a white mate to form the first 5 pairs. 1 Spare Pair No. 21.

One to 5 of "Standard Twenty" twisted with a red mate to form the second 5 pairs. 1 Spare Pair No. 22.

One to 5 of "Standard Singles". One Spare Single No. 21.

COLOR SCHEME "D-3"

One to 7 of "Standard Twenty" with a white mate twisted with 1 to 7 of "Standard Singles" with a red mate to form 7 twisted quads.

COLOR SCHEME "E-3"

One to 13 of "Standard Twenty" with a white mate twisted with 1 to 13 of "Standard Singles" with a red mate to form 13 twisted quads.

COLOR SCHEME "F"

One to 20 of "Standard Twenty" twisted with a white mate to form the first 20 twisted pairs, 1 to 5 of "Standard Singles" with a white mate to form the next 5 twisted pairs. Total, 25 regular pairs. One Spare Pair No. 21.

COLOR SCHEME "F-3"

One to 3 of "Standard Twenty" with a white mate twisted with 1 to 3 of "Standard Singles" with a red mate to form 3 twisted quads.

COLOR SCHEME "F-4"

One to 20 of "Standard Twenty" twisted with a white mate to form the first 20 twisted pairs. One to 5 of "Standard Twenty" twisted with a red mate to form the next 5 twisted pairs. One Spare Pair No. 23, one to 20 of "Standard Singles". Next 5 singles are: 21 Blue-White, 22 Orange-White, 23 Green-White, 24 Black-White, 25 Slate-White, 26 Spare Single No. 21.

COLOR SCHEME "F-6"

One to 5 of "Standard Twenty" each twisted with a white mate to form 5 twisted pairs. One Spare Pair No. 21. One to 5 of "Standard Singles". One Spare Single No. 21.

COLOR SCHEME "F-7"

One to 9 of "Standard Twenty" (tracer colors).

COLOR SCHEME "F-8"

One to 7 of "Standard Twenty" (tracer colors).

COLOR SCHEME "F-9"

First Group — One to 20 of "Standard Twenty", one to 20 of "Standard Singles" with a white mate to form 20 twisted triples.

Second Group — Same as 1st Group, except mate to be red.

Third Group — Same as 1st Group, except mate to be red-white.

Fourth Group — Same as 1st Group, except mate to be brown.

Fifth Group — Same as 1st Group, except mate to be brown-white.

Spare Triples — Numbers 21, 22, 23, 24.

COLOR SCHEME "J"

One to 20 of "Standard Twenty" twisted with a white mate to form the first 20 twisted pairs, one to 20 of "Standard Singles" twisted with a red mate to form the second 20 pairs. Total 40 regular pairs. One Spare Pair No. 21.

COLOR SCHEME "J-2"

One to 10 of "Standard Twenty" twisted with a white mate and red mate to form 10 twisted triples. One Spare Triple No. 21.

COLOR SCHEME "M-2"

One to 7 of "Standard Twenty" (tracer colors).

COLOR SCHEME "O-2"

One to 12 of "Standard Twenty" (tracer colors).

COLOR SCHEME "O-3"

One to 75. Same as one to 75 of Color Scheme "V". Spares 21 and 22.

COLOR SCHEME "O-4"

One to 5 of "Standard Twenty".

COLOR SCHEME "Y"

One to 5 of "Standard Twenty" (tracer colors).

LAMP CAPS



Type No. 9

This nickel-plated lamp cap is used generally for pilot and signal work. Long lasting, efficient, it fits 19/32-inch holes; its shank is 7/16-inch long.

Code No.	Color	Lens	Description
9	White Opalescent	Diamond	
9-A	Clear Red Glass	Diamond	Back of lens ground
9-B	Clear Green Glass	Diamond	Back of lens ground
9-D	Clear Amber Glass	Diamond	Back of lens ground

Types Nos. 74 and 75

These nickel-plated lamp caps fit Dean pilot jacks and are used in signal work in switchboards. They fit 13/16-inch holes. The shanks are 7/32-inch long.



Code No.	Color	Lens	Description
74	White Opalescent	Diamond	
74-D	Clear Amber Glass	Diamond	Back of lens ground
75	Red Opalescent	Diamond	Back of lens ground





Type No. 79

Made of brass, these lamps fit 5/16-inch holes. Their shanks are ½-inch long. Used with Type Nos. 36, 41, and 60 lamp jacks.

Code No.	Marking	Color	Lens	Description
79	A	White Opalescent	Convex	
79-A	A	Clear Red Glass	Convex	Back of lens ground
79-E	C	White Opalescent	Convex	
79-F	H	White Opalescent	Convex	Double Bar Mark
79-G	A	Clear Green Glass	Convex	Back of lens ground
79-K	E	Clear Green Glass	Convex	Marked with white enamel, back of lens ground
79-L	D	White Opalescent	Convex	Marked with black enamel



Type No. 154

The most popular switchboard lamp types available . . . because they shine brighter and last longer than considered possible. This type has lacquered brass shanks which fit 11/32-inch holes and are 9/32-inch long. It is used with Nos. 25, 31, 32, 33, 34, 37, 43, and 44 lamp jacks. When ordering No. 54-C caps, be sure to specify numbering desired.

Code No.	Marking	Color	Lens	Description
154	A	White Opalescent	Convex	Groove for extractor
154-A	A	Clear Red Glass	Convex	Back of lens ground
154-B	A	Clear Green Glass	Convex	Back of lens ground
154-C	B	Clear Glass	Semi. . . . . Convex	Arranged for numbering
154-D	C	White Opalescent	Convex	Marked with black enamel
154-G	A	White Opalescent	Flat	
154-H	D	White Opalescent	Convex	Marked with black enamel
154-J	E	White Opalescent	Convex	Marked with black enamel
154-K	F	White Opalescent	Convex	Marked with black enamel
154-L	G	White Opalescent	Convex	Marked with black enamel
154-M	H	White Opalescent	Convex	Marked with black enamel
154-N	A	Blue Opalescent	Convex	
154-P	A	Clear Red Glass	Convex	Back of lens ground. Front sandblasted, No. 154 adapter disc (shield) over part of lens to reduce light
154-Q	A	Clear Green Glass	Convex	Same as 154-P.
154-U	A	Clear Red Glass	Semi-Convex	Back of lens ground
154-V	A	Clear Green Glass	Semi-Convex	Back of lens ground
154-W	A	Clear Green Glass	Convex	Back of lens ground . . . front sandblasted
154-X	A	Clear Amber Glass	Semi-Convex	Back of lens ground
154-Y	A	White Opalescent	Semi-Convex	Back of lens ground

COILS, NO. 2 HEAT



These coils are specially designed for use with the No. 16 Kellogg arrester between the incoming lines and the telephone mechanism, serving as a lightning and stray power arrester. These coils will operate on .5 ampere in less than 210 seconds and will carry .35 ampere for 10 minutes at 68°F. Resistance varies between 3.8 and 4 ohms.

COILS, INDUCTION

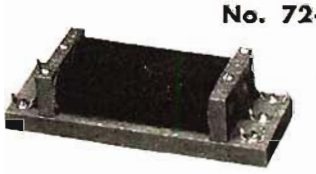
A most necessary component of any telephone system, Kellogg induction coils are made in two major groups, switchboard and telephone coils. Each group is then divided into "anti-side tone" and "booster" types, as listed in the following groupings. In the telephone section, the application of each coil is included for local or common battery operation.

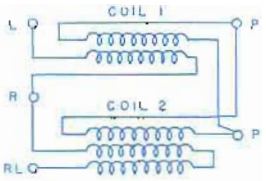
Since 1897, Kellogg has earned its fame as the leader in careful craftmanship. Only the finest materials are used throughout in the manufacture of Kellogg induction coils, as is true with every article that Kellogg makes. The coil windings are made of enameled wire, separated when required with an interleaving layer of paper. The coil is finished with a cotton serving and impregnated with varnish under the vacuum method.

This impregnation protects the coils against moisture and corrosion and, even in tropical areas, protects it against the ravages of fungus and other tropical damage.

SWITCHBOARD TYPE
Anti-Side Tone Type

No. 72-A

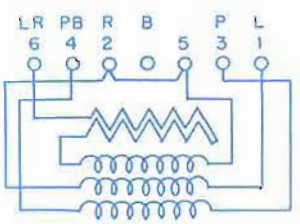




This anti-side tone coil is made up of two separate coils with the primary of the two coils connected in parallel. Wound inductive and spliced on the second winding to make a total resistance of 430 ohms.

Code No.	Winding Resistance (ohms) Primary	Secondary	Dimensions (inches)
72-A	(1) 12.6 (2) 12.6	(1) 74.6 (2) 430	6 x 2⅛





No. 110-A

Designed for local battery operation in magneto switchboards. Anti-side tone type. Replaces Coils Nos. 28-C, 100-A, and 108-A for this purpose. Has four windings; third and fourth are connected in series. The first three windings are concentric, the fourth is non-inductive. The primary is insulated from the secondary.

Code No.	Winding Resistance (ohms) 1	2	3	4	Dimensions (inches)
110-A	1.38	10.30	8.30	600	4¼ x 1⅜

SWITCHBOARD TYPE
Booster Type

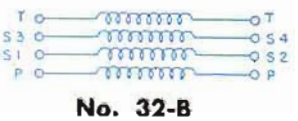
No. 7-A



This induction coil is a booster type for use in common battery switchboards. Its third or tertiary winding is designed for monitoring with an operator's circuit having a relay-type busy test. It is *not* anti-side tone.

Code No.	Winding Resistance (ohms) Primary	Secondary	Tertiary	Dimensions (inches)
7-A	62	84	463	6 x 2



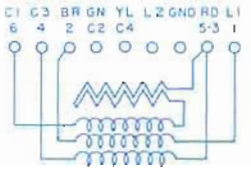


No. 32-B

Designed for use with an operator's circuit having a retardation type of busy test. Booster type, it has four windings. The two secondaries are wound in parallel to form a split secondary. Enameled and silk insulation.

Code No.	Winding Resistance (ohms) Primary	Secondary	Tertiary	Dimensions (inches)
32-B	30	(1) 141 (2) 141	474	6 x 2





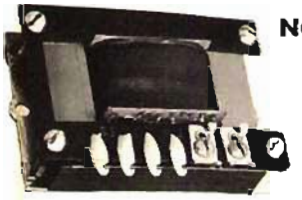
NO. 103-A

TELEPHONE TYPE Anti-Side Tone Type

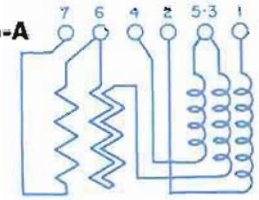
Anti-side tone type, four winding coils with 9-point connecting rack for easier connections. Used in telephones and desk set boxes wired with the Kellogg Triad circuit.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
103-A	9	6	—	1st	See Remarks	4¼ x 1⅜
		1	2	2nd	37.6	
		3	4	3rd	16.7	
		5	—	4th	See Remarks	Non-Inductive

REMARKS—First winding spliced to fourth winding. Total resistance 108 to 120 ohms.



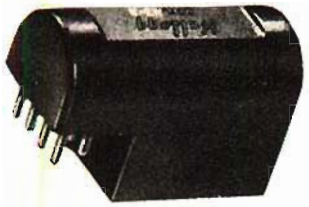
NO. 106-A

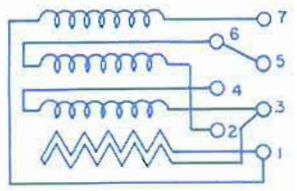


Anti-side tone type, five winding coils. Standard for common battery telephones and desk set boxes. Closed core. Greater side tone reduction by special series windings.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
106-A	6	1	2	1st	115 — 14	3 x 1⅞
		5	—	2nd	1207 — 15.5	
		3	4	3rd	12.5 — 15.5	
		—	6	4th	See Remarks	Non-Inductive
		6	7	5th	60 — 63	

REMARKS—2nd and 4th winding in series. Total resistance 136 to 140 ohms. Term. 5 and 6, 5th winding in series with winding 2 and 4. Total resistance 196 to 203 ohms.



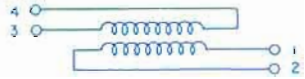


NO. 113-A

Specially designed coil for the 1000 series Kellogg Masterphone in handy plug-in type. For common battery signaling and talking.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
113-A	7	7	1	1st	14.25- 15.75	$2^{35}/_{64} \times 1^{1}/_{32}$
		2	6	2nd	15.01- 16.59	
		3	4	3rd	263 -283	
		1	3	4th	90 -110	

NO. 79-A

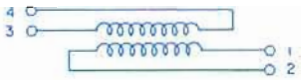


Used in the booster circuit in telephones and desk set boxes.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
79-A	4	3	4	1st (Primary)	33	4¼ x 1
				2nd (Secondary)	17.5	

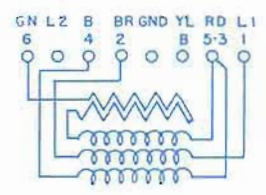
REMARKS—Each spool head equipped with 2 terminals.

NO. 99-A



This coil is similar in function to No. 79-A in that it is a two-winding, local battery induction coil. The difference is that it is equipped with a 7-point connecting rack. Used mainly for wall telephone and desk set boxes.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
99-A	7	2	1	1st (Primary)	25.4	4¼ x 1⅛
		3	4	2nd (Secondary)	7.8	



LOCAL BATTERY

TELEPHONE TYPE

Anti-Side Tone Type

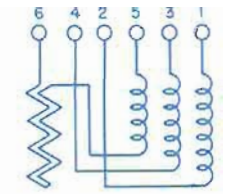
No. 105-A

A local battery induction coil for the Kellogg Triad anti-side tone circuit, equipped with an 8-point connecting rack for installation ease. Specifically designed for the Kellogg 4800 series wall telephones and the 5800 series magneto wall Masterphones.

Code No.	No. of Terms	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
105-A	8	3	3	1st	1.38	4¼ x 1⅜
		1	2	2nd	10.30	
		5	—	3rd	8.3	
		6	—	4th	600	

REMARKS—3rd and 4th windings connected in series. Total resistance Min. 600, Max. 615 ohms.

No. 111-A

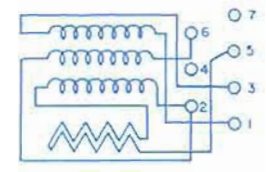


A four winding, closed core, local battery coil with separate primary and secondary circuits. Used in telephones with 4-conductor handsets.

Code No.	No. of Terms	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
111-A	6	1	2	1st	8.7	3 x 1⅞
		3	4	2nd	1.5	
		5	—	3rd	9.2	
		—	6	4th	—	

REMARKS—2nd and 3rd windings separate.

No. 114-A



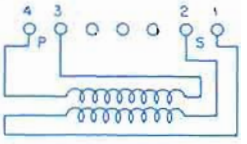
A different coil! Especially designed for the 1000 series Kellogg Masterphones, for local battery use—with a difference! Use it for local battery signaling or talking. Then use it for common battery signaling and local battery talking. It's a plug-in type . . . extremely easy to change. Looks the same as No. 113-A.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
114-A	7	1	3	1st	0.890 - 0.984	$2^{35}/_{64} \times 1^{1}/_{32}$
		6	2	2nd	8.71 - 9.63	
		2	4	3rd	See Remarks	
		—	5	4th	See Remarks	

REMARKS—4th winding GS spliced to 3rd winding. Total resistance 825 - 925 ohms.

Booster Type





No. 100-A

Here is a 2-winding induction coil and 7-point connecting rack specifically designed for simplified wiring to be used in line and cord terminals. It is a replacement for the old-style Kellogg No. 3800-M series magneto wall telephones.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
100-A	7	3	4	1st (Primary)	1.3	4¼ x 1⅜ x 1⅛
		2	1	2nd (Secondary)	11.1	



No. 108-A



This concentric wound coil replaces No. 28-C for telephone work. It is generally used with the F-2300 series desk set boxes and with Nos. F-2731, 3000, F-1983, and F-2921 telephones.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
108-A	4	P	S	1st (Primary)	1.3	3⅝ x 1
		S	S	2nd (Secondary)	11.1	

No. 108-EA

Exactly the same as No. 108-A, except this number is treated for Export.

No. F-108-A

Exactly the same as No. 108-A, except this number has No. 65 binding posts.

SPECIAL RAILWAY AND DISPATCHING TYPE





No. 66-A

A vibrating booster type. Combined interrupter and induction coil for railroad and telephone sets. Specially useful with Nos. F-2869 and 3002 telephones.

Code No.	No. of Terms.	Term. In	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
66-A	3	P	P	1st (Primary)	1.6	4½x2¼ (App.)
		S	S	2nd (Secondary)	22	





No. 97-A

When teamed with No. 98-A, it becomes a set to produce high impedence for railway dispatching. A booster type, it is especially useful with telephone F-2945.

Code No.	No. of Terms.	Term. In.	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
97-A	4	1	2	1st (Secondary)	240	4¼ x 1⅜ x 1⅜
		3	4	2nd (Primary)	15.5	





No. 98-A

Used in conjunction with No. 97-A to form high impedence for railway dispatching telephone F-2945. Also for desk set boxes. Booster type.

Code No.	No. of Terms.	Term. In.	No. Out	Windings	Resistance (ohms)	Overall Dimensions Without Terminals (inches)
98-A	4	1	2	1st (Primary)	0.3	3⅝ x 1
		3	4	2nd (Secondary)	12	

COILS, RELAY



Number 2000-Type Relay Coils are wound with enamel copper wire or enamel copper wire and nickel silver wire. The nickel silver windings are non-inductive unless otherwise specified, and are insulated with nyon.

The Number 2000-Type Relay Coils will fit the No. 2000, No. 1700, No. 1800, No. 3000 and No. 7100-type relays and the No. 1000-type mountings unless mountings are otherwise indicated in the relay section.

Complete coils are vacuum impregnated with varnish to make them resistant to moisture. The No. 2000-type coils are Single, Concentric, Tandem and Parallel wound as indicated.

The 4000-Type Relay Coils are manufactured in multiple (stick) windings, and sliced to individual windings. After assembly of spool leads, the coils are coalesced under specified temperature and pressure to form sealed moisture-proof coils.

Special-purpose coils with copper slugs on the armature end of the coil to provide a slow-operate relay, or with a copper sleeve over the core to provide a slow-release relay, are available, and listed under separate headings with the respective type of coil. Order by standard code numbers for each standard coil desired.

Special requirements or needs for unusual uses will be covered on application to the Sales Division of the Kellogg Switchboard and Supply Company.

In the listings below, relay coils are separated into four types —

Single Winding — its code numbers are prefixed by the letter "S".

Concentric Winding — its code numbers are prefixed by the letter "C".

Tandem Winding — its code numbers are prefixed by the letter "T".

Parallel Winding — its code numbers are prefixed by the letter "P".

Unless otherwise specified, nickel silver windings are non-inductively wound.

NO. 22-TYPE RELAY COILS
Concentric Wound Coils
¼-Inch Core
For General Use

Made of Formex wire. Coil is impregnated with synthetic varnish. First resistance value given below is for the inside winding terminals 1 and 2.

Code No.	Resistance (ohms)
C-GG	11 — 70
C-EP	100 — 12000
C-DF	875 — 200 GS
C-FN	1000 — 6800
C-DR	875 — 450 GS Rough Wound

⅜-Inch Core

FOR GENERAL USE

First resistance given below is for the inside winding terminals 1 and 2. Made of Formex wire. Coil is impregnated with synthetic varnish.

Code No.	Resistance (ohms)
C-GE	24 — 1000 GS Inductive
C-FC	65 — 20 GS
C-CE	150 — 20 GS
C-CC	150 — 750 GS
C-CJ	110 — 39
C-DJ*	215-500 GS Ind. — 63 GS
C-DU	300 — 110
C-DG†	300 — 1700
C-GA‡	300 — 1700
C-FW§	400 — 1000 GS
C-AW	500 — 20 GS
C-CR	500 — 200 GS
C-FR	500 — 2500 GS
C-AE	500 — 300 GS
C-DB	(%) 500-350 GS — 225 GS
C-AB	500 — 500 GS
C-B	500 — 1000 GS
C-BD	500 — 1500 GS

*150 orms in Mult. Rough Wound.
†Terminal No. 4 dead.
‡No. 4 Terminal dead. Inductive.
§Used as stepping relay in counting chain of Relaymatic switchboards. Stick Wound.

Code No.	Resistance (ohms)
C-FP	500 — 3000 GS
C-FA¶	750-250 — 500 GS
C-EA	775 — 250
C-EL†	800 — 3000
C-BE	1000 — 20 GS
C-EH	1000 — 40 GS
C-EQ	1000 — 100 GS
C-AA	1000 — 200 GS
C-FE	1000 — 310
C-AJ	1000 — 500 GS
C-P	1000 (525-475 GS) — 1000 GS
C-DP	1000 — 1000 GS
C-DS	1000 — 1500 GS
C-EY	850-1100-850 to 1000 GS
C-FQ	1300 — 2000 GS
C-FU	2000 — 500
C-GD	2000 — 500 GS
C-GL	1000 — 285 NS

¶Ind. outside wind. Term. 3-4. Total in series 750 ohms (wound Ind.).
†Terminal No. 4 dead.

FOR "SLOW RELEASE" RELAYS

These coils are concentric wound and are provided with a 1/16-inch copper sleeve over the ⅜-inch magnetic iron core for use with slow release relays. First resistance value given below is for the inside winding terminals 1 and 2. Windings are of Formex nickel silver wire.

Code No.	Resistance (ohms)
C-CG	143 - 775 GS Inductive
C-BM	500 - 200 GS
C-Z	500 - 500 GS
C-DX	500 - 1000 GS

⅛-Inch

Copper Sleeve

Code No.	Resistance (ohms)
C-FL	1000 - 200 GS Semi-Automatic Wound
C-FZ	1000 - 2000 GS Semi-Automatic Wound

¾-Inch

Solid Copper Armature Head

Code No.	Resistance (ohms)
C-CY	125 - 130

NO. 22-TYPE, SINGLE WOUND COILS

FOR GENERAL USE

¼-Inch Core

These coils are made of Formex wire and impregnated with synthetic varnish.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
S-HG*†	3.5	S-EP	3800
S-JG	35	S-EK	7250
S-HY*	100	S-FV‡	14500
S-ET	140	C-JC§	11.8
S-FA	1175	S-GR◊	143
S-GD	2000	S-JQ*	210

*Nickel Iron Core. †For screw adjustment relay.
§16 ohm copper winding in multiple with 45 ohm GS wire.
◊143 ohms in multiple using 200 ohm copper winding in multiple with 500 ohm GS wire.
‡Semi-Automatic.

⅜-Inch Core

All coils impregnated with synthetic varnish and are made up of Formex wire.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
S-D	10	S-DG	800
S-E	20	S-FG	800
S-F	30	S-FY	1000
S-EX	34	S-W	1000
S-G	40	S-BK	1300
S-H	50	S-JP	1300
S-J	65	S-X	1500
S-L	100	S-Y	2000
S-N	150	S-JO	2500
S-P	200	S-Z	3000
S-FP	200	S-BG	4000
S-GE*	250	S-BF	4500
S-R	300	S-GO	†(1) 350
			‡(2) 350 GS
S-U	390	S-DY	§(1) 550
			◊(2) 660 NS
S-V	500	S-GG	‖(1) 1000
			¶(2) 1000
		S-GX	!(1) 2000
			¶(2) 2000 NS

*Univ. Card, sleeve relay.
†Coils in multiple, effective resistance 205 ohms.
‡GS, Inductive.
§Coils in multiple, effective resistance 300 ohms.
¶Nickel Silver.
‖Coils in multiple, effective resistance 500 ohms.
!Coils in multiple, effective resistance, 1000 ohms.

FOR A.C. RELAYS

Code No.	Resistance (ohms)	
S-BZ	500	End of core tapped for No. 2017 relay.
S-BX	1000	End of core tapped for No. 2017 relay.
S-JD	2000	End of core tapped for No. 2103 type relay core (laminations).

FOR "SLOW RELEASE" RELAYS

Formex Wire

The coils listed in the left column and first half of the right have a ⅜-inch iron core with 1/16-inch thick copper sleeve. Over-all diameter is ½-inch, except S-JJ which has a ¼-inch core, and S-JE which has a ¼-inch core and ¾-inch copper head. The last two coils in the right column have a ⅜-inch diameter core with a ⅛-inch thick copper sleeve. Over-all diameter is ⅝-inch.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
1/16-Inch Copper Sleeve		1/16-Inch Copper Sleeve	
S-AJ	40	S-BH	4000
S-AK	100	S-JJ ¼-inch Core	55
S-AN	300	S-JE *¾" Cpr. Hd. ¼-inch Core ⅛" Cpr. Sleeve	97
S-BE	400		
S-AP	500	S-8M	500
S-AQ	1000	S-8U	1000

*Replaces C-FO Coil.

FOR "SLOW OPERATE" RELAYS

These coils, made of Formex wire and impregnated with synthetic varnish, have a ⅜-inch diameter core. Each has a ¾-inch solid copper slug on the armature head.

Code No.	Resistance (ohms)
S-FN	43
S-GA	800
S-FM	1000
S-DS	1300

FOR TRIP RELAYS

Formex wire over ⅜-inch core. For use with Nos. 2061, 2062, 2083, and 2098 trip relays only.

Code No.	Resistance (ohms)
S-GN	100
S-FS	500
S-FU	1000

FOR RINGING TONE RELAYS (WITH CONDENSER)

Formex wire, single wound over a ⅜-inch core.

Code No.	Resistance (ohms)	
S-GB	100-GS .20-.28-MF	Non-Inductive Resistance and a No. 35 condenser in series as a .20-.28 mfd. winding.
S-FC	540 .01-MF	Terminals 1 and 2 Resistance. Terminals 3 and 4 Condenser with .01 mfd. winding.
S-GT	10000-GS .01-MF	Terminals 1 and 2 Resistance. Terminals 3 and 4 Condenser. Non-Inductive in Series with .01 mfd.

RESISTANCE COILS

Single wound on standard relay coil spools. German silver wire insulated with enamel and one layer of silk. The coils are non-conductively wound on ⅜-inch cores.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
S-CW	20	S-CP	600
S-CE	100	S-CS†	750
S-GJ*	150	S-FQ	800
S-CT	200	S-CD	1000
S-CQ	250	S-CF‡	1100
S-CC	300	S-CJ	2000
S-CV	400	S-CH	10000
S-CB	500		

*Terms. 3 and 4 Dead. Non-Inductive.
†Replaces S-DA and S-EE Coil.
‡Replaces S-EJ Coil.

No. 22-TYPE, PARALLEL WOUND COILS

FOR GENERAL USE

Single Silk and Formex Wire

⅜-Inch Core

Code No.	Resistance (ohms)
P-J	50 - 50 Parallel Wound
P-C	100 - 100 Parallel Wound
P-L	2000 - 2000

*Each winding of this coil is made up of 1230 ohm copper winding connected in series with 770 ohms G.S., inductive, winding for 2000 ohm total.

¼-Inch Core

Code No.	Resistance (ohms)
P-P*	200 - 200

*This coil has a ¼" nickel iron core, parallel wound.

NO. 22 TYPE, TANDEM WOUND COILS

¼-Inch Core

FOR GENERAL USE

Wound in tandem on Formex wire. First resistance given below is for the terminal winding. The second is for the armature winding.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
T-BL	35 - 35	T-BY	125 - 125
T-BK	46 - 46	T-CU	250 - 250
T-CW	48 - 641	T-BX	490 - 48
T-CY*	100 - 100		

*Nickel Iron Core.

⅜-Inch Core

FOR GENERAL USE

Wound in tandem on Formex wire. First resistance listed is for the Inside or Terminal winding. The second is for the Outside or Armature winding. The Terminal winding connects to Terminals 1 and 2. The Armature winding connects to Terminals 3 and 4.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
T-AE	25 - 25	T-E	500 - 100
T- Z	75 - 75	T-H	500 - 250
T-C*	100 - 100	T-F	500 - 500
T-G	200 - 200	T-X	1000 - 500
T-K	250 - 250	T-Y	1000 - 1000
T-AY	300 - 100	T-GD	1500 - 1500

*Replaces T-AP coil. Stick wound.

FOR "SLOW RELEASE" RELAYS

These Formex wire coils are tandem wound on a ⅜-inch magnetic iron core with a 1/16-inch thick copper sleeve. Over-all diameter of sleeve is ½-inch. First resistance value given is for the Inside or Terminal winding; the second is for the Outside or Armature winding. Terminal windings connect with Terminals 1 and 2. Armature windings connect with Terminals 3 and 4.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
T-B	500 - 500	T-CG	1000 - 1000

RESISTANCE COILS

These coils are tandem wound on standard relay coil spools with German Silver wire insulated with enamel and one layer of silk. The coils are non-inductively wound on a ⅜-inch core. The first winding given is the Inside or Terminal winding; the second is the Outside or Armature winding. The Terminal winding connects with Terminals 1 and 2; the Armature winding connects with Terminals 3 and 4.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
T-CB	40 - 40	T-CE	750 - 750
T-BE	50 - 500	T-CX	1000 - 1000
T-AT	200 - 200	T-BU	1500 - 1500
T-CZ	300 - 300	T-DC	300 - 300
T-AF	400 - 400		

NO. 4000-TYPE RELAY COILS

Made of copper enamel wire and nickel silver wire, these coils are manufactured in multiple (stick) windings and sliced to individual windings. After assembly, the coils are acetone dipped and coalesced under specified temperature and pressure to form sealed, moisture-proof coils. These coils are single wound unless otherwise specified.

⅜-Inch Core
FOR GENERAL USE

Concentric wound coils. First resistance given is for the Inside or Terminal winding, and connects Terminals 1 and 2. The second is for the Outside or Armature winding which connects Terminals 3 and 4.

Code No.	Winding No.	Resistance (ohms)
C-9	1	10
	2	63

Single Wound Coils
Copper enamel wire, acetone dipped, ⅜-inch core.

Code No.	Resistance (ohms)	Code No.	Resistance (ohms)
S-5	315	S-21	225
S-6	485	S-25	3600
S-8	1000	S-33	82
S-9	1075	S-35	1235
S-10	2000	S-36	815
S-11	5340	S-45	1700
		S-50	10260

1/16-Inch Copper Sleeves

Code No.	Resistance (ohms)
S-26	334
S-27	540
S-38	1000

⅛-Inch Copper Sleeve

Code No.	Resistance (ohms)
S-12	975
S-34	540

¾-Inch Copper Slug

Code No.	Resistance (ohms)
S-22	225
S-30	2220

1-Inch Copper Slug

Code No.	Resistance (ohms)
S-51	2220
S-53	1080

HOLD COIL

Code No.	Resistance (ohms)
S-48	1250

HOLD COIL FOR X-BAR SWITCH

Code No.	Resistance (ohms)
S-39	1080

SELECT COIL

Code No.	Resistance (ohms)
S-17	170
S-18	315
S-19	485
S-20	660

Special Winding

Code No.	Winding No.		Wire Size
T-5*	1	225	35
	2	1555 NS	36
	(1)	225	35
	(2)	1555 NS	36

*Inside and Outside winding of each coil connected in series giving a total resistance of 1780 ohms. Wound inductive.

TANDEM WOUND

These coils, mounted on a ⅜-inch core, are tandem wound for the 400-Type Relay. They are made up of copper enameled wire and nickel silver wire Type "S", acetone dipped, then formed into sealed, moisture-proof coils. The first figure given below is the Inside or Terminal winding; the second is the Outside or Armature winding. The Terminal winding connects with Terminals 1 and 2; the Armature winding connects with Terminals 3 and 4.

Code No.	Winding No.	Resistance (ohms)
T-2	1	225
		225
T-3	1	1025
	2	1025
T-9	1	515
	2	515
T-11	1	2220
	2	2220
T-14	1	1310
	2	1310
T-17	1	2220
	2	515
T-21	1	830
	2	830

1/16-Inch Copper Sleeve

Code No.	Winding No.	Resistance (ohms)
T-27	1	1050
	2	475
T-48	1	1050
	2	1050

MULTIPLE WOUND COILS

Core Sizes
⅛-Inch x ⅜-Inch

Copper enameled wire and nickel silver wire, Type "S", are used to form these coils.

Coil No.	Coil	Term.	Resistance (ohms)
M-1	#1	1 - 3	725
	#2	2 - 4	725
M-2	#1	1 - 3	1250
	#2	2 - 4	1250
M-4	#1	1 - 3	725
	#2	2 - 4	1250
M-6	#1	1 - 3	210
	#2	2 - 4	210

COILS, REPEATING

Now you can get the kind of repeating coil you need! Kellogg's complete line of coils is divided into three major groups . . . cord circuit line, and miscellaneous. Each of these is sub-divided into . . . "talk and ring through" or "talk through only" types.

The "talk through only" type has a low impedance and passes only the high frequencies. The "talk and ring through" type has a high impedance and passes both low and high frequencies. All "line" type repeating coils are of the "talk and ring through" type.

If you should need a repeating coil not shown here, consult the Kellogg Sales Department staff. They are expert on solving unusual needs.



CORD CIRCUIT TYPE

NO. 20-A

A concentric-wound coil for "talk through only" circuits. Mounts on standard relay mountings.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
20-A	12.1	13.7	15.2	16.6

NO. 20-D

This unusual coil replaces No. 21-A Relaymatic composite circuits. The coils are wound, one in parallel, the other concentric. A "talk through only" circuit.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
20-D	13.3	13.3	15.5	17.1

NO. 120-D

Exactly the same winding and resistance as No. 20-D. Mounts on a 1¾-inch width mounting strip. "Talk through only" circuit.

NO. 19-A

This useful coil is a concentric-wound coil of the "ring and talk through" type. It mounts on a standard 1000-type repeating coil mounting.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
19-A	15.3	17.1	18.8	20.9

LINE TYPE

All line type repeating coils are of the "ring and talk through" type.

NO. 21-A

This line type coil has a phantom circuit type coil, but otherwise is made the same as No. 19-A. Consists of one parallel and one tandem winding. Same in action and appearance as No. 24-A coil without the base. This is a "ring and talk through" type.

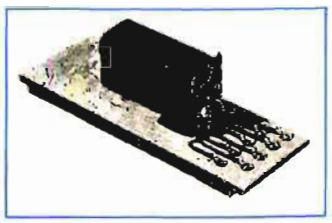
Code No.	Winding Resistance (ohms)			
	1	2	3	4
21-A	20.6	20.6	25.5	25.5

No. 22-A

This phantom circuit type coil is made up of two Code 21-A coils. One has two parallel windings, the second has two tandem windings, both mounted on a Type 1012 mounting to a wood base, for coil rack mounting. A "ring and talk through" type.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
22-A	20.6	20.6	25.5	25.5

NO. 24-A



A variation of Code 21-A coil. Phantom type circuit with two separate coils. One, with two parallel windings; the other with two tandem windings, mounted on No. 1012 mounting to a wood base. It is a "ring and talk through" type.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
24-A	20.6	20.6	25.5	25.5

NO. 121-A

Built like No. 21-A. Phantom circuit type with two coils. One has two parallel windings; the other has two tandem windings. It mounts on a 1¾-inch mounting strip. "Talk through" type only.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
121-A	20.6	20.6	25.5	25.5

MISCELLANEOUS TYPE

NO. 19-B

This concentric wound coil is designed for use as a monitoring coil for operator's telephone circuit. A "ring and talk through" type, it is built similar to No. 19-A.

Code No.	Winding Resistance (ohms)			
	1	2	3	4
19-B	23	26	115	120

NO. 28-A

Used in Kellogg carrier equipment. Has high frequency cut-off at 40,000 cycles. A "ring and talk through" type. Windings 2 and 4 are wound parallel. Mounts on 1¾-inch mounting.

Code No.	Winding Resistance (ohms)		
	1	2	3
28-A	55.8	28.8	28.8

COILS, RETARD

Retard coils are used to feed battery and isolate or limit fluctuating or alternating currents to certain particular circuits. They are made over a soft iron wire core or on coils having laminated cores of silicon steel.

Attendant Station Type

NO. 21-A

A special coil designed for use with the No. 21 attendant station.

Code No.	Resistance (ohms)
21-A	350

For Radio Interference



NO. 65-A

This retard coil was created to eliminate radio interference from telephone ringing equipment.

Code No.	Resistance (ohms)
65-A	2.72 - 3.01

Ringing Machine Type

These retard coils are specially designed to be used as noise killers for pole changer equipment.

Code No.	Resistance (ohms)
67-A	60.5
67-B	48.4
67-C	29.9
67-D	18.6

Switchboard Type



Retard coils used for common battery operator's circuit.

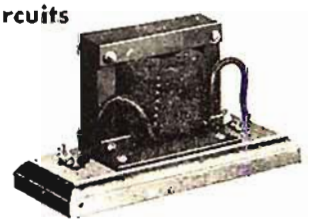
Code No.	Resistance (ohms)
8-C	350
8-H	165

For Relaymatic Ringing Circuits

NO. 41-B

A special retard coil for use on Relaymatic ringing circuits.

Code No.	Resistance (ohms)
41-B	0.19



Close Type — Parallel Wound

NO. 40-A

An especially designed retard coil for metallic phantoms and transposition.

Code No.	Resistance (ohms)
40-A	(1) 45
	(2) 45

NO. 28-A

Used in Kellogg carrier equipment. Has high frequency cut-off at 40,000 cycles. Mounts on 1¾-inch mounting. "Ring and Talk Through Type".

Code	Winding Resistance (ohms) 1	2	3
28-A	55.8	28.8	28.8

CONDENSERS

Kellogg telephone and switchboard condensers are of the wax impregnated aluminum foil type. The condenser windings are potted in cans with a potting and sealing compound to prevent the entrance of moisture.

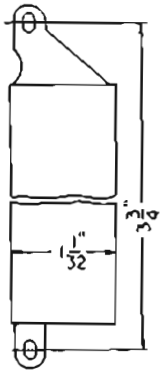


FIG. L

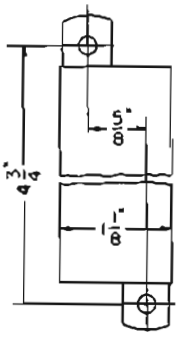


FIG. D

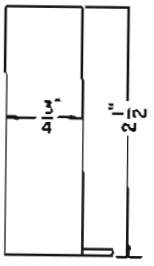
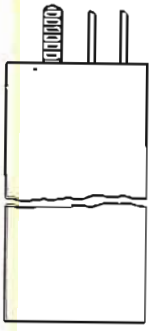
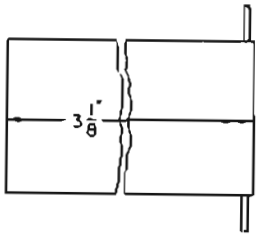


FIG. H


FIG. E



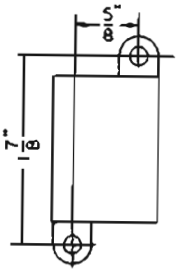


FIG. J

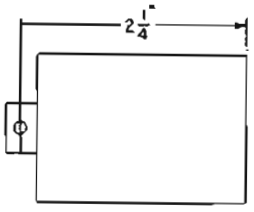


FIG. F

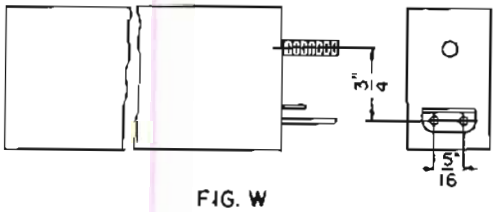
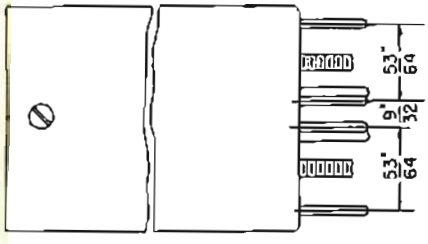


FIG. W


FIG. S



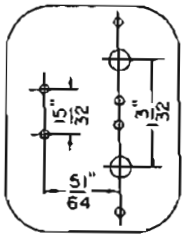


FIG. U

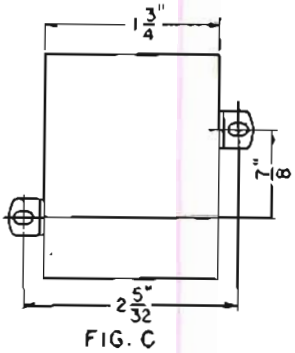


FIG. C

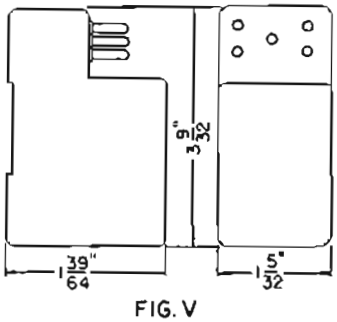


FIG. V

SWITCHBOARD CONDENSERS

Triple Type
NO. 239

This condenser was specifically designed for Nos. 1007-CC, 1007-CCX, and 2007-11 cordless switchboards. It is a three-unit condenser with capacities of 0.25, 0.50, 1.0 mfd. Maximum peak working voltage (dc) is 200 volts for each section. Size: 3-15/54 x 1 13/32 x 5/4 inches. See mounting sketch "E'.

TELEPHONE AND DESK SET BOX CONDENSERS

Single Type
NO. 28



This condenser mounts on end. Capacity 0.5 mfd. Maximum working capacity is 200 volts (dc). For telephones and desk set boxes. Size: 2½ x 1¼ x ¾ inches. For its layout, see mounting sketch "H".

NO. 67



Designed for attendant stations and telephones. Capacity is 1 mfd.; working voltage is 200 volts (dc). Size: 3⅛ x 1½ x 1½ inches. Refer to mounting sketch "J".

NO. 200

Developed for telephone sets, this condenser has flexible leads 9 inches long. The capacity is 1 mfd., the working voltage is 160 volts (D.C.) Size: 2¼ x 1¼ x ¾ inches. See mounting sketch "H".

Double Type
NO. 186

For telephones. Two windings capacity: (1) 1.0 mfd., (2) 2.0 mfd. Maximum peak working voltage, 160 volts (dc), both windings. Size: 3 x 1½ x 1$\frac{31}{32}$ inches. Consult mounting sketch "L" for layout.

Triple Type
NO. 203

For telephone sets. This condenser has a protective can cover and flexible leads with terminals. Its three capacities are: (1) 1.0 mfd., (2) 1.0 mfd., and (3) 1.5 mfd. Maximum working voltage in all three sections is 160 volts (dc) each. Size: 2⅛ x 1¾ x 1 inches. Refer to mounting sketch "C".



NO. 225

Created for the No. 1000 series Kellogg Masterphones. Triple capacity: (1) 0.5 mfd., (2) 0.5 mfd., and (3) 1.0 mfd. Maximum working voltages: 200 volts (dc) for all sections. Size: 3$\frac{3}{32}$ x 1$\frac{3}{32}$ x 1$\frac{39}{64}$ inches. For condenser layout, see mounting sketch "V".

NO. 252

A special condenser for Type 1000 Masterphones when a No. 126 harmonic ringer (above 42 cycles) is used. Capacities: (1) 0.25 mfd., (2) 0.25 mfd., (3) 1.0 mfd. Working voltages on all three coils are 200 volts (dc). Size: 3$\frac{3}{32}$ x 1$\frac{3}{32}$ x 1$\frac{39}{64}$ inches. Shown in mounting sketch "V".

MISCELLANEOUS CONDENSERS

The following condensers do not have any special applications but are made by Kellogg for miscellaneous use in the construction of Kellogg equipment and for general use in telephone work. Condensers are listed according to capacity, the smallest sizes first.

Single Type

Code No.	Capacity (mfd.)	Working Voltage	Dimensions (inches) Height	Width	Thickness	Mounting Sketch
238	0.25	200	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	W
101	0.50	200	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	E
237	0.50	200	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	W
132	1.0	200	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	E
236	1.0	200	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	W
12	1.0	400	4⅜	2$\frac{1}{16}$	$\frac{25}{32}$	S
177*	1.0	200	4⅜	2$\frac{1}{16}$	$\frac{25}{32}$	S
146	1.0	400	4⅜	2$\frac{1}{16}$	1⅛	S
241*	1.0	160	2⅛	1½	1⅛	F
66	2.0	160	3⅛	1½	1$\frac{1}{32}$	J
235	2.0	160	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	W
64	2.0	240	3$\frac{15}{64}$	1$\frac{13}{32}$	$\frac{27}{32}$	E
34	2.0	200	4⅜	2$\frac{1}{16}$	1⅛	D
251	6.0	(240	3$\frac{1}{32}$	2	1$\frac{13}{32}$	F
		(240				
		(240				

* These condensers are equipped with flexible leads.

Double Type

Code No.	Capacity (mfd.)	Working Voltage	Dimensions (inches) Height	Width	Thickness	Mounting Sketch
128	(1) 2.0	200	4	2⅜	1$\frac{13}{16}$	U
	(2) 2.0	200				
213	(1) 2.0	400	4	2⅜	1$\frac{13}{16}$	U
	(2) 2.0	400				
234	(1) 2.0	400	4	2⅜	1$\frac{45}{64}$	U

CONVERSION KITS

Keep your customers proud of your equipment . . . satisfied with your service! Modernize your old model out-dated telephones with the Kellogg Conversion Kit, using modern handset units. They cost so little that you can afford to improve your customer relations by converting your phones free of charge . . . before they demand it!

For special conversion kits, consult the Kellogg Sales Department.

For Magneto Telephones

KIT NO. 7



To convert wall magneto telephones into wall Masterphone handset telephones. Conversion possible without removing the telephone from the wall.

This kit includes:

1 No. 40-C handset

1 No. 56280 switch hook lever

1 No. 71618 cover plate

A growling, dissatisfied customer costs your reputation, costs time, costs money . . . may develop into court action. Forestall equipment dissatisfaction with these Conversion Kits and reap the reward in customer satisfaction, reduced complaints, savings of time.

Kellogg telephone cords are manufactured for a wide variety of uses:

Switchboard Cords

Instrument Cords, including: Desk Stand Sets, Receiver Cords, Straight Handset Cords, Koiled Kords, Transmitter Cords.

Rubber-Neoprene Cords

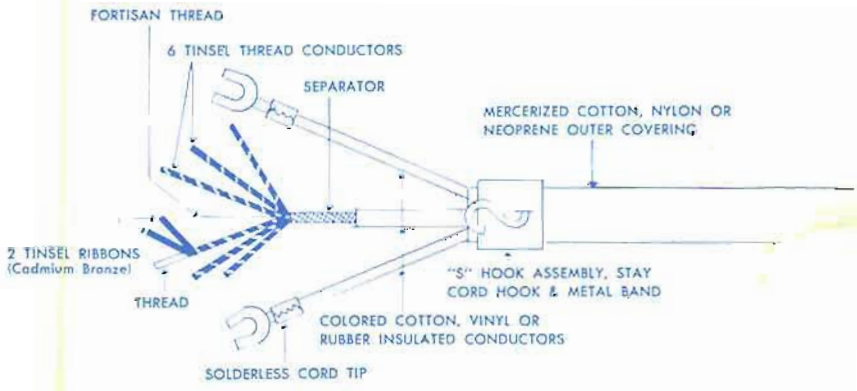
Operator's Cords

Miscellaneous Cords, including: Patching Cords, Test and Test Set Cords, Spider Cords.

CORDS

Kellogg takes real pride in the telephone and switchboard cords it has made for many years. The terms "high quality" and "long life" mean little until they are proved true in actual use. Kellogg's own reputation is bound up in those terms as they apply to the cords we make, for they are literally the "nerve centers" of our business. Kellogg manufactures these cords in four distinct types for telephone use:

1. Cords with Vinyl covered conductors, and a Nylon overall braid jacket. See Note "A" below.
2. Cords with rubber covered conductors, enclosed by a Neoprene jacket.
3. Cords with rubber covered conductors, encased by an overall cotton braid.
4. Cords with braided conductors, covered with an overall cotton braid, encased in an overall cotton braid jacket.



Composite Sketch Showing Typical Kellogg Cord Construction. NOTE "A": Kellogg Nylon switchboard cords are developed to withstand many times the normal wear of ordinary cotton braided cords. Replacements and cut-backs are greatly reduced, which more than compensate for this cord's slightly higher cost. Nylon cords can be cleaned readily and easily when they become soiled.

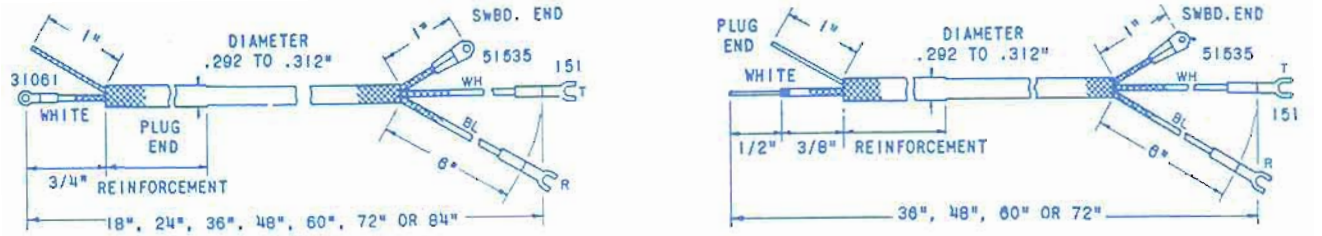
To give you a better idea of the vast range of Kellogg Cords, listed below is every Kellogg Cord, arranged according to the types of coverings listed above.

Type of Cord	TYPES OF CORD COVERING 1	2	3	4	Type of Wires
Switchboard Cords	1		3	4	Tinsel. Steel-and-Tinsel
Desk Stand Cords		2	3	4	Tinsel. Steel-and-Tinsel
Receiver Cords			3	4	Tinsel. Steel-and-Tinsel
Handset Cords		2		4	Tinsel. Steel-and-Tinsel
Transmitter Cords				4	Tinsel. Steel-and-Tinsel
Koiled Kords		2			Tinsel. Steel-and-Tinsel
Miscellaneous Cords		2		4	Tinsel. Steel-and-Tinsel
Neoprene Cords		2			Tinsel. Steel-and-Tinsel

Within each class or group there are sub-divisions according to the number of conductors used. When specified, cords may be supplied with the required Plugs attached.

Regardless of the location, degree of hard usage, weather or environmental conditions, there is a Kellogg cord specifically designed to provide the best possible service at low cost and with the longest-wearing qualities obtainable.

SWITCHBOARD CORDS



TWO CONDUCTOR

Tinsel Type — Braid Covered

NO. 301-TO

The covering of this two-conductor tinsel cord is white glazed cotton for overall external braid, available in other colors . . . *when specified with the order.* Conductor colors are: White, Blue. White conductor lengths are: ⅝ inch at the Plug end; 6 inches at the switchboard end. Blue conductor lengths are: 1 inch at the Plug end; 6 inches at the switchboard end. Your choice of overall cord length: 18", 24", 36", 48", 60", 72" or 84". *Please specify when ordering.* Cord diameter ranges from 0.292 to 0.312 at the Plug end, with tie cord terminal No. P-51535. The terminals at the Plug end are No. P-31061; at the switchboard end, No. P-68417. It fits Kellogg plugs No. 42, 70, 109, 138, and 187; also Leich plug No. 3-A.

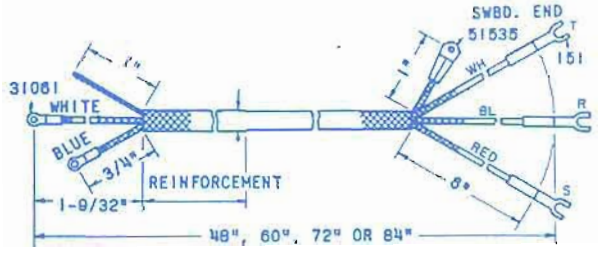
Steel and Tinsel Type — Braid Covered

NO. 304-ST

Standard white cotton glazed external braid on this steel-and-tinsel two-conductor cord. Other colors available—when specified. Cord diameter ranges from 0.292 to 0.312 at the Plug end. Blue and White conductor colors. The White extends to the Plug end with both colors entering the cord at the switchboard end. The ends of the Blue cord are 1 inch at the Plug end, 6 inches at the switchboard end. The White cord is 1⅛ inches length at the Plug end; 6 inches long at the switchboard end. Both colors use No. P-151 terminals at the switchboard end. Your choice of available lengths: 36, 48, 60, or 72-inches. *Length must be specified when ordering.* Fits Kellogg Nos. 3, 42, 70, 130, 187 plugs, and Automatic Electric Co. No. 1188 plug.

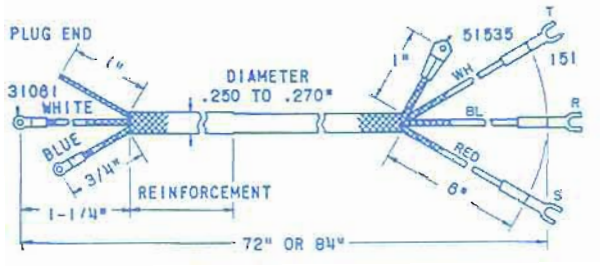
THREE CONDUCTOR

Tinsel Type — Braid



NO. 309-TO

White glazed cotton external braid is standard for this tinsel and braid covered three-conductor cord. You may have other colors, if specified. Cord diameter ranges from 0.292 to 0.312 at Plug end. White, Blue and Red conductor colors. Each cord has a 6-inch length at the switchboard end. White cord length at the Plug end is 1½ inches; the Blue cord is ¾ inches long; the Red cord is 1-inch length. Terminals at the Plug end are No. P-31061, at the switchboard end No. P-68417. Available lengths are: 48, 60, 72 or 84 inches. *Be sure to specify cord length when ordering.* Fits Kellogg Nos. 12, 13, 106, 202, 152, 137 plugs; Leich No. 202; Automatic Electric Co. Nos. K-28, K-55 and K-56 plugs. It replaces Automatic Electric No. 406548-W cord.



NO. 326-TO

Covered with the same white cotton baid as No. 309-TO, with other colors available when ordered. Cord diameter is from 0.250 to 0.272 at Plug end. Three conductor colors: White, Blue and Red. Each cord has a 6-inch length at the switchboard end. At the Plug end, the White cord length is 1¼ inches; Blue cord end is ¾ inch long; Red cord is 1 inch long. Terminals at the Plug end No. P-31061; at the switchboard end, No. P-68417. Offered in 72 and 84-inch lengths only. *Be sure to specify when ordering.* Fits Kellogg Nos. 199 and 201 plugs. Replaces Automatic Electric Co. No. CD-407572.

NYLON COVERED SWITCHBOARD CORDS

Nylon has developed a great reputation for extremely long wear and lasting qualities. Laboratory and field tests show that a nylon-encased switchboard cord will out-wear a fabric-covered cord many, many times. Its main advantage is that it is perspiration-proof. While only a few production items are shown here, Kellogg is equipped to make any type of switchboard cord to your specifications, in quantity. Talk with your Kellogg field representative or send a sketch of the wires desired to the Kellogg Sales Department for an estimate.

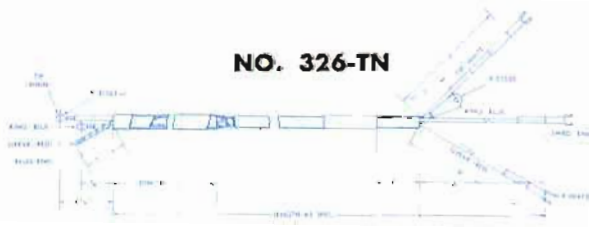
THREE CONDUCTOR
Tinsel Type — Nylon Covered

NO. 309-TN

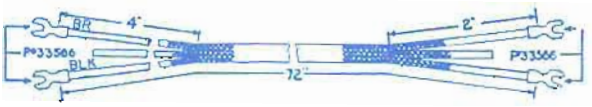


A three-conductor, vinyl insulated, white Nylon covered cord. Other colors than white may be used, *if specified with the order*. Conductor colors are: White, Blue, Red. All are 6 inches long at the switchboard end. At the Plug end: White is 1½ inches; Blue is ¾ inch; Red is 1 inch long. Choice of overall lengths: 48", 60", 72", or 84". . . . *Please specify length when ordering*. Diameter ranges from 0.292 to 0 312 at Plug end, with the tie cord No. P-51355. Terminals at the Plug end are No. P-31061; at the switchboard end, No. P-68417. This cord will fit the following plugs: Kellogg Nos. 12, 13, 106, 202, 152, 137; Leich No. 202, Automatic Elec tric Co. No. K-28, K-55, and K-56. It is a replacement for Automatic Electric Co. No. CD-406548-W.

NO. 326-TN

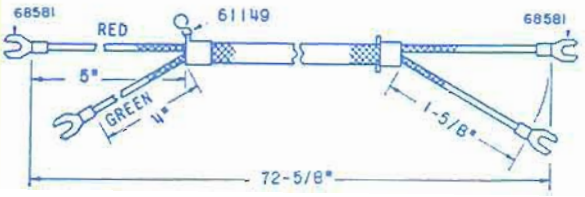


Like No. 309-TN, this cord has vinyl insulated conductors and standard white Nylon external braid. Other colors are available *if specified with order*. The conductor colors are: White, Blue, Red. White conductor length at the Plug end is 1¼ inches; Blue is ¾ inch; Red is 1 inch. All have the same lengths at the switchboard end: 6 inches. Choice of overall lengths: 72" or 84" — *please specify when ordering*. Cord diameter ranges from 0.250 to 0.270 at the Plug end, with a tie cord terminal No. P-51535. Terminals at the Plug end are No. P-31061, at the switchboard end, No. P-68417. It will fit Kellogg plug Nos. 199 and 201, and is a replacement for Automatic Electric Co. No. CD-407572.



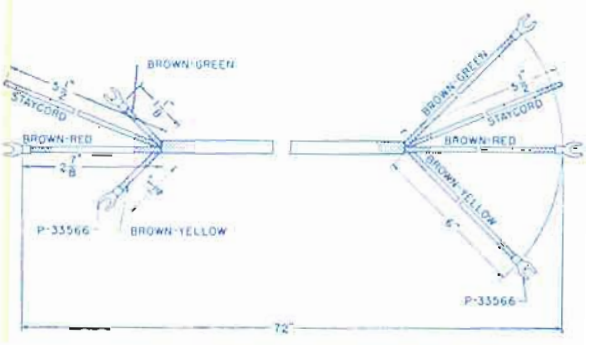
DESK STAND CORDS
TWO CONDUCTOR
Braid Covered
NO. F-665-D

Two conductor wires of 12 strands cadmium copper tinsel with brown mercerized cotton overall braid, in two colors: Solid Brown and Black. Overall length, 72 inches. Both wires are 2 inches long at the stand end; 4 inches at the box end. Terminals at both ends are No. 33566. Used on Desk Stands Nos. F-75, F-79, F-111 and other stands provided with terminals for flat type tips, and Nos. 900 and 925 type combination Masterphones. Replaces Kellogg No. F-100-D cord, and Stromberg-Carlson No. D-2-C cord.



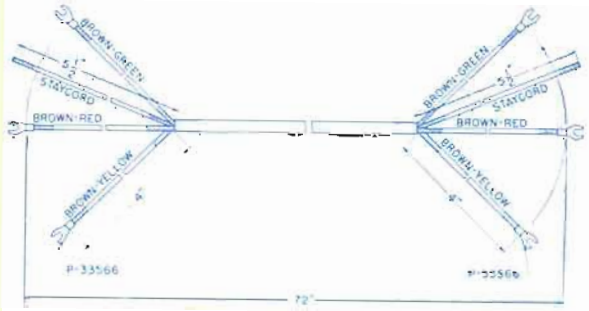
Rubber Covered Conductors
NO. F-740-D

Brown mercerized cotton overall braid over two rubber covered conductors. Conductor colors are Red and Green, both 1⅝ inches long at the box end. Red is 5 inches long at the stand end, Green is 4 inches, with tie cord clip on the stand end No. P-61149. Terminals at both ends are No. P-68581. Overoll length 72⅝ inches. A replacement for Western Electric Co. No. D-2-D cord.



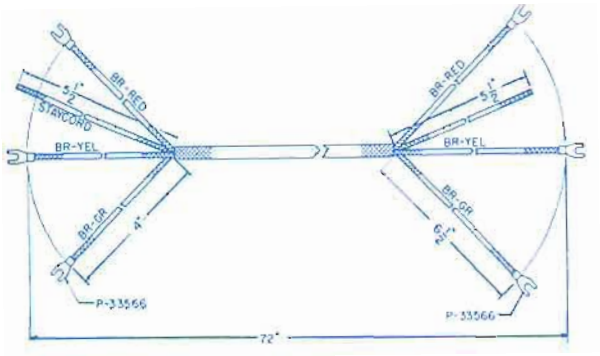
THREE CONDUCTOR
Braid Covered
NO. F-639-D

Brown mercerized cotton braid covering a three-conductor wire composed of 12 strands of cadmium copper tinsel. Three conductor colors: Green, Red, Yellow, each 72 inches overall length. Green is 1⅛ inches long at the stand end; Red is 2⅞ inches, and Yellow is 1¼ inches. At the box end, each is 6 inches long. Terminals on both ends: No. P-33566. This cord replaces Kellogg No. F-479-D and Western Electric Co. No. D-3-AB.



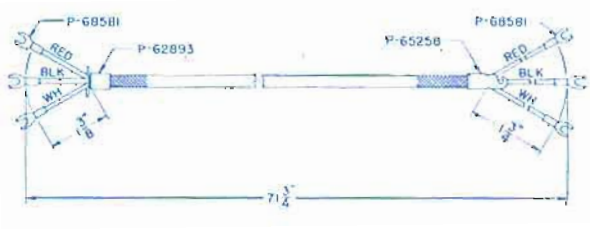
NO. F-640-D

Same braid covering over same wire types as No. F-639-D. Three conductor colors: Green, Red, Yellow. Overall length 72 inches. All three are 4 inches long at the stand end, and 4 inches at the box end. Terminals at both ends: No. P-33566. Used on desk stand Nos. F-115-A, F-118-A, F-118-B, F-135, F-138, F-301 stands, and 900 and 925-type combination Masterphones. It replaces No. F-636-D cord.



NO. F-674-D

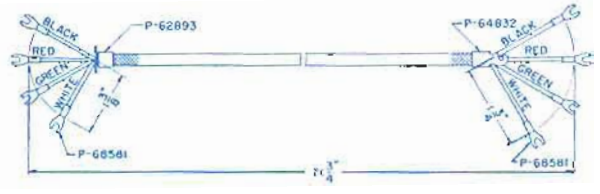
A fine 3-conductor desk stand cord with brown mercerized cotton overall braid over 12 strands of cadmium copper tinsel wire. Three conductor colors: Red, Yellow, Green. Each is 4 inches long at the box end, 6½ inches at stand end. Terminals used on both ends. No. P-33566. Total overall length 72 inches. Used on desk stand Nos. 700, 725, and Nos. 900-A and 925-A Masterphones.



Rubber Covered Conductors

NO. 769-M. F. P.

A three-conductor desk stand cord made up of 12 strands of cadmium copper tinsel wire, rubber covered, encased in *Black* mercerized cotton overall braid. This cord is specially impregnated and insulated against moisture and fungus damage. Designed for use with the Kellogg 1000 Masterphone. The conductor colors are: Red, White, Black. Overall length 71¾ inches. Each color has the same conductor lengths: 1¾ inches at the stand end; 1⅜ inches at the box end. Terminals at both ends: No. P-68581. It comes equipped with a Kellogg cord clamp hook No. P-64832.



Four Conductor, Rubber Covered Conductors

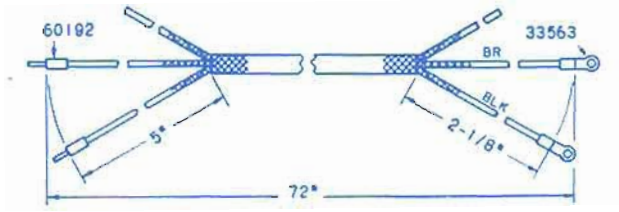
NO. 771-M. F. P.

Especially created for the Kellogg 1000 series Masterphones and treated against moisture and fungus damage. Made of four conductors combining 12 strands of cadmium copper tinsel, identified by colors: Red, Green, Black, White. Each conductor color length is: 1¾ inches at stand end, 1⅜ inches at box end. Overall length 71¾ inches. Encased in a *Black* mercerized overall cotton braid. Same terminals on both ends: No. P-67316. Comes equipped with a Kellogg cord clamp hook No. P-64832 on stand end.

OPERATOR'S CORDS

Kellogg operator's cords are manufactured under the same conditions of quality and workmanship as are all other Kellogg cords. Standard operator's cords appear in this section. Cords requiring different length or trim than those listed, can be furnished on Special Order to meet your specific specifications.

Please order standard cords by the Kellogg Code Number. If you should order special cords, please include complete information *plus a sketch* of the desired cord. If your order is for a duplication of a specific cord, it is very helpful to include a sample of the old cord.

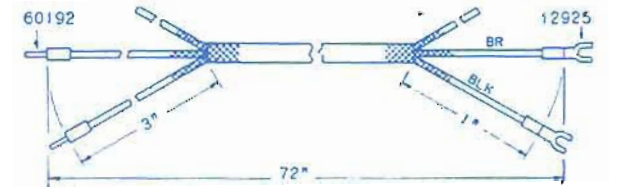


FOR HEAD RECEIVERS

Two Conductor, Braid Covered

NO. 466-OR

This beautiful two-conductor head receiver cord is made up of 12 strands of cadmium copper tinsel wire, covered with a brown mercerized cotton overall braid. One conductor is Brown color, the other Black, with a total overall cord length of 72 inches. Both have a 2⅛ inch length at the Plug end; 5 inches at the receiver end. Terminals used: No. P-33563 at the Plug end, No. P-60192 at the receiver end. This cord fits Kellogg No. 139 plug, and is used with the No. 65 type receiver. It replaces Western Electric Co. No. 254 cord.

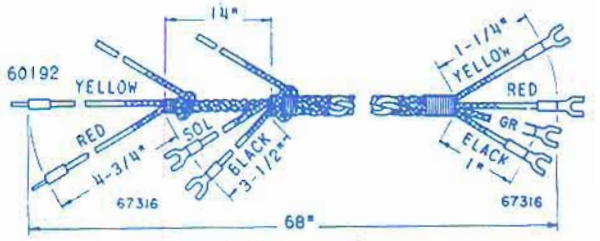


NO. 710-OR

An Operator's cord to fit Kellogg No. 146 plug and Nos. 85-A and 87-A receivers. Made up the same way as No. 466-OR. Identifying colors: Solid Brown and Black. Total cord length, 72 inches. Both conductors have 1 inch length at the Plug end, 3 inch length at the receiver end. Terminals used: No. P-12925 at the Plug end, No. P-60192 at the receiver end. Standard on Kellogg boards using a suspended type transmitter, it replaces Kellogg No. 110-OR cord.

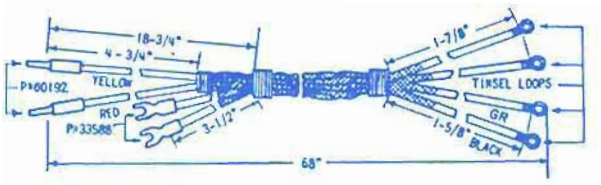
FOR HEAD AND CHEST SETS

Four Conductor, Braid Covered



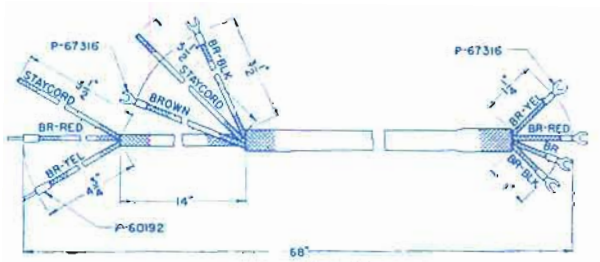
NO. 711-O

A four-conductor operator's head and chest set cord, made up of 12 strands of cadmium copper tinsel wire with brown mercerized cotton overall braid. Conductor colors: Solid Green, Black, Red, and Yellow. Solid Green and Black have 2⅛ inches length at the Plug end, 3½ inches length at the transmiter end. Red and Yellow are 1¼ inches long at the Plug end, 4¾ inches long at the receiver end. Total overall length 68 inches. Terminals used: Plug end No. P-67316, Transmitter end No. P-67316, Receiver end No. P-60192. Fits all breast plate transmitters and No. 145 Plug, including Nos. 65-A, 85-A and 87-A receivers. Replaces Kellogg No. 111-O twisted conductors green cord.



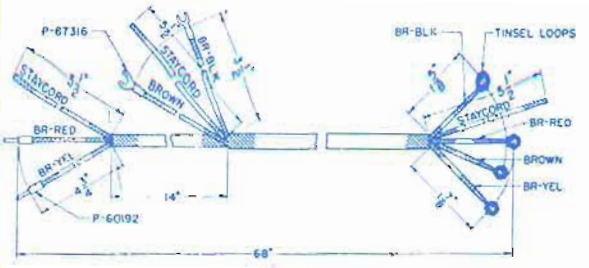
NO. 713-O

This cord is made up similar to No. 711-O cord. Overall length 68 inches. Conductor colors: Solid Green, Black, Red and Yellow. Solid Green and Black are both 1⅝ inches long at the Plug end, 3½ inches at the transmitter end. Red and Yellow are both 1⅞ inches long at the Plug end, 4¾ inches long at the receiver end. Loops are used for the Plug end tips; the transmitter end has No. P-67316, the Receiver end has No. P-60192 terminals. This cord will fit all breast plate transmitters, the Kellogg No. 182 plug, and Kellogg Nos. 65-A, 82-A and 87-A receivers. It replaces Kellogg No. 439-O cord.



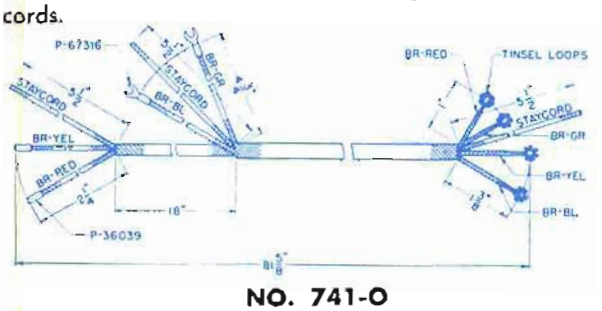
NO. 721-O

Made up like Nos. 711-O and 713-O cords. Overall cord length 68 inches. Conductor colors: Solid Brown, Black, Red, and Yellow. The first two have the same length measurements: 1 inch at the Plug end, 3½ inches length at the transmitter end. Red and Yellow are both 1¼ inches long at the Plug end; 4¾ inches long at the receiver end. Terminals used: both Plug and Transmitter ends, No. P-67316, at Receiver end, No. P-60192. It replaces Kellogg No. 670-O cord, and fits Kellogg No. 145 plug.



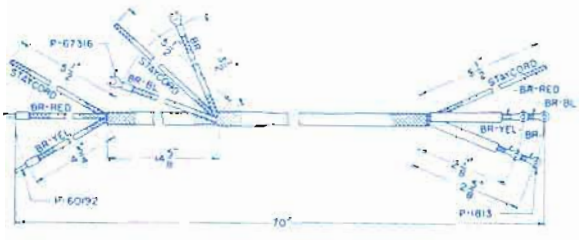
NO. 722-O

This head and chest set cord is made up the same as the preceding ones. Length 68 inches, its conductor colors are: Solid Brown, Black, Red, and Yellow. The first two are both 1⅝ inches long at the Plug end, 3½ inches long at the transmitter end. Red and Yellow are both 1⅞ inches long at the Plug end, 4¾ inches long at the receiver end. Terminals used: Loops at the Plug end, No. P-67316 at the Transmitter end, No. P-60192 at the Receiver end. It replaces Kellogg No. 672-O cord, and fits Kellogg No. 182 plug. It is a replacement for Automatic Electric Co. Nos. DB-12, MC-54220, CD-509464, and Stromberg-Carlson No. MO-4F cords.



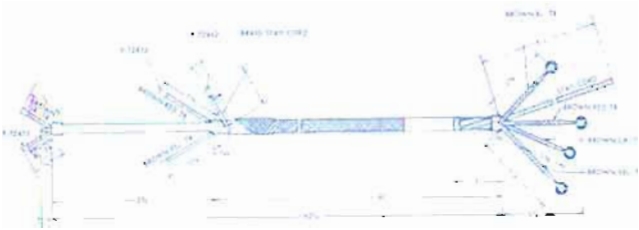
NO. 741-O

Cord construction same as others in this group. Overall length 81⅝ inches. Conductor colors: Green, Blue, Red, and Yellow. The Green wire is 1 inch long at the Plug end, 4⅜ inches long at the transmitter end. Blue is 1⅜ inches long at the Plug end, 4⅜ inches at the transmitter end. Red wire is 1 inch long at the Plug end, 2¼ inches long at the receiver end. Yellow is 1⅜ inches long at the Plug end, 2¼ inches long at the receiver end. Terminals: equipped with loops at the Plug end tips, No. P-67316 terminals at the Transmitter end, No. P-36039 terminals at the Receiver end. This cord will fit Kellogg No. 245 and Stromberg-Carlson No. 23 plugs. it replaces Stromberg-Carlson No. MO-4F cord.



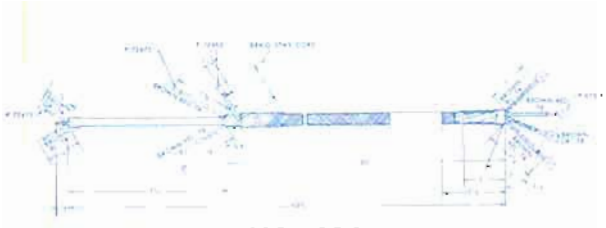
NO. 743-O

Made up similar to preceding cords in this group. Overall length 70 inches. Conductor colors: Solid Brown, Blue, Red, and Yellow. First two are 2⅝ inches long at the Plug end, 3½ inches long at the transmitter end. Red and Yellow are 2⅝ inches long at the Plug end, 4¾ inches long at the transmitter end. Terminals: Four No. P-67927 at the Plug end, and No. P-72475 . . . 2 at the Transmitter end, 2 at the Receiver end. Used with Kellogg Nos. 1-C and 1-L operators head and chest sets; fit Kellogg No. 139 and Western Electric Co. No. 23 plug. Replaces Stromberg-Carlson MO-4F cord.



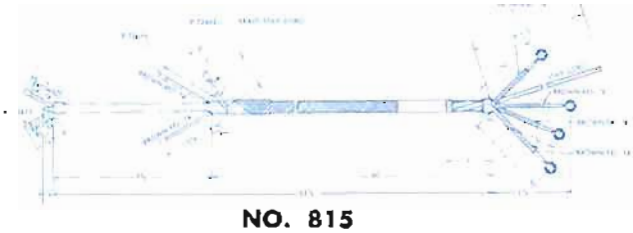
NO. 813

This four-conductor operator's cord is made up of 12 strands of cadmium copper tinsel encased in a brown mercerized cotton overall braid. Its conductor colors are: Green, Blue, Red and Yellow. Green and Blue have the same conductor lengths: 2⅝ inches at the Plug end, ¾ inch at the receiver end. Red and Yellow have also the same conductor lengths: 2⅛ inches at the Plug end, 1⅜ inches at the transmitter end. Overall cord length 67⅛ inches. Equipped with four No. P-67297 terminals at the Plug end, and of No. P-72475 terminals, two at the Transmitter end, 2 at the Receiver end. This cord will fit Western Electric Co. No. 52-AW headset, using Kellogg No. 139 plug.



NO. 814

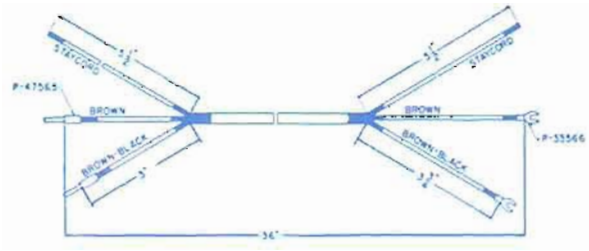
Twelve strands of cadmium copper tinsel, covered with brown mercerized cotton overall braid, make up this useful wire. Overall length 65¾ inches. Conductor colors: Green, Blue, Red, and Yellow. Green and Blue conductor lengths are: 1 inch each at the Plug end, ¾ inch each at the receiver end. Red and Yellow lengths: 1¼ inch each at the Plug end, 1⅜ inches each at the transmitter end. All four wires carry the same No. P-67316 terminal tips at the Plug end. Red and Yellow use No. P-72475 terminals at the Transmitter end. Green and Blue use No. P-72475 terminals at the Receiver end. Used for Kellogg No. 52 and Western Electric Co. No. 52-W headsets with Kellogg No. 145 plug.



NO. 815

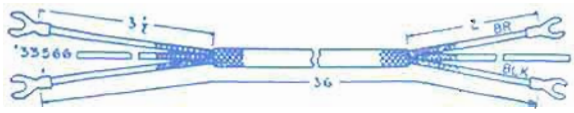
Encased in a brown mercerized cotton overall braid, this four conductor operator cord is also made up of 12 strands of cadmium copper tinsel, and is 65⅝ inches overall length. Its conductor colors: Green, Blue, Red, Yellow. Green and Blue conductor lengths are the same: 1⅝ inches at the Plug end, ¾ inch at the receiver end. Red and Yellow lengths also the same: 1⅞ inches at the Plug end, 1⅜ inches at the transmitter end. Fits Western Electric Co. No. 52-AW headset equipped with Kellogg No. 182 plug. Terminals are the same: Loops at the Plug end, and 2 each No. 72745 terminals at the Transmitter and the Receiver ends.

RECEIVER CORDS
Two Conductor, Braid Covered



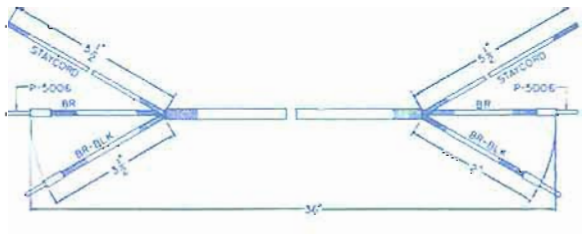
NO. F-642-TR

This two-conductor receiver cord is made up of 12 strands of cadmium copper tinsel wire with brown mercerized overall cotton braid, and is 36 inches long. Two conductor colors: Solid Brown and Black. Conductor lengths the same in both cases: 3 inches at the receiver end, 3¾ inches at the telephone end. Terminal tips on Receiver end. No. P-47565; on the Telephone end No. P-33566. This cord fits Nos. 90 and 14 type receiver. Replaces Kellogg No. 197-TR cord. Stromberg-Carlson No. MR-2-1 cord, Automatic Electric Co. Nos. AR-11, CD-104436, and MC-5430 cords, and Leich No. 11-A cord.



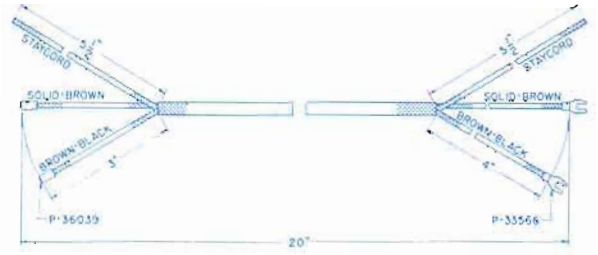
NO. F-644-TR

Of similar construction to No. F-642-TR, this cord reverses its conductor colors to: Black and Solid Brown, with an overall length of 36 inches. Each color has the same lengths: 3½ inches on the Receiver end, 2 inches on the Telephone end. The same terminal tips are used: No. P-68581. Fits Kellogg No. 41 type receiver. Replaces Kellogg No. F-98-TR, Leich No. 11-C, and Automatic Electric Co. No. D-541846 cords.



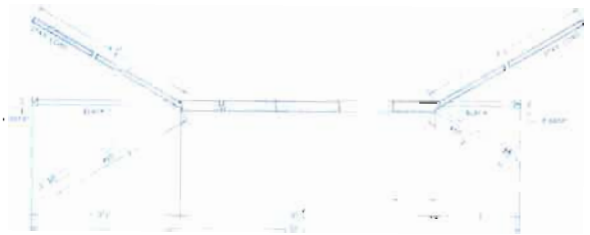
NO. 644-TR

Constructed the same as the previous two cords, with 36 inch overall length. Conductor colors: Solid Brown and Black. Both have the same conductor lengths: 3½ inches length at the Receiver end, 2 inches length at the Telephone end. Terminal tips are P-5006 spike tips at both ends. Cord is the same as No. F-644-TR except for the spike terminal tips. Fits Kellogg Nos. 90 and 41 type receivers. Replaces Kellogg No. 98-TR and Leich No. 11-B cords.



Two Conductor, Rubber Covered Conductors
NO. F-744-TR

A special receiver cord designed to be used with Kellogg weatherproof telephones. It is a two-conductor cord, made up of 12 strands of cadmium copper tinsel, rubber covered conductors, with brown mercerized cotton overall braid. 20 inches overall cord length. Colors: Brown and Black. Both have the same conductor lengths: 3 inches at the Receiver end, 4 inches at the Telephone end. At both ends, No. P-36039 terminal tips are used. Will fit Kellogg No. 81 receiver. Replaces Kellogg No. 682-TR cord.

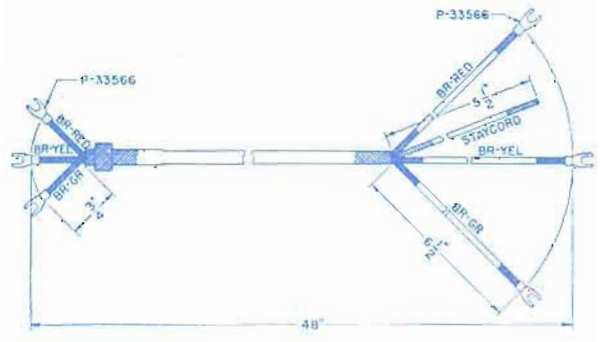


NO. F-716-TR

This two-conductor cord with brown mercerized cotton overall braid, has rubber covered conductors. Overall cord length 36 inches. Conductor colors: Black and Red. Both colors have the same lengths: 3½ inches at the Receiver end, 2 inches at the Telephone end. It fits No. F-41-A receiver, and its terminals are the same at both ends: No. P-68581.

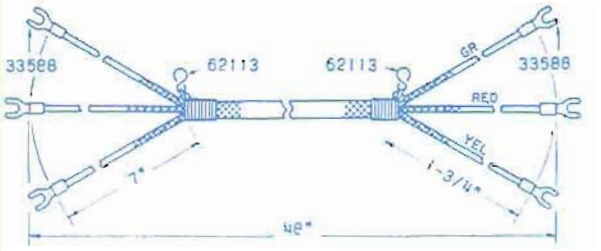
HANDSET CORDS

Kellogg handset cords are described in this section. If you need cords not shown, please consult the Kellogg Sales Department. If writing, please enclose a sketch or drawing of the desired cord, or enclose a small sample if a replacement is needed. When you order standard cords, please order by their code number.



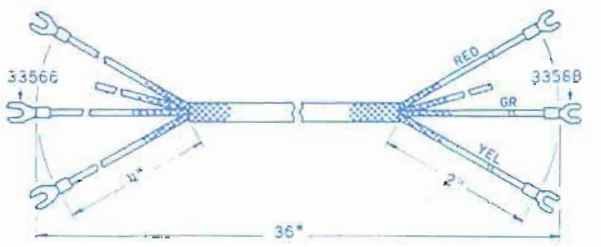
Three Conductor, Braid Covered
NO. F-673-G

Made of 12 strands of cadmium copper tinsel, this 3-conductor handset cord has a brown mercerized cotton overall braid. Standard overall length 48 inches, equipped with No. P-64612 cord clamp hook at each end. Conductor colors: Red, Yellow, Green. Their conductor length at the Stand End is 6½ inches; at the Handset end, ¾ inch. The terminal tips in both cases No. P-33566. Specifically designed for Kellogg No. 27-C handset, it is used on Masterphones of all types.



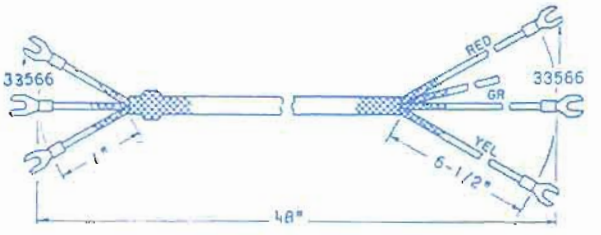
NO. F-738-G

Same construction as No. F-673-G cord, but with *Black* overall mercerized cotton braid. Three conductor colors: Green, Red, and Yellow. Overall cord length 48 inches. Each color has the same conductor length: 7 inches at the Stand end, 1¾ inches at the Handset end. No. P-33588 terminal tips are used at both ends, with metallic tie cord clip No. P-62113. This cord will fit Stromberg-Carlson No. 15 handset, and replaces Stromberg-Carlson No. MC-3-F cord.



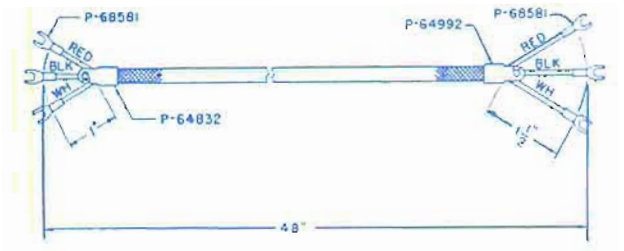
Three Conductor, Rubber Covered Conductors
NO. F-688-G

This, and the next three handset cords, consist of 12 strands cadmium copper tinsel, three rubber covered conductors, brown mercerized cotton overall braid. It is specifically designed for Kellogg No. 32-C handset. Standard length 36 inches. Conductor colors are: Yellow, Green, Red. Individual conductor lengths: at Stand end 4 inches; at Handset end, 2 inches. Same terminal tips at both ends: No. P-33566. Cord diameter is 0.296 inches.



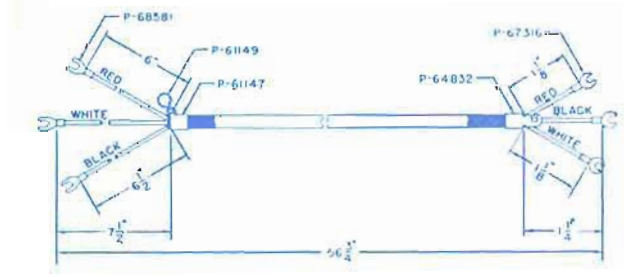
NO. F-723-G

Same construction as No. F-688-G. Fits Kellogg No. F-27-EC handset, an outdoor telephone used mostly for export. 48 inch overall cord length. Three conductor colors: Red, Yellow, and Green, all the same conductor lengths: 6½ inches at Stand end; 1 inch at Handset end. Terminal tips at both ends, No. P-33566.



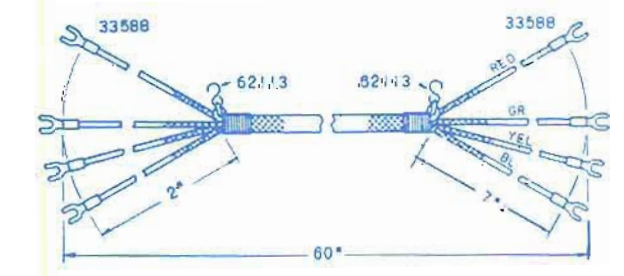
NO. 770-M. F. P.

This cord is a variation in that it has a *Black* mercerized cotton overall braid. It is used with Kellogg Nos. 46-C, 52-L, and 54-C handsets. Overall cord length 48 inches, equipped with two No. P-64832 cord clamp hooks. Three conductor colors: Red, White, and Black. Each has the same conductor length: 1½ inches at the Stand end; 1 inch at the Handset end. Terminals at both ends: No. P-68581.



NO. 773-G

Constructed the same as the first two cords in this group of rubber covered conductors, with a brown mercerized cotton overall braid. A replacement for Western Electric Co. No. H-3-C-9 cord, it has a No. P-61149 hook on the Stand end, a No. P-64832 hook on the Handset end. Cord overall length, 56¾ inches. Conductor colors: Red, Black, and White. The Red length at the Stand end, 6 inches; at the Handset end, 1⅛ inches. Black length at Stand end, 6½ inches; at Handset end, 1¼ inches. White length at Stand end, 6½ inches; at Handset end, 1⅛ inches. Terminal tips at both ends No. P-67316.



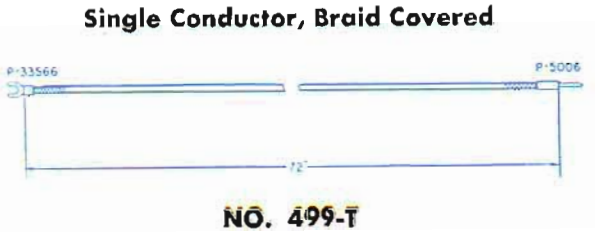
Four Conductor, Braid Covered

NO. F-742-G

Four conductor handset cord, made up of 12 strands of cadmium copper tinsel, covered with brown mercerized cotton overall braid. Replaces Stromberg-Carlson No. MC-4F cord. Four conductor colors: Blue, Red, Green, and Yellow; all with the same conductor lengths. Length at Stand end, 7 inches; at Handset end, 2 inches. Overall cord length, 60 inches. Terminal tips at both ends No. P-33588.

TRANSMITTER CORDS

Single Conductor, Braid Covered



NO. 499-T

This single conductor transmitter cord is for suspended type transmitters. It is made up of 12 strands of cadmium copper tinsel, covered by a brown mercerized cotton overall braid. Fits transmitters Nos. 157-C and 157-L. Overall cord length, 72 inches. Has ½ inch length at the Transmitter end, and is arranged for spade terminals, using terminal type No. P-33566 at the transmitter end, No. P-5006 at the connecting rack end.

HOW TO ORDER

When you order Kellogg cords, be sure to include the Code Number of the cords you desire — to assure fast, accurate service and complete satisfaction. Be sure to include the Cord Length Dimensions, for in some cases they are listed as "Per Specification", and the length you desire must be stated for prompt delivery.

If you need to replace cord terminals, you can secure the proper Kellogg Code Number in the "Cord Terminals" section on Page No. L-37, immediately following the Cord Section.

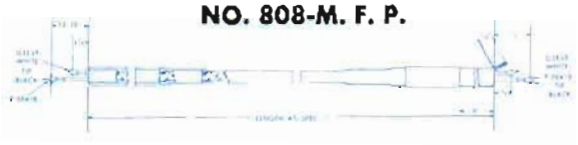
MISCELLANEOUS CORDS
PATCHING CORDS

Kellogg switchboard patching cords are made in a variety of types to meet the needs of every telephone exchange. Usually, these cords are made to special order to fit the exact conditions of central office equipment. When ordering or requesting information on these cords, please send a sketch or sample of the proposed patching cord.

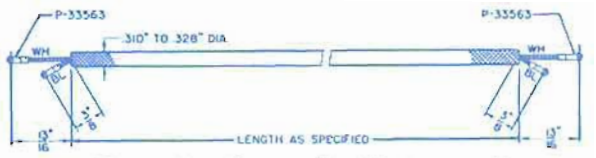
The Code Number of the plug required should always accompany the order for patching cords. Listed below are the most commonly ordered patching cords. Please order them by the Kellogg Code Number. Be SURE to include the desired cord length! This will assure fast, accurate delivery and your complete satisfaction.

Two Conductor, Rubber Covered Conductors

NO. 808-M. F. P.



Completely moisture and fungus-proof! This useful two-conductor tinsel patching cord has a standard white cotton external braid covering, but other colors are available *when specified*. Conductor colors: White and Black, with white overall braid. Conductor lengths: White ⅜ inch at both ends; Black 13/16 inch at both ends. *The length of this cord must be specified.* Fits Kellogg Plug No. 247, and is arranged for that plug at both ends. Terminals are the same at both ends: No. P-63418.



Three Conductor, Braid Covered

NO. 786

This three-conductor patching cord is made up of tinsel wire, covered with standard white glazed cotton external braid; other colors available *when specified. The length of this cord must be specified.* Arranged for No. 106 plug, at each end, but No. 152 may be used. Conductor colors: White, Blue, Red. White wire has the same conductor length at both ends; 1 1/32 inches. Blue has ¾ inch length at either end. Red has 1 inch length at each end. Terminals at each end are No. P-31061.

TEST AND TEST SET CORDS

SPIDER CORDS

These special cords for special switchboard applications are available on Special Order only, because of the variations of lengths, plugs, and other factors.

Please consult your Kellogg Sales representative, or write the Kellogg Sales Department direct, 79 West Monroe Street, Chicago 3, Illinois. Be sure to enclose a sketch of the desired cord; if possible, include a small sample of the wire desired. In quantities, these types of cord are not expensive.



TEST AND TEST SET CORDS

NO. 822-TN

A 2-conductor test and test set cord, tinsel. Green nylon overall braid, vinyl insulated conductors. Terminal tips are No. 31061 at the Frame end, No. 5006 at the Shoe end. White conductor color is 1 1/32 inches at the Plug end, 2 inches at the Switchboard end. Blue conductor color is ¾ inches at the Plug end, 2 inches at the Switchboard end. Overall length 84 inches. Cord is .292 inches to .312 inches at the Plug end. No tie cord terminal is used on No. 1929 test set. Fits No. 106 Plug.

TELEPHONE AND SWITCHBOARD CORDS

The data on Kellogg telephone and switchboard cords are presented in the order shown below to simplify ordering and reference.

A. Switchboard Cords.
   Steel and tinsel type—
   two conductor.
   Tinsel Type—
   three conductor.
B. Desk Stand Cords.
   Two conductor.
   Three conductor.
   Four conductor.
C. Operator's Cords.
   Head Receivers—
   two conductor.
   Head and Chest Sets—
   four conductor.
D. Receiver Cords.
   Two conductor.
E. Handset Cords.
   Three conductor.
   Four conductor.
F. Transmitter Cords.
   Single conductor.
G. Miscellaneous Cords.
   Patching Cords.
   Test and Test Set Cords.
   Spider Cords.
H. Neoprene Jacketed
   Cords.
   Handset type.
   Desk Stand type.
I. Koiled Cords.
   Three conductor.
   Four conductor.
J. Cord Terminals, Etc.
   Cord Weight.
   Cushions, Plug.
   Cord Fasteners.

NEOPRENE JACKETED CORDS

"Telecord"

Originally, the famous Kellogg "Telecord" was designed to meet a growing demand for handset and desk stand cords for any installations where serviceability and long life are most important. The "Telecord" is a neoprene jacketed, rubber-covered conductor cord, especially suited for handset cords and desk stand (or base) cords—the two cords in the telephone field that receive the most wear.

When Kellogg introduced the "Telecord", another factor was behind the thinking about this cord. In tropical areas, moisture, fungus and deterioration demanded a new-type cord to resist these hazards to efficient telephone service. The "Telecord" was the perfect answer.

Today, the "Telecord" is in demand everywhere in the United States and abroad, particularly where people who are proud of their homes, or have unusually heavy telephone usage, want this unusually fine "Telecord' to complete the perfection of their homes. "Telecord' is increasingly being used in offices and pay stations — in fact, everywhere that a telephone cord is subjected to hard usage, unusually difficult handling conditions, or where appearance is an important factor.

Kellogg "Telecord" will outlast the ordinary braid covered cord several times, one of the many reasons why it is increasingly used in pay stations where exteremely hard and heavy usage demands a tough and unusually-lasting cord.

The many advantages of rubber jacketed cords are all incorporated in the "Telecord" neoprene jacketed cords. Additional "plus" features are: smaller diameter, greater flexibility, and increased resistance to abrasion, oil, and natural acid.

"Telecords" are built to Kellogg's famous quality standards. From two tinsel ribbons, through every step, including the overall sheath of vulcanized neoprene, Kellogg quality materials are checked by the Kellogg Quality Control to make sure that the "Telecord" is in every way worthy to bear the Kellogg name.

"Telecord" Replacements for Kellogg and Other Manufacturers' Standard Telephone Cords

FOR KELLOGG TELEPHONES

For Kellogg No. 1000 series desk and No. 1100 series wall Masterphones using the following handsets and cords:

Handset No. 46-C, No. 770 M.F.P. cord—Use No. 3000 cord.

Base (or Mounting, or Desk Stand) cords No. 769 M.F.P. — Use No. 3004 cord.

For Kellogg Nos. 900 and 925 desk and Nos. 9900 and 9917 wall type Masterphones using the following handsets and cords:

Handset No. F-27-C, No. F-673-G cord — Use No. 3001 cord.

Base (or Mounting or Desk Stand) cord — Use No. 3013 cord.

FOR WESTERN ELECTRIC TELEPHONES

For Nos. 250, 302, 205, and 306 desk type telephones using the following handsets and cords:

Handset No. F1AW, No. H3C-9 cord — Use No. 3002 cord.

Base (or Mounting or Desk Stand) cord — Use No. D-3AL-9 for Nos. 302, 306 type—Use No. 3006 cord.

FOR STROMBERG-CARLSON TELEPHONES

For No. 1243 desk and No. 1250 wall type telephones using following handsets and cords:

Handset No. 23, Nos. MC-3J and WC-3J cords — Use No. 3002 cord.

Base (or Mounting or Desk Stand) cords Nos. MC-3J and WD-3J for No. 1243 desk type — Use No. 3007 cord.

FOR NORTH ELECTRIC TELEPHONES

For North Electric Nos. H-400 desk and H-800 wall type telephones — the No. 3002 handset cord and the No. 3006 base (or Mounting or Desk Stand) cord should be used.

FOR AUTOMATIC ELECTRIC TELEPHONES

For Nos. 40 desk and 50 wall type telephones using the following handsets and cords:

Handset No. 41 cord No. AH-27 — Use cord No. 3003.

Base (or Mounting or Desk Stand) cord No. AD-57 for No. 40 desk type — Use No. 3007 cord.

FOR LEICH ELECTRIC TELEPHONES

For Leich Electric Nos. 601 and 605 desk or wall telephones, the No. 3003 handset cord and No. 3007 base (or Mounting or Desk Stand) cord should be used.

TABLE OF REPLACEMENT CORDS

THREE CONDUCTOR CORDS

Kellogg Cord No.	Replace With
F-640-D	3013
641-D	3016
F-673-G	3001
F-723-G	3001
769-M.F.P.	3004
770-M.F.P.	3000

W. E. Co. Cord No.	Replace With
H3C	3002
D3AL	3006
D3BB	3031

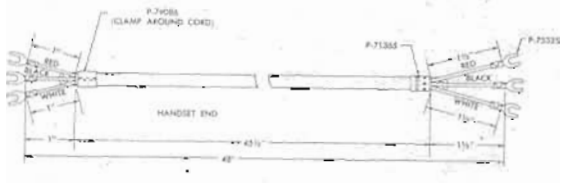
S. C. Cord No.	Replace With
MC-3J	3007
WD-3J	3007

A. E. Co. Cord No.	Replace With
AH-27	3003
AD-57	3007

FOUR CONDUCTOR CORDS

Kellogg Cord No.	Replace With
771-M.F.P.	3020

W. E. Co. Cord No.	Replace With
H4BF	3030



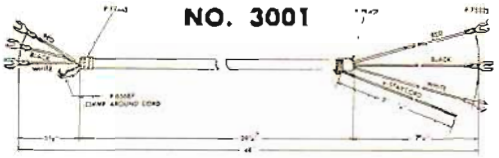
HANDSET CORDS

Three Conductor

NO. 3000

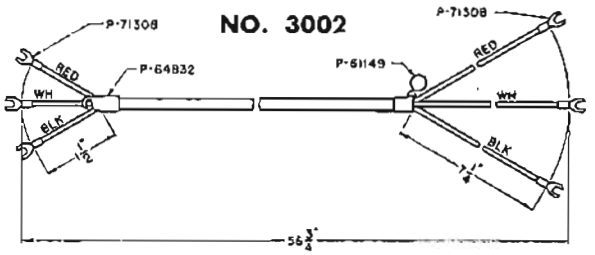
Made up of 12 strands cadmium bronze tinsel, rubber covered conductors, neoprene jacket, three conductors, equipped with No. P-78086 cord clamp hook at each end. This cord replaces No. 770-M.F.P. cord when neoprene cord is desired, and fits No. 46-C Handset. Conductor colors: Red, Black, and White. On the Stand end, the conductors are each 1½ inches long. On the Handset end, they are 1 inch long. The cord is 48 inches overall length. Both ends are equipped with No. P-75325 terminals.

NO. 3001



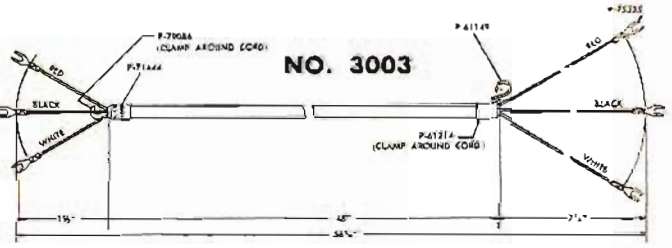
Constructed similar to No. 3000, this neoprene cord is equipped with No. P-65857 cord clamp hook at the Handset end. It is a replacement for Nos. F-673-G and F-723-G cords, when a neoprene cord is specified. Conductor colors: Red, Black, and White. On the Stand end, each is 7¼ inches long; on the Handset end, each is 1½ inches long. No. P-75325 terminals are attached to each end.

NO. 3002



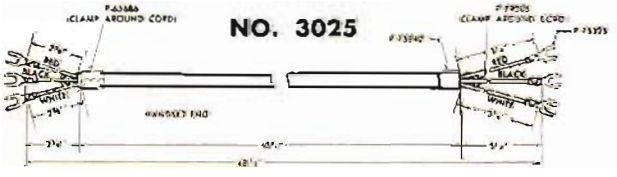
A similarly constructed neoprene three-conductor cord, equipped with No. P-79086 cord clamp hook on the Handset end, and a No. P-61149 hook on the Stand end. Terminals at both ends are No. P-75325; the cord is 56¾ inches overall length. Colors: Red, Black, and White, are each 7¼ inches long at the Stand end, and 1½ inches long at the Handset end. It is a replacement for Western Electric, Stromberg-Carlson and North Electric Co. handset cords, when a neoprene cord is desired.

NO. 3003



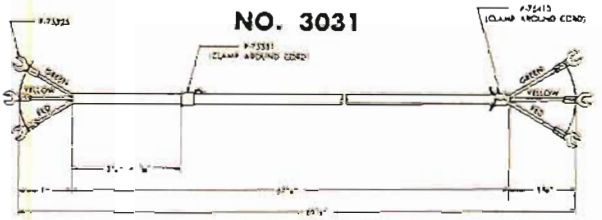
This neoprene cord is a replacement for Automatic Electric Co. and Leich Electric Co. fabric cords when a neoprene cord is desired. It is 48 inches long, comes equipped with No. P-79086 cord clamp hook on the Handset end, No. P-61149 hook on the Stand End. Conductor colors: Red, Black, and White, all of the same lengths: 3½ inches at the Stand end, 2 inches at the Handset end. Same P-75325 terminals at both ends.

NO. 3025



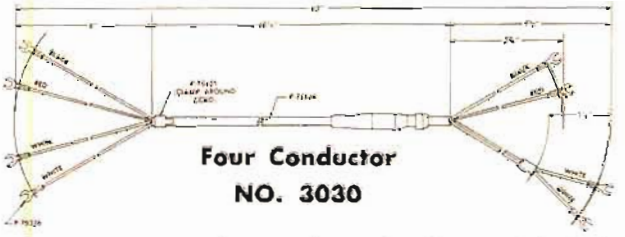
A 3-conductor, neoprene jacketed, rubber-covered conductors, handset cord of 48½ inch overall length. Conductor colors: Red, Black, and White, each of the same lengths: 3¼ inches at the Stand end; 2⅜ inches at the Handset end. Terminals No. P-75325 at both ends. For Automatic Electric Co. Nos. 34-A-3, 31-B, 40, and 43 telephones, and Automatic Electric Co. Paystations equipped with Kellogg handset.

NO. 3031



A new neoprene cord, used with the new K-500 telephone. Overall cord length 69½ inches. Replaces Western Electric Co. D-3BB fabric cord when a neoprene cord is indicated. Conductor colors: Green, Yellow and Red, all of the same conductor lengths . . . 1 inch at the Stand end, 1⅜ inches at the Handset end. Terminals at the stand end No. P-75325; at the Handset end No. P-75329.

Four Conductor
NO. 3030



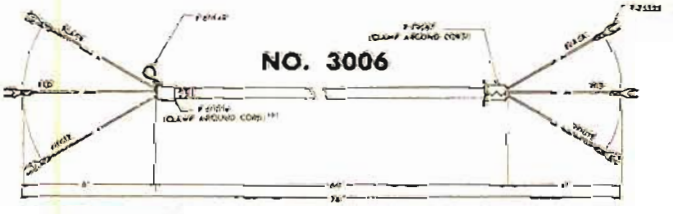
This new neoprene four-conductor handset cord, similarly made to the 3-conductor neoprene cords, is used on the 65-C handset, and replaces Western Electric Co. No. H-4BF fabric cord when a neoprene cord is illustrated. Overall cord length 62 inches. Conductor colors: Black, Red, White, and White. Conductor lengths at the Stand end, 6 inches each. Black and Red lengths at the Handset end, 2⅝ inches long. White and White conductor lengths at the Handset end are each 7½ inches long. No. P-75325 terminals at both ends.

DESK STAND CORDS
Three Conductor
NO. 3004

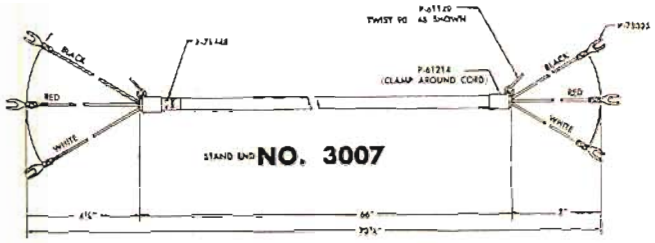


Made of 12-strand cadmium bronze tinsel, this three-conductor cord is rubber covered and jacketed in neoprene. Overall cord length 71¾ inches, equipped with No. P-79086 cord clamp hook on the Stand end. Replaces No. 769 M.F.P. fabric cord when a neoprene cord is required, and is used for Kellogg No. 1000 series Masterphones. Conductor colors: Red, Black, White, with the same conductor lengths. 1¾ inches at the Stand end, 1⅜ inches at the Handset end. No. P-75325 terminals installed at both ends.

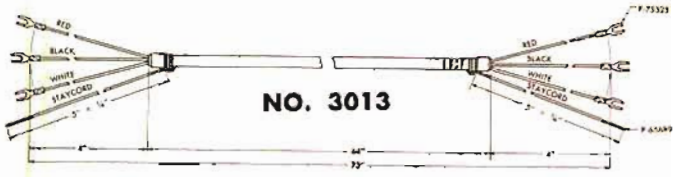
NO. 3006



This cord is a replacement for Western Electric Co. No. D3AL and North Electric Co. braid cords when a neoprene jacketed cord is specified. Overall cord length 76 inches. Equipped with No. P-61149 hook on the Stand end. Conductor colors: Red, Black, and White, all 6 inches long each at the Stand end, 4 inches long each at the Handset end. Terminals No. P-75325 at both ends.



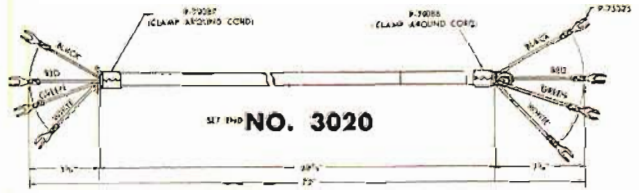
Another replacement item for Automatic Electric Co. No. AD-57, Leich Electric Co., and Stromberg-Carlson Co. Nos. MC-3J and WD-3J braided cords when a neoprene jacketed cord is specified. This cord is 73¼ inches long, complete with a No. P-61149 hook with closed eye at each end. Conductor colors: Red, Black, and White, have the same lengths: 4¼ inches at the Stand end, 3 inches at the Handset end. No. P-75325 terminals installed at each end.



The same general construction as Kellogg No. F-640-D braided cord, which it replaces when a neoprene jacketed cord is desired. Used as a replacement with desk stands Nos. F-115-A, F-118-A, F-118-B, F-135, F-138, F-301 and Nos. 900 and 925 Masterphones. This cord is 72 inches long. Conductor colors: Red, Black, and White, are the same lengths: 4 inches on both the Stand and Box ends. Terminals installed at both ends, No. P-75325.

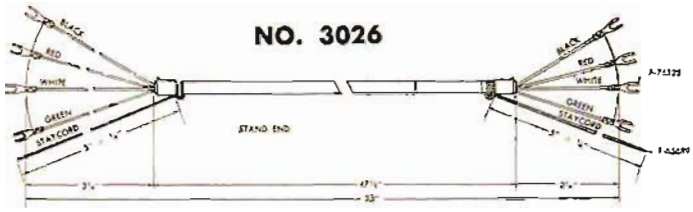


This neoprene jacketed, rubber-covered cord has universal terminals to fit handsets of any manufacture. It is 73¼ inches long, equipped with a No. P-61149 hook at each end. Conductor colors: Red, Black, and White, with identical conductor lengths. On the Stand end, 5 inches; on the Box end, 3 inches. Cord terminals are the same at both ends, No. P-75325. Used on Automatic Electric No. 21 desk stand, No. 34-A-3 cradle set, and No. 40 telephones.



FOUR CONDUCTOR

A replacement cord for Kellogg No. 771 M.F.P. braided cord, when a neoprene cord is specified. No. 3020 is a 12-strand cadmium bronze tinsel, four rubber-covered conductors, encased in a neoprene jacket. It is 72 inches overall cord length. Conductor colors: Green, Red, White, and Black. Each has the same conductor lengths: 1¾ inches at the Stand end; 1⅜ inches at the Box end. Terminals No. P-75325 are the same at both ends.



A four-conductor, neoprene-jacketed, rubber-covered desk stand cord, 53 inches overall cord length. Conductor colors are: Black, Red, White, Green. Each conductor has the same lengths: 3¼ inches at the Stand end, 2¼ inches at the Box end. Terminals No. P-75325 is installed at both ends. Used with Automatic Electric Paystations and Kellogg No. 41 handset for switchboards.

KOILED KORDS

Koiled Kords, the "wonder why I didn't think of that" idea, were originally developed and patented by Kellogg. Later, this highly useful item was taken over in its entirety by Koiled Kords, Inc., an entirely separate organization which specializes in the manufacture and sale of Koiled Kords exclusively.

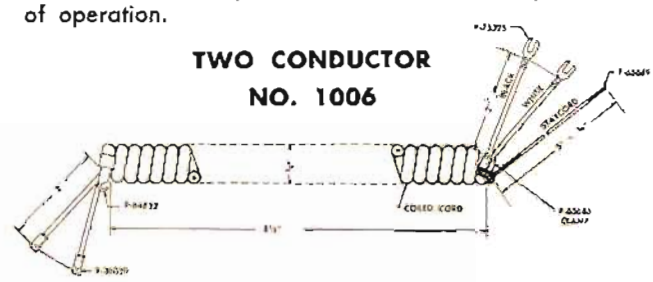
Jacketed exclusively in Neoprene, Koiled Kords immediately demonstrated their efficiency in handling telephone and other cords. Permanently coiled, these unique cords stretch to their full length, and return to the original coil. Saves space on crowded desks, saves frustration due to ordinary cord's habit of entangling itself around other objects, saves temper, contributes to a calmer approach to telephone conversations.

The possibilities for the Koiled Kord are limitless. Fortunately, they were first introduced to the telephone industry, and today are becoming increasingly popular.

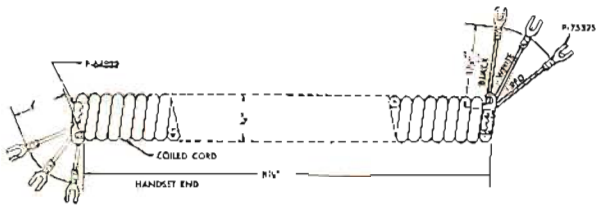
These cords are pre-coiled at the factory, and return to their original positions after being stretched in use. They are kept out of the user's way and take up less room than ordinary telephone cords. The advantages of Koiled Kords are many, but instantly recognizable.

At present, the following Kellogg items are in stock and may be installed on Kellogg telephones when specified. The trend is toward a greater use of Koiled Kords as the public becomes better acquainted with their efficiency and ease of operation.

TWO CONDUCTOR
NO. 1006

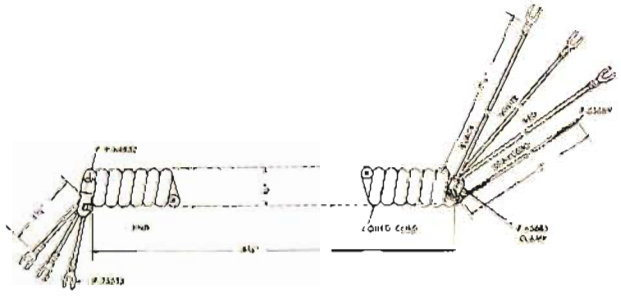


Black and white are the two colors in this coiled cord. Cord diameter .185 inches — .205 inches. Both conductor lengths 2 inches at the handset end, 2 inches at the other end. Terminals at the handset end are No. 36039, at the other end, No. 75325. Outside diameter of coil ¾ inches. Length retracted 8½ inches; extended, 51 inches.



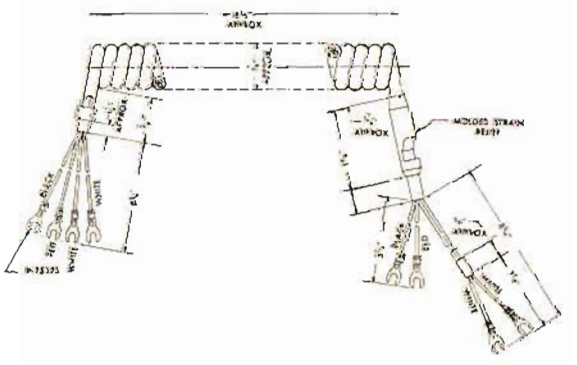
THREE CONDUCTOR
NO. 1000

A three-conductor retractable telephone cord, neoprene jacketed. Conductor colors: Black, White, and Red. Used on the 47-C handset. Made by Koiled Kords, Inc., their No. 5001-1. Cord diameter is 0.185 - 0.205. Conductor lengths: 1 inch at Handset end, 1½ inches at the other end. Terminals at Handset end and other end, both No. P-75325. Outside diameter of cord coil, ¾ inch. The overall retractable cord length is 8½ inches contracted, expanding to 51 inches. For Kellogg No. 1000 series desk and No. 1100 series wall Masterphones.



NO. 1002

A genuine Koiled Kord, their No. 5001-2. Its three-conductor cord colors are: Black, White, and Red. Cord diameter and terminal numbers same as No. 1000. Conductor length at Handset end 1½ inches; at other end, 7½ inches. Length of cord, retracted, 8½ inches; extended, 51 inches. A No. P-64832 cord hook is installed at the handset end. For Kellogg Nos. 900, 925, 9900, 9917 series and other Masterphones using a No. 27-C handset.



FOUR CONDUCTOR
NO. 1005

A new Koiled Kord especially designed for Kellogg's latest telephone, the K-500 series! This is a four-conductor, rubber-insulated cord with a neoprene jacket, permanently formed in a retractable coiled position. It is for the Kellogg No. 65-C (2) handset, a K-500 type telephone. Koiled Kord No. 5022-2. Its conductor colors are: Black, Red, White, and White. The cord diameter is 0.212 - 0.242, and the outside diameter of the Koil Kord is ⅞ inches. The Black and Red conductors are each 3⅞ inches long at the Handset end, while both White conductors are 8⅜ inches long. All four conductor lengths are the same at the other end: 6⅜ inches. No. P-75325 terminals are installed on all eight ends. The Koiled Kord is 8½ inches long when retracted, extends to 51 inches. For Kellogg K-500 series and Western Electric Co. No. 500 series handset type telephones.

KOILED KORDS IN COLOR
to Match New
K-500 Telephones IN FULL COLOR!

Koiled Kords, made of neoprene jacketing over rubber-covered conductors, are STANDARD EQUIPMENT for the new K-500 telephone series! The following table shows the new K-500 telephones both in Black and in COLOR, *including* the Mounting (or Desk Stand or Base) neoprene wire cords in Matching Color, and the Koiled Kords as Handset wires, in Matching Color:

Telephone Code No.	Telephone Color Code	CORDS Mounting	CORDS Koiled Kord
K-500			
K-500-1	Black	3031	1005
K-500-2	Red	3038	1010
K-500-3	Brown	3032	1007
K-500-4	Yellow	3040	1011
K-500-5	Green	3041	1012
K-500-6	Blue	3042	1013
K-500-7	Beige	3043	1014
K-500-8	Gray	3033	1008
K-500-9	Ivory	3036	1009

EXAMPLE: Suppose you want to order a K-500 telephone in Red, with a Biased Ringer. Your order would read: DK-500-2(BA). The figure "2" refers to the color, and since both the Mounting and Desk Stand (Koiled) cords are standard neoprene, that is all that is necessary to secure the Red color. The letters in parentheses refer to the Ringer type (BA), meaning a "Biased Ringer".

COLORED TELEPHONES

Kellogg K-500 Full Color telephones may be ordered by showing the proper suffix symbol directly after the Desk or Wall K-500 code number. Thus, Code DK-500-BA indicates a standard black desk telephone, whereas DK-500-4-BA indicates a full-colored Yellow telephone. Following are the eight colors and their suffix symbols to be used in ordering Desk and Wall K-500 telephones:

—2 Red	—6 Blue
—3 Brown	—7 Beige
—4 Yellow	—8 Gray
—5 Green	—9 Ivory

Kellogg K-500 Full Color telephones are of exactly the same styling as the standard black, except they are furnished with Colored housings, Colored finger retainers, Colored dials with transparent finger rings and transparent plungers, Koiled Kords, and Colored Mounting Cords — all are Standard.

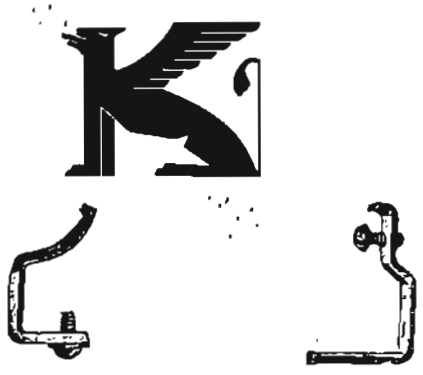
K-500 REPLACEMENT COMPONENTS

Color	Desk Housing	Wall Housing	Handset	Receiver Cap	Transmitter Cap	Dial	Dummy Plug	Koiled Kord	Mounting Cord
Black	75401	79406	65-C	75381	75380	19-G	75419	1005	3030
Red	75401-2	79406-2	65-2C	75381-2	75380-2	19-2G	75419-2	1010	3039
Brown	75401-3	79406-3	65-3C	75381-3	75380-3	19-3G	75419-3	1007	3032
Yellow	75401-4	79406-4	65-4C	75381-4	75380-4	19-4G	75419-4	1011	3040
Green	75401-5	79406-5	65-5C	75381-5	75380-5	19-5G	75419-5	1012	3041
Blue	75401-6	79406-6	65-6C	75381-6	75380-6	19-6C	75419-6	1013	3042
Beige	75401-7	79406-7	65-7C	75381-7	75380-7	19-7G	75419-7	1014	3043
Gray	75401-8	79406-8	65-8C	75381-8	75380-8	19-8G	75419-8	1008	3033
Ivory	75401-9	79406-9	65-9C	75381-9	75380-9	19-9G	75419-9	1009	3036

NOTE: Two-tone K-500 telephones are available, equipped with Black handset No. 65-C, Black dial No. 19-G, Black Mounting Cord No. 3031, and Black Straight handset cord No. 3031. The Desk and Wall housings are colored.

Colored Koiled Kords are made exactly the same as No. 1005 Koiled Kord (black), except for the difference in color. All have self-contained grommets at each end of the cord. The Red, Gray, Brown, Blue, and Green cords have a jacket of black neoprene under an outer layer of colored Chloro-Sulfonated-Polyethylene. This outer jacket will not discolor upon exposure to light, and is highly resistant to aging, cracking and abrasion.

The Ivory, Yellow, and Beige cords have an outer jacket of Ivory neoprene under an outer layer of Ivory, Yellow, or Beige color in Chloro-Sulfonated-Polyethylene to provide a fast color.



No. 4 No. 5

CORD FASTENERS

Brass-punched with hot tinned finish for soldering to switchboard cable, and screw terminals for connecting with switchboard cords. No. 4 dimensions: 1 1/16 inches long, 1/4 inch wide. No. 5 dimensions: 1 3/16 inches long, 5/16 inches wide.

CUSHIONS, PLUG

These cushions fit snugly around the switchboard cord just below the plug, and absorb the shock when the plug is returned to the plug seat. This cushioning is essential; it protects both the plug and cord from damage and excess wear. Kellogg plug cushions are made of gray anti-oxidant rubber in sizes to fit all standard cords. Installed easily by using Kellogg Tool No. 95, which fits over the plug end to provide a smooth, sloping surface to position the rubber cushion. See Tools Section for details of this handy installing tool.

Code No.	Description
1-A	21/64 inch diameter, 3/16 inch hole size. Fits 0.2495 inch diameter plugs.
2-A	17/64 inch diameter, 5/32 inch hole size. Fits 0.2215 inch diameter plugs.

NO. 9 CORD WEIGHT

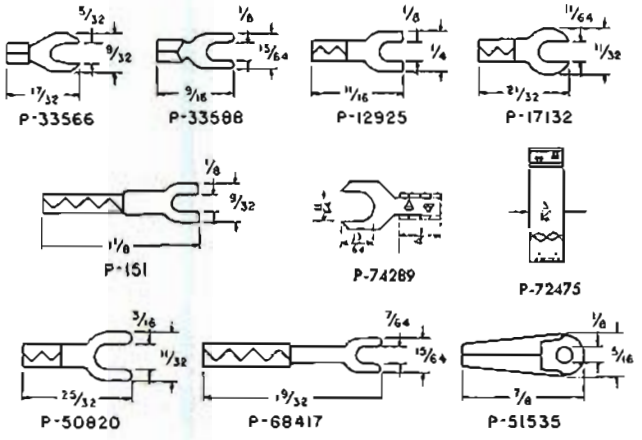


This cord weight is the standard weight for promptly restoring switchboard cords to their proper position after use. Adjustable weight from 9 to 11 ounces. This cord weight will perform its work quickly yet not damage the cord. The steel casing is rust-proofed before filling with lead to add weight. Pully wheel helps prevent damage to cords while in use. Dimensions of weight: 4 inches long, 1 23/32 inches wide, 1/2 inch thick.

CORD TERMINALS

Shown below are the terminals regularly used on Kellogg equipment, including the individual cords described in this Cord section. When you need these items, please order terminals by the Code Number to facilitate handling speed and insure rapid, accurate shipment to you. If the terminal you desire is not shown here, please send a drawing to the Kellogg Sales Department for price estimate.

Western Electric Co. Terminals	Kellogg Equivalent
29	60192
38	33563
45	51535
47	33563
62	33566
72	33566
80	36039
86	33566
87	33588
101 or 120	67297
102 or 121	67298





KOILED KORDS

No Kinking, No Twisting!

A perfect, practical solution to the frustrating, annoying problem of kinking telephone cords! Completely compact, fully retractable, almost indefinite life. Means few replacements, more completely satisfied subscribers.

The average Koiled Kord is of high quality, tinsel conductor telephone cord, permanently coiled to an average length of only nine inches. Yet — with just a slight pull, it extends to four feet. A superb Convenience Item!

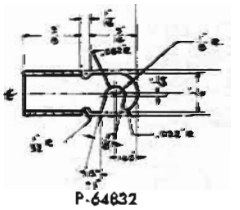
The small diameter and light-but-strong construction permit the Koiled Kord to extend with only a slight pull. They are permanently molded into a spring-like shape with no mechanical devices, to produce their remarkable retractability and uniform small diameter.

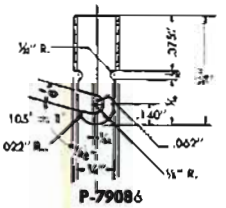
No matter where it is used, the Koiled Kord can "take it". Rubber covered conductors encased in a tough Neoprene jacket protect it against abrasion, light, oil, grease and acid. It is particularly designed to be used in "tough" installations where cord replacements formerly were a problem, as in lunch rooms, gas stations, paint and chemical plants.

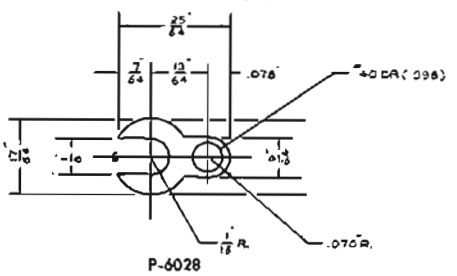
Every subscriber who sees it wants a Koiled Kord on his own office telephone. Now that Koiled Kords are available in color to match the new Colored Telephone, every home is a prospect for a colored telephone and a matching colored Koiled Kord. This leads to a demand in each family for extension telephones in color with matching Koiled Kords, throughout the entire home.

If ever there was a natural "business builder" for telephones . . . the Koiled Kord is it!

ordering information on following page ▶







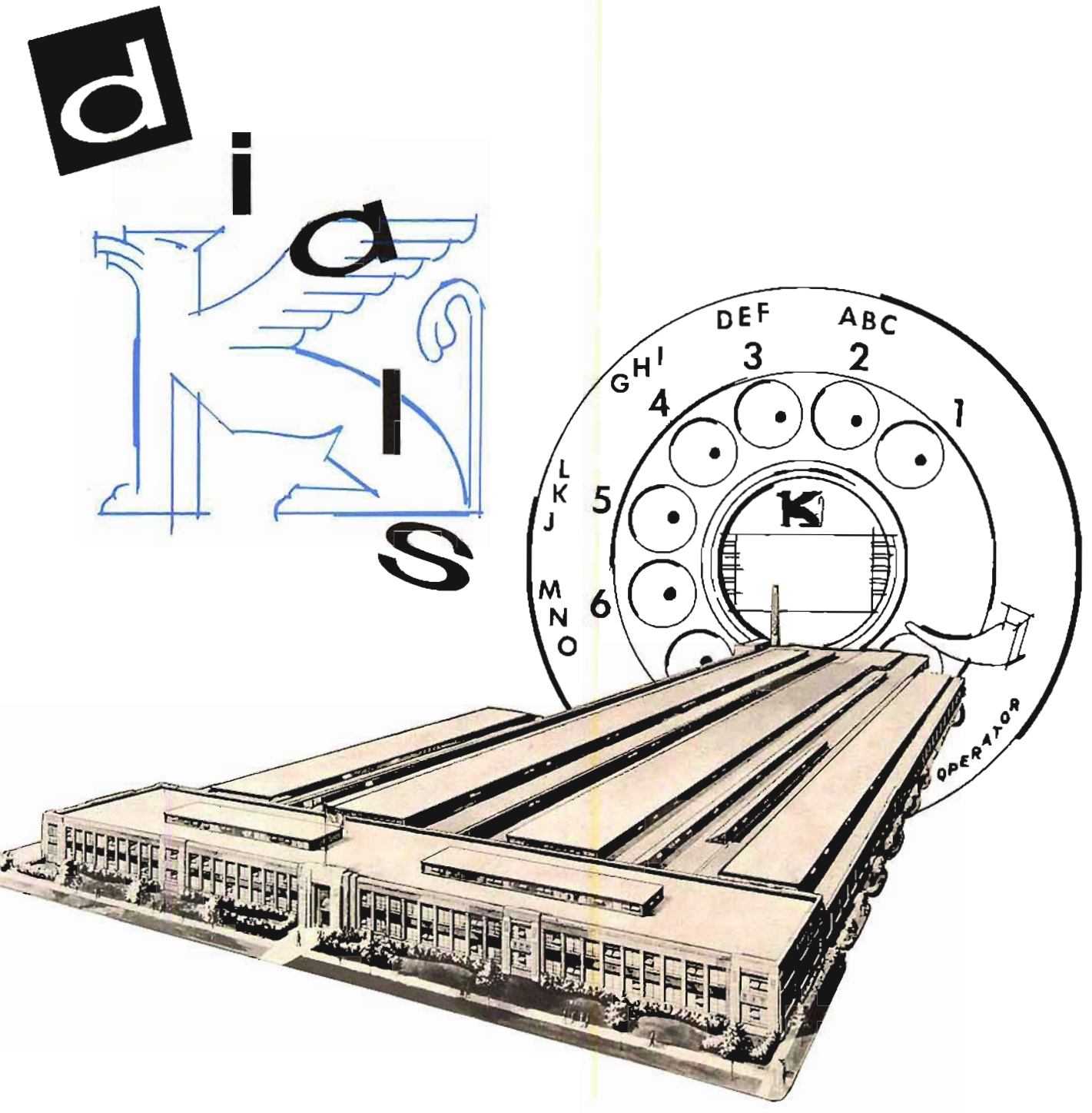
NOW STOCKED IN THESE KELLOGG STYLES

RECEIVER CORDS

Kellogg Code No.	Koiled Kord Cat. No.	Description	Application
1000	5000-1	3 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg No. 1000 series desk and No. 1100 series wall telephones.
1002	5001-2	3 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg Nos. 900, 925, 9900, 9917 series and other Masterphones using a No. 27-C handset.
	5020-8	4 Cond. Tinsel 4′ extended 8½″ retracted	For magneto type telephones.
1003	5020-47	4 Cond. Tinsel 5′ extended 10″ retracted	For Kellogg Masterphone magneto set.
1005	5022-2	4 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series telephones.
	5022-3	4 Cond. Tinsel 10′ extended 18″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series telephones.
	5022-6	4 Cond. Tinsel 13′ extended 26″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series telephones.
	5022-50 Ivory Beige Yellow	4 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series handset type telephones. Specify color when ordering. (Same as No. 5022-2 except for color.)
	5022-52 Green Gray Red Brown Blue	4 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series handset type telephones. Specify color when ordering. (Same as No. 5022-2 except for color.)
	5022-54 Brown	4 Cond. Tinsel 4½′ extended 8½″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series handset type telephones. Brown color. (Same as No. 5022-2 except for color.)

LINE CORDS

5001-10	3 Cond. Tinsel 10′ extended 16½″ retracted	10′ Line Cord completely trimmed.
5001-15	3 Cond. Tinsel 15′ extended 25″ retracted	15′ Line Cord completely trimmed.
5001-25	3 Cond. Tinsel 25′ extended 42″ retracted	25′ Line Cord completely trimmed.
5011-5	3 Cond. Tinsel 25′ extended 42″ retracted	For Kellogg No. K-500 series and Western Electric Co. No. 500 series telephones.

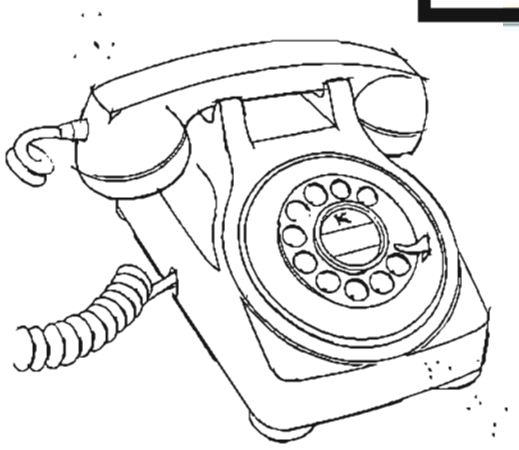


DIALS

Kellogg dials, noted for their simplicity, effectiveness and operating ease, are offered in three types of number plates to suit various dial applications. The Standard number plate —numbers *only* from 1 to 0, is indicated by the suffix letter "D" after the dial code number. If a Metropolitan number plate is desired—with both numbers and letters—the suffix letter "G" appears after the dial code number. A third number plate, with numbers from 1 to 0 and with the word "Operator" along with the 0 digit, is available. If this dial is desired, use the suffix letters "DO" after the dial code number.

A schematic diagram of each of the code numbers, with the suffix letters designating the number plates available with the respective dial codes, follows . . . . To install dials, special tools are needed. See "Tools, Switchboard" for Tools Nos. 3-86 and 92.

TELEPHONE TYPE



TELEPHONE TYPE

A new, super-efficient dial for Kellogg's new, ultra-modern K-500 series telephones! Made like a fine watch, to insure perfect operation under any conditions!

Its greatest feature is a single-lobed cam, driven by a motor spring acting through a gear train, which operates the pulsing springs. This assures uniform dial pulses. An improved governor provides better speed control. It is connected to the dial by a clutch which engages only on the self-return of the dial. "Forcing" of the dial return is minimized by the governor's "drive-bar" feature.

The "heart" of the dial is the nylon pawl. This form of Nylon is trouble-free, wear-proof, and lasts the full life of the dial. The cam is fastened to the pulsing shaft which has a 12:1 gear ratio with the finger wheel. The spacing of the holes in the finger wheel is such that, if "E" is the number of the digit dialed, the pulsing shaft and therefore the cam rotates "E-plus-1" revolutions. The nylon pawl is coupled to the cam shaft through a spring friction drive, and rotates with the shaft between the beginning and ending stops. When the dial is wound up, the pawl moves to the starting position.

Both springs follow the cam motion so that the bifurcated (or forked) contact does not open. During the "rundown" when impulses are sent to the central office, the pawl moves to the second position on the first revolution of the cam shaft, and remains there during the successive revolutions. Only the bottom pulsing spring follows the cam. The top spring is restricted by the pawl. The contacts are therefore opened and closed "E" times for every "E-plus-1" revolutions of the cam shaft.

This new dial provides an extremely quiet action with no disturbing clicks, resulting in a completely satisfactory trouble-free dial service. The K-500 number plate is an improved type, with characters and numbers located *outside* the finger wheel, and "Target Dots' inside the finger wheel to provide increased legibility and facilitate faster and more accurate dialing.

This new dial, termed the "Expanded Metropolitan Dial", is Standard on the Kellogg K-500 series, and is restricted to the K-500 series *alone*.

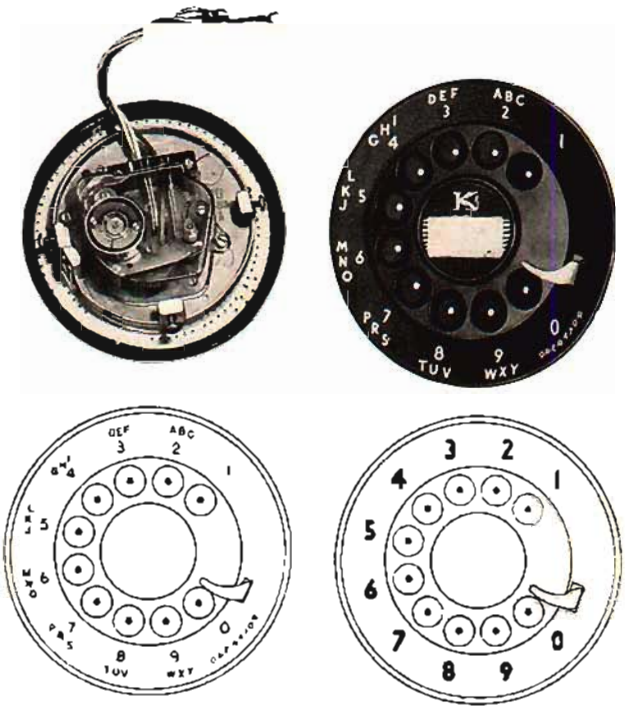


Fig. 1

Dials for K-500 Desk Set

TYPE G

Expanded Metropolitan Dial
Letters and Numerals Outside Dial

TYPE D

Standard Dial — Numbers Only

Code No.	Wiring Diagram	Type No. Plate
19-D	Fig. 1	D*
19-G	Fig. 1	G†

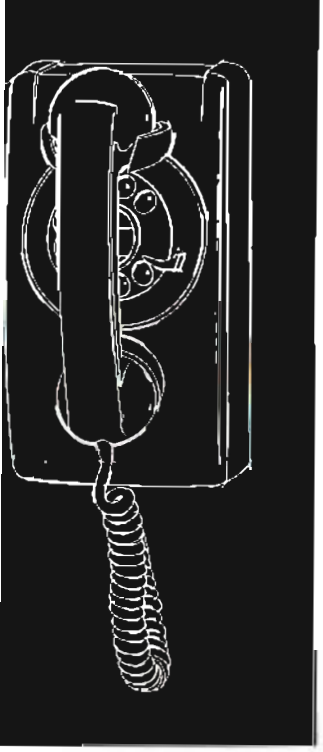
*K-500 Standard Type Dial, Numbers Outside Dial.

†K-500 Type Dial, Expanded Metropolitan Dial, Letters and Numbers Outside dial.

COLOR

The 19-D and 19-G telephones of the K-500 series are now also available in EIGHT colors and black! The modern note for the modern home, or to "brighten up" older ones. The dials will be in matching color with a transparent fingerplate. Colors of each are:

Code No.	Color	Type No. Plate	Remarks
19-D	Std. Black	D	Expanded Standard Dial Plate
19-2-D	Red	D	Expanded Standard Dial Plate
19-3-D	Brown	D	Expanded Standard Dial Plate
19-4-D	Yellow	D	Expanded Standard Dial Plate
19-5-D	Green	D	Expanded Standard Dial Plate
19-6-D	Blue	D	Expanded Standard Dial Plate
19-7-D	Beige	D	Expanded Standard Dial Plate
19-8-D	Gray	D	Expanded Standard Dial Plate
19-9-D	Ivory	D	Expanded Standard Dial Plate
19-G	Std. Black	G	Expanded Metropolitan Dial Plate
19-2-G	Red	G	Expanded Metropolitan Dial Plate
19-3-G	Brown	G	Expanded Metropolitan Dial Plate
19-4-G	Yellow	G	Expanded Metropolitan Dial Plate
19-5-G	Green	G	Expanded Metropolitan Dial Plate
19-6-G	Blue	G	Expanded Metropolitan Dial Plate
19-7-G	Beige	G	Expanded Metropolitan Dial Plate
19-8-G	Gray	G	Expanded Metropolitan Dial Plate
19-9-G	Ivory	G	Expanded Metropolitan Dial Plate



K-500

WALL TELEPHONES

No. K-554

A new addition to the K-500 series line of telephones! Kellogg offers the new K-554 wall telephone for residential use in kitchens, garages, basements, sewing rooms, children's rooms — wherever a wall telephone is needed, or as an extra telephone. The K-554 telephones are available in either the Standard (Type "D") with the extended dials—numbers only, or the Expanded Metropolitan (Type "G") dial — numbers and letters outside the dial. Both are offered in colors, as indicated in the chart (page L-40).



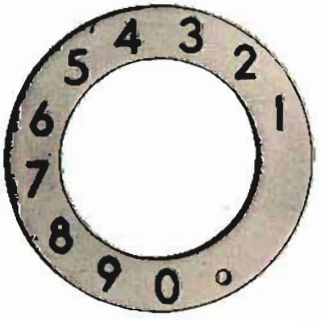
SCHEMATIC FOR DIAL
15-D, 15-DO & 15-G

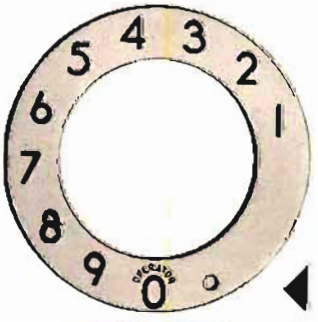
Fig. 2



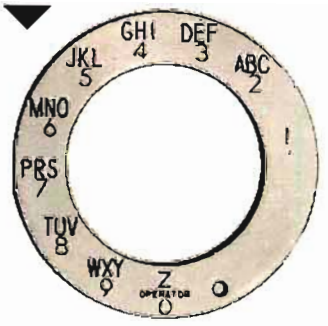


TYPE "D" DIAL
Standard Dial — Numbers Only





TYPE G DIAL
With Both Letters and Numbers



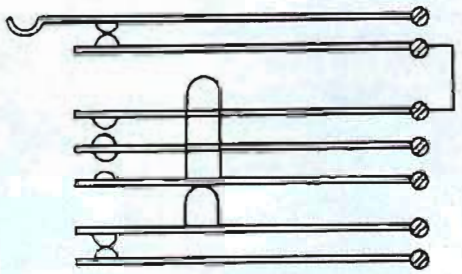
TYPE "DO" DIAL
A "Number-Only" Dial with Word "Operator" Inside Dial

NO. 15 TYPE DIAL

This telephone type dial is used on the 1000-type, 1100-type, and 925 series telephones.

The No. 15-type Dials, used with Nos. 925, 1000-type or 1100-type telephones, have a connecting strap No. P-71964 *included*, as shown in the dotted line.

Code No.	Wiring Diagram	Type No. Plate
15-D	Fig. 2	D Standard
15-G	Fig. 2	G Regular
15-DO	Fig. 2	DO



SCHEMATIC FOR DIAL
17-D, 17-DO & 17-G

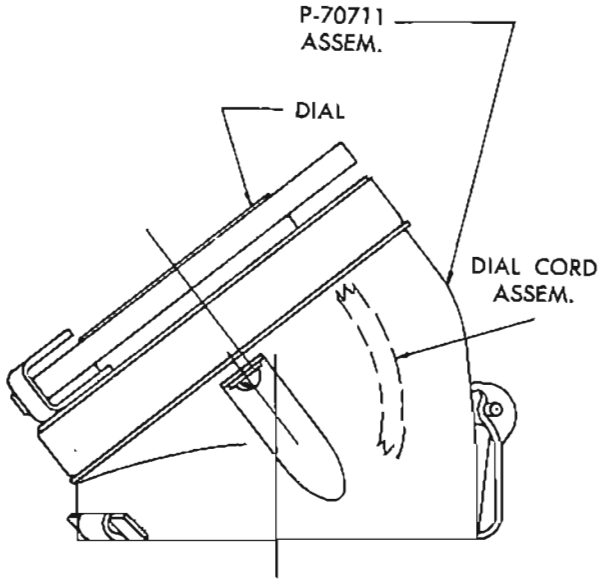
Fig. 3

NO. 17 TYPE DIAL

Uses the same type dial as No. 15 dial. Used mainly on Western Electric Co. Nos. 251 and 302 telephones. Different schematic wiring diagram.

Code No.	Wiring Diagram	Type No. Plate
17-D	Fig. 3	D Standard
17-G	Fig. 3	G Regular
17-DO	Fig. 3	DO

When the No. 17-type dials are used with Western Electric Co. No. 251 or 302 telephones, use Adapter No. P-74446. This adapter is used for mounting these dials flush on panels or mounting plates which may be of different thicknesses. The adapter is a soft rubber gasket with three eyelets and three screws for mounting.



SWITCHBOARD TYPE DIALS
No. 13
Dial Cord Assembly

These dials are used on switchboards. The dial itself is a No. 15 dial with this important difference — the No. P-71964 is *removed*, as shown in the wiring diagram. For switchboard use, a No. P-70711 dial cord assembly is used to house the dial and its mechanism.

Code No.	Wiring Diagram	Type No. Plate
13-D	Fig. 4	D Standard
13-G	Fig. 4	G Regular

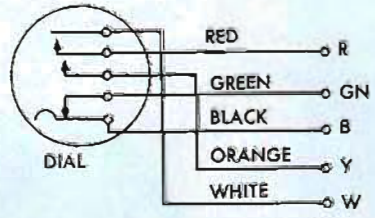


Fig. 4

SCHEMATIC FOR CODE 20-D & 20-G



DROPS, CLEAR OUT

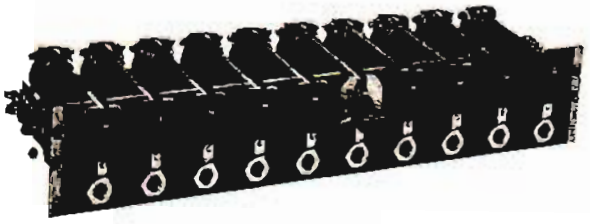
All Kellogg drops are factory-adjusted for positive, sensitive operation. These drops are supplied without mountings and without coils, unless these parts are ordered with the drop. Be sure to include the code numbers of both the mounting and coil desired when ordering. Drop coil mountings are found listed under "Mountings". The coils are listed below.

Code No.	Fits Mountings	Description
		NIGHT AND CODE ALARM TYPE CONTACTS
60	496 - 508 - 509	Regular night alarm and code night alarm contacts. Replaces No. 50. Has staggered insulators, special finish on steel parts.
		NIGHT ALARM TYPE CONTACTS
70	494 - 504 - 505 506 - 507 - 510	Regular night alarm contacts only. Replaces No. 51. Has staggered insulators, special finish on steel parts.

DROP COILS

These coils are designed to be used with Kellogg Clear Out Drops (see above), Nos. 60 and 70. They are wound to varying resistances to meet varying line and switchboard conditions. If other resistances are required, contact the Kellogg Sales Department for special windings.

Code No.	Resistance (ohms)
DC	1000
DE	500



DROPS AND JACKS, COMBINED

The combined drop and jack is used as a line signal on rural and toll lines on manual type switchboards. The drop is sensitive and provides a clear signal for incoming calls. The drop shutter is mechanically restored when the switchboard plug is inserted to answer the call. Coils and mountings are not furnished unless ordered.

Coils of the proper resistance may be selected from the list of coils under "Coils, Drop and Jack". Mountings must be ordered separately, and the code number and number of units to be mounted on each mounting strip must be specified with the order. Drops and Jacks, Combined, ordinarily are supplied unnumbered, but number plates can be supplied if specified.

These drops and jacks, combined, will fit Mounting Nos. 495, 497, 498, 499, 500, 502, 503, and 552. If other drops and jacks, combined, are required or different specifications are needed, please contact the Kellogg Sales Department for special information.

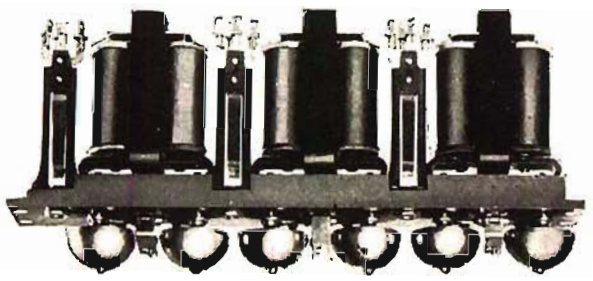
Code No.	Fits Plug Code No.	Description
		TWO CONDUCTOR TYPE
509	42	Regular night alarm contacts on spring jack. Has break contact on tip conductor. Drop coil shell is grounded. Replaces No. 301.
		THREE CONDUCTOR TYPE
505	106	Regular night alarm contacts on spring jack. Double "cut-off" contacts for toll line use. Has break contact on both tip and ring conductors. Drop shell is grounded.

DROP AND JACK COILS

These coils are designed to be used with all types of Kellogg combined drops and jacks. They are wound to different resistance values to meet varying line and switchboard conditions. Be sure to order these coils by code number.

Code No.	Resistance (ohms)
DJ-C	1000
DJ-E	500
DJ-S	2500

For special coils of different resistance, consult the Kellogg Sales Department for estimate.



No. 3 TYPE
DROP AND RINGER, COMBINED

The combined ringer and drop is used where a bell signal is required in addition to the visual drop signal. The gongs on these No. 3 type ringers and drops are 1 13/32 inches in diameter, of brass with polished nickel plating. The drop shutter is activated by the ringer armature, but it must be manually restored. These combined ringers and drops are available in the resistances given below. Please use code numbers when ordering.

The spring jack and mounting used with this item are not included, and must be ordered separately.

Code No.	Resistance (ohms)
3-A	1000
3-D	1600
3-E	2500



EXTENSION SHAFTS, GENERATOR SWITCHBOARD TYPE

These generator extension shafts are specially designed to fit the No. P-15911 generator crank that is standard for all Kellogg switchboard operators type generators.

Code No.	Overall Length
13	19½ inches
27	18 29/32 inches

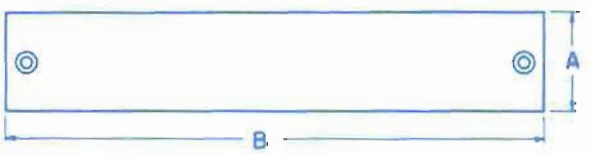
ESCUTCHEONS, KEY

Kellogg key escutcheons, or face plates, are made of brass with a heavy black enamel finish. The items listed below are the ones most constantly used, and are carried in stock at the factory. If the size or shape you require is not on the lists given below, the Kellogg Sales Department will gladly quote on your needs. Mounting screws are not furnished unless specified with the order, or mentioned in the description.

No. 142
Key Blanks (Dummy Plugs)

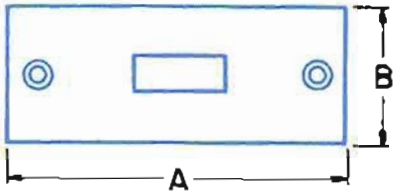


This key blank is used on a blank position of the escutcheon for a No. 1000 type key. Made of cold rolled steel finished in black enamel to match the key escutcheon. Four screws and nuts are supplied for assembly of the blank to the escutcheon. Blank is 1¼ inches long, and ¾ inch wide.



Blank Escutcheons

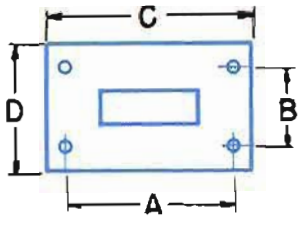
Code No.	Dimensions (inches) A	B
281	½	4
245	¾	4
224	1	4
225	1 1/16	4
256	1 3/32	4
264	½	5½
309	⅝	5½
258	¾	5½
250	13/16	5½
268	1	5½
276	1 1/16	5½
241	1 ⅛	5½
274	1 3/32	5½
261	1 3/32	5½
263	½	7 3/16
279	13/16	7 3/16
262	1	7 3/16
277	1 1/16	7 3/16
255	1 ⅛	7 3/16
273	1 3/32	7 3/16



Dimensions (Inches)

Cam Key Escutcheons
SINGLE TYPE
For 1000 Type Keys

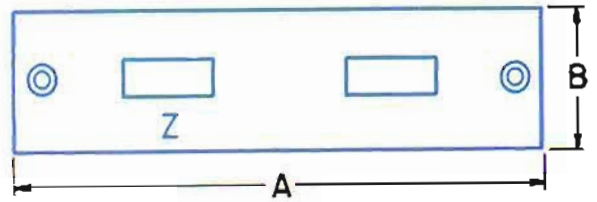
Code No.	Dimensions (inches) A	B
1053	2½	¾
1054	2½	13/16
1055	2½	⅞
1021	2½	1
1069	4	¾



Dimensions (Inches)

SPECIAL SINGLE TYPE

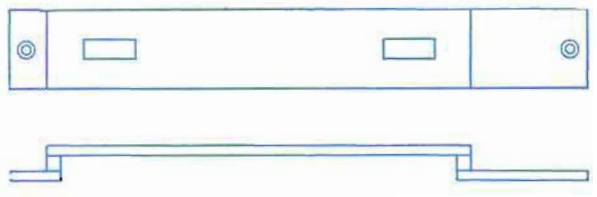
Code No.	Dimensions (inches) C	D	A	B	Remarks
1022	1⅝	15/16	1 1/16	⅝	For Mounting 1000 Type Key to Panel



Dimensions (Inches)

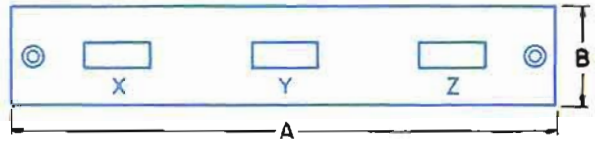
DOUBLE TYPE

Code No.	Dimensions (inches) A	B	Remarks
1070	4	¾	L
1015	4	13/16	
1016	4	13/16	Less Hole "Z"
1013	4	1	
1011	4	1	Less Hole "Z"
1094	4	1 1/16	
1085	4	1 ⅛	
1012	4	1 3/16	
1010	4	1 3/16	Less Hole "Z"
1026	4	1 3/32	



SPECIAL DOUBLE TYPE

Code No.	Length Overall (inches)	Width Overall (inches)
1049	7 21/64	27/32



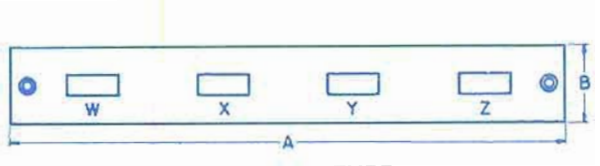
TRIPLE TYPE

Code No.	Length Overall (inches)	Width Overall (inches)	Remarks
1113	5½	¾	
1040	5½	¾	Less Hole "Y"
1076	5½	¾	Less Hole "Z"
1078	5½	¾	Less Holes "Y" & "Z"
1014	5½	13/16	
1074	5½	1	
1041	5½	1	Less Hole "Y"
1077	5½	1	Less Hole "Z"
1075	5½	1	Less Holes "Y" & "Z"
1080	5½	1 1/16	Less Holes "Y" & "Z"
1000	5½	1 ⅛	
1002	5½	1 ⅛	Less Hole "Y"
1004	5½	1 ⅛	Less Hole "Z"
1001	5½	1 ⅛	Less Holes "Y" & "Z"
1043	5½	1 3/16	Less Hole "Z"
1030	5½	1 3/32	
1065	5½	1 3/32	Less Hole "Z"



FOR MILLER TYPE KEYS

Code No.	Length Overall (inches)	Width Overall (inches)
303	3⅝	¾



QUADRUPLE TYPE

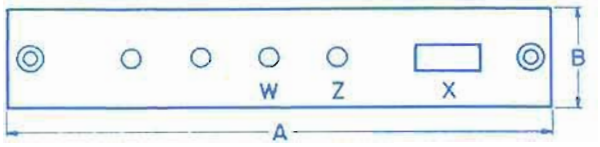
Code No.	Dimensions (inches) A	B	Remarks
1051	7⅜	13/16	
1010	7⅜	1	
1036	7⅜	1	Less Hole "W"
1032	7⅜	1	Less Holes "W" & "X"
1037	7⅜	1	Less Holes "X", "Y" & "Z"
1007	7⅜	1⅛	
1009	7⅜	1⅛	Less Holes "W" & "X"



FOR OLD STYLE FOUR PARTY KEYS (190 TYPES)

Made of polished hard rubber.

Code No.	Length Overall (inches)	Width Overall (inches)	Remarks
202	5½	1⅛	Includes 8 Screws for mounting purposes.



FOR FOUR PARTY KEYS

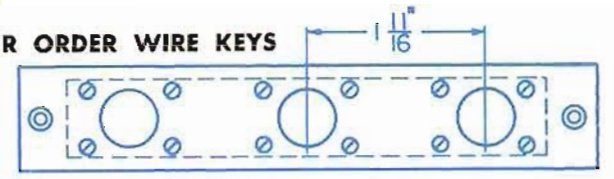
With or Without Hole for Mounting 1000 Type Cam Keys.

Code No.	Dimensions (inches) A	B	Remarks
1027	5½	¾	
1028	5½	¾	Less Hole "X"
1096	5½	⅞	
1097	5½	⅞	Less Hole "X"
1089	5½	15/16	Less Hole "X"
1039	5½	1	
1038	5½	1⅛	
1005	5½	1⅛	
1006	5½	1⅛	Less Hole "X"

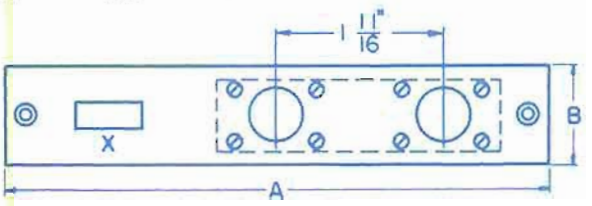


Code No.	Dimensions (inches) A	B	Remarks
1114	7⅜	1	Less Hole "Y"
1033	7⅜	1	
1008	7⅜	1⅛	
1009	7⅜	1⅛	Less Hole "Y"
1111	7⅜	1⅛	Less Holes "V" and "W" (for 2-party Key)

FOR ORDER WIRE KEYS



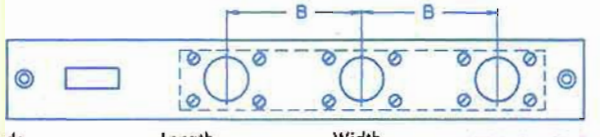
Code No.	Length Overall (inches)	Width Overall (inches)
1083	5½	1



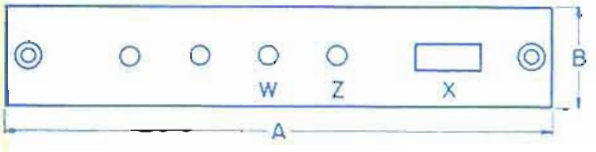
FOR TWO ORDER WIRE KEYS

With or Without Hole for Mounting 1000 Type Cam Keys.

Code No.	Dimensions (inches) A	B	"B" Dim.	Description
1098	7⅜	¾	1 1/16	Less Hole "X"
1101	5½	1	1 1/16	



Code No.	Length Overall (inches)	Width Overall (inches)	"B" Dim. (inches)
1102	7⅜	¾	1 1/16



FOR TWO PARTY KEYS

With or Without Hole for Mounting 1000 Type Cam Key.

Code No.	Dimensions (inches) A	B	Description
1050	5½	⅞	Less Holes "Z" & "W" for 319 Key
1064	5½	1	Less Holes "X", "W", & "Z"

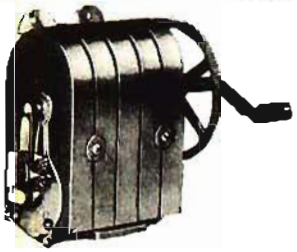


Code No.	Length Overall (inches)	Width Overall (inches)
1062	7⅜	1

FILTERS, NO. 4-A NOISE

This special noise filter is used on all Relaymatic switchboards equipped for harmonic ringing. Made up of one No. 41-B retard coil and two No. P-70717 condensers mounted on one No. P-70716 panel.

A. C. GENERATORS No. 53



Generators by Kellogg are world-famous for their long, dependable service under any conditions, because they are designed with "plus" service values. The generator armatures are wound with a specially insulated wire and vacuum varnish - impregnated to produce the best possible protection against breakdown and to insure long life. The magnets used in these generators are made of 3½% chrome steel to insure that their magnetic strength will be retained at near peak levels. No detail has been overlooked . . . even the generator gears are accurately cut to insure quiet, smooth operation.

The 3-bar generator will ring fifty 2500 ohm bells through 1500 ohms resistance, and five 2500 ohm bells through 19,000 ohms resistance. The 5-bar generator is designed for heavier loaded lines with an output approximately 50% greater than that of the 3-bar generator. The 6-bar generator is a special-purpose generator for extra-heavily loaded lines.

SWITCHBOARD OPERATORS TYPE*

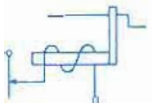


Fig. A

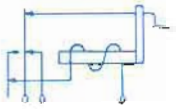


Fig. B

Code No.	No. Bars	Min. Output 24000 ohm load	Circuit	Overall Dimensions (inches) Length	Width	Height
		4-BAR TYPE				
11	4	70 volts	Fig. A	6½	4	5¾
		5-BAR TYPE				
72	5	80 volts	Fig. A	6½	4	5½

*For extension shafts for these generators, see Extension Shafts, Generators.



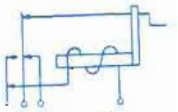


FIG B

TELEPHONE TYPE

Code No.	No. Bars	Min. Output 24000 ohm load	Circuit	Overall Dimensions (inches) Length	Width	Height
		3-BAR TYPE				
15*	3	65 volts	Fig. B	5½	4	5¾
		5-BAR TYPE				
53*	5	80 volts	Fig. B	6½	4	5¾
86*	5	80 volts	Fig. B	6½	4	5¾
		6-BAR TYPE				
75*	6	125 volts	Fig. B	7½	4	5¾
		MINIATURE TYPE				
GN-38-B	2†	60 volts	Fig. B	4	2⅜	3¼
138	2‡	60 volts	Fig. B	4	2⅜	3¼

*ac Type.

†Solid field poles equivalent to 3 bars (has Alnico magnet). Used on Nos. EE-8, 1070 and 1170 phones.

‡Same as GN-38-B except pole piece tapped for No. 1070 type telephone.

HANDSETS

Naturally the new Kellogg K-500 series telephones have a new Handset to match this ultra-modern, efficient new type! It is listed below in the Four-Conductor, Common Battery section as Nos. 65-C and 65-C (2). It looks slightly different from the regular standard black plastic Kellogg handsets, for it is extremely modern in appearance. It is shorter, lighter, easier to handle and use. "Lifts to the ear like a feather." And — it's available in full color!

Kellogg handsets are offered in two basic general types, depending on how the handset is used. These types are: a plastic housing used on all standard Kellogg telephones, and a Metal housing type for installations where space is an important factor.

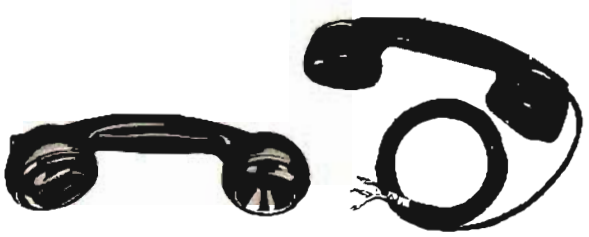
In both the regular Kellogg plastic handset, and in the Metal handset, both have the famous Kellogg Non-Positional transmitter and bi-polar type receivers, using cobalt magnets. The regular Kellogg plastic handsets have two brass bars molded into the plastic handle to serve as conductors to the receiver and reinforce the handle.

These Kellogg handsets are noted for low resistance, low noise and positive connection through field-tested positive clip connections. These clip connections, which require no screws or other terminals, are standard on the regular plastic Kellogg handsets. The Metal type has screw connections to the transmitter.

The 65-C and 65-C (2) handsets are restricted to the new K-500 series telephones. They have a slightly different construction. The cord goes through the handset to the receiver and to the transmitter, where in both cases, connection is made by screw terminals. Alnico magnets are used with the bi-polar receivers. The transmitters are non-positional. Cord noise is eliminated by rubber grommets, integral with the cord, and placed where the cord enters the handset.

All Kellogg handsets are furnished with cords attached. The cord supplied with each handset is listed with the code number of the handset.

Phenol Plastic Type Handsets (Black Bakelite)



THREE CONDUCTOR — COMMON BATTERY

	No. F-27-C	No. 46-C
Code No.	Cord Code No.	Description
F-27-C	F-673-G	For. Nos. 700, 900, and 925 desk Masterphones and Nos. 5800, 9700 and 9900 type telephones.
F-35-C	F-727-G	For Nos. 4910 and 4902 weatherproof telephones.
46-C	770-M.F.P.	Standard for 1000 series Masterphones.
47-C	1000 1000	For 1000 series Masterphones. Has Koiled Cord.

THREE CONDUCTOR — LOCAL BATTERY

53-L	1000	For Nos. 1042-BB-L and 1142-BB-K telephones. Similar in appearance to No. 46-C. Has Koiled Cord.



FOUR CONDUCTOR — COMMON BATTERY

F-40-C	F-699-G	For conversion of local battery wall telephones.
66-C	718-G	Cord fits No. 139 plug. For test set and switchboard operator's handset.
65-C	3030	For K-500 telephones only. New flat-type handset for a new type telephone. Black bakelite plastic.
65-C (2)	1005	For K-500 telephones only. New flat-type handset for a new type telephone. Koiled Cord standard equipment. This number in black, bakelite plastic. For colors in this number, see below.

COLORS



Cellulose Acetate Butyrate (Tenite) Type Handsets

The No. 65-C (2) Handset is available in the colors listed below. When in color, this handset is made of cellulose acetate butyrate ("Tenite") to provide a complete, saturated color that will not fade or spread. This color goes completely through the handset with no variation. The Koiled cords are of the same fast color as the handset, complete with a matching-color grommet where the cord enters the handset.

Color	Handset Code No.	Koiled Cord Code No.
Red	65-2 C (2)	1010
Brown	65-3 C (2)	1007
Yellow	65-4 C (2)	1011
Green	65-5 C (2)	1012
Blue	65-6 C (2)	1013
Beige	65-7 C (2)	1014
Gray	65-8 C (2)	1008
Ivory	65-9 C (2)	1009



METAL TYPE HANDSETS

THREE CONDUCTOR — LOCAL BATTERY

Code No.	Cord Code No.	Description
32-L	F-688-G	Specially built for increased transmission on local battery sets, and for installations where space is at a premium.

If you need other types of handsets than those listed above please contact the Kellogg Sales Department for an estimate.



HEAD BANDS

Kellogg head bands are supplied in a round wire type without cover. These head bands are supplied less receivers. If you desire a receiver with the head band, the receiver code number must be specified when ordering. See Receivers Section for the type receivers used with these head bands.

ROUND WIRE TYPE — SWIVEL WITH YOKE

Code No.	Construction	Receivers Required	Code No. Receiver
12	Round wire, no cover	1	No. 65-A
14	Round wire, no cover	1	Nos. R-114, 85, or 87



HEAD AND CHEST SETS, OPERATOR

Kellogg operator's head and chest sets use the same transmitter, receiver and head band on each of the codes listed below. The difference lies in the cord and plug used on the various codes. For details, see listings under the components elsewhere in this section.

Code No.	Transmitter	Receiver	Head Band	Cord	Plug
		COMMON BATTERY			
1-C	178-C	87A	14	743-0	139
2-C	178-C	87A	14	713-0	182
3-C	178-C	87A	14	711-0	145
		LOCAL BATTERY			
1-L	178-L	87-A	14	743-0	139
2-L	178-L	87-A	14	713-0	182
3-L	178-L	87-A	14	711-0	145

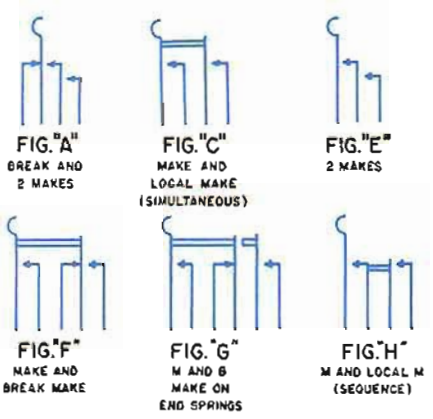
HOOKS, CORD
No. 2

Kellogg's standard switchboard cord hook. Made of brass.

HOOK SWITCHES

The name "Kellogg" on hook switches means "the Best". Kellogg hook switches are sturdy and compact, always deliver dependable service. They are divided into two main groups: for regular hand receivers, and for handsets. Each group is available with different mounting details. The charts shown below are made up according to the mounting details and lever type. Be sure to order standard hook switches by code number. If you need a type not listed, please consult the Kellogg Sales Department.

The spring combinations for these hook switches are shown in the drawings immediately above. The charts refer to them by a figure letter.



HAND RECEIVER TYPES
No. 47 — Side Mounting Lug Type

This hook switch is used on No. 1016 test set, and for No. 14-A receivers. Contact arrangement: one break, two makes (see Fig. "A" above). Solder type terminals. Switch hook is made up of one No. P-64656 and one No. P-5935. Side mounting lug type with short lever.

Wall Side Mounting Type With Escutcheon



Wall side mounting type with escutcheon and short lever. Designed for wood sets. All switches have solder type terminals.

Code No.	Hook Pc. No.	Spring Contacts	Receiver Type	Used On
103	P-46811	E	No. 41-A	Standard for local battery wood type telephones
163	P-46811	C	No. F-41-A	No. 6886 telephone

Wall Side Mounting Type Less Escutcheon

These hook switches have the short lever type switch hook and are furnished less escutcheon.

Code No.	Hook Pc. No.	Spring Contacts	Receiver Type	Used On
159	P-27871	E	No. 81-A	Nos. 4883 and 4888 telephones
178	P-46811	F	No. 41-A	No. 4901-A telephone

Wall Back Mounting Type

These hook switches have an extra wall bracket for installation on steel sets. They are furnished without escutcheons.

Code No.	Hook Pc. No.	Spring Contacts	Receiver Type	Used On
171*	P-46811	F	No. 41-A	No. F-817 type telephone

*Two screw type terminals and three terminals with flexible leads (soldered).

HANDSET TYPE
Wall Side Mounting Type — With Escutcheon

These hook switches have screw type terminals, are furnished with escutcheon and short lever for wood sets.

Code No.	Hook Pc. No.	Spring Contacts	Used On
155	P-56280	C	No. 3800 type obsolete sets
165	P-56280	C	No. 5800 type local battery telephones

Wall Side Mounting Type — Less Escutcheon



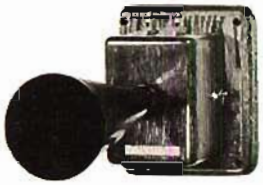
These hook switches are all equipped with switch hook piece No. P-56280. They are of the short lever type, furnished less escutcheons, and are of the wall side mounting type.

Code No.	Spring Contacts	Used On	Description
154	C	No. F-9700 Extension telephone	Replaces No. 98 hook switch. Has screw type terminals.
158	F	No. 9710 Extension telephone	Has two screw type terminals and three terminals with flexible leads (soldered).
164	F	Nos. 9720, 9735, 9736, 9740, 9741, telephones	Solder type terminals.
179	F	Nos. 9750 and 9751 telephones	Same as No. 164, but has screw terminals on outside spring.

DUMMY HOOK SWITCH
No. 200

This dummy hook switch is used for holding handsets on P.B.X. switchboards.

HOWLERS
No. 5-A — Signaling Horn



Used with composite telephone lines for signaling purposes. Has heavy adjustable nut, wound to 1700 ohms, mounted in oak cabinet. Base 5⅛ by 6 inches; overall length, including horn, 9 inches.

JACKS, SPRINGS

"The standard of the telephone industry"—Kellogg Spring Jacks! The frames are heavy, rigid brass construction with phenol fibre insulation. German silver is used for the springs which are then tempered to withstand long hard usage. Because of their design, these jacks give a minimum of wear on the springs and the plugs used with them and insure a long, serviceable life.

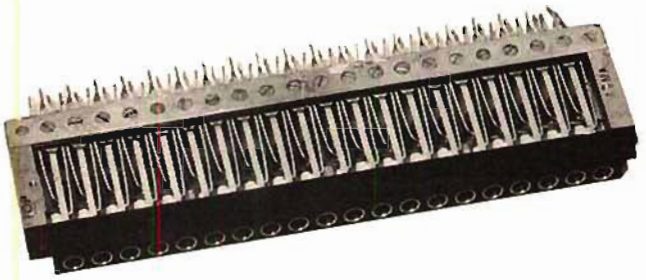
These jacks are listed below, according to the number mounted on single mounting strips; then by the type of the jack — two, three or four-conductor types. Only the most popular types are included. If you need a different type, please consult the Kellogg Sales Department. If possible, please include a drawing of the type you need.

These listings also include the number of conductor and local contacts. For example, Figure "A" in the illustration is of a standard spring jack with neither local nor conductor contacts. Figure "B" shows a three conductor jack with two conductor contacts. All conductor contacts on Kellogg spring jacks are "break" contacts.

Figure "C" shows a three conductor jack with local contacts. The listings below show the type of local contacts on each jack, where they appear, and indicate by "1-M," "1-B", etc. to show one Make contact, one Break contact, etc.



FIG. A FIG. B FIG. C



20 Per Strip on ½-inch Centers
THREE CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
261	10¼"x7/16"	11 5/32"	106	..	..	Lines up with No. 25 Lamp Jack. (Jack Blanks 2-A or 2-C)
268	10¼"x7/16"	11 5/32"	106	2	..	Lines up with No. 25 Lamp Jack. (Jack Blanks 2-A or 2-C)
270	10¼"x7/16"	11 5/32"	106	..	1-M	Lines up with No. 25 Lamp Jack. (Jack Blanks 2-A or 2-C)
272	10¼"x7/16"	11 5/32"	106	..	1-B	Lines up with No. 25 Lamp Jack. (Jack Blanks 2-A or 2-C)
258	10¼"x7/16"	11 5/32"	106	..	..	Lines up with No. 25 Lamp Jack. Drilled for party line indicators. (Jack Blanks 2-A or 2-C)

20 Per Strip on ½-inch Centers
THREE CONDUCTOR TYPE (cont'd)

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
239	7 21/32" x 3/8"	8 9/32"	201, 141	..	..	Lines up with No. 41 Lamp Jack. (Jack Blanks 4-A or 4-B)
257	7 21/32" x 3/8"	8 9/32"	201, 141	..	..	Lines up with No. 41 Lamp Jack. (Jack Blanks 4-A or 4-B)
367	7 21/32" x 3/8"	8 9/32"	201, 141	..	..	Lines up with No. 41 Lamp Jack. (Jack Blanks 4-A or 4-B). Drilled for party line indicators.
369	7 21/32" x 3/8"	8 9/32"	201, 141	..	..	Lines up with No. 41 Lamp Jack. (Jack Blanks 4-A or 4-B)
395	7 21/32" x 7/16"	8 9/32"	201, 141	..	..	Some as No. 369 except for width. Lines up with No. 41 Lamp Jack. (Jack Blank 4-D)



TWO CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
116	10 1/4" x 7/16"	11 5/32"	42, 55, 137, 112	..	..	Lines up with No. 36 Lamp Jack. (Jack Blanks 2-A or 2-C)

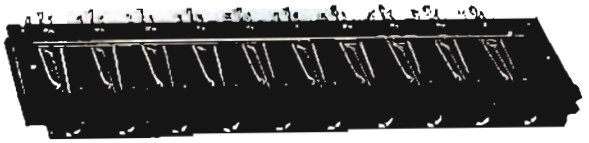
10 per Strip on 1-inch Centers
TWO CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
195	10 1/4" x 7/16"	11 5/32"	42,55 & 137	..	..	Lines up with No. 34 Lamp Jack. Slotted for number plate. (Jack Blanks 2-A or 2-C)



10 per Strip on 1-inch Centers (cont'd)
THREE CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
267	10 1/4" x 7/16"	11 5/32"	106	2	..	Lines up with No. 34 Lamp Jack. (Jack Blanks 2-A or 2-C)
269	10 1/4" x 7/16"	11 5/32"	106	..	1-M	Lines up with No. 34 Lamp Jack. (Jack Blanks 2-A or 2-C)
271	10 1/4" x 7/16"	11 5/32"	106	..	1-B	Lines up with No. 34 Lamp Jack. (Jack Blanks 2-A or 2-C)
273	10 1/4" x 7/16"	11 5/32"	106	..	..	Lines up with No. 34 Lamp Jack. (Jack Blanks 2-A or 2-C)
259	10 1/4" x 7/16"	11 5/32"	106	..	..	Lines up with No. 34 Lamp Jack. Slotted for number plates. (Jack Blanks 2-A or 2-C)
354	10 1/4" x 7/16"	11 5/32"	106	2	..	Lines up with No. 34 Lamp Jack. Drilled for party line indicators. (Jack Blanks 2-A or 2-C)
324	10 1/4" x 7/16"	11 5/32"	106	2	1-M&B	Same as No. 267 but has local contacts. Lines up with No. 34 Lamp Jack. (Jack Blanks 2-C or 2-D)



10 per Strip on ¾-inch Centers
THREE CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
274	7 21/32" x 3/8"	8 9/32"	201	..	..	Lines up with No. 31 Lamp Jack. (Jack Blanks 4-A or 4-B)

5 per Strip on 2-inch Centers
THREE CONDUCTOR TYPE

Code No.	Face Strip	Mtg. Pin Center	Used with Plugs	Cond. Contacts	Local Contacts	Description
297	10 1/4" x 7/16"	11 5/32"	106	..	..	Lines up with No. 37 Lamp Jack. (Jack Blanks 2-A or 2-C)
318	10 1/4" x 7/16"	11 5/32"	106	..	..	Lines up with No. 37 Lamp Jack. (Jack Blanks 2-A or 2-C)



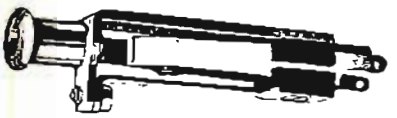
Individual Type Spring Jacks
TWO CONDUCTOR TYPE

Code No.	Mounting Centers	Cond. Contacts	Used with Plugs	
85	5/8"	..	42-55-137	Mounts on 3/64" panel.
319	5/8"	1	42-55-137, 56-112-70, & 152	Fits 42-55-137 plugs on 9/32" panel. Fits 56 & 112 plugs on 13/32" panel. Fits 70 & 152 plugs on 7/16" panel.
360	5/8"	..	70-109-152, 130-247-236	Mounts on 3/16" panel.
363	5/8"	..	130-247-236	Mounts on 3/16" panel for U.S. Signal Corps (Fire Control). Equivalent to W. E. Co. Jack No. 220-A.
364	5/8"	2	130-247-236	Mounts on No. 603-604 Mounting Strip. Equivalent to W. E. Co. No. 218-A Jack when on 5/8" centers. Also fits W. E. Co. No. 241-A twin plug.
362	5/8"	..	130-247	Mounts on 3/16" panel for U.S. Signal Corps (Fire Control), W. E. Co. Jack No. 223-A, Cords CC-67, 68, 69. Also fits Det. No. 9 plug.



Test Jacks and Busy Jacks
TWO CONDUCTOR TYPE
Individual Type Spring Jacks

TEST JACK Code No.	TEST JACK Fits Plug	BUSY JACK Plunger Assembly	BUSY JACK Local Contacts	Remarks
500	106	P-71649	1 - M & B	Mounted on P-71651 Mounting Bracket Assembly. Mounts same as No. 1700 type relays.
502	106	P-71649	1 - M & B	Mounted on PC. 72186 Mounting Bracket. Bracket also mounts 2 No. 235 Cond.



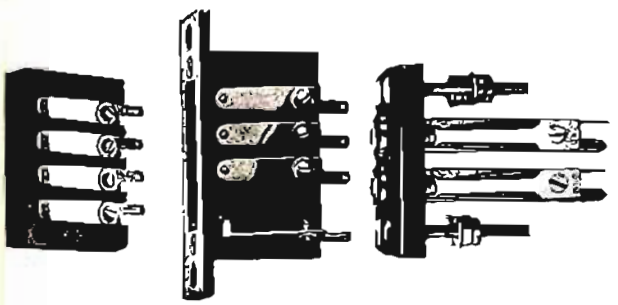
260

286 — 1 Make and Break.

356 — 1-Conductor Contact.

THREE CONDUCTOR TYPE

Code No.	Mounting Centers	Cond. Contacts	Local Contacts	Used with Plugs	Description
260	5/8"	..	..	106	Test Jack. Mounts on 5/16" panel.
286	5/8"	..	1 B & M	106 233	Fits Kellogg No. 106 plug on 1/2" panel. Fits Kellogg No. 233 plug or W. E. Co. No. 110 plug on 3/8" panel. Has local Break & Make Contact.
361	5/8"	2	..	70-152-230	Mounts on 5/16" panel.
254	5/8"	..	..	201	Mounts on 3/8" panel.
377	5/8"	2	..	106	Mounts on 5/16" panel.
380	5/16"	..	..	106	Replaces E. S. 2361, Item No. 2. Mounts on 5/8" panel.



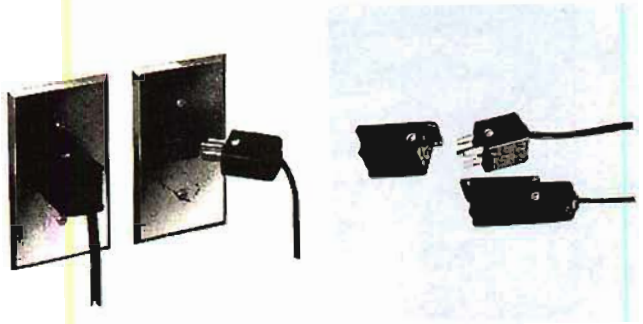
Type 43 — Type 325-A — Type 310

Operator's Type Spring Jacks
FOUR CONDUCTOR TYPE

Code No.	Face Dimensions	Used with Plugs	Description
57	2" dia.	No. 25	For use with Operator's Breast Plate Transmitter.
43	2 1/4"x1/2"	No. 145	Hard rubber frame. Mounts on 7/16" centers.
325-A	1 13/16"x15/32"	No. 182	Black fibre frame on 7/16" centers. Includes No. 252 mounting.
310	2 11/32"x1 1/4"	No. 139	Consists of two No. 260 Spring Jacks mounted on hard rubber mounting.
410	3 1/2"x1 3/16"	No. 139	Two No. 260 Spring Jacks mounted on black plastic mounting. Mounting interchangeable with No. 325-A Jack.

Dummy Spring Jacks
20 PER STRIP

Code No.	Face of Strip	Mounting Pin Centers	Terminal Centers	Description
345	7 21/32"x7/16"	8 9/32"	3/8"	Has Bakelite face.
346	10 1/4"x1/2"	11 5/32"	1/2"	Has Bakelite face.



WALL OUTLET JACKS

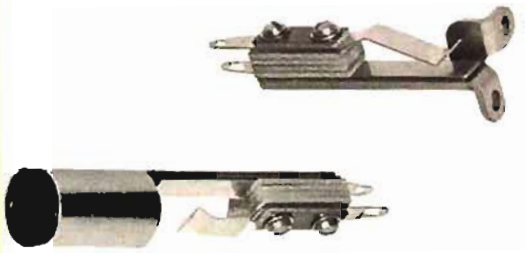
Flush Mounting Type **Surface Mounting Type**

TWO CONDUCTOR TYPE

Code No.	Face of Strip	No. of Conductors	Used with Plugs	Description
402	2¾"x4½"	2	302	Flush Mounting Type
412	1¼"x1"	2	302	Surface Mounting Type

FOUR CONDUCTOR TYPE

404	2¾"x4½"	4	304	Flush Mounting Type
414	1¼"x1"	4	304	Surface Mounting Type



JACKS, LAMP
INDIVIDUAL TYPE

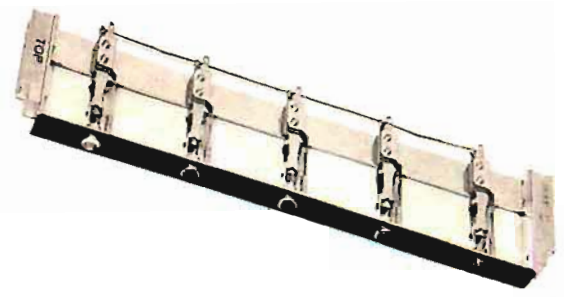
Individual Type 39 **Individual Type 49**

Even in lamp jacks, Kellogg careful quality design is self-evident. They are so designed that the standard switchboard lamp is securely held in the proper position to furnish the maximum amount of useful illumination, directed to the proper spots. The No. 39 lamp jack frame is made of steel with a cadmium plate finish. The Nos. 49 and 64 lamp jacks are made of seamless brass tubing with a nickel finish. In every way, you can depend on Kellogg quality!

Code No.	Mounting Centers	Mounting Panel Thickness	Used with Lamp Cap
39	⅝ inch	⅞ inch	
49	⅝ inch	to ⅜ inch	No. 154
64	⅝ inch	to ⅜ inch	No. 154

STRIP TYPE

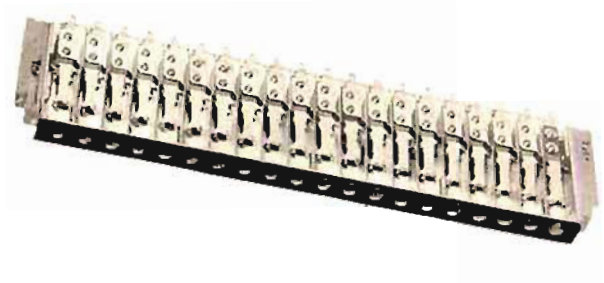
These lamp jacks are made with a heavy brass frame. The brass face is finished in chip-resistant black enamel. A brass partition strip between adjacent lamp caps prevents leakage of light, concentrates the bulb's beam where it is needed. Another example of Kellogg attention to "the details that count".



Code No.	Jacks Per Strip	Mounting Centers	Strip Size (inches)	Mtg. Pin Centers	Used with Lamp Cap	Used with Spring Jack
37	5	2 in.	10¼x½	11⅝₂	No. 154	296-297-318
31	10	¾ in.	7²¹⁄₃₂x½	8⅝₂	No. 154	253
34	10	1 in.	10¼x½	11⅝₂	No. 154	290
60*	10	¾ in.	7²¹⁄₃₂x³⁄₁₆	8⅝₂	No. 79	274
61†	10	¾ in.	7²¹⁄₃₂x³⁄₁₆	8⅝₂	No. 79	397-398

*Replaces E. S. No. 3802 Lamp Jack.

†Same as No. 60 except jacks are equally divided within length of face strip.



Code No.	Jacks Per Strip	Mounting Centers	Strip Size (inches)	Mtg. Pin Centers	Used with Lamp Cap	Used with Spring Jack
25	20	½ in.	7²¹⁄₃₂x½	8⅝₂	No. 154	146-258
41	20	⅜ in.	7²¹⁄₃₂x½	8⅝₂	No. 79	239

BALLAST LAMP JACK ASSEMBLY

Code No.	Lamp Jack Assembly	Hole for Lamp Cap	Description
51	(2) PC. 70510	1⁄₃₂	2 Lamp Jacks mounted on 1 PC. 67919 bracket. Mounts on same mountings as 1700-type relays.

KEYS
KEYS, 1000-TYPE CAM

Kellogg cam keys, built on an extruded brass frame, are formed into a perfect "T". Using this as a quality base, Kellogg keys are built to a high standard. The contact springs, made of nickel silver, are protected with precious metal contacts. Even the insulators are the best grade of phenolic obtainable — specially selected for its mechanical and electrical properties under every condition.

To meet every demand, Kellogg cam keys are available in five types: 1) single locking; 2) single restoring; 3) locking and restoring; 4) double locking; and 5) double restoring. Charts of these basic contact forms appear immediately below. A large variety of spring combinations is available for each one of these type keys.

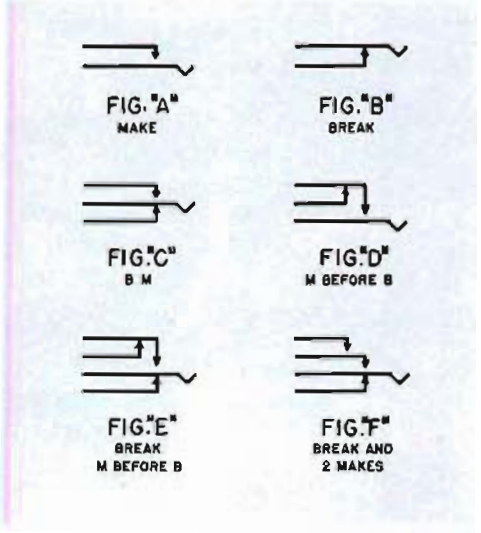
Each chart shows the various spring combinations on the "Head Side" or "Nut Side" of the key. This locates the spring combinations with reference to the heads of the screw holding the spring stackups . . . or to the opposite or "Nut Side" of the screw.

In ordering cam keys, please note that escutcheons are *not* furnished automatically. Code numbers of both the keys and the desired escutcheon must be specified.

Certain tools are needed with the 1000 type cam keys. These are shown in the "tools" heading in this section. You will need tools Nos. 16, 4, 67, and 68.

If you do not find a special application or combination you desire listed in this section, the Kellogg Sales Department will gladly quote on your needs.





Single Locking Type

Dummy restoring springs are on the Nut Side of all single locking keys.

Code No.	Spring Combinations (Head Side) A	B	C	D
1001	2	..	..	..
1004	2	2	..	..
1014	..	..	..	2
1017	3	1	..	..
1028	..	..	2	..
1034	..	..	4	..
1035	1	..	2	..
1042	3	..	..	..
1072	4	..	..	..
1102	..	..	3	..
1127*	..	2	..	..
1148	2	..	..	2
1145	3	..	..	..
1146	1	..	..	..

*Meteor metal contacts.

Single Restoring Type

This type has dummy restoring springs on the Head Side.

Code No.	Spring Combinations (Nut Side) A	B	C
1033	..	..	2
1068	..	..	4

Locking and Restoring Type

Code No.	Spring Combinations Head Side (Locking) A	B	C	D	Nut Side (Restoring) A	B	C	D
1016	..	..	4	..	..	..	2	..
1021	3	..	..	..	..	..	1	1
1023	4	..	..	..	..	..	2	..
1024	1	..	2	..	1	..	2	..
1026	2	..	..	2	..	..	2	..
1029	..	..	2	..	..	..	2	..
1032	1	..	2	..	..	..	2	..
1041	2	..	..	..	..	..	2	..
1043	3	..	..	..	..	..	2	..
1164-A	3	2	..	..	..	..	2	..
1165-A	2	2	..	..	..	1	2	..
1169-A	4	2	..	..	..	..	2	..

Double Locking Type

Code No.	Spring Combinations Head Side (Locking) A	B	C	D	Nut Side (Locking) A	B	C	D
1002	2	..	..	..	2	..	..	..
1010	..	2	2	..	2	..	2	..
1011	4	..	..	..	4	..	..	..
1013	..	..	4	..	..	..	4	..
1019*	..	..	2	..	..	..	2	..
1020	2	..	..	..	2	..	..	..
1030	..	..	2	..	..	..	2	..
1036	..	..	2	..	1	..	2	..
1039	..	..	..	2	..	..	..	2
1049	1	..	2	..	1	..	2	..
1051	3	1	..	..	3	1	..	..
1052	2	..	..	2	3	1	..	..
1067	1	1	2	..	1	1	2	..
1097	3	..	..	..	2	..	..	..
1098	3	..	..	..	3	..	..	..
1105	..	..	2	2	..	..	2	..
1128	2	..	..	2	..	2	2	..
1114	1	2	..	..	1	2	..	..
1136	2	1	..	..	2	1	..	..
1138	..	1	2	..	..	1	2	..
1147	2	..	..	2	2	..	..	2
1160	3	2	..	..	3	..	..	..
1223	..	..	..	4	..	..	2	..

*Meteor metal contacts.

Double Restoring Type

Code No.	Spring Combinations Head Side (Restoring) A	B	C	D	Nut Side (Restoring) A	B	C	D
1031	..	..	2	..	..	..	2	..
1050	1	..	2	..	1	..	2	..
1124	2	..	..	..	2	..	..	..

KEYS, 1000 TYPE CAM
For Releasing Party Keys

Two-party releasing keys, both locking and restoring, and single restoring types are listed under "A" type cam keys for four party keys.

KEYS, TO RELEASE FOUR PARTY "A" TYPE LOCKING AND RESTORING TYPE

Code No.	Spring Combinations Head Side (Locking) A	B	C	Nut Side (Restoring) A	B	C
1053-A	2	2	..	Dummy Springs		
1062-A	2	..	2	Dummy Springs		
1125-A	2	2	..	..	..	2

NOTE: Operation of springs on Restoring Side of Key, releases operated four party key.

Single Restoring Type

Code No.	Spring Combinations Head Side	Nut Side (Restoring) A	B	C
1000-A	Dummy Springs	Dummy Springs		
1015-A	Dummy Springs	Dummy Springs		

NOTE: Operation of springs on Restoring Side of Key, releases operated four party key.

RELEASE KEYS FOR OLD STYLE FOUR PARTY KEYS

For use with four party keys Nos. 265, 267, and 355. Each key ha wo extra dead terminals on end springs.

›cking and Restoring Type

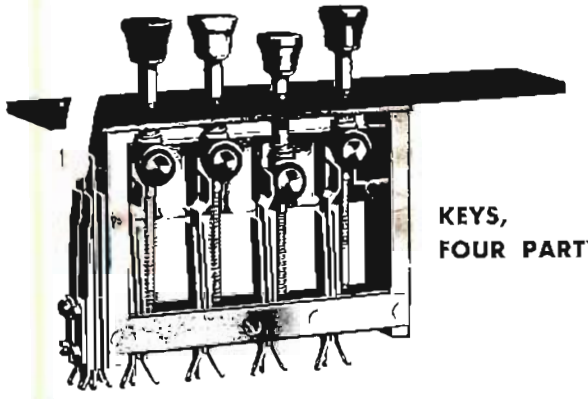
Code No.	Spring Combinations ad Side (Locking) B	C	Nut Side (Restoring) A	B	C
1045	3 ..	..	Dummy Springs		
1053	2 2	..	Dummy Springs		

NOTE: Oper› on of springs on Restoring Side of Key, releases operated four ›rty key.

Single Restoring Type

This key h . dummy springs on both head side and nut side (restori). Restoring side of key releases operated four party k r.

Code No.	Description
1000	Single Restoring Type Four Party Key



KEYS, FOUR PARTY

"Positive Action, Always", is the experience of every Kellogg four party ringing key user. They're designed that way. Each key will remain in operated or locked position until restored by either the cam key or by operation of one of the other buttons.

Especially constructed heavy brass frames with nickel plate finish enclose contact springs of Nickel Silver with contacts of precious metal. Even the insulating materials have been carefully selected for their mechanical and electrical properties.

Escutcheons are not supplied with the key. When ordering, please be sure to specify the code number of the four party key, the cam key, and the escutcheon on which they are to be mounted—to give you a complete unit.

The two party keys you see listed below are as sturdily built as the four party keys. They are like the four party keys, except they are equipped only with two keys.

Special tools, used on either type of key, are shown in the "Tools" section. They are Nos. 33, 34, 4, 67, and 68. SPECIAL NOTE: See the Chart of Basic Spring Combinations shown at the beginning of this Section. These combinations apply to the following charts, and should be consulted before making a final decision to order any key. Four party keys are available with "C" type spring combinations only ("Break-Make"). Other combinations shown are for the No. 1000 type cam keys used for restoring four party keys.

For Release by "A" Type Cam Keys
LOCKING TYPE

Code No.	Spring Comb. (Each Key)	End Spring Comb.
355-A*	2-C	2-C
265-A*	1-C	2-C
267-A	1-C	..

*Two extra dead terminals on end springs.

With Old Style Release Strip
LOCKING TYPE

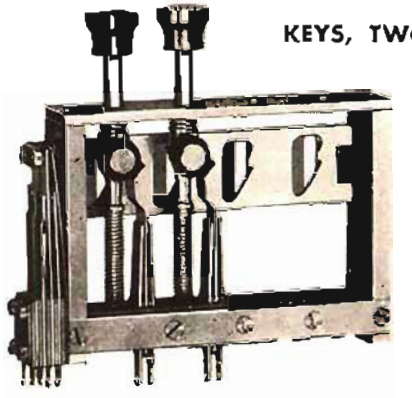
Code No.	Spring Comb. (Each Key)	End Spring Comb.
265*	1-C	2-C
355*	2-C	2-C

*Two extra dead terminals on end springs.

Not Released by Cam Key
LOCKING TYPE

Code No.	Spring Comb. (Each Key)	End Spring Comb.
266*	1-C	2-C

*Two extra dead terminals on end springs.



KEYS, TWO PARTY

For Release by "A" Type Cam Keys
LOCKING TYPE

Code No.	Spring Comb. (Each Key)	End Spring Comb.
358-A	1-C	2-C

NOTE: Used with any of cam keys listed with "A" type four party keys. Mounts on Nos. 1050 and 1111 escutcheons.

Not Released by Cam Key
LOCKING TYPE

Code No.	Spring Comb. (Each Key)	End Spring Comb.
328	1-C	2-C

NOTE: Mounts on No. 1064 escutcheon.



KEYS, PUSH BUTTON

Kellogg push button keys are available in either individual or strip types.

Tools used on push button keys are: Nos. 4, 67, and 68 switchboard tools, shown under "Tools" in this section.

High Button Type
RESTORING ACTION

Code No.	Spring Comb. (Each Key)	Mounting Thickness
254	2-C	¾ in.
302	2-C	⅞ in.

LOCKING ACTION

These keys mount on wood on ⅝-inch centers.

Code No.	Spring Combination	Mounting Thickness
269	2A	⅞ in.
300*	2A	⅞ in.
167	2C	⅞ in.
255	2C	¾ in.
372	2C	⅞ in.

*Meteor metal contacts. Brass frame.

LOCKING OR RESTORING

These keys mount on panels 1/16 to 3/32-inch thick on ⅝-inch mounting centers.

Code No.	Plunger Action	Spring Combination
403	Locking	2C
404	Restoring	2C
407	Locking	4C
410	Locking	2B

Individual Type
LOW BUTTON, RESTORING ACTION

Code No.	Spring Combination	Mounting Thickness
5	2A	⅞ in.
367	2B	⅞ in.
296	3A	⅞ in.
24	2C	⅞ in.
400	2C	*
412	4B	*

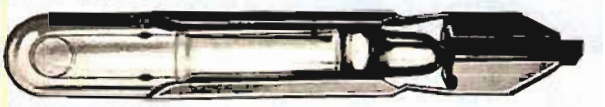
*NOTE: Nos. 5, 367, 296, and 24 push button keys mount on Wood ⅝-inch centers. The Nos. 400 and 412 keys mount on Metal ⅛-inch thick, mounting on ¾-inch centers.

KEY, TURN TYPE

This key has mounting pin centers on wood panels ⅝ inches thick, or on metal panels ¾ inches thick. Has locking action.

Code No.	Spring Combination	Mounting Thickness
411	2C	⅞ in. Wood ⅛ in. Metal

LAMPS, SWITCHBOARD



Kellogg switchboards have built up a tremendous advantage and reputation over the years because . . . each part is built of quality materials, and designed to do its job properly. Kellogg switchboard lamps follow this same pattern of quality materials, long life, economical operation. They fit all standard lamp jacks of all makes, and are designed to insure extra long life and superior performance. With one exception, these lamps have tungsten filaments, are uniform in size and current consumption.

Shown below is a listing of each lamp required for each type of switchboard and other operation.

FOR ANNUNCIATOR SYSTEMS

1. 24 volt systems—use lamp No. 1224-TA.
2. 48 volt systems—use lamp No. 2448-TA.

BALLAST LAMPS

1. 48 Relaymatic—use Lamp No. 1224-TA.

BUSY LAMPS, SWITCHBOARD

1. 24 volt multiple switchboards—use lamp No. 2448-TD.
2. 48 volt multiple switchboards—use lamp No. 4896-TD.

CORD LAMPS, SWITCHBOARD

1. 24 volt multiple switchboards and non-multiple switchboards—use lamp No. 1632-TD.
2. 48 volt multiple switchboards—use lamp No. 2448-TD.

INDUSTRIAL APPLIANCES

The Nos. 6-TA, 8-TA, 12-TA, and 30-TA lamps are used in all types of industrial applications.

LINE LAMPS, SWITCHBOARD

1. 24 volt multiple and non-multiple switchboards — use lamp No. 1632-TD.
2. 48 volt multiple switchboards — use lamp No. 2448-TD.

PILOT LAMPS, SWITCHBOARD

1. 24 volt multiple and non-multiple switchboards — use lamp No. 1632-TD.
2. 48 volt multiple switchboards — use lamp No. 2448-TD.

RESISTANCE LAMPS, RINGING

For ringing circuits — use lamp No. 110-A.

TRUNK LAMPS, SWITCHBOARD

1. 24 volt multiple and non-multiple switchboards — use lamp No. 1632-TD.
2. 48 volt multiple switchboards — use lamp No. 2448-TD.

Industrial and Special Purpose Lamps

Code No.	Resistance Cold (ohms)	Current Consumption Milli-Amps Voltage	Min.		Max.	Min. Candle Power End of Bulb
6-TA	5 - 8	6	110	..	150	.15
8-TA	9 - 13	8	80	..	100	.10
12-TA	12 - 16	10	70	..	90	.08
		12	90	..	115	.21
30-TA	30 - 40	28	70	..	90	.23
		30	90	..	110	.30

For 24-Volt Telephone Systems

Code No.	Resistance Cold (ohms)	Current Consumption Milli-Amps. Voltage	Min.		Max.	Min. Candle Power End of Bulb	Remarks
1224-TA	23 - 25	12	70	..	90	.02	Annunciator system.
		28	90	..	120	1.20	
1632-TD	65 - 80	16	28	..	36	.021	Line Cord, Pilot &
		28	33	..	38	.045	Trunk Lamps for Common Battery Mult. & Non-Mult. Swbd.
2448-TD	100 - 118	20	25	..	35	.002	Busy Lamps for Com-
		48	40	..	50	.230	mon Battery Multiple Switchboards.*

*If other than a Red Lamp Cap, or if a Type No. 254 Lamp Cap is used, order Lamp Code No. 1632-TD.

For 48-Volt Telephone Systems

Code No.	Resistance Cold (ohms)	Current Consumption Milli-Amps. Voltage	Min.		Max.	Min. Candle Power End of Bulb	Remarks
2448-TA	72 - 95	20	30	..	50	.210	Annunciator system.
		48	40	..	50	.01	
2448-TD	100 - 118	20	25	..	35	.002	Line Cord, Pilot &
		48	30	..	45	.230	Trunk Lamps for Common Battery Multiple or Non-Multiple Swbds.
4896-TD	340 - 405	40	15	..	30	.003	Busy Lamps for Com-
		48	15	..	32	.021	mon Battery Multiple Switchboards.

Standard Lamps

Medium screw base Tungsten lamp.

Code No.	Watts	Voltage	Diameter	Length	Remarks
110-A	15	110 to 120	3½"	1⅞"	Generator Resistance Lamp.
110-B	25	110 to 120	3 15/16"	2⅜"	Wire Chief Test Panel.
110-C	40	110 to 120	4¼"	2⅜"	Wire Chief Test Panel.

MOUNTINGS

One of the most necessary — but distinctly unglamorous item — is the Kellogg complete line of Mountings. The following charts show all types of Kellogg mountings for all types of Kellogg equipment. Only the most commonly used mountings are shown here.

For unusual types or special applications, please consult the Kellogg Sales Department, and furnish them with completely detailed information, so they can prepare the mountings you desire to your exact specifications.

In some cases, mounting information includes the specifications furnished with the original installation. This applies particularly to the relay mountings for Nos. 1700-1800, 3000, 7007, 7100, 7200, 7300, and 7400 type relays which are designed for various Relaymatic installations to meet a definite requirement. In such cases, equipment drawings and specifications are necessary for reference before ordering additional or replacement equipment.

The Kellogg mountings listed below are shown in this order:

1) For combined drops and jacks; 2) For combined ringer and drop; 3) For condensers; 4) For drops; 5) For 1000-type keys; 6) For mechanical signals; 7) For message registers 8) For operators jacks; 9) For retard coils; 10) For relays; 11) For spring jacks; and 12) For resistance coils.

MOUNTINGS FOR DROPS



For No. 60 Drops, Drilled for Night Alarm Screw

LUG MOUNTED

Code No.	Mtg. Spaces Per Strip	Mtg. Centers	Centers Spaced	Drop	Width	Length	How Mtd.	Mat'l
509	10	11 3/32"	1"	Grnd	1¼"	10¼"	Lug	Steel

For No. 70 Drops, NOT Drilled for Night Alarm Screw

Code No.	Mtg. Spaces Per Strip	Mtg. Centers	Centers Spaced	Drop	Width	Length	How Mtd.	Mat'l
506	1	1¼"	Single	Grnd	1"	1½"	Screw	Steel
504	5	6¼"	1 3/16"	Grnd	1"	6 1/16"	Screw	Steel
510	8	10 3/32"	1 3/32"	Grnd	1"	10 3/32"	Screw	Steel
494	10	10 3/32"	1"	Grnd	1"	10 3/32"	Screw	Steel
507	12	13"	1"	Grnd	1"	13 3/16"	Screw	Steel

LUG MOUNTED

Code No.	Mtg. Spaces Per Strip	Mtg. Centers	Centers Spaced	Drop	Width	Length	How Mtd.	Mat'l
505	10	11 3/32"	1"	Grnd	1"	10¼"	Lug	Steel

FOR RETARD COILS

Code No.	Mtg. Spaces Per Strip	Mtg. Centers	Centers Spaced	Width	Length	How Mtd.	Mat'l
319	1			1"	1 3/16"	Screw	Steel

DESCRIPTION—Mounts 2 or 4 Term. Retard Coils. Angle Mounting.

FOR CONDENSERS

16 PER STRIP, SCREW MOUNTED

Code No.	Retard Coil Condenser Per Strip	Used On	Mtg. Screw Centers	Centers Spaced	Width	Length	Mat'l
335	16	No. 36	20 3/8"	1 3/16"	2"	21 1/8"	Steel

DESCRIPTION—2 1/8" Mounting Centers.

18 PER STRIP, SCREW MOUNTED

1500	18	No. 64	17 15/16"	2 3/32"	1½"	18 1/16"	Steel

DESCRIPTION—1 1/16" Mounting Centers.

FOR COMBINED DROPS AND JACKS

For Mounting Nos. 100, 300, or new 500 Series Drops & Jacks

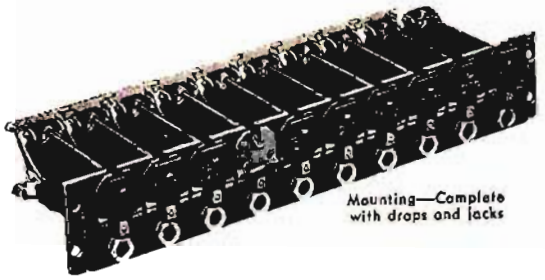
INDIVIDUAL TYPE, SCREW MOUNTED

Code No.	Width of Strip	Centers Spaced	Length of Face	Mtg. Centers	Length Overall	Description
552	1¾"	....	1¾"	....	1¾"	Drilled for Code Night Alarm

5 PER STRIP, SCREW MOUNTED

No. 232 Dummy Plugs Used for Unequipped Spaces

497	1¾"	1 3/16"	5 15/64"	6¼"	6 5/16"	Replaces No. 257 Mounting.
499	1¾"	1 3/16"	5 15/64"	6¼"	6 5/16"	Replaces No. 333 Mounting.
500	1¾"	1 3/16"	5 15/64"	6¼"	6 23/32"	Replaces No. 395 Mounting. Same as No. 497 except with adapters for W. E. Co. boards for flush mounting.


Mounting—Complete with drops and jacks

10 PER STRIP, SCREW MOUNTED

Mounting — complete with drops and jacks

495	1¾"	1"	10¼"	10³¹⁄₃₂"	10³¹⁄₃₂"	Replaces No. 320 Mounting.
502	1¾"	1"	10¼"	10³¹⁄₃₂"	10³¹⁄₃₂"	Replaces No. 426 Mounting. Same as No. 495, except is drilled for Code Night Alarm.

10 PER STRIP, LUG MOUNTED

498	1⅞"	1"	10¼"	11³⁄₃₂"	10¾"	Replaces No. 258 Mounting.
503	1⅞"	1"	10¼"	11³⁄₃₂"	10¾"	Replaces No. 426 Mounting. Same as No. 495, except is drilled for Code Night Alarm.

FOR SPRING JACKS

Hard rubber face. For fire control and test panels. Fit Plug No. 70. EQUIVALENT TO W. E. CO. Nos. 184 AND 185.

Code No.	Mtg. Spaces Per Strip	Drilled For Spring Jack	Center Spaced	Width	Length of Face	Length Overall
600	24	360-361	⅝"	1¼"	16¹⁵⁄₁₆"	17³³⁄₃₂"

DESCRIPTION — Equivalent to W. E. Co. No. 184 Jack Strip, but mounts Kellogg Jack only. Fits W. E. Co. No. 101-B rack. Used with Plugs Nos. 70-152-230-240.

601	48	360-361	⅝"	2⅛"	16¹⁵⁄₁₆"	17³³⁄₃₂"

DESCRIPTION — Equivalent to W. E. Co. No. 185 Jack Strip, but mounts Kellogg Jack only. Fits W. E. Co. No. 101-B rack. Used with Plugs Nos. 70-152-230-240.

DUPLICATE OF W. E. CO. Nos. 184 and 185

603	24	382 or 363	⅝"	1¼"	16¹⁵⁄₁₆"	17³³⁄₃₂"

DESCRIPTION — Duplicate of W. E. Co. No. 184 Jack Strip. Mounts either Kellogg or W. E. Co. Jacks. Used with Kellogg Plugs Nos. 247-130-236.

604	48	362 or 363	⅝"	2⅛"	16¹⁵⁄₁₆"	17³³⁄₃₂"

DESCRIPTION — Same as No. 603 except 48 Jacks. Duplicate of W. E. Co. No. 185 Jack Strip. Mounts either Kellogg or W. E. Co. Jacks. Used with Kellogg Plugs Nos. 247-130-236.

605	16 8	363-SJ 39-LJ	⅝"	1¼"	16¹⁵⁄₁₆"	17³³⁄₃₂"

DESCRIPTION — Spring Jack Positions 1 to 16; Lamp Jacks Positions 17 to 24, looking at Face Strip.

LUG MOUNTED. HARD RUBBER FACE

424	10	307	1"	1"	10¼"	10¾"

DESCRIPTION — 11³⁄₃₂" Mounting Screw Centers. To Line Up with Nos. 26 and 34 Lamp Jack.

FOR OPERATORS JACKS

INDIVIDUAL TYPE, SCREW MOUNTED, BRASS

Code No.	Mtg. Spaces Per Strip	Drilled For No.	Center Spaced	Width	Length of Face	Length Overall
452	1	PC-57236	....	1¾"	3½"	....

DESCRIPTION—2¾₆" Mounting Screw Centers. Mounts No. 325 Spring Jack.

FOR 1000 TYPE KEYS
Made of Steel

3 PER STRIP, SCREW MOUNTED

Code No.	Stile Centers	Centers Spaced	Width	Length of Face	Keys Mounted
703	6¼"	1¹³⁄₁₆" 2⅜"	1¾"	5⁵⁵⁄₆₄"	Vertical

DESCRIPTION—Spaces 1-2 and 4.

4 PER STRIP, SCREW MOUNTED

704	6¼"	1¹³⁄₁₆"	1¾"	5⁵⁵⁄₆₄"	Vertical

DESCRIPTION—Spaces 1-2-3 and 4.

5 PER STRIP, LUG MOUNTED

403	11³⁄₃₂"	2"	1"	10¼"	Horizontal

DESCRIPTION—Overall Length 10¾".

454	11³⁄₃₂"	2"	1¼"	10¼"	Vertical

DESCRIPTION—Overall Length 10¾".

5 PER STRIP, SCREW MOUNTED

405	6¼"	1¹³⁄₁₆"	1¾"	5⁵⁵⁄₆₄"	Vertical

DESCRIPTION—Overall Length 6¹¹⁄₁₆".

705	10²³⁄₃₂"	1" & 2"	1¾"	10¹³⁄₆₄"	Vertical

DESCRIPTION—Spaces 1-2-3-4 and 6.

706	6¼"	1¹³⁄₁₆"	1¾"	5⁵⁵⁄₆₄"	Vertical

DESCRIPTION—Overall Length 6¹¹⁄₁₆".

6 PER STRIP, SCREW MOUNTED

435	10³¹⁄₃₂"	1"	1¾"	11³⁄₃₂"	Vertical

10 PER STRIP, LUG MOUNTED

400	11³⁄₃₂"	1"	1½"	10¼"	Vertical

DESCRIPTION—Overall Length 10¾".

401	11³⁄₃₂"	1"	1¾"	10¼"	Vertical
402	11³⁄₃₂"	1"	1⅞"	10¼"	Vertical

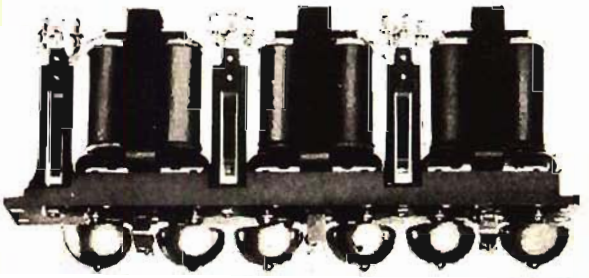
DESCRIPTION—Overall Length 10¾".

453	11³⁄₃₂"	1"	1¼"	10¼"	Vertical

DESCRIPTION—Overall Length 10¾".

10 PER STRIP, SCREW MOUNTED

483	10³¹⁄₃₂"	1"	1¾"	11³⁄₃₂"	Vertical



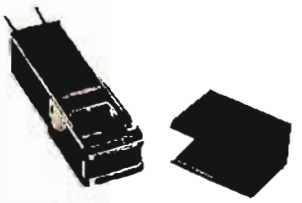
FOR COMBINED RINGER AND DROP

3 PER STRIP, SCREW MOUNTED

Code No.	Mounting Centers	Centers Spaced	Width	Length of Face	Overall Length
455	10³¹⁄₃₂"	1¹¹⁄₁₆"	1¾"	10³⁄₈"	11³⁄₃₂"

DESCRIPTION—Thickness of Jack Mountings, 1⁹⁄₃₂". Provides mounting space for three No. 3 combined Ringers & Drops and three No. 319 Spring Jacks.

METERS, MESSAGE REGISTER



Kellogg message register meters are standard equipment in Kellogg Masterbuilt switchboards. In addition, they have many other special uses to fill the need for consecutive numbering records. Can be mounted individually or in strips. Cover is steel with heavy black enamel finish. Overall dimensions: 5¹¹⁄₁₆ inches long, 1½ inches wide, 1⅜ inches deep.

These meters mount on Nos. 343, 380, and 1023 mounting strips.

Code No.	Volts	Coil Resistance	Description
1-A	24	300 ohms	Replaces W. E. Co. No. 5-A
1-B	48	500 ohms	Replaces W. E. Co. No. 5-B
1-C	3	25 ohms	Replaces W. E. Co. No. 5-C

MOUNTINGS FOR MESSAGE REGISTER METERS
INDIVIDUAL TYPE, SCREW MOUNTED, STEEL

Code No.	Mtg. Spaces Per Strip	Mounting Centers	Centers Spaced	Width	Length of Face	Length Overall
380	1	2⅝"	....	1⅜"	1½"	3⅞"

DESCRIPTION—Mounts on ebonized jack panel. Mounts Kellogg No. 1 Type or W. E. Co. 5 type meters. Wood mounting screws furnished.

6 PER STRIP, SCREW MOUNTED, STEEL

343	6	10³⁵⁄₃₂"	1⅝"	13⅛"	10³⁵⁄₃₂"	10³⁵⁄₃₂"



15 PER STRIP, SCREW MOUNTED, STEEL

1023	15	25¼"	1⅝"	1⅞"	26"	26"

DESCRIPTION—Mounts Kellogg No. 1 Type or W. E. Co. No. 5 Type Meters.

FOR RELAYS

FOR No. 10 TYPE RELAYS

Code No.	No. Per Strip	Mounting Centers	Length Overall	Width	Centers Spaced
357	26	22¹³⁄₁₆	23¾"	3¾"	1⅜₆"
375	15	13¹⁵⁄₁₆"	13¹³⁄₁₆"	¾"	1⅜₆"
376	20	17¹³⁄₁₆"	18¹¹⁄₁₆"	¾"	1⅜₆"

DESCRIPTION—No Overall Can Cover.

377	30	25¼"	26"	¾"	1⅜₆"
408	24	20⅜"	21⅛"	¾"	1⅜₆"
473	20	17¹³⁄₁₆"	18¹¹⁄₁₆"	¾"	1⅜₆"

DESCRIPTION—Has Overall Can Cover. Accommodates No. 561 relays.

FOR No. 72 TYPE RELAYS

279	20	25¼"	26"	3¾"	1³⁄₃₂"

DESCRIPTION—2 Rows, 10 per Row. Vertical Spacing 4".

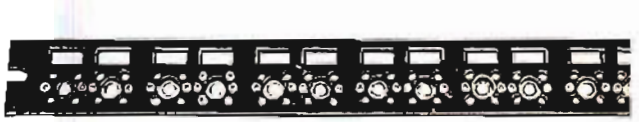
FOR No. 440 TYPE RELAYS

346	40	25¼"	26"	3¾"	1³⁄₃₂" 1¼"

DESCRIPTION—2 Rows, 20 per Row. Vertical Spacing 4¼". Overall Can Cover.

FOR RELAY AND REPEATING COILS
Operating Coil Mountings, Strip Type, W. E. Co. Type Frame

Code No.	No. Pairs Per Strip	Length Overall	Mounting Centers	Vertical Spacing	Description
484	10	19"	13¾"	3½"	Width 3¹⁵⁄₁₆". For Mounting C-111 Repl. 16 coils.
484-A	10	19"	13¾"	3½"	Arranged for 8 Repl. Coils, W. E. Co. No. 139-A Condenser and W. E. Co. No. J-54 Relay. Width 3¹⁵⁄₁₆".



STRIP TYPE MOUNTINGS

On all mountings except No. 1008, the relay cover will be supplied for each equipped space (pair of relays). Different types of covers are required for different relays. When you order mounting strips, please specify the code numbers of the relays to be mounted, so that the proper cover may be supplied. No. 1008 has a single over-all cover.

For 2000 Type Relays. Relay Shell No. PC 8271

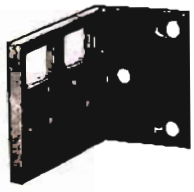
Code No.	No. Pairs Per Strip	Length Overall	Mounting Centers	Vertical Spacing	Remarks
1027	2	5⅞"	5½"	....	Width 1⅞".
1000	5	13¹³⁄₁₆"	13⅛"	2"	
1011	6	16¼"	15½"	2"	
1001	7	18¹³⁄₁₆"	17¹⁵⁄₁₆"	2"	
1021	7	20½"	19¾"	2"	
1002	8	21⅛"	20⅜"	2"	
1003	10	26"	25¼"	2"	
1004	10	13¹³⁄₁₆"	13⅛"	4"	
1005	14	18¹¹⁄₁₆"	17¹⁵⁄₁₆"	4"	
1007	20	26"	25¼"	4"	
1008	20	26"	25¼"	4¼"	Single Can Cover.
1026	See Remarks	21⅛"	20⅜"	2"	12 2000-type & 1 2100-type Relays. 1 C-111 Repeating Coil.
1033	30	26"	25¼"	2" & 2⅛"	Width 5⅜". 1 No. 1003 Mounting and 1 No. 1007 Mounting welded together.
1034	40	26"	25¼"	2" & 2⅛"	Width 7⅞". 2 No. 1007 Mountings welded together.

FOR 7000 TYPE RELAYS
Also for 700-800 Type

Code No.	No. Relays Per Strip: Indiv.	Gang	Length Overall	Mounting Centers	Vertical Spacing	Width	
806	....	6	2' 10¾"	2' 9¹³⁄₁₆"	2¼"	1¼"	
805	1	5	2' 10¾"	2' 9¹³⁄₁₆"	2¼"	1¼"	
807	5	5	2' 10¾"	2' 9¹³⁄₁₆"	2¼"	1¼"	Mts. 5 Indiv. 5 Gang Alt.
808	5	5	2' 10¾"	2' 9¹³⁄₁₆"	2¼"	1¼"	Mts. 5 Indiv. Type at Left End. Mounts 5 Gang Type Relays at Right End.
804	7	4	2' 10⅞"	2' 9¹³⁄₁₆"	2½"	1¼"	
803	13	3	2' 10⅞"	2' 9¹³⁄₁₆"	2½"	1¼"	
802	19	2	2' 10⅞"	2' 9¹³⁄₁₆"	2½"	1¼"	
801	25	1	2' 10⅞"	2' 9¹³⁄₁₆"	2¼"	1¼"	
800	30	....	2' 10¾"	2' 9¹³⁄₁₆"	2¼"	1¼"	



No. 1012



No. 1013



RIGHT: No. 1014

FOR 2000 TYPE RELAYS OR REPT. COILS
ANGLE MOUNTING

Code No.	No. Pairs Per Strip	Description
1012	1	Mounts on Right side of Cabinet.
1013	1	Mounts on Left side of Cabinet.
1014	1	Mounts on Roof of Cabinet.
1024	1	Mounts on Floor of Cabinet.

FOR 4000 TYPE RELAYS
ALSO MOUNTS CONDENSERS, REPTG. COILS, RELAY COILS

Code No.	Spaces Per Strip	Mounting	Mtg. Centers	Length Overall	Width
4000	18	Horiz.	22¼"	23"	2³³⁄₃₂"

DESCRIPTION—Will mount No. 235-type condenser, No. 22-type relay coils, 4000 relays, in all 18 spaces. No. 19 Reptg. Coil will mount in Spaces 17 & 18 only, with 2 overall can covers.

4001	18	Horiz.	22¼"	23"	3¹⁵⁄₃₂"

DESCRIPTION—Same as No. 4000 mounting except width. Accommodates a maximum of 16 springs or 4 sets of 3 springs and 2 sets of 2 springs in 1 stack.

6000-TYPE MOUNTINGS FOR RELAYS

MOUNTS 700, 2000, 4000-TYPE RELAYS AND REPEATING COILS

Code No.	Spaces Per Strip	Mounted	Mounting Centers	Length Overall	Width
6001	20	Horiz.	29 11/16"	30 3/16"	3 3/16"

REMARKS—1-Strip with overall cover both relay and wiring sides. Will mount 20 No. 700, 2000, or 4000 type relays or 10 each No. 17, 19, or 20 repeating coils.

6002	40	Horiz.	29 11/16"	30 3/16"	6 5/16"

REMARKS—2-Strips same as 6001 except will mount 40 No. 700, 2000, or 4000 type relays or 20 each No. 17, 19, or 20 type repeating coils.

6003	60	Horiz.	29 11/16"	30 3/16"	10 1/16"

REMARKS—3-Strips same as 6001, except will mount 60 No. 700, 2000, or 4000 type relays or 30 each No. 17, 19 or 20 type repeating coils.

6004	80	Horiz.	29 11/16"	30 3/16"	13 5/16"

REMARKS—4-Strips same as 6001, except will mount 80 No. 700, 2000, or 4000 type relays or 40 each No. 17, 19, or 20 type repeating coils.

6005	100	Horiz.	29 11/16"	20 1/16"	17 1/16"

REMARKS—5-Strips same as 6001, except will mount 100 No. 700, 2000, or 4000 type relays or 50 each No. 17, 19 or 20 type repeating coils.

6006	120	Horiz.	29 11/16"	30 3/16"	20 5/16"

REMARKS—6-Strips same as 6001, except will mount 120 No. 700, 2000, or 4000 type relays or 60 each No. 17, 19 or 20 type repeating coils.

6007	140	Horiz.	29 11/16"	30 3/16"	24 1/16"

REMARKS—7-Strips same as 6001 except will mount 140 No. 700, 2000, or 4000 type relays or 70 each No. 17, 19, or 20 type repeating coils.

6010	See Remarks	Horiz.	29 11/16"	30 3/16"	6 5/16"

REMARKS—Includes 1 No. 604 Spring Jack Mounting and Covers.



MOUNTS 700, 2000, 4000-TYPE RELAYS, REPEATING COILS, VACUUM TUBE SOCKETS, CLARE STEPPING SWITCHES

6008	See Remarks	Horiz.	29 11/16"	30 3/16"	6 15/16"

REMARKS—2-Mounting Strips with Overall Covers: 1-Strip will mount 20 No. 700, 2000 or 4000 type relays or 10 each No. 17, 19, or 20 type repeating coils. 1-Strip will mount 15 vacuum tube sockets. Replaces ES-4104.

6009	See Remarks	Horiz.	29 11/16"	30 3/16"	20 5/16"

REMARKS—Consists of 4-Mounting Strips with overall covers. 2-Strips will mount 40 No. 700, 2000, or 4000 type Relays or 20 each No. 17, 19, or 20 type repeating coils. 2-Strips will mount 20 CLARE stepping switches.

MOUNTS 4000-TYPE RELAYS AND IMPULSE COUNTERS

6011	See Remarks	Horiz.	18 3/4"	19"	3 15/32"

REMARKS—Mounts 6 No. 4000 type relays and 2 impulse counters, with 2 overall counters.

FOR RESISTANCE COILS

Steel, Screw Mounted

Code No.	Resist. Per Strip	Coil Mounting Code No.	Coil Mounting Screw Centers	Centers Spaced	Width	Length
229	3	3	3 1/16"	1 1/32"	1 3/8"	3 1/16"

REMARKS—Angle mounting. Also mounts No. 22 type relay coil.

242	2	3	1 29/32"	1 1/32"	1 3/8"	2 3/32"

REMARKS—Angle mounting. Also mounts No. 22 type relay coil.

MOUNTINGS FOR NOS. 1700, 1800, 3000, 7007, 7100, 7200, 7300 AND 7400 TYPE RELAYS

Mountings for these relays are designed for various Relaymatic installations to meet a definite requirement. Additional mountings, when needed, should be ordered the same as the original mountings, as listed in the switchboard specification.

Your order for No. 1700 and 1800 type relays for special applications should include complete information regarding mounting space so that the mountings may be properly designed to fit the allotted space.

FOR MECHANICAL SIGNALS

Combination Drops & Jacks and Keys, and Mechanical Signals
Combination Drops and Jacks, and Jacks only, of Combination Drops and Jacks
All Made of Brass

Code No.	Mechanical Signal No. Per Strip Type		Comb. Drop & Jack No. Per Strip Type		Keys or Jacks No. Per Strip Type		Mtg. Centers	Width	Length of Face	Length Overall
						SCREW MOUNTING				
1501	3	7	3	500	3	1000 KEY	10 21/32"	1 3/4"	10 1/4"	10 31/32"*
1505	3	7	3	500	3	JACK or 500 CDJ	10 21/32"	1 3/4"	10 1/4"	10 31/32"†
						LUG MOUNTED				
1504	3	7	3	500	3	1000 KEY	11 3/32"	1 7/8"	10 1/4"	10 3/4" ‡

*Takes same space as No. 426, 495, 502, and 329 Mounting.
†Same as 1501 except mounts Jacks instead of Keys.
‡Takes same space as Nos. 528, 482, 498 and 503 Mounting.

PINS, INDICATOR



Indicator pins are used on multiple jacks to indicate the equipped stations of a party line. They are made of rust-proofed iron wire. The concave heads are filled with colored lacquer. Since five colors are available, please order these pins by Code Number to make sure you receive the desired color.

Code. No.	Color	Code. No.	Color
5	Red	8	Blue
6	White	15	Yellow
7	Green		

PLATES, NUMBER
For Combined Drops and Jacks
No. 10

These number plates are standard for numbering combined drops and jacks. Kellogg carries them in stock from 0 to 999. They are made of nickel silver with black lacquered finish. Overall dimensions: ⅝ by 5/16 inches. Please specify the numbers desired.

Key and Plug Shelf Type
No. 4

These plates are used for numbering the different panels of each position or section of a switchboard. Made of ivory ⅛ inch thick, ¾ inch in diameter. The inscription is engraved and filled with black paint. Please order by Code Number and specify the characters desired.

No. 5

Used for numbering each cord circuit, this item is ⅜ inch in diameter, ⅛ inch thick. Made of polished ivory, the numerals are engraved and filled with black paint. When ordering, please use Code Number and specify characters desired.

Spring Jack Type
No. 2



A number plate made of brass with black enamel finish. Inscription filled-in with white. Used with No. 253 spring jack. Overall dimensions: ⅜x¼ inch.

No. 3

Same purpose and use as No. 2, but dimensions are 27/64 by 19/64 inches. Used with Nos. 40, 95, and 195 spring jacks.

Stile Strip Type



This standard stile strip number plate, made of polished white celluloid. Engraved numerals filled with black paint. If you want Mounting Screws, please specify, as they are ordinarily not supplied. Please order by Code Number and specify numerals you desire. Size: 11/16 x 1/16 inch square.

No. 116

Exactly the same as No. 57, except this number is made of red opaque celluloid.

Switchboard Type
No. 46

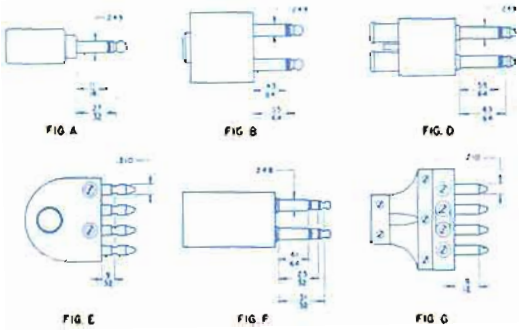


For numbering the positions of a switchboard. Made of polished white ivory, engraved and filled with black paint. Dimensions: 1¾ by 1¼ inches. Please include the Code Number when ordering, and specify characters desired.

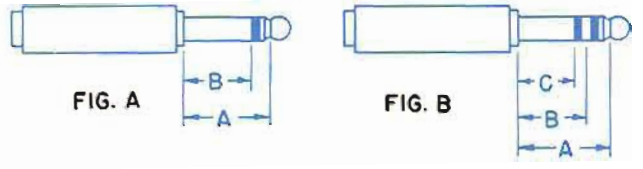
PLUGS

Operator's switchboard and wall outlet plugs by Kellogg are shown immediately below. They are designed to give maximum service, and are made of proper materials to insure it. Brass tips and hard rubber insulation, with all connections protected by fibre sleeves securely fastened . . . guarantee extremely long service life.

Detailed sketches are shown for each type of operator's plug. Switchboard plugs have a general sketch to cover all types.



Code No.	Fits Cord	Fits Jack	Photo No.	Description
				2 CONDUCTOR
107	708	24	A	Replaces No. 75 Plug.
				4 CONDUCTOR
136	712	57	B	Replaces No. 25 Plug.
139	466 709	310	D	Made of 2 No. 130 Plugs. Replaces W. E. Co. Nos. 137 & 152. Fits W. E. Co. No. 99 Jack.
145	711 721	43	G	With full round cord hole.
182	713 722	325-A	E	
236	722	364	F	Profile same as No. 247 Plug, W. E. Co. No. 241-A.



SWITCHBOARD PLUGS

Kellogg Switchboard Plugs are offered in two types: two conductor and three conductor. These two types are shown in separate charts immediately following. For plug tools, see tools Nos. 22, 40, 41, 46, 47, 50, 53, 72, 101, 102, 105, 106, 107, listed under the separate heading: "Switchboard Tools."

2 CONDUCTOR

Code No.	Dimensions Tip "A"	Ring "B"	Sleeve Diam.	Fits Cord	Used With
42	7/8"	3/4"	.2495"	301, 304, 502, 506, 508, 509, 511, 512, 513. 901, 787	Comb. Drop & Jack Nos. 103, 113, 300, 301, Spring Jacks Nos. 116, 186, 195, 215, 85, 298, 277, 319, 378, and 381.
130	53/64"	53/64"	.2495"	301, 304	Comb. Drop & Jack Nos. 302, 303, 510, 500. Spring Jacks Nos. 146, 148, 141, 191, 362, 363.
187	55/64	33/32"	.2498"	301, 304	Comb. Drop & Jack No. 507. Spring Jacks No. 215. For old type 2-wire multiple jacks Nos. 195, 186.
247	1"	31/32"	.2495"	397, CC-63, CC-64, CC-65	Comb. Drop & Jack Nos. 302, 303, 500, 510. Spring Jacks Nos. 362, 363, 366. Replaces W. E. Co. No. 47 Plug.



3 CONDUCTOR

Code No.	Dimensions Tip "A"	Ring "B"	Sleeve "C"	Sleeve Diam.	Fits Cord	Used With
106	1⅛"	27/32"	47/64"	.2495"	309, 303, 785	Combined Drop & Jack Nos. 504, 503, 505, 507, 514, which supersedes Nos. 105, 106, 107, 116. Spring Jacks Nos. 261, 268, 270, 272, 258, 259, 267, 269, 271, 273, 285, 324, 254, 255, 296, 297, 318, 290, 284, 260, 286, 356, 377, 379, 380, 500, 502, 504, 506, 507, superseding Nos. 372, 384, 386, 388, 389, 383, 382. For common battery, magnetic switchboard and non-multiple switchboards.
106-G	Same as No. 106 but with a Gray Shell.					
106-B	Same as No. 106 but with a Black Shell.					
137	⅞"	21/32"	17/32"	.2495"	309-TN 309-TO 303-ST	Spring Jacks Nos. 116, 186, 195, 85, 277, 319.
152	31/32"	25/32"	41/64"	.2495"	309-TO 309-TN 303-ST	Spring Jacks Nos. 141, 191, 322, 146, 148, 396, 94, 298, 319, 360, 361, 390, 357, 359.
201	15/16"	21/32"	5/16"	.2215"	326-TN 326-TO 325-ST 788	Spring Jacks Nos. 239, 257, 367, 369, 292, 395, 274, 253, 293, 397, 398, 254, 336.
201-G	Same as No. 201 but with a Gray Shell.					
201-B	Same as No. 201 but with a Black Shell.					
233	1"	¾"	41/64"	.2495"	358-ST 391-TO 391-TN	Replaces W. E. Co. No. No. 110 Plug for use on ⅜" panel.





WALL OUTLET PLUGS

Code No.	No. of Conductors	Description
302	2	Fits Jacks No. 402 and 412.
304	4	Fits Jacks No. 404 and 414.

Plugs, Dummy

Quality is paramount even in the Kellogg dummy plugs used for designating lines in trouble, discontinued service, etc. They are offered in brass finished with enamel, and in colored celluloid. These plugs have flat heads for marking and designation purposes.

For Line Jacks

BRASS TYPE — For ¼-Inch Diameter Jack Sleeves

Code No.	Plug Diameter	Color
83	.249 in.	White
84	.249 in.	Black
85	.249 in.	Red
86	.249 in.	Blue
87	.249 in.	Yellow
88	.249 in.	Green

CELLULOID TYPE — For .222-Inch Diameter Jack Sleeves

Code No.	Plug Diameter	Color
93	.219 in.	White
94	.219 in.	Black
95	.219 in.	Red
97	.219 in.	Yellow
98	.219 in.	Green

Hard Rubber Type No. 24



Polished hard rubber. Plug length overall, 1.240 inches, diameter .2495 in. Used on jacks having ¼ inch inside diameter sleeves. Used generally to plug out multiple jacks.

No. 120

Used to fill blank holes in key escutcheon, such as when a two-party key is mounted on an escutcheon drilled for a four-party key. Head diameter ⅝ inch.

No. 132

Used to fill hole for generator crank in switchboard cabinet when generator is not used. Head diameter ⅞ inch.

No. 142

Used to blank one oblong hole of a two or four-party 1000-type cam key escutcheon. Made of cold rolled steel, 1¼" long, ¾ inches wides, 1⅛ inches between hole fasteners. Furnished with four bolts and attaching nuts. For 1000-type cam key escutcheons only.

Trouble Sleeve Type



Made of fibre tubing, used for designating defective cords and plugs. Tubing is split to allow for variation in plug diameters. Two sizes available.

Code No.	Description
163	For plugs .2495 inch in diameter.
223	For plugs .2215 inch in diameter.

Lamp and Key Hole Blank No. 256

To provide a blank space for No. 49 lamp jack. A round brass blank, head finished in silver hammertone finish. Head diameter 5/8 inches; length 3/8 inches; head height 1/16 inches; prong width 23/64 inches. Used in holes 29/64 to 31/64 inch diameter through flexible prongs.

No. 257

Constructed similar to No. 256. Used in blank space for 400 type push button key. Round brass head finished in silver hammertone. Head diameter 11/16 inches; length 3/8 inches; head height 3/64 inches; prong width 33/64 inches. Used with holes 33/64 to 35/64 inch diameter, through flexible prongs.

No. 259

Made similar to No. 256. Used in all stock switchboards and on Nos. K-50 and K-500 P. B. X. switchboards. Made of brass. Head diameter 5/8 inches; length 3/8 inches; head height 1/16 inches; prong width 23/64 inches. Finished in high bake black rubber enamel.

No. 133-B

Used as a lamp hole blank in unequipped positions on the key-shelf. Made of maple with head finished in black lacquer. Head diameter 7/8 inches, stud length 1 3/4 inches. Backing plate 1/2 inch x 5/8 inch. Nut included.

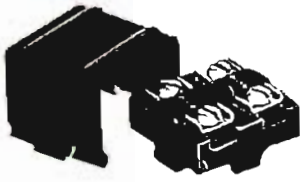
No. 134-B

Used to plug hole blank in unequipped positions on the plug-shelf. Body diameter 3/4 inch, overall length 1 5/64 inches.

RACKS, CONNECTING

Kellogg connecting racks, like all other Kellogg equipment, are designed to give more than usual in quality construction and long, serviceable life. These connecting racks are made of one piece molded bakelite, specifically designed for quick, easy connection with lead wires. They are neat and compact in appearance, enhanced by an attractive enamel cover. The blocks are mounted with wood screws. Kellogg connecting racks are offered in the three most wanted sizes to meet an unusually large variety of applications.

Two Point Type Nos. 24-A and 25-A



These connecting racks are the Two-Point type for connecting two wires. No. 24-A is complete with cover. Mounting screws are *not* supplied.

No. 25-A is exactly the same as No. 24-A, except it has no cover. Both are used for connecting telephone cord to line wires. Dimensions: 1 1/8" x 1 1/16". Both are made of bakelite.

Three Point Type Nos. 24-B and 25-B



Three - Point connecting racks for connecting three conductor telephone cord to line wires. No. 24-B includes a cover. Mounting screws are not supplied.

No. 25-B is exactly the same as No. 24-B except it has no cover. Dimensions: 1 1/8" x 1 11/16". Both are made of bakelite.

Four Point Type No. 27



A Four Point type for connecting 1000-type and 1100-type four-conductor telephone cord to line wires. Complete with cover and wood screws for mounting. An attractive, complete, neat connecting rack that does not "clash" no matter where it is used. Dimensions: 2 3/16" x 1 7/8". Made of black molded compound.

No. 28



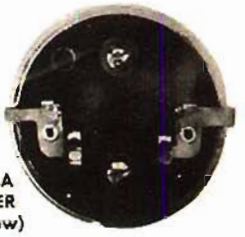
A special four-conductor connecting rack specifically designed for the new K-500 type telephones. Made of black plastic, it is only 1 13/16" x 1 13/16". A special design for use with a very special new telephone.

RECEIVERS

No matter how well a telephone system is designed, it is not effective if the receivers are not efficient. Kellogg receivers, always noted for clarity of reception, are designed for maximum efficient operation under all types of circuit conditions. They are offered in two basic types: 1) for telephone use in both handset and hand-receiver types; and 2) operator's head and chest set types.



No. 89-A RECEIVER (Front-View)



No. 89-A RECEIVER (Rear View)

TELEPHONE TYPE — FOR HANDSETS

Code No.	Resistance (ohms)	Used On
P-75547	36 D.C. nominal.	Nominal Impedance 130 ohms at 1000 cycles. Used on 65-C handset for new K-500 telephones only.
84-A	40 - 48	Nos. 52-L, 53-L, 56-C, 56-L, 61-L and 62-L handsets.
89-A	40 - 48	Nos. 46-C and 47-C Masterphone handsets.
P-55919	47	Nos. F-27-C, F-27-L, F-27-EC, F-27-CWL, F-35-EC, F-39-C, F-40-C, 42-C, F-43-C, F-43-L, 44-C, F-44-L, 49-C, 54-C, 55-C, 57-C, 58-C, F-40-L and 60-C handsets.
P-44405	100	Nos. 32-C and 32-L metal handsets.
P-69602	2000	No. 51-C handset.

OPERATOR'S TYPE

Code No.	Resistance (ohms)	Head Band	Fits Cord	Used On
87-A	56	No. 14	Nos. 708 to 713 inclusive	Universal lightweight type — bakelite. For Operator's sets.
90-A	150	No. 2	644-TR F-644-TR	Heavy bakelite operator's type. For No. 1016 Test Set.
90-B	650	No. 2	644-TR F-644-TR	Heavy bakelite operator's type. For No. 1016 Test Set.

RECTIFIERS



Kellogg rectifiers are used to operate a dc relay on ac dialing trunk circuit applications to replace the ac relays formerly used. These rectifiers are of the selenium type provided with proper mounting details so they will mount either a 700-800 or 1700-1800 type relay mounting space, depending upon the code.

By using these rectifiers with a standard relay, you will have a more reliable operation than the ac relay formerly used on ac dialing trunk circuits. Please order these rectifiers by code number to obtain the proper mounting details.

Code No.	Wave	Description
1-A	Full Wave	Mounts in space of 1700-1800 type relay.
1-B	Full Wave	Mounts in space of 700-800-2000 type relay.
2-A	Half Wave	Mounts in space of 1700-1800 type relay.

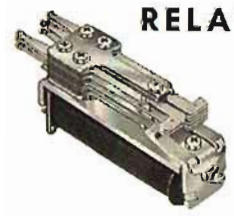


Federal's Contact Protectors

Increases the life expectancy of telephone switches by minimizing the destructive effects of arcing at relay contact points. This application of selenium rectifiers reduces the inductive kick voltage without slowing the speed of the telephone switch, thus extending its life by one hundred to one over contact operations without these protectors. Federal Contact Protectors will accommodate all signal and telephone type relays which operate up to 40 times per second and draw up to 66 ma operating current at 150 volts ac or dc. Kellogg design engineers will gladly determine for you the most effective and economical unit for your requirements . . . if you will supply the following information:

• Coil Voltage • Coil Current • Number of Operations per Second • Ambient Conditions • Special Atmospheric Conditions • Hermetic Sealing, if required.

RELAYS



Simple . . . Effective!

Kellogg relays are very simple in design, sturdy in construction, yet extremely effective . . . the result of years of striving to develop "the perfect relay". The angle type armature and simple adjustment assure reliable operation under every adverse condition which Kellogg relays must meet every day in telephone service.

Kellogg manufactures full lines of relays of all types to meet every telephone need. The latest is the already-famous 4000 Type Relay which introduces this section. Because it is offered in so many variations to meet the requirements of the unique Kellogg Crossbar Switching System — no charts for this type are included in this catalog. Each telephone system has its own special problems; the 4000 Type Relay is individually engineered to meet these variable conditions.

The many other relays made by Kellogg are listed by type in the succeeding pages, each with its own separate chart and a brief description of the applications for that group.

Certain tools are needed to install Kellogg relays properly. See Code Numbers 44, 13, 57, 43, 76, 11, 78, 1, 2, 58, 60, 75, and 79. You will find these illustrated and described under "Tools" in this section.

I. THE 4000 TYPE RELAY an integral part of THE KELLOGG CROSSBAR SWITCHING SYSTEM

The Kellogg Crossbar dial telephone switching system and its equipment have made possible an entirely unique and improved method of establishing a connection between two subscribers' telephones.

A telephone system is a network of lines and equipment arranged to connect one subscriber to another. The original dial switching systems established their connections by various electrical and mechanical devices. Unfortunately, they often became noisy and caused expensive repairs.

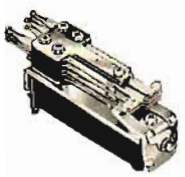
The Crossbar Switching System is so completely improved and different in approach from the older types of switched connections that there is no comparison! A direct path is established through precious metal contacts — with nothing moving but the relay armatures! Full advantage is taken of the high-speed relay type operation of the Crossbar Switch by including the selecting and trunk-hunting features in common control circuits, which are composed by the 4000 Type Relays.

Simple — Complete!

The Kellogg Crossbar System contains only *three* basic units — the Crossbar Switch, the Magnetic Impulse Counter, and the famous 4000 Type Relay. This system eliminates the troubles of previous slow mechanical dialing systems; provides quicker, quieter, more efficient non-attendant service — and better subscriber satisfaction, with practically no maintenance or repair expense.





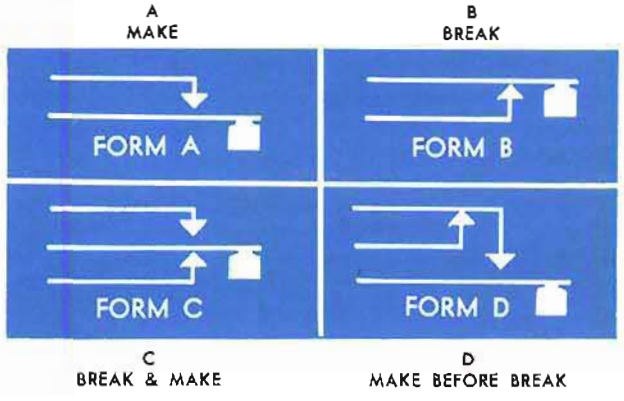


The 4000 Type Relay

The 4000 Type Relay series is standard for all Kellogg Crossbar Switching Systems. Twin contacts of precious metal are used on all contact springs. All these relays can be equipped with various sizes of residual clips and residual screw adjustments. The coil for each application is selected by the Kellogg Engineering Department to meet your own specified requirements — "tailor-made" for your own needs!

To meet every individual telephone dial system need, Kellogg offers a wide number of variations in the 4000 Type Relay . . . such as: Standard Relays, Time Delay Relays, Twin Relays, and Multi-Contact Relays. Each of the variations in the 4000 Type Relay—with the exception of the Standard Relay, are used to meet specific requirements for a special job. The Standard Relay is an all-purpose type.

Four Basic Spring Combinations



In the 4000 Type Relay, over 1,700 contact spring combinations are available, ranging from: 1-to-16 A's, 1-to-15 B's, 1-to-10 C's, and 1-to-10 D's, or an equivalent combination of these contacts.

The springs are insulated from each other by a special phenolic material highly resistant to temperature and humidity variations. Contact terminals are perforated and staggered for ease in wiring.

The Kellogg 4000 Type Relay, designed to the rigid standards required in telephone switching systems, lends itself admirably for use also in the wide range of precise controls problems now facing modern industry.



TIME DELAY RELAY

Three different time delay relays are available in the Kellogg 4000 Type Relay series. The Slow-Release Relay, which has a coil wound on a copper sleeve placed over the iron core, gives "slightly slow-to-operate" and "slow-to release" action. The Slow-Operate Relay, which has a copper slug at the armature end, furnishes "slow-to-operate" and "slightly slow-to-release" action. For Slow to Release and "normal operate" characteristics the copper slug is placed at the heel end of the coil.

TWIN RELAYS



The twin relay is, in effect, two independent relays that mount in the same space as the Standard 4000 Type Relay. The two armatures are pivoted on a long-life, low-friction bearing pin supported by a retainer, both of which are non-magnetic. Either a fixed residual clip or an adjustable screw can be furnished with these armatures. The coil assembly consists of two complete coils, mounted in the space normally taken up by one coil.

MULTI-CONTACT RELAYS



The Multi-Contact Relay is another special purpose relay, useful in applications where the dependable operation of a large number of contacts is necessary. By mounting three standard contact spring assemblies on a common heel iron, powered with a single coil, one control circuit can simultaneously operate a maximum of 48 A's (normally open), 45 B's (normally closed), 30 C's (double throw), or any equivalent combination of contacts. The core and armature are mounted on the heel iron frame, forming a highly efficient magnetic circuit.

A non-magnetic residual clip keeps the armature from coming in direct contact with the core, thereby preventing residual magnetism from holding the relay "operated" after the current through the coil is removed. By varying the thickness of the clip or by adjustment of a residual screw, the relay charcteristics can be varied for marginal operation, or to suit your own special needs.

GENERAL INFORMATION

The coils used in the Kellogg 4000 Type Relays are built to withstand the worst possible climatic conditions. Cellulose acetate insulation is used between each layer of wire. The ends of the winding are heat coalesced and dipped in acetone to seal the entire coil. Careful inspection of the wire itself insures uniformly fine quality of both the wire and its insulation.

Because the dial telephone system must function year in and year out, with an absolute minimum of trouble and repair service, the reliability of the Kellogg 4000 Type Relay must be of the highest order. To maintain these standards, all material sources—as well as every step in the manufacturing process—are continuously checked. Design approval of the Kellogg 4000 Type Relay came only after it had proved its worth, its long life, its precise operation, its unfailing reliability in *any* field assignment — regardless of the surroundings.

Over 100 Million Cycles!

The life expectancy of the Kellogg 400 Type Relay is well in excess of 100 Million Cycles under extremely severe conditions. Kellogg equipment is operating every day in many remote spots all over the world where temperature and humidity extremes are commonplace. When the Kellogg 4000 Type Relay proved its unusual worth under these conditions, final design approval was automatic.

It's completely Versatile! Over 1,700 contact spring combinations with over 100 coils are available to make this series fit any conceivable telephone need. Because of this wide variety, application charts of the 4000 Type Relay series are not included in this Catalog.

The Kellogg Company manufactures thousands of different relays, yet none of them may be interchangeable for your particular application. A given Kellogg relay may have several standard adjustments . . . only one of which may be satisfactory for your own special use. Therefore — when ordering a replacement of an Kellogg relay — and particularly the 4000 Type Relay—please remember to supply us with as much information about the particular relay as possible, so we can duplicate exactly the unit you desire.



4000 TYPE RELAYS

Contact Assembly

The use of twin contact springs with their self-cleaning action greatly increases the reliability of the 4000 relay, as there is little probability of both contacts failing at the same time.

contacts

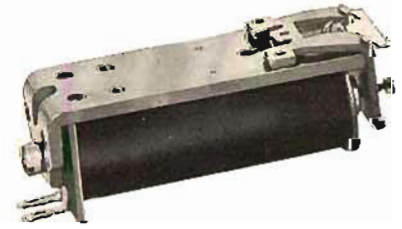


form A, open — form B, closed — form C, transfer

Maximum of 32 spring leaves in each of two pileups. Will give maximum of 16 a's, 14 b's and 10 c's, or an equivalent combination of these contacts.

TABLE A: contact configurations

CONTACTS No.	A	B	C	Load Factor	(I)
1	1	0	0	120	—4001—
	0	1	0	152	—4002—
	0	0	1	149	—4003—
2	2	0	0	144	—4005—
	1	1	0	178	—4006—
	1	0	1	178	—4007—
	0	2	0	214	—4009—
	0	1	1	212	—4010—
	0	0	2	214	—4012—
3	3	0	0	174	—4015—
	2	1	0	200	—4016—
	2	0	1	199	—4017—
	2	2	0	230	—4019—
	1	1	1	232	—4020—
	1	0	2	232	—4022—
	0	3	0	256	—4025—
	0	2	1	256	—4026—
	0	1	2	256	—4028—
	0	0	3	256	—4031—
4	4	0	0	198	—4035—
	3	1	0	221	—4036—
	3	0	1	199	—4037—
	2	2	0	248	—4039—
	2	1	1	248	—4040—
	2	0	2	248	—4042—
	1	3	0	271	—4045—
	1	2	1	270	—4046—
	1	1	2	270	—4048—
	1	0	3	269	—4051—
	0	4	0	293	—4055—
4	0	3	1	293	—4056—
	0	2	2	293	—4058—
	0	1	3	288	—4061—
	0	0	4	292	—4065—
5	5	0	0	224	—4070—
	4	1	0	240	—4071—
	4	0	1	245	—4072—
	3	2	0	259	—4074—
	3	1	1	262	—4075—
	3	0	2	263	—4077—
	2	3	0	283	—4080—
	2	2	1	282	—4081—
	2	1	2	278	—4083—
	2	0	3	282	—4086—
	1	4	0	306	—4090—
	1	3	1	306	—4091—
	1	2	2	306	—4093—
	1	1	3	358	—4096—
	1	0	4	300	—4100—
	0	5	0	326	—4105—
	0	4	1	328	—4106—
	0	3	2	329	—4108—
	0	2	3	328	—4111—
	0	1	4	325	—4115—
	0	0	5	330	—4120—
6	6	0	0	245	—4126—
	5	1	0	256	—4127—
	5	0	1	264	—4128—
	4	2	0	276	—4130—
	4	1	1	270	—4131—
6	4	0	2	288	—4133—
	3	3	0	295	—4135—
	3	2	1	300	—4137—
	3	1	2	294	—4139—
	3	0	3	300	—4142—
	2	4	0	319	—4146—
	3	2	1	317	—4149—
	2	1	3	317	—4152—
	2	0	4	324	—4156—
	1	5	0	342	—4161—
	1	4	1	353	—4162—
	1	3	2	342	—4164—
	1	2	3	341	—4167—
	1	1	4	342	—4171—
	1	0	5	348	—4176—
	0	6	0	362	—4182—
	0	5	1	360	—4183—
	0	4	2	360	—4185—
	0	3	3	360	—4188—
	0	2	4	358	—4192—
	0	1	5	360	—4197—
	0	0	6	372	—4203—
7	7	0	0	264	—4210—
	6	1	0	286	—4211—
	6	0	1	286	—4212—
	5	2	0	286	—4214—
	5	1	1	316	—4215—
	5	0	2	316	—4217—
	4	2	1	306	—4221—
	4	1	2	312	—4223—
	4	0	3	327	—4226—
7	3	4	0	334	—4230—
	3	3	1	334	—4231—
	3	2	2	336	—4233—
	3	1	3	336	—4236—
	3	0	4	351	—4240—
	2	5	0	352	—4245—
	2	4	1	353	—4246—
	2	3	2	352	—4248—
	2	2	3	352	—4251—
	2	1	4	356	—4255—
	2	0	5	356	—4260—
	1	6	0	378	—4256—
	1	5	1	342	—4267—
	1	2	4	378	—4276—
	1	1	5	387	—4281—
	1	0	6	374	—4287—
	0	7	0	402	—4294—
	0	0	7	420	—4322—
8	8	0	0	288	—4330—
	7	1	0	294	—4331—
	7	0	1	306	—4332—
	6	2	0	300	—4334—
	6	1	1	307	—4335—
	6	0	2	330	—4337—
	5	2	1	324	—4341—
	5	1	2	330	—4343—
	5	0	3	351	—4346—
	4	4	0	344	—4350—
	4	2	2	342	—4352—
	4	1	3	354	—4356—
8	4	0	4	378	—4360—
	3	4	1	368	—4366—
	3	3	2	366	—4368—
	3	2	3	366	—4371—
	3	0	5	408	—4380—
	2	6	0	390	—4385—
	2	3	3	392	—4392—
	2	1	5	408	—4401—
	2	0	6	392	—4407—
	1	7	0	414	—4414—
	1	2	5	411	—4429—
	1	1	6	444	—4435—
	1	0	7	416	—4442—
	0	8	0	438	—4450—
	0	1	7	439	—4478—
	0	0	8	522	—4486—
9	9	0	0	306	—4495—
	8	1	0	310	—4496—
	7	2	0	316	—4499—
	7	1	1	335	—4500—
	7	0	2	360	—4502—
	6	2	1	350	—4506—
	6	1	2	360	—4508—
	6	0	3	384	—4511—
	5	2	2	356	—4518—
	5	1	3	384	—4521—
	5	0	4	413	—4525—
	4	4	1	408	—4531—
	4	3	2	384	—4533—
	4	2	3	384	—4536—
	4	0	5	426	—4545—
9	3	6	0	404	—4551—
	3	5	1	404	—4552—
	3	4	2	408	—4554—
	3	3	3	406	—4557—
	3	0	6	488	—4572—
	2	7	0	430	—4580—
	2	0	7	540	—4607—
	1	6	2	451	—4518—
	1	0	8	465	—4651—
	0	0	9	495	—4705—
10	10	0	0	336	—4715—
	8	2	0	342	—4719—
	8	1	1	365	—4720—
	8	0	2	384	—4722—
	7	2	1	362	—4726—
	7	1	2	386	—4728—
	7	0	3	389	—4731—
	6	2	2	372	—4738—
	6	1	3	432	—4741—
	5	5	0	397	—4750—
	5	3	2	397	—4753—
	5	2	3	408	—4756—
	5	1	4	450	—4760—
	5	0	5	432	—4765—
	4	5	1	420	—4772—
	4	4	2	422	—4774—
	4	3	3	414	—4777—
	4	0	6	540	—4792—
	3	3	4	441	—4809—
	3	2	5	498	—4814—
	3	0	7	600	—4827—
	2	4	4	467	—4845—



Magnetic Circuit

The L-shaped armature rotates on a knife-edge pivot and permits armature movement with a minimum of side play and friction.

TABLE B: Coil Data

Load Factors at Specified Voltages						Load Factor	Coil	
6V	12V	24V	48V	90V	115V	Per Volt	Ohms	(II)
25	50	101	202	378	483	4.2	10260	S-50
31	62	125	250	459	587	5.1	5340	S-11
40	80	161	322	603	771	6.7	4340	S-64
42	85	170	341	639	817	7.1	3600	S-25
55	109	218	437	819	1046	9.1	2550	S-46
57	114	228	456	855	1093	9.5	2000	S-10
65	131	262	523	981	1254	10.9	1700	S-45
74	148	295	590	1107	1415	12.3	1235	S-35
65	130	259	518	972	1242	10.8	1075	S-9
87	174	348	696	1305	1668	14.5	1000	S-8
103	205	410	821	1539	1967	17.1	815	S-36
93	186	372	744	1395	1783	15.5	660	S-7
127	253	506	1013	1899	2427	12.1	485	S-6
138	276	552	1104	2070	2645	23.0	390	S-68
163	325	650	1301	2439	3117	27.1	315	S-5
169	337	674	1349	2529	3232	28.1	260	S-54
179	358	715	1430	2682	3427	29.8	225	S-21
209	419	838	1675	3141	4014	34.9	170	S-4
261	522	1044	2088	3145	5003	43.5	125	S-3
325	649	1298	2597	4869	6222	54.1	82	S-33
310	620	1241	2482	4653	5946	51.7	57	S-2
425	850	1699	3398	6372	8142	70.8	50	S-56
518	1037	2074	4147	7776	9936	86.4	33	S-29
554	1109	2218	4435	8316	10626	92.4	23	S-55
628	1256	2513	5026	9423		104.7	18	S-1
714	1428	2856	5712	10710		119.0	10.5	S-49

Coils above the heavy line consume less than 8 watts and are therefore self-protecting.

HOW TO ORDER

A complete relay code number consists of two parts: (I) the contact configuration code number, and (II) the proper code number determined at a specified voltage. In general, this code number is **aa-(I)-x-(II)** where **(I)** and (II) are obtained as follows:

i. Obtain **(I)** by selecting desired contact configuration from TABLE A. Note its LOAD FACTOR.

ii. Obtain at a specified operating voltage, the coil code number, **(II)** by selecting a coil with a LOAD FACTOR larger than required (by Table A) from TABLE B.

example: A relay with 1-A and 1-B contact (total two contacts) to operate at 24 V. is desired.

i. In TABLE A, under 2 contacts, the number of this configuration in -4006-. (**aa-4006-x-**(II)). Load factor is 178.

ii. In TABLE B, under 24 V. look for a load factor larger than 178. S-10 has a factor of 228. (**aa-4006-x-S-10** is the complete code number of this relay.)

For information regarding coil voltages exceeding 115 V., unlisted contact configuration of special operation and release times, contact the Chicago office.

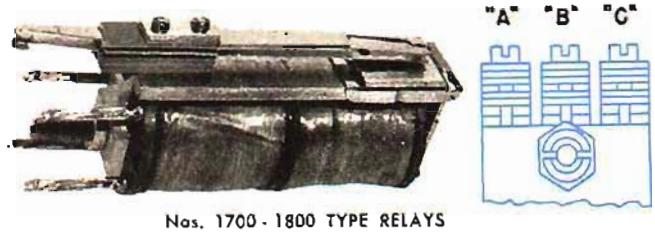
HOW TO ORDER

When ordering the 4000 Type Relay, please be sure to include the Spring and Coil Designations (Code Number, Stock List Number, or even the Drawing Number, if possible). Always specify the Relay Designation as well as the Circuit Number in which it is used.

If there is any question you would like answered about the 4000 Type Relay, or its application to your own particular requirements . . . please write the Kellogg Sales Department, or consult a Kellogg Representative.

II. RELAYMATIC SWITCHBOARD RELAYS

The Kellogg Relaymatic switching equipment is designed to provide interconnections entirely by relays. This all-relay construction is one of the most dependable methods of switching dialed connections automatically in an exchange area, and provides all main exchange functions. The following charts cover all Relaymatic Relays used on Kellogg Relaymatic Switchboards and certain popular variations.



Nos. 1700 - 1800 TYPE RELAYS

The standard for all new Relaymatic switchboards. Twin contacts of precious metal are used on all contact springs. A new "clip-on" type anti-residual plate eliminates the difficulty of hammering down anti-residual pins. The new clip type can be changed easily if a thicker or thinner clip is needed.

Spring stackups are clamped under pressure in a special fixture. High tensile strength screws are used to prevent loosening.

The coil is *not* included as a part of this type relay. When you order, please specify the Code Number of the relay having the spring combination you desire. Also please state the voltage or operating current value at which the relay is to operate. The Kellogg Engineering Department will then select the proper coil to meet the requirements you have specified. If you desire mounting strips for these relays, please specify with your order.

On replacement orders, code numbers should be included so the complete relay can then be ordered. Charts of the standard Relaymatic types spring combinations are shown below and on succeeding pages.

The spring combinations on these charts are shown as they actually appear on the heel iron — reading from the bottom or heel iron surface to the tip of the spring combination of each stackup.

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1700										
1701		M		1						
1702		M M		2						
1703		M M M		3						
1704	M M		M M	4						
1705	M M M		M M	5						
1706	M M M		M M M	6						
1707		M M BM		2		1				
1708	M M		M BM	3		1				

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1709	M M M		M BM	4		1				
1710		M B		1	1					
1711		B B			1					
1712		B B			2					
1713		B B B			3					
1714	B B B		BM B		4	1				
1715	M B B		M B B	2	4					
1716	B B B		B B B		6					
1717		M B B		1	2					
1718	M B		M BM	2	1	1				
1719	BM B		BM B		2	2				
1720		M BM		1		1				
1721		BM				1				
1722		BM BM				2				
1723	BM BM		BM			3				
1724	BM BM		BM BM			4				
1725		M BM B		1	1	1				
1726	2M B		BM BM	2	1	2				
1727	M BM		BM B	1	1	2				
1728	M BM		M BM	2		2				
1729	M M M		BM BM	3		2				
1730		BM B			1	1				
1731		2M					1			
1732		2M 2M					2			
1733		2M M		1			1			

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1734	M M		2M	2			1			
1735	M M		2M M	3			1			
1736	2M M		2M M	2			2			
1737	2M M		2M	1			2			
1738	2M		B2M				1	1		
1739		2M B			1		1			
1740		2M BM				1	1			
1741		B2M						1		
1742	B2M		B2M					2		
1743		M B2M		1				1		
1744	M M		B2M	2				1		
1745	M M M		B2M	3				1		
1746		B2M B			1			1		
1747		B2M BM				1		1		
1748		B2M M B		1	1			1		
1749	B2M		MB4B					1	1	
1750	BM		B2M			1		1		
1751	B2M		BMB4B					1		1
1752		M BM BM		1		2				
1753		BM BM B			1	2				
1754	M M BM		BM BM	2		3				
1755		BM B B			2	1				
1756		M M B		2	1					
1757	B B		M BM	1	2	1				
1758	M M B		BM B	2	2	1				
1759	M BM B		BM BM	1	1	3				

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1760	M M M		BM B	3	1	1				
1761	M B B		BM BM	1	2	2				
1762	M BM		BM BM	1		3				
1763	M M M		M B	4	1					
1764	M BM BM		BM BM	1		4				
1765	M BM BM		M BM BM	2		4				
1766	B B B		BM BM		3	2				
1767	M M		M B	3	1					
1768	M M M		M M B	5	1					
1769	M M M		B B	3	2					
1770	M B		M B	2	2					
1771		MB4B							1	
1772		MB4B MB4B							2	
1773	MB4B MB4B		MB4B						3	
1774	MB4B MB4B		MB4B MB4B						4	
1775		MB4B M		1					1	
1776		MB4B M M		2					1	
1777	M M		MB4B M	3					1	
1778	MB4B M		MB4B	1					2	
1779	MB4B M		MB4B M	2					2	
1780	MB4B M M		MB4B M	3					2	
1781	MB4B M M		MB4B M M	4					2	
1782		MB4B BM				1			1	

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1783		MB4B BM BM				2			1	
1784	MB4B BM		MB4B BM			2			2	
1785	MB4B BM		MB4B			1			2	
1786	MB4B BM BM		MB4B MB4B			2			3	
1787	MB4B BM BM		BM BM			4			1	
1788	M BM		MB4B	1		1			1	
1789	MB4B M		BM BM	1		2			1	
1790	M BM		MB4B M	2		1			1	
1791	MB4B M M		MB4B BM	2		1			2	
1792	M BM BM		MB4B BM	1		3			1	
1793	MB4B M		MB4B B	1	1				2	
1794	M B		MB4B M	2	1				1	
1795	M M B		MB4B B	2	2				1	
1796	M B		MB4B	1	1				1	
1797	BM BM B		MB4B BM		1	3			1	
1798	MB4B B		BM BM		1	2			1	
1799	M M B		MB4B 2M	2	1		1		1	
1800		MB4B 2M					1		1	
1801		M84B B B			2				1	
1802		MB4B B			1				1	
1803	M B B		MB4B BM	1	2	1			1	
1804	M BM B		MB4B BM	1	1	2			1	

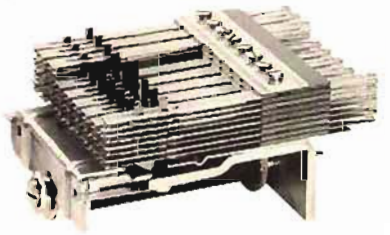
Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1805	MB4B M M		BM B	2	1	1			1	
1806	MB4B		BMB4B						1	1
1807		BMB4B								1
1808		BMB4B M		1						1
1809		BMB4B BM				1				1
1810	M M BM		M M BM	4		2				
1811	M M M M		M M B	6	1					
1812	M M BM		M M M	5		1				
1813	M BM B		M M BM	3	1	2				
1814	M BM B		M BM B	2	2	2				
1815	BM BM BM		BM BM BM			6				
1816	M M B		MB4B M M	4	1				1	
1817	M BM BM		MB4B MB4B	1		2			2	
1818	M M M M		M M BM	6		1				
1819	M M M M		M M M M	8						
1820	M M M M		M M M	7						
1821	M M M B		M M M M	7	1					
1822	M BM B		M BM BM	2	1	3				
1823	M B		2M	1	1		1			

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1824	M B B		2M BM	1	2	1	1			
1825	M BM BM		M M BM	3		3				
1826	M B B		MB4B MB4B	1	2				2	
1827	MB4B M M		M BM B	3	1	1			1	
1828	M M M B		M BM BM	4	1	2				
1829	MB4B M BM		M M M M	5		1			1	
1830	MB4B BM		M M M M	4		1			1	
1831	MB4B B B		BM BM		2	2			1	
1832	2M M		M B	2	1		1			
1833	MB4B M M M		MB4B M M M	6					2	
1834	MB4B M B		MB4B M B	2	2				2	
1835	BM BM BM		BM BM			5				
1836	BM BM B		M BM BM	1	1	4				
1837	MB4B M BM		MB4B M BM	2		2			2	
1838	M BM BM		M M M BM	4		3				
1839	M M M M M		M M M	9						

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1840	M M M M M		M M M M M	10						
1841	M M M B		M M M B	6	2					
1842	M M M B		M M M BM	6	1	1				
1843	M BM B		MB4B M BM	2	1	2			1	
1844	M M M		MB4B M M	5					1	
1845	M M M BM		M M M M	7		1				
1846	M M M M M		M BM BM	6		2				
1847	M M B		M M B	4	2					
1848	BM BM B		MB4B B B		3	2			1	
1849	B B		B B		4					
1850	M M M M M		BM BM B	5	1	2				
1851	MB4B M BM		MB4B M M B	3	1	1			2	
1852	M M M M		MB4B M M M	7					1	
1853	M M M M		M BM BM	5		2				

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1854	M M M M		M B B B	5	3					
1855	MB4B B B		MB4B B B		4				2	
1856	MB4B M BM		MB4B B B	1	2	1			2	
1857		BM BM M		1		2				
1858	M M B		M B B	3	3					
1859	B B		M B	1	3					
1860	MB4B M M		BM BM	2		2			1	
1861	MB4B BM B		MB4B B B		3	1			2	
1862	M M BM B		M M BM B	4	2	2				
1863	M BM BM		M M BM B	3	1	3				
1864	M M M BM		BM BM BM	3		4				
1865	M M M M M		M M M B	8	1					
1866	M M M BM		BM B B B	3	3	2				
1867	M B B		BM B B	1	4	1				
1868	M		M	2						
1869	B		B		2					
1870	BM		BM			2				
1871	M M M B		MB4B BM BM	3	1	2			1	

Code No.	Contact Arrangement			No. of Sets of Following Springs						
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE	BREAK & TWO MAKE	MAKE BEFORE BREAK	BREAK & MAKE BEFORE BREAK
1872	M M M M M		BM BM BM	5		3				
1873	MB4B M M B		MB4B M B B	3	3				2	
1875	M B B B		M BM B	2	4	1				
1876	BM B B B		M BM B B	1	5	2				
1878	BM BM B		M M BM B	2	2	3				
1879	MB4B B		MB4B B		2				2	
1880	M M BM B		2M BM BM	2	1	3	1			
1881	BM BM BM		MB4B M BM	1		4			1	
1882	2M B		3M B	5	2					
1883	M M M BM		MB4B M M M	6		1			1	
1884	M BM BM		B B B	1	3	2				
1885	MB4B M M		BM BM BM	2		3			1	
1886	BM BM B		M B B B	1	4	2				
1887	BM		2M			1	1			
1888	M M BM B		BM BM BM	2	1	4				
1889	M M		BM	2		1				
1890	BMB4B		BMB4B		1					2
1891	BMB4B		BMB4B							
	B		M	1	1					2
1892	MB4B		MB4B							
	BM BM		MB B	1	2	2			2	2
1893	M		B	1	1					
1894	MM		MM	4		4				
	BM		BM							
	BM		BM							



VARIATIONS

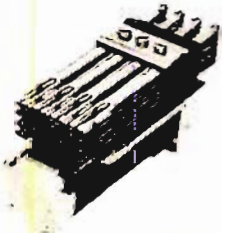
No. 7000 Type Gang Relays

A new style gang relay used on Kellogg Relaymatic switchboards. To hold field maintenance work to a minimum, ladder type spring separators and a special adjustment feature are used. The spring stackup is clamped in a pressure fixture and firmly held by high tensile strength screws to prevent any possibility of loosening. Twin contacts of precious metal are used on all contact springs to assure perfect connections. Standard relay coils are used with these relays, and are furnished to meet specification requirements. These relays mount No. 1700-1800 relay mounting strips when your order requires them.

Spring Stackups Left to Right

Code No.	Facing Armature A	B	C	D	E	F	G	H	J	Remarks
7007	4M	4M	4M	3M	3M	3M	3M	4M	4M	Screw Type Adj. Arm. Total 32 Makes
7008	4M	4M	4M	3M	3M	3M	4M	4M	4M	Screw Type Adj. Arm. Total 33 Makes
7009	4M	4M	4M	3M	3M	3M	3M	3M	4M	Screw Type Adj. Arm. Total 31 Makes
7010	4M	4M	4M	2M 1B	2M 1B	2M 1B	3M	3M	4M	Screw Type Adj. Arm. Total 28 Makes, 3 Breaks
7011	4M	4M	4M	4M	4M	4M	4M	4M	4M	Screw Type Adj. Arm. Total 36 Makes
7012	3M	3M	3M	3M	3M	3M	3M	3M	3M	Screw Type Adj. Arm. Total 27 Makes

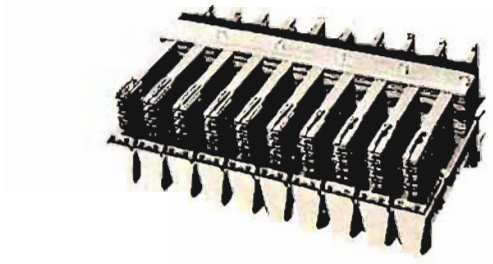
No. 7100 Type Gang Unit Relays

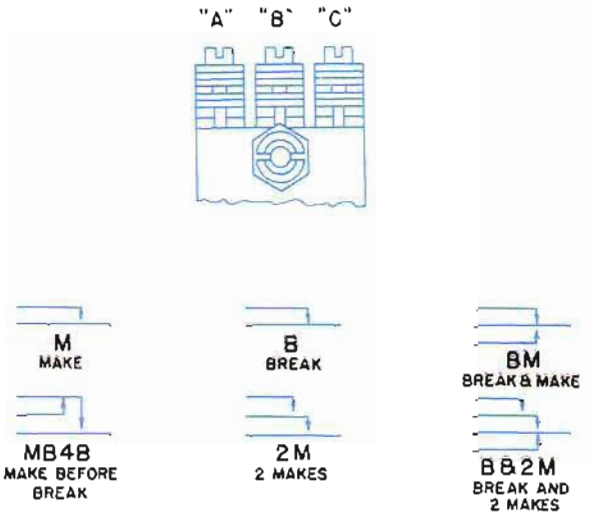


This new style gang unit relay is used in the finder circuit of the Kellogg Relaymatic switchboard. It follows the same adjustment features and construction methods as the No. 7007 gang relay. Twin contacts of precious metal are used on all contact springs to assure perfect connection. Coils are *not* supplied as a part of this relay, but are furnished to meet specific requirements. These relays mount on No. 1700-1800 relay mounting strips, supplied upon application with your order.

Spring Stackups Left to Right

Code No.	Facing Armature A	B	C	D	Remarks
7100	4M	4M	4M	4M	Total 16 Make Contacts
7101	3M	3M	3M	3M	Total 12 Make Contacts
				1B	Total 11 Makes and 1 Break
7102	3M	3M	3M	2M	on top in "D"
7104	6M	6M	6M	6M	Total 24 Makes. Mountings require 2½" vertical spacing





No. 7200 Type Gang Unit Relays

New style, special purpose relay, used on Kellogg Relaymatic switchboards. It is composed of ten separate coils, armature and spring stackups — all assembled to one common heel iron. Common strappings between the respective "Make" contacts of the spring stackups allows the connection of ten lines by the operation of one armature. Each individual armature has the same clip type residual as used on the No. 1700-1800 type relays. The spring combinations are the same. The only difference between the two is the coil winding as listed below. Coils are supplied.

These relays mount on No. 1700-1800 type relay mounting strips upon application. Twin contacts of precious metal are used on all contact springs to assure perfect connections.

Code No.	CONTACT ARRANGEMENT A	B	C	D	E	F	G	H	J	K	COIL RES. (Ohms) Pos. A	Pos. B, C, D, E, F, G, H, J, K
	4M	4M	4M	4M	4M	4M	4M	4M	4M	4M	1200	1200 (each coil)
7200	1B	1B	1B	1B	1B	1B	1B	1B	1B	1B	100	
REMARKS—Total 40 Makes—10 Breaks (for 48 volts).												
	4M	4M	4M	4M	4M	4M	4M	4M	4M	4M	500	500 (each coil)
7201	1B	1B	1B	1B	1B	1B	1B	1B	1B	1B	100	
REMARKS—Total 40 Makes—10 Breaks (for 24 volts).												
	4M	4M	4M	4M	4M	4M	4M	4M	4M	4M	1200	1200 (each coil)
7203	1B	1B	1B	1B	1B	1B	1B	1B	1B	1B	100	
REMARKS—Total 40 Makes — 10 Breaks (for 48 volts) Mtg. Arrang. Threaded Core and Screw Mounted.												

The 2000 Type Relays

These Kellogg relays are standard for use on manual type switchboards. They are designed for mounting on No. 1000 type relay mountings. The relays generally are mounted in pairs under a steel shell, supplied with the mounting strip. Coils are supplied as a part of the relays.

In ordering, please specify the Code Number of the relay which has the spring combination you desire. Also please state the voltage at which the relay is to operate, or the operating current required. The Kellogg Engineering Department will then select the proper coil to meet your specific requirements.

If you do not find the types of relay to fit your needs, please write the Kellogg Sales Department or consult a Kellogg Representative. They will quickly take care of your needs.



III. MANUAL SWITCHBOARD RELAYS

The many advantages of Kellogg manual switchboards are too well-known and proved through the years to detail here. The "heart" of these switchboards is the Relay — the types that are specifically designed and engineered for efficient manual operation.

The relays listed in this section, combined with the Kellogg Masterbuilt switchboards, mean the most desirable manual exchange equipment ever produced.

On replacement orders, Code Numbers should be included so the complete relay can then be ordered. For example, if a No. 2028 S-FY relay is ordered, a No. 2028 relay and a No. S-FY coil will be supplied.

Charts of the Standard 2000 Type Relay spring combinations are shown below and on the succeeding pages. The combinations are listed as they actually appear on the heel iron, reading from the bottom or heel surface to the top of the respective stackup.

Code No.	Contact Arrangement			No. of Sets of Following Springs						Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	MAKE BEFORE BREAK	TWO MAKE	BREAK & TWO MAKE	
2000		B				1				Buzzer Relay
2001		BM				1				
2002	BM		BM			2				
2003	BM		BM BM			3				
2004	BM BM		BM BM			4				
2005	B BM		B BM		2	2				
2006		MB4B					1			
2007	MB4B		MB4B				2			
2008	MB4B		MB4B MB4B				3			
2009	MB4B MB4B		MB4B MB4B				4			
2019	MB4B		BM BM			2	1			
2020	BM		MB4B MB4B			1	2			
2021	MB4B MB4B		BM BM			2	2			
2023	M M	M	M M	5						
2026	M BM	B	M BM	2	1	2				
2027	BM BM	M	BM BM	1		4				
2028	M B	MB4B	M B	2	2		1			
2029		M		1						For Pilot Relays
2030		B			1					For Supv. Relays
2031	M BM	BM	M BM	2		3				
2032	M M	BM	M M	4		1				
2034	BM	B	C		1	1				Interrupter Relay. Special Tension Spring.
2035		B2M							1	
2036		M MB4B		1			1			
2037	M		M	2						
2038		BM				1				With screw adj. on Arm. Interrupter Rel.
2039	BM		BM BM			3				With screw Adj. on Arm.
2042	Tension Spring Trouble Tone. B				1					Tone buzzer rel. Ratchet arm. adj.

Code No.	Contact Arrangement			No. of Sets of Following Springs						Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	MAKE BEFORE BREAK	TWO MAKE	BREAK & TWO MAKE	
2043		M		1						Uses S-FL or S-DZ Rel.Coil. For Pilot Relay. Has light armature.
2044		BM				1				Has light armature.
2045		B			1					Has dead terminal. Has light armature.
2046	BM BM	MB4B	BM BM			4	1			
2048	B		B		2					
2049		B			1					Has light armature.
2053										Consists of Heel Iron and Armature.
2056		M M		2						Has light armature.
2058	Dialing	M		1						Ratchet Arm. Adj. Uses S-FL or S-DZ Coil.
2059	B	B	B		3					
2063	MB4B MB4B	MB4B	BM BM			2	3			
2065	MB4B		2M				1	1		
2075	B-2M		BM			1			1	
2076	M MB4B		M BM	2		1	1			
2077	M M		M M	4						
2078		M B		1	1					
2079	M BM		B BM	1	1	2				
2080	M BM		M M	3		1				
2081	BM		M M	2		1				
2087	B		B M	1	2					Spec. Tension Springs & extra heavy Plat. contacts.
2088	M		M	2						Same as #2037 rel. but has extra heavy Plat contacts.

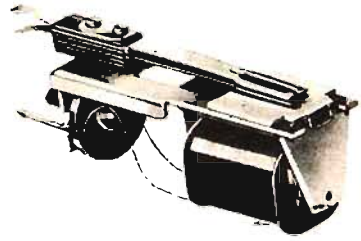
Code No.	Contact Arrangement			No. of Sets of Following Springs						Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	MAKE BEFORE BREAK	TWO MAKE	BREAK & TWO MAKE	
2089	MB4B		BM			1	1			
2091	M BM		M BM	2		2				
2093		2M						1		
2094	2M	M	2M	1				2		
2099	M BM	2M	M BM	2		2		1		
2108	MB4B MB4B	M	B B M	2	2		2			
2109	M		M M	3						
2111	MB4B MB4B	M	MB4B MB4B	1			4			
2112	BM		B B		2	1				
2113	BM		M BM	1		2				
2114		B M		1	1					
2116	2M B		B B		3			1		
2118	M MB4B		MB4B	1			2			
2119	M MB4B		M MB4B	2			2			
2120	M MB4B	M	M MB4B	3			2			

VARIATIONS FOR SPECIFIC USE

No. 10 Type Relays

Similar in construction to the No. 2000 Type Relays, the No. 10 Type Relay is slightly smaller in over-all dimensions. They mount only on mounting strips for No. 10 type relays (see Mountings in this section). Since these relays have no shell cover, they are not cross-talk proof.

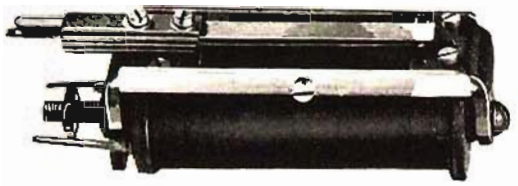
Code No.	Contact Arrangement Left to Right Facing Armature			No. of Sets of Springs				Coil Res. (Ohms)	Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	TWO MAKE		
21-A	B		B		2			250	
21-B	B		B		2			300	
21-C	B		B		2			500	
25-A		BM				1		250	
25-B		BM				1		1000	
25-C		BM				1		500	
26-A		M		1				250	
26-B		M		1				90	
26-C		M		1				600	
26-D		M		1				500	
26-E		M		1				100	
26-F		M		1				250	500 N.S. mult. with 500 C.E.
26-G		M		1				6	
561-A	M		M	2				500	Two Dead Terminals in "B" Position.
561-B	M		M	2				300	
561-C	M		M	2				1000	
561-D	M		M	2				500	1000 N.S. mult. with 1000 C.E. 2 dead terms. in "B" Position
567-A	B		B		2			300	Concentric
								1640	Coil.
								47	Concentric
567-B	B		B		2			900	Coil.
569-A		M		1				500	Four dead terms. (Pos. A & C).
569-B		M		1				300	
								100	Concentric
579-A	M		M	2				200	Coil.
								1000	Concentric
579-B	M		M	2				2000	Coil.
								500	Concentric
579-C	M		M	2				2000	Coil.
								500	Concentic
579-D	M		M	2				2000	Coil.
579-E	M		M	2				500	1000 mult. with 1000.
580-D		2M					1	500	
580-E		2M					1	1000	



A.C. Type Relays

This group of alternating current relays mounts on standard 1000 type relay mountings. A laminated core is used for the coil and special coils similar to the S-JD coil (see ac Relay Coils, this section). These relays have been largely supplanted by using a standard 2000 type relay and a selenium rectifier. Spring combinations are listed as they appear on the heel iron, reading from the bottom or heel iron surface to the top of the spring stackup.

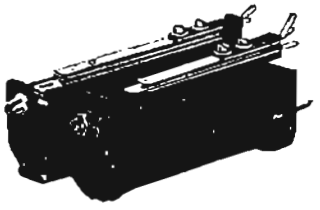
Code No.	Contact Arrangement			No. of Sets of Following Springs			Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	
2103		B			1		These relays are for
2104		M		1			mounting on standard
2105		BM				1	1000 type mountings
2106	BM		BM			2	with 200 type relays.
	BM		BM				
2107	BM		BM			4	
2203		B			1		These relays are for
2204		M		1			mounting on mounting
2205		BM				1	strips with 1700-1800
		BM					type relays.
2206		BM				2	

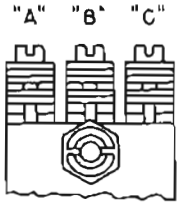


No. 2000 Type ac Relays

This group of alternating current relays requires special coils having the end of the core tapped. (See ac Relay Coils in the Coil Section). They mount on standard 1000 type mounting strips.

Code No.	Contact Arrangement			No. of Sets of Following Springs		Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	
2017		M		1		
2018		B			1	
2040	M		M	2		
2052	B		M	1	1	Composite Ring.
2057			M	1		Has extra Adj. Spring.
2085	M		M	2		Tension Adj. Spring.





No. 2060 Type Restoring Relays

Specifically designed and engineered for use only with the No. 2061 trip type relay group, these relays use standard relay coils. The restoring arm relay is on the right side when facing the armature. The following combinations in this group are listed as they actually appear on the heel iron reading from the bottom or heel iron surface to the top of the respective stackup.

Code No.	Contact Arrangement			No. of Sets of Following Springs				Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE	MAKE BEFORE BREAK	
	BM		BM					
2060	BM		BM			4		
2064	BM		BM			2		
2066								No contact springs.
2067		BM				1		
			BM					
2068	BM		BM			3		
2074	MB4B		BM			1	1	
2082	MB4B		MB4B				2	

No. 2061 Trip Type Relays

Designed and engineered to do a specific job, this group of relays forms a part of a "team" with the restoring type relay, and is always used with it. The trip is on the left side when facing the armature. Because of its special construction, this group of relays can be used only with Nos. S-FS, F-FU, S-GM, S-GN, or S-RC relay coils.

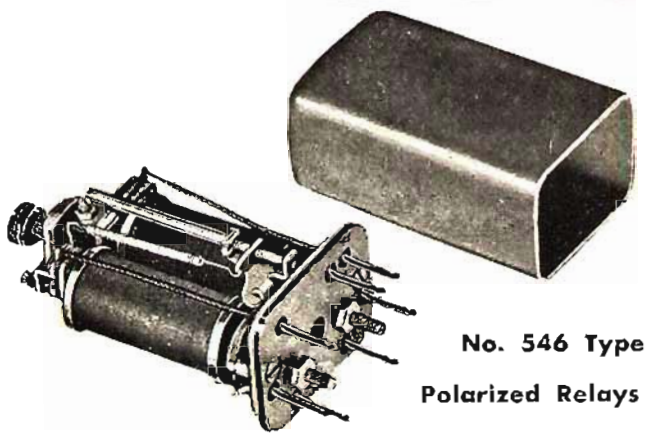
Code No.	Contact Arrangement			No. of Sets of Following Springs		
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	BREAK & MAKE
2061	B		M	1	1	
2062			M	1		
2083	BM		M	1		1
			M			
2086			M	2		
2098	BM					1



No. 2100 Type Micrometer Adjustment Relays

This group of Kellogg micrometer adjustment relays are engineered for positive and precise adjustment. The No. 2102 relay with an S-HG coil (complete code number is No. 2102, S-HG) is the standard pilot relay used on Kellogg switchboards, replacing No. 2043, S-HQ relay for this application. The spring stackup is always in the "B" or center position on the heel iron. All relays listed below mount on No. 1000 type mounting strips, excepting No. 2007 relay. This is a special pendulum relay for mounting on No. 1700-1800 type relay mounting strips.

Code No.	Contact Arrangement			No. of Sets of Following Springs			Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK & MAKE	TWO MAKE	
2100		BM			1		Used only with S-HH or S-HG Rel. Coils. Is supplied with a cover for single relay.
2102		BM			1		Used with any 2000 type re. coil. Replaces W. E. B-42 but not interchangeable.
2110		2M				1	Used only with S-HH or S-HG Rel. Coils. Is supplied with a cover for single relay.
		M					Used with any 2000 type
2115		M		2			rel. coil.
2207		BM		1			Uses ac Rel. coils such as S-BX with tapped core. Mts. on 1700-1800 rel. mountings.



No. 546 Type Polarized Relays

The Kellogg No. 546 type relay is the polarized relay used primarily as a ring-up relay. The ringer coils are adjustable. The entire relay is enclosed in a brass shell to eliminate any interference from alternating currents. Precious metal contacts are used to assure constant functioning. The relay is designed for fine adjustments as the armature is controlled by a biasing spring with a micrometer screw adjustment. These relays mount on No. 1000 type mountings. Please order them by Code Number for the resistance desired.

Code No.	Contact Arrangement	No. of Sets of Springs	Coil Res. (Ohms)	
		BREAK & MAKE	L. COIL	R.COIL
546-A	BM	1	40	40
546-B	BM	1	200	200
546-C	BM	1	1600	1600
546-D	BM	1	2500	2500
546-E	BM	1	7500	7500
546-F	BM	1	750	750
546-G	BM	1	1600	60
546-H	BM	1	100	100
546-J	BM	1	40	30,000
546-K	BM	1	100	30,000

No. 440 Type Relays

The Kellogg No. 440 Type Relays are primarily used as line or cutoff relays on older manual exchanges, depending upon the code number selected. They are similar to the standard No. 2000 type relays, but mount on No. 346 mounting strips (see Mountings — this section). Coils are furnished as a part of this relay for the code numbers listed below. Please order these relays by Code Number.

Code No.	Contact Arrangement			No. of Sets of Following Springs		Coil Res.	Remarks
	POS. "A"	POS. "B"	POS. "C"	MAKE	BREAK	(Ohms)	
441-A	B		B		2	200	Used as cutoff relay.
441-B	B		B		2	500	Used as cutoff relay.
441-C	B		B		2	300	Used as cutoff relay.
442-A		M		1		1000	Used as Line Relay.

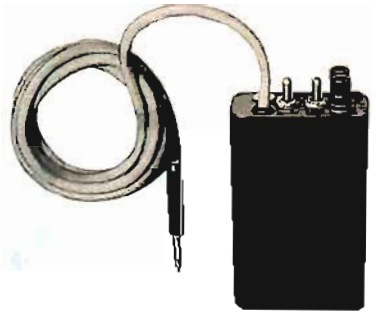
IV. RELAYS, HARMONIC

Kellogg harmonic relays consist of standard harmonic ringer movements fitted with auxiliary contacts for operation of lamp signals or other relays.

Code No.	Frequency (Cycles)	Resistance (2 Coils)
20576-A-5	16	2500
20575-A-4	16.6	2500
20570-A-1	20	2500
20575-A-5	25	2500
20570-A-3	30	1000
20576-A-1	30	1000
20575-A-1	33.3	500
20570-A-4	40	1000
20576-A-2	42	1000
20570-A-5	50	1000
20575-A-2	50	500
20576-A-3	54	1000
20570-A-2	60	1000
20576-A-4	66	1000
20575-A-3	66.6	500

SPECIAL NOTE

If you do not find the relays or relay types to suit your needs, please contact the Kellogg Sales Department, or a Kellogg field representative. Be sure to give all the information you can about the relay desired, its use and applications. If possible, include the code numbers of the relay, coil number, voltages desired, and the type of electrical system in which it is to operate. Kellogg engineers will then have a good basis to recommend one or more relays to meet your own specifications.



DIAL TEST RELAY UNIT

No. 101

A complete, handy, accurate testing unit duplicating line conditions to check dialing troubles. It will simulate the following conditions:

1. Zero ohm loop — no leak or ringers
2. 1000 ohm loop — no leak or ringers
3. Zero ohm loop — leak and ringers
4. 1000 ohm loop — leak and ringers

When a leak and ringer condition is used, a 10,000 ohm leakage condition is simulated along with a maximum ringer load. The test unit has a 6-foot cord with a No. 106 plug, to plug into the test jack on the equipment to be tested. A No. 260 spring jack is installed in the test unit so a handset (butt-in) or telephone may be plugged in for dialing. Binding posts are provided on the test unit for connecting a butt-in or telephone with clips or lugs.

This unit is used also to get an accurate check on dialing equipment, ring tripping, and back bridge relay. It enables the maintenance man to duplicate line conditions for the purpose of checking the dialing relay, hold relay, series relay, counter or counting chain, ring trip relay, and back bridge relay.



RINGERS

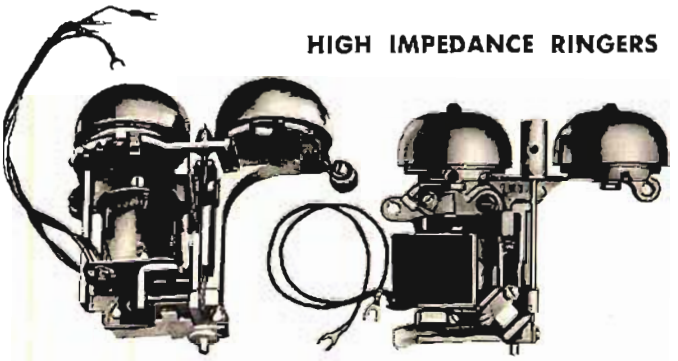
Kellogg quality ringers are designed to meet every ringer need in normal telephone practice. They are divided into three general types: Biased, Straight Line, and Frequency Selective groups, divided according to the following applications:

Biased Ringers—Used for common battery manual, dial, or magneto when future conversion to common battery service is planned. These ringers are used for bridged or divided ringing to prevent bell tapping, or where the ringers must respond to a single polarity. They are used for two-party and four-party selective, code, and other semi-selective pulsating and superimposed ringing using Vincent Rare Gas Relay for noise reduction, or Western Electric 426-A Tube for selective ringing.

Straight Line Ringers—Used for magneto, bridged or divided ringing when bell tapping is not objectionable, or where maximum sensitivity to a broad range of ringing frequencies is desirable.

Frequency Selective Ringers — Used for common battery manual or dial, bridged or divided frequency selective ringing in Harmonic, Synchromonic, or Decimonic frequencies.

HIGH IMPEDANCE RINGERS



For K-500 Type Telephones

Kellogg's new K-500 series of modern telephones naturally requires new, improved ringers. The Kellogg K-500 Telephone is an all-purpose telephone for all common battery services. Hence, Biased Ringers and Frequency Selective Ringers, both with and without volume control, are necessary.

The K-500 type Ringer is a new, single-coil design with a higher impedance, allowing more ringers to be placed on a line with no increase in bridging loss, or increase of unbalance on divided ringing circuits. With volume control, the subscriber may adjust the sound output over a range of approximately 4 db. with the highest value of about 2 db. above previous ringers. The two gongs have harmonically related frequencies whose fundamentals are reinforced by resonant air chambers below the gongs, which equals about 15 db. gain in sound output.

The magnetic circuits include a laminated coil core, pole pieces and armature, permanent magnet and magnetic shunt. These provide adequate sensitivity to ringing signals and low sensitivity to transients or other operating surges. The structure design includes the magnetic circuit saturation feature, to limit the effects of high surge currents which might otherwise weaken the permanent magnet.

Biased Ringers in the K-500 type telephone which provide non-polarized ringing, are used for the following purposes:



Individual lines
Two-Party divided lines
Two-Party selective message rate lines
Two-Party selective automatic ticketing lines
Four-Party semi-selective divided ringing lines
Code Ringing non-selective bridged or divided ringing lines.

Frequency Selective Ringers for the K-500 type telephones, are divided into two classes, with Volume Control and without volume control, to provide the following services:

One to Five selective bridged party lines
One to Ten selective divided party lines
Six to Ten semi-selective bridged party lines
Eleven to Twenty semi-selective divided party lines.

When ordering these new ringers, please use the proper Code Number, together with the proper frequency desired. This will insure that you will receive exactly the right ringer you desire. Example: No. 131 HB-3 is the Code Number for a 54 cycle Synchromonic Ringer, 4700 ohms resistance, with volume control.

SMALL TYPE RINGERS

For L-500 Type Telephone Only

Biased Ringers

Code No.	Total Resistance (ohms)	Used On
130-BA	Inside Winding 1000 Outside Winding 2600	K-500 Type Telephones exclusively

Standard High Impedance Frequencies

131 and "E"-131 Ringers

Code No.	Frequency (cycles)	Resistance (ohms)
HARMONIC FREQUENCIES — WITH VOLUME CONTROL		
131-HA-1	33⅓	4700
131-HA-2	50	4700
131-HA-3	66⅔	4700
131-HA-4	16⅔	4700
131-HA-5	25	4700
SYNCHROMONIC FREQUENCIES — WITH VOLUME CONTROL		
131-HB-1	30	4700
131-HB-2	42	4700
131-HB-3	54	4700
131-HB-4	66	4700
131-HB-5	16	4700
DECIMONIC FREQUENCIES — WITH VOLUME CONTROL		
131-HC-1	20	4700
131-HC-2	60	4700
131-HC-3	30	4700
131-HC-4	40	4700
131-HC-5	50	4700

NOTE: On ringers where a condenser is furnished with the ringer (.1, .25, .35 MFD); when the Exclusion or Lift-to-Talk features are desired, a different condenser or capacitor is required. When you order ringers for these telephones uses, prefix the symbol "E" before the ringer code number. Example: E-131-HA to indicate a No. 131 Biased Ringer of 33⅓ Harmonic Frequency with Volume Control for the Exclusion and Lift-to-Talk features telephone.

133 and "E"-133 Ringers

HARMONIC FREQUENCIES — NO VOLUME CONTROL		
133-HA-1	33⅓	4700
133-HA-2	50	4700
133-HA-3	66⅔	4700
133-HA-4	16⅔	4700
133-HA-5	25	4700
SYNCHROMONIC FREQUENCIES — NO VOLUME CONTROL		
133-HB-1	30	4700
133-HB-2	42	4700
133-HB-3	54	4700
133-HB-4	66	4700
133-HB-5	16	4700
DECIMONIC FREQUENCIES — NO VOLUME CONTROL		
133-HC-1	20	4700
133-HC-2	60	4700
133-HC-3	30	4700
133-HC-4	40	4700
133-HC-5	50	4700

NOTE: On ringers where a condenser is furnished with the ringer (.1, .25, .35 MFD); when the Exclusion or Lift-to-Talk features are desired, a different condenser or capacitor is required. When you order ringers for these telephones uses, prefix the symbol "E" before the ringer code number. Example: E-131-HA to indicate a No. 131 Biased Ringer of 33⅓ Harmonic Frequency without Volume Control — for the Exclusion and Lift-to-Talk features telephone.

BIASED RINGERS



For 1000 Series Desk and 1100 Series Wall Masterphones

Code No.	Resistance (ohms)	Impedance	Gong Diameter	Type	Armature Type
120-BA	4000	High	1¾ in.	Small	Adjustable
120-BB	2500	Medium	1¾ in.	Small	Adjustable
120-BC	1000	Low	1¾ in.	Small	Adjustable

NOTE: 120-BA ringers are for use on all dial and heavily loaded manual lines. Do not mix on the same line with other ringers having resistance less than 2500 ohms. Use 120-BB ringers if your present ringers on line have a resistance of over 1500 ohms and under 3000 ohms. Use 120-BC ringers if the present ringers on the line have a resistance of over 500 ohms to 1500 ohms. To adjust, use Kellogg No. 85 Special Adjustment Tool — see "Tools" in this section.





For Extension Bells and C.B. Desk Set Boxes

Code No.	Resistance (ohms)	Gong Diam.	Type	Armature Type	Remarks
79-A	1000	2½"	Large	Adj.	For No. 37 Extension Bell,
79-C	500	2½"	Large	Adj.	F-605, F-602, 610 Desk Set
79-G	2500	2½"	Large	Adj.	Boxes, F817, 9817 Telephones.

STRAIGHT LINE RINGERS

For 1000 Series Desk and 1100 Series Wall Telephones

Code No.	Resistance (ohms)	Impedance	Gong Diam.	Type	Armature Type
123-SA	4000	High	1¾ in.	Small	Adjustable
123-SB	2500	Medium	1¾ in.	Small	Adjustable
123-SC	1000	Low	1¾ in.	Small	Adjustable

NOTE: 123-SA ringers are for use on all heavily loaded magneto lines. Do not mix the same line with ringers having resistance less than 2500 ohms. Use 123-SB ringers if the present ringers on line have a resistance of over 1500 ohms and under 3000 ohms. Use 123-SC ringer if present ringers on line have a resistance of over 500 ohms to 1500 ohms. To adjust, use Kellogg No. 85 Special Ringer Adjustment Tool — See "Tools", this section.

For 4800 and 5800 Series Wall Telephones Extension Bells and Local Battery Desk Set Boxes

Code No.	Resistance (ohms)	Gong Diam.	Type	Armature Type	Remarks
78-A	1000	2½ in.	Large	Non-Adj.	For No. 37 Extension Bells, F2300, 3300, 3400, 3500 Desk Set Boxes, and 4800, 5800 Telephones.
78-D	1600	2½ in.	Large	Non-Adj.	
78-G	2500	2½ in.	Large	Non-Adj.	

For Loudringing Extension Bells

Code No.	Resistance (ohms)	Gong Diam.	Type	Armature Type	Remarks
107-A	1000	*	Large	Adjust.	For No. 65 Extension Bells
107-D	1600	*	Large	Adjust.	
107-G	2500	*	Large	Adjust.	

*Six-inch diameter ringers are mounted on extension bell frame and are not supplied with ringer.



For 3000-3001 Portable Telephones

Code No.	Resistance (ohms)	Gong Diameter	Type	Armature Type
109-G	2500	1⅜ in.	Large	Non-Adj.
		For No. 6886		
55-G	2500	3 in.	Large	Non-Adj.

FREQUENCY SELECTIVE RINGERS

For 1000 Series, Desk, 1100 Series Wall Masterphones

For Harmonic, Synchromonic, Decimonic Ringing Applications

LOW IMPEDANCE RINGERS

Kellogg No. 124 Ringer

A standard low impedance ringer furnished in 1000 series desk, and 1100 series wall Masterphones. Used for bridged selective ringing. Five to ten telephones equipped with the No. 124 ringer can be used on a line. We do *not* recommend the use of ten bridged telephones using No. 124 ringers on long rural lines. However, for divided selective ringing applications, ten telephones equipped with this ringer can be used on a line.

For frequencies available in the No. 124 ringers, consult Frequency Chart below.

SPECIAL RINGERS FOR WESTERN ELECTRIC and STOMBERG CARLSON TELEPHONES

Kellogg W-125 Ringer—The same style ringer as No. 124, but it is especially designed for installation in Western Electric No. 302 desk telephones. Available in all frequencies.

Kellogg S-125 Ringer—Same low impedance style as No. 124, but is designed for use in Stromberg Carlson No. 1243 desk and No. 1250 wall telephones. Available in all frequencies.

Standard Low Impedance Frequencies

The ringers listed above are available in the following frequencies. When ordering, please specify the Code Number of the ringer desired and designate frequency wanted. Example: No. 124-HB-1 — 30 cycles.

Code No.	Frequency (cycles)	Resistance (ohms
	HARMONIC FREQUENCIES	
HA-1	33⅓	1000
HA-2	50	1000
HA-3	66⅔	1000
HA-4	16⅔	2500
HA-5	25	2500
	SYNCHROMONIC FREQUENCIES	
HB-1	30	2500
HB-2	42	1000
HB-3	54	1000
HB-4	66	1000
HB-5	16	2500
	DECIMONIC FREQUENCIES	
HC-1	20	2500
HC-2	60	1000
HC-3	30	2500
HC-4	40	1000
HC-5	50	1000

HIGH IMPEDANCE RINGER

Kellogg No. 126 Ringer

A standard High Impedance Ringer, built the same as No. 124 ringer, except for the high impedance rating. It is furnished in the 1000 series desk and 1100 series wall Masterphones — when definitely specified in the order. For bridged ringing applications, ten telephones equipped with the No. 126 ringer can be used on a line. For divided ringing applications, twenty telephones equipped with this ringer can be used on a line.

For frequencies available in the No. 126 ringer, consult Frequency Chart which follows.

SPECIAL RINGERS FOR WESTERN ELECTRIC AND STROMBERG CARLSON TELEPHONES

Kellogg W-127 Ringer—The same style ringer as the No. 126, but especially designed for installations in Western Electric No. 302 desk telephones requiring high impedance ringers. Available in all frequencies.

Kellogg S-127 Ringer—Same high impedance type as No. 126, but designed for use in Stromberg Carlson No. 1243 desk and No. 1250 wall telephones. Available in all frequencies.

STANDARD HIGH IMPEDANCE FREQUENCIES

The ringers listed previously are available in the following high impedance frequencies. When ordering, please specify the Code Number of the ringer, and designate frequency desired. Example: No. 126-HHB-1 — 30 cycles.

Code No.	Frequency (cycles)	Resistance (ohms)
HARMONIC FREQUENCIES		
HHA-1	33⅓	4000
HHA-2	50	4000
HHA-3	66⅔	4000
HHA-4	16⅔	4000
HHA-5	25	4000
SYNCHROMONIC FREQUENCIES		
HHB-1	30	4000
HHB-2	42	4000
HHB-3	54	4000
HHB-4	66	4000
HHB-5	16	4000
DECIMONIC FREQUENCIES		
HHC-1	20	4000
HHC-2	60	4000
HHC-3	30	4000
HHC-4	40	4000
HHC-5	50	4000

RINGERS

For Use With No. 65 Extension Bell

Six-inch diameter gongs for this party-line ringer are mounted on an extension bell frame. This ringer is a large type with an adjustable armature. Bell gongs are *not* included.

105 Type Ringer **72 Type Ringer**



Code No.	Frequency (cycles)	Resistance (ohms)
HARMONIC FREQUENCIES		
105-A-1	33⅓	500
105-A-2	50	500
105-A-3	66⅔	500
105-A-4	16⅔	2500
105-A-5	25	2500
SYNCHROMONIC FREQUENCIES		
106-A-1	30	1000
106-A-2	42	1000
106-A-3	54	1000
106-A-4	66	1000
106-A-5	16	2500
DECIMONIC FREQUENCIES		
119-A-1	20	2500
119-A-2	60	1000
119-A-3	30	1000
119-A-4	40	1000
119-A-5	50	1000

Ringers for Nos. F-817 and F-9817 Telephones and Nos. 602, 605, 610 Desk Set Boxes

Two and one-half inch diameter large type gongs for this party-line ringer are mounted on adjustable gong posts with an adjustable armature.

Code No.	Frequency (cycles)	Resistance (ohms)
HARMONIC FREQUENCIES		
72-A-1	33⅓	500
72-A-2	50	500
72-A-3	66⅔	500
72-A-4	16⅔	2500
72-A-5	25	2500
SYNCHROMONIC FREQUENCIES		
73-A-1	20	1000
73-A-2	42	1000
73-A-3	54	1000
73-A-4	66	1000
73-A-5	16	2500
DECIMONIC FREQUENCIES		
74-A-1	20	2500
74-A-2	60	1000
74-A-3	30	1000
74-A-4	40	1000
74-A-5	50	1000

If you do not find your requirements listed in any of the above charts, please contact the Kellogg Sales Department, or consult a Kellogg Sales Representative. Whatever your needs in ringers, Kellogg will do its best to satisfy them.

SEATS, PLUG

Plug seats in strip types cannot be accurately drilled unless they are fitted to the plug shelf and the old plug holes used as a drilling guide. Strips are therefore shipped undrilled and, if desired, necessary tools for drilling are furnished. For tools used for drilling plug seats, see tool kits Nos. 65 and 66 in "Tools", this section.

No. 9 Individual Type



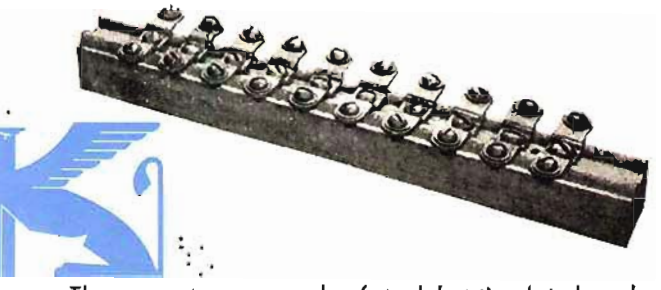
The No. 9 plug seat is made up of two parts —a leather washer and a red fibre seat which may be fastened to the plug shelf by two wood screws which are furnished. The leather washer is 3/32 inch thick and has an outside diameter of 1 1/16 inch. Dimensions of the 1/8 inch red fibre strip are 1 by 3/4 inch. The cord hold is .368 inch in diameter.

Strip Type

Code No.	Length	Width	Thickness	Material
15	19 3/8 in.	2 1/8 in.	1/8 in.	Red fibre
22	20 3/8 in.	2 1/8 in.	1/8 in.	Red fibre
25	21 3/8 in.	2 1/8 in.	1/8 in.	Red fibre

NOTE: Order No. 65 tool kit for drilling plug seats for Nos. 42 and 106 plugs. Order No. 66 tool kit for drilling plug seats for No. 201 plugs.

STRIPS, TERMINAL
WITH SCREW CONNECTORS



The connectors are made of steel, hot tin plated, and are mounted on a hard maple strip, finished with shellac.

Code No.	No. of Lines	No. of Connectors	Length of Strip
41	5	10	7 1/2 in.
43	25	50	32 1/2 in.



STRIPS, TERMINAL
WITH SOLDER CONNECTORS

Code No.	No. of Connectors	No. of Connectors Per Row	No. of Rows High	Over-all Length of Strip
32	20	10	2	6 1/8 in.
31	30	10	3	6 1/8 in.
49	40	10	4	6 1/8 in.

STRIPS, DESIGNATION

Kellogg designation strip holders are made of brass with a heavy black enamel finish. White paper inserts are used under a clear celluloid cover. Type No. 7 strips shown below are 1 1/2-inch wide and can be furnished in the lengths listed. Mounting screws are not furnished unless specified. No. 4 flat head wood screws (P-5964) should be specified if screws are desired.



TYPE NO. 7—UNMOUNTED

Code No.	Over-all Length	No. Mtg. Screws
15	10 in.	3
17	5 1/2 in.	2
28	8 3/16 in.	3
30	17 in.	4
33	11 1/2 in.	5



TYPE NO. 13—MOUNTED

Type No. 13 designation strips are similar to type No. 7 in general construction except they are mounted on jack panels for mounting on switchboard stile strip.

Code No.	Mounting Centers	Width of Panel	Dimensions
13	11 3/32 in.	1/2 in.	10 x 7/16 in.
20	11 3/32 in.	7/16 in.	10 x 7/16 in.
23	8 3/32 in.	3/8 in.	7 7/16 x 2 3/4 in.
31	8 3/32 in.	1/2 in.	7 7/16 x 7/16 in.



SUPPRESSORS

The Kellogg No. 4-A suppressor is designed as a spark suppressor for Relaymatic switchboards. Its function is to prevent burning of contacts on dialing relays and similar applications. A flash test voltage of 500 volts, dc, is given every suppressor.

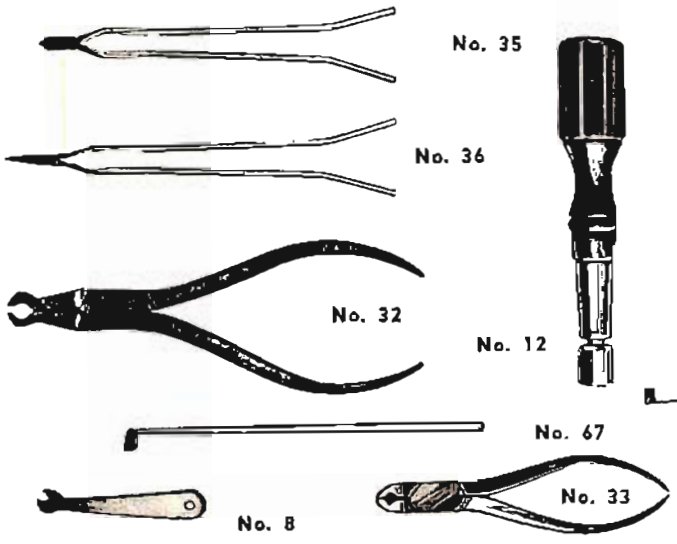
Code No.	Capacity (Mfd.)	Working Voltage	Size
4-A	.20 - .25	250 volts	3 1/4 x 1/2 in. diam.
5-A	1/2 with 600 ohms		Same as No. 237 condenser with resistor in series with winding.
5-B	1 with 600 ohms		Same as No. 236 condenser with resistor in series with winding.
6-A	0.8 with 200 ohms in series 0.8 with 200 ohms in series		2 each assembled in condenser can assembly.
6-B	1—0.8 with 200 ohms in series 1—0.01		Both assembled in condenser can assembly.

TOOLS

"The Right Tools for the Job"

There is a special Kellogg tool available for use with all types of Kellogg equipment. These tools are especially designed to fit the job. Each operation on telephone equipment can be handled with a Kellogg tool which will exactly fit the conditions required.

Listed below are the types of tools used in almost every telephone operation, by types of equipment involved. Following that, a complete list of tools is listed by individual KELLOGG Tool Number. These tools will perform practically every-maintenance job on Kellogg equipment. If you do not find a tool listed to perform a specific job, please consult the Kellogg Sales Department.



Switchboard Tools

Item		Use Kellogg Tool Nos.
1. Magneto Switchboards: With Drop Supervision, Suspended or Breast Plate Transmitter—and—WITHOUT 4-Party Keys.	Wrenches: Flat & Socket	—8, 12, 16
	Screwdriver	—21, 22
	Pliers	—32
	Screwdriver	—67
2. Magneto Switchboards: Same as Item 1, with 4-Party Keys.	Same tools as Item 1, PLUS: Pliers	—33, 34
3. Magneto Switchboards: Lamp Supervision Type, Suspended or Breast Plate Transmitter—and—WITHOUT 4-Party Keys.	Wrenches: Flat & Socket	—8, 11, 12, 16
	Screwdriver	—21, 22
	Spring Adjusters	—58, 67
	Pliers	—32, 38
	Lamp Extracter	—25
	Contact Cleaning & Burnishing Tool	—68
4. Magneto Switchboards: Same as Item 3, WITH 4-Party Keys.	Same Tools as Item 3, PLUS: Pliers	—33, 34
5. Junior Masterbuilt Switchboards: With Suspended or Breast Plate Transmitter, WITHOUT 4-Party Keys.	Same Tools as Item 3, PLUS: Wrenches, Socket & Combination	—13, 14, 77
	Pliers, Flat Nose	—78
	Gauges (6)	—76
6. Same as Item 5, WITH 4-Party Keys.	All tools listed in Items 3, 4, 5.	
7. P. B. X. Suspended or Breast Plate Transmitter: All Floor Types.	Wrenches: Socket & Combination	—11, 12, 13, 16, 77
	Pliers	—32, 39, 78
	Screwdrivers	—21, 22
	Spring Adjusters	—58, 67
	Lamp Extractor	—25
	Contact Cleaning & Burnishing Tool	—68
8. P. B. X. Cordless Types, Magneto.	Wrenches: Flat & Socket	—8, 11, 12, 13, 14, 16, 17, 77, 84
	Screwdriver	—21
	Spring Adjuster	—67
9. P. B. X. Cordless Type, Common Battery.	All of tools in Item 8, except No. 8, PLUS:	
	Lamp Extracter	—25
	Pliers	—32, 78
	Spring Adjuster	—58
	Contact Cleaning & Burnishing Tool	—68
10. Multiple Switchboard, Common Battery, WITHOUT 4-Party Keys.	Wrenches: Flat, Socket & Combination	—8, 11, 12 13, 14, 16, 17, 77, 84
	Pliers: Regular, Cutting, Long Nose, Flat	—32, 35, 36, 39, 78
	Spring Adjusters	—58, 67
	Relay Spring Adjusters (Right and Left)	—43, 44
	Screwdriver	—22
	Lamp Extracter	—25
	Gauges (6)	—76
	Contact Cleaning & Burnishing Tool	—68
11. Same as No. 10, WITH 4-Party Keys.	All tools listed in No. 10, PLUS: Pliers	—33, 34
12. Relaymatic Switchboards, Common Battery, WITH Attention Boards.	Wrenches: Socket, "T" Shaped, Combination	—11, 12, 13, 14, 16, 18, 77, 91
	Pliers: Regular, Flat Nose	—32,39, 78, 97
	Spring Adjusters	—58, 67, 75, 79, 88
	Screwdriver	—21, 22
	Lamp Extracter	—25
	Gauges (6)	—76
	Contact Cleaning & Burnishing Tool	—68
13. Relaymatic Switchboards, Common Battery, WITHOUT Attention Boards	Of tools listed in No. 12, USE ONLY the following numbers: 12, 13, 18, 21, 25, 32, 58, 68, 75, 76, 77, 78, 88, 91, 97.	



FOR OVER 100 LINES



14. Multiple Switchboards, Common Battery WITHOUT 4-Party Keys	Wrenches: Flat, Socket, Combination	—8, 11, 12, 13, 14, 16, 77, 31
	Pliers: Regular, Cutting, Long Nose, Flat Nose	—32, 35, 36, 39, 78
	Screwdriver	—22
	Spring Adjusters	—58, 67
	Relay Spring Adjusters (Right, Left)	—43, 44
	Gauges (6)	—76
	Lamp Extracter	—25
15. Same as No. 14, WITH 4-Party Keys.	Use all tools listed in No. 14, PLUS: Pliers	—33, 34
16. Relaymatic Switchboards, Common Battery WITHOUT Attention Boards.	Wrenches: Socket or Combination	—13, 77, 87
	Pliers: Flat Nose	—78, 97
	Spring Adjusters	—75, 79, 88
	Gauges (6)	—76
	Contact Cleaning & Burnishing Tool	—68

FOR UP TO 100 LINES

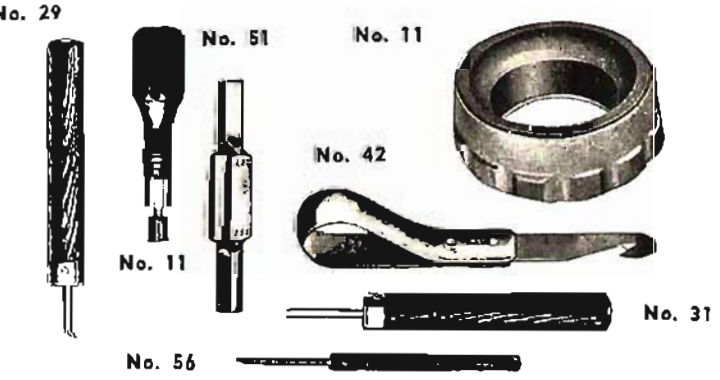
17. Crossbar Equipment.	Wrenches: Comb. Socket & Screwdriver	—77, 115, 126
	Spring Adjusters	—104, 105, 107, 108
	Adjusting Tools	—118, 119 122, 123
	Screwdriver	—114
	Adjustable Mounting Support Fixture	—110
	Armature Leg Bending Tool	—125
	Ladder Support Bending Tool	—120
	Gauges: Right & Left Relay Adjustment (25)	—117 —124
	Gram	—127
	Switch Off-Normal Centering Tool	—130
	Two Alignment Pins	—133

Item		Use Kellogg Tool Nos.
18. Toll Switchboards. Type 3-C.	Wrenches: Combination Socket & Screwdriver	—77, 115, 126
	Screwdriver	—22, 114
	Pliers: Long Nose, Cutting, Regular	—32, 35, 36
	Spring Adjusters	—67, 104, 105, 106
	Gauges (6)	—76
	Plug	—41
	Lamp Extracter	—25
	Contact Cleaning & Burnishing Tool	—68
19. Multiple Line Addition Switchboards, Common Battery.	Socket Wrench	—17
	Kit No. 26:—	
	Cable Needle	—134, 136
	Skinner Combination	—135
	Cable Stripper	—137
	Cable Butter	—138
	BAR	—P-75078

Code No.	Description
104	Spring Adjuster
105	Spring Adjuster
77	Socket Wrench & Screwdriver Combination
124	Relay Adjustment Gauges (25)
131	Armature Adjusting Tool
70-D	Gram Gauge—W. E. Co.
139	Gauge — .004 thickness
140	Gauge — .006 thickness

TOOLS FOR CROSSBAR SYSTEM

Code No.	Description
9	Flat wrench for drop armatures
62	Burnishing Tool for plug seats
77	Socket Wrench & Screwdriver Combination
104	Spring Adjuster for Relays
105	Spring Adjuster for Relays
106	Spring Adjuster for Relays
107	Spring Adjuster for Relays
108	Spring Adjuster for Crossbar
110	Adjustable Mounting Support Fixture
115	Combination Screwdriver and Hex. Socket Wrench
118	Adjusting Tool
119	Adjusting Tool
120	Ladder Support Bending Tool
122	Adjusting Tool
124	Relay Adjustment Gauges (25)
125	Armature Leg Bending Tool
126	Combination Screwdriver & Socket Wrench
127	Gram Gauge
130	Switch Off-Normal Centering Tool
133	Alignment Pin
141	Armature Tool
143	Screwdriver (Phillips or Yankee)
114	Screwdriver
117-1	Gauge (Right Hand)
117-2	Gauge (Left Hand)



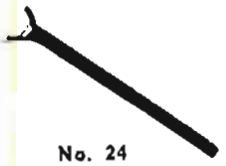
The Right Tool for the Job — To Do it Right

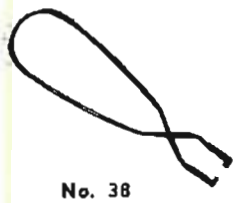
(For illustrations, see Individual Tool List)

If you are working on:	Use Kellogg Tools No.
Arresters	11—Socket Wrench.
Cables	42—Cable Skinner.
	137—Cable Stripper.
Combined Drops & Jacks	12—Socket Wrench.
	15—Spanner Wrench.
Cords	39—Pliers.
Desk Set	52—Spring Adjuster.
Dials	3—Spanner Wrench.
	86—Dial Tool.
	92—Spring Adjuster.
Drops	8—Flat Wrench.
Handsets	71—Ear Cap & Mouth Piece Remover.
Heat Coils	32—Pliers.
Jacks	14—Socket Wrench for fastening Jacks to Switchboard with PC-989 Nuts.
	17—Socket Wrench, Adjustable for 989 nuts for switchboard jack.
	29—Adjuster.
	31—Wrench.
	48—Jack Gauge for No. 239 Jacks.
	49—Jack Gauge for No. 258 Jacks.
	51—Jack Gauge for No. 42 Plug.
	56—Spring Adjuster.
	84—Wrench.
Keys—1000 Type Cam, 4-Party, Spring	4—Key Springs and Contact Scraper.
	16—Socket Wrench for stop nuts on 1000-type keys. Fits ⅛" Hex. Nut.
	33—Pliers for removing 4-Party Key buttons.
	34—Pliers—curved nose. For holding 4-Party key plungers while removing buttons.
	67—Spring Adjuster for key springs.
	68—Contact Cleaning and Burnishing Tool.
Lamp Caps & Lamps	24—Lamp Cap Extractor — for supervisory lamps.
	25—Lamp Extractor — for 7/16" lamp jacks.
	38—Lamp Cap Extractor — for line lamps.
Lamp Jacks	25—Lamp Extractor — for 7/16" lamp jacks.
	69—Wrench — for removing sleeve of No. 49 lamp jack.
Lamps, Switchboard Mounting Plates	25—Lamp Extractor.
	89—Mounting Plate Tool — for Link Mounting Plate Installing Tool.
Operator's Transmitter	3—Spanner Wrench—for nuts on Operator's Transmitter and special screw for name plate on Dials.
Plugs, Seats	61—Drill "U" for plug seats for No. 106 plug.
	62—Burnishing Tool for No. 106 plug.
	63—Drill for plug seats for No. 201 plug.
	64—Burnishing Tool plug seats for No. 201 plug.
	65—Tool Kit for drilling plug seats for No. 106 and No. 42 plugs.
	66—Tool Kit for drilling plug seats for No. 201 plug.
	80—Tool Kit for drilling leather faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps.
	81—Tool Kit for drilling bakelite faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps.
	82—Tool Kit for drilling leather faced plug shelves and lamp rails for No. 201 plug and supervisory lamps.
	83—Tool Kit for drilling bakelite faced plug shelves and lamp rails for No. 201 plugs and supervisory lamps.

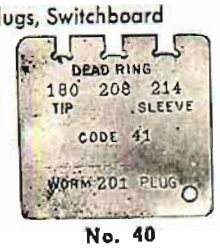

No. 57


No. 16


No. 24


No. 38

If you are working on:	Use Kellogg Tools No.
Plugs, Switchboard	22—Screwdriver for hollow screws on plugs.
	40—Plug Gauge for Nos. 106, 137, 156 plugs.
	41—Plug Gauge for No. 201 plugs.
	46—Plug Gauge for No. 152 plugs.
	47—Plug Gauge for Nos. 55, 112, 187 plugs.
	50—Plug Gauge for No. 42 plugs.
	72—Plug Gauge for No. 70 switchboard plugs.
Power Unit for BD-116 Switchboard	116—"T" Shaped socket wrench.
RELAYS	1—Relay Spring Adjuster.
Relay Armature	11—Socket Wrench for relay armature nuts.
	12—Socket Wrench fits hex. nut on No. 72 type shell.
	13—Socket Wrench for mounting major relays on mounting strip.
	18—"T" Shape Socket Wrench for Relaymatic Switchboards and nuts on relay rack.
	19—Special Wrench for removing No. 22 type major relay shells.
	20—Screwdriver Wrench for removing No. 22 type major relay shells with round nut.
	43—Relay Spring Adjuster (Right).
	44—Relay Spring Adjuster (Left).
	58—Two halves of Nos. 43 and No. 44 spring adjusters.
	60—Spring Adjuster for adjusting relay springs of center or "B" stackup.
	75—Spring Adjuster for Nos. 700 and 800 type relays.
	76—Gauges (6) for Nos. 700 & 800 type armatures.
	77—Socket Wrench and Screwdriver Combination for residual pins and Relaymatic relays.
	79—Spring Adjuster for Nos. 7100 and 7200 type relays.
	87—Socket Wrench for round slotted nut to fasten Relay coils to heel iron used on Relaymatics.
	88—Spring Adjuster for gang relays.
	89—Mounting Plate Tool—Link Mounting Plate installing tool.
	91—Socket Wrench for fastening relay coil to heel iron on Relaymatics.
	93—Spring Adjuster for 7000 Gang Relays.
	94—Spring Adjuster for 700-800, 1700-1800, 2000 type relays.
	97—Flat Nose Plier to affix separators to springs on 1700-1800 type relays.
Relaymatic	
Relaymatic Relays	
Relay Racks	
Relay Spring	
Relay Shells	
Residual Pins	



No. 40



No. 13



No. 19

No. 20





No. 57



No. 60



No. 9



No. 10

If you are working on:	Use Kellogg Tools No.
	98—Gauges (8) for 4000 type relays.
	103—Combination Screw Driver and Socket Wrench for adjusting crossed recessed residual screw and nut on 4000 type relay.
	104—Spring Adjuster for 4000 type relay springs.
	105—Spring Adjuster for 4000 type relay springs.
	106—Spring Adjuster for 4000 type relay springs.
	113—Adjuster, Armature residual stop adjusting tool for 4000 type relays.
	124—Relay Adjustment Gauges (25) for 4000 type relays.
	125—Armature Leg Bending Tool for 4000 type relays.
	128—Gram Gauge for 1700-1800 type relays.
	131—Armature Adjusting Tool for 4000 type relays.
	139—Gauge for 4000 type relay armature.
	140—Gauge for 4000 type relay armature.
	142—Armature adjusting tool for Micro Switch relay.
	143—Screwdriver for 4000 type relays.
Ringers	9—Flat Wrench for adjusting large type ringers.
	10—Flat Wrench for adjusting large type ringers.
	59—Wrench for Nos. 72-A and 73-A type ringers.
	73—Gauge (5) for adjusting Nos. 112, 113, 114 ringers.
	85—Socket Wrench and Screwdriver Combination for adjusting Nos. 120, 122 and 123 type ringers.
Screws, Switchboard	21—Screwdriver for small boards.
Soldering Irons	1-A—Soldering Iron for light work at medium temperature.
	2-A—Soldering Iron for heavy duty work at hot temperatures.
Telephones	71—Ear Cap and Mouthpiece Remover, for handsets.
	52—Spring Adjuster for adjusting springs in Desk Sets.
	90—Socket Screw Wrench for 1000 type telephone.
Tool Kits	65—Tool Kit for drilling plug seats for Nos. 42 and 106 Plugs.
	66—Tool Kit for drilling plug seats for No. 201 Plug.
	80—Tool Kit for drilling leather faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps.
	81—Tool Kit for drilling bakelite faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps.
	82—Tool Kit for drilling leather faced plug shelves and lamp rails for No. 201 plug and supervisory lamps.
	83—Tool Kit for drilling bakelite faced plug shelves and lamp rails for No. 201 plug and supervisory lamps.
Wire	35—Cutting Pliers, long handle.
	36—Long Nose Pliers.
	111—Wire Scraper.
	135—Skinner Combination.
	137—Cable Stripper.



No. 71



No. 21



No. 35



No. 8



No. 9



No. 10



No. 11

TOOLS

Individually Listed by Code Number

Code No.	Description	Use
1	Relay Spring Adjuster	Wood handle, No. 20 B&S Saw Slot.
3	Spanner Wrench	For nuts on Operators Transmitter, and for special screw for name plate on dials.
4	Key Springs & Contact Scraper	
8	Flat Wrench	For adjusting drop armatures.
9	Flat Wrench	For adjusting large type ringers. One end 17/64", other end 4/64". Also for No. 124 ringer.
10	Flat Wrench	For adjusting large type ringers. One end 1/4", other end 4/64". Also for No. 124 ringer.
11	Socket Wrench	For relay armature nuts and arrestor nuts. Fits 17/64" hex. nut.
12	Socket Wrench	For sleeve for Combined Drops and Jacks & Hex. Nut on No 72 type shell. Fits 3/8" Hex. Nut.
13	Socket Wrench	For mounting major relays on Mounting Strip. Fits 3/8" Hex. Nut.
14	Socket Wrench	For fastening Jacks in Switchboard with PC. No. 989 nuts. Fits 5/16" Hex. Nut.
15	Spanner Wrench	For mounting nuts on Combined Drops and jacks mountings. Fits round nut 15/32" centers.
16	Socket Wrench	For stop nuts on No. 1000-type cam keys. Fits 1/8" Hex. Nut.
17	Socket Wrench	Similar to No. 14 with adjustable feature. For PC. No. 989 Nuts. Fits 5/16" Hex Nuts.



No. 12



No. 14



No. 13



No. 16

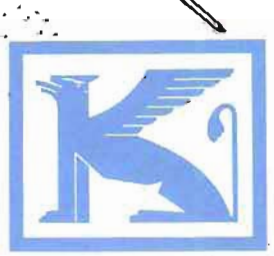
Code No.	Description	Use
18	"T" Shape	For Relaymatic swbds. and nuts on relay rock. Fits 1/2" Hex. Nut.
19	Special Wrench	For removing No. 22 type major relay shells.
20	Screwdriver Wrench	For removing No. 72 type major relay shells with round nut.
21	Screwdriver	For small boards.
22	Screwdriver	For hollow screws on switchboard plugs.
24	Lamp Cap Extractor	For supervisor lamps.
25	Lamp Extractor	For 7/16" lamp jacks.
29	Adjuster	Adjuster for tip springs on No. 1 116 type jacks.
31	Wrench	For large removable slotted type sleeve of No. 260 type spring jack. For plugs of .2495 diameter. Similar to No. 84 tool.
32	Pliers	For removing heat coils.
33	Pliers	For removing 4-Party Key buttons.
34	Pliers	For holding 4-Party Key Plungers while removing buttons. Curved nose pliers.
35	Cutting Pliers	Long handle to reach Jacks in multiple boards from rear of board.
36	Long Nose Pliers	Long handle to reach Jacks in multiple boards from rear of board.
38	Lamp Cap Extractor	For line lamps.
39	Pliers	For assembling terminals on tinsel cords.
40	Plug Gauge	For gauging worn Nos. 106, 137, 156 switchboard plugs. Tip .174". Dead Ring .236". Sleeve .242".



No. 22

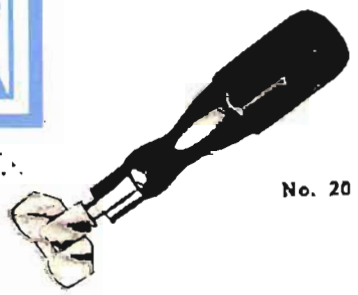


No. 21





No. 19



No. 20

Code No.	Description	Use
41	Plug Gauge	For gauging worn No. 201 switchboard plugs. Similar to No. 40. Tip .180". Dead ring .208". Sleeve .214".
42	Cable Skinner	For removing insulation from cable conductors.
43	Relay Spring Adjuster (Right)	Same as one-half of No. 58 tool.
44	Relay Spring Adjuster (Left)	Same as one-half of No. 58 tool.

Code No.	Description	Use
46	Plug Gauge	For gauging worn No. 152 switchboard plugs. Similar to No. 40. Tip .174". Ring .217". Sleeve .242".
47	Plug Gauge	For gauging worn Nos. 112-187, 55 switchboard plugs. Similar to No. 40. Tip .178". Sleeve .240".
48	Jack Gauge	For gauging worn No. 239 type jack sleeve, No. 45 type jacks.
49	Jack Gauge	For gauging worn No. 258 type jacks. Similar to No. 48. (.256" - .259".)
50	Plug Gauge	For gauging worn No. 42 Plugs. Similar to No. 47. (Tip .227", Sleeve .236".)
51	Jack Gauge	For gauging Jacks using No. 42 Plug or plugs of similar size (.257" - .260"). And combined Drops and Jacks Sleeves. Similar to No. 48 tool.
52	Spring Adjuster	For adjusting springs in Desk Set. No. 20 B & S saw slot.
56	Spring Adjuster	For adjusting all types of spring jacks.
58	Spring Adjuster	Replaces Nos. 43 and 44 tools. Two-end spring adjuster for relays. Saw slot .023", Max. .025".


29


31


No. 32


No. 24

Code No.	Description	Use
60	Spring Adjuster	For adjusting Relay Springs of center or "B" stack up. Saw slot No. 23 B & S .022".
61	Drill "U"	For plug seats for No. 106 Plug. Drill .3680".
62	Burnishing Tool	For plug seats for No. 106 Plug.
63	Drill	For plug seats for No. 201 Plug.
64	Burnishing Tool	For plug seats for No. 201 Plug.
65	Tool Kit	For Drilling plug seats for Nos. 106, 42 plugs. Includes Nos. 61 & 62 tools and ½" steel guide for drill.
66	Tool Kit	For Drilling plug seats for No. 201 plug. Includes Nos. 63 and 64 tools and 3/16" steel guide for drill.
67	Spring Adjuster	For key springs. No. 21 B & S gauge slot.
68	Contact Cleaning & Burnishing Tool	6" long 3/16" x No. 24 U.S.G. stainless steel.
69	Wrench	For removing sleeve of No. 49 Lamp Jack.

Code No.	Description	Use
71	Ear Cap & Mouthpiece Remover	For F-27-C hand set. Replaces No. 70 tool.
72	Plug Gauge	For gauging worn No. 70 switchboard plugs.
73	Gauge	Consists of 5 gauges: .004", .006", .007", .008", and .010". 2 of each for adjusting Nos. 112, 113, 114 ringers.
75	Spring Adjuster	For 700 & 800 type Relays. No. 21 B & S Gauge sow slot on one end, No. 19 B & S Gauge on other end.
76	Gauges (6)	For armature for No. 700 & 800 type Relays. .010", .015", .020", .025", .030", and .035".
77	Socket Wrench & Screw Driver Combination	For residual pins and Relaymatic Relays. Similar to W. E. Co. No. 48 tool.


35


33




No. 36

No. 38

Code No.	Description	Use
78	Pliers, Flat Nose	For forming Relay Armatures.
79	Spring Adjuster	For 7100 & 7200 type Relays.
80	Tool Kit	For drilling leather faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps. Includes No. 65 tool kit.
81	Tool Kit	For drilling bakelite faced plug shelves and lamp rails for No. 106 plugs and supervisory lamps. Includes No. 65 tool kit.
82	Tool Kit	For drilling leather faced plug shelves and lamp rails for No. 201 plugs and supervisory lamps. Includes No. 66 tool kit.
83	Tool Kit	For drilling bakelite faced plug shelves and lamp rails for No. 201 plugs and supervisory lamps. Includes No. 66 tool kit.
84	Wrench	For small removable slotted type sleeve (PC. 15822) used on No. 254 type Spring Jack. (Plugs of .221 diameter). Similar to No. 31 tool.
85	Socket Wrench and Screwdriver Combination	For adjusting Nos. 122, 123 and 120 type ringers.
86	Dial Tool	For removing number cord retaining ring on 10-D dial.
87	Socket Wrench	For round slotted nut (21/64" diam.) to fasten relay coils to heel iron used on Relaymatics.
88	Spring Adjuster	For Gang Relays.
89	Mounting Plate Tool	Link Mounting Plate installing Tool.
90	Socket Screw Wrench	For fastening Press to Talk Switch, in 1000 type telephone.
91	Socket Wrench	For fastening relay coil to heel iron on Relaymatics. Fits ¼" Hex. Nut.
92	Spring Adjuster	Dial Spring adjusting tool.





No. 43



No. 44

Code No.	Description	Use
93	Spring Adjuster	Similar to No. 88 tool. For 7000 Gang Relays.
94	Spring Adjuster	For 700-800, 1700-1800 & 2000 type relays.
95	Plug Cushion Tool	For assembling Nos. 1-A & 2-A Plug Cushions on Nos. 106 and 201 Plugs.
96	Wrench & Screwdriver Combination	For adjusting Relay Armatures in Select-O-Phone.
97	Flat Nose Pliers	To affix Separators to Springs on 1700-1800 type Relays.
98	Gauges (8) with case	For 4000 type relays: .003, .006, .009, .010, .015, .016, .022, .026.
103	Combination Screw Driver & Socket Wrench	For adjusting crossed recessed residual screw and nut on 4000 type Relay.
104	Spring Adjuster	Adjusting tool for 4000 type Relays.
105	Spring Adjuster	Adjusting tool for 4000 type Relay Springs.
106	Spring Adjuster	Adjusting tool for 4000 type Relay Springs.
107	Spring Adjuster	Counter bank adjusting tool for Cross Bar equipment.
108	Spring Adjuster	Counter lever spring adjusting tool for Cross Bar equipment.
110	Adjustable Mountain Support Fixture	For servicing relay strip on Cross Bar equipment.
111	Wire Scraper	For removing enamel and insulation from cable conductors.
112	Offset Box Wrench	For Hex. head screws size 13/64" x 3/16". Used on Pole Changers.
113	Adjuster	Armature residual stop adjusting tool, for 4000 type relays.
114	Screw Driver	Wood handle. Blade 1/4" x 4". Used on Crossbar equipment.

Code No.	Description	Use
115	Combination Screw Driver & Hex. Socket Wrench	Switch Coil positioning tool for Crossbar equipment.
116	"T" Shape Socket Wrench	Used to mount power unit in BD-116 switchboard to fit 3/8" No. 16 Nut. 13" long with 7" cross piece handle. Similar to No. 18 tool.
117-1	Gauge (Right Hand)	Select rod centering gauge.
117-2	Gauge (Left Hand)	For Crossbar equipment.
118	Adjusting Tool	Counter residual gap adjusting tool for Crossbar equipment.
119	Adjusting Tool	Switch Spring adjusting tool for Crossbar equipment.
120	Ladder Support Bending Tool	For Crossbar equipment.
122	Adjusting Tool	Switch-Off-Normal. Adjusting Tool No. 28 B & S saw slot. For Crossbar equipment.
123	Adjusting Tool	Switch-Off-Normal. Adjusting Tool No. 28 B & S saw slot. For Crossbar equipment.
124	Relay Adjustment Gauges (25)	For 4000 type Relays: .0015, .002 to .016 incl., .018, .020, .022, .024, .025.
125	Armature Leg Bending Tool	For 4000 type Relays.
126	Combination Screw Driver & Socket Wrench	Switch back stop adjusting screw tool for Crossbar equipment.
127	Gram Gauge	For Crossbar equipment.
128	Gram Gauge	Used on 1700-1800 type Relays Scale 50-0-50 Grams.
129	Dial Tool	Used on No. 14 type Dial for locking into place and removing Dial escutcheon plate.
130	Switch Off-Normal Centering Tool	For Crossbar equipment.



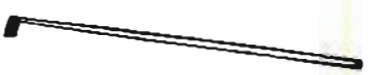
No. 71



No. 57



No. 51



No. 67



No. 60



No. 56



No. 67



No. 71

Code No.	Description	Use
131	Armature Adjusting Tool	For adjusting Armature on 4000 type Relay.
132	Spacing Tool	For spacing uprights on Crossbar frame.
133	Alignment Pin	Used in the assembly of Spring equipment on Crossbar.
134	Cable Needle	Also furnished with other (Multiple Line Addition) tools. In kit No. 26.
135	Skinner Combination	" " " " "
136	Cable Needle	" " " " "
137	Cable Stripper	" " " " "
138	Cable Butter	" " " " "
139	Gauge	For 4000 type Relay Armature .004 thickness.
140	Gauge	For 4000 type Relay Armature .006 thickness.
141	Armature Tool	For lubrication of Hold, armature tabs on Crossbar equipment.
142	Armature Adjusting Tool	For adjusting armatures on microswitch relay.
143	Screw Driver	Wood handle. Blade ¼" x 4". Used on 4000 type Relays. Similar to No. 114 tools.



SOLDERING IRONS

Code No.	Heat Res.	Volts	Unit Watts	Nicrome Res. Wire	Turns	Layers
1-A	95 to 105	115AC	150	No. 30	77	2
REMARKS—Includes 1 cord 6 ft. long and 1 No. 9972 Hubble Cap. For medium temperature. PC-47796 Pointed Tip.						
2-A	71 to 79	115AC	150	No. 27	110	2
REMARKS—Includes 1 cord 6 ft. long and 1 No. 9972 Hubble Cap. For hot temperatures (enamel wire). PC-47796 Pointed Tip.						

TRANSFORMERS

Kellogg transformers are specially designed for power panels and for use in transformer sets.

Code No.	Freq. (cycles)	Primary (volts)	Secondary (volts)	Pri. Res. (ohms) Parallel Wound	Sec. Res. (ohms)
1-C	16-20	24	105-115	1.44 - 1.44	31
DESCRIPTION—Used in 27-B and 29-A transformer sets, power panels, No. 41 Pole Changers.					
2-A	30-42	24	125-135	1.32 - 1.32	56
DESCRIPTION—Used with 29-A Transformer sets.					
3-C	50-66⅔	24	145-155	1.085 - 1.085	57
DESCRIPTION—Used in 27-B and 29-A transformer sets, No. 43 Pole Changer.					
5-C	16-20	48	105-115	3.9 - 3.9	26.5
DESCRIPTION—For power panels, No. 46 Pole Changer.					
28-B	30-42	48	125-135	6.2 - 6.2	54
DESCRIPTION—Used in Nos. 30 and 31 transformer sets.					
29-B	50-66⅔	48	145-155	5.25 - 5.25	50
DESCRIPTION—Used in Nos. 30 and 31 transformer sets.					



TRANSFORMER SETS — WALL TYPE

No. 27-B

This transformer set is designed for use with Nos. 42, X-42, 47, and X-47 Pole Changers, for 24 volt operation, on Relaymatic switchboards. Set consists of one No. 1-C; two No. 2-A; and three No. 2-C transformers, plus distributing bar, fifteen condensers and ten resistance coils.

No. 30

Same as No. 27-B except operates on 48 volts. All components the same, except it has one No. 5-C, two No. 28-B, and two No. 29-B transformers. It is used with Nos. 44 and X-44 Pole Changers.

No. 31

Same as No. 30, but uses terminal strips instead of distributing bar. Panel length 33¼ inches, operating on 48 volts. Used with Nos. 45 and 49 Pole Changers. For Relaymatics.

TRANSMITTERS

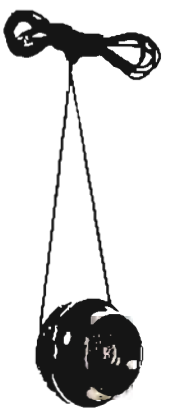
All Kellogg transmitters are of the famous Kellogg Non-Positional type. They are divided into three groups, separately coded. The suffix letter "C" designates a transmitter designed for common battery application. The suffix letter "L" denotes a transmitter designed for local battery application.



No. 121 Type Transmitter

Designed for use with the old style desk stand telephones, wall type, and weatherproof telephones. Arranged with solder type terminals. Furnished without back assembly. Its shell is made of bakelite.

Code No.	Transmitter Assembly No.
121-C	P-66521
121-L	P-66522



No. 157 Type Transmitter

Especially designed for use in the operator's suspended type transmitter. Arranged with solder type terminals, complete with back assembly. The shell is made of black molded compound. Cords must be ordered separately—they are not included in this Code Number.

Code No.	Transmitter Assembly No.
157-C	P-66521
157-L	P-66522

No. 178 Type Transmitter

The transmitter for operator's breast plate head and chest sets. Small diameter mouthpiece, especially light weight and small size. Shell made of black molded compound.

Code No.	Used In Operators' Sets
178-C	1-C, 2-C, 3-C
178-L	1-L, 2-L, 3-L



TUBE KIT

The No. 100 Rare Gas Relay kit is used in conjunction with the Kellogg No. 1000 Series Masterphone for divided ringing applications to isolate the telephone from the ground and for certain forms of the Kellogg K-500 Series telephones.



VINCENT RARE GAS RELAY

No. 100 Tube Kit

The Vincent Rare Gas Relay is an electronic device with no moving parts. It has the electrical characteristic of infinite resistance to the passage of electrical current of potentials below its predetermined breadown voltage. Above this critical point it funtions to pass a current of considerable magnitude. In the telephone circuit, its action is to isolate the telephone from the ground until ringing voltage is applied. The ringing voltage being higher than the 60-volt breadown point of the tube causes the tube to break down to allow the ringing current to flow and operate the ringer.

This relay consists of a small glass tube containing rare inert gases acting in contact with special metal electrodes which allow the current to pass above a closely predetermined voltage. No adjustment is necessary. The relay is connected in series with the ringer.

The Vincent Rare Gas Relay may be used on magneto or common battery lines with either straight line, harmonic, or biased ringers. It cannot be used for selective pulsating or selective superimposed ringing and should not be used with ringers with more than 3000 ohms resistance.



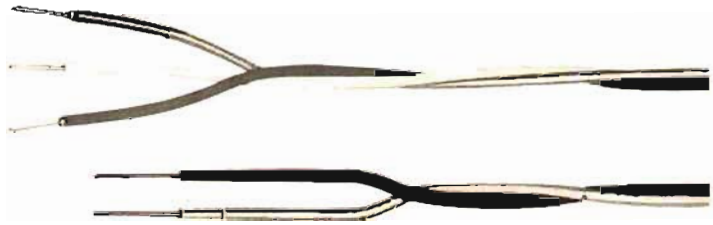
No. 426-A ELECTRON TUBE

Kellogg PC No. 75599

A three element inert gas filled cold cathode tube used for vacuum electron tube ringing. Includes a 120,000 ohm resistor connected in series at the starter anode. The assembly consists of the tube, a plastic base socket, the resistor, three wire leads, and a No. 6 self-tapping screw for mounting the assembly to the telephone base.

It is particularly adaptable to the Kellogg K-501 type telephone, similar to the K-500 type telephone, except this new Electron Tube is now used in the ringer circuit on Polarized Ringing lines except:

4-Party Selective Ringing (Manual or Dial).
8-Party Semi-Selective Ringing (Manual or Dial).



WIRE

Kellogg Flameproof Jumper Wire

This special Kellogg wire is a lacquer treated, flameproofed jumper wire for use in making cross-connections on distributing frames. It is made in bright, easily traced colors, and has a low mutual capacity rating and good moisture-proof qualities.

It is a small-diameter wire with high insulation qualities, and is made up of No. 22 A.W.G. tinned or tinned-enameled annealed copper wire. It is completely covered with three wrappings of cellulose acetate yarn, applied in reverse directions, covered with an outer layer of cotton. These wrappings are then impregnated with a special Kellogg cellulose acetate lacquer to give the wire a hard, smooth, dust-free finish which resists flame, moisture, and corrosion.

The wire is shipped in 500 and 1000 foot coils in one continuous length. It has a lay of about two inches, or six twists per foot. The No. 5000 type consists of 2 pairs to form 1 quad. When you order this Jumper Wire, please include the Code Number of the type of wire you desire.

No. 22 A.W.G.

No. Code	Type Wire	No. of Strands	Colors	Weight per 1000 feet
3001	Tinned	1	Brown	2.5 lbs.
3002	Tinned	2	Red, White	10 lbs.
3002-E	Tinned Enameled	2	Red, White	10 lbs.
3003	Tinned	3	Red, White, Blue	15 lbs.
3003-E	Tinned Enameled	3	Red, White, Blue	15 lbs.
3004	Tinned	4	Red, White, Blue, Black	10 lbs.
4002-A	Tinned Lacuered	2	Red, White	5 lbs.
4003-A	Tinned Lacquered	3	Red, White, Blue	8 lbs.
5000	Tinned Lacquered (2 Pr. to form 1 quad)	4	Red, White, Blue, Brown	10 lbs.

Kellogg Wire—Flexible—Insulated—Stranded

Specification G.M. 453

Proved in strenuous service, the type "S" Kellogg stranded wire is extensively used in Kellogg desk and wall telephones. We recommend other stranded wire where increased flexibility is specified.

The tables below give wire size in A.W.G. units. The impregnation consists of either one or two coats of moisture and flame proof lacquer. The tables list only the number of coats under "Impregnation".

Be sure to specify "Wire per G.M. 453" when you order.

This wire comes in 24 colors. Be sure to specify the colors you desire when you order:

RED	GREEN	BLUE RED
RED WHITE	GREEN WHITE	ORANGE RED
BLACK	SLATE	GREEN RED
BLACK WHITE	SLATE WHITE	BLACK RED
BLUE	BROWN	SLATE RED
BLUE WHITE	BROWN WHITE	BLUE ORANGE
ORANGE	ORANGE GREEN	WHITE
ORANGE WHITE	ORANGE BLACK	YELLOW

Rubber and Vinylite for insulation of wire are most commonly used in: BLACK, WHITE, and RED. If additional colors are needed for rubber, they are available in GREEN, BLUE, YELLOW or BROWN. Always use in the sequence of colors as specified above. Vinylite is available in a greater variety of colors than rubber.

Kellogg Type	No. of Strands	Wire Size No.	Insulation	No. of Coats Impregnation
A	16	30	Tinned Copper Wire Rubber Covered & Braided (Lacquered)	1
B	16	30	Tinned Copper Wire Wrap & Braid (Lacquered)	2
C	41	36	Tinned Copper Wire (Rubber Covered)	None
D	41	36	Tinned Copper Wire (Lacquered)	2
E	10	30	Tinned Copper Wire Rubber Covered & Braided (Lacquered)	1
F	5	30	Rubber Covered & Braided (Lacquered)	1
G	5	30	Tinned Copper Wire (Lacquered) Cotton Wrap & Braid	2
H	7	30	Braided Wire (Lacquered)	2
J	7	30	Tinned Copper Wire (Vinylite Insulation) & Braided (Lacquered)	1
K	19	27	Tinned Copper Wire Rubber Covered and Lacquered Cotton Braid	None
L	5	35	Tinned Copper Wire Silk Insulated & Lacquered. Two reverse servings of cellulose acetate yarn for white or solid colors. Three reverse servings for two color combination.	2
M	21	36	Tinned Copper Wire (Rubber Insulated). One cotton wrap and ⅛ in rubber jacket (max. O.D. .070 in.). Can be furnished in black, white or red.	None
N	10	30	Tinned Copper Wire (Lacquered) Single Braid	2
Q	3	35	Tinned Copper Wire (Lacquered) 2 reverse servings of silk yarn	2

Kellogg Type	No. of Strands	Wire Size No.	Insulation	No. of Coats Impregnation
R	7	36	Tinned Copper Wire (Lacquered) 1-Cotton Braided	2
S	10	30	Tinned Copper Wire (Lacquered) 2 reverse servings of cellulose acetate yarn, 1-overall cotton braid of 40/2 ply 2-end cotton	2
T	10	34	Tinned Copper Wire (Lacquered) 2 reverse servings with 1 serving of celanese yarn, one serving of 40/2 ply 7-end cotton	
U	5	35	Tinned Copper Wire with 3 reverse wraps of white nylon	2
V	7	30	Tinned Copper Wire—2 reverse wraps of cellulose acetate yarn and 1-cotton overall braid (Lacquered)	4
W	7	30	Tinned Copper Wire Vinylite covered and 1-braided	4
X	7	36	Tinned Copper Wire	
Z	7	30	Tinned Copper Wire (Vinylite Ins.)	

HOOK-UP WIRE

Kellogg Type	No. of Strands	Wire Size No.	Insulation	No. of Coats Impregnation
AA	7	32	Extruded Vinyl Insulated Hook-up Wire 7 Twisted strands of No. 32 AWG tinned copper wire (No. 24 A.W.G. 3 reverse wraps of white nylon Type "U" insulated wire. Colors used for tracer strips applied in helical stripes on white background (Insulation): Black Green Red Yellow Blue Orange White Brown Purple Gray (Slate)	2
AA-2	7	32	Same as AA with 2-Twisted Conductors (duplex twisted pair), 12 turns per ft.	2
AB	10	30	Extruded Vinyl insulated. Tinned Copper Wire (No. 20 AWG) per Type "T" wire spec.	
AC	10	32	10-Twisted Strands of No. 32 AWG Tinned Copper Wire (Lacquered) 2 reverse servings of 7-end silk (Type Q)	2
AD	3	35	Tinned Copper Wire (Type Q) (Lacquered) 2 reverse servings of 7-end silk	2
AE	7	32	Extruded Vinyl Insulated Hook-up Wire with cotton wrap insulation (Type U) Solid White with 40/2 ply 8-end cotton wrap. Color as in standard color codes. Lacquer impregnated.	1

Kellogg Type	No. of Strands	Wire Size No.	Insulation	No. of Coats Impregnation
AF	7	38	Tinned Copper Wire Polyvinylchloride Insulation and Braided (Type "W" wire). Designed for hook-up wire in electronic equipment where normal temperature range is within —40° C. and +105° C. and where voltage rating is 600 volts rms or less. O.D. Cond. .012, Insulation Thickness .0105, Maximum Diameter .035, Weight per 1000 ft. 83 lbs. Color: Available in "Spiralon" colors (White background plus 1, 2, or 3 tracer stripes) in standard RETMA colors, or in 10 standard RETMA colors to be specified with order: Black, Blue, Brown, Green, Orange, Purple, Red, White, Yellow, Gray (Slate)	4
AG	10	34	Tinned Copper Wire, Type "S" (Lacquered) with 2 reverse wraps of Cellulose Acetate Yarn, 2 coats impregnated, and 1 overall cotton braid. Each tracer of specified color. Orders must specify basic and tracer colors.	2
AH	7	36	Tinned Copper Wire Polyvinylchloride Insulation and Nylon Jacket. Made up of Type "X" wire — a general purpose Hook-up wire for electronic apparatus where voltage does not exceed 600 volts rms. Primary insulation is polyvinylchloride compound. Jacket is extruded clear nylon. Nom. O.D. of wire 0.042 max. 0.045. Available in "Spiralon" colors with white background plus 1, 2, or 3 tracer stripes in standard RETMA colors, or in 10 standard RETMA solid colors: Black Green Red Gray (Slate) Blue Orange White Brown Purple Yellow	2
AJ	4	32	Bare Copper Enamel, each end served with 6 ends of nylon with "S" twist (1 each — Red, Blue, Brown, White). 4 wires laid parallel and served with 10 ends of nylon with an "S" twist over all 4 wires.	

WIRE, PUSH BACK

G.M. 245

Push Back wire is also known as telephone cable wire. It is used for wiring magneto desk set boxes, compact type wall telephones, and for hook-up wire.

This wire is furnished in single conductor only, with tinned copper conductors.

Insulation on the Push Back wire consists of one braid only. Type "M" is finished with lacquer, Type "N" is tropicalized. If you desire heavier insulation, in either single or duplex wire, order Generator Wire. When ordering Push Back Wire, please specify "Wire per G. M. 245".

Push Back Wire is available in No. 20 A.W.G. in the following colors:

RED	GREEN	SLATE WHITE
RED WHITE	GREEN WHITE	BROWN
BLUE	BLACK	BROWN WHITE
BLUE WHITE	BLACK WHITE	ORANGE GREEN
ORANGE	SLATE	ORANGE BLACK
ORANGE WHITE		

Code No.	Insulation	Conductor Finish	No. of Conductors	Type Wire
M-T-1	M	Tinned	1	Single
N-T-1	N	Tinned	1	Single
M-TE-1	M	Tinned Enameled	1	Single
N-TE-1	N	Tinned Enameled	1	Single





SINGLE



DUPLEX

SPECIFICATION G.M. 245

Solid Insulated Wires

Wire, Switchboard

Kellogg switchboard wire is the tinned or tinned-and-enameled copper wire used in the famous Kellogg switchboard cables. They are available in No. 19, 22, or 24 A.W.G. sizes, in all standard colors for cable conductors: The tip conductor of duplex wires is available in white, red, red-white, brown and brown-white colors. Be sure to specify the color when ordering.

Types "A", "B" and "C" wires are each covered with two opposite wraps of cellulose acetate yarn and 1-cotton overall wrap over copper wire, both plain and enameled. The differences lie in impregnation. Type "A" has no impregnation; Type "B" is impregnated with 4 coats of flame and moisture resistant lacquer. Type "C" wire is tropicalized with 4 coats of flame, moisture and fungus resistant lacquer.

Code No.	Impregnation	Conductor Finish	No. of Conductors	Type Wire
A-T-1	None	Tinned	1	Single
A-T-2	None	Tinned	2	Duplex
A-T-3	None	Tinned	3	Triplex
A-TE-1	None	Tinned-Enameled	1	Single
A-TE-2	None	Tinned-Enameled	2	Duplex
A-TE-3	None	Tinned-Enameled	3	Triplex
B-T-1	Lacquer	Tinned	1	Single
B-T-2	Lacquer	Tinned	2	Duplex
B-TE-1	Lacquer	Tinned-Enameled	1	Single
B-TE-2	Lacquer	Tinned-Enameled	2	Duplex
C-T-1	Tropicalized	Tinned	1	Single
C-T-2	Tropicalized	Tinned	2	Duplex
C-TE-1	Tropicalized	Tinned-Enameled	1	Single
C-TE-2	Tropicalized	Tinned-Enameled	2	Duplex



ROTO WIRE FOR RELAYMATIC SWITCHBOARD CABLES

This Kellogg wire is similar to generator wire except the overall braid is constructed with a finer cotton thread to hold the hand-made cable arms for Relaymatic switchboards to a minimum diameter.

The insulation consists of two opposite wraps of cellulose acetate yarn, over which a close soft cotton braid is applied. The Type "F" wire is finished with lacquer; the Type "G" wire has a tropicalized finish.

These wires are available in No. 22 or 24 A.W.G. in these standard colors:

RED	BROWN	GREEN WHITE
BLUE	ORANGE GREEN	BLACK WHITE
ORANGE	RED WHITE	SLATE WHITE
GREEN	BLUE WHITE	BROWN WHITE
BLACK	ORANGE WHITE	ORANGE BLACK
SLATE		

Code No.	Insulation	Conductor Finish	No. of Conductors
F-T-1	F	Tinned	1
F-T-2	F	Tinned	2
F-TE-1	F	Tinned-Enameled	1
F-TE-2	F	Tinned-Enameled	2
G-T-1	G	Tinned	1
G-T-2	G	Tinned	2
G-TE-1	G	Tinned-Enameled	1
G-TE-2	G	Tinned-Enameled	2



WIRE

Wire, Power Equipment

The Types "H", "J", and "K" wires in this group are usually furnished in a 5, 7, or 9-wire twist as cable and used for leads from ringing equipment to switchboards.

Single conductor wire of these types is available with standard tracer colors:

BLUE	SLATE	BLUE BLACK
ORANGE	BLUE WHITE	BLUE SLATE
GREEN	BLUE ORANGE	ORANGE WHITE
BLACK	BLUE GREEN	ORANGE GREEN

These wires are available in either No. 14 or 18 A.W.G. rubber covered tinned wire. Each type has a close overall cotton braid. When ordering, be sure to specify the wire gauge you desire.

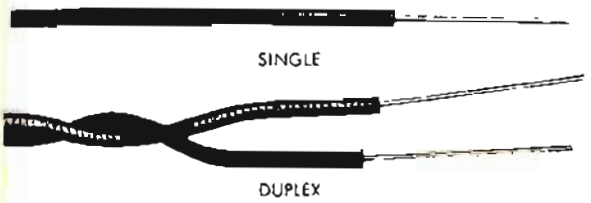
Type Wire	Type Impregnation
H-T-1	None
J-T-1	Lacquered
K-T-1	Tropicalized

WIRE, GENERATOR

Generator wire, No. 18 or 20 A.W.G., is used as battery leads in local cables and general wiring when the added protection of tinned-enameled wire and braided covering is necessary. This wire can be also be furnished with tinned conductors.

Insulation consists of two opposite wraps of cellulose acetate yarn enclosed by a close cotton braid. Type "P" wire is finished with lacquer; Type "R" wire is tropicalized.

Be sure to specify "Wire per G. M. 245" when ordering, and be sure to specify the wire colors you desire. The following colors are furnished:



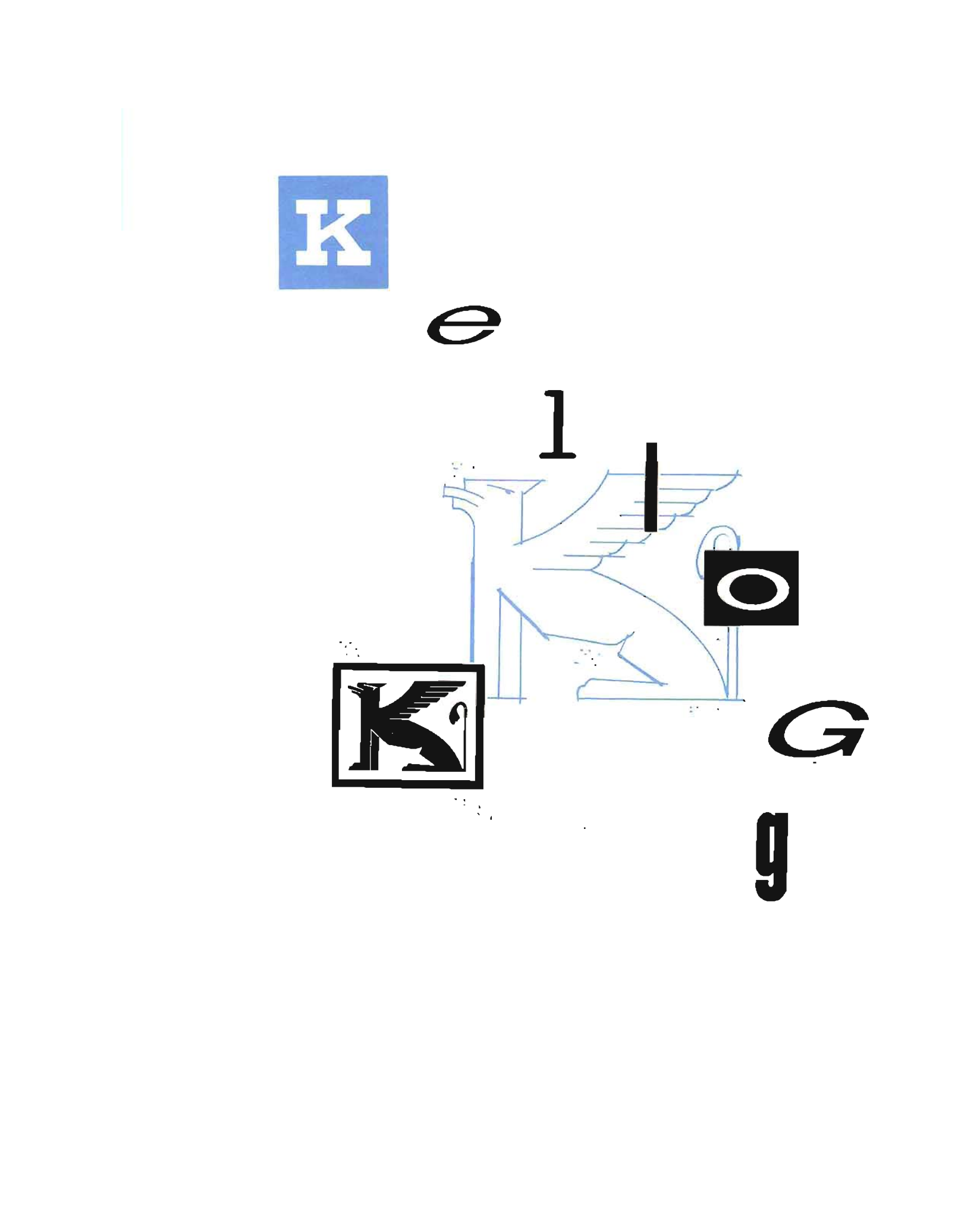
RED	GREEN	SLATE WHITE
RED WHITE	GREEN WHITE	BROWN
BLUE	BLACK	BROWN WHITE
BLUE WHITE	BLACK WHITE	ORANGE GREEN
ORANGE	SLATE	ORANGE BLACK
ORANGE WHITE		

Code No.	Impregnation	Conductor Finish	No. of Conductors	Type Wire
P-T-1	Lacquered	Tinned	1	Single
P-T-2	Lacquered	Tinned	2	Duplex
P-TE-1	Lacquered	Tinned-Enameled	1	Single
P-TE-2	Lacquered	Tinned-Enameled	2	Duplex
R-T-1	Tropicalized	Tinned	1	Single
R-T-2	Tropicalized	Tinned	2	Duplex
R-TE-1	Tropicalized	Tinned-Enameled	1	Single
R-TE-2	Tropicalized	Tinned-Enameled	2	Duplex

WIRE

Wire for open line construction and drop, bridle, inside, and other wires sold by Kellogg may be found in the Supply Section of this catalog. Information on lead covered cable for outside plant use is also shown in the Supply Section.

Telephone and switchboard cords of Kellogg manufacture are shown under "Cords" in this section.


K
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PIECE PARTS

L
4

for

- dial and manual switchboards
- common battery and magneto telephones
- wiring plans

FOREWORD

This section of the catalog covers the Piece Parts or various components which are incorporated into the most commonly used items of Kellogg telephone apparatus, and are most in demand for maintenance and replacement purposes.

In addition to the Piece Parts listed for the No. 1000 Series Masterphone, we also present a complete list of replacement parts for the new Kellogg No. K-500 Series Telephone, including special Piece Part Numbers in the Color Code for this new line.

Coded apparatus is not generally included in the Piece Parts section, as those items appear in their own Coded Apparatus section. However, we have shown views of some coded items, and a list of their replaceable parts, when applicable.

In general, only the non-coded piece parts which form a part of the coded items, are shown by their piece part numbers.

Space does not permit detailed information for all components and Piece Parts. In many cases, older editions of the Kellogg Catalogs may furnish the information you desire. If you do not have our previous catalogs, and the Piece Parts numbers are not available, we can usually furnish the items you need if your orders include the following:

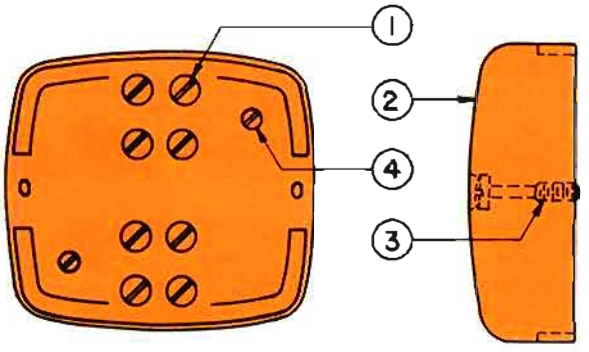


ORDERING INFORMATION

Orders for Piece Parts should include the Piece Part Number — when available. When these numbers are not available, please include with your order:

1. Description of the part desired and the component in which it is used.
2. The Code Number of the component on which the Piece Part is used.
3. A sample of the part desired or a sketch should be furnished when necessary.

CONNECTING BLOCK OR RACK



PARTS NOT COMMON

For No. 25-A

P-58881	Block
P-58887	Cover

For No. 25-B

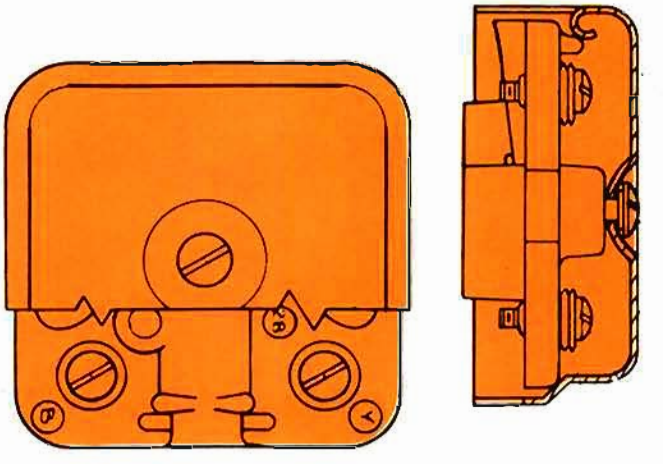
P-58882	Block
P-58889	Cover

No. 27

Item No.	Part No.	Description
1	P-69117	Screw
2	P-69114	Cover
3	P-69113	Screw
4	P-60409	Screw (Mounting)







Nos. 25-A and 25-B

(25-A 2 Conductor — 25-B 3 Conductor)

COMMON PARTS

P-58885	Screw
P-58884	Clip

No. 28

4-Conductor, For K-500 Telephone

P-75540	Base Assembly
P-75487-2	Bind H. M. Screw—4
P-75544	Washer—8
P-75542	Cover
P-75545	Cabinet Lock Screw

DIALS


D


DO


G

The following are the piece parts for Code Numbers 10-D, 10-G, 10-DO, 12-D, 12-G, 13-D, and 13-G Dials.

COMMON PARTS

Description	Piece No.
Number Card	P-64972
Protector	P-64969
Retaining Ring	P-69011
Finger Ring	P-70102

SPECIALIZED PARTS

Dial Type	Description	Piece No.
D	Numeral Ring	P-68985
G	Numeral Ring	P-69056
DO	Numeral Ring	P-70336

Nos. 15 and 17 Type Dials

Code Nos. 15-D, 15-DO, 15-G, 17-D, 17-DO, 17-G





Part No.	Description	Quantity
P-71894	Finger Plate	1
P-64972	Number Card	1
P-64969	Protector	1
P-71879	Retaining Ring	1
P-71880	Number Card Retainer	1

SPECIALIZED PARTS

Dial Type	Description	Piece No.
D	Numeral Ring	P-71882
G	Numeral Ring	P-71974
DO	Numeral Ring	P-71973

No. 19 Type Dial

The following are the piece parts for Code Numbers No. 19-G, 19-D, 19-2-G to 19-9-G, 19-2-D to 19-9-D



The No. 19 type dial is used exclusively in the new K-500 telephone series. Shown below are its piece parts, first in standard black color, following with variations according to color selections, as indicated by (*).

Part No.	Description
P-75465	Finger Plate*
P-75480	Finger Stop
P-75438	Dust Cover
P-75474	Vinyl Gasket*
P-75481	Special Screw for attaching finger stop
P-75482	Numeral Ring*
P-75412	Retaining Ring*
P-75413	Protector
P-75415	Number Card
P-75416	Retaining Disc*
P-75417	Retaining Spring

FOR COLOR

When this dial is to be used in a colored telephone, the following changes are effective in the Piece Part Numbers of:

P-29284	Lucite Finger Plate
P-75474-2*	Vinyl Gasket
P-79291	Retaining Disc
P-79287	Spider Spring Assembly
P-75482-2*	Numeral Ring

*Piece Part Number varies with Color used—see below.

COLOR CHART

Piece parts subject to color change when another color than black is used are identified by the basic part number plus the color number. This applies to the 19-G dials only. The 19-D dials are identified by the same plan—plus—one more number.

Example: No. P-75482 Numeral Ring is in Black for the 19-G dial. For the 19-D dial, the number is P-75482-21.

P-75482	Black	19-G	P-75482-5	Green	19-G
P-75482-21	Black	19-D	P-75482-25	Green	19-D
P-75482-2	Red	19-G	P-75482-6	Blue	19-G
P-75482-22	Red	19-D	P-75482-26	Blue	19-D
P-75482-3	Brown	19-G	P-75482-7	Beige	19-G
P-75482-23	Brown	19-G	P-75482-27	Beige	19-D
P-75482-4	Yellow	19-G	P-75482-8	Gray	19-G
P-75482-23	Yellow	19-D	P-75482-28	Gray	19-D
			P-75482-9	Ivory	19-G
			P-75482-29	Ivory	19-D

DROPS AND JACKS, COMBINED

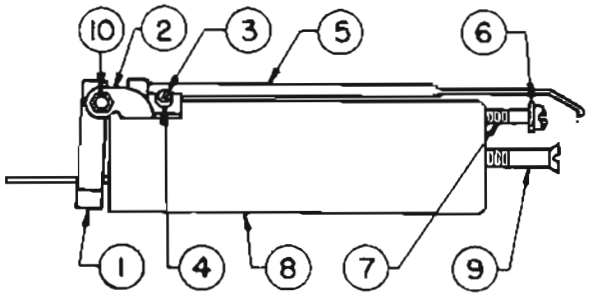
500 Type—with Regular Night Alarm contacts only.

JACK ASSEMBLIES AND DROP ASSEMBLIES

Code No.	Jack Assembly	Drop Assembly
505	P-68607	P-68323
509	P-68337	P-68323

For other numbers in this group, please see preceding Kellogg Catalogs.

Shown below is an itemized drawing of a No. 500 type combined drop and jack with Night Alarm contacts only. For piece parts corresponding to the item numbers, see table below drawing.



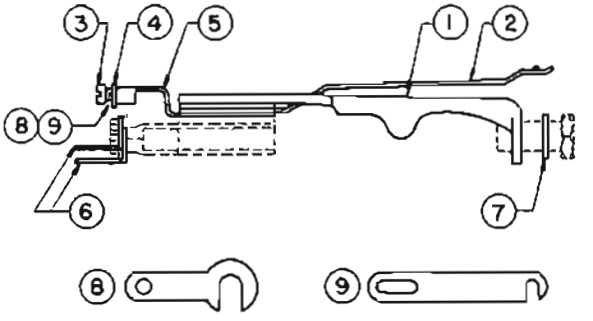
PIECE PARTS FOR N. A. CONTACT ONLY TYPE

Item No.	Piece No.	Description
1	1086	Armature
2	62503	Armature Support
3	63970	R.H. Mach. Screw
4	59312	Lock Washer
5	2233	Hook
6	54370	Spring Washer
7	68253	Fil. H.M. Screw
8	64025	Shell
9	68102	Spec. F.H. Mach. Screw
10	62502	Pivot Screw Assembly

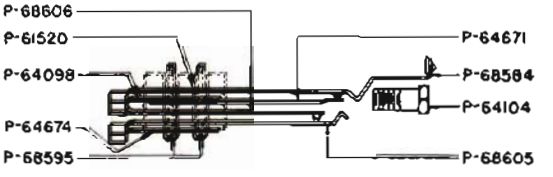
Parts Common to all Jack Assemblies

Item No.	Piece No.	Description
1	64039	Frame
2	39474	Contact Spring Assembly
3	68303	Fil. H.M. Screw
4	64015	Lock Washer
5	64036	Terminal
6	66961	Terminal
7	10001	Washer
8	14154	Terminal
9	30336	Connector

SPRING ASSEMBLY PARTS FOR JACK ASSEMBLIES



No. 505



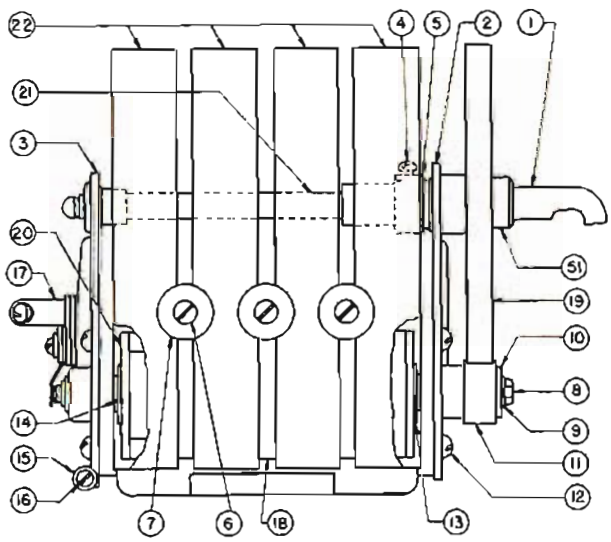
No. 509



GENERATORS

Parts Common to No. 72 Generator

Item No.	Piece No.	Description
1	15911	Crank Assembly
2	12172	End Bracket Assembly
3	12175	End Bracket Assembly
4	6021	Fil. H. Mach. Screw
5	3264	Collar
6	3668	R. H. Mach. Screw
7	64049	Washer
8	28670	Hex. Hd. Mach. Screw
9	54369	Spg. Washer
10	3274	Washer Assembly
11	3273	Pinion
12	14078	R. H. Mach. Screw
13	9893	Washer
14	38400	Washer
15	5019	Washer
16	5026	R. H. Mach. Screw
17	42679	Spring Assembly
18	13458	Pole Piece Assembly
19	27899	Gear
20	12974	Armature Assembly
21	27900	Shaft Assembly
22	57856	Magnet
	57857	Magnet
	59223	Magnet
51	4630	Stop Collar



TELEPHONE SUBSCRIBER'S TYPE

Nos. 15, 53, and 75

No. 15

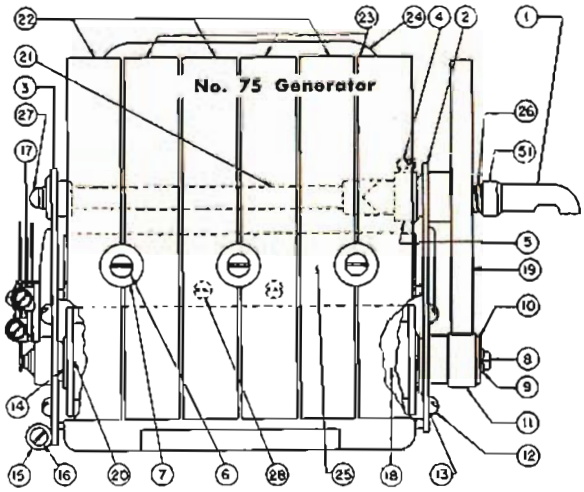
All parts for the number 15 generator are the same as those shown for the No. 72 except those special parts shown.

Item No.	Piece No.	Description
17	42687	Spring Assembly
51	3272	Stop Collar
18	4415	Pole Pieces
20	12973	Armature Assembly
21	51527	Shaft Assembly
23	7732	Shaft Insulation
24	3266	Spring
25	4748	Mounting

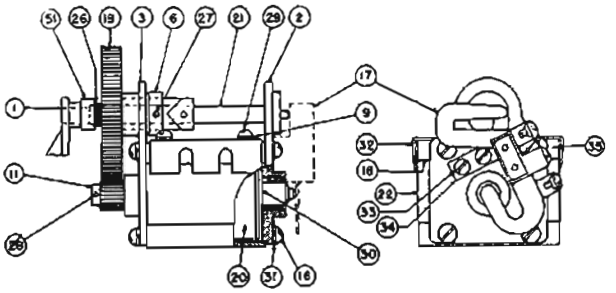
No. 53

All parts for the No. 53 generator are the same as those shown below for the No. 72 except those special parts shown below:

Item No.	Piece No.	Description
17	42687	Spring Assembly
51	3272	Stop Collar
19	3267	Gear Assembly
21	51515	Shaft Assembly
25	13461	Mounting Bracket



Item No.	Piece No.	Description
1	15911	Crank Assembly
2	12172	End Bracket Assembly
3	12175	End Bracket Assembly
4	6021	Fil. H. Mach. Screw
5	3264	Collar
6	16165	F.H.M. Screw
7	39922	Washer
8	28670	Hex. Hd. Mach. Screw
9	54369	Spg. Washer
10	3274	Washer Assembly
11	3273	Pinion
12	14078	R. H. Mach. Screw
13	9893	Washer
14	38400	Washer
15	5019	Washer
16	5026	R. H. Mach. Screw
17	42687	Spring Assembly
51	4630	Stop Collar
18	39915	Pole Piece Assembly
20	53965	Armature Assembly
21	51525	Shaft Assembly
22	57856	Magnet
23	57857	Magnet
24	39918	Mounting Bracket
25	39919	Mounting
26	3266	Spring
27	7732	Shaft Insulator
28	15531	F.H.M. Screw



No. GN-38-B (Small Type)

Item No.	Piece No.	Description
1	GC-9	Crank
2	63695	Bearing Plate Assembly
3	63696	Bearing Plate Assembly
6	63700	Collar
9	54368	Spring Washer
11	63702	Pinion
16	56649	R.H.M. Screw
17	63704	Spring Assembly
51	63699	Spring Retainer
18	63690	Pole Piece
19	63701	Gear
20	63694	Armature Assembly
21	63697	Shaft Assembly
22	63692	Magnet
26	63698	Spring
27	66041	Headless Set Screw
28	63705	Pin
29	66001	R.H.M. Screw
30	63703	Thrust Washer
31	54368	Washer
32	63693	Angle
33	63587	R.H.M. Screw
34	54369	Spring Washer
35	63691	Pole Piece

HANDSETS

Nos. F-27-C and F-40-C

Description	Part No.	Description	Part No.
Mouthpiece	62505	Ear Cap	58028
Mouthpiece Ring	55369	Trans. Assembly	66521
Screw (Trans.)	60788	Receiver Assem.	55919
Handset Body	55367	Diaphragm	58015

Nos. 46-C and 47-C

Description	Part No.	Description	Part No.
Mouthpiece	62505	Ear Cap (46-C, 47-C)	69426
Mouthpiece Ring	55369		
Screw (Trans.)	60788	Trans. Assembly (46-C, 47-C)	66521
Handset Body (46-C, 47-C)	64888	Receiver Assem. (46-C, 47-C)	89-A

PARTS NOT COMMON

Description	Part No.	Description	Part No.
Transmitter (32-C)	66525	Transmitter (32-L)	66526

PARTS COMMON TO NOS. 32-C AND 32-L

Description	Part No.	Description	Part No.
Handle	44310	Trans. Cup Ins.	36230
Screw	36189	Head	44321
Transmitter Front	36261	Body	44320
Insulator	36262	Tip	44314
Transmitter Back Assembly	44407	Receiver Assem.	44405



No. 65-C

This is the new flat-handle handset used exclusively as a part of the new K-500 series telephone.

Index No.	Part No.	Color Part No.	Name of Part	Quantity
1	P-75381	P-79289	Receiver Cap	1
	P-75547		Receiver Unit	1
3	P-75386		Terminal Screw	2
4	P-75380	P-79290	Transmitter Cap	1
	P-75555		Transmitter Unit	1
6	P-75384		Trans. Holder Assem.	1
7	P-75386		Terminal Screw	2
10	P-75383	P-79250	Handle	1
		P-79293	Cord Holder	1

COLOR CHART

Receiver Piece Parts, subject to a number change when other colors than black are used, are identified by a new Basic Parts Number, plus the color number . . . because a different type material is used.

For example: The No. 65-C Handset Handle in Black is P-75383. In color, this same handset handle carries basic Piece Part No. P-79250, PLUS the number designating the color.

No. 65-C Handset Handle:

P-75383	Black	P-79250-6	Blue
P-79250-2	Red	P-79250-7	Beige
P-79250-3	Brown	P-79250-8	Gray
P-79250-4	Yellow	P-79250-9	Ivory
P-79250-5	Green		

PIECE PARTS

We have made every effort to include in this Piece Parts Section all piece parts normally required by telephone operating companies. Some parts available are not shown because:

1. We do not show components of coded items which are themselves coded items. For instance, the code of condensers, handsets, induction coils, etc., used in telephones, are generally not listed here, but will be found in the Coded Apparatus Section.

2. We do not show here parts which ordinarily are not replaced by operating companies, such as rollers, cam assemblies, frames for cam keys, etc.

KEYS, CAM
No. 1000 Type

Replaceable parts for No. 1000 type cam keys which are common to all keys of this type are shown in the list below.

Description	Piece No.
Cam Handle (Black—Standard)	15171
Cam Handle (Red)	17078
Cam Handle (White)	62607
Cam Handle (Yellow)	63980
Dust Protector Washer (Felt)	32690
Dust Protector Washer (Brass)	47557
Cam Stop	46221
Mounting Screw (long—for cam stop side)	49726
Mounting Screw (short)	49724
Nut (for long mtg. screw)	28872
Nut (for short mtg. screw)	28871
Washer (for spring stack-up nut)	29184
Nut (for spring stack-up)	28985

Special Parts for Miscellaneous No. 1000 Type Keys

Due to the large quantity of No. 1000 type cam keys of various spring combinations not commonly used, detailed breakdown of parts has been made. Piece parts for these miscellaneous keys should be ordered as follows.

HEAD SIDE

19 — — 9
18 — — 8
17 — — 7
16 — — 6
15 — — 5
14 — — 4
13 — — 3
12 — — 2
11 — — 1

FRAME

31 — — 21
32 — — 22
33 — — 23
34 — — 24
35 — — 25
36 — — 26
37 — — 27
38 — — 28
39 — — 29

NUT SIDE

SPRINGS

To order replacement springs locate the desired spring on the drawing at the left and order as follows: "Spring No..... for key No....." It is important that both the item number of the spring and the code number of the key be specified in ordering spring for these keys.

INSULATORS AND SEPARATORS

To order replacement insulators and separators locate the desired part on the drawing and order as follows: "Insulator (Separator) between Springs No..... and .... for key No....."

OTHER PARTS

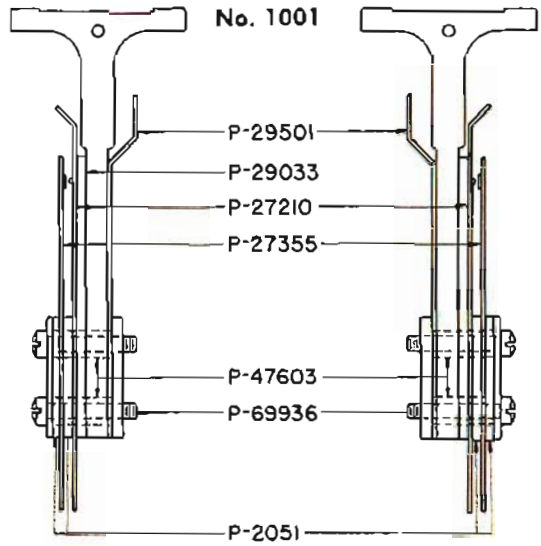
In ordering other parts for these keys specify the code number of the key for which the part is required and give a complete description of the part.

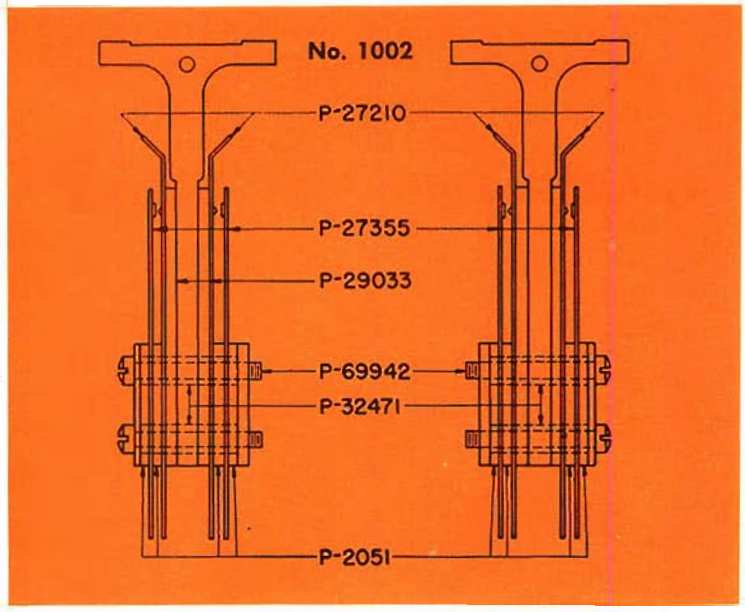
NOTE

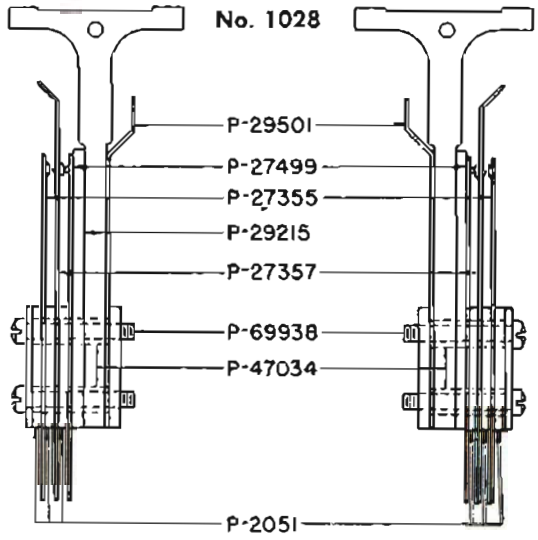
When referring to cam keys "Head Side" indicates the side of the key on which the head of the screw which secures the spring stack-ups appears. The "Nut Side" is the side on which the nut, usually oval or square-shaped, appears.

Special Parts for No. 1000 Type Keys

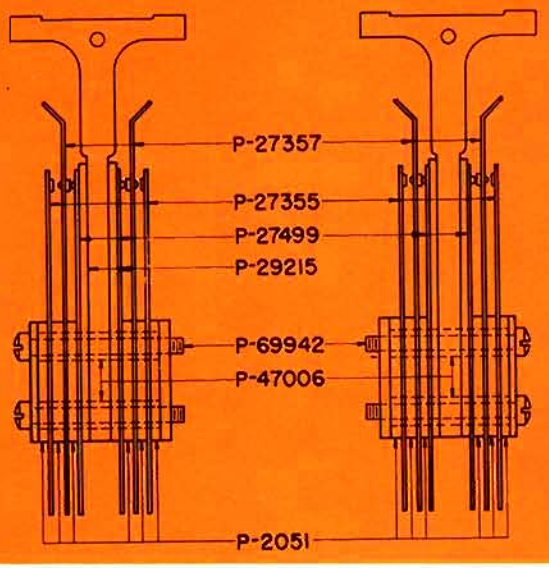
Special piece parts for No. 1000 type cam keys most commonly used are shown in the drawings following. For parts for keys not shown in these drawings, see the drawing and description above.



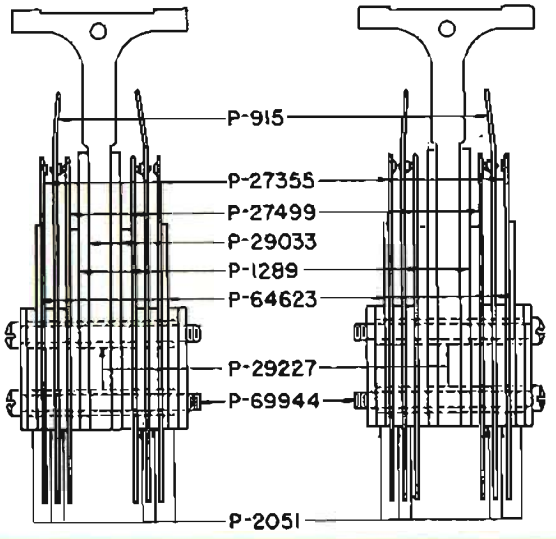




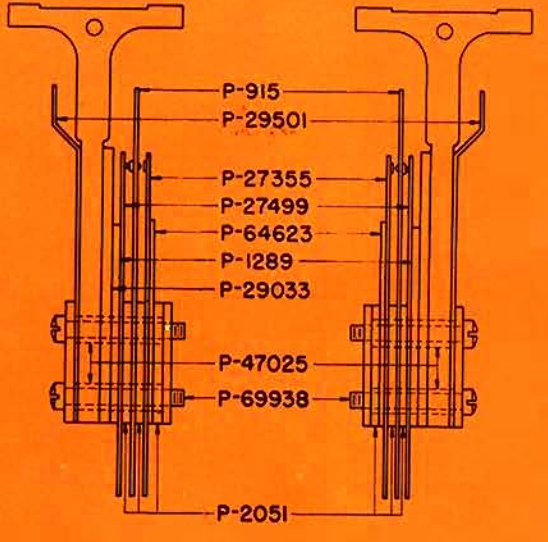
No. 1030



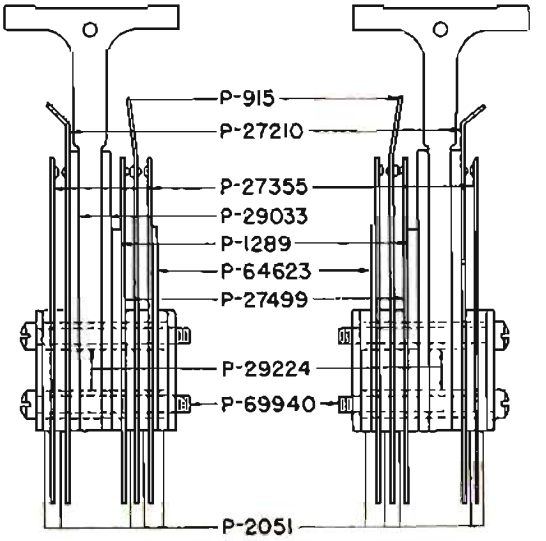
No. 1031



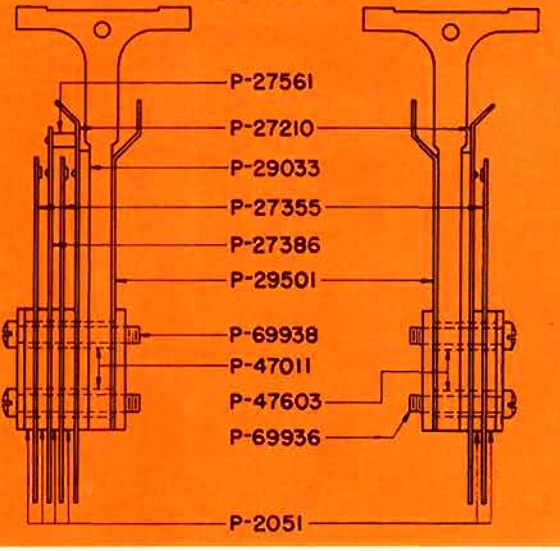
No. 1033



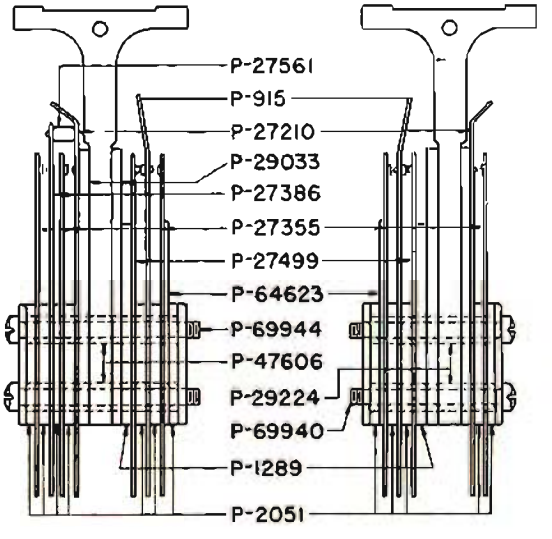
No. 1041



No. 1042



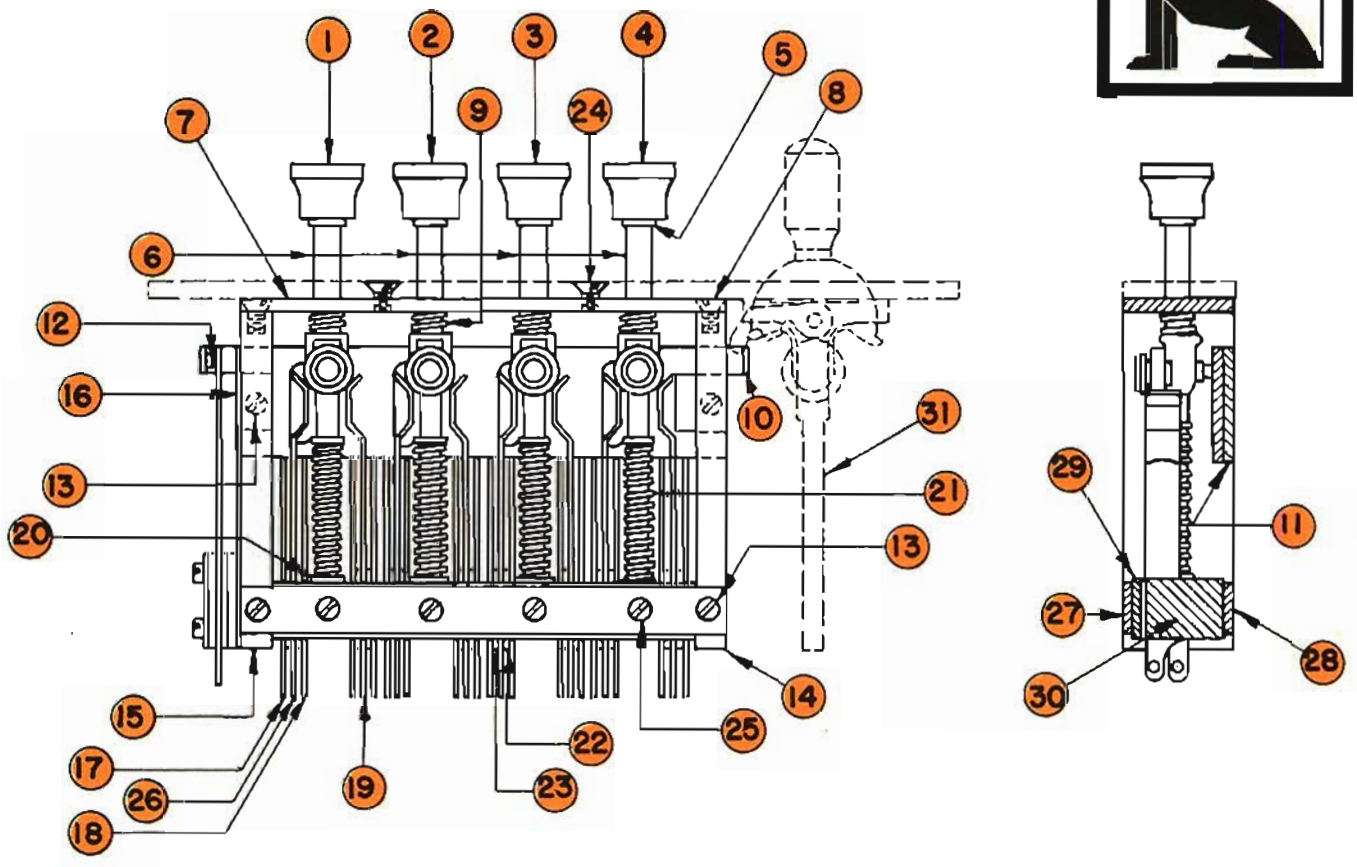
No. 1043



KEYS, PARTY TYPE

Four Party Keys

Code Nos. 265-A, 267-A, and 355-A



COMMON PARTS FOR KEYS NOS. 265-A, 267-A, AND 355-A

Item No.	Piece No.	Description
1	3992	Button (Black)
2	3993	Button (Green)
3	3994	Button (Red)
4	3995	Button (Blue)
5	55624	Spring Washers
6	27075	Plunger Assembly
7	28769	Mounting Plate
8	6545	Special Screws
9	27052	Spring
10	49757	Release Strip
11	27056	Guide
12	27106	Insulator
13	13238	Special Screw
14	27062	Upright (right)
15	27064	Upright (left)
16	33437	Insulation
17	27079	Spring with Contact
18	27077	Spring with Contact
19	34034	Spring with Contact
20	32275	Washers
21	32276	Springs
22	10200	Insulations
23	3204	Insulations
24	29023	Mounting Screws

PARTS NOT COMMON FOR KEYS NOS. 265-A, 267-A, AND 355-A

Item No.	For Key Code No.	Piece No.	Description
25	355-A	47169	Special Screw
25	265A, 267-A	27123	Special Screw
26	355-A	27087	Spring with Contact
27	355-A	34037	Strip (front)
27	265-A, 267-A	27066	Strip (front)
28	355-A	34037	Strip (rear)
28	265-A, 267-A	27068	Strip (rear)
29	355-A	47167	Insulator
29	265-A, 267-A	27069	Insulator
30	355-A	47166	Mounting Block
30	265-A, 267-A	27070	Mounting Block
31	Release key. For parts for these release keys see parts list for cam keys Nos. 1000-A, 1015-A, 1045-A, 1053-A, 1062-A, 1125-A, and 1162-A on pages .... and		

COMMON PARTS FOR KEYS CODE NOS. 265, 267, AND 355

Common parts for keys Code Nos. 265, 267, and 355 are the same as those for keys Code Nos. 265-A, 267-A, and 355-A above except as shown below.

Item No.	Piece No.	Description
10	32365	Release Strip

Listing continued on next page

PARTS NOT COMMON FOR KEYS CODE NOS. 265, 267, AND 355

Special parts for keys Code Nos. 265, 267, and 355 are the same as those for keys Code Nos. 265-A, 267-A, and 355-A above except as shown below. See Listing, Page ...

Item No.	Description
31	Release key. For parts for these release keys see parts list for cam keys Nos. 1000, 1044, 1045, 1053, 1062, and 1162 in section following.

COMMON PARTS FOR KEYS CODE NOS. 266 AND 310

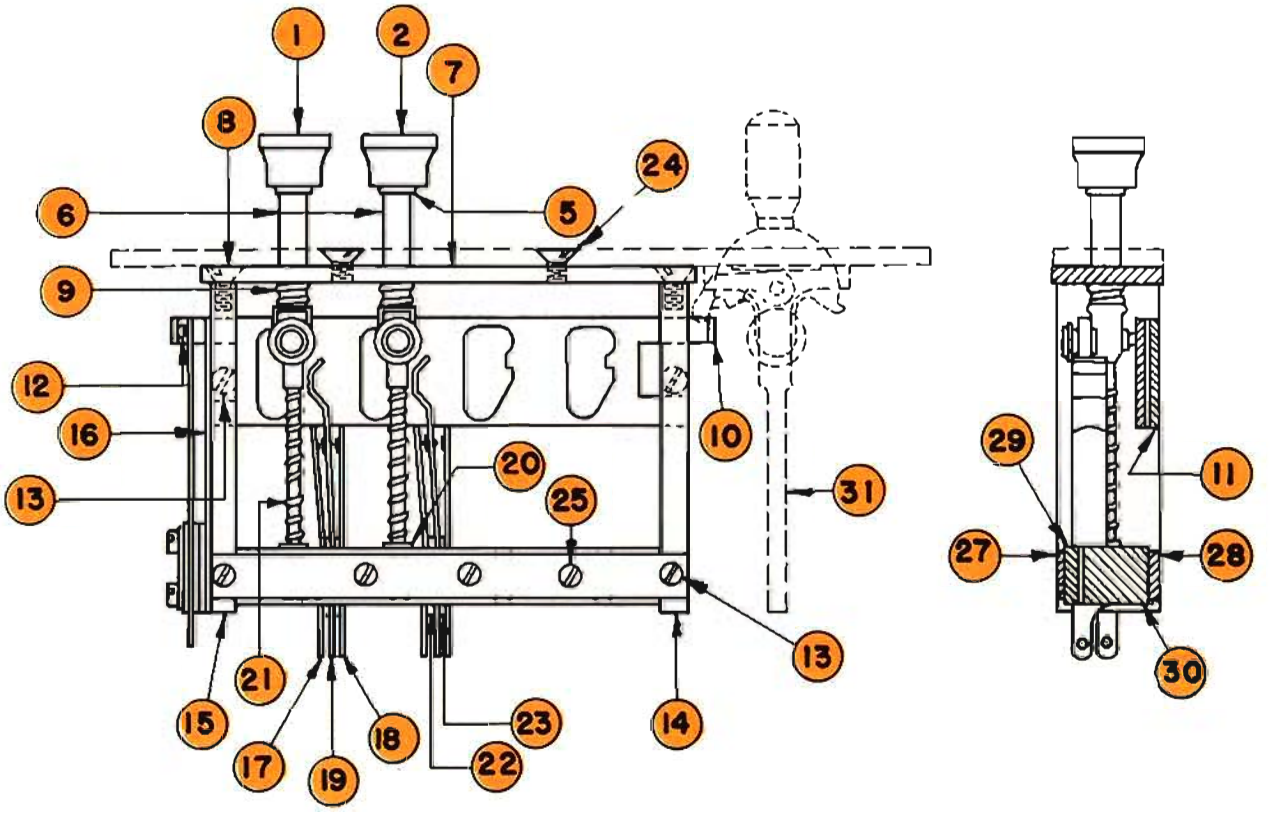
Common parts for keys Code Nos. 266 and 310 are the same as those for keys Code Nos. 265-A, 267-A, and 355-A above except as shown below.

Item No.	Piece No.	Description
10	27126	Release Strip

PARTS NOT COMMON

Special parts for keys Code Nos. 266 and 310 are the same as those for keys Code Nos. 265-A and 267-A listed on page .... except as shown below.

Item No.	Description
31	Cam key not included



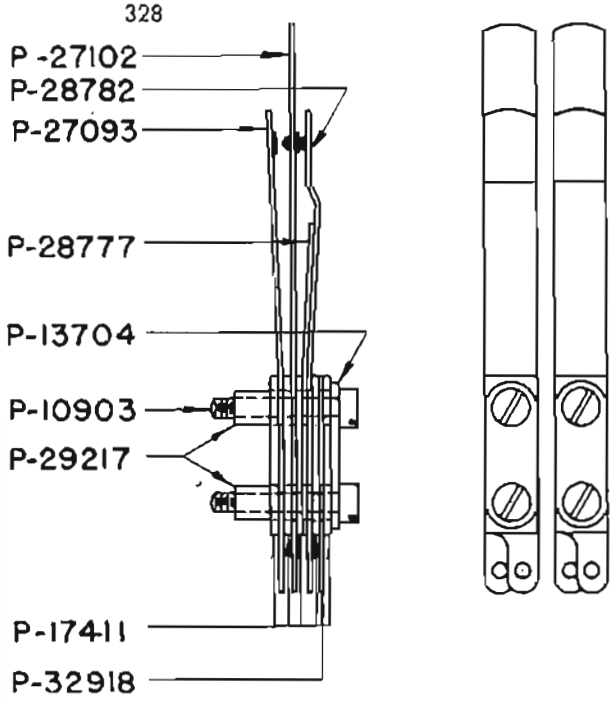
Two Party Keys
Code Nos. 358-A and 328

Item No.	For Key Code No.	Piece No.	Description
1	358-A, 328	3992	Button (Black)
2	358-A, 328	3994	Button (Red)
5	358-A, 328	55624	Spring Washer
6	358-A, 328	27075	Plunger Assembly
7	358-A, 328	28769	Mounting Plate
8	358-A, 328	6545	Special Screw
9	358-A, 328	27052	Spring
10	358-A	49757	Release Strip
10	328	27126	Release Strip
11	358-A, 328	27056	Guide
12	358-A, 328	27106	Insulator
13	358-A, 328	13238	Special Screw
14	358-A, 328	27062	Upright (right)
15	358-A, 328	27064	Upright (left)
16	358-A, 328	33437	Insulator
17	358-A, 328	27079	Spring with Contact
18	358-A, 328	27077	Spring with Contact
19	358-A, 328	34034	Spring with Contact
20	358-A, 328	32275	Washer
21	358-A, 328	32276	Spring
22	358-A, 328	10200	Insulators
23	358-A, 328	3204	Insulators
24	358-A, 328	29023	Mounting Screws
25	358-A, 328	27123	Screws
27	358-A, 328	27066	Strip (front)
28	358-A, 328	27068	Strip (rear)
29	358-A, 328	27069	Insulator
30	358-A, 328	27070	Mounting Block
31	358-A	All "A" type restoring cam keys.	
31	328	Not restored by cam key.	

END SPRINGS

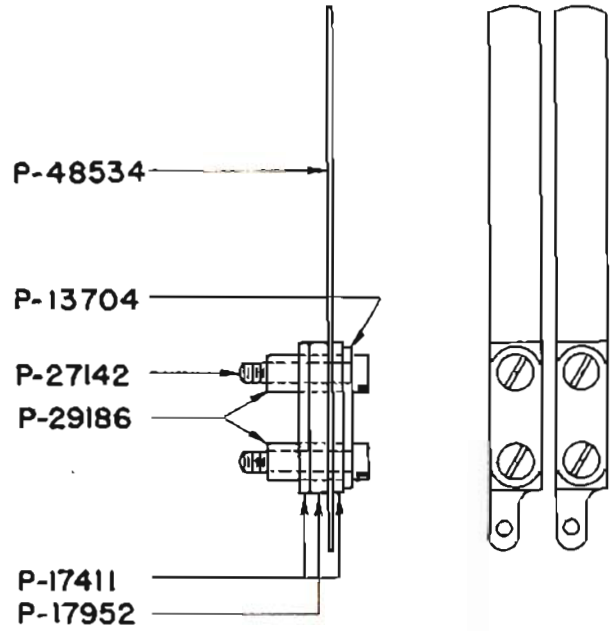
The drawing below shows the piece parts for end springs of the following party type keys.

Code No.	Code No.
265	355
265-A	355-A
266	358-A
328	



The drawing below shows the piece parts for end springs of the following party type keys.

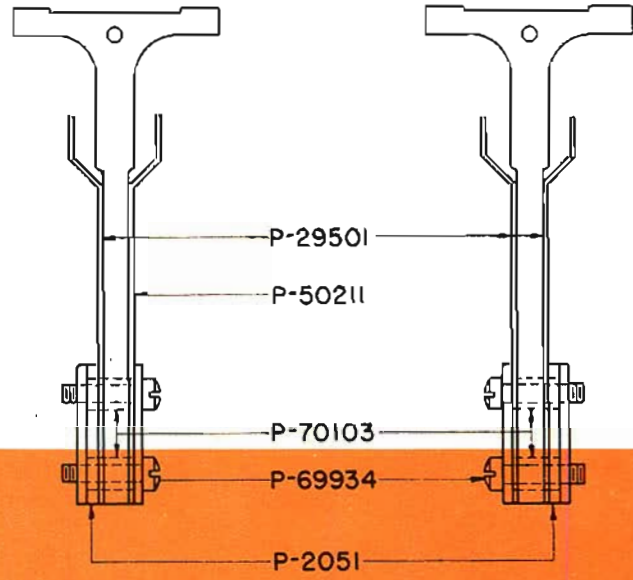
Code No.
267
267-A
310



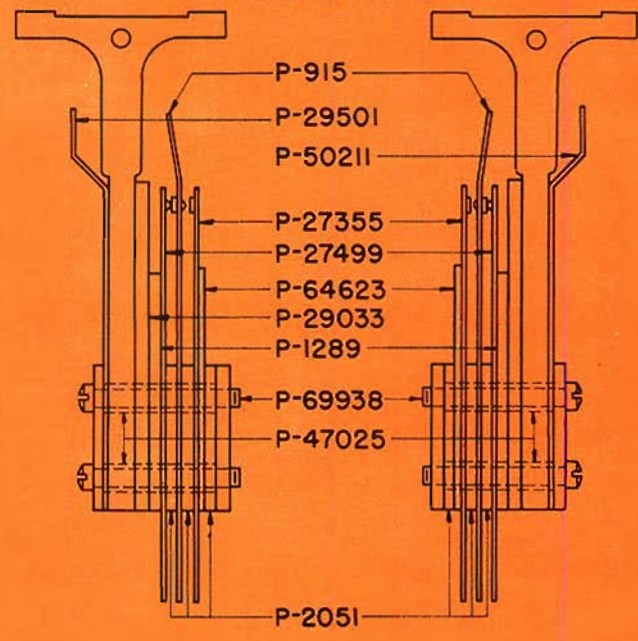
RESTORING CAM KEYS FOR COMMON PARTS

Piece No.	Description
15171	Handle
46221	Cam Stop
28871	Nut (for short mounting screws)
49724	Mounting Screw (short)
49726	Mounting Screw (long—for cam stop side)
32690	Dust Protector Washer (felt)
47557	Dust Protector Washer (brass)
28872	Nut (for long mounting screws)

Nos. 1000 and 1000-A



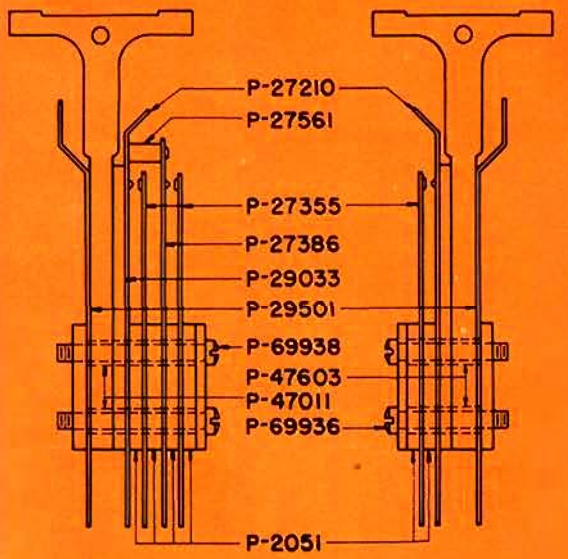
No. 1015-A



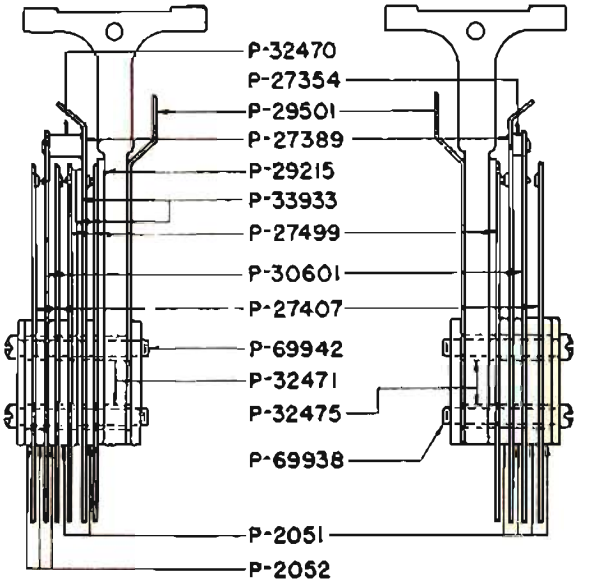
KEYS, PARTY TYPE (Cont'd)

RESTORING CAM KEYS FOR

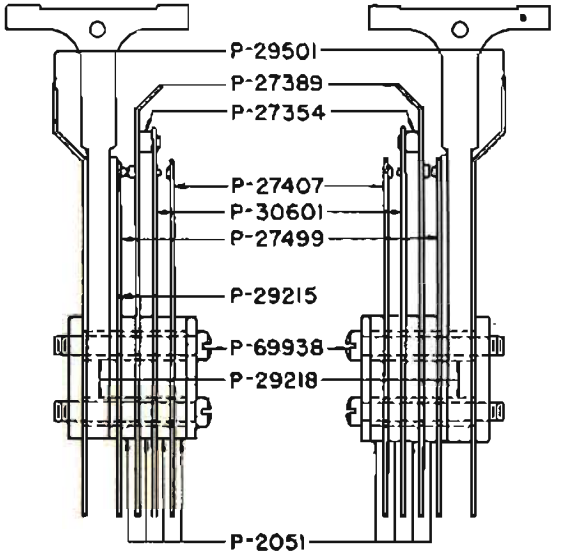
No. 1045



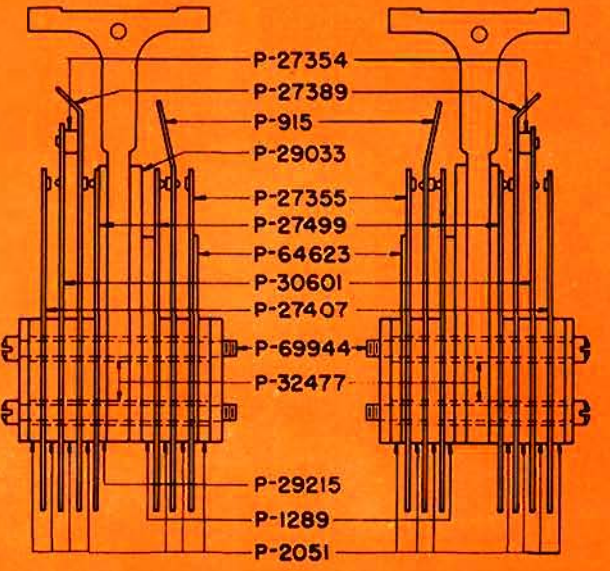
Nos. 1162 and 1162-A



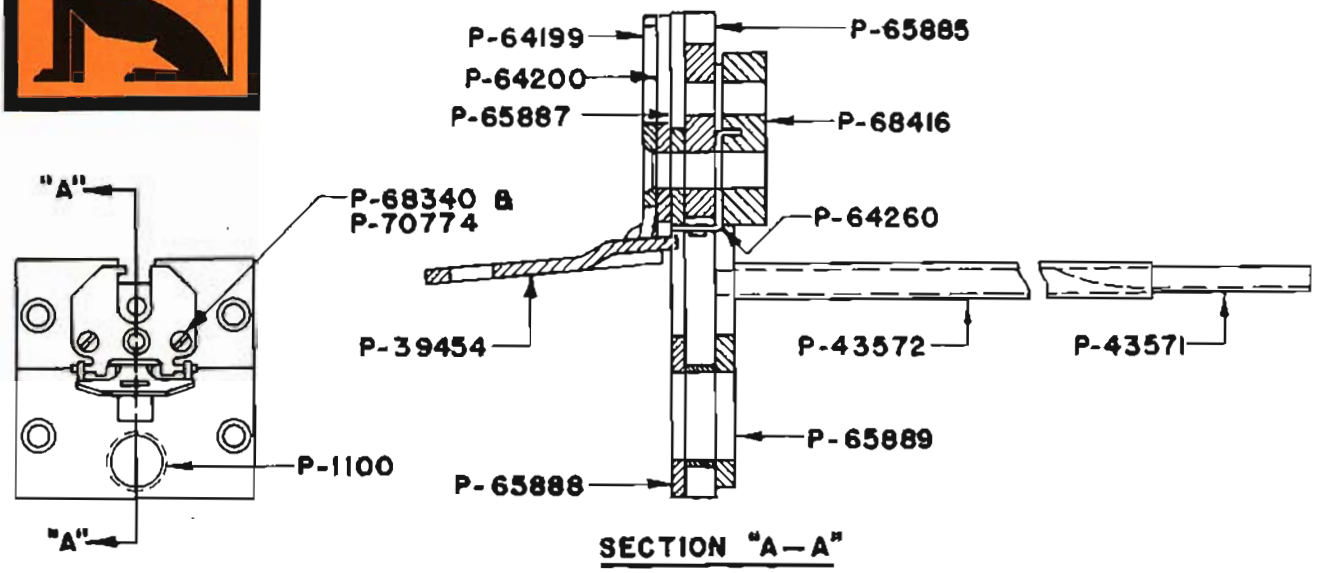
Nos. 1053 and 1053-A



No. 1125-A

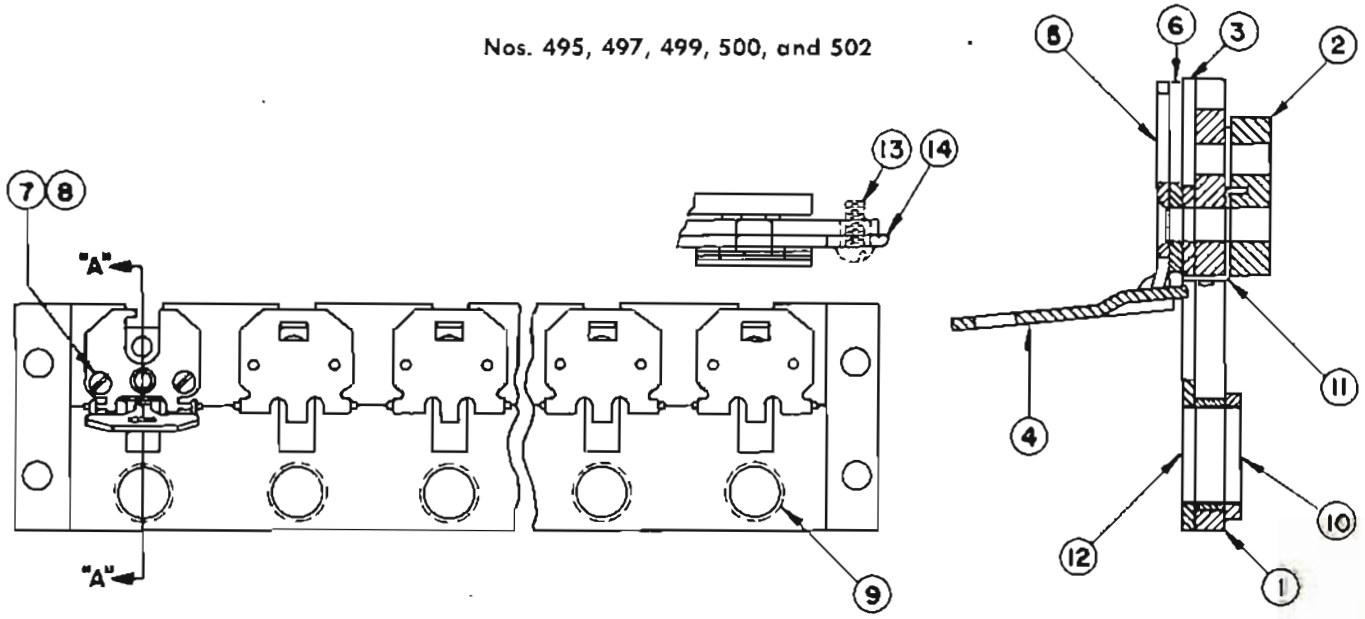


MOUNTINGS
For Drops and Combined Drops and Jacks
No. 552



SECTION "A—A"

Nos. 495, 497, 499, 500, and 502



SECTION "A-A"

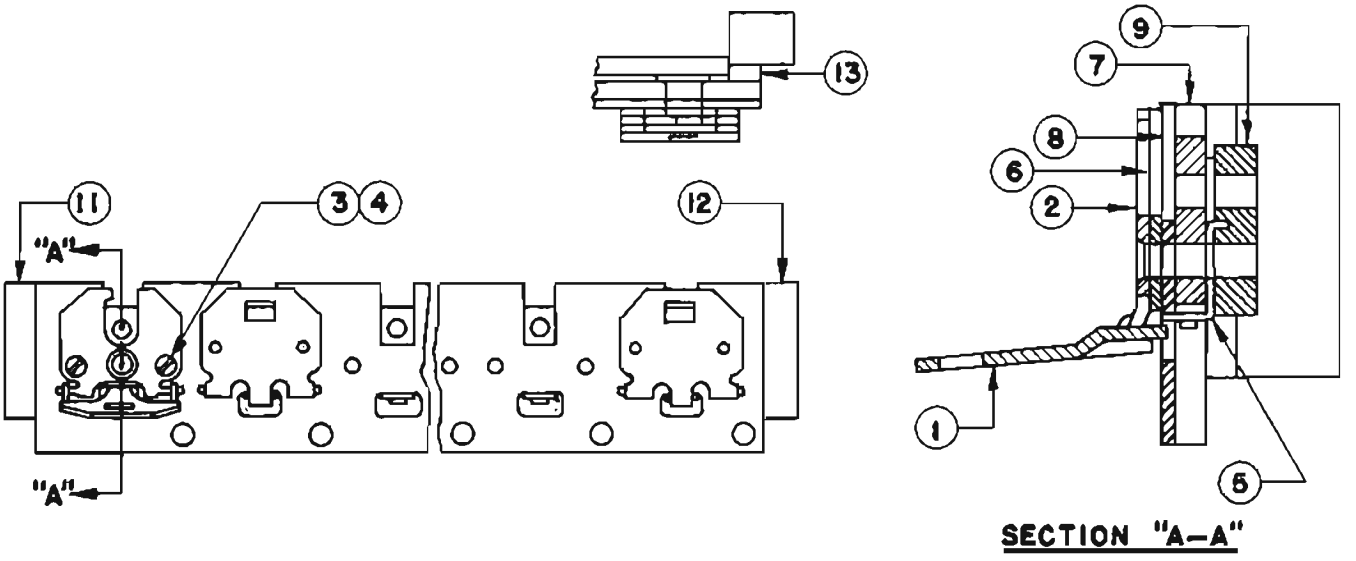
COMMON PARTS

Item No.	Piece No.	Description	Item No.	Piece No.	Description
4	39454	Shutter	8	68341	F. H. M. Screw
5	64199	Support	9	1100	Bushing
6	64200	Insulator	10	12907	Rear Insulator
7	70774	Nut	11	64260	Contact Terminal Assembly

PARTS NOT COMMON

Item No.	Piece No.	Description	Mounting Code No.	Item No.	Piece No.	Description	Mounting Code No.
1	68803	Mounting Strip	495, 502	12	12928	Front Insulator	495
1	68327	Mounting Strip	497, 499, 500	12	29350	Front Insulator	502
2	68004	Rear Insulator	495, 502	12	12905	Front Insulator	497, 500
2	68328	Rear Insulator	497, 499, 500	12	25858	Front Insulator	499
3	64201	Front Insulator	495, 502	13	37883	R. H. Mach. Screw	500
3	64198	Front Insulator	497, 499, 500	13	58650	R. H. Mach. Screw	495, 497, 499, 502
10	12919	Rear Insulator	495, 502	14	28241	Adapter	500

MOUNTINGS (Cont'd)
No. 509



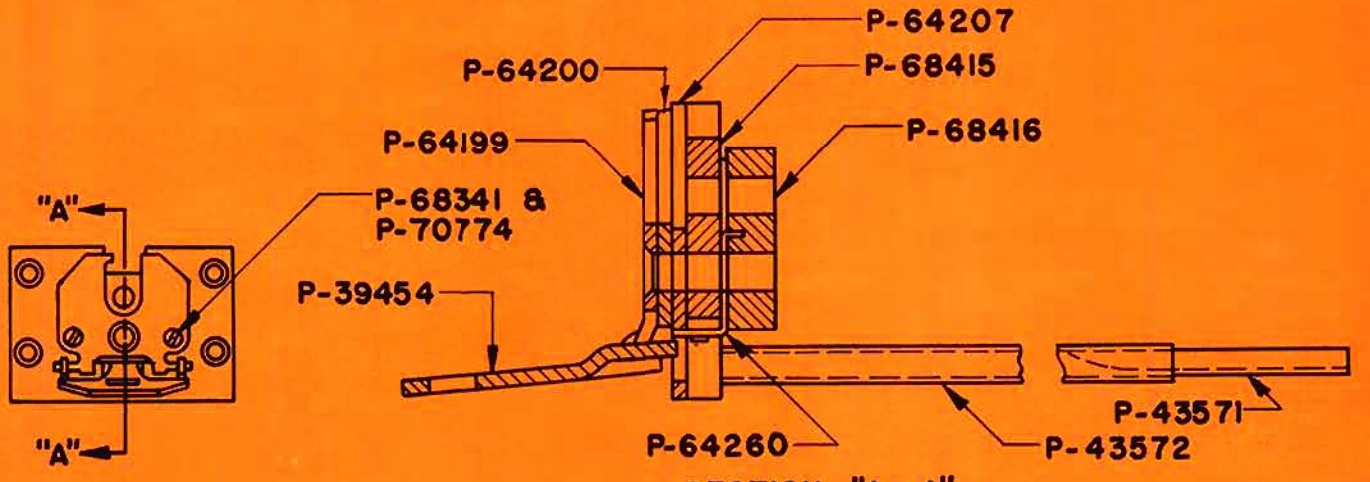
SECTION "A—A"

No. 509

Item No.	Piece No.	Description
1	39454	Shutter
2	64199	Support
3	70774	Nut
4	68341	F. H. M. Screw
5	64260	Contact Terminal Assembly
6	64200	Insulator

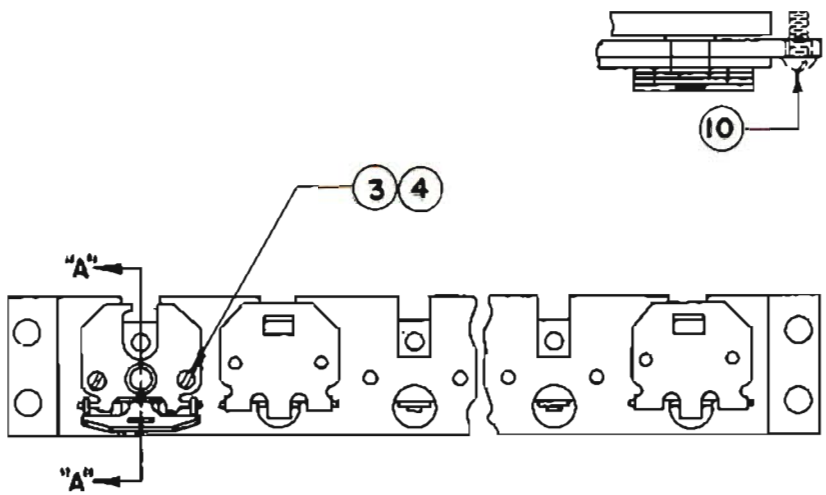
Item No.	Piece No.	Mounting Code No.	Description
7	67473	509	Mounting Strip
8	64204	509	Front Insulator
9	67472	509	Rear Insulator
10	58650	509	R. H. M. Screw
11	29336	509	Lug
12	29337	509	Lug
13	29177	509	Separator

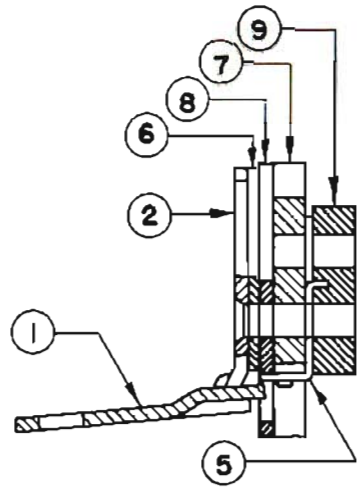
No. 506



SECTION "A—A"

MOUNTINGS (Cont'd)
Nos. 494, 504, 507, and 510

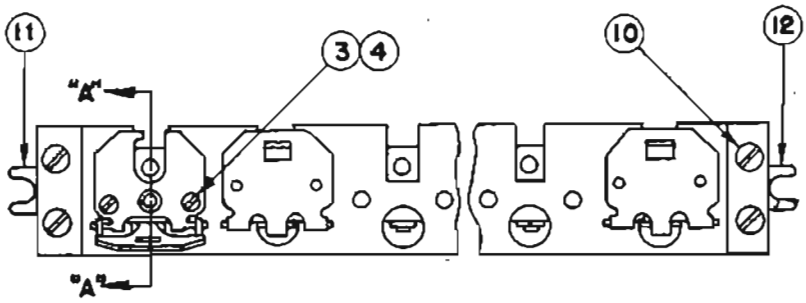


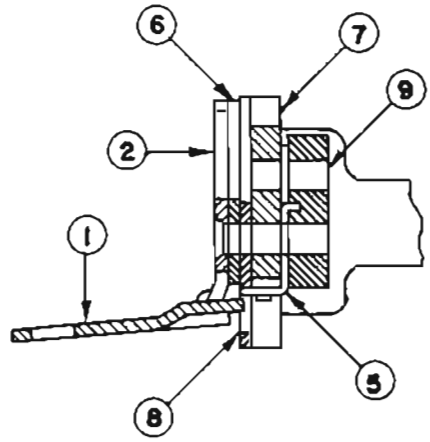


SECTION "A—A"

PIECE PART LISTS FOLLOW.

No. 505





SECTION "A—A"

PIECE PART LISTS FOLLOW.

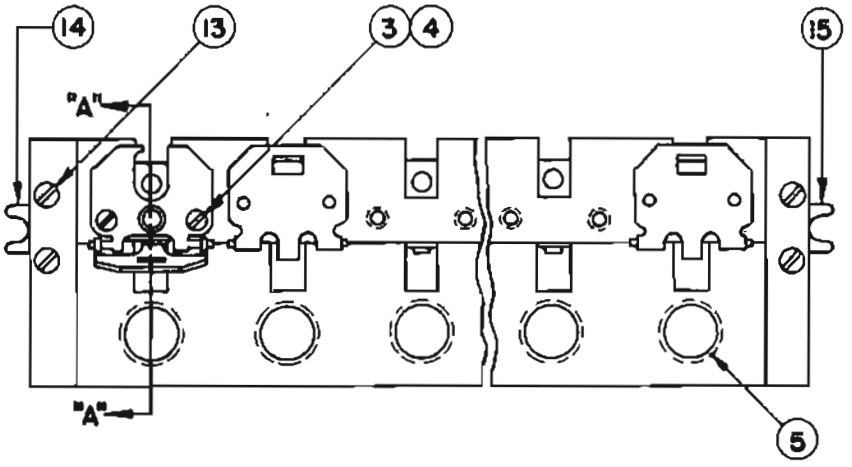
COMMON PARTS

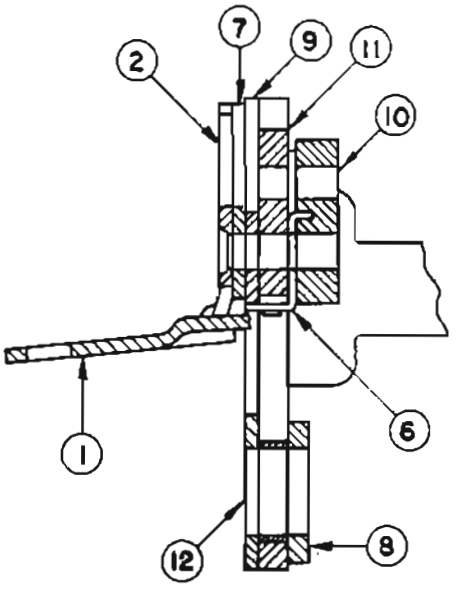
Item No.	Piece No.	Description	Item No.	Piece No.	Description
1	39454	Shutter	4	68341	F. H. M. Screw
2	64199	Support	5	64260	Contact Terminal Assembly
3	70774	Nut	6	64200	Insulator

PARTS NOT COMMON

Item No.	Piece No.	Mounting Code No.	Description	Item No.	Piece No.	Mounting Code No.	Description
7	68377	504	Mounting Strip	9	68328	504	Rear Insulator
7	68412	510	Mounting Strip	9	68413	510	Rear Insulator
7	68313	494	Mounting Strip	9	68004	494, 505	Rear Insulator
7	68378	507	Mounting Strip	9	68379	507	Rear Insulator
7	68409	505	Mounting Strip	10	58650	504, 510, 494, 507	R. H. M. Screw
8	64206	504	Front Insulator				
8	64209	510	Front Insulator	10	69191	505	F. H. M. Screw
8	64205	494, 505	Front Insulator	11	68403	505	Lug (left)
8	64208	507	Front Insulator	12	68404	505	Lug (right)

MOUNTINGS (Cont'd)
Nos. 498 and 503





SECTION "A–A"

COMMON PARTS

Item No.	Piece No.	Description	Item No.	Piece No.	Description
1	39454	Shutter	6	64260	Contact Terminal Assembly
2	64199	Support	7	64200	Insulator
3	70774	Nut	8	12919	Rear Insulator
4	68341	F. H. M. Screw	9	64201	Front Insulator
5	1100	Bushing	10	68004	Rear Insulator

PARTS NOT COMMON

Item No.	Piece No.	Mounting Code No.	Description	Item No.	Piece No.	Mounting Code No.	Description
11	68402	498	Mounting Strip	13	69191	498, 503	F. H. Mach. Screw
11	68406	503	Mounting Strip	14	68403	498, 503	Lug (left)
12	12917	498	Front Insulator	15	68404	498, 503	Lug (right)
12	60268	503	Front Insulator				

NOTE

In ordering piece parts for the above mountings for drops and combined drops and jacks the piece part number must be included with the order. Do not order by item number as shown on the above drawings. Determine the corresponding piece part number from the lists accompanying the drawings and order by that number.

PLUGS

SWITCHBOARD TYPE

Code No.	Cover	Cover Screw	Terminal Screw
42	7960	899	1998
130	7960	899	1998
187	32156	899	1998
247	59769	59790	59791
106*	1807	899	27043 & 899
106**	71310	71312	8924
137	1807	899	27043
152	1807	899	27043
201*	27603	27115	27043
201**	71311	71312	27043
233	59881	59885	59884

Old Type
***New Type (has over-all shell)*

OPERATORS' TYPE

Code No.	Cover	Cover Screw	Terminal Screw	Washer
136	6209	1464	899	
139	29849	14955	29032	
145			4069	5019
182			7025	12582
236	67209	67239	67229	67211

Vibrator assembly piece numbers and contact stud and spring assembly piece numbers are shown below for all Kellogg pole changers shown in the Apparatus Section. For parts other than those listed consult the Kellogg sales department.

Pole Changer Code Number	Position	Frequency	Vibrator Assembly No.
39	1	16⅔ cycles	59267
	2	33⅓ cycles	59266
	4	50 cycles	59264
	5	66⅔ cycles	59265
41	-	20 cycles	59267
42	1	16 cycles	59267
	2	30 cycles	59266
	3	42 cycles	59265
	4	54 cycles	59264
	5	66 cycles	59263
43	-	60 cycles	59263
44	1	16 cycles	61884
&	2	30 cycles	69541
45	3	42 cycles	69542
	4	54 cycles	69543
	5	66 cycles	69544
46		16 cycles	61884

Vibrator Assembly Parts

Piece No. 59263

Piece No.	No. of Pieces	Description
59253	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	2	Spring assem. (transformer contact)
59256	2	Coil assembly
59280	1	Weight
53881	1	Screw (weight)
59281	1	Weight (nut)

Piece No. 59264

Piece No.	No. of Pieces	Description
59253	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	2	Spring assem. (transformer contact)
59257	2	Coil assembly
59282	1	Weight
13241	1	Screw (weight)
59283	1	Weight (nut)

Piece No. 59265

Piece No.	No. of Pieces	Description
60274	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	1	Spring assem. (transformer contact)
59257	2	Coil assembly
59282	2	Weight
8782	1	Screw (weight)
59283	1	Weight (nut)

Piece No. 59266

Piece No.	No. of Pieces	Description
59255	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	2	Spring assem. (transformer contact)
59258	2	Coil assembly
8807	1	Weight
13699	1	Screw (weight)
8809	1	Weight (nut)

Piece No. 59267

Piece No.	No. of Pieces	Description
59254	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	2	Spring assem. (transformer contact)
59259	2	Coil assembly
31124	5	Washer (weight)
31126	3	Washer (weight)
31128	5	Washer (weight)
7410	1	Washer (weight)
8807	1	Weight
13699	1	Screw (weight)
48948	1	Weight (nut)

Piece No. 61884

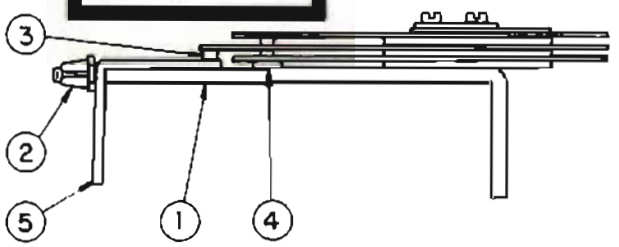
Piece No.	No. of Pieces	Description
59254	1	Armature assembly
11962	1	Motor contact stud
67686	1	Transformer contact stud
7437	1	Spring assembly (motor contact)
66604	2	Spring assem. (transformer contact)
70769	2	Coil assembly
8807	1	Weight
13699	1	Screw (weight)
7409	1	Weight (nut)

RECEIVERS

No. 87-A

Description	Piece No.
Cap	59891
Diaphragm	59918
Coil Assembly	66597
Shell Assembly	66290
Screw	59913

RELAYS 2000 TYPE



PARTS COMMON TO ALL 2000 TYPE RELAYS

Item No.	Item No.	Description
1	28368	Frame Assembly
2	1287	Armature Nut

SPECIAL PARTS

Item No.	Description
3	Armature Tip Bushing
4	Spring Stop Bushing
5	Armatures (see armature ordering information below)

HOW TO ORDER

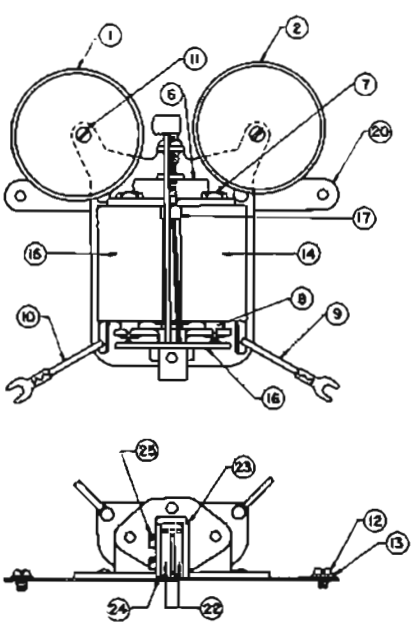
To order special parts for 2000 type relays the order should read as follows:

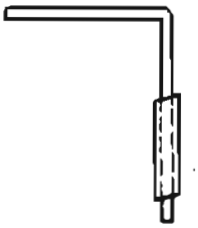
Item 3 (2091) relay—when armature tip bushing for 2091 relay is desired.

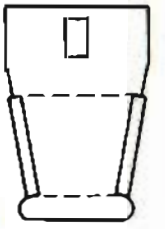
Item 4 (2091)—when spring stop bushing for 2091 relay is desired.

ARMATURE ORDERING INFORMATION

The armatures shown at the right are interchangeable for all 2000 type relays to conform with various circuit conditions. In ordering specify the type desired.



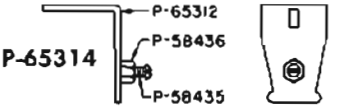


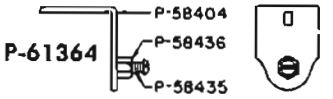


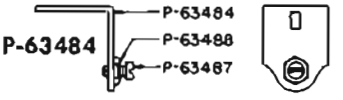
ARMATURE TYPES

STANDARD, A, B, AND C ARMATURES

Residual Clip	Thickness	Piece No.
Standard	.010 in.	65319
A	.006 in.	65320
B	.003 in.	65321
C	None	65311







FOR OTHER TYPE RELAYS

To order replacement parts for either the No. 1700 type Switchboard Relaymatic or the No. 4000 type Switchboard Crossbar Relays — or their many variations, please see the job specifications for the particular switchboard you have. Usually the code numbers of the particular Relays are listed in the stock list form, either on the Relaymatic or Crossbar drawings or specifications.

RINGERS
No. 120-Type
Nos. 120 and 123

PARTS COMMON TO ALL 120-TYPE RINGERS

Item No.	Piece No.	Description
1	64935	Gong
2	64934	Gong
3	64936	Adjusting Screw
4	70893	Lock Washer
5	64953	Hex. Nut
6	64919	Magnet & Bracket Assembly
7	70301	Locknut
8	64923	Core
9	64964	Wire Assembly
10	64963	Wire Assembly
11	70892	R.H.M. Screw
12	64871	Screws
13	64965	Lock Washers

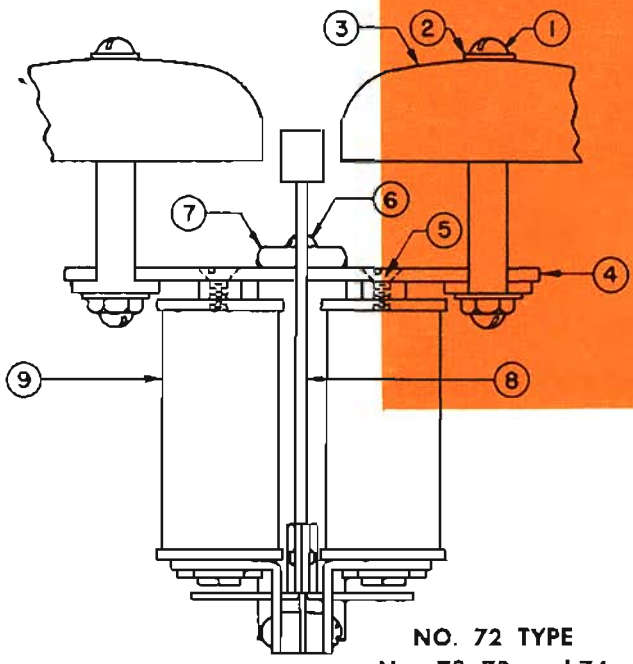
OTHER PARTS FOR NO. 120-TYPE BIASED RINGERS

Item No.	Code No.	Piece No.	Description
14	120-BA	64945	Coil Assembly
	120-BB	68841	Coil Assembly
	120-BC	68843	Coil Assembly
15	120-BA	64944	Coil Assembly
	120-BB	68840	Coil Assembly
	120-BC	68842	Coil Assembly
16	120-BA, BB, BC	64927	Armature & Clapper Assem.
17	120-BA, BB, BC	64925	Bias Spring Stud
18	120-BA, BB, BC	64924	Bias Stud Retaining Spring
19	120-BA, BB, BC	64937	Pin
20	120-BA, BB, BC	70487	Base Assembly
21	120-BA, BB, BC	64952	Washer

120 TYPE (Cont'd)

STRAIGHT LINE RINGERS

Item No.	Code No.	Piece No.	Description
14	123-SA	64945	Coil Assembly
	123-SB	68841	Coil Assembly
	123-SC	68843	Coil Assembly
15	123-SA	64944	Coil Assembly
	123-SB	68840	Coil Assembly
	123-SC	68842	Coil Assembly
16	123-SA, SB & SC	68930	Armature & Clpr. Assem.
20	123-SA, SB & SC	70487	Base Assembly
21	123-SA, SB & SC	64952	Washer



NO. 72 TYPE
Nos. 72, 73, and 74

PARTS COMMON TO ALL NO. 72 TYPE RINGERS

Item No.	Piece No.	Description
1	39400	R.H. Machine Screws
2	46936	Lock Washer
3	30488	Gong
4	42291	Heel Iron Assembly
5	58573	F.H. Machine Screws
6	58572	R.H. Machine Screws

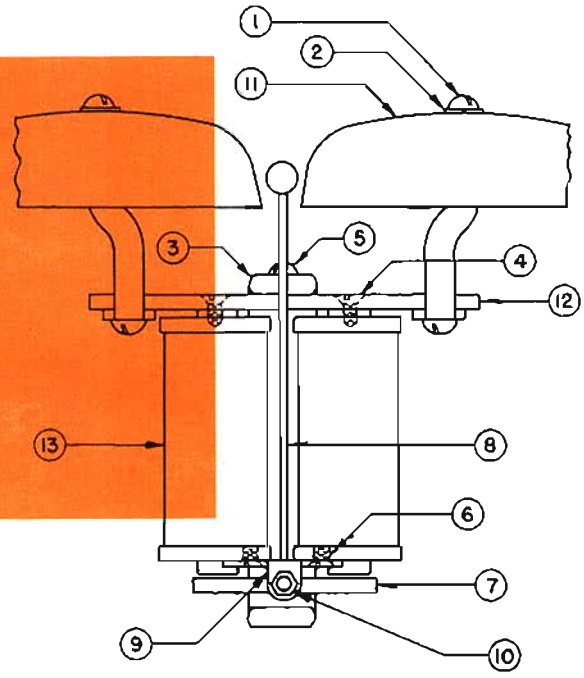
OTHER PARTS FOR NO. 72 TYPE RINGERS

Item No.	Code No.	Piece No.	Description
7	72-A, 72-A-4	6705	Magnet
	73-A1, 73-A-2		
	73-A-3, 74-A-1		
	72-A-5		
	72-A, 73-A-4	49194	Magnet
	74-A-2		
8	72-A-1	6498	Armature
	72-A-2	6718	Armature
	72-A-3	6719	Armature
	72-A-4	6720	Armature
	73-A-1	15193	Armature
	73-A-2	15194	Armature
	73-A-3	15195	Armature
	73-A-4	15196	Armature
	74-A-1	15191	Armature
	74-A-2	15192	Armature
	72-A-5	43475	Armature
9	72-A1, 72-A-2	61328	Coil Assembly
	72-A-3, 74-A-2	61329	Coil Assembly
	72-A-4, 74-A-1	51081	Coil Assembly
	72-A-5	51081	
	73-A-1, 73-A-2	51198	Coil Assembly
	73-A-3, 73-A-4		

NO. 78 TYPE (with Non-Adjustable Armature)
Nos. 55, 78, and 109

PARTS COMMON TO ALL NO. 78-TYPE RINGERS

Item No.	Piece No.	Description
1	39400	R.H. Machine Screws
2	46936	Washers
3	12154	Magnet
4	58573	F.H. Machine Screw
5	58572	R.H. Machine Screw
6	12161	F.H. Machine Screw
7	12157	Armature Asseembly
8	12195	Clapper Assembly
9	12160	Armature Support Assembly
10	10065	Screw and Nut Assembly



RINGERS (Cont'd)

NO. 78 TYPE

OTHER PARTS FOR NO. 78 TYPE RINGERS

Item No.	Code No.	Piece No.	Description
11	55-G	53299	Gongs
12	55-G	45123	Heel Iron Assembly
13	55-G	51140	Coil Assembly
11	78-A, 78-D, 78-G	30488	Gongs
12	78-A, 78-D, 78-G	50411	Heel Iron Assembly
13	78-A	51098	Coil Assembly
13	78-D	51156	Coil Assembly
13	78-G	51140	Coil Assembly
11	109-G	2894	Gongs
12	109-G	50412	Heel Iron Assembly
13	109-G	51140	Coil Assembly

NO. 125 TYPE (with Adjustable Armatures)

The 125 type ringer is designed to substitute for Stromberg-Carlson and Western Electric ringers. The S-125 ringer is for Stromberg-Carlson ringers in Stromberg-Carlson telephones and the W-125 ringer is for Western Electric No. 302 type ringers in Western Electric telephones.

PARTS COMMON TO ALL 125-TYPE RINGERS

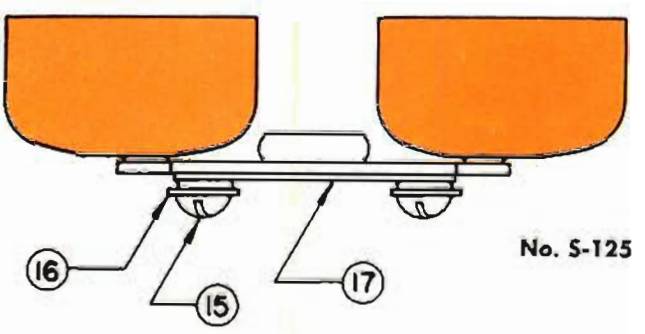
Item No.	Piece No.	Description
1	64934	Gong
2	64935	Gong
3	71238	Magneto and Bracket Assembly
4	70892	R.H.M. Screw
5	70893	Lock Washer
6	71379	F.H.M. Screw
7	71243	Wire Assembly
8	71244	Wire Assembly
9	71129	Spec. Hex. Screw
10	71127	Spec. Hex. H.M. Screw

OTHER PARTS FOR S-125 & W-125 RINGER

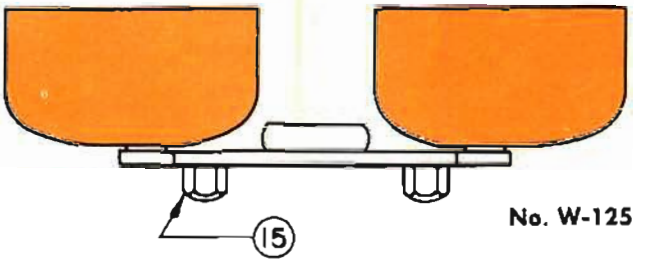
Item No.	Code No.	Piece No.	Description
13	125-HA1, HA-2, HA-3 125-HB-2, HB-3, HB-4 HC-2	71158	Coil Assembly
	125-HB-5, HA-5 HB-1, HC-1	71159	Coil Assembly

ARMATURE WITH WEIGHT

Part numbers for armature and weight assemblies for the W-125 ringer are the same as those shown for the 124 ringer on page L-22



No. S-125



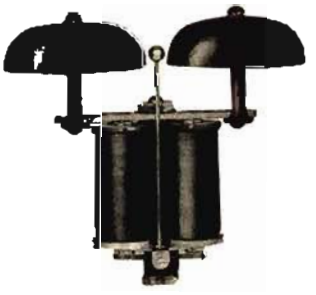
No. W-125

Item No.	Code No.	Piece No.	Code No.	Piece No.	Code No.	Piece No.
14	HA-1	71409	HB-1	71414	HC-1	71419
	HA-2	71410	HB-2	71415	HC-2	71420
	HA-3	71411	HB-3	71416	HC-3	71421
	HA-4	71412	HB-4	71417	HC-4	71422
	HA-5	71413	HB-5	71418	HC-5	71423

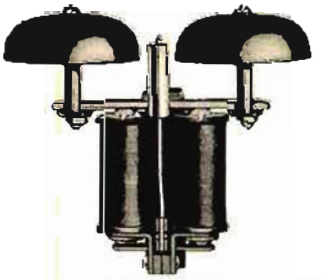
Item No.	Code No.	Piece No.	Description
15	W-125	71235	Spec. Hex. Hd. M. Screw
15	S-125	56744	R.H.M. Screw
16	S-125	71232	Ext.-Int. Tooth Lockwasher
17	S-125	71233	Adapter



NO. 120 TYPE



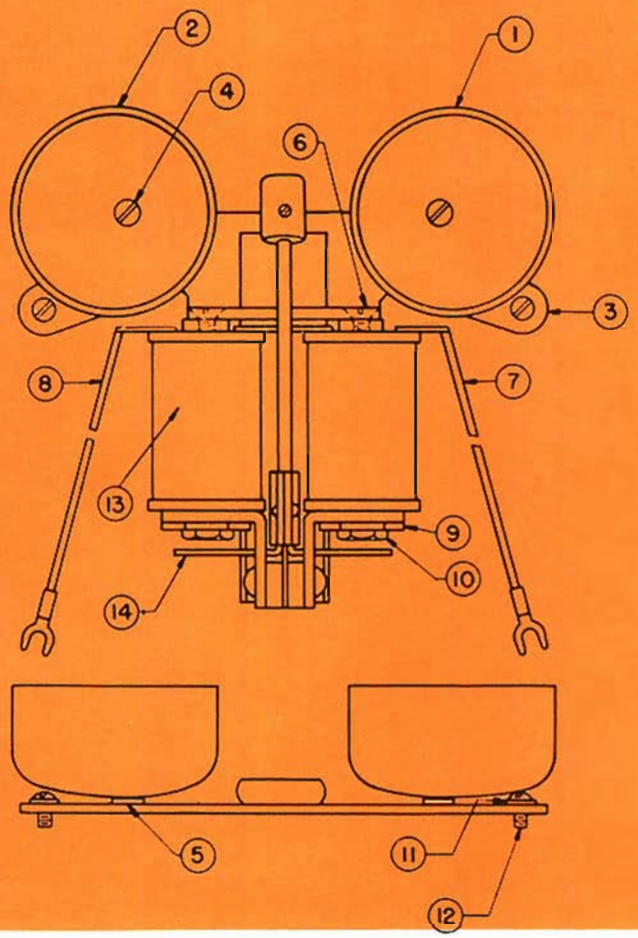
NO. 78 TYPE



NO. 72 TYPE

RINGERS (Cont'd)

NO. 124 TYPE (with Adjustable Armature)



HARMONIC, SYNCHROMONIC AND DECIMONIC
No. 124

PARTS COMMON TO ALL 124-TYPE RINGERS

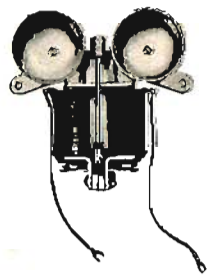
Item No.	Piece No.	Description
1	64934	Gong
2	64935	Gong
3	71163	Magnet and Bracket Assembly
4	70892	R.H.M. Screw
5	70893	Lock Washer
6	56557	F.H.M. Screws
7	71167	Wire Assembly
8	71166	Wire Assembly
9	71129	Spec. Hex. Nut
10	71127	Spec. Hex. H.M. Screw
11	64965	Lock Washers
12	71165	Screws

SPECIAL PARTS FOR 124-TYPE RINGERS

Item No.	Code No.	Piece No.	Description
13	124-HA-1, HA-2, HA-3 124-HB-2, HB-3, HB-4 HC-2	71158	Coil Assembly
	124-HB-5, HA-5, HB-1, and HC-1	71159	Coil Assembly

Item No.	PARTS FOR ARMATURE WITH WEIGHT
14	**(See chart "A" opposite page)**

Nos. 124 and 126 Ringers
For Use on No. 1000 Type Telephones



Code Nos. 124-HA-1, -2, -3, -4, -5; 125 HB-1, -2, -3, -4, -5; 125 HC-1, -2 ,-3, -4, -5. Code Nos. 126 HHA-1, -2, -3, -4, -5; 126 HHB-1, -2, -3, -4, -5; 126 HHC-1, -2, -3, -4, -5.

No. 124 HA Ringers are classed as Harmonic—low impedance.
No. 124 HB Ringers are classed as Synchromonic—low impedance.
No. 124 HC Ringers are classed as Decimonic—low impedance.
No. 126 HHA Ringers are classed as High Impedance Harmonic.
No. 126 HHB Ringers are classed as High Impedance Synchromonic.
No. 126 HHC Ringers are classed as High Impedance Decimonic.

Name of Part	Part No.	Quantity
Magnet & Bracket Assem.	P-71163	1
Gong	P-64934	1
Gong	P-64935	1
Wire Assembly (Black)	P-75326-57	1
Wire Assembly (Red)	P-75326-58	1
Coil Assembly	P-71158	2 (See Note 1.)
Coil Assembly	P-71158-2	2 (See Note 3.)
Coil Assembly	P-71159	2 (See Note 2.)
Armature & Wt. Assem.	P-71383 to 97	1 (See Chart "A".)
Screw & Nut Assembly	P-71464	2
Special F.H.M. Screw	P-71379	2
R.H.M. Screw	P-70892	2
Lockwasher	P-70893	2

NOTE 1: Coil Assembly P-71158 used on following ringers:
Nos. 124 HA-1, 124 HA-2, 124 HA-3.
Nos. 124 HB-2, 124 HB-3, 124 HB-4.
Nos. 124 HC-2, 124 HC-4, 124 HC-5.

NOTE 2: Coil Assembly P-71159 used on following ringers:

Nos. 124 HA-4, 124 HA-5.

Nos. 124 HB-1, 124 HB-5.

Nos. 124 HC-1, 124 HC-3.

NOTE 3: Coil Assembly P-7115-2 used on following ringers:

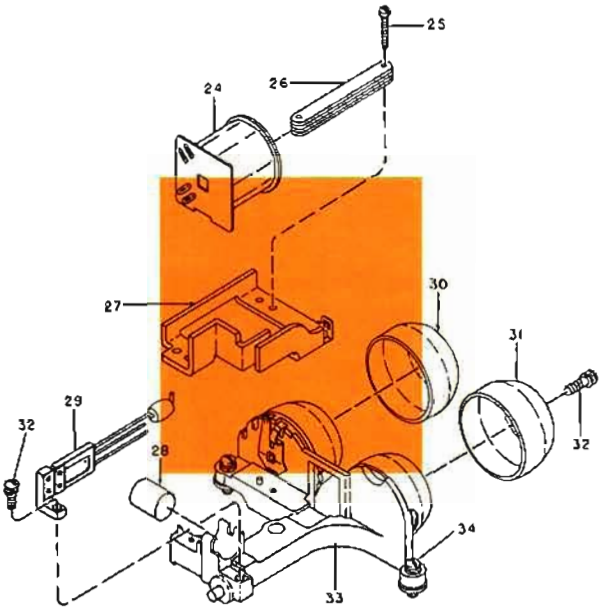
Nos. 126 HHA-1, 126 HHA-2, 126 HHA-3, 126 HHA-4, 126 HHA-5.

Nos. 126 HHB-1, 126 HHB-2, 126 HHB-3, 126 HHB-4, 126 HHB-5.

Nos. 126 HHC-1, 126 HHC-2, 126 HHC-3, 126 HHC-4, 126 HHC-5.

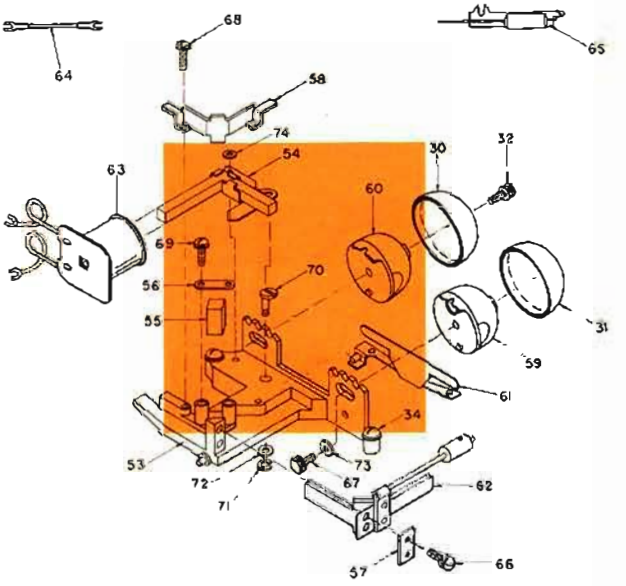
CHART "A"

Part No.	Description	Used On
P-71383	Armature & Weight Assembly	124 HA-1 Ringer
P-71384	Armature & Weight Assembly	124 HA-2 Ringer
P-71385	Armature & Weight Assembly	124 HA-3 Ringer
P-71386	Armature & Weight Assembly	124 HA-4 Ringer
P-71387	Armature & Weight Assembly	124 HA-5 Ringer
P-71388	Armature & Weight Assembly	124 HB-1 Ringer
P-71389	Armature & Weight Assembly	124 HB-2 Ringer
P-71390	Armature & Weight Assembly	124 HB-3 Ringer
P-71391	Armature & Weight Assembly	124 HB-4 Ringer
P-71392	Armature & Weight Assembly	124 HB-5 Ringer
P-71393	Armature & Weight Assembly	124 HC-1 Ringer
P-71394	Armature & Weight Assembly	124 HC-2 Ringer
P-71395	Armature & Weight Assembly	124 HC-3 Ringer
P-71396	Armature & Weight Assembly	124 HC-4 Ringer
P-71397	Armature & Weight Assembly	124 HC-5 Ringer
P-71383	Armature & Weight Assembly	126 HHA-1 Ringer
P-71384	Armature & Weight Assembly	126 HHA-2 Ringer
P-71385	Armature & Weight Assembly	126 HHA-3 Ringer
P-71386	Armature & Weight Assembly	126 HHA-4 Ringer
P-71387	Armature & Weight Assembly	126 HHA-5 Ringer
P-71388	Armature & Weight Assembly	126 HHB-1 Ringer
P-71389	Armature & Weight Assembly	126 HHB-2 Ringer
P-71390	Armature & Weight Assembly	126 HHB-3 Ringer
P-71391	Armature & Weight Assembly	126 HHB-4 Ringer
P-71392	Armature & Weight Assembly	126 HHB-5 Ringer
P-71393	Armature & Weight Assembly	126 HHC-1 Ringer
P-71394	Armature & Weight Assembly	126 HHC-2 Ringer
P-71395	Armature & Weight Assembly	126 HHC-3 Ringer
P-71396	Armature & Weight Assembly	126 HHC-4 Ringer
P-71397	Armature & Weight Assembly	126 HHC-5 Ringer



No. 130-BA Ringer

Index No.	Name of Part	Part No.	Quantity
24	Coil Assembly	P-75422	1
25	Flat fil. HD Machine Screw	P-75409-2	2
26	Core Lamination	P-75395	1
27	Support Pole Piece Assembly	P-75398	1
28	Magnet	P-75369	1
29	Clapper Assembly	P-75393	1
30	Gong (Movable)	P-75396	1
31	Gong (Fixed)	P-75397	1
32	Rd. Hd. Lockwasher Screw	P-75408-2	3
33	Frame Assembly	P-75388	1
34	Mounting Screw Assembly	P-75371	1



131 and "E"-131 Ringers. 133 and "E"-133 Ringers.

Code 131 HA-1, -2, -3, -4, -5; Code 131 HB-1, -2, -3, -4, -5; Code 131 HC-1, -2, -3, -4, 5; Code 133 HA-1, -2, -3, -4, -5; Code 133 HB-1, -2, -3, -4, -5; Code 133 HC-1, -2, -3, -4, -5.

Index No.	Name of Part	Part No.	Quantity
30	Gong "A"	P-75396	1
31	Gong "B"	P-75397	1
32	Gong Mounting Screw	P-75408-2	2
34	Ringer Mounting Screw	P-75366	2
53	Mounting Frame	P-75577	1
54	Side Plate & Lamination Assem.	P-75578	1
55	Magnet	P-75562	1
56	Clamping Plate	P-75563	1
57	Clamping Plate	P-75564	1
58	Shunt Bar	P-75566	1
59	Control Wheel & Resntr. Assem.	P-75581-1	1
60	Control Wheel & Resntr. Assem.	P-75581-2	1
61	Damper Spring Assembly	P-75580	1
62	Armature & Weight Assembly (SEE TABLE I)	P-75579-1 to 15	1*
63	Coil Assembly	P-75582	1
64	Jumper Wire Assembly	P-75326-38	1†
65	Capacitor & Bracket Assembly (SEE TABLE II)	P-75583-1 to 3	1‡
66	Armature Mounting Screw	P-79260-2	2
67	Control Whl. Mounting Screw	P-79258-2	2
68	Shunt Bar & Slide Plate Screw	P-79259-2	3
69	Magnet Clamp Screw	P-79260-3	2
70	Eccentric Stud	P-75560	1
71	Retaining Ring	P-75586-2	1
72	Washer	P-4532	1
73	Washer	P-63990	1
74	Washer	P-64197	1

*Code 131 Ringers only.

†Furnished with ringer only when internal capacitor is used.

‡Furnished with ringer only when external capacitor is used.

These are small type frequency selective ringers for the K-500 type telephone. No. 131 type has volume control; No. 133 type has no volume control. Both are offered in three groups of frequency selection: HA—Harmonic, HB—Synchromonic, and HC—Decimonic.

SPECIAL NOTE: On ringers where a condenser is furnished with the ringer (.1, .25, .35 MFD.); when the Exclusion or Lift-to-Talk features are desired, a different condenser or capacitor is required. In this case, the prefix symbol "E" appears before the ringer code number. Example: E-131-HA is used to indicate a No. 131 Biased Ringer of 33⅓ Harmonic Frequency with Volume Control for the Exclusion and Lift-to-Talk features telephone.

Special Capacitor and Bracket Assemblies are needed to convert a No. 131 or No. 133 ringer to these new features. The piece numbers vary with the type of ringer.

No. P-79742-1:
E-131-HA-2, E-131-HA-3, E-131-HB-3, E-131-HB-4, E-131-HC-2, E-131-HC-5, E-133-HA-2, E-133-HA-3, E-133-HB-3, E-133-HB-4, E-133-HC-2, E-133-HC-5

No. P-79742-2:
E-131-HB-2, E-131-HC-4, E-133-HB-2, E-133-HC-4

No. P-79742-3:
E-131-HA-1, E-133-HA-1

TABLE I
INDEX NO. 62 ARMATURE AND WEIGHT ASSEMBLY

Series	Frequency	Armature and Weight Assembly Part No.
HA	33⅓	P-75579-1
	50	P-75579-2
	66⅔	P-75579-3
	16⅔	P-75579-4
	25	P-75579-5
HB	30	P-75579-6
	42	P-75579-7
	54	P-75579-8
	66	P-75579-9
	16	P-75579-10
HC	20	P-75579-11
	60	P-75579-12
	30	P-75579-13
	40	P-75579-14
	50	P-75579-15

TABLE II — CAPACITOR SIZES

Series	Frequency	Capacitor Size	Capacitor Assembly Part No.
HA	33⅓	.35 MFD	P-75583-3
	50	.10	P-75583-1
	66⅔	.10	P-75583-1
	16⅔	*	*
	25	*	*
HB	30	*	*
	42	.25	P-75583-2
	54	.10	P-75583-1
	66	.10	P-75583-1
	16	*	*
HC	20	*	*
	60	.10	P-75583-1
	30	*	*
	40	.25	P-75583-2
	50	.10	P-75583-1

* Denotes .47 MFD internal capacitor provided in the network.

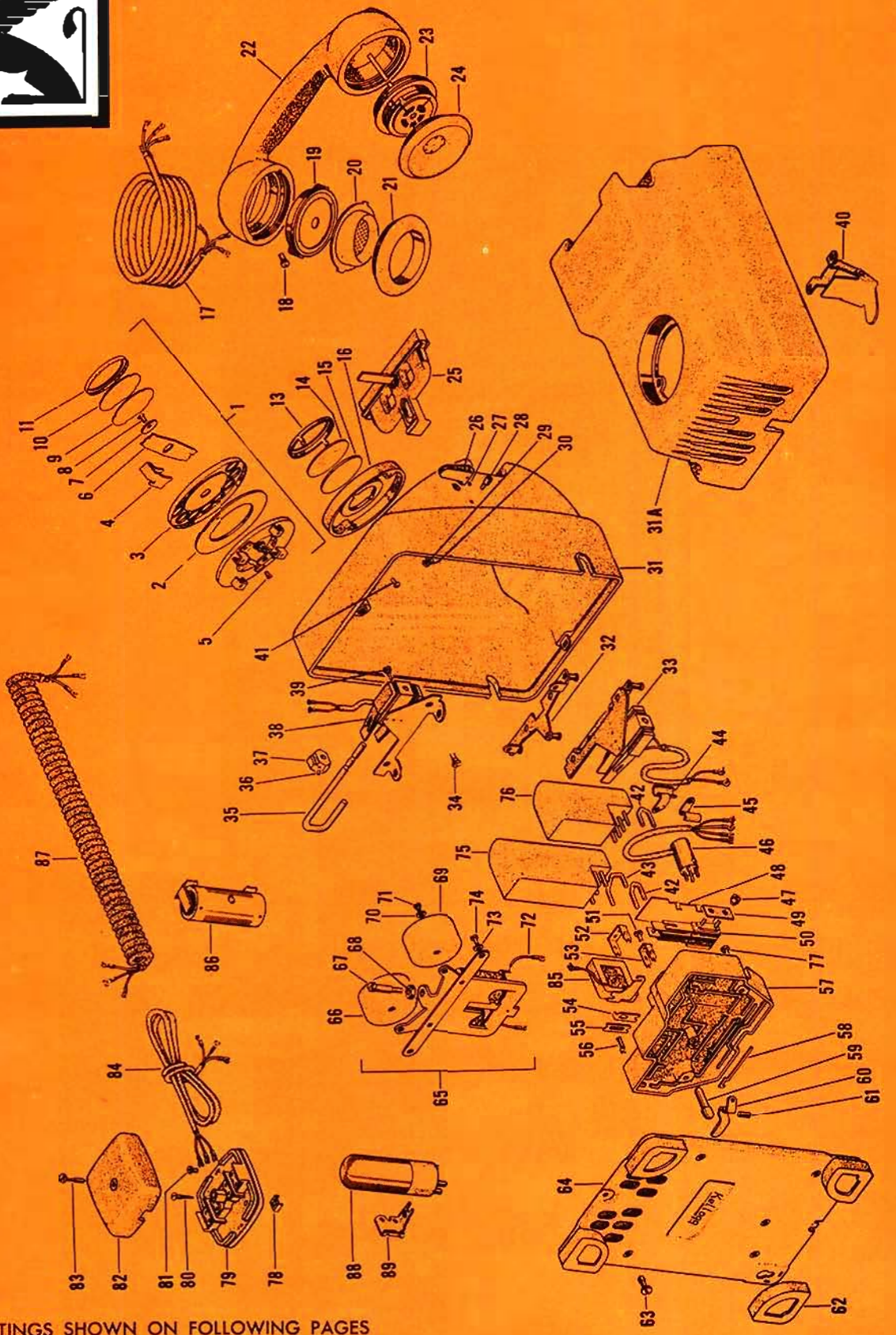
"E"-131 Ringers and "E"-133 Ringers Exclusion and Lift-to-Talk Features

TABLE II-A — CAPACITOR SIZES

Series	Frequency	Capacitor Size	Capacitor Assembly Part No.
HA	33⅓	.35 MFD	P-79742-3
	50	.10	P-79742-1
	66⅔	.10	P-79742-1
	16⅔	*	*
	25	*	*
HB	30	*	*
	42	.25	P-79742-2
	54	.10	P-79742-1
	66	.10	P-79742-1
	16	*	*
HC	20	*	*
	60	.10	P-79742-1
	30	*	*
	40	.25	P-79742-2
	50	.10	P-79742-1

* Denotes .47 MFD internal capacitor provided in the network.

The above changes in Piece Parts Numbers indicate the Kellogg K-500 telephone series Convenience Items — the Exclusion Feature and Lift-to-Talk Feature that permit a private conversation even if the telephone is on a series of extension lines or party line. To do this, capacitors or condensers designed differently from the standard K-500 ringer capacitors are required. See Ringers in the Coded Apparatus Section for further details about this unusual feature.



PARTS LISTINGS SHOWN ON FOLLOWING PAGES

How to Order

Piece parts for the 1000 Series Masterphone should be ordered by piece number.

To determine the piece number of any part for these telephones first identify the part by item number from the drawing on page . . . . . Refer to the charts on the following pages and from the part number lists associated with each item number determine the part number of the part for the particular telephone for which the replacement is required.

No not order parts by item number. If the piece part number connot be determined from the following charts the part can be ordered by specifying the item number from the drawing on page . . . and the code number of the telephone for which the port is required. For example, to order a sub-base assembly for a D-1004 Masterphone order as follows: Item No. 57, for D-1004 Masterphone—Sub-Base Assembly.

(The chart below gives the piece number for this item—in this case Piece No. 70720.)

ITEM	DESCRIPTION	USED ON MASTERPHONE CODE NO.	COMPLETE ASSEMBLY NUMBER	REMARKS AND PIECE PART NUMBERS
1-11	Dials	On all Dial Masterphones	10-D, 10-DO, 10-G	For replaceable parts refer to "Dials" in this section.
12-16	Dummy Plug		64967	Item 13 Retaining Ring Item 14 Protector for Number Card Item 15 Number Card Item 16 Dummy Plug Item 41 Mounting Screw
17	Handset Cord Fabric		770-MFP	For information on fabric and neoprene jacketed cords refer to "Cords" in Apparatus Section.
17	Handset Cord, Neoprene		3000	
18-24	Handset		46-C	For replaceable parts refer to "Handsets" in this section.
25	Plunger Bar			
26	Thumb Lever		69519	
27	Screw		69521	For Piece Part Ordering Information refer to "Desk Housing" below.
28	Stub		69868	
29	Lockwasher		63766	
30	Nut		63952	
31	Desk Housing (Common Battery)	1000 1040 1004 1042 1005 1043 1007 1050 1008 1060 1020 1062 And dial Masterphones with above numbers	64892	Item 25 Plunger Bar Assembly 64819 Item 31 Desk Housing—Bakelite 71302 Desk Housing—Metal 73809 Item 32 Support Bracket Assembly 64810 Item 34 Screw 64820
31	Desk Housing (Common Battery with Press-to-Talk Switch)	1001 D-1001 1041 D-1041 1061 D-1061 1063 D-1063	69535	Item 25 Plunger Bar Assembly 69518 Item 26 Thumb Lever 69519 Item 27 Screw 69521 Item 28 Stud 69868 Item 29 Lockwasher 63766 Item 30 Nut 63952 Item 31 Desk Housing 70878 Item 32 Support Bracket Assembly 69514 Item 34 Special Screw 64820 Item 35 Actuating Arm 69510 Item 36 Screw 69521 Item 37 Cam 69511 Item 38 Switch Assembly 69509 Item 39 Screw 69512
31	Desk Housing (Magneto)	1070	70747	Item 25 Plunger Bar Assembly 64819 Item 31 Desk Housing 70726 Item 32 Support Bracket Assembly 64810 Item 34 Special Screw 64820

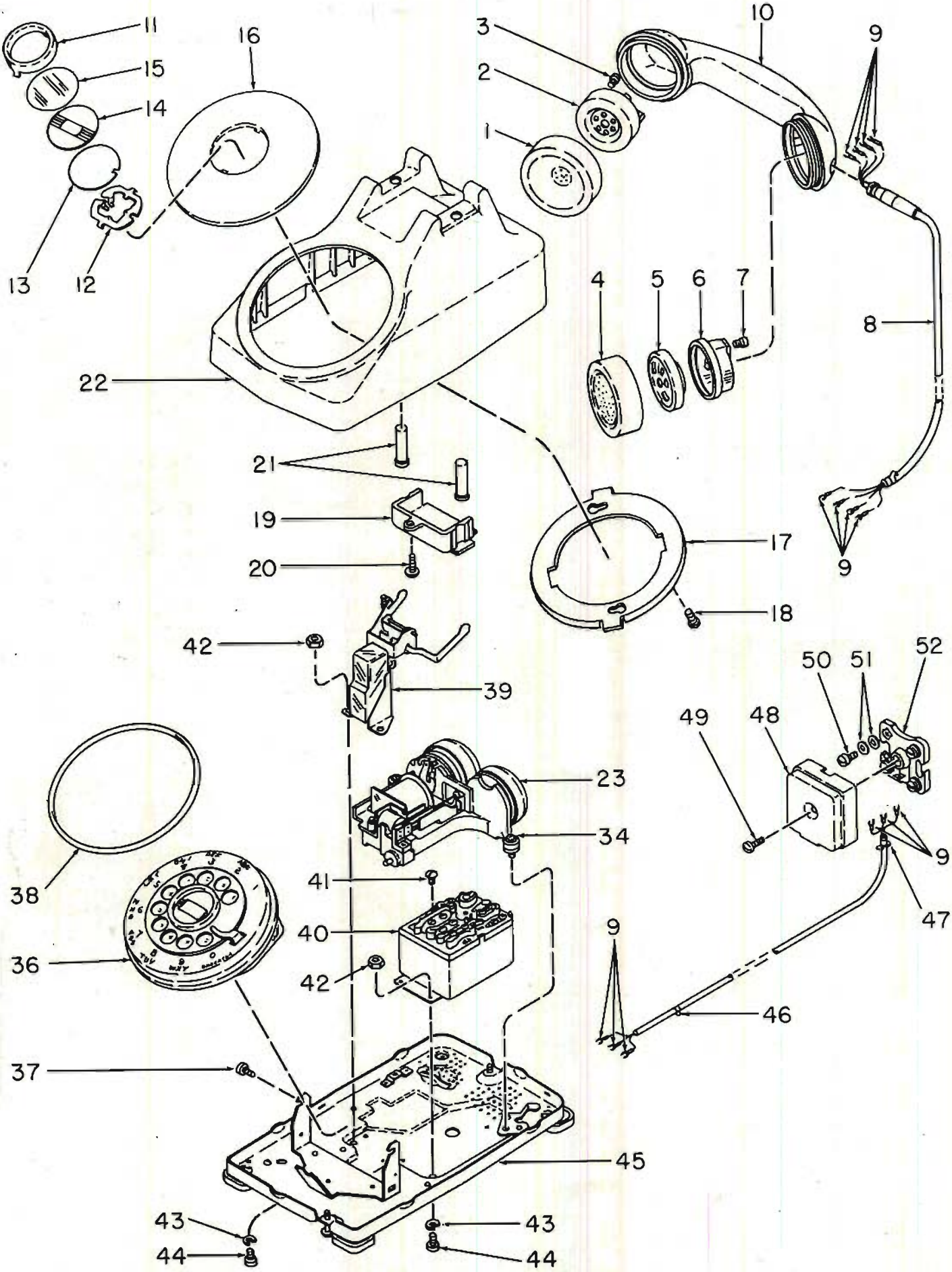
1000 SERIES MASTERPHONES (Cont'd)

ITEM	DESCRIPTION	USED ON MASTERPHONE CODE NO.	COMPLETE ASSEMBLY NUMBER	REMARKS AND PIECE PART NUMBERS
31	Desk Housing (Magneto with Press-to Talk Switch)	1071	71113	Note: This housing same as Housing 69535 except for Item 31 Desk Housing specify 71114 instead of 70878.
31	Desk Housing	D-1081	70350	Note: Housing same as Housing 69535 except Item 38 Switch Assembly for 70350 to be 70344.
31	Desk Housing	1081	70351	Item 38 Switch Assembly for Pc. 70351 to be Pc. 70345.
31	Desk Housing	1021	71189	Item 38 Switch Assembly for Pc. 71189 to be Pc. 71190.
31-A	Wall Housing (Common Battery)	1100 1142 1104 1150 1105 1160 1120 1162 1140	64805	Item 25 Plunger Bar Assembly 64819 Item 31A Wall Housing 70879 Item 32 Support Bracket Assembly 64810 Item 34 Screw 64820 Item 40 Switch Arm Assembly 64814
31-A	Wall Housing (Common battery with Press-to-Talk Switch)	1101 D-1101 1141 D-1141 1161 D-1161 1163 D-1163	69536	Item 25 Plunger Bar Assembly 64819 Item 26 Thumb Lever 69519 Item 27 Screw 69521 Item 28 Stud 69868 Item 29 Lockwasher 63766 Item 30 Nut 63952 Item 31A Wall Housing 70880 Item 33 Switch & Support Bracket Assembly 69530 Item 34 Special Screw 64820 Item 35 Actuating Arm 69510 Item 36 Screw 69521 Item 37 Cam 69511 Item 39 Screw 69512 Item 40 Switch Arm Assembly 64814
31-A	Wall Housing (Magneto)	1170	70748	Same as Wall Housing Pc. 64805 except Item 31-A to be Pc. 70881 instead of Pc. 70879.
31-A	Wall Housing (Magneto with Press-to-Talk Switch)	1171	71153	Same as Wall Housing Pc. 69536 except Item 31-A to be Pc. 71154 instead of Pc. 70880.
31-A	Wall Housing	1121	71192	Item 33 switch and support bracket assembly for Piece No. 71192 is Piece No. 71193.
31-A	Wall Housing	1181	70349	Item 33 switch and support bracket for Piece No. 70349 is Piece No. 70347.
31-A	Wall Housing	D-1181	70348	Item 33 switch and support bracket assembly for Piece No. 70348 is Piece No. 70346.
32	Support Bracket Assem.		64810	For Housings Piece Nos. 64892, 70747, and 64805.
32	Support Bracket Assem.		69514	For Housings Pc. Nos. 69535, 71113, 71192, 70349, 70348.
33	Support Bracket and Switch Assembly		69530	For Housings Pc. Nos. 69536, 71153, 71192, 70349, 70348.
34	Screw		64820	
35	Actuating Arm		69510	
36	Screw		69521	

ITEM	DESCRIPTION	USED ON MASTERPHONE CODE NO.	COMPLETE ASSEMBLY NUMBER	REMARKS AND PIECE PART NUMBERS
37	Cam		69511	
38	Switch Assembly		69509	For Piece Part Ordering Information refer to Desk and Wall Housings above.
39	Screw		69512	
40	Switch Arm Assembly		64814	
41	Screw (Dial and Dummy Plug)		64867	Refer to "Dials" above for application of this screw.
42	Strap		64865	Strap for dial jacks, 2-4, and for stripped telephones.
43	Strap		69559	Strap, used when condenser is not used.
44	Clamp		69585	For holding "Press-to-Talk" switch cord against Desk Housing
45	Clamp		64864	For holding dial cord against housing. Also for "Press-to-Talk" on wall housing.
46	Dial Cord and Plug	All dial Masterphones except —81	64984	
46	Dial Cord and Plug	D-1081, D-1181	70353	
47	Nut, Spring Assembly		64853	Part of Sub-Base Assembly.
48	Cover, Spring Assembly		64856	Part of Sub-Base Assembly.
49	Plate, Spring Assembly		65890	Part of Sub-Base Assembly.
50	Spring Assembly		64833	Part of Sub-Base Assembly.
51	Screw, Terminal		63262	
52	Terminals, Double Screw		64911	
53	Terminals, Single Screw		64912	
54	Link, Induction Coil		64915	
55	Link, Condenser		64914	
56	Terminal, Pin Plug			Not furnished separately.
57	Sub-Base Assembly	1000 1140 1001 1141 1050 1142 1060 1150 1061 1160 1062 1161 1063 1162 1070 1163 1100 1170 1101 D-1021 1120 D-1104 1121 D-1107	64910	Includes: Item 42, Strap Item 43, Strap Item 47, Nut, Spring Assembly Item 48, Cover, Spring Assembly Item 49, Plate, Spring Assembly Item 50, Spring Assembly Item 51, Screw Terminal Item 52, Terminal, Double Screw Item 53, Terminal, Single Screw Item 54, link, Induction Coil Item 55, Link, Condenser Item 56, Terminal, Pin Plug (not furnished separately) Item 58, Wire (not furnished separately) Item 59, Plunger, Switch Hook (not furnished separately) Item 60, Switch, Lever Assembly (not furnished separately) Item 61, Pivot Pin (not furnished separately) Item 77, Screw for Handset Cord

1000 SERIES MASTERPHONES (Cont'd)

ITEM	DESCRIPTION	USED ON MASTERPHONE CODE NO.	COMPLETE ASSEMBLY NUMBER	REMARKS AND PIECE PART NUMBERS
57	Sub-Base Assembly	1004 1042 1005 1104 1020 1105 1021 D-1004 1040 D-1007 1041 D-1020	70720	See note for Piece No. 64910, Item 57
57	Sub-Base Assembly	1043	71171	See note for Piece No. 64910, Item 57
57	Sub-Base Assembly	1071 D-1181 1081 D-1081 1171 D-1181	70337	See note for Piece No. 64910, Item 57
57	Sub-Base Assembly	D-1008	70722	See note for Piece No. 64910, Item 57
58	Wire			Not furnished separately.
59	Plunger, Switch Hook			Not furnished separately.
60	Switch, Lever Assembly			Not furnished separately.
61	Pivot Pin			Not furnished separately.
62	Rubber Foot Assembly		64882	For Desk Base Plate, Piece No. 64880.
63	Lock Screw, Desk Housing		64868	For Desk Base Plate, Piece No. 64880.
64	Base Plate with Rubber Feet	All Desk Masterphones	64880	
64	Base Plate less Rubber Feet	All Wall Masterphones	64879	
65-74	Ringers		122-124 types	For replaceable parts refer to "Ringers" in this section.
75	Condenser	All Master-phones	No. 225	
76	Induction Coil, Common Battery	All C.B. Masterphones	No. 113-A	
76	Induction Coil, Local Battery	All L.B. Masterphones	No. 114-A	
77	Screw for Handset Cord		64870	See note for Item 57, Piece No. 57, above.
78-83	Line Connecting Block		No. 27	For replaceable parts see "Connecting Blocks" in this section.
84	Base Cord, Fabric Covered		No. 769-MFP	Three Conductor Type.
84	Base Cord, Neoprene Jacketed		No. 3000	Three Conductor Type.
84	Base Cord, Fabric Covered		No. 771-MFP	Four Conductor Type.
85	Retard Coil		No. 64-A	For 1020-1120 Masterphones with or without dial.
85	Retard Coil		No. 64-B	For 1081-1181 Masterphones with or without dial.
86	Vincent Rare Gas Relay		No. RTC-2	For reducing line induction on divided ringing circuits.
87	Koiled Kord		No. 1000	Can be furnished instead of straight cord if desired.
88	Western Electric Tube		No. 333-A	For polarity selective ringing with biased ringers.
89	Bracket		64979	For mounting Gas Relays and Western Electric tubes in Kellogg 1000 Series Masterphones.


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Index No.	Name of Part	Part No.	Quantity
	Handset (Code No. 65-C)		
1	Receiver Cap	P-75381	1
2	Receiver Unit	P-75400	1
3‡	Terminal Screw	P-75386	2
4	Transmitter Cap	P-75380	1
5	Transmitter Unit	P-75399	1
6	Transmitter Holder Assembly	P-75384	1
7‡	Terminal Screw	P-75386	2
8	Handset Cord (Code No. 3030)		1
9	Terminal	P-75325	24*
10	Handle	P-75383	1
	Number Card Assembly	P-75418	1
11	Retainer Ring	P-75412	1
12	Retainer Spring	P-75417	1
13	Retainer Disc	P-75416	1
14	Number Card	P-75415	1
15	Protector	P-75413	1
	Dummy Plug Assembly	P-75419	1
16	Dummy Plug	P-75411	1
17	Clamping Plate	P-75420	1
18	R.H. Self Tapping Screw	P-75407-4	2
	Housing-Plunger Assembly	P-75401	1
19	Plunger Retainer	P-75405	1
20	R.H. Self Tapping Screw	P-75407-2	1
21	Plungers	P-75406	2
22	Housing Assembly	P-75402	1
23	Ringer (Code No. 130 or 131)		1
36	Dial (Code No. 19-G)		
37§	Mounting Screw	P-75487-2	3
38	Vinyl Gasket	P-75474	1
	Base Assembly	P-75338	
39	Cradle Switch Assembly	P-75300	1
40	Network Assembly	P-75335	1

*Total of 22 in telephones equipped with ringer No. 131. (Harmonic ringer requires 2 less leads.)
†For piece parts information on 130, 131, and 133 ringers, refer to the ringers in this section.
‡Total quantity of 4.
§Total quantity of 7.

Index No.	Name of Part	Part No.	Quantity
41	Terminal Screws	P-75392-2	15
42	Hex Nut	P-67093	6
43	Spring Washer	P-54336-5	6
44	Bind HD Machine Screw	P-69116-3	6
45	Base Plate	P-75327	1
	Mounting Cord (Code No. 3031)		
46	Cord Clamp Hook	P-75351	1
47	Cord Strain Relief Band	P-75410	1
	Connecting Block (Code No. 28)		
48	Cover	P-75542	1
49	Cabinet Lock Screw	P-75545	1
50§	Bind Hd Machine Screw	P-75487-2	4
51	Washer	P-75544	8
52	Base Assembly	P-75540	1

§Total quantity of 7.

TRANSMITTERS

Nos. 121-C and 121-L COMMON PARTS

Part No.	Description
62178	Front
60416	Terminal
55806	Screw (Terminal
59032	Screw
45545	Washer
5396	Screw (Trans. Back)

OTHER PARTS

66521	Transmitter (121-C)
66522	Transmitter (121-L)

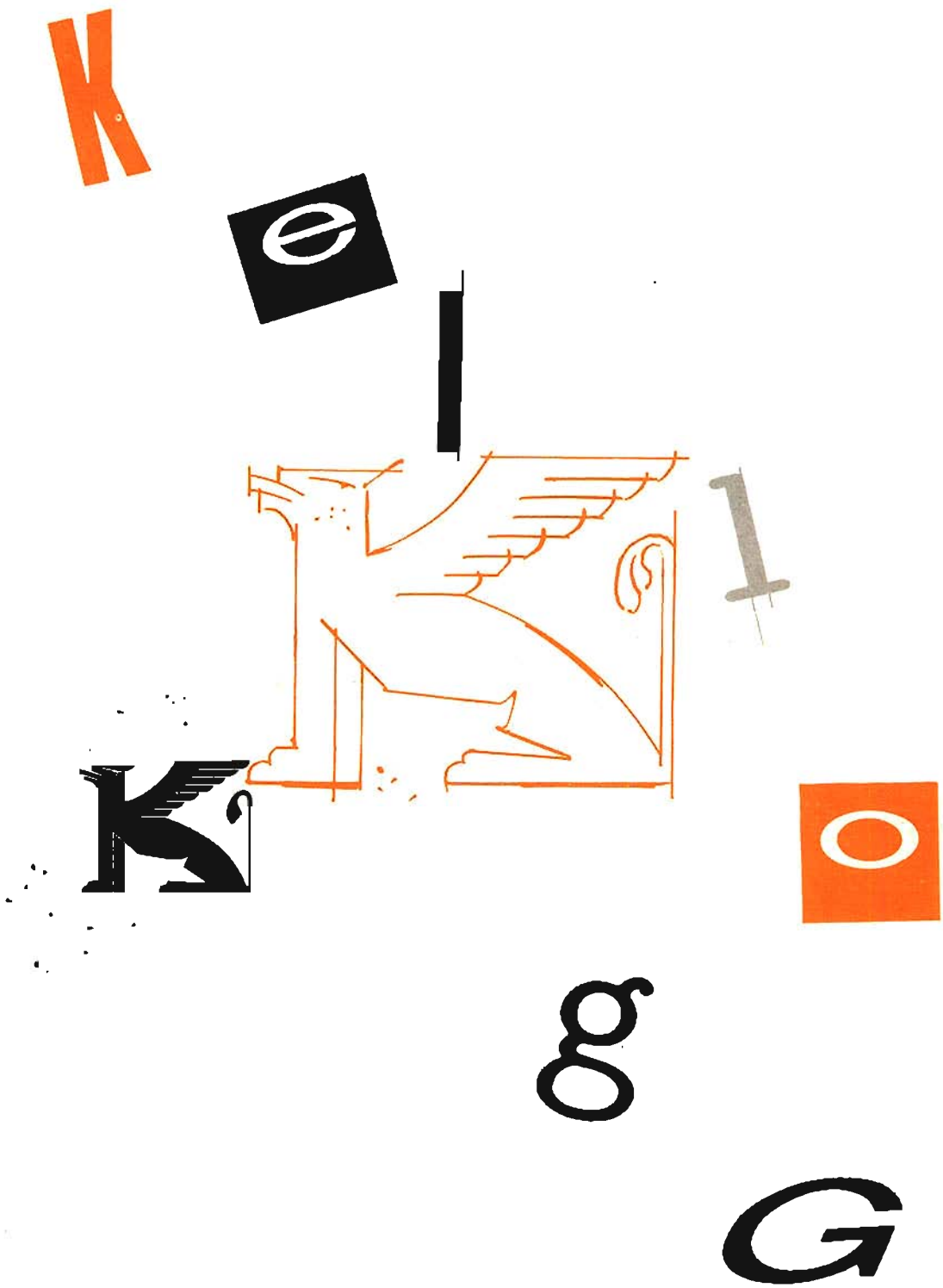
Nos. 157-C and 157-L COMMON PARTS

Part No.	Description
62178	Front
60416	Terminal
55806	Screw (Terminal)
59032	Screw
45545	Washer
35623	Screw
39911	Back
1916	Weight
2875	Nut
4187	Washer

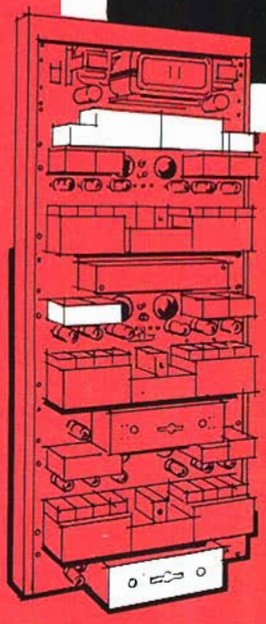
OTHER PARTS

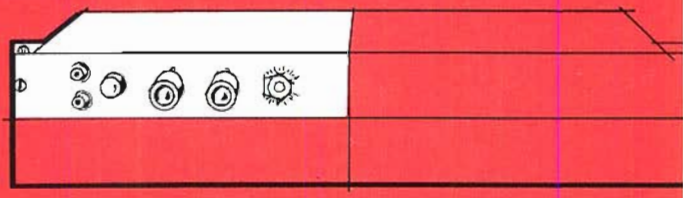
66521	Transmitter (157-C)
66522	Transmitter (157-L)

NOTE: Piece Parts for the Transmitters used in the No. 1000 Type and K-500 Type telephone are listed under telephones.

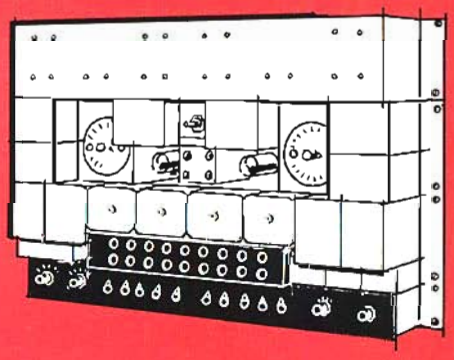


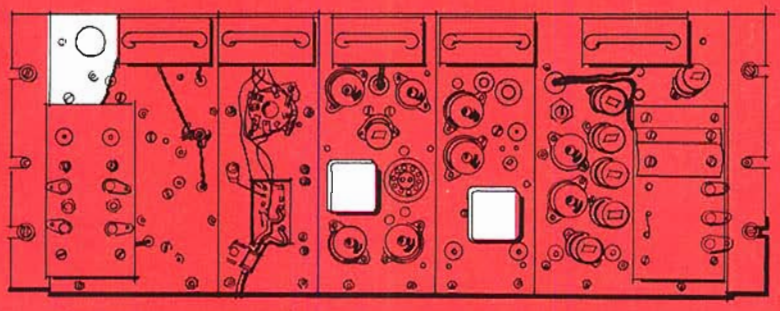
- carrier equipment
- microwave and radio equipment
- repeater equipment





ELECTRONIC PRODUCTS 05





FOREWORD

The extraordinary demand for telephone service in this country and elsewhere has contributed greatly to the rapidly increasing use of wire transmission equipment in the independent telephone field. Because of its greater economy compared with wire construction costs, carrier equipment in many instances has proven to be the logical choice where new circuits are required. Similarly modern voice frequency repeaters are improving transmission on wire and cable circuits more economically than is possible by alternate means.

Today progressive telephone companies, large and small, are calling for more and more carrier and repeater apparatus. To meet these needs Kellogg presents in this catalog a full complement of this equipment—equipment which has been proven through years of service to be the finest available. Telephone companies who purchase Kellogg wire transmission products not only buy quality but also assurance that they have made an investment in the future—an investment which will repay them manyfold both in revenue and in customer satisfaction.

Characteristic of all electronic equipment, new concepts affecting carrier and repeater design and circuitry are constantly being introduced. Kellogg, through an extensive and carefully planned development program, is continuously making available wire transmission equipment incorporating the latest proven design features and component developments. Transistorization—miniaturization—printed circuitry plug in components — plug-in circuit elements — all will be found in equipment described in bulletins and supplements to this catalog. Be sure to write for yours. Remember!—Whatever your wire transmission needs may be, Kellogg will supply them.



F M TELEPHONE CARRIER SYSTEMS

Estimating Performance of FM Telephone Carrier Systems on your circuits is not difficult. The examples and charts on these pages show you how.

When planning the use of carrier on a circuit, it is necessary to know the attenuation, or loss of that circuit at the carrier frequencies involved. Just as when planning physical circuits for dial telephone systems, the maximum DC loop resistance places a limit on the loop length for various gauges of wire, so the carrier frequency attenuation limits the distance over which subscriber carrier will operate reliably.

Since the attenuation increases at higher frequencies, and is not the same for cable as for open wire, or for copper as for iron, we must determine the attenuation for each different circuit makeup and carrier channel separately. Ideally, the actual carrier frequency attenuation of each circuit under consideration should be measured but the equipment to do this is not normally at hand. Generally the anticipated circuit attenuation may be calculated from published data for typical circuits.

To calculate the attenuation of a given circuit, merely calculate the attenuation of each of its parts and add them up. Also it is wise to add an additional 3 db of attenuation to account for the mismatch loss at each junction of open wire and cable. Circuits whose total attenuation is 35 db or less at the operating frequency will in general be suitable for FM Subscriber Carrier.

A table, listing the approximate attenuation for various types of wire circuits follows _____ for convenience in estimating the performance of FM Carrier on a given circuit.

As an example, suppose it is desired to determine whether three channels of FM Carrier can be applied to the following typical rural subscriber circuit:

Section 1: 0.5 miles, 22 gauge lead-paper entrance cable
Section 2: 7.0 miles, .080 30% copper-clad steel
Section 3: 3.0 miles .109 iron wire

From the table, it is found that the following losses may be expected;

	Attenuation Per Mile (db)			Total Attenuation (db)		
Facility	Chan. 1	Chan. 2	Chan. 3	Chan. 1	Chan. 2	Chan. 3
0.5 miles 22 cable	8.1	9.0	10	4	4.5	5
7.0 miles .080 30% cond.	.44	.47	.49	3.1	3.3	3.4
3.0 miles .109 Steel	2.9	3.7	4.2	8.7	11.2	12.6
				15.8	19.0	22.0
Allowance for mismatch at junction of cable and open wire				3.0	3.0	3.0
				18.8	22.0	25.0

Comparing the estimated loss of 25 db at the highest frequency with the conservative 35 db rating of the system, it appears that all three channels should provide exceptionally good circuits with at least 10 db of gain margin. Actually the maximum attenuation over which FM Carrier will operate under OPTIMUM conditions is 55 db, but 35 to 40 db rating is used for most systems design to insure satisfactory performance under most conditions of line noise and crosstalk. The 10 db of gain margin obtained in the example above can be interpreted to indicate the amount of additional attenuation that can be tolerated without any degradation in circuit quality. Obviously, this represents a simple application, but the same approach can be used in more involved systems.

In general FM Telephone Carrier Systems may be used with line transposition schemes which are adequate for standard low frequency carrier systems. When FM Telephone carrier systems are used on a wire facility on which telephones or branch lines are bridged, a Type F-1 Pole mounted filter will be required. This filter is installed between the telephone line and the telephone drop. Similarly if branch lines or other facilities or equipment are bridged on a carrier line, isolation filters will be required. In circuit arrangements where it is necessary to drop off one or more carrier channels at an intermediate point or where one or more carrier channels are to be transferred from one wire facility to another, special filter units must be used. Because of the many possible circuit arrangements and wide variety of filters available it is not practical to list them in this bulletin. A manual covering the subject is available and will be sent on request by writing to the Electronic Products Department, Chicago, Illinois, or to the Kellogg Branch nearest you.

The services of the Kellogg's Carrier Systems Engineers are available to you on a no charge basis to help you plan the most economical FM Carrier system for your requirements.

ATTENUATION DATA

TYPE OF CIRCUIT		PHYSICAL			CARRIER CHANNEL (DATA IS IN db PER MILE — FIGURES ARE APPROXIMATE)									
		LOOP RESISTANCE PER MILE (OHMS)	ATTENUATION AT 1,000 CPS (db)		1	2	3	4	5	6	7	8	9	10
CABLE	PLASTIC	19	92	1.2	5.0	5.6	6.3	6.8	7.4	7.8	8.4	8.8	9.4	9.9
		22	184	1.6	6.8	7.3	7.8	8.3	8.8	9.3	9.7	10.2	10.7	11.2
	LEAD PAPER	16	42	.69	3.0	3.6	4.2	4.8	5.0	5.3	5.7	6.2	6.4	6.9
		19	85	1.1	5.5	6.5	7.5	8.0	8.6	9.2	9.9	10.6	11.1	11.8
		22	170	1.5	8.1	9.0	10.0	11.0	12.0	12.8	13.5	14.6	15.2	16.0
		24	270	2.2	10.5	11.7	12.5	13.5	14.6	15.4	16.4	17.5	18.2	19.1
		26	460	2.7	14.2	15.5	16.7	17.9	18.4	19.3	20.2	21.5	22.3	23.0
OPEN WIRE COPPER-CLAD	30%	.165	12.8	.097	.17	.19	.22	.26	.30	.28	.33	.37	.41	.45
		.128	21.3	.140	.22	.24	.27	.30	.33	.35	.38	.41	.43	.46
		.104	32.3	.188	.30	.33	.35	.36	.38	.40	.42	.45	.46	.48
		.080	54.5	.262	.44	.47	.49	.50	.52	.54	.56	.58	.60	.62
	40%	.165	9.8	.075	.16	.20	.23	.27	.29	.32	.35	.37	.39	.42
		.128	16.2	.111	.18	.23	.27	.30	.34	.38	.42	.45	.49	.53
		.104	24.6	.152	.24	.28	.31	.34	.49	.43	.47	.51	.55	.58
		.080	41.6	.219	.34	.37	.40	.44	.48	.51	.54	.58	.62	.65
	COPPER	.165	4.0	.04	.22	.28	.33	.38	.43	.47	.51	.56	.59	.63
		.128	6.7	.05	.26	.32	.38	.44	.49	.54	.58	.63	.68	.71
		.104	10.0	.07	.29	.36	.43	.49	.55	.60	.65	.71	.74	.78
	IRON	.109	70	.25	2.9	3.7	4.2	4.6	5.0	5.3	5.7	5.9	6.2	6.4

TYPE FM TELEPHONE CARRIER CHANNEL FREQUENCIES

Channel Number	Line Frequencies in Kilocycles			
	"A" Allocation		"B" Allocation	
	West	East	West	East
1	50	65	57.5	72.5
2	80	95	87.5	102.5
3	110	125	117.5	132.5
4	140	155	147.5	162.5
5	170	185	177.5	192.5
6	200	215	207.5	222.5
7	230	245	237.5	252.5
8	260	275	267.5	282.5
9	290	305	297.5	312.5
10	320	335	327.5	342.5

Circuit attenuations are shown at the highest frequencies used in each channel.

When A and B Frequency Allocations are used on the same pole lead, crosstalk coupling at carrier frequency need be down only 25-30 db for proper operation.

FM TELEPHONE CARRIER SYSTEMS

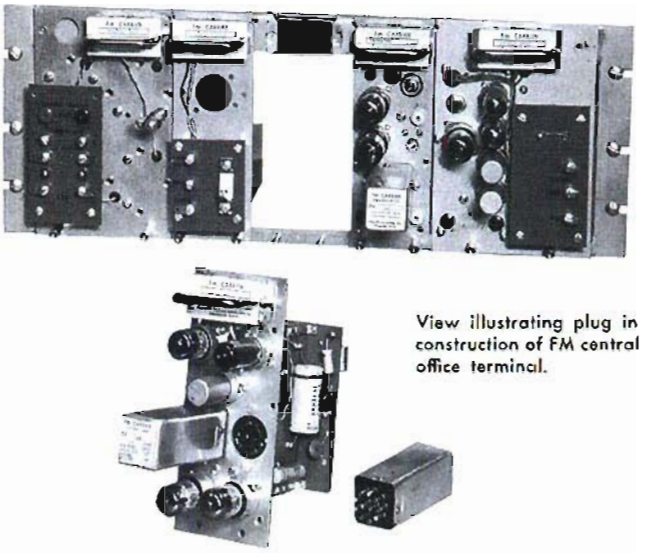
GENERAL

FM Telephone Carrier Systems manufactured expressly for Kellogg by the Panhandle Electrical Construction Company feature highest quality unitized construction, superior performance and greatly simplified installation and maintenance. They provide an economical means of adding up to ten additional ringdown or dial trunks of toll quality or of serving up to 100 new rural subscribers on a fully selective ringing basis on a single pair of wires. Two ten-channel frequency allocations are available so that with two wire circuits on a pole lead the service described normally may be doubled without objectionable crosstalk between circuits.

Panhandle FM Telephone Carrier Systems have been giving excellent telephone service for over 5 years and are being used regularly by the largest telephone operating companies. Kellogg highly recommends this equipment and is pleased to offer it on an exclusive basis to all independent telephone companies in the United States and to all operating companies abroad.



FM subscriber carrier terminal equipped for divided ringing.



View illustrating plug in construction of FM central office terminal.

DESIGN — APPLICATION

FM Telephone Carrier equipment is designed to provide a low cost and flexible method of deriving additional trunk or subscriber circuits on existing wire lines. Each channel is complete in itself and no common equipment is required. Operating frequencies are above most conventional carrier equipment so that Type FM equipment can be installed on the same wire circuit with existing carrier systems with little or no coordination problems.

Type FM Carrier equipment has been "unitized" to provide extreme flexibility for both application and field service. All functional units are of the plug-in type. Transmitter plug-in units are identical for all channels. Similarly receiver plug-in units are identical.

Separate channel receive and transmit filters for each operating frequency are provided on a plug-in basis. Channel frequencies are established by plug-in crystal units assuring the highest order of oscillator stability.

The plug-in "Signal and Termination Unit" determines whether the carrier is for trunk application with E & M or ringdown signaling or for subscriber service with divided, bridged or biased ringing.

Power requirements for the carrier are supplied by a plug-in power supply unit. Units available permit operation from either a 117 volt, 60 cycle ac power source or from 48 volt switchboard battery.

Installation of FM Telephone Carrier Systems is made extremely simple due in part to the design features discussed above and also to the fact that crystal controlled oscillator frequencies permit factory preadjustment. Thus in the majority of installations of this equipment *no adjustments whatsoever* are required either at the central office terminal or at the subscriber terminal. On marginal circuits or where for other reasons any adjustment may be required they may be quickly made using only a 20,000 ohm per volt voltmeter as detailed in the instruction manual accompanying each terminal.

In general FM Telephone Carrier Systems may be used with line transposition schemes which are adequate for standard low frequency carrier systems. Thus wire circuit facilities which are suitable for standard low frequency three channel systems without intermediate repeaters are in general suitable for the addition of at least three type FM channels. All channels will perform satisfactorily on up to 50 miles of either copper clad or copper circuits. Some entrance cable may be tolerated with no special treatment in the way of impedance transforming devices. As a rule of thumb, one mile of 22 gauge or larger cable may be tolerated at each end of a circuit on channels 1 to 4. On channels 4 to 10 if more than a half mile of cable is in the circuit, it may be feasible to pole mount the terminals and bring the drop circuit into the Central Office through the cable. In determining the suitability of a given wire circuit for use with higher frequency carrier it is always advisable to make a transmission measurement of the circuit at the frequencies to be used.

When FM Telephone Carrier Systems are used on a wire facility on which telephone or way stations are bridged a Type F-1 Pole mounted filter will be required. This filter is installed between the telephone line and the telephone drop. Similarly if branch lines or other facilities or equipment are bridged on a carrier line isolation filters will be required. In circuit arrangements where it is necessary to drop off one or more carrier channels at an intermediate point or where one or more carrier channels are to be transferred from one wire facility on which telephone or way stations are bridged a of the many possible circuit arrangements and wide variety of filters required it is not practical to list them in this catalog. A manual covering the subject is available and will be sent

on request by writing to the Electronic Products Sales Department, Chicago, Illinois or to the Kellogg Branch nearest you.

FM Telephone Carrier Systems employ frequency modulation to efficiently utilize high frequencies with a simple and inexpensive carrier design. The use of frequency modulation enables the carrier system to have a very effective automatic gain control. Thus the voice level is independent of line loss variations over wide limits. Such variations occur under changing weather conditions particularly during wet weather and icing.

SYSTEM OPERATION

In trunk service FM Telephone Carrier Systems may be operated on either a ringdown signal basis or on an E & M signal basis. In ringdown service the necessary relay equipment and a timing circuit are provided in the signal unit to limit the ring duration to 10 seconds in the event of equipment or line failure. In dial service E & M signaling units are provided. These may be strapped to function with any normal trunk and on a special order basis can have A & B leads brought out to eliminate the need for external repeat coils.

In subscriber service the subscriber terminal is designed to operate from a 117 volt ac source only. It is equipped with a subscriber signal unit which furnishes talking battery and ringing voltage for subscriber telephones. 140 volts of ringing supply at 5 watts is supplied by each subscriber terminal. The subscriber terminal will operate properly with up to 1500 ohms of resistance in its drop circuit.

Standard subscriber terminals are equipped for divided ringing on a 10 party fully selective basis. By a change in strapping 5 party selectvie or 10 party semi-selective bridged ringing may be provided. When equipped with a special signal unit biased (superimposed) ringing is also available.

SPECIFICATIONS

POWER SOURCE—*Central Office Terminal* . . . 117 volts ± 10 volts 60 cycle ac or 48 volt dc from exchange battery (positive grounded).

POWER SOURCE—*Subscriber Terminal* . . . 117 volts ± 10 volts 60 cycle ac only.

AVERAGE POWER CONSUMPTION . . . 30 watts . . . (40 watts for subscriber terminal during ringing period).

CARRIER FREQUENCIES

CHANNEL NO.	"A" Allocation in Kilocycles WEST	"A" Allocation in Kilocycles EAST	"B" Allocation in Kilocycles WEST	"B" Allocation in Kilocycles EAST
1	50	65	57.5	72.5
2	80	95	87.5	102.5
3	110	125	117.5	132.5
4	140	155	147.5	162.5
5	170	185	177.5	192.5
6	200	215	207.5	222.5
7	230	245	237.5	252.5
8	260	275	267.5	282.5
9	290	305	297.5	312.5
10	320	335	327.5	342.5

When A and B frequency allocations are used crosstalk coupling at carrier frequency need be down only 24 to 30 db for proper operation.

MAXIMUM LINE ATTENUATION AT CARRIER FREQUENCY . . . 55 db

This represents the gain capability of the carrier system. In practice this gain is not normally obtainable due to crosstalk or noise characteristics of the wire facility. For instance if a wire circuit has appreciable length and severe power line exposure it may not be practical to utilize the equipment on a circuit longer than 35 db at carrier frequency.

VOICE FREQUENCY RESPONSE . . . *Trunk Service*—Flat within ± 3db from 250 cycles to 2500 cycles.

VOICE FREQUENCY RESPONSE . . . *Subscriber Service* Flat within 8 db of 1000 cycle response from 250-2500 cycles.

CARRIER FREQUENCY STABILITY . . . Maintained within ± .01% from −35°F to 140°F by a crystal controlled oscillator.

CARRIER LEVEL OUTPUT . . . ± 18 dbm nominal.

IMPEDANCE AT CARRIER LINE . . . 600/135 ohms.

DERIVED CIRCUIT LEVEL . . . 2 db below 1 milliwatt.

CARRIER RECEIVE LEVEL . . . Minimum −17 to −37 dbm depending on noise characteristics of circuit.

RESIDUAL NOISE . . . Carrier only, less than 0 dba with 55 db pad in carrier line F1 weighting.

MOUNTING SPACE . . . 7" per channel terminal on 19" equipment rack.

CLEARANCE, FRONT & REAR . . . 5" minimum, all necessary adjustments, connections and tubes are on the front so only this need be accessible.

TUBE COMPLEMENT

Type of Terminal	Tube Type 6T8	6U8	6AK6	6BJ6	6AN5	12AU7	50B5	6BE6*
FMCA } FMCB } All Types of ringing	1	5	2				1	1
FMSA	1	6					1	1
FMSA Superimposed Ringing	1	4	1	1	1		1	1
FMEA } FMEB }	1	4	2			2	1	1
FMRA } FMRB }	1	4	3				1	1

* Used only in Chan. 8-9-10

SUBSCRIBER TERMINAL:

RINGING OUTPUT . . . 140 volts at 5 watts nominal.

TALKING BATTERY . . . Provided by terminal.

TYPE OF RINGING . . . Divided: 10 party frequency selective or code selective.

Bridged: 5 party selective or 10 party semi-selective.

Biased (Superimposed) . . . Divided: 4 party selective or 8 party semi-selective.

Biased and bridged: 2 party selective or 2 way code.

PERMISSIBLE RESISTANCE IN DROP CIRCUIT . . . 1500 ohms maximum.

TRUNK SERVICE

Ringdown or E&M signaling—A&B leads may be provided on special order.

ORDERING INFORMATION

FM Telephone Carrier Systems should be ordered by code numbers. Each carrier terminal is completely described by the code number which consists of a group of letters and numbers specifying signaling desired, power supply to be used, and the carrier channel number.

The **FIRST** TWO letters of this code are the CARRIER TYPE.

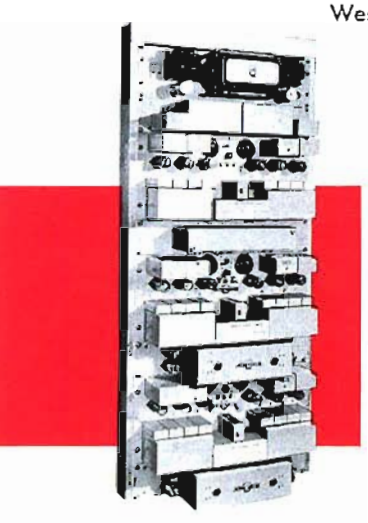
The **THIRD** letter is the SIGNALING designation.

The **FOURTH** letter is the POWER SUPPLY designation.

The **NEXT** GROUP, consisting of a NUMBER and TWO LETTERS, is the CHANNEL NUMBER and FREQUENCY allocation, and whether an EAST or WEST terminal.

EXPLANATION OF CODE

Carrier Type	FM	For all types of FM Carrier
Type of Terminal	R	Trunk-Ringdown signaling
	E	Trunk-E & M signaling
	C	Subscriber-Central office Terminal
	S	Subscriber-Subscriber terminal
Power Supply	A	117 volt, 60 cycle, ac power
	B	48 volt switchboard battery
Channel and Terminal.		First digit is CHANNEL NUMBER. First letter (A or B) designates frequency allocation. Second letter (E or W) designates East or West terminal.



YPE 5 THREE CHANNEL CARRIER TERMINAL

For Superimposed, 20 cycle, Semi-Selective Ringing: specify "Superimposed Ringing" after the proper ordering code as given above.

EXAMPLE

To order a Type FM Carrier for subscriber service, with both terminals operating from 117 volt ac power, and the channel desired is Channel 1, using "A" (regular) frequency, the order would be coded as follows, with a separate identifying order number for East and for West terminals:

Quantity	Ordering Code
1	FMCA-1AE
1	FMSA-1AW

GENERAL

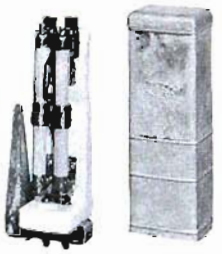
Orders for FM Telephone Carrier Systems should be accompanied by a complete description of the wire facilities on which the carrier is to be used. It is preferable to submit such data in sketch form showing the location of any and all bridged stations, branch lines, or other facilities or equipment on the line.

ACCESSORIES

TYPE F-1 FILTER—A pole mounted filter in a weatherproof housing designed to isolate a telephone drop from the carrier line. May be used for one or more channels of FM type carrier. Protection for the carrier side of the line is provided. Additional protection should be used on the drop side if the subscriber line exceeds two spans in length.

WEATHERPROOF CABINETS — A sturdy ventilated metal cabinet with built-in rack to hold FM carrier terminals. Designed for pole mounting and equipped with lock. Available in two sizes, one for holding two terminals and the other for five terminals.

EMERGENCY POWER SUPPLY—Emergency power supplies are equipped with transfer relay, inverter and trickle charger for 12 volt storage battery operation. All items are mounted on a 19" panel for rack mounting.



Type F-1 pole mounted filter.

KELLOGG TYPE 5 TELEPHONE TRANSMITTED CARRIER SYSTEMS

The Kellogg type No. 5 telephone carrier systems provide additional circuits over existing voice-frequency lines without any increase in outside plant facilities. Operation over these carrier circuits can be arranged on either a ringdown or E and M lead dial basis with full supervision and without interference with existing circuits.

The type No. 5 carrier systems can be superimposed on a straight physical circuit, on either one or both sides of a phantom group, or on the phantom circuit itself. It can be used on either copper, copper-steel, or iron open-wire lines or non-loaded cable circuits.

The additional telephone circuits of any carrier system are created by lifting the voice frequency currents of each new circuit by a modulation process to frequency bands above the voice range, thus "carrying" them over the circuit without conflicting with the existing voice frequency currents. At the receiving end the carrier frequency currents are separated from the voice currents by filters and are then lowered by demodulation to recover the same voice frequency currents as were originally impressed on each new circuit.

Kellogg type 5 carrier uses the transmitted carrier principle.

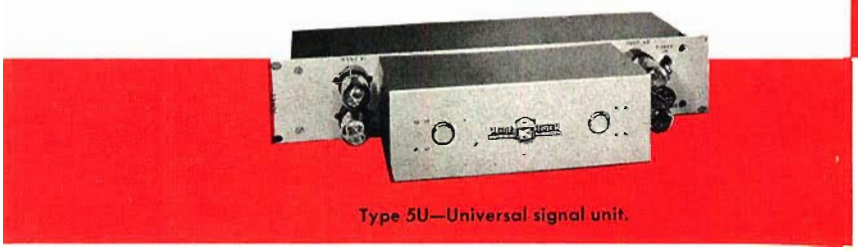
In a transmitted carrier system the carrier frequency generated by the oscillator in each channel is actually transmitted on the line. Most carrier systems suppress or filter out this oscillator frequency and transmit only the sum and/or difference of the oscillator frequency and the voice frequency. The use of the principle of transmitting rather than suppressing the oscillator or carrier frequency has many advantages.

No Synchronization Necessary . . . Transmitted Carrier Systems do not require separate oscillators in the receiving section of the carrier terminal, as each sideband is demodulated by the same carrier frequency which originally produced it. Thus there is no requirement for synchronizing or aligning oscillator frequency.

No Frequency Distortion . . . Since voice frequencies cannot be shifted by a difference in oscillator frequencies, Transmitted Carrier Systems are completely and continuously free of voice distortion due to frequency shift and speech is always clear and distinct.

No Carrier Leak Adjustments . . . Carrier leak is not a problem in Kellogg Transmitted Carrier Systems and no adjustments for eliminating or minimizing carrier leak are required.

Simplified Positive Signaling . . . In ringdown service, ringing is accomplished simply by blocking the transmitted carrier frequency during the ringing period. In dial service, the transmitted carrier is shifted, using a frequency modulated signal unit. Signaling in both services may be accomplished over lines having attenuation values greatly in excess of the allowable limits for the carrier talking circuit. Thus, signaling is always positive and foolproof.



Type 5U—Universal signal unit.

Also, signaling is accomplished within the limits of the transmitted side band and no additional frequency bands are required.

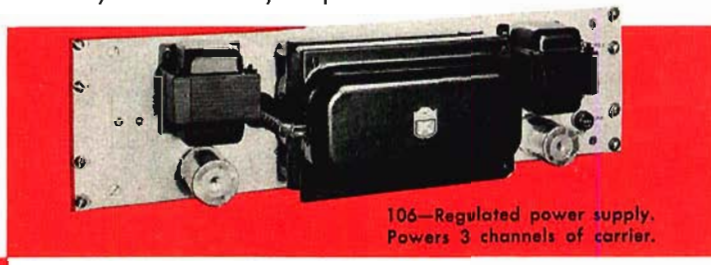
Installation, Operation and Maintenance Simplified . . . Since no adjustment of oscillator frequencies or carrier leak is required, Kellogg Transmitted Carrier Systems can be installed and placed in service in a very minimum of time. Because the carrier frequency is transmitted, measurements of terminal output and of the level of the carrier frequency received from the distant terminal may be easily and quickly made with a vacuum tube voltmeter without the use of a separate oscillator.

KELLOGG DESIGN AND PERFORMANCE FEATURES

Equal Performance on all 3 Channels—Kellogg Transmitted Carrier Systems are designed to give approximately equal performance in all three channels on a given wire circuit. Since the attenuation of a wire circuit increases with frequency, the terminal loop gain of the second and third channels has been increased above that of the first channel by approximately 11db. This means that on the average wire circuit, a second and third channel Carrier System can be installed above an existing first channel and give equally good performance without the addition of separate channel amplifiers or carrier repeaters even though the first channel may be working near its upper limit.

To give a commercial 6 db circuit, the first channel will operate over a line attenuation of 30 db measured at 10 kc and the second and third channels over a line attenuation of 41 db measured at 20 kc and 30 kc respectively. These figures can be translated into circuit miles of various wire and cable facilities by using attenuation tables. Transmitting levels and receiving gains are adjusted in each terminal by variable attenuation pads equipped with calibrated dials. In the first channel the transmitting level has a range from —10 dbm to +10 dbm in 2 db steps. In the second and third channels the maximum transmitting level is increased to +20 dbm and can be varied from 0 dbm in 2 db steps. The receiving gain is selected by a variable attenuation pad calibrated in twenty 1 db steps.

FREQUENCY SELECTION—The carrier frequencies were selected to conform with nationally accepted standards for allocation of frequencies and direction of transmission. The harmonic relationship of all carrier frequencies was selected to cancel out any possible interference between bands. The equivalent voice frequency band in each channel is approximately 250 to 2750 cycles per second.



106—Regulated power supply. Powers 3 channels of carrier.

REGULATED POWER SUPPLY—The No. 106 power supply is designed to maintain proper output voltages even though the ac line input voltage varies from 95 volts to 125 volts. One power supply has sufficient capacity to serve 3 carrier channels.

INSTALLATION FLEXIBILITY—The line filters are so designed that the carrier system may be connected before or after composite sets; thus reducing costly and complicated central office cabling in many cases.

LINE BALANCE—When used on one side of a phantom group, "built-in" line filter balance is provided for the other physical line.

DIAL OR RINGDOWN SIGNALING—The 5U Universal Signal unit may be arranged by simple strapping, for dial or ringdown signaling.

APPLICATION

Kellogg Type 5 Transmitted Carrier Systems can be used on wire lines with losses up to 30 db at first channel frequency (10 kc) and up to 41 db loss at second (20 kc) and third (30 kc) channel frequencies. They may be applied to a single physical circuit or one or both side circuits of a phantom or composite group. Any one or all of the 3 channels may be used as desired, so long as the loss at the particular channel frequency does not exceed the prescribed limits stated above. Measured losses are, of course, more accurate; however, if the necessary measuring equipment is not available, approximate losses may be calculated by using attenuation tables.

SPECIFICATIONS

		East-West	West-East
FREQUENCY BANDS:	1st channel	8025-10425 cps	4450-6850 cps
	2nd channel	14600-17000 cps	18750-21150 cps
	3rd channel	33050-35450 cps	25900-28300 cps
SEND LEVEL: Variable in steps of 2 db	1st channel	—10 to +10 dbm	
	2nd channel	0 to +20 dbm	
	3rd channel	0 to +20 dbm	
RECEIVE LEVEL:	Variable pad, calibrated in twenty 1 db steps		
SIGNALING:	Type 5-U —	Dial (E & M Lead) or Ringdown	
	Type 5-J —	Ringdown only	
	CX —	No signal unit required if simplex or composite leg is available	
POWER SUPPLY:	No. 106 —	Regulated, selenium rectifier (No electron tubes used) 95-125 volt 60 cycle input, capacity for 3 channels of carrier with any type signal unit.	
	No. 105 —	Non-regulated, 105-125 volt 50-60 cycle input, capacity for 1 channel with type 5-U signal unit or 2 channels with type 5-J signal units.	

PLATE VOLTAGE: 220 volts dc **HEATER VOLTAGE:** 6.3 volts ac

DIMENSIONS:

Horizontal: Mounts on standard 19" equipment rack

Vertical:

Carrier units	8¾"	Terminal complete with	
Power Supply units:		No. 106 Power supply	
No. 106	5¼"	and signaling unit.	
No. 105	7"	one channel	21"
Signal units	3½"	two channels	33¼"
Line Filter unit	3½"	three channels	45½"

TUBES USED:

Standard Types	Number Used		
	Carrier Unit		Signal Unit
	1st channel	2nd & 3rd channel	
6SL7GT	3	3	1
6SN7GT	3	2	2
6V6GT		1	
OD3/VR150			1

SHIPPING WEIGHT:

Carrier units (per channel)	40 lbs.	Terminal Complete with	
Power Supply (Approx.)	40 lbs.	Power Supply and One	
Signal Units (Each)	20 lbs.	Signal Unit Per Channel	
Line Filter Unit	20 lbs.	one channel	120 lbs.
		two channels	180 lbs.
		three channels	240 lbs.

CARRIER SYSTEM MAKE-UP AND ORDERING INFORMATION

Each channel of a Type No. 5 carrier system consists of an east terminal and a west terminal. Each channel terminal consists of a carrier unit, a power supply unit, and a signal unit when required.

Shown in the chart following is all the equipment required for each terminal in the standard Kellogg carrier systems listed.

ORDERING INFORMATION CHART

SYSTEM			Component	East Terminal			West Terminal		
1st Channel	2nd Channel	3rd Channel		1st Channel	2nd Channel	3rd Channel	1st Channel	2nd Channel	3rd Channel
*5A3-CX	5B1-CX	5C1-CX	Carrier Unit	5A-E-3	5B-E-1	5C-E-1	5A-W-3	5B-W-1	5C-W-1
			Power Supply Unit	See Power Supply Specifications					
*5A3-J	5B1-J	5C1-J	Carrier Unit	5A-E-3	5B-E-1	5C-E-1	5A-W-3	5B-W-1	5C-W-1
			Power Supply Unit	See Power Supply Specifications					
			Signal Unit	5J	5J	5J	5J	5J	5J
*5A3-U	5B1-U	5C1-U	Carrier Unit	5A-E-3	5B-E-1	5C-E-1	5A-W-3	5B-W-1	5C-W-1
			Power Supply Unit	See Power Supply Specifications					
			Signal Unit	5UA-E-1	5UB-E-1	5UC-E-1	5UA-W-1	5UB-W-1	5UC-W-1

* A No. 300-B line filter unit is supplied with each first channel carrier unit.

Kellogg Type 5 Carrier Systems may be ordered simply by specifying the number of channels required, the type of signaling to be employed and the Power Supply units desired or individual items of equipment may be selected by using the chart above

ACCESSORY EQUIPMENT FOR CARRIER SYSTEMS

NO. 28-A REPEATING COIL

The No. 28-A repeating coil is a specially designed wide frequency range transformer which will pass all frequencies from 15 to 40,000 cps. The line side of the repeating coil is a center-tapped, balanced winding that can be used to derive a simplex or phantom leg from a wire circuit over which a carrier system is operating.

No. 310 CARRIER BY-PASS UNIT

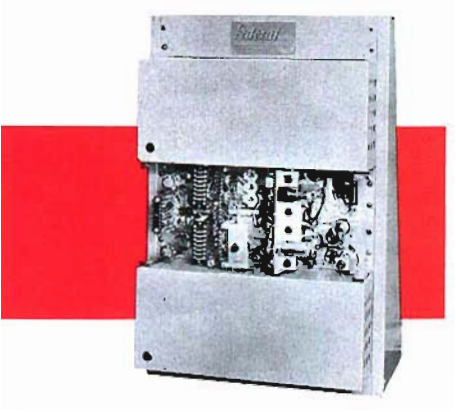
A carrier by-pass unit must be employed to separate voice frequency currents from carrier currents where it is necessary to transfer a carrier circuit from one wire circuit to another wire circuit. This unit consists of two low pass line filters and a high pass filter. The low pass filters have a cut-off frequency of 3,000 cps, and the high pass filter passes only those frequencies above 4,000 cps.

With the by-pass unit, voice frequency and ac or dc signaling currents can be passed through the low pass filter to an intermediate switchboard while the carrier currents are by-passed around the switchboard. The use of the carrier by-pass unit makes it possible to operate carrier circuits between two locations not connected by direct wire circuits.

Channel drop-off and reinsertion filters are available for specific carrier circuit needs. These permit you to drop off one or two channels at an intermediate exchange and, if desired, to reinsert another channel at a drop off point. Information on these filters is obtainable through your division office or the Chicago Sales Office.



Equipment racks for mounting the Carrier terminals may be selected from Section G VI, Power and MDF Equipment of this catalog. Similarly test instruments will be found in Section G VII, Supplies, under subdivision 5, Batteries, Power and Test Equipment.



9-H-2—3 channel system—cover removed from channel 2.

9-H-2 MEDIUM HAUL CARRIER TELEPHONE SYSTEM

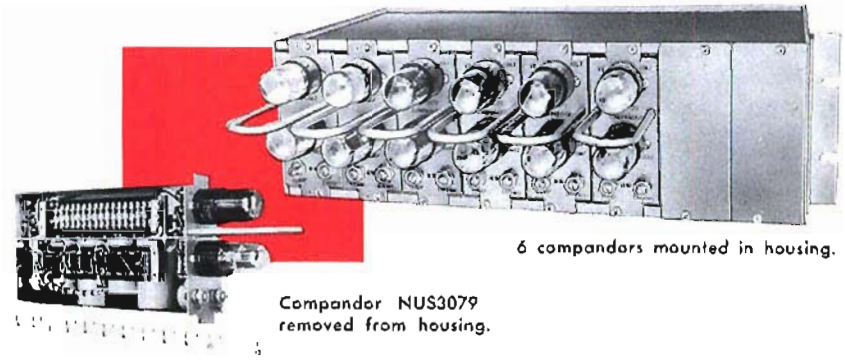
The 9-H-2 medium-haul carrier telephone system offers a low cost way to increase circuit capacity on open-wire telephone lines up to 225 miles in length. The 9-H-2 systems can be stacked to provide 1, 2, or 3 additional telephone channels over an existing line. The quality of the transmission obtained is of the high standard demanded by present day facilities, and the application of the system is limited only by the distance over which satisfactory operation is practicable. Design features of this system include:

- small size—complete unit with built-in power supply
- ease of installation—no change in line wiring normally required, and coordinates with other carrier systems
- flexibility—may be used as East or West terminal, on two or four wire drop basis

Other carrier telephone systems include: 9-E-1 multi-channel telegraph and tone signalling carrier 9-A-1 single-channel telephone carrier; 9-F-1 single-channel telephone carrier.

COMPANDOR

Compandors—installed at each end of a carrier or micro-wave telephone circuit—can reduce noise and cross-talk 20 to 25 db. In some instances, 35 kc carrier can be operated successfully on pairs transposed for only 3 kc, thus eliminating cutting in an elaborate transposition system. Compandors are of compact, plug-in design; a rack assembly for 8 units requires only 5¼" of standard rack space.



6 compandors mounted in housing.

Compandor NUS3079 removed from housing.



Typical terminal installation. Federal micro-wave equipment.

MICROWAVE

Microwave radio systems provide an efficient means of handling many types of telephone service spanning lakes, rivers and all types of difficult terrain without construction of wire lines and resulting right-of-way and maintenance problems. The system includes terminals and repeater stations spaced an average of 25 to 30 miles apart.

This equipment was engineered by pioneers in the development of modern microwave techniques and is backed by world-wide experience in radio and telephone communications. Applications of microwave to modern telephone operation are as follows:

- toll circuits • inter-office trunks for extended area service
- signaling and supervision between company's toll offices
- transmittal of digital data
- extending highway and urban mobile radio service
- radio broadcast program relay • leased line and facsimile service

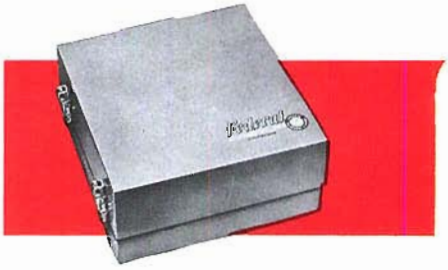
MOBILE RADIO-TELEPHONE EQUIPMENT

A complete "one-Package" system that assures maximum dependability, performance and economy—for urban or emergency service.

With mobile equipment, subscribers can be furnished the finest radio-telephone service—with minimum maintenance and installation expense. Mobile units are designed for dependable service under all types of vehicular operation.

In this complete "one-package" system, all parts are designed and matched to work together, as a perfectly coordinated communications network. Complete mobile radio-telephone equipment is available including fixed stations, mobile and remote control units. These noteworthy features assure outstanding performance:

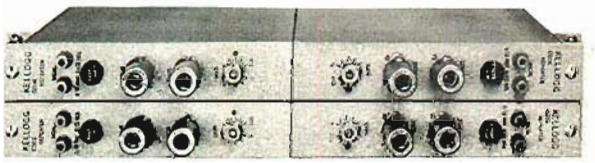
- adjacent channel equipment engineered for split-channel requirements
- simple conversion to split-channel operation • micro-sensitive receiver
- job-rated transmitter power amplifier • selective calling



ORDERING INFORMATION

For complete information on the 9-H-2 Carrier, the Compandor, Microwave and Mobile Radio-Telephone Equipment, contact the Electronic Products Department, General Sales Office, Kellogg Switchboard and Supply Company.

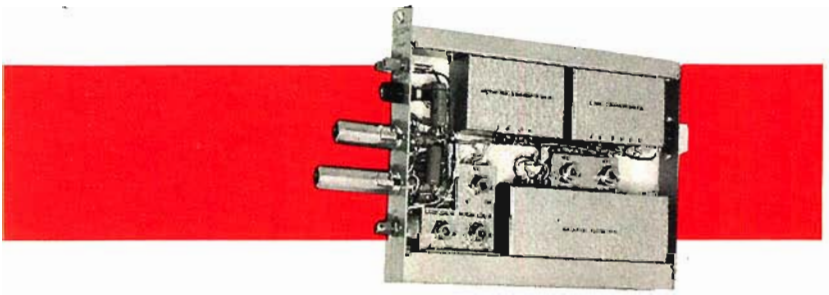
VOICE FREQUENCY TELEPHONE REPEATERS



Z-11 and Z-21 V.F. Repeaters

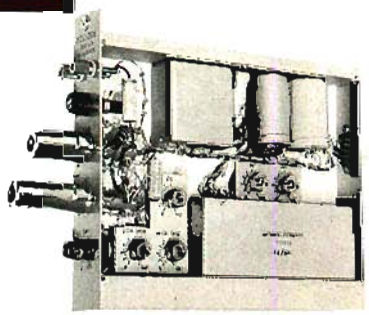
Kellogg Z-11 Series and Z-21 Shunt V.F. Repeaters are of the negative impedance type. They provide an economical means of improving transmission on most all types of local and long distance telephone circuits by reducing or counteracting the loss caused by normal line impedances. The degree of transmission improvement obtainable with these repeaters is dependent upon the circuit make-up and characteristics and may be readily calculated. In general one Z-11 Series repeater will recover up to 50% of the circuit loss at voice frequencies the maximum average repeater gain being 10 db. A Series-shunt combination repeater consisting of one Z-11 and one Z-21, coded 11-Z-21, will recover up to 85% of the circuit loss, the maximum average repeater gain being 14 db. Z-11 and 11-Z-21 V.F. Repeaters may be located at either end of the circuit or at an intermediate point along the circuit. Maximum gain is obtained when they are located at the electrical center of the circuit.

Kellogg Z-11 and Z-21 V.F. Repeaters are used on cable circuits, open wire circuits and combinations of cable and open wire. They are equally effective on ringdown, loop or composite dial trunks, as well as on trunks equipped for toll **ticket**ing or other special services. They may be applied on **both** side circuits and phantom circuits and are also excel**lent** for use on subscriber loops. Insertion of the repeaters in a wire circuit has no detrimental effect on signaling Therefore, no by-pass equipment is required in any application. The added loop resistance introduced in a wire circuit by a Z-11 V.F. Repeater totals 56 ohms.



Z-11 Removed from Shelf

The Z-11 Series V.F. Repeater is a balanced four-terminal network which when inserted in series with a line cancels the series impedance drop of the line. The Z-21 Shunt V.F. Repeater is a two element network which when connected across the line counteracts the shunt impedance of the line. Both repeaters are equally effective in each direction of transmission and herein lies one of the big advantages of these negative impedance repeaters. In both Kellogg Z-11 and Z-21 V.F. Repeaters the gain varies with frequency precisely as the line loss varies with frequency when the network equivalent impedance is adjusted to match the line impedance; and thus the repeaters automatically equalize the line.



Z-21
Removed from Shelf

Optimum performance of negative impedance repeaters is directly dependent upon the degree to which the network equivalent impedance can be adjusted to match the line impedance. It is of greatest importance, therefore, that the task of adjusting the repeater network be made as simple and straight forward as possible. This has been accomplished in the Kellogg Z-11 and Z-21 V.F. Repeaters by the use of continuously variable controls for adjustments of overall gain, low frequency gain, high frequency gain and for all resistance elements of the network. No time-consuming strapping procedures are used in adjustments. The test set used in setting up these repeaters is also designed to facilitate adjustment and make practical the attainment of optimum performance. It acts as a control device for elements in the network of the repeater itself, switching them in or out as required.

SPECIFICATIONS

INPUT—48 Volts dc ±4 Volts
TUBE COMPLEMENT—One 12AU6 One 35C5
FUSE—Buss Type MDL .3 Amp. Fusetron

MOUNTING

Plug-in drawer construction. Mounting shelf assembly for 19" rack mounting (18⅜" mounting centers; standard RETMA or WE drillings) occupies 1¾" vertical height and holds two repeaters. Repeaters extend 5¼" in front and 8¾" to rear of rack mounting face. An additional 1½" is required in the rear when Code 1352 or 1354 Mounting Shelf Assemblies with automatic by-pass relays are used.

GAIN

Z-11—Up to 50% of the loss of the line or 10 db whichever is less.

11-Z-21—Up to 85% of the loss of the line or 14 db whichever is less.

VARIABLE CONTROLS

Molded composition type—provided for High Frequency Gain, Low Frequency Gain, Overall Gain and for the resistance elements of the network.

TEST SET OPERATION

Utilizes network components in actual repeater for setup. Settings for circuit configuration, component values and cutting repeater in and out of circuit are all accomplished by switches in the test set. Test set circuit provides for flat zero-reference level versus frequency, thus permitting the use of an automatic sweep oscillator for rapid setup operation.

Circuit description, installation and set up instructions, and application data are furnished with all repeater shipments.

DESCRIPTION

Code No. Z-11. Series negative impedance V.F. Repeater complete with electron tubes but less mounting. Shipping weight 9 lbs.

Code No. Z-21. Shunt negative impedance V.F. Repeater complete with electron tubes but less mounting. Shipping weight 9 lbs.

Code No. 1351. Mounting shelf assembly less relays — holds two Z-11 repeaters — requires 1¾" space on 19" equipment rack. Shipping weight 8 lbs.

Code No. 1352. Mounting shelf assembly—same as No. 1351 except equipped with relay to cut circuit through when repeater is taken out of service. Shipping weight 10 lbs.

Code No. 1353. Mounting shelf assembly less relays — holds one Z-11 and one Z-21 Repeater — same dimensions as No. 1351. Shipping weight 8 lbs.

Code No. 1354. Mounting shelf assembly — same as No. 1353 except equipped with relay to cut circuit through when repeater is taken out of service. Shipping weight 9 lbs.

Code No. 901. Test Set—required to set up Z-11 Repeater. Also used to test Z-11 repeaters. Shipping weight 10 lbs.

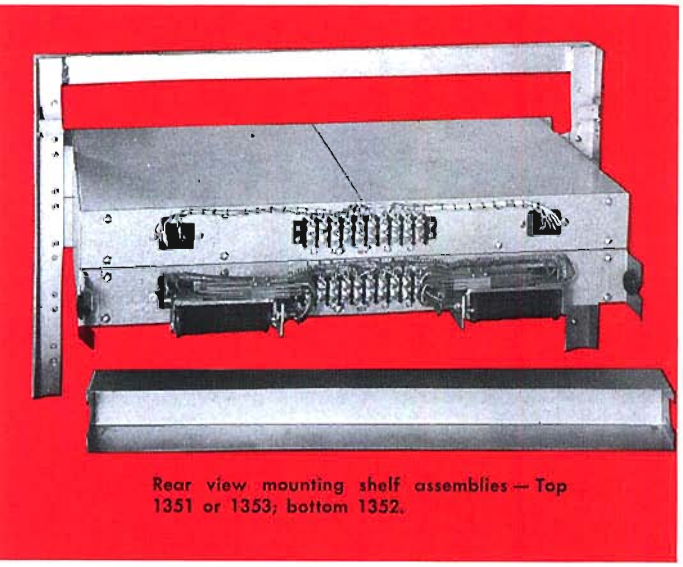
Code No. 902. Test Set—Same as No. 901 test set except includes the additional facilities to set up and test the Z-21 and 11-Z-21 Repeater Combination. Shipping weight 10 lbs.

Code No. 903. Conversion Panel to convert a No. 901 Test Set to a No. 902 Test Set.

SPARE PARTS

P-75105-1 — 12AU6 Electron tube
P-75105-2 — 35C5 Electron tube
P-64427-4 — Fuse - Buss Type MDL .3 amp. Fusetron
P-75281 — 32 Point strapping receptacle

Rear view mounting shelf assemblies. Top No. 1351 or No. 1353, bottom No. 1352.



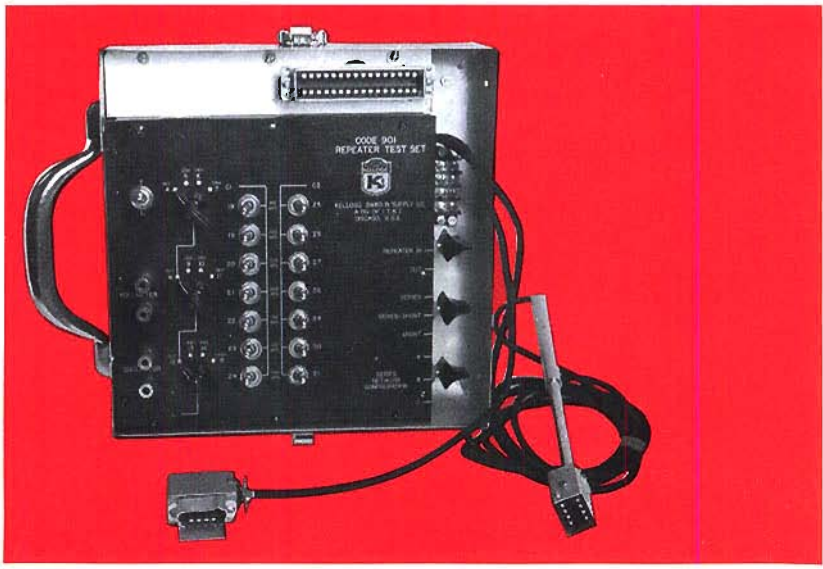
Rear view mounting shelf assemblies — Top 1351 or 1353; bottom 1352.

ORDERING INFORMATION

Kellogg Z-11 and Z-21 voice frequency repeaters may be used singly or in combination. When a single repeater is used we recommend the Z-11 for most all applications.

A mounting shelf assembly is required to mount the repeaters. Each mounting shelf assembly holds two repeaters either two Code Z-11 or one Z-11 and one Z-21. They are available with or without by-pass relays. When equipped with by-pass relays the circuit is automatically cut through in event of failure of a fuse or heater in one of the electron tubes.

A test set is required to balance the repeaters. This may be purchased with the repeaters and mountings or it may be leased as it is needed only at the time the repeaters are initially set up or when it may be desirable to rebalance the repeaters because of circuit or line changes.



No. 901 Test Set less cover.

GENERAL INFORMATION

No. 1351 and No. 1352 Mounting Shelf Assemblies may be used only with Z-11 Series Type Repeaters. If in ordering Z-11 Repeaters it is known that Z-21 Repeaters will be added later on the same circuits, then No. 1353 and No. 1354 Mounting Shelf Assemblies should be ordered. Since these mountings are designed for one Z-11 and one Z-21 the order should specify the same number of mountings as Z-11 Repeaters.

When Z-11 Series Repeaters are being used in No. 1351 or No. 1352 Mountings and it is desired to change to 11-Z-21 Series-Shunt Repeater operation, it will be necessary to change the back plate of the mounting shelf assembly. The factory will furnish information on this change on request.

All mountings are designed for use on 19" equipment racks. When wider racks are used the mounting shelf assemblies may be supported in a vertical plane between two drilled metal cross strips or bars.

Note that a No. 901 Test Set is required to set up Z-11 Repeaters and a No. 902 to set up Z-21 or 11-Z-21 Repeaters. In addition, a vacuum tube voltmeter or db Meter

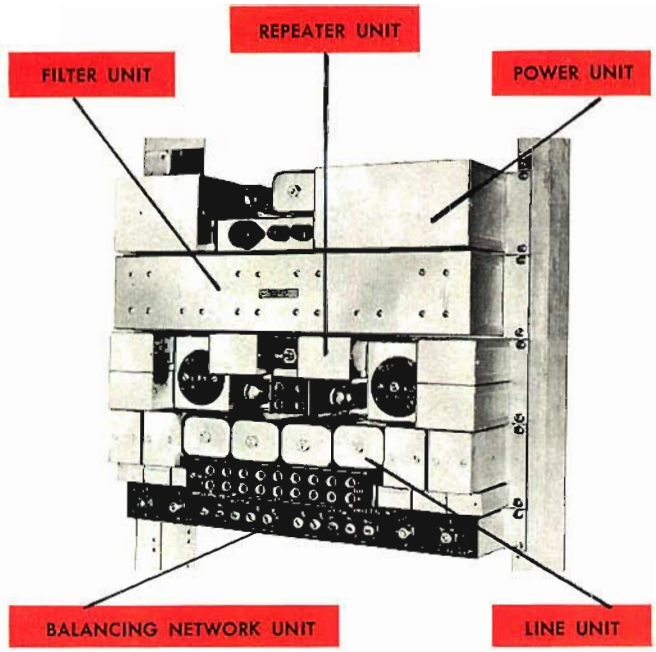
and an audio sweep oscillator will be required. Refer to installation service notes for specifications of these instruments.

The Kellogg Electronic Products Sales Office will be glad to recommend the proper equipment for any circuit application. Requests for such recommendation should be accompanied by a filled out "Application Engineering Data Sheet." Copies of these sheets are available through your Kellogg field representative or Division Office.

We do not recommend the use of Negative Impedance Repeaters on facilities on which carrier is superimposed. Kellogg No. 3 and No. 4 hybrid repeaters should be used for such applications.

Equipment racks for mounting this equipment may be selected from Section G VI, Power and MDF Equipment of this catalog. Similarly test instruments will be found in Section G VII, Supplies, under sub-division 5, Batteries, Power and Test Equipment.

VOICE FREQUENCY TELEPHONE REPEATERS



V. F. REPEATERS

Types 3A, 3B and 4

The Kellogg Type 3A, 3B and 4 voice frequency telephone repeaters are used to increase the transmission level on long or highly attenuated telephone circuits. They may be used on any circuit which will carry regular telephone transmission.

This equipment may be used as a terminal or as an intermediate repeater without circuit changes.

The Kellogg repeater consists of: 1) a repeater unit for amplifying the voice level in each direction; 2) a filter unit which, by limiting the frequencies to be amplified, makes possible a greater degree of balance and consequently a greater usable gain from the repeater; 3) a balancing network unit which provides the necessary impedance balance between the line side and the network side of each hybrid coil; 4) a line unit which acts as a connecting link between the line and the repeater unit and provides a means of bypassing signaling current around the repeater unit; and 5) a power unit used only with ac operated repeaters to furnish plate and heater voltages for the amplifier tubes in the repeater unit.

Kellogg repeaters are assembled and wired on a unit basis to provide the flexibility necessary to satisfy the requirements of various types of lines and circuit applications. Each of the five components listed above is assembled individually on a panel suitable for mounting on a standard 19-inch relay rack or in cabinets.

Installation is greatly simplified through the elimination of all strapping procedures normally required when installing other V. F. repeaters. All adjustments are easily accomplished through the use of dial type controls. Calibrated attenuators are provided for accuracy in determining repeater gain.

REPEATER UNIT

The repeater units consist primarily of two vacuum tube amplifiers with gain controls and two hybrid coils. To simplify maintenance a series jack is provided in each plate circuit to permit measuring the plate current without taking the repeater out of service. This provision makes it possible to check the operation of the repeater without turning down the circuit.

Each amplifier section of the repeater unit is equipped with a dual purpose tube operated at conservative voltages as a push-pull amplifier. The amplification of the repeater in each direction is governed by a variable gain control pad accurately calibrated in one db steps indicating the actual gain of the repeater unit itself.

Three different types of repeater units can be furnished for operation on: 1) 24 volt exchange battery; 2) 48 volt exchange battery or 3) 110-120 volt 60 cycle ac power source. See Specifications. Mounting space 3½" x 19".

NO. 1 BALANCING NETWORK UNIT

The function of the balancing network unit is to create an artificial line whose impedance at all frequencies in the voice range approximates that of the physical line in which the repeater is installed. When this condition is satisfied the repeater is balanced and maximum gain can be obtained without singing.

The balance network unit consists of two identical networks of variable resistance units and a decade condenser unit so designed that a wide range of line impedances may be rapidly balanced by the simple adjustment of accurately calibrated dial controls. Thus should line impedance change due to unusual weather conditions balance may be easily and rapidly restored without the necessity of reducing the repeater gain to prevent singing. Mounting space 1¾"x19".

FILTER UNITS

The filter unit in the repeater system is used to limit the band of frequencies which must be amplified and passed by the repeater unit, thus permitting a high degree of balance between the line and network side of the repeater hybrid coil. This balance is necessary to insure a high and uniform gain from the repeater. Two filters are provided on each filter unit—one for each direction of transmission.

NO. 204-2 FILTER UNIT

This filter is a sharp cut-off, 300 to 2700 cps, band-pass filter.

It is recommended where maximum repeater gain is required, especially where the repeater is to be installed on a circuit with heavily loaded cable lines or circuits upon which a carrier system is superimposed. Mounting space 1¾"x19".

NO. 200-2 FILTER UNIT

The No. 200-2 filter unit is a general purpose filter suitable for use where the impedance characteristic of the line is smooth and the cut-off frequency of the line is fairly high. Mounting space 1¾"x19".

NO. 104-A POWER SUPPLY UNIT

The No. 104-A power supply unit, required only with the No. 4 voice repeater unit, supplies the proper plate and heater voltages for the amplifier tubes in the repeater unit. It will supply from one to six No. 4 repeater units. It operates directly from the regular 105-125 volt, 60 cycle ac power or lighting circuit. It uses a choke-input filter.

The power unit is provided with local protection by a fuse in each side of the ac input supply. It is also equipped with a power failure relay wired to release the power failure relays in all associated line units. This relay may also be used to operate an alarm circuit. Mounting space 3½"x19".

LINE UNITS

The line unit is the connecting link between the line and the repeater unit and between the repeater unit and the balancing network. It provides the terminating apparatus for the line as well as the means for signaling or ringing around the repeater unit.

Each line unit is equipped with a power failure relay which by-passes the wire circuit around the repeater unit should the latter become inoperative because of a power failure or when it may be desirable to take the repeater unit out of service temporarily. This feature makes it unnecessary to turn down the circuit when a repeater unit must be removed for maintenance.

NO. 400-TYPE LINE UNIT

The No. 400-type line unit is a relay by-pass unit using relays either to by-pass the signaling current around the repeater or to apply a new source of signaling current when repeat ringing is desired. The change from by-pass signaling to repeat signaling is accomplished by changing straps on the terminal strip. When repeat ringing is used, the source of ringing power must be supplied. When used with intermediate repeaters in a phantom group, coils for terminating the circuits must be provided separately. The type 400 line unit has the advantage of reducing noise resulting from power line exposure to a greater extent than the other line units listed herein.

The No. 400 line unit is avaliable in three different operating voltages: No. 400-A for 24-volt operation; No. 400-B for 48 volts; and No. 400-D for 6 volts. The A and B types operate from exchange battery and the D type from a 6 volt, dc, power source. Mounting space is 3½"x19".

NO. 401-TYPE LINE UNIT

The type No. 401 line unit is a filter by-pass unit designed to by-pass all frequencies from 3 cps to 150 cps. It will also pass dc. The No. 401 line unit is recommended for use with intermediate repeaters operating in side circuits of a phantom group. It may be used in loop dial circuits or in any circuit using signaling as indicated. Three types are available: 401-A—24 volt; 401-B—48 volt; and 401C—200 volt (obtained from power supply unit.) Mounting space 5¼"x 19".

NO. 402-TYPE LINE UNIT

The type No. 402 line unit is a filter by-pass unit designed to by-pass frequencies from 15 to 150 cps. It is a general purpose unit for ac signaling only in the frequency range specified. It may be used with terminal or intermediate repeaters on a metallic or phantom circuit. Balanced phantom coils for side circuits must be provided separately. Three types are available: 402-A—24 volt; 402-B—48 volt; and 402-C—200 volt (obtained from power supply unit). Mounting space 5¼"x19".

NO. 403-TYPE LINE UNIT

The type No. 403 line unit is recommended for use with terminal repeaters where the signaling circuit is derived on the line side of the repeater. It may also be used with intermediate repeaters in a simplex circuit. T.R.A. and B leads are available on the drop side of the repeater terminal. Three types are available: 403-A—24 volt; 403-B—48 volt; and 403-C—200 volt (obtained from power supply unit). Mounting space 3½"x19".

SPECIFICATIONS

	No. 3A	No. 3B	No. 4
Power Source	20-28 vdc Exchange Battery	40-56 vdc Exchange Battery	115V 60 cps Power Supply Unit
Maximum Possible Gain—each direction	20 db	20 db	20 db
Maximum Output Level	greater than 12 dbm (0 dbm = 1 mw)		
Harmonic Distortion	less than 5% at plus 8 dbm		
Intermodulation Distortion	less than 1% at plus 12 dbm		
Type of Tube, 2 ea.	28D7	28D7	6SL7
Plate Voltage	20-28 vdc	40-56 vdc	200 vdc
Plate Current	46 ma	80 ma	8 ma
Heater Voltage	20-28 vdc	40-56 vdc	300 vac 60 cps
Heater Current	.72 amp	.36 amp	.60 amp
Gain Adjustment	One attenuator for each direction, calibrated in actual db, 1 db per step, screw driver adjustment.		
Balance Network Adjustment	Calibrated variable resistors and capacitors, screw driver operated (no-strapping).		
Mounting	Standard 19" frame.		
Signal Treatment	Accessory Line Units equipped for either filter by-pass, relay by-pass, or repeat ring.		

APPLICATION AND ORDERING INFORMATION

In ordering Kellogg telephone repeater equipment the following information must be included with the order.

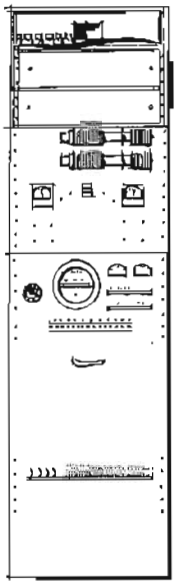
1. Operating voltage. Indicate whether the equipment is to be operated from (a) 24 volt exchange battery, (b) 48 volt battery, or (c) 105-125 volt, 60 cycle, commercial power supply.

2. Type of signaling.
   a. Ringdown signaling. Specify if relay by-pass, repeat ring, or filter by-pass type line unit is desired. (If repeat ring is required a source of ringing power must be provided at the repeater location.) Specify frequency of ringing power used.
   b. Composite or simplex signaling. If an intermediate repeater is desired in a composited circuit, specify whether composite equipment is available to carry the CX legs around the repeater.
   c. 3½ cps dispatcher signaling.
   d. Loop dialing signaling, or C.B. subscriber's loop.

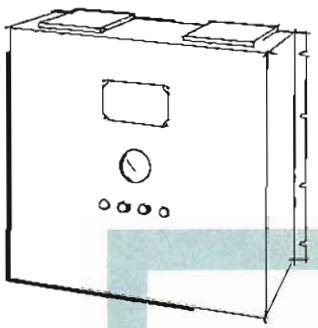
3. Circuit information. Complete details of the wire facilities involved in the circuits to be repeatered must be provided.

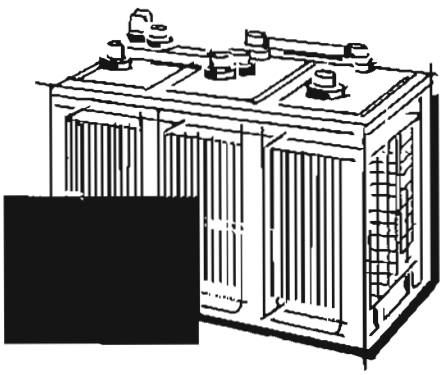
4. Equipment racks. Kellogg Telephone Repeater equipment mounts on any standard 19-inch equipment rack.

- power boards
- ringing equipment
- charging equipment
- batteries
- stand-by and portable power units
- protection and m.d.f. equipment

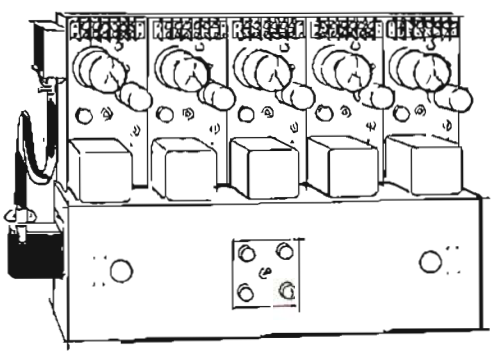








POWER — M.D.F. EQUIPMENT

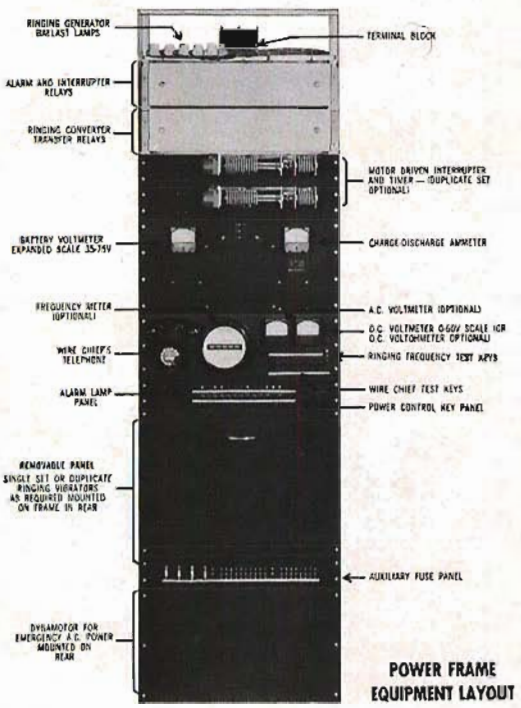


FOREWORD

POWER EQUIPMENT

All power, protection, and cross connecting equipment is listed in this section to facilitate ordering.

Wherever possible, complete information necessary for ordering this equipment is given. In some instances it is neither possible nor advisable to order from catalog listings only. In these cases the Kellogg engineering department should be consulted for a detailed analysis of the particular installation and its power, or other requirements.



POWER FRAME EQUIPMENT LAYOUT

POWER BOARDS

I. Generally the telephone system power plant will consist of a power board, ringing equipment, battery, battery charging equipment, and, in some cases, standby ac generating equipment.

The power board proper contains supervisory, alarm, switching, and control equipment. Small simple telephone systems can generally be serviced by a single bay unit, whereas large complex telephone systems may require two or more bays depending on the services required. Power boards are generally built of various panels and units on a pair of uprights in such a way as to arrange the panels and equipment to be within reach of the plant personnel for the normal functions of the manual control equipment. For example, instruments are located at eye level, keys and switches at waist level, etc. Volt-meters are furnished to indicate the voltage being supplied to the telephone equipment, ammeters to indicate the rate of charge or discharge. Fuses generally transmit an alarm when blown; lamps indicate conditions of "Alarm", "Normal", "Transferred", etc.; relays detect conditions indicated by the lamps and can automatically cause switching to take place.

In the cases of small exchanges the ringing equipment is quite often located within a single power bay and associated switching and control circuits may guarantee continuous ringing current from either a primary or a standby source. In such cases interrupter equipment may also be contained within the bay in the form of primary and secondary units.

Charging usually is on the full float basis. This method allows the charging equipment to supply the current for the office load. Should the capacity of the charging equipment be exceeded, a portion of the current is then fed from the battery. Should the commercial ac to the charging equipment fail, the battery will supply the current. The length of time the exchange can operate from the battery alone is determined by the size of the battery and the current being drawn from it.

II. BATTERY EQUIPMENT

Normally a telephone exchange uses a single battery which is the "main" battery. The function is to supply the direct current necessary to operate the equipment of the system when the charging source capacity is exceeded or is inoperative. Other batteries are sometimes necessary since certain requirements for other potentials make it undesirable to furnish the direct current from the "main battery." These batteries may be used for metering, coin control potential, controlled or delayed ringing, etc. Usually the batteries used for other purposes than "main battery" are a given number of cells with or without end cell or CEMF cell arrangements.

In small exchanges batteries usually are of 12 or 24 cells. In larger exchanges the arrangement may be with end cells. With the end cell method, usually employing 23 regular and 3 end cells of similar size, a smaller capacity battery can be used due to the increase of voltage which will prolong the discharge time.

Battery size is determined by the current drawn for a given period. In normal localities, i.e., where the commercial ac supply to the charging equipment is reliable, a 5 busy hour reserve is considered adequate. Where ac failures are frequent an 8 busy hour reserve is normal. If the failures are to be of long duration a standby emergency engine generator should be considered. When the emergency generator is used it is considered adequate to use a 2 busy hour battery reserve.

Whatever reserve is used the future growth of the system must be included in the battery calculation.

III. CHARGING EQUIPMENT

The charging method normally employed is the "constant voltage" or full float method. This ensures a stable voltage during the normal exchange operation which requires a minimum of equipment adjusting. This type of charging equipment is known as the automatic type dry disc charger.

Chargers are available for regular systems, end cell systems; they may have their outputs either wire or bus-bar connected, they may have alarm relays, be arranged for remote control and can be supplied to operate from the type of commercial ac current available.

IV. RINGING EQUIPMENT

Ringing current sources can generally be divided into two classifications, single and multi-frequency. The telephone ringer connections are either "bridged" across the line or are "divided" tip or ring to ground.

A. Under the single frequency ringing current source, the current used is normally 20 cycles, 90 volts, the capacity required depends upon the size of the office. The simplest system is "straight line" ringing where a single telephone is connected across the line. By ringing a single frequency "divided" two telephones can be connected to a line, one tip to ground and the other ring to ground. If more than two telephones are necessary on a line, then a code ringing method can be used. Code ringing, i.e. combinations of long and short rings, can be arranged to provide 10 party bridged or divided.

Ringing equipment types are as follows:

Primary	Standby
Sub-cycle (static)	Dynamotor to furnish ac to Sub-cycle
Rotary (ac)	Rotary (dc)
Vibrator (dc)	Vibrator (dc)

B. Another single frequency method of ringing is available whereby only the called party hears the telephone ring. This is the "Superimposed" system. The name Superimposed pertains to the polarization of the ringing current by the addition of a dc potential. Thus positive and negative ringing current is applied to telephones containing a vacuum tube which detects this polarization. Therefore, by connecting the ringers "divided", positive or negative on the tip and the ring of the line, 4 party service is obtained and only the called phone rings.

C. Multi-frequency ringing pertains to the use of ringers tuned to respond to a given frequency. Three systems of multi-frequency ringing are in common use today; they are as follows:

Harmonic	16⅔, 25, 33⅓, 50, 66⅔ cycles
Synchromonic	16, 30, 42, 54, 66 cycles
Decimonic	20, 30, 40, 50, 60 cycles

The ringing source equipment available is as listed below. Any combination for primary and secondary sources is satisfactory.

Primary	Secondary
Electronic	Rotary (dc) or Vibrator
Static	Vibrator
Rotary (ac)	
Vibrator	

Transfer circuits are available for all types of ringing equipment. Usually each type of equipment has a particular characteristic which requires a transfer circuit which is different from another type of transfer circuit. For example, a secondary rotary source might need a motor starter whereas with a secondary vibrator there would be no need for the starter. All power boards have transfer circuits which are designed to operate with the particular ringing source apparatus used.

V. INTERRUPTER EQUIPMENT

Interrupter equipment is usually either relay or motor driven. While the relay types operate from exchange batt; the motor driven types operate from either ac or exchange batt. Normal practice is to supply two interrupter units, one as a primary, the other as a standby. In cases where rotary ringing machines are used it is possible to combine the interrupter into the assembly. The number and type of contacts, the timing and cam cutting vary considerably and must be arranged to apply to the particular application.

VI. SUPERVISORY EQUIPMENT

Supervisory equipment consist of relays, lamps, audible signals, and keys. The function is to detect conditions within the equipment which are other than normal, to indicate transfer conditions, indicate normal conditions, control voltage, control charge, etc. A typical arrangement is illustrated herewith but any arrangement can be furnished.

Major Alarms

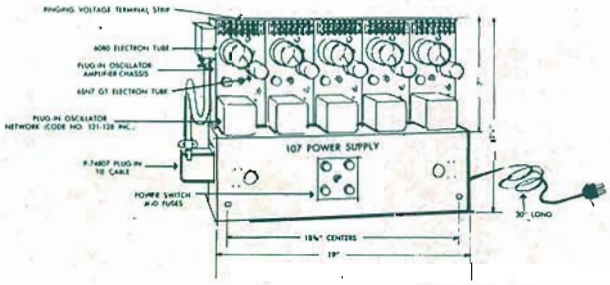
Individual circuit fuse, major
Ringing machine transfer, 2nd set faulty
Interrupter transfer, 2nd set faulty
Rectifier failure
Emergency engine generator failure

Minor Alarms

Individual circuit fuse, minor
Ringing machine transfer, 2nd set satisfactory
Interrupter transfer, 2nd set satisfactory
MDF heat coil failure
Emergency engine generator operating satisfactory

VII. TONE EQUIPMENT

Tone equipment can be either static, electronic, or rotary type. The static type operates from alternating current, the electronic from exchange battery, and the rotary from either ac or exchange battery. In small offices the static unit is usually used as a primary unit with the electronic unit operating as a standby. Since the rotary type is usually built as part of the rotary ringing machines they are available only when these machines will be present.



Kellogg Type 100 Electronic Ringing Generator

The Standard Kellogg Type 100 Electronic Ringing Generator furnishes ringing power for telephone exchanges of 3000 lines or less by means of electron tubes. Any combination of ringing frequencies up to five are available. Having no moving parts, Type 100 ringing equipment is completely silent in operation. There are no contacts to clean, adjust or replace. This unit provides a high degree of frequency stability and reliability under varying conditions of room temperature, humidity and ringing load. Maintenance is sharply reduced and cross-ring problems due to the ringing supply are eliminated. These features coupled with the flexibility of design and ease of installation have influenced both large and small telephone operating companies to adopt the Type 100 Electronic Ringing Generator as their standard source of ringing power.

SPECIFICATIONS

Input	— 105-125 volts, 60 cycle ac.
Output	— Rings up to 3000 lines (nominal). Ringing voltage independently adjustable for each ringing frequency. See chart under Ordering Information.
Mounting	— Standard 19" Equipment Rack. Requires 12¼" vertical space. Projection from frame to front of unit 7½" — To Rear — 5½".
Electron Tubes	— One Type 6080 or 6AS7 and one Type 6SN7 for each ringing frequency.
Equipment Complement	— Each Type 100 Ringing Generator consists of a Generator Panel, and a Power Supply Panel.
Power Supply Code 107	— Operates from 105-125 volts, 60 cycles ac Commercial power source. Utilizes long-life Selenium Rectifier. Supplies all voltages required for the generator panel.
Protection	— Fuses provide all necessary protection. Generator cannot be damaged by shorts on line or at output terminals.
Generator Design	— Generator Panel consists of separate and independent plug-in oscillator amplifier panels for each ringing frequency. The output frequency of each is determined by a plug-in oscillator network unit. This flexibility of design permits a choice of any combination of five or less ringing frequencies desired. Full ringing output at any frequency or at all five frequencies simultaneously is immediately available to the operator. Frequency stability regardless of load or room temperature variation is assured by a thermostatic element which controls the operating temperature of the oscillator network unit.
Shipping Weight	— Type 100 ERG less spare parts—96 lbs. Type 100 ERG with spare parts—102 lbs.
Ordering Information	— Electronic Ringing Generators should be ordered by code number as indicated in the chart below. The code number includes the No. 107 power supply unit. Orders should specify mounting center dimensions of the rack which is to support the generator. If the rack is wider than the standard 19" type, adapter plates can be furnished.

Code No. 101 Harmonic	Frequency	16⅔	25	33⅓	50	66⅔
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	123	124	126	128
Code No. 102 Synchromonic	Frequency	16	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	124	125	126	128
Code No. 103 Decimonic	Frequency	20	30	40	50	60
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	122	124	125	126	127
Code No. 4	Frequency	20	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	122	124	125	126	128

*Ringing voltages are adjustable from the nominal values listed. Depending on the frequency, voltages may be reduced 10 to 25% or increased 12 to 20%. Because of the type of wave form, greater ringing power will be obtained from the Electronic Ringing Generator at a given RMS voltage value than may be obtained from a vibrator type ringing supply at the same voltage. Complete data on the installation, maintenance, and operation of the Electronic Ringing Generator are contained in an instruction book included with each shipment.

It is recommended that a set of spare electron tubes, fuses and component parts be ordered with each Electronic Ringing Generator. A standard kit consists of the following equipment: 2 Type 6080 or 6AS7 electron tubes, 2 Type 6SN7 electron tubes, 1 code 140 Oscillator Amplifier unit, 5 oscillator networks and 1 lot of fuses. Spare Parts kits should be ordered by code No. as follows:

Code No.	1101	Spare Parts Kit for code 101 ERG
	1102	Spare Parts Kit for code 102 ERG
	1103	Spare Parts Kit for code 103 ERG
	1104	Spare Parts Kit for code 104 ERG

For Electronic Ringing Equipment having greater power output, contact your field representative or write to Kellogg Sales Office, Chicago, Illinois.

ACCESSORY EQUIPMENT FOR USE WITH ELECTRONIC RINGING GENERATORS

Automatic Switching Circuits

No. Drwg. 200764 — For transferring ringing from Electronic Ringing Generator to standby vibrator type supply only in the event of a commercial power failure. Equipment mounted on 19" x 3½" panel.

No. Drwg. 200660-1 — For transferring ringing from ERG to standby vibrator type supply in the event either of commercial power failure or a failure of one or more of the ringing frequencies in the Electronic Ringing Generator. Equipment mounted in 19" x 3½" panel.

No. Drwg. 200765-1 — For transferring ringing from Electronic Ringing Generator to Rotary ringing equipment in the event of failure of either commercial power or of Electronic Ringing Generator. Equipment mounted on 19" x 7" panel.

Note: For equipment racks to mount Electronic Ringing Generators and accessory equipment see the end of this Section.

A special dynamotor operating from 48 volt exchange battery and supplying 117 vac for emergency operation of Electronic Ringing Generator is available on request.

FREQUENCY METERS

Kellogg #2 Frequency Meter for all ringing frequencies . . .

The Kellogg No. 2 Frequency Meter is designed to read all standard ringing frequencies directly. It may be used with any type of ringing supply and is particularly well suited for use with the Kellogg Electronic Ringing Generator.



The Meter is extremly simple in operation; there is no translating or computing involved in making readings. Frequencies and deviations as small as 1/10 cycle per second at even the highest frequency are easily discernible.

The scale is calibrated to read directly 16⅔, 20, 25, 30, 33⅓, 42, 50, 54, 60, 66 and 66⅔ cycles per second. No batteries are required, as the unit is designed to operate directly from 117 volt, 60 cycle power line.

The No. 2 Frequency Meter weighs approximately 12 lbs. and is supplied in a 10 x 10 x 6¼ inch hardwood portable case with protective metal corners and leather carrying strap. It is equipped with a cord for connecting to the commercial power line with test leads for connecting the meter to the output terminals of the ringing supply. Full instructions for operating the meter are embossed on the face of the panel.



0362600-000-00A STock

FRAHM PORTABLE FREQUENCY METER

This type FH portable frequency meter is designed for use with portable test equipment. Rated voltage is 50 to 300 volts with selector switch marked for normal voltage of 65, 100, 130, 180, and 250. Midscale frequency CPS 16⅔, 25, 33⅓, 50, 66⅔. Overall size measures 9¼ in. wide x 8½ in. high x 4¾ in. deep. Self-contained in polished walnut case with leather handle and rubber pads on bottom and back.

Kellogg Code Number	Catalog Number	Description	Wt., Lbs.
595091	6145	Frahm Portable Frequency Meter	8

POLE CHANGERS

The pole changer is used to convert direct current to alternating current for telephone ringing purposes. It operates on the same principle as the ordinary door bell with weighted vibrator to regulate the frequency of vibration. The telephone exchange storage battery can be used to operate the vibrator or a separate set of batteries of the correct voltage and ampere hour capacity may be used.

Pole changers are supplied with a single vibrating unit for straight line service or with four or five vibrating units of different frequencies for party line service.

Kellogg pole changers require only a minimum of maintenance. They hold their adjustment over a long period of time. There are three springs; one is used to operate the pendulum or vibrator reed; the other two, together with the swinging vibrator, produce the desired frequency of ringing current.

To protect the pole changer contacts, a 15 or 25 watt, 120 volt mazda lamp should be installed in the live side of the ringing leads in the switchboard.

SINGLE FREQUENCY TYPE

These pole changers provide ringing current only in single frequency. They are storage battery type (side swinging).

Code No.	Volts (Input)	Frequency	Transformer Set
41	24	20	No. 2-A
43	24	60	No. 3-C

SINGLE FREQUENCY — FOR RELAYMATIC

This pole changer is used on the Relaymatic standardized power panel. It includes one P-69662 and two P-65789 resistors; two No. 64 and one No. 132 condensers; one No. 5C transformer; two No. 65-A and one 41-B retard coils; relays Nos. 2106 S-JD, 1870 S-DS, and a No. S-GT coil.

Code No.	Volts (Input)	Frequency (Cycles)
46	48	16

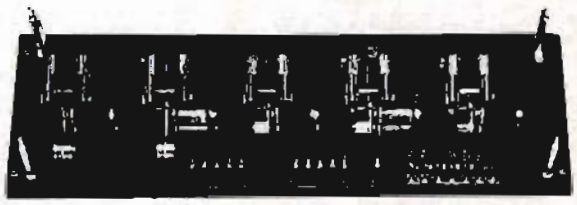
FOUR FREQUENCY TYPE

This pole changer provides four frequencies for the first four parties of harmonic ringing. It is designed for relay rack mounting, and it is used with a No. 29-A transformer set.

Code No.	Volts (Input)	Frequency (Cycles)	
39	24	Position 1	16⅔
		Position 2	33⅓
		Position 4	50
		Position 5	66⅔

FIVE FREQUENCY TYPE

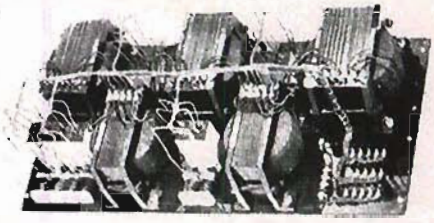
This pole changer provides the five frequencies of five party synchromonic ringing. Each of these pole changers includes five P-69662 resistors.



Code No.	Volts (Input)	Frequency (Cycles) Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Trans. Set
39	24	16⅔	33⅓		30	66⅔	29A
42	24	16	30	42	54	66	27B*
x42	24	66	54	42	30	16	27B*
44	48	16	30	42	54	66	30†
x44	48	66	54	42	30	16	30†
45	48	16	30	42	54	66	31*
47	24	20	30	40	50	60	27B
x47	24	60	50	40	30	20	27B
48	48	20	30	40	50	60	30
49	48	20	30	40	50	60	31*
50	24	16⅔	33⅓	25	50	66⅔	32
x50	24	66⅔	50	25	33⅓	16⅔	32

*Relaymatic Power Bay Mounting.
†Relay Rack Mounting.

The afore listed pole changers have been arranged to meet specific power board and relay rack dimensions. Panels can be provided to fit any bay.



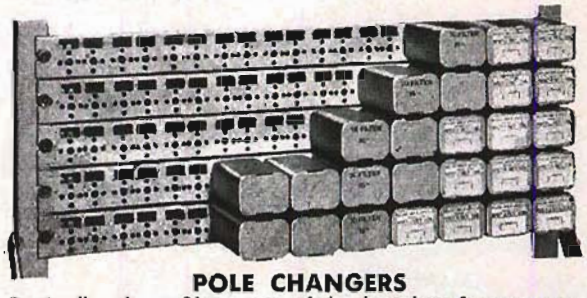
FIVE-FREQUENCY TRANSFORMER SETS No. 27-B

Kellogg transformer sets are equipped with five transformers arranged for multi-frequency ringing. The five transformers furnish ringing current ranging in voltage from 110 volts for 16 cycles to 155 volts for the 66⅔ cycle frequency. The transformers are mounted on panels 26 inches long, 12¾ inches wide and ¾ inch thick, which are drilled for relay rack mounting. The transformer panel is equipped with the necessary selenium rectifier arc suppression, distributing bars, and terminals for connecting to the pole changers and to the switchboard.

Refer to the preceding table for pole changers for the proper frequency and operating voltage desired. Special panels are available upon request.

POLE CHANGER FILTERS

The Kellogg pole change filter is designed to reduce cross-ringing, radio interference, and ringing induction in the switchboard and outside cables.



POLE CHANGERS

Basically, these filters are of the band or frequency pass type and serve as blocking filters for the stray harmonic frequencies present in pole changer voltages. These harmonics are created as part of the basic frequency since the form of the pole changer frequency is, in general, a "square" wave, made up of the basic frequency and many harmonics of that basic frequency.

THE HOLTZER-CABOT MOTOR DRIVEN INTERRUPTER UNITS

MECHANICAL FEATURES: (25BC6 and 25BC18 Interrupters)

a) These units are driven with the Holtzer-Cabot R-25 gear head motor which is a precision, synchronous, instrument motor equipped with ball bearings.

b) The units require no maintenance except periodic oiling of the motor gear case.

c) The 25BC6 Interrupter contains a maximum of six spring packs, each of which may contain a maximum of five springs or leaves.

d) The 25BC18 Interrupter contains a maximum of eighteen spring packs, each of which may contain a maximum of five springs or leaves.

e) The spring packs are easily adjusted with an ordinary spring bender of the type used in adjusting relays.

f) The unit can be mounted vertically or horizontally. If mounted vertically, the motor must be in the down position.

g) Standard interrupter shaft speeds are ½, 1, 2, 4, 5, 6 7½, 8, 10 or 12 R.P.M.

ELECTRICAL FEATURES: (25BC6 and 25BC18 Interrupters)

Drive Motor:

115 volts, 60 cycles, 1 phase
Power Consumption—10 Watts

A terminal block is mounted on the interrupter bracket for the motor connections.

(HOLTZER-CABOT 25 WATT FIVE FREQUENCY RINGING PANEL)

This ringing panel is available either ac or dc driven for all the standard frequencies — harmonic, synchromonic, or decimonic.

All generators are cog belt driven from a synchronous ac motor or governor controlled dc motor. Ringing frequencies are regulated to ±⅓ cycle. Since the generated frequencies of the primary and standby machines have identical waveshapes, ringers adjusted to the primary unit will ring equally as well on the standby unit.

The full load power consumption of the ac driven machine is only 360 watts, regardless of output frequencies.

The ringing generators are of the permanent magnet type construction which requires no commutators, brushes, or slip rings. The generators are short circuit proof and will not lose voltage with a dc potential of up to 60 volts applied to the output terminals. Both motors and generators are equipped with permanently lubricated and sealed type ball bearings which require no maintenance. Ringing voltage selection is available without the use of transformers.

A single or two channel tone generator mounted on the ringing panel is available as optional equipment. This tone generator produces 600/120 cycles dial and busy tone and/or 420/40 cycles audible ring-back tone. Ring-back tone may also be obtained from the harmonics present in the ringing frequencies. The percentage of harmonics is closely controlled to eliminate the tendency to cross-ring.

Also available as optional equipment is a 25BC type motor driven interrupter which can provide a maximum of 18 timing circuits.







ESCO RINGING EQUIPMENT

ESCO ringing equipment, including ringing generators, dynamotors and special rotary units, is available for single or multiple frequency, ac or dc drive with physical and electrical characteristics to meet your individual needs. Vertical mounted units, designed to save maximum floor space, are our specialty. Horizontal units and five-frequency machines for relay rack mounting are also available. Motor driven tone and interrupter equipment (featuring standard Bell System tones) can be furnished in combination with any of our ringing machines.

Full information on equipment to meet your particular requirements is available through your nearest KELLOGG sales office.

Unique screw-adjusted pile-ups





Lifetime drive motors

Motor-driven tone alternators





Compact, accessible interrupters

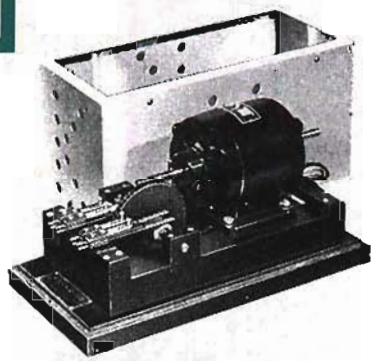


Complete factory pre-wiring



Space-saving Vertical Mounting—Permanent drive alignment

KELLOGG INTERRUPTERS



KELLOGG INTERRUPTERS

INTERRUPTERS USED ON POWER BOARDS

Interrupters built to match the various conditions which arise in the production of the different types of switchboards are available under Kellogg part numbers. The different models available are too numerous to list in this space.

The machines are available in either ac driven models which operate from 115 volts 60 cycles single phase ac or in dc driven models which operate from the exchange battery.

The ac models are intended as a primary unit, while the dc models are for standby service. Normally one of each unit is used to guarantee continued service in the event of the failure of commercial ac supply.

The machines are constructed on a channel type frame with four bearing plates to carry the bearings supporting the ends of the cam shafts. The drive motor is mounted at the left end and transmits the power through a gear reduction to the 10 RPM shaft which may accommodate as many as 22 cam and spring assemblies. At the right hand end of this shaft another gear reduction is applied to further reduce the shaft speed to ½ RPM. The ½ RPM shaft cam accommodate as many as 6 cam and spring assemblies. The 10 RPM section will carry the ringing and tone interrupter functions while the ½ RPM section will carry the timing functions essential to the exchange involved.

These interrupters are available with any timing combination which will not exceed a minimum of .125 seconds nor exceed a maximum of 5.875 seconds on the 10 RPM section; or a minimum of 1. seconds or a maximum of 119 seconds on the ½ RPM section.

Interrupters are available in units as small as 6 cam and spring assemblies for either 10 RPM or ½ RPM operation with either ac or dc drive.

The cams are of molded nylon with the various lobes milled into them. The springs are of the leaf type with a nylon tip to ride the cam surface. Spring combinations available are: normally open; normally closed; and a transfer contact.

Other cam shaft speeds are available on special order.

These Kellogg automatic ringing interrupters furnish automatic ringing and signaling tones. The motors operate from either 115 volt, 60 cycle, ac power supply or from the regular exchange storage battery. The interrupters can be equipped with six sets of interrupter springs and a three-tone commutator.

A tone mechanism equipped with a three-tone commutator is available when required. This will produce a high tone of 360 interruptions per second for howler service, a medium tone of 280 interruptions per second for dial and miscellaneous tones, and a low tone of 160 interruptions per second for "busy back" and "out of order" tone.

Automatic ringing is accomplished directly through cam operated interrupter spring contacts which operate a relay in the cord circuit and send the ringing current out on the line for one second and then withholds it for five seconds. The interrupter cams make 10 R.P.M. to furnish a six second cycle of ringing interruptions.

The interrupter is complete with driving motor, mounting base and glass top, ventilated steel cover. Base dimensions are 15 by 7 inches.

The code numbers listed below, the No. 10-A and No. 10-D, are used in pair with the No. 10-A as the regular or No. 1 machine and the No. 10-D as the emergency or No. 2 machine, held in reserve for emergency service.

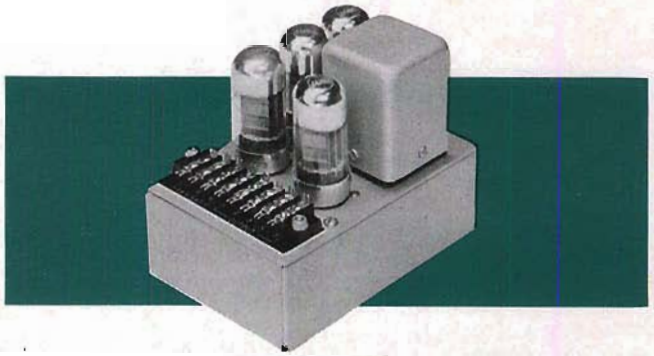
Code No.	Power Supply	Ring Codes
10-A	115 volts, 60 cycle, ac	1
10-D	24 volts, dc	1
10-AA	115 volts, 60 cycle, ac	2
10-AX	115 volts, 60 cycle, ac	..
10-DA	24 volts, dc	2
10-DX	24 volts, dc	..

The codes are stocked less springs and cams so that special cams and springs may be added. Any of the dc units are available for operation on 48 volts.

CODE 11, 12, 13 INTERRUPTERS

The Kellogg code 11 and 12 interrupters are 2 circuit interrupters. The code 11 unit operates from 115 volt 60 cycle ac; the code 12 operates from ringing current of 100 volts 20 cycles. The code 11 is intended as the primary unit while the code 12 is the standby unit.

The code 13 consists of a wooden base which mounts one each of the code 11 and code 12 to serve as a complete unit for primary and standby service. Both units are covered with a glass top ventilated cover. Base size is 14¼ x 8 x 1 inch with the cover 12 x 7½ x 5¾ inches.

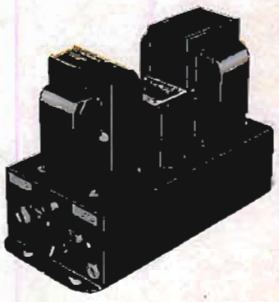


KELLOGG ELECTRONIC TONE GENERATOR

The Kellogg code 100 Electronic Tone Generator supplies a tone of 600 cycles modulated at 120 cycles that may be used for dial tone, busy tone, etc. The output is 100 milliwatts; operation is from 48 volt exchange battery. Designed for long periods of trouble free service. Has built in standby circuit. Size 4⅛ x 6 x 4¾ inches.

lorain products

The Lorain RELAY START SUB-CYCLEs are frequency changers operating without moving parts. They supply an output frequency which is a fixed fraction of the input frequency. The regular models supply one-third the input frequency or 20 cycle ringing current when powered from a 60 cycle line or 16⅔ cycle current when supplied from a 50-cycle line.



RELAY START SUB-CYCLEs for operation from 60 cycle single phase.

Model	No. of Stations up to	Duty Ringing	Input Volts	20 Cy Output in rms unless stated No Load (VOLTS)	Full Load (VOLTS)	Watts	SIZE	
*M7.5-60	100	Light	105-125	90	75	7.5	6⅝x5	⅛x11¼
*BX-60	1600	Regular	105-125	90	75	15-20	5¾x9	⅝x14⅛
*S-60	1600	Regular	105-125	90	75	15-20	5¾x9	⅝x14⅛
†S1-60	1600	Regular	105-125	90	75	15-20	5¾x9	⅝x14⅛
SP-60	1600	Regular w.pulstg.	105-125	90 110 peak	75 90 peak	15-20	5¾x9	⅝x14⅛
*CC-60	4000	Heavy	105-125 or	90 or	75 or	45	8¼x10	¾x16⅜
†CC1-60	4000	Heavy	210-250	130	100	45	8¼x10	¾x16⅜
‡CCR-60	4000	Heavy	210-250	130	100	45	8¼x10	¾x16⅜
CCP-60	4000	Heavy w. Pulsating	210-250	90 or 130, 160 peak	75 or 100, 120 peak	45	8¼x10	¾x16⅜



†Same as CC-60 or S-60 except arranged for operating with or without output capacitor.

‡Same as CC-60 except has resistor, instead of capacitor, in output circuit.

*Saturable shunt choke should be added to these SUB-CYCLEs if ringing loads are highly inductive to prevent excessive operation of the SUB-CYCLE starting relay.

NOTES:
1. The above Models with suffix — 50 instead of — 60 are available for 50 cycle operation.
2. Higher output ringing voltages are obtainable by means of auxiliary transformers. Also output transformers are available to provide a direct current path for superimposed ringing. For 230 volt input use auxiliary step down transformers.
3. An additional variety of Special Relay Start SUB-CYCLEs is available for special duties.

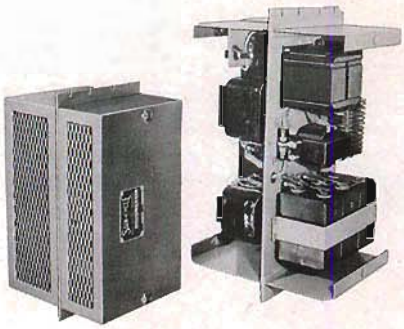




"BC" SUB-CYCLEs use metallic rectifiers to bias the core of saturable inductances. These SUB-CYCLEs are self-starting and operate without moving parts. They are characterized by instant starting with low inrush current, protection on overload, reserve capacity, regulated output ringing voltage, dc path for superimposed ringing and, of course, by ever-important, fixed frequency output. There are two types of BC SUB-CYCLEs: 20 cycle models and 30 cycle models, all operable from 105-125 volt 60 cycle supply.

20 Cycle Output

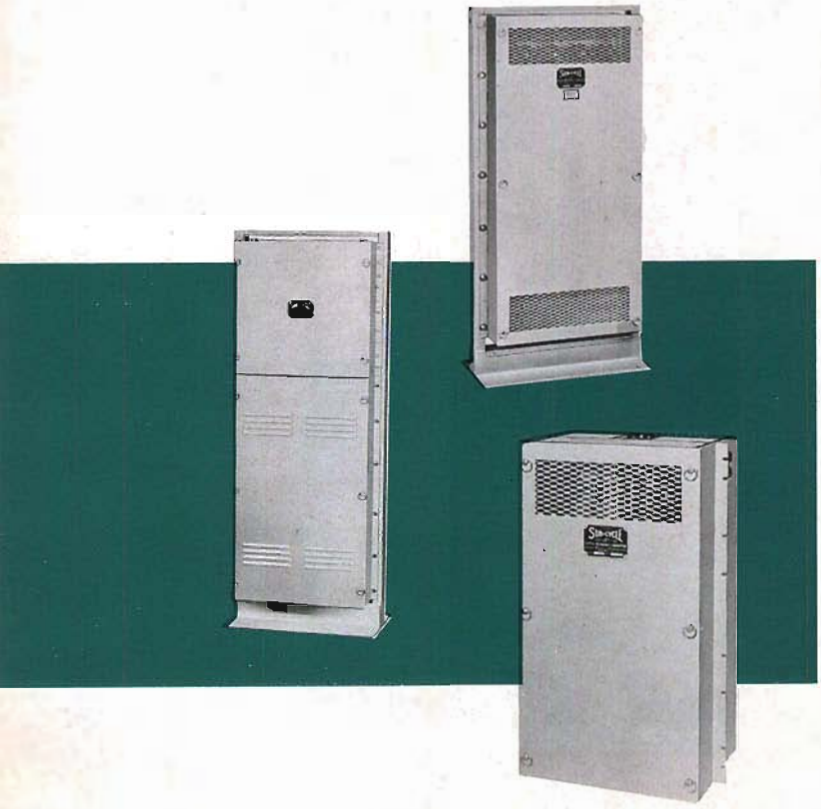
Model	Recom. No. of Stations	No Load Volts	F. L. Watts	Size
BC-20X	PBX 1 Position	90	3.5	5" x 8" x 9⅛"
BC-20M-19	100 or less	88, 101	8.5	7" space on 19" relay rack
BC-20M-23	100 or less	88, 101	8.5	5¼" space on 23" relay rack
BC-20S-19	1600	88, 101, 110	20	10½" space on 19" relay rack
BC-20S-23	1600	88, 101, 110	20	8" space on 23" relay rack
BC-20C-19	4000	88, 101, 110	40	10½" space on 19" relay rack
BC-20C-23	4000	88, 101, 110	40	8¾" space on 23" relay rack



30 Cycle Output

BC-30X	PBX 1 Position	110	5	5 x 4⅛ x 6¾
BC-30M	100 or less	90	7.5	5⅜ x 8 x 9⅛
BC-30S	1600	90, 120	20	5⅜ x 8⅝ x 12½
BC-30C	4000	90, 130	60	6⅞ x 9¼ x 16½





The line of LORAIN MULTIPLE FREQUENCY SUB-CYCLEs consists of three ringing converters: Model K-5 for Decimonic ringing systems, H-5 for Harmonic ringing frequencies and S-5 for Synchromonic systems, S-5 generates either 15 or 20 cycles besides four other synchromonic frequencies.

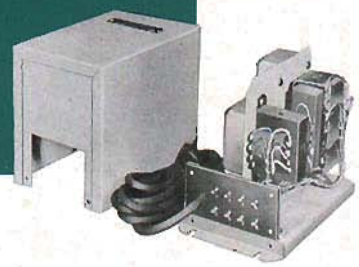
Models	Ring. Frequencies	Mounting
K-5-19	20, 30, 40, 50, 60	Single Cabinet
K-5-23	20, 30, 40, 50, 60	2 Cab'ts 52" RR
K-4-19	20, 30, 40, 50	Single Cabinet
*H-5	16⅔, 25, 33⅓ 50 & 66⅔	64½" RR 24⅜" Wide
*H-4	16⅔, 33, 50 and 66⅔	64½" RR 24⅜" Wide
*S-4-19	30, 42, 54, 66	19" Relay Rack
*S-4-23	30, 42, 54, 66	23" Relay Rack
*S-5-15-19	15, 30, 42, 54, 66	19" Relay Rack
*S-5-15-23	15, 30, 52, 54, 66	23" Relay Rack
*S-5-20-19	20, 30, 42, 54, 66	19" Relay Rack
*S-5-20-23	20, 30, 42, 54, 66	23" Relay Rack

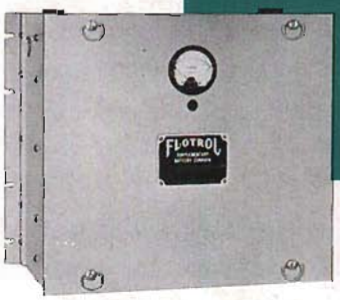
*Prefix R indicates remote control relay added.



LORAIN STANDBY RINGING GENERATORS supply 10 watt 20 cycle plus or minus 0.5 cycle ringing current during commercial ac power failure.

Model	Input dc Volts	Output Volts	Size
G581-501	20-26	100-115	7⅝ x 5⅛ x 12¾
G581-504	40-52	94-101	7⅝ x 5⅛ x 12¾





LORAIN DIAL TONE GENERATORS are static type, self-contained, compact and trouble-free. Models AA, D and DK for offices up to 4000 stations, Models C and CK for offices up to 1000 stations. All models except E, are operable from 105-125 volt 60 cycle input.

Model	Description	Size
AA	High tone—480 cycles Low tone—600 cycles Modulated at 120 cycles	8 x 13¼ x 5¼
C	Single tone—600 cycle Modulated at 120 cycles, 25 mw output	4⅛ x 6¾ x 5¼
CK	Same as Model C but fits Time-O-Matic panel, no cover	4¼ x 6 x 4¾
D	The same as C, except rated at 100 mw output	4⅛ x 6¾ x 5¼
DK	Same as Model D but fits Time-O-Matic panel, no cover	4⅛ x 6 x 4¾
DK-50	The same as DK, but for 50 cycle input	4⅛ x 6 x 4¾
E	Operates from 230 volt 60 cycle input, Low tone 30v 500 mw, High tone 30v 100 mw.	12¼ x 8⅝ x 5¼

LORAIN MODEL A HOWLER is the key to clear party lines. It is an ideal method for getting that receiver on the hook without making a service call.



LORAIN SUPPLEMENTARY FLOTROLS are unregulated chargers, designed to supply a constant current to supplement the output of a standard, regulated FLOTROL. The rating of the regulated charger must always be equal to or greater than that of the supplementary charger. Each supplementary charger is equipped with either built-in or separately mounted CONTROL RELAY, actuated by the output current of the regulated FLOTROL to turn on the supplementary charger when it is needed, and to turn it off when it is not needed. When ordering a supplementary charger the current rating of the regulated FLOTROL should always be specified.

Model	Input Volts	Output Volts	Output Amps	Size
150SA	115/230	24	6	19 x 8½ x 13 15/16
300SA	115/230	24	12	19 x 12 1/16 x 15 11/16
600SA	115/230	24	24	23 x 14⅞ x 19 1/16
150SB	115/230	48	3	19 x 8½ x 13 15/16
300SB	115/230	48	6	19 x 12 1/16 x 15 11/16
600SB	115/230	48	12	23 x 14⅞ x 19 3/16
1200SB	115/230	48	24	23 x 15 x 29½

CONTROL RELAYS

Model	Amps	Model	Amps	Model	Amps
FS1R-3	3	XFS1R-3	3	XFS2R-24	24
FS1R-6	6	XFS1R-6	6	XFS2R-50	50
FS1R-12	12	XFS1R-12	12	XFS2R-75	75
FS1R-24	24	XFS1R-24	24	XFS2R-100	100
		XF1SR-50			

Relays with prefix "X" are mounted externally and have contacts to control "ON" and "OFF" dc relay in supplementary charger.



ALL LORAIN THREE PHASE FLOTROLS have output voltage regulation of plus or minus 1% from 2% load to full load with input voltage variation of plus or minus 8%. All 3-phase FLOTROLS listed below are equipped with voltmeter and ammeter, have filter choke and condenser (except 260 volt models) and have dc relay for remote control of input contactor, 24 volt and 48 volt FLOTROLS have magnetic contactors on ac input, on dc output and overload relays on ac contactor. 130v and 260v FLOTROLS are equipped with circuit breakers in ac input and dc output. 230 volt input FLOTROL Models are tapped for 208 or 230 volt 60 cycle 3-phase input. 460 volt models are tapped for 420 or 460 volts. Charge failure alarm relays are available for all models when specified.

Model	Input Volts	Output Cells	Amps	Size	Mounting
24 VOLT FLOTROLS					
*U1250A	230	11-12	50	23 x 14⅞ x 45½	RR
U2500A	230	11-12	100	32 x 19 x 60	F1
U5KA	230	11-12	200	36 x 26 x 72	F1
48 VOLT FLOTROLS					
*U1250B	230	23-24-25	25	23 x 14⅞ x 45½	RR
*2501B	230	23-24-25	50	23 x 14⅞ x 45½	RR
U3750B	230	23-24-25	75	32 x 19 x 60	F1
U5KB	230	23-24-25	100	36 x 26 x 72	F1
U7.5KB	230	23-24-25	150	36 x 26 x 72	F1
U10KB	230	23-24-25	200	42 x 28 x 78	F1
10KB4	460	23-24-25	200	42 x 28 x 78	F1
20KB	230	23-24-25	400	42 x 28 x 78	F1

Model	Input Volts	Output Cells	Amps	Size	Mounting
130 VOLT FLOTROLS					
2100H	230	57-60-63	15	20½ x 15 x 60	F1
3300H	230	57-60-63	25	32 x 19 x 60	F1
4600H	230	57-60-63	35	32 x 19 x 60	F1
6.5KH	230	53-60-63	50	36 x 26 x 72	F1
6.5KH4	460	53-60-63	50	36 x 26 x 72	F1
260 VOLT FLOTROLS					
6.5KLN4	460	120	25	36 x 26 x 72	F1
13KLN4	460	120	50	42 x 28 x 78	F1

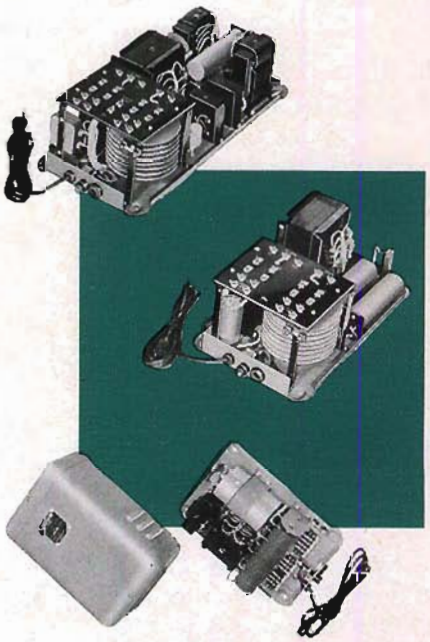
U—Underwriters Laboratories approved.

*Mounts on any standard 23" relay rack or floor mounts on 119E relay rack.

LORAIN RT UNITS are the combination of ringing (R) and talking (T) power supplies, operable from 111, 117 or 123 volt 60 cycle input and tolerating voltage fluctuations of plus or minus 5%. All units are equipped with 6 foot cords and plugs. Flat type telephone fuses are used in talking and signaling output circuits. Selenium rectifiers of Lorain make are used for obtaining the dc for talking and signaling supply.

Model	Ringing	Talking dc Supply	Signaling dc & ac	Size
RT-1	50 ma 75-95v 20cy	1.0 amp. 14-28v	.5a 18-28v dc 1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 13⅞ x 5¼
RT-2	50 ma 75-95v	2.0 amp. 19-30v or 28-40v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 17⅝ x 5¼
RT-3	50 ma 100-115v 30cy	1.0 amp. 14-28v	.5a 18-28v dc 1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 12¼ x 5¼
RT-3-50	50 ma 100-115v 25 cy	1.0 amp. 14-28v	.5a 18-28v dc 1.5a 10v 50cy* 1.5a 20v 50cy†	8⅝ x 12¼ x 5¼
RT-4	50 ma 100-115v	2.0 amp. 19-30v or 28-40v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 17⅝ x 5¼
RT-5	50 ma 100-115v	1.0 amp. 40-52v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 17⅝ x 5¼
RT-6	20 ma 100-115v 30cy	0.4a 14-26v		8 x 8⅞ x 5¼
RT-7	50 ma 75-95v 20cy	1 amp. 40-52v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 17⅝ x 5¼

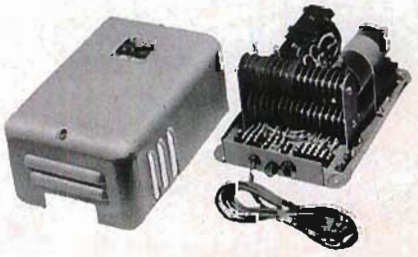
*Plus or minus 1v; †Plus or minus 2v.



Note 1. Model RT-4 is available with change of source transfer relay (equipped with an alarm contact) and is then identified as RT-4R. In case of an ac power failure the dc load is transferred to a set of dry-cell batteries.

Note 2. Models RT-1, RT-2, RT-3, RT-5, RT-6 and RT-7 may employ Model 25K change of source transfer relay, mounted as a separate unit, 5⅛" x 3 1/16" x 2¾", operable from 14 to 56 volt dc and equipped with alarm contacts.

LORAIN T UNITS are essentially the same type equipment as RT units but filtered dc power supplies and with ringing circuits omitted. Most of them operate on either 50 or 60 cycle 115v input. The models T-3, T-5, T-6 and T-8 may be made available with a built-in change of source transfer relay when designated with suffix R. The Models T-1, T-2, T-4 may be used with 25K and Model T-7 with 61K transfer of source relays, both separately mounted. T-7 is for coin collect service, whereas T-8 is for current supply in superimposed ringing.



Model	Talking dc Supply	Signaling dc & ac	Size
T-1	1.0 amp. 14-28	0.5a 18-28v dc 1.5a 10v 60cy* 1.5a 20v 60cy†	8 x 8⅞ x 5¼
T- 2	2.0 amp. 19-30v or 28-40v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 13⅞ x 5¼
T-2A	1.5 amp. 34-50	1.5a 10v 60cy*	8⅝ x 17⅝ x 5¼
T-3	0.5 amp. 22-30v	6, 10, 18 & 24v 60cy, 2.5a cont., 4.0 amp. int't.	8 x 8⅞ x 5¼
T-4	1.0 amp. 40-52v	1.5a 10v 60cy* 1.5a 20v 60cy†	8⅝ x 13⅞ x 5¼
T-5	0.5 amp. 10-16v	6, 10, 18, 24v 60cy 2.5 amps.	8 x 8⅞ x 5¼
T-6	1.0 amp. 5-8v	6, 10, 18, 24v 60cy 2.5 amps.	8 x 8⅞ x 5¼
T-7		+120, —120v dc .25a Cont, .6a Int.	8⅝ x 12¼ x 5¼
T-8		+40, —40v dc .25a Cont, .6a Int.	8⅝ x 12¼ x 5¼
T-9	1 amp. 6v dc		6¾ x 4⅛ x 5¼

*Plus or minus 1v;
†Plus or minus 2v.



LORAIN SINGLE-PHASE FLOTROLS are completely automatic battery chargers with no moving parts. The output voltage regulation is accomplished by magnetic reactors and the rectification by means of selenium rectifiers. On overloads the FLOTROLS are automatically protected against damage by changing their operation from constant voltage type chargers to constant current type chargers. They maintain voltage regulation of plus or minus 1% from 10% load (some models from no load) to full load.

Most single-phase FLOTROLS are available as battery eliminators. Some popular models are listed below. The quiet model FLOTROLS are characterized by their extremely low sound level.

Model	Input Volts	Output Volts	Cells	Amps	Size	Mounting
24 VOLT FLOTROLS						
U24A	115	24	10-11-12	1	19 x 5 x 7	RR,W
U75A	115	24	10-11-12	3	19 x 9 x 15⅜	RR,W
U150A	115	24	10-11-12	6	19 x 8⅝ x 24⅜	RR,W
150AF	115	22	9-10-11	6	19 x 8⅝ x 24⅜	RR,W
U300A	115	24	10-11-12	12	19 x 12⅛ x 28	RR,W
300AA	115	18	8	12	19 x 12⅛ x 28	RR,W
300AF	115	22	9-10-11	12	19 x 12⅛ x 28	RR,W
U600 A	230	24	11-12	24	23 x 15 x 45½	RR
U600A1	115	24	11-12	24	23 x 15 x 45½	RR
600AF1	115	22	9-10-11	24	23 x 15 x 45½	RR
DUAL RANGE FLOTROLS						
U150D	115	24	11-12	6	19 x 8⅝ x 24⅜	RR,W
	230	48	22-23-24	3		
U300D	115	24	11-12	12	19 x 12⅛ x 28	RR,W
	230	48	22-23-24	6		
48 VOLT FLOTROLS						
U75B	115	50	22-23-24	1.5	19 x 9 x 15⅜	RR,W
U150B	115	50	22-23-24	3	19 x 8⅝ x 24⅜	RR,W
U300B	115	50	22-23-24	6	19 x 12⅛ x 28	RR,W
300BA	115	43	20	6	19 x 12⅛ x 28	RR,W
U600B	230	52	23-24-25	12	23 x 15 x 45½	RR
U600B1	115	52	23-24-25	12	23 x 15 x 45½	RR
*600BA1	115	43-50	20-23-24	12	23 x 15 x 45½	RR
†UAE600B	230	52	23-24-25	12	23 x 15 x 45½	RR
U1200B	230	52	23-24-25	24	23 x 15 x 45½	RR
1200B1	115	52	23-24-25	24	23 x 15 x 45½	RR
*1200BA	230	43-50	20-23-24	24	23 x 15 x 45½	RR
†UAE1200B	230	52	23-24-25	24	23 x 15 x 45½	RR

Model	Input Volts	Output Volts	Output Cells	Output Amps	Size	Mounting
130 and 140 VOLT FLOTROLS						
350J	230	140	66	2.5	19 x 12⅛ x 28	RR,W
‡U400H	115/230	130	57-60-63	3	19 x 12⅛ x 28	RR,W
‡700H	230	130	57-60-63	5	20½ x 15 x 60	FLOOR
700J	230	140	66	5	23 x 15 x 45½	RR
‡1400H	230	130	57-60-63	10	20½ x 15 x 60	FLOOR
1400J	230	140	66	10	23 x 15 x 45½	RR
‡3302HN	230	130	57-60-63	25	20½ x 15 x 60	FLOOR
QUIET MODEL FLOTROLS						
22A	115	24	10-11-12	1	19 x 5 x 7	RR,W
72A	115	24	9-10-11-12	3	19 x 8⅝ x 24½	RR,W
152A	115	24	9-10-11-12	6	19 x 8⅝ x 24⅜	RR,W
302A	115	24	9-10-11-12	12	19 x 12⅛ x 28	RR,W
112BA	115	38	17-18	3	19 x 8⅝ x 24½	RR,W
222BA	115	38	17-18	6	19 x 8⅝ x 24⅜	RR,W
152B	115	50	23-24	3	19 x 8⅝ x 24⅜	RR,W
PLUS or MINUS 2½% V REGULATION FLOTROLS						
‡12EB	230	4.3	2	3		
‡40EB	230	4.3	2	10		
24E	115	6.5	3	4	19 x 5 x 7	RR,W
130E	115	6.5	3	20	19 x 8⅝ x 24⅜	RR,W
‡24EA	230	8.6	4	3	19 x 5 x 7	RR,W
U40MA3	115/230	13.0	6	3	19 x 9 x 15⅜	RR,W
140MA3	115/230	13.0	6	10	19 x 8⅝ x 24⅜	RR,W
280MA3	115/230	13.0	6	20	19 x 12⅛ x 28	RR,W
15AA	115	18	8-9	.75	12¼ x 8⅝ x 5¼	WALL
U1700G	230	86	40	20	23 x 15 x 45½	RR
PLUS or MINUS 2% V REGULATION BATTERY ELIMINATORS with MAX. 30 mv RIPPLES						
BE75A	115	24		3	19 x 9 x 15⅜	RR,W
BE150A	115	24		6	19 x 8½ x 24⅛	RR,W
BE300AF	115	24		12	19 x 12⅛ x 28	RR,W
BE300A	115	24		12	19 x 12⅛ x 28	RR,W
BE600A1	115	24		24	23 x 25 x 45½	RR
BE112BA	115	38		3	19 x 9 x 15⅜	RR,W
BE150B	115	48		3	19 x 8½ x 24⅛	RR,W
BE300B	115	48		6	19 x 12 x 28	RR,W
BE600B	230	48		12	23 x 15 x 45½	RR
BE600B1	115	50		12	23 x 15 x 45½	RR
BET1400HA	230	120±5%		12	20½ x 15 x 60	FLOOR
PLUS or MINUS 5% VOLTAGE REGULATION BATTERY ELIMINATORS with MAX. 200 mv RIPPLES						
Model	Input Volts	Output Cells		Output Amps	Size	Mounting
TT	115	120		.8	19⅜6 x 7⅝ x 9⅜6	SHELF
XTTB	115	90		.8	8½ x 7 x 16½	SHELF
TT2	115	48/55		2.0	19 x 8¾ x 9	SHELF
TT3	115	10/20		5.0	19 x 8¾ x 9	RR
T192B	115	48		4.0	19 x 10½ x 10	RR

U—Underwriters Laboratories approved.

*Regulation on 20 cell tap plus or minus 2½%.

†Has magnetic ac and dc contactors, voltmeter and ammeter and end cell switch to float 26 volt battery.

‡Equipped with voltmeter and ammeter.



RAYTHEON RECTIFILTER

Here is the modern, economical way to obtain dc power direct from an ac source.

Operating entirely without moving parts, the unit consists of a power transformer, dry disc rectifier element, a retardation coil and condenser for filtering, and in the 1.0 ampere and larger sizes, a saturable core reactor for voltage control, all mounted in a gray lacquered steel cabinet. A built-in voltmeter is provided.

STEADY DC VOLTAGE

The 1.0 ampere and larger sizes of the Raytheon Rectifilter include an exclusive dc stabilizing circuit which operates magnetically and therefore requires neither adjustment nor maintenance. This unique feature insures closely stabilized dc voltage, for proper operation of switchboards under the conditions of changing traffic load normally encountered.

Since the usual ac source is generally dependable, continuous dc supply is normally assured from the Raytheon Rectifilter without auxiliary power sources. However, there may be certain applications that require an alternative power source for continuity of service. In such cases the Rectifilter can be provided with relays that automatically connect to a standby power source (dry cells, etc.) the instant ac power fails.

RECTIFILTER SPECIFICATIONS

Input 110-125 volts ac single phase

Catalog Number	dc Output For Talking		60 Cycle Output for Ringing		Approximate Cabinet Size in Inches		
	Volts	Amps.	Volts	Amps.	High	Wide	Deep
RFR-1057-BR	4	0.23	None	..	8⅝	3⅜	3⅝
RFR-1024-B	6	0.5	6-12-18-24 ac	4.0	8⅝	3¾	5⅜
RFR-1026-A	12	0.5	6-12-18-24 ac	4.0	7¼	7¼	6¾
RFR-1027-B	24	0.5	6-12-18-24 ac	4.0	8⅝	3¾	5⅜
RFR-1027-BR	24	0.5	6-12-18-24 ac	4.0	8⅝	3¾	5⅜
RFR-1044-G	24	1.0	(6-12-18-24	4.0	10½	12⅛	7⅛
RFR-1044-GR	24	1.0	(		ac 1044-G with change of source relay		
RFR-1043-AR	24	1.5	(75-100	4.0	10½	12⅛	7⅛
RFR-1040-A	24	3.0	24 V. dc	..	12¼	12⅝	7⅛
RFR-1040-AR	24	3.0	24 V. dc		1040-A with change of source relay		
RFR-1041-AR	24	4.5	24 V. dc	..	16⅞	16⅛	8½
RFR-1042-AR	24	6.0	24 V. dc	..	16⅞	16⅛	8½
RFR-1079-AR	48	4.0	48 V. dc	..	16⅞	16⅛	8½
RFR-1080-AR	48	6.0	48 V. dc	..	19⅞	18	9½

RAYTHEON RECTICHARGER

The Raytheon RectiChargeR* is a battery charger of the constant potential type, for use in telephone service . . . a dry disc rectifier combined with a control circuit which maintains a constant voltage output over the complete load range regardless of the wide variation of line voltage encountered in many communities.

Across the output terminals, a small storage battery is floated for emergency and peak period use. This is kept at a constant cell voltage by the RectiChargeR* so that it never becomes overcharged or undercharged, thus prolonging the life of the battery.

The RectiChargeR* maintains the close voltage limits required by dial systems and eliminates such common difficulties as incorrect ringing, line noises, and lamp failures. The constant potential method of charging prevents battery gassing and water loss, thus reducing maintenance cost.



RECTICHARGER SPECIFICATIONS

Input 95-130 volts ac single phase

Catalog Number	Batt. Cells	Amps. Cont.	Shipping Wt. Lbs.	Size in Inches W	D	H	Pair of Brackets for Floor Mounting Catalog No.	Separate Relay for Constant Current Combination Catalog No.
RCR-1066B	11/12	1.0	62	13½	7⅛	12¼	DV 17-1750	CR-1093
RCR-1058B	11/12	3.0	163	19¼	9½	19⅞	DV 17-1747	CR-1090
RCR-1067B	11/12	6.0	233	19¼	9½	19⅞	DV 17-1747	CR-1091
RCR-1068B	22/24	1.0	93	17⅜	8½	16⅞	DV 17-1748	CR-1093
RCR-1069D	22/24	3.0	231	19¼	9½	19⅞	DV 17-1747	CR-1090
RCR-1070D	22/24	6.0	280	29⅛	12⅛	24	W-6714	CR-1091
RCR-2013A	11/12	12.0	232	17	15⅜	21	All Electronic models operate on 115/230 volts, 50/60 cycles 1-phase input	
RCR-2016A	11/12	24.0	320	17	15⅜	28		
RCR-2016B	22/24	12.0	320	17	15⅜	28		

RECTIRINGER*

Operating entirely without moving parts, the RectiRingeR is composed of a time tested Raytheon RectiFilteR to supply humless, dc power for the switchboard, and an adaptation of an exclusive saturable core reactor to supply 20 cycle ringing power. These two products, field tested for more than two decades, have been combined to bring to the telephone industry a compact, economical, trouble free method of powering switchboards, and supplying 20 cycle ringing power.

The RectiRingeR operates directly from an ac power source and retains the advantages of the Raytheon RectiFilteR.

The Raytheon RectiRingeR is also equipped with a relay which automatically connects the switchboard to a source of standby power, if the ac power source should fail, as well as a 10 volt ac output for operation of key equipments.

The 20 cycle ringer, built into the Raytheon RectiRingeR, is a self-starting static device, and operates entirely without moving parts to convert 60 cycle power into 20 cycle ringing power. Precision built of high quality materials, the 20 cycle ringer assures quiet, effiicent operation, and self protection on overloads.

RECTIRINGER SPECIFICATIONS

Model No. RRR-1244-AR.
Input, 110-125 volts, 60 cycle, 1-phase.
DC Output—24 volts at 1.0 Amp. for switchboard power.
AC Output—10 volts at 4.0 Amps. for lighting key equipment.
Ripple—60 DB.
Ringing Output—85 volts, 20 cycle, .050 Amps.
Signaling Output: 6-12-18-24 Volts, 60 cycle, ac at 4.0 Amps. 75-100 Volts, 60 cycle, ac at 150 Amps.
Size—Approximately 13" wide, by 14½" high, by 7" deep. Contact factory for detailed mounting dimensions.



SCHAUER BATTERY CHARGERS

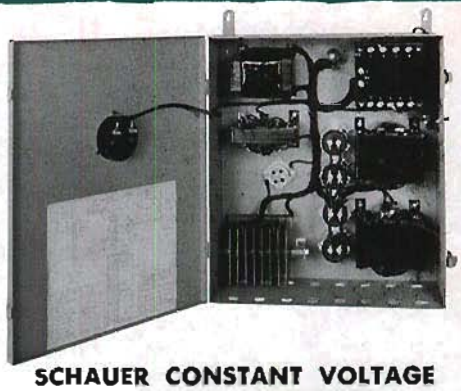
The Type RB is a completely automatic charger having no relays, vibrators or bulbs requiring attention or adjustment. Entirely noiseless, it can be connected directly across the battery terminals without causing hum or other interference. As current is withdrawn from the batteries, the resulting drop in terminal voltage causes the Type RB to deliver a charging current which is maintained until the original battery terminal voltage is restored.

Component parts consist of a transformer, continuously rated full wave selenium rectifier, magnetic regulating equipment, ample choke-type filtering system, precision dc voltmeter, on-off switch, fuse and rubber covered ac cord and plug. Parts are housed in a ventilated steel cabinet arranged for wall mounting.

When ordering, specify the number of battery cells to be charged.

TYPE	DC OUTPUT VOLTS	DC OUTPUT AMPS.	METERS	SIZE
RB-1024	24	1.0	VM	10"x12"x6"
RB-2024	24	2.0	VM	12"x15"x7"
RB-3024	24	3.0	VM-AM	12"x15"x7"
RB-4024	24	4.0	VM-AM	12"x15"x7"
RB-6024	24	6.0	VM-AM	16"x18"x7"
RB-12024	24	12.0	VM-AM	16"x18"x7"
RB-30024	24	30.0	VM-AM	24"x36"x8½"
RB-1048	48	1.0	VM	12"x15"x7"
RB-2048	48	2.0	VM	12"x15"x7"
RB-3048	48	3.0	VM-AM	12"x15"x7"
RB-4048	48	4.0	VM-AM	16"x18"x7"
RB-6048	48	6.0	VM-AM	16"x18"x7"
RB-12048	48	12.0	VM-AM	20"x28"x8"
RB-20048	48	20.0	VM-AM	24"x29"x9½"
RB-24048	48	24.0	VM-AM	24"x29"x9½"

VM indicates dc Voltmeter; AM Indicates dc Ammeter.



SCHAUER CONSTANT VOLTAGE BATTERY ELIMINATORS
For Lamp Signal and Automatic Switchboards

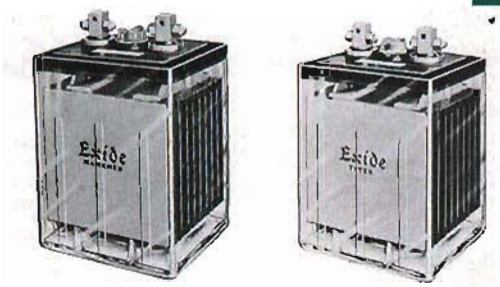
The Type RA Electrox Battery Eliminator delivers a practically constant output voltage, irrespective of current drain, up to the maximum rated output of the unit. Constant voltage output is obtained automatically, requiring no manual adjustments.

The Type RA consists of a transformer; full wave Selenium rectifier, rated for continuous service; magnetic regulator; ample choke and condenser filtering system; precision dc voltmeter; rubber covered cord and plug; ac cut-off switch. Parts are housed in a ventilated steel cabinet arranged for wall mounting. A power-off relay is optional equipment. Sizes other than shown at the left, are also available.

TYPE	DC OUTPUT VOLTS	DC OUTPUT AMPS.	RINGING VOLTS*	SIZE
RA-05024	24	0.5	12-18-24	10"x12"x6"
RA-1024	24	1.0	6-12-18-24	10"x12"x6"
RA-2024	24	2.0		12"x15"x7"
RA-3024	24	3.0		12"x15"x7"
RA-4024	24	4.0		12"x15"x7"
RA-6024	24	6.0		12"x18"x7"
RA-12024	24	12.0		18"x21"x7"
RA-2048	48	2.0		12"x18"x7"
RA-3048	48	3.0		16"x18"x7"
RA-4048	48	4.0		16"x18"x7"
RA-6048	48	6.0		18"x21"x7"
RA-12048	48	12.0		20"x28"x8"

*Supplied only when specified on order.

EXIDE STORAGE BATTERIES



There are two types of Exide batteries used in telephone service: The Exide Manchex (Plante type) and the Exide Tytex (Faure). These are furnished in capacities to meet virtually every requirement. In all types listed the cell covers are sealed at the top of the jars and have spray-proof vents.

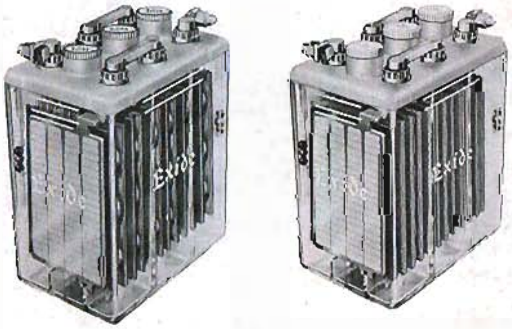
EXIDE-MANCHEX TYPE — The Exide-Manchex type is the more durable of the two types because of its rugged plate construction. The manchester positive plate consists of a lead antimony alloy grid, perforated with openings into which the pure lead buttons of active metal are forced. This alloy grid resists the "forming" action of the current during charge and discharge, and, therefore, retains its strength, shape, and dimensions throughout the entire life of the plate. Its heavy framework of interlocking rib and horizontal bar design holds the active material securely locked in place.

EXIDE-TYTEX TYPE — This pasted plate type will furnish greater ampere hour capacity in a given space than the Exide-Manchex type and the initial cost is lower. The active material of both positive and negative plates is pasted on both sides of the lead antimony grid or framework of interlocking rib and bar design, and locked in place by the horizontal bars. Where space is limited and cost is a consideration, where service requirements are light and operating conditions satisfactory, the results obtained from the pasted plate type may justify its selection.

A thermometer and a hydrometer syringe should be ordered with all batteries.

Exide-Manchex Type
TYPES DME, EME, and FME

With the exception of the three smallest sizes (DME-A), all types have burned ring seal post construction with copper inserts in the posts to improve their conductivity. All types have manchester positive and Exide Permanized negative plates, wood and slotted plastic separators.



The cells are shipped assembled, sealed, charged and filled with electrolyte, ready for service. Bolt connectors, lead plated copper intercell connectors, and lugs are furnished with two cells or more. Each cell is a unit not requiring crates. Information on racks for these cells will be furnished upon request.

SINGLE CELL UNITS

Type & Size	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	Approximate Dimensions in Inches			LCL Shipping Weight in Pounds
		Length	Width	Height	
DME-5A	40	3 1/16"	7 13/16"	12 5/8"	29
DME-7A	60	3 7/8"	7 13/16"	12 5/8"	35
DME-9A	80	4 11/16"	7 13/16"	12 5/8"	42
DME-11	100	5 1/2"	7 13/16"	12 1/2"	50
DME-13	120	6 5/16"	7 13/16"	12 1/2"	59
DME-15	140	7 1/8"	7 13/16"	12 1/2"	66
DME-17	160	7 15/16	7 13/16	12 1/2"	73
EME-11	200	6 1/8"	9 15/16"	15 1/4"	96
EME-13	240	6 7/8"	9 15/16"	15 1/4"	113
EME-15	280	7 3/4"	9 15/16"	15 1/4"	126
EME-17	320	8 5/8"	9 15/16"	15 1/4"	138
EME-21	400	10 3/8"	9 15/16"	15 1/4"	165
EME-25	480	12 1/8"	9 15/16"	15 1/4"	191
FME-15	560	8"	13 5/16"	19 5/16"	234
FME-17	640	8 7/8"	13 5/16"	19 5/16"	259
FME-21	800	10 5/8"	13 5/16"	19 5/16"	308
FME-25	960	12 3/8"	13 5/16"	19 5/16"	373

Exide-Tytex Pasted Plate Types DOE, EOE, and FOE

These Exide pasted plate batteries are (like the Exide-Manchex type) assembled in clear molded glass jars with the elements resting upon ribs in the bottom. With the exception of the three smallest sizes (DOE-A) all types have burned ring post construction with copper inserts in the posts to improve their conductivity.

Type & Size	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	Approximate Dimensions in Inches			LCL Shipping Weight in Pounds
		Length	Width	Height	
DOE-5A	50	3 1/16"	7 13/16"	12 5/8"	27
DOE-7A	75	3 7/8"	7 13/16"	12 5/8"	33
DOE-9A	100	4 11/16"	7 13/16"	12 5/8"	39
DOE-11	125	5 1/2"	7 13/16"	12 1/2"	47
DOE-13	150	6 5/16"	7 13/16"	12 1/2"	55
DOE-15	175	7 1/8"	7 13/16"	12 1/2"	61
DOE-17	200	7 15/16	7 13/16	12 1/2"	68
EOE-13	240	6 1/8"	9 15/16"	15 1/4"	91
EOE-15	280	6 7/8"	9 15/16"	15 1/4"	105
EOE-17	320	7 3/4"	9 15/16"	15 1/4"	116
EOE-19	360	8 5/8"	9 15/16"	15 1/4"	125
EOE-29	560	12 1/8"	9 15/16"	15 1/4"	176
FOE-17	608	8"	13 5/16"	19 5/16"	210
FOE-19	684	8 7/8"	13 5/16"	19 5/16"	229
FOE-29	1064	12 3/8"	13 5/16"	19 5/16"	336

Exide-Manchex Type CME

The Exide CME batteries are the plante type using the manchester button positive plate — an Exide exclusive feature. The 3, 5 and 7 plate elements are assembled in clear, heat-resistant polystyrene containers with plastic covers. Double insulation of microporous rubber separators and slotted plastic retainers is used. Cover is permanently sealed to container and includes funnel-type vents. Units are equipped with terminals and pilot balls.

Type & Size Side-to-Side Asmbly	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	No. of cells per unit	Overall Dimensions in Inches			LCL Shipping Wt. per unit in pounds
			Length	Width	Height	
2-CME-3	8	2	4 15/32"	4¼"	8½"	14
3-CME-3	8	3	6 19/32"	4¼"	8½"	20
2-CME-5	16	2	4 15/32"	4¼"	8½"	17
3-CME-5	16	3	6 19/32"	4¼"	8½"	25
2-CME-7	24	2	6⅛"	4¼"	8½"	24
3-CME-7	24	3	9"	4¼"	8½"	34

Exide-Tytex Type COE

The Exide COE is the pasted plate type assembled in 2 and 3 cell heat-resistant polystyrene containers with plastic covers permanently sealed. Thick positive plates assure long life. Double insulation is used and consists of microporous rubber separators and Vitrex retainers. Covers are equipped with funnel type vents. All units are equipped with terminals and pilot balls.

Type & Size Side-to-Side Asmbly	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	No. of cells per unit	Overall Dimensions in Inches			LCL Shipping Wt. per unit in pounds
			Length	Width	Height	
2-COE-3	10	2	4 15/32"	4¼"	8½"	13
3-COE-3	10	3	6 19/32"	4¼"	8½"	18
2-COE-5	20	2	4 15/32"	4¼"	8½"	15
3-COE-5	20	3	6 19/32"	4¼"	8½"	22
2-COE-7	30	2	6⅛"	4¼"	8½"	21
3-COE-7	30	3	9"	4¼"	8½"	30

EXIDE PLX BATTERIES
PASTED PLATE IN MULTI-UNIT PLASTIC CONTAINERS

The elements consist of pasted type plates assembled with double insulation consisting of microporous rubber separators and Vitrex (spun glass) retainers in heat-resistant polystyrene containers molded to exact dimensions. Cover is plastic, permanently sealed to the container. All PLX types can be furnished with the Exide explosion-proof vent consisting of gas collector, gas cylinder, vent-filling funnel and plastic vent cap. Units are equipped with terminals and pilot balls.

Type & Size	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	No. of cells per unit	Overall Dimensions in Inches			LCL Shipping Wt. per unit in pounds
			Length	Width	Height	
2-PLX-7	50	2	4 15/32"	7 5/16"	10⅜"	33
3-PLX-7	50	3	6 1/16"	7 5/16"	10⅜"	46
2-PLX-13	100	2	7¾"	7 5/16"	10⅜"	54
3-PLX-13	100	3	11⅜"	7 5/16"	10⅜"	76

Caption for (C) Type CME
Caption for (D) Type COE
Caption for (E) Type EB (Cut Away)
Caption for (F) Type PLX

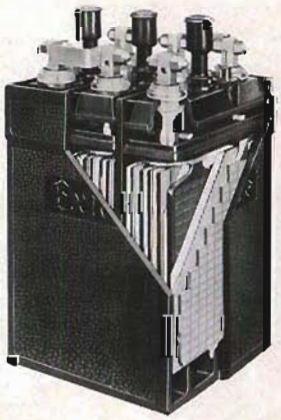
All cells and units are shipped assembled, sealed and charged ready for service. Intercell or interunit connectors are included. Information on racks will be furnished on request.

Rubber Jar Types EB and FB

These are thick pasted plate batteries assembled in molded rubber jars with the elements resting on ribs in the bottom. They are designed particularly for telephone service. A special feature of this battery design is its explosion control construction.

Type & Size	Ampere Hours Capacity at 8 Hour Rate to 1.75 Final Volts	Approximate Dimensions in Inches			LCL Shipping Weight in Pounds
		Length	Width	Height	
2-EB—7 Units	180	7⅜"	10 1/16"	19⅛"	130
3-EB—7 Units	180	11"	10 1/16"	19⅛"	190
EB—9 Cells	240	5 5/16"	10¾"	19⅛"	82
EB—11 Cells	300	6 5/16"	10¾"	19⅛"	100
EB—15 Cells	420	8⅛"	10¾"	19⅛"	135
EB—19 Cells	540	10 5/16"	10⅞"	19⅛"	166
EB—23 Cells	660	12 5/16"	10⅞"	19⅛"	204
FB—15 Cells	840	8 5/16"	14⅝"	23¾"	255
FB—19 Cells	1080	10 5/16"	14⅝"	23¾"	313
FB—23 Cells	1320	12 5/16"	14⅝"	23¾"	371
FB—29 Cells	1680	15¼"	14⅝"	23¾"	461





PLASTICELL®

PLASTIC AND RUBBER JAR BATTERIES
TYPES A, B, C, CE AND CT
Capacities: 10 to 1680 A.H.

Technical Data, Overall Dimensions and Weights

C&D Unit Type	Cells Per Unit	Plates Per Cell	Cap. in Amp. Hours 8 Hr. to 1.75V	3 Hr. to 1.75V	1 Hr. to 1.75V	72 Hr. to 1.85V	Overall Dimensions L	W	H	Approx. Wt. in Lbs. Net Filled	Dom. Pkd.	Dom. Palletized Incl. Skid	Exp. Pkd. Dry	Electrolyte Unit Gal.
A-10	1	5	10	7.5	5.0	15	2½	3⅝	7¾	4	7	8	7	0.14
B-15	1	5	15	11	7.5	22	2½	3⅝	7¾	6	9	10	8	0.14
C-120	1	13	120	90	60	168	7⅜	7¼	10	28	38	40	35	0.70
C-140	1	15	140	105	70	196	7⅜	7¼	10	30	40	42	38	0.70
C-160	1	17	160	120	80	224	7⅜	7¼	10	32	42	44	40	0.65
CE-9	1	9	240	176	116	360	4¾	10¾	18	60	78	82	72	1.50
CE-11	1	11	300	220	145	450	5⅝	10¾	18	75	93	97	87	1.75
CE-13	1	13	360	264	174	54	7½	10½	18	92	112	117	98	2.45
CE-15	1	15	420	308	203	630	7½	10½	18	100	120	125	113	2.40
CE-17	1	17	480	352	232	720	9⅜	10½	18	122	144	150	126	3.05
CE-19	1	19	540	396	261	810	9⅜	10½	18	130	152	158	145	3.00
CE-23	1	23	660	484	319	990	11¼	10½	18	155	179	189	171	3.70
*CT-11	1	11	600	435	275	900	8⅛	14½	22⅛	150	180	190	172	4.25
*CT-13	1	13	720	522	330	1080	8⅛	14½	22⅛	170	200	210	190	4.15
*CT-15	1	15	840	609	385	1260	8⅛	14½	22⅛	190	220	230	210	4.10
*CT-17	1	17	960	696	440	1440	10	14½	22⅛	220	255	265	242	5.35
*CT-19	1	19	1080	783	495	1620	10	14½	22⅛	240	275	285	265	5.30
*CT-23	1	23	1320	957	605	1980	11⅞	14½	22⅛	285	325	340	310	6.40
*CT-29	1	29	1680	1218	770	2520	14¾	14½	22⅛	360	410	430	395	8.20



Positive Plate .250" or .266" Thick Specific Gravity of Electrotype Fully Charged 1.215 at 77° F.

EXTRA LONG LIFE — C & D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION — Thick Fiberglas mat — Microporous rubber separators — Perforated Koroseal retainer.

HIGH HEAT RESISTANT — crystal-clear polystyrene jars and covers are hermetically sealed — permit easy visual internal inspection.

PLASTITE POST SEALS.

SAFTEE-VENT.

Intercell Connectors — Lead Plated Copper. All Cells shipped completely assembled, sealed and charged with necessary accessories.

*Assembled in Monobloc Hard Rubber cases.

Racks available, complete information on request.

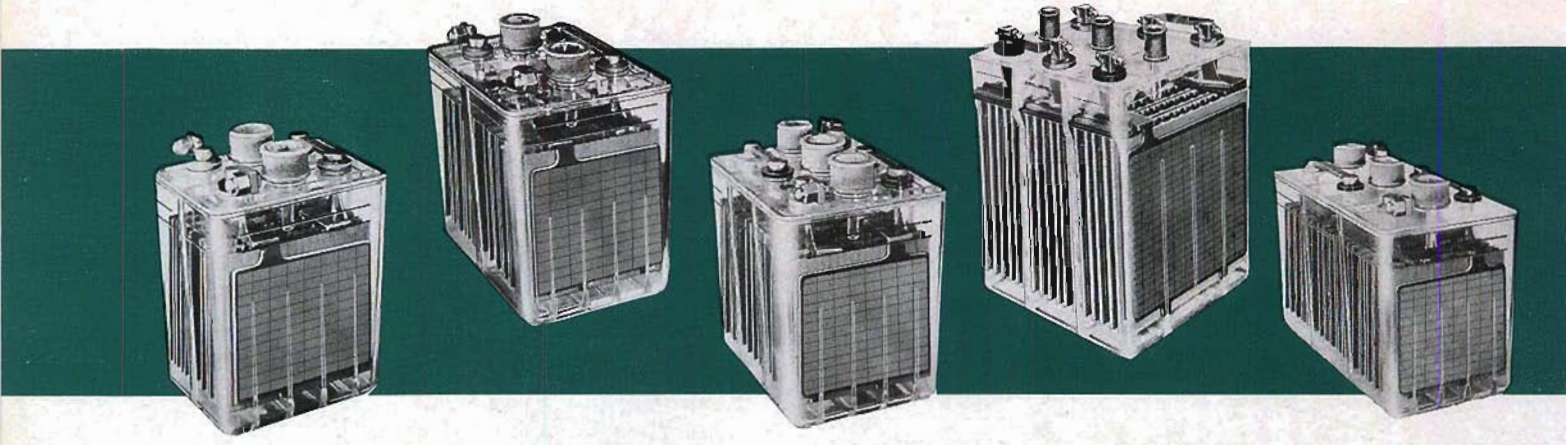
The C & D batteries listed are built in accordance with telephone industry standards.

® PLASTICAL

PLASTIC JAR BATTERIES
TYPES PCC AND PCE
Capacities: 40 to 180 A.H.

Technical Data, Overall Dimensions and Weights

C&D Unit Type	Cells Per Unit	Plates Per Cell	Cap. in Amp. Hours 8 Hr. to 1.75V	3 Hr. to 1.75V	1 Hr. to 1.75V	72 Hr. to 1.85V	Overall Dimensions L	W	H	Approx. Wt. in Lbs. Net Filled	Dom. Pkd.	Dom. Palletized Incl. Skid	Electrolyte Unit Gal.
2PCC-40	2	5	40	30	20	56	6⅛	7⅜	10	25	35	36	0.75
3PCC-40	3	5	40	30	20	56	9	7⅜	10	38	51	53	1.05
2PCC-50	2	7	50	37.5	25	70	6⅛	7⅜	10	29	39	40	0.70
3PCC-50	3	7	50	37.5	25	70	9	7⅜	10	44	57	59	1.00
2PCC-60	2	7	60	45	30	84	6⅛	7⅜	10	30	40	41	0.65
3PCC-60	3	7	60	45	30	84	9	7⅜	10	45	58	60	1.00
2PCC-80	2	9	80	60	40	112	9	7⅜	10	41	55	56	1.25
3PCC-80	3	9	80	60	40	112	13⅜	7⅜	10	60	76	80	1.85
2PCC-100	2	11	100	75	50	140	9	7⅜	10	45	59	60	1.20
3PCC-100	3	11	100	75	50	140	13⅜	7⅜	10	66	82	86	1.80
2PCE-180	2	7	180	132	87	270	7½	10½	18	100	120	125	2.40
3PCE-180	3	7	180	132	87	270	11¼	10½	18	145	170	175	3.50



Positive Plate .250" Thick Specific Gravity of Electrotype Fully Charged 1.215 at 77° F. Positive Plate .220" Thick on 2 C-50 and 3 C-50 only.

EXTRA LONG LIFE — C & D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION — Thick Fiberglas mat — Microporous rubber separators — Perforated Koroseal retainer.

HIGH HEAT RESISTANT — crystal-clear polystyrene jars and covers are hermetically sealed — permit easy visual internal inspection.

PLASTITE POST SEALS.

SAFTEE-VENT.

Intercell Connectors — Lead Plated Copper. All Cells shipped completely assembled, sealed and charged with necessary accessories.

*Assembled in Monobloc Hard Rubber cases.

Racks available, complete information on request.

The C & D batteries listed are built in accordance with telephone industry standards.



PLASTICELL®



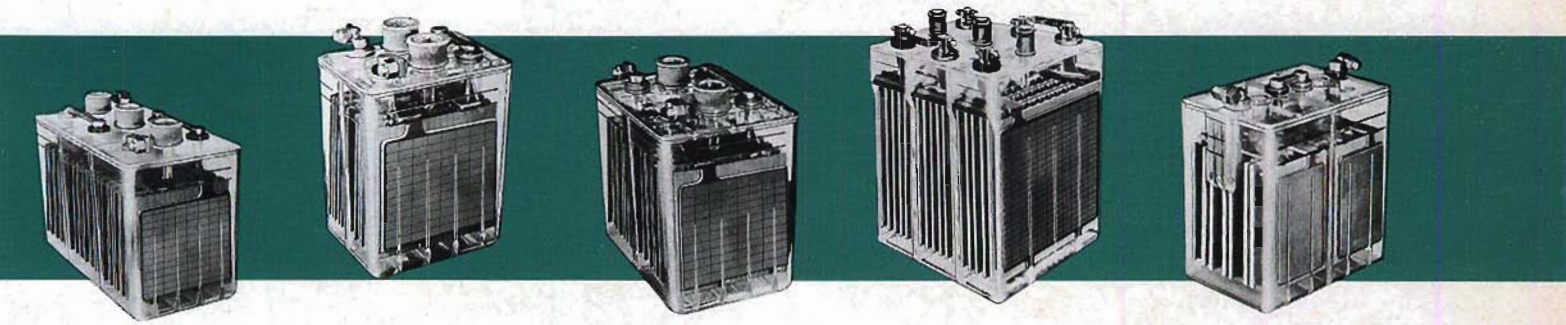
PLASTIC JAR BATTERIES

TYPES A, B, C AND CE

Capacities: 10 to 180 A.H.

Technical Data, Overall Dimensions and Weights

C&D Unit Type	Cells Per Unit	Plates Per Cell	Cap. in Amp. Hours 8 Hr. to 1.75V	3 Hr. to 1.75V	1 Hr. to 1.75V	72 Hr. to 1.85V	Overall Dimensions L	W	H	Approx. Wt. in Lbs. Net Filled	Dom. Pkd.	Dom. Palletized Incl. Skid	Exp. Pkd. Dry	Electrolyte Unit Gal.
2A-10	2	5	10	7.5	5.0	15	2½	7¼	7¾	8	11	12	10	0.28
3A-10	3	5	10	7.5	5.0	15	7	3 15/16	7¾	11	14	15	13	0.42
2B-15	2	5	15	11	7.5	22	2½	7¼	7¾	9	12	13	11	0.28
3B-15	3	5	15	11	7.5	22	7	3 15/16	7¾	12	15	16	14	0.42
2A-20	2	9	20	15	10	30	4⅜	7¼	7¾	13	17	18	12	0.60
2B-30	2	9	30	22	15	44	4⅜	7¼	7¾	15	19	20	18	0.60
2C-40	2	5	40	30	20	56	5	7¼	10	25	35	36	32	0.75
3C-40	3	5	40	30	20	56	7⅜	7¼	10	38	51	53	48	1.05
2C-50	2	7	50	37.5	25	70	6⅛	7⅜	10	29	39	40	37	0.70
3C-50	3	7	50	37.5	25	70	9	7⅜	10	44	57	59	56	1.00
2C-60	2	7	60	45	30	84	6⅛	7⅜	10	30	40	41	38	0.65
3C-60	3	7	60	45	30	84	9	7⅜	10	45	58	60	54	1.00
2C-80	2	9	80	60	40	112	9	7⅜	10	41	55	56	52	1.25
3C-80	3	9	80	60	40	112	13⅜	7⅜	10	60	76	80	74	1.85
2C-100	2	11	100	75	50	140	9	7⅜	10	45	59	60	55	1.20
3C-100	3	11	100	75	50	140	13⅜	7⅜	10	66	82	86	75	1.80
2CE-7	2	7	180	132	87	270	7½	10½	18	100	120	125	113	2.40
3CE-7	3	7	180	132	87	270	11¼	10½	18	145	170	175	160	3.50



Positive Plate .250" Thick Specific Gravity of Electrotype Fully Charged 1.215 at 77° F. Positive Plate .220" Thick on 2C-50 and 3C-50 only.

EXTRA LONG LIFE — C & D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION — Thick Fiberglas mat — Microporous rubber separators — Perforated Koroseal retainer.

HIGH HEAT RESISTANT — crystal-clear polystyrene jars and covers are hermetically sealed — permit easy visual internal inspection.

PLASTITE POST SEALS.

SAFTEE-VENT.

Intercell Connectors — Lead Plated Copper. All cells shipped completely assembled, sealed and charged with necessary accessories.

*Assembled in Monobloc Hard Rubber cases.

Racks available, complete information on request.

The C & D batteries listed are built in accordance with telephone industry standards.

® PLASTICAL

PLASTIC AND RUBBER JAR BATTERIES

TYPES PCC, PCE AND RCT

Capacities: 120 to 1680 A.H.

Technical Data, Overall Dimensions and Weights

C&D Unit Type	Cells Per Unit	Plates Per Cell	Cap. in Amp. Hours 8 Hr. to 1.75V	3 Hr. to 1.75V	1 Hr. to 1.75V	72 Hr. to 1.85V	Overall Dimensions L	W	H	Approx. Wt. in Lbs. Net Filled	Dom. Pkd.	Dom. Palletized incl. Skid	Electrolyte Unit Gal.
PCC-120	1	13	120	90	60	168	7⅜	7¼	10	28	38	40	0.70
PCC-140	1	15	140	105	70	196	7⅜	7¼	10	30	40	42	0.70
PCC-160	1	17	160	120	80	224	7⅜	7¼	10	32	42	44	0.65
PCE-240	1	9	240	176	116	360	4¾	10¾	18	60	78	82	1.50
PCE-300	1	11	300	220	145	450	5⅝	10¾	18	75	93	97	1.75
PCE-360	1	13	360	264	174	54	7½	10½	18	92	112	117	2.45
PCE-420	1	15	420	308	203	630	7½	10½	18	100	120	125	2.40
PCE-480	1	17	480	352	232	720	9⅜	10½	18	122	144	150	3.05
PCE-540	1	19	540	396	261	810	9⅜	10½	18	130	152	158	3.00
PCE-660	1	23	660	484	319	990	11¼	10½	18	155	179	189	3.70
*RCT-600	1	11	600	435	275	900	8⅛	14½	22⅛	150	180	190	4.25
*RCT-720	1	13	720	522	330	1080	8⅛	14½	22⅛	170	200	210	4.15
*RCT-840	1	15	840	609	385	1260	8⅛	14½	22⅛	190	220	230	4.10
*RCT-960	1	17	960	696	440	1440	10	14½	22⅛	220	255	265	5.35
*RCT-1080	1	19	1080	783	495	1620	10	14½	22⅛	240	275	285	5.30
*RCT-1320	1	23	1320	957	605	1980	11⅞	14½	22⅛	285	325	340	6.40
*RCT-1680	1	29	1680	1218	770	2520	14¾	14½	22⅛	360	410	430	8.20



Positive Plate .250" or .266" Thick Specific Gravity of Electrotype Fully Charged 1.215 at 77° F.

EXTRA LONG LIFE — C & D's exclusive design combines advantages of both suspended and supported plate construction.

TRIPLE INSULATION — Thick Fiberglas mat — Microporous rubber separators — Perforated Koroseal retainer.

HIGH HEAT RESISTANT — crystal-clear polystyrene jars and covers are hermetically sealed — permit easy visual internal inspection.

PLASTITE POST SEALS.

SAFTEE-VENT.

Intercell Connectors — Lead Plated Copper. All Cells shipped completely assembled, sealed and charged with necessary accessories.

*Assembled in Monobloc Hard Rubber cases.

Racks available, complete information on request.

The C & D batteries listed are built in accordance with telephone industry standards.

GOULD PLANTE GLASS JAR BATTERIES
TYPES WPE-3, XPE-3, YPE-3, DP, EP AND FP
CAPACITIES — 40 to 960 AMPERE HOURS







Technical Data, Overall Dimensions and Weights

Type of Cell	CAPACITY AT 77°F. Ampere Hours at 8 Hour Rate of Discharge	Amperes for 8 Hours to 1.75 F.V.	Amperes for 5 Hours to 1.92 F.V.	Amperes for 5 Hours to 1.83 F.V.	Amperes for 2 Hours to 1.92 F.V.	Amperes for 2 Hours to 1.83 F.V.	Overall Dimensions of Cell in Inches Length	Width	Height	Approximate Wt. of Cell in Pounds Net	Packed	Electrolyte Gals. Per Cell
WPE-3*	9.2	1.15	1.08	1.43	1.68	2.44	2 3/16	4 5/16	8 3/4	6	7	.1
XPE-3*	20	2.5	2.35	3.12	2.67	5.30	2 1/2	6 3/4	10 13/16	12	15	.3
YPE-3*	28	3.5	3.29	4.36	5.13	7.41	2 1/2	6 3/4	15 5/16	19	23	.5
DP-5	40	5	4.8	6.5	8	11.6	4 15/16	8 1/16	12 1/2	27	32	.7
DP-7	60	7.5	7.2	9.7	12	17.4	5 13/16	8 1/16	12 1/2	33	38	.85
DP-9	80	10	9.5	12.9	16	23.2	6 13/16	8 1/16	12 1/2	40	45	.95
EP-5	80	10	9.5	12.9	16	23.2	5	10	16 1/8	50	55	1.5
EP-7	120	15	14.3	19.4	24	35	5 7/8	10	16 1/8	63	70	1.7
EP-9	160	20	19.0	25.9	32	46	6 3/4	10	16 1/8	77	85	1.9
EP-11	200	25	23.9	32.4	40	58	9 1/4	10 1/8	16 13/16	102	120	2.7
EP-13	240	30	28.6	38.8	48	70	9 1/4	10 1/8	16 13/16	110	130	3.0
EP-15	280	35	33.4	45.2	56	81	13 1/4	10 1/4	18 5/16	135	155	5.5
EP-17	320	40	38.2	51.8	64	93	13 1/4	10 1/4	18 5/16	145	165	5.2
EP-19	360	45	43.0	58.2	72	104	13 1/4	10 1/4	18 5/16	155	175	5.0
EP-21	400	50	47.6	64.7	80	116	13 1/4	10 1/4	18 5/16	165	185	4.8
FP-9	320	40	38.2	51.8	64	93	8 7/8	13 7/8	20 7/8	175	205	6.7
FP-11	400	50	47.6	64.7	80	116	8 7/8	13 7/8	20 7/8	190	220	6.2
FP-13	480	60	57.2	77.6	96	139	10 1/4	13 3/4	20 7/8	215	245	6.5
FP-15	560	70	67	90.5	112	162	12 3/8	14	20 7/8	245	275	7.5
FP-17	640	80	76	103	128	185	12 3/8	14	20 7/8	260	300	7.0
FP-19	720	90	86	116	144	209	14 3/4	14	20 7/8	300	340	8.0
FP-21	800	100	95	129	160	232	14 3/4	14	20 7/8	315	355	7.5
FP-23	880	110	105	142	176	255	14 3/4	14	20 7/8	330	370	7.0
FP-25	960	120	114	155	192	278	16 1/4	14	20 7/8	380	420	8.5

SINGLE CELLS: Heavy duty sealed glass jars. Suspended element. Wood separators.

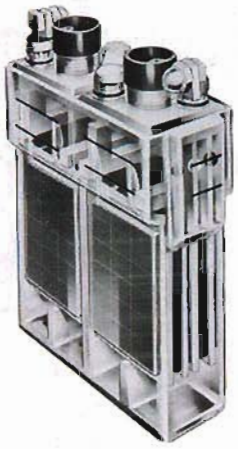
SPECIFIC GRAVITY OF ELECTROLYTE: Fully charged — 1.215 at 77°F.

POSTS: Types DP-5 to EP-13 have two posts per cell. Types EP-15 to EP-21 have four posts per cell. Types FP-9 and FP-11 have two posts per cell. Types FP-13 to FP-25 have four posts per cell.

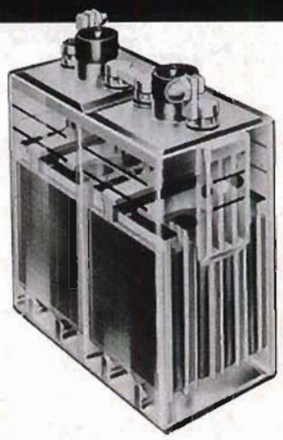
INTERCELL CONNECTORS: Lead plated copper. All cells shipped completely assembled, sealed and charged with necessary accessories.

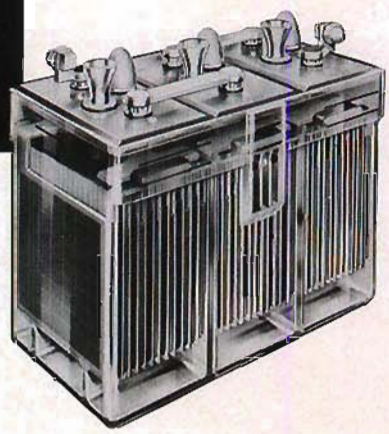
*These types normally assembled in trays. See Plante Catalog.

GOULD PLASTIC JAR BATTERIES
TYPES AS, AT, BS, BT AND CS
CAPACITIES 10 TO 100 AMPERE HOURS









Technical Data, Overall Dimensions and Weights

CAPACITY AT 77°F.

Type of Cell	Cells Per Unit	Ampere Hours at 8 Hour Rate of Discharge	Amperes for 8 Hours to 1.75 F.V.	Amperes for 5 Hours		Amperes for 2 Hours		Overall Dimensions of Unit in Inches			Approximate Unit Weight in Pounds		Electrolyte Gals. Per Cell
				to 1.92 F.V.	to 1.83 F.V.	to 1.92 F.V.	to 1.83 F.V.	Length	Width	Height	Net	Packed	
AS-52	1	10	1.25	1.17	1.54	1.83	2.53	2⅝	3½	7⅜	4	7	.1
AS-54	2	10	1.25	1.17	1.54	1.83	2.53	2⅝	6½	7⅞	7.5	13	.1
AT-56	3	10	1.25	1.17	1.54	1.83	2.53	6⅜16	3½	7⅜	12	21	.1
BS-54	2	15	1.88	1.76	2.32	2.75	3.95	2¼	8⅛16	8	10	15	.12
BS-56	3	15	1.88	1.76	2.32	2.75	3.95	6½	4¼	7 13⁄16	15	22	.14
BS-94	2	30	3.75	3.52	4.63	5.5	7.90	3 13⁄16	8⅛16	8	17	23	.22
BT-76	3	30	3.75	3.52	4.63	5.5	7.90	8⅜	4⅜16	8½	27	35	.25
CS-74	2	50	6.25	5.85	8.1	9.65	14.4	5	7½	10⅜	28	40	.3
CS-76	3	50	6.25	5.85	8.1	9.65	14.4	7⅜	7½	10⅜	41	55	.3
CS-134	2	100	12.5	11.70	16.2	19.3	28.8	8⅝	7½	10⅜	55	65	.55
CS-136	3	100	12.5	11.70	16.2	19.3	28.8	12⅞	7½	10⅜	71	85	.55

SPECIFIC GRAVITY OF ELECTROLYTE: Fully charged, 1.215 at 77°F.

CHARGE INDICATOR BALLS: One set per cell for Type AS-52. One set per each MultiUnit all other types.

INTERCELL CONNECTORS: Lead.
INTERUNIT CONNECTORS: Lead tape.
TERMINALS: Bolted type.
SEPARATORS: Porous rubber and perforated retainer.

STANDARD TRAYED ARRANGEMENTS

Type and Description	Overall Dimensions in Inches			Weight in Pounds	
	Length	Width	Height	Net	Packed
24V-AT56T-1 (24 Volt) (4—3 Cell Units)	26¾	4⅛	8¾	55	90
24V-BS56T-1 (24 volt) (4—3 Cell Units)	28	4¾	9¼	65	100
24V-BT76T-1 (24 Volt) (4—3 Cell Units)	35½	4¾	9⅞	120	160
24V-CS76T-1 (24 Volt) (4—3 Cell Units)	31⅞	8	11⅝	175	225
12V-CS136T-1 (12 Volt) (2—3 Cell Units)	27⅜	8	11⅝	160	200

When multiples of above units are required, specify the total voltage required so that necessary intertray connectors may be supplied; thus 2 units 12V-CS136T-1 for 24 volts total.

Trays are of wood, painted black. Interunit connectors are bolted type, lead tape.



GOULD PLASTIC AND RUBBER JAR BATTERIES
TYPES EWT, FW, ET AND FCW
EXPLOSION PROTECTED CONSTRUCTION
CAPACITIES — 180 TO 1680 AMPERE HOURS



Technical Data, Overall Dimensions and Weights

Type of Cell			Cells Per Unit	CAPACITY AT 77°F. Ampere Hours at 8 Hour Rate of Discharge	Amperes for 8 Hours to 1.75 F.V.	Amperes for 5 Hours to 1.92 F.V.	Amperes for 5 Hours to 1.83 F.V.	Amperes for 2 Hours to 1.92 F.V.	Amperes for 2 Hours to 1.83 F.V.	Overall Dimensions of Unit in Inches Length	Width	Height	Approximate Unit Weight in Pounds Net	Packed	Electrolyte Gals. Per Cell
EWT-74	Lead Antimony Grids	Plastic Container	2	180	22.5	21	28	33	47	7	10½	17¾	100	120	1.0
EWT-76			3	180	22.5	21	28	33	47	10⅝	10½	17¾	150	170	1.0
EWT- 9			1	240	30.0	28	37	44	63	5⅛	10 13/16	17¾	65	85	1.6
EWT-11			1	300	37.5	35	47	55	79	6	10 13/16	17¾	82	100	2.0
EWT-15			1	420	52.5	49	65	77	111	7¾	10 13/16	17¾	109	140	2.8
EWT-19			1	540	67.5	63	84	99	143	9½	10 13/16	17¾	139	180	3.5
EWT-23			1	660	82.5	77	103	121	175	11¼	10 13/16	17¾	169	200	4.2
FW-15	Lead Antimony Grids	Hard Rubber Container	1	840	105	97	131	149	222	7¾	14 5/16	23⅜	204	243	3.6
FW-19			1	1080	135	125	188	191	286	9½	14 5/16	23⅜	260	294	5.3
FW-23			1	1320	165	153	206	243	350	11¼	14 5/16	23⅜	302	337	5.8
FW-29			1	1680	210	194	262	297	445	13⅞	14 5/16	23⅜	380	430	7.4
ET-74	Lead Calcium Grids	Plastic Container	2	180	22.5	21	28	33	47	7	10½	17¾	100	120	1.0
ET-76			3	180	22.5	21	28	33	47	10⅝	10½	17¾	150	170	1.0
ET- 9			1	240	30.0	28	37	44	63	5⅛	10 13/16	17¾	65	85	1.6
ET-11			1	300	37.5	35	47	55	79	6	10 13/16	17¾	82	100	2.0
ET-15			1	420	52.5	49	65	77	111	7¾	10 13/16	17¾	109	140	2.8
ET-19			1	540	67.5	63	84	99	143	9½	10 13/16	17¾	139	180	3.5
ET-23			1	660	82.5	77	103	121	175	11¼	10 13/16	17¾	169	200	4.2
FCW-15	Lead Calcium Grids	Hard Rubber Container	1	840	105	97	131	149	222	7¾	14 5/16	23⅜	204	243	3.6
FCW-19			1	1080	135	125	188	191	286	9½	14 5/16	23⅜	260	294	5.3
FCW-23			1	1320	165	153	206	243	350	11¼	14 5/16	23⅜	302	337	5.8
FCW-29			1	1680	210	194	262	297	445	13⅞	14 5/16	23⅜	380	430	7.4

SPECIFIC GRAVITY OF ELECTROLYTE: Fully charged — 1.215 at 77°F.

INTERCELL CONNECTORS: Lead plated copper.

POSTS: Types EWT and ET have two posts per cell. Types FW and FCW have four posts per cell.

SEPARATORS: Durapor rubber, glass mats and perforated retainer.

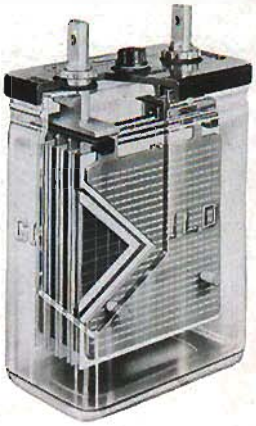
FLOAT TYPE ELECTROLYTE LEVEL INDICATORS.

FILLING FUNNEL: Molded.

VENT: Ceramic cone type.

ELEMENT: Suspended from sidewalls of jar.

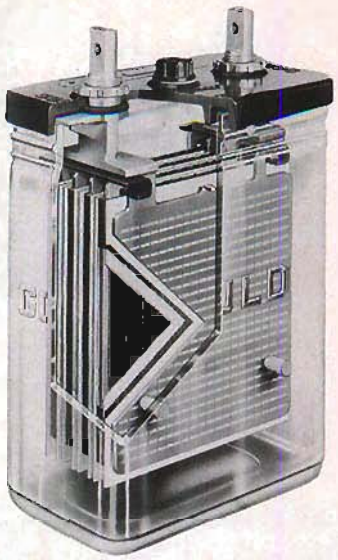
TYPES: ET and FCW: Recommended for Full Float operation only.



GOULD KATHANODE GLASS JAR BATTERIES

TYPES: DK, EK, AND FK

CAPACITIES — 36 TO 1140 AMPERE HOURS



Technical Data, Overall Dimensions and Weights

Type of Cell	CAPACITY AT 77°F. Ampere Hours at 8 Hour Rate of Discharge	Amperes for 8 Hours to 1.75 F.V.	Amperes for 5 Hours to 1.92 F.V.	Amperes for 5 Hours to 1.83 F.V.	Amperes for 2 Hours to 1.92 F.V.	Amperes for 2 Hours to 1.83 F.V.	Overall Dimensions of Cell in Inches Length	Width	Height	Approximate Wt. of Cell in Pounds Net	Packed	Electrolyte Gals. Per Cell
DK-5	40	5	4.8	6.5	8	11.6	4 15/16	8 1/16	12 1/2	23 1/2	28 1/2	.8
DK-7	60	7.5	7.2	9.7	12	17.4	4 15/16	8 1/16	12 1/2	26	31	.7
DK-9	80	10	9.6	12.9	16	23.2	5 13/16	8 1/16	12 1/2	31	36	.85
DK-11	100	12.5	11.9	16.2	20	29.0	6 13/16	8 1/16	12 1/2	36	41	1.0
DK-13	120	15	14.3	19.4	24	34.8	6 13/16	8 1/16	12 1/2	38 1/2	43 1/2	.95
EK-5	80	10	9.6	12.9	16	23.2	5	10	16 1/8	45	50	1.4
EK-7	120	15	14.3	19.4	24	34.8	5	10	16 1/8	50	56	1.25
EK-9	160	20	19.1	25.9	32	46.4	5 7/8	10	16 1/8	60	67	1.6
EK-11	200	25	23.9	32.4	40	58	6 3/4	10	16 1/8	70	78	1.8
EK-13	240	30	28.6	38.8	48	70	6 3/4	10	16 1/8	75	85	1.65
EK-15	280	35	33.4	45.2	56	81	9 1/4	10 1/8	16 13/16	97	123	2.7
EK-17	320	40	38.2	51.7	64	93	9 1/4	10 1/8	16 13/16	101	128	2.5
EK-19	360	45	43.0	58.2	72	104	9 1/4	10 1/8	16 13/16	105	133	2.4
EK-21	400	50	47.7	64.7	80	116	13 1/4	10 1/4	18 5/16	145	175	4.4
EK-23	440	55	52.5	71.3	88	127	13 1/4	10 1/4	18 5/16	150	180	4.25
EK-25	480	60	57.3	77.6	96	139	13 1/4	10 1/4	18 5/16	155	185	4.1
EK-27	520	65	62.0	84.3	104	150	13 1/4	10 1/4	18 5/16	160	190	3.85
FK-17	608	76	72.6	98	122	176	10 1/4	13 3/4	20 7/8	200	235	6.2
FK-19	684	85.5	81.5	110	137	198	10 1/4	13 3/4	20 7/8	210	245	5.9
FK-21	760	95	91	123	152	220	12 3/8	14	20 7/8	220	255	5.6
FK-23	836	104.5	100	135	167	243	12 3/8	14	20 7/8	230	265	5.3
FK-25	912	114	109	147	183	264	14 3/4	14	20 7/8	265	300	7.2
FK-27	988	123.5	118	159	198	286	14 3/4	14	20 7/8	275	310	6.9
FK-29	1064	133	127	172	213	309	14 3/4	14	20 7/8	285	320	6.6
FK-31	1140	285	136	184	228	326	14 3/4	14	20 7/8	295	330	6.3

SINGLE CELL: Heavy duty sealed glass jars. Suspended elements. Wood separators and perforated envelope retainers.

POSTS: Types DK-5 to EP-13 have two posts per cell. Types EK-15 to FK-31 have four posts per cell.

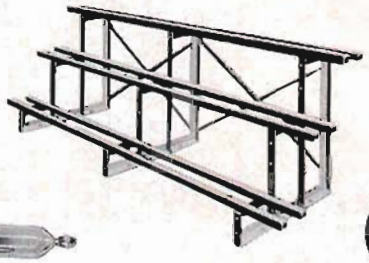
SPECIFIC GRAVITY OF ELECTROLYTE: Fully charged — 1.215 at 77°F.

INTERCELL CONNECTORS: Lead plated copper.



CONNECTOR BOLT WRENCH
Furnished with complete battery

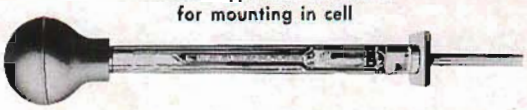
3-STEP ALL STEEL RACK
Complete with insulation
Also furnished in 1-step, 2-step and 2-tier styles





LEAD-PLATED COPPER LUG
Sizes from No. 6 wire to 600,000 C.M. furnished with each battery

V-2 HYDROMETER
Portable Type also furnished for mounting in cell





VENT HOLE THERMOMETER
To be mounted in pilot cell

EXIDE INDUSTRIAL DIVISION — THE ELECTRIC STORAGE BATTERY CO.





Part No. Z-1408
Hydrometer Holder





Part No. Z-1266
6" Thermometer



Part No. Z-1151-A
12½" Hydrometer Complete

Part No. Z-1151-B
12½" Hydrometer with Offset Tip

GOULD HYDROMETERS AND THERMOMETERS

Part No.	Item	Scale	Length
Z-1109-A	Hydrometer complete	1.155 to 1.225	18"
Z-1151-A	Hydrometer complete	1.160 to 1.250	12½"
Z-1151-B	Hydrometer complete with offset tip	1.160 to 1.250	12½"
Z-1266	Thermometer	30-120-77 degree correction	6"
Z-758	Thermometer	30-120-77 degree correction	10"
Z-1408	Hydrometer holder		

C & D BATTERIES, INC.
Accessories

CONNECTORS — Available for intercell, interow and intertier.

Flexible or solid

State distance between post centers, arrangement of cells (side-to-side or end-to-end) and current to be carried when ordering.

HYDROMETER SYRINGE — (Telephone-Stationary Use) with hydrometer range 1.155 to 1.222 specific gravity complete, Part No. PL-520 (180 A.H.)

HYDROMETER SYRINGE — (Telephone-Stationary Use) with hydrometer range 1.160 to 1.248 specific gravity complete, Part No. PL-538 (Up to 160 A.H.)

THERMOMETERS — Small - 6" - Part No. PL-542
Large - 10" - Part No. PL-540



UNITED STATES MOTORS CORPORATION
LIGHT US POWER
OSHKOSH · WISCONSIN

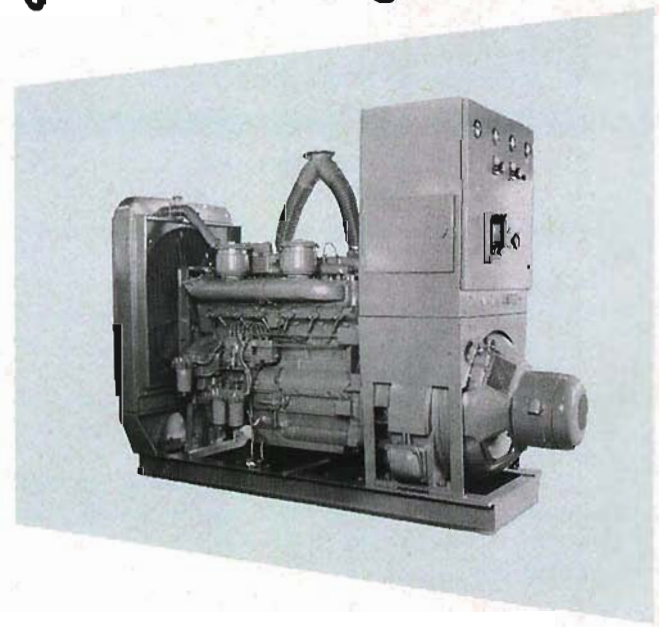
ENGINE GENERATORS for standby service

Specially designed standby engine generators built by experts in this field, United States Motors Corporation, are available in a range of sizes from 1000 watts to 150 kilowatts for gasoline or natural gas fuel and 5 to 200 KW for diesel.

These *package units* include the engine and generator on a self-supporting fabricated steel subbase, a generator control panel and self contained transfer switch where size permits, otherwise necessary relays and switches to control starting and stopping of the engine from a separate transfer switch. Full engine protection against low oil pressure or high water temperature is available

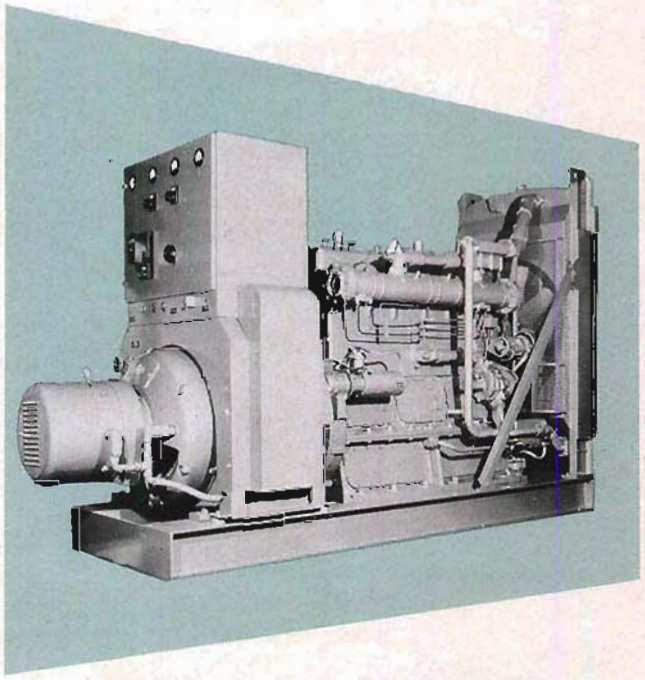
Remote manual starting and stopping control by electric pushbutton can be supplied (for small installations) where automatic control is not desired.

Although a line of standards units designed for the needs of the average exchange is available, special combinations to meet individual needs can be readily supplied.



150 KW, 1200 RPM diesel plant with base mounted generator control panel. Engine is automatically started by contacts on remote mounted load transfer switch.

75 KW, 1200 RPM diesel plant with generator control panel and automatic load transfer switch in base mounted cubicle.



A complete line of portable lighting generators, manhole blowers, and trailer mounted engine generators is available. Information and literature upon request.

UNITED STATES MOTORS CORPORATION

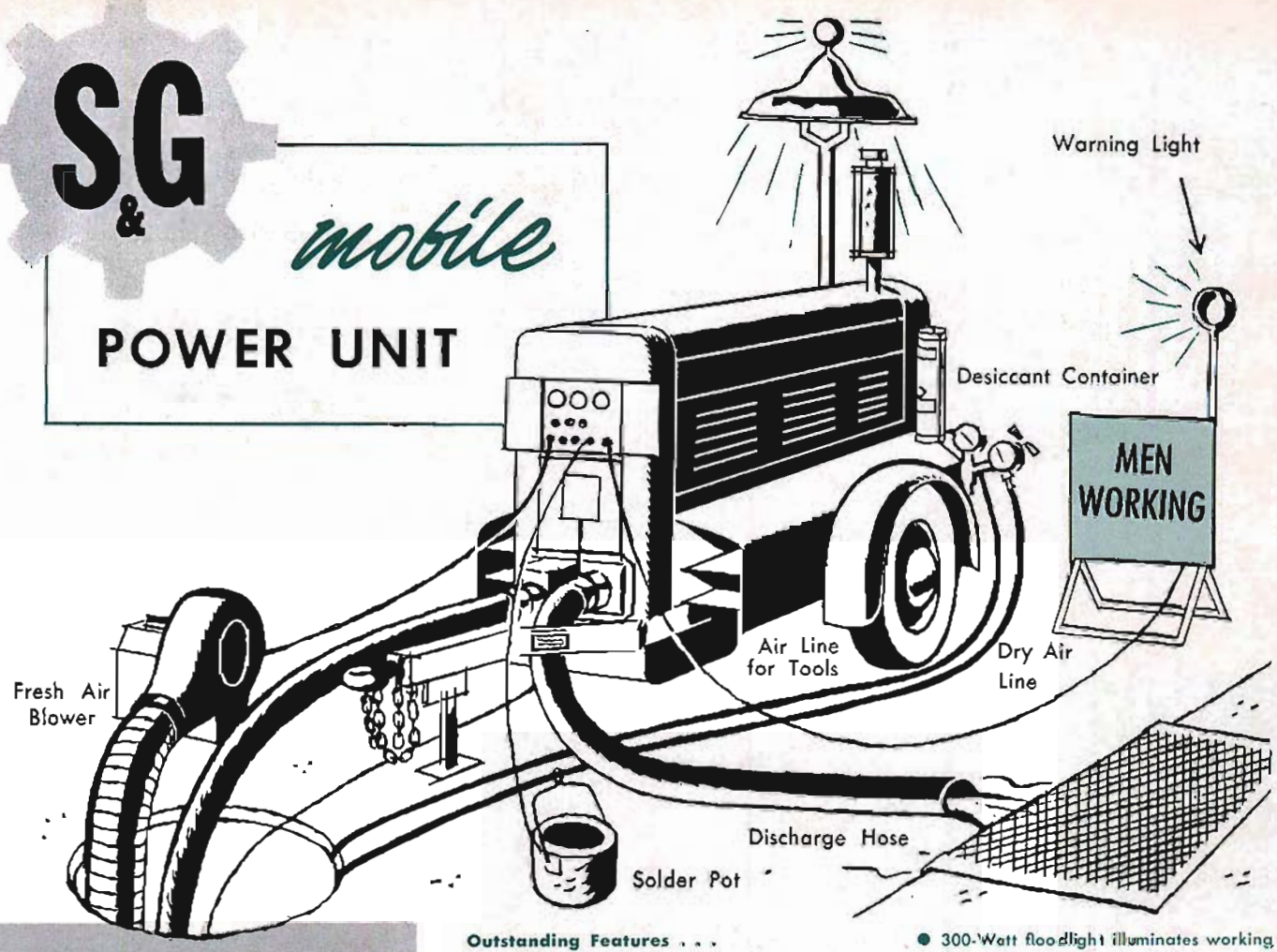
AC Voltage 120/240, 1 phase, 3 wire; or 120/208 3 phase, 4 wire or 240 or 480, 3 phase, 3 wire.
Fuel, gasoline, natural gas or diesel.

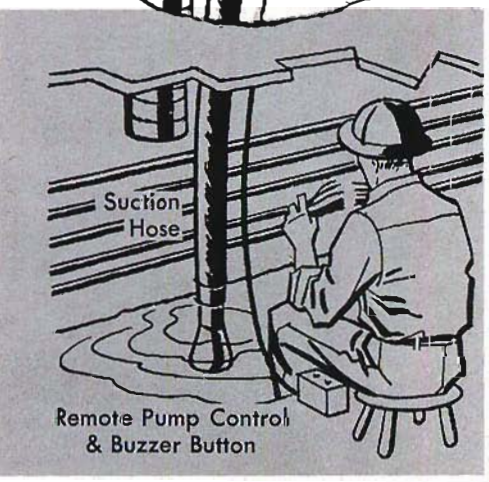
KVA	KW	RPM	KVA	KW	RPM	KVA	KW	RPM
12.5	10	1800	37.5	30	1800	93	75	1800
12.5	10	1200	37.5	30	1200	93	75	1200
18.75	15	1800	50	40	1800	125	100	1800
18.75	15	1200	50	40	1200	125	100	1200
25	20	1800	62.5	50	1800	156.3	125	1800
25	20	1200	62.5	50	1200	156.3	125	1200
31.3	25	1800	75	60	1800	187.5	150	1800
31.3	25	1200	75	60	1800	187.5	150	1200

S&G

mobile

POWER UNIT





Outstanding Features . . .

- ***Generator* (slow speed for quietness) 2500 Watt, 110-Volt DC**
- ***Pump*—2800 GPH Diaphragm to remove seepage and drain back**
- ***Air Compressor*—to put cables under pressure for cut-overs or repairs.**

Furnished with or without pump and compressor.

- 300-Watt floodlight illuminates working area
- operates soldering pot and iron, electric and air tools
- electric blower to ventilate manhole
- supplies dry air for cable cut-overs, flash testing, etc.
- diaphragm pump can be operated from manhole by push button control
- buzzer signal for summoning helper
- light, easy to handle



S&G MANUFACTURING CORPORATION

PROTECTION AND CROSS-CONNECTING EQUIPMENT

Protection and cross-connecting equipment is mounted on a main distributing frame in the central telephone office. Two types of main distributing frames are used: wall mounting for small exchanges and self-supporting floor mounting, upright racks for larger exchanges.

Three types of protector units are available for mounting on the main frame:

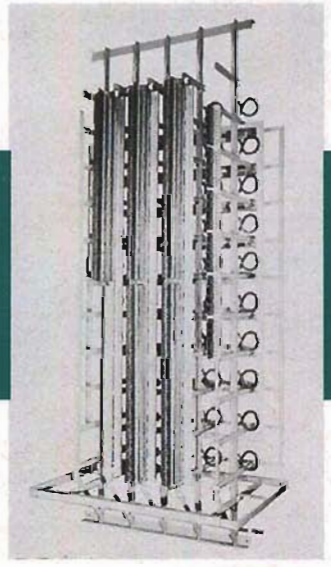
1. Carbon lighting arresters and heat coils.
2. Carbon lighting arresters and fuses.
3. Carbon lighting arresters, fuses, and heat coils.

Every switchboard should be protected from lighting by some form of carbon arrester for each incoming line. Where there is danger from electric light and power circuits a fuse or heat coil protector is used in addition to the carbon arrester.

Fanning strips mounted on the distributing frame make it possible to connect any switchboard number by means of a jumper wire to any outside line. This jumper wire provides a flexible link between the switchboard and line cables as a means of connecting or transferring any switchboard number to any cable pair. This makes it unnecessary to change the telephone number when a subscriber moves from one part of town to another.

The main distributing frame also affords a convenient means for testing both outside line and switchboard circuits and cutting them in and out of service.

Cook Type "L" Main Distributing Frames



The type "L" floor type main distributing frame is constructed in sectional form, 100 or more pairs in height. Additions may be made on either the right or left side of the frame without disturbing existing equipment.

The verticals and top and bottom pieces are of angle iron and the shelf and cross-connecting pieces are of channel iron. Braces are of bar steel. The finish is gray enamel and the frame is shipped knocked-down.

Switchboard protectors built on ½-inch centers and standard line terminal blocks may easily be attached as required. Vertical, steel protector mounting bars and numbered maple fanning strips are mounted on the frame. A ground lug is attached to the lower end of each protector mounting bar to assure a good ground connection.

The type "L" frame is built with either a single or double floor angle. The uprights of a standard 100-pair section are 6 feet high but special uprights made to attach to the ceiling of the terminal room are available.

Cook Vertical and Horizontal Type "L" Frames

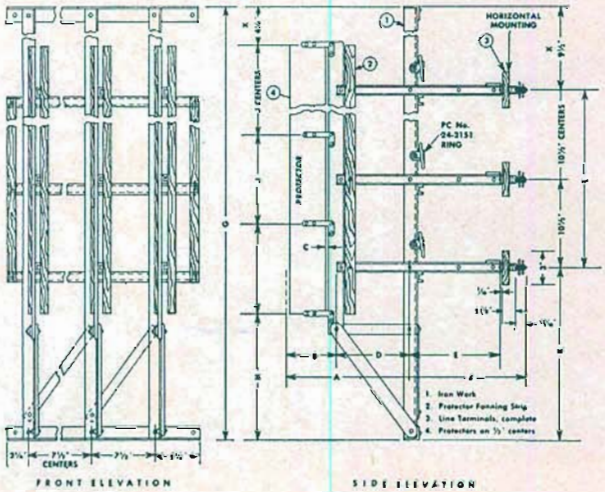
On the vertical type frame each line terminal block is mounted on an individual vertical fanning strip. On the horizontal type frame the line terminal blocks are mounted on continuous horizontal fanning strips.

Both types include the iron frame work, large jumper rings, bolts, nuts, and ground connections. Fanning strips are made of hard maple with holes equal in number to the protector capacity. Protectors are furnished as specified and line terminals, protector number plates, and fanning strips are numbered as ordered.

Vertical Type—On the vertical type frame, each line terminal block of 20 to 26 pairs of clips from two to six clips high is mounted on an individual fanning strip.

Horizontal Type—On the horizontal type frame, continuous type fanning strips run from one end of the frame to the other. The number of line terminal blocks mounted on each continuous type fanning strip depends on the width of the frame. Either No. 1000 or No. 5000 line terminals are supplied, as ordered.

The iron framework weighs approximately 24 pounds per 100 pairs.



DIMENSIONS OF TYPE "L" MAIN FRAMES

Number of Pair of Protectors per Vertical	G*	H	J	K	L
100	6'0"	1'3¼"	10½"	1'8½"	3'6"
110	6'10½"	1'8¼"	5½" & 10½"	1'8½"	4'4½"
150	8'7½"	1'8¼"	5½" & 10½"	1'8½"	6'1½"
160	8'7½"	1'3¾"	10½"	1'8½"	6'1½"
200	10'0"	10¾"	10½"	1'4"	7'10½"

**This dimension is variable with the height of the ceiling. Standard dimensions are shown.*

Cook Vertical and Horizontal Type "L" Frames (Cont'd

PROTECTOR AND LINE TERMINAL DIMENSIONS

Type of Protector	Size of Main Frame	Dimensions (inches) A	B	C	D	E	F (2-clip)
100	100 to 400 Pairs	10¼	4¼	½	6	6½	8⅞
	400 to 1000 Pairs	12⅝	4¼	½	8⅜	10⅝	13
	1000 Pairs and larger	14½	4½	½	10¼	18½	20⅞
105	100 to 400 Pairs	14⅜	8⅝	1	6	6½	8⅞
	400 to 1000 Pairs	17	8⅝	1	8⅜	10⅝	13
	1000 Pairs and larger	18⅞	8⅝	1	10¼	18½	20⅞
H-35	100 to 400 Pairs	12	6	⅝	6	6½	8⅞
	400 to 1000 Pairs	14⅜	6	⅝	8⅜	10⅝	13
	1000 Pairs and larger	16¼	6	⅜	10¼	18½	20⅞

Cook L-9 Wall Type Distributing Frame



frame with the protector fanning strip on which protectors are to be mounted.

This compact, wall type distributing frame is designed to mount No. 100, 105, or H-36 Cook central office protectors and 2-clip, 26-pair line terminals. The frame consists of two pieces of hard, kiln dried maple, one piece drilled and arranged for line terminals, the other piece drilled and milled for mounting the protectors, and two heavy mounting brackets made of bar iron.

The frame is furnished complete with line terminals. Protectors are extra and may be selected according to requirements.

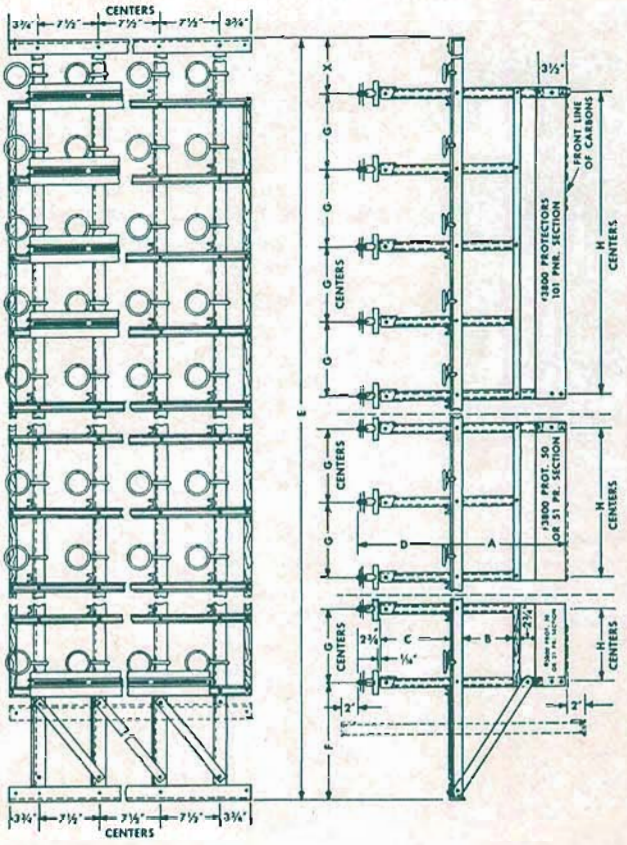
Cat. No.	No. of Pairs Protector Side	No. of Pairs Cable Side	Height Over-all (inches)	Shipping Weight
361-1050	20	26	13	10 lbs.
361-1052	40	52	23½	18 lbs.
361-1054	60	78	34	32 lbs.
361-1056	80	102	44½	46 lbs.
361-1058	100	130	55	60 lbs.

Main Distributing Frames

Special main distributing frames for special applications and special installations are available upon order. The Kellogg engineering department will make recommendations upon submission of the necessary information on the particular requirement.

Standard main distributing frames, not generally used and not shown, also are available. For information on these frames consult either the Kellogg engineering or sales department.

Cook No. 38 Main Distributing Frame



The No. 38 main frame is designed to mount the No. 3800 Cook protector on ⅜-inch centers. It is similar to the type "L" frame except it has no protector mounting bar. The protectors are mounted directly to the shelf channels. Additions to the frame may be made to either the left or right side.

Continuous type fanning strips are mounted horizontally. The dimensions of the frame may be varied to suit conditions.

The dimensional diagram at the left above shows the front view of the No. 38 main distributing frame. For sizes of this frame also refer to the table below.

The dimensional diagram at the right above shows the side view of the No. 38 main distributing frame. Sizes are also shown in the table below. Dimensions marked "X" are variable with the height of the ceiling of the room where the frame is to be installed. Standard dimensions are shown.

DIMENSIONS OF MAIN FRAME

Number of Protector Pairs per Section	Dimensions (inches) E	F	G	H	X
101 Pair	72	19¾	9¾	39	13¼
51 Pair	X	X	10⅛	20¼	X

X These dimensions are variable with the height of the ceiling. Standard dimensions are shown.

DIMENSIONS OF PROTECTORS AND TERMINALS

Type of Protector	Type of Main Frame	Dimensions (inches) A	B	C	D (2-clip)
3800	100 to 400 Pair	11⅛	4⅞	6½	2⅞
	400 to 1000 Pair	13½	7¼	10⅝	13
	1000 Pair and Up	15⅜	9⅛	18½	20⅞

Cook No. 3800 Central Office Protector



This protector mounts on the No. 38 main distributing frame. Heat coils and carbon discharge blocks protect against sneak currents and high potentials. Pairs are mounted on ⅜-inch centers.

Operation—This protector opens the switchboard circuit, grounds the outside line and operates an alarm signal. It is reset by relatching the operating spring over the heat coil. The coil does not have to be changed, reversed, or resoldered.

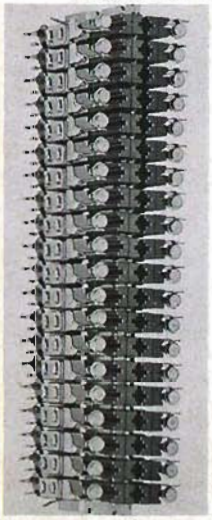
Construction—The mounting plate is cadmium plated steel, formed to secure great strength and rigidity. The ends of the mounting plate fasten directly to the shelf channels of the main frame. All springs are of nickel silver, of ample strength to give positive operation and strong, permanent contact pressure. Line connections are on one side of the protector and switchboard connections are on the other side.

Insulation—All current carrying parts are insulated with hard rubber and bakelite.

Lightning Arresters—No. 2614 sealed-gap unit dischargers are standard. They are made of two carbons, separated by an acetate dielectric and cemented into a unit. They will permanently ground under continuous discharge. They are easily installed and removed.

Kellogg Code No.	Cat. No.	Description
680010	380-1320	20-pair section

Cook No. 100 Central Office Protector



The No. 100 central office protector utilizes heat coils and carbons. Line connections are on one side of the protector and switchboard connections on the other side. Pairs are mounted on ½-inch centers. Testing may be done easily without removing heat coils.

Operation—This protector opens the switchboard circuit, grounds the outside line, and operates an alarm signal. The protector is reset by simply relatching the operating spring to the heat coil. The coil does not have to be changed, reversed, or re-soldered.

Construction — heavy nickel silver holding springs insure a positive permanent pressure between the lightning arrester carbons and ground plate.

Mounting plates are metal and may be mounted on a standard frame carrying protectors on ½-inch centers. The circuit from the heat coil spring to the switchboard terminal is carried between the grounded mounting plates and is well shielded.

Kellogg Code No.	Cat. No.	Description
680008	360-1210	10-pair section
680009	360-1220	20-pair section

KELLOGG EQUIPMENT RACKS

The Kellogg No. 200333 Equipment rack is designed to accommodate a standard 19" panel having 18⅜" mounting centers. The equipment rack is of sturdy welded construction with the upright members fabricated from 3" channel iron. These are drilled and tapped (No. 12-24) the entire length. Drillings are spaced to take standard panel widths of 1¾ inch or multiples thereof.

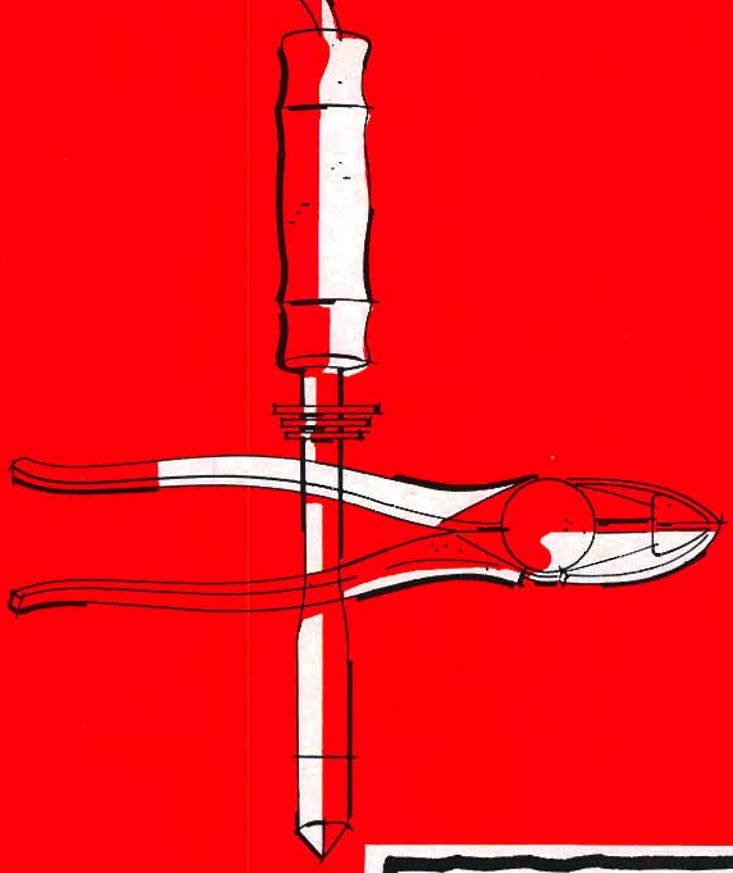
The racks are the self-supporting floor-mount type requiring a floor area of 20½ by 15 inches.

Being of sturdy construction, these racks, secured properly to the floor, will mount both a large variety and a large quantity of equipment such as: V.F. Repeaters, Carrier terminals, Electronic Ringing Generators, etc.

The following table conveniently lists the code number(s) for standard height racks. Special heights are available on special order.

Code No.	Height
200333-7	6'6"
200333-18	7'0"
200333-14	7'6"
200333-6	8'0"
200333-16	8'9"
200333-9	9'1"
200333-8	11'0"
200333-12	11'6"





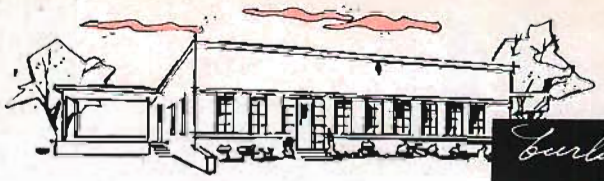




- pole line hardware
- cable and accessories
- wire and strand
- protective equipment and terminals
- batteries, power and portable test equipment
- tools
- insulators
- wood products
- telephone booths and accessories
- miscellaneous







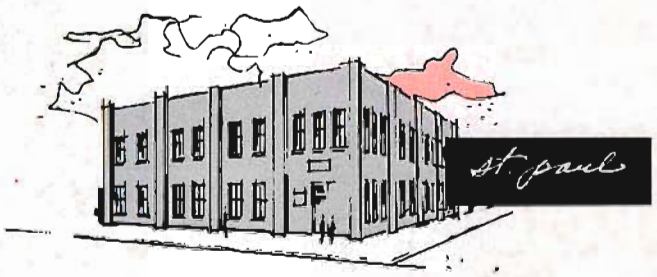
FOREWORD

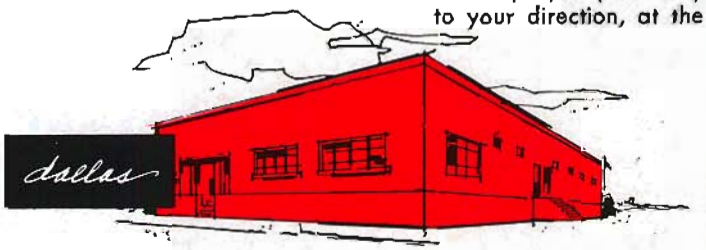
Superior service and satisfaction are the by-words of our Supply Sales Division . . . which definitely means increased dividends for you.

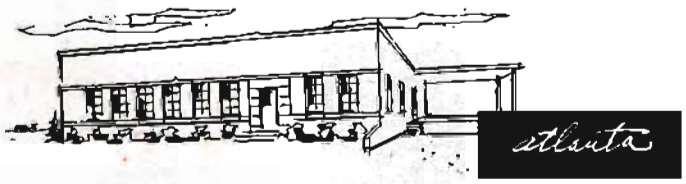
Kellogg maintains a network of warehouses throughout the country, each strategically located, to provide fast, dependable deliveries. Our warehouses are fully stocked with your normal requirements of outside plant supplies, telephone instruments, and apparatus.

The following pages describe and illustrate most of the product lines which we distribute. However, space does not permit a listing of all the brands of manufacture, nor even the full range of the telephone supply items readily obtainable through Kellogg. If you do not find your favorite brand name, or the particular item or items which you require, please contact your nearest Kellogg Warehouse for more complete information.

The proper part or parts will be delivered according to your direction, at the appropriate place and time.



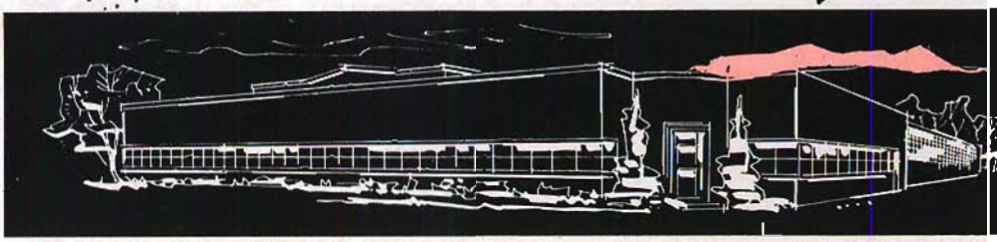








chicago





pole line hardware



2-WAY ANCHOR

EVERSTICK exclusive features are incorporated in this 2-Way Anchor. Many uses are found for this model in pole line construction. It can be depended on to give safe service for many years.

Kellogg Code No.	Trade No.	Size Anchor and Hole	Size Rod or Smaller	Area Expended Sq. In.	Weight of Anchor, Lbs.
915035	62	6-in.	⅝-in.	55	7
915036	82	8-in.	⅝-in.	100	10½

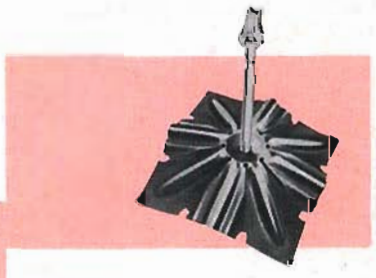
EXPANDING POLE KEY ANCHOR



Keys poles at the butt to reinforce them against unbalanced loads in soft soils. Ideal for congested urban areas. Constructed entirely of structural steel.

Kellogg Code No.	Cat. No.	Area Exp. Sq. In.	Weight Each
915008	P4817	276	25 lbs.

8-WAY EXPANDING ANCHOR

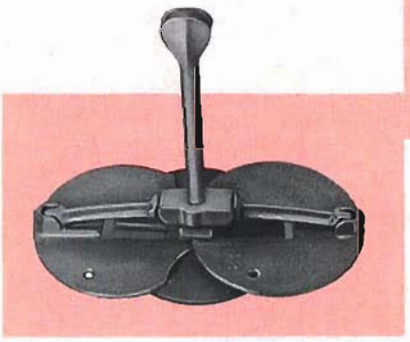


Eight steel blades expand to form a cone-shaped square. They distribute the load evenly all the way around the anchor. There are no non-holding areas between blades. Coated with asphalt paint to guard against corrosion. Order rods separately.

Kellogg Code No.	Cat. No.	Rod Dia.	Rod Length	Area Sq. In.	Weight Per 100
915001	6860	½"-⅝"	6'-7'-8'	60	503 lbs.
915002	6870	½"-⅝"	6'-7'-8'	70	504 lbs.
915003	88100	⅝"-¾"	7'-8'	100	875 lbs.
915005	88135	⅝"-¾"	7'-8'	135	932 lbs.
915006	1082	1"	10'	200	1865 lbs.

4-WAY ANCHOR

For extra heavy duty guying — the 4-Way EVERSTICK is used and recommended by foremost construction and maintenance engineers. Ease of expansion and large holding area are features of this Anchor.



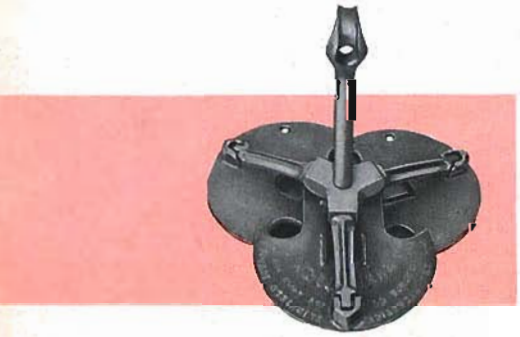
Kellogg Code No.	Trade No.	Size Anchor and Hole	Size Rod or Smaller	Area Expended Sq. In.	Weight of Anchor, Lbs.
915043	84¾"	8"	¾"	125	17
915044	84¾-1"	8"	¾"-1"	132	17
915045	104	10"	1 in.	210	28
915046	124	12"	1¼"	310	54

NEVER-CREEP ANCHOR



Made of structural steel. Pulls entirely against solid, undisturbed earth. Usually installed in clay or loam. Not subject to serious loss of holding power due to moisture seepage. Order rods separately.

Kellogg Code No.	Cat. No.	Plate Size	Rod Size	Weight Per 100
915030	622	6"x22"	¾"x8'	1180
915031	822	8"x22"	¾"x8'	1602
915032	827	8"x27"	¾"x9'	2395

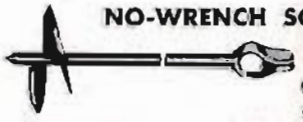


3-WAY ANCHOR

The ideal Guy Anchor for permanent construction. Ease of installation — ease of expansion — maximum holding power — long life — are assured with this Anchor. A proven product of millions of miles of electric lines.

Kellogg Code No.	Trade No.	Size Anchor and Hole	Size Rod or Smaller	Area Expended Sq. In.	Weight of Anchor, Lbs.
915037	633	6-in.	⅝ in.	65	7½
915038	834	8-in.	⅝ in.	90	10½
915039	836	8-in.	¾ in.	110	13
915040	8310	8-in.	¾ in.	125	15
915041	8312	8-in.	1 in.	125	15
915042	10316	10-in.	1 in.	175	28

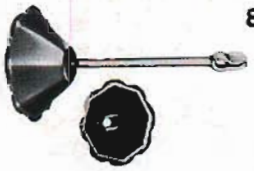
NO-WRENCH SCREW ANCHOR



Consists of a drop-forged galvanized - steel Thimbleye double arc welded to a high-strength structural steel blade. Blade of each size anchor is correctly pitched for best installation and greatest holding power. A bar, or the like, is used for installing. Asphalt dipped.

Kellogg Code No.	Cat. No.	Anchor Size	Rod Size	Weight Per 100
915009	4345	4"	¾"x54"	806 lbs.
915010	6346	6"	¾"x66"	1040 lbs.
915011	816	8"	1"x66"	1842 lbs.

8-WAY STEEL CONE ANCHOR



Made of drop-forged steel, asphalt dipped. Acts as inverted wedge. Flaring base and flat faces increase wedging action. Used in rocky areas with rock wedging. Order rods separately.

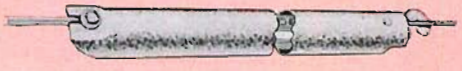
Kellogg Code No.	Cat. No.	Anchor Size	Rod Size	Weight Per 100
915024	6S	6"	½"-⅝"x6'	328 lbs.
915025	8S	8"	⅝"-¾"x7'	647 lbs.
915026	10S	10"	⅝"-¾"x7'	996 lbs.
915027	12S	12"	⅝"-¾"x8'	1671 lbs.

TERMINAL BRACKETS



Chance Terminal Brackets are for deadending or terminal use. No cotter pins, lock washers or nuts are necessary to hold it permanently in place. Pins and brackets are hot dip galvanized. Brackets are available with or without insulators. Brackets are made with square holes for receiving ⅜-inch carriage bolts or ½-inch carriage bolts. Bracket with the hole for receiving ½-inch bolts is used for pole mounting. Shipped unassembled.

Kellogg Code No.	Cat. No.	Ult. Strength	No. In Box	Wt.
145017	H1424	1500 lbs.	100	75 lbs.
DESCRIPTION—Bracket with square hole for ⅜" carriage bolts, complete with insulator.				
145018	H1424-1	1500 lbs.	100	75 lbs.
DESCRIPTION—Bracket with square hole for ½" carriage bolts, complete with insulator.				
145015	H14		100	35 lbs.
DESCRIPTION—Bracket with square hole for ⅜" carriage bolts, and pin only.				
145016	H14-1		100	35 lbs.
DESCRIPTION—Bracket with square hole for ½" carriage bolts, and pin only.				
565011	H24		50	19 lbs.
DESCRIPTION—Single groove insulators for brackets.				



MONO-BOLT GUY GUARDS

The Mono-Belt combines normal guy wire protection requirements—safety, durability, economy—with a quick and simple method of installation. The hook is slipped over the guy wire; the Mono-Bolt clamp is placed on the anchor rod and slipped up into the slot on the bottom of the guard; tightening the single bolt with a single wrench completes the installation. Mono-Bolt clamp securely grips the anchor rod with a firm 3-point gripping action.

MONO-BOLT GUY GUARDS

Cat. No.	Description	Length	Gauge	Wt. per 100
714 MB	Half Round	7'	14	1060
814 MB	Half Round	8'	14	1190
7160 MB	Full Round	7'	16	1450
8160 MB	Full Round	8'	16	1630
7180 MB	Full Round	7'	18	1130
8180 MB	Full Round	8'	18	1280



CLAMP, SPAN

Span clamps are used primarily for taking off drop wire leads along the span. Also used for "pull-offs" to hold the cable away from trees, thus avoiding the use of tree guards.

This clamp can be used on lashed cable as well as suspended cable. The plates are made of ¼-inch steel and the hooks of ⅜-inch round, high tensile strength steel. All parts hot-dip galvanized.

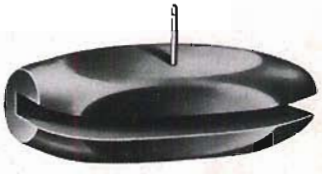
Kellogg Code No.	Cat. No.	Description	Std. Pkg.	Weight per Std. Pkg.
230251	869	Clamp, Span	100	41 lbs.

CLAMPS, "C" LASHING



For securing cable lashing wire at end of span. Furnished with double ended stud bolt and washer and free-running nuts, all Hot Dipped Galvanized. Bolt end peened over to prevent nuts running off. Can be securely attached to messenger strand before taking up tension on cable lashing wire. Nuts can be tightened with terminal socket wrench or pliers. Plates are ¾" specially rolled section, stud bolts are ¼" high tensile steel with cut thread.

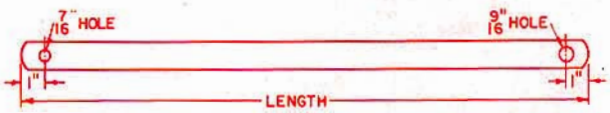
Kellogg Code No.	Cat. No.	Description	Std. Pkg.	Weight per 100
230201	900	Clamps, "C" Cable Lashing	100	15½ lbs.



Guards, Flexibal Guy

A flexible-type guy guard which will take unusual abuse without damage to the guard or guy. The Flexibal guard is easily installed with just one nail through each of the sections. Nail is already inserted in the 6-inch spindles which make up the guard. The end of the guard is securely clamped at the end with a hot-dipped, galvanized bolt clamp supplied with each set of spindles. This guard will yield under pressure from animals, vehicles, etc., without damage. Readily transported, these guards come packed in easy-carry cartons only 6x14x4 inches in size.

Kellogg Code No.	Cat. No.	Description	Weight
455023	85	5 ft. length (10 spindles)	4 lbs.
455020	86	6 ft. length (12 spindles)	4½ lbs.
455021	87	7 ft. length (14 spindles)	5 lbs.
455022	88	8 ft. length (16 spindles)	5½ lbs.



FLAT CROSS ARM BRACES
Hot Dip Galvanized

Flat Cross Arm Braces are made of two cross-sections of open hearth steel of different physical properties. The 1 7/32x 7/32-inch brace is fabricated from A.I.S.I. C-1040 steel. The section and physical properties are standard with A.T.&T. and Western Union. The 1¼x¼-inch steel is made of structural grade steel. Both braces have about the same breaking strength and stiffness. The breaking strength across the bolt holes will average 10,000 pounds. Made to E.E.I. Standards.

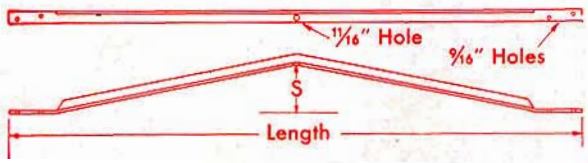
1-7/32x7/32-INCH SIZE

Kellogg Code No.	Stock No.	For Arms with Brace Bolt Spacing Inches	Length Inches	Wt. Lbs. per 100
140030	J7020	25	20	130
140031	J7022	28	22	144
140032	J7024	32	24	157
140033	J7026	33	26	170
140034	J7028	36-38	28	185
140035	J7030	42	30	200
140036	J7032	42	32	215

1¼x¼-INCH SIZE

Kellogg Code No.	Stock No.	For Arms with Brace Bolt Spacing Inches	Length Inches	Wt. Lbs. per 100
140040	J7120	25	20	170
144041	J7122	28	22	185
140042	J7124	32	24	200
140043	J7126	33	26	215
140044	*J7128	36-38	28	230
140045	*J7130	42	30	245
140046	*J7132	42	32	260

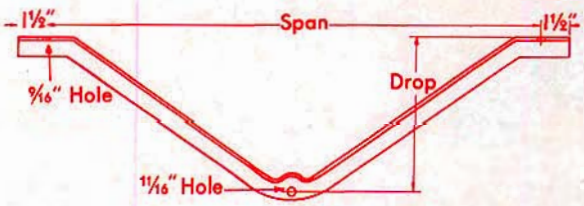
* E.E.I. Standard.



CROSS ARM BACK BRACES
Hot Dip Galvanized

Used for bracing cross arms at corners and terminal poles. Made of open hearth steel angle, punched with 11/16-inch center hole for ⅝-inch machine bolt and two 9/16-inch holes at each end for ½-inch carriage bolts.

Kellogg Code No.	Stock No.	Length	S. In.	Size Angle Inches	Wt. Lbs. per 100
140011	J6966	6'	7	1½x1½x3/16	1020
140012	J6967	7'10"	7	1¾x1¾x3/16	1640
140013	J6969	9'1"	7	1¾x1¾x3/16	1920

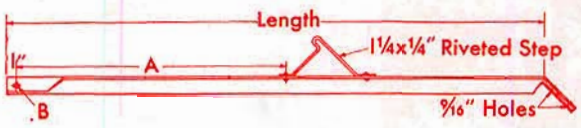


DOUBLE SPAN BRACES
Hot Dip Galvanized

Fastened to the arm by ½-inch machine bolts at each end and to the pole by a ⅝-inch through bolt.

Kellogg Code No.	Stock No.	Size Angle Inches	Span Inches	Drop Inches	Wt. Lbs. per 100
140072	J1505	1½x1½x3/16	37	12	740
140073	*J1506	1½x1½x3/16	42	12	800
140074	*J1507	1½x1½x3/16	48	14	900
140080	J1514	1½x1½x3/16	48	18	1000
140075	*J1508	1½x1½x3/16	60	18	1120
140076	*J1510	1¾x1¾x3/16	60	18	1340
140077	J1511	1¾x1¾x3/16	66	20	1480
140078	J1512	1¾x1¾x3/16	72	22	1625
140079	J1513	2 x2 x3/16	72	22	1833

* E.E.I. Standard.



ALLEY ARM BRACES
Hot Dip Galvanized

Furnished with lineman's step. Punched with 9/16-inch holes for lag screws and machine bolts.

Kellogg Code No.	Stock No.	Size Angle Inches	Length Feet	A In.	B Diam. Hole In.	Wt. Lbs. per 100
140001	J1521	1½x1½x3/16	5	30	5/8	1100
140004	*J1522	1¾x1¾x3/16	5	30	5/8	1300
140002	J1523	1½x1½x3/16	6	30	5/8	1300
140003	*J1525	1¾x1¾x3/16	7	30	11/16	1750
140005	*J1526	2 x2 x¼	10	50	11/16	3500

* E.E.I. Standard.



No. J7054 Vertical Brace



Nos. J7051 and J7052 Back Braces

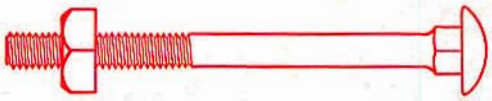


No. J7050 Diagonal Brace

EXTENSION FIXTURE BRACES
Hot Dip Galvanized
A.T.&T. CO. Standard

Used to clear buildings or trees without the use of high poles. A.T.&T. Standard.

Kellogg Code No.	Stock No.	Description	Length Overall In.	Size Angle Inches	Wt. Lbs. Per 100
140015	J7050	Diagonal	83	2x2x3/16	1950
140054	J7051	Back	54½	2x2x¼	1480
140016	J7052	Back	66 7/16	2x2x¼	1750
140055	J7054	Vertical	30⅝	1¾x1¾x¼	720



CARRIAGE BOLTS
Hot Dip Galvanized
Rolled Threads — Square Nuts

Made to E.E.I. Specification TD-1.

⅜-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120001	J8633	3	1¾	12.2
120002	J8633½	3½	1¾	15.2
120003	J8634	4	3	15.5
120004	J8634½	4½	3	16.5
120005	J8635	5	3	19.6
120006	J8635½	5½	3	20.4
120007	J8636	6	3	21.6

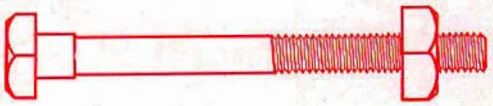
½-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120022	J8644	4	3	31.4
120023	J8644½	4½	3	31.7
120024	J8645	5	3	33.7
120025	J8645½	5½	3	36.2
120026	J8646	6	3	38.5

⅝-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120033	J8666	6	3	65

MACHINE BOLTS
Hot Dip Galvanized
Rolled Threads — Square Heads and Nuts



Made to E.E.I. Specification TD-1.

⅜-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120100	J8603	3	1	11.4
120101	J8603½	3½	3	13.2
120102	J8604	4	3	15.0
120103	J8604½	4½	3	16.8
120104	J8605	5	3	18.6
120105	J8605½	5½	3	20.4
120106	J8606	6	3	22.2

½-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120116	J8704½	4½	3	34.0
120117	J8705	5	3	36.0
120119	J8706	6	3	40.0
120120	J8707	7	4	48
120121	J8708	8	4	52
120122	J8709	9	4	57
120123	J8710	10	4	61
120124	J8712	12	6	70

⅝-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120135	J8806	6	3	67
120136	J8807	7	4	76
120137	J8808	8	4	83
120138	J8809	9	4	90
120139	J8810	10	4	96
120140	J8812	12	6	112
120141	J8814	14	6	128
120142	J8816	16	6	146
120143	J8818	18	6	162

¾-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Length Thd. In.	Wt. Lbs. Per 100
120155	J8908	8	4	124
120156	J8910	10	4	144
120157	J8912	12	6	164
120158	J8914	14	6	184
120159	J8916	16	6	206
120160	J8918	18	6	227

DOUBLE ARMING BOLTS
Hot Dip Galvanized
Threaded Full Length

Made to E.E.I. Specification TD-1.



(Tabular data on next page)

½-INCH DIAMETER

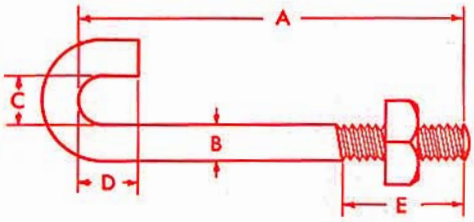
Kellogg Code No.	Stock No.	Length In.	Wt. Lbs. Per 100
120050	J8842	12	82
120051	J8844	14	94
120052	J8846	16	104
120053	J8848	18	108
120054	J8850	20	122
120055	J8852	22	138
120056	J8854	24	148

⅝-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Wt. Lbs. Per 100
120060	J8862	12	127
120061	J8864	14	141
120062	J8866	16	155
120063	J8868	18	170
120064	J8870	20	185
120065	J8872	22	199
120066	J8874	24	204

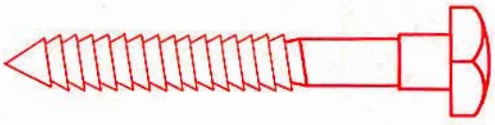
¾-INCH DIAMETER

Kellogg Code No.	Stock No.	Length In.	Wt. Lbs. Per 100
120075	J8882	12	184
120076	J8884	14	205
120077	J8886	16	226
120078	J8888	18	247
120079	J8890	20	268
120080	J8892	22	289
120081	J8894	24	310



J BOLTS OR HOOK BOLTS
Hot Dip Galvanized

Made to order only. Give the following dimensions: A—length, B—diameter, C—opening, D—short length, and E—thread length.



LAG SCREWS
Hot Dip Galvanized

Made to E.E.I. Specification TD-3.

¼ and 5/16-INCH DIAMETERS

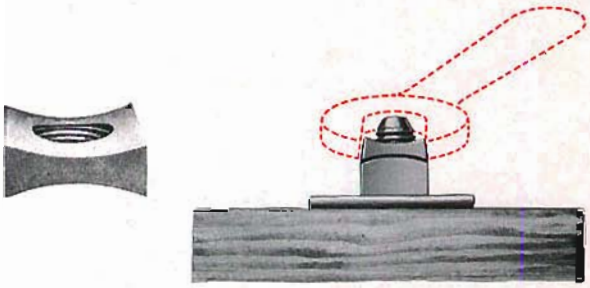
Furnished with sharp cut wood screw threads in all sizes, ¼x2" and ¼x2½" can also be furnished with fetter drive thread.

Kellogg Code No.	Stock No.	Size Inches	Thd. Lgth. Inches	Wt. Lbs. Per 100
725010	J8721¼	¼x1¼	1⅛	1.9
725011	J8721½	1½	1¼	2.1
725012	J8722	2	1½	3.0
725013	J8722½	2½	1¾	3.5
725017	J8732	⅝x2	1½	5.1
725018	J8732½	2½	1⅝	5.8
725019	J8733	3	2	6.8
725020	J8733½	3½	2½	7.7

⅜, ½ and ⅝-INCH DIAMETERS

The ⅜ and ½-inch sizes have upset shoulders. Unless otherwise specified furnished with Fetter Drive Threads.

Kellogg Code No.	Stock No.	Size Inches	Thd. Lgth. Inches	Wt. Lbs. Per 100
725022	J8742½	⅜x2½	1⅝	8.9
725023	J8743	3	2¼	9.9
725024	J8743½	3½	2⅝	12.1
725025	J8744	4	2⅝	13.0
725026	J8744½	4½	2⅝	14.0
725029	J8753	½x3	2¼	19.1
725030	J8753½	3½	2⅝	21.0
725031	J8754	4	2⅝	22.4
725032	J8754½	4½	2⅝	23.2



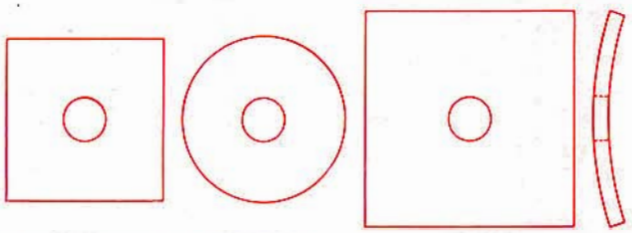
SQUARE M-F LOCK NUTS
Hot Dip Galvanized

M-F Lock Nuts should always be used to complete a static-proof installation. Used with a regular nut to form a solid unit which cannot loosen. Turns on the bolt with a free fit. When it touches the nut, it takes ½ to ¾ turn of the wrench to flatten the concave surface bonding it to the thread. This nut is a solid piece of rolled steel and can be removed from the bolt with a wrench.

Hexagon nuts can be furnished on special order.

Kellogg Code No.	Stock No.	Bolt Size Inches	Width In.	Thickness In.	Wt. Lbs. Per 100
615050	J8581	⅜	⅝	¼	1.5
615051	J8582	½	13/16	19/64	2.5
615052	J8583	⅝	1	⅜	4.5
615053	J8584	¾	1⅛	7/16	6.4
615054	J8585	1	1½	15/32	14.0

SQUARE, CURVED, AND ROUND WASHERS
Hot Dip Galvanized



SQUARE WASHERS

Kellogg Code No.	Stock No.	Size Inches	Size Hole Inches	Size Bolt Inches	Wt. Lbs. Per 100
845075	*J1073	2x2x⅛	⅝	½	13.8
845076	*J1074	2x2x⅛	11/16	⅝	13.2
845077	*J1075	2¼x2¼x3/16	11/16	⅝	26.0
845078	*J1076	2¼x2¼x3/16	13/16	¾	25.0
845079	J1078	3x3x3/16	⅞	⅝ & ¾	50.0
845080	*J1079	3x3x¼	⅞	⅝ & ¾	63.0
845081	J1080	4x4x3/16	⅞	⅝ & ¾	92.0
845083	*J1082	4x4x¼	⅞	⅝ & ¾	120
845084	J1473	4x4x½	⅞	⅝ & ¾	232
845082	J1081	4x4x½	1⅛	1	224

SQUARE CURVED WASHERS

Kellogg Code No.	Stock No.	Size Inches	Size Hole Inches	Size Bolt Inches	Wt. Lbs. Per 100
845010	J6822	2½x2½x3/16	11/16	⅝	31
845001	*J113	3x3x¼	11/16	⅝	67
845020	*J6823	3x3x¼	13/16	¾	66
845025	J6824	3x3x5/16	1 1/16	1	79
845005	J133	3¼x3¼x¼	13/16	¾	72
845030	J6829	4x4x¼	⅞	¾	120

ROUND WASHERS

Kellogg Code No.	Stock No.	Outside Diam. In.	Size Hole Inches	Size Bolt Inches	Thickness Gauge B.W.	Wt. Lbs. Per 100
845050	*J1084	1	7/16	⅜	14	1.5
845051	†J1085	1¼	9/16	⅜	14	2.9
845052	*J1086	1⅜	9/16	½	12	4.1
845054	*J1088	1¾	11/16	⅝	10	8.5

† For use under head of ⅜-inch carriage bolt.
* E.E.I. Standard.



POLE STEPS
Hot Dip Galvanized

Made of the best grade of open hearth steel and can be bent at the threads through an angle of 75 degrees about a diameter equal to the diameter of the step, without breaking.

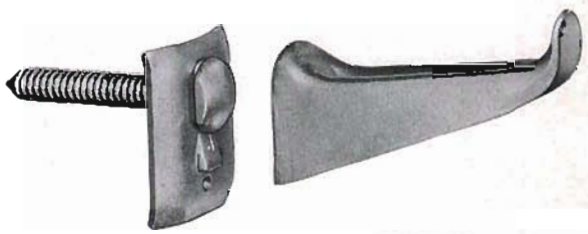
Kellogg Code No.	Catalog No.	Size In.	Wt. Lbs. Per 100
735010	J-1116	5/16x9	73
735011	J-1117	⅜x9	85
735012	J-1118	⅜x10	94



POLE DATING NAILS
Hot Dip Galvanized

Joslyn Pole Dating Nails are used to indicate the year in which poles are set. They are made of steel, hot galvanized, and may be obtained for any specified year. They may be also obtained blank.

Length	Net Wt. Per 100
2½ inches	4 pounds



DETACHABLE POLE STEPS
Hot Dip Galvanized

The detachable step slips over the head of the special 5/16x4-inch lag. Turning is prevented by the punched projection. A nail hole is also provided. Steps may be removed to prevent unauthorized climbing.

Kellogg Code No.	Stock No.	Description	Steel Size	Wt. Lbs. Per 100
655026	J6235	Pole Plate and Lag Screw only	2¾"x2¼"x3/16"	69
735003	J6236	Detach. Step only	12 ga. x 5½"	66



GALVANIZED STAPLES
Hot Dip Galvanized

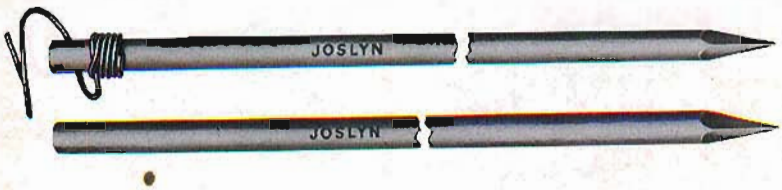
All galvanized staples are cement coated to prevent them from pulling out of the pole.

CUT POINT

Kellogg Code No.	Stock No.	Length In.	Spread at Shoulder, In.	Size Wire In.	No. per 100 Lb. Keg
751016	J1671	1½	3/16	.148	7500
751017	J1672	1½	¼	.148	7300
751018	J1673	1¾	¼	.148	5000

ROLLED POINT

Kellogg Code No.	Stock No.	Length In.	Spread at Shoulder, In.	Size Wire In.	No. Lbs. per 100
751015	J-126	1	⅜	.125	.75



GROUND RODS
Hot Dip Galvanized

WITHOUT WIRE

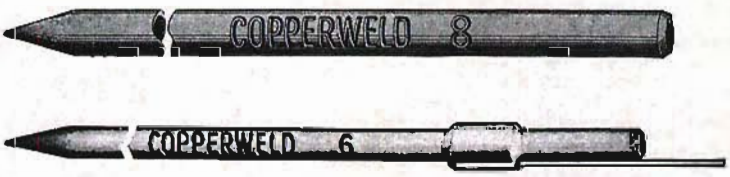
The unwired type is furnished with plain end. These can also be furnished with a 3/16-inch hole drilled 1-inch from end of rod. When ordering rods with hole add suffix letter A to catalog number.

Kellogg Code No.	Stock No.	Size Diam. Lgth. In. Ft.	Wt. Lbs. Per 100
710070	J5305	⅜x5	190
710071	J5306	6	230
710072	J5315	½x5	320
710073	J5316	6	386
710074	J5326	⅝x6	600
710075	J5328	8	800

WITH WIRE

The wired type has five turns of .104" tinned copper wire (free end 18 inches long) soldered to the upper end of the rod, insuring a proper electrical connection.

Kellogg Code No.	Stock No.	Size Diam. Lgth. IN. FT.	Wt. Lbs. Per 100
710080	J1098	½x5	340
710081	J1099	6	406
710082	J1100	⅝x6	600



COPPERWELD GROUND RODS

Copperweld non-rusting ground rods are excellently suited for use as driven ground electrodes. "Copperweld" identifies the only ground rods made by the exclusive Molten-Welding process—in which a thick covering of protective copper is inseparably and continuously welded to a core of high strength alloy steel. The inseparable union of these two metals, which can be accomplished only by Molten-Welding, provides the combination of stiffness for easy driving and permanent rust-resistance for long life.

When used with copper ground wires, Copperweld Ground Rods provide copper-to-copper connections. This eliminates electrolytic corrosion and prevents increased resistance in wire-to-rod contacts.

The top end of the Copperweld Ground Rod is chamfered to prevent mushrooming during driving. The clamp may be slipped over the rod after driving is completed.

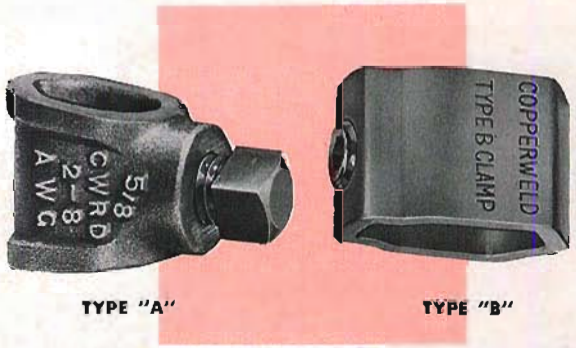
WITHOUT WIRES

Kellogg Code No.	Stock No.	Size In. Ft.	Std. Bundle	Wt. Lbs. Per 100
710040	J8315	⅜x5	10	170
710041	J8316	⅜x6	10	205
710042	J8325	½x5	10	305
710043	J8326	½x6	10	370
710044	J8327	½x7	10	430
710045	J8328	½x8	10	490

WITH ANNEALED COPPER PIGTAILS

A standard rod 5 or 6 feet long, ⅜" or ½" in diameter. A pigtail of .104" annealed copper, is firmly attached to the ⅜" rod by means of a sleeve, compressed over the rod and wire and a permanent soldered connection. The ½" rod is furnished with .128" annealed copper pigtail.

Kellogg Code No.	Stock No.	Rod Size and Length Wire	Wt. Per 100 Rods
710049	J7105	⅜"x5'—18"	195
710050	J7106	⅜"x6'—18"	230
710051	J7107	⅜"x7'—18"	265
710054	J7305	½"x5'—18"	330
710055	J7306	½"x6'—18"	395
710056	J7308	½"x8'—18"	515



TYPE "A" TYPE "B"

COPPERWELD GROUNDING WIRE CLAMPS

The bronze grounding wire clamps illustrated are designed for use with Copperweld Ground Rods. These clamps eliminate the need for soldered connections and provide dependable electrical and mechanical connection between the grounding wires and the ground rods. A tremendous pressure is easily obtained, which forces the grounding wires or strands against the ground rods, thereby securing permanent low-resistance, copper-to-copper contacts.

Copperweld Grounding Wire Clamps are made in two designs, the Type "A" and the Type "B". Both types of clamps are regularly available with either the safety set screw or the square head set screw. Hexagonal safety wrenches are furnished free with clamps equipped with the safety set screw.

TYPE "A" CAST BRONZE — With Square Head Set Screw

Kellogg Code No.	Catalog No.		Size Rod	Ground Wire Size	Wt. Lbs. Per 100
230060	J8390	Safety	⅜"	#6 to #12 AWG	15
230061	J8391	Set	½"	#4 to #10 AWG	20
230062	J8392	Screw	⅝"	#2 to #8 AWG	35
230066	J8490	Square	⅜"	#6 to #12 AWG	15
230067	J8491	Head	½"	#4 to #10 AWG	20
230068	J8492	Bolt	⅝"	#2 to #8 AWG	35

TYPE "B" DRAWN BRONZE — With Safety Set Screw

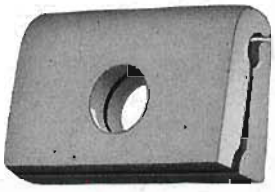
Kellogg Code No.	Catalog No.		Size Rod	Ground Wire Size	Wt. Lbs. Per 100
230073	J5490	Safety	⅜"	#6 to #14 AWG	7
230074	J5491	Set	½"	#2 to #10 AWG	15
230075	J5492	Screw	⅝"	#2 to #8 AWG	25
230077	J5590	Square	⅜"	#6 to #14 AWG	7
230078	J5591	Head	½"	#2 to #10 AWG	15
230079	J5592	Bolt	⅝"	#2 to #8 AWG	25

CABLE REINFORCING LINKS
Hot Dip Galvanized

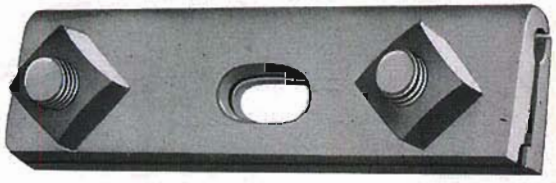


A reinforced link, ½-inch round, 8⅜ inches long, is used on each side of the cable suspension clamp to relieve side strains at corners in the line. It is fastened to the pole by ½-inch lag screws through the double eye.

Kellogg Code No.	Catalog No.	Wt. Lbs. per 100
585002	J7929	116



CABLE SUSPENSION CLAMPS
A.T.&T. Standard
Hot Dip Galvanized



These standard telephone and telegraph cable suspension clamps are made of special rolled sections of open hearth steel 1 1/16 inches wide and ⅜ inch thick, and are shaped to grip securely messenger strands of the sizes shown.

In attaching to the pole, a nut and a square washer are placed between the clamp and pole to provide clearance for the cable. Where cables are to be mounted on both sides of the pole, a ⅝-inch double arming bolt is usually used instead of the through bolt.

ONE-BOLT TYPE

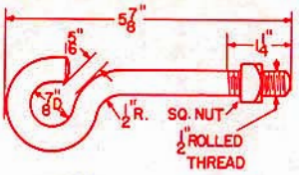
The one-bolt type is used for light cables and on cable arms. It is furnished without a bolt, the ⅝-inch through bolt being used both for attaching the clamp to the pole and tightening the clamp on the strand.

Kellogg Code No.	Catalog No.	Length Overall	Strand Size	Wt. Lbs. Per 100
230300	J1095	2½"	5/16"-7/16"	76

THREE-BOLT TYPE

The three-bolt type is used for heavy cables and long spans. It is furnished with but two ½-inch high carbon steel track bolts, the center hole for a ⅝-inch through bolt.

Kellogg Code No.	Catalog No.	Length Overall	Strand Size	Wt. Lbs. Per 100
230301	J1096	5¾"	5/16"-7/16"	216



GUARD ARM HOOKS
Hot Dip Galvanized

Kellogg Code No.	Catalog No.	Wt. Lbs. per 100
510060	J8245	44

CONNECTOR, POLE STRAND
Hot Dip Galvanized



This Pole Strand Connector is mounted on the pole with a ¾-inch Machine Bolt. The connector is used to make a dead end splice at the pole.

Kellogg Code No.	Stock No.	Width, Grooves Inches	Mounting Hole Inches	Wt. Lbs. Per 100
285026	*J7900	¾	13/32	420

* A.T.&T. Standard

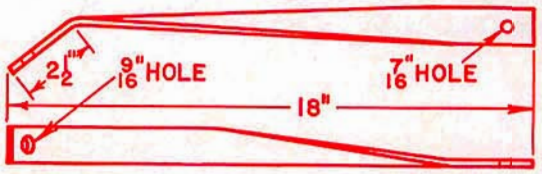


ANGLE CABLE SUSPENSION CLAMPS
Hot Dip Galvanized

The angle cable suspension clamp consists of two drop forged sections and is assembled with two ⅝" bolts. The curved ends of the clamp prevent injury to the messenger strand when turning small angles.

Kellogg Code No.	Stock No.	Strand Size Inches	Mounting Hole Inches	Wt. Lbs. Per 100
230302	*J7902	¼-7/16	1 3/32	405

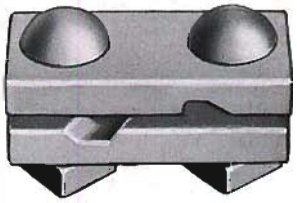
* A.T.&T. Standard



GUARD ARM BRACE
Hot Dip Galvanized

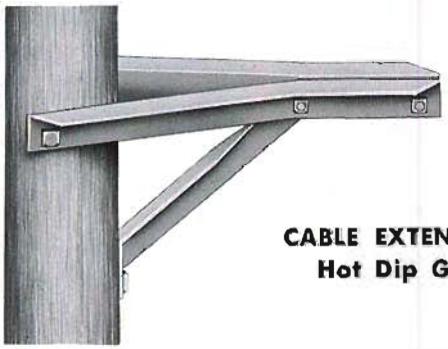
Kellogg Code No.	Catalog No.	Wt. Lbs. per 100
140055	J8240	170

CROSS OVER CLAMP
Hot Dip Galvanized



This Cross Over Clamp is used to clamp two messengers where they cross at right angles. The body of the clamp is a drop forging and bolts are ½-inch with oval shoulders.

Kellogg Code No.	Stock No.	Strand Size Inches	Wt. Lbs. Per 100
230030	J7930	5/16	157

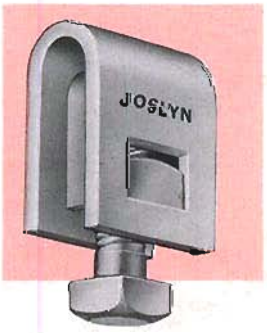


CABLE EXTENSION ARMS
Hot Dip Galvanized

These cable extension arms are standard with the telephone industry. They are used to support a telephone cable at a distance from the pole. The messenger wire is held by a standard J1096 suspension clamp which is bolted up against the under side of the angles by a ⅝" machine bolt. This machine bolt goes between the legs of the two angles and permits adjustment.

Mounting is accomplished by a ⅝" machine bolt at the upper position and a ½" lag screw at the lower.

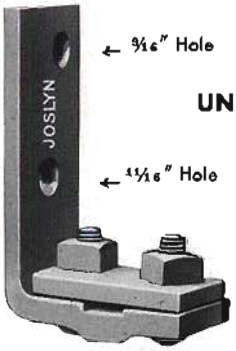
Kellogg Code No.	Stock No.	Size Angle Inches	Extension from Center of Pole, In.	Wt. Lbs. Per 100
920010	J7920	3x2½x¼	17½ to 26	3000
920012	J7921	3½x2½x5/16	26½ to 44½	5900



B STRAND GROUND CLAMP
Hot Dip Galvanized

Used to bond the cable sheath to the messenger strand. Body of clamp is made of 1¾x5/16" steel with keeper inside riding on the end of the bolt. The ½-inch bolt can be removed to place the clamp over the messenger wire.

Kellogg Code No.	Catalog No.	Wt. Lbs. Per 100
230275	J7956	60



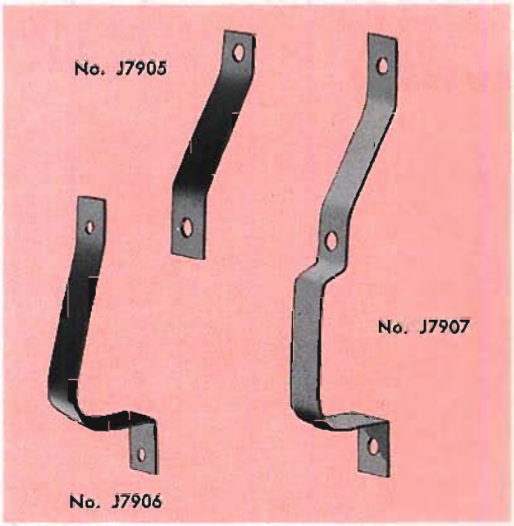
UNIVERSAL MESSENGER HANGERS
Hot Dip Galvanized

The Universal Hanger is forged from open hearth steel with a specially curved groove which permits its use on corners as well as on straight runs.

Two ½-inch high carbon steel track bolts clamp the strand.

Mounting holes 9/16 and 11/16 inches in diameter for ½-inch lag and ⅝-inch through bolt.

Kellogg Code No.	Catalog No.	Size Stock	Wt. Lbs. Per 100
475011	J1070	½"x2"	325
475012	J1071	⅜"x1¾"	248



REINFORCED AND SAFETY STRAPS
For Suspension Clamps
Hot Dip Galvanized

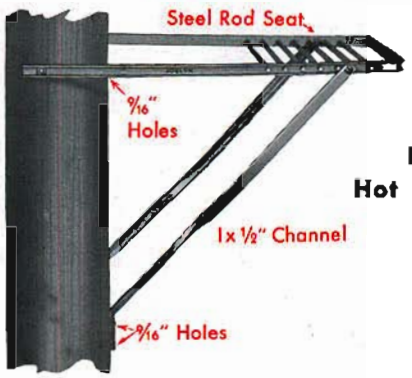
These straps are standard for telephone and telegraph companies.

No. J7905 is used to support the messenger bolt at points of extreme stress, such as long spans.

No. J7906 is a safety strap which will prevent the cable from falling should the messenger give way. The upper hole fits over the messenger bolt, and the lower end is fastened to the pole by a ½-inch lag screw.

No. J7907 is a combination of Nos. J7905 and J7906.

Kellogg Code No.	Catalog No.	Size Steel Inches	Wt. Lbs. Per 100
760150	J7905	1¾x⅛	51
760151	J7906	1¾x⅛	72
760152	J7907	1¾x⅛	121



POLE SEATS
Hot Dip Galvanized

This pole seat owes its great strength and rigidity to the 1x½-inch channel iron frame and brace construction. There is sufficient space between the ⅜-inch square cross bars to prevent ice and snow from collecting. Designed to fit a 10-inch diameter pole, but may be fitted to 8 to 12-inch diameter poles.

Kellogg Code No.	Catalog No.	Size Platform	Extension from Pole Center	Wt. Lbs. Per 100
728001	J287	12"x12"	2'-8"	1340



U-CABLE GUARDS
Hot Dip Galvanized

The U-Cable Guard is used for the protection of telephone and power cables.

It is made from 14-gage sheet steel, formed into a U shape. This U shape provides the additional strength necessary against collision and the rounded surface protects the pedestrian.

Kellogg Code No.	Stock No.	Length Feet	Inside Width Inches	Wt. Lbs. Per 100
455002	J985	6	1⅛	540
455001	J984	8	1⅛	725
455003	J986	5	2⅜	780
455004	J987	8	2⅜	1238
455009	J989	8	3⅜	1838

MOUNTING STRAPS

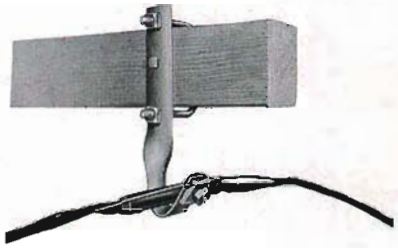
The strap is made from flat steel and is shaped to fit the guard.

The Nos. J995 and J996 are fastened with ¼-inch lag screws.

The No. J997 strap is lagged to the pole with ⅝-inch lag screws.

Kellogg Code No.	Stock No.	Size Steel Inches	Used with Cable Guard No.	Diam. Hole In.	Wt. Lbs. Per 100
760100	J995	⅛x¾	J985	9/32	18
760101	J996	⅛x¾	J986-7	9/32	30
760102	J997	3/16x1	J988-9	11/32	70

CABLE SUPPORT BRACKETS
for use with self-supporting rural telephone cable
Hot Dip Galvanized

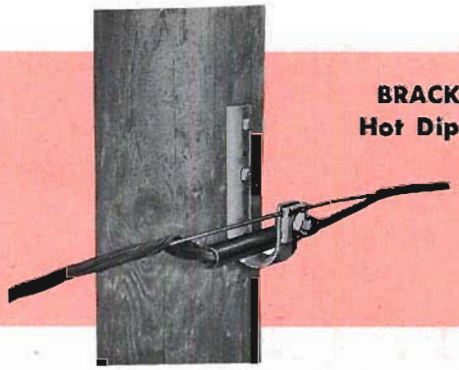


The J8235 "C" Wire Bracket supports rural distribution cable beneath a crossarm on straight runs and angles less than 35 degrees. If the pole has more than one crossarm, support the cable from the lowest arm. Place bracket as close to the pole as possible. Any pull should be against the bracket. The J8236 "B" Wire Pole Bracket is attached to the pole with two ⅜" x 4" FD lags on straight runs and angles less than 35 degrees. Use a ⅜" carriage bolt in the lower hole for corner pulls and angles of more than 35 degrees.

The plastic cable guard (supplied by others) is used to protect the paired conductors. When used with the pole bracket, the plastic guard should be placed in the saddle of the bracket on straight runs; and outside when the corner pull is away from the bracket. The guard should always be located in the saddle of the crossarm bracket.

It is not necessary to remove the insulation of the support wire before fastening it in the upper groove of the clamp. The groove ends are belled to prevent injury to support wire.

Kellogg Code No.	Stock No.	Wt. Lbs. per 100
145073	J8235	349
145074	J8236	220



BRACKET STRAPS
Hot Dip Galvanized

Bracket straps are used to reinforce the wood bracket when new types of high strength wire are used. Longer spans are used and therefore the strain on the fastenings is greatly increased, especially on angles.

The J7069 strap is used with the standard J2553 R.E.A. wood bracket. These straps are mounted on the pole with J8722½, ¼x2½-inch lag screws.

Kellogg Code No.	Stock No.	Style	Dimension, In. A	Dimension, In. B	Size Steel	Wt. Lbs. Per 100
760001	J2562	Bottom	2	2⅞	1"x#14 ga.	21
760002	J2563	Top	2	5	1"x#14 ga.	33
760003	J7067	Top	1¾	2	1x⅛"	26
760004	J7068	Bottom	1¾	⅞	1x⅛"	16
760005	J7069	Top	1¾	2⅛	1x⅛"	26



BRACKET CLIPS
Hot Dip Galvanized

Bracket Clips are used under the head of the nail to prevent wood bracket from splitting.

They are made of No. 14 gage steel.

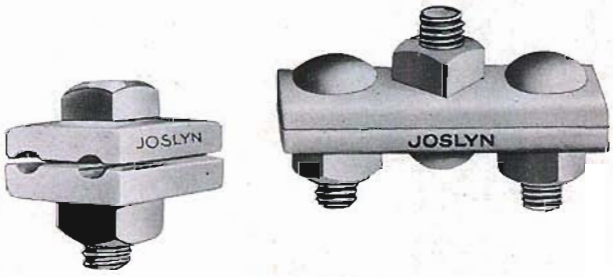
Kellogg Code No.	Stock No.	Width Between Legs, Inches	Wt. Lbs. Per 100
255001	J2560	1½	4
255002	J2561	2	4

WIRE ROPE CLIPS
Hot Dip Galvanized



Made with malleable iron bases and steel bolts.

Kellogg Code No.	Stock No.	Strand Size Inches	Wt. Lbs. Per 100
255150	J1048	¼	14
255151	J1049	5/16	19
255152	J1050	⅜	30
255153	J1051	½	48
255154	J1052	⅝	60



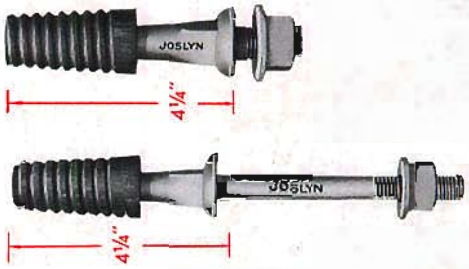
GUY CLAMPS
Hot Dip Galvanized
Lubex Treated

Clamps are rolled from structural bridge steel. One bolt clamp furnished with square head bolt, which also has a square section under the head to prevent the bolt from turning while being tightened. All sizes having three bolts are shipped with center bolt, reversed. ½" center bolt standard on all sizes except J931, which is equipped with ⅝" center bolt.

Kellogg Code No.	Stock No.	Strand Size Inches	Type	Length In.	Wt. Lbs. Per 100
230100	J1061	3/16 to 5/16	1-Bolt	1⅝	67
230101	J1030	3/16 to 5/16	2-Bolt	3⅜	127
230102	J929	3/16 to ⅜	3-Bolt	4	174
230103	J930	¼ to 5/16	3-Bolt	6	236
230104	J931	5/16 to ½	3-Bolt	6	280

WOOD COB STEEL PINS
Hot Dip Galvanized

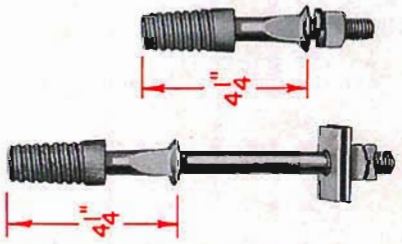
The cobs are made of the best grade of thoroughly seasoned oak, or locust and are boiled in paraffin to exclude all moisture. The pins are forged from stiff, high carbon, open hearth steel, and have razor-sharp cut threads to prevent splitting the cobs.



WESTERN UNION STANDARD TYPE

The long shank pin is equipped with one square nut and a round washer clipped on one side to permit locking the nut by driving a nail into the arm. The short shank pins are furnished with nut only. These pins are for use with standard insulators having 1-inch pin holes, thread taper 1.111-inch, per 12-inch.

Short shank pins are designed for use on transposition brackets, steel cross arms, ridge irons, etc.



LONG SHANK

Kellogg Code No.	Stock No.	Diameter Shank, Inches	Length Shank, Inches	Wt. Lbs. Per 100
651013	J1190	½	5	70
651014	J1191	⅝	5	106

SHORT SHANK

Kellogg Code No.	Stock No.	Diameter Shank, Inches	Length Shank, Inches	Wt. Lbs. Per 100
651015	J1193	½	1	45
651016	J1195	⅝	1	65

R.E.A. STANDARD TYPE

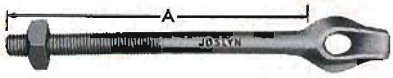
The J1185 pin is assembled with a J138 lock washer and square nut; the J1187 with a J139 lock washer and square nut; and the J1188 with two 2x2x⅛-inch square washer, nut, and M-F lock nut.

Kellogg Code No.	Stock No.	Diameter Shank, Inches	Length Shank, Inches	Wt. Lbs. Per 100
651010	J1185	½	1½	50
651011	J1187	⅝	1¾	75
651012	J1188	⅝	5⅞	126

THIMBLEYE BOLTS
Hot Dip Galvanized

For attaching guys to poles. Eliminates the use of strain plates, guy hooks and extra strand. Bolts 10 inches and shorter have 4 inches of thread; longer bolts, 6 inches of thread. All thimbleye bolts have cone points.

The shoulder type improved eyebolt for down guys is superior mechanically to the standard type. The shoulder prevents the curved portion being drawn into the pole and also prevents crushing the wood fibers. Eye will accommodate ½-inch maximum diameter strand. Lift plates should be used on both types of angle thimbleye bolts where loads are excessive and guys are steep.



DROP FORGED STRAIGHT BOLTS

⅝-INCH DIAMETER

Minimum Breaking Strength, 14,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120175	J8049	6	114
120176	*J8050	8	130
120177	*J8051	10	146
120178	*J8052	12	161
120179	*J8053	14	177
120180	*J8054	16	198
120181	J8055	18	219

¾-INCH DIAMETER

Minimum Breaking Strength, 20,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120190	*J8060	8	180
120191	*J8061	10	203
120192	*J8062	12	226
120193	*J8063	14	249
120194	*J8064	16	272
120195	J8065	18	295



SHOULDER TYPE STRAIGHT BOLTS

⅝-INCH DIAMETER

Minimum Breaking Strength, 14,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120255	J8406	6	128
120256	J8408	8	148
120257	J8410	10	168
120258	J8412	12	188
120259	J8414	14	208
120260	J8416	16	228
120261	J8418	18	248



DROP FORGED 45° ANGLE BOLTS

⅝-INCH DIAMETER

Minimum Breaking Strength, 14,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120210	J8149	6	122
120211	*J8150	8	137
120212	*J8151	10	152
120213	*J8152	12	167
120214	*J8153	14	182
120215	*J8154	16	197
120216	J8155	18	212

¾-INCH DIAMETER

Minimum Breaking Strength, 20,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120225	J8159	6	182
120226	*J8160	8	188
120227	*J8161	10	214
120228	*J8162	12	240
120229	*J8163	14	266
120230	*J8164	16	292
120231	J8165	18	318



SHOULDER TYPE 45° ANGLE BOLTS

⅝-INCH DIAMETER

Minimum Breaking Strength, 14,000 Pounds

Kellogg Code No.	Stock No.	A Length Inches	Wt. Lbs. Per 100
120245	J8006	6	130
120246	J8008	8	148
120247	J8010	10	166
120248	J8012	12	184
120249	J8014	14	204
120250	J8016	16	224
120251	J8018	18	244

* E.E.I. Standard

GUY ATTACHMENTS



These guy attachments are all sturdy enough to shear the bolts used to fasten them to the pole.

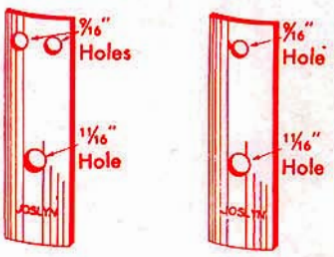
Two-bolt attachments such as the No. J6505 are used on steep guys. Wherever possible, use these attachments under the head of a machine bolt. When used under the nut where the load bears on the threaded portion of the bolt, there will be some loss in the shearing strength of the bolt.

Kellogg Code No.	Stock No.	Type	Size Steel Inches	Size Hole Inches	Wt. Lbs. Per 100
930001	J6502	1-bolt	2x⅛	11/16	80
930002	J6505	2-bolt	2x¼	9/16x13/16	208
930003	J6506	1-bolt	2x¼	13/16	156



DROP FORGED ANGLE THIMBLEYE
Hot Dip Galvanized

Kellogg Code No.	Catalog No.	Size "A" Hole	Wt. Lbs. Per 100
797001	J6500	11/16"	115
797002	J6501	13/16"	118



LIFT PLATES FOR ANGLE THIMBLEYE BOLTS

Used with ½-inch lag screws to increase load capacity of angle thimbleye bolts. All plates except the J7899 are 2½ x 7 inches curved on a 3-inch radius. Plates for ⅝-inch eyebolts have 11/16-inch round holes; plates for ¾-inch eyebolts have 1 x ⅞-inch oval holes; plates for 1-inch eyebolts have 1 1/16-inch round hole.

3-HOLE PLATES

Kellogg Code No.	Stock No.	Size Eyebolts Inches	Thickness Inches	Wt. Lbs. Per 100
655010	J7885	⅝	3/16	93
655011	J7886	⅝	¼	128
655012	J7887	⅝	5/16	156
655013	J7889	¾	3/16	93
655014	J7890	¾	¼	128
655015	J7891	¾	5/16	156
655019	J7899	1	5/16	156

2-HOLE PLATES

Kellogg Code No.	Stock No.	Size Eyebolts Inches	Thickness Inches	Wt. Lbs. Per 100
655017	J7896	⅝	3/16	93
655018	J7897	⅝	¼	128
655016	J7894	¾	¼	128

GUY HOOKS
Hot Dip Galvanized



Used to prevent the strand from slipping on the pole where the pull is exerted at a sharp angle.

Made of half oval steel bent with the flat side to the pole. The rounded side prevents injury to the guy strand or its galvanized coating. J1016 is 3" long, J1018 is 6" long and J1019 is 4" long.

Kellogg Code No.	Catalog No.	Type	Size Steel Inches	Mounting Hole, In.	Wt. Lbs. Per 100
510090	J1016	1-bolt	1¼x¼	5/16	39
510091	J1018	2-bolt	1½x⅜	5/16	87
510092	J1019	1-bolt	1¾x⅜	11/16	80

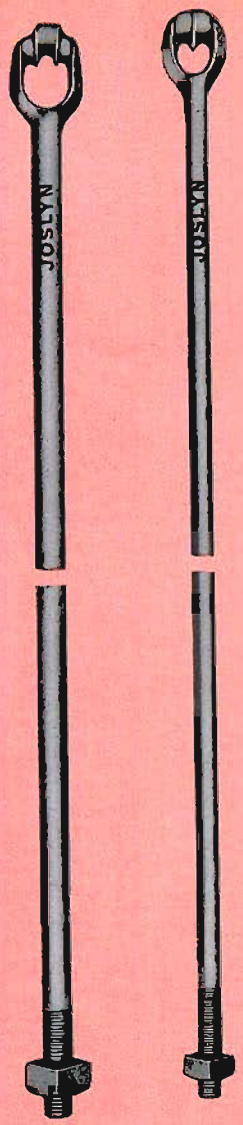


DROP FORGED THIMBLEYELETS
Hot Dip Galvanized

This eyelet is used under the head or nut of machine bolts. Maximum strand size, ⅝-inch diameter.

Kellogg Code No.	Stock No.	Bolt Size Inches	Wt. Lbs. Per 100
797004	*J6550-C	⅝	136
797005	*J6551	¾	118

* E.E.I. Standard



DROP FORGED THIMBLEYENUTS
Hot Dip Galvanized

These eyenuts are tapped to fit hot dip galvanized bolts made to E.E.I. Specifications.

THIMBLEYENUTS

Kellogg Code No.	Stock No.	Bolt Size Inches	Max. Strand Size In.	Wt. Lbs. Per 100
615033	J6509	½	½	88
615030	*J6510	⅝	½	86
615031	*J6511	¾	½	82

TWINEYENUTS

Kellogg Code No.	Stock No.	Bolt Size Inches	Max. Strand Size In.	Wt. Lbs. Per 100
615040	J6515	⅝	⅝	146
615041	J6516	¾	⅝	144

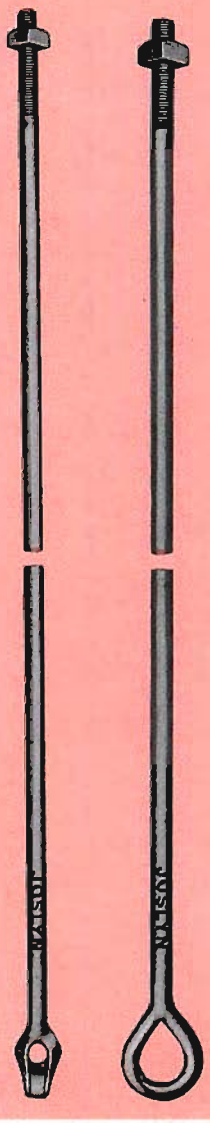
* E.E.I. Standard



THIMBLEYENUTS



TWINEYENUTS



THIMBLEYE THREADED ANCHOR RODS
Hot Dip Galvanized

Made to E.E.I. Specifications T.D.2

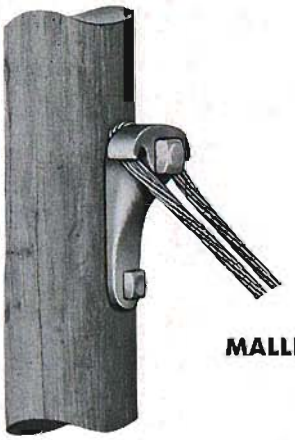
Rolled Thread ½, ⅛ and ¾ Inch — Cut Thread 1 and 1¼ Inches — Length of Thread 3½ Inches

THIMBLEYE RODS

Kellogg Code No.	Stock No.	Diameter Inches	Length Feet	Ult. Strgth. Lbs. Min.	Wt. Lbs. Per 100
710001	J7405	½	5	10,000	350
710002	J7406	½	6	10,000	410
710005	J7416	⅝	6	15,000	640
710006	J7417	⅝	7	15,000	740
710007	J7418	⅝	8	15,000	840
710008	J7427	¾	7	23,000	1080
710009	J7428	¾	8	23,000	1220
710010	J7429	¾	9	23,000	1360
710011	J7440	1	10	36,000	2810

TWINEYE RODS

Kellogg Code No.	Stock No.	Diameter Inches	Length Feet	Ult. Strgth. Lbs. Min.	Wt. Lbs. Per 100
710027	J7516	⅝	6	15,000	640
710028	J7517	⅝	7	15,000	740
710029	J7518	⅝	8	15,000	840
710022	J7527	¾	7	23,000	1110
710023	J7528	¾	8	23,000	1250
710025	J7529	¾	9	23,000	1390
710021	J7540	1	10	36,000	2820



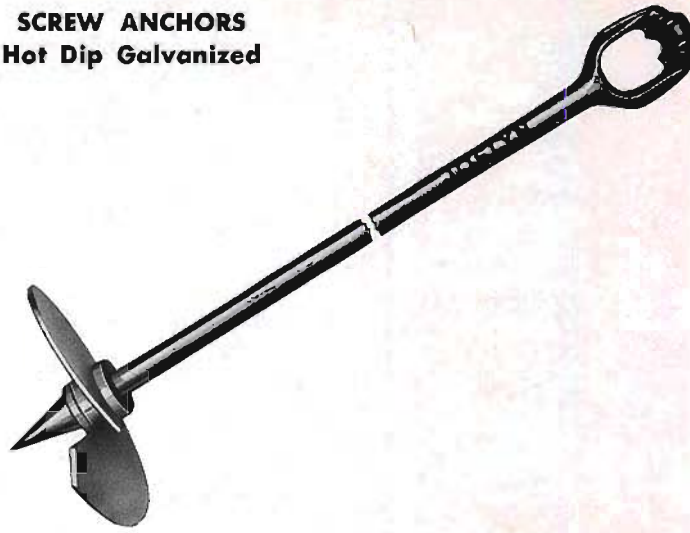
MALLEABLE GUY ATTACHMENT

The J6555 and J6556 Malleable Guy Attachments provide an economical and dependable means of attaching guy wire to the pole. The loop is made up on the ground and slipped on the Guy Attachment at any convenient time. When rotated 90°, the loop slips over the ears easily. However, the loop cannot be installed or disengaged in any other way. This design makes it possible to apply the guy load at any angle from 0° to 90° in the vertical plane. Consequently, these guy attachments can be used on a head or span guy as well as on a down guy.

The J6555 will accommodate guy strand up to and including 7/16" size and the J6556 will accommodate strand up to and including ½" size.

Kellogg Code No.	Stock No.	Size Hole A	Size of Bolt for Hole A	Wt. Lbs. Per 100
930005	J6555	11/16"	5/8"	105
930006	J6556	13/16"	5/8" or 3/4"	120

SCREW ANCHORS
Hot Dip Galvanized



The screw type anchor has a forged eye with 3 circular grooves. When used with a single guy, the load is centralized in the center groove; used with 2 guys the load is divided uniformly on the outer grooves. The eye will accommodate a 1¼-inch bar used to twist the anchor into the earth.

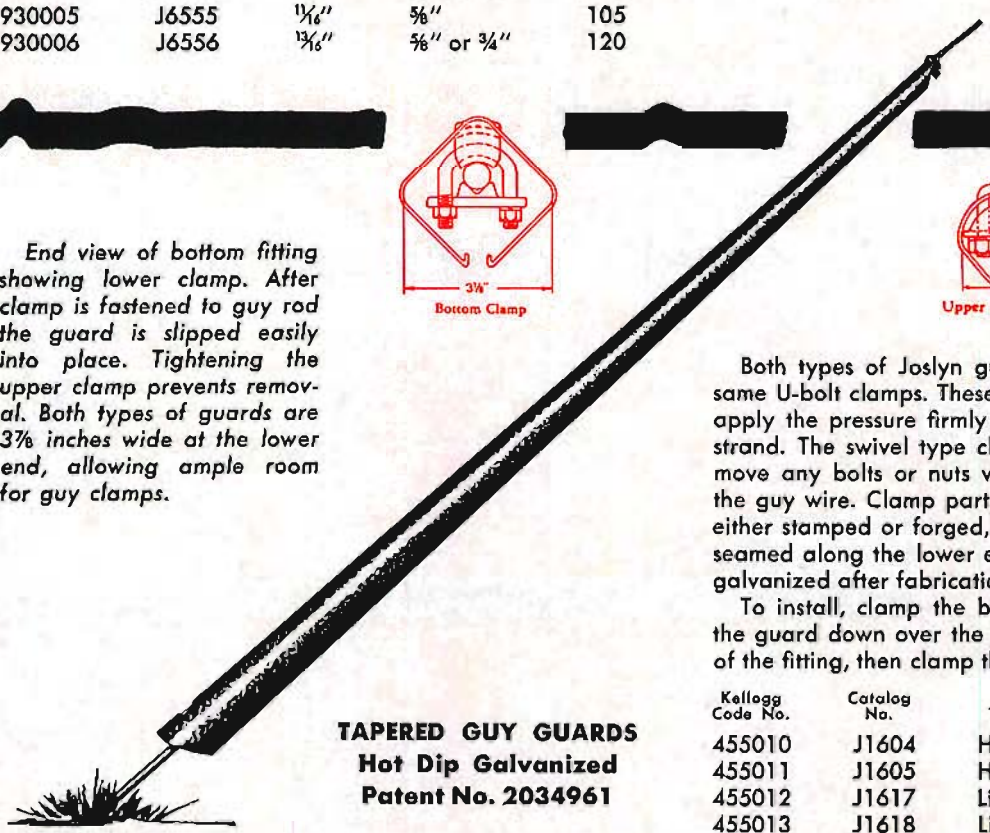
Kellogg Code No.	Catalog No.	Diam. Wing, In.	Diam. Rod, In.	Length Feet	Wt. Lbs. Per 100
915051	J6524	4	¾	4½	765
915052	J6526	6	¾	5½	1065
915053	J6528	8	1	5½	2016

Bottom Clamp



Upper End View

End view of bottom fitting showing lower clamp. After clamp is fastened to guy rod the guard is slipped easily into place. Tightening the upper clamp prevents removal. Both types of guards are 3⅞ inches wide at the lower end, allowing ample room for guy clamps.

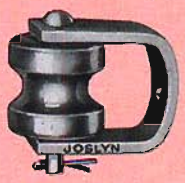

Standard Type

TAPERED GUY GUARDS
Hot Dip Galvanized
Patent No. 2034961

Both types of Joslyn guy guards are provided with the same U-bolt clamps. These clamps which are easy to install, apply the pressure firmly and directly to the guy rod and strand. The swivel type clamps make it unnecessary to remove any bolts or nuts while attaching the upper end to the guy wire. Clamp parts are made of open hearth steel, either stamped or forged, for greater strength. Guards are seamed along the lower edges for rigidity and are hot dip galvanized after fabrication.

To install, clamp the bottom fitting to the guy rod, slip the guard down over the guy clamps engaging the tongue of the fitting, then clamp the top fitting to the guy strand.

Kellogg Code No.	Catalog No.	Type	Length	Gauge Steel	Wt. Lbs. Per 100
455010	J1604	Heavy	7 ft.	16	1600
455011	J1605	Heavy	8 ft.	16	1800
455012	J1617	Light	7 ft.	18	1200
455013	J1618	Light	8 ft.	18	1400



INSULATED FORKS
Hot Dip Galvanized

The No. J79 Insulated Fork is made of 1½x¼-inch steel with a No. J24 Insulator, 1⅞-inch diameter, 1¾ inches high. It is used with ½-inch bolt or lag screws. Dimension from center of pin to back of fork, 2½ inches.

Kellogg Code No.	Catalog No.	Wgt. Lbs. per 100
400001	J79	144



INSULATED FORK BOLTS
Hot Dip Galvanized

This fork bolt is forged in one integral piece. Diameter of bolt, ½-inch. Size of fork, 1½x⅜-inch. It is furnished with No. J100 insulator, 2¼-inch diameter, 2⅛ inches high.

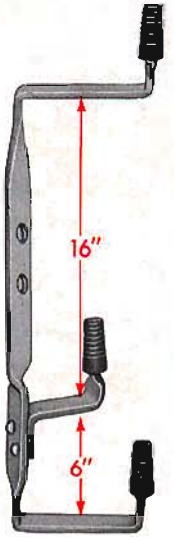
Kellogg Code No.	Catalog No.	Length of Bolt	Wt. Lbs. Per 100
400002	J7188	8"	148
400003	J7190	10"	154



TELEPHONE DEAD END CLEVIS

The J1944 clevis is standard with the telephone industry for dead ending telephone lines. The stock number does not include the insulator.

Kellogg Code No.	Catalog No.	Uses Insulator	Type Insulator	Wt. Lbs. Per 100
245001	J1944	J99	Wet Process	50



TRANSPOSITION BRACKETS
Hot Dip Galvanized

Western Union Phantom Circuit Type

No. J8271 is standard with the Western Union Telegraph Company.

Made of 1½x⅜-inch steel.

Furnished complete with 1-inch wood cobs. ½x4-inch galvanized machine bolts with clipped washers (on 2⅜-inch centers), are not included and must be ordered separately.

Kellogg Code No.	Catalog No.	Wt. Lbs. Per 100
145061	J8271	960

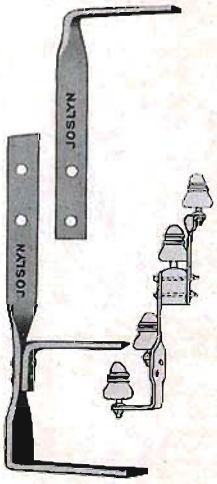
Phantom Circuit Type

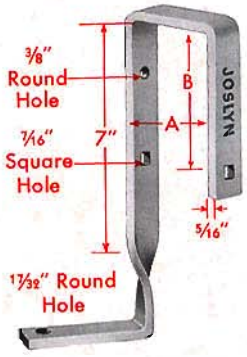
No. J8275 is fastened to the arm by two ½x5-inch machine bolts, spaced on 2⅜-inch centers, and has holes for ½-inch pins.

Made of 1½x⅜-inch steel.

The price includes the two parts shown, the smaller of which projects above the arm, but no bolts or pins.

Kellogg Code No.	Catalog No.	Wt. Lbs. Per 100
145063	J8275	712

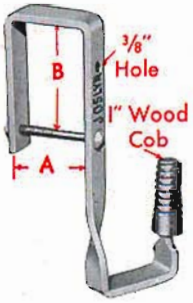




Old Style Western Union Single Circuit Type

These brackets are furnished without the ½" short shank pin, carriage bolt or #14 x 2-inch wood screw. The No. J451 requires a ⅜x 4½-inch carriage bolt. The Nos. J450 and J452 require a ½x4½" carriage bolt.

Kellogg Code No.	Catalog No.	Size Steel Inches	For Size Arm, In.	Wt. Lbs. Per 100
145053	J451	1¼x5/16	2¾x3¾	240
145054	J450	1¼x5/16	3¼x4¼	250
145055	J452	1½x⅜	3¼x4¼	395



Western Union
Single Circuit Type

Furnished complete with 1-inch wood cob and carriage bolt and provided with a ⅜-inch hole. Made of 1¼x5/16-inch steel.

No. J8270 is standard with the Western Union Telegraph Company.

Kellogg Code No.	Catalog No.	For Size Arm	Carriage Bolt, Inches	Wt. Lbs. Per 100
145060	J8269	2¾x3¾	⅜x4	310
145062	J8272	3¼x4¼	⅜x4½	320

HEAVY DUTY TRANSPOSITION BRACKETS



Single Type

This bracket is standard with the telephone industry for heavy construction. It is provided with a hole for ⅝-inch short shank pin.

Kellogg Code No.	Catalog No.	Size Steel Inches	For Size Arm	Wt. Lbs. Per 100
145066	J8283	1½x⅝	3¼x4¼	715

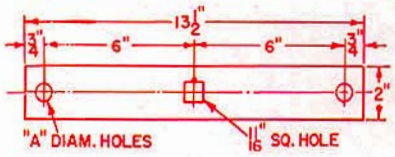


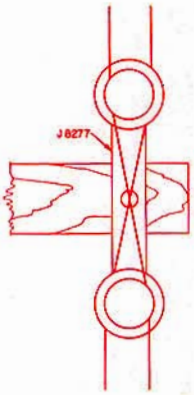
Phantom Type

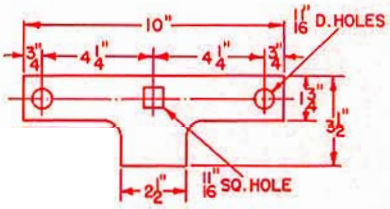
Both of these transposition brackets have the same type of clamp made of 1½x⅜-inch steel. The ⅜-inch hole is for a 2-inch x No. 14 wood screw.

Kellogg Code No.	Catalog No.	Size Steel Inches	For Size Arm	For Size Pin	Wt. Lbs. Per 100
145056	J8263	1½x⅜	3¼x4¼	½"	995
145057	J8264	1½x⅝	3¼x4¼	⅝"	1492

TANDEM TRANSPOSITION BRACKETS
Hot Dip Galvanized







These tandem transposition brackets are used with No. H56 glass transposition insulators for transposing telephone lines. They are mounted on the cross arm by means of a ⅝-inch carriage or machine bolt. The No. J8277, used for straight line work, takes two ½-inch insulator pins. The No. J8278 is used for angles with the extra supporting section protruding on the inside of the line angle. Two ⅝-inch insulator pins are used with the No. J8278 bracket.

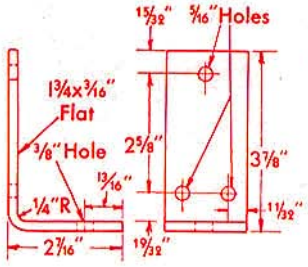
Order pins, bolts, and insulators separately.

Kellogg Code No.	Catalog No.	Thickness Steel	Size Pin Holes	Wt. Lbs. Per 100
145064	J8277	⅜"	9/16"	278
145065	J8278	½"	11/16"	368



HOOKS
Hot Dip Galvanized

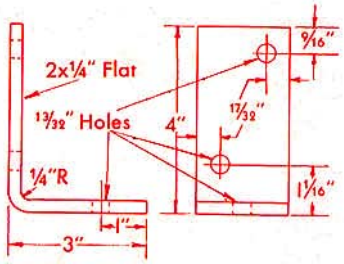
Kellogg Code No.	Catalog No.	Size Hook	Wt. Lbs. per 100
510030	J3316	7/16"x5¼"	26
510040	J3317	5/16"x4"	13



HOUSE BRACKETS

No. J1200 is used with porcelain knobs for telephone service drops.

Kellogg Code No.	Catalog No.	Wt. Lbs. per 100
145025	J1200	56



WESTERN UNION POLE BRACKETS

The holes for fastening to the pole are for ⅜-inch lag screws.

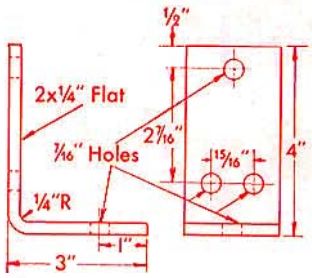
This is the Western Union Standard Bracket.

Kellogg Code No.	Catalog No.	Wt. Lbs. Per 100
145030	J1201	93

POLE BRACKETS

This bracket is used with porcelain knobs for telephone service drops, fastened to pole with ⅜-inch lag screws.

Kellogg Code No.	Catalog No.	Wt. Lbs. Per 100
145031	J1202	93



WESTERN UNION WALL BRACKETS

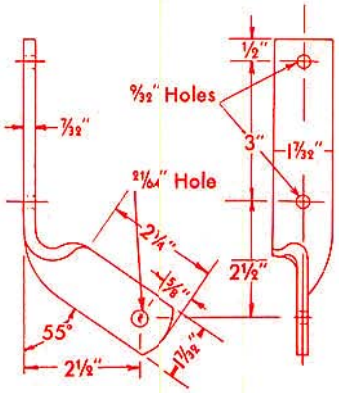
Type A

No. J2584 is the standard Type A Western Union Wall Bracket. No. 14 wood screws are used for fastenings.

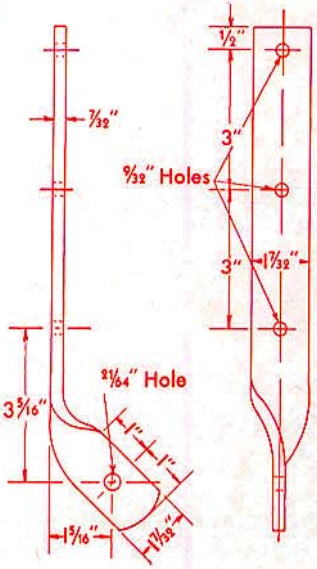
TYPE B

No. J2585 is the standard Type B Western Union Wall Bracket. No. 14 wood screws are used for fastenings.

Kellogg Code No.	Catalog No.	Type Bracket	Wt. Lbs. Per 100
145005	J2584	"A"	66
145006	J2585	"B"	78









2

cable and accessories

CABLE INSTALLATION EQUIPMENT

For over 65 years Cope has been supplying an extremely wide range of underground and overhead cable installation equipment, some of which is illustrated below and in other sections of this catalog. Other items in the line include conduit clearing equipment, soldering equipment, aerial and manhole tents and guard rail cable benders, wire raising tools, etc. Complete information is contained in Cope Bulletin 65.

PNEUMATIC FISHLINE

The Cope Pneumatic Fishline is essentially a powerful air gun which uses conduit as its barrel. This makes it possible to fish underground conduit in a matter of minutes—not hours—regardless of diameter or length. An air-operated retrieving motor permits fast rereeling. The projectile consists of a neoprene cup mounted on a steel rod with eyes at both ends. Standard sizes are 3" to 3½"; 4" to 4½"; 5" to 5½". Other sizes can be made to order.



FLEXIBLE MANDREL

The Cope Flexible Mandrel is useful for testing conduits having bands through which rigid mandrels will not pass. It is constructed of hardened steel discs of graduated sizes strung on a flexible steel cable separated by beveled spacers and equipped with drop forged steel socket eyes, making it a good tool to cut interior obstructions in the duct. It is designed to withstand a pull of 5,000 lbs. Available in diameters of 1¾" to 5" in ¼" increments.



STRINGING SHEAVES

The Cope Stringing Sheave is divided into two parts; A, (Bracket Assembly) and B, (Sheave Assembly). The whole unit weighs less than thirty pounds and can be positioned by one man. For easier installation, bracket assembly can be readily removed from sheave by unscrewing pin in clevis. Special link chain permits greatest possible grip and stays in position. The same wrench will tighten chain and adjust height of sheave.

If desired, Assemblies A & B can be purchased separately. Part A can be used for hoisting jobs, and B can be attached to cross arms.

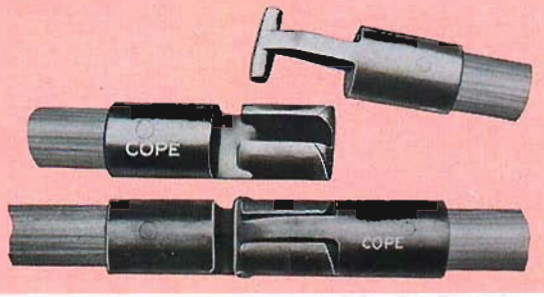


CABLE FEEDER and STRAIGHTENER

The Cope Aerial Feeder and Straightener will be found indispensable for pulling aerial cable. The wide mouth aluminum bells protect the cable sheath during pulling, and the steel tube whose flexibility is limited prevent overbending the cable. All interior surfaces are finished smooth and will accommodate cables up to 3½" diameter.

The complete feeder, Catalog number 90, comprises a galvanized flexible steel tube with an aluminum bell at each end, overall length 5 feet, and 2 pairs of malleable iron clamps as shown.





RODS, QUICK COUPLING CONDUIT

Made of best grade hickory, straight grained and toughened by an oil process to insure long life. The castings are malleable iron and are power driven onto the sticks and securely riveted.

Cat. No.	Length	Description	Weight Each
461	2 ft. rod	Straight Stick	1 lb.
462	3 ft. rod	Straight Stick	2 lbs.
463	4 ft. rod	Straight Stick	2½ lbs.
465	3 ft. rod	Swell Center Stick	2¼ lbs.
466	4 ft. rod	Swell Center Stick	2¾ lbs.



DRAWING-IN PROTECTORS

A protector in every sense, it is made of brass, machined and finished throughout. Its smooth, bell-shaped mouth will guide the cable without chafing the cable sheath while it is being drawn into the conduit.

Catalog No.	Size	Weight Each
42	2" Round Conduit	1½ lbs.
42½	2½" Round Conduit	2 lbs.
43	3" Round Conduit	3 lbs.
43½	3½" Round Conduit	3½ lbs.
44	4" Round Conduit	4 lbs.
44½	4½" Round Conduit	4½ lbs.
41	5" Round Conduit	6 lbs.
47	6" Round Conduit	12 lbs.
45	3" Square Conduit	4½ lbs.
46	4" Square Conduit	5 lbs.



CABLE PULLING RIGGING

The pulling rigging provides a direct pull through the conduit. The lower sheave is placed opposite the conduit and upper sheave is placed above the street level to lead to the winch.

(Continued)

The standard Cope Pulling Rigging shown is made of 6" steel channel with holes spaced on 8½" centers. The 2 sheaves are made of cast iron, 12" in diameter, and will accommodate 3½" cable. The sheaves rotate on 1" shafts.

Catalog No.	Size	Weight Each
111	9' Long	235 lbs.
112	10' Long	250 lbs.
113	12' Long	280 lbs.



CABLE FEEDER

The Cope Cable Feeder is used to guide and protect the cable as it is being pulled from the reel into the conduit and to facilitate the application of lubricant.

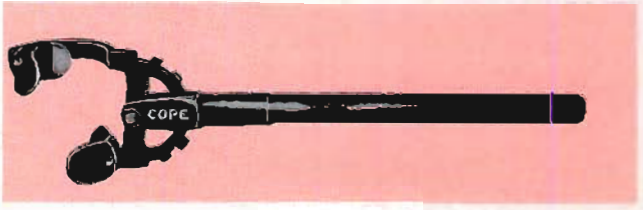
Made of 4" O.D. heavy steel galvanized flexible tubing with a smoothly-finished brass bell at the free end and a steel sleeve at the conduit end. The sleeve will accept the range of smoothly-finished brass nozzles listed. Maximum inside diameter of this series is 3⅛".

Feeders

Catalog No.	Length	Weight
71	9'-0"	40 lbs.
72	12'-0"	50 lbs.
73	16'-0"	65 lbs.
74	20'-0"	80 lbs.

Nozzles *(Order separately)*

Catalog No.	Conduit Diameter	Weight
82	2"	11 lbs.
82½	2½"	10 lbs.
83	3"	9 lbs.
83½	3½"	8 lbs.
84	4"	8 lbs.
84½	4½"	12 lbs.
85	5"	15 lbs.



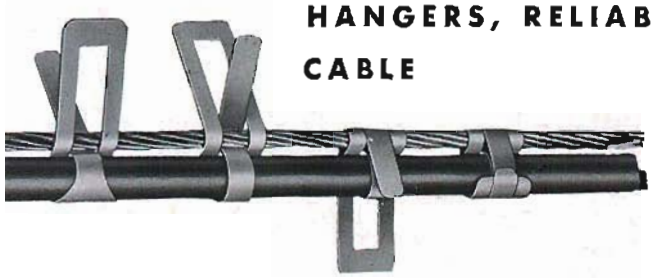
CABLE BENDER

The Cope Bender is a universal tool. Its yoke, which can be adjusted to seven positions by pulling back on the sleeve, permits working in very close quarters.

The shoe surfaces are wide, will accommodate up to 3" cable, and have rounded edges to prevent injury to the cable sheath.

Catalog No.	Length	Weight
20	36"	15 lbs. each

HANGERS, RELIABLE CABLE



For supporting lead covered cable or insulated conductors to galvanized steel strand. These hangers wrap around the cable, securely attaching them to the messenger, minimizing creep bow and fatigue. The zinc hangers bond the cable sheath and strand to give added protection against lightning. Zinc hangers and steel strand should be used with neoprene jacketed wires. Copper hangers are available for use with copperweld and bronze strand.

ZINC

Kellogg Code No.	Catalog No.	Shpg. Wt. Lbs. per M	Length	Cable Diam. Max.	Cable Diam. Min.
475001	1	35	7⅞"	¾"	½"
475002	2	53	11"	1⅛"	½"
475003	3	73	14"	1⅝"	½"
475004	4	92	16"	2"	⅞"
475005	5	107½	18"	2¼"	1½"
475006	6	126	19½"	2-7/16"	2"



Multiple Wire Pulling Grips

SINGLE WEAVE

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
11/32 to ½	205	8½	500
½ to ⅝	407	8¾	900
⅝ to ¾	509	8⅞	1,400
11/16 to 13/16	712	9¼	1,600
13/16 to 1	1220	9⅜	2,100
1 to 1⅛	2030	9¾	2,100



Grips, Flexible Cable

SINGLE WEAVE — SINGLE EYE

Used to attach pulling line to cable. See table for pulling aerial and underground cables of all sizes.

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
½ to ¾	821	18	2,800
¾ to 1	822	24	3,350
1 to 1½	823	24	6,300
1½ to 2	824	24	8,400
2 to 2½	825	24	12,300
2½ to 3	826	24	15,400
3 to 3½	827	24	15,400
3½ to 4	828	24	15,400



Grips, Flexible Cable

DOUBLE WEAVE — SINGLE EYE

Used for pulling underground cable where wear is light and the use of reinforced grips is not warranted.

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
1 to 1½	933	36	10,500
1½ to 2	934	36	12,500
2 to 2½	935	36	18,500
2½ to 3	936	36	24,500
3 to 3½	937	36	27,700
3½ to 4	938	36	27,700



Grips, Hard Wire

SINGLE EYE — DOUBLE WEAVE

Hard, tough wire grip for attaching pulling line to the end of a cable. Resists wear in rough, sandy conduits. The grip must fit exactly for best performance. May be used for swabbing ducts by packing with waste.

For Cable Diam., Inches	Catalog No.	Length Inches	Tens. Str. Pounds	Catalog No.	Length Inches	Tens. Str. Pounds
½ to ¾	801	18	5,300	811	24	5,300
¾ to 1	802	22	6,300	812	30	6,300
1 to 1½	803	22	6,300	813	30	6,300
1½ to 2	804	22	8,500	814	30	8,500
2 to 2½	805	22	15,000	815	30	15,000
2½ to 3	806	30	18,300	816	45	18,300
3 to 3½	807	30	23,000	817	45	23,000
3½ to 4	808	30	23,000	818	45	23,000



Grips, Reinforced Flexible Pulling

SINGLE EYE — DOUBLE WEAVE

For pulling underground cable. The reinforcement protects wires of the grip at shoulder where wear is greatest. The eye is formed of the wires themselves and reinforced. As there is no joint at the working end of the grip there is no loss of strength.

For Cable Diameter, Inches	Catalog No.	Length Inches	Catalog No.	Length Inches	Catalog No.	Length Inches
1 to 1½	1023	24	1033	36	1043	48
1½ to 2	1024	24	1034	36	1044	48
2 to 2½	1025	24	1035	36	1045	48
2½ to 3	1026	24	1036	36	1046	48
3 to 3½	1027	24	1037	36	1047	48
3½ to 4	1028	24	1038	36	1048	48



Grips, Double Eye Luffing

Used for pulling slack or removing old cable. Pull is distributed as evenly as possible on all wires which results in a very long wearing grip. Shortest body permits longest pull in cramped manhole.

SINGLE WEAVE — FOR LIGHT PULLS

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
¾ to 1	842	18	3,300
1 to 1½	843	18	6,300

DOUBLE WEAVE — FOR HEAVY PULLS

1½ to 2	954	24	12,600
2 to 2½	955	24	16,800
2½ to 3	956	24	24,600
3 to 3½	957	24	24,600
3½ to 4	958	24	24,600



Grips, Single Eye Luffing

When the strain is applied the eye lies flat against the cable.

SINGLE WEAVE

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
¾ to 1	1842	18	3,300
1 to 1½	1843	18	6,300

DOUBLE WEAVE

1½ to 2	1954	24	12,600
2 to 2½	1955	24	16,800
2½ to 3	1956	24	24,600
3 to 3½	1957	24	24,600
3½ to 4	1958	24	24,600

Grips, Double Eye Split

Used for pulling slack in working cable. Can be attached and removed without cutting cables. A special hooking arrangement makes the grip easy to fasten or unfasten.

SINGLE WEAVE

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
¾ to 1	*862	18	3,300
1 to 1½	863	18	6,300

*No hooks — wire lacing furnished.

DOUBLE WEAVE

1½ to 2	974	24	12,600
2 to 2½	975	24	16,800
2½ to 3	976	24	24,600
3 to 3½	977	24	24,600
3½ to 4	978	24	24,600

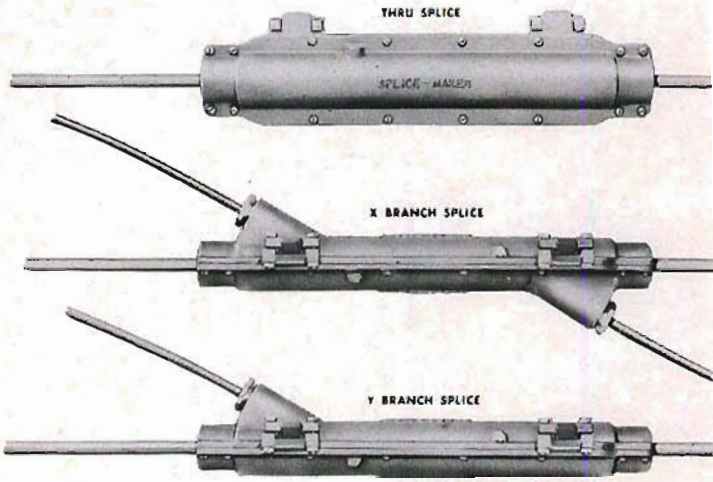
Grips, Single Eye Split Flexible

SINGLE WEAVE

For Cable Diameter, Inches	Catalog No.	Length Inches	Tensile Strength Pounds
¾ to 1	1862	18	3,300
1 to 1½	1863	18	6,300

DOUBLE WEAVE

1½ to 2	1974	24	12,600
2 to 2½	1975	24	16,800
2½ to 3	1976	24	24,600
3 to 3½	1977	24	24,600
3½ to 4	1978	24	24,600



THE NEW COOK SPLICE MAKER

For cold splicing of lead or plastic sheath distribution cable from 11 to 101 pair (¼" to 1" diam.) sizes.

Easy to Rig

Mount the strand clipped half of the Splice Maker to the messenger, measure the sheath for stripping, and position with tape for splicing.

Easy to Pack

With one half of the Splice Maker in position, the staggering of the wire joints within the prescribed splicing area makes final forming of the bundle regular and easy to pack away in the Splice Maker housing.

Easy to Assemble

All fasteners, grommets and small parts are retained by the two Splice Maker halves and nothing can fall to the ground. Assembly of the two halves is accomplished with screw driver or socket wrench.

Easy to Seal

Sealing is accomplished with split grommets and edge gasket. A fill hole also permits compound plotting to insure long term moisture proofing.

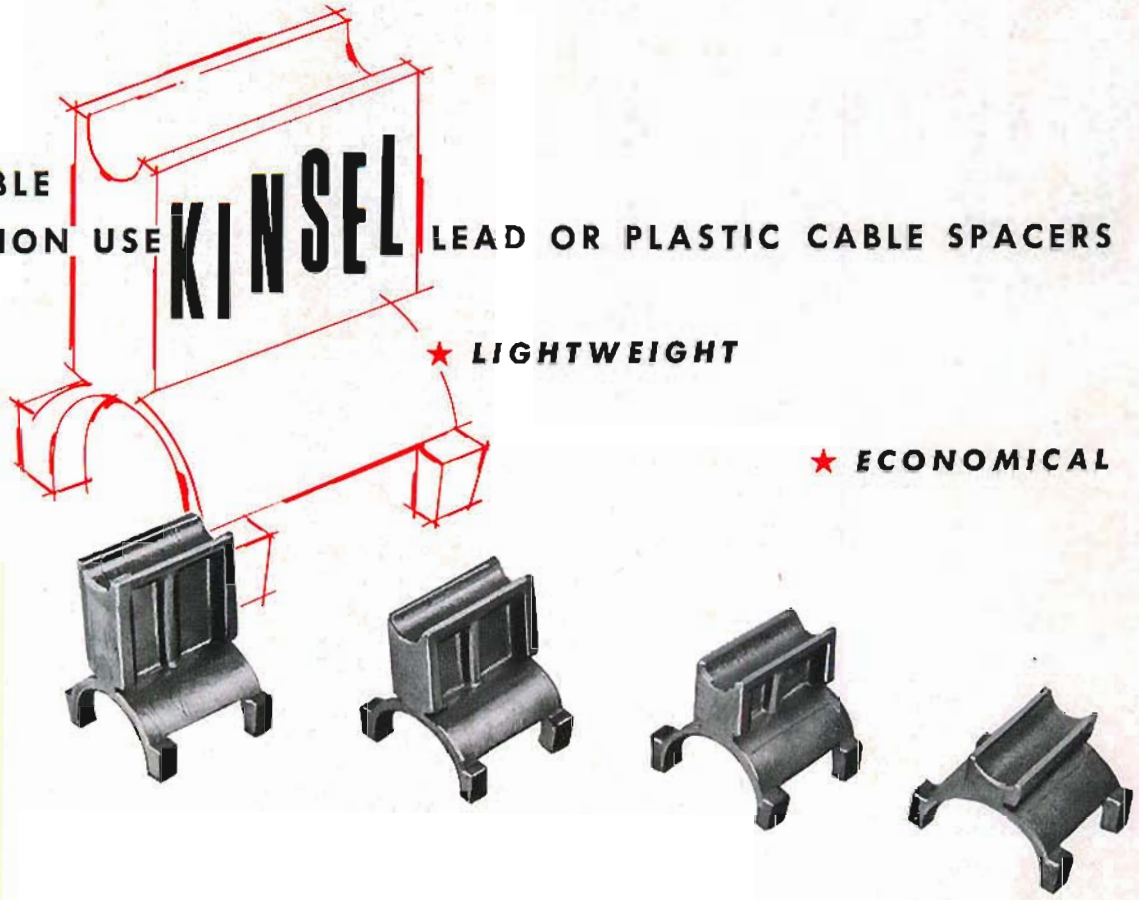
1 Thru Splice	Catalog No. 81-20
2 Y Branch Splice	Catalog No. 81-21
3 X Branch Splice	Catalog No. 81-22
4 Terminal Splice	Catalog No. 81-23
5 Y Branch Terminal Splice	Catalog No. 81-24

FOR BETTER LASHED CABLE CONSTRUCTION USE **KINSEL** LEAD OR PLASTIC CABLE SPACERS

★ *LIGHTWEIGHT*

★ *ECONOMICAL*

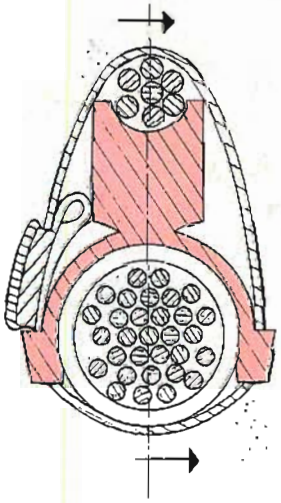
★ *STRONG*



LEAD CABLE SPACERS

These spacers are used on lashed cable construction to separate cable from strand. Will readily conform to any size cable.

Kellogg Code No.	Spacing	Qty. Per Box	Wgt. per 100 Pcs.
742001	¼"	10	10 lbs.
742002	½"	10	14 lbs.
742003	¾"	5	17 lbs.



PLASTIC CABLE SPACERS

Similar in construction to lead cable spacers, but designed for the new plastic aerial cables.

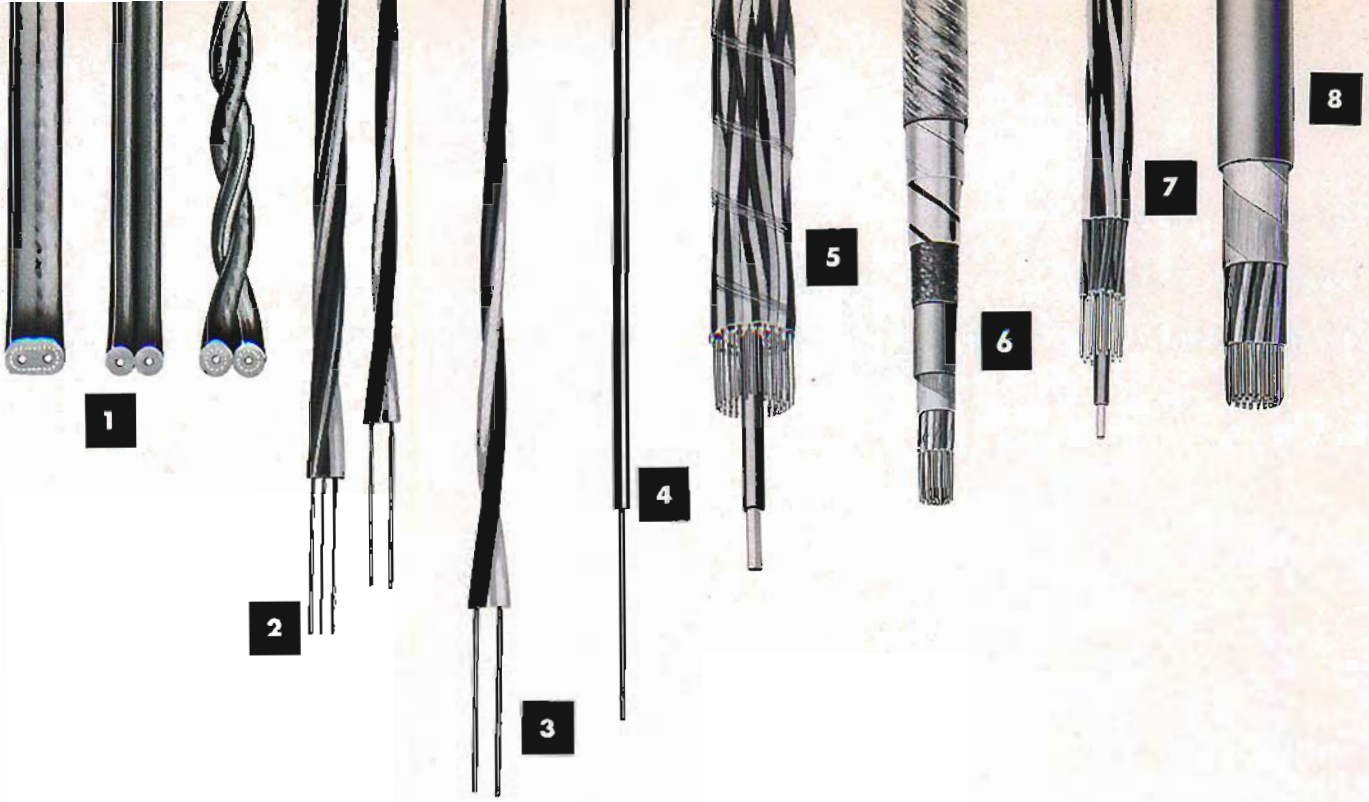
Kellogg Code No.	Spacing	Std. Pkg.	Approx. Wt. Per 100 Pcs.
742010	¼"	50	1½ lbs.
742011	½"	50	2 lbs.
742012	¾"	25	3 lbs.



LEAD CABLE WEDGES

For use in fitting between and properly spacing two adjacent lead cables at wiped solder joint of a "Y" splice. Made of 5/16" thick cast lead with curved sides and curved opening at opposite ends to fit contour of cable. Each wedge has raised or depressed code numeral designation.

Kellogg Code No.	Catalog No.	Cable Diameters (Inches)	Cable Opening Separation (Inches)
848001	0	½ — ½	⅜
848002	1	½ — ⅞	⅜
848003	2	⅞ — 1½	⅜
848004	3	1-5/16 — 2	½
848005	4	2 — 2	½
848006	5	½ — 2⅜	⅜



1. drop wire—The finest outside drop wire employing copperweld conductors, rubber insulation, in a neoprene jacket.

2. interior wire — Available in brown or ivory. Superior performance is insured by soft annealed copper conductors and thermoplastic insulation.

3. jumper and duct wire—High performance, superior quality jumper and duct wire, made of soft annealed tinned copper conductors with a thermoplastic insulation.

4. ground wire — For a safe dependable ground and long life performance, this ground wire is constructed of soft annealed copper conductors and thermoplastic insulation.

5. urban distribution telephone wire — Ideally suited to extending communications circuits to multi-unit establishments near already existing facilities, specifically engineered for service in metropolitan areas.

6. paper insulated lead sheathed telephone cable-armored—When used in direct burial installations, provides the same high quality production as that used for aerial and duct systems, but with the addition of protective armoring.

7. rural distribution telephone wires — Specifically designed to meet the increasing demand for high quality communications circuits, necessitated by expanding telephone facilities in rural communities, because it is a self-supporting cable.

8. paper insulated lead sheathed telephone cable—Extensively used in communication systems almost since the inception of the telephone industry. Suitable to aerial and underground duct installations, particularly in exchange areas.

9. a thermoplastic telephone cable—This is a lightweight, multipair communication cable to simplify inside wiring installations. It is a compact thermoplastic sheathed construction of up to 76 pairs.

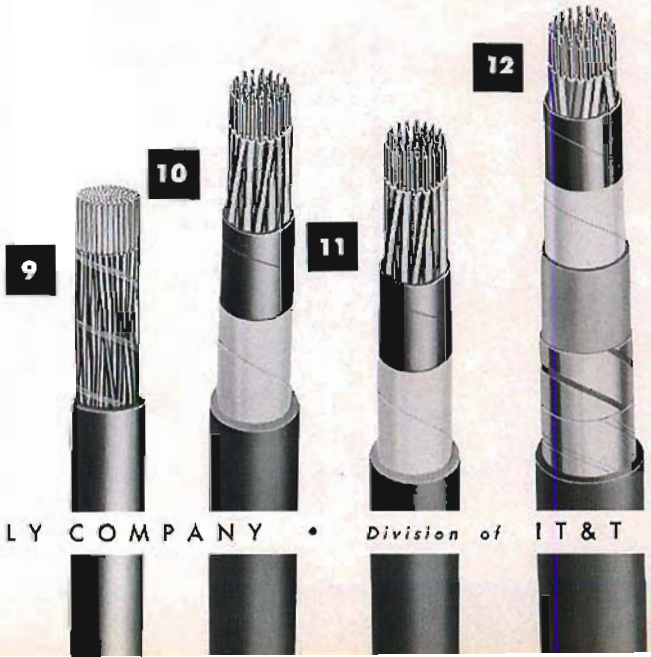
10. self-supporting telephone cables — Fulfills the need for a compact, multipair, communications drop wire for use between transmission poles and multi-unit establishments.

11. aerial and duct type—A quality communication cable ideal for installations in rural and suburban communities. It is used in underground duct systems and for aerial service when in conjunction with a messenger.

12. direct burial type—Telephone cable for use in direct burial installations providing a high quality production similar to that used for aerial and duct systems, but with the addition of protective armoring. This minimizes the possibility of damage to the cable from rodents and insects, sharp stones, etc.

PHELPS DODGE COPPER PRODUCTS CORPORATION · MINE TO MARKET

phelps dodge
copper
products
corporation



KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

RURAL DISTRIBUTION WIRE



The most economical method of extending service in growing rural and residential areas.

This wire has excellent electrical characteristics: low-loss transmission, low capacitance, high dielectric strength. It has excellent weather resistance. It is easy to install—light weight, self-supporting and comes in long lengths. Use of cross arms is unnecessary since the wire can be attached to the pole making a neat, inconspicuous installation and reducing the amount of trimming required in wooded areas. On poles with already filled cross arms, capacity can be increased by attaching the built-in messenger to the pole below the cross arms.

CONSTRUCTION

High conductivity No. 19 A.W.G. annealed copper conductors.

High dielectric strength, weather-resistant polyethylene insulation to a nominal diameter of .076". Color-coded polyvinyl chloride PLASTITE jacket over each insulated conductor to an outside diameter of .096". Color coding of pairs for 6 PAIR WIRE is black-blue, black-red, black-green, black-brown, black-slate and black-yellow; for 11 PAIR: slate-white, blue-yellow, green-yellow, brown-yellow, slate-yellow, black-red, black-blue, black-green, black-brown, black-slate, black-yellow; for 16 PAIR: blue-white, green-white, brown-white, slate-white, blue-red, green-red, brown-red, slate-red, blue-black, green-black, brown-black, slate-black, blue-yellow, green-yellow, brown-yellow, slate-yellow.

Adjacent pairs are twisted with varying layers to minimize cross talk. Pairs are cabled around a core of polyethylene-covered galvanized steel with 1800 pounds breaking strength. Polyethylene covering provides cushioning effect.

Available in long lengths to make possible extensive runs without splicing.

MEASURED ELECTRICAL CHARACTERISTICS

dc resistance of conductor at 68°F.

6 Pair — 87 ohms per loop mile
11 Pair — 88 ohms per loop mile
16 Pair — 89 ohms per loop mile

Mutual capacitance of pair at one kilocycle:

in air — 6 Pair — .06 microfarad per mile; 11 and 16 Pair — .065 microfarad per mile
in water — 6 Pair — .13 microfarad per mile; 11 and 16 Pair — .13 microfarad per mile

Characteristic impedance at one kilocycle

in air — 6 Pair — 485 ohms; 11 and 16 Pair — 470 ohms
in water — 6, 11 and 16 Pair — 325 ohms

Attenuation — at 1 kilocycle

in air — 6 Pair — 1.1 decibels per mile; 11 and 16 Pair — 1.17 decibels per mile
in water — 6 Pair — 1.6 decibels per mile; 11 and 16 Pair — 1.7 decibels per mile

Insulation resistance in air (conductor to conductor in pair) 6, 11 and 16 Pair — over 5000 megohms — mile.

Conductor insulation resistance in water — 6, 11 and 16 Pair — approx. 1500 megohms — mile.

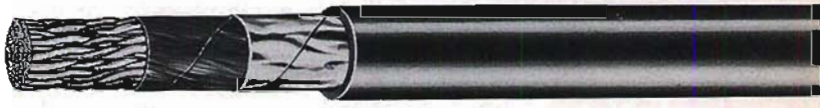
Breakdown voltage between conductors and between each conductor and steel member — 6, 11 and 16 Pair — 30,000 volts.

Crosstalk — 6, 11 and 16 Pair — greater than 60 decibels down per mile.

SPECIFICATIONS

Kellogg Code No.	No. Pairs	Nom. O.D. Inches	Ap. Net Wt./M Ft. Pounds	Ap. Gross Wt./M Ft. Pounds	Ft. per Reel
860705	3	.450	81	100	2000) as 4000) specified
860701	6	.500	125	154 143	2000) as 4000) specified
860703	11	.640	201	251	2000
860704	16	.750	273	322	2000

PUT-UP: Non-returnable wooden reels. Other sizes and pairs available on special order.



PLASTIC EXCHANGE AREA CABLE FOR AERIAL AND DUCT USE

This is a totally new design using only copper, polyethylene and an aluminum shield.

Polyethylene is used for conductor insulation because of its low capacitance, high dielectric strength and generally excellent stability. Black polyethylene, properly compounded to withstand sunlight oxidation, is used for the jacket because it combines the properties of flexibility at low temperatures and long life expectancy, to a greater degree than any other commercially used thermoplastic.

This cable meets all the electrical values and life expectancy of paper insulated, lead sheathed cables and in addition is simpler and less costly to install. The tough, flexible black polyethylene sheath is unaffected by the stresses imposed during installation and operates efficiently under extremes of winter and summer weather. It is not subject to environmental cracking.

REA approved per Specification PE-14.

Information on splicing of this cable is available from Kellogg Switchboard and Supply Company.

A marking tape showing manufacturer's name and year of manufacture is run under the shield.

(Continued on following page)

SPECIFICATIONS

Kellogg Code No.	No. Pairs Total	No. Pairs Guaranteed	Nom. Wall Jacket Inches	Nom. O.D. Inches	Approx. Net Wt./M Ft. Pounds	Approx. Gross Wt./M Ft. Pounds	Feet Per Reel
			No. 24 AWG CONDUCTOR				
185001	11	11	.050	.460	78	96	5000
185002	16	15	.050	.530	107	132	5000
185003	26	25	.060	.650	158	194	5000
185004	51	50	.070	.840	291	350	2500
185005	76	75	.070	1.000	435	523	2500
185006	101	100	.070	1.130	583	721	2500
185007	152	150	.080	1.360	859	1,065	2000
185008	202	200	.090	1.540	1,008	1,243	1000
			No. 22 AWG CONDUCTOR				
185010	11	11	.050	.480	110	135	5000
185011	16	15	.050	.570	153	189	5000
185012	26	25	.060	.700	230	266	5000
185013	51	50	.070	.930	422	493	2500
185014	76	75	.070	1.120	621	713	2500
185015	101	100	.080	1.280	814	948	2500
185016	152	150	.090	1.520	1,251	1,418	2000
185017	202	200	.100	1.740	1,556	1,916	1000
			No. 19 AWG CONDUCTOR				
185021	11	11	.050	.570	161	186	5000
185022	16	15	.060	.670	230	266	5000
185023	26	25	.060	.810	351	407	5000
185024	51	50	.070	1.090	657	751	2500
185025	76	75	.080	1.300	985	1,109	2500
185026	101	100	.090	1.520	1,307	1,462	2500
185027	152	150	.100	1.820	1,927	2,325	1000
185028	202	200	.110	2.040	2,375	2,776	1000

CONSTRUCTION

Each conductor is bare annealed copper and is furnished in No. 24, No. 22 and No. 19 gauge. Insulation is stabilized polyethylene with a nominal wall of ¼". Its high dielectric strength insures satisfactory operation of the cable even if the sheath becomes damaged.

Up to and including 76 Pair Cable, one pair of each cable has one red leg and one orange leg for use as a tracer pair. All other pairs have one red leg and one natural leg.

101 Pair cable has a center core of 50 pairs, 49 pairs with one leg red and one leg natural and one marker pair with one leg red and one leg orange. Around this core are cabled 51 pairs, 50 pairs with one leg blue, one leg natural and one marker pair with one leg red and one leg orange.

152 Pair cable has a center core of 52 pairs, 51 pairs with one leg red and one leg natural and one marker pair with one leg red and one leg orange. Around this core are cabled 62 pairs, 61 pairs with one leg blue and one leg natural and one marker pair with one leg red and one leg orange. The outside layer has 38 pairs, 37 pairs with one leg red and one leg natural and one marker pair with one leg red and one leg orange.

202 Pair cable has a center core of 52 pairs, 51 pairs with one leg red and one leg natural and one marker pair with one leg red and one leg orange. Around this core are cabled 62 pairs, 61 pairs with one leg blue and one leg natural, and one marker pair with one leg red and one leg orange. The next layer has 41 pairs, 40 pairs with one leg red and one leg natural, and one marker pair with one leg red and one leg orange. The outside layer has 47 pairs, 46 pairs with one leg blue, one leg natural and one marker pair with one leg red, one leg orange.

To minimize crosstalk, the length of lay is varied for adjacent pairs. The core is wrapped spirally with polyethylene tape for further protection and then covered with an aluminum shield. This shield, when grounded, protects the cable from damage by lightning, prevents low frequency induction and consequent noisy circuits. The jacket is black weather-resistant polyethylene, assuring long service life.

ELECTRICAL CHARACTERISTICS

Mutual capacitance: at 1000 cps.

Average — No. 24 Cables — .070 microfarads per mile
Average — No. 22 Cables — .075 microfarads per mile
Average — No. 19 Cables — .085 microfarads per mile

Conductor resistance: at 68°F.

No. 24 Cables—not to exceed 145 ohms per mile of cable
No. 22 Cables—not to exceed 92 ohms per mile of cable
No. 19 Cables—not to exceed 46 ohms per mile of cable

Insulation resistance: at 60°F.

Any conductor measured against all other conductors and shield, grounded, shall have an insulation resistance of not less than 1000 megohms — mile.

Dielectric strength:

Conductor to Conductor — 10,000 volts rms.
Conductor to Shield — 10,000 volts rms.

Attenuation: at 1000 cps.

Nominal — No. 24 Cables — 2.08 db/mile
Nominal — No. 22 Cables — 1.73 db/mile
Nominal — No. 19 Cables — 1.34 db/mile

Transmission Distance — non-loaded — based on 30 db loss:

Nominal — No. 24 Cables — 14.4 miles
Nominal — No. 22 Cables — 17.4 miles
Nominal — No. 19 Cables — 22.4 miles



PLASTIC DIRECT BURIAL CABLE

Similar in construction to Aerial and Duct cables with the addition of two overlapping, electrically continuous .013" aluminum tapes of low resistance and a second overall jacket of high molecular weight, black polyethylene.



PLASTIC INSIDE WIRING CABLE

Light weight for easy installation.

Water resistant for use in damp ducts.

Semi-rigid PLASTITE insulation has high resistance to crushing and has reduced cold flow. The latter is especially important when cable is liable to be bent sharply, as when installed in conduit.

This cable has superior insulation resistance and is unaffected by humidity. Conductors are easy to terminate—just strip the insulation and solder. The insulation is permanently colored for lasting polarity identification. Semi-rigid PLASTITE has compression strength far exceeding that of regular polyvinyl chloride compounds. The polyvinyl chloride jacket is tough, flame resistant and abrasion resistant. The long service life of this cable means lower maintenance costs.

SPECIFICATIONS

Kellogg Code No.	A.W.G.	No. Pairs	Nom. O.D. Inches	Approx. Net Wt./M Ft. Pounds	Approx. Gross Wt./M Ft. Pounds
185129	24	6	.305	50	59
185131	24	11	.370	76	93
185132	24	12	.380	81	98
185134	24	16	.430	105	122
185135	24	21	.480	128	152
185136	24	26	.520	154	183
185137	24	32	.570	183	216
185138	24	51	.710	299	358
185139	24	76	.840	414	482
185151	22	6	.325	61	70
185153	22	11	.400	99	116
185154	22	12	.410	106	123
185156	22	16	.470	136	156
185158	22	26	.570	208	237
185159	22	32	.650	260	308
185160	22	51	.775	414	464

CONSTRUCTION

Solid bare soft copper conductors in No. 24 and No. 22 AWG insulated with tough semi-rigid polyvinyl chloride to a nominal wall of .014". Color coded for polarity and pair identification. Pairs are twisted with systematically varied lays to minimize crosstalk. Pairs are cabled without fillers into a round core. Free-stripping jacket is brown or ivory polyvinyl chloride with a nominal wall of .040" for all except 51 and 76 pair which have .050" nominal wall. Specify color when ordering.

A steel rip wire is run longitudinally under the jacket to facilitate removal of jacket. Jacket is marked with number of pairs and gauge size for easy identification.



PLASTIC SELF-SUPPORTING TELEPHONE CABLE CONSTRUCTION

Self-Supporting Telephone Cable basically is identical in design with the Aerial & Duct Type, all being constructed with aluminum shielding and all-polyethylene insulation, binder tape and jacketing. Unusually high tensile strength has been engineered into Self-Supporting Cable by the use of hard-drawn 19 Awg copper conductors. This feature enables the cable to be self-supporting without damage to its protective jacket, permits easy attachment to support fixtures of simple and inexpensive design.

Color-coding is the same as for Aerial & Duct Telephone Cable.

Advantages

Self-Supporting Cables will —

- Eliminate messenger and hardware expense.
- Lessen the number of man-hours required for installation.
- Exhibit complete resistance to weather extremes, ozone, oils, alkalis, acids and other chemicals.
- Demonstrate fine transmission characteristics.

Electrical Characteristics

Average mutual capacitance at 1 KC, mf/mile 0.090

Loop resistance, ohms/mile

- 19 Awg 92
- 22 Awg 184
- 24 Awg 290

Insulation resistance, megohms—mile 1000

Dielectric Strength

- Conductor-to-conductor, volts 3500
- Conductor-to-shield, volts 3500

SPECIFICATIONS

Kellogg Code No.	No. Pairs Total	No. Pairs Guaranteed	Nom. Wall Jacket Thickness Inches	Nom. O.D. Inches	Approx. Net Wt./M Ft. Pounds	Approx. Gross Wt./M Ft. Pounds	Feet Per Reel
185090	6	6	0.050	0.49	105	148	5000
185091	11	11	.050	.59	167	222	5000
185092	16	15	.060	.70	236	291	5000
185093	26	25	.060	.82	353	450	5000

REX

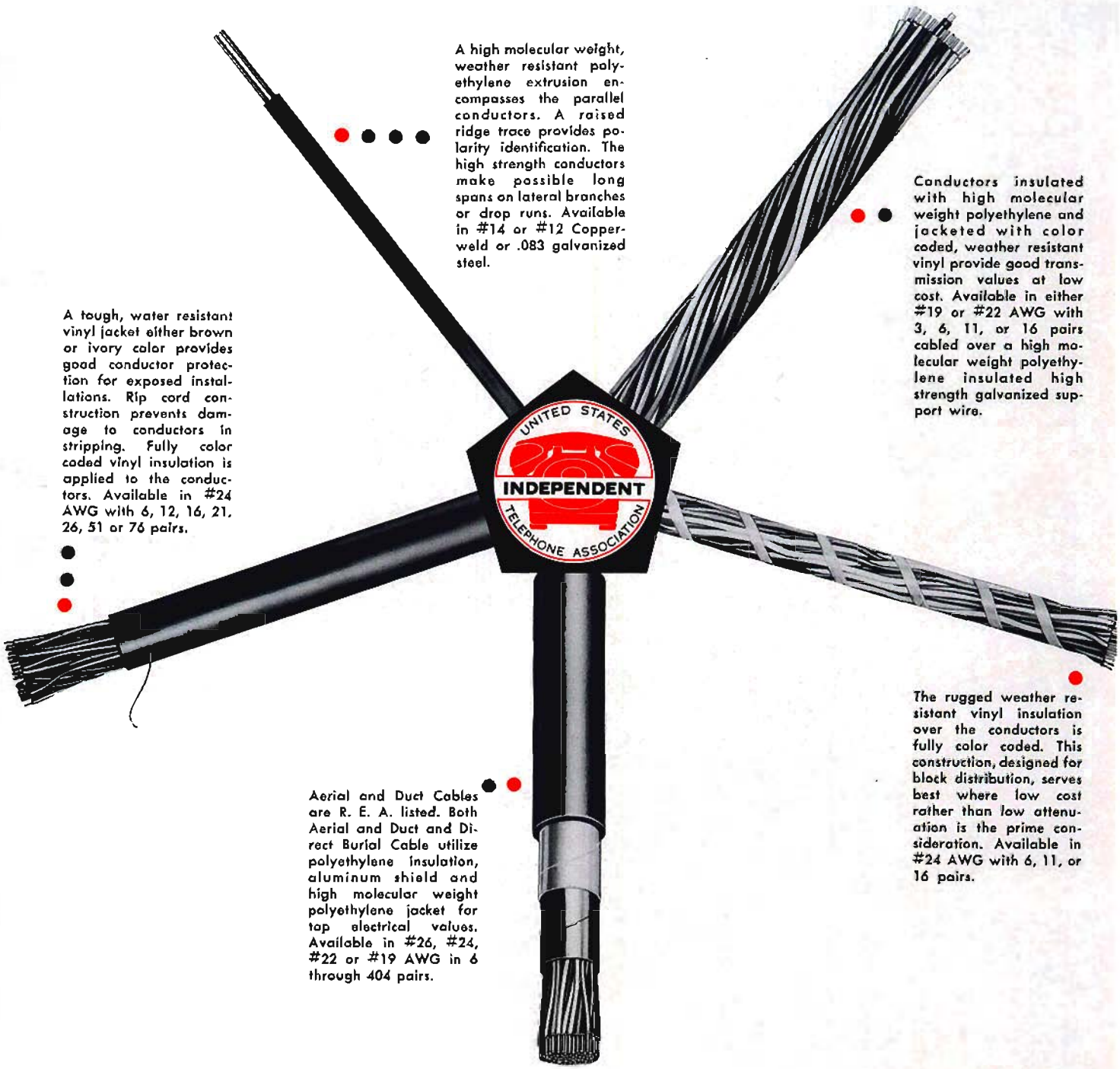
WIRE AND CABLE

Rex telephone wires and cables are designed to meet the many special needs of the independent telphone companies. All Rex products are carefully inspected to the latest requirements of either R. E. A. or Western Electric specifications. If your requirements are special, consult the Rex engineering staff for design information or manufacturing quotations.

A high molecular weight, weather resistant polyethylene extrusion encompasses the parallel conductors. A raised ridge trace provides polarity identification. The high strength conductors make possible long spans on lateral branches or drop runs. Available in #14 or #12 Copperweld or .083 galvanized steel.

Conductors insulated with high molecular weight polyethylene and jacketed with color coded, weather resistant vinyl provide good transmission values at low cost. Available in either #19 or #22 AWG with 3, 6, 11, or 16 pairs cabled over a high molecular weight polyethylene insulated high strength galvanized support wire.

A tough, water resistant vinyl jacket either brown or ivory color provides good conductor protection for exposed installations. Rip cord construction prevents damage to conductors in stripping. Fully color coded vinyl insulation is applied to the conductors. Available in #24 AWG with 6, 12, 16, 21, 26, 51 or 76 pairs.



The rugged weather resistant vinyl insulation over the conductors is fully color coded. This construction, designed for block distribution, serves best where low cost rather than low attenuation is the prime consideration. Available in #24 AWG with 6, 11, or 16 pairs.

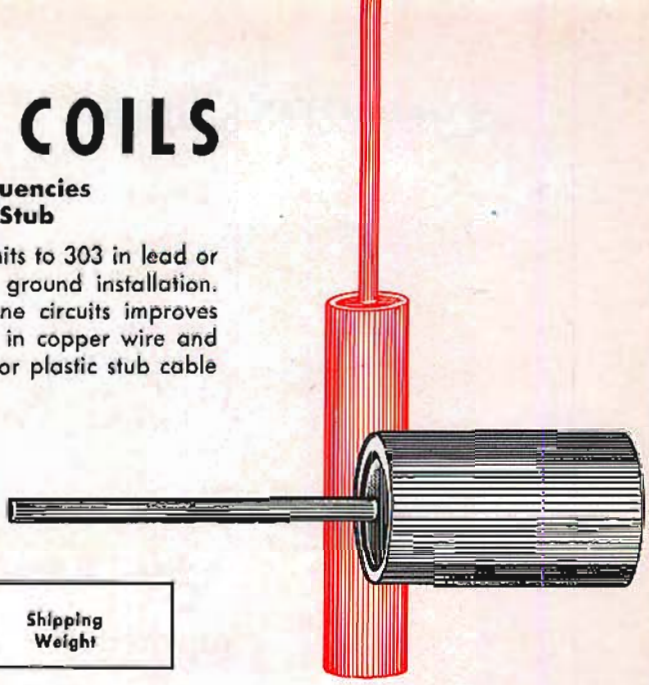
Aerial and Duct Cables are R. E. A. listed. Both Aerial and Duct and Direct Burial Cable utilize polyethylene insulation, aluminum shield and high molecular weight polyethylene jacket for top electrical values. Available in #26, #24, #22 or #19 AWG in 6 through 404 pairs.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

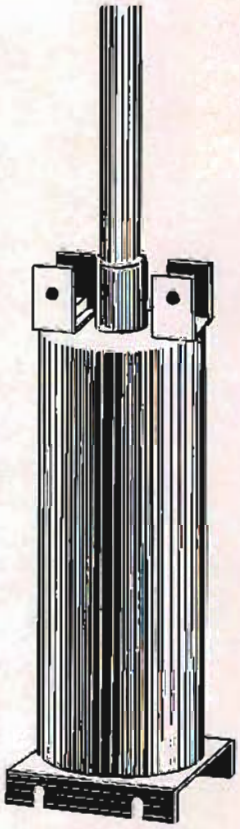
LOADING COILS

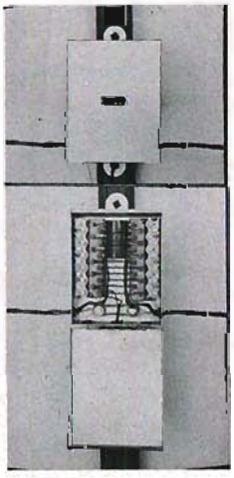
For Voice and Carrier Frequencies
With Plastic or Lead Cable Stub

All sizes available from single units to 303 in lead or steel cases for aerial or under ground installation. Proper loading of your telephone circuits improves voice quality with great savings in copper wire and requires fewer repeaters. Paper or plastic stub cable can be furnished.



Loading Coil Case Type	Contains Coils Type 632 or 638	Approx. Case Size	Shipping Weight
LEAD CASE FOR AERIAL USE			
124A	4 to 15 coils	2" Dia. up to 13" long	10 to 17 lbs.
124B	16 to 24 coils	4" Dia. up to 9" long	20 to 30 lbs.
124C	25 to 51 coils	4" Dia. up to 15" long	30 to 45 lbs.
124D	52 to 76 coils	5" Dia. up to 15" long	45 to 82 lbs.
STEEL CASE FOR AERIAL USE			
125A	75 to 101 coils	6⅝" Dia. up to 18' long	90 to 110 lbs.
125B	102 to 152 coils	6⅝" Dia. up to 24' long	110 to 160 lbs.
125C	153 to 205 coils	9" Dia. up to 18" long	160 to 210 lbs.
125D	206 to 303 coils	9" Dia. up to 24" long	210 to 300 lbs.
STEEL CASE FOR UNDERGROUND USE			
225A	75 to 101 coils	9⅝" Dia. up to 18" long	90 to 110 lbs.
225B	102 to 152 coils	6⅝" Dia. up to 24" long	110 to 160 lbs.
225C	153 to 205 coils	9" Dia. up to 18" long	160 to 210 lbs.
225D	206 to 303 coils	9" Dia. up to 24" long	210 to 300 lbs.

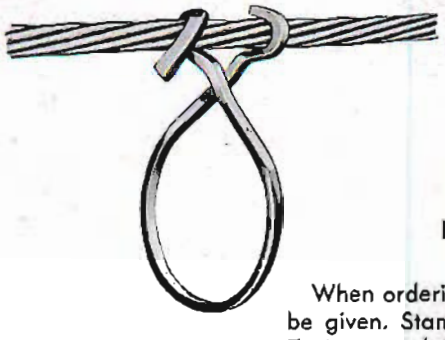


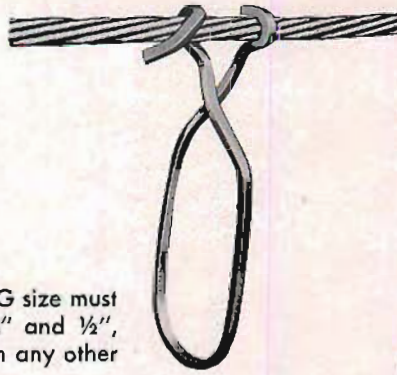


TERMINAL LOADING CASE
Type 177 for
RURAL DISTRIBUTION WIRE

A cast aluminum combination terminal box and housing for loading coils. Designed to be used with the new rural distribution wire and available in 8 types to meet your requirements. Terminals are available with or without protectors and designed to accommodate loading coils of 88MH or 44MH inductance. Available through:

COMMUNICATION EQUIPMENT AND ENGINEERING COMPANY





NATIONAL CABLE RINGS AND SADDLES

When ordering rings, both SUPPORTING STRAND size and RING size must be given. Standard supporting strand sizes are ¼", 5/16", ⅜", 7/16" and ½", 7-wire strand. Rings made to fit one size strand cannot be used on any other size strand.

NATIONAL GALVANIZED STEEL CABLE RINGS

Ring	Size Supporting Strand	Maximum Cable Diameter	Standard Package	Approx. Shpg. Wt. per 1000
1½"	LIGHT Specify Strand Size	1 3/16"	1000	47 lbs.
2"		1 5/16"	500	90 lbs.
2"		1 5/16"	500	66 lbs.
2½"		1 5/16"	500	108 lbs.
3"		2¼"	400	124 lbs.
3½"		2⅝"	300	140 lbs.
4"		3"	200	195 lbs.
4½"		3½"	200	210 lbs.

NATIONAL COPPERWELD CABLE RINGS

Ring	Size Supporting Strand	Maximum Cable Diameter	Standard Package	Approx. Shpg. Wt. per 1000
1½"	Specify Strand Size	1 3/16"	1000	48 lbs.
2"		1 5/16"	500	96 lbs.
2½"		1 5/16"	500	110 lbs.
3"		2¼"	400	125 lbs.
3½"		2⅝"	300	140 lbs.
4"		3"	200	195 lbs.
4½"		3½"	200	210 lbs.

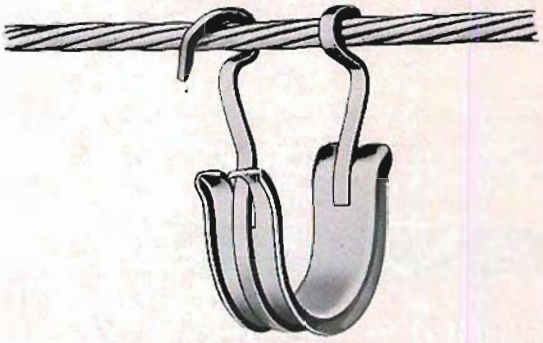
NATIONAL EXTRA LONG CABLE RINGS

For adding a SECOND CABLE on MESSENGER STRAND. When ordering rings, both SUPPORTING STRAND size and RING size must be given. Standard supporting strand sizes are ¼", 5/16", ⅜", 7/16" and ½", 7-wire strand. Rings made to fit one size strand cannot be used on any other size strand.

GALVANIZED STEEL SADDLES

For Standard Ring Size	Standard Package	Approx. Shpg. Wt. per 1000
1½"	1000	90 lbs.
2"	1000	100 lbs.
2½"	500	110 lbs.
3"	500	135 lbs.
3½"	500	150 lbs.
4"	500	169 lbs.
4½"	500	184 lbs.

NOTE: Saddles fit STANDARD rings only. If wanted for EXTRA LONG RINGS, please so specify.



GALVANIZED STEEL

Size	Length Under Strand	Standard Package	Approx. Shpg. Wt. per 1000
1½"	4½"	500	114 lbs.
2"	5¼"	300	170 lbs.
2½"	6¼"	250	216 lbs.
3"	7¼"	200	255 lbs.
3½"	7¾"	200	270 lbs.
4"	8⅜"	200	293 lbs.
4½"	9"	150	357 lbs.

COPPERWELD

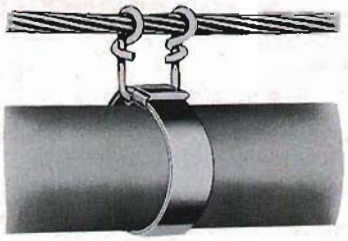
Size	Length Under Strand	Standard Package	Approx. Shpg. Wt. per 1000
1½"	4½"	500	114 lbs.
2"	5¼"	300	175 lbs.
2½"	6¼"	250	207 lbs.
3"	7¼"	200	235 lbs.
3½"	7¾"	200	245 lbs.
4"	8⅜"	200	260 lbs.
4½"	9"	150	283 lbs.

Rings can also be furnished in Calsun Bronze. Prices on request.

NATIONAL ADJUST-A-STRAPS
(Improved Aerial Cable Support)

Max. Diam. of Cable	Length of Strap	Number of Wraps	Stock No.	Standard Package	Approx. Shpg Wt. Std. Pkg.
¾"	8"	2	2007	500	39 lbs.
1"	9"	2	2010	500	40¼ lbs.
1½"	12¼"	2	2015	500	48½ lbs.
2"	15¾"	2	2020	250	28 lbs.
2⅝"	28"	3	2026	250	40 lbs.
3¼"	34"	3	2033	200	37½ lbs.
5"	50"	3	2050	200	52½ lbs.
6½"	64"	3	2065	200	62¼ lbs.
6½"	64"	3	*2067	200	66 lbs.

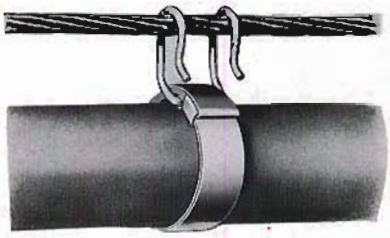
* Same as No. 2065 except has 10" hanger. All other sizes have 5" hangers.

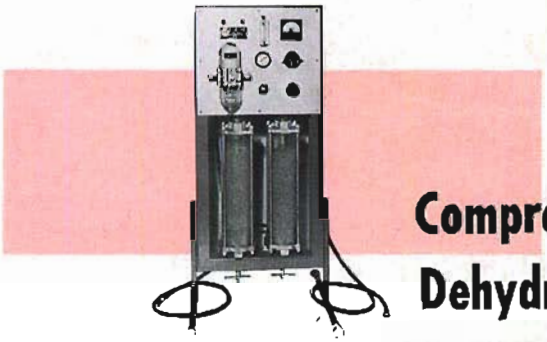


NATIONAL ZINC-WRAPS
(Improved Zinc Cable Clip)

Max. Diam. of Cable	Length of Strap	Number of Wraps	Stock No.	Standard Package	Approx. Shpg. Wt. Std. Pkg.
¾"	8"	2	2207	500	39 lbs.
1"	9"	2	2210	500	40 lbs.
1½"	12¼"	2	2215	500	48 lbs.
2"	15¾"	2	2220	250	28 lbs.
2⅜"	28"	3	2226	250	40 lbs.

The standard hook fits 5/16", 3/8", 7/16" strands. A hook for ½" strand can also be furnished.





Air Compressor Dehydrator

For Pressurizing Telephone Cables Aerial and Underground

This Air Compressor Dehydrator for supplying dry air to aerial and underground cables is made to supply 1 cable or as as many as 40 cables.

The main feature of this unit is the individual flow indicators for each separate cable showing the volume of dry air consumed per cable per hour.

Both Automatic and Manual Units are available. The most popular is the Automatic unit which is self-contained and operates on a time cycle.

All desiccant containers used, both Hot and Cold, are visual and can be seen at any time. The two hot containers are permanent and will last for a long period of time. The single or second stage desiccant container can be replaced with a new charge of desiccant at any time. This second stage feature is used as an additional check in the event of a power failure.

SOME ADDITIONAL FEATURES

1—Automatic (visual) driers for additional safety.

2—Flowmeter measure cubic feet of dry air per cable per hour.

3—Air Purifier (visual) to eliminate oil mist from entering and destroying the action of the Desiccant.

4—Two regulator valves are used for reducing the air pressure in two stages, also allowing three safety valves to be put into the air system.

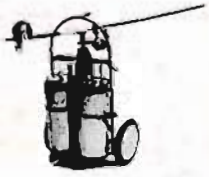
5—Single type pressure gauge with high and low contacts for alarming.

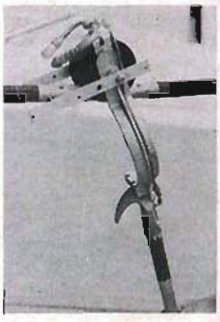
6—The hour meter is used to record the time the air compressor operates.

7—A standby dry air cylinder can be installed in the supply line and will automatically come in should trouble arise in the Air Compressor System.

8—A heavy duty air compressor.

9—The air pack loom is used for supplying the dry air to each cable.





LEAK DETECTOR APPLICATOR MODEL LD-1 AND LD-2

Telephone Cable Leak Detectors are made in two models.

The Model LD-1 or single wheel is used for Aerial Cables which are easily accessible and not higher than 18 ft. This unit is protected with a wind spray shield and can be operated successfully in windy and open areas.

The Model LD-2 or double wheel unit is used where cables are high, and where the LD-1 cannot be used due to buildings or other obstructions.

Both units LD-1 and LD-2 can be supplied with test solution from a portable truck mounted tank or the back carrying type tank.

ANSONIA ANKOSEAL

ANSONIA ANKOSEAL Ankoseal *the first insulated plastic telephone cable*

FOR ALL TELEPHONE PLANT NEEDS:

Aerial — self-supported or on messenger; Duct; Direct Burial; Submarine • Made in Quadded and Composite as well as Paired Construction • Ankoseal-Ankofoam Exchange Cable • Rural Distribution Wire • Also Switchboard and Inside Wiring Cables.

AERIAL OR DUCT CABLES Type 775P

Polyethylene Insulated, PVC Jacketed (Spec. 132.)

Total No. Pairs	Guart'd No. Pairs	Approx. O.D.	Approx. Net Wt. lbs./M ft.	Standard Reel Length
SIZE 24 AWG COPPER CONDUCTORS				
11	10	.440"	102	5000'
16	15	.520"	137	5000'
26	25	.620"	195	5000'
51	50	.885"	360	3000'
76	75	1.070"	520	2500'
101	100	1.195"	663	2000'
152	150	1.500"	925	1000'
202	200	1.670"	1298	1000'
303	300	2.100"	1861	1000'
404	400	2.350"	2386	1000'
SIZE 22 AWG COPPER CONDUCTORS				
11	10	.460"	116	5000'
16	15	.540"	155	5000'
26	25	.650"	225	5000'
51	50	.925"	415	3000'
76	75	1.120"	606	2000'
101	100	1.295"	776	3000'
152	150	1.600"	1100	1000'
202	200	1.830"	1520	1000'
303	300	2.210"	2175	1000'
404	400	2.600"	2886	1000'
SIZE 19 AWG COPPER CONDUCTORS				
11	10	.530"	170	5000'
16	15	.620"	229	5000'
26	25	.750"	339	5000'
51	50	1.070"	637	2500'
76	75	1.290"	948	3000'
101	100	1.500"	1291	3000'
152	150	1.850"	1725	1000'
202	200	2.250"	2520	1000'
303	300	2.630"	3434	1000'
404	400	3.100"	4918	1000'

DIRECT BURIAL CABLES Type 775AP

Same as Type 775P plus aluminum armor tapes and outer PVC Jacketed. (Spec. 132.) Detail data on request.

INSIDE WIRING CABLES Type 1255

PVC Insulated and Jacketed. (Spec. 162)

Total No. Pairs	Approx. O.D.	Approx. Net. Wt. lbs./M ft.	Standard Reel Length
SIZE 24 AWG COPPER CONDUCTORS			
6	.290"	54	5000'
11	.370"	85	5000'
16	.410"	111	5000'
26	.490"	162	4000'
51	.710"	325	1500'
SIZE 22 AWG COPPER CONDUCTORS			
6	.315"	67	5000'
11	.400"	108	5000'
16	.455"	142	5000'
26	.580"	220	3000'
51	.780"	422	1500'

ANKOSEAL-ANKOFOAM Type 775PF

Cellular polyethylene insulated, PVC jacketed exchange type aerial cable.

Available: 1. Fully color coded in sizes 11 to 51 pair in 19, 22 and 24 gauge. 2. Standard color coded in sizes 76 to 909 pair in 22 and 24 gauge—76 to 606 pair in 19 gauge. Detail data furnished on request.

SELF-SUPPORTING CABLES Type 775P-SS

Total No. Pairs	Guart'd No. Pairs	Approx. O.D.	Approx. Net. Wt. lbs./M ft.	Standard Reel Length
SIZE 19 AWG COPPER CONDUCTORS				
6	5	.450"	125	5000'
11	10	.530"	170	5000'
16	15	.660"	229	5000'
26	25	.750"	339	5000'

CHANNEL CABLE SUPPORTS are recommended for use with the above cable. Detail installation data upon request.

RURAL DISTRIBUTION WIRE

Type	Guart'd No. Pairs	Approx. O.D.	Approx. Net. Wt. lbs./M ft.	Standard Reel Length
SIZE 19 AWG COPPER CONDUCTORS 109 Extra High Strength Galvanized Support Wire				
619 PE	6	.500"	115	4000'
619 PEV	6	.500"	115	4000'
1119 PEV	11	.760"	193	2000'
1619 PEV	16	.850"	267	2000'

619-PE insulated with black polyethylene only. Pairs identified by ridge on one leg of pair, tracer pair by double ridge.

619, 1119 and 1619 PEV — Black polyethylene insulation covered with tough ANKOSEAL PVC jacket, fully color coded.

SWITCHBOARD CABLES

PVC Insulated Cotton Wrapped Lacquered Single Conductors, PVC Jacketed. (Spec. 121.)

Type	Approx. W. E. Type	No. Conductors	Approx. O.D.
SIZE 22 AWG COPPER CONDUCTORS			
231	182CL	13	.355"
262	74CL	21	.420"
229	50CL	33	.465"
230	183CL	53	.600"
261	62CL	63	.640"
249	191CL	93	.770"
248	66CL	103	.820"

Data on other sizes and types on request.

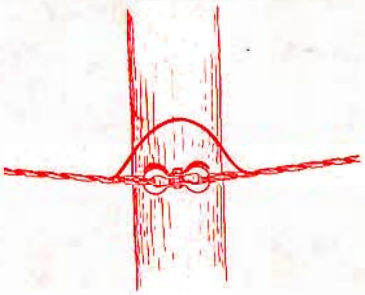
SPLICING KITS

Available for ANKOSEAL Telephone Cables. Complete splicing information supplied on request.

TRANSMISSION CHARACTERISTICS:

		#24 AWG	#22 AWG	#19 AWG
Mutual Capacitance	1000 cps MFD/mile . . .	.070	.075	.085
Attenuation	1000 cps DB/mile . . .	2.11	1.71	1.26

Standard loading can be employed on all Ankoseal Telephone Cable. The engineering staff of the Ansonia Wire and Cable Company is available to assist in the use of Ankoseal Cables and to design cables to meet special installation requirements.



PREFORMED DEAD-ENDS
For Self-Supporting Plastic Cable

Two lines are available. The longer Dead-End is designed to hold the full-rated strength of the self-supported cable, protecting the outer sheath and internal members even under extreme temperature variations. A shorter series holds the self-supporting cable more than adequately for most application and is recommended for those that do not require the full-rated strength of the cable. Like all other PLP Products, they are easily applied without the use of special tools. Merely slip one leg through a thimble clevis and wrap the legs around the cable.

ANSONIA ANKOSEAL TYPE 725-P-55
(Right Hand Lay)

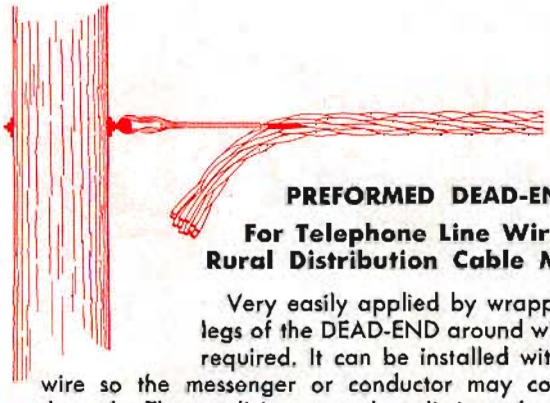
Catalog No.	Construction	Shipping Wt. Lbs./100 Dead-Ends
ANKDE-450	6 pair No. 19 AWG	51
ANKDE-530	11 pair No. 19 AWG	70
ANKDE-660	16 pair No. 19 AWG	102
ANKDE-750	26 pair No. 19 AWG	172

PLASTIC WIRE AND CABLE CO.
(Left Hand Lay)

PWCDE-380	6 pair No. 20 AWG	30
PWCDE-450	6 pair No. 19 AWG	51
PWCDE-559	11 pair No. 19 AWG	70
PWCDE-680	16 pair No. 19 AWG	102
PWCDE-824	26 pair No. 19 AWG	172

WHITNEY-BLAKE CO.
(Right Hand Lay)

WBDE-470	6 pair No. 19 AWG	36



PREFORMED DEAD-ENDS
For Telephone Line Wires and Rural Distribution Cable Messenger

Very easily applied by wrapping the two legs of the DEAD-END around wire. No tools required. It can be installed without cutting wire so the messenger or conductor may continue right through. Thus, splicing may be eliminated at dead-end points. The Dead-End can be applied around an insulator, or inserted through thimble eye. Legs are easily unwrapped for removal and re-use. Available in galvanized steel, copperweld, stainless steel and bronze.

GALVANIZED STEEL

Catalog No.	Wire Size	Shipping Wt. Lbs./100
11 GDE-083	14 BWG	6
12 GDE-109	12 BWG	9
13 GDE-134	10 BWG	15

COPPERWELD

11 CWDE-080	.080	7
12 CWDE-102	10 AWG	12
12 CWDE-104	.104	12
13 CWDE-128	8 AWG	16
12 CWDE-104	.104	12
13 CWDE-128	8 AWG	16

PREFORMED LINE GUARDS
For Self-Supporting Plastic Cable



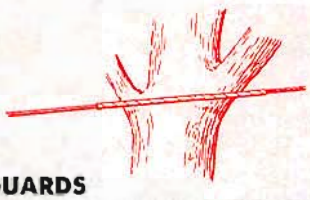
Essentially for protecting your cable from tie or clamp pressures. Merely wrap line guards around cable at tangent support points. No tools required. Line Guards are accurately formed to fit snugly without using clamps or clips to hold ends secure.

Catalog No.	Cable Construction	Shipping Wt. Lbs./100 Dead-Ends
18 AMGT-380	6 pair No. 20 AWG	19
20 AMGT-450	6 pair No. 19 AWG	30
22 AMGT-560	11 pair No. 19 AWG	45
24 AMGT-680	16 pair No. 19 AWG	61
28 AMGT-824	26 pair No. 19 AWG	100



TANGENT SUPPORT CLAMP

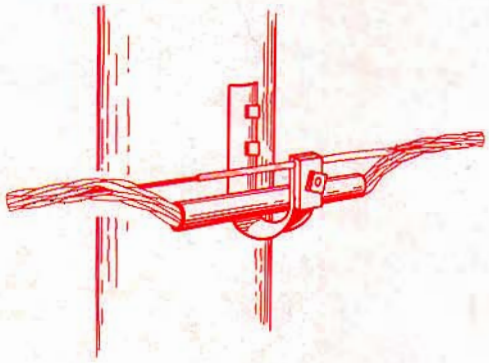
Especially designed as a tangent supporting device, there is a clamp available for each self-supporting cable with Line Guards applied — eliminates typing. Tongue and slot design permits bottom and top half of clamp to be placed around the cable, holding the assembly in place while single bolt or lag screw is applied.



PLASTIC LINE GUARDS

Ideal for protecting covered cables or conductors from abrasion by trees or other objects. Fit securely like metal Line Guards — are as easily installed. Standard stock sizes come in 6-ft. lengths. 3-ft., 9-ft. and other lengths are available on order.

Inside Diameter	Stock No.	Inside Diameter	Stock No.
5/32"		3/4"	
3/8"		1"	
1/2"		1 1/4"	
5/8"			



PREFORMED ARMOR RODS

For Rural Distribution Messenger or For Insulated Telephone Line Wire

Protect the plastic jacket of rural distribution or insulated wire messenger from clamp pressure and abrasion. Armor Rods are an inexpensive method of preventing damage at a later date. They are easily applied, and can be re-used.

Catalog No.	Conductor	Shipping Wt. Lbs./100 sets
	6-PAIR RURAL "B" CONSTRUCTION	
8 AAR-155	.109 G. X. Covered	4
	INSULATED TELEPHONE LINE WIRE	
12 AAR-155	.109 G. S. Covered	6
24 AAR-155	.109 G. S. Covered	12
12 AAR-139	.109 G. S. Covered	6
24 AAR-139	.109 G. S. Covered	12
12 AAR-110	.080 C. W. Covered	4
24 AAR-110	.080 C. W. Covered	8

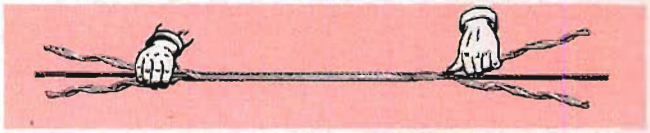


For Messenger or Guy Strand

PREFORMED GUY-GRIPS

Guy-Grips hold the full rated strength of even extra high strength grade of each size strand. They will not slip even under impact. Their use reduces the amount of strand required — they eliminate strand looping. They are the safest, surest method of dead-ending guy wires and strands. Guy-Grips are quickly applied without tools. Installation savings range upwards to 50%. They can be applied either to the cut end or coiled end of the strand, permitting the strand to be cut to the proper length after application of the Guy-Grip. A larger or shorter loop (bail) is provided by selecting the desired point of cross over of the Guy-Grip legs. (Two cross over points are indicated by marks on the Guy-Grip.) The loop is formed by multiple strong wires for added strength.

Catalog No.	Strand	Shipping Wt. Lbs./100 Guy Grips
	GALVANIZED STEEL	
20 GDE-3/16	3/16" 7-wire	25
23 GDE-7/32	7/32" 7-wire	28
25 GDE-1/4	1/4" 3 or 7-wire	44
28 GDE-9/32	9/32" 7-wire	48
30 GDE-5/16	5/16" 3 or 7-wire	63
35 GDE-3/8	3/8" 3 or 7-wire	105
38 GDE-7/16	7/16" 7-wire	158
40 GDE-1/2	1/2" 7 or 19-wire	220
45 GDE-9/16	9/16" 7 or 19-wire	331



PREFORMED SPLICES

A Preformed Splice is very readily applied without the use of tools. It holds the full rated strength of the strand — will not slip even under impact. It assures the fastest, most efficient means for splicing strands in new construction and repairing damaged or broken strands. Neat small diameter contour permits lashing right over splice or lineman riding out on messenger. Available in galvanized steel, copperweld, bronze, and stainless steel.

Catalog No.	Strand Size	Shipping Wt. Lbs./100 Splices
	GALVANIZED STEEL	
27 GLS-3/16	3/16" 7-wire	34
29 GLS-7/32	7/32" 7-wire	37
35 GLS-1/4	1/4" 3 or 7-wire	62
38 GLS-9/32	9/32" 7-wire	66
42 GLS-5/16	5/16" 3 or 7-wire	87
50 GLS-3/8	3/8" 3 or 7-wire	141
56 GLS-7/16	7/16" 7-wire	232
63 GLS-1/2	1/2" 7 or 19-wire	355
70 GLS-9/16	9/16" 7 or 10-wire	515

TACA "Magic" Cable Stripper



Designed for stripping various kinds and sizes of cable, being equipped with a friction brake that holds the shuttle in any desired position; a slight pressure on the brake release pin will allow shuttle to return to starting position. For rough or uneven cable the brake can be locked in neutral position so that shuttle is free to follow the contour of the cable and prevent cutting wires.

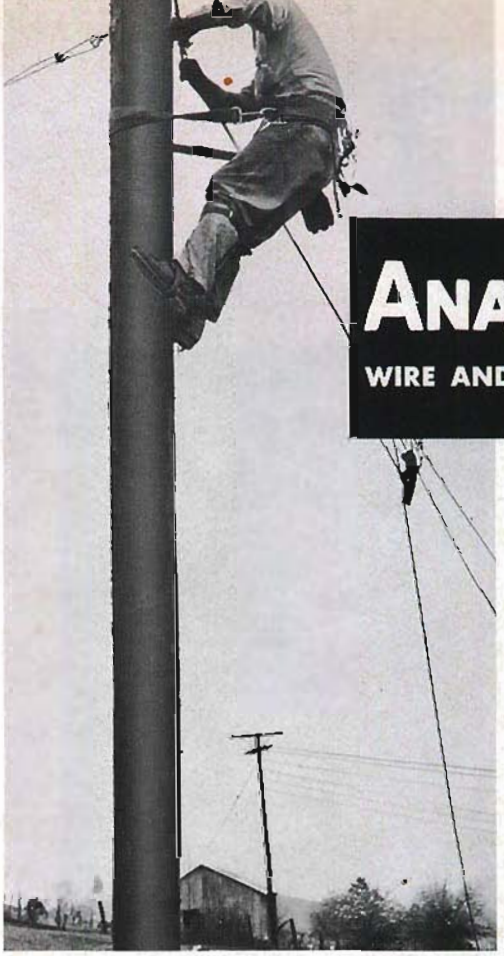
Catalog No.	Yoke	Cable Capacity
Model R	Type A	1/8" to 7/8" O.D.
Model R	Type B	1/8" to 1 5/16" O.D.
Model R	Type B-1	3/8" to 1 3/4" O.D.

New help from an old hand

for Independent Telephone Companies

From Anaconda's complete line of plastic telephone cables, Independent Telephone Companies can always select the right cable for every job. Into these products have been engineered all the experience and know-how gained by Anaconda over many years of communication cable research, development and manufacture.

Whatever your problem . . . wherever you're installing cable . . . you'll find an outstanding Anaconda product to help you.

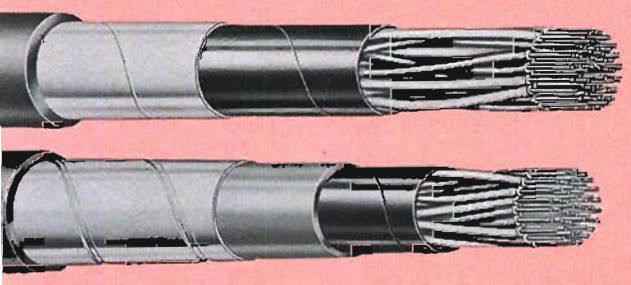


ANACONDA®
WIRE AND CABLE COMPANY:

COPPER AND ALUMINUM WIRE AND CABLE

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CABLE ACCESSORIES



ATC Aerial, Duct, and Self-Supporting Cable

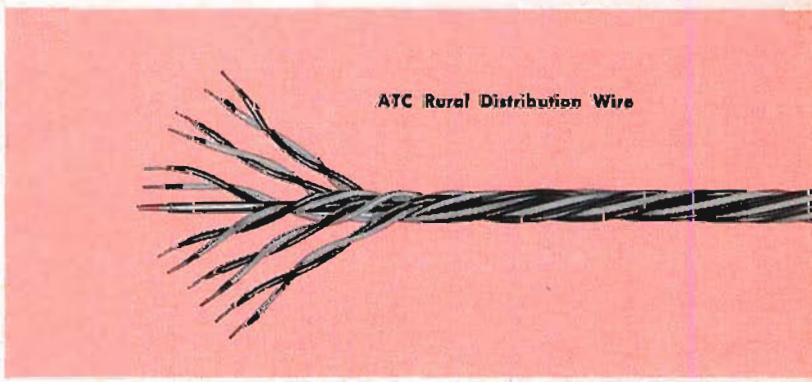
ATC Direct-burial Wire

1. ATC AERIAL & DUCT TELEPHONE CABLE — offered in pair numbers from 6 to 404. Design features eliminate cross-talk, provide lightning protection, minimize transmission loss. Lightweight, simple to install and splice. All-polyethylene insulation and jacket resist oils, chemicals, sunlight, ozone, temperature extremes.

2. ATC SELF-SUPPORTING TELEPHONE CABLE — with hard-drawn copper conductors for high tensile strength. All-polyethylene insulation and jacket. No messenger and minimum hardware expense. Long-lived, quickly installed, with fine transmission characteristics.

3. ATC DIRECT-BURIAL CABLE — all-polyethylene insulation, belt and jacket. Heavy shield. Flexible, quickly and inexpensively installed, durable and long-lasting under adverse soil conditions. Designed for minimum transmission loss.

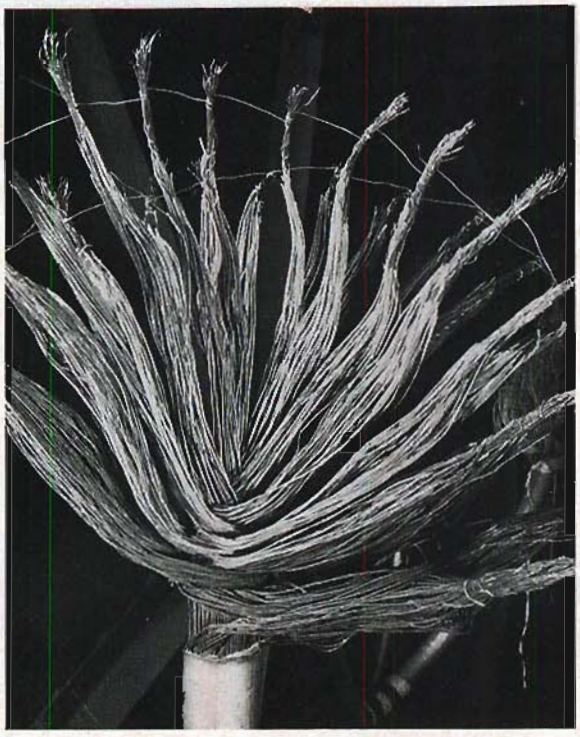
4. ATC RURAL DISTRIBUTION TELEPHONE WIRE — polyethylene insulation, special colored polyvinyl chloride jacket . . . high-strength galvanized steel, polyethylene-insulated messenger. All pairs accessible at any point, fully color-coded, easy to splice, distinguished by low transmission loss. Highly salvageable: permits easy removal and re-use.
Special communication cables such as quad and composite types are also available.



ATC Rural Distribution Wire

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

CABLE



Roebling Paper Insulated, Lead Encased Telephone Cable

The Roebling Company exercises complete manufacturing control over all its wire products. Every step of manufacture, from hot rolling copper bars to applying the necessary insulation and testing the finished wire is performed in the Roebling Plants.

Many years of product research and development in Roebling laboratories stand behind Roebling telephone cables. This, coupled with complete manufacturing facilities provides well designed, structurally sound telephone cable. The user of Roebling telephone cable can feel confident that this product, closely controlled in every step of production, will meet the highest standards.

Telephone cable is regularly made with various electrostatic capacities and with conductors of Nos. 19, 22 and 24.

Each wire is insulated with one or more wraps of manila paper, or paper made from clear rope stock with suitable proportions of wood pulp or cotton rag stock added. The paper is wound loosely, in helical form, around the wire. When two or more papers are used they are applied in reverse direction. Dry paper is used because of its low specific inductive capacity which is further reduced by the air space introduced by the loose wrapping.

After insulation of the conductors they are twisted together to form pairs, each wire of a pair being wrapped with paper of a different color for tracing purposes. The length of lay of the twisted pair varies from two to five and one-half inches.

The twisted pairs are cabled together in layers, each layer being one pair thick. Alternate layers are cabled in opposite directions. The completed cable core is taped over with paper.

The cable is then treated under controlled high temperature and vacuum to remove the moisture from the cable without causing deterioration of the paper insulation.

The cable is then sheathed with lead containing approximately one per cent antimony. Pure lead or lead containing up to three per cent in tin may be used in special cases. The lead-antimony sheath is usually used to give additional stiffness of the sheath and to prevent crystallization of the lead under continuous vibration.

After the cable is sheathed, it is tested for continuity of the conductors, dielectric strength, insulation resistance, capacity.

Efficiency of transmission depends upon the resistance of the conductors, the electrostatic capacity and, to a limited extent, on the insulation resistance.

CABLE CHARACTERISTICS

Cable is regularly made in the following types:

Type	Size A.W.G. or B.&S.	Paper Insulation, Wrap	Mut. Cap. Microfarads per Mile	Grd. Cap. Microfarads per Mile	Resistance per Mile in Ohms	Trans. Loss in Decibels per Mile at 1000 C.P.S.
24-S-9	24	Single	.09	.135	135.5	2.5
24-D-8	24	Double	.08	.12	135.5	2.6
22-S-9	22	Single	.09	.135	85.2	2.0
22-D-95	22	Double	.095	.1425	85.2	2.0
22-D-75	22	Double	.075	.1125	85.2	1.8
19-S-9	19	Single	.09	.135	42.5	1.4
19-D-75	19	Double	.075	.1125	42.5	1.3

CONDUCTOR RESISTANCE

Except for purposes of long distance transmission, where a lower conductor resistance may be necessary, cables are usually built of Nos. 19, 22 or 24 wires. The resistances of these wires per mile — approximately 42.5 ohms, 85 ohms and 136 ohms respectively at 20°C. — are increased by twisting into pairs and by cabling, but as the increase is not constant, the maximum resistance for any wire in the cable is usually specified.

ELECTROSTATIC CAPACITY

The electrostatic capacity is specified in microfarads per mile at a given temperature and is expressed as "Mutual Capacity" or "Grounded Capacity." By "Mutual Capacity" is meant the capacity between one wire of a pair and its mate, the measurement being made while all the other wires of the cable are connected to the sheath and to ground. By "Grounded Capacity" is meant the capacity between one wire and the balance of the wires and the sheath of the cable. The grounded capacity of a wire in a cable is approximately one and one-half times the mutual capacity of the pair of which that wire is a part.

The lower the capacity of a cable the greater the separation of the conductors . . . i.e. . . . for two cables with the same number of conductors of the same size, the cable with the lower capacity will have the larger diameter under the load.

INSULATION RESISTANCE

The effect of the insulation resistance under actual working conditions is not definitely known owing to the high frequencies employed. The usual practice is to specify a minimum of 500 megohm miles which is considered sufficiently high to prevent appreciable leakage. Actual tests of cables generally exceed 1000 megohm miles. Insulation resistance decreases with an increase in temperature so it is usual to specify the temperature at which a minimum resistance is desired.

CONDUCTORS

Each conductor shall be solid wire of commercially pure annealed copper, smoothly drawn, cylindrical, uniform in quality and resistance and free from scale and other defects. All joints in conductors shall be welded or brazed with silver alloy solder. The tensile strength of any sections of a conductor including a joint shall be at least ninety (90) per cent of the tensile strength of an equal length of an adjacent section of the conductor without a joint. The resistance of any six-inch section of a conductor including a joint shall be not more than one hundred and five (105) per cent of the resistance of an adjacent six-inch sample of the conductor without a joint.

INSULATION

Each conductor shall be insulated with a single or double wrap of paper, as required by the type of cable, applied helically with an overlap. When two wraps are used, they are applied in reverse directions. The paper shall be of clear rope stock with suitable proportions of either cotton rag or chemical wood pulp. By clear rope stock is meant stock composed of manila rope or of manila rope and hemp. Jute or sisal shall not be added and shall be present only in very small proportions. The paper shall be free from sizing and loading materials.

TWIST OF PAIRS AND CABLING

The insulated conductors shall be twisted in pairs. Adjacent pairs in each layer shall have different lengths of lay. The pairs thus formed are cabled together in layers, each layer being one pair thick. Succeeding layers are wound in reverse direction.

CORE COVERING

The core shall be covered with at least two wrappings of paper not less than .004-inch in thickness — laid on so that all portions of the core are covered with not less than two thicknesses of paper. The paper shall be clear rope stock or stock made from clear rope and chemical wood pulp, the wood pulp not exceeding 80% by weight.

DENSITY OF CABLE

In the finished cable at least 38% of the volume inside the sheath excluding that occupied by the conductors and the paper covering of the core shall be occupied by the insulating paper on the conductors. This volume occupied by the insulating paper shall be calculated from the average width and thickness of this paper and the actual length of the paper used per unit of the cable.

SHEATH

The core shall be enclosed in a sheath composed of an alloy of commercially pure lead and antimony, the amount of antimony by weight in any sample being not less than nine-tenths (0.9) per cent and not more than one and one-tenth (1.1) per cent.

The sheath shall be free from holes or other defects and shall be of uniform composition and thickness. The average thickness of sheath in each length of cable shall be as nearly as possible the values as given in the cable charts with such tolerances as are permitted in the best commercial practice.

EXTRA PAIRS

The extra pairs in a cable will be the nearest unit per cent of the normal number of pairs.

Normal No. of Pairs	Extra Pairs	Normal No. of Pairs	Extra Pairs
6 to 150 Pairs	1 Pair	450 to 600 Pairs	5 Pairs
150 to 250 Pairs	2 Pairs	600 Pairs	6 Pairs
250 to 350 Pairs	3 Pairs	800 Pairs	8 Pairs
350 to 450 Pairs	4 Pairs	900 Pairs	9 Pairs
		1200 Pairs	12 Pairs

ELECTRICAL REQUIREMENTS

Dielectric Strength

The insulation of each conductor in every length of cable when tested against all of the other conductors and the lead sheath shall be capable of withstanding without rupture for two seconds, a 60-cycle ac potential, having approximately sine wave form whose maximum instantaneous value is not less than the following:

Type of Cable	Between Conductors	Between Conductors and Sheath	Type of Cable	Between Conductors	Between Conductors and Sheath
24-S-9	500	1,400	22-D-75	700	1,400
24-D-8	700	1,400	19-S-9	700	1,400
22-S-9	500	1,400	19-D-75	700	1,400
22-D-95	700	1,400			

INSULATION RESISTANCE

Each conductor in every length of cable, when measured against all other conductors and the sheath, connected to ground, after an electrification of not more than one minute with a potential of not less than 100 nor more than 500 volts, shall show an insulation resistance equivalent to not less than 500 megohms per mile at 60°F.

The insulation resistance shall be measured at a temperature not lower than 60°F. If the cable when measured at a temperature higher than 60°F. fails to meet this requirement, no temperature correction factor shall be applied, but in such case, the cable may be retested at a temperature not lower than 60°F.

(Continued on following page)

CONDUCTOR RESISTANCE

Each conductor in every length of cable shall have a resistance equivalent to not more than the following values at 68°F.:

24 A.W. Gauge.....145 Ohms per Mile of Cable
22 A.W. Gauge..... 92 Ohms per Mile of Cable
19 A.W. Gauge..... 46 Ohms per Mile of Cable

CAPACITANCE

In each length of cable the average 900 cycle ac mutual capacitance of all pairs shall be equivalent to not more than previously shown in table on Cable Characteristics. The capacitance shall be measured at a temperature not lower than 60°F. If the cable, when measured at a higher temperature fails to meet this requirement, no temperature correction factor shall be applied, but in such cases, at the option of the manufacturer, the cable may be retested at a temperature not lower than 60°F. The mutual capacitance of a pair shall be measured between the two wires of the pair, the remainder of the conductors being connected to the sheath and ground.

GUARANTEE

There shall be no defective pairs caused by grounds. The number of defective pairs in each cable length caused by shorts, opens, or crosses, shall be not more than shown in the last column in the following table on Color Code, and the capacitance and conductor resistance shall not increase nor the insulation resistance decrease beyond the limits above specified for a period of one year from date of original shipment from the factory due to defective material or manufacture. The cable shall be so manufactured that when properly installed and spliced it will be commercially free from crosstalk.

The cable furnished under these specifications is guaranteed to be of first-class material and workmanship throughout. Any length of cable proven defective in material or workmanship within one year from date of original shipment from the factory will be replaced. All such replacements will be made free of charge, F.O.B. the destination called for in original order.

Cable thus replaced shall become the property of the manufacturer and shall be either returned by the purchaser F.O.B. point of original delivery or at the option of the manufacturer, the purchaser shall credit the manufacturer with the scrap value of the replaced cable.

DEFECTIVE PAIR MARKINGS

Each pair which is found by the final factory tests to be defective shall be distinctly marked with a cloth tag at each end of the length of cable. Each of these tags shall denote the type of defect and shall be securely attached to the conductors of the defective pairs. The inspection report shall show location of the tagged pairs by color groups and where there are duplicate color groups in the same cable, the report shall indicate in which of the two groups the defective pairs are located, that is, the inner or outer groups.

No. 19 A.W.G. Double Wrap .075 Mut. Cap.

No. of Pairs	Thickness of Lead Sheath, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Shipping Length per Reel, Feet
6	.063	.451	427	524	3,500
11	.064	.570	608	719	3,500
16	.067	.631	724	880	2,500
26	.071	.776	1,005	1,161	2,500
51	.077	1.043	1,610	1,870	1,500
76	.082	1.249	2,170	2,610	1,500
101	.086	1.394	2,661	3,161	1,500
152	.092	1.661	3,626	4,176	1,200
202	.097	1.867	4,514	5,341	1,100
253	.102	2.073	5,441	6,351	1,000
303	.105	2.218	6,231	7,531	1,000
354	.110	2.424	7,218	8,518	1,000
404	.112	2.511	7,906	9,466	1,000
455	.116	2.691	8,843	10,403	1,000

No. 19 A.W.G. Single Wrap Paper .09 Mut. Cap.

No. of Pairs	Thickness of Lead Sheath, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Shipping Length per Reel, Feet
6	.063	.427	403	500	3,500
11	.065	.538	568	665	3,500
16	.067	.594	684	795	3,500
26	.070	.729	941	1,141	3,000
51	.076	.976	1,511	1,751	2,500
76	.080	1.165	2,022	2,352	2,000
101	.083	1.299	2,469	2,881	1,600
152	.089	1.546	3,379	3,851	1,400
202	.094	1.737	4,219	4,769	1,200
253	.098	1.927	5,069	5,979	1,000
303	.101	2.061	5,818	6,829	900
354	.106	2.252	6,748	8,192	900
404	.108	2.332	7,405	8,850	900
455	.112	2.499	8,291	9,736	900

CABLE JUTE PROTECTED

There are many situations where cables buried directly in the ground would offer advantages over other forms of construction. The life of unprotected cable sheath may be very short depending upon the particular soil conditions. To meet this need there has been developed a type of cover for the cable sheath which effectively protects the sheath from soil corrosion. This protection consists of wrappings of paper and jute which have been thoroughly impregnated with preservative compound and which are thoroughly flooded with asphaltic compounds while being applied to the cable. Cables having this type of covering are referred to as jute protected. Jute protected cables are about .2 inches larger in over-all diameter than the unprotected cables for the smaller sizes and about .3 inch larger for full size cables. Any lead covered cable can be furnished jute protected if so noted on the order.



SHIPMENTS

Each length shall be wound on a separate reel unless otherwise stated. The reels shall be substantial and able to withstand such reasonable handling as they are liable to receive in transit. The diameter of the drum shall be large enough to prevent damage to the cable from reeling. The outer end of the cable shall be securely fastened to the inner side of the reel head so that the cable will not come loose in transit.

Each end of every length of cable shall be effectively sealed with solder to prevent the entrance of moisture.

The reel shall be plainly marked to indicate the direction in which it should be rolled so as not to loosen the cable on the reel.

In each length of cable containing defects, the outer ends shall be painted for a distance of one foot and the inner ends as far as can be conveniently reached.

ROEBLING LEAD ENCASED, PAPER INSULATED TELEPHONE CABLE

COLOR CODE

The colors in the insulating paper, the number of like colored pairs forming a color group, and the location of each color group for all types are given in the table below.

Actual No. of Pairs	1st *Red †Grey	2nd Blue Grey	3rd Orange Grey	4th Green Grey	5th Red Blue	6th Red Green	7th Red Grey	8th Blue Grey	9th Orange Grey	10th Green Gray	11th Red Blue	12th Red Green	Tracer Pairs Red Orange
6	5	..	..	..	..	..	..	..	..	..	..	..	1
11	10	..	..	..	..	..	..	..	..	..	..	..	1
16	15	..	..	..	..	..	..	..	..	..	..	..	1
21	20	..	..	..	..	..	..	..	..	..	..	..	1
26	25	..	..	..	..	..	..	..	..	..	..	..	1
31	30	..	..	..	..	..	..	..	..	..	..	..	1
41	40	..	..	..	..	..	..	..	..	..	..	..	1
51	50	..	..	..	..	..	..	..	..	..	..	..	1
61	60	..	..	..	..	..	..	..	..	..	..	..	1
76	75	..	..	..	..	..	..	..	..	..	..	..	1
101	49	50	..	..	..	..	..	..	..	..	..	..	2
152	50	50	50	..	..	..	..	..	..	..	..	..	2
202	49	51	50	50	..	..	..	..	..	..	..	..	2
253	49	51	50	51	50	..	..	..	..	..	..	..	2
303	49	51	50	51	50	50	..	..	..	..	..	..	2
354	100	101	101	50	..	..	..	..	..	..	..	..	2
404	100	101	101	100	..	..	..	..	..	..	..	..	2
455	100	101	101	101	50	..	..	..	..	..	..	..	2
505	100	101	101	101	100	..	..	..	..	..	..	..	2
606	100	101	101	101	101	100	..	..	..	..	..	..	2
808	100	101	101	101	101	101	101	100	..	..	..	..	2
909	100	101	101	101	101	101	101	101	100	..	..	..	2
1,010	100	101	101	101	101	101	101	101	101	100	..	..	2
1,212	100	101	101	101	101	101	101	101	101	101	101	100	2

* Wire. † Mate.

COLOR CODE

Note: Where one (1) tracer pair is required in accordance with the above table, it shall be placed in the outside layer of the cable. Where two (2) tracer pairs are required one shall be placed in the outside complete layer of the first color group and the other in the outside layer of the cable.

No. 22 A.W.G. Double Wrap Paper .095 Mut. Cap.

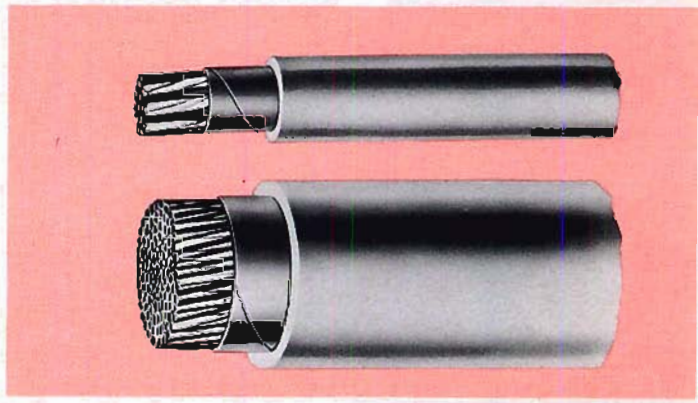
No. of Pairs	Thickness of Lead Sheath, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Shipping Length per Reel, Feet
6	.061	.349	296	370	3,500
11	.063	.429	404	478	3,500
16	.064	.470	473	547	3,500
26	.066	.568	630	741	3,500
51	.070	.747	970	1,170	3,000
76	.073	.885	1,273	1,513	2,500
101	.076	.983	1,543	1,783	2,500
152	.080	1.162	2,061	2,436	1,600
202	.083	1.300	2,526	2,939	1,600
253	.087	1.439	3,029	3,469	1,500
303	.089	1.536	3,445	3,953	1,300
354	.092	1.675	3,958	4,508	1,200
404	.094	1.733	4,332	5,090	1,200
455	.097	1.854	4,831	5,658	1,100
505	.100	1.952	5,301	6,211	1,000
606	.103	2.131	6,157	7,168	900
808	.110	2.425	7,855	9,492	650
909	.113	2.563	8,689	10,689	650

No. 22 A.W.G. Single Wrap Paper .09 Mut. Cap.

No. of Pairs	Thickness of Lead Sheath, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Shipping Length per Reel, Feet
6	.061	.350	294	368	3,500
11	.063	.431	401	475	3,500
16	.064	.471	469	566	3,500
26	.066	.569	624	735	3,500
51	.070	.748	956	1,086	3,000
76	.073	.886	1,251	1,491	2,500
101	.076	.985	1,515	1,755	2,500
152	.080	1.164	2,018	2,393	1,600
202	.083	1.302	2,468	2,881	1,600
253	.087	1.442	2,957	3,397	1,500
303	.089	1.539	3,358	3,829	1,400
354	.092	1.677	3,855	4,405	1,200
404	.094	1.736	4,215	4,765	1,200
455	.097	1.858	4,701	5,301	1,100
505	.099	1.955	5,128	6,095	1,100
606	.103	2.134	5,981	7,163	1,100
808	.110	2.428	7,619	9,063	900
909	.114	2.568	8,461	10,319	700

No. 24 A.W.G. Single Wrap Paper .09 Mut. Cap.

No. of Pairs	Thickness of Lead Sheath, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Shipping Length per Reel, Feet
6	.060	.303	239	313	3,500
11	.061	.366	315	389	3,500
16	.062	.398	364	438	3,500
26	.064	.475	477	574	3,500
51	.067	.614	710	840	3,000
76	.070	.723	923	1,053	3,000
101	.071	.797	1,088	1,288	3,000
152	.075	.938	1,442	1,656	2,800
202	.077	1.045	1,743	2,016	2,200
253	.080	1.154	2,070	2,445	1,600
303	.082	1.230	2,346	2,759	1,600
354	.084	1.337	2,674	3,146	1,400
404	.085	1.382	2,902	3,374	1,400
455	.088	1.478	3,239	3,711	1,400
505	.089	1.553	3,512	4,020	1,300
606	.093	1.694	4,100	4,700	1,100
808	.098	1.922	5,172	6,082	1,000
909	.101	2.031	5,723	6,734	900
1,010	.103	2.138	6,261	7,399	800
1,212	.108	2.353	7,371	8,771	650



CABLE TAPE ARMORED

In cases where somewhat more mechanical protection is desired or where some protection against low frequency induction from power lines is desired, a steel tape armor can be furnished. This type of sheath covering is similar to that used for jute protected cables except for the addition of the steel tapes and a further covering of asphalt flooded jute. For the tape armored cable the increase in diameter varies with the size of the cable from about .3 inch to about .6 inch. Any lead covered cable can be furnished tape armored if so noted on the order.

CABLE GALVANIZED TAPE ARMORED

Can furnish galvanized tape armored cable for aerial use where some protection against low frequency induction from power lines is desired. Information and prices on this type of cable sheath will be supplied on request.

CRAPO CABLE LASHING WIRE



CORROSION RESISTANT (STAINLESS STEEL). Crapo Type 430 Corrosion Resistant (Stainless Steel) Lashing Wire is widely used for lashing cable to messenger strand. Furnished to the following specifications:

Kellogg Code Number 850103 — .045" diameter — For use in Western Electric Type "C" Cable Lasher and in General Machine Products Companys' Types "C", "D" and "E" Lashers. Each coil contains 1200 feet of wire plus or minus 30 feet.

Kellogg Code Number 850105 — .061" diameter — For use in machines with tapered or straight hub reels; coil length 735 feet plus or minus 20 feet.

Kellogg Code Number 850104 — .065" diameter — Designed for straight hub reels; coil lengths 650 and 450 feet plus or minus 20 feet.

Crapo Stainless Steel Cable Lashing Wire also can be furnished in Type 302 and Type 316.

GALVANIZED STEEL ("C" COATED). Crapo "C" Coated Cable Lashing Wire is produced in .091 and .061" diameter. Put up in neat, compact, thread-lay coils, with either straight or tapered arbor holes.

Coil Dimensions: Arbor hole, straight hub, 1⅞ inches, minimum; tapered hub, approx. 2 inches to 2½ inches. Outside diameter of coil (nominal) 6 inches; width (nominal) 1½ inches.

Kellogg Code No.	Wire Size	Feet per coil	Nominal Wt. per coil
850120	.091	325	7.2 lbs.
850115	.061	650	6.45 lbs.

CRAPO GALVANIZED TIE WIRE

Manufactured specially to facilitate tying in telephone line wire at the supports. Furnished in coils or straightened and cut to length.

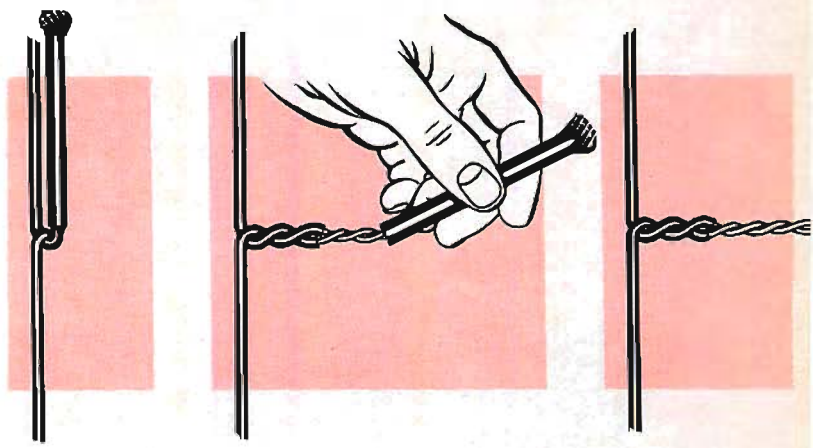
			STRAIGHTENED and CUT to LENGTH Standard 8dle. — 25 lb. Standard 8dle. — 50 lb.			
			Horseshoe Ties		Ties for Use with Tie Splints	
Size B.W.G.	Length Coil (Ft.)	Weight Coil (Lb.)	Length Inches	Pieces per Bundle	Length Inches	Pieces per Bundle
9	1700	100	13	395	..	..
10	2040	100	18	350	..	..
11	2040	100	16	390	..	..
12	3100	100	14	675	30 28	620 665
13	4165	100	..	...	30	835
14	2650	50	14	1150	26	1230

"SUPER-SPLICE" PLASTIC SPLICING SLEEVES

A moisture-proof, waterproof, plastic individual conductor splice developed to provide a means of restoring the insulation and moisture-resistant properties of polyethylene insulated conductors in communications and signal cables at points where the insulation must be removed in order to splice conductors together. Super-Splice is a polyethylene sleeve with one end sealed. The sleeve comes filled with an insulating and waterproofing material. When the sleeve is slipped over the twisted pigtail, the waterproofing material completely covers the bared copper wire and prevents leakage currents and breakdowns in the presence of moisture. Never hardens, and can be easily removed should it ever be necessary to re-enter the splice.

The splice is available for use in straight, butt or bridge splices and in wire gauges No. 19, 22 and 24. All sleeves are 2⅛ inches long. Packed 110 pieces to a carton.

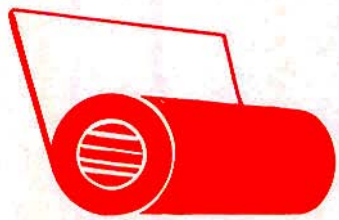
Kellogg Code No.	Cat. No.	Inside Diameter
735015	SS-105	.105"
735016	SS-125	.125"
735017	SS-145	.145"
735018	SS-165	.165"



CABLE PASTERS

Two-inch kraft paper, gummed on one side, for use in limiting the length of a wiped joint and giving it a neat and finished appearance.

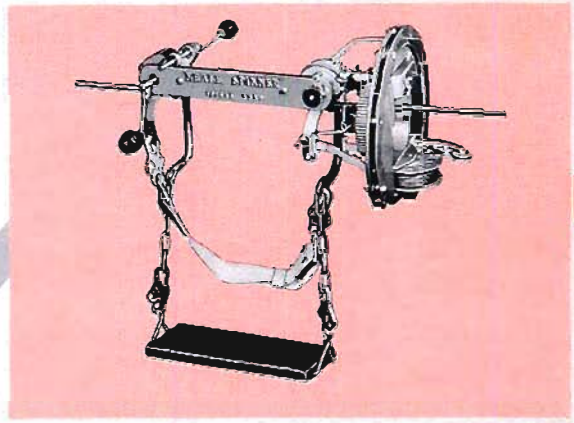
Kellogg Code No.	Size	Weight per Roll
643001	2" x 100 ft.	½ lb.



NEALE CABLE SPINNERS

NEALE MODEL D ONE MAN SPINNER

The Neale Model B is designed expressly for one-man operation. It is ideal for maintenance spinning in that the operator is at cable level. He is able to examine for ring cuts or any other damage and repair prior to spinning. No extra riding of messenger necessary. A sprocket chain links the front and rear trolley wheels and insures their positive driving action. This machine is easy to transfer at the pole—simply by removing the gate in the spinner head. Compound gearing minimizes propelling effort and eases spinning on up-grades. Positive snap action changes hand crank from regular to compound drive. All steel parts are cadmium plated. Cast aluminum spinning head. Overall dimensions: 36 by 37". Weight: 65 pounds. Supplied with spinner chest, seat, safety belt, tube of grease, and lashing wire clamp.



The Neale Model K is equally effective both in the spinning of new cable and maintenance spinning of existing cable, has a maximum capacity of the three 2" O.D. cables, and will spin single cable as small as ⅝" O.D. May be used with either one or two coils of spinning wire.

As the spinner progresses forward 13", the spinning drum makes one complete revolution.

With both spinning wires being used this gives a double 13" spiral or a support every 6½".

With a single spinning wire being used there will be a single 13" spiral of wire.

Dimensions: Length 19", diameter 12".

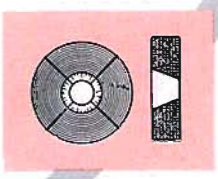
Weight: 36 pounds. Supplied with two LC5 Lashing Wire Clamps, tow rope, cable placing dolly, chest, and required maintenance and repair tools.

NEALE MODEL K PULL TYPE SPINNER

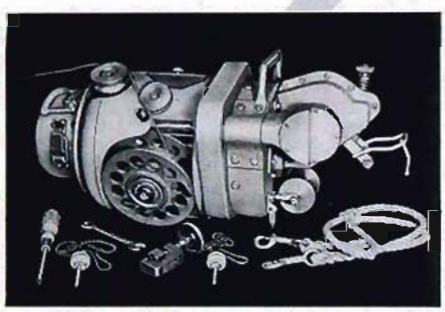
Recommended for use with Model B and Model D.

Type 1A

Cone-shaped hub packed 6 coils to carton.



NEALE MODEL D PULL TYPE SPINNER



Recommended for use with Model K.

Type 1AK

Straight hub with reel packaged 5 coils to carton.



The Neale Model D is specially designed to operate on ball bearing races, and is equipped with a double drive mechanism that eliminates slippage. The Model D offers instant adjustment for all sizes of cable—from minimum size to a maximum diameter of 2¼". A ratchet on the strand wheel makes it impossible for the spinning wire to slack off when pull on the tow line is released. Size of machine: length 24", diameter 10". Weight: 42 pounds. Supplied with lashing wire clamp, two adjustment wrenches, screwdriver, open end wrench, and tow rope. Packed in spinner chest.



NEALE MODEL K PULL TYPE SPINNER

NEALE SPINNING OR LASHING WIRE

ALL TYPES AVAILABLE IN THESE METALS AND SIZES

10A .061 Type 316 Stainless Steel. Highest in corrosion resistance under all conditions. Grade: Stainless type 316 cold drawn wire (Chromium 16% to 18%; Nickel 10% to 14%; Molybdenum 2% to 3%).

7A .091 Aluminum Alloy. High corrosion resistance. Used with steel strand. Alloy 52S¼H with .091" diameter has good strength characteristics with an ultimate tensile strength of 197 lbs. breaking load.

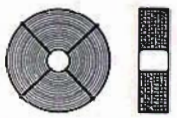
12A .091 Standard Galvanized. Special soft annealed spinning wire. For use where corrosion conditions are light. Used with steel strand.

5A .061 Galvanized. Soft annealed spinning wire. Used on small cable up to and including 51 pair, 26 gauge in areas where corrosion is light. Used with steel strand.

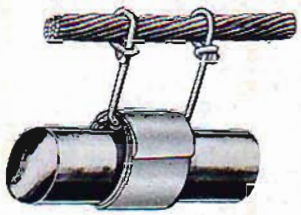
1A .091 Special Soft 2.5 Bethanized C-Coating Galvanized.

9A .061 Bethanized 1.5 Coating. Special soft annealed steel spinning wire. For use under normal corrosion conditions.

For Other makes of Cable spinners.



Type 3A
Straight hub packed 6 coils to carton.



HANGERS, DIAMOND AERIAL CABLE

FOR SUSPENDED CABLE. Two supports, 20 inches apart are placed on each side of the pole. Each support consists of a zinc strip in position on a soft, galvanized U-shaped wire, 5 inches long.

*No. 898 is the same as No. 897 except No. 898 has 10-inch long U-shaped wire on end instead of 5-inch.

Kellogg Code No.	Cat. No.	Length of Strap	Diameter of Cable or Sleeve	Std. Pkg.	Weight per 100
772001	891	10	¾ in.	500	8.5 lbs.
772002	892	16	1 3/16 in.	500	11. lbs.
772003	893	22	2 in.	300	12. lbs.
772004	894	28	2⅝ in.	300	16. lbs.
772005	895	34	3⅛ in.	300	18.5 lbs.
772006	896	50	5 in. sleeve	200	25.5 lbs.
772007	897	64	6½ in. sleeve	200	31.5 lbs.
772008	898*	64	6½ in. sleeve	200	35. lbs.



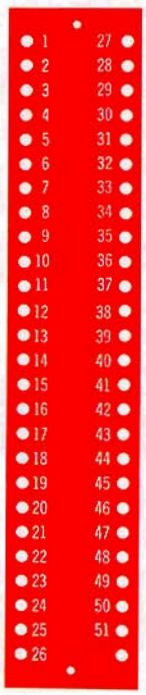
HANGERS, DIAMOND LASHED CABLE

Same dimensions as Aerial Cable Hangers for suspended cable but less the "U" shaped wires. Used where cable is lashed to the messenger strand with a spinning machine.

Kellogg Code No.	Cat. No.	Std. Pkg.	Weight per 100
772025	L-891	500	5½ lbs.
772026	L-892	500	8 lbs.
772027	L-893	300	10 lbs.
772028	L-894	300	13 lbs.
772029	L-895	300	15½ lbs.
772030	L-896	200	22½ lbs.
772031	L-897	200	28½ lbs.

TEST BOARDS, SPLICER'S FIBRE

Used for classifying pairs when testing out cable. Numbers are easy to read and will not wash off. Standard numbering.



Kellogg Code No.	Catalog Number	Numbered
115001	810	1 - 51
115002	811	51 - 101
115003	812	102 - 152
115004	813	152 - 202
115005	814	203 - 253
115006	815	253 - 303
115007	816	304 - 354
115008	817	354 - 404
115009	818	405 - 455
115010	819	455 - 505
115011	820	506 - 556
115012	821	556 - 606
115013	822	607 - 657
115014	823	657 - 707
115015	824	707 - 758
115016	825	758 - 808
115017	826	809 - 859
115018	827	859 - 909
115019	828	910 - 960
115020	829	960 - 1010
115021	830	1011 - 1061
115022	831	1061 - 1111
115023	832	1112 - 1162
115024	833	1162 - 1212



CABLE SPLICERS MUSLIN TAPE

Used for wrapping cable splices. Has serrated edge to prevent ravelling. Available in 2", 3" and 4" widths.

Kellogg Code No.	Catalog Number	Size Roll
785111	P-210	2" x 10 yds.
785112	P-310	3" x 10 yds.
785113	P-410	4" x 10 yds.

CONDUIT, CLAY

A permanent protection for telephone cables against fire, corrosion, vibration, electrolysis, mechanical injury and chemical attack. Clay conduit is manufactured from special, high-quality clays, ground and moulded into form, then vitrified into a flint-like rock by over 2,000 degrees of heat and salt-glazed to provide permanently smooth glass-like duct surfaces.

PERMANENCE — Permanent because it will not soften, swell, deform, rot, collapse or disintegrate on exposure to heat, moisture, frost, steam or chemical attack.

STRENGTH — Of high compressive strength, wet or dry, clay conduit will safely carry all normal street loads and stand up under severe traffic vibration. It permits immediate back-filling of trenches.





Rear view of connector ready to receive conduit.

PIPE CONNECTORS — Two way

For connecting clay conduit to cast-iron or steel pipe lines as in pole risers or to enter buildings. These connectors are made of cast-iron, one end shaped to receive the end of the clay conduit while the opposite end of the connector is reamed to receive the cast-iron or steel pipe. 3¼" single. 2, 3, 4, or 6 duct to 3" pipe. 3½" single, 2 and 4 duct to 3" pipe. 4¼" single, 2 and 4 duct to 3" pipe. When ordering, specify whether pipes are cast-iron or steel, and if steel, whether threaded or slip joint.

NON-CORROSIVE — Inert, insoluble and chemically neutral, clay conduit is free from caustic alkalies, acids or organic compounds that would injure the cable sheath. Clay conduit is unaffected by wet or corrosive ground conditions.

SMOOTH DUCT SURFACES — The smooth, glazed duct surfaces have a low coefficient of friction, hence cable pulling is safe and easy.

FLEXIBILITY — The comprehensive range of shapes and sizes assures extreme flexibility in construction, fewer manholes, less splicing and bending of cables and lower installation costs.

MAINTENANCE — Because it is permanent in character, clay conduit requires little maintenance and depreciation is practically eliminated. Repairs to cables may be made quickly (without removing the cable) and the duct line restored to its original condition by the use of split conduit.

QUALITY AND SERVICE — Extreme care in manufacture and inspection assures the highest quality. Large manufacturing facilities assure prompt shipment. Scientific shipping methods assure the arrival of the conduit on the job in good condition.

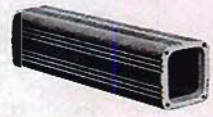
STANDARD SHAPES



Six Duct — 3¼, 3½, and 4¼ inch square bore, 36 inches long.



Single Duct — 3¼, 3½, and 4¼ inch round bore, 18 inches long.



Single Duct — 3¼ inch square bore, 24 inches long. 3½ and 4¼ inch square bore, 18 inches long.



Two Duct — 3¼, 3½, and 4¼ inch square bore, 24 inches long.

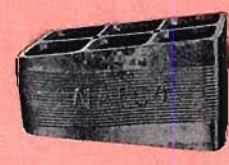


Three Duct — 3¼, 3½, and 4¼ inch square bore, 24 inches long.

SPECIAL SHAPES



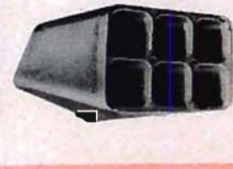
Split Conduit — for quick repairs. 3¼, 3½, and 4¼ inch bore single, 2, 3, 4, 6, and 9 duct, 18 inches long.



Mitered Conduit — for curve construction, 3 degree, 10 ft. radius. 2, 3, and 6 duct edge or flat position. 4 and 9 duct in one position.



Branch Conduit — 24 inch lengths. Permits the division of multiple duct main lines into two or more branch lines. 2, 3, 4, and 9 duct for 2 branches; 3 and 6 duct for 3 branches; 6 duct for 2 branches (2 or 3 duct.)



Transposition Conduit — for transposing 2, 3, and 6 duct conduit lines from flat to edge position, or vice versa. 24 inch lengths. 3¼ inch bore, 22½° turn, 3½ inch bore, turn, 18° turn, 4¼ inch bore, 15° turn.

NATCO TYPES

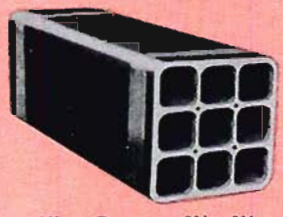
JOINT WRAPPING TAPE

A special prepared tape used for wrapping joints of clay conduit before applying the joint mortar. It adheres closely and firmly to the conduit surfaces and aids in water-proofing the joints. Made of paper with paraffin coating and supplied in 4" or 6" widths in rolls of 100 lineal yards.





Four Duct — 3¼, 3½, and 4¼ inch square bore, 36 inches long.



Nine Duct — 3¼, 3½, inch square bore, 36 inches long. 4¼ inch square bore, 24" long.



DOWEL PINS

Steel dowel pins are used in the ends of multiple duct and some single duct clay conduit for aligning adjacent pieces. Two pins are required for each piece of conduit.

Catalog No.	Size	Weight per 100
9050	5/16" x 3"	8 lbs.

SINGLE DUCT CLAY CONDUIT

For lateral lines and made in round bore or square bore with rounded corners. It is scarified lengthwise on four sides to provide anchorage for joint and bedding mortar.

Made in three bore sizes — 3¼, 3½, and 4¼ inch. Specifications are shown in the table.

MULTIPLE DUCT CLAY CONDUIT

Especially adapted to all telephone work, multiple duct clay conduit provides longer lengths and a multiplicity of duct holes. Economical and easy to install. Through dowel holes permit positive alignment. Scarifications around the outside near each end provide anchorage for joint mortar. The bore of duct holes is square with rounded corners.

Made in three bore sizes — 3¼, 3½, and 4¼ inch. Specifications are shown in the table.

UNDERGROUND CLAY CONDUIT STANDARD SHAPES AND SIZES

Duct holes: Number per piece	Duct holes: Standard Bore, in.	Number of dowel holes	Standard length, in.	Duct feet per piece	Actual size of duct hole, in.	Approximate outside dimensions, in.	Lengths in which short pieces are made, in.	Minimum carload, duct feet	Approx. Wt. per piece pounds
Single Duct									
1	3¼ round	0	18	1½	3⅜	4½ x 4½	6, 9, 12	7700	12
1	3½ round	0	18	1½	3⅝	4⅞ x 4⅞	6, 9, 12	6200	15
1	4¼ round	0	18	1½	4⅜	5⅝ x 5⅝	6, 9, 12	5100	18
1	3¼ square	4	24	2	3⅜	4¾ x 4¾	6, 9, 12	6200	20
1	3½ square	0	18	1½	3⅝	5 x 5	6, 9, 12	5400	17
1	4¼ square	4	18	1½	4⅜	5⅞ x 5⅞	6, 9, 12	4400	21
Multiple Duct									
2	3¼ square	2	24	4	3⅜	4¾ x 8¾	6, 8, 12	7300	34
3	3¼ square	4	24	6	3⅜	4¾ x 12¾	6, 8, 12	7600	49
4	3¼ square	5	36	12	3⅜	8¾ x 8¾	6, 9, 12	8700	86
6	3¼ square	2	36	18	3⅜	8¾ x 12¾	6, 9, 12	9000	122
8	3¼ square	3	36	24	3⅜	8¾ x 16¾	6, 9, 12	9600	158
9	3¼ square	4	36	27	3⅜	12¾ x 12¾	6, 9, 12	9800	172
2	3½ square	2	24	4	3⅝	5⅛ x 9⅛	6, 8, 12	6900	36
3	3½ square	4	24	6	3⅝	5⅛ x 13⅝	6, 8, 12	6900	54
4	3½ square	5	36	12	3⅝	9⅛ x 9⅛	6, 9, 12	7500	100
6	3½ square	2	36	18	3⅝	9⅛ x 13⅝	6, 9, 12	7800	145
9	3½ square	4	36	27	3⅝	13⅝ x 13⅝	6, 9, 12	8100	212
2	4¼ square	2	24	4	4⅜	5 15/16 x 11	6, 8, 12	5000	50
3	4¼ square	4	24	6	4⅜	5 15/16 x 16 1/16	6, 8, 12	5400	70
4	4¼ square	5	36	12	4⅜	11 x 11	6, 9, 12	6000	127
6	4¼ square	2	36	18	4⅜	11 x 16 1/16	6, 9, 12	6200	183
9	4¼ square	4	24	18	4⅜	16 1/16 x 16 1/16	6, 9, 12	6700	170
Scored or Split Shapes									
1	All standard bores	..	18	..	...	.....	6, 9, 12	....	..
2 and 3		..	18	..	...	.....	6, 8, 12	....	..
4 and 6		..	18	..	...	.....	6, 9, 12	....	..
9		..	18	..	...	.....	6, 9, 12	....	..

Slants or Mitered Conduit

Number of duct holes per piece	Standard bore	Length, in.	Angle in degrees	Nominal radius, ft.	Position
1	All	6x6¾	3	10	.....
4, 9	std.	6x6¾	3	10	.....
2, 3, 6	bores	6x6¾	3	10	edge or flat

Note: Branch Conduit and Transposition Conduit also supplied in all standard shapes.

Single Duct Bends

Standard bore, in.	Angle, in degrees	Radius, in.
3¼ round	90 and 45	12, 18, 24, 30 and 36
3½ round	90 and 45	12, 18, 24, 30 and 36
3½ square	90 and 45	12, 18, 24, 30 and 36

Bends can be supplied either split or solid.

PERMA-LINE CONDUIT



Designed for permanent, underground installation with concrete encasement. Manufactured by Line Material Company within close tolerances and according to rigid test requirements to assure trouble-free service for all generating station, substation, and underground system applications.

Corrosion-, vermin-, and leak-proof. Has unusually high tensile strength. Water-tight joints, safe from seepage of wet concrete and soil water, quickly and easily made by tapping tapered coupling onto tapered end of conduit. Smooth inner bore makes cable easier to pull and reduces cable sheath abrasion. Available in 5 and 8-foot lengths. Light, and easy to handle. Can be laid faster than many other types of duct.

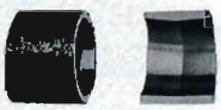


Conduit and Couplings

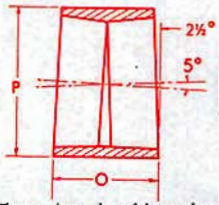
CONDUIT AND COUPLINGS — Conduit lengths have accurately machined 2° tapers on each end. Taper sleeve joint coupling provided with each length of conduit has matching 2° taper which makes for quicker jointing. No cement or mastik is required to produce water-tight joints. Wood block and hammer are all that are required to drive the taper sleeve joint onto the end of the conduit. Friction thus generated causes bonding of the material which takes over 200 pounds of straight line pull to separate.

Conduit	Taper sleeve joint					
Size D Min.	2"	3"	4"	4½"	5"	6"
T Min.	.25	.25	.26	.27	.40	.43
F Min.	1.00	1.20	1.60	1.80	1.95	1.95
Approx. Wt. Lbs. per ft. with coupling	1.08	1.35	1.98	2.25	3.00	4.25
Std. Length	5'	5' or 8'	5' or 8'	8'	5'	5'

A taper sleeve joint coupling is included with each length of conduit. When ordering extra couplings specify Style N. 101.



Angle Couplings

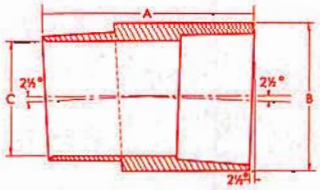


5° ANGLE COUPLINGS — For laying offsets, bends of less than 45°, and long radius curves. These couplings provide an offset of 1" per foot.

Style 102	5° angle coupling					
Size	2"	3"	4"	4½"	5"	6"
P Min.	2.97	4.00	5.12	5.72	6.65	7.72
O	2.35	2.84	3.74	4.19	4.55	4.65



CAPS—To provide a water-tight, vermin- and dirt-proof seal for duct lines following a completion of run and prior to the installation of the cables. In sizes from 2" through 6".





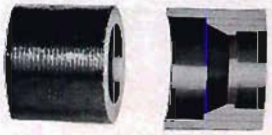
Multi-use bend sections

5° MULTI-USE BEND SECTIONS — For short radius turns without the use of nipples.

Style 135	5° multi-use bend sections					
Size	2"	3"	4"	4½"	5"	6"
C	2.06	3.03	4.03	4.59	5.16	6.09
B	2.87	3.87	5.00	5.50	6.12	7.50
A	3.81	4.08	4.61	4.99	5.26	5.41



Conduit to Pipe



Conduit to Conduit

REDUCER ADAPTERS — For use in connecting one size of conduit to a different size conduit or to metal pipe with a standard pipe thread joint — in all combinations of sizes from 2" through 6". Be sure to specify size of conduit and pipe when ordering.



45° AND 90° ELBOWS AND BENDS — Bends and elbows differ in radius and length of tangents. Special radius elbows and bends can be made to order. Be sure to specify size, degree and radius when ordering. S-Bends with 20" offset and 36" radius are also available as standard in sizes from 2" to 4½" I.D.

Style 116	Bends								
Size D Min.	2"	.25		3"	.25	4"	4½"	5"	6"
T. Min.						.26	.27	.40	.43
R	18	24	36	24	36	36	36	36	36
E	26	32	38	32	38	38	36	36	36
G	8	8	2	8	2	2	0	0	0
K	8	8	8	8	8	8	8	8	8

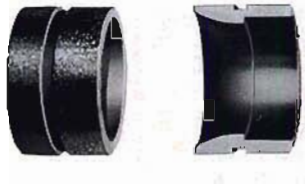
Style 117	Elbow				
Size D Min.	2"	3"	4"	4½"	5"
T Min.	.25	.25	.26	.27	.40
R	9.5	13	16	18	24
E	17.5	21	24	26	32
G	8	8	8	8	8
K	8	8	8	8	8



PLUGS — For temporary closing of ducts to prevent them from filling with water, dirt or other foreign matter until cable is drawn in. Can be removed and re-used. Fit all sizes of L-M PERMA-LINE Conduit.



BELL ENDS — For use at conduit terminals in manholes. Built with a wide flaring mouth and a smooth interior to protect the cable sheaths from abrasion. Available with a machine tapered sleeve joint or with a slip joint which accommodates untooled L-M conduit.



Style 120 — Bell ends — taper joint

Size	2"	3"	4"	4½"	5"	6"
D	2.03	3.03	4.04	4.54	5.04	6.06
E	2.75	3.87	4.94	5.56	6.40	7.42
L	1.05	1.25	1.65	1.85	2.00	2.00
O	2.09	2.50	3.31	3.68	4.00	4.00
C	3.00	4.12	5.18	5.81	6.65	7.87

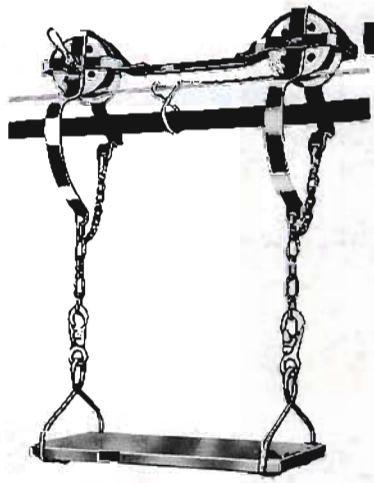
SPACERS — Prefabricated base and intermediate spacer units are available to keep installations rigid and evenly aligned. Spacers have special locking feature to make any combination of duct configuration. Also available is a bend spacer bar which serves as a duct installation leveler. It can be used horizontally or vertically to maintain alignment and spacing around conduit bends.

For more information on L-M PERMA-LINE Fibre Conduit, request Bulletin UGLA which contains complete specifications.

CABLE CARS

Designed for safety, comfort, and convenience. Rigid and Adjustable types are available. Both are 21 inches wide. Height of the Rigid is 25½"; the Adjustable, 26 to 30½". Safety hand brake.

Catalog No.	Description	Weight
20	Rigid	29 lbs.
27	Adjustable	27 lbs.





SLEEVES, WAXED COTTON

Used over all joints in conductors, exposed leads or wherever there is an exposed wire.

Prepared cotton sleeves are impervious to moisture, are cylindrical in form, permanent and ready for application. Packed in moisture-proof cartons.

SINGLE WALL

Kellogg Code No.	Catalog Number	Description	Diameter	Length	No. In Carton	Weight per Carton
735004	3-SW	Prepared Sleeves	3/32 in.	3¼ in.	900	15 oz.
735005	4-SW	Prepared Sleeves	⅛ in.	3¼ in.	700	15½ oz.
735006	5-SW	Prepared Sleeves	5/32 in.	3¼ in.	400	15 oz.
735007	6-SW	Prepared Sleeves	¼ in.	3¼ in.	200	13 oz.

DOUBLE WALL

735008	5-DW	Prepared Sleeves	5/32 in.	3½ in.	300	15 oz.
735009	6-DW	Prepared Sleeves	¼ in.	3¼ in.	150	15 oz.



LEAD SLEEVES

Lead sleeves for making cable splices can be furnished in any specified length. The following are standard diameters for No. 22-gauge cable. Walls of sleeve are ⅛-inch thick.

Kellogg Code No.	Inside Diameter	Size Cable	Weight per Foot
736001	¾"	11 and 16 pair	2 lbs.
736002	1"	26 pair	2.18 lbs.
736003	1¼"	51 pair	2.66 lbs.
736004	1½"	101 pair	3.15 lbs.
736006	2"	152 pair	4.11 lbs.
736007	2¼"	202 pair	4.60 lbs.
736010	3"	404 pair	6 lbs.
736011	3½"	606 pair	7 lbs.

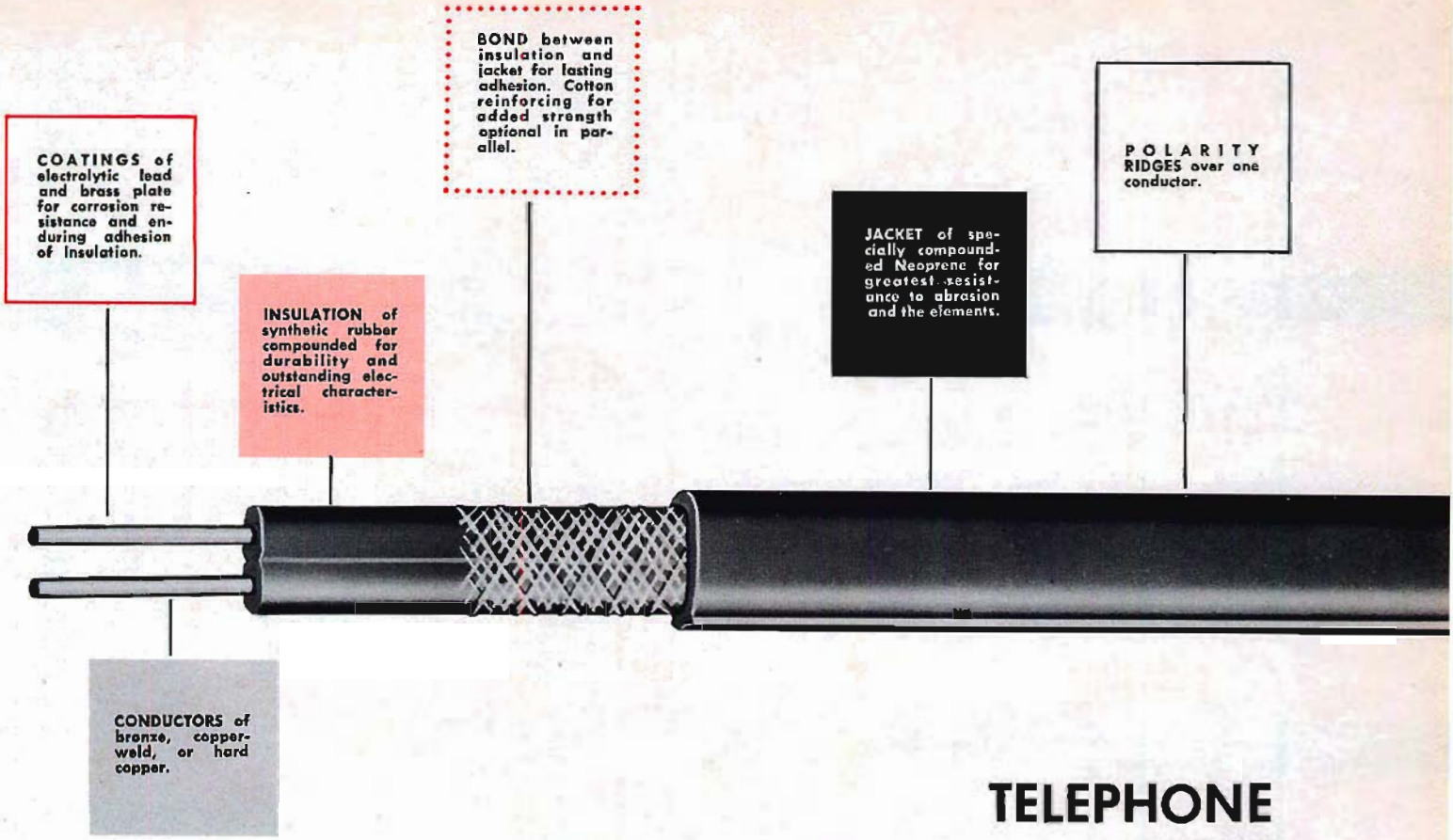
SPLICING KITS, PLASTIC CABLE

There are two "SCOTCHCAST" Splicing Kits available for communication cable splicing — the 89A series and the 89B series. Contact us for full information.



wire and strand

3



ENDURPRENE

TELEPHONE WIRE

FOR LONGER SERVICE LIFE!

GENERAL INSULATED WIRE WORKS, INC.

ENDURPRENE Drop Wire is carefully tested at every stage of manufacture to assure its superior quality with respect to:

conductivity • tensile strength • uniformity of conductor coatings • insulation dielectric strength • insulation resistance • permanent adhesion between conductors and insulation • insulation compression resistance • bond between jacket and insulation • resistance to—

aging
heat
sunlight
the elements
corrosion
abrasion

Construction details and sizes of following telephone wires appear under data on insulated wire.

NEOPRENE

Drop Wire
Bridle Wire
Underground Wire
Inside-Outside Station Wire

PLASTIC

Inside Wire-Twisted
Inside Wire-Jacketed
Inside Wire-Parallel
Jumper, Duct and Switchboard Wire
Nylon Jacketed Distributing Frame Wire
Ground Wire

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-53

WIRE, NEOPRENE JACKETED TYPES
ENDURPRENE DROP WIRES

. . . for extension of telephone circuits from open wire or **distributing cable terminals on poles to subscribers' stations.** Furnished with either copperweld, bronze, or hard copper conductors in twisted pair, parallel figure 8, or parallel reinforced constructions.



Twisted Pair Drop and Outside Distributing Wire

Kellogg Catalog Number	AWG	Type Conductor	Approx. Weight M Feet	Nom. Diam. Over Rubber Insulation	Nom. Diam. Over Neoprene Jacket
860001	18	Copperweld	35	.105	.155
860005	17	Copperweld	39	.110	.160
860007	17	Bronze	38	.110	.160
860010	16	Hard Copper	55	.125	.185
860011	14	Hard Copper	75	.156	.218



Parallel, Figure 8 Drop Wire

860003	18	Copperweld	30	.097	.147
860009	17	Bronze	35	.102	.278
					.150
					.288



Parallel, Reinforced and Oval Drop Wire

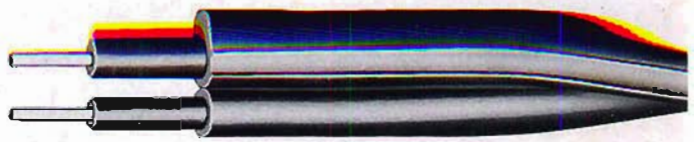
860002	18	Copperweld	40	.105	.190
		(Reinforced)		.225	.296
860004	18	Copperweld Oval	35	.105	.170
		(Non-Rein)		.230	.276
860008	17	Bronze	45	.110	.195
		(Reinforced)		.230	.306



ENDURPRENE BRIDLE WIRE

. . . for use in ring wiring, bridling and connecting open lines to cable terminals.

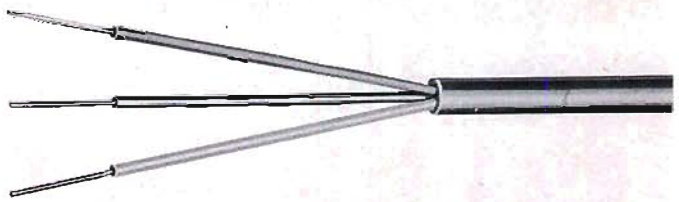
860050	20	Soft Copper	24	.085	.125
860051	20	Soft Copper	36	.085	.125
860052	18	Soft Copper	33	.105	.145
860053	18	Soft Copper	50	.105	.145



ENDURPRENE UNDERGROUND WIRE

. . . for use as direct underground burial or overhead extension of telephone circuits from open wire or distributing cable terminals to subscribers' stations.

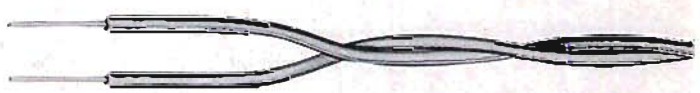
Kellogg Catalog Number	AWG	Type Conductor	Approx. Weight M Feet	Nom. Diam. Over Rubber Insulation	Nom. Diam. Over Neoprene Jacket
860100	16	Hard Copper	59	.132	.203
860102	14	Hard Copper	82	.168	.238
860104	12	Hard Copper	112	.195	.265



ENDURPRENE INSIDE-OUTSIDE STATION WIRE

. . . all neoprene station wire for use directly from outside station protector to inside station set. Brown colored weather resistant neoprene jacket with neoprene insulated conductors color coded in sequence, red—green—yellow—black.

860019	22	2	26	.070	.196
860020	22	3	28	.070	.207
860021	22	4	37	.070	.225



PLASTIC INSIDE TYPES WIRE
TWISTED INSIDE WIRE

. . . for extension of telephone circuits from arrestors and other terminating fixtures of outside lines to station sets. Furnished in brown or ivory color with ridges on insulation for polarity identification.

860150	22	2	9	.074	Brown
860151	22	2	9	.074	Ivory
860152	22	3	15	.074	Brown
860153	22	3	15	.074	Ivory
860154	19	2	15	.086	Brown
860155	19	2	15	.086	Ivory
860156	19	3	23	.086	Brown
860157	19	3	23	.086	Ivory

JACKETED INSIDE WIRE



. . . for extension of telephone circuits from arrestors and other terminal fixtures of outside lines to station sets. Furnished with brown or ivory jacket with conductors color coded in sequence, red—green—yellow. For use with stapling gun.

Kellogg Catalog Number	AWG	Number of Soft Copper Conductors	Approx. Weight M Feet	Nom. Diam. Over Plastic Insulation	Nom. Diam. Over Plastic Jacket	Jacket Color
860200	22	2	18	.056	.167	Brown
860201	22	2	18	.056	.167	Ivory
860202	22	3	19	.056	.167	Brown
860203	22	3	19	.056	.167	Ivory



GROUND WIRE

. . . for ground connections from station protector to ground.

Kellogg Catalog Number	AWG	Number of Soft Copper Conductors	Approx. Weight M Feet	Nom. Diam. Over Insulation	Colors
860450	14	1	19	.130	Brown, Ivory or Black



PARALLEL INSIDE WIRE

. . . for extension of telephone circuits from arrestors and other terminating fixtures of outside lines to station sets. Furnished in brown or ivory color with one tinned conductor for polarity identification.

Kellogg Catalog Number	AWG	Number of Soft Copper Conductors	Approx. Weight M Feet	Nom. Diam. Over Plastic Insulation	Colors
860250	22	2	9	.074 x .148	Brown
860251	22	2	9	.074 x .148	Ivory
860252	22	3	15	.074 x .222	Brown
860253	22	3	15	.074 x .222	Ivory



JUMPER, DUCT AND SWITCHBOARD WIRE

. . . for use in building conduit systems, ducts, distributing frames and cross connecting racks.

Kellogg Catalog Number	AWG	Number of Soft Tinned Copper Conductors	Approx. Weight M Feet	Nom. Diam. Over Plastic Insulation	Colors
860350	22	2	8	.056	Black & White
860351	22	2	8	.056	Red & White
860352	22	3	12	.056	Black, Red & White



DISTRIBUTING FRAME — NYLON JACKETED WIRE

. . . for use in building conduit systems, ducts, distributing frames and cross connecting racks. Jacketed with transparent nylon jacket for high abrasion resistance.

Kellogg Catalog Number	AWG	Number of Soft Tinned Copper Conductors	Approx. Weight M Feet	Nom. Diam. Over Nylon Jacket	Colors
860400	22	2	8	.056	Black & White
860401	22	2	8	.056	Red & White
860402	22	3	12	.056	Black, Red & White



SPLINTS, TIE WITH V SHAPED NOTCHES

These tie splints give better vibration dampening, a stronger grip on the line wire, and prevent contact between the line wire and insulators.

The core diameter of the spiral sections is slightly smaller than that of the line wire, thus producing increased vibration dampening. This greater grip holds the wire against slipping and tends to confine repair jobs for line breaks to only one span. Abrasion wear is practically eliminated as there is no contact between the insulator and line wire.

Supplied in sets with tie wires.

Order by Catalog No.

COPPER STEEL (Copper Clad) WIRE

Tie Splint Cat. No.	Line Wire Sizes	A.W.G. No.	Diameter Tie Splint	Tie Wire Cat. No.	Tie Wire Diameter	Tie Wire Length	Insulator
CT 880	.080	12	.081	CW-902	.080	26"	D.P. & Toll
CT 881	.104	10	.102	CW-903	.102	24"	C.S.C.
CT 881	.104	10	.102	CW-904	.102	28½"	D.P. & Toll
CT 882	.128	8	.128	CW-905	.102	28½"	C.S.C.
CT 882	.128	8	.128	CW-906	.102	32"	D.P.
CT 883	.165	6	.144	CW-907	.102	28½"	C.S.C.
CT 883	.165	6	.144	CW-908	.102	32"	D.P.

GALVANIZED STEEL WIRE

ST 884	.083		.109	GW-911	.083	26"	D.P. & Toll
ST 885	.109		.134	GW-912	.109	30"	D.P. & Toll
ST 886	.134		.134	GW-913	.109	30"	D.P. & Toll

SIZES SUGGESTED FOR USE ON R.E.A. TELEPHONE BORROWER'S SYSTEMS

Diamond Splints	Line Wire	Tie Wires Cat. No.	Wire Diam.	Length
CT-880	.080 Copperweld	CW-902	.080	26"
CT-881	.102 Copperweld	CW-909	.091	28½"
CT-881	.104 Copperweld or Copper	CW-909	.091	28½"
CT-882	.128 Copperweld or Copper	CW-906	.102	32"
ST-885	.109 Galv. Steel	GW-910	.095	30"
ST-886	.134 Galv. Steel	GW-913	.109	30"

PAGE DEAD END WIRES

Half-round wires, approximately 14" long, made of stainless steel (type 302, chrome 18/20%, nickel content 8/10%) Page Dead End Wires are used to take the strain from a telephone wire going from a pole to a house, at the house end.

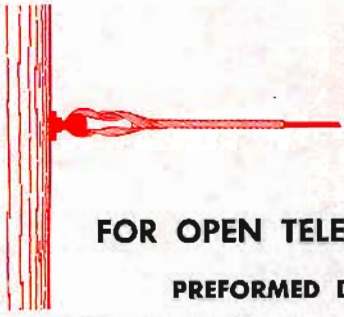
They are looped around an insulator screwed into the house. Then the two flat sides are brought together making a round wire which is inserted in one end of a sleeve (usually of soft copper) which is crimped on the Dead End Wire making a solid connection to the house.

The conductor comes into the other end of the sleeve and passes out through the middle going on into the house. After the conductor is pulled sufficiently tight between the pole and the house through the attaching sleeve, the sleeve is crimped on the conductor thus making the Dead End Wire and insulator take all the strain of the conductor from the pole to the house, and leaving the conductor free in a loop to go into the house and in to the telephone.

Sizes used:

.083"
.104"
.109"
.128"
.135"

in each case with round conductor of same size so a cylindrical sleeve fits both Dead End Wire and Conductor.



FOR OPEN TELEPHONE WIRE

PREFORMED DEAD-ENDS

Also available in galvanized steel and copperweld, Dead-Ends hold the full rated strength of the telephone wire. They are quickly, easily installed and eliminate looping the wire. No tools required.

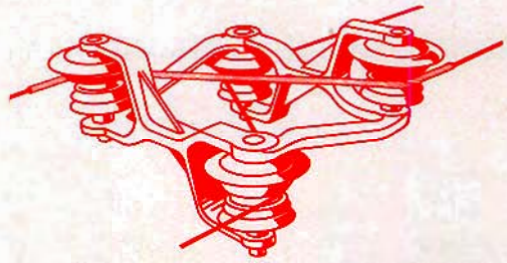
Catalog No.	Wire Size	Shipping Wt. Lbs./100
GALVANIZED STEEL		
11 GDE - 083	14 BWG	6
12 GDE - 109	12 BWG	9
13 GDE - 134	10 BWG	15
COPPERWELD		
11 CWDE - 080	.080	7
12 CWDE - 102	10 AWG	12
12 CWDE - 104	.104	12
13 CWDE - 128	8 AWG	16
12 CWDE - 104	.104	12
13 CWDE - 128	8 AWG	16



PREFORMED SPLINT-AND-TIES

Preformed Splint-and-Ties are flexible, have high strength and are easy to apply. They reinforce the conductor and provide protection during the life of the line . . . eliminate wear and chafing and resist slippage.

Catalog No.	Line Size	Shipping Wt. Lbs./1000 units
GALVANIZED STEEL		
GS 1314 A	14 BWG	75
GS 1213 A	12 BWG	109
GS 1012 A	10 BWG	175
COPPERWELD		
CW 1011 A	.080	72
CW 911 A	10 AWG	86
CW 911 A	.104	86
CE 710 A	8 AWG	134
COPPER		
CU 1011 A	.104	75
CU 910 A	8 AWG	104

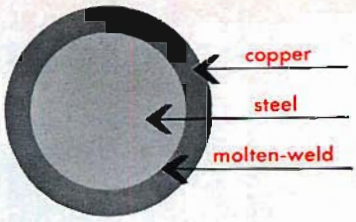




PREFORMED SPLICES

No tools are required. Splices completely restore the strength to the line wire. Two lengths are available: 12" splices for damage at tie points or out on the line, and 24" splices for damage at transposition points. Available in galvanized steel, copperweld and bronze.

Catalog No.	Messenger Size	Shipping Wt. Lbs./11 Splices
GALVANIZED STEEL		
10 GLS - 083	14 BWG	6
22 GLS - 083	14 BWG	13
12 GLS - 109	12 BWG	9
24 GLS - 109	12 BWG	18
14 GLS - 134	10 BWG	16
26 GLS - 134	10 BWG	29
COPPERWELD		
10 CWLS - 080	.080	8
22 CWLS - 080	.080	20
12 CWLS - 102	10 AWG	12
24 CWLS - 102	10 AWG	25
12 CWLS - 104	.104	12
24 CWLS - 104	.104	25
14 CWLS - 128	8 AWG	17
26 CWLS - 128	8 AWG	36
COPPER		
12 CWLS - 104	.104	12
24 CWLS - 104	.104	25
14 CWLS - 128	.128	17
26 CWLS - 128	.128	36



WHAT IS COPPERWELD?

Copperweld Wire successfully combines the best characteristics of copper and steel. It consists of a copper exterior permanently Molten-Welded to a strong steel core. The result of this unique union is a material that resists rust and corrosion like copper, assures adequate electrical conductivity and provides permanent high strength. These qualities make Copperweld Wire exceptionally well suited for many applications in the telephone field.

COPPERWELD TELEPHONE LINE WIRE

Copperweld "talks better" than any other high-strength conductor. It's strong, non-rusting, light in weight. Economical and easy to string, it's unequaled for long life, long-span construction. Use .080" — 30 E.H.S. for short subscriber loops and secondary toll lines — and .104" — 40 H.S. for toll lines and long subscriber loops.



COPPERWELD TELEPHONE LINE WIRE

Kellogg Code No.	CONDUCTOR Size and Type	DIAMETER Inch	BREAKING STRENGTH	WEIGHT Lbs. per 1,000 ft.	WEIGHT Lbs. per Mile	DC RESISTANCE Ohms per 1,000 ft. at 68°F.	CROSS SECTION Sq. In.	TRANSMISSION CHARACTERISTICS AT 1 KC PER SECOND Transmission Equivalent Decibels (db) per Loop Mile Dry	Wet	Characteristic Impedance (Z) Ohms per Loop Mile
850032	.128" H.S. 40% Cond.	.128	1,647	45.47	240.1	1,614	.01287	.107	.111	710
850031	.104" H.S. 40% Cond.	.104	1,177	30.01	158.5	2,445	.008495	.144	.152	800
850025	.080" E.H.S. 30% Cond.	.080	900	17.76	93.77	5,509	.005027	.256	.262	1,100
850026	.080" H.S. 40% Cond.	.080	770	17.76	93.77	4,133	.005027	.213	.219	980



COPPERWELD GRIP-FLEX INSULATOR TIES

The preformed Copperweld Grip-Flex Insulator Tie assures uniformity of construction — reinforces the conductor over the entire length of the tie — and prevents chafing of conductors. It's strong, non-rusting, simple in design, easy and inexpensive to apply.

COPPERWELD GRIP-FLEX INSULATOR TIES

Kellogg Code No.	LINE WIRE Size Inch	COMPLETE GRIP-FLEX TIE Catalog Number	COMPLETE GRIP-FLEX TIE Approx. Weight per 100 Ties	REINFORCING WIRE ONLY Catalog Number	REINFORCING WIRE ONLY Approx. Weight per 100 pcs.	BINDING WIRE ONLY Catalog Number	BINDING WIRE ONLY Approx. Weight per 100 pcs.
799022	.128	GFC-78	14 lbs.	R-78	8 lbs.	B-78	6 lbs.
799020	.104	GFC-910	8 lbs.	R-910	4 lbs.	B-910	4 lbs.
799021	.080	GFC-1012	7 lbs.	R-1012	3 lbs.	B-1012	4 lbs.

COPPERWELD GUY STRAND

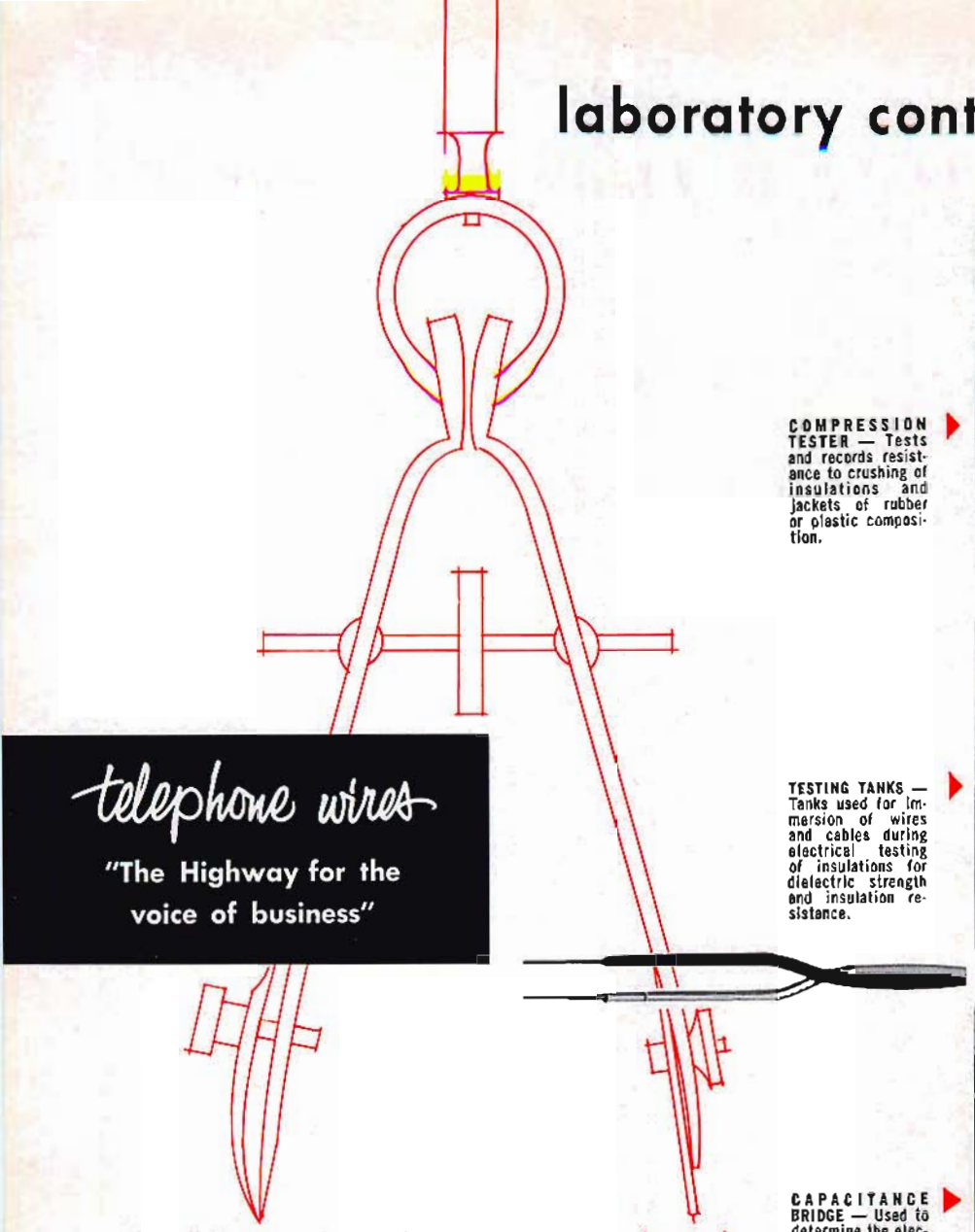
These non-rusting Copperweld Guys match the life of the line, while rustable guys invite replacement costs. Use 3 No. 8 Copperweld for 6M breaking loads, 3 No. 10 for 4M, and 3 No. 12 for 2.2M. Easy to handle, these lifetime Copperweld Guys cost little more than rustable guys of comparable strengths.



COPPERWELD GUY STRAND

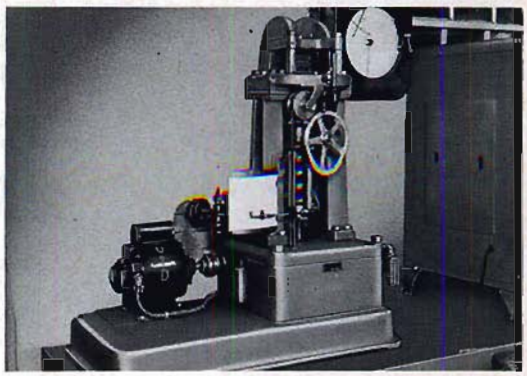
Nominal Diameter (Inch) Size Awg	Actual Diameter (Inch)	BREAKING LOAD Lbs. High Strength	BREAKING LOAD Lbs. Extra High Strength	WEIGHT Lbs. Per 1000 Ft.	WEIGHT Lbs. Per Mile	Cross-Section Sq. In.	Ft. per Pound
3/8 (7 No. 8)	.385	11,440	13,890	323.9	1,710	.09077	3.087
5/16 (7 No. 10)	.306	7,758	9,196	203.7	1,076	.05708	4.909
3 No. 8	.277	5,174	6,282	138.5	731.5	.03890	7.218
3 No. 10	.220	3,509	4,160	87.13	460.0	.02446	11.47
3 No. 12	.174	. . .	2,565	54.80	289.3	.01539	18.25

laboratory control and inspection

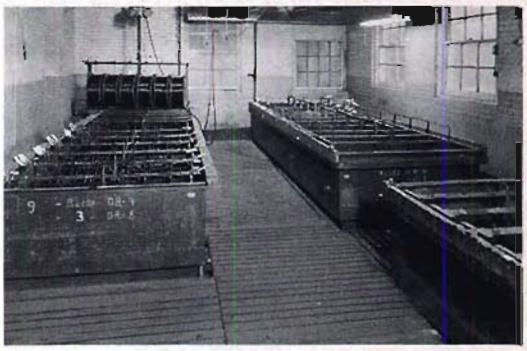


telephone wires

"The Highway for the voice of business"



COMPRESSION TESTER — Tests and records resistance to crushing of insulations and jackets of rubber or plastic composition.



TESTING TANKS — Tanks used for immersion of wires and cables during electrical testing of insulations for dielectric strength and insulation resistance.



CAPACITANCE BRIDGE — Used to determine the electrostatic capacitance and dissipation factors of insulations.



LOW TEMPERATURE CABINETS AND RECORDING INSTRUMENTS — Used to determine the flexibility of insulations and jackets when subjected to sub-zero temperatures.

Lowell Neoprene Jacketed Telephone Wires are designed to provide the user with maximum performance and durability, and to guarantee long life, which results in lower average installation and replacement costs.

Lowell's Neoprene Jacket Compound is highly resistant to oils, acids, alkalies, etc.; and to natural aging, sunlight, weather, and abrasion.

A high grade rubber compound provides insulation with excellent electrical and physical characteristics. The best obtainable conductors of high tensile strength are coated with lead for corrosive resistance and plated with brass (brass flashed) for lasting adhesion between conductor and insulation.

LEGEND FOR CATALOG NUMBERS

L — Lowell; N — Neoprene; D — Dumb-Bell; R — Reinforced. These letters precede conductor size number as 18 (AWG) size of conductor.

T — Twisted; D — Drop; B — Bridle; O — Outside Distributing; U — Underground. Numbers 2, 3 or 4 follow type letters such as TD or PD, TO or TB. Eg. LNR18PD2 — Lowell Neoprene Reinforced No. 18 AWG Parallel Drop Wire (Copperweld).

"FINE WIRE ONLY"

LOWELL INSULATED WIRE COMPANY

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

Select DIAMOND RED TELEPHONE WIRE

Diamond Wire and Cable has been continuously serving the electrical trade for over half a century.

Diamond Red — D Product quality, assured through research and manufacturing control, is a constant program at Diamond. This, plus new product design and technical service assistance guarantees customer satisfaction in the use of Diamond Red—D products.



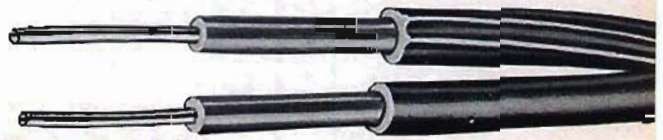
"jumper wire"
1—INSIDE WIRE
2—OUTSIDE WIRE



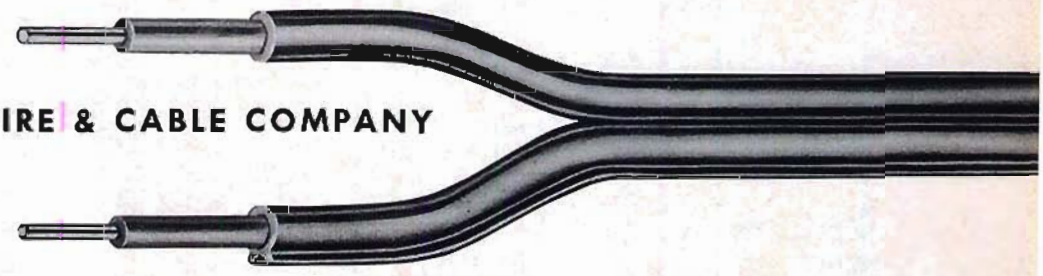
drop wire
"PARALLEL REINFORCED NEOPRENE"



"parallel"
DROP WIRE



"twisted pair"
NEOPRENE
DROP WIRE



drop wire
"PARALLEL DUMB-BELL NEOPRENE"

DIAMOND WIRE & CABLE COMPANY

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-59

WIRE, STEEL LINE



Crapo High-Tensile, Low-Resistance Telephone Wire

CRAPO HTL-85 HIGH TENSILE

Provides for spans of 210 feet in heavy loading districts, 330 feet in medium loading districts and 440 feet in light loading districts. It is extra galvanized by the Crapo Process.

Kellogg Code No.	Size B.W.G.	Nom. Diam. (Inches)	Wt. per Mile (Pounds)	Min. Breaking Strength (lb.)	Max. Resistance Ohms per Mile
850084	9	.148	314	1,462	18.47
850085	10	.134	258	1,199	22.48
850079	12	.109	170	793	34.12
850083	14	.083	99	460	58.59

Nominal Coil Length — ½ Mile

Copyright 1945 by Indiana Steel & Wire Co.

CRAPO HTL-135 EXTRA HIGH TENSILE

For extra long spans of 350 feet in heavy loading districts, 540 feet in medium loading districts and 650 feet in light loading districts. Galvanized by time-tested Crapo Process.

Kellogg Code No.	Size B.W.G.	Nom. Diam. (Inches)	Wt. per Mile (Pounds)	Min. Breaking Strength (lb.)	Max. Resistance Ohms per Mile
850080	12	.109	170	1,213	38.23

Nominal Coil Length — 4,659 feet.

Copyright 1945 by Indiana Steel & Wire Co.

CRAPO HTL-190 EXTRA HIGH TENSILE

Provides spans of 600 feet in heavy loading districts, 650 feet in medium loading districts and 700 feet in light loading districts. Galvanized by Crapo Process to insure a uniform, tightly adherent zinc coating.

Kellogg Code No.	Size B.W.G.	Nom. Diam. (Inches)	Wt. per Mile (Pounds)	Min. Breaking Strength (lb.)	Max. Resistance Ohms per Mile
850081	12	.109	170	1,800	47.1

Nominal Coil Length — 4,659 feet.

Copyright in 1951 by Indiana Steel & Wire Co.

CRAPO EXTRA GALVANIZED TELEPHONE AND TELEGRAPH WIRE BB and EBB GRADES

Kellogg Code No.	Size B.W.G.	Nom. Diam. (Inches)	Wt. per Mile (Pounds)	Minimum Breaking Strength (lb.) BB	Minimum Breaking Strength (lb.) EBB	Maximum Resistance Ohms per Mile BB	Maximum Resistance Ohms per Mile EBB
850075	6	.203	590	1,652	1,475	9.83	8.22
850076	9	.148	314	879	785	18.47	15.44
850077	10	.134	258	722	645	22.48	18.79
850078	12	.109	170	476	425	34.12	28.52
850082	14	.083	99	277	247	58.59	48.98



STRAND

Crapo Galvanized Steel Guy and Messenger Wire

Crapo Galvanized Steel Strand is furnished in the following standard lengths: ⅜-inch diameter and smaller in 250, 500 and 1,000-foot coils and 2,500 and 5,000-foot reels; 7/16-inch diameter and larger in 250 and 500-foot coils and 1,000, 2,500 and 5,000-foot reels.

Available in Class A, B, and C Coatings.

7 Wire, Specification Grade

Uitlities Grade — Western Union — AT&T

Kellogg Code No.	Nom. Size (Inches)	Nom. Diam. Wire (In.)	Wt. per 1000 Ft. (Pounds)	Min. Strength (Pounds)
755400	3/16 (2.2M)	.065	80.3	2,400
755401	9/32 (4M)	.093	164	4,600
755402	5/16 (6M)	.109	225	6,000
755403	⅜ (10M)	.120	273	11,500
755404	7/16 (16M)	.145	399	18,000
755405	½ (25M)	.165	517	25,000

7 Wire, Common Grade

Kellogg Code No.	Nom. Size (Inches)	Nom. Diam. Wire (In.)	Wt. per 1000 Ft. (Pounds)	Min. Strength (Pounds)
755001	3/16	.062	72.9	1,150
755002	¼	.080	121	1,900
755003	5/16	.104	205	3,200
755004	⅜	.120	273	4,250
755005	7/16	.145	399	5,700
755006	½	.165	517	7,400

7 Wire, Siemens Martin Grade

Kellogg Code No.	Nom. Size (Inches)	Nom. Diam. Wire (In.)	Wt. per 1000 Ft. (Pounds)	Min. Strength (Pounds)
755100	3/16	.062	72.9	1,900
755101	¼	.080	121	3,150
755102	5/16	.104	205	5,350
755103	⅜	.120	273	6,950
755104	7/16	.145	399	9,350
755105	½	.165	517	12,100

7 Wire, High Strength Grade

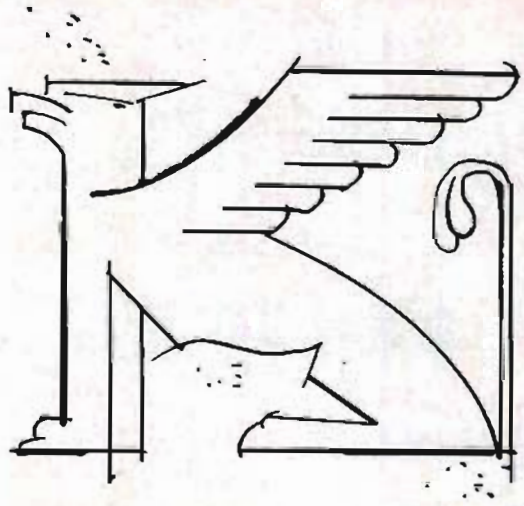
Kellogg Code No.	Nom. Size (Inches)	Nom. Diam. Wire (In.)	Wt. per 1000 Ft. (Pounds)	Min. Strength (Pounds)
755200	3/16	.062	72.9	2,850
755201	¼	.080	121	4,750
755202	5/16	.104	205	8,000
755203	⅜	.120	273	10,800
755204	7/16	.145	399	14,500
755205	½	.165	517	18,800

7 Wire, Extra Strength Grade

Kellogg Code No.	Nom. Size (Inches)	Nom. Diam. Wire (In.)	Wt. per 1000 Ft. (Pounds)	Min. Strength (Pounds)
755300	3/16	.062	72.9	3,990
755301	¼	.080	121	6,650
755302	5/16	.104	205	11,200
755303	⅜	.120	273	15,400
755304	7/16	.145	399	20,800
755305	½	.165	517	26,900

protective equipment and terminals

4











FUSES, RELIABLE MICA

Provided with copper terminals, these fuses are stocked in ¼ and ½ amperes. The enclosed type will be shipped unless otherwise specified. Order by catalog number and amperage desired.

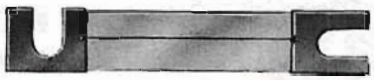
Special mica and fibre fuses can be furnished promptly.

WESTERN UNION TYPE



Kellogg Code No.	Catalog No.	Length (Inches)	Width
415002	8	2⅛	⅜
415005	19	2	⅜
415008	22	2½	½

POSTAL TYPE

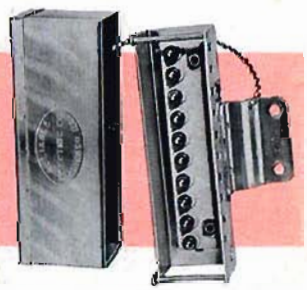


Kellogg Code No.	Catalog No.	Length (Inches)	Width
415028	11	2⅛	⅜
415007	21	2	⅜
415030	25	2½	½
415026	137	1⅞ or 2	¼

Standard Package: 50. Shipping Weight: ½ lb. per 100.

WIRE TERMINALS
Protected and Unprotected

Wire Terminals listed for 1, 5, 6, 11 and 16 pair provide a junction point between drop wire and bridle wire; between drop wire and Rural Distribution Wire; for terminating plastic jacketed cable. These terminals are made in three categories: Unprotected; Cable protection; Multiple fuseless station protection. All terminals are supplied with bracket for pole, crossarm or wall mounting. Ground lugs are provided along with ample nuts and washers on each binding post.



The Unprotected terminals in all sizes are used as distribution or termination points for the Rural Distribution Wires or plastic jacketed cables, providing a weather tight junction point to connect drop wires and bridle wires to the RD Wire or plastic cable. These terminals use either a porcelain or a resin filled shell binding post block enclosed in a formed or cast aluminum housing.



Cable protected terminals, using Reliable No. 506 Protector Units, provide for lightning discharges, power fault current, and can be used as protected distribution terminals or lightning arresters. Station protected terminals, using Reliable No. 504 Protector Units, are well suited for termination of plastic jacketed cables where multiple fuseless station protection is required. Binding post blocks on all protected terminals are resin-filled shells in cast aluminum housings.

WIRE TERMINAL BLOCKS

The Wire Terminal Blocks are the same as used in the protected and unprotected wire terminals. They are furnished less housing for use in building boxes or similar type installations.

WIRE TERMINALS

For use as junction point between drop wire and bridle wire; drop wire and Rural Distribution Wire in sizes 1, 5, 6, 11and 16 pair. Also used for terminating plastic jacketed cable.

No. 506 Protector Unit—Cable Protection
No. 504 Protector Unit—Station Protection

Catalog No.	Capacity (Pairs)	Type of Block	Protector Unit No.	Shpg. Wt. Lbs. Each
5502	1	Porcelain	Unprotected	1
*5503	5	Porcelain	Unprotected	2
†5504	6	Resin filled	504	5
†5505	6	Resin filled	Unprotected	4
†5506	6	Resin filled	506	5
*5507	6	Porcelain	Unprotected	2
†5509	6	Porcelain	Unprotected	5
†5524	11	Resin filled	504	6
†5525	11	Resin filled	Unprotected	5
†5526	11	Resin filled	506	6
†5544	16	Resin filled	504	8
†5545	16	Resin filled	Unprotected	6
†5546	16	Resin filled	506	8

* Formed aluminum housing for pole or cross arm mounting.
† Cast aluminum housing for strand, pole or wall mounting.

WIRE TERMINAL BLOCKS

These blocks are identical to the ones used in the above Wire Terminals. Used in building boxes or similar type housings.

5514	6	Resin filled	504	2
5515	6	Resin filled	Unprotected	1
5516	6	Resin filled	506	2
5517	6	Porcelain	Unprotected	1

PROTECTORS, RELIABLE No. 955 STATION



Self-cleaning, saw-tooth, air gap protector for indoor use. Consists of low absorption porcelain base, phosphor bronze fuse clips and discharge block springs and heavy binding posts, two No. 55L, 7

ampere, ceramic fuses, bakelite screw cover over two No. P-495 sawtooth discharge blocks and two No. P-197 carbons.

Other fuse capacities will be supplied on these protectors when specified.

Mounting holes are 3/16-inch.

Kellogg Code No.	Cat. No.	Size	Shpg. Wt. Ea.
680050	955	5 5/16 x 3 1/2 inches	2 lbs.

PROTECTORS, RELIABLE No. 955-A STATION

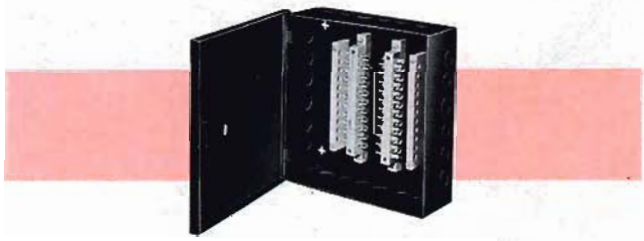
Listed as Standard by Underwriters' Laboratories.

Same as No. 955 except equipped with clips which bite into the tips of the two No. 77L, 7 ampere, ceramic fuses.

Kellogg Code No.	Cat. No.	Size	Shpg. Wt. Ea.
680051	955-A	5 5/16 x 3 1/2 inches	2 lbs.

Other fuse capacities are available for all protectors.

Listed as Standard by Underwriters' Laboratories.



BUILDING TERMINAL BOXES

Reliable Building Terminal Boxes (listed by Underwriters') are provided with numerous knockouts at top and bottom. Surface mounted boxes for distributing and terminating lead covered cable can also be supplied for flush mounting. Boxes are provided with fanning strips and terminal strips having screw binding posts for distributing wires, and soldering terminals for cable wires.

Type E equipped with Type E Terminal Strips

Kellogg Code No.	Catalog No.	Pairs Per Row	Rows of Terminals	Width Inches	Height Inches	Depth Inches	Shpg. Wt. Lbs. Ea.
135160	E 11	11	1	6	10	4	7
135161	E 16	16	1	6	16	4	8
135162	E 22	11	2	12	12	4	10
135163	E 26	13	2	12	16	4	14
135164	E 32	16	2	12	16	4	15
135165	E 52	26	2	12	20	4	19
135166	E104	52	2	12	40	4	34
135167	E208	52	4	24	48	4	125

Type EC for cross connecting cables. Equipped with jumper rings and space for jumper wires

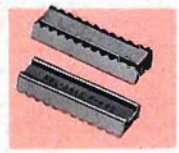
135170	EC 52	26	2	12	20	4	16
135171	EC104	26	4	24	24	4	45
135172	EC208	52	4	24	48	4	125

BLOCKS, RELIABLE SAWTOOTH DISCHARGE

The new improved Reliable self-cleaning sawtooth discharge blocks offer the highest standard of protection for uninterrupted service. They eliminate dirty carbon trouble, dissipate static discharges with no time lag, and do not ground the line unnecessarily. They operate in the plant just as sensitively as carbon to carbon discharge gaps and have none of the latter's faults. Carbon ground blocks of various shapes and thicknesses adapt the discharge block to fit any lightning arrester or cable terminal which uses standard carbon or copper blocks.

P495 discharge blocks are used in the following Reliable equipment:

Types RP 27 and RP 56 Protected Cable Terminals
Types 1000, 1000H and 1000F Outdoor Station Protectors
Type 222 Ten Wire Cross Arm Arrester
Type 402RR Two Wire Cross Arm Arrester
Types 955 and 955A Indoor Station Protectors
Types 977AA and 977HH Indoor Station Protectors
Types 303F and 303H Central Office Protectors



P495L discharge blocks are used in the following Reliable equipment:

Type 222 Ten Wire Cross Arm Arrester
Type 402RR Two Wire Cross Arm Arrester
Type B Cable Terminal
Type RP Cable Terminal

P495 and P495L self-cleaning sawtooth discharge blocks can also be used in other types of telephone protection equipment.



P308 self-cleaning sawtooth discharge blocks are used in 308F and 308H central office protectors.

Kellogg Code No.	Catalog No.	Description	Wt. Per 100
105023	P495	Discharge Block	1 lb.
105032	P495L	Discharge Block	1 lb.
105028	P308	Discharge Block	1 lb.

CARBON BLOCKS

Kellogg Code No.	Catalog No.	Description	Size - Inches
105027	P197	Grooved Carbon Block	1 1/4 x 25/64 x 1/4

USED WITH — 955, 995A, 977AA Indoor Arresters 1000, 1000H, 1000F Outdoor Protectors P495 and P495L Sawtooth Discharge Block.

105024	P663	Carbon Block	1 1/4 x 25/64 x 3/16

USED WITH — 22 and 402RR Arresters Type RP Terminals.

105031	P1384	Carbon Block	1 1/4 x 25/64 x 7/32

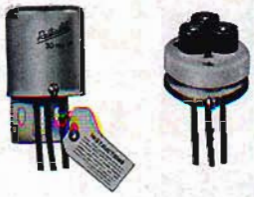
USED WITH — Type B Terminals.

ARRESTERS, RELIABLE No. 402RR OUTDOOR

Weatherproof, self-cleaning sawtooth air gap arrester for outdoor use, used to discharge static at the telephone station or to drain exposed lines. Consists of metal cover and mounting bracket, porcelain base, two No. P495L self-cleaning sawtooth discharge blocks and two No. P663 carbons. Mounting bracket has two 3/16-inch holes for mounting.



Kellogg Code No.	Catalog No.	Height	Diameter	Std. Pkg.	Shpg. Wt. Each
925103	402RR	8 1/2 inches	3 inches	2	2 3/4 lbs.



HIGH VOLTAGE PROTECTORS

This Reliable protector is a high voltage, high current unit, factory wired for use on communication lines joint with power conductors and at power crossing conflicts. The unit may also be used as a high current lightning arrester for two wires. The unit consists of three heavy duty, cylindrical carbon electrodes mounted on a steatite ceramic base which is attached to an aluminum bracket covered with a weather-tight bugproof drawn aluminum shell. Cover is secured to the bracket base with a screw clamp and can be removed for inspection. One 6 ft. and two 2 ft. No. 10 insulated copper conductors enter the base through neoprene grommets. Wires are permanently connected to the carbon electrodes by solderless method.

Kellogg Code No.	Catalog No.	Approximate Air Gap Breakover	Shpg. Wt. Lbs. Ea.	Std. Pkg.
925109	20HVP	2000 volts	1¼	1
925101	30HVP	3000 volts	1¼	1

PROTECTORS, RELIABLE No. 1000 OUTDOOR



Listed as Standard by Underwriters' Laboratories.

The fuses and air gaps are for protection against static and crosses with electric circuits. Equipped with a weatherproof extruded aluminum cover which cannot be contacted with line fuse clips.

The No. 1000 protector has ample space for terminating wires. Beveled washers also simplify installation of wires.

Has special, low absorption porcelain, treated binding posts and phosphor bronze clips and springs. 1000, 1000H and 1000F equipped with Reliable No. P495 self-cleaning sawtooth discharge blocks and No. P197 carbons.

Mounting bracket has two 5/32-inch mounting holes.

Other fuse capacities will be supplied on these protectors when specified.

Kellogg Code No.	Catalog No.	Fuse No.	Amperes	Fuse	Size (Inches)
680056	1000	55L	7	Ceramic	5¾x3½x2¼
680059	1000H	77L	7	Ceramic	6½x3½x2¼
680058	1000F	27L	7	Ceramic	6½x3½x2¼

Shipping weight each, 1¾ lbs.

TERMINALS, RELIABLE RUG UNDERGROUND

To be mounted in a manhole for the termination and distribution of underground cable systems. Unprotected type.

The rugged cast iron housing is thoroughly hot galvanized. The binding posts, set in a bakelite face plate, are treated to prevent season cracking and are provided with beveled washers to facilitate wiring.



Brass plugs on the outside of RUG terminals are removed to insert solder dipped stuffing boxes which accommodate entering instrument cables. Each stuffing box will accommodate one or two pair, lead covered cable and form a gas tight entrance for the cable. They are rugged in construction, yet easy to install. When ordering specify the number of stuffing boxes required.

This terminal is furnished with a 6 ft. or 15 ft. cable stub attached. When ordering specify which length stub is required.

Kellogg Code No.	Catalog No.	Capacity (Pairs)	Height (Inches)	Weight 6 Ft. Stub	Weight 15 Ft. Stub
790431	RUG 11	11	8½	26 lbs.	32 lbs.
790433	RUG 16	16	10½	32 lbs.	37 lbs.



FUSES, RELIABLE TERMINAL AND PROTECTOR

Sizes and types for every telephone protector and cable terminal supplied in wood, fibre or ceramic. When ordering, specify catalog number and amperage desired. Unless amperage is on order, seven ampere fuses will be supplied. Also available in one, three and five amperage capacities.

TIP DIAMETER: 13/64 inches

Kellogg Code No.	No. Catalog	Material	Length—Shoulder To Shoulder (Inches)	Shpg. Wt. Lbs. Per C
415011	27L	Ceramic	4¾	7
415015	35L	Ceramic	3⅞	5
415022	*77L	Ceramic	4¾	6
415025	95L	Ceramic	4	5
415013	31L	Ceramic	3	4
TIP DIAMETER: 11/64 inches				
415036	106	Fibre	3⅛	3

FUSES, 3/8-INCH NUTTED ENDS

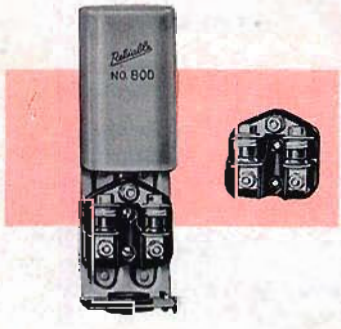
FUSE DIAMETER: 7/16 inch				
415018	53L	Ceramic	3¾	5
415020	*55L	Ceramic	4⅛	5

* Approved and listed by Underwriters' Laboratories in 7 ampere capacity.

FUSES, 7/16-INCH NUTTED END, 8-32 THREADED TIP

FUSE DIAMETER: 7/16 inch				
415021	56	Fibre	4⅛	5

FUSELESS STATION PROTECTORS



The Reliable Fuseless Station Protectors provide one unit for indoor mounting (Catalog No. 700) and the same unit in a weatherproof housing for outdoor mounting (Catalog No. 800).

Both protectors use the No. 504 Protector Units which provide carbon to carbon air gap protection, and a secondary ground-

ing element for high currents. The Protector Unit grounds permanently only when necessary.

Kellogg Code No.	Catalog No.	Shpg. Wt. Lbs. Per C	Std. Pkg.
680065	700 Protector	27	2
680054	800 Protector	40	2
680060	504 Protector Unit	2½	10

TERMINAL, RELIABLE RP 27 CABLE



The RP is a six pair reversible, protected cable terminal. It is compactly designed and made of corrosion resistant aluminum alloy throughout,

A sliding cover is provided, making the terminal reversible and eliminating the other of handling separate types for installation with stub at top and bottom.

Protection consists of two No. 27L 5 ampere ceremic fuses, two No. P495L sawtooth discharge blocks, and two P663 carbons per pair.

The mouting bracket is detachable for easy installation, and has four 7/16-inch holes for mounting.

This terminal is shipped with or without a 6 foot, 22 B&S gauge cable stub attached. When ordering be sure to specify with or without stub.

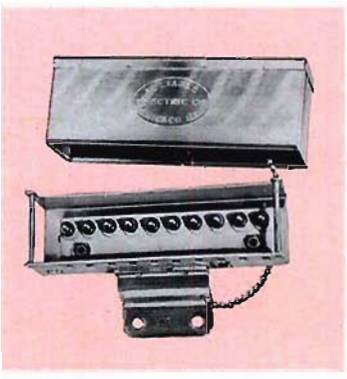
Kellogg Code No.	Catalog No.	Capacity	Height	Shpg. Wt.
790454	RP 27	6 pair less stub	11 in.	9 lbs.
790449	RP 27	6 pair with stub	11 in.	15 lbs.

TERMINAL RELIABLE RP 56 CABLE

Same as No. RP 27 except equipped with No. 56, 5 ampere fibre fuses. Protected type terminal.

Kellogg Code No.	Catalog No.	Capacity	Height	Shpg. Wt.
790456	RP 56	6 pair less stub	11 in.	9 lbs.
790455	RP 56	6 pair with stub	11 in.	15 lbs.

ARRESTER, RELIABLE No. 222 OUTDOOR



The No. 222 ten - wire cross arm arrester drains static from exposed lines. It is very sensitive and is used in connection with unprotected cable terminals where open wire or drop wire leads are too long to be left unprotected. It is also of outstanding value when placed on open wire one to three poles from a protected terminal. In locations where static is very troublesome, cross arm arresters should be placed at frequent intervals.

Equipped with ten P495L self-cleaning sawtooth discharge blocks and ten P663 carbons.

Mounting bracket has 5/16-inch holes for lag screws.

Kellogg Code No.	Catalog No.	Size (Inches)	Shpg. Wt. Lbs. Each
925102	222	8¼ x 3⅛ x 4½	4

TERMINALS, RELIABLE No. B 27 CABLE



B 27 protected cable terminal provides a perfect means of terminating lead covered cable and gives high grade protection and excellent facilities for drop wire distribution. It is all metal yet is light in weight.

Protection consists of two No. 27L, 5 ampere ceramic fuses of the snap-in type, two No. P495L self-cleaning sawtooth discharge blocks and two No. P1384 carbons per pair.

The cable chamber is on the pole side and if necessary is easily accessible by removing the terminal from the bracket for work on the platform. The cable chamber is air-tight with a flat neoprene gasket which thoroughly seals it. Cable wires are terminated in hollow studs and can be soldered outside of the cable chamber.

All drop wiring is done on the side away from the pole, giving perfect visibility and convenience. There are individual clips for carbons and fuses to prevent the blocks from crossing when removing fuses. It is unnecessary to remove when installing drop wires as all binding posts are at right angles to the fuses. These heavy binding posts are treated to prevent season cracking. They are mounted in molded bakelite and cannot short or turn.

A detachable mounting bracket simplifies installation — it has four 7/16-inch holes for mounting.

This terminal can be furnished with a 7-foot, 22 B.&S. gauge, double paper wrapped cable stub attached. When ordering be sure to specify with or without stub.

Kellogg Code No.	Catalog Number	Capacity	Height Overall	Weight
790393	B 27	11 pair (less stub)	14½ in.	11 lbs.
790394	B 27	16 pair (less stub	17½ in.	13 lbs.
790395	B 27	26 pair (less stub)	23¾ in.	21 lbs.
790390	B 27	11 pair (with stub)	14½ in.	17 lbs.
790391	B 27	16 pair (with stub)	17½ in.	19 lbs.
790392	B 27	26 pair (with stub)	23¾ in.	27 lbs.

TERMINALS, B 55 CABLE

Same as B 27 except equipped with No. 55L, 5 ampere ceramic fuses. Protected type.

Kellogg Code No.	Catalog Number	Capacity	Height Overall	Weight
790399	B 55	11 pair (less stub)	14½ in.	11 lbs.
790400	B 55	16 pair (less stub)	17½ in.	13 lbs.
790401	B 55	26 pair (less stub)	23¾ in.	21 lbs.
790396	B 55	11 pair (with stub)	14½ in.	17 lbs.
790397	B 55	16 pair (with stub)	17½ in.	19 lbs.
790398	B 55	26 pair (with stub)	23¾ in.	27 lbs.

TERMINALS, B 56 CABLE

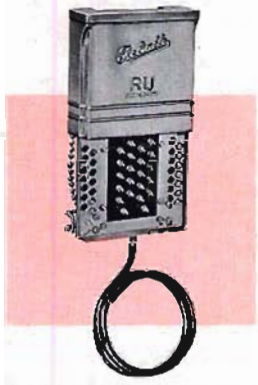
Same as B 27, except equipped with No. 56, 5 ampere screw type fibre fuses. Protected type.

(Continued on next page)

Kellogg Code No.	Catalog Number	Capacity	Height Overall	Weight
790405	B 56	11 pair (less stub)	14½ in.	11 lbs.
790406	B 56	16 pair (less stub)	17½ in.	13 lbs.
790407	B 56	26 pair (less stub)	23¾ in.	21 lbs.
790402	B 56	11 pair (with stub)	14½ in.	17 lbs.
790403	B 56	16 pair (with stub)	17½ in.	19 lbs.
790404	B 56	26 pair (with stub)	23¾ in.	27 lbs.

TERMINALS, RELIABLE RU CABLE

A reversible, unprotected type cable terminal with an aluminum cable chamber. The face plate is molded bakelite and the terminal binding posts are seated in back to prevent turning.



The design of this terminal with its perfectly sealed cable nozzle and indirect openings for the drop wires creates an unusually weather-proof box.

The rigid cover is made of aluminum alloy. Gravity catches are provided on the fanning plate to hold the cover in a raised position. The terminal is equipped with a detachable mounting bracket for easy installation. The bracket has four 7/16-inch holes for mounting and is secured to the terminal with a bead chain.

This terminal can be furnished with or without a 6-foot 22 B&S gauge cable stub attached. When ordering be sure to specify with or without stub.

Kellogg Code No.	Catalog Number	Capacity (Pairs)	Height (Inches)	Weight
790424	RU 6	6 less stub	11	5 lbs.
790425	RU 11	11 less stub	11	6 lbs.
790426	RU 16	16 less stub	12½	7 lbs.
790427	RU 26	26 less stub	16	11 lbs.
790420	RU 6	6 with stub	11	9 lbs.
790421	RU 11	11 with stub	11	10 lbs.
790422	RU 16	16 with stub	12½	11 lbs.
790423	RU 26	26 with stub	16	17 lbs.

TYPE ST STRAND CABLE TERMINALS

PROTECTED AND UNPROTECTED

These Cable Terminals, for strand, pole and wall mounting, employ reinforced cast resin binding post terminal blocks with a choice of lead sheathed paper insulated or plastic sheathed, plastic insulated cable stubs. Terminals are suitable for use in cable systems maintained under gas pressure. They are made in 3 categories: Unprotected; Cable protection; Multiple fuseless station protection.

The cast aluminum alloy housings of the 6, 11 and 16 pair terminals are equipped with stub cable entrance holes at opposite ends for reversal of stubs. All housings have individual drop wire entrance grommets, keeping the terminal weathertight and bugproof. All metallic parts are aluminum or stainless steel to minimize corrosion.

The 26 pair terminal housing and stub are reversible without changing the terminal block. Bracket furnished for pole mounting on 26 pair only. Protection is not lost when terminal cover is opened.

TYPE ST CABLE TERMINAL BLOCKS

The ST Cable Terminal Blocks are the same blocks as used in the ST type terminals, protected and unprotected. They are furnished less housing, and supplied with the standard stub.

THE PROTECTOR UNIT

All parts for the No. 504 and No. 506 Protector Units can be removed from the housing and cleaned or replaced.

Strand Mounted — 6, 11 and 16 pair. Pole and Wall Mounted — 6, 11, 16 and 26 pair. Mounting brackets are listed separately for 6, 11 and 16 pair. Bracket is supplied with 26 pair. All terminals are supplied with 24 gauge double paper insulated lead sheath cable stubs. 24 gauge plastic stubs may be ordered at no additional charge. Add "A" suffix to catalog number if polyethylene plastic stub is desired, or "B" suffix for polyvinyl chloride plastic stub. For Cable Protection use No. 506 Protector Unit. For Station Protection use No. 504 Protector Unit.

PROTECTED TYPE

Kellogg Code No.	Catalog Number	Capacity (Pairs)	With Cable Protector Unit No.	Std. Stub Length (Ft.)	Shpg. Wt. Lbs. Each
790511	ST 6 P	6	506	4½	7
790504	ST 11 P	11	506	4½	8
790505	ST 16 P	16	506	4½	10
790506	*ST 26 P	26	506	7	13

* For Pole and Wall Mounting Only.

UNPROTECTED TYPE

Kellogg Code No.	Catalog Number	Capacity (Pairs)	Std. Stub Length (Ft.)	Shpg. Wt. Lbs. Each
790510	ST 6	6	4½	6
790501	ST 11	11	4½	6½
790502	ST 16	16	4½	8
790503	*ST 26	26	7	10½

* For Pole and Wall Mounting Only.

TYPE ST CABLE TERMINAL ACCESSORIES

MOUNTING BRACKETS

Catalog No.	Capacity	Shipping Weight Ounces Each
6129	6 pr.	4
6129	11 pr.	4
6130	16 pr.	6
P2129	26 pr.	2

PROTECTOR UNITS

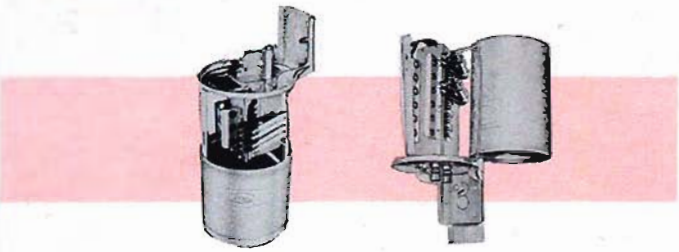
Sold only in multiples of 10

Catalog No.	Shipping Weight Lbs. per 100
504 Station Protector Unit	2½
506 Cable Protector Unit	2½

PROTECTOR UNIT PARTS

Part No.		Min. Quantity*	Shpg. Wt. Ozs. per 100
P 6082	Carbon Block	200	2
P 6083	Alloy Pellet	200	4
P 5841	Insulator-Carbon Block for No. 504	100	4
P 5827	Insulator-Carbon Block for No. 506	100	4

* Minimum package quantities are shown.



COOK S-20 and S-20V POLE CABLE TERMINALS

Every possible feature of accessibility and convenience has been carefully designed and engineered into the S-20 Pole Cable Terminal and Protector Mounts. The cable opening is located close to the pole, all connections are at the front and subscriber drops are taken out through knock-outs in an insulating plate to prevent the entrance of insects, moisture, and dust. Furnished in 6, 11, 16, 26, and 51 pair.

For use with plastic cable, specify the S-20-V Terminal manufactured with two cable entrances, each of which is arranged to take any size of compression coupling from 6 pair to 51 pair. When only one cable entrance is required, a standard pipe plug can be inserted to close the other entrance.

S-20 POLE CABLE TERMINALS

Kellogg Code No.	Catalog Number	Description
790200	506-1800	S-20 6 pr. less protectors less stub
790201	506-1805	less protectors w/7' stub
790202	506-1820	S-20 11 pr. less protectors less stub
790203	506-1825	less protectors w/7' stub
790204	506-1840	S-20 16 pr. less protectors less stub
790205	506-1845	less protectors w/7' stub
790206	506-1870	S-20 26 pr. less protectors less stub
790207	506-1875	less protectors w/7' stub
790208	506-1896	S-20 51 pr. less protectors less stub
790209	506-1895	less protectors w/7' stub

S-20-V POLE CABLE TERMINAL FOR PLASTIC CABLE

Kellogg Code No.	Catalog Number	Description
790020	506-2330	6 pair S-20-V less protectors
790021	506-2331	11 pair S-20-V less protectors
790022	506-2332	16 pair S-20-V less protectors
790023	506-2333	26 pair S-20-V less protectors
790024	506-2334	51 pair S-20-V less protectors

COMPRESSION COUPLINGS FOR USE ON S-20-V TERMINALS

Kellogg Code No.	Part Number	Cable Diameter Max.	Min.
305001	506-630	½"	7/16"
305002	506-631	5/8"	½"
305003	506-632	¾"	5/8"
305004	506-633	1"	7/8"
663001	506-629	1 Pipe Plug	

TYPE O7, O9, and O44 PROTECTORS

These protectors are of the same basic design as the O9u except for length and type of fuses.



Kellogg Code No.	Catalog Number	Description
680014	472-1582	O-7 complete w/A-7 wood fuses 5 amp.
680015	472-1597	O-7 complete w/A-7 wood fuses 7 amp.
680029	473-1583	O-9 complete w/A-9 lavite fuses 5 amp.
680032	473-1586	O-9 complete w/A-9 lavite fuses 7 amp.
680013	471-1581	O-12 complete w/A-12 lavite fuses 5 amp.
680020	481-1585	O-44 complete w/A-44 lavite fuses 5 amp.

TYPE 1 HIGH POTENTIAL LIGHTNING ARRESTER



The Type 1 High Potential Lightning Arrester can be used for either station protection or static drain on long rural circuits where lightning is the principal hazard. The long life and dependable service rendered by this protector is insured by patented non-grounding Tru Gap dischargers, grounded non-corrosive Everdur cover, and heavily galvanized mounting bracket. This device is also recommended as an adjunct to the line wire side of the sub-station protector for grounding heavy potentials at the pole in areas where power crosses, joint pole occupancy, and heavy discharges present constant hazards.

Kellogg Code No.	Catalog Number	Description
925005	501-7800	No. 1 Lightning Arrester (complete)

COOK S-6 PROTECTED CABLE TERMINAL



This heavy hot dipped galvanized steel constructed unit provides lightning and fuse protection with ready access to drop wire connections; equipped with Cook 5 amp. A-7 wood fuses; available in 11 to 102 pair sizes.

Lightning arresters consist of Tru Gap Dischargers and hard grooved carbons which are held under permanent tension by separate bronze springs.

On the drop side, both screw and solder connections are provided. All current carrying parts are installed with hard rubber. The S-6 is furnished with or without lead cable stub.

Kellogg Code No.	Catalog Number	Description
790225	112-1700	S-6 11 pr. complete w/A-7, 5 amp fuses
790226	112-1706	w/7' stub
790227	112-1701	S-6 16 pr. complete
790228	112-1709	w/7' stub
790229	112-1702	S-6 26 pr. complete
790230	112-1712	w/7' stub
790231	112-1703	S-6 51 pr. complete
790232	112-1715	w/7' stub
790233	112-1704	S-6 102 pr. complete
790234	112-1716	w/7' stub

O-9u SUBSTATION PROTECTOR



A single circuit protector for both indoor and outdoor use.

The body of the Type O-9u is a single piece of heavy white glazed, low absorbent porcelain. Fuse and lightning arrester clips are of phosphor bronze. The lightning arresters consist of two Tru,-Gap dischargers, two flat carbons mounted on a copper ground strip, and two A9U 7-ampere lavite fuses. Each protector is equipped with a 40 durometer Neoprene gasket to keep out insects, dust, snow, etc. A removable locking device is attached to the base of each unit in order to secure the hood. Overall dimensions are: 6" long, 2¼' wide and 1¾" deep. This protector is listed as standard by Underwriters' Laboratories.

Kellogg Code No.	Catalog Number	Description
680016	473-10	Complete with A-9U lavite fuse 7 amp.

TYPE 7 HIGH POTENTIAL LIGHTNING ARRESTER



The Type 7 High Potential Lightning Arrester provides lightning protection and static drain for 5 pairs of open-wire circuits. This arrester should also be used for the protection of drop wires and cables terminating in unprotected cable terminals where atmospheric conditions require constant static drain. Insulation and fanning strip are single-piece moulded Bakelite. Non-corrosive metal hood, Everdur studs, and galvanized mounting bracket assure satisfactory service and long life. Phosphor bronze fuse clips position the Tru-Gap lightning dischargers which do not normally ground the line.

Kellogg Code No.	Catalog Number	Description	Net Weight Pounds
925002	371-2200	No. 7 Arrester (complete)	3

THE NEW COOK STRANTERM

All terminals are supplied with 3½-foot, 24-gauge cable stubs, which are soldered to heavy Everdur studs imbedded in a special unsaturated Polyester thermal setting plastic with fibre-glass filler, which provides indestructible moisture-proof, gas tight potting of the terminal core.

Drop wires are dressed and supported by means of three heavy stainless steel wire rings.

Stranterm also features an ingenious bell shaped cable nozzle which eliminates cable breakage due to excessive right angle bends.

No. 24 GAUGE LEAD STUB

Kellogg Code No.	Catalog Number	Description
790001	353-1211	11 pr. with 3½' stub less protectors
790002	352-1240	11 pr. with 3½' stub with protectors
790003	352-1216	16 pr. with 3½' stub less protectors
790004	352-1241	16 pr. with 3½' stub with protectors
790005	352-1360	26 pr. with 3½' stub less protectors
790006	352-1361	26 pr. with 3½' stub with protectors

No. 24 GAUGE PLASTIC STUB

Kellogg Code No.	Catalog Number	Description
790010	352-1250	11 pr. with 3½' stub less protectors
790011	352-1336	11 pr. with 3½' stub with protectors
790012	352-1251	16 pr. with 3½' stub less protectors
790013	352-1337	16 pr. with 3½' stub with protectors
790014	352-1362	26 pr. with 3½' stub less protectors
790015	352-1363	26 pr. with 3½' stub with protectors
680001	41-290	Minigap Protectors

TESTERM DROP WIRE CONNECTOR



The Cook Testerm is especially developed for better insulation, to simplify installation and testing, occupy less space and improve the connecting methods of subscriber drops to open wire. It is low in cost and upkeep, and the wire entrances are sealed with a Neoprene gasket for long life.

Kellogg Code No.	Catalog Number
285018	563-30

COOK 5 CIRCUIT POWER CROSS PROTECTOR

This heavy duty arrester has been developed for telephone protection when there is a joint occupancy of poles by communication and power circuits. It provides a single assembly for 5 circuits requiring only one ground wire. The No. 10 copper wire coiled pigtail leads are pre-cut to the correct lengths for convenient installation on a 10B cross arm.



Kellogg Code No.	Catalog Number
925004	501-50

COOK SINGLE CIRCUIT POWER CROSS PROTECTOR



The miniature member of the family is also used in the event of contact between the power and communication circuits, in addition to furnishing considerable protection from lightning damage. This protector is furnished with an alloy cover, a bracket for quick-easy mounting and 3 copper wire leads.

Kellogg Code No.	Catalog Number
925003	501-40

THE NEW COOK "INTERCEPTOR" FUSELESS PROTECTOR



By taking advantage of the simplicity, compactness and high protection characteristics of the new Cook Minigap, Cook engineers have developed a new fuseless subscriber protector for indoor or outdoor mounting. It is ideal for open wire pole or cross arm installation ahead of the subscriber drop wire where protection is desirable for joint occupancy with power circuits.

The Interceptor is designed to meet the Underwriters' "Standard for Protectors for Communication Circuits." Consequently, both Minigap arresters will pass, simultaneously, a current of 30 amperes for 15 minutes without destruction.

For outdoor mounting the Interceptor is enclosed in an all metal, corrosion resistant, weatherproof housing with grommetted bracket.

The new self cleaning sealed Minigaps, No. 41-350, are screw mounted in Bakelite with ground stud and bussed circuits insert moulded.

Each arrester consists of two carbons with a thermoplastic acetate dielectric providing an air gap, which in the event of heavy or prolonged discharges will allow contact between the discharge blocks.

Kellogg Code No.	Catalog Number	Description
680030	501-150	Outdoor Type

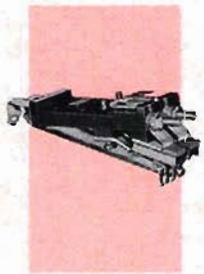
TYPE 54 JUNCTION BOX



The Type 54 junction box is similar to the Type 53 except that the heads are smaller and the unit more compact. It is especially designed for distribution of enunciator wire in small PBX systems and where economy is a factor.

Kellogg Code No.	Catalog Number		Description
135130	490-5406	#54	6 pairs complete with cover
135131	490-5410	#54	10 pairs complete with cover
135132	490-5413	#54	13 pairs complete with cover
135133	490-5426	#54	26 pairs complete with cover

COOK TYPE "H" PROTECTOR MOUNTS

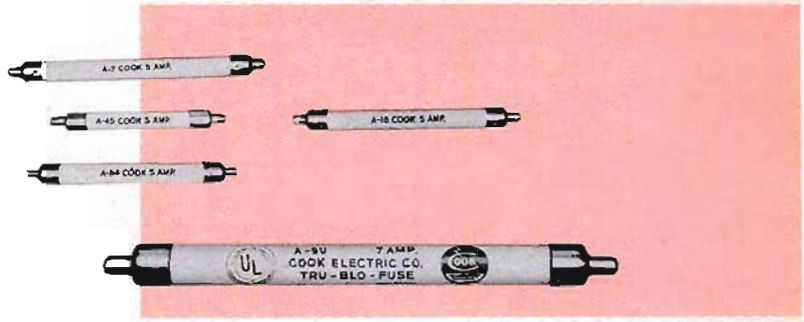


This type "H" protector unit is used in all apparatus of the Cook Trans-Mount system. Built on a bakelite base, it provides primary protection with a fuse and high-potential discharger and secondary high-potential protection after the fuse has blown.

These protector mounts are installed only as required and mount standard fuses and dischargers.

PRECISION RATED FUSES

Cook telephone fuses are designed for use in Cook protectors and Terminals and will operate at their rated capacity, thus assuring critical protection. They are made to withstand the most severe field tests in accordance with critical performance standards. The Cook A-9u fuses are listed as standard by the Underwriters' Laboratory.



Kellogg Code No.		Description
415051	A-7	5 ampere wood
415052	A-7	7 ampere wood
415055	A-9	5 ampere lavite
415056	A-9	7 ampere lavite
415058	A-12	5 ampere lavite
415059	A-12	7 ampere lavite
415060	A-16	5 ampere wood
415065	A-45	5 ampere lavite
415082	A-64	5 ampere wood
415083	A-64	7 ampere wood
415070	A-90	5 ampere lavite

COOK XB UNPROTECTED CABLE TERMINAL



The Type XB Unprotected Cable Terminal features many important advancements in construction and high insulation characteristics, such as a patented Bakelite face plate and insulating fanning strip moulded in one piece,

The terminal cable box and bracket are formed of heavy rust-resisting steel, riveted together and thoroughly hot galvanized.

The hood is formed of heavy sheet zinc and fits closely to the box. A galvanized steel chain is attached to the hood. The terminal may be mounted with cable stub carried out at either top or bottom, as the hood is reversible.

The cable enters through a well in the steel box in which solder is puddled so that a strong and tight connection is made.

Bosses moulded on the face of the Bakelite greatly increase the surface distance between the studs and raise the live parts 3/16" above the face of the Terminal.

For coastal areas, this unit is supplied in corrosive-resistant silicon bronze.

The unit is available in 6, 11, 16, and 26 pair sizes, with or without stub.

(Continued on next page)

Kellogg Code No.	Catalog Number		Description
790300	452-3580	X-3-B	3 pair less stub
790301	452-3581	X-3-B	3 pair with 5½' stub
790302	452-3502	X-6-B	6 pair less stub
790303	452-3506	X-6-B	6 pair with 5½' stub
790304	452-3503	X-11-B	11 pair less stub
790305	452-3509	X-11-B	11 pair with 5½' stub
790306	452-3504	X-16-B	16 pair less stub
790307	452-3512	X-16-B	16 pair with 5½' stub
790308	452-3505	X-26-B	26 pair less stub
790309	452-3515	X-26-B	26 pair with 5½' stub

THE COOK P-L-X- PLASTIC LOOP CABLE TERMINAL



Heavy galvanized steel frame, deep-drawn chamber, welded zinc cover, and the famous XB Bakelite face plate with heavy Everdur studs, comprise some of the major features of this new terminal.

The new P-L-X is the only plastic loop cable terminal which can be protected. Protection is provided by use of the Cook Minigap Arresters — the most advanced high potential discharger for telephone and cable protection — mounted in a convenient arrester plate.

Unprotected terminals can be protected at a later date by utilizing the Cook "Protection Conversion Kit" with Minigap Arresters.

When ordering, specify cable size (6 thru 51 pair) so that the correct size grommet may be furnished.

UNPROTECTED

Kellogg Code No.	Part Number		Description	
790050	452-1106	PL	6-X	6 pr.
790051	452-1111	PL	11-X	11 pr.
790052	452-1116	PL	16-X	16 pr.
790053	452-1126	PL	26-X	26 pr.

EQUIPPED FOR PROTECTION — LESS MINIGAPS

Kellogg Code No.	Part Number		Description	
790070	452-1330	PL	6-X	6 pr.
790071	452-1331	PL	11-X	11 pr.
790072	452-1332	PL	16-X	16 pr.
790073	452-1333	PL	26-X	26 pr.

COMPLETELY PROTECTED

Kellogg Code No.	Part Number		Description	
790090	452-1306	PL	6-X	6 pr.
790091	452-1311	PL	11-X	11 pr.
790092	452-1316	PL	16-X	16 pr.
790093	452-1326	PL	26-X	26 pr.

PROTECTOR CONVERSION KIT — LESS MINIGAPS

Kellogg Code No.	Part Number	Description
790100	452-1340	6 pr.
790101	452-1341	11 pr.
790102	452-1342	16 pr.
790103	452-1343	26 pr.

VINCENT RARE GAS RELAY TYPE RTC-2

It is a well known fact that where divided ringing is used to obtain selective or semi-selective ringing, the bridging of bells to ground, especially on lines exposed to power induction, so disturbs the balance that even with properly coordinated transpostions, the noise interference is objectionably high. By inserting the Vincent Rare Gas Relay in series with each bell, the line will normally be free from paths to ground because the resistance of the relay is practically infinity below its critical breakdown voltage which is sixty volts. The ringing voltage being higher, usually around eighty-five volts, this current passes through with little difficulty and the bells ring satisfactorily. A marked improvement in transmission is immediately noticeable due to this instantaneous action.

The Vincent Rare Gas Relay may be used on magneto or common battery lines. Either harmonic or coded bells can be used.

The Vincent Rare Gas Relay consists of a small glass tube containing a special combination of rare inert gases acting in contact with special metal electrodes which allow current to pass above a closely pre-determined voltage. This glass envelope is carefully and securely mounted in a heavy Bakelite shell for protection. Provided with "single hole" mounting clip (not shown).

Kellogg Code No.	Catalog Number	Description	Size	Weight Each
704005	RTC-2	Rare Gas Relay	2½"x1½	8 oz.

BUSS FUSE WIRE (LEAD)



This material is of the kind ordinarily used for open link fuses. BUSS fuse wire will carry indefinitely current shown under heading "Capacity" and will open the circuit when subjected to current 25% in excess thereof. This is based on a distance between contacts or terminals of two (2) inches. When used on contacts of other distances, the carrying capacity is affected approximately as follows: It must be understood that size of terminal and other local conditions will greatly affect these figures, and that they are only approximate.

Will carry more current		Will carry less current	
½-inch	100% more	2½-inch	5% less
¾ "	70% "	3 "	10% "
1 "	45% "	4 "	15% "
1¼ "	30% "	5 "	20% "
1½ "	15% "	6 "	25% "

BUSS FUSE WIRE

We can furnish this material only in full spools. Full spools will be furnished on any order calling for part of a spool.

Kellogg Code No.	Size Ampere	Dia. Inches	Carrying capacity amperes	Feet per lb.	Quantity on spool
415207	¼	.0045	.45	12920	250 ft.
415200	½	.010	1.25	2616	½ lb.
415201	1	.016	2.2	1020	½ lb.
415203	2	.025	4.3	420	½ lb.
415204	3	.031	6	273	½ lb.
415205	5	.039	8	172	1 lb.

batteries, power and test equipment

6

All telephone equipment requires maintenance in some form in order to assure continued optimum performance. Essential to good maintenance, is the use of properly designed test equipment by personnel trained in servicing techniques. One complete set of test equipment will normally suffice for a number of offices depending upon the quantity of, and distance between the equipment to be maintained.

In many instances, it is not necessary to employ complex test instruments to maintain or service wire transmission equipment. Generally, equipment instruction manuals outline procedures for making in-service checks with a minimum of equipment.

Recommended test instruments for the maintenance and servicing of wire transmission equipment are described in the detailed specifications following.

MULTIMETERS

A basic instrument suitable for the maintenance of all telephone equipment. Those recommended have been especially selected for their simple operation, rugged construction, accuracy and high sensitivity, (20,000 ohms per volt dc). Sensitivity is extremely important in the servicing of voice frequency Repeater and Carrier equipment.

SIMPSON MODEL 260
AC-DC VOLT-OHM-MILLIAMMETER



One of the most widely used multimeters. Model 260 is dependable, easy to use, and sensibly priced. Extremely useful, wherever quick, accurate electrical checks are needed . . . 29 Ranges . . . 20,000 ohms per volt dc . . . 1,000 ohms per volt ac.

VOLTS, ac and dc: 2.5, 10, 50, 250, 1000, 5000.
VOLTS, OUTPUT: 2.5, 10, 50, 250.
DECIBELS: —12 to +55 DB in 5 ranges.
CURRENT, dc: 100 ua; 10, 100, 500 ma; 10a.
OHMS: O-2K (12 ohms center), O-200K (1200 ohms center), O-20 meg. (120K center).

Size: 5¼" x 7" x 3⅛" . . . Weight: 3½ lbs. Shpg. wt. 6 lbs. Accessory probes and carrying cases available. Model 260 is shipped complete with test leads and Operator's Manual

(Continued on next page)

. . . Order as follows: Model 260 (Instrument only, less carrying case), Model 260RT—Instrument in roll top case.
#4236—Vinyl carrying case for Model 260.
#1818—Leather carrying case for Model 260.



HICKOK, MODEL 456 . . .

is a new portable multimeter that incorporates the very latest engineering advancements including a new technique that protects both the meter and the entire internal circuit against accidental burnouts. In fact, any high voltage or current may be applied directly across any function including ohms without any danger to the meter movement or associated components.

This exclusive HICKOK system provides complete protection, not only for the meter, but for all resistors, shunts and other components. Incorporates a full-wave bridge-type rectifier circuit, and a single function and range selector switch to speed range setting.

Batteries are housed in a special compartment that is easily accessible without removing case. No soldering is required, batteries snap in or out with ease.

New, streamlined ultra-modern case design with curved face and slanted meter dial permit easy reading while instrument is lying flat. The inclined panel with the flush mounted, wide vision non-breakable lucite window allows extra light to illuminate meter dial for easier reading.

HICKOK MODEL 456 SPECIFICATIONS

Sensitivity:	20,000 ohms per volt dc. 1,000 ohms per volt dc.
Volts:	3, 12, 30, 120, 600, 1200 volts ac. 3, 12, 30, 120, 600, 1200 volts dc.
Resistance:	0 to 100 megohms in four ranges.
Center Scale Ranges:	5 ohm, 500 ohm, 5000 ohm, 500,000 ohm.
Current:	50 microamperes. 1, 10, 100, 1000 milliamperes. 10 amperes.
DB Range	—18 to +57 in 5 ranges.

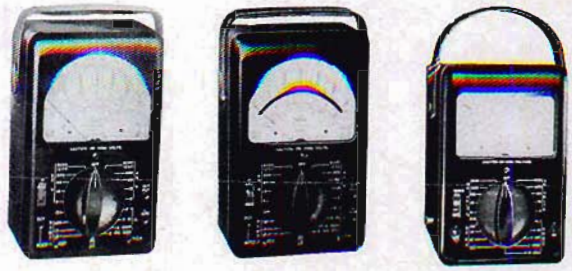
Frequency compensated for accurate readings over the entire audio range.

Attractive and durable neoprene carrying case is available for either model to house instrument and leads. Black molded case is 8½" long, 5⅞" wide. Height is 3" tapered down to 1¾". Net weight, 3¾ lbs.

TRIPLETT MODEL 630 V-O-M-A

28-Range Volt-Ohm-Mil-Ammeter.
SENSITIVITY: ac V 5,000 ohms/volt, 6 ranges to 6,000; dc V. 20,000 ohms/volt, 6 ranges to 6,000.

Reads Ohms to 100 megs.



Streamlined tester with meter scale arranged for easy reading. All dc scales black on white, ac and ohms red on white. Also carries RED•DOT Lifetime Guarantee.

One switch which will select any range.

Recessed knob flush with panel.

Banana jacks for longer life and better contact.

Model 630 . . . STANDARD MODEL.

Model 630A . . . Equipped with special 1% resistors selected for greater accuracy.

Model 630-T . . . Specially designed for telephone and industrial maintenance. For both inside work on panel and outside checking circuits on pole.

Special straps supplied to support instrument in easy reading position while supported from lineman's neck, leaving both hands free.

Selector switch of molded construction, completely enclosed keeps dirt out and retains contact alignment permanently.

TRIPLETT MODEL 310



MIGHTY MITE MINIATURE VOLT-OHM-MILLIAMMETER

A complete Miniature V-O-M with 20,000 ohms per volt sensitivity. dc selector switch for all ranges. Ranges: dc volts: 0-3-12-60-300-1200 at 20,000 ohms/volt; ac volts: 0-3-12-60-300-1200 at 5,000 ohms/volt; dc Microamperes: 0-600 at 250 MV; dc Milliamperes: 0-6-60-600 at 250 MV; Ohms: 0-20,000-200,000 (200-2000 at center scale); Megohms: 0-2-20 (20,000-200,000 Ohms at center scale). Self-shielded bar ring instrument movement for checking in strong magnetic fields. Strong plastic meter window. New Probe-A-Test feature by fitting interchangeable test prod tip into top of tester, making it the common probe.

Selector switch for faster settings—the only miniature V-O-M with selector switch for quick, fool-proof selection of all ranges. Printed circuit. Banana-type jacks for positive connections and long life. Case, fully insulated, 1⅜"x2¾"x4¼". Weight approximately 14 oz. complete with battery. RED•DOT Lifetime Guaranteed Meter.

VACUUM TUBE VOLTMETERS

The vacuum tube voltmeter is an improvement in the multimeter. This instrument has little or no effect upon the circuit being tested, making it ideal for voice frequency repeaters and carrier equipment servicing. It is also recommended for making transmission measurements of wire circuits at both audio and carrier frequencies.

SIMPSON MODEL 303
VACUM TUBE VOLT-OHMMETER



Use it as an electronic dc voltmeter, ohmmeter, ac or af voltmeter (with accessory probe), output-meter, and other applications.

dc VOLTAGE: Ranges — 1.2, 12, 60, 300, 1200.

OHMS: Ranges — 1K ohms (10 ohms center); 100K ohms (1000 ohms center); 1 megohm (10K ohms center); 10 megohms (100K ohms center); 1000 megohms (10 megohms center).

ac VOLTAGE: Ranges—1.2, 12, 60, 300, 1200
af VOLTAGE: Ranges—1.2, 12, 60
DECIBELS: —20 to +63 DB in 5 ranges.
rf VOLTAGE: Range—20 volts maximum. Frequency Flat 20 Kc to 100 Mc.
Line Voltage: 105-125V, 50/60 Cycles.

Model 303 furnished with dcV Probe, acV-Ohms Probe, Ground Lead, Operator's Manual.

Model 303-RT same as Model 303 except furnished in Roll-Top Safety Case.

600 ohm probe for use with Model 303 to provide 600 ohm termination on telephone lines in making transmission measurements. Part No. 10-890086.

Vinyl carrying case for Model 303—#4236.

TRANSMISSION MEASURING SETS

CLOUGH-BRENGLE

Model 340 Transmission Measuring Set



Model 340 is a wide range decibel and volt meter. It has high impedance input for frequencies from 20 cycles to 1 megacycle; 135 ohm and 600 ohm balanced input up to 250 KC; and a meter calibrated for a reference level of one milliwatt. There are separate meter range switches for sending and receiving levels. Levels to minus 60 dbm may be easily read.

Specifications:

BALANCED INPUT SYSTEM

Input Impedance: 600 and 135 ohm.

Accuracy: ±3% of full scale from 200 cycles to 100 KC. ±5% of full scale from 100 KC to 250 KC. From 20 to 200 cycles, the accuracy will depend on the input level, but in most cases, the error will not exceed 5% of full scale.

Power Range: —60 to +32 db. Separate meter range controls for sending and receiving levels.

Reference level: 0 db reading for 1 milliwatt input.

Terminations: Four jacks for standard tip and sleeve plugs are provided for connection of monitoring phone, generator, sending circuit, and receiving circuit. Input circuit is insulated from the case and may be used on either balanced or grounded circuits.

HIGH IMPEDANCE INPUT SYSTEM

Voltage range: Full scale reading from .001 to 300 volts.

Frequency range: 20 cycles to 1 MC.

Accuracy: +3% of full scale from 20 cycles to 100 KC. ±5% of full scale from 100 KC to 1 MC.

Input Impedance: 10 megohms.

Input Connections: Insulated binding posts are provided on the panel, one at chassis potential.

Overload Capacity: Meter will not be damaged by occasional overloads of 100 times normal.

Power supply: 115 volts 50-60 cycles.

Tubes (Supplied) Four 6AK5, two 6SQ7, one 6AV5GT, one OA2, one 6X5GT, one 10-4C.

Size and finish: 7¾" wide, 9¼" high, 10¼" deep exclusive of knobs, handle and feet. Engraved panel. Case and panel are gray wrinkle finish.

Weight: 21 Pounds.

Recommended for use with all types of carrier systems such as 3 channel, multi-channel and subscriber carrier and with voice frequency repeater equipment.

CLOUGH-BRENGLE MODEL 420

Extended Range Audio Oscillator



Model 420 is a resistance-capacity tuned type oscillator with balanced 135 ohm and balanced 600 ohm outputs from 20 cycles to 250 KC and single ended output from 20 cycles to one megacycle. Output is 100 milliwatts. Distortion is less than 1% from 100 cycles to 100 KC. In both the Model 420 and the Model 340 described above, the jacks and switching usually required for transmission measurements are built into the instrument for convenience.

Specifications:

Frequency Range: 20 cycles to 1000 KC in five ranges. Internal transformer for balanced output good to 250 KC.

Frequency Accuracy: ± (2% plus 1 cycle) from 20 cycles to 200 KC; ±3% from 200 KC to 1000 KC.

Internal Impedance: 600 and 135 ohm balanced. 600 and 50 ohm single ended.

Output: 100 Milliwatts on 600 ohm output. (Balanced or single ended). 50 milliwatts on 135 ohm balanced output. 190 milliwatts into 1150 ohms from 50 ohm single ended output.

Output Controls: Continuously variable control for amplitude adjustment of the signal. Fixed pads may be switched into the balanced circuit for additional attenuation of 10, 20, and 30 db.

(Continued on next page)

OUTPUT CURVE

Single Ended: ± .5 db from 20 cycles to 200 KC. ± 2 db from 200 KC to1000KC.

Balanced: ± .5 db from 100 cycles to 100 KC. The drop at 20 cycles and at 250 KC is less than 3 db with the output control at maximum.

DISTORTION

Balanced: Less than 1% with rated loads from 100 cycles to 100 KC.

Single Ended: Less than 1% with rated loads from 20 cycles to 100 KC. The distortion will be less when high impedance loads are used.

POWER SUPPLY: 115 volts, 50-60 cycles. Consumption 70 watts.

Tubes Supplied: One type 6AG5, three type 12BY7, and one type 5Y3GT.

Size and finish: 7¾" wide x 9¾" high x 10¼" deep, exclusive of knobs, handles, and feet. Gray wrinkle finish. Net weight: 21 pounds.



SIERRA 108A CARRIER FREQUENCY VOLTMETER

Model 108A is a wide-range instrument offering high accuracy and selectivity throughout the frequency range 15 to 500 kc. Like other Sierra voltmeters, level is measured directly in dbm. The usable measuring range is from 77 microvolts to 97 volts or —80 to +42 dbm. at 600 ohms. Measuring accuracy is ± 2 db over the range —70 to +42 dbm. Balanced input is provided for use on 135 ohm systems and unbalanced input is provided for use on 600 ohm systems.

The instrument includes a listening jack for aural monitoring and a regulated power supply so that power line variations from 105 to 125 volts do not affect normal performance.

Easy to Use, Calibrate

Calibration and operation is uniformly simple and straight-forward. Calibration is achieved by switching the calibration oscillator signal to the input, tuning the dial to the calibration oscillator frequency and adjusting the IF gain control for a zero dbm meter reading. As a further check, the rectified output of the calibrating oscillator can be switched directly to the meter and checked to determine that the calibrating signal is actually 0 dbm.

After calibration, operation of the instrument merely involves selecting the desired frequency on the precision tuning dial, selecting the desired attenuation, and reading signal strength direct in dbm on the large, 4" panel meter.

WESTON ANALYZER MODEL 779 TYPE 5



A new WESTON Analyzer designed in cooperation with telephone company engineers to provide in a single unit all of the normal ac voltage and dc voltage, current and resistance ranges together with special facilities for communication transmission line measurements.

DBM Readings at Carrier Current Frequencies

The WESTON Model 779, Type 5 is designed particularly for low level carrier current and audio frequency measurements. The ac response is essentially flat to 50 kc, within 1 db, throughout the range from —20 to + 22 dbm. Higher ranges to 50 volts (36 dbm) are available for normal audio frequency measurements.

Readings to —20 dbm

The unusually low range (—20 to +2 dbm) is possible through the use of a newly designed rectifier circuit with broad frequency and temperature compensation. The low range permits measurements of transmission characteristics from the central office to the subscribers' hand-set in the presence of wide ambient temperature variations.

Line Bridging

The one volt ac range (—20 to +2 dbm) has an impedance of 2500 ohms permitting the use of the instrument as a bridging device with a minimum insertion effect upon relays and other line equipment components. All high ac ranges have a standard resistance of 1000 ohms per volt.

Line Terminating (600 ohms)

A 600 ohm switching circuit converts the instrument to a terminating db meter on the lower ranges. This 600 ohm impedance provides a dc return circuit for line relay operation without influencing the db readings.

Ungrounded Self-Powered Unit

The instrument is entirely self-contained, requiring no power line connection.

The instrument is ruggedly constructed for long term use under day to day service and is supplied in a solid oak case with heavy bakelite panel, nickel plated all-brass hardware, a removable cover and a convenient carrying handle.

RANGES

Volts AC	Decibels (DBM)	Volts DC	Current DC Only	Ohms
1.0	—20 to +2	. . .	. . .	. . . .
2.5	—8 to +10	2.5	.1 Ma	1000
10	+4 to +22	10	1 Ma	10,000
50	+18 to +36	50	10 Ma	100,000
250	+32 to +50	250	50 Ma	10 Meg.
1000	+44 to +62	1000	250 Ma	. . . .
	(1 milliwatt, 600 ohms, zero level)		1 Amp	
			10 Amp	

Approx. Weight: 6 lbs.

Recommended for use in conjunction with voice frequency repeaters and low frequency carrier systems.

OSCILLOSCOPE

An instrument which is extremely useful in the servicing of voice frequency repeater and carrier equipment. It provides a visual indication of the signal being measured and therefore provides a rapid means of detecting audio distortion. Useful in conjunction with the adjustment and servicing of the Kellogg Electronic Ringing Generator, voice frequency repeaters, and carrier equipment.

SIMPSON MODEL 458 — 7" Colorscope

Everything you need in an Oscilloscope



Seven big features make Model 458 the ideal scope of many uses: (1) Good square wave response for Electronic Ringing Generator or pole changer voltage study and adjustment. (2) Ideal for FM, KP, #3 and all carrier. (3) 7" Cathode Ray Tube; (4) On wide band operation, the frequency response is flat within 1 db to 4.5 Mc and can be used to 7 Mc or more with a sensitivity greater than 30 Mv rms per inch of vertical deflection; (5) On narrow band operation, the frequency response is flat within 3 db from 10 cycles to 100 Kc with a sensitivity greater than 10 Mv rms per inch; (6) Horizontal Sweep, to 50 Kc, for expansion of high frequency waveform detail; (7) Vernier and Compensated Decimal Step Attenuator for better single control.

Size: 11" x 17¼" x 13⅜" high. Weight: 27 lbs. 9 ozs.

WATERMAN POCKETSCOPE

The Pocket-Size Oscilloscope — S-11-A



The S-11-A INDUSTRIAL POCKETSCOPE is a small, compact (5x7x11 inches), lightweight (8 lbs.), instrument for observing electrical circuit phenomena. The flexibility of the POCKETSCOPE permits its use for ac measurements as well as for dc.

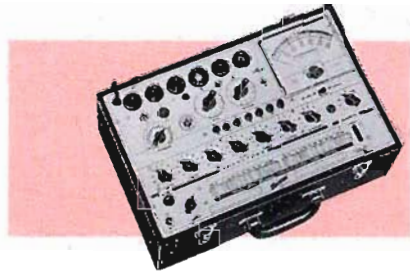
The vertical and horizontal amplifiers are capable of reproducing within—2DB from dc to 200 KC with a sensitivity of 0.1v rms/in. . . . repetitive time base from 3 cycles to 50 KC continuously variable throughout its ranges . . . Positive External or Internal synchronization . . . vertical and horizontal amplifiers have (low) .5 megohm, 35 mmf or (high) 10 megohm, 10 mmf shunt input impedance—direct vertical deflection and horizontal deflection shunt input impedance of 10 megohms, 10 mmf.—Operates from 115 volt 60 cycle power source.—Variations of input impedance, line voltage or controls do not "bounce" the signal—the scope stabilizes immediately.

APPLICATIONS

Determination of carrier frequency or percent of modulation—Detection of audio distortion—Measurement of voice frequency Repeater Gain.

TUBE TESTER

An instrument for determining the condition of electron tubes. Recommended for use in any office where a substantial amount of wire transmission equipment is in service. Enables the telephone exchange to always have on hand spare tubes of known quality. Where it is necessary to check electron tubes in operation in equipment, it is always desirable to check the tube performance without removing them from the equipment. Methods of checking the tubes under these conditions are usually covered in instructions manuals supplied by the manufacturer of the equipment. Where in-service tests cannot be performed, then a tube tester should be used.



HICKOK 600A TUBE TESTER

Dynamic Mutual Conductance Tube Tester in a Handier, Portable Size.

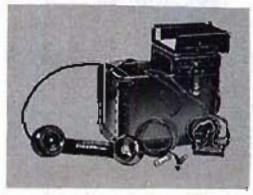
Strong portable carrying case with detachable cover. Case is attractively covered in durable, dark red leatherette. 16¾" wide, 11¾" long, 7½" deep, 16 lbs., net, 21 lbs. shipping weight. 110-120 V.A.C. 40 watts.

HICKOK testers remain up-to-date . . . Periodically revised roll-charts, covering new tubes, are available to all registered owners of HICKOK Tube Testers.

FEATURES

1. New, large 5" meter scale is easier to read more accurately.
2. Scale readings in micromhos for most accurate tube evaluation. ac Signal 2.5 volts: 0-3000, 6000, 15,000 micromhos.
3. Tests tubes under simulated operating conditions.
4. Detects more weak tubes with professional accuracy.
5. Contains the new HICKOK improved "Short Test" and Gas Test.
6. Tests the latest tubes including miniature and subminiature types.

TEST SET, WEST



Handy, portable unit which the lineman can take out on the job to quickly find faults without opening lines or interfering with circuits and without any help from the operator.

The set is equally useful on iron or copper wire, bare or insulated and on grounded or metallic circuits.

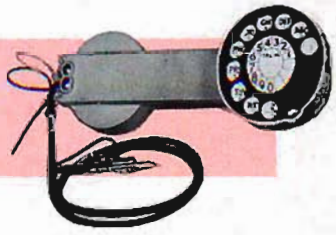
Also a convenient portable telephone with handset which can be folded into the case and headband which frees both hands for testing. Three flashlight batteries are mounted in the case and the telephone equipment is connected to the line by operating a lever key. The telephone circuit is a high-efficiency circuit — transmission is excellent and ringing signals carry distinctly over long and heavily loaded lines.

Contained in a carrying case that is weatherproof and cannot accidentally become grounded.

(Continued on next page)

Furnished with three National Carbon No. 950 or three Ray-O-Vac No. 2 dry cells.

Kellogg Code No.	Cat. No.	Description	Size Inches	Weight Each
795005	TA-21	Test set with leather case	7x9x5	18 lbs.



HAND TEST TELEPHONE

Used in testing lines and for supervising or monitoring. Connects into telephone circuits silently — without interrupting busy lines, without clicking or loss of volume.

Handset is equipped with dial, cord, test plug (or clips), and two pushbuttons. One button is pushed before connecting to a busy line. This prevents direct current from shunting through the transmitter and causing a "click" or loss of volume. The other button puts a 1200-ohm resistance in series with the line, for testing automatic switches over a maximum resistance loop.

Sturdy aluminum alloy case protects dial from damage. Can be carried from belt when used with Belt Hook (below).

Cat. No. TA-10—Test Telephone, with Test Plug.

Cat. No. TA-11—Test Telephone, with Test Clips.

Cat. No. TA-54—Belt Hook, only.

Cat. No. TA-13—Dial Guard, only.

(For Hand Test Telephone having Type 24 or Type 24A36 dials.)

BATTERY BOXES



Paragon Battery Boxes find application wherever dry cells are used. They provide a convenient and practical method of keeping batteries clean, dry, and protected, and battery connections firm.

Equipped with covers fastened to the boxes themselves with chain. Made of sheet steel finished in black crackle lacquer and completely lined with heavy insulating fiber. May be hung on a hook or nail. Have wire lead-in holes both in bottom and cover.

Available in sizes for two or three Standard No. 6 dry cells. Pay for themselves in increased efficiency and longer battery life.

Kellogg Code No.	Catalog Number	Weight
135001	2	1½ lbs.
135002	3	2 lbs.

MODEL 4300 TELOHM

Kellogg Code No. 595050



For testing and locating line, telephone and switchboard trouble, shorts, grounds, high resistance, and open circuits incoils of all kinds, also partially shorted coils, high resistance transmitters, cutouts in receiver, desk stand and switchboard cords, hook-switch contacts, etc.

Equipped with a Weston O-3 Volt Direct Reading Ohmmeter O-10,000 Ohm scale, with glass protector mounted in a solid walnut case that fits the pocket and is easy to carry. Furnished complete with 2 flashlight type dry cells, "on and off" battery switch, cords and test clips.

Dimensions, 1⅝ x 3½ x 6.

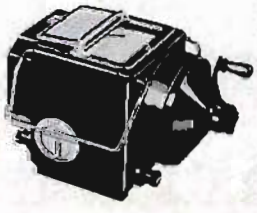
Weight, 1¼ lbs.

TELOHM CARRYING CASE

Kellogg Code No. 205027

Made of "Tolex" (lighter and more durable than leather) especially for the Telohm. Fits snugly and has adjustable shoulder strap for convenient carrying.

MEGGER INSULATION TESTER



For testing cable and other insulation resistance up to 1000 megohms. Hand cranked constant voltage generator rated at 400 volts dc. Equipped with discharge switch and guard terminal. Insulation tester is complete with 12 ft. test leads, 100 4 in. x 6 in. test record cards and durable fabrikoid - covered wood carrying case.

Type No. K has a single scale, reading from 0 to 1000 megohms.

Type No. RK has a double scale, reading from 0 to 1000 megohms, and 0 to 10,000 ohms.

Rectifier-operated or dual operated models also available.

Kellogg Code No.	Catalog Number	Description	Wt., Lbs.
795010	7679.4K	Single Scale	7
795011	7679.4RK	Double Scale	7

BATTERIES, DRY CELL

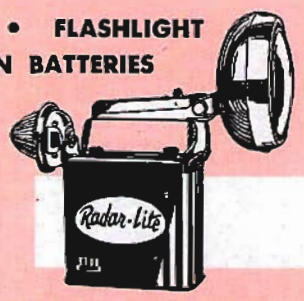


This is a medium, low current, long life battery, especially designed for telephone service.

Initial amperage is 18 to 22, 1½ volts. Size is 2⅝ x 6⅝ inches. Fahnestock spring terminals are supplied unless screw connections are specified.

Kellogg Code No.	Catalog Number	Voltage	Standard Package	Weight Std. Pkg.
960010	6	1½	12	26¼ lbs.

BURGESS • TELEPHONE • FLASHLIGHT • IGNITION • LANTERN BATTERIES



Kellogg Code No. 580013

Cat. No. TW3. Deluxe model Radar-Lite with sealed beam spotlight unit and red flashing beacon. Comes complete with TW1 battery. Standard package—1.



Kellogg Code No. 960025

Cat. No. 4FH. Little-Six. 1½ volts for general ignition, telephone, electronic devices, radio, and broadcasting equipment. Can be used in place of No. 6 cell. High working voltage ideal for industrial applications. Size 2⅝" x 2⅝" x 4". Standard package—12.



Kellogg Code No. 960020

Cat. No. 4F2H. 3-volt battery for TW2 Twin-Six lantern. Also used in place of two No. 6 cells for doorbells, telephones, alarm systems and other ignition applications. Has two spring clip terminals. Size 3²⁹⁄₃₂"x2¹¹⁄₁₆"x5¹³⁄₃₂". Standard package—8.



Kellogg Code No. 960033

Cat. No. F4H. Most popular battery for all 6-volt railroad, industrial, and sportsmen's lanterns. Two coiled spring terminals are protected by heavy extra flap on carton. Size 2⅝" x 2⅝" x 3¹⁵⁄₁₆". Standard package—12.



Kellogg Code No. 960010

Cat. No. 6. Telephone. 1½ volts. For intermittent low-drain applications. Has spring clip terminals. Size 2½" x 6⅝". Standard package—12.



Kellogg Code No. 960031

Cat. No. 2130B. Super heavy duty, long life 45 volt "B" battery. Available with spring clip or three hole socket using plug No. 626. Also 22½ volt tap. Size 8⅛" x 4¹³⁄₃₂" x 7³⁄₃₂". Specify spring clip or plug in when ordering. Standard package—6.

Kellogg Code No. 960029

Cat. No. 5156. Universal 22½, 13½, 9, 4½, 3 volt "B & C" application. Also used for "C" radio supply. Spring clip terminals or five hole socket. Size 4⅛" x 2½" x 2¾". Specify spring clip or plug in when ordering. Standard package—5.

Kellogg Code No. 960030

Cat. No. 5360. Very popular 4½ volt "C" battery for electronic instruments and testing devices. Binding post terminals. Size 2¹³⁄₃₂" x 2⁷⁄₃₂" x 2²¹⁄₃₂". Standard package—10.

Kellogg Code No. 960027

Cat. No. 4156. Universal 22½ volt "B" application. Binding post terminals. Size 3¹⁷⁄₃₂" x 2⅛" x 2²⁹⁄₃₂". Standard package—5.

Kellogg Code No. 960026

Cat. No. 5308. 45 volt "B" Screw terminals with insulated junior knobs. Size 4¹⁄₁₆" x 2³⁄₁₆" x 5⅛". Standard package—5.

TYPE S TEST SETS



Cat. 5305 Type S-2 and Cat. 5300 Type S-1 Test Sets are self-contained, portable Wheatstone bridges used extensively to measure the resistance of electrical instruments, meters, motor-windings, and small gauge wire, as well as the heating elements in toasters, electric irons or other household appliances. They can also measure insulation resistance up to a few megohms.

Ratio arm has multiplying values of 0.001, 0.01, 0.1, 1, 10, 100 and 1000; Cat. 5300 also has special provisions for locating grounds and crosses by the Murray and Varley Loop tests. Rheostat arm contains four decades — 9 (1/10/100/1000) ohms. Built-in pointer-type galvanometer has sensitivity of 1 ua per scale division. Case is oak, 9½" x 8½" x 6⅛", with hinged lid and carrying strap. Weight, about 10 lbs. If desired, sets can be supplied with Cat. 5431 leather carrying case.

Cat. No.	Description	Size, Inches	Weight Each
5300	Type S Portable Test Set	8⅞x7⅜x5½	8 lbs.
5431	Leather Carrying Case		
5412	Buzzer		
9872	Telephone Receiver Set with Head Band		
P1-124-C	Extra Galvanometer System		
Std. 986	Eveready No. 950 Flashlight Cell, 3 required.		

TYPE U TEST SET



Cat. 5430-A Type U Test Set is a self-contained, portable Wheatstone bridge especially adapted for locating faults in communication circuits, for locating grounds and crosses by Murray, Varley or Hilborn Loop tests, and for locating opens by capacitance tests.

Ratio arms contain multiplying values of 1/1000, 1/100, 1/10, 1/9, 1/4, 1/1, 10/1, and 100/1; also settings of M1000, M100 and M10 for ratios in Murray Loop tests. Rheostat arm contains four decades—10(1/10/100)/9x100/infinity. Built-in pointer-type galvanometer has a sensitivity

(Continued on next page)

of 1 ua per scale division. Case is gray metal, 9½" x 7½" x 6", with a slip-type hinged lid and a sturdy plastic handle. Weight, about 9 lbs. Set can be supplied with Cat. 5431-M leather carrying case.

Cat. No.	Description	Size, Inches	Shpg. Wt. Each
5430-A	Type U Portable Test Set	8⅞x7⅜x5¾	9 lbs.
5431	Leather Carrying Case		
5412	Buzzer		
9812	Telephone Receiver Set with Head Band		
P1-124-C	Extra Galvanometer System		
Std. 986	Eveready No. 950 Flashlight Cell, 3 required.		

STEWART DETECTO-METER
Model D-1



The lineman's companion—extremely handy—light weight. A pocket-size volt ohmmeter.

The Stewart Detecto - Meter has a multitude of uses for rapidly determining line and cable troubles. It will locate poor joints, crosses, shorts and grounds.

The unit has a 0-10,000-ohm scale, powered by a self-contained #2 flashlight battery.

Furnished in either of two voltage ranges 0-1.5 volts or 0-60 volts.

The case is of highly finished hard wood with bakelite ends and so constructed as to stand the hard service given it.

Stewart Detecto-Meter comes complete with battery, two-line leads and clips.

Kellogg Code No.	Catalog Number	Size	Weight Each
595001	D-1-60	1¾" x 3" x 6"	1¼ lbs.
595002	D-1-1.5	1¾" x 3" x 6"	1¼ lbs.

STEWART CABLE TESTER
Model L-1



Trouble that might ordinarily take hours to find can be located with the Stewart Cable Tester in only a few minutes. It is simple to use, saves time, more accurately locates cable faults. It will locate shorts, crosses, grounds and wet spots to the inch.

This highly reliable instrument is the only Cable Tester having a patented Fish Tail Exploring Coil which is neutral to the tone on the sheath and messenger. With this feature only the tone produced by a cable pair in trouble will be heard in the head phone.

The Stewart Model L-1 Cable Tester uses two #6 dry cells and comes complete with Fish Tail pickup coil and head phones.

Kellogg Code No.	Catalog Number	Size	Weight Each
595007	L-1	11¾" x 10½" x 4"	10 lbs.

STEWART TESTER AND LOCATOR
Model A



The Stewart Tester and Locator has all the outstanding features of the Model L-1 and in addition by the use of the special Depth Coil provided with the instrument, may be used to locate and tell the depth of buried pipe and cable.

The Stewart Model A Tester and Locator uses four #6 dry cells and comes complete with Fish Tail and Depth Coils, head phones and cord, all self-contained.

Kellogg Code No.	Catalog Number	Size	Weight Each
595008	A	11" x 12½" x 7¼"	17 lbs.

STEWART EXPLORING COIL AMPLIFIER
Model E



In testing cable and attempting to locate buried pipes and cable, only a certain amount of power may be used in the tone signal put out by a Cable Tester or Tester Locator. If this amount of power is exceeded, there will be a signal carryover beyond the actual trouble and a noising up of adjacent lines and the line beyond the fault.

The Exploring Coil Amplifier increases the signal strength of the pickup coil and makes it audible where, without its amplification, determination of a fault would be difficult.

The voltage or signal strength gain of the Amplifier is approximately 50. Input and output impedance are matched for use with a 40-100 ohm pickup coil on the input and 40-100 ohm phone on the output.

It has self-contained A and B batteries and a panel located volume control.

Kellogg Code No.	Catalog Number	Size	Weight Each
595006	E	5" x 3" x 2"	1½ lbs.

BATTERIES, DRY CELL

This is a medium, low current, long life battery, especially designed for telephone service.

Initial amperage is 18 to 22, 1½ volts. Size is 2⅝ x 6⅝ inches. Fahnestock spring terminals are supplied unless screw connections are specified.

Kellogg Code No.	Catalog Number	Voltage	Standard Package	Weight Std. Pkg.
960010	6	1½	12	26¼ lbs.

RAY-O-VAC HEAVY-DUTY INDUSTRIAL FLASHLIGHT



Catalog Number
N22

Workman Model. The sensational new NYLON heavy-duty flashlight which is highly resistant to breakage, chemical action and extreme temperature ranges. The N22 features a space lamp holder in the removable end cap plus a nylon ring hanger and replaceable switch. See the listing on this page for all part numbers. The N22 uses two No. 2LP or 3LP size "D" flashlight batteries and bulb No. PR6.

RAY-O-VAC-TELEPHONE DRY BATTERY

The Ray-O-Vac No. 6 Tel. is manufactured with a specially compounded mix for telephone service which permits this battery to give lower cost per hour of telephone service. They are available in either screw or clip terminals with a standard package quantity of 12.



Kellogg Code No.	Catalog Number	
960010	6	1½ Volts

POCKET METERS



Has calibrated scales, durable, clearly marked dial and full nickel-finished case, 2¼ inches in diameter and ⅝-inch thick.

Equipped with a flexible cord and spur for making connections.

Kellogg Code No.	Catalog Number	Std. Pkg.	Weight Std. Pkg.
595010	24	10	4 lbs.
READING-SCALE — Ammeter, 0-35 amp., 1 amp. divisions.			
595013	34-C	10	4 lbs.
READING-SCALE — Voltmeter, 0-50 volts, 1 volt divisions.			
595012	44	10	4 lbs.
READING-SCALE — Voltammeter, 0-35 ampere, 0-10 volts, 1 ampere and 1/5 volt divisions.			

METER, #6100 WHEATSTONE FAULT LOCATION BRIDGE



A portable, convenient bridge for measuring resistance from 1 ohm to 1 megohm. Locates grounds, crosses, opens, and shorts by the Murray, Varley, Hillborn or Fisher Loop and Capacitance tests, can be operated by repairman wearing gloves.

Multiplying values:

$\frac{1}{1000}, \frac{1}{100}, \frac{1}{10}, \frac{1}{1}, \frac{10}{1}, \frac{100}{1}$ M1000, M100, M10, $\frac{1}{9}$ and $\frac{1}{4}$.

Rheostat: 4 decades, 10, 110 ohms in 1 ohm steps.

Accuracy: ratio arm resistors ± 0.05% all others 0.1%.

Wattage rating: 0.5.

Resistance change from zero setting of dial equals dial setting ± (0.1% ± 0.01 ohm.)

Has Shallcross galvanometer with knife-edge pointer and hair line scale. Coil resistance—250 ohms, period—3 seconds.

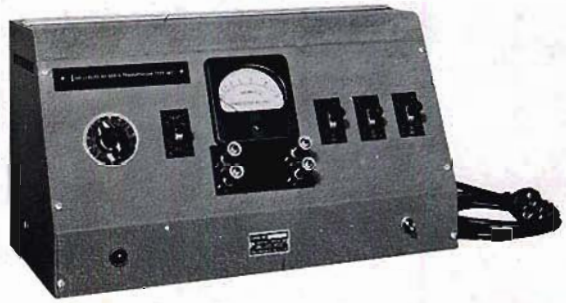
Power supply: three 1½ volt batteries (not supplied.)

Switches:—Molded mineral-filled phenolic with pure nickel contacts, beryllium-copper brushes and stainless steel shaft.

Available in wooden or water proof metal case with carrying strap and removable cover.

Weight 8 lbs.

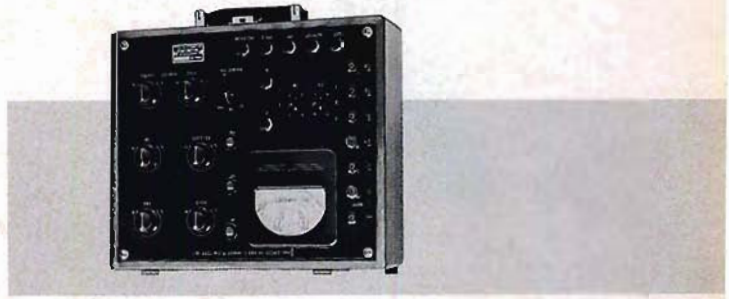
Cat. No.	Description	Size	Shpg. Wt. each
6100	Wheatstone Fault Location Bridge	8⅞"x7⅜"x5¾"	9 lbs.



METER, #692 SHALLCROSS TRANSMISSION TEST SET

Designed to provide a convenient and inexpensive means of measuring transmission losses in lines, switchboard circuits and other equipment. Measures comparative capacity of condensers and the balance of repeating coils and relays. The 1000 cycle oscillator output may be used as a tone source for fault location measurements with Shallcross #628 and #629 Fault Location Bridges. Operates on 110-120 volts, A.C. or D.C.

Cat. No.	Description	Size	Shpg. Wt. each
692	Transmission Test Set	14¼"x8"x8½"	13 lbs.
690	Transtester-Decibel Meter	7¾"x4"x4¾"	2¾ lbs.
355	Attenuation Box	7¾"x4"x4¾"	5 lbs.
691	Tone Generator	6½"x7"x7"	5 lbs.



METER, #696 SHALLCROSS CURRENT FLOW

Five separate and independent circuits provide a convenient means of testing the current flow through relays and other communications equipment. Five separate tests may be set up at the same time. Each circuit can be readjusted without disturbing other circuits.

Current Range: 0-30, 0-150, 0-750 MA.

Full scale accuracy: ± 2%.

Power source: Central office battery or external battery of 22½ to 45 volts. Test set is housed in a wooden carrying case with removable lid.

Net weight 10 lbs.

Cat. No.	Description	Size	Shpg. Wt. each
696	Current Flow Test Set	12½"x10½"x6¾"	17 lbs.

METER, #695 SHALLCROSS CURRENT FLOW



Three separate and independent circuits provide a complete and rapid means of testing the flow of current through relays and similar telephone and telegraph equipment.

Current range: 0-15, 0-75, 0-150 MA full scale.

Voltage range: 7.5, 15, 75 volts full scale.

Power source: Central office battery or external battery of 22½-45 volts.

Enclosed in sturdy wooden case with carrying strap and a removable cover.

Net weight 7¼ lbs.

Cat. No.	Description	Size	Shpg. Wt. each
695	Current Flow Test Set	10½"x9"x6"	14 lbs.

tools

5

KLEIN'S SIDE CUTTING PLIER



Genuine Klein Linemen's Side Cutting Plier is one of the most popular pliers in use today. Its handles are shaped to the curvature of the hand, a much desired feature. Powerful leverage and keen reinforced cutting knives make this plier adaptable for heavy cutting.

Full clearance back of the knife permits use on insulated wire.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660002	201-5	5-inch	3 lbs.
660003	201-6	6-inch	5¼ lbs.
660005	201-7	7-inch	7¼ lbs.
660007	201-8	8-inch	11¾ lbs.
660009	201-9	9-inch	14 lbs.

KLEIN'S SIDE CUTTING PLIER With Sleeve-Joint Twister



This plier is the same as No. 201 series, but with opening provided for twisting double tube sleeve joints.

Sleeve opening in 7" pliers for Nos. 14 and 17 N.B.S. and No. 12 B.&S. (.045) Sleeve opening in 8" pliers for No. 12 N.B.S. and No. 10 B.&S. (.104).

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660025	212-7	7"	7¼ lbs.
660027	212-8	8"	11¾ lbs.

KLEIN'S OBLIQUE CUTTING PLIER (Bell System Type)



This plier is similar to, but of heavier construction than, the 202-5-SW, an all purpose cutting tool for telephone installation and maintenance work. The "W" notches will slit acetate cellulose and other insulations from wires up to .058 O.D. A stripping hole .052 diameter is provided in blades. Sleeve openings in handles.

The 252-6 is the same plier less stripping hole, W skinning notch and sleeve opening.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660054	252-6-SW	6-inch	4 lbs.
660057	252-6	6-inch	4 lbs.

KLEIN'S NARROW NOSED OBLIQUE CUTTING PLIER



Cuts close, the narrow head permitting its use in confined places. The knives are perfectly fitted, so that they meet accurately at all points.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660011	202-5	5-inch	3¾ lbs.
660014	202-6	6-inch	4 lbs.

KLEIN'S SIDE CUTTING PLIER N.E. Type ("Stream-lined")



These pliers are identical with Series 201 except that the nose is round to permit working in confined space and all edges are rounded to prevent nicking of wire.

Full clearance back of the knife permits use on insulated wire.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660004	201-6 N.E.	6-inch	5¼ lbs.
660006	201-7 N.E.	7-inch	7¼ lbs.
660008	201-8 N.E.	8-inch	11¼ lbs.
660010	201-9 N.E.	9-inch	13½ lbs.

KLEIN'S OBLIQUE CUTTING PLIER



This plier is the all-purpose cutting tool for telephone installation and maintenance work. The "W" notches will slit acetate cellulose and other insulations from wires up to .058 O.D. A stripping hole .052 diameter is provided in blades. Sleeve openings in handles.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660013	202-5-SW	5½-inch	3¾ lbs.



KLEIN'S "AUTO" OBLIQUE CUTTING PLIER

Made especially for mechanics and others who demand a high quality plier of this pattern. The knives are close cutting and carefully matched for their full length. Useful for pulling cotter pins, for choke wires, etc. The "Handform" handles provide full leverage and comfort for continual use.

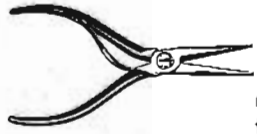
Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660030	220-7	7-inch	7 lbs.

KLEIN'S CHAIN NOSE PLIER, WITHOUT CUTTERS



This plier is intended for general use where a shorter nose is desirable. Made in one size only—6 inch.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660051	317-6	6-inch	3½ lbs.



LONG NOSE PLIER

Newly designed slim pattern long nose plier suitable for working in confined places. Jaws are knurled to insure a positive grip.

Kellogg Code No.	Cat. No.	Size	Weight per Doz.
660064	307-5½-L	5½-inch	2½ lbs.
660059	307-5½ (less Leaf Spring)	5½-inch	2½ lbs.

KLEIN'S LONG NOSE PLIER, WITHOUT CUTTERS



Special features are its adaptability to stripping the ends of insulated wire and the extra long reach of the jaws which permits getting into difficult places. For switchboard, telegraph and telephone work, armature winding, etc. This tool is especially hardened and tempered to insure positive grip at point of nose when pressure is applied. Point 3/32 in. round.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660040	301-5	5-inch	3¼ lbs.
660041	301-6	6-inch	3¾ lbs.
660043	*301-7	7-inch	4¼ lbs.

*This plier has extra long nose — measuring 2¾" from center of hinge to point.

KLEIN'S LONG NOSE, SIDE CUTTING PLIER



Has the same features as No. 301 series shown above, with the addition of the cutting knives. The knives are carefully fitted and the body of the plier is hardened and tempered, assuring true cutting. Point 3/32 in. round.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660015	203-5	5-inch	3¼ lbs.
660016	203-6	6-inch	3¾ lbs.
660018	*203-7	7-inch	4¼ lbs.

*This plier has extra long nose — measuring 2¾" from center of hinge to point.



KLEIN'S CHAIN NOSE PLIER, SIDE CUTTING

A chain nose plier similar to No. 317-6 but with side cutting knives. The knives are carefully matched and cut true over their entire length. Made in one size only—6 inch.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660029	217-6	6-inch	3½ lbs.

KLEIN'S HEAT-COIL PLIER



Particularly adapted for the removing of heat coils from switchboards and telephone terminals, the nose being shaped to fit the coils. This tool is also serviceable in removing caps from batteries or from binding posts, as well as holding any cylindrical object.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660049	313-6	6-inch	3¾ lbs.



KLEIN'S LONG FLAT NOSE, SPRING ADJUSTED PLIER

This plier is hollow ground on the outside of the jaws to reach between and grasp springs easily. It is largely used by telephone men because it makes rapid and accurate adjustments possible. Inside of jaws smooth.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660048	311-5½	5½-inch	3¼ lbs.

KLEIN'S LONG CURVED NOSE PLIER



A handy plier for working around switchboards, terminals and telephones, due to the nose being curved. The angle is arranged to give full clearance and prevent skinning of knuckles. Users will find this tool adaptable to a great variety of uses. The jaws will not lose their shape or set due to pressure applied, owing to the quality of steel used, its hardening and tempering.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660044	302-6	6-inch	3¼ lbs.



KLEIN'S CORD TIP CLOSING PLIER

The jaws of this tool are sturdy, permitting its use as a hand press for closing cord tips such as W.E. 101 and 102 (new numbers 120 and 121). The circular openings are correctly sized to insure perfect connections when the press is completed. The diameters of the holes are .128" and .156" respectively.

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
660001	039	5-inch	3 lbs.



CHAIN NOSE PLIER

Suitable for all types of close-quarter precision work—a full inch smaller than standard Klein Chain Nose Plier. Furnished with a very fine knurl that will not damage soft wire. Can be furnished less knurl to order.

Kellogg Code No.	Cat. No.	Size	Weight per Doz.
660060	317-5-L	5-inch	2½ lbs.
660061	317-5 (less Leaf Spring)	5-inch	2½ lbs.



DUCK BILL PLIER

Here is a new small plier with duck bill jaws of sufficient width to hold small springs, yet small enough to form wire in confined places. This plier is furnished without knurl.

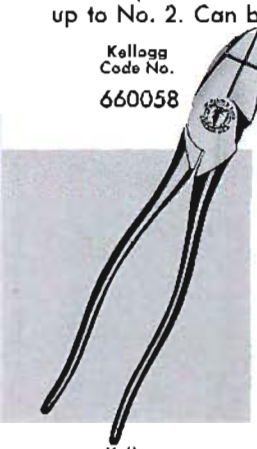
Kellogg Code No.	Cat. No.	Size	Weight per Doz.
660062	306-5½-L	5½-inch	2½ lbs.
660063	306-5½ (less Leaf Spring)	5½-inch	2½ lbs.

KLEIN'S SIDE-CUTTING PLIERS
Klein Kut High-Leverage Plier

A quality plier that will cut regular wire and also provide easy cutting of weatherproof hard-drawn copper wire up to No. 2. Can be used for A.C.S.R



Kellogg Code No.	Cat. No.	Size
660058	213-9	9-inch



Klein Kut High-Leverage Plier N.E. Type (Streamlined)

The same as 213-9 shown above, but with the rounded nose and edges characteristic of all Klein N.E. Streamlined side-cutting pliers. Like the 213-9 this N.E. type has the unique high-leverage characteristics that permit cutting through heavy-duty wire with one-hand operation.

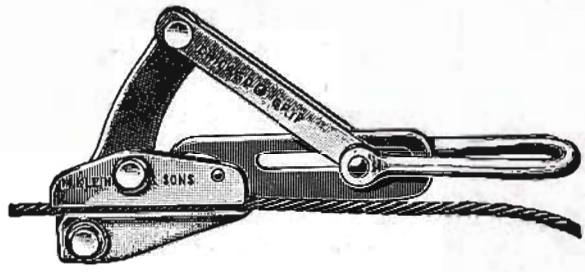
Kellogg Code No.	Cat. No.	Size
660055	213-9 N.E.	9-inch



GRIPS FOR BARE WIRES, KLEIN "CHICAGO" WITHOUT PULLEYS

The harder the pull, the tighter this grip holds. It pulls straight without leaving kinks in the wire. Handy to put on and holds itself in place by means of a spring acting on the compressing lever.

Kellogg Code No.	Cat. No.	Maximum Wire Size	Minimum Wire Size	Approx. Max. Opening	Safe Load	Approx. Weight Each
445031	1613-30	No. 6 B&S Solid (.162")	No. 12 B&S Solid (.081")	.22 in.	1,500 lbs.	1½ lbs.
445032	1613-30B	As above, but bronze lined jaws.				
445033	1613-40	No. 0 B&S Strand (.373")	No. 10 B&S Solid (.102")	.44 in.	2,250 lbs.	3 lbs.
445034	1613-50	No. 4/0 B&S Strand (.552")	No. 6 B&S Solid (.162")	.62 in.	4,000 lbs.	8 lbs.
445035	1613-50B	As above, but bronze lined jaws.				

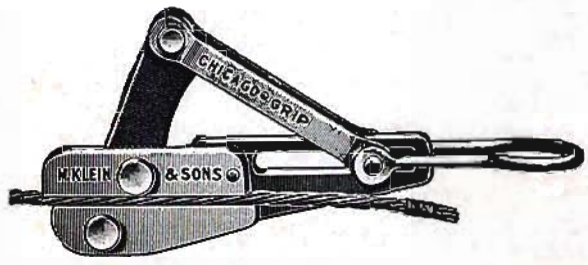


GRIPS, KLEIN IMPROVED "CHICAGO"
For Messengers, Guys and Conductors Up to ½ in. in Diameter

Has bronze-lined jaws to prevent slippage and consequent damage to galvanized finish or to copper or aluminum conductor. Forged from alloy steel, heat treated.

Maximum cable size: 4/0 B.&S. 7 strand copper (.522 in.) 3/0 A.C.S.R. Minimum cable size: No. 4 B.&S. solid copper (.202 in.) No. 6 A.C.S.R.

Kellogg Code No.	Cat. No.	Maximum Cable Size	Minimum Cable Size	Approx. Max. Opening	Safe Load	Approx. Weight Each
445040	1628-5B	With bronze lined jaws 4/0 B&S 7 Strand Copper (.522") 3/0 A.C.S.R. (.502")	No. 4 B&S Solid Copper (.204") No. 6 A.C.S.R. (.198")	.58 in	8,000 lbs.	6 lbs.
445039	1628-5	As above but without bronze lining in jaws.				
445044	1628-5AT	Same as 1628-5 except with chain and clevis for use as strand puller, Type L.				



GRIPS, KLEIN "CHICAGO"
For Messenger Strand and Heavy Cables

Similar in construction to No 1613 series, but heavier. They can be modified on special order to accommodate strand and cable of larger diameters.

Kellogg Code No.	Cat. No.	Maximum Cable Size	Minimum Cable Size	Approx. Max. Opening	Safe Load	Approx. Weight Each
445041	1628-6	3/16" Galvanized Steel Strand (.438") No. 2/0 B&S Copper Strand (.414") No. 1/0 A.C.S.R. (.398")	1/16" Galvanized Steel Strand (.188") No. 5 B&S Copper Solid (.182") No. 7 A.C.S.R. (.177")	.50 in.	8,000 lbs.	8½ lbs.
445042	1628-16	5/8" Galvanized Steel Strand (.625") No. 300,000 C.M. Copper Strand (.629") No. 4/0 A.C.S.R. (.563")	5/16" Galvanized Steel Strand (.312") No. 1/0 B&S Copper Solid (.325") No. 2 A.C.S.R. (.316")	.69 in.	15,000 lbs.	15½ lbs.
445045	1628-16AT	Same as 1628-16 except with chain and clevis for use as strand puller, Type H.				



KLEIN'S LINEMAN'S WRENCH

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
87005	3146-A	13-inch, for ¾ in. hardware. Same as No. 3146 but modified for ¾ inch hardware.	23 lbs.

Openings: Large end 1 1/16 inch and 1 5/16 inch.
Small end 5/8 inch and 7/8 inch.
(For ¾ inch and 5/8 inch through bolt, ½ inch lag screw, 3/8 inch carriage bolt, ½ inch and 5/8 inch guy clamps.)



KLEIN'S LINEMAN'S WRENCH
"Bell System" Type

This wrench is forged of select bar steel, heat treated, and is of the open end type with two openings of different size at each end.

There is a hole provided at the larger end so that the wrench may be used for turning in standard pole steps.

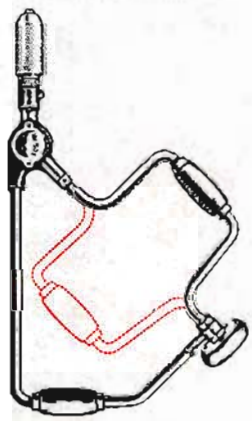
This wrench is particularly adapted for use on the heavier 3-bolt guy clamps on which the clearance for a wrench is limited and is generally suitable for 5/8-inch hardware.

Openings: Large end 1 3/32 inch and 29/32 inch.
Small end 13/16 inch and 5/8 inch.
(For 5/8 inch through bolt, ½ inch lag screw, 3/8 inch carriage bolt, ½ inch and 5/8 inch guy clamps.)

Kellogg Code No.	Cat. No.	Size	Av. Weight per Doz.
870004	3146	13-inch, for 5/8 in. hardware	23 lbs.

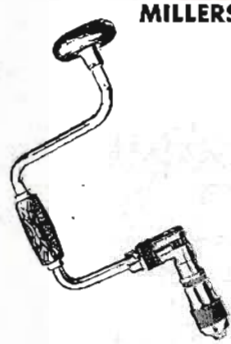
No. 502 MILLERS FALLS CORNER BRACE

A fine tool for boring in corners, against walls and beams and similar locations. Master chuck holds round, square and No. 1 M.T. shanks. Ball thrust bearing at chuck. Black enameled frame. Other exposed metal parts nickeled and buffed. Machine cut steel gears. Mahogany finished hardwood head and handle.



Kellogg Code No.	Cat. No.	Sweep	Weight
140063	502	10"	4 lbs.

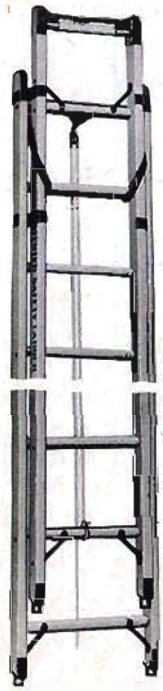
MILLERS FALLS RATCHET BRACES



A low priced brace with Barber chuck with alligator jaws and semi-boxed ratchet. Steel clad, ball bearing head. Head and handle mahogany finished hardwood. Exposed metal parts nickeled and buffed.

Kellogg Code No.	Cat. No.	Sweep	Weight
140060	1708	8"	2¼ lbs.
140061	1710	10"	2⅜ lbs.
140062	1712	12"	2½ lbs.

"OSHKOSH" SAFETY EXTENSION LADDER



One of the outstanding features on the Oshkosh Safety Extension Ladder is the automatic safety lock. The ladder is extended by merely pulling the rope. The instant the operator lets go of the rope, the locking device drops into place and the top section is firmly locked. To lower, the operator gives a slight pull on the rope; then the top section slowly descends. It cannot accidentally drop.

The side rails are made from straight grained, properly seasoned aeroplane Spruce.

The rungs are made from tough Mountain Hickory and they, too, are absolutely straight grained. Each rung has a shouldered tenon joint which is pressed tightly into the side rails assuring a safe, tight fit. The side rails of each section are connected at top, middle, and bottom with steel tie-rods. Either section can be used separately as an individual ladder, both being equipped with safety tips and pikes.

All metal parts are parkerized. Available in lengths from 16 feet to 46 feet in 2-foot steps, flared or straight rails.



"DIAMIDE" SPIRAL TWIST DRILL
Carbide Tipped Masonry Drill

STEEP SPIRAL FLUTE FOR . . . Fast, complete dust removal • No Binding of Drill • Drills full depth without stopping or removing Drill.

CARBIDE TIP AND DRILL STOCK SAME DIAMETER FOR . . . Better support of tip, eliminating bent shanks and no overhang on tip to cause snagging • Heavier, Stronger Shanks • Less Breakage.

MORE ACCURATE HOLES, STRAIGHT HOLES, No "creeping" of Drill • Lower drilling cost • Easier, faster drilling, less effort; and the drill runs cooler.

Catalog Number	Nominal Diameter	Shank	Overall Length
7703	3/16"	1/4"	3"
7704	1/4"	1/4"	4"
7705	5/16"	1/4"	4"
7706	3/8"	1/4"	4"
7707	7/16"	1/4"	4"
7708-A	1/2"	1/4"	4"
7708-B	1/2"	3/8"	6"
7709-A	5/16"	3/8"	6"
7710	5/8"	1/2"	6"
7711	11/16"	1/2"	6"
7712	3/4"	1/2"	6"
7714	7/8"	1/2"	6"
7716	1"	1/2"	6"
7718	1 1/8"	1/2"	6"
7720	1 1/4"	1/2"	10"
7724	1 1/2"	1/2"	10"



DRILLS, DIAMOND N STAR TYPE

For brick, stone or concrete. Made of high grade octagon drill rod.

Additional sizes and lengths are available on special order. Specify Catalog No. 700 and size wanted.

Kellogg Code No.	Diameter Drill	Length	Std. Pkg.	Weight per Doz.
350060	1/4 in.	12 in.	12	2 lbs.
350061	5/16 in.	12 in.	12	3 lbs.
350062	3/8 in.	12 in.	12	4 lbs.
350063	7/16 in.	12 in.	12	5 lbs.
350064	1/2 in.	12 in.	12	5 lbs.
350065	5/8 in.	12 in.	6	9 lbs.
350066	3/4 in.	12 in.	6	12 lbs.



DRILLS, DI-FORGE MASONRY

FOR HAMMER DRILLING. Forged from a solid bar of vanadium tool steel. Used with hand Drill Holder or electric hammer. Rotate clockwise between each blow when used with hand hammer. Rotate continuously if used with electric hammer. Will stand hard use and abuse.

Kellogg Code No.	Cat. No.	Diameter	Length Over-all	Std. Pkg.	Weight per Doz.
350030	720-3	3/16 in.	2 3/4 in.	12	.5 lb.
350031	720-4	1/4 in.	3 3/16 in.	12	.75 lb.
350032	720-5	5/16 in.	4 1/4 in.	12	1. lb.
350033	720-6	3/8 in.	5 in.	12	1.25 lbs.
350034	720-7	7/16 in.	5 1/4 in.	6	1.50 lbs.
350035	720-8	1/2 in.	5 3/4 in.	6	2. lbs.
350036	720-9	9/16 in.	5 7/8 in.	6	2.5 lbs.
350037	720-10	5/8 in.	6 1/8 in.	6	2.5 lbs.



DRILL HOLDERS, STYLE C RUBBER GRIP

For use with Di-Forge Masonry Drills. Made of vanadium steel with a soft rubber grip with flange to protect the hand of the operator. Hexagon flange also prevents rolling.

Kellogg Code No.	Cat. No.	Weight Per Doz.
505006	755	10½ lbs.



STRIPPER, BRAID

Diamond braid strippers are used for removing the braided covering from parallel drop wire and for holding bridging connectors while they are being installed or removed.

Consists of an aluminum handle with an enlarged end into which is clamped two circular steel cutting blades, projecting into three wire grooves. These grooves are .270, .330, and .375 inches wide and make cuts .060, .080, and .110 inches deep, respectively.

A sliding guard protects the thumb while forcing wire down on cutting blade. Blade can be rotated to new position when used section becomes dull.

Handle is provided with steel wrench plate. Hexagonal opening of 3/8 x 7/16, and 5/8 inches for bridging connectors, nuts, or heads.

Kellogg Code No.	Cat. No.	Description	Standard Package	Weight Each
765001	779	Stripper, Braid	12	¼ lb.



MANHOLE COVER HOOKS

Designed to raise a heavy manhole cover by prying the wedged point end of the hook under the groove provided in the cover for the purpose.

Kellogg Code No.	Cat. No.	Length	Weight Each
510050	860	26½ in.	5 lbs.



TELESCOPING TRIP AUGER

Smooth-working trip mechanism and movable blade make dumping dirt easy. Reamer blade can be set to bore 9 sizes of holes.

Cat. No.	Hole Size	Max. Extended Length	Wt. Each
610-A	6½" to 10"	8'	24 lbs.
612-A	6½" to 10"	10'	27½ lbs.
812-A	8¼" to 14⅜"	8'	24¾ lbs.
813-A	8¼" to 14⅜"	10'	28½ lbs.
814-A	8¼" to 14⅜"	12'	32 lbs.



NEVER-CREEP MAUL AND INSTALLING BAR

These tools are especially designed for use with Never-Creep Anchors. The bar can be used for installing, retrieving, or tamping.

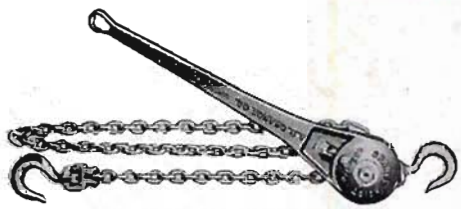
Cat. No.	Description	Weight
15	Never Creep Installing Bar	9 lbs.
16	Never Creep Maul	12 lbs.



EXPANDING AND TAMPING BAR

Weight of the bar does the expanding job. Eliminates the need to carry extra tamping equipment, as it also serves as a tamp.

Cat. No.	Description	Weight	Length
10	Expanding and Tamping Bar	10'	24 lbs.
12	Expanding and Tamping Bar	12'	25 lbs.



CHAIN HOIST

Only 100 pounds pull required to lift rated 1-ton load. Simple controls can be operated with gloves on Ratchet-action handle.

Cat. No.	Description	Weight
3010	Without Safety Latch	12 lbs.
2010S	With Safety Latch	12 lbs. 2 oz.



STANDARD PIKE POLE

Chance Standard Pike Poles are available with a Maplac plastic coating or a linseed oil finish. The tough clear Maplac covering protects the pole from wear, adds strength and prevents splintering. These poles are laminated for greater warp-resistance and rigidity.

STRAIGHT, MAPLAC FINISH

Cat. No.	Size	Wt. Ea.
210 M	2" x 10'	8 lbs.
212 M	2" x 12'	9 lbs.
214 M	2" x 14'	11 lbs.
216 M	2" x 16'	13 lbs.
218 M	2" x 18'	15 lbs.
220 M	2" x 20'	17 lbs.
214 SM	2¼" x 14'	13 lbs.
216 SM	2¼" x 16'	15 lbs.
218 SM	2¼" x 18'	17 lbs.
220 SM	2¼" x 20'	20 lbs.

STANDARD FINISH

Cat. No.	Type	Size	Wt. Ea.
210	Straight	2" x 10'	8 lbs.
212	Straight	2" x 12'	9 lbs.
214	Straight	2" x 14'	11 lbs.
216	Straight	2" x 16'	13 lbs.
218	Straight	2" x 18'	15 lbs.
220	Straight	2" x 20'	17 lbs.
210 H	Tapered	2½" x 10'	10 lbs.
212 H	Tapered	2½" x 12'	12 lbs.
214 H	Tapered	2½" x 14'	14 lbs.
216 H	Tapered	2½" x 16'	16 lbs.
218 H	Tapered	2½" x 18'	18 lbs.
220 H	Tapered	2½" x 20'	20 lbs.

LAMINATED PLASTIC-COATED PIKE POLES

Catalog Number Safety-Pt.	Catalog Number Std. Pt.	Size	Weight Each
210PM	210M	2" x 10'	8 lbs.
212PM	212M	2" x 12'	9 lbs.
214PM	214M	2" x 14'	11 lbs.
216PM	216M	2" x 16'	13 lbs.
218PM	218M	2" x 18'	15 lbs.
220PM	220M	2" x 20'	17 lbs.
214SPM	214SM	2¼" x 14'	13 lbs.
216SPM	216SM	2¼" x 16'	15 lbs.
218SPM	218SM	2¼" x 18'	17 lbs.
220SPM	220SM	2¼" x 20'	20 lbs.



HOOK, SHAVE

Used for scraping lead sleeves, pipe, cable ends, pot heads, etc. The blade is fastened in place with a nut, so that it can be replaced when required.

Kellogg Code No.	Cat. No.	Pattern	Length	Weight per Doz.
510010	304	Oval	5½ in.	2¾ lbs.



DRESSER, HARDWOOD

Made of hardwood for shaping and dressing lead sleeving, pipe, pot heads, etc.

Kellogg Code No.	Cat. No.	Description	Weight per Doz.
345001	295	Hardwood Dresser	15 lbs.

TELEGRAPH SPOONS
Sturd-E Plain Back With 22-Inch Strap

13-Gage Heat Treated, Forge Finish Blade
XX Grade Handle, Lacquer Finish



EASTERN PATTERN

With Hickory, or Ash, Lacquer Finished Handles

Kellogg Code No.	Cat. No.	Length Handle Feet	Size Blade Inches	Net. Wt. Lbs. Each
746004	T55	7	9½ x 10½	10
746005	T56	8	9½ x 10½	11
746006	T57	9	9½ x 10½	12
746008	T58	10	9½ x 10½	13



WESTERN PATTERN

With Hickory, or Ash Handle, Lacquer Finished Handles

Kellogg Code No.	Cat. No.	Length Handle Feet	Size Blade Inches	Net. Wt. Lbs. Each
746007	T50	7	8½ x 9¼	10
746001	T51	8	8½ x 9¼	11
746002	T52	9	8½ x 9¼	12
746003	T53	10	8½ x 9¼	13

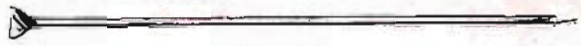


TELEGRAPH SHOVELS
Sturd-E Plain Back With 22-Inch Strap

13-Gage Heat Treated, Forge Finish Blade
XX Grade Hickory Handle, Lacquer Finish

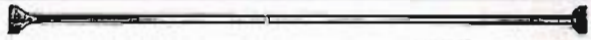
Kellogg Code No.	Cat. No.	Length Feet	Size Blade Inches	Net. Wt. Lbs. Each
730001	T16	7	9 x 12	10
730002	T17	8	9 x 12	11
730003	T18	9	9 x 12	12
730004	T19	10	9 x 12	13

Handles on Telegraph Shovels and Spoons stamped with foot marks to show depth of hole.



CROW AND DIGGING BARS

Kellogg Code No.	Cat. No.	Size	Shape	Net. Wt. Lbs. Each
955001	T401	1" x 7'	Hexagon	20
955002	T402	1" x 8'	Hexagon	23
955003	T404	1⅛" x 7'	Hexagon	25
955004	T405	1⅛" x 8'	Hexagon	28
955005	T406	1¼" x 8'	Hexagon	34



TAMPING AND DIGGING BARS

Kellogg Code No.	Cat. No.	Size	Shape	Net. Wt. Lbs. Each
955006	T408	1" x 7'	Hexagon	21
955007	T409	1" x 8'	Hexagon	25
955008	T411	1⅛" x 7'	Hexagon	27
955009	T412	1⅛" x 8'	Hexagon	30



PLAIN DIGGING BARS

Kellogg Code No.	Cat. No.	Size	Shape	Net. Wt. Lbs. Each
955010	T413	1⅛" x 8'	Round	28
955011	T414	1⅛" x 8'	Hexagon	30



ELECTRIC DIGGING SPUDS
With Tamper

Kellogg Code No.	Cat. No.	Size	Shape	Net. Wt. Lbs. Each
955012	T415	1⅝" x 9'	Round	17



WOOD HANDLE TAMPING BARS

Lacquer Finish Handle, 1⅝ Inch Diameter
Wood Head 3½" x 1¾", Shoe ¼" x 1¾"

WITH LIGHT SHOE

Kellogg Code No.	Catalog No.	Length	Net. Wt. Lbs. Each
955014	T417	7 ft.	10
955015	T418	8 ft.	11

WITH HEAVY SHOE

Handle 1⅝" Diameter. Head 2½" x 1¾". Shoe ⅝" x 1¼"

Kellogg Code No.	Catalog No.	Length	Net. Wt. Lbs. Each
955016	T419	7 ft.	11
955017	T420	8 ft.	12



FIR PIKE POLES
Plain or Gimlet — Point-Light Pattern

Available with straight or twisted points at no extra cost. Metal band can be added at bottom of pole if desired. Handle is lacquered.

(Continued on next page)

Kellogg Code No.	Stock No.	Size	Net. Wt. Lbs. Each
668001	T205	2" x 12'	9
668002	T206	2" x 14'	11
668003	T207	2" x 16'	13
668004	T208	2" x 18'	15



A.T.&T. PATTERN

Kellogg Code No.	Stock No.	Size	Net. Wt. Lbs. Each
668011	T218	2½" x 10'	10
668005	T219	2½" x 12'	12
668006	T220	2½" x 14'	14
668007	T221	2½" x 16'	16



POST HOLE DIGGERS
True Temper Perfection Digger

Designed for all sandy, loamy, or light soils. Blades are shaped to hold full loads of light soils, without spilling. Two identical, one-piece high carbon steel blades are accurately hinged by a strong steel bolt.

HEAVY DUTY PATTERN — HEAT TREATED

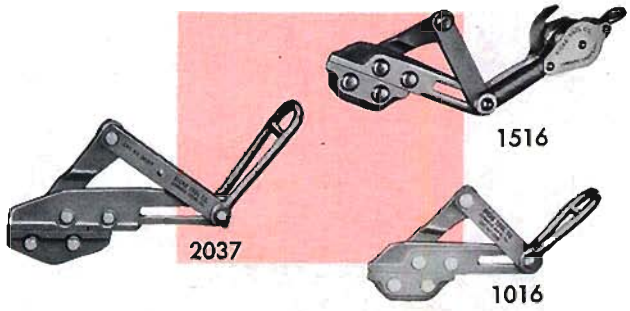
Blades are 11 gage, 13½ inches long and 8¼ inches wide.

Kellogg Code No.	Catalog No.	Length	Net. Wt. Lbs. Each
340020	T439	4 ft.	10
340021	T440	7 ft.	12
340022	T441	8 ft.	13

REGULAR PATTERN

Blades are 13 gage, 13½ inches long and 8¼ inches wide. Ash handles, lacquer finish.

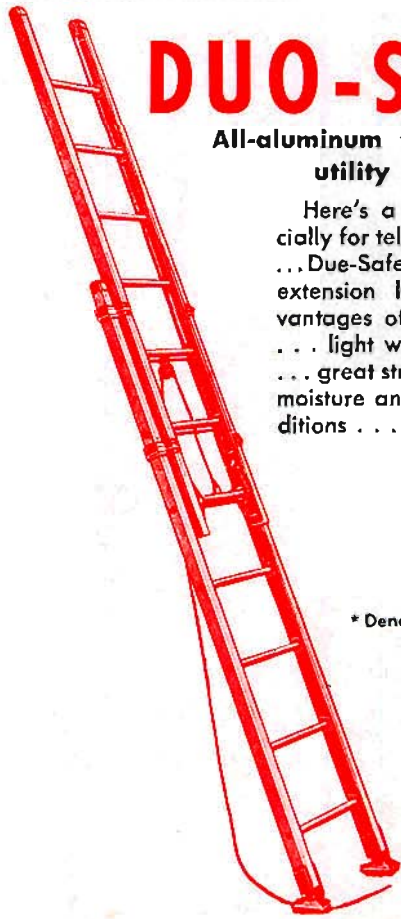
Kellogg Code No.	Catalog No.	Length	Net. Wt. Lbs. Each
340025	T442	7 ft.	13
340026	T443	8 ft.	14



GRIPS, BUFFALO

For bare and insulated wire — with and without pulleys. These grips will receive wire in open position without manipulating any part of the tensioning tackle.

Kellogg Code No.	Cat. No.	For Wire or Strand Size	Max. Opening	Weight Each
445001	1016	No. 6 and smaller	¼ in.	1½ lbs.
DESCRIPTION—With Loop.				
445002	1516	No. 6 and smaller	¼ in.	2¼ lbs.
DESCRIPTION—With Pulley.				
445003	2037	No. 0 and smaller	7/16 in.	3 lbs.
DESCRIPTION—With Loop.				



DUO-SAFETY
All-aluminum telephone and utility ladder

Here's a ladder designed especially for telephone and utility work. . . . Due-Safety's Type F all-aluminum extension ladder. The many advantages of aluminum construction . . . light weight for easy handling . . . great strength . . . unaffected by moisture and adverse weather conditions . . . will not sliver or bruise

* Denotes heavy rail 1¼" x 3¼".

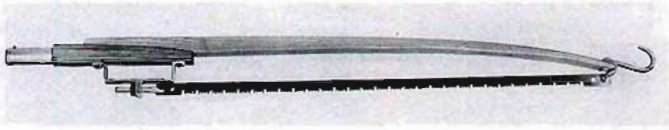
SINGLE		TWO SECTIONS		THREE SECTIONS	
No.	Size	No.	Size	No.	Size
8-TFI	8'	16-TF2	16'	24-TF3	24'
10-TFI	10'	18-TF2	18'	30-TF3	30'
12-TFI	12'	20-TF2	20'	36-TF3	36'
14-TFI	14'	24-TF2	24'	42-TF3	42'
16-TFI	16'	26-TF2	26'	*48-TF3	48'
18-TFI	18'	28-TF2	28'		
20-TFI	20'	30-TF2	30'		
		*32-TFF2	32'		
		*34-TFF2	34'		
		*36-TFF2	36'		
		*38-TFF2	38'		
		*40-TFF2	40'		

UNIVERSAL TREE SAW



The Universal Tree Saw can be attached to the head of Newman Tree Trimmers Nos. 700-800 and 900.

Kellogg Code No.	Cat. No.	Length Overall
716026	S1-15	15"



NEWMAN NO. 1200 TREE SAW

A long blade tree saw designed for cutting limbs up to 4 inches in diameter. By under-cutting, limbs up to 8 inches in diameter may be cut.

Kellogg Code No.	Cat. No.	Description	Weight
716014	1200	Saw for 1½" trimmer pole	3 lbs.
716024	1200-A	Saw for 1¼" trimmer pole	3 lbs.



HEAVY DUTY TREE TRIMMERS

A heavy duty tree trimmer employing a cutting mechanism which cuts the limb from the top down. The cutting motion is cyclic — point first, then heel. The trimmer has compound leverage with a pulley arrangement featuring ball bearing pulleys. Makes full ½-inch cut. All handles 1½ inches in diameter, 5 feet long.

Kellogg Code No.	Cat. No.	Description	Weight
815009	900	Tree Trimmer, Complete	6½ lbs.
470023	975	5 ft. Center Extension Handle	2 lbs.
100020	950	Replacement Blade	½ lb.
470024	985	5 ft. End Extension Handle	2 lbs.

FEATHERWEIGHT TREE TRIMMERS

Designed for lighter work than the No. 900 trimmer. A light weight tool but will make a 1-inch cut. This trimmer has single action pulley design. Uses 1¼-inch diameter handles.

Kellogg Code No.	Cat. No.	Description	Weight
815007	700	Trimmer Complete	4¾ lbs.
470020	875	2 ft. Center Extension Handle	1¾ lbs.
100012	750	Replacement Blade	⅜ lb.
470021	885	5 ft. End Extension Handle	1¾ lbs.

THIS ONE TOOL

The HKP PORTER *Center-Cut* CUTTER will do 90% of ALL YOUR METAL CUTTING and *SAVE TIME* and *MONEY* on every operation.

Available in six different sizes for cutting medium hard metals up to ⅝" diameter. Also comes in sizes #0 to #3, with Cohardite insulated handles, tested to 20,000 volts.

CAPACITIES

Tool Number	Approx. Length	Med. Hard Bolts In Thread	Med. Hard Metals	Approx. Weight Lbs.
14CC	14"	5/16"	¼"	2⅞
0CC	18"	⅜"	5/16"	4¼
1CC	24"	7/16"	⅜"	6¾
2CC	30"	9/16"	½"	10½
3CC	36"	⅝"	9/16"	14¾
4CC	42"	¾"	⅝"	17¾

PORTER TN STEEL CABLE CUTTER

For cutting all soft or hard steel cable or wire rope. Shear type-cutting edges pass each other for crisp, clean cuts. Cable locks during cut to minimize crushing or deforming.

CAPACITIES

Tool Number	Approx. Length	Wire Rope and Cable	Approx. Weight Lbs.
14TN	14"	¼"	3
1TN	24"	⅜"	6½
3TN	36"	⅝"	14½

SINGLE END CRESCENT WRENCH



A tool for general use in garages, repair shops, machine shops, on the farm, in the home and anywhere else there is a need for a dependable, adjustable wrench. The Crescent

Kellogg Code No.	Cat. No.	Size	Capacity	Weight, Each
870020	A16	6"	¾"	5 oz.
870024	A18	8"	15/16"	11 oz.
870021	A110	10"	1⅛"	1 lb. 4 oz.
870022	A112	12"	1⅝"	2 lbs. 1 oz.

FINISH: Sides of head polished, balance of wrench black.

COFFING SAFETY LOAD BINDERS



Safest boomer on the market. Load can be adjusted a fraction of an inch without releasing the binder. One man can pull the rated capacity without using a cheater. The handle will not fly as in the eccentric type binders.

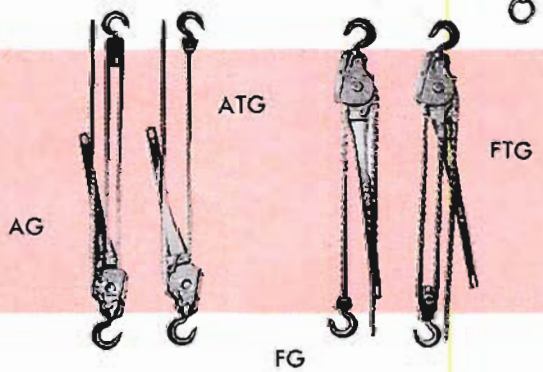
Model	ALB	FLB
Rated Capacity	3000#	6000#
Net Weight	11½#	24#
Standard Lift	20½"	19½"
Min. Distance Between Hooks	15"	18½"
Lever Pull to Lift Capacity	120#	220#

COFFING MIGHTY MIDGET PULLERS



The Mighty Midget Pullers operate both as a crank for fast action or as a lever where operating space is limited. The handle bends to warn of overload. This is a handy, tool-belt-size puller for linemen, welders and all around maintenance crews.

Kellogg Code No.	685010	685011
Model	MP-5	MP-10
Rated Capacity	500#	1000#
Net Weight	6½#	9½#
Standard Lift	57"	56½"
Min. Distance Between Hooks	8½"	8½"
Lever Pull to Lift Capacity	28#	40#

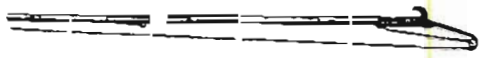


COFFING RATCHET LEVER HOISTS

Coffing ratchet lever hoists are safe, light weight hoists built for rugged use by maintenance, construction and utility crews. They are built with ratchet and pawls; there are no friction brakes to slip or freeze. The lever bends to warn of dangerous overloads before hooks fail or chain breaks.

Model	Rated Cap.	Net Wt.	Std. Lift	Min. Dist. Bet. Hooks	Lever Pull to Lift Cap
AG	¾	14#	56½"	13"	56#
ATG	1½	17#	57"	15"	60#
FG	1½	25#	56½"	16"	116#
FTG	3	34#	57"	17"	120#

PRUNERS, SEYMOUR SMITH TREE



In the Seymour Smith tree pruner the cutting and operating mechanism is contained in the head—a simple construction with a few parts. The pruner features a "center cut" action. A thin cutting blade is supported on both sides by heavy strong side pieces. The branch being cut is held on both sides of the cut by these same pieces.

Operation is by pulling a rope attached to a strong steel cable chain by a welded wire ring. The chain works through a ball bearing pulley—a simple and powerful action that easily cuts the roughest branches up to the full capacity of pruner.

The head casting is malleable iron; the cutting blade is hardened, tempered cutlery steel; the double music wire compression coil spring is supported by tempered, flat wire guides and the lever is heat treated alloy steel with a safety catch.

CUTS 1½-INCH DIAMETER BRANCHES

Kellogg Code No.	Cat. No.	Description	Shipping Wt. Each
815002	12-18	Complete Pruner with rope and 18-ft. pole	19 lbs.
815005	12	Pruner head only	4 lbs.
470042	202	6-ft. head section of pole	4½ lbs.
470043	203	6-ft. extension section of pole	5½ lbs.

CUTS 1-INCH DIAMETER BRANCHES

Kellogg Code No.	Cat. No.	Description	Shipping Wt. Each
815001	11-18	Complete Pruner with rope and 18-ft. pole	10 lbs.
815003	11	Pruner Head only	1½ lbs.
470040	102	6-ft. head section of pole	2¼ lbs.
470041	103	6-ft. extension section of pole	3 lbs.



DRILL, AUTOMATIC

For rapidly boring holes in wood by pushing down on the handle, which is forced back by a spring. The drill point revolves backward on up stroke of handle, clearing the chips and freeing the point. Points are held in chuck so they cannot be pulled out.

Drill is chrome plated and polished. The handle is a magazine for holding the drill points. It is quickly closed and locked and when unlocked the drill points are forced up into plain sight. Eight drill points are included with each drill: 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64 inch diameter.

Kellogg Code No.	Cat. No.	Diameter Holes	Length Over-all	Weight per Doz.
35002	41	1/16 to 11/64 in.	11¼ in.	8¼ lbs.



DRILL, DOUBLE SPEED BREAST

Has 3-jaw chuck for round shank tools up to ¼ inch. Handy sliding shifter instantly changes the speed or locks spindle for opening chuck. Steel spindle with adjustable ball bearing, cut gears and steel pinions. Breast plate is adjustable.

Kellogg Code No.	Cat. No.	Length Over-all	Capacity	Weight Each
350101	1455	16½ in.	0 to ½ in.	6 lbs.



DRILL, DOUBLE SPEED HAND

Double speed plain hand drill. Has 3-jaw chuck for round drills. Malleable iron frame, finished in dead black. Hardwood handle, detachable at milled nut. Deep drill magazine inside. Bright parts chrome plated.

Kellogg Code No.	Cat. No.	Length Over-all	Capacity	Weight
350095	1446	14½ in.	0 to ⅜ in.	2¾ lbs.



SCREW DRIVERS, CABINET

Same as standard style except with light, slim blades.

Kellogg Code No.	Cat. No.	Blade Length	Length Over-all	Diameter of Blade	Weight per Doz.
720040	95- 4½	4½ in.	8¼ in.	3/16 in.	1⅛ lbs.
720041	95- 5½	5½ in.	9¼ in.	3/16 in.	1¾ lbs.
720042	95- 6½	6½ in.	10¼ in.	3/16 in.	2 lbs.
720043	95- 8½	8½ in.	13 in.	7/32 in.	2⅞ lbs.
720044	95-10½	10½ in.	15 in.	7/32 in.	3⅛ lbs.
720045	95-12½	12½ in.	17 in.	7/32 in.	3⅜ lbs.



STANDARD STYLE SCREW DRIVERS

A superior quality driver. Blades of extra fine, alloy steel; selected hardwood handles with black satin finish. Fastening of blades to handles by unique method, without pins; cannot loosen with normal or even rough usage.

Kellogg Code No.	Cat. No.	Blade Length	Length Over-all	Diameter of Blade	Weight Per Doz.
720030	90-3	3"	7½"	7/32"	1⅞ lbs.
720031	90-4	4"	9¼"	¼"	2⅞ lbs.
720032	90-5	5"	10½"	5/16"	4¼ lbs.
720033	90-6	6"	11¾"	5/16"	4½ lbs.
720034	90-8	8"	14"	⅜"	7 lbs.
720035	90-10	10"	16⅜"	7/16"	10⅛ lbs.



SCREW DRIVERS, SPIRAL RATCHET

REGULAR STYLE

Kellogg Code No.	Cat. No.	Description	Length with Bit Extended	Length with Bit Closed	Weight per Doz.
720023	30-A	Standard Size	18¼ in.	13 in.	13½ lbs.

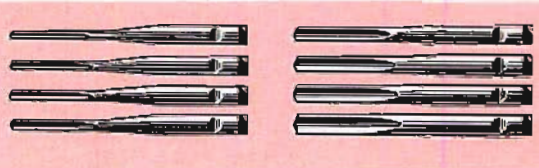
Screws may be driven or drawn by pushing on the handle or by ratchet movement. The movement is changed instantly or the driver can be made rigid by a simple shift. Spindle can be locked closed. Three bits of different size are furnished with each driver.



WITH QUICK RETURN

Spring in handle causes handle to come back automatically after each stroke of the driver.

Kellogg Code No.	Cat. No.	Description	Length with Bit Extended	Length with Bit Closed	Weight per Doz.
720024	130-A	Standard Size	20 in.	14¾ in.	15 lbs.



ATTACHMENTS FOR SPIRAL SCREW DRIVERS
Chuck and Drill Set

Consists of chuck and 8 drill points which fit into chuck adapter and the two together are then put into the chuck of spiral screw driver in the same manner as a regular bit. Set of points and a chuck in a wood box.

Kellogg Code No.	Cat. No.	Set	No. of Points	Range of Sizes	Wt. per Doz. Sets
350025	30-A	Chuck and Drill Set	8	1/16 to 11/64 in.	1¼ lbs.



NO. 11 HACKSAW FRAME

An all-'round usage frame of the same high quality as the No. 10 but with open pistol grip handle. Flexible Back, Hard Edge-Standard 10" blade. Spring steel, round edge frame 3/16" thick, 1/16" wide, adjusts for 10" and 12" blades.

Kellogg Code No.	Description	Weight Each
405002	#11 Hacksaw Frame	1¾ lbs.



NO. 10 HACKSAW FRAME

Atkins' finest frame, with a new, large, black plastic handle designed for greater ease in cutting—less hand fatigue. Silver Steel Tungsten-High Speed 10" blade. Spring steel, round edge frame 3/8" thick, 11/16" wide, adjusts for 10" and 12" blades. Heavy thread, thumb screw blade tightener adjusts to cut at four different angles. Throat opening permits 3 3/8" cut. Heavy duty plastic handle. Chrome finish.

Kellogg Code No.	Description	Weight Each
405001	#10 Hacksaw Frame	2 lbs.



HACKSAW BLADES
Standard Flexible Back, Hard Edge

An inexpensive blade, heat treated and carefully made to give easy, clean cutting and excellent service.

Kellogg Code No.	Cat. No.	Length	Width	Thickness	Teeth per Inch	Weight 100 Blades
RAKER SET						
100001	300	10"	½"	.025"	18	3¼ lbs.
100007	300	12"	½"	.025"	18	4 lbs.
WAVE SET						
100002	310	10"	½"	.025"	24	3¼ lbs.
100003	310	12"	½"	.025"	24	4 lbs.
100004	315	10"	½"	.025"	32	3¼ lbs.
100008	315	12"	½"	.025"	32	4 lbs.



NO. 9—COMPASS SAW

The favorite compass saw of plumbers and electricians. Heavy duty blade permits cutting of light metal as well as wood.

Silver Steel construction. Taper Ground Hardwood handle with thumb screw blade fastener facilitates rapid interchange of blades. Trimmed with nickeled screw. Polished finish.

Kellogg Code No.	Length	Points	Weight
716003	12"	9	½ lb.

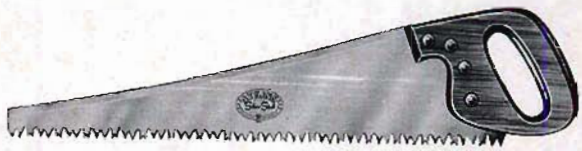
NO. 24—CABLE SAW



This is the favorite saw of electricians or anyone requiring a saw capable of cutting wood and soft metals.

Silver Steel construction. Double edged blade with 8 point edge for metal cutting, 15 point for cutting cable insulation or wood. Hardwood handle trimmed with nickeled screws. Polished finish.

Kellogg Code No.	Length	Width Point	Width Butt	Weight
716009	12"	2"	2¾"	1 lb.



NO. 40—TUTTLE TOOTH PRUNER SAW

The famous, fast-cutting Tuttle Tooth design. A handy all-purpose saw.

Silver Steel construction. Flat ground. Natural finish hardwood, special pattern handle, trimmed with nickeled screws. Polished finish.

Kellogg Code No.	Length	Width Point	Width Butt	Weight
716011	24"	1½"	5¾"	1½ lbs.
716012	20"	1⅛"	5"	1¼ lbs.



NO. 22—CURVED PRUNER SAW

A professional's pruner with rip tooth design for heavy limb cutting. Cuts on the pull. A good pruner for the farm or ranch.

Silver Steel construction. Flat ground. Hardwood, special pattern handle with large hand hole, trimmed with nickeled screws. Polished finish.

Kellogg Code No.	Length	Cut-Off Points	Width Point	Width Butt	Weight
716006	18"	6	1⅛"	3⅛"	1 lb.
716007	22"	6	1⅛"	3⅛"	1 lb.



NO. 390—ONE-MAN CROSSCUT SAW

Silver Steel construction. Taper ground. Hardwood handle trimmed with nickeled screws and medallion. Two cutter—one raker Tuttle Tooth pattern.

Kellogg Code No.	Length	Width Point	Width Butt	Weight
716020	3'	2¼"	6¾"	3 lbs.



NO. 590—DOCKING SAW

A rugged, skew back saw for rough, fast sawing around docks, car shops, farms and mines.

Silver Steel construction. Taper ground. Malleable iron handle riveted to blade. Peg tooth design—4½ points per inch.

Kellogg Code No.	Length	Width Point	Width Butt	Weight
716013	2½′	2½″	6½″	3 lbs.



Nos. 3 and 4 PLAIN EXPANSIVE BITS

The No. 3 bores ½″ to 1½″ and the No. 4, ⅞″ to 3″. For boring holes up to 4″ diameter, an extra cutter can be supplied for the No. 4.

Kellogg Code No.	Catalog Number	Size	Weight per Doz.
995150	3	Small, ½″ to 1½″	3⅛
995151	4	Large, ⅞″ to 3″	7½



No. 56 SOLID-CENTER CAR BIT

12-INCH TWIST — 18 INCHES OVER ALL

Kellogg Code No.	Cat. No.	Diameter	Weight per Doz.
995050	56-6	⅜″	3⅛ lbs.
995051	56-7	7/16″	3¾ lbs.
995052	56-8	½″	4¼ lbs.
995053	56-9	9/16″	4¾ lbs.
995054	56-10	⅝″	5⅞ lbs.
995055	56-11	11/16″	6⅜ lbs.
995057	56-12	¾″	7 lbs.
995058	56-14	⅞″	9¼ lbs.

No. 53 SOLID-CENTER CAR BIT

8-INCH TWIST — 12 INCHES OVER ALL

Kellogg Code No.	Cat. No.	Diameter	Weight per Doz.
995032	53-6	⅜″	2¼ lbs.
995034	53-8	½″	3 lbs.
995036	53-10	⅝″	3¾ lbs.
995037	53-11	11/16″	4¼ lbs.
995038	53-12	¾″	4¾ lbs.
995040	53-14	⅞″	5½ lbs.

CUT YOUR INSTALLATION COSTS

BOSTITCH T5 STAPLING TACKER

with grooved door

Grooved door fits over wire. Staple holds wire firmly.



Feeds and drives more than 80 staples without reloading — loads in a jiffy. Fast one hand operation — just place the stapler over the wire, press the handle, and a strong staple is driven into the wood, holding the wire snugly.

Kellogg Code No.	
750003	SPECIAL Bostitch T5-8 Tacker with grooved door and driver. . . .
751033	REGULAR Bostitch STCr-5019—⅜″ staples for all regular work, box of approximately 5,000 staples. . . .
751034	SPECIAL Bostitch STCr-5019—⅜″ C8 staples for hand-to-penetrate work, extra high carbon wire, box of approximately 5,000 staples. . . .



No. 57 SINGLE-SPUR CAR BIT

12″ TWIST AND 18″ TWIST

No. 57 Single-Spur Car Bit. Designed for pole, bridge, dock, and other heavy wood construction.

12″ TWIST

Kellogg Code No.	Cat. No.	Diameter	Weight per Doz.
995070	57-6-12	⅜″	3¼ lbs.
995071	57-7-12	7/16″	4½ lbs.
995072	57-8-12	½″	4½ lbs.
995073	57-9-12	9/16″	6¼ lbs.
995074	57-10-12	⅝″	7¼ lbs.
995075	57-11-12	11/16″	8½ lbs.
995076	57-12-12	¾″	9⅜ lbs.
995078	57-14-12	⅞″	11½ lbs.
995080	57-16-12	1″	15¼ lbs.

18″ TWIST

995085	57-9-18	9/16″	8½ lbs.
995086	57-10-18	⅝″	10¼ lbs.
995087	57-11-18	11/16″	11½ lbs.
995088	57-12-18	¾″	12¾ lbs.
995090	57-14-18	⅞″	18 lbs.
995092	57-16-18	1″	27 lbs.

Tools with 12″ twist are 17″ to 18″ over-all; with 18″ twist, 23″ to 24″ over-all.

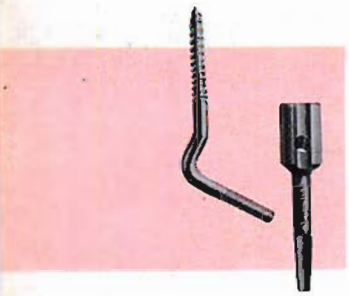


No. 261 SOCKET FRAMING CHISEL

Bevel-edged blade, socket and handle are fully polished. Conveniently long hardwood handle with nickel-plated, pressed steel ring. Blade length 8″. Over-all length 16″ to 17½″ according to size.

(Continued on next page)

Kellogg Code No.	Cat. No.	Width	Weight per Doz.
225001	261-¼	¼"	5 lbs.
225002	261-½	½"	6⅝ lbs.
225003	261-¾	¾"	10 lbs.
225004	261-1	1"	13½ lbs.
225006	261-1½	1½"	15¼ lbs.
225007	261-2	2"	22 lbs.



No. 727 ANGLE-SCREW DRIVER

For quick, easy driving of telephone angle screws (standard 5/16" size) without pre-boring. Saves time and saves workers' hands from injury.

Kellogg Code No.	Cat. No.	Weight per Doz.
720060	727	5 lbs.



No. 900 BIT EXTENSION

Strong enough to drive a bit up to 1" diameter yet small enough to follow a 5/8" size. Positive lock insures absolute grip on shank at all times to prevent holding sleeve loosening while boring or withdrawing.

Kellogg Code No.	Cat. No.	Weight Each
995001	900-15	1 lb.
995002	900-18	1⅛ lbs.
995003	900-21	1¼ lbs.
995004	900-24	1⅜ lbs.



No. 48 BELL HANGERS' DRILL

Of high-grade alloy steel, heat-treated over-all for additional strength, so that drill will not be damaged if metal is encountered during drilling. Twist length 3¾", over-all length as listed below. A 3/32" hole is drilled about one inch from point for convenience in pulling wire.

OVER-ALL LENGTH 12"

Kellogg Code No.	Cat. No.	Diameter	Weight per Doz.
350020	48-6-12	3/16"	1¼ lbs.
350009	48-8-12	¼"	1⅝ lbs.
350021	48-10-12	5/16"	1¾ lbs.
350012	48-12-12	3/8"	2⅛ lbs.
350023	48-14-12	7/16"	2⅞ lbs.
350024	48-16-12	½"	4 lbs.

OVER-ALL LENGTH 18"

350008	48-6-18		1¾ lbs.
350010	48-8-18		2½ lbs.
350011	48-10-18		2⅞ lbs.
350022	48-12-18		3 lbs.
350013	48-14-18		3¾ lbs.
350014	48-16-18		6⅛ lbs.



No. 46 WOOD-BORING BRACE DRILL

Twist lengths, 2¼" to 4½" — over-all lengths, 5½" to 9", depending on size.

Kellogg Code No.	Cat. No.	Diameter	Weight per Doz.
350003	46-8	¼"	1 lb.
350004	46-10	5/16"	1⅞ lbs.
350005	46-12	3/8"	1⅞ lbs.
350006	46-14	7/16"	2¼ lbs.
350007	46-16	½"	2⅜ lbs.

No. 41 UTILITY SAW



The special handle, as shown, is extra large.
The No. 41 Saw has 20" or 24" tuttle tooth blade

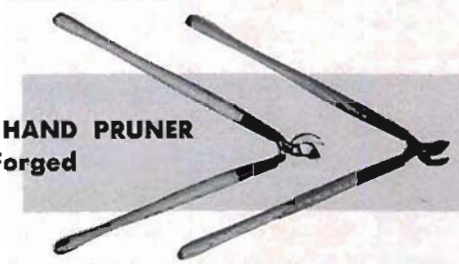
Kellogg Code No.	
716027	No. 41—20" Blade, tuttle tooth, special handle (wt. 1 lb. 5 ozs.)
716018	No. 41—24" Blade, tuttle tooth, special handle (wt. 1 lb. 10 ozs.)



No. 170 FORESTERS SAW

A splendid saw for large or small limbs, 4½ points to the inch. The handle is extra large to permit the use of gloves.

Kellogg Code No.	
716019	No. 170—26" Blade (wt. 1 lb. 3 ozs.)



No. 777 TWO HAND PRUNER
Drop Forged

Our No. 777 is designed on scientific principles. Because of the fact that the majority of men are right-handed, we have placed the blade on the opposite side from the general custom.

This permits the blade to be placed next to the body or main limb of the tree with the hook handle held in the left hand, while the right hand operates the blade.

The blade positively will not cut or dig into the hook. By dropping the hook considerably below the center line we have produced a positive draw cut superior to any other,

Both blade and hook are hardened drop forged crucible tool steel. Length overall 31½". Furnished either with plain ferrules or with strap ferrules.

No. 777 — Two-hand Pruner with 26-inch white ash handle, riveted and 4½" ferrule (wt. 3 lbs. 10 ozs.)

No. 777 — Two-hand Pruner with 26-inch white ash handle, with 10" strap ferrule (wt. 4 lbs.)

SIMPLEX POLE PULLING JACKS

15 TON CAPACITY — Nos. 1538, A1538 standard pole jacks

The standard pole jacks of the industry.

They have 15 tons capacity and will pull or straighten any size pole, large or small. The "I" beam base provides a firm foundation and the jack will pivot on its base.

No. A1538, with aluminum housing and base, provides easier portability without sacrifice of strength.

5 TON CAPACITY — No. 325 junior pole jack

The Simplex junior pole jack pulls or straightens poles up to 30 feet in height. It has a capacity of 5 tons and will pivot on the steel channel base to any angle.



Jack No.	Capacity Tons	Height Inches	Lift Inches	Weight Jack Only, Lbs.	Weight Complete, Lbs.
*325	5	50	36	34	98
**1538	15	37¾	22	100	186
**A1538	15	37¾	22	60	146

*Equipped with 5' steel pinch lever bar, 5' steel chain; an 8" x 15" steel channel base; and 8' pike pole of seamless tubing.

**Equipped with 8' BBB steel chain; "I" beam base 10" x 20" with hand hole; and 5' steel lever bar.

The Simplex No. 310A Emergency Jack is also used extensively for pole pulling and straightening where the amount of travel is of secondary importance.

SIMPLEX "ROL-TOE" HYDRAULIC TRANSFORMER JACKS

10, 25 and 50 ton Capacities



Ideal for lifting and lowering heavy transformers, etc. These jacks develop full tonnage with only 19" operating levers. The lifting toe is an integral part of the sturdy steel housing, and the lifting capacity on the toe is the same as on the cap.

No.	Capacity Tons	Lbs.	Closed Height Inches	Travel Inches	Min. Height Inches	TOE Width Inches	TOE Base Inches
TJ10	10	54	11¾	6	1¾	3	9½x 8
TJ25	25	110	14	7	2½	4½	9 x12
TJ50	50	230	18	10	3½	5½	11½x14¼

MANHOLE SHEAVE



No. 220. For pulling cable or carrying winch line at right angle in utility maintenance work. Can be used on the end of a truck or over top of manhole in connection with snatch block in manhole—eliminates need for manhole skids. Handles cable up to 3" dia. or any size winch line. Furnished with a ¼" chain, 24" long, with special hook as shown for anchoring and protection when winch line is released suddenly.

Large Sheave Diameter Inches	Large Sheave Width Inches	Small Sheave Diameter Inches	Small Sheave Width Inches	Weight Lbs.
7¾	3	4¾	3	100

SIMPLEX CABLE AND WIRE TENSIONING JACKS



Single Acting — 2 TON CAPACITY

Light, yet powerful enough to pull overhead and underground cables easily and to take up slack in trolley, guy, transmission and distribution wires. Speed trigger permits instant slack take up when Jack is not under load.

Jack No.	Capacity Tons	Travel Inches	Weight Lbs.
324	2	20¼	13



SIMPLEX REEL JACKS for Cable, Rope or Belting

No. 320A—5 tons, Single Acting — For warehouse and shop service. Handles 20 to 60-inch diameter reels; has one 2½" lifting hook and 2 for 2" spindles.

No. 321—10 Tons, Single Acting — Handles 20 to 96-inch diameter reels. Has 5 lifting hooks; 1 for 3½"; 1 for 3" and 3 for 2½" spindles.

No. A1029 — 10 Tons, Single Acting — T-Shaped base area of 319 sq. in. for non-rocking foundation. Built with right and left bases; handles 36 to 84-inch diameter reels. Has 3 lifting hooks; 1 for 3" and 2 for 2½" spindles. Housing is aluminum.

SIMPLEX SCREW TYPE REEL JACKS

"A" frame type. Spindle cap for 2¼" spindle. No. 1CR for reels 40 to 60 inches diameter. No. 2CR for 60 to 92-inch reels. 3-Way Nut for speed.

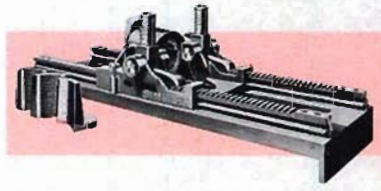
No.	Capacity Tons	Height Inches	Lift Inches	Weight Lbs.	Length of Lever, Inches
1CR	5	19¾	13¼	60	..
2CR	5	30½	18	88	..
320A	5	21	10	48	30
321	10	34¼	15	108	60
A1029	10	29½	13¾	83	60

SIMPLEX PIPE PUSHING AND PULLING JACKS

25 TON CAPACITY

Reversible carriage eliminates need to reverse track when pulling pipe. Design permits use of longer pipe lengths, resulting in threading and coupling savings. Tapered steel jaws completely surround pipe—no crushing or flattening. Double levers and extensions for operating singly, alternately or in unison on double tracks.

For pipe from 2" to 4" in diameter. An adapter sleeve (334-4B) is available which permits pushing pipe from ¾" to 2" in diameter. ¾", 1", 1¼", 1½" and 2" jaws and pilots can also be furnished. Also hydraulic rams and pumps for pushing pipe.



Jack No.	Capacity Tons	Travel Inches	Weight Lbs.	Weight Jack Only, Lbs.
R334A	25	28½	321	208

EQUIPMENT INCLUDES: One set tapered jaws and one pilot for single diameter pipe, two 3½" steel lever bars and two steel pipes for extending levers. Specify size of jaws and pilot required.

HEIDER AUTOMATIC EXTENSION LADDERS



Made of selected ladder stock. Plain, Rodded rung or and rodded rails.

Full size side rails with full size 1⅜" Hickory rungs tenoned into the side rails. Rungs do not extend through rails; consequently, the joint is protected from decaying and side rails are not weakened by holes drilled through entire rail.

Further safety features are double guide irons and simple but positive automatic malleable iron gravity locks. Ladders are regularly furnished with flared bottom, but without rope and pulley. If rope and pulley are desired, specify and add 8c per ft.

SITKA SPRUCE SIDE RAILS

Model No. E Without Rod under rung or Rails, Weight 2 lbs. per foot.

Model No. ER With Rod under each Rung. (No Rod under Rails.) Weight, 2¼ lbs. per foot.

Model No. ERR With Rod under each Rung and under each Rail. Weight, 2½ lbs. per foot.

Made in lengths of 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42 and 44 ft.

DOUGLAS FIR SIDE RAILS

Model No. FE Without Rod under Rungs or Rails. Weight, 2¼ lbs. per foot.

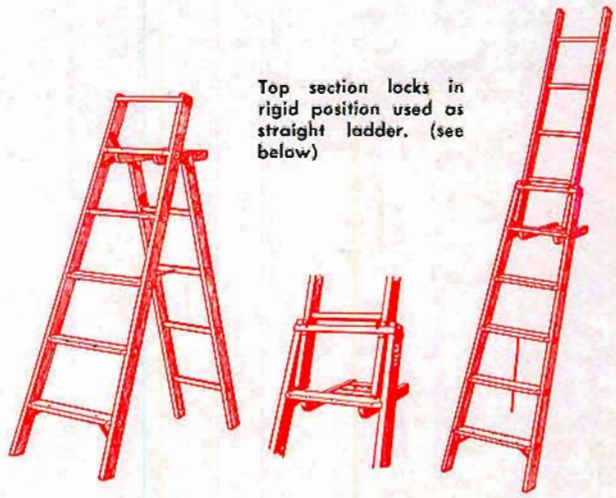
Model No. FER With Rod under each Rung. (No Rods under Rails.) Weight, 2½ lbs. per foot.

Made in lengths of 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, and 40 ft.

HEIDER 2-WAY STEP AND STRAIGHT LADDERS

This ladder may be used as either a step or straight ladder. Special designed joint makes a rigid step ladder, trestle, and practical straight ladder.

Made of selected Sitka Spruce, with steps and rungs rodded with ¼" rod. All steel parts finished in green and bolts are cadmium-plated. Bucket shelf furnished.



Top section locks in rigid position used as straight ladder. (see below)

Length Step Ladder — ft.	4	5	6	7	8
Length Straight Ladder — ft.	8	10	12	14	16
Weight in pounds	18	23	26	31	36

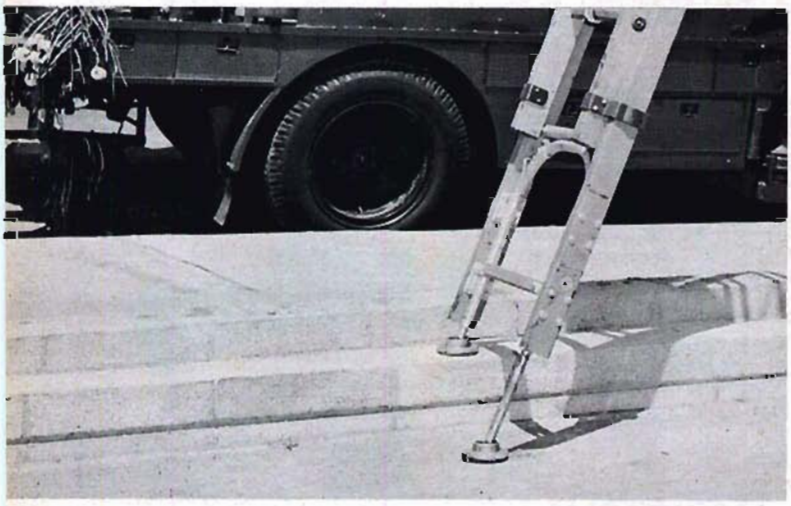
LADR-LEVL

U.S. Patent Number 2548311

Kellogg Code No.	Size
570023	12" to 19"
570024	20" to 25"
570025	Ice Cleat Inter-Changeable Feet

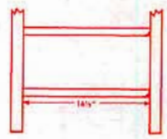
• for ladder safety • fully mechanical

• levels instantly • locks automatically • a level ladder on any surface



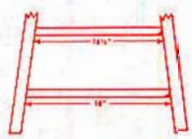
on slopes . . . steps . . . or irregular surfaces

durable construction
simple to install



HOW TO ORDER
For Straight Side Rails

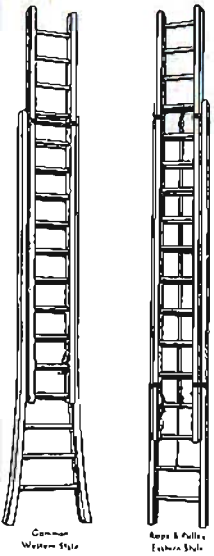
Measure length of bottom rung between side rails. Length of rung is size number. Illustration is #16½.



For Tapered Ladders

Measure length of bottom and second rung between side rails. The illustration shows second rung to be 16½ inches and bottom rung to be 18 inches. Order: 16½-18.

BLUE RIBBON EXTENSIONS
Leading Industrial Names Demand Them



Side rails are 100% vertical grain Douglas Fir; rungs are clear, seasoned second-growth hickory-sealed in the blind-bored rails under pressure, for snug, weather-tight fit, then securely nailed. Locks are certified malleable, automatically operating by gravity —

Approved by Underwriters' Laboratories, Inc. Choice of Western Style (with flared bottom and automatic gravity locks) and Eastern Style (straight sides, spring locks, and equipped with rope and pulley).

Available in even length sections 16' to 40'.

8' - 14' SECTIONS

Side Rails . . . . . 1⅜" x 2½"
Diameter of Rungs . 1⅛"
Approx. Weight . . . 2⅛ lbs. per ft.

16' - 20' SECTIONS

Side Rails . . . . . 1⅜" x 2¾"
Diameter of Rungs . 1⅛"
Approx. Weight . . . 2¼ lbs. per ft.

BLUE RIBBON SAFETY PLATFORM
Brings the Floor up to the Job



Roomy (15½" x 20½") safe — working platform — Scientifically formed one piece heavy band steel guard rail

Double - rodded cantilever bracing on back legs — Hand-safe lock — One-man operation and handling — Flat folding. — Equipped with non-skid rubber treads. Approved by Underwriters' Laboratories, Inc.
Patented

Order by No.	Height to Platform	Height Over All	Distance Between Front Risers	Distance Between Risers & Legs	Wt. Lbs. Each
3	2' 10"	5' 7"	22"	36"	34
4	3' 9"	6' 7"	24"	41"	36
5	4' 8"	7' 7"	25¾"	46"	40
6	5' 7"	8' 7"	27½"	51"	45
7	6' 6"	9' 7"	29¼"	58"	60
8	7' 9"	10' 7½"	31"	60"	65
10	9' 5"	12' 7"	34½"	72"	76
12	11' 2¾"	14' 6½"	38"	82"	87

HAMMER, LINEMAN'S DOUBLE FACE



Full polished faces and heads, smooth black body. Best grade two-tone hickory handle.

Kellogg Code No.	Cat. No.	Length	Weight of Head
465001	SL-36	15"	36 oz.

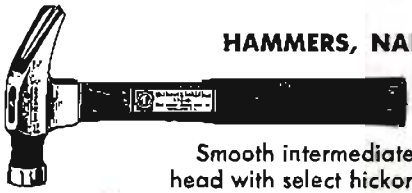
HAMMERS, BALL PEIN



Polished face and pein and smooth intermediate grade black finish sides with select hickory handle.

Kellogg Code No.	Cat. No.	Length	Weight of Head
465002	MO-16	14"	16 oz.
465003	M-224	16"	24 oz.
465006	M-432	17"	32 oz.

HAMMERS, NAIL & RIPPING



Smooth intermediate grade polished head with select hickory handle.

Kellogg Code No.	Cat. No.	Length	Weight of Head
465010	VB16N (Nail)	13"	16 oz.
465011	VB16R (Ripping)	13"	16 oz.

HAMMER, BLACKSMITH OR ENGINEERS



Ground Black finish head with good grade clear lacquered handle.

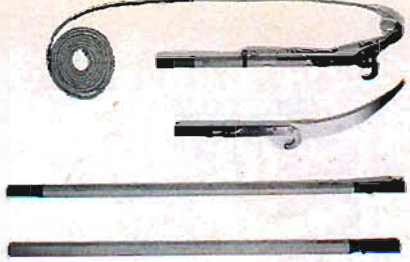
Kellogg Code No.	Cat. No.	Length	Weight of Head
465013	TCB-40	16½"	40 oz.

HATCHET, STANDARD PATTERN, HALF



Medium weight for general use. The octagon face is in line with the top of the head for reaching close to corners. Smooth black finish. Best grade two-tone hickory handle.

Kellogg Code No.	Cat. No.	Length	Weight of Head
480003	SH-2	13¼"	22 oz.



No 1-W PULLEY TYPE TREE TRIMMER

This tool will sever any branch up to 1¼" diameter with the slightest effort. A special coil spring positively returns the blade to a full cutting position.

The No. 1-W Tree Trimmer is furnished with 1¼" x 1⅛" rectangular poles in 6, 8, 10, 12, 14 and 16 ft. lengths, one piece pole or in short sections joined together with our No. P156 sleeve, which has a positive locking device.

6 or 8-ft. octagon poles with P146 round sleeves are obtainable if desired.

No. 1-W 4 ft.	Complete with Rectangular Pole	wt. 4 lbs.
No. 1-W 6 ft.		wt. 4½ lbs.
No. 1-W 8 ft.		wt. 5 lbs.
No. 1-W 10 ft.		wt. 5½ lbs.
No. 1-W 12 ft.		wt. 6 lbs.
No. 1-W 14 ft.		wt. 6½ lbs.
No. 1-W 16 ft.		wt. 7 lbs.

* No. 1-W Head complete with pulley (wt. 2 lbs.).
* P-139 Pole Supports (under head) are not included with Head unless ordered.

Extra rectangular sections for all trimmers with No. 156 Sleeve.

4-ft. with Sleeve Body (wt. 1½ lbs.)
4-ft. with Body and Ferrule (wt. 1¾ lbs.)
6-ft. with Sleeve Body (wt. 2 lbs.)
6-ft. with Body and Ferrule (wt. 2¼ lbs.)
8-ft. with Sleeve Body (wt. 2½ lbs.)
8-ft. with Body and Ferrule (wt. 2¾ lbs.)
10-ft. with Sleeve Body (wt. 3 lbs.)
10-ft. with Body and Ferrule (wt. 3¼ lbs.)
12-ft. with Sleeve Body (wt. 3½ lbs.)

When more than one section is ordered for each top pole, we will fit the intermediate sections with ferrule on one end and sleeve body on the other; however, one section will be fitted with sleeve body only to be used for handle.

Note—Leather thongs for the pulley will eliminate rope wear, available if desired at 65c each.

WE COMBINATION PRUNER AND SAW OCTAGON POLE

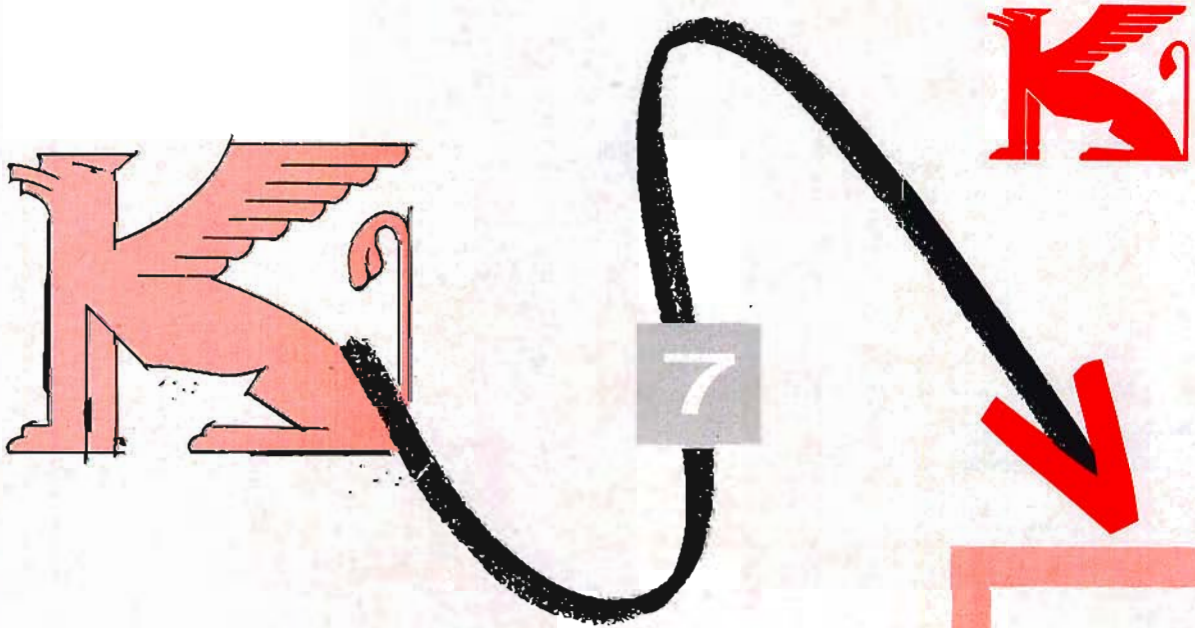
This Combination has two separate tools for head sections mounted on short pieces of 1¼" octagon Sitka spruce poles, with a round ferrule (No. 146-2) attached to the lower end and extra 4, 6 or 8-ft. octagon section fitted with round sleeve body which engages the ferrule and locks securely.

No. 1-WE Pruner Head Section, 30" overall (wt. 2¾ lbs.)
No. 44-WE Saw Head Section, 30" overall (wt. 1½ lbs.)
4-ft. Intermediate Section (wt. 1½ lbs.)
4-ft. Bottom Section (wt. 1¼ lbs.)
6-ft. Intermediate Section (wt. 2 lbs.)
6-ft. Bottom Section (wt. 1¾ lbs.)
8-ft. Intermediate Section with No. 146-1 and 2 body and ferrule (wt. 2½ lbs.)
8-ft. Bottom Section with No. 146-1 sleeve body (wt. 2¼ lbs.)
No. 146-1 Sleeve Body, complete (wt. 6 ozs.)
No. 146-2 Sleeve Ferrule (wt. 4 ozs.)

Specify WE Combination Pruner and Saw consisting of No. 1WE30" Pruner Head Section and No. 44WE30" Pole Saw Head Section with No. 4402 16" blade.

With 4-ft. Intermediate Section and 4-ft. Bottom Section, complete (7 lbs.)
or with 6-ft. Intermediate Section and 6-ft. Bottom Section, complete (8 lbs.)
or with 8-ft. Intermediate Section and 8-ft. Bottom Section, complete (9 lbs.)

Where No. 1-WE head section is ordered without extra sections, we will furnish sufficient rope for two extra 6-ft. sections.



insulators

HEMINGRAY INSULATORS

Hemingray insulators, developed through many years of experience and research by engineers of the Owens Illinois Glass Company, have earned an enviable reputation among users because of their long and satisfactory service.

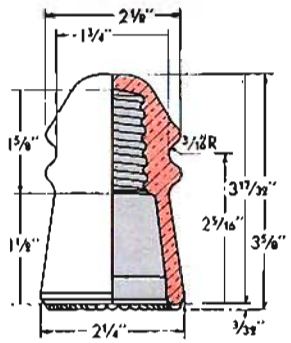
Glass insulators have certain unique advantages. One of these is the fact that glass being homogeneous in character, is superior to substances composed of two or more materials whose co-efficients of expansion may be different. With only one co-efficient of expansion, glass insulators are not normally subject to conflicting strains induced by the uncontrollable forces of heat and cold.

Hemingray insulators are continuously given the thermal test as set up in the Method of Test Specification of A.S.T.M. This gives insurance that the insulators will withstand without injury any temperature shock that it would be likely for them to receive in actual service.

The insulator threads are gaged in accordance with specifications of various users, such as Edison Electric Institute Specification TD-51. In this way it can be accurately determined in advance that the insulators will give satisfactory service on either wood or lead thread pins.

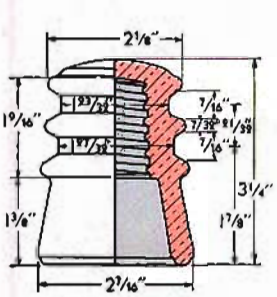
No. H9 Pony

Weight per 1000 Pounds 580



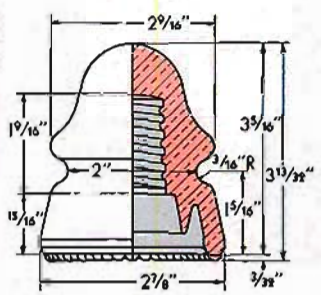
No. H10 Exchange Line

Weight per 1000 Pounds 710



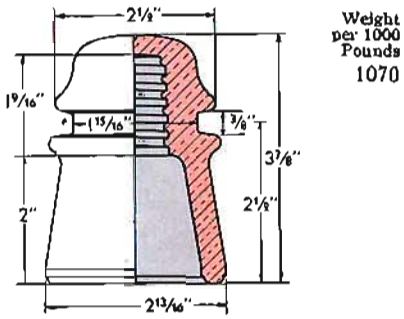
No. H14 Double Petticoat Pony

Weight per 1000 Pounds 810



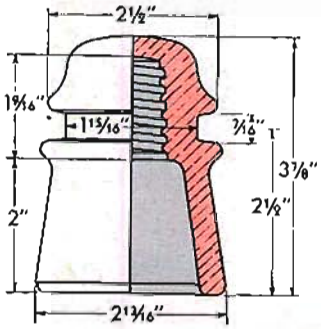
No. H16 Long Distance, New Style

Weight per 1000 Pounds 1070



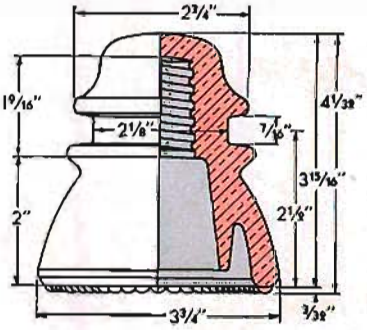
No. H17 Toll Line

Weight per 1000 Pounds 1060



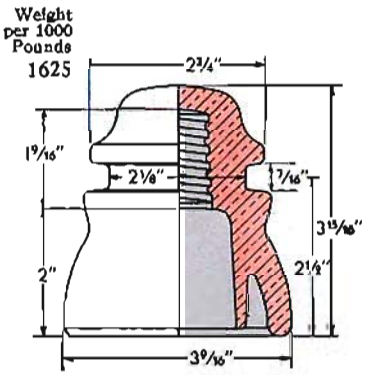
No. H42 Double Petticoat, 24-Ounce

Weight per 1000 Pounds 1500



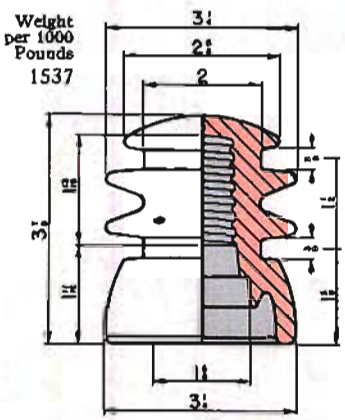
No. H45 Double Petticoat Western Union

Weight per 1000 Pounds 1625

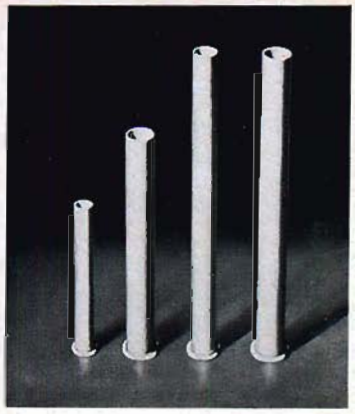


No. H56

Weight per 1000 Pounds 1537



Kellogg Code No.	Catalog Number	Standard Package	Weight Lbs. Per 100
530001	9	50	580
530002	10	50	710
530004	14	50	810
530005	16	50	1070
530006	17	50	1060
530007	42	40	1500
530008	45	40	1625
530010	56	40	1537



TYPE "B" PLASTIC TUBES

Kellogg Code No.	Size
820001	3/8" x 4"
820002	3/8" x 6"
820003	3/8" x 8"
820004	3/8" x 12"
820005	1/2" x 6"
820006	1/2" x 8"
820007	1/2" x 12"
820008	5/8" x 6"
820009	5/8" x 8"
820010	5/8" x 12"

These are made to replace the ceramic or unglazed porcelain tubes. Made of thermoplastic material, *non-inflammable and practically unbreakable*. Considerable saving in weight plus tremendous saving in breakage. Considerable time and labor saved due to the fact that our outside diameters on the "B" tubes are extremely smaller than the old type porcelain tube. Example: Porcelain tube with 5/8" hole has 15/16" O.D. while the "B" plastic tubes with 5/8" hole has 3/4" O.D. The same proportionate saving in wall thickness on all sizes. This means that a much smaller hole is drilled to take the "B" tube making the installation much faster and easier. Any length tubes can be furnished. Prices on request. "B" Tubes are packed in individual boxes (5 pcs. per box). Approximately 200 Pcs. per shipping carton, one size.



INSULATORS, GUY STRAIN

Made of dry process porcelain, brown glaze.

Kellogg Code No.	Cat. No.	DIMENSIONS – INCHES Lgth.	Diam.	Hole Diam.	Wt. Lbs. Per C
530020	500-D	2 1/8	1 3/16	3/8	25
530021	502-D	3 1/2	2 1/2	5/8	126
530022	504-D	4 1/2	2 7/8	7/8	175
530023	506-D	5 1/2	3 3/8	1	362



UNGLAZED PORCELAIN TUBES

Kellogg Code No.	Lgth. under head	Inside Diam.	Outside Diam.	Wt. per 1000
820020	3"	5/16"	9/16"	65 lbs.
820021	4"	5/16"	9/16"	80 lbs.
820022	6"	5/16"	9/16"	120 lbs.
820027	4"	3/8"	11/16"	117 lbs.
820023	6"	3/8"	11/16"	180 lbs.
820024	8"	3/8"	11/16"	225 lbs.
820025	10"	3/8"	11/16"	275 lbs.
820028	12"	3/8"	11/16"	350 lbs.

PORCELAIN KNOBS

Manufactured by Porcelain Products, Inc. Made of dry process porcelain, white glazed. Split knob dimensions, weights, etc. per pair.


No. 6061


No. 4 (2 groove)


No. 4 (single groove)


No. 6062


No. 6064


No. 6066


No. 6065


Paragon (Unassembled)

Solid Telephone Knobs

Kellogg Code No.	Catalog No.	DIMENSIONS – INCHES Height	Diameter	Hole Diameter	Wire Groove	Wt. Lbs. Per M
565001	4 single groove	1 11/16	1 1/2	3/8	3/8	230
565002	4 (2 groove	1 11/16	1 1/2	3/8	5/16	225
565005	6061	1 1/16	1 5/8	3/8	5/16	210
565006	6062	2 1/4	1 3/4	7/16	5/16	395
565012	6064	1 1/16	1 5/8	3/8	7/16	140
565007	6065	1 13/16	1 5/8	7/16	7/16	245

Split Telephone Knobs

Kellogg Code No.	Cat. No.	DIMENSIONS – INCHES Height	Diam.	Hole Diam.	Wt. Lbs. Per M
565008	6066	1 1/4	3/4 x 1 3/16	7/32	92
565015	Paragon (Unassembled)	2 1/4	2	1/4	485

CEECO **insulators**

ELIMINATE REPLACEMENT COSTS

Use Unbreakable Insulators made by Communication Equipment & Engineering Co.



Type CC6066
2 pc. Cleat

Size—1¼" high, ¾" wide, 13/16" long, 7/32" hole diam.
Packed—500 pr. per carton.
Shipping Wt.—92 lbs. per 1000.
Made of Plastic Compound.



Type CC6061
Two Groove Telephone Knob

Size—1 1/16 high, 1⅝" Diam., ⅜" Hole Diam.
Packed—100 per carton.
Shipping Wt.—100 lbs. per 1000.
Made of Plastic Compound.



Type R-3
Rubber Insulator for Wood Pins—Can be used on Steel pins when used with wood COB.

Size—2½" High, 2 7/16" Diam. of Skirt.
Packed—100 per carton.
Shipping Wt. 200 lbs. per 1000.



Type CC6060
Single Groove Telephone Knob

Size—10" High, 2" Diam., ½" Hole Diam.
Packed—100 per carton.
Shipping Wt.—195 lbs. per 1000.
Made of Plastic Compound.



Type CC6062
Four Groove Telephone Knob

Size—2½" High, 1¾" Diam., 7/16" Hole Diam.
Packed—100 per carton.
Shipping Wt.—220 lbs. per 1000.
Made of Plastic Compound.



Type CC42
A plastic compound insulator — Size and shape similar to Hemingray No. 42.

Size—3⅝" Outside Diam. of Skirt. Pine hole size 1".
Packed—50 per carton.
Shipping Wt.—900 lbs. per 1000.

wood products

8

KELLOGG COMPANY • *Division of* IT&T

G-101

manufacturers of southern pine, and hardwood lumber

From the Dierks Treating Plant, 3500 carloads of creosoted and penta pressure, treated fence posts, utility poles and lumber are shipped annually to markets in this and foreign countries.

The Dierks Plant is one of the country's largest and most modern treating operations. Five cylinders, 8 x 110 ft., 60 acres of storage space, 5 huge cranes, lift and straddle trucks, and other heavy equipment enables this plant to fill orders promptly.

This plant is backed by the forest resources of Dierks' own timberlands — 1,780,000 acres of fine southern pine.

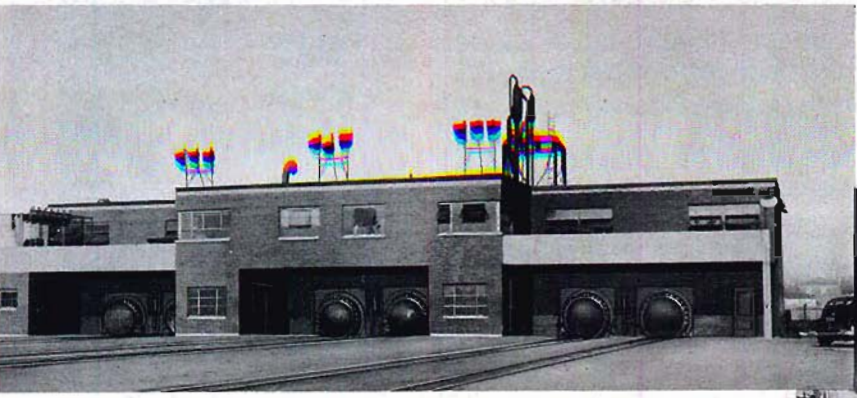
THE DIERKS TREATING PLANT, NEAR DE QUEEN, ARKANSAS

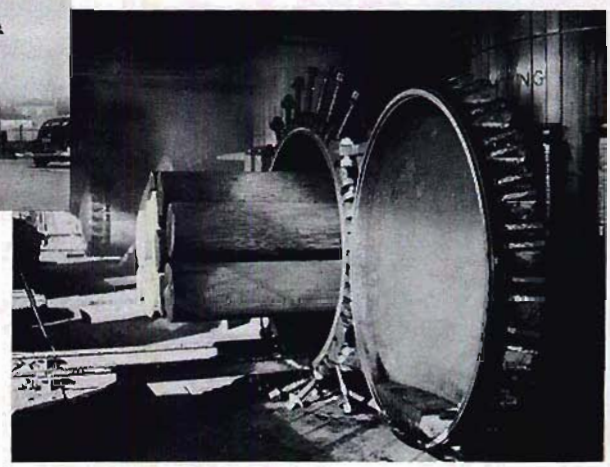


DIERKS FORESTS, INC.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

G-102





POLES

Creosoted Southern Yellow Pine—Northern White Cedar —Western Red. Cedar. There are three species of wood poles commonly used in telephone work — southern yellow pine, northern white cedar and western red cedar. These comprise approximately 85 per cent of the poles in current use. Advantages of cedar and pine are discussed below.

CEDARS

The Cedars, which are among the most durable woods known, contain powerful decay and termite resistant toxins in their fibrous substance, particularly in the heartwood which represents approximately 90 per cent of their volume. While Cedar poles, untreated, will remain in service far longer than other species of pole timber, it is recommended that they be *treated full length* with *Pentachlorophenol*. When Cedar poles have been treated with this *clean, permanent* preservative by the approved open tank non-pressure method, they will resist decay and insect attack beyond line obsolescence.

Cedar poles are strong, durable, lighter in weight, easier to climb, have greater ground stability, are good electric insulators and are attractive in appearance. These advantages mean savings to telephone organizations and lead to good labor and public relations.

CONCENTRATING YARDS AND TREATING PLANTS

Large stocks of seasoned poles in concentrating yards, adequate treating facilities and a diversified location of plants permit prompt shipment. The utmost care in production, seasoning, and yarding provides the necessary insurance against incipient decay and deterioration in storage.

Prompt service is assured from producing plants strategically located to conveniently serve Kellogg customers.

CREOSOTED SOUTHERN YELLOW PINE

Brewton, Alabama
Heber Springs, Arkansas
Savannah, Georgia
New Orleans, Louisiana
Shreveport, Louisiana
Winnfield, Louisiana
Fernwood, Mississippi
Norfolk, Virginia
Process City, Arkansas (De Queen)
Franklin Park, Illinois
Gulfport, Mississippi
Louisville, Mississippi
Panama, Oklahoma
Jackson, Tennessee

NORTHERN WHITE CEDAR

Gladstone, Michigan
Minneapolis, Minnesota

WESTERN RED CEDAR

Sandpoint, Idaho
Minneapolis, Minnesota
Gladstone, Michigan

PINE

Because of the very perishable nature of pine, a pine pole must be treated its entire length under pressure to insure the fullest possible penetration of the sapwood by the preservative. Framing must be done before treatment to avoid subsequent exposure of untreated sapwood or heartwood. In standard sizes the average yellow pine pole consists of about 80 per cent sapwood. There is no appreciable difference in strength between sapwood and heartwood. This applies to all species of wood poles. Heartwood, in all species, while very resistant to penetration of the preservative is, at the same time, relatively more durable and resistant to decay and termite attack than is the sapwood of the same species.

DIMENSION SPECIFICATIONS

There are three distinct specifications under each species of pole:

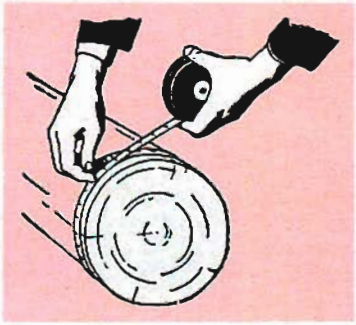
1. A.S.A. (American Standards Association). Covers numerical classes 1 to 10; each class (from 1 to 7) signifying the same breaking load for all species. This specification is the most popular of the three now in use.

2. Woods run or top size. Guarantees no minimum groundline circumference. Poles under this specification are furnished with minimum tops and natural or "woods run" taper, 1" in 10 feet.

3. N.E.L.A. (National Electric Light Association), covers alphabetical classes.

SUMMARY OF INFORMATION NECESSARY TO QUOTE OR FILL POLE ORDERS

1. Quantities (minimum car).
2. Sizes.
3. Species (S.Y.P., N.W.C., W.R.C.).
4. Specification (A.S.A., Woods Run, N.E.L.A.).
5. Treatment: Cedars, AA, B, ½; Pine 8 lb., 10 lb., 12 lb. Creosote or Penta.
6. Framing instructions, essential for all pine orders. See following.



INSTRUCTIONS FOR MEASURING POLES – Measuring Diameter of Poles

The terms "5-inch top—20 foot," "7-inch top—30 foot" are used to designate the top diameter and length of poles respectively. Because the tops and butts of poles are not perfect circles the diameter cannot be measured direct. To get the diameter it is necessary to measure the circumference and divide it by 3.1416. The sketch at the left illustrates how poles should be measured and the table at the right above shows the top size of the pole when the circumference is known.

Designated Top Size	Circumference Necessary
4 inches	12 inches
5 inches	15 inches
5½ inches	17 inches
6 inches	18½ inches
6½ inches	20 inches
7 inches	22 inches
8 inches	25 inches
9 inches	28 inches
10 inches	31 inches

MEASUREMENT OF SWEEP AND SHORT CROOK IN POLES

The correct way to measure the sweep of a pole is to stretch a tape tightly from the top to a point six feet from the butt end. A rule can then be used to determine the amount of sweep at the greatest distance between the pole and the tape. See the illustration below.

Diagram 1—Measurement of Sweep in One Plane and One Direction

Stretch a tape measure from the top to a point 6 feet from the butt end. Use a rule to determine the maximum sweep between the pole and tape.



Diagram 2—Measurement of Sweep in Two Planes (Double Sweep) or in Two Directions in One Plane (Reverse Sweep)

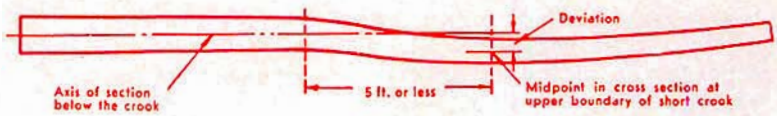


Stretch a tape measure from the mid-point of the top to the mid-point at the ground line. Use a rule to determine the maximum sweep of each side between the pole and tape.

NOTE: This diagram applies to the measurement of double sweep in Western Red Cedar and Southern Pine poles. For measurement of double sweep in Northern White Cedar and Chestnut poles, see text.

Diagram 3—Measurement of Short Crook (Three Cases Shown)

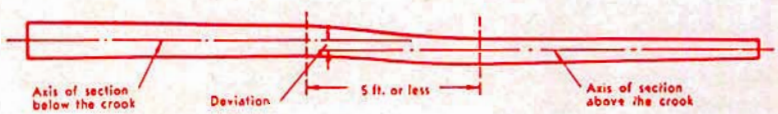
1. When the reference axes are approximately parallel.



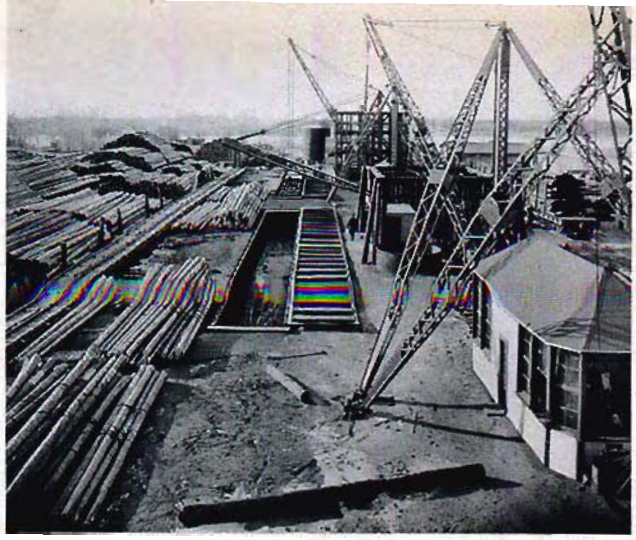
2. When the axes of sections above and below the crook coincide or are practically coincident.



3. When the axis of section above the short crook is not parallel or coincident with axis below the crook.



NOTE: The three cases shown under Diagram 3 are typical and are intended to establish the principle of measuring short crooks. There may be other cases not exactly like those illustrated.



CEDAR POLES

Orders . . . All orders should clearly specify the size of poles desired and the specifications under which they are to be inspected. In order to keep the shipping cost of each pole at a minimum, it is advisable to order a sufficient quantity of poles to make a carload shipment. If it is impossible to do this, Northern White Cedar cross arms can be included to provide the proper weight for the best rates. Upon arrival of the car at destination, the freight is to be paid by the customer direct to the railroad company.

Freight charges may be deducted from gross amount of invoice. Shortage claims should be reported to the Kellogg Company within ten days from receipt of shipment and supported with original freight bill with agent's notation as to shortage.

Carload Weights . . . For the purpose of figuring the number of Northern Cedar Poles required for the minimum carload to points west of the Illinois-Indiana State line, a minimum of 36,000 pounds should be used; to points east of the Illinois-Indiana State line 43,000 pounds should be used.

In Western Cedar, the minimum carload weight for poles 40 feet and shorter is 50,000 pounds; for poles from 45 to 50 feet long, 62,500 pounds and for poles 55 feet long and longer, 82,500 pounds.

SHIPPING WEIGHTS — A.S.A. NORTHERN WHITE CEDAR POLES — Weight Per Pole In Pounds

Length	Class 10	Class 9	Class 8	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2	Class 1
16 ft.	85	105	135	135	190	230	..	..	..	..
18 ft.	95	125	155	155	210	300	300	420	..	..
20 ft.	100	130	190	190	230	300	350	540	600	720
22 ft.	150	200	225	225	315	420	500	540	780	1020
25 ft.	150	200	250	250	300	420	515	600	780	1020
30 ft.	..	275	350	350	420	520	630	870	1170	1320
35 ft.	..	..	..	450	510	720	820	1060	1320	1620
40 ft.	..	..	..	..	625	790	1020	1280	1675	2040

A.S.A. DIMENSIONS OF NORTHERN WHITE CEDAR POLES

Class		1	2	3	4	5	6	7	8	9	10
Minimum Top Circumference (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	Minimum Circumference at Six Feet from Butt (Inches)									
16	3½	..	..	..	..	26.0	24.0	22.0	No Butt Requirement	..	..
18	3½	..	..	32.5	30.0	28.0	25.5	23.5		..	..
20	4	39.5	37.0	34.0	31.5	29.0	27.0	25.0	..	..	..
22	4	41.0	38.5	36.0	33.0	30.5	28.0	26.0	..	..	..
25	5	43.5	41.0	38.0	35.5	32.5	30.0	28.0	..	No Butt Requirement	..
30	5½	47.5	44.5	41.5	38.5	35.5	32.0	30.5	..		..
35	6	50.5	47.5	44.0	41.0	38.0	35.0	32.5	..	..	..
40	6	53.5	50.0	46.5	43.5	40.0	37.0	..	..	..	..
45	6½	56.0	52.5	49.0	45.5	42.0	..	..	..	..	No Butt Requirement
50	7	58.5	55.0	51.5	47.5	44.0	..	..	..	..	
55	7½	61.0	57.5	53.5	49.5	46.0	..	..	..	..	..
60	8	63.5	59.5	55.5	51.5	..	..	..	..	..	..

*The standard height of butt treatment is to a point one foot above the groundline.

PINE POLES — Framing Specifications

These are indispensable for prompt handling of Pine orders, as all Pine poles must be completely framed before treatment. Information needed is as follows:

1. Number of gains (all same size?) (or slab gain?)
2. Dimensions of gains, width and depth.
3. Distance from apex of roof to center of first gain.
4. Spacing of gains, center to center.
5. Diameter of through-bolt hole.
6. Angle and type of roof.
7. Special pole step holes, etc.

Convenient sheets "Instructions for Framing Poles" will be furnished on request.

(Continued on following page)

These poles have no size requirement other than top measurement as indicated.

4-inch top poles approximate ASA Class 10.
5-inch top poles approximate ASA Class 9.
6-inch top poles approximate ASA Class 8.
7-inch top poles approximate ASA Class 5.
8-inch top poles approximate ASA Class 4.

Requirements for Carload

Origins West of Mississippi River:
Single Load—34,000 lbs. to 36,000 lbs.
Double Load—48,000 lbs.
(Weights depend on destination)

Origins East of Mississippi River:
(Weights depend on destination)
Single Load—34,000 to 36,000 lbs.
Double Load—58,000 to 60,000 lbs.

SHIPPING WEIGHT WOODS RUN POLES
(Top Measurement — Natural Taper)

WEIGHT PER POLE IN POUNDS

Length Feet	Top Diam. 4 in.	Top Diam. 5 in.	Top Diam. 6 in.	Top Diam. 7 in.	Top Diam. 8 in.
16	110	170	..	..	..
18	125	210	260	..	..
20	155	225	310	..	..
22	185	250	350	..	..
25	225	310	440	540	580
30	..	415	520	675	780
35	..	..	700	865	1010
40	..	..	920	1060	1260
45	..	..	1115	1275	1500
50	..	..	..	1495	1740
55	..	..	..	1700	2010
60	..	..	..	1900	2260

SHIPPING WEIGHTS — A.S.A. POLES — 8-lb. Treatment — Weight Per Pole In Pounds

Length	Class 10	Class 9	Class 8	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2
16 ft.	110	138	188	165	..	..	..	..	..
18 ft.	133	151	211	188	..	..	..	..	..
20 ft.	160	202	261	234	284	..	..	..	..
22 ft.	188	234	307	284	339	..	..	..	..
25 ft.	235	298	389	344	422	490	573	..	..
30 ft.	..	371	513	454	550	660	784	..	..
35 ft.	..	..	697	646	742	862	1004	1155	..
40 ft.	..	..	..	807	921	1059	1214	1403	..
45 ft.	..	..	..	976	1114	1274	1444	1664	1911
50 ft.	..	..	..	1169	1329	1494	1687	1925	2214
55 ft.	..	..	..	..	1563	1718	1934	2200	2567
60 ft.	..	..	..	..	..	2130	2385	2740	3210

A.S.A. DIMENSIONS OF CREOSOTED SOUTHERN PINE POLES

Class		1	2	3	4	5	6	7	8	9	10
Minimum Top Circumference (Inches)		27	25	23	21	19	17	15	18	15	12
Minimum Top Diameter (Inches)		8.6	8	7.3	6.7	6.1	5.4	4.8	5.7	4.8	3.8
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)*	Minimum Circumference at Six Feet from Butt (Inches)									
16	3½	..	..	..	..	21.5	19.5	18.0	No Butt Requirement	No Butt Requirement	No Butt Requirement
18	3½	..	..	26.5	24.5	22.5	21.0	19.0			
20	4	31.5	29.5	27.5	25.5	23.5	22.0	20.0	..	..	..
22	4	33.0	31.0	29.0	26.5	24.5	23.0	21.0	..	..	..
25	5	34.5	32.5	30.0	28.0	26.0	24.0	22.0	..	..	..
30	5½	37.5	35.0	32.5	30.0	28.0	26.0	24.0	..	..	..
35	6	40.0	37.5	35.0	32.0	30.0	27.5	25.5	..	..	..
40	6	42.0	39.5	37.0	34.0	31.5	29.0	27.0	..	..	..
45	6½	44.0	41.5	38.5	36.0	33.0	30.5	28.5	..	..	..
50	7	46.0	43.0	40.0	37.5	34.5	32.0	29.5	..	..	..
55	7½	47.5	44.5	41.5	39.0	36.0	33.5	..	..	..	..
60	8	49.5	46.0	43.0	40.0	37.0	34.5	..	..	..	..
65	8½	51.0	47.5	44.5	41.5	38.5	..	..	..	..	..
70	9	52.5	49.0	46.0	42.5	39.5	..	..	..	..	..
75	9½	54.0	50.5	47.0	44.0	..	..	..	..	..	..

*The figures in this column are intended solely for use whenever a definition of ground line is necessary in order to apply specification requirements relating to scars, straightness, etc.

SHIPPING WEIGHTS — A.S.A. WESTERN RED CEDAR POLES — Weight Per Pole In Pounds

Length	Class 10	Class 9	Class 8	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2	Class 1
16 ft.	90	115	150	150	190	255	..	..	..	..
18 ft.	90	120	160	175	200	265	350	440	..	..
20 ft.	90	120	160	175	200	265	350	440	530	615
22 ft.	120	180	205	220	280	350	425	530	635	750
25 ft.	120	180	205	220	280	350	425	530	635	750
30 ft.	..	225	295	310	370	440	540	645	750	880
35 ft.	..	..	445	415	495	570	660	750	880	1055
40 ft.	..	..	..	615	615	705	790	970	1145	1320
45 ft.	..	..	..	..	880	880	1010	1145	1365	1585
50 ft.	..	..	..	..	1145	1145	1230	1365	1585	1760

A.S.A. DIMENSIONS OF WESTERN RED CEDAR POLES

Class		1	2	3	4	5	6	7	8	9	10
Minimum Top Circumference (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	Minimum circumference at Six Feet from Butt (Inches)									
16	3½	..	..	..	..	23.0	21.5	19.5	No Butt Requirement	No Butt Requirement	No Butt Requirement
18	3½	..	..	28.5	26.5	24.5	22.5	21.0			
20	4	34.5	32.0	30.0	28.0	25.5	23.5	22.0	..	..	..
22	4	36.0	33.5	31.5	29.0	27.0	25.0	23.0	..	..	..
25	5	38.0	35.5	33.0	30.5	28.5	26.0	24.5	..	..	..
30	5½	41.0	38.5	35.5	33.0	30.5	28.5	26.5	..	..	..
35	6	43.5	41.0	38.0	35.5	32.5	30.5	28.0	..	..	..
40	6	46.0	43.5	40.5	37.5	34.5	32.0	..	..	..	..
45	6½	48.5	45.5	42.5	39.5	36.5	..	..	..	..	..
50	7	50.5	47.5	44.5	41.0	38.0	..	..	..	..	..

TEMPORARY TELEPHONE CROSS ARM

The Chance Temporary Telephone Cross Arm is used when cross arm replacements are made. The arm, 8½ feet long, will support any number of conductors. It is fastened to the pole with a chain tightener. Wires are trapped between the pegs and lifted away, preventing any interference while changes are made.

Cat. No.	Length	Approx. Wt.
530	8½ Ft.	15½ Lbs.

Minimum Carload Weights—Fir Crossarms from Pacific Coast Mills, 38,000 lbs. Pine Crossarms from mills west of the Mississippi River 36,000 lbs. from mills east of the Mississippi River 34,000 to 36,000 lbs.

Note: Orders for REA Specification arms should specify whether preservative treatment and/or inspection is required.

Special Note—If arms wanted are to have double-arming holes; or are to be painted, creosoted, or preservatively treated in any way; or are to be unroofed or beveled edge or roofed in any manner other than 4⅝-inch radius; or if quality is to be other than standard; or if any special feature is to be incorporated, such information fully detailed must be included in the specifications. Arms made special are of no value for general stock and may not be cancelled or returned.

Pressure Treated Southern Yellow Pine Cross Arms Specifications and Quotations Furnished Upon Request.

STANDARD DOUGLAS FIR CROSS ARMS

Douglas Fir, also known as Washington Fir, or Yellow Fir, comes from the vast forestlands of the Pacific Northwest. For cross arm purposes, fir wood has no peer, best combining the prime requisites of strength and durability with light weight. Consequently, fir cross arms are the accepted standard and have been adopted almost universally, being in general use throughout the country for power and communication lines. Because of the heartwood characteristic of the wood, fir arms do not necessarily require preservative treatment for long life. However, dip or pressure treatment with either pentachlorophenol or creosote is available.

The following specifications are recognized generally as standard. Cross arms shall be fabricated in accordance with these specifications, unless specifically ordered otherwise. See instructions below for ordering special arms.

Material: Unless otherwise specified, in accordance with current specifications of the Edison Electric Institute. Complete EEI Specifications furnished upon request.

3¼ x 4¼ Electric Light Arms

Lgth. Arm	No. Pins	Pin Holes Spacing, Inches Center	Sides	Ends	Size Inches	Center Brace Bolt Hole Inches	Bolt Spacing	Use Lgth. Brace	Wt. Lbs. per 100
3′	2	28	..	4	1 13/32	⅝	25	20	1062
4′	4	16	12	4	1 13/32	⅝	28	22	1416
5′	4	18	17	4	1 13/32	⅝	28	22	1770
6′	4	22	21	4	1 13/32	⅝	32	24,26	2124
6′	6	16	12	4	1 13/32	⅝	32	24,26	2124
8′	6	18	17½	4	1 13/32	⅝	32	24,26	2832
8′	8	16	12	4	1 13/32	⅝	32	24,26	2832
8′ 6″	10	16	9¾	4	1 13/32	⅝	32	24,26	3009
10′	8	17½	15¾	4	1 13/32	⅝	42	30,32	3540
10′	10	16	12	4	1 13/32	⅝	42	30,32	3540
10′	12	16	9⅜	3⅜	1 13/32	⅝	42	30,32	3540

(Continued on following page)

3 x 4¼ Western Union Arms

6′	6	20	11½	3	5/16	11/32	..	..	1980
8′	8	21	11½	3	5/16	21/32	..	..	2640
10′	10	22	11½	3	5/16	21/32	..	..	3300

3½ x 4½ N.E.L.A. Arms

3′ 2″	2	30	..	4	1 11/32	11/16	28	22	1267
5′ 7″	4	30	14½	4	1 11/32	11/16	38	28	2233
8′	6	30	14½	4	1 11/32	11/16	38	28	3200
9′ 2″	8	30	12	4	1 11/32	11/16	38	28	3667

2¾ x 3¾ Pony Telephone Arms

2′	2	17	..	3½	1 13/32	5/8	..	..	540
2′ 6″	2	23	..	3½	1 13/32	5/8	..	..	675
3′	2	29	..	3½	1 13/32	5/8	25	20	810
3′ 6″	4	16	9½	3½	1 13/32	5/8	28	22	945
5′ 2″	6	16	9¾	3½	1 13/32	5/8	28	22	1395
6′ 10″	8	16	9¾	3¾	1 13/32	5/8	28	22	1845
8′ 6″	10	16	9¾	4	1 13/32	5/8	28	22	2295
10′	12	16	9⅝	3⅞	1 13/32	5/8	28	22	2700

3¼ x 4¼ R.T.A. Specification Arms

Lgth. Arms	Type Arm	No. Pins or Clevises	Pin or Clevis Holes Spacing, Inches Center	Sides	Ends	Size Inches	Center Bolt Hole Inches	Brace Bolt Spacing	Wt. Lbs. per 100
1′ 6″	2-A	2	12″	..	3″	1 13/32	5/16	..	531
2′ 6″	2-B	2	12″	..	4″	1 13/32	5/16	..	885
6′	6-A	6	16″	12″	4″	1 13/32	11/16	25″	2124
6′ 8″	6-B	6	32″	10″	4″	1 13/32	11/16	25″	2361
10′	10-A	10	16″	12″	4″	1 13/32	11/16	43″	3540
10′	10-B	10	32″	10″	4″	1 13/32	11/16	43″	3540
6′	DET	10	18″	6″	3″	7/16	11/16	36″	2124

3¾″ x 5″ R.T.A. Specification Arms

6′	DE	10	18″	6″	3″	7/16	11/16	36″	3120

3¾″ x 4¼″ Guard Arms

Guard Arms are 3¼″ x 4¼″ x 48″, bored for one ⅝″ machine bolt, one ⅜″ carriage bolt and drop attachments —specify when ordering.

Standard cross arms as above are untreated, drilled with recommended tolerances for ⅝-inch center bolt and ⅜-inch brace bolts, horizontal drilling, no double-arming holes, and roofed to a 4⅝-inch radius. Arms shall be of the net dimensions called for subject to unavoidable slight natural shrinkage and allowable variations. Workmanship shall be of the highest standards, pin and bolt holes shall be accurately spaced and smoothly drilled to show a minimum of splintering where bits break through.

Order for special cross arms should be accompanied by blueprint or sketch whenever possible, or should state: (a) size in width, height and length: (b) number of pin holes; (c) spacings beween pin holes—center, sides, ends; (d) size of pin holes or state size of pin to be used); (e) size of center bolt hole (or state size of bolt to be used, otherwise drilling shall be for ⅝-inch bolt); (f) size of brace bolt holes (or state size of bolts to be used, otherwise drilling shall be for ⅜-inch bolts); (g) spacing between brace bolt holes (drilling shall be horizontal unlesse vertical is specified).

Thus, the standard 8-foot 6-pin cross arm is described: 3½″ x 4½″ x 8-foot 6 pin holes spaced 30 in center, 14½-inch sides; 4″ ends, drilled for 1½-inch pins; center bolt hole for ⅝-inch bolt; brace bolt holes, for ⅜-inch bolts, spaced 38 inches apart.



WOOD INSULATOR PINS

The most popular wood pin available at the present time is the pin made of locust wood. Locust is a hard, close-grained wood, impenetrable to moisture and practically impervious to decay. Because of its great strength and uniform quality, it is especially well suited for making wood insulator pins where accurate turning and freedom from shrinking or warping are primary considerations.

All pins are shipped in heavy burlap bags.

No. J1760 pins are threaded 1″ for glass telephone insulators, tapered 1.111″ in diameter for 12″ in length.

No. J1761 pins are threaded 1″ for porcelain insulators, tapered 1/16″ in diameter for each 1-inch in length in accordance with EEI specification TD-71.

Kellogg Code No.	Stock Number	Size Pin Inches	Size Top Inches	Wt. Lbs. per 100
651001	J1760	1¼x8	1	32
651002	J1761	1½x9	1	45



WOOD BRACKETS

Wood brackets are manufactured from oak. The top or threaded portion is accurately turned to size and the threads are cleanly cut. All brackets are threaded 1 inch in diameter, four threads to the inch, tapering 1.111″ in diameter for 12″ in length. The length of the thread on all sizes is 2¼″. Spikes are usually used for mounting the brackets and pole steps and 5/16-inch diameter holes are provided to accommodate the spikes. The J2553 is R.E.A. Standard.

Brackets are wired in bundles of 20 or 25 for shipment.

Kellogg Code No.	Stock Number	Size Inches	Wt. Lbs. per 100
145101	J2550-4	1½x2x10	60
145103	J2553-L.D.	1⅜x2x12	80
145104	J2555-W.U.	2x2⅜x12	100
145106	J2557-New W.U.	2x2¾x12	115
145102	J2553	1⅜x2½x12	80
145105	*2561	2x2⅜x12	100

*(Kellogg Giant) Short Neck.

WOOD POLE STEPS

Pole steps are wired in bundles of 20 or 25 for shipment. They are manufactured from oak with 5/16-inch holes for mounting with spikes.



Kellogg Code No.	Stock Number	Size Inches	Wt. Lbs. per 100
735020	J2662	1¾x2⅝x7	70



telephone booths and accessories

9

"HEAR HERE" in a Burgess-Manning ACOUSTI-BOOTH

No noise in — No conversation out!

- **Air is always fresh—never stuffy or smelly.**
- **Easy to keep clean—no corners to collect dirt.**
- **No doors—no glass breakage.**



Model 45
Kellogg Code No. 13001

The latest "HEAR HERE" Acousti-Booth with special shape to fit all corners, island locations, around center posts, etc. Two Model 45's fit conveniently in a 90° corner, or 8 of them form a complete circle. Patented acoustic design with sturdy, all-steel, welded construction. Silver gray hammered finish.

Specifications:
Steel
Outside Dimensions: 35½" wide, 32" deep, 34½" high — mounts 42½" from floor.
Net Weight: 100 lbs.

Light fixture and mounting wall bracket for multi-booth installation extra. Floor stand available.

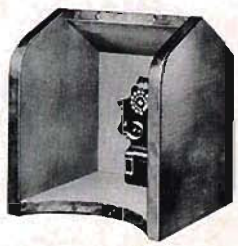
Model 211
Kellogg Code No. 130003



Floor model for use in noisy places requiring maximum performance such as: public locations (hotel lobbies, airports, stores, etc.) and for use in power plants, factories, etc. Patented acoustic construction provides an "isle of quiet" inside booth. Heavy duty, durable, gray wrinkle finish. Shelf and light fixture included.

Specifications:
Steel
Outside dimensions:
31" wide, 38½" deep, 79⅜" high.
Net weight: 350 lbs.

Model 601
Kellogg Code No. 130004



Wall model. Reinforced plywood construction with rich, walnut stain exterior finish. Walls of thick sound-absorbing material, enclosed in plywood paneling, soak up noise. Patented construction. Ideal for use where space is limited.

Specifications:
Wood
Outside dimensions:
28" wide, 26" deep, 32" high.
Net weight: 60 lbs.

Model 602
Kellogg Code No. 130005



Wall model. Rigid, all-steel construction. Durable, gray, wrinkle finish. Heavy-gauge steel sheets protect the acoustic material. Patented construction. Ideal for for installations where space is limited.

Specifications:
Steel
Outside dimensions:
28" wide, 26" deep, 32" high.
Net weight: 85 lbs.

There's a "HEAR HERE" Booth for every purpose.

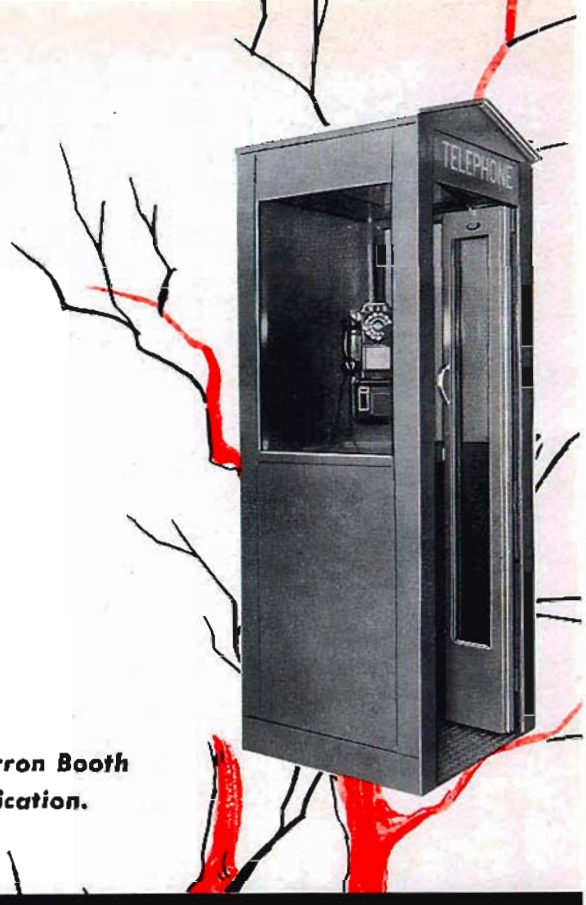
SHERRON MODEL 15-S TYPE 1

Outdoor "Special" Telephone Booth

Size: Width 30" x Deph 30" x Height 89¼".

Reinforced construction of zinc coated cold rolled steel with integral rigid steel base and safety plate floor. Equal-leaf folding door. Backboard for mounting coin collector, corner shelf, tubular wiring standard. Half panel construction, lower half panels on three sides and upper rear half panel are steel acoustic filled, upper right and left side half panels wire glass. Flush incandescent light fixture in ceiling. Solid lintel panels, decal "Telephone" sign. Weatherproof entry fittings in rear lintel panel. Positive action door closer included. Peaked steel roof. Finished in DuPont baked synthetic enamel, standard color No. 84-24314 Flame Red. Booth shipped completely packaged, set up, as described, no extras.

Shipping Weight, set up, packed 500 pounds.



INDEPENDENT
SHERRON
ACOUSTIC
STEEL—STAINLESS STEEL
OUTDOOR AND INDOOR
TELEPHONE BOOTHS

There is a Sherron Booth for every application.

SHERRON *Outside Phone Booths*

SHERRON MODEL 25-S TYPE 2

Outdoor "Clearview Stainless" Telephone Booth

Size: Width 30" x Depth 30". Reinforced main construction of stainless steel. Upper structure, panels, ceiling and roof, solid clad panels and backboard are of zinc-coated cold rolled steel finished in bright baked enamel. Integral rigid stainless steel base with safety plate floor. Equal-leaf folding door. Backboard for mounting coin collector, corner shelf, tubular wiring standard. Quarter panel construction, lower panels solid steel clad with ventilating louvres, upper three panels each side clear safety glass. Solid steel panels substituted in any locations if specified. Translucent plastic hinged ceiling assembly, translucent plastic telephone signs on front and two sides, central light source. Regularly equipped with Circline fluorescent light unit with two 40W-16" tubes. Door switch included but continuous lighting recommended. Booth regularly includes stainless steel shelf assembly, stainless steel kick plates on door, stainless steel outside moldings, door closing device and spring door stop. Weatherproof entry fittings in rear lintel panel. Furnished with either Translucent Plastic "Astra-Dome" (shown here), Peaked steel roof or Flat steel roof as specified. Height with dome 92½", peaked 89¼", flat 85". Zinc coated steel parts finished in DuPont baked synthetic enamel, standard colors: No. .84-24314 Flame Red, No. 84-35617 Alert Orange, No. 84-218 Highway Yellow, No. 84-9799 Hunter Green. Special finishes at extra charge.

Shipping weight, set up, packed and crated, 650 pounds.

Extras: Lite-O-Matic Photo Electric light control switch with adjustable light sensitivity control (115 V60 Cyc ac, contact rating 500 Watts.)

Seat Assembly, cold rolled steel, stainless trim.

Wire Ducts at rear for incoming services from ground, stainless steel. (set of two)



KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

G-110

at any location . . . an invitation to patronage



THE BENNER-NAWMAN TELEPHONE BOOTH

- STURDILY MOUNTED TOP is rust and leak proof and is mounted with only four attachment points.
- WELL VENTILATED ceiling.
- "SAFETY" GLASS used in all transparent panels.
- DOOR CLOSING STOP prevents damage from internal pressure.
- ALL PANELS are rustproof, rigidly supported, rubber mounted—easily replaced without screws.
- NATURAL VENTILATION.
- FOOT MOUNTINGS are adjustable and rustproof.
- ALL PARTS AND PANELS are interchangeable.
- FULLY APPROVED BY UNDERWRITERS
- LETTERING and bright night signs available in three styles.
- RIGID DOOR HEADER
- HEAVY DUTY, smooth operating door carriage with nylon rollers.
- RIGID BACKBOARD with self-aligning nuts for mounting telephones.
- SCIENTIFICALLY DESIGNED door handle
- STRONG, SPACIOUS SHELF
- PINCHPROOF on hinge side of doors.
- SEMI-CONCEALED hinges.
- ROUNDED CORNERS FOR EXTRA SAFETY.

B-N designers thought of everything to provide the best...

VERSATILITY OF ARRANGEMENT of safety-glass and enameled steel panels for all ocations. Practically any combination of half or quarter panels in metal and safety-glass is available.

1. Clear, easy to read, lettering on non-illuminated sign. TELEPHONE
2. Die-cut, illuminated lettering for night-time visibility. TELEPHONE
3. Light-Top, all glass signs for extra brilliance. TELEPHONE





These and other arrangements are available with all three variations in top and sign design.

B-N BOOTHS VIRTUALLY CLEAN THEMSELVES

All materials have been especially selectel to resist dust, rust and dirt. Repainting is never required and floors may be efficiently cleaned in seconds with a water hose. In case of damage, repairs are often made without interrupting phone service.

In thousands of locations, B-N telephone booths have demonstrated strong customer appeal, substantially increased revenues. Fabricated in safety glass and enameled steel panels attractively arranged in an aluminum frame. All materials resist rust and stains, have a brand new look that lasts—bright, shiny and inviting—for years. Variety of available lighting arrangements includes fluorescent lights of extra brilliance in interiors and night signs. Self-locking sections, level-correcting foot mountings and other simplified assembly features make installation quick, easy.

Shipped in five cartons, Benner-Nawman Telephone Booths weigh 312½ pounds. Booths with Top Light night signs weight 326 pounds packed for shipping. Each section shipped completely glazed.



BENNER-NAWMAN, INC.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • Division of IT&T

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ALCOA
ALUMINUM OUTDOOR TELEPHONE BOOTHS



Newest Convenience for folks away from home is the outdoor telephone booth made of light, strong, Alcoa aluminum. On duty 24 hours a day, these booths are easy to see, easy to use; they never close for the night.

Booths made of Alcoa aluminum are expertly designed, attractive enclosures that are a credit to any location. Well-illuminated at night, they're bright, clean and colorful in the daytime. Solid construction is provided with high-strength, heat-treated, Alcoa aluminum alloy extruded shapes.

The finish used on these booths has long-lasting beauty even under severe weather conditions. Maintenance costs are cut because Alcoa Aluminum will never warp or rot, and painting is unnecessary because no rust will ever appear to mar the beauty of this durable and handsome installation.

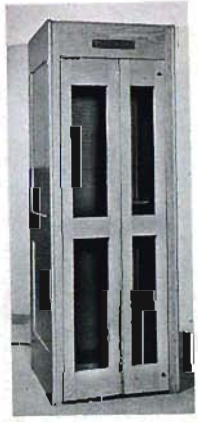
Watch for Alcoa aluminum outdoor phone boths; thousands are now in use. You'll find them on street corners . . . at the beach . . . and in convenient locations everywhere.

It will pay you to look into pay stations of Alcoa Aluminum!

Booths normally shipped knocked down and boxed. Floor plates and apparatus blanks available as optional items.

Item	Shipping Weight
Booth	442 lbs.
Floor Plate	33 lbs.
Apparatus Blank	1 lb.

BOOTHS, SERIES 100 FOLDING DOOR



The new series 100 Telephone Booth is the result of years of scientific reseach, experiments and improvement of existing models. It is made of selected, kiln dried lumber by skilled cabinet makers. Handsome as a fine piece of furniture, it harmonizes with its surroundings and attracts favorable attention. Being acoustically designed and automatically lighted and ventilated this booth affords privacy and perfect comfort to the user.

Standard equipment includes a silent electric ventilator and complete automatic lighting equipment — both operated by an automatic door switch. This booth is completely metal lined. No floor — glass in door only.

Shipped "knocked down" unless order specifies to be shipped "set up." Size over-all: 84¾ in. high x 29 in. wide by 30½ in. deep.

Kellogg Code No.	Cat. No.	Material	Finish	Shipping Weight
130020	100-A	Oak	Light or medium oak	300 lbs.
130021	100-B	Birch	Light or medium mahogany	300 lbs.

ING-RICH *Porcelain Enamel* TELEPHONE SIGNS



Clear visibility and permanent, bright colors are features of the Telephone Signs made by Ingram-Richardson Manufacturing Company. They are made of lifetime Porcelain Enamel fused to heavy gauge steel.

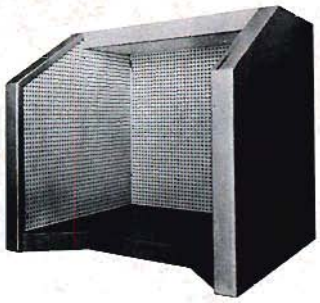


(Left) These double-faced Porcelain Enamel signs are available in either plain or activated surface. Sizes available 18" x 18" x 2" flanged signs, plain or reflective surface, 11" x 11" x 1½" flanged signs, reflective surface (white portion).



(Below) Public Telephone Pay Station Sign is 18" x 8" x 2" in size, is double faced, and made of long life Porcelain Enamel.

Telephone Office sign, furnished complete with scroll-type bracket. Sign is 20" x 16", Porcelain Enameled both sides.



MODEL A-5 — Modular Booth

The "Modular Booth" represents the latest in ultra modern styling and acoustical qualities. Can be installed in indoor locations either singly or in groups.

Comfortable size and ample shelf room.

Dimensions: 27½" w. x 26" d. x 26" h.

Finishes: Wheat, Limed-oak, Platinum, Sahara Mahogany.

Can be furnished in soft or hard pressed wood or metal perforations. Directory chain and mounting brackets supplied with all models.

Model A-5, wood — Shipping weight 77 lbs. • Model A-5, Std. steel — Shipping weight 96 lbs. • Model A-5, embossed aluminum.



MODEL A-8 — Industri-Booth

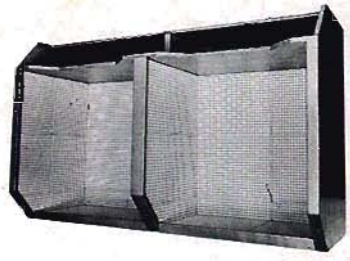
"Industri-Booth," for desk or wall location, provides a sound deadened, personal booth for hearing detailed conversations without error or annoyance.

Can be supplied in hard or soft pressed wood or metal perforated panels. Specify on order.

Also available in wood, standard steel, and embossed aluminum.

Dimensions: 24" w. x 30" h. x 17¼" d.

Model A-8, wood • Model A-8, std. steel • Model A-8, embossed aluminum • Shipping wt. wood, 40 lbs. • Shipping wt. steel, 58 lbs.



MODEL A-6 — Commercial Booth

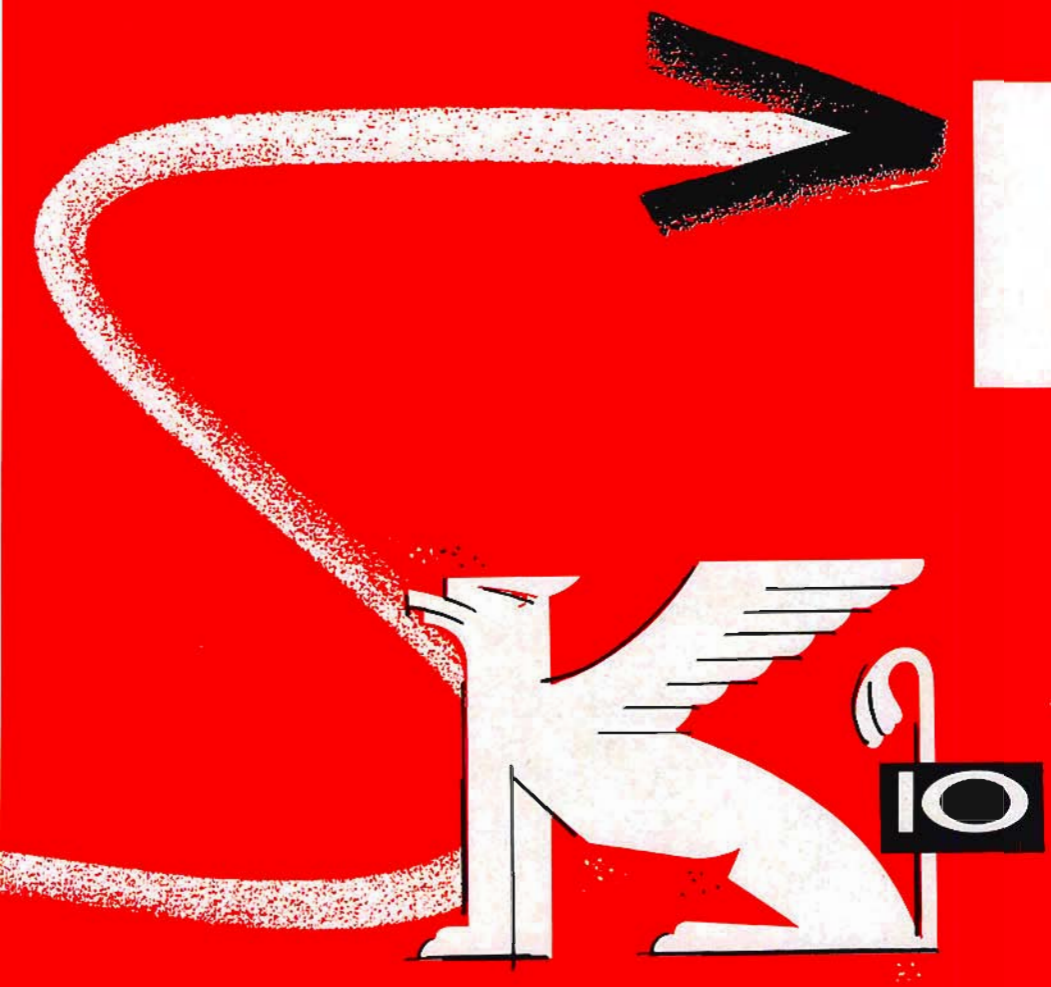
The finest acoustical double booth of this type made at any price. Note handy shelf location for telephone books and parcels, large, comfortable private enclosure. Ideal for department stores, public buildings, etc.

Can be supplied in hard or soft pressed wood or metal perforated panels. Specify on order. Directory chain supplied.

Dimensions: 51½" w. x 35½" h. x 24" d.

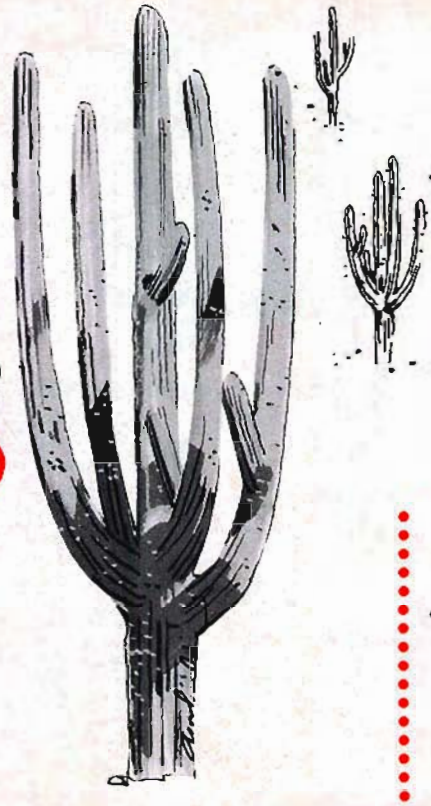
Finishes: Wheat, Limed-oak, Platinum, Sahara Mahogany.

Model A-6, Double — Shipping wt.: 130 lbs. (double section). • Model A-6, Single — Shipping wt.: 66 lbs. (single section).



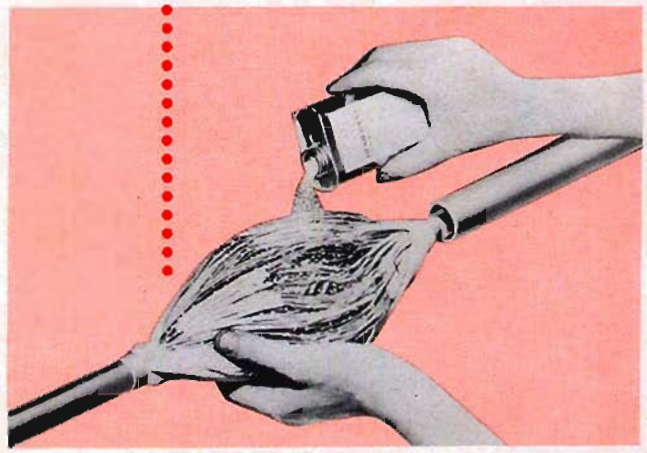
miscellaneous

thirsty AS A CACTUS



for drying out a cable splice

DRIERITE, "The Versatile Dessicant", **Easiest, Most Effective** remedy to use against the hazards of Water Vapor. No destructive tarnish, corrosion, mildew, disintegration, or electrical deterioration. No grounded circuits when DRIERITE is used!



HOW DRIERITE WORKS

Just pour DRIERITE into the cable splice, and SEAL it up! It absorbs *all* moisture from the wires, insulation, bandage, and surfaces inside the sleeve. No gases, fumes, odors. Never becomes wet or crystalizes on container walls. No danger of fire, accident or discomfort to workmen or building occupants.

DRIERITE is a granular material; looks like sugar, feels like chalk. Has an affinity only for Water. . . . it's chemically inert otherwise. Completely non-poisonous, non-corrosive, non-abrasive — will not powder or liquefy . . . important advantages when the splice must be made in a manhole! Although it has an exceptionally high dielectric constant, will never injure the most delicate materials — even by direct contact!



WHAT DRIERITE IS

Made of Anhydrous Calcium Sulfate, DRIERITE is one of the most efficient and effective drying agents known! Air in contact with DRIERITE retains only 0.005 miligram of moisture per liter—only 0.31 lb. per Million Cubic Feet! That's being Really DRY!

Laboratory and field research tests by major telephone systems over the past 20 years, prove DRIERITE the most effective dessicant of all. Much more effective and safer than enduring the hazards and inconveniences of Boiling-Out with melted paraffin! DRIERITE now is used all over the world . . . because it is a Safe, Easy, Time-Saver! Because it really DRIES!

DRIERITE is now available in large quantities. . . . at an All-Time Low Cost!

W. A. HAMMOND DRIERITE CO.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-114



FOLDING TAKE-UP REELS

Twelve 15½-inch arms — height of legs, 32 inches.

Kellogg Code No.	Catalog No.	Size Coil	Net Wt. Lbs. Each
700002	T501	21"	47

REELS, JUMPER WIRE

Single or double units are available. Wire may be reeled from the top or bottom at any angle without kinking or snarling. The reel turns easily but never coasts as the correct tension is held by a center spring.

The diameter of the coil eye may be adjusted from 4½ inches to 12½ inches on 15" reels, and from 4½ inches to 13¾ inches on the 18" reels. To load, the reel is placed on its side and the tension cone face plate is removed. The coil of wire is placed in position and pins adjusted to correct tension. The face plate is replaced and the reel is ready to use. A hole is provided in the face plate to anchor the free end of the wire.

The Individual Reel is made for mounting to a frame-work or on service trucks, etc. The Double and Single Unit Reels rest on the floor on legs. All are of metal with black enamel finish.

Cat. No.	Description	Size Reel	Weight each
IND-15	Individual Reels	15 inches	11 lbs.
IND-18	Individual Reels	18 inches	13 lbs.
SU-15	Single Unit Reels	15 inches	16 lbs.
SU-18	Single Unit Reels	18 inches	19 lbs.
DU-15	Double Unit Reels	15 inches	25 lbs.
DU-18	Double Unit Reels	18 inches	30 lbs.



THE TRANSPORT TYPE M-1220 (PR) REEL is designed to pay out drop wire, also can be used as a take-up reel. It is demountable and can be used in a vertical or horizontal plane when removed from the vehicle. The outer spider is removable and adjustable with a plunger type lock. This permits the placing of coils as well as removal of same from the reel.

It is equipped with a variable tension brake whereby the speed of reel is controlled when paying out wire.

It can be mounted on the side of a body, in a horizontal position, for which reel brackets can be supplied.

Construction is of malleable castings and high grade steel. The Type M-1220 Reel weighs 32 pounds.

Core diameter .....15"
Outside diameter .....25"
Coil thickness .....4" to 7⅛"

UTILITY PLATFORM



This platform is designed for use on power or telephone poles, or around substations where space is limited, or when only a small working area is required. It is quickly applied with the safety-lock chain tightener.

The board is surfaced with Chance Safety Tread, which insures a safe, sure footing. End cleats tell the lineman when he is near the end of the board. Aluminum alloy fittings hold the weight of this sturdy platform to a minimum . . . for handling ease. The strut brace folds against the board, making it compact and easy to transport.

Cat. No.	Rating Work Load	Board Dim.	Wt.
M 4950	750 lbs.	30"x11"x1⅝	20 lbs.
M 4950-42	400 lbs.	42"x11"x1⅝	22 lbs.



GUY WIRE DISPENSER

The Chance Guy Wire Dispenser feeds guy strand rapidly and smoothly through a square opening. The square hole catches the strand, prevents uncoiling and protects the workman from the whipping of loose ends. Wire can be unreeled from either a vertical or horizontal position permitting the dispenser to be hung from the truck by the ring holder or placed flat on the ground. The dispenser is excellent for storage, convenient to use when guys are cut and made up in the warehouse.

MATTHEWS WIRE REEL



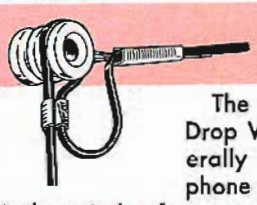
Besides the economy of long service life, this reel offers added savings as wire can be purchased in coils, eliminating the high freight costs and handling of heavy wooden spools. The turntable is constructed of heavy gauge steel and the frame of white oak. The five arms of the reel hold the coil snugly in place, fitting coils snugly in place, fitting coils from 14 to 21 inches inside diameter. Maximum conductors size — No. 1 strand.

Cat. No.	Description	Overall Length Wood Frame	Width Wood Frame	Turn-Table Dia.	Hgt. Arms	Wt. Lbs.
7	Reel with Brake	48"	24"	34"	9"	100
11	Reel without Brake	48"	24"	34"	9"	100

This Warning Sign is the most satisfactory equipment for providing maximum safety for crews while working in the srteets and along the highways. For tree trimming crews, the "Men Working Above" signs are being furnished.

Cat. No.	Description	Weight
3513	Plain, yellow and black	23 lbs.

P, PS & PR DROP WIRE CLAMPS & D CLIPS



The Reliable "P", "PS" and "PR" Drop Wire Clamps have become generally accepted for supporting telephone drop wire.

Made entirely of non-corrosive alloys of high copper content, these clamps are quick and easy to install as they require no threading. The large clamping area grips without distorting or damaging the drop wire. The wedge design tightens the wire grip as tension increases, making it possible to take up any slack in drop wires without leaving weak spots. Wire can be cut to accurate length after being sagged, eliminating waste.

When using twisted pair it is essential to parallel the wires through the clamp.

Drop wires of questionable size or type should be sent to our laboratory to determine a suitable clamp.

Kellogg Code No.	Catalog No.	Capacity	Std. Pkg.	Shpg. Wt. Lbs. per C
230046	P	Nos. 17-18 AWG reinforced parallel	25	11
230047	PS	No. 17 non-reinforced, and most construction to No. 20	25	12¼
230048	PR	Nos. 14-16 AWG twisted pair and parallel, suitable for Nos. 17-18 reinforced parallel neoprene jacketed drop wire	25	14
255018		"D" Clip used to secure drop wire to itself for snub attachments	25	1

WIRELINK AND WIREVISE

Especially designed for splicing and deadending Communications Steel, Copper and Copperweld Wires. Deadend is one piece, yet is designed to free one leg of the bail to permit easy assembly around insulator spools and thru thimble eye. Wirelink is pressure packed at factory with petroleum jelly to provide lubrication and to permanently prevent corrosion, making it suitable for splicing conductor as well as splicing supporting wire.

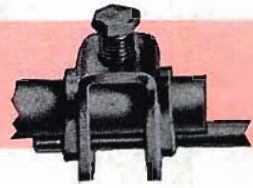
Two types are available. For use with Rural Distribution Telephone Cable Supporting Wire, and .109 Conductor, and all 12 BWG Iron Wire, the splice has heat-treated aluminum tubes with case-hardened, triple-protected steel jaws. The deadend has an aluminum yoke and stainless steel bail. For use with Copper and Copperweld, the splice is supplied with copper tubes, bronze jaws; deadend has bronze yoke and stainless steel bail.

Kellogg Code No.	Catalog No.	Description	Wire Size	Shpg. Wt. Lbs. per C
880001	5058	Wirevise	12 BWG .109	4½
880002	5059	Wirelink	12 BWG .109	4

STRANDLINK AND STRANDVISE, RELIABLE

Installed without tools, Strandlink and Strandvise splice and deadend steel strand faster and more efficiently than any other method. Tubes are heat-treated aluminum alloy enclosing three cold forged gripping jaws. These jaws have several hundred case hardened, triple protected steel teeth. Their uniform penetration grips the steel without appreciably reducing the ultimate strength of the steel strand. The Strandvise bail is high chrome nickel alloy stainless steel — stronger than the steel strand itself. Strandlink and Strandvise are internally coated at factory with inhibitor type No-Oxid oil.

Kellogg Code No.	Catalog No.	Size of Steel Strand	Description
757005	4999	3/16"	For splicing steel strand
757001	5000	¼"	" " " "
757002	5001	5/16"	" " " "
757003	5002	⅜"	" " " "
757004	5022	⅜" - 5/16"	Reducer splice
758001	5100	¼"	Short bail
758002	5150	¼"	Long bail
758003	5101	5/16"	Short bail
758004	5151	5/16"	Long bail
758005	5102	⅜"	Short bail
758006	5152	⅜"	Long bail
510080	9055	. .	Pulling Hook for use with all Strandvise ¼" thru 7/16"



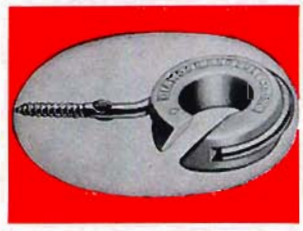
CLAMPS, RELIABLE ADJUSTABLE GROUND

Station ground clamps for grounding of communication circuits. The most approved method of making ground connections at subscriber's stations where water pipes are available. Made of copper strips, round edged with close fitting threads.

These clamps can be used in any location where a natural ground exists by fitting the adjustable strap around the water pipes or other ground, and tightening the clamping screw. Saves time and material on all types of installations.

Kellogg Code No.	Catalog No.	Pipe Size	Std. Pkg.	Shpg. Wt. Lbs. per C
230049	1	⅜ to 1¼ inch	100	6

SCREW EYES, SPLIT INSULATED



Convenient, small insulators that are easy to install. The porcelain ring has a 5/32-inch diagonal opening which allows the easy insertion of wires. The ¼-inch steel screw eye is galvanized by the hot dip process.

Kellogg Code No.	Cat. No.	Diameter of Hole	Length of Shank	Std. Pkg.	Weight per 100
722001	830	⅝ in.	1¼ in.	100	9 lbs.
722002	831	⅝ in.	2⅛ in.	100	10 lbs.
722003	832	1 in.	1⅛ in.	100	18 lbs.
722004	833	1 in.	2⅛ in.	100	20 lbs.

SCREW, ANGLE

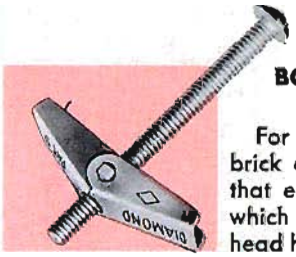
FURNISHED LESS KNOBS



Provides a convenient and economical fastening for drop wiring on frame or brick buildings. By inclining the angle of the screw the porcelain knob may be set at any desired angle. Knobs must be ordered separately.

Kellogg Code No.	Cat. No.	Size	Length of Screw End	Length of Shank	Use Knob No. 6016	Weight per 100
725001	840	5/16	1¾ in.	2¼ in.	2 Groove	10.5 lbs.
725002	*840A	5/16	1⅞ in.	2¼ in.	2 Groove	11.1 lbs.

* Has cut thread, instead of rolled thread.



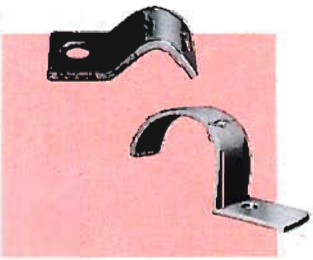
BOLTS, TOGGLE

For making attachments to hollow tile, brick or lath walls. Made with two wings that engage a trunnion nut and a spring which forces the wings outward when the head has passed through the wall. One end of the spring is extended to prevent rotation of the head while turning in the screw. Furnished complete with bolts. ⅛-in. diameter sizes have mushroom-head bolts, others round-head bolts.

Additional sizes and style bolt head available on special order.

Kellogg Code No.	Cat. No.	Diam. Inches	Length	Drill Hole	Std. Pkg.	Weight per 100
120305	7022	⅛	2 in.	3/16 in.	50	1.5 lbs.
120306	7023	⅛	3 in.	3/16 in.	50	2 lbs.
120307	7024	⅛	4 in.	3/16 in.	50	2.5 lbs.
120317	7033	3/16	3 in.	½ in.	50	4 lbs.
120319	7034	3/16	4 in.	½ in.	50	4.5 lbs.
120320	7035	3/16	5 in.	½ in.	50	5 lbs.

CLAMPS, CABLE



A very efficient fastening where lighter construction is to be used and where it will not be subjected to severe strains. Made of cold rolled mild steel annealed and hot galvanized after forming. Clamps can also be furnished in Brown or Ivory enameled finish.

ONE HOLE STANDARD TYPE

Kellogg Code No.	Cat. No.	Cable Size	Nearest Conduit or Pipe Size	Screw Hole Size	Std. Pkg.	Approx. Shpg. Wt. per 100
230001	L-3	3/16"		1/4"	500	1 lb.
230002	L-4	1/4"		5/16"	500	1 lb.
230003	L-5	5/16"		5/16"	500	1 lb.
230004	L-6	3/8"	1/8"	3/8"	500	1 lb.
230005	L-7	7/16"		13/32"	500	1.1 lbs.
230006	L-8	1/2"	1/4"	1/2"	500	1.2 lbs.
230007	L-9	9/16"		9/16"	500	1.2 lbs.
230008	L-10	5/8"		5/8"	500	1.3 lbs.
230009	L-11	11/16"	3/8"	11/16"	500	3 lbs.
230010	L-12	3/4"	1/2"	11/16"	500	4.5 lbs.
230011	L-14	7/8"		25/32"	500	5.0 lbs.
230012	L-16	1"	3/4"	1"	250	7.0 lbs.

TWO HOLE STANDARD TYPE

Kellogg Code No.	Cat. No.	Cable Size	Nearest Conduit or Pipe Size	Size Steel	Std. Pkg.	Approx. Shpg. Wt. per 100
230031	T-7	7/16"	1/8"	½x.048"	500	1.5 lbs.
230032	T-10	5/8"	1/4"	½x.048"	500	2 lbs.
230033	T-11	11/16"	3/8"	5/8x.062"	250	3.2 lbs.
230034	T-14	7/8"	½"	13/16x.062"	250	4.5 lbs.
230015	T-18	1⅛"	¾"	¾x.080"	250	7.5 lbs.
230035	T-20	1¼"	1"	⅞x⅛"	100	13.5 lbs.
230036	T-24	1½"	..	⅞x⅛"	100	15.5 lbs.

ONE HOLE OFFSET TYPE

Kellogg Code No.	Cat. No.	Cable Size	Nearest Conduit or Pipe Size	Size Steel	Std. Pkg.	Approx. Shpg. Wt. per 100
230018	403	3/32"	..	5/16x.048"	500	.4 lb.
230023	405	5/16"	..	5/16x.048"	500	.5 lb.
230022	406	3/8"	..	½x.048"	500	1 lb.
230025	407	½"	⅛"	½x.048"	500	1.1 lbs.
230037	408	5/8"	¼"	½x.050"	500	1.2 lbs.
230038	411	13/16"	3/8"	¾x.060"	500	2.87 lbs.
230019	413	⅞"	½"	¾x.078"	500	4.12 lbs.
230039	417	1-1/6"	¾"	¾x.078"	500	5.31 lbs.
230040	422	1½"	1"	¾x.115"	250	9.75 lbs.
230041	425	1¾"	1¼"	¾x.115"	250	10.62 lbs.

SHIELDS, LAG SCREW EXPANSION

Used to attach fixtures, cable, etc., to the surface of masonry.

The problem of misfit threads has been solved by the improved formation of the interior threaded portion in these Lag Screw Shields. They will permit cut thread or rolled thread, cone point or gimlet point lag screws of good and poor quality to enter equally well with a free and uniform expansion and without binding.

Malleable iron with hot-dipped galvanized finish available on special order. Furnished less lag screws.

LONG STANDARD

Kellogg Code No.	Cat. No.	Diameter Lag Screw	Drill Hole	Length of Shield	Std. Pkg.	Weight per 100
915380	1104	¼ in.	½ in.	1½ in.	100	4 lbs.
915381	1105	5/16 in.	5/8 in.	1¾ in.	100	5 lbs.
915382	1106	3/8 in.	5/8 in.	2¾ in.	50	11 lbs.
915383	1108	½ in.	¾ in.	3½ in.	50	18 lbs.

SHORT STANDARD

915371	1004	¼ in.	½ in.	1 in.	100	2 lbs.
915372	1005	5/16 in.	½ in.	1 in.	100	2.5 lbs.
915373	1006	3/8 in.	5/8 in.	2 in.	50	7.5 lbs.
915374	1008	½ in.	¾ in.	2 in.	50	10 lbs.

RINGS, BRIDLE



For pole line and interior distribution. Each ring has a 5/16-inch opening in the eye. Furnished either hot galvanized or dark blue enameled. When order does not specify galvanized rings will be shipped.

HOT-GALVANIZED — Wood Screw Type

Kellogg Code No.	Cat. No.	Size of Eye	Length of Shank	Std. Pkg.	Weight per 100
708001	810	1⅝ in.	1¼ in.	100	11.1 lbs.
708002	812	1¼ in.	1¼ in.	100	8.9 lbs.
708003	814	⅝ in.	⅞ in.	100	3.6 lbs.
708004	816	3 in.	1⅞ in.	100	31. lbs.

VITREOUS-ENAMELED — Wood Screw Type

708010	810	1⅝ in.	1¼ in.	100	15. lbs.
708011	812	1¼ in.	1¼ in.	100	12.5 lbs.
708012	814	⅝ in.	⅞ in.	100	5. lbs.

NAIL ANCHORS, HAMMER DRIVE

For nailing to concrete, brick or stone. Shields are one piece, non-rusting aluminum alloy. Furnished with heavily hot galvanized nails.

Kellogg Code No.	Cat. No.	Diameter and Length of Shield	Diameter of Drill to Use	Std. Pkg.	Weight per 100
915104	4314	3/16x7/8 in.	3/16 in.	25	1 lb.
915105	4320	3/16x1 1/4 in.	3/16 in.	25	1 1/4 lbs.
915106	4416	1/4x1 in.	1/4 in.	25	1 1/2 lbs.
915107	4420	1/4x1 1/4 in.	1/4 in.	25	1 3/4 lbs.
915108	4424	1/4x1 1/2 in.	1/4 in.	25	2 1/4 lbs.
915109	4520	5/16x1 1/4 in.	5/16 in.	25	2 3/4 lbs.
915110	4528	5/16x1 3/4 in.	5/16 in.	25	3 1/2 lbs.
915111	4536	5/16x2 1/4 in.	5/16 in.	25	4 1/2 lbs.
915112	4544	5/16x2 1/2 in.	5/16 in.	25	5 lbs.
915113	4632	3/8x2 in.	3/8 in.	25	6 1/2 lbs.
915114	4652	3/8x3 1/4 in.	3/8 in.	25	8 1/4 lbs.
915115	4836	1/2x2 1/4 in.	1/2 in.	25	11 1/2 lbs.
915116	4856	1/2x3 1/2 in.	1/2 in.	25	15 1/2 lbs.

RINGS, TOGGLE BRIDLE



Used in material of hollow construction as magnesia blocks, wallboard, lath, plaster, hollow tile, etc.

Furnished complete with 5/16x1 1/4-inch round washer and square nut.

The 3/16-inch size is furnished with cadmium plated finish and the 1/4-inch size is furnished with hot galvanized finish.

Supplied with either spring or No. 5 type toggle head. Spring type will be furnished unless otherwise specified.

Kellogg Code No.	Cat. No.	Size	Diam. Eye	Size Drill	Std. Pkg.	Weight per 100
708030	TBR-2	3/16x4 in.	5/8 in.	1/2 in.	100	8.5 lbs.
708031	TBR-4	1/4x4 in.	1 1/4 in.	5/8 in.	100	17.5 lbs.

RINGS, DRIVE



These rings accomplish the same purpose as the screw threaded, pigtail bridle ring but are designed for driving instead of screwing into structures. When attached to wood they are driven as an ordinary wire nail. When attached to hard substances such as brick, stone or concrete, Hammer Drive Anchors are employed.

Made of hard nail wire, hot galvanized.

Kellogg Code No.	Cat. No.	Diameter of Eye	Size of Hammer Drive Anchor	Std. Pkg.	Weight per 100
708020	801	1/2 in.	3/16x7/8 in.	50	1.8 lbs.
708021	804	5/8 in.	1/4x1 in.	25	3.3 lbs.
708022	805	7/8 in.	1/4x1 in.	25	6.4 lbs.

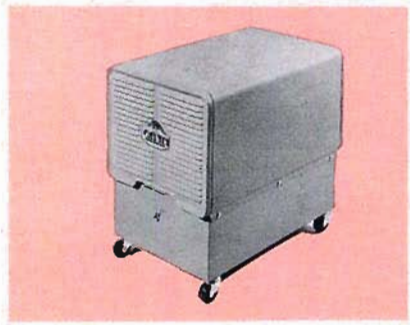
SCREW ANCHORS, MULTI-SIZE

Designed to accommodate in one anchor several diameters of wood screws. The purpose is to reduce the number of anchors required to accommodate all sizes of screws. They are made in several lengths covering the majority of uses.

Furnished less wood screws.

Kellogg Code No.	Cat. No.	Use Wood Screws No.	Length of Anchor	Drill Hole	Std. Pkg.	Weight per 100
915117	5212	6 to 8	3/4 in.	1/4 in.	25	1. lb.
915118	5216	6 to 8	1 in.	1/4 in.	25	1.5 lbs.
915120	5316	10 to 14	1 in.	5/16 in.	25	1.75 lbs.
915121	5324	10 to 14	1 1/2 in.	5/16 in.	25	2.5 lbs.
915122	5516	16 to 18	1 in.	3/8 in.	25	2.75 lbs.
915123	5524	16 to 18	1 1/2 in.	3/8 in.	25	4. lbs.
915124	5628	20 to 24	1 3/4 in.	7/16 in.	25	5.25 lbs.

OASIS DEHUMIDIFIER AIR DRIER



The OASIS DEHUMIDIFIER provides safe, sure protection from costly moisture damage by removing up to 3 gallons of water from the air in 24 hours . . . almost 2 barrels of water per month under peak humidity conditions. It takes care of a large space . . . more than 10,000 cubic feet can be kept dry with just one Oasis Dehumidifier! It converts damp, musty basements—or other damp areas—into valuable space for family or business use. It makes such areas comfortably dry, healthful and safely usable at all times.

Optional Items include an automatic timer to regulate operating time of drier and a dirt filter to prevent collection of dirt and dust on the drier coils.

SIZE—13" wide, 18 1/4" high, 19" long.

WEIGHT—55 pounds.

FINISH—Beige-colored baked enamel, harmonize with any decor.

CAPACITY—Up to 3 gallons of water from air in 24 hours in rooms up to 10,000 cubic feet of closed space.

COMPRESSOR MOTOR—1/8 horsepower.

AIR DELIVERY—250 cubic feet per minute.

MOISTURE CONTAINER—10 quart capacity. Tough, lightweight Fibreglas, drawer-type with self-contained handle.

CURRENT—115 volts, ac, 50-60 cycle, single phase.

CURRENT CONSUMPTION UNDER AVERAGE CONDITIONS — 230 watts.

Kellogg Code No.	Cat. No.	Description
325001	J-20B	Air Drier Dehumidifier
325002	13587	Automatic Timer
325004	13849	Filter

COMPOUND KETTLE "T" TYPE



Of brazed and welded construction throughout, the outer jacket keeps material at correct pouring temperature for a long period. The heat-conductor tube assures even melting of compound, allows gas to escape, and prevents solidified compound from exploding when heating. Double ring on bail permits attaching of hand line for raising or lowering kettle to the work.

Catalog Number	Capacity	Weight
53	5 Qts.	6 1/2 lbs.

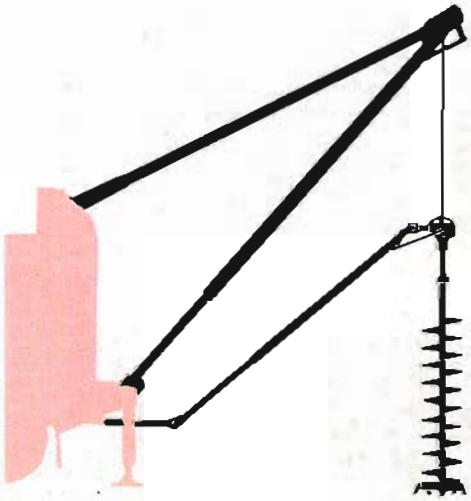
hydraulic and HOLAN mechanical equipment by...

LADDERS, HOLAN HYDRAULIC AND MECHANICAL

This Series 2100 Ladder is completely hydraulic. Elevation, rotation and fly ladder extension and retraction are controlled by three hydraulic control levers. A multiple-plunger control valve with throttling action enables the operator to control speed of positioning. Ladder maximum elevation is 75°; rotation is 360°. There are four models with platform heights from 27 to 40 feet. The ladders can be mounted on ¾ to 1½ ton trucks.

The Series 2200 Ladder is completely mechanical and features a new safety device — a band-type brake for absolute control of ladder retraction. The new Series 2500 Ladder is manually-operated, but has a two-speed pump for elevation and automatic lowering.

All Holan ladders can be furnished with a new duo-level platform that gives workmen extra security at low angles



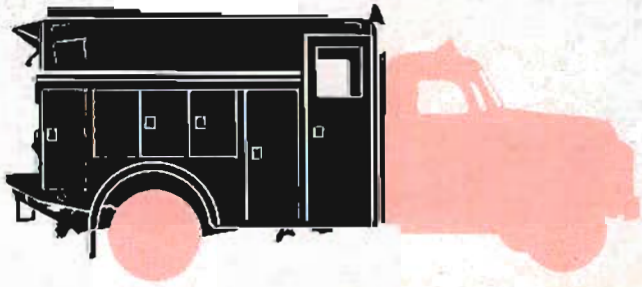
EARTH BORERS, HOLAN HYDRAULIC AND MECHANICAL

Holan 4401 earth borers make hole-digging faster and easier.

The hydraulic unit, 4401-H, doesn't vibrate or create mechanical stresses when stalled. There are no bearings, no universal joint, no shear pin, no complicated mechanical linkages. A powerful gear-type hydraulic motor, driven by PTO, powers the earth borer.

The mechanical digger, 4401-M, is an extremely rigid and lightweight unit which can also be driven by power take-off.

Holan diggers are available for hole diameters from 8 to 20 inches, depths to 8 feet. Either the Holan Standard Head or the Pengo Cutter Head can be used.



TRUCK BODIES, HOLAN INSTALLATION AND MAINTENANCE

This compact Holan body can be mounted on any ½ ton chassis. It is 72 inches long and has an efficient compartment arrangement for all the tools and equipment necessary for telephone maintenance and installation.

All compartments are 14¼ inches deep. Box-type, double panel compartment doors give an excellent seal against the weather and will not spring out of shape. Non-skid floors and feather action, pull-type handles, flush with the side of the body, are standard equipment on Model TS-72.

Overhead center mounted ladder racks or overhead side mounted ladder racks can be installed as optional equipment.

Compartments on both sides of the body provide ample room for the storage of small parts, tools and equipment. Bulky equipment can be carried in the truck bed, which is 46 inches wide.

An extension ladder, step ladder, tree trimmers and ground rods, all optional equipment, can be carried on overhead center mounted ladder racks.

TRUCK BODIES, HOLAN LINE CONSTRUCTION

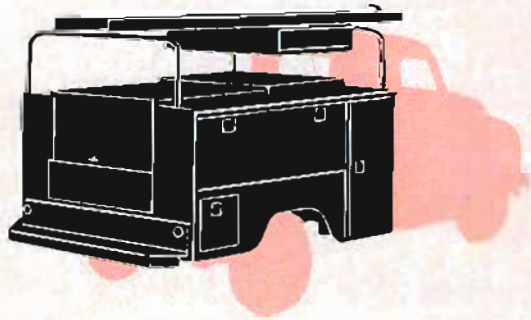
The design of the CLC-138 Line construction body stresses time and labor-saving features that reduce on-the-job costs. Frequently used tool and material storage on the "curbside" avoids delays and reduces traffic hazards by keeping the men away from the street. Drawers and compartments, arranged for quick accessibility and full visibility, minimize mixing of small parts in the tool trays. Self sealing, slam type doors of double panel construction keep tools in good working condition in all weather. Adjustable mirror arrangement allows the driver to see the winch in operation. Flush type door handles provide an additional safety feature.

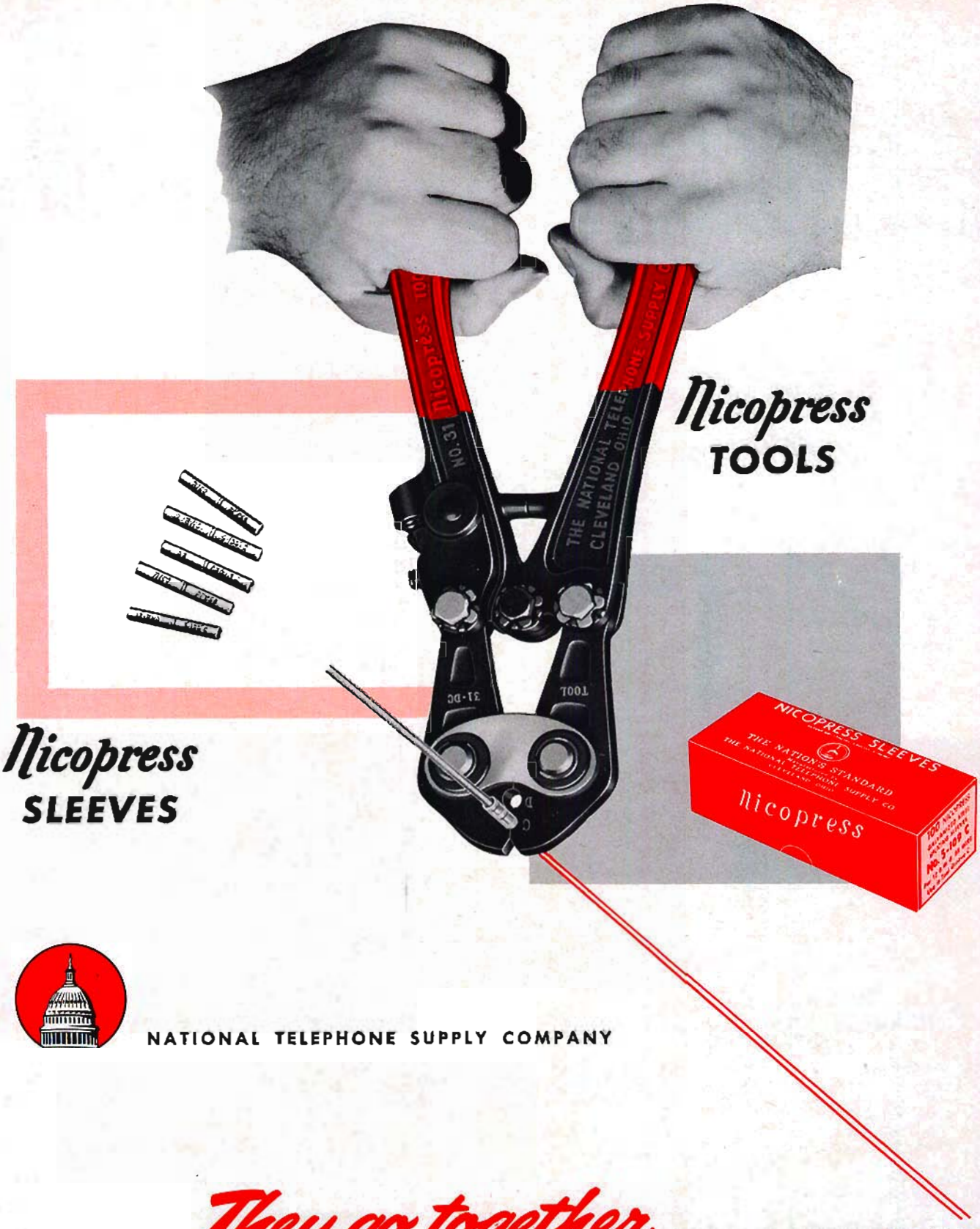
This body will fit all makes of chassis with 84 to 88 inch C.A. dimension. Basic weight is 2650 pounds.

Crew compartment is large enough for four men. Shoulder width of 75 inches and seat width of 68 inches.

This body features low derrick tunnel height. Telescoping derricks permit use of left side of cab door. A low, short sheave bar assembly clears working platform space.

Three winch enclosures are available on this body. Normal winch capacity is 18,000 pounds.





NATIONAL TELEPHONE SUPPLY COMPANY

They go together FOR A PERFECT SLICE

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-120

NICOPRESS SPLICING SLEEVES

For Telephone Drop, Bridle and Inside Wire

Kellogg Code No.	Wire Size	Sleeve Stock No.	For Use In Tool No.	Approx. Ship. Wt. per 200
735044	19-20-22 B.&S. Copper	3-036 A	17-2	½ lb.
735045	17-18 A.W.G. Copperweld 17-18 B.&S. Bronze 17-18 B.&S. Copper	3-045 B	17-2	¾ lb.
735046	16 B.&S. Copper 16 A.W.G. Copperweld	3-051 B	17-2	¾ lb.
735047	14 B.&S. Copper	3-064 B	17-2	¾ lb.

For Solid Copper Wire

Kellogg Code No.	Gauge B. & S.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735047	14	3-064 B	17-2	½ lb.
735020	14	1-064 C	C	1½ lbs.
735021	12	1-080 C	C	1½ lbs.
735022	12	1-080 D	D	1¾ lbs.
935024	10	1-102 C	C	1¼ lbs.
935025	10	1-102 D	D	1¾ lbs.
935028	9	1-114 D	D	1½ lbs.
935030	8	1-128 E	E	1¾ lbs.
935031	8	1-128 J	J	4½ lbs.
935032	6	1-162 J	J	4½ lbs.

For Galvanized STEEL Conductors

Kellogg Code No.	Gauge B. W. G.	Sleeve Stock No.	For Use In Tool Groove	Approx. Ship. Wt. per 100
735080	14 "BB" and "85"	2-083 C	C	1½ lbs.
735052	14 "BB" and "85"	5-083 C	C	1½ lbs.
735035	14 "BB" and "85"	2-083 D	D	1¾ lbs.
735051	12 "BB"	4-109 C	C	1¼ lbs.
735053	12 "BB"	5-109 C	C	1½ lbs.
735039	12 "BB"	2-109 D	D	1¾ lbs.
735054	12 "BB"	5-109DBB	D	1½ lbs.
735055	12 "85"	5-109 D85	D	1¾ lbs.
735056	12 "135"	5-109 D135	D	2½ lbs.
735057	12 "190"	5-109 D190	D	3 lbs.
735065	12 "190"	5-109 G190	41-GD	4½ lbs.
735037	12 Rusty or undersize	2-102 C	C	1¼ lbs.
735040	10 "BB" and "85"	2-134 J	J	4 lbs.
735041	9 "BB" and "85"	2-148 J	J	4½ lbs.
735042	8 "BB"	2-165 J	J	4½ lbs.

For SOLID COPPERWELD Wire

30% and 40% Conductivity — High and Extra High Strength

Kellogg Code No.	Gauge A. W. G.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735020	14	1-064 C	C	1½ lbs.
735022	12	1-080 D	D	1¾ lbs.
735048	10	3-102 D	D	2 lbs.
735027	10	1-102 J	J	5½ lbs.
735029	9	1-114 J	J	5½ lbs.
735031	8	3-128 J	J	5 lbs.

NICOTAPS

For Steel to Copper, Copperweld and Bronze

Kellogg Code No.	Gauges B. W. G. to B. & S.	Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735207	14 to 17 or 18	T2-083x045 C	C	2¼ lbs.
735206	14 to 12	T-2083 C	C	2¼ lbs.
735209	12 to 17 or 18	T2-109x045 D	D	3 lbs.
735216	12 to 16	T2-109x051 D	D	3 lbs.
735210	12 to 14	T2-109x064 D	D	3 lbs.
735208	12 to 10	T2-109 D	D	3 lbs.

For Copper, Copperweld and Bronze

Kellogg Code No.	Gauges B. & S. to B. & S. A. W. G to A. W. G.	Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735205	17, 18, 19 to 17, 18, 19	T2-045 B	17-2	½ lb.
735201	12 to 17, 18	T1-080x045 C	C	2¼ lbs.
735261	12 to 14	T1-080x064 C	C	2¼ lbs.
735200	12 to 12	T1-080 C	C	2¼ lbs.
735203	10 to 17 or 18	T1-102x045 D	D	3 lbs.
735204	10 to 14	T1-102x064 D	D	3 lbs.
735212	10 to 12	T1-102x080 D	D	3 lbs.
735202	10 to 10	T1-102 D	D	3 lbs.

For Steel to Steel

Kellogg Code No.	Gauges B. W. G. to B. W. G.	Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735206	14 to 14	T2-083 C	C	2¼ lbs.
735208	12 to 12	T2-109 D	D	3 lbs.
735256	12 to 14	T2-109x083 D	D	3 lbs.

STRAIGHT SPLIT SLEEVE FOR CONNECTING RURAL DISTRIBUTION WIRE TO TAP WIRE

Kellogg Code No.	Gauges A. W. G. to A. W. G.	Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735260	19, 20, 22, 24 to 14	1727 B	17-2	½ lb.
735262	19, 20, 22, 24 to 17 & 18	1744 B	17-2	½ lb.

NICOPRESS LASHING WIRE SLEEVES

For Splicing Galvanized Steel, Copperweld, Stainless Steel and Aluminum

Kellogg Code No.	Wire Diameter	Sleeve Stock No.	Tool Groove	Approx. Ship. Wt. per 100
735066	.045	4-045 B ¾"	17-2	½ lb.
735067	.061	2-061 C ¾"	C	¾ lb.
735068	.065	2-065 C ¾"	C	¾ lb.
735069	.091	2-091 C ¾"	C	¾ lb.
735036	.091	2-091 D ¾"	D	1 lb.

NICO PRESS REDUCING SLEEVES

For Copper Wire to Drop, Bridle, Inside and Line Wire

Kellogg Code No.	Gauges B. & S. to B. & S.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735123	17, 18 to 19, 20, 22	2-045x036 B	17-2	½ lb.
735139	14 to 19, 20, 22	1-064x036 C	C	1½ lbs.
735111	12 to 19, 20, 22	1-080x036 C	C	1½ lbs.
735112	12 to 17, 18	1-080x045 C	C	1½ lbs.
735134	12 to 17, 18	1-080x045 D	D	1¾ lbs.
735113	12 to 16	1-080x051 C	C	1½ lbs.
735114	12 to 14	1-080x064 C	C	1½ lbs.
735137	12 to 14	1-080x064 D	D	1¾ lbs.
735115	10 to 17, 18	1-102x045 C	C	1½ lbs.
735135	10 to 17, 18	1-102x045 D	D	1¾ lbs.
735116	10 to 14	1-102x064 C	C	1½ lbs.
735117	10 to 14	1-102x064 D	D	1¾ lbs.
735118	10 to 12	1-102x080 C	C	1½ lbs.
735119	10 to 12	1-102x080 D	D	1¾ lbs.

For Galvanized Wire to Drop, Bridle and Inside Wire

Kellogg Code No.	Gauges B. W. G. to B. & S.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735124	14 to 17, 18	2-083x045 C	C	1½ lbs.
735131	12 to 17, 18	4-109x045 C	C	1½ lbs.
735138	12 to 17, 18	2-109x045 D	D	2 lbs.
735132	12 to 14	4-109x064 C	C	1½ lbs.

For Galvanized "BB" Wire

Kellogg Code No.	Gauges W. W. G. to B. W. G.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735133	12 to 14	4-109x083 C	C	1½ lbs.
735127	12 to 14	2-109x083 D	D	2 lbs.
735128	10 to 12	2-134x109 J	J	3 lbs.

NICOPRESS TOOLS

No. 17-2 Nicopress Tool

For TELEPHONE DROP, BRIDLE and INSIDE WIRE

810002 No. 17-2 Length 8" — Weight 9 oz.

Type No. 31 Nicopress Tools

For Communication Line Wire

Kellogg Code No.	Tool No.	Length	Weight Each
810011	31-DC	11¾"	2 lbs.
810012	31-DJ	11¾"	2 lbs.
810015	31-CP	11¾"	2 lbs.

NICOPRESS REPAIR SLEEVES

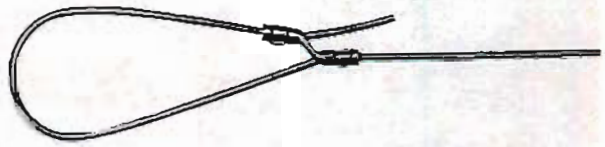
For Replacing Defective Twist Splices

For Solid Copper Wire

Kellogg Code No.	Gauge B. & S.	Sleeve Stock No.	For Use In Tool Groove	Length	Approx. Ship. Wt. per 100
735250	12	R1-080 C	C	7"	6 lbs.
735258	12	R1-080 D	D	7"	7½ lbs.
735251	10	R1-102 C	C	7½"	5¼ lbs.

For Galvanized "BB" Wire

Kellogg Code No.	Gauge B. W. G.	Sleeve Stock No.	For Use In Tool Groove	Length	Approx. Ship. Wt. per 100
735252	14	R2-083 C	C	7"	6 lbs.
735255	12	R4-109 C	C	7½"	5½ lbs.
735253	12	R2-109 D	D	7½"	7 lbs.



NICOPRESS OFFSET DEAD-END SLEEVES

For Galvanized Steel Wire

Kellogg Code No.	Gauge B. W. G.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735080	14 "BB" and "85"	92-083 C	C	1½ lbs.
735089	14 "BB" and "85"	95-083 C	C	1½ lbs.
735081	14 "BB" and "85"	92-083 D	D	1¾ lbs.
735088	12 "BB"	94-109 C	C	1½ lbs.
735090	12 "BB"	95-109 C	C	1½ lbs.
735084	12 "BB"	92-109 D	D	1¾ lbs.
735046	12 "BB"	95-109 DBB	D	1½ lbs.
735091	12 "85"	95-109 D85	D	1¾ lbs.
735092	12 "135"	95-109 D135	D	2½ lbs.
735085	10 "BB" and "85"	92-134 J	J	5½ lbs.
735093	9 "BB" and "85"	92-148 J	J	5 lbs.
735086	8 "BB"	92-165 J	J	5 lbs.

For Solid Copper Wire

Kellogg Code No.	Gauge B. & S.	Sleeve Stock No.	For Use In Tool Groove	Approx. Ship. Wt. per 100
735070	14	91-064 C	C	1½ lbs.
735071	12	91-080 C	C	1½ lbs.
735072	12	91-080 D	D	1¾ lbs.
735074	10	91-102 C	C	1½ lbs.
735075	10	91-102 D	D	1¾ lbs.
735077	9	91-114 D	D	1½ lbs.
735094	9	91-114 E	E	2 lbs.
735078	8	91-128 E	E	1¾ lbs.
735095	8	91-128 J	J	5½ lbs.
735079	6	91-162 J	J	4½ lbs.

For Solid Copperweld Wire

Kellogg Code No.	Gauge A. W. G.	Sleeve Stock No.	For Use in Tool Groove	Approx. Ship. Wt. per 100
735070	14	91-064 C	C	1½ lbs.
735071	12	91-080 C	C	1½ lbs.
735072	12	91-080 D	D	1¾ lbs.
735087	10	93-102 D	D	2½ lbs.
735076	10	91-102 J	J	6 lbs.
735095	8	91-128 J	J	5½ lbs.

UNIQUE BALANCED LADLE WITH AIR COOLED HANDLE

Kellogg Code No.	Bowl Diam.	Capacity, Pints	Weight Ea., Ounces
575002	3"	⅛	12
575003	3½"	¼	14
575004	4"	⅜	16

No. 776 BAR SOLDER

Kellogg Code No.	Catalog Number	Description	Length Per Bar	Weight Per Bar
740020	776	40/60	13"	1½ lbs.



"CHALLENGE" STEEL TAPES

Particularly recommended for all kinds of general measuring. Line is ⅜-inch wide, made of highest grade tape steel with distinct markings on one side only. Case of genuine russet leather hand stitched and with substantial plated steel liner. Folding flush steel handle is opened by pressing pin on opposite side. Measurements guaranteed accurate.

Kellogg Code No.	Cat. No.	Markings	Length	Weight of each
785150	263	Feet, inches and 8ths	50 ft.	11 ozs.
785151	266	Feet, inches and 8ths	100 ft.	21 ozs.
785157	263-D	Feet, 10ths and 100ths	50 ft.	11 ozs.
785158	266-D	Feet, 10ths and 100ths	100 ft.	21 ozs.

"STERLING" NON-METALLIC LINEN TAPES



A strictly high grade tape especially popular with telephone and telegraph companies for ordinary work. The serviceable linen tape is ⅜" wide with long-wearing green plastic reinforcing strip at first end for extra service. Though not of steel tape accuracy, markings are clear, and figures are prominent. Durable case is covered with tough vinyl over a strong welded metal liner which is rust resistant. Narrow, flat stainless steel edge band, and substantial folding winding handle.

Kellogg Code No.	Cat. No.	Markings	Length	Weight of each
785152	403	Feet, inches and half inches	50 ft.	12 ozs.
785153	406	Feet, inches and half inches	100 ft.	19 ozs.
785158	403-D	Feet, tenths and half-tenths	50 ft.	12 ozs.
785159	406-D	Feet, tenths and half-tenths	100 ft.	19 ozs.

Vinyl Electrical Tape No. 1 & No. 2



Bishop Vinyl Electrical Tapes No. 1 and No. 2 offer complete electrical and mechanical protection for most general taping problems, with more dielectric protection than similar tapes. Improved method of bonding the adhesive to the vinyl prevents transfer, and gives greater adhesive strength. Thin, tough and resilient, this pressure-sensitive tape can be pulled strongly without breaking to wrap splices tighter. Completed jobs look better, are more compact.

VINYL ELECTRICAL TAPE No. 1 & No. 2

Kellogg Code No.	Catalog No.	Description
785034	1	¾" x 20 ft.
785035	1	¾" x 66 ft.
785036	2	¾" x 36 yds.

TAPE, MANSON FRICTION

Kellogg Code No.	Description	Standard Width	Weight
785104	Manson Friction Tape	34 in.	½ lb.



There is a Bishop Electrical Tape For Every Moisture-Sealing and Insulating Job

. . . for permanent moisture sealing

. . . for rapid insulation build-up

. . . BI-SEAL Self-Bonding (polyethylene based) Electrical Tape provides a permanent, watertight seal and insulation for drop wire and telephone cable splices.

TYPE II BLACK BI-SEAL

Kellogg Code No.	Width	Length	Weight Per Roll
785001	½"	30 ft.	4 oz.
785002	¾"	30 ft.	6 oz.
785004	1"	30 ft.	8 oz.
785005	2"	30 ft.	1 lb.



. . . No. 125 Electrical Filler Tape, ⅛" thick, fuses into a solid mass of high-dielectric insulation in a matter of seconds. This insulating compound in tape form is ideal for cable splice build-up, padding and cable end-sealing.

TYPE 125 ELECTRICAL FILLER TAPE

Kellogg Code No.	Width	Length	Weight Per Roll
785006	1½"	5 ft.	10 oz.

NOTE: Both BI-SEAL and No. 125 Filler Tape are accepted by the Technical Standards Committee (telephone) of the Rural Electrification Administration for splicing thermoplastic insulated, thermoplastic sheathed telephone cable. As per REA STANDARD PC-2 and PC-3.



BULL DOG FRICTION TAPE

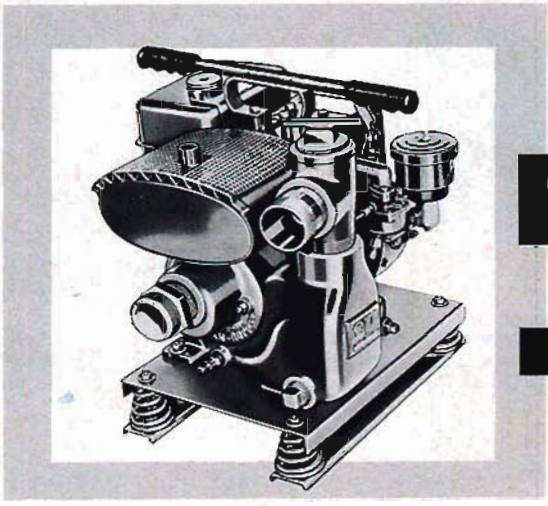
Tape, Black Friction

A quality insulating tape with high adhesive qualities. It lies smooth, holds tight, has high dielectric strength, and stays fresh in the roll. This tape retains its adhesive qualities through all seasons. Standard width is ¾ inch.

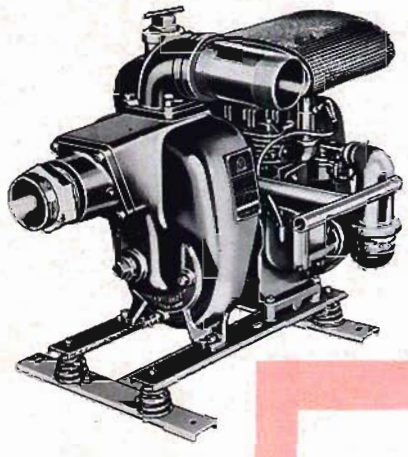
Kellogg Code No.	Cat. No.	Width	Length per Roll	Weight per Roll
785101	8-¾	¾ in.	60 ft.	8 oz.
785103	8-2	2 in.	60 ft.	16 oz.

DRAINAGE PUMPS *designed for*

TELEPHONE COMPANIES



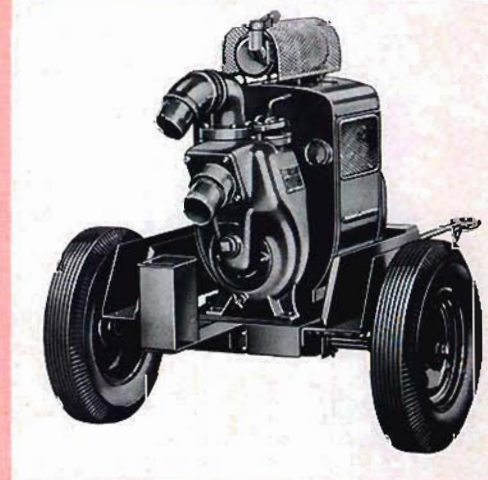
MODEL 32



MODEL 31

SPECIFICATIONS

- Suction Lift — up to 25 feet at sea level.
- Automatic self-priming — self-priming centrifugal pumps.
- Portability — Models T-32, T-33 designed with carrying handles.
- Non-clogging — any spherical solids that will pass the intake strainer will pass through the pump.
- Renewable Wear Plate — replace it for a fraction of the cost of a new pump volute casing.
- Simplicity — the impeller, the only moving part, is mounted directly on the engine shaft and operates at engine speed.
- Heavy Duty Engine — Model T-32, powered by Briggs & Stratton 8BFB. Model T-33 by Wisconsin BKN and Model T-34 by Wisconsin VE4.
- Suction and Discharge — Model T-32, 2" brass adapter on suction, 2" N.P.S. flat faced nipple on discharge. Model T-33, 3" brass adapter on suction, 3" N.P.S. flat faced nipple on discharge. Model T-34, 4" N.P.S. flat faced brass nipple on suction, 4" N.P.S. flat faced nipple on discharge.
- Base — Models T-32 and T-33 mounted on sturdy spring supported base. Model T-34 mounted on 6:70 x 15 tires with towing tongue.



MODEL 34

These sturdy Gorman - Rupp self - priming, centrifugal pumps are especially designed for use in quiet zones and are ideal for utilities operating in residential areas. They are equipped with a full line of quiet operation accessories and fittings including muffler and hand throttle gasoline control. All models finished in telephone green.

GORMAN RUPP COMPANY

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-124

SCOTCH No. 33 Plastic Electrical Tape

This tape has a stretchy, rubber-like plastic backing that enables it to do the work of two ordinary tapes. Goes on in one operation, instead of two, and does a better job. Its stretchability and resistance to oil and moisture equip it perfectly for a wide range of uses in electrical construction and repair. Its thinness gives it an important advantage in eliminating "overstuffed" junction boxes. Has a dielectric strength of 10,000 volts—only .007 of an inch thick.

This revolutionary Electrical Tape is backed with the same synthetic resin that is used on Type T synthetic insulated wire. It provides complete electrical and mechanical protection.

Kellogg Code No.	"SCOTCH" No. 33 Electrical Tape	Type of Packing
785024	¾" x 66 ft.	1 Roll per Can
785032	¾" x 20 ft.	12 Rolls per Tube

TAPE, OKONITE RUBBER

Kellogg Code No.	Description	Standard Width	Length per Roll	Weight per Roll
785042	Okonite Rubber Tape	¾ in.	30 ft.	½ lb.
785043	Okonite Rubber Tape	2 in.	30 ft.	1 lb.



ALLEN SOLDERING LIQUID

Standard Formula. For all-around work, for all metals save aluminum and stainless steel. 17,000 pounds to the square inch with no gumming, fumes, or corrosion. Double strength, non-evaporating. Works like lightning. Adaptable to hand, or machine soldering. Excellent for tinning the soldering copper.

Kellogg Code No.	Size	No. per Carton
220004	2 oz.	24
220005	4 oz.	12
220012	Qt.	4
220013	Gal.	1

ALLEN-ALUMI-SODER

ALLEN ALUMINUM SOLDER

Allen Alumi-Solder is a complete solder and flux combined. Requires only heat to permanently join aluminum to itself or other metals. Comes in ⅛" square-wire form and triangular ¼ lb. and 1 lb. bars. Also in popular trial size pieces, called 9-inch pieces.

Also solders cast iron.

Size	No. per Carton
6" Pieces	3 Doz.
¼ lb. Bars	6 lbs.
1 lb. Bars	6 lbs.
11 gauge Square Wire	6 lbs.

KESTER ROSIN CORE SOLDER

Kellogg Code No.	Cat. No.	Description	Size Wire Inches	Length Per Lb.	Weight Per Spool
740006	5	40/60 Round	.092"	50 ft.	1 lb.
740007	5	40/60 Round	.092"	50 ft.	5 lbs.

KESTER ACID CORE SOLDER

Kellogg Code No.	Cat. No.	Description	Size Wire Inches	Length Per Lb.	Weight Per Spool
740004	5	(40/60) Round	.092"	51 ft.	1 lb.
740005	5	(40/60) Round	.092"	51 ft.	5 lbs.

KESTER SPECIAL WIPING SOLDER

Kellogg Code No.	Catalog Number	Description	Length Per Bar	Weight Per Bar
740019	. .	38/62	13"	1½ lbs.

No. 111 BAR SOLDER

Kellogg Code No.	Catalog Number	Description	Length Per Bar	Weight Per Bar
740021	111	50/50	13"	1¼ lbs.

SOLDERING COPPERS

Kellogg Code No.	Cat. No.	Weight Each	Weight per Pair
290001	1	½ lb.	1 lb.
290002	2	1 lb.	2 lbs.
290003	3	1½ lbs.	3 lbs.
290004	4	2 lbs.	4 lbs.
290005	5	2½ lbs.	5 lbs.
290006	6	3 lbs.	6 lbs.

PLAIN WIRE SOLDER



Used for general line work in connection with any good grade of flux. 50/50 Grade, supplied in 1 pound hanks, or 5 pound spools.

Kellogg Code No.	Wire Size	Diameter	Feet per Pound
740016	6 B&S	3/16"	7½
740018	10 B&S	⅛"	16

ALLEN SOLDERING SALTS



An all around flux in convenient powder form; just add water 3 to 5 times according to metal to be soldered. Solders all metals but aluminum. Takes a quick bite and makes the solder hold on. Non-acid. Comes packed in metal or glass.

Kellogg Code No.	Size	No. per Carton
220006	½ lb.	12
220014	1 lb.	6

ALLEN SOLDERING PASTE

Standard Formula. Safest soldering paste made—fast working—a convenient corrosion-free, soft form of flux. Adheres to the surface while you solder. Assures secure electrical and mechanical joints. Saves time. Triples strength of the soder. Makes solder self-fluxing. Official National Underwriters Laboratory approved listing.



Kellogg Code No.	Size	No. per Carton
642003	2 oz.	24
642004	4 oz.	24
642005	½ lb.	12
642009	1 lb.	6

BEESWAX COMPOUND

Kellogg Code No. 970001

Supplied in 1-lb. bars.

FULLY REFINED PARAFFINE WAX

Kellogg Code No. 640000

Furnished in standard 11 pound cakes.

CANDLES, STEARINE WICKLESS

For applications to lead sheath, prior to pouring on hot lead in making cable splices.

Kellogg Code No.	Cat. No.	Length	Diameter	Weight Each
195001	3½	3½ in.	1½ in.	3 oz.

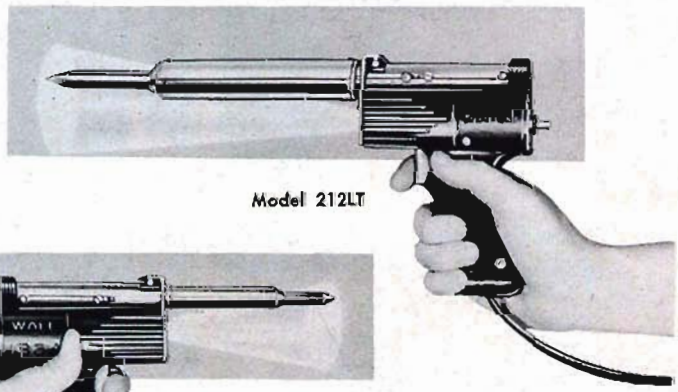
HEXACON
QUICK-HEATING BATTERY OPERATED SOLDERING IRON

DEVELOPED AS THE STANDARD BATTERY IRON FOR THE ARMED FORCES

Kellogg Code No.	Cat. No.	Volts	Watts	Tip Diameter	Shipping Weight
741034	612	6/12	200	7/16"	2⅜ lbs.
741035	624	12/24	200	7/16"	2⅜ lbs.

For telephone installation, maintenance and repairs wherever battery equipment is available — trucks, cars, remote locations, etc.

READY TO USE IN 20 SECONDS! Will do finest to heaviest work. Generates any degree of heat required, controlled by switch in handle. 12-foot rubber cord with battery clips included. Nickel-chromium replaceable heating element.


Model 212LT


Model 238LT

Interchangeable Tip Assembly

Tips and Element Assemblies are Interchangeable between Models 212LT and 214LTN.


Model 214LTN

TRIG-R-HEAT ELECTRIC SOLDERING GUNS

These New Soldering Guns have no moving parts and no heavy transformers. They are light weight, have built-in unobstructed 10-Watt spotlight, with separate switch and are all equipped with Steel Clad Tips. New is the exclusive feature of the "Thermostatic Brain," it thinks for you. Pull the trigger and in seconds it heats to the exact required temperature. The "Brain" automatically regulates the wattage of the gun from maximum to minimum, assuring constant heat.

Wattage ranges from 650 maximum, down to 75 watts minimum. Guns may be operated from either ac or dc outlets.

Kellogg Code No.	Catalog No.	Approx. Tip Size	Maximum Watt Input	Minimum Watt Input	Wt. Ea. without Cord	Shpg. Wt. Each
741007	214LTN	¼"	400	150	14 ozs.	2⅛ lbs.
741008	212LT*	½"	650	300	24 ozs.	3 lbs.
741005	238LT*	¼"	150	75	6 ozs.	1 lb.



Weller Soldering Guns are standard equipment for professional servicemen. They save time and current on every job and pay for themselves in a few months.

INSTANT HEAT — full capacity heat in 5 seconds.

EXCLUSIVE TIP GRIP — assures full, constant heat.

SHATTERPROOF HOUSING — rugged plastic, protects built-in transformer.

LONGER REACH — slides easily into tight places, speeds work and prevents damage to insulation.

DUAL SPOTLIGHTS — locate the work quickly.

GUARANTEED — registered and guaranteed for 1 year.

WELLER SOLDERING GUNS

HEAVY DUTY MODELS

Kellogg Code No.	Model No.	Description
741023	S-500	Single Heat, 250 Watts
741025	D-550	Dual Heat, 200-275 Watts

LIGHT DUTY MODELS

Kellogg Code No.	Model No.	Description
741022	S-400	Single Heat, 135 Watts
741024	D-440	Dual Heat, 100-150 Watts



No. 30—Screw Tip

No. 35—Plug Type Tip



SOLDERING IRONS, VULCAN ELECTRIC

Correctly designed for the steady production and constant delivery of ample heat, and operates from either direct or alternating current. It is equipped with a perfectly "tinned" hand forged tip of purest copper, either screw type tip or plug-in type. The plug-in type is held by a set-screw.

The Vulcan construction is unique in the simplicity of its maintenance requirements, consisting of 5 complete, replaceable parts, a tip, a sealed heating head, a handle, a 6-ft. cord and plug.

The No. 35 is recommended for telephone inspectors or linemen's tool kits, equal to 1½ lbs. per pair coppers.

The No. 35 is recommended for telephone inspectors or linemen's tool kits, equal to 1½ lbs. per pair coppers.

The No. 40 is for heavier work and suited for fast telephone work. Equal to 2½ pounds per pair coppers.

No. 50 is for fast telephone work. Equal to 3½ pounds per pair coppers.

Will operate from any light socket on either ac or dc. Standard voltages are 110 and 120, 220-230 volts.

Kellogg Code No.	Cat. No.	Watts	Diameter Tip	Length	Weight Ea.
		PLUG TYPE TIP			
741011	35	100	⅜ in.	14 in.	1⅛ lbs.
		SCREW TYPE TIP			
741010	30	60	½ in.	13½ in.	¾ lb.
741012	40	90	. . .	13½ in.	⅞ lb.
741013	50	130	⅞ in.	13½ in.	1⅛ lbs.

Soldering Iron Tips, Vulcan

Kellogg Code No.	Cat. No.	Description	Tip. Diameter
805002	35-T	Plug Type for No. 35 Iron	⅜ in.
805001	30-T	Screw Type for No. 30 Iron	½ in.
805003	40-T	Screw Type for No. 40 Iron	½ in.
805004	50-T	Screw Type for No. 50 Iron	⅞ in.



ELECTRIC SOLDERING IRONS

Available in standard voltages and for 32 volts. No. 3138 also made for 6, 12, 24 and 64 volts. All irons can be equipped with three-conductor cord, one wire grounded, at slight additional charge. Separate heat-insulating stand supplied with each iron.

Kellogg Code No.	Cat. No.	Dia. of Tip	Watts	Length Over All	Casing Dia.	Approx. Ship. Wt.
741030	3138	⅜"	100	12⅞"	⅞"	2 lbs.
741031	3158	⅝"	200	13⅝"	1¼"	3 lbs.



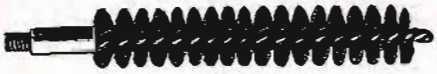
TEMPERATURE REGULATING STAND

This is a thermostatically controlled device for the regulation of the temperature of an Electric Soldering Iron while at rest. Through an adjustment on bottom of stand the thermostat may be set for maintenance of any desired heat — from very low, or warm, to full working temperature. It is designed for use with Electric Soldering Irons from 80 to 660 watts input. For use on (ac) current only.

Specifications

May be used on all voltages up to 240 (ac only). Can be equipped with 3-conductor cord and receptacle at slight additional cost.

Kellogg Code. No.	Cat. No.	Watts (Max.)	Length Over All	Width	Height	Net Weight
741033	475	660	6½"	5⅜"	3⅜"	1¾ lbs.



CLEANERS, SWITCHBOARD JACK

These brushes are recommended for cleaning switchboard jacks. Use with carbon tetrachloride while revolving on a flexible shaft or wheel drill. This is an ideal way to clean switchboard jacks and is non-injurious. Brushes are furnished in two sizes — No. 32, diameter .249, fits all jacks approximately ¼-inch in diameter; No. 22, diameter .221, fits all jacks using No. 201 Kellogg plugs.

Kellogg No.	Catalog No.
150002	No. 32 (692)
150001	No. 22 (1163)

HEATER, AERIAL TENT



Affords a convenient, safe, economical and dependable method of tent heating. Portable and easy to operate. Built-in soldering iron holder. Tank holds ½ gallon of kerosene and will burn 5 to 24 hours on one filling. Famous Perfection "High-Power" wick-type burner gives instant heat, finger-tip control. 11⅜ inches in diameter, 19⅞ inches high.

Sturdily constructed of heavy metal, securely welded and riveted. Heavy iron bottom band to prevent wear. Body and inside base has baked enamel finish; zinc-plated steel top and ventilating cone; porcelain-enameled heating drum.

Kellogg Code No.	Catalog No.	Description	Weight
495001	11-B	Aerial tent heater	6 lbs.



BUHRKE SAFETY BELTS

Floating type belt specifically designed and assembled to give the lineman comfort with safety. 4-ply NYLON fabric impregnated with special neoprene compound saddle extending beyond the Dee rings, 5" wide at rear, cushioned with top-grain elk leather rolled along edges. Body strap is 4-ply NYLON impregnated with neoprene compound, 2" wide. No exposed rivets on body side of belt. Belt is equipped with glove ring, two-way knife snap and non-metallic tape holder made 12" long for ease in handling tape when working on the pole. Billet contains 12 buckle holes on one inch centers to fit all statures in relation to the Dee ring dimensions and still allow extra length for winter clothing.

NOTE: Dee rings on belts may be 0-90° (Right angle) or 0-30° as ordered.

Cat. No.	Width	Weight
1299-N	5"	Approx. 5 lbs. each



FIRST AID KIT

Recommended for use by maintenance, operating crews or individuals. Each kit contains up-to-date approved directions — each kit clearly marked. Weather-proof — dust-proof.

Refills available separately (see First Aid Kit Replacements).

UNIT PACK KIT No. 50-110

	No. of Packets
R-1—4" Bandage Compress (1)	1
R-2—2" Bandage Compress (4)	1
R-3B—1" Adhesive Bandage (16)	2
R-5—Ammonia Inhalants (10)	1
R-7—Triangular Bandage (1)	1
R-8AR—U.S. Army Tourniquet (1)	1
R-42—3½ cc. Menthiolate (2)	1
R-62B—Boric Acid Ointment ¾ oz. (2)	1
R-67—Gauze Pads 3"x3" (4)	1

Kellogg Code No.	Catalog No.	Description	Size	Weight
555005	50-110	First aid kit, suitable for 1-10 men.	2½"x7"x 5"	3 lbs.

FIRST AID KIT REPLACEMENTS

Kellogg Code No.	Catalog No.	Description	Quantity Pack
380001	R-1	4" Bandage Compress	1
380002	R-2	2" Bandage Compress	4
380003	R-3	1" Bandage, Adhesive Mercurochrome	16
380011	R-3B	1" Bandage Compress	16
380004	R-5	Ammonia Inhalants	10
380005	R-6X	⅛ oz. Kep Tannic Ointment	6
380006	R-7	Triangular Bandage	1
380012	R-8AR	U.S. Army Tourniquet	1
380007	R-11	Bandage, Gauze Absorbent Cotton	1
380013	R-31-P	1 oz. Borated Petrolatum	6
380008	R-35	Iodine Swabs	10
380014	R-42	3½ cc. Merthiolate	2
380015	R-62B	¾ oz. Boric Acid Ointment	2
380016	R-67	3"x3" Gauze Pads	4
380010	R-97	1 cc. vial Imun-Ivy	4



PARAFFIN DIPPER

It is drawn from 20 gauge steel, has rolled bead completely around top with pouring lip on each side. The sturdy handle, 9¾" long, is securely riveted to dipper body. Its top diameter is 4 13/16", bottom diameter 3⅞" and depth 3¼".

Catalog Number	Capacity	Weight
57	1 qt.	1 lb.



TURNER No. 206A BLOW TORCH

A top-favorite torch for continuous service . . . thousands in use.

Adjustable air siphoning tube (Turner's exclusive "Carburetor Control") permits instant balancing of gas and air mixture to meet widely varying fuel and job conditions.

Automatic cleaning needle and replaceable jet-block insure constant, dependable blue-blast flame.

Oversize fuel passages prevent clogging.

Highly polished, sturdy brass tank with bottom fill.

Blow-proof pump construction.

Double-rolled and soldered safety seam locks the bottom to tank shell.

Complete with windshield.

Factory burn-tested under actual operating conditions.

Tank capacity: one quart.

Fuel used: gasoline.



TURNER No. 30A BLOW TORCH

Popular priced, general-duty torch with a well-deserved reputation for dependable service.

Has powerful one-piece cast bronze burner with jam-proof taper needle.

Exclusive Turner construction: leak-proof Hexagon Feed Pipe Inlet, and all inlets locked, metal to metal.

Rapid blow-proof pump.

Sturdy, polished brass tank with windshield.

Factory burn-tested under actual operating conditions.

Tank capacity: one quart.

Fuel used: gasoline.

TURNER BG-240 TORCH KIT for use with LP (Liquefied Petroleum) tank

This handy kit is complete with handle and extension tube assembly, three burners (small pencil point, medium, and large), hose adapter, and carrying case.

Torches burn with clean flame . . . no grease, smoke, soot . . . are designed to meet a wide range of job requirements.

Pistol Grip Handle made of moulded, heat-resistant, tough and durable rubber; designed to fit the hand; easy to use in any position.

All brass construction.

Valve designed and located to provide for one-hand operation.

Burner tube, made of extra heavy-gauge brass, contains porous bronze filter.

Handle tube assembly interchangeably used with all torch tips; one handle and tube assembly makes it possible to use complete range of burners. All that is needed for various types of flames is the burner tip.





TURNER No. 275 FIRE POT

Complete with Turner's exclusive "Carburetor Control" for more perfect combustion; positive flame control for exact heat desired (valve has built-in stainless steel needle which automatically cleans the orifice).

Construction assembly permits quick, easy accessibility and cleaning.

Burner coil is extra-heavy seamless steel tubing; pump is heavy blow-proof brass.

Takes a 6-inch melting pot; has a fuel capacity of 9 pints; will burn for 9 hours on one filling.

TURNER LP (Liquefied Petroleum) FIRE POT

Listed under Re-examination Service of Underwriters' Laboratories, Inc.

Made for use on all tanks equipped with 3" flange valve.

May be assembled to — or removed from — tank without wrenches.

Instant lighting . . . fast heating; saves money by reducing warm-up time.

Easy conversion to bench-type firepot by fitting furnace assembly to base plate.

All castings subject to shock or stress are made of malleable iron to prevent breakage.

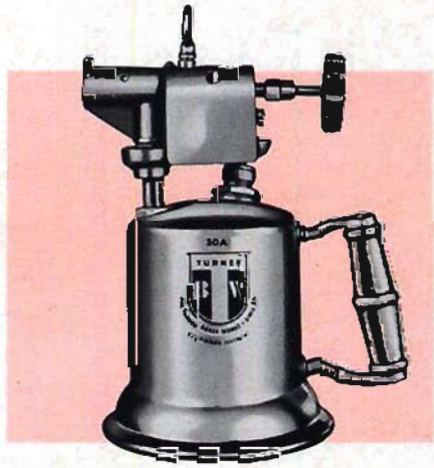
Burner—heavy cast iron; easy lighting; wide range of flames from idling flame to 3" diameter x 14" long; unsurpassed for high-speed melting efficiency; burns at full tank pressure . . . no regulator required; replaceable orifice block.

Equipped with heavy steel wire bail and coil handle.

Heavy-gauge, wrought, one-piece hood; rolled top edge; ventilated bottom. Permanent heavy-gauge windshield; unit may be used in any weather.

Fuel is chemically stable, non-toxic, non-explosive from concussion, produces no monoxide gas or other noxious fumes; burns with a clean flame . . . no grease, soot, smoke.

Safer . . . for inside use or on jobs with fire hazards because fuel cannot spill out.





CLIMBERS, KLEIN No. 1939 "STREAMLINED"

A new design in which the use of any unnecessary metal has been carefully avoided. These climbers are approximately one-third lighter in weight than the Standard Pattern and about 10% lighter than the original Lightweight. They offer every possible comfort and a full measure of safety.

The leg irons are flexible and tapered in width and thickness. The critical section, from 3 inches above the gaff to half way across the stirrup has been designed for ample strength. A wrought ring carries the ankle strap.

The gaffs are the slender type — preferred on treated poles and are 3½ inches long measured on the outside.

FURNISHED LESS STRAP UNLESS OTHERWISE SPECIFIED

Stock sizes are 15 to 18 inches, measured from the instep to the end of the shank which should come one inch below the knee. Other sizes to order. Use ankle straps Nos. 5301-16 or 5301-26.

Kellogg Code No.	Cat. No.	Description	Weight per Pair
250064	1939	Riveted Top Loop, Ring at Ankle	2½ lbs.



CLIMBERS, KLEIN STANDARD AND LIGHTWEIGHT

Safe, dependable and comfortable. They are designed for greatest strength and fit the foot and limb, giving the lineman the greatest comfort and freedom of action. The gaff is of tool steel, individually tempered and set at the correct angle. The leg iron is produced from the best grade of steel individually tempered. The gaff and leg iron are securely hand riveted and tested.

FURNISHED LESS STRAP UNLESS OTHERWISE SPECIFIED

When ordering please specify the length of shank wanted. Stock sizes are from 15 to 18 inches measured from the instep to the end of the shank which should come one inch below the knee for comfort.

Kellogg Code No.	Cat. No.	Description	Loop Style of	Weight per Pair
250055	1901	Standard Climbers	Punched	3⅜ lbs.
250058	1903	Lightweight Climbers	Riveted	2⅞ lbs.



CLIMBERS, KLEIN No. 1907 TREE

These climbers are similar to the No. 1901 but are furnished with extra long gaffs necessary to penetrate bark in tree climbing. The gaffs are 5½ inches long measured on the outside and 3½ inches long measured on the underside. They are set high in the leg iron so that the points clear the ground when walking.

FURNISHED LESS STRAP UNLESS OTHERWISE SPECIFIED

Stock sizes are 15 to 18 inches, measured from the instep to the end of the shank. Other sizes to order.

Kellogg Code No.	Cat. No.	Description	Weight per Pair
250060	1907	Punched Strap Loops	4 lbs.



KLEIN'S CLIMBER STRAPS WITH SQUARE PADS

The set consists of

2 upper (or calf) straps 1¼" x 22".
2 lower (or ankle) straps 1¼" x 22".
2 square pads 4" x 4".

Kellogg Code No.	Cat. No.		Av. Wt. per Doz. Sets
760175	5301-1	One set complete with plain pads	20 lbs.
760185	5301-2	One set complete with sheep-lined pads	20 lbs.
760176	5301-3	One set complete with felt-lined pads	20 lbs.



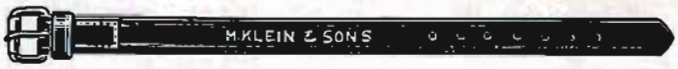
KLEIN'S CLIMBER STRAPS WITH OBLONG PADS

"Bell System" Type

The set consists of two upper or calf straps 1" x 22" with two special pads as shown and two lower or ankle straps 1" x 26".

Kellogg Code No.	Cat. No.		Av. Wt. per Doz. Prs.
760186	5301-6	One set complete with plain pads	14 lbs.
760187	5301-7	One set complete with sheep-lined pads	15 lbs.
760188	5301-8	One set complete with felt-lined pads	15 lbs.

These pads are made of select leather, arranged with loops for climber straps and climber. Tapering 3¾" to 2¾" x 6¼" deep.



KLEIN'S NYLON CLIMBER STRAPS

Kellogg Code No.	Cat. No.		Av. Wt. per Doz. Prs.
760181	5301-18	1" x 22" Calf Strap	5 lbs.
760184	5301-19	1" x 26" Ankle Strap	6 lbs.



KLEIN'S ANGLE SHAPE CLIMBER PADS

Right and left pad—of high grade latigo leather, padded for maximum comfort. The wing of the pad protects the leg from chafing and provides a more secure hold for the climber. Size: 8" x 8".

Kellogg Code No.	Cat. No.		Av. Wt. per Doz. Prs.
635006	8210	One pair (2 pieces), Angle Shape	12 lbs.

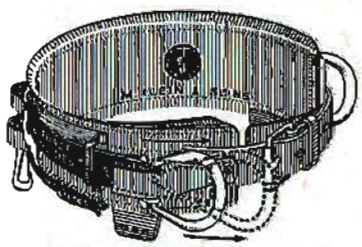
DIRECTIONS TO ENSURE PROPER FIT OF LINEMEN'S BELTS

Linemen's belts are usually specified by waist or body size but to ensure comfort in use it is important that the "D" rings do not rest on the hip-bones of the wearer. The correct position of the "D" rings is about 1 inch in front of the hip-bone on either side.

To obtain correct body size of Klein's Tool Belt, measure (around the back) from hip-bone to hip-bone AND ADD TWO INCHES to this distance.

Then refer to table below and select the corresponding belt size.

Distance between "D" Rings	20 in.	22 in.	24 in.	26 in.	28 in.
Belt Size	36 in.	38 in.	40 in.	42 in.	46 in.



"KLEIN-LINE" TOOL BELT

PATENT APPLIED FOR

This sturdy new "Klein-Line" Tool Belt is designed to provide a maximum factor of safety with increased comfort and convenience to the lineman.

A full-floating, sliding trace of the famous "Klein-Kord" material—1¾ inches wide—carries the single bar Dee rings. This trace slides through leather guides, allowing approximately 6 inches of free movement. By this means the lineman is relieved of the chafing that is unavoidable with conventional belts, and undue wear on the safety strap is prevented. New apron design permits visual inspection of sliding trace throughout its entire length.

This apron, securely riveted to the belt, also carries the weight of tools in the harness leather tool loop strap. The tool strap, 1¼ inches wide, has five tool loops—is riveted on the apron with a reinforcing strap.

The soft, pliable, latigo leather cushion—4¾ inches wide—is pad-lined and edge-rolled for comfort.

The 2-inch wide belt strap is of heavy harness leather with drop-forged buckle. A leather pad under the buckle provides additional comfort. Buckle and Dee rings tested to 1500 pounds. All sewing is lock stitched with hot waxed linen thread—rivets are solid copper, hand set. No rivets came through the body pad — an extra safety insulating feature. Fitted with tape thong, knife snap and ring for glove pouch. Furnished with pocket tabs on both sides, punched for lacing. One, two or three partition holsters can be furnished to order.

Kellogg Code No.	Cat. No.		Weight per Doz.
980060	5249	With Standard "D" Rings. Width 4¾ in.	55 lbs.



KLEIN'S No. 5228 LEATHER TOOL BELTS

The cushion—4½ inches wide at center of back and tapered to 3½ inches wide at the front—is soft, pliable, russet latigo leather, doubled to form comfortable rolled edges.

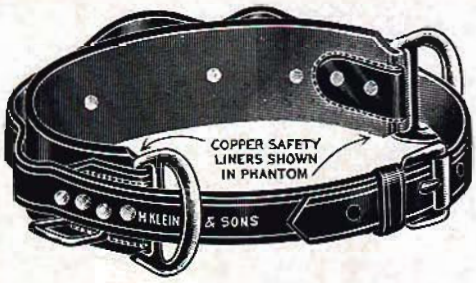
The body strap is first quality russet harness leather 2 inches wide, stitched to the cushion at back and passing through loops at end of cushion as well as through the "dee" rings. A russet harness leather tool strap 1¾ inches wide with five loops in the 1¼ inch loop strap is carried on leather hangers from the body strap to which it is looped at the ends.

So constructed that no rivets come through to inside of belt—a safety insulation feature that will be appreciated.

The "dee" rings are single bar type solid steel drop forgings as is also the buckle. All hardware tested to 1500 lbs. Galvanized finish.

Fitted with knife snap, tape thong and ring for glove pouch. One, two or three partition holsters can be furnished to order.

Kellogg Code No.	Cat. No.		Av. Wt. per Doz.
980054	5228	With Standard (Single bar) "D" Rings. Width 4½ in. (Complete)	45 lbs.



KLEIN'S No. 5204 LEATHER TOOL BELTS

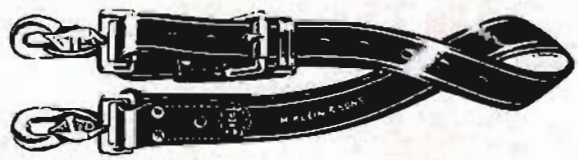
Made of select first quality harness leather. The cushion 3½ inches wide carries the "D" rings. The outer or loop layer is 1½ inches wide formed into tool loops by riveting to the cushion. It also passes through the "D" rings and is furnished with a strong drop forged buckle tested to 1500 lbs.

The "D" rings are solid steel drop forgings tested to 1500 lbs. Surfaces taking the wear of the "D" rings are protected with copper safety liners riveted through the full thickness of belt. All rivets are solid copper set with burrs and sewing is with hot waxed linen thread, lock stitched. "D" rings and buckle galvanized finish. No. 5204-DE provides a leather pocket for pliers and a convenient snap for carrying knife. At the other end of the belt a rawhide thong is attached with fibre crossbar for carrying tape.

Kellogg Code No.	Cat. No.		Weight per Doz.
980036	5204	With Standard "D" Rings (double bar). Width 3½"	34 lbs.
980042	5204-DE	With Standard "D" Rings (double bar). Width 3½	38 lbs.

KLEIN'S SAFETY SAFETY STRAPS

These straps are cut from first quality harness leather, back or center stock only. All rivets solid copper, hand set with burrs. Snaps and buckles solid steel drop forgings tested to 1500 lbs., galvanized finish. Straps may be lengthened or shortened by adjusting buckle.



Kellogg Code No.	Cat. No.	Size and Description	Av. Wt. per Doz.
760238	KL-5251	1¾ in. x 5 ft. 8 in. "Klein-Lok" Snaps. Leather wear pad at buckle	32½ lbs.
760230	5251	1¾ in. x 5 ft. 8 in. Standard Snaps. Leather wear pad at buckle	32½ lbs.



Kellogg Code No.	Cat. No.	Size and Description	Av. Wt. per Doz.
760235	KL-5250	1¾ in. x 5 ft. 8 in. "Klein-Lok" Snaps. Stainless Clips.	32½ lbs.
760240	5250	1¾ in. x 5 ft. 8 in. Standard Snaps. Stainless Clips.	32½ lbs.



KLEIN'S "KLEIN-KORD" SAFETY STRAPS

Furnished with "Klein-Lok" Snaps, as shown (No. KL-5233), or with Standard Snaps (No. 5233).

To avoid substitutes see that every strap has our registered trade name, "KLEIN-KORD," molded into the surface.

Kellogg Code No.	Cat. No.	Size and Description	Av. Wt. per Doz.
760229	5233	1¾ in. x 5 ft. 8 in. Standard Snaps. Stainless Clips.	36 lbs.
760239	KL-5233	1¾ in. x 5 ft. 8 in. "Klein-Lok" Snaps. Stainless Clips.	36 lbs.



"KLEIN-KORD" NYLON SAFETY STRAPS

Klein-Kord Nylon offers the desired flexibility in a fabric safety strap. The smooth surface gives long service, wears evenly, and does not require dressing or treatment.

Made of multiple plies of strong, finely woven Nylon, bonded together with frictioning and vulcanized in neoprene, the famous Klein Red Center provides an unmistakable signal before wear reaches the danger point. "Stop when you see the Red."

Kellogg Code No.	Cat. No.	Size and Description	Av. Wt. per Doz.
760241	5294	1¾ in. x 5 ft. 8 in. Standard Snaps. Stainless Clips	34 lbs.
760233	KL-5294	1¾ in. x 5 ft. 8 in. "Klein-Lok" Snaps. Stainless Clips	34 lbs.



LINEMEN'S CANVAS TOOL BAG, LEATHER BOTTOM

These bags are made of one piece of white duck reinforced all around the bottom with heavy bag leather, 3¼

inches up on the 5102 series. The bottom is made of heavy leather outside and duck inside, lock stitched all around. The bottom is protected with strong steel studs. Bottoms and sides are joined together with lock stitched leather welt seams. Mouth of the bag is formed by a 12-gauge steel frame; the canvas is clinched between this frame and an inside secondary steel frame. Has harness leather handles and two retaining straps with buckles.

Kellogg Code No.	Cat. No.	Size	Av. Wt. Each
945010	5102-12	12-inch	2¼ lbs.
945011	5102-14	14-inch	2½ lbs.
945012	5102-16	16-inch	3 lbs.
945013	5102-18	18-inch	3¼ lbs.
945014	5102-20	20-inch	3½ lbs.
945015	5102-22	22-inch	3¾ lbs.
945016	5102-24	24-inch	4 lbs.



BELT, BASHLIN
No. 68 LEATHER TOOL

The No. 68 is practical, comfortable and yet has the wearing quality that makes it economical. A Shifting "D" belt with a 5½-inch rolled-edge, body fitted cushion. The belt cushion is widest in the center of the back where support is needed. It tapers to the sides and then flares to large "D" ring and hip bone pads. The belt is made from chrome cushion leather, saddle and Latigotan leather.

Kellogg Code No.	Cat. No.	Description
980067	68	One Width Only—5½" Cushion



BASHLIN'S ALCOA ALUMINUM ALLOY ADJUSTABLE CLIMBERS WITH REPLACEABLE GAFFS

Bashlin's Adjustable, Right and Left Climber with a replaceable gaff is made of Aluminum Alloy. It is lighter than conventional climbers and has the same strength as equivalent steel.

The sleeve can be adjusted from size 15 to 18 inches in ¼-inch steps. This assures the perfect fit required in order to attain the utmost in comfort. The sleeve is securely held in place by one slotted head self-locking screw.

The Bashlin gaff is held firmly in place by a triple locking device. The gaff is inserted into the gaff slot, shifted and locked into the proper position. A large, alloy steel, self-locking slotted head screw is inserted through the climber and threaded into the gaff. A small steel slotted head screw is placed in the lower end of the gaff slot as an additional safeguard against any movement of the gaff. The triple locking device incorporated with close fitting parts gives the wearer a solid substantial gaff assembly.

This climber, as well as all other Bashlin climbers, is equipped with the new Bashlin non-shifting triangular bottom strap ring.

All parts for Bashlin Adjustable Climbers can be secured by the following parts numbers:

Kellogg Code No.	Cat. No.	Description
250006	BD-14	Climbers
250007	BD-14-1	Climbers with No. 87 Straps (bottom)
250008	BD-14-2	Climbers with No. 84 Straps (top and bottom)
250009	BD-14-3	Climbers complete with No. 84 Straps and 110-D Pads
420003	14	Gaffs with Screws only (1 pr.) Items 3 and 6
420004	14-T	Gaffs, Tree 3"

TOOL BUCKETS



Bashlin's Tool Buckets are ideal for all line work. They are made of 1/0 quality white canvas, have all leather bottoms and the leather reinforcement extends up the side two full inches. The No. 21 buckets have the non-metallic fibre tops.

The fibre top on the Bashlin bag will withstand severe punishment and at the same time keep the bag open so that material can be readily inserted or removed. A handy inside pocket and a heavy duty swivel snap is standard on all Bashlin tool buckets.

Kellogg Code No.	Cat. No.	Dimensions
155001	21	10" dia. x 12" depth

TOOL BAGS



Specifications: 34 oz. Belt Duck Bag with leather bottom and two-inch apron around the sides and ends. The bottom is triple thickness reinforced with masonite and steel studs for long wear. Convenient climber pocket along one side. Flap opening.

Kellogg Code No.	Cat. No.	Dimensions
945020	10-L	22" x 11" x 10"



WHERE **SAFETY** COUNTS

BUCKINGHAM SAFETY EQUIPMENT
COPY ON NEXT PAGE

BUCKINGHAM SAFETY EQUIPMENT

Adjustable Climbers • Glove Bags • Grips for Pliers • Knife Pouches • Leather Safety Straps • Climber Straps • Foot Straps • Leg Straps • Tool Bags • Tool Belts • Tool Buckets • Tool Pouches •

USE LINE EQUIPMENT MADE BY

Buckingham of Binghamton

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

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BUCKINGHAM ADJUSTABLE CLIMBERS No. 9205



Adjustable climbers are quickly and easily adjusted from size 14¾ to size 18½ by an oval head set screw and lock washer. Copper oval head rivets are supplied. The climbers are constructed with an adjustable steel sleeve. These climbers maintain all the desirable qualities of the Buckingham Climbers.

The leg irons in these new adjustable climbers are identical with those in the standard line of Buckingham Climbers. They are produced from the same quality material and subjected to the same rigid tests. The flexibility has been maintained and linemen will find it easy to shape them to their legs.

This advanced climber design enables utilities to fit any and all linemen from a smaller stock of bank climbers. Ideal for extra climbers for the service truck, plant, or sub station because they will fit any worker.

Kellogg Code No.	Cat. No.	Description	Weight
250086	9205	Climbers with straps and pads	per 12 pr., 59 lbs.
250087	9208	Adjustable climbers with 2134 foot straps attached	
250088	9209	Adjustable climbers only	
250089	9204	Sleeves only for adjustable climbers	
250090	9203	Leg irons only for adjustable climbers	
250091	9206	Replaceable gaffs with "Driv-Lok" pins	per pr., 5 ozs. per 12 pr., 4 lbs.

BUCKINGHAM CLIMBER STRAPS

Buckingham Climber Straps are made from two grades of leather and price varies accordingly. Harness leather straps are made from selected quality steer hides, and latigo leather straps are made from first quality cow hides. These straps are strong and durable, and fitted with tested steel buckles. The buckles on latigo leather straps are riveted on whereas the buckles on harness leather straps are sewn as well as riveted.

Kellogg Code No.	Cat. No.	Description	Size
760200	2235	Harness leather leg strap	1¼"x22"
760201	2435	Harness leather foot strap	1¼"x24"



BUCKINGHAM DE LUXE CLIMBERS PAD No. 3122

These climber pads provide the utmost in comfort. They protect the calf of the leg, and the wing of the pad folds over the shin preventing the climber from sliding back.

Made of high-grade leather, padded with rubberized wool, and backed with chrome leather. Made in pairs right and left.

Kellogg Code No.	Cat. No.	Description	Size	Weight
635001	3122	Climber pad	7⅜"x7⅜", with wings 3½" wide.	per pr., 9½ ozs. per 12 pr., 8 lbs.

BUCKINGHAM "CUSHION DE LUXE" FLOATING TOOL BELT No. 1058

Outselling all other tool belts by a wide margin, Buckingham's famous No. 1058 is a strong, durable and flexible belt made from the best leather obtainable for the purpose. It has a rolled edge feature providing a cushion effect that affords greater working comfort for the wearer. Its floating feature permits wider range of body movement under all working conditions, without binding tools or clothing. The floating feature assures full tool loops under all working conditions. (Pouch shown on belt is extra.)

The tool loop strap is formed into five loops with two rivets between loops to prevent twisting and sagging.

Belt is fitted with ring, two-way snap and tape thong. Rigidly tested for strength and safety.

Kellogg Code No.	Cat. No.	Description	Size	Weight
980001	1058	Floating tool belt	4¾" wide, sliding strap, 2" wide	3 lbs. 12 ozs. per 12, 56 lbs.



BUCKINGHAM TOOL POUCHES

Combination plier, rule and screwdriver pouch. Rivited harness leather. Will take any belt up to 2" in width.

Kellogg Code No.	Cat. No.	Description	Size	Weight
672002	4023	Tool pouches	6"x10½"	9 ozs., per 12, 8 lbs.

BUCKINGHAM ALL-PURPOSE-POUCH



This durable leather pouch, stitched and riveted, will save wear and tear on pockets. Has five compartments for carrying pliers, screwdrivers, knife, small tools, etc. Slotted for easy attachment to belt. With this pouch, tools are always at fingertips and less apt to be lost or misplaced. Can be quickly slipped on or off any belt up to 1½" wide. Very popular with users everywhere.

Kellogg Code No.	Cat. No.	Description	Size	Weight
672007	4650	All-purpose pouch	8½"x10"	11 oz. per pouch per 12, 10 lbs.



BUCKINGHAM LINEMAN'S BUG BAG

A lightweight, more pliable bag than No. 5302. Ideal for maintenance and repair work.

Kellogg Code No.	Cat. No.	Description	Size	Weight
945030	5299	Lineman's bug bag	10"x9"x3"	14 ozs., per 12, 12 lbs.

BUCKINGHAM STANDARD SAFETY STRAPS

Kellogg Code No.	Cat. No.	Description	Size	Weight
760225	3042	Harness leather safety strap	2"x5'10"	2 lbs. 15 ozs. per strap per 12, 41 lbs.

ILLUSTRATED ON PAGE G-134



M-S-A BROOKS ADJUSTABLE LINEMEN'S CLIMBERS

THE CLIMBER DESIGNED BY A LINEMAN FOR LINEMAN TO PROVIDE *ADDED SAFETY, GREATER COMFORT, LONGER SERVICE.*

HEAT TREATED—All leg irons and gaffs are heat treated to assure exactly the proper balance of hardness, toughness and ductility, with uniform grain stresses within the metal.

MAGNAGLO INSPECTED—Every leg iron and gaff is inspected by the magnetic particles method to eliminate parts which contain external or internal flaws.

ROCKWELL TESTED—Samples of each batch of leg irons and gaffs are Rockwell tested for positive assurance of uniform hardness within a predetermined effective range.

IMPACT TESTED—Gaffs from each heat treatment batch are purposely tested to destruction under impact to assure quality.

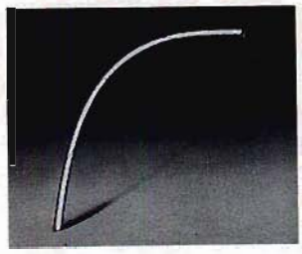
Actual tests prove that the M-S-A-Brooks Climber, with its reinforced rib, withstands millions of flexes without failure.

Pads and straps are made of top-grain steer hide leather for longer safe service. Calf pad is reinforced on the leg side with chrome leather to promote comfort. Lower strap has a cushioned pad between the buckle and leg for greater comfort.

The M-S-A- BROOKS ADJUSTABLE CLIMBERS are the only climbers made with a gaff and tang—forged in one piece—for greater safety. All parts of these climbers are available separately for replacement.

Kellogg Code No.	Cat. No.	Description
250030	CF-72578	Climbers, complete with straps, pads, and 1½" gaffs.
250031	CF-72579	Climbers, complete with straps, pads, and 2" gaffs.

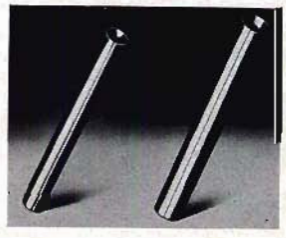
VIBRATION DAMPER



Made of flexible Polyethylene of a special compound to withstand weathering, and helically slit with approximately three turns to the foot, VIBRATION DAMPERS are used on wire — adjacent to insulators on pole to prevent fracture from fatigue caused by wind vibration. 25 pcs. per package, 20 pkgs. to carton.

Kellogg Code No.	Size
324001	¼" I.D. x .062" wall, 18" length

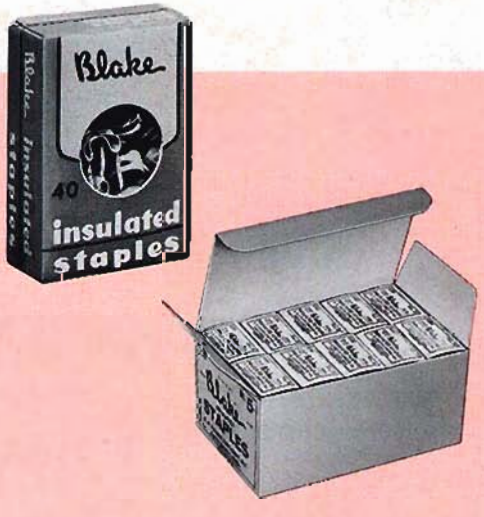
CABLE GUARD

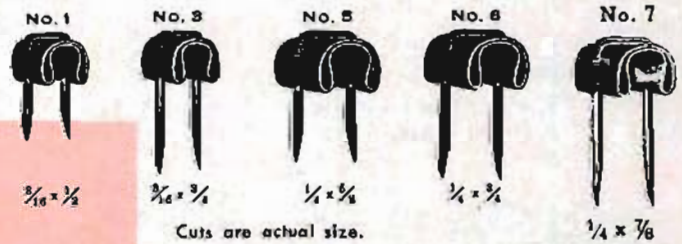


To protect Polyethylene sheath cable against abrasion where it rubs against suspension clamps.

Made of flexible Polyethylene and slit all the way along one side and having an overlap so that it will take cable as follows:

Kellogg Code No.	Size
455070	½"—For cable from ⅜" I.D. to ⅝" I.D.
455071	¾"—For cable from ⅝" I.D. to 1" I.D.
455072	1½"—For cable from 1" I.D. to 1¾" I.D.
455073	2¼"—For cable from 1¾" I.D. to 3" I.D.





Cuts are actual size.

BLAKE INSULATED STAPLES

Steel, copper-coated staple, with grey fibre insulation. Packaged 100 staples to a box, 10 boxes to a carton.

Kellogg Code No.	Cat. No.	Description	Weight per M
751001	1	3/16" x ½"	1¾ lbs.
751002	3	3/16" x ¾"	2 lbs.
751003	5	¼" x ⅝"	2 lbs.
751004	6	¼" x ¾"	2¼ lbs.
751005	7	¼" x ⅞"	3 lbs.



Nails, No. 18, Insulated

Used for installing two-conductor or three-conductor twisted insulated wire. Easy to handle and has excellent insulating characteristics. Diameter of head is 7/16 inches.

Available in brown or ivory finish.

Kellogg Code No.	Cat. No.	Length Under Head	Color	Std. Pkge.	Weight per 1000
605049	1812	½"	Brown	100	1⅝ lbs.
605050	1812	½"	Ivory	100	1⅝ lbs.
605052	1858	⅝"	Brown	100	1⅞ lbs.
605053	1858	⅝"	Ivory	100	1⅞ lbs.
605055	1878	⅞"	Brown	100	2⅛ lbs.
605056	1878	⅞"	Ivory	100	2⅛ lbs.

Nails, No. 14, Insulated

Same as the No. 18 Fibre Head Insulated Nails except with smaller, 5/16 in., diameter head.

Kellogg Code No.	Cat. No.	Length Under Head	Color	Std. Pkge.	Weight per 1000
605032	1412	½"	Brown	100	1¼ lbs.
605033	1412	½"	Ivory	100	1¼ lbs.
605034	1458	⅝"	Brown	100	1½ lbs.
605035	1458	⅝"	Ivory	100	1½ lbs.
605038	1478	⅞"	Brown	100	1⅝ lbs.
605039	1478	⅞"	Ivory	100	1⅝ lbs.

GALVANIZED NAILS

Kellogg Code No.	Size	Length	Gauge	Diameter of Head	No. Per Keg
605002	6d	2 in.	No. 11½	¼ in.	18,100
605003	8d	2½ in.	No. 10¼	9/32 in.	10,600
605004	10d	3 in.	No. 9	5/16 in.	6,900
605005	20d	4 in.	No. 6	3/8 in.	3,100
605006	30d	4½ in.	No. 5	7/16 in.	2,400
605007	40d	5 in.	No. 4	15/32 in.	1,800
605009	50d	5½ in.	No. 3	½ in.	1,400
605010	60d	6 in.	No. 2	17/32 in.	1,100

WARNING SIGNS



This Cope Warning Sign is an extremely rugged piece of equipment built to stand up in the hardest service. Its 18"x18" panel is mounted in a structural steel welded frame, and its legs are pivoted but may be locked in an open or closed position. It is an ideal highway sign, brilliant yellow panel, black letters 5" high, galvanized frame, and heavy enough to stand up in the wind.

WARNING SIGN – "MEN WORKING"



The solid black 5½" letters on the 20" x 20" background of brilliant traffic yellow flashes a signal which no driver can possibly miss.

It is lightweight, yet extremely durable – the legs being made of ½" high carbon steel which will not bend. The 1¼" flange around the edge of the sign not only acts as a reinforcement, but also protects the lettering from becoming marred when being transported in the trucks. Lettering is on both sides.

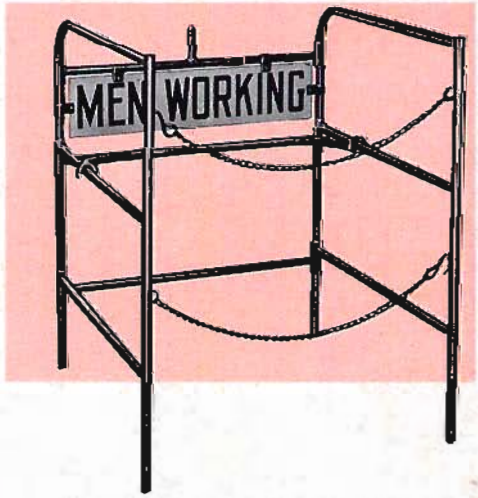
Each sign is equipped with two convenient handles for adjusting the angle of the legs. These handles, being hollow, also serve as flag sockets, and these handles can always be turned to an upright position. Each handle is also equipped with a handy lantern lock. Height 43", width 28", size folded 28" x 28" x 1¼".

SCOTCH-LITED WARNING SIGN

This warning sign is also available with a yellow scotch-lited background . . . giving it greatly increased warning value on dark days or at night on emergency jobs.



MANHOLE GUARD RAILS

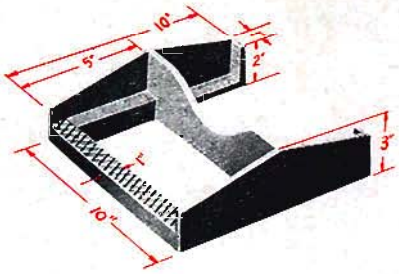


An all steel, electrically welded guard rail, heavy enough to stay in place and light enough to be handled easily. It is made of ¾-inch steel pipe, equipped with a flag holder. Painted with durable red enamel unless otherwise specified.

In the No. 402 guard rail a bow-shaped wing brace holds the rail rigid against collapse when in place, leaving the open side free for work.

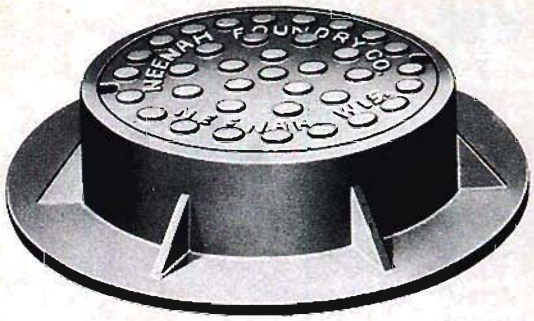
The No. 401 guard rail is of the same material but lighter construction than the No. 402. Has a steel hook (instead of the wing brace) for holding rail rigid when open.

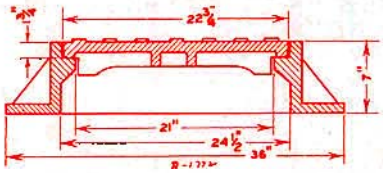
Cat. No.	Size Open	Size Closed	Weight
402	32x32x42 in.	32x42x2 in.	49 lbs.
401	32x32x42 in.	32x42x3 in.	40 lbs.



R-198-E

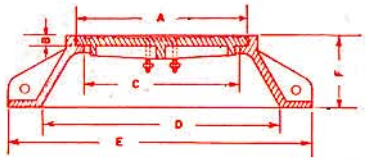
Cast iron manhole steps—other types and sizes available. Write for information.





R-1772—Heavy Duty

Furnished in 325, 365 and 400 lb. weights. When ordering specify weight required.



R-1640 Series

Standard for Underground Electric or Telephone Construction. Frame ribs have hook holes for easy handling—also for anchorage.

Illustrating R-1640-C



Machined bearing surfaces.

Specify if two drop handles or regular pickhole required.

TABLE

Dimensions in inches. Weight in pounds.

Cat. No.	A	B	C	D	E	F	Wt.
R-1640-A	26	1⅜	24	35	43	10	550
R-1640-B	29	1⅜	27	38	46	10	630
R-1640-B1	29	1⅜	27	34	46	5⅝	540
R-1640-C	32	1⅜	30	41	49	10	750
R-1640-C1	32	1⅜	30	37	49	5⅝	640
R-1640-D	38	1½	36	40	50	10	825

Castings

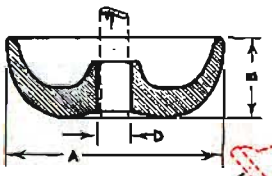
FOR ELECTRICAL AND TELEPHONE INSTALLATION

SERVICE — QUALITY — SATISFACTION

We have patterns available for over 15,000 different gray iron castings used on construction projects, including

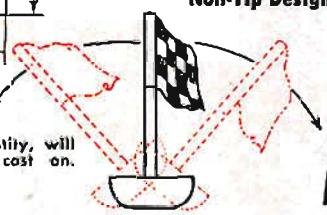
PULL BOXES • CONDUIT BOX COVERS • CONE ANCHORS
CONDUIT JUNCTION BOXES • CONDUIT COUPLINGS

For the best SERVICE and finest QUALITY refer to us for any casting requirements. Stocks are maintained on most standard items to insure prompt handling. Write for further information.



Illustrating the non-tip feature. If struck will return to vertical position.

R-4900 Series Non-Tip Design



If purchased in quantity, will supply with name cast on.

HIGHWAY WARNING FLAG BASES



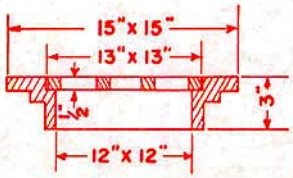
TABLE

Dimensions in inches.

Cat. No.	A	B	D
R-4900-A	6¾	2¼	13/16
R-4900-B	10¾	3½	1¼

Flag hole diameter can be furnished special size on request. Cast Iron Bases only furnished.





R-1646—Sump Frame and Grate

Total weight 50 pounds. Designed for use in electric conduit manhole for drainage.



TENT, CABLE SPLICER'S

For use of aerial cable splicers during cold and stormy weather. Made of heavy white 10 oz. high quality cotton duck. The roof is spread and supported by means of a collapsible three-ribbed galvanized metal framework which fastens to the cable suspension strand. On each of two opposite sides of the tent there is an opening which can be laced from the inside after the tent is erected.

Furnished in two sizes: Type "S" for general splicing uses. Type "L" for splicing work where more room is required. Frame is included with these tents.

Kellogg Code No.	Cat. No.	Length	Width	Height	Weight
789001	S	3 ft. 2 in.	4 ft. 6½ in.	8 ft. 8 in.	42 lbs.
789005	L	4 ft. 6 in.	4 ft. 6½ in.	8 ft. 8 in.	48 lbs.



LINEMEN'S PROTECTOR GLOVES

Protector Gloves are designed to be worn over Rubber Gloves to protect them from snagging and abrasive wear. The Protectors are made especially for this work and they should not be confused with the ordinary work gloves often offered for this purpose. The Protectors are made of specially tanned Grade "A" Buffed Horsehide, maroon color, from selected weights. These protector gloves remain soft and pliable under all conditions; will not become slippery when wet. They resist wire puncture to the greatest degree as no belly or shank leather is used. Nylon thread is used throughout the sewing process. Extra wide reinforcements at the thumb seam, making double leather thickness at this point of hardest wear. Finger tips are semi-moccasin style and are double stitched to insure long wear. The gloves are equipped with leather pull straps and self engaging buckle to tighten at wrist.

The standard "Gun Cut" construction is employed which means the finger seams are sewed at back away from the wearing surface.

Inside seam gloves can be furnished if desired. In ordering inside seam sewing gloves give the style number and mention the "Clute Pattern".

Protector Gloves made with open backs can be supplied in either the Gun Cut or the Clute Pattern. When ordering this type add the words "open back" after the catalog number.

The Protector Gloves with 4" gauntlets are most popular but they are also available in the band top style and in a semi gauntlet which is 2¾" long.

In ordering protectors the following Style Numbers should be used:

Catalog No.	Fits Glove Size
118-C	9, 9½, 10
120-C	10½, 11
140-C	11½, 12

PROTECTIVE BAGS FOR LINEMEN'S GLOVES



Salisbury Glove Bags are used to protect linemen's rubber gloves when not in use. They enable the proper storage of gloves on the truck without danger of their being torn or damaged by contact with other equipment. If the bags are suitably marked they will permit the linemen to retain the gloves issued to him for his exclusive use.

The bags are made large enough to accommodate leather protector gloves also. Eqiupped with snap hooks and "D" rings to enable the lineman to attach the bags to his belt. The bag is made of tight-woven 42-ounce duck with non-raveling edges, it is amply heavy waterproof, and thoroughly serviceable. Color is natural white of canvas. It has ventilating eyelets in the bottom of the gussets and is sewed with nylon thread.

Kellogg Code No.	Cat. No.	Dimensions
945003	35	15" long, 8" wide



LINEMEN'S RUBBER GLOVES
Curved Finger

Salisbury Linemen's Rubber Gloves feature the following qualities which are evenly balanced: High insulation, low leakage, strength, flexibility and long life. Each of these essentials is raised to the highest possible value without lowering the standard of some other desirable property. All gloves are steam cured, seamless and form fitting. with finger lengths and widths adjusted to best meet average conditions.

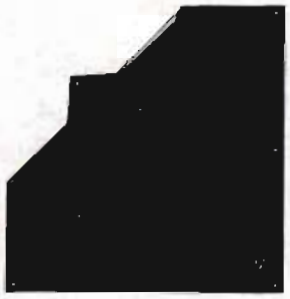
The standard length of gloves is 14" but we are also prepared to furnish 16" and 18".

GUARANTEE

All Salisbury Rubber Gloves are guaranteed to pass the most thorough inspection and to meet A.S.T.M. and Government Specifications. Replacement will be made, or return accepted, of all gloves which fail under initial tests at their rated voltage or otherwise prove unsatisfactory on delivery.

Cat. No.	Grade	Grade
100-10	Class I	10,000 Volt Test
100-15	Class II	15,000 Volt Test
100-20	Class III	20,000 Volt Test

LINEMEN'S BLANKETS



Salisbury is the originator of the Linemen's Rubber Blankets. The essential factors of high voltage resistance, toughness, long life, flexibility and lightness in weight are all present in the Salisbury Blankets.

Only the best of Hevea Plantation Rubber from selected Estates and the highest quality of compounding ingredients are used. Only natural rubber is used in the manufacture of these blankets.

GUARANTEE

All blankets are guaranteed to be free from all imperfections and are guaranteed on acceptance to test 20,000 volts for a period of three minutes.

Cat. No.	Dimensions
300-E	36" x 36" x ⅛"



CABLE BANDAGES



Rubber Cable Bandages are for general use as temporary insulation.

The bandages are made of highest grade pure gum rubber, these bandages are unusually strong, very flexible, and have excellent aging qualities. The bandages have a fabric impression finish and acceptance tests prove that a single thickness has the ability to stand 7,000 volts.

The bandages are furnished in rolls 14 feet long, either 3" or 4" wide and ½" thick.

Kellogg Code No.	Cat. No.	Size
950001	S-314	3 in. by 14 ft.
950002	S-414	4 in. by 14 ft.

CLOTHS, WIPING

Formed, Flexible Finishing Cloths

Kellogg Code No.	Size
260005	2 x 2 inches
260006	2½ x 2½ inches
260007	3 x 3 inches
260008	3½ x 3½ inches
260009	4 x 4 inches

Flat, Finished Catch Cloths

Kellogg Code No.	Size
260010	5 x 5 inches
260011	6 x 6 inches
260012	6 x 7 inches
260013	7 x 8 inches
260014	8 x 8 inches

CLOTH, UPRIGHT JOINT WIPING

Kellogg Code No.	Material	Size
260017	Ticking Facing	1¾ in. center opening x 11 in. O.D.
260018	Ticking Facing	1 in. center opening x 9 in. O.D.

SUPERSHYNE PLUG POLISHING CLOTHS

The Perfect answer for cleaning Switchboard Plugs.
Clean — Quick — Economical

Will clean hundreds of Switchboard Plugs. Packed in New Moisture-Proof Envelope.

IBM No.	Size
260001	11" x 13½"

ROPE, MANILA

Kellogg Code No.	Diameter	Circumference	Feet per Pound	Weight per Coil
712001	⅜ in.	1⅛ in.	24½	65 lbs.
712003	½ in.	1½ in.	13⅓	90 lbs.
712007	⅝ in.	2 in.	7½	160 lbs.
712006	¾ in.	2¼ in.	6	200 lbs.

FURNACE, UNIQUE SPLICER'S

Kellogg Code No.	Cat. No.	Fuel	Capacity	For	Weight
410001	53	Gasoline	1 Gal.	8" Pot	12½ lbs.
410002	55	Kerosene	1 Gal.	8" Pot	12½ lbs.

GLIDDEN-PLI-NAMEL



A Gloss Rubber Base Paint for concrete floors, walls and metal surfaces in telephone exchanges. Free from corrosive fumes that would damage relay contacts or other exposed metal surfaces. Resists scuffing from heavy foot traffic and equipment moving. Prevents concrete dusting. Is not affected by moisture, alcohol, alkalies and most acids. Available in the following colors:

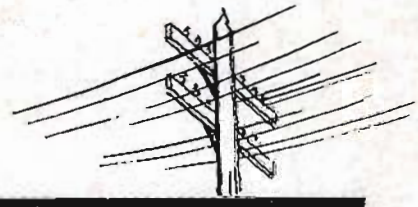
#810 White	#821 Turf Green
#811 Black	#822 Stone Gray
#815 Concrete Gray	#823 Flint Gray
#819 Delft Blue	#1525 Chromate Primer (For Metal surfaces)
#820 Navajo Red	

Orders will be drop-shipped from nearest Glidden factory.

when it comes to line clearance

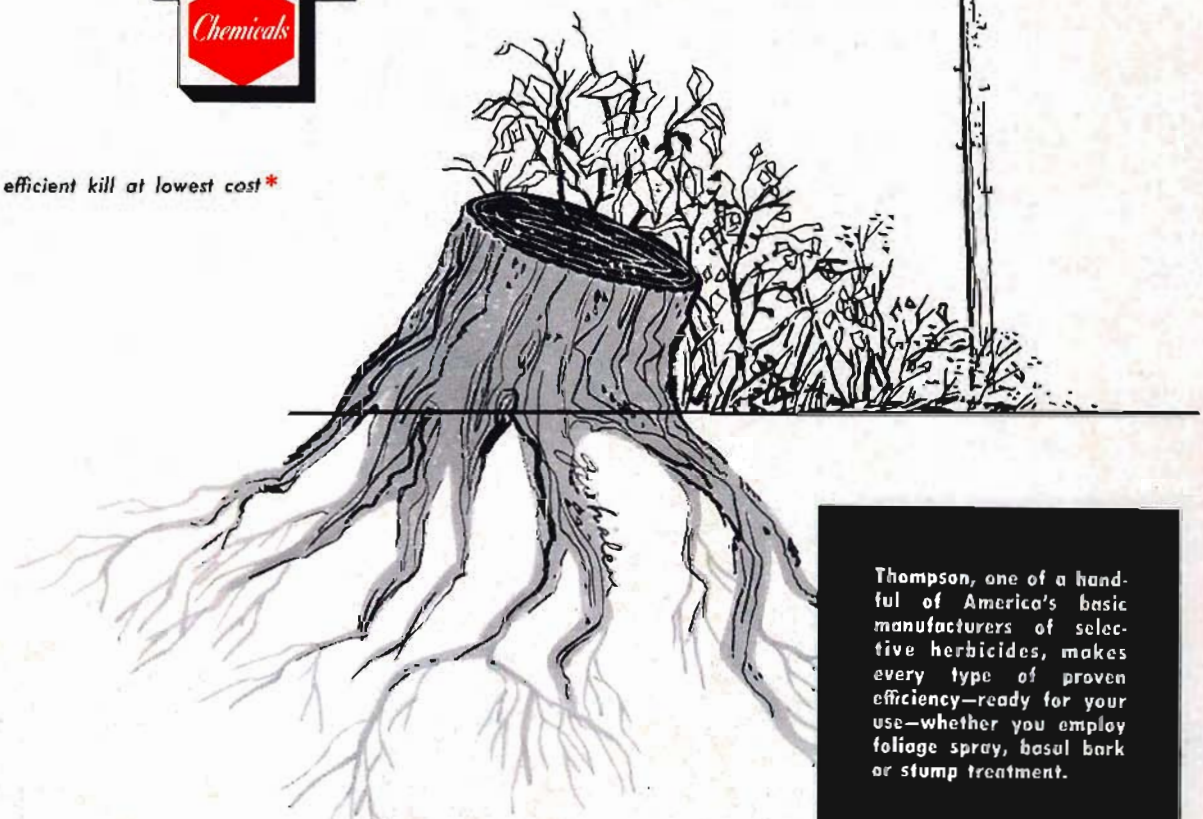
BRUSH KILLERS *You name it....*

THOMPSON makes it!



SPECIFY... Thompson Chemicals **FIRST NAME IN BRUSH KILLERS**

*for most efficient kill at lowest cost**



Thompson, one of a handful of America's basic manufacturers of selective herbicides, makes every type of proven efficiency—ready for your use—whether you employ foliage spray, basal bark or stump treatment.

LOW VOLATILE

Brambicide 5 - L.V.
2,4,5-T

Bramble-weedicide 5 - L.V.
2,4-D - 2,4,5-T

CONTROLLED VOLATILITY

Broad Spectrum - Pentyl Esters
Brambicide
Bramble-weedicide
Brambicide 5
Bramble-weedicide 5

BROAD SPECTRUM . . . or LOW VOLATILE . . . whichever you prefer, Thompson's delivers more kill per gallon because every gallon is fortified with a new and exclusive surfactant perfected in the Thompson laboratories. No other "creeping agent" duplicates its performance.

MORE GALLONS PER DOLLAR . . . when you specify Thompson you get a finished product from the basic producer . . . your most economical method of buying.

**Write for station paper 19. It provides latest research on right of way herbicides, their selection and application.*

THOMPSON CHEMICALS CORP.
agents in principal cities

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-141

CADILLAC BLOWER-SUCTION CLEANERS



5 MODELS TO CHOOSE FROM
(Light Duty Model AY-6 Illustrated)

Used with numerous attachments, they handle many special assignments other than dirt removal by blowing and vacuuming methods.

By eliminating dust, Clements-Cadillac blower-suction cleaners promote the health and safety of workers. They boost employee morale, too, by making cleaning jobs easy, and good maintenance a regular practice. Units are powered from a standard light socket, ac or dc operation.

Guaranteed for one year against defective materials and workmanship. Positively safe to operate. Ground connections are so designed that it is impossible to receive a shock from any Cadillac portable electric blower or blowtorch. Approved by Underwriters' Laboratories Inc. and Canadian Standards Association.

MODEL HP for double duty

2-SPEED OPERATION provides 2-blower convenience.

HIGH SPEED: 11,600 rpm. Velocity, 27,000 lineal ft. per min. Capacity, 195 cu. ft. per min.

LOW SPEED: 9,700 rpm. 21,500 lineal ft. per min. Capacity, 150 cu. ft. per min.

Equipped with rubber blowing nozzle and 20-ft. reinforced, rubber-covered 16-gauge 3-conductor cable with 3-prong plug for positive grounding. Net wt. 15 lbs. Ship. wt. 18 lbs.

MODEL G for heavy duty

Delivers air at 20,000 lineal ft. per min. with a pressure of 33 inches water column of 1.19 lbs. per sq. inch. Displaces 95 cu. ft. of air per min.

Equipped with rubber blowing nozzle and 20-ft. reinforced, rubber-covered 18-gauge 3-conductor cable with 3-prong grounding type plug. Net wt. 11 lbs. Ship. wt. 14 lbs.

MODEL F for medium duty

Recommended where a blower lighter in weight and smaller in capacity than the Model G is required.

The Model F delivers air at 17,000 lineal ft. per min. with a pressure of 25 inches water column of .9 lbs. per sq. inch. Displaces 80 cu. ft. of air per min.

Equipped with rubber blowing nozzle and 20-ft. reinforced, rubber-covered, 18 gauge 3-conductor cable with 3-prong grounding type plug. Net wt. 9 lbs. Ship. wt. 12 lbs.

MODEL AY
for use where smaller volume of air is required

Delivers air at 12,000 lineal ft. per min. with a pressure of 18 inches water column or .65 lbs. per sq. inch. Displaces 50 cu. ft. or air per min.

Equipped with rubber blowing nozzle and 20-ft. reinforced, rubber-covered, 18 gauge 3-conductor cable with 3-prong grounding type plug.

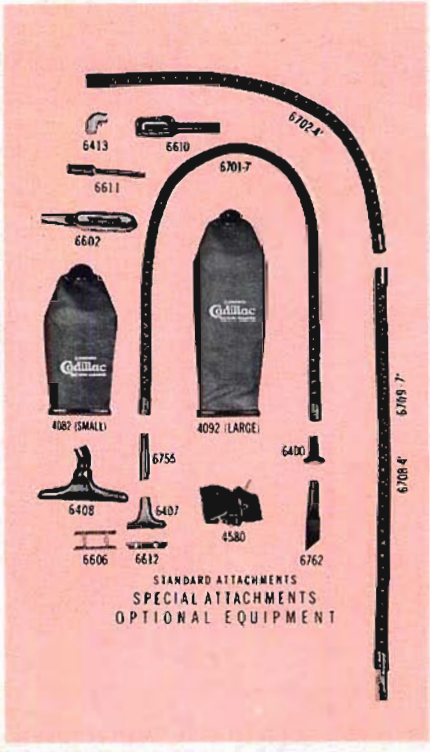
Net wt. 8 lbs. Ship. wt. 11 lbs.

MODEL L Hot or Cold Air Blower

The Model L is a portable blower developed to meet power plant and telephone company requirements. Delivers a choice of room-temperature air or heated dry air. Dries out insulation in motors, cables, delicate switchboards, terminal boards. With normal room temperature of 70°F. and heating element turned on, a blast of air approximately 150°F. is delivered.

Equipped with rubber-tipped aluminum nozzle, and 20-ft. reinforced, rubber-covered 16 gauge 3-conductor cable with 3-prong grounding type plug. (Because of heating element, this model cannot be used with suction attachments.) Net. wt. 10 lbs. Ship. wt. 13 lbs.

ATTACHMENTS FOR CADILLAC PORTABLE CLEANERS

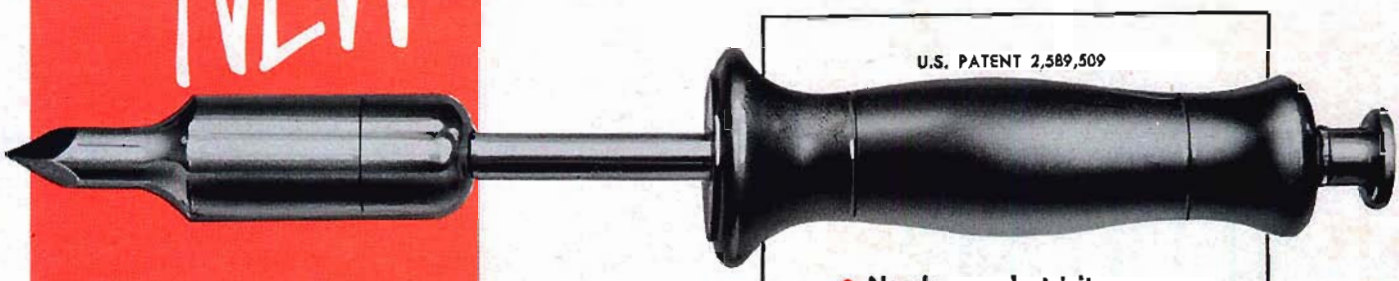


A large variety of suction and blowing attachments is available for use with all Cadillac Cleaners except Model L which uses blowing attachments only. These attachments will take care of all ordinary cleaning jobs.

4082—Dust bag — any model but HP, NHP, HP2
4092—Dust bag for HP, NHP, HP2
4580—Sam Browne Belt
6400—Aluminum hose connection
6407—Female furniture nozzle to fit nipple
6408—10" floor nozzle
6413—Aluminum elbow
6602—7" switchboard brush
6606—Double row brush for No. 6406 and 6407 nozzle
6610—Rubber insulated cleaning brush
6611—Telephone braid cleaning brush
6612—Brush for No. 6406 and 6407 nozzle
6701—7' braided hose with two 2" rubber ends
6702—4' braided hose with two 2" rubber ends
6708—4' hose with one 8660 swivel
6709—7' hose with one 8660 swivel
6755—Fibre nipple
6762—Male-end open flat fibre cleaning tool

THE NEW

STANDARD FOR ALL LINE MAINTENANCE SOLDERING



U.S. PATENT 2,589,509

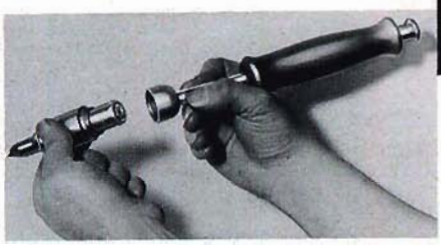
The CARTRIDGE-HEATED
"Quick-Shot" Soldering Iron

- Needs no electricity
- Needs no flame
- Needs no blowtorch
- Needs no external heat of any kind!



The "Quick-Shot" cartridge contains a thermit iron-aluminum mixture that provides 225 watts equivalent at the copper soldering tip in 25 seconds, and maintains this heat for fully 7 minutes. No special precautions are required in use or in storage. Ignition point is 650° F.

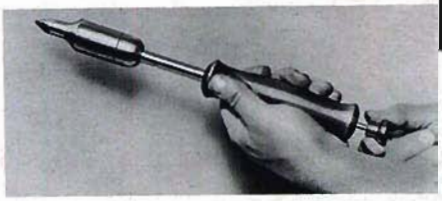
STEP 1



Just 2 Things To Do and The Iron Is Ready For Use!

Unscrew tip, insert cartridge, remount tip.

STEP 2



Pull back spring rod at back of handle and release. Tip heats up in 25 seconds!

A UNIQUE NEW INVENTION

Developed, tested and approved by an outstanding telephone laboratory — and used throughout its operating system — the "Quick-Shot" soldering iron is the answer where line power is neither convenient nor available. Here is a self-heating ruggedly constructed soldering iron that can be used in any location. Where electric irons and flame-heated coppers require from three to five minutes for heating, the "Quick-Shot" provides practically instantaneous heat in less than 30 seconds.

ECONOMICAL—ELIMINATES HAZARDS

The cost of cartridges is far below that of other conventional soldering methods. And, in addition to economy, fire and electrical shock hazards are reduced to zero, thus providing another important feature. Far less bulky than blow torches, fire pots, or electric irons with long cords, the "Quick-Shot" iron fits easily into any maintenance kit.

FIVE INTERCHANGEABLE TIP SIZES

Five standard tip sizes are available — 3/8" pyramid and chisel, 5/8" pyramid and chisel, and 1" chisel. Each of these accepts the standard heat cartridge and screws into the handle of the iron.

KENMODE MANUFACTURING CO. INC.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-143

STERLING EARTH BORING MACHINES



"PROSPECTOR"

Designed and manufactured to satisfy the urgent need and growing demand from telephone companies everywhere for a tough, dependable, inexpensive Digger . . . low in cost, operation and maintenance. Now for the first time, a STERLING Earth Boring Machine in the $3000-3500 price range.

Specifications

The Sterling "Prospector", its low cost and unbeatable performance, has been designed especially for Telephone Companies, State Highway Districts, and Guard Rail Contractors.

1. Motor: Continental—4 cyl.—164 cu. in. Dis. Engine.
2. Straight Line Drive.
3. Selective speeds available (operator controlled).
4. Vacuum Clutch Control.
5. Eng. Trans. 4 speed forward—1 speed reverse.
6. Heavy Duty Auxiliary Transmission—provides gear reduction to final drive.
7. Automotive type differential—extra heavy duty—F700 Ford Timken Built.
8. Digger Bar or shaft—2¼x2¼"—13 ft. long—Highest grade alloy steel—(Hydraulically controlled digger).
9. Final Drive and bar angle 45 degrees to right or left.
10. 3,000 to 3,150 lbs. weight—can be mounted on 1½ ton truck.

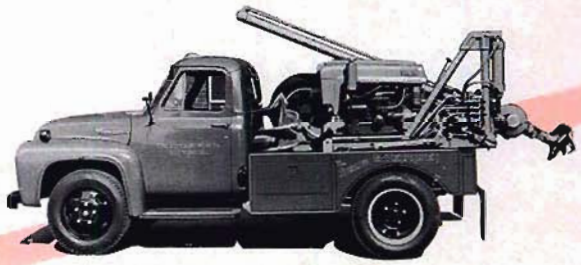
"ENTERPRISER"

"Enterpriser" Earth Boring Machines can be mounted on any standard 1½ ton chassis with special body constructed for that purpose. All-Wheel-Drive Ford trucks converted by Marmon-Herrington Company are recommended. Conventional trucks are not generally recommended due to the rough terrain encountered in the operation of digging equipment. The photograph shows the compact design of this equipment when mounted on a 1½ ton chassis.

The "Enterpriser" model is built with the same precision engineering used in the manufacturing of the Sterling "Model A" digger. The "Enterpriser" was designed to meet the needs for a lighter weight machine that would handle up to a 20-inch auger and could be mounted on lighter trucks. A greater degree of boom maneuverability is available, aiding in the replacement of poles between existing telephone lines when lines are mounted low on the poles. The transmission has three speeds forward and one reverse. — See the "Enterpriser" in operation on your next job. This digger provides enough power to do 75% of all hole digging jobs. Reduces costs. Expedites jobs.

AUGER SIZES

Ten-inch (10") to twenty-inch (20") augers are recommended. These augers are designed and engineered in various styles to fit different soil conditions. This is a definite determining factor in selecting the style of auger and cutting tools to be used. Improper cutting tools never do a good job.



POWER PLANT

Ford industrial four cylinder, 172 cu. in. piston displacement, overhead valves. This engine is used because it develops maximum torque at 1600 r.p.m. This feature reduces a great percentage of shock due to the fact that the auger turns at a lower speed when digging. At this speed the engine develops 42 h.p. and 146 ft. lbs. torque. At 2400 r.p.m., which is the speed for auger dirt to "spin off", and bar travel, the engine develops 58 h.p. Also, available with 6 cylinder "Red Seal" Continental Engine, 226 cu. in. displacement for heavy duty service.

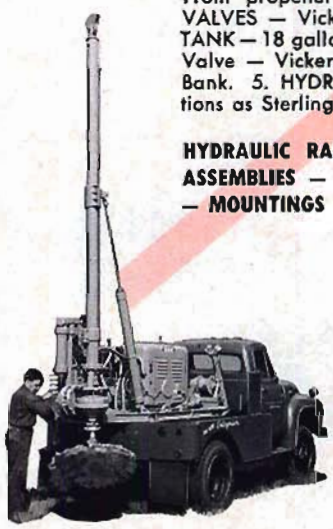
CLUTCH

Twin Disc Model CL-107 single plate, with ball bearing throwout collar. Easy to adjust . . . easy to install . . . easy to repair and maintain.

HYDRAULIC SYSTEM

1. Pump — Commercial Shearing, 25 g.p.m., Front propeller shaft driven. 2. CONTROL VALVES — Vickers Bank Type. 3. STORAGE TANK — 18 gallon capacity. 4. Relief or Check Valve — Vickers, integral with Control Valve Bank. 5. HYDRAULIC OIL — Same specifications as Sterling Model "A".

HYDRAULIC RAMS OR CYLINDERS — DRIVE ASSEMBLIES — FEED RAM SHAFT — FRAME — MOUNTINGS



All have the same specifications as the Sterling Model "A" with the exception that the "Enterpriser" is only furnished with a 13 or 15-foot bar.

WEIGHT

Standard three valve machine — 3,150 lbs.

STERLING

STERLING EARTH BORING MACHINES

MODEL "A"

"Sterling" Earth Boring Machines are hydraulically controlled. Power is furnished to the earth boring machine by a Ford Industiral type gasoline engine. The transmission has four speeds forward and one reverse. The hydraulic control system governs the lifting, leveling and main auger shaft operations. Finger Tip Controls allow the operator to have complete command of the digging operation at all times. This feature saves time and expense because the operator controls ALL power during the digging operation.

AUGER SIZES

1. Ten-inch (10" to twenty-six (26") augers are recommended. These augers are designed and engineered in various styles to fit varied soil conditions. Larger sizes are available for specific jobs. Augers are furnished "banded" with tool steel to insure longer wear.

POWER PLANT

Ford industrial six cylinder, 215 cu. in. piston displacement, overhead valves. This engine is used because it develops maximum torque at 1600 r.p.m. This feature reduces a great percentage of shock due to the fact that the auger turns at a lower speed when digging. At this speed the engine develops 57 h.p. and 186 ft. lbs. torque. At 2800 r.p.m., which is the speed for auger dirt to "spin off", the engine develops 93 h.p. Ford parts are universally available — maintenance costs are low — service is fast — down time is held to a minimum.

CLUTCH

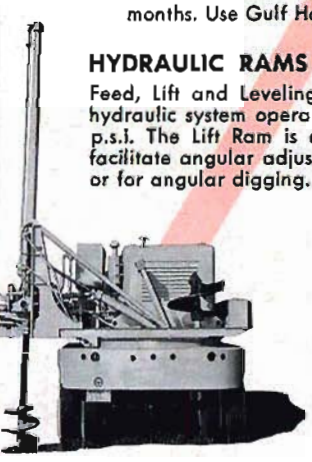
Twin Disc Model "CL-108" single plate with ball bearing throwout collar. Clutch is easily accessible for adjustments. The operator or field service mechanic has no difficulty making clutch repairs or adjustments.

HYDRAULIC SYSTEM

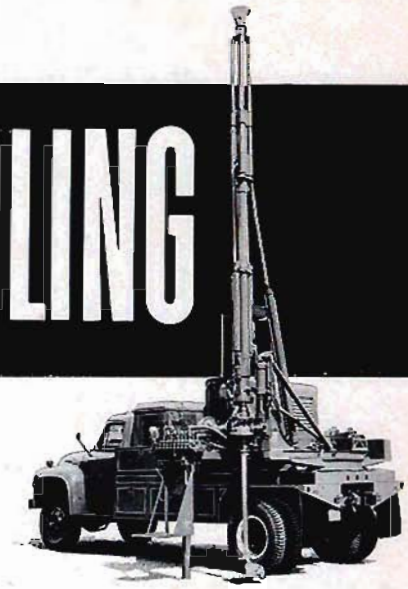
1. Pump—Vickers Vane Type, 30 g.p.m. Power Take Off driven.
2. CONTROL VALVES—Vickers Bank Type.
3. STORAGE TANK—32 gallon capacity.
4. RELIEF OR CHECK VALVE—Vickers, integral with Control Valve Bank.
5. HYDRAULIC OIL—Use Gulf Harmony "C" or equal for Summer months. Use Gulf Harmony "A" or equal for Winter months.

HYDRAULIC RAMS OR CYLINDERS

Feed, Lift and Leveling cylinders are mirror finished inside. The hydraulic system operates under a working pressure of 1,000 lbs. p.s.i. The Lift Ram is equipped with ball joints at both ends to facilitate angular adjustments necessary to fit terrain irregularities or for angular digging. Ball joints prevent wear.



MODEL "A"



DRIVE ASSEMBLIES

Right Angle Drive and Final Drive ring and pinion gears are genuine Ford parts. (Truck type, ratio of 5.14 to 1, 36 tooth ring gear, 7 tooth pinion). Timken cones and cups are used in both assemblies.

FRAME

Welded "I" beam construction, with cast Leveling Ram Bracket. Fish plating is used at various points to insure greater strength on Turn Table Fore and Aft mounting.

BORING BAR, DIGGER AUGER SHAFT, FEED RAM SHAFT

All of the above terms apply and have been used to describe this most important working part of the machine. Bars are furnished in four (4) different lengths, manufactured for "Sterling" Earth Boring Machines by the Bethlehem Steel Company. Materials used are S.A.E. 4142 alloy steel, heat-treated and maintained at a size of 2.250 inches square. All four surfaces are machined to plus or minus .005. These close tolerances insure a tight fit to the hydraulic packing and prevent dirt and foreign matter from entering the hydraulic system. To further insure non-passage of foreign materials into the hydraulic system, the machine is equipped with a lower wiper packing and plate which is incorporated into the packing nut assembly.

LENGTHS OF BARS AVAILABLE	DEPTH OF HOLE POSSIBLE
13 foot	7½ to 8 feet
15 foot	9 to 9½ feet
16 foot	10 to 10½ feet
20 foot	14 to 14½ feet

Hole depth depends on the type of mounting, the height of the truck frame, tire sizes, etc.

COLOR

Standard color is "Sterling Green" (same as Ford Truck Green). Customers may furnish their own color combination, and factory will paint according to their special instructions. Special painting at extra cost.

WEIGHTS

Standard three valve machine (when furnished without pole setter winch or other accessories) 3,906 lbs. When accessories are added, the weights are increased accordingly.

MOUNTINGS

1. Body (platform type) for skid mounting. (Digger is bolted to body)
2. Body (platform type) with "Swing Maunt" feature.
3. Body (platform type) with "Turntable Fore & Aft."

USE PROVEN PENGO EQUIPMENT FOR POLE SETTING!

"There's a PENGO Auger for Every Boring Job . . . every make of drilling machine!"



A

PENGO OFFSET BORING HEAD

Most effective for use with flight augers as shown in center and at right. Same replaceable Pengo No. 41 "wisdom teeth" and pilot bit fit all sizes. 13 diameters from 13" to 27".

B

PENGO X H D
DOUBLE HELIX AUGER

For use on heavy duty boring machines such as Sterling, Highway, etc. Pengo No. 49 "wisdom teeth" fit 23 of 25 sizes from 6" to 6' in diameter.

C

PENGO
FABRICATED FLIGHT AUGER

The 25-ST-78 series comes complete with Pengo OB head, is used generally by the telephone industry on all makes of A-frame borers. 13 diameters from 8" to 27".

D

PENGO H X D FLIGHT AUGER

Same as auger shown at the left but with flights added. Bores any kind of material except solid rock. 19 sizes from 6" to 42" in diameter.

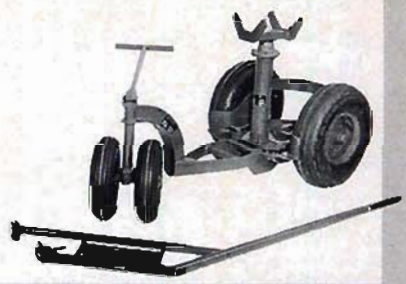


PENGO PULLING EYE

For installing pre-formed guy grips. Provides extra eye on anchor rod.

PENGO POLE CHARIOT

The easy answer to the problem of handling poles across lawns, through narrow alley ways, garden gates, etc.



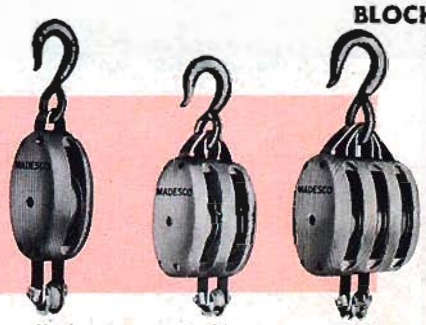
PENGO augers are used by most all major utilities in the United States . . . the "foremost" earth auger throughout the world!

PETERSEN
ENGINEERING COMPANY
Santa Clara, Calif.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • *Division of* IT&T

G-146

BLOCKS, WOOD PULLEY
For Manila Rope



Single Sheave — Double Sheave — Triple Sheave

Hard wood shells, steel strapped on the inside with iron sheaves, loose side hooks and beckets. Sheaves are furnished with iron roller bushings.

Kellogg Code No.	Cat. No.	Description	For Rope Size	Size Shell	Weight Each
105121	1001½-S	Single	½ in.	4 in.	1¼ lbs.
105120	1001½-D	Double	½ in.	4 in.	2½ lbs.
105124	1001⅝-S	Single	⅝ in.	5 in.	2¼ lbs.
105122	1001⅝-D	Double	⅝ in.	5 in.	3¾ lbs.

BLOCKS, STEEL SNATCH
For Manila Rope



Heavy steel shell with full length double steel straps, iron sheaves, steel heads and links and flat, stiff swivel hook. Rounded edges prevent chafing of rope. Sheaves are furnished with iron roller bushings, and blocks are black japanned.

Kellogg Code No.	Cat. No.	For Rope Size	Length of Shell	Weight Each
105131	2706¾	¾ in.	6 in.	5¾ lbs.
105133	2706⅞	⅞ in.	7 in.	7 lbs.
105132	2706-1	1 in.	8 in.	12¼ lbs.

BLOCKS, STEEL PULLEY
For Manila Rope



Single Sheave

Shell is made of pressed steel with rounded edges to prevent chafing rope. Equipped with iron sheaves and round, loose side hook. Sheaves are furnished with iron roller bushings. Shell is black japanned.



Double Sheave



Triple Sheave

Kellogg Code No.	Cat. No.	Description	For Rope Size	Size Shell	Weight Each
105128	2001½-S	Single	½ in.	4 in.	1¼ lbs.
105125	2001½-D	Double	½ in.	4 in.	2 lbs.
105127	2001⅝-S	Single	⅝ in.	5 in.	2 lbs.
105126	2001⅝-D	Double	⅝ in.	5 in.	3 lbs.



BLOCKS, MALLEABLE IRON PULLEY, GALVANIZED

Single or double sheave, with single eye, double eye, or hook.

Kellogg Code No.	Catalog Number	Description	For Rope Size
105110	932⅜	Single Sheave, Single Eye	⅜"
105103	933⅜	Double Sheave, Single Eye	⅜"
105100	932½	Single Sheave, Single Eye	½"
105101	933½	Double Sheave, Single Eye	½"
105111	935⅜	Single Sheave, Double Eye	⅜"
105105	936⅜	Double Sheave, Double Eye	⅜"
105112	935½	Single Sheave, Double Eye	½"
105106	936½	Double Sheave, Double Eye	½"
105113	937⅜	Single Sheave, Double Eye, W/Hook	⅜"
105107	938⅜	Double Sheave, Double Eye, W/Hook	⅜"
105114	937½	Single Sheave, Single Eye, W/Hook	½"
105115	938½	Double Sheave, Double Eye, W/Hook	½"

CABINET — No. EX 1278 WIRE CHIEF'S



These cabinets are 15 inches wide, 15 inches deep, and 78 inches high, including 6-inch legs. Recessed handles are fitted with number plates (specify numbering when ordering). Built-in flat key lock with two keys. Finished in green baked-on enamel. Shipped set up. Has five shelf openings, one 9 inches high, two 8 inches high, and two 4 inches high. Includes nine drawers, one 11⅛ inches wide, 12¾ inches deep, and 1⅝ high with 15 compartments, each 3¾ by 2³⁄₁₆ inches; two drawers 11⅛ inches wide, 12¾ inches deep, and 1⅝ inches high with nine compartments, each 3¾ inches by 4⅞ inches; two drawers 11⅛ inches wide, 12¾ inches deep, and 5⅜ inches high with nine compartments, each 3¾ by 4⅞ inches, two drawers 11⅛ inches wide, 12¾ inches deep, and 5⅜ inches high with nine compartments, 3¾ by 4⅞ inches, and two drawers 11⅛ inches wide, 12¾ inches deep and 5⅜ inches high with four compartments each 6¹⁄₁₆ by 5⁴⁄₁₆ inches.



HEADSET CABINET — No. EX 1437-A

Each cabinet contains 40 compartments with sloping shelves for efficient storage of headsets. Cabinets may be stacked to desired height. Specify numbering desired on openings. No. EX 1437-1 Top and No. EX 1437-2 Base must be ordered separately as shown at right. Finish—Lyon gray baked-on enamel.

No. EX 1437-A Cabinet—39¼" W. x 33" H. x 9" D.
No. EX 1437-1 Top—39¼" W. x 3" H. x 9" D.
No. EX 1437-2 Base—39¼" W. x 15" H. x 9" D.

NOTE—Total height of one cabinet plus base and top is 47".

CABINET — No. EX 1278-8 WIRE CHIEF'S



This cabinet has eight shelf openings, one 13 inches high at top, six 8 inches high, and one 10 inches high at bottom. This cabinet is 15 inches wide, 15 inches deep, and 78 inches high, overall. Height includes 6-inch legs. Recessed handles are fitted with number plates (specify numbering when ordering). Built-in flat key lock with two keys. Finished in green baked-on enamel. Shipped set up.



CONTACT BURNISHING TOOL

Has a very hard and mildly abrasive surface on both sides of blade. Blade is of correct stiffness and balanced length permits getting into cramped places so right amount of abrading pressure can be applied to contact face. Non-residual, leaves no residue whatever on contact face. After use contact is smooth, shiny and perfectly clean. Plastic handle is insulator for working on live contacts.
3" length overall, 1½" long blade, 3/16" wide, .007" thick.

Kellogg Code No.	Cat. No.	Description	Std. Pkg.
165002	3-316	Burnisher in vinyl carrying case	10





WOOD SCREWS

Wood Screws are furnished with round or flat heads. Available galvanized or blued. Normally stocked in the following sizes:

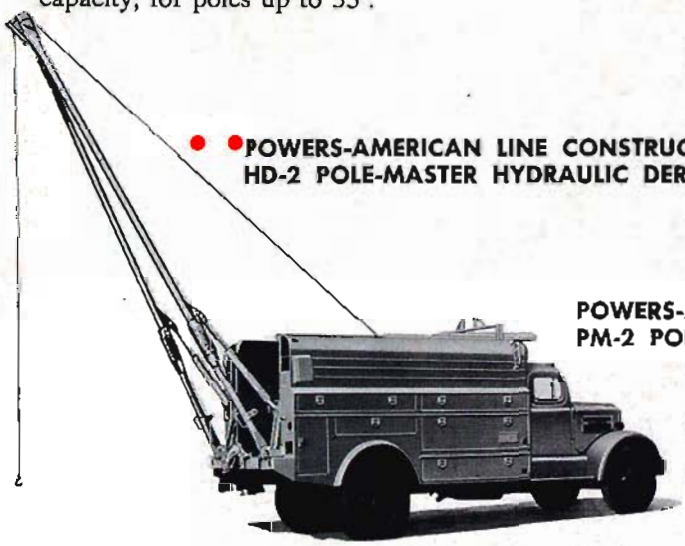
Kellogg Code No. Round Head Galv.	Round Head Blued	Flat Head Galv.	Screw Size	Length (inches)
	725150		No. 6 x	½
725200	725151	725100		¾
725201	725152	725101		1
725202	725153			1¼
	725154			1½
725203			No. 8 x	½
725204	725159			¾
725205	725160	725103		1
725206	725161			1¼
725207	725162	725104		1½
725208	725163			1¾
725209	725164	725105		2
725210	725165			2½
725212	725167		No. 10 x	¾
725213	725168			1
725214				1¼
725215	725169	725107		1½
725216	725170	725108		2
725217	725171			2½
725219	725172			3
725220		725109		3½
725221			No. 12 x	1
725222				1¼
725223				1½
725224				2
725225				2½
725226				3
725227			No. 14 x	1
725228				1¼
725229				1½
725230				2
725231		725110		2½
725249				3½
725232			No. 16 x	1½
725233				2
725234		725111		2½
725235		725112		3
725236		725113		3½
725243		725114	No. 18 x	1½
725237		725115		2
725238		725116		2½
725239		725117		3
		725118		3½

The Series 600 Line Body is available in lengths from 9 to 14 feet. It has one vertical and five horizontal compartments on each side, with shelves, hooks, and bins for storing tools, parts, and materials in easy-to-find order. Can be furnished with pole derrick and engine-driven winch that fits individual operating requirements.

The Pole-Master (Series HD-2) Hydraulic Derrick is a fully-powered unit which is actuated by twin hydraulic cylinders. It is operated by a single control lever, and can be moved under load. Requires only single-drum winch. Has no pre-determined spotting positions. Two sizes: HD-2-40, with 4000 lb. capacity, for handling poles up to 40′ in length; and HD-2-55, with 6000 lb. capacity, for poles up to 55′.

Shelves, bin-divided drawers, brackets, hooks, parts bins, and door pockets store "everything needed for line work" in the Series 800-C Body. Can be winch and derrick equipped as desired. Built-in crew compartment seats four. Available, with crew compartment, in lengths from 11′ to 14′; without crew compartment in 9′ to 13′ lengths.

Pole-Master (Series PM-2) Hydraulic Derrick has a live-boom operating range in excess of 180°. It is actuated by two hydraulic cylinders, in combination with a unique system of linkage. Head sheave can be threaded from ground. Requires only single-drum winch. In three sizes: PM-2-40 for 40′ poles, PM-2-55 for 55′ poles, and PM-2-70 for 70′ poles. Can be furnished with ground prop, if desired.



• •POWERS-AMERICAN LINE CONSTRUCTION WITH HD-2 POLE-MASTER HYDRAULIC DERRICK

POWERS-AMERICAN LINE CONSTRUCTION WITH PM-2 POLE-MASTER HYDRAULIC DERRICK • •



POWERS



• •POWERS-AMERICAN CABLE SPLICERS



POWERS-AMERICAN TELEPHONE INSTALLATION • •

Series 44-CS-90 Body has six compartments which are fitted with shelves, hooks, bins, straps, and pockets for carrying all tools and materials needed for any cable splicing operation. The curbside vertical compartment, extending across the body head panel, contains racks for storing gas cylinders.

Space for stowing cable splicer's platform is provided beneath cargo area floor. Two hooks, and a bracket for "Men Working" signs, are installed on sides of cargo area.

Body is normally furnished, as shown, with ladder trough and tent carrier, and with special top-opening compartment for sleeves and tree trimming tools.

Available for installation on single-or dual-rear wheel chassis having cab-to-axle dimension or approximately 48 inches.

Series 25T and 35T Bodies provide specially-fitted compartments for carrying a complete inventory of tools and parts for routine or emergency installation and general service work.

The Series 25T is 74½" long, and is designed for standard chassis having C.A. dimension from 38" to 40". The Series 35T, which is 84½" long, fits chassis having C.A. dimensions of approximately 40".

Removable shelves, padded with sponge rubber and fitted with elastic hold-down straps, are furnished in the streetside vertical compartment. Two tiers of bins are provided in the curbside horizontal compartment, with removable dividers furnished in the upper tier. Can be equipped with wire reel and other special equipment as required.



PYRENE FOAM 4-STAR
2½-Gallon Seamless Shell

Now offered at former riveted shell price. Has seamless drawn one-piece shell and dome. No side seams nor rivets. Strong — tested to 500 pounds. Has tough plastic nozzle which resists damage and discloses clogging. Discharges about 22 gallons of foam that floats on liquids and clings to ordinary combustibles. Smothers fire. Protects against re-flash. Labeled by Underwriters' Laboratories and approved by Factory Mutuals.

Kellogg Code No.	Cat. No.	Description
375002	P13	Polished Copper
375004	PS13	Polished Copper, with pressure relief valve to meet Merchant Marine Council of U.S. Coast Guard requirements
375035	PXR1	Extra Pyrene foam recharge

PYRENE WATER-TYPE
2½-Gallon Cartridge-Operated



Now available in either the seamless drawn shell or new stainless steel welded shell. Both types tested to 500 pounds pressure. No annual recharging. Tough plastic nozzle discloses clogging. 40-foot stream of water discharged by means of pressure from carbon dioxide gas cartridge. Operated by inverting and striking plunger head on the floor. Effective on fires in ordinary combustibles. Labeled by Underwriters' Laboratories and approved by Factory Mutuals.

Kellogg Code No.	Cat. No.	Description
375010	HW12	Stainless Steel
375011	H13	Seamless, Polished Copper
375045	HWC1	Extra Cartridge (new type)



PYRENE 1 and 1½-Quart
VL Hand Pump Type

Smothers all classes of incipient fire, particularly fires in flammable liquids and electrical equipment. Light, compact and easily operated. The double-acting pump with rotating pick-up discharges a steady 25 to 30-foot vaporizing liquid stream from any position in any direction. For motorcycles, airplanes and heavy vehicles, "shock absorber" construction and clamp type brackets guard against wear from excessive vibration. Labeled by Underwriters' Laboratories and approved by Factory Mutuals. Sold with charge and bracket.

Kellogg Code No.	Cat. No.	Description
375052	C21	1 Qt. Brass Wall Bracket
375053	C24	1 Qt. Chrome, Wall Bracket
375054	C31	1½ Qt. Brass, Wall Bracket
375055	C34	1½ Qt Chrome, Wall Bracket

HAND PORTABLE FIRE EXTINGUISHERS
Carbon Dioxide Type



Recommended — Especially for highly inflammable liquids, paints, oil, solvents, alcohol, and for the protection of electric equipment.

Extinguishing Agent — Carbon dioxide, the fastest extinguishing agent, is a dry inert gas stored in cylinders under pressure and snuffs out in seconds. It leaves no odor, stain or damage. It is non-corrosive and a non-conductor of electricity and does not deteriorate or freeze.

"Squeez-Grip" Valve — Has a "pressure-closing seat," which is sealed against leakage by the tremendous pressure of carbon dioxide stored within its own cylinder. The valve is opened just as fast as you can close your hand as there is nothing to do but squeeze the control lever over the carrying handle. The "SQUEEZ-GRIP" type extinguisher is more efficient than a hand-wheel type as there is no "loss of gas" and no "lost motion" while maneuvering around a fire.

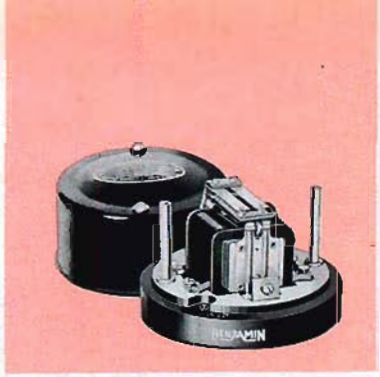
Construction — Cylinder is of high pressure steel and I.C.C. approved, with a forged brass valve. The discharge hose is of wire reinforced rubber construction with cotton braided cover and die pressed couplings. The discharge horn is a non-conductor, resistant to corrosion or moisture and is of shatterproof construction.

Maintenance — Carbon dioxide does not deteriorate. A periodic check of the extinguisher is the only maintenance required. Full and empty weights are stamped on nameplate band and valve. Recharging stations are conveniently located in all principal cities.

Approvals — C-O-TWO portable extinguishers are approved by Underwriters' Laboratories, Inc., Factory Mutuals, and comply with all Federal regulations and requirements.

Note — One wall hook is furnished with each size hand portable extinguisher. When extinguishers are placed on moving equipment a marine type bracket, or running board type, is recommended. When ordering specify Catalog Number, Type and Size.

Kellogg Code No.	Cat. No.	Size	Overall Dimensions	Shipping Weight Each
375090	PSA-2½	2½ lbs.	17¼"x8¼"x3½"	9 lbs.
375091	PSA-5	5 lbs.	16¾"x8¾"x5¼"	16½ lbs.
375095	PSH-10	10 lbs.	27½"x10½"x6⅜"	34 lbs.
375096	PSH-15	15 lbs.	31"x11"x6⅜"	42 lbs.
375097	PSH-20	20 lbs.	32¾"x11½"x7"	55 lbs.



listed by Underwriters' Laboratories, Inc.

BENJAMIN TELECODE RELAYS

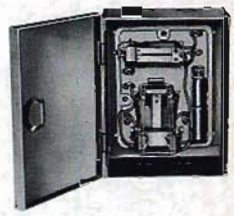
Benjamin Telecode Relays are particularly designed for operating Benjamin Industrial Howlers as loud-sounding signal extensions of the ringing circuits of standard and intercommunicating telephone circuits of all types. The use of these relays in telephone circuits in no way affects the talking, or ringing efficiency of the telephone system. Due to their low current requirements, a few milamperes, these relays are also widely used in closed-circuit systems. Telecode Relays are supplied with contacts arranged for open circuits (contact open until coil is energized); with contacts arranged for closed circuits (contacts closed until coil is energized) and with locking armatures (contacts lock when the relay is operated) giving continuous operation to signals until signal circuit is broken by a release switch.

Description	Shipping Wt. Lbs. Each	Catalog Number
FOR PANEL MOUNTING		
Less Condenser		
Open Circuit	2½	8313-P
Closed Circuit	2½	8313-C
Locking Armature	2½	8313-L
WITH PRESSED STEEL BOX		
Less Condenser		
Open Circuit	5¼	8315-P
Closed Circuit	5¼	8315-C
Locking Armature	5¼	8315-L
With Condenser		
Open Circuit	5¼	8316-P
Locking Armature	5¼	8316-L
WITH EXPLOSION PROOF BOX		
Less Condenser		
Open Circuit	10½	8319-P
Closed Circuit	10½	8319-C
Locking Armature	10½	8319-L
With Condenser		
Open Circuit	10½	8320-P
Locking Armature	10½	8320-L
WITH WATERTIGHT BOX		
Less Condenser		
Open Circuit	7½	8322-P
Cloced Circuit	7½	8322-C
Locking Armature	7½	8322-L
With Condenser		
Open Circuit	7½	8323-P
Locking Armature	7½	8323-L

SPECIFY: RESISTANCE OF PULL UP COIL AND VOLTAGE AND FREQUENCY OF LOCKING COIL WHEN ORDERING.

BENJAMIN SUPER SENSITIVE RELAY

Recommended especially for operation on ringing current of telephone lines in connection with: oil pipe lines, power transmission lines, mine shafts and all locations where it is necessary to use extension signals in connection with long communication lines.



Description	Shipping Wt. Lbs. Each	Catalog Number
With 6x8x4 Inches Steel Box	13	8330
Relay Only	8½	8331



BENJAMIN BUZZERS

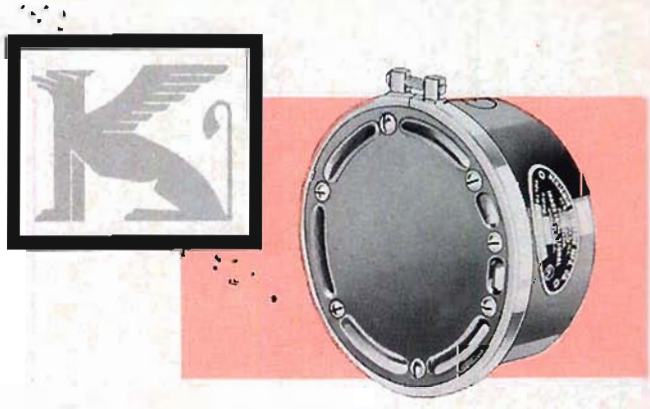
SWP — Weatherproof Heavy Duty Buzzer

SNP — Non-Weatherproof Buzzer

Benjamin Buzzers have a distinctive tone, suitable for Commercial as well as Industrial use on calling and warning systems, where competing sound is not excessive. Benjamin Buzzers have the same alternating and direct current mechanism common to all Benjamin Vibrating-Type ac and dc Howlers.

Type SWP Heavy Duty Mine Buzzer

Alternating Current (60 cycles) Voltage	Catalog Number	Direct Current Voltage	Catalog Number
12	8699-12V	6	8698-6V
24	8699-24V	115	8698-115V
115	8699-115V	230	8698-230V
230	8699-230V	250	8698-250V

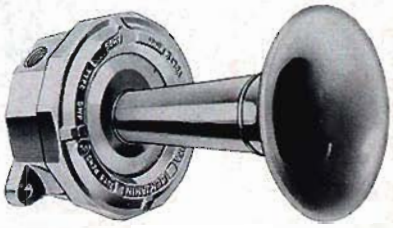


Type SNP Non-Weatherproof Office and Factory Buzzer

Alternating Current (60 cycles) Voltage	Catalog Number	Direct Current Voltage	Catalog Number
12	8797-12V	6	8796-6V
24	8797-24V	115	8796-115V
115	8797-115V	230	8796-230V
230	8797-230V	250	8796-250V

BENJAMIN Weatherproof & Non-Weatherproof Howlers
Motor Driven or Vibrator Type listed by Underwriters'

Type SWP Howler



Weatherproof Vibrator Type

The SWP Howler produces a distinctive tone that cannot be mistaken for any other signal or industrial noise. This unique tone is loud enough to cut easily through the average industrial noises. The sound producing mechanism starts and stops instantly with the current impulse. This makes it ideal for code calling, if desired.

WITH 7-INCH SINGLE BELL TYPE PROJECTOR

Alternating Current (60 cycles)		Direct Current	
Voltage	Catalog Number	Voltage	Catalog Number
12	8546-12-V	6	8526-6V
24	8546-24V	115	8526-115V
115	8546-115V	230	8526-230V

WITH DOUBLE BELL TYPE PROJECTOR

12	8590-12V	6	8599-6V
24	8590-24V	115	8599-115V
115	8590-115V	230	8599-230V

Type SNP Howler



Non-Weatherproof Vibrator Type

These signals are designed for use indoors where signal equipment will receive severe service, but location does not require weatherproof construction. Signal housings, projectors and grilles are of heavy gauge steel, finished in grey baked enamel. Entire projector assembly can be removed without touching the wiring.

WITH 7-INCH SINGLE BELL TYPE PROJECTOR

Alternating Current (60 cycles)		Direct Current	
Voltage	Catalog Number	Voltage	Catalog Number
12	8755-12V	6	8726-6V
24	8755-24V	115	8726-115V
115	8755-115V	230	8726-230V

PROJECTOR-LESS TYPE WITH GRILLE FRONT

12	8741-12V	6	8740-6V
24	8741-24V	115	8740-115V
115	8741-115V	230	8740-230V

Motor Driven Howler



Weatherproof

The most distinctive feature of this signal is its attention-compelling one-tone note. This note is different from any other type of signal or industrial noise. It is obtained through the use of a high torque motor that starts and stops with practically no lag or "coasting". Entirely weatherproof and assembled throughout with rubber gaskets to exclude moisture.

WITH 2-INCH SINGLE BELL PROJECTOR

Voltage	Catalog Number
115 ac-dc	8178-115V

WITH 5½-INCH SINGLE BELL PROJECTOR

115 ac-dc	8170-115V

WITH DOUBLE BELL PROJECTOR

115 ac-dc	8182-115V



BELLS AND BUZZERS, LUNGEN TYPE

Surface type — available in five sizes, varying in tone and volume to meet all conditions. Covers fit tightly making them bug and dust proof. They have phosphor bronze springs and double adjustment, pure, hard-drawn silver contacts. Standard finish is rustproof, polished chrome.

Standard voltage is 8-10 volts ac or 6-8 volts dc. Special voltages or resistances up to 48 volts are available — please specify exactly when ordering.

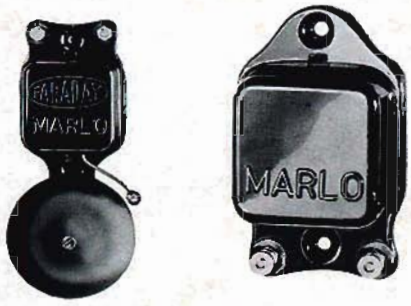


No. 15 Lungen Bells

Kellogg Code No.	Cat. No.	Size - Inches	Std. Pkg.	Weight Std. Pkg.
180001	15-0	1⅝ x 1⅛	10	1¼ lbs.
180002	15-1	2⅛ x 1⅝	10	2½ lbs.
180003	15-2	2⅝ x 1¾	10	3½ lbs.
180004	15-3	3 x 2	10	5 lbs.

No. 13 Lungen Buzzers

		Size Gong		
975001	13-1	1 in.	10	1⅞ lbs.
975002	13-1¾	1¾ in.	10	2½ lbs.
975003	13-2½	2½ in.	10	5 lbs.
975004	13-3	3 in.	10	7 lbs.



MARLO BELLS AND BUZZERS

These bells have pivoted armature and double lock spring tension adjustment. The mechanism is fully insulated from the frame. Cover encloses mechanism only — terminals are exposed. Standard finish of case and gong is black. These bells will operate on 6 to 8 volts, 60-cycle ac or 3 to 6 volts dc.

Kellogg Code No.	Catalog Number	Type	Std. Pkg.	Shpg. Wt. Std. Pkg.
975020	571	2½" Bell	10	6¾ lbs.
975021	572	3" Bell	10	7¾ lbs.
975022	573	4" Bell	10	9¾ lbs.
180020	570	Buzzer	10	5 lbs.



C-R SERVICE CONNECTORS

For connecting copper, or bronze or copperweld drop or service wires to galvanized iron or copper line wires, or for multiple service and party-line connections, pole jumper wires, ground wire connections, etc. The C-R Tinned Service Connector has the head, slot and one washer heavily coated with tin which prevents electrolytic and corrosive action between the zinc coating of the iron wire and the copper wire and should always be used on galvanized iron wire.

Made in two types, tinned for galvanized iron to copper wire connections and plain brass for copper to copper wire connections. When ordering state whether tinned or plain brass connectors are wanted.

Furnished in five sizes:

Kellogg Code No. 285001 — No. 1. Made in nickel finish brass only. Used for splicing drop wire, multiple taps on drop wire, connecting house wire to drop wire, etc. ¼-inch brass bolt with ⅜-inch hexagon head and nut. Slotted to receive No. 14 B&S gage, No. 17 B&S gage and smaller wires.

Kellogg Code No. 285002 — No. 2. ⅜-inch brass bolt with 7/16-inch hexagon head and nut slotted to receive No. 12 B&S gage, No. 14 N.B.S. gage and No. 14 B.W. gage wires.

Kellogg Code No. 285003 — No. 2-T. Same as No. 2 except tinned.

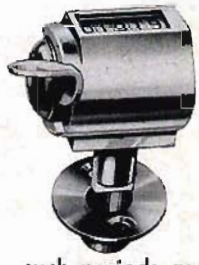
Kellogg Code No. 285006 — No. 3. ⅜-inch brass bolt with ⅝-inch hexagon head and nut slotted to receive No. 10 B&S gage, No. 12 N.B.S. gage and No. 12 B.W. gage wires.

Kellogg Code No. 285007 — No. 3-T. Same as No. 3 except tinned.

Kellogg Code No. 285004 — No. 3A. ⅜-inch brass bolt with ½-inch hexagon head and nut, same capacity as No. 3 but lighter construction.

Kellogg Code No. 285005 — No. 3AT. Same as No. 3-A except tinned.

Kellogg Code No. 285008 — No. 4. 7/16-inch brass bolt with ⅝-inch hexagon head and nut, diagonally slotted to receive No. 8 to 10 B&S gage, No. 10 to 12 B.W. gage wires. A phosphor bronze spring lock washer has been added to insure against loosening of the nut in service. Nut and washers are not removed from bolt when using this connector.



STRAIGHT COUNTER

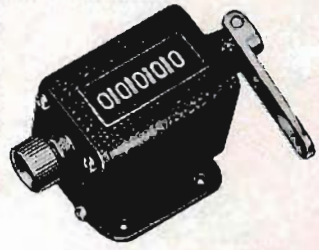
Designed to record incoming or outgoing telephone calls but can be used for many purposes.

The socket plate is intended to go flush into the keyboard slightly to the right of the operator and to remain there permanently. The counter can be then inserted and removed at will. At such periods as it is decided to make a count, counter is placed in socket plate in front of each operator and upon receipt of each call the operator presses the lever. This counter registers up to 100,000.

Kellogg Code No.	Cat. No.	Size	Weight
300004	A-107815	1⅜x1x1⅜ in.	5 oz.

SET BACK RATCHET COUNTER

This counter is suitable where a hand operated set back counter is desired, and can be furnished with the drive shaft projecting either on right or left hand side. Furnished with 3, 4, or 5 figure wheels and thumb lever.



Kellogg Code No.	Cat. No.	Size	Weight
300002	1122	2⅜x1½x1¼ in.	½ lb.

HAND COUNTER



A Hand Tally Counter, useful for inventory, counting poles, calls, traffic work, etc. Quickly set back to zero by one turn of the knob. Can be operated with either hand. Has rounded corners so as not to irritate the hand of the user, or wear the pocket when carrying it. Counts up to 10,000.

Kellogg Code No.	Cat. No.	Size	Weight
300001	A-1023	2x1½x2 inches	½ lb.

TEMPEROMETER, DILLON

Kellogg Code No.	Description	Diameter of Dial	Length Overall	Weight Each
430010	Dillon Temperometer	2¼"	8¾"	1 lb.

DILLON TRACTION TYPE DYNAMOMETER



This instrument was originally designed for the express purpose of pulling up wire and strand to correct tension. Eliminates guesswork of linemen's rule-of-thumb methods of adjusting tension.

Reads directly in pounds. Maximum hand records tension. Size: 8¼ in. long, 6¼ in. tall, and 3 in. thick. Weight: 5 lbs., 10 oz. Furnished in the following capacities: 500; 1000; 2500; 3500; 5000; 7500; 10,000; 15,000, and 20,000 pounds.



STEEL MANHOLE LADDER

This sturdy Manhole Ladder is made of galvanized steel. The side bars are 1½"x⅜"x ⅜" open hearth channel and rungs of ⅝" round steel. The rungs are completely welded to the side bars, both inside and out. This assures far more strength at these points than the customary turned down or threaded joints. Rungs are spaced on 14" centers with an inside width of 12" between side bars.

Ladders in other lengths are available for immediate shipment.

Catalog Number	Standard Ladder Length	Weight Each
380	8 ft.	32 lbs.

FIBRE CLEATS



No. 1 No. 2

Kellogg Code No.	Catalog Number	Type	Size
240001	1	Single Groove Fibre Cleats	5/16"
240002	2	Two Groove Fibre Cleats	⅛ and ⅛"

ANCHORING INDUSTRIES

Art Anchors are made of Tenite and pulverized aluminum, making them practically indestructible in the face of heat, cold, water, and other climatic conditions.

In hollow walls the tail of the Art Anchor opens, to form a modified toggle bolt effect. In solid walls, Art Anchors work on the expansion bolt principle. The material is soft and cold-flowing, therefore, forming itself into the voids of the masonry. They are made in three sizes which embrace screw sizes from No. 6 to No. 18, and various sizes of nails as well.

Art Anchors have unbelievable holding power in plaster.

Kellogg Code No.	Anchor Size	Hole Size	Screw Size Number	Length	Packed Per Box
915095	No. 10	3/16"	6-7-8-9-10	¾"	100
915096	No. 12	¼"	10-12-14	1"	100
915097	No. 16	5/16"	14-16-18	1½"	50

PROTEK-SORB DESICCANT

A granular material, similar in appearance to granulated sugar. It is chemically inert and non-corrosive. It will not dust, cake, powder nor liquefy when used. Even when completely saturated, it looks and feels perfectly dry — has exceptionally high dielectric constant. The moisture-absorbing capacity of Protek-Sorb Desiccant is more than twice that of other desiccating materials of non-deliquescent type. The action of Protek-Sorb Desiccant is physical — not chemical — moisture removal is accomplished by the physical phenomena of surface absorption and capillarity, best understood when it is pointed out that every cubic inch of Protek-Sorb has a pore surface of 7,500,000 square inches.

Supplied in two sizes of moisture-proof cans containing pre-determined quantities for economy and efficiency.

Kellogg Code No.		
330010	160 grams.	12 cans per case.
330011	650 grams.	12 cans per case.

Protek-Sorb Desiccant Grade 11 meets Specification AT-7014, AT&T Company Standard.



EMBOSSED ALUMINUM TAG

Easy to attach, permanent, embossed aluminum tags offer the simplest, cheapest and most practical identification of poles and other properties. Letter is sharply and clearly embossed on pure aluminum strip. Furnished with 7/16", 5/8", 13/16", or 1⅛" letters, plate width from ¾" to 2¼".

To determine length of tag needed for any specified lettering, multiply total number of letters by length of letter selected from above size range and add 1⅛" to total for end spacing. Periods or spaces, when required, equal ½ of space required for a letter.

ALUMINUM POLE LETTERS AND FIGURES

Standard embossed figures and letters of 99% pure aluminum, will not rust, tarnish or corrode. Plain smooth finish will not catch or hold dirt. Standard packing, 100 per carton.

Size (Inches)	Type
½	Roman Letter & Figures
¾	Roman Letters & Figures
1	Roman Letters & Figures
1½	Roman Letters & Figures
1½	Gothic Figures Only
2	Roman Letters & Figures
3	Roman Letters & Figures
4	Roman Letters & Figures
6	Roman Letters & Figures





Cramer HI models





DE LUXE MODEL 4D-22

Widespread arc welded steel base with glides or ball-bearing casters • Independently-adjustable 19" diameter footring • Saddle type seats, 16½" by 15" deep, with 2½" thickness of genuine molded foam latex

Cushioned 13x8" back rest adjusts up and down, and forward and back; seat height adjusts from 22" to 31".

STANDARD MODEL 4E-22

Widespread arc welded steel base with glides or ball-bearing casters • Independently-adjustable 19" diameter footring • Regular seat, 17½" by 14½" deep, with 2" thickness of bonded foam latex cushioning.

Differs from de luxe model only in seat shape, cushioning material and single instead of double-plate 13x8" cushioned back rest.

ECONOMY MODEL 6E-22

Arc welded tubular steel base with glides or ball-bearing casters • Fixed footring, on choice of two base heights • Seat 17½" by 14½" deep, with 2" cushion of bonded foam latex

Seat height adjusts from 21½" to 28½"; single-plate 13x8" cushioned back rest adjusts up and down, forward and back.

OPTIONAL on Deluxe and Standard models, forward-tilt seat and Hite-Master automatic seat and footring height adjustment; optional on all models, fold-away back and ball-bearing casters instead of glides. All upholstery covers removable and replaceable. Available in a variety of fabrics and colors.

COFFING FLAG AND FLAG HOLDER

The Coffing Flag Holder eliminates the need of nailing the flag staff to the pole and prevents split flag staffs. It is easier and faster to attach. The holder will fit any size pole. Chain wraps around the pole and fastens to the main body of the clamp. A strong coil spring assures tension on the chain. The flag is 12" x 16" and is made of 6 oz. red Army Duck canvas. The staff is 1" x 18" hardwood.



Kellogg Code No.	Cat. No.	Description	Weight
390001	1110	Danger Flag Only	1 lb.
390002	1111	Danger Flag, Complete with Holder	3 lbs.

PLASTIC ANCHOR KIT

Kellogg Code No.	Cat. No.	Packaging	Size	Weight
555003	K-3	In transparent plastic boxes	8½x4½x1½	1 lb.

DESCRIPTION — 475 Assorted Anchors; 200 No. 8 x 1"; 160 No. 10 x 1"; 115 No. 12 x 1"; 3 Hi-Twist Masonry Drills.

Torches, Gas
"PREST-O-LITE" EQUIPMENT

The use of "Prest-O-Lite" Gas as a fuel saves delays and interruptions. It furnishes an intense heat in a concentrated, easily controlled flame. No preheating, pumping-up, priming, or generating required. Just turn on the gas and light the torch. This together with the lightness and balance of the torches, makes possible neater and stronger connections that are solid through and through. Experienced linemen require no special training to use "Prest-O-Lite" equipment. Gas tanks are ordered separately.

LINEMAN'S OUTFIT

Developed especially for telephone use. Includes a soldering copper and open-flame torch stem with an interchangeable handle, also a handle for carrying an MC Tank. It will take care of all brazing, splicing, and similar operations on wire, cable, transformers, switchboards, generators, and lighting fixtures. The torch handle has two interchangeable heads so that two distinct torches may be assembled — one with an open-flame stem, the other with a soldering iron.

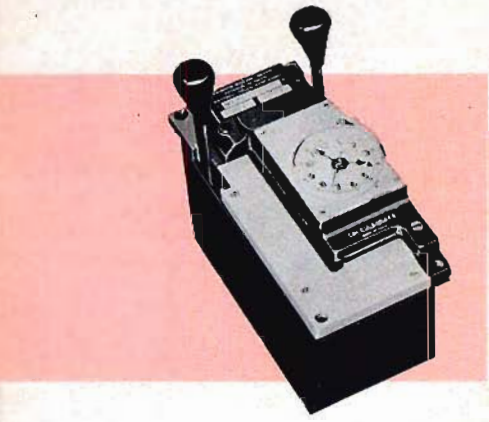
This Lineman's Outfit weighs 4 pounds and consists of the following, any of which may be ordered separately. (Gas tank is not included.) Shipping weight of the outfit is 4½ lbs.

Cat. No.	Description
02X84	No. 402 Torch Handle
10X38	No. 8 Soldering Iron Stem
10X23	No. 3 Torch Stem
3321-A	MC Tank Handle
19X25	Union for MC Tank
10Y85	6-ft., ⅜-in. Fitted Hose Assembly

CALCULAGRAPHS

Round type calculagraphs can be furnished in either the Type A or Type C case. If the calculagraph is to be mounted on a pedestal the Type A case should be specified. Whenever the calculagraph is to be sunk in a switchboard shelf the Type C case should be ordered. The Type C case is 8¾ inches in diameter and 4 inches deep from the bottom of the flange. Specify voltage and frequency when ordering.

MODEL 33 — ELECTRIC



Records elapsed time in minutes and seconds for maximum periods of 30 minutes and time of day in hours and minutes. The time of day record is printed with a 24-hour dial thus eliminating the A.M. and P.M. jumps at noon and midnight. A sweep second hand enables the operators to tell accurately when a call is approaching the initial period by glancing at the visible dial.

Toll tickets up to 2¼ inches in width may be used. Equipped with a self-starting synchronous motor designed to operate on 20 volts, 60, 50 or 25 cycles or on 115 volts, 60 or 50 cycles regulated ac. Size is 7½ inches long by 3⅜ inches wide by 3¾ inches deep.

This model may be placed in the large round opening made in a switchboard for Nos. 6 or 30 by using an adapter plate or may be installed in place of four Type A keys. It may be mounted on a pedestal by using a pedestal adapter.

Cat. No.	Description	Case Style	Mounting	Weight Each
33-C	Model 33	C	Flush with Keyshelf	11½ lbs.

MODEL 30 — ELECTRIC



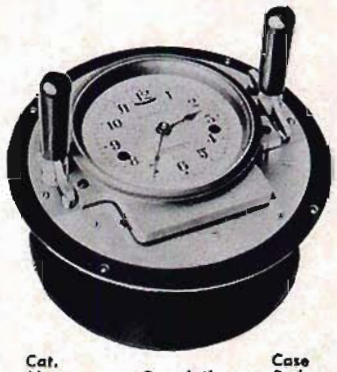
Records elapsed time in minutes and seconds for maximum periods of 30 minutes and time of day in hours and minutes. Also available with a 24-hour time of day imprint, eliminating the A.M. and P.M. jump at noon and midnight. Toll tickets up to 2¼ inches in width may be used.

Equipped with self-starting synchronous motor for 20 volts, 60, 50, or 25 cycles or for 115 volts, 60 or 50 cycles regulated ac.

Models 30-XC and 30-XA are the same as Models 30-C and 30-A except the X models have a date printing device.

Cat. No.	Description	Case Style	Mounting	Weight Each
30-C	Model 30	C	Flush with keyshelf	20 lbs.
30-A	Model 30	A	Portable less pedestal	20 lbs.
30-XC	Model 30-X	C	Flush with keyshelf	20 lbs.
30-XA	Model 30-X	A	Portable less pedestal	20 lbs.

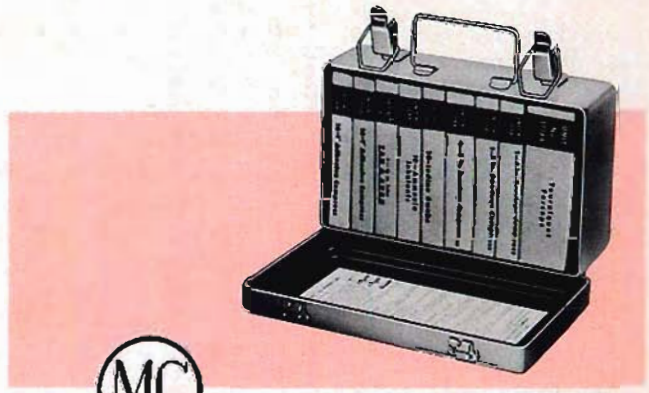
MODEL 6 — SPRING DRIVE



Records elapsed time in minutes and quarter minutes with 5 second indicator after each minute. Maximum period is one hour. At the same time records time of day in hours and minutes.

Model 6-XC and 6-XA are the same as Models 6-C and 6-A except the X models have a date printing device.

Cat. No.	Description	Case Style	Mounting	Weight Each
6-C	Model 6	C	Flush with keyshelf	20 lbs.
6-A	Model 6	A	Portable less pedestal	20 lbs.
6-XC	Model 6-X	C	Flush with keyshelf	20 lbs.
6-XA	Model 6-X	A	Portable less pedestal	20 lbs.



MSCO

Flexible Unit Type FIRST AID KIT

A compact 10-unit kit that provides effective emergency first aid to field workers. Contains standardized unit packages that conform with the MSco Flexible Unit System for simplified inventory maintenance and restocking of depleted units on an individual basis. Each unit package contains one or more individual treatments. Each dressing is complete in itself, containing just sufficient material for treating the injury and thus eliminating waste. The kit itself is a sturdy, heavy-duty type of 20-gauge steel. Dimensions: 4¾" x 7⅞" x 2¾". Weatherproof and dustproof to protect contents from deterioration and damage. New type round corners for extra safety. Attractive hard finish inside and out — baked-on automotive type enamel. Includes quick guide to first aid on inside cover. Contents as listed below.

TYPE OF UNIT		QUANTITY
100AW	— 1" Adhesive Bandage (16 per unit)	2
101A	— Tan-A-Burn (Six ⅛ oz. tubes)	1
104A	— Ammonia Inhalants (10 per unit)	1
105A	— Iodine Swabs (10 per unit)	1
108A	— 2" Bandage Compress (4 per unit)	2
109A	— 4" Bandage Compress (1 per unit)	1
111AA	— Tourniquet and Forceps	1

Kellogg Code No.	Catalog Number
555006	500-A

MUELLER TEST CLIPS



No. 27 Clip. Steel, cadmium plated. A high grade clip for general telephone test work. Teeth mesh on all three sides of jaw. Length 2 7/16". Jaws open ½".



No. 60CHS. Same as No. 60CS except red or black insulating sleeves on barrel. Convenient for distinguishing leads. Length 2 11/32". Jaws open 5/16".



No. 50-C Needle Clip. Solid bronze, brass screw connection. Sharp needle in one jaw pierces insulation of wire to make immediate electrical contact without stripping wire. Length 2¼", jaws open ½".



No. 60CS. Conventional alligator clip, solid copper, brass screw connection. Slim jaws with fine meshing teeth. Strong spring gives hard bite. Length 2". Jaws open 5/16".



No. 85 Crocodile Clip. Steel, cadmium plated. Nesting teeth give solid contact along entire length of jaws. Length 2⅛". Jaws open 5/16".



No. 45 Pee-Wee Clip. Steel, cadmium plated. A very small clip for general test purposes. Meshing teeth and interlocking necks. Length 1½". Jaws open 5/16".



No. 30-C. Newl Miniaturized alligator clip. Solid copper. Ideal for test work in close quarters. Only 1 1/16" long. Jaws open 3/16". Shown in No. 32 skin-tight flexible insulator, red or black.

Kellogg Code No.	Cat. No.	Description	Wt./100
255127	30-C	Minigator clip	¼ lb.
530085	32	Insulator for #30-C clip	¼ lb.
255109	60-CS	Alligator-clip	1 lb.
530086	62	Insulator for #60-CS clip	1 lb.
255108	60CHS	Alligator clip	1½ lbs.
255105	45	Pee-Wee clip	1¼ lbs.
530081	47	Insulator for #45 clip	1 lb.
255110	85	Crocodile clip	1½ lbs.
530083	87	Insulator for #85 clip	1 lb.
255104	27	Test clip	
530084	29	Insulator for #27 clip	4 lbs.
255107	50-C	Needle clip	2½ lbs.
530082	49	Insulator for #50-C clip	2 lbs.



SNUB-R-GRIP DROP WIRE GRIP

Grip is coated to give additional holding power particularly effective on modern synthetic drop wire insulation where a non-slip tie must be maintained without damage to insulation.

The Snub-R-Grip is equally efficient on twisted pair, parallel, or synthetic-jacketed drop wire. Where twisted pair is used, it is not necessary to parallel conductors to install in the grip.

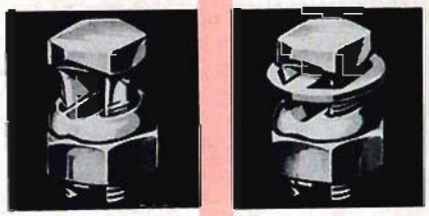
Kellogg Code No.	Cat. No.	Material	Length	Approx. Shpg Wt. per 100
445010	6715	Copper	8⅝"	12 Pounds
445011	6715-1	Steel	8⅝"	12 Pounds



LAY-CIT CABLE GRIP

The laced design of the grip increases its holding power with increase in conductor tension. It also permits placing the grip on continuous runs. Slack may be taken up or released by adjusting the lacing.

Kellogg Code No.	Cat. No.	Material	Maximum Cable Dia.	Minimum Cable Dia.	Weight per 100
445012	19234	Aluminum	⅝"	⅜"	19 lbs.
445013	19235	Aluminum	1⅛"	⅝"	25 lbs.



KEARNEY SOLDERLESS CON-NEC-TITES

Compact, electrically and mechanically efficient connections are easily made with Kearney Con-Nec-Tites. Galvanic action is eliminated in copper-to-iron connections by the use of plated separating washers.

Kellogg Code No.	Maximum Wire Size	Cat. No.	Type of Connection	Shpg. Wt. per 100
285014	12 NBS - 10 B&S	86-7	Copper to Copper	2 lbs.
285020	12 NBS - 10 B&S	986-7	Copper to Copper	2 lbs.
285015	10 NBS - 8 B&S	89-2	Copper to Copper	3 lbs.
285021	10 NBS - 8 B&S	989-2	Copper to Copper	3 lbs.
285023	12BWG	2451-7	Iron to Iron	2 lbs.
285022	12BWG	2449-7	Iron to Iron	2 lbs.
285025	12 BWG-12 NBS	5694-7	Iron to Copper	2 lbs.

DROP WIRE CLIPS



This reliable clip can be used either with parallel or twisted pair drop wire, where intermediate fastenings are desired on straight line drop extensions. They are carefully designed to grip drop wire tightly without damaging the wire.

Kellogg Code No.	Catalog Number	Description	Weight per 100
255015	11452	Drop Wire Clip	5 lbs.

C. & L. No. 32-A BLOW TORCH



Designed for all around service, either indoors or outdoors. For gasoline or kerosene. It produces an intensely hot blue blast 7 inches long which may be regulated for lighter work. The gas orifice is automatically cleaned out but never enlarged by the control needle cleaner tip.

Regularly supplied for gasoline but can be furnished for kerosene if specified when ordering.

Catalog Number	Capacity	Size, Overall	Weight Each
32-A	1 quart	10½"	5 lbs.

C. & L. No. 44-A FIRE POT



The burner of the No. 44-A fire pot is of the coil type. The coils can be replaced when plugged with carbon. In addition to the regular shut-off valve this fire pot has the "Coiltrol" flame regulating valve. By the use of this valve a pot of metal can be quickly melted and the flame turned down, saving loss of metal and use of fuel.

Handles a full 6-inch metal pot.

The tank is seamless, drawn from heavy steel and thickly coated with tin inside and out to prevent corrosion. All fittings are interlocking. A large size pump produces air pressure quickly. Supplied with 6½-inch diameter top shield. Regularly supplied for gasoline but can be furnished for kerosene if specified when ordering.

Catalog Number	Description	Capacity	Weight Each
44-A	Fire Pot	1 gallon	14 lbs.

C. & L. No. 75 FIRE POT



A heavy duty fire pot with a 10¼-inch top shield to take a large metal pot.

Regularly supplied for gasoline but can be furnished for kerosene if specified when ordering. Has quickly detachable burner.

Catalog Number	Description	Capacity	Weight Each
75	Fire Pot	1 Gallon	22½ lbs.

No. 30X06 — 4-IN-1 OUTFIT



The 4-in-1 Outfit is light, compact, and easy to handle anywhere. Largest torch is only 13 in. long, and weighs less than 12 ounces. Stems lock on torch handle in any convenient working position. Entire outfit, in durable plastic roll, takes up little room, weighs less than 3½ pounds. Standard 4-in-1 Outfit includes the following, any of which may be ordered separately.

Cat. No.	Description
02X84	No. 402 Torch Handle
10X21	No. 1 Superfine Torch Stem
10X23	No. 3 Light Torch Stem
10X24	No. 4 Medium Torch Stem
10X25	No. 5 Heavy Torch Stem
19X24	B Tank Union
19X25	MC Tank Union
10Y85	6-ft., 3/16-in. Fitted Hose Assembly
72Z60	Roll-Up Plastic Carrying Case

A precision model of this outfit is available as Part No. No. 30X01 (for use with B Tank) or Part No. 30X02 (for use with MC Tank). The Precision Model Outfit includes a pressure regulator in place of the B and MC Tank Unions; also a No. 401 Torch Handle with needle valve control in place of the No. 402 straight handle.



No. 30X35 TELEPHONE OUTFIT

A handy kit for line crews, installers, maintenance men, and others engaged in similar work. It is lightweight, streamlined, convenient, and easy to handle in any location. The lineman can take it up the pole with him as a self-contained unit. Ideal for soldering lugs, ground clamps, bridle wires, and transformer leads; for smoothing wiped cable sleeves; for soldering wire splices; for heating impregnating wax; and for many other jobs.

The Telephone Outfit consists of the following, any of which may be ordered separately. (Tank is not included.) Shipping weight of the outfit is 4 pounds.

Cat. No.	Description
02X84	No. 402 Torch Handle
10X23	No. 3 Light Torch Stem
04X37	R-411MC Regulator (fits MC Tank)
10Y85	6-ft., 3/16-in. Fitted Hose Assembly



"PREST-O-LITE" FITTED HOSE ASSEMBLIES

Hose Assemblies, complete with standard fittings that attach directly to all current "Prest-O-Lite" regulators and torch handles, are available in 6-, 12½-, and 25-ft. lengths. Lightweight, flexible, durable, tough; in 3/16-in. diameter only. 6-ft. length — No. 10Y85; 12½-ft. length — No. 10Y87; 25-ft. length — No. 11Y11.

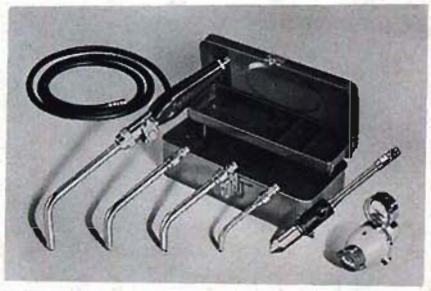
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"PREST-O-LITE" GAS TANKS

These small steel cylinders are packed full with a porous material that is saturated with a chemical that dissolves many times its own volume of acetylene. When pressure is released by opening the key-operated tank valve, gas comes out of solution, and the tank delivers pure, dry acetylene ready for instant use. "Prest-O-Lite" Tanks are sold outright at initial prices that include a full charge of acetylene and valve wrench. When empty, they are exchanged on a "one-for-one" basis for "Prest-O-Lite" Tanks of the same style, at prices that charge for the gas contents only.

Style	Rated Capacity	Length	Diameter	Weight Each
MC	10 cu. ft.	15 in.	4 in.	9½ lbs.
B	40 cu. ft.	25 in.	6¼ in.	32½ lbs.

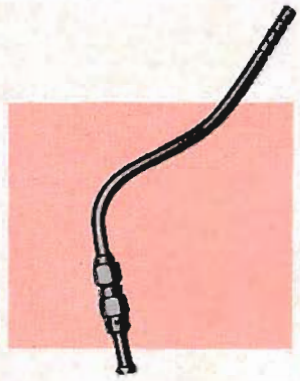


No. 30X01 — PRECISION MODEL 5-IN-1 OUTFIT

A complete, wide-range outfit for all-purpose soldering, heating, and brazing. Interchangeable stems combine instantly with a common torch handle to make up five distinct outfits, providing the proper flame size and exactly the right amount of heat for best results on each job. Soldering iron handles work where open flame is not practical. Fully adjustable regulator operates automatically to provide steady gas pressure, regardless of how much gas is in tank. "Gas miser" pilot flame control saves gas and time on intermittent work. Stems lock on torch handle without wrench in any working position desired. Furnished with sturdy enameled steel carrying case.

Precision 5-in-1 Outfit includes the following, any of which may be ordered separately.

Cat. No.	Description
02X83	No. 401 Precision Torch Handle
10X21	No. 1 Superfine Torch Stem
10X23	No. 3 Light Torch Stem
10X24	Meium Torch Stem No. 4
10X25	No. 5 Heavy Torch Stem
10X38	No. 8 Soldering Iron Stem with Pointed Copper
04X36	R-411B Regulator (fits B Tank)
10Y85	6-ft., 3/16-in. Fitted Hose Assembly
72Z59	Enameled Steel Carrying Case



LIGHT SOLDERING TORCHES

These torches are unusually handy and easy to use around the shop that has only an occasional light heating or soldering job to do. They are without handles, weigh but a few ounces, and measure only 8 in. long. One tip size fits interchangeably on both torches.

The two models available differ only in the way in which they are connected for use. Model 10X31 has a threaded inlet that fits the standard 3/16-in. Fitted Hose Assembly. The 6101-A Torch has a gland and captive nut that connects directly to the valve of the MC Tank. Both torches furnished with No. 6014-L Torch Tip, which is also available separately.



FRICTION LIGHTER

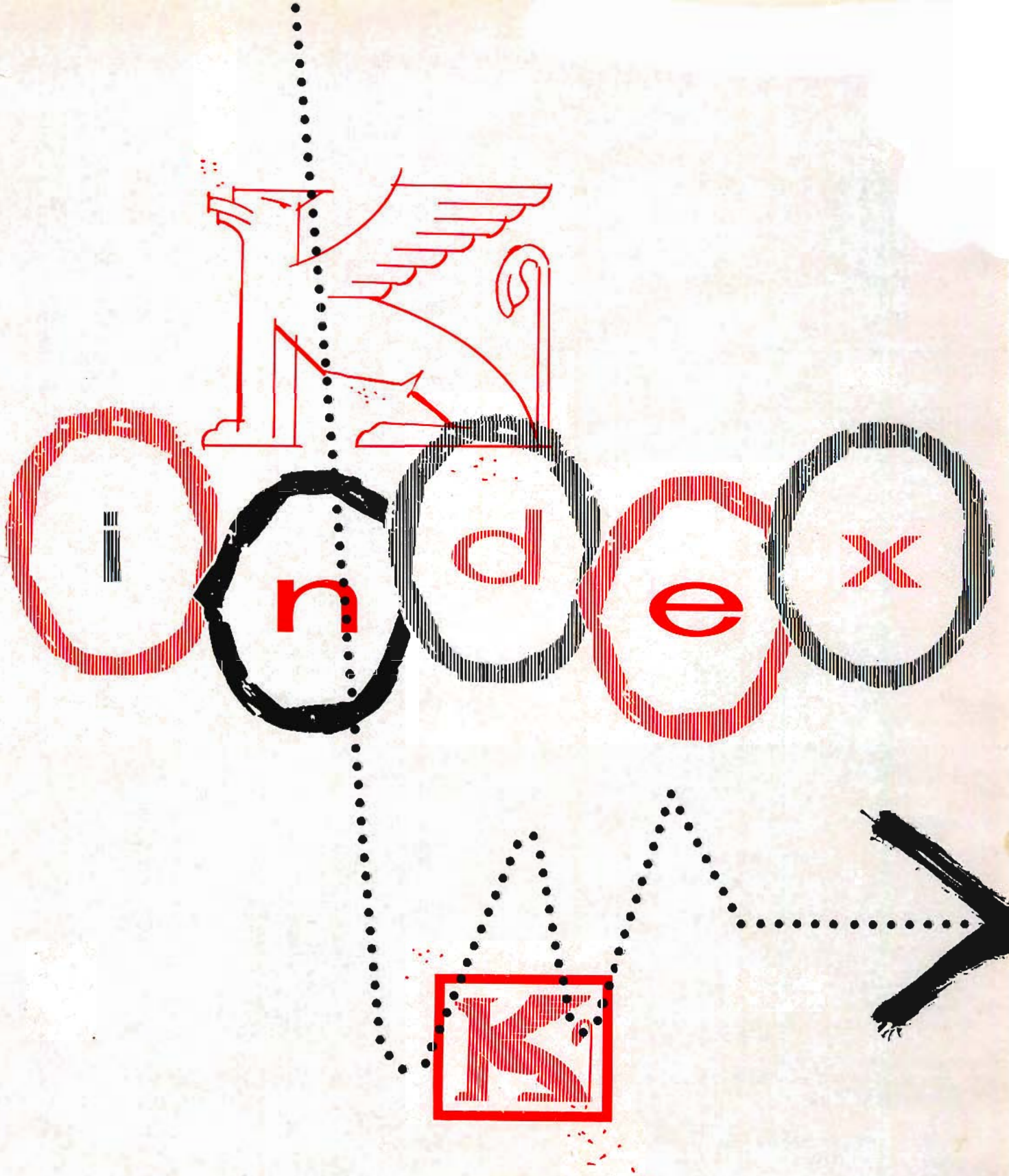
For maximum safety and convenience, use a friction lighter to ignite the gas at the tip of your torch. This model has over 1 sq. in. of specially hardened, round file surface. Flint strikes the file at an angle, producing an unusually fat spark. The file turns automatically and does not fill up. Renewal flints are quickly and easily replaced.

Cat. No.	Description
05Y02	Friction Lighter
05Y04	Renewal Tips, pkg. of 6



"PREST-O-LITE" REGULATORS

The "Prest-O-Lite" R-411 Acetylene Regulator is fully adjustable and can be used with any "Prest-O-Lite" torch or appliance. Once set, the R-411 automatically delivers acetylene at any selected working pressure from 1 to 13 lbs. per sq. in., regardless of the amount of gas in the acetylene tank. The R-411 eliminated the need for frequent adjustment of working pressure at the tank valve and saves gas by preventing use of excessive pressures. Available in two models: R-411B Regulator No. 04X36 fits "Prest-O-Lite" B Tank; R-411MC Regulator No. 04X37 fits "Prest-O-Lite" MC Tank.


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