



KELLOGG

**SWITCHBOARDS
TELEPHONES
SUPPLIES**

**CATALOG
N^o 100**

CHICAGO U.S.A.

Kellogg

**SWITCHBOARDS,
TELEPHONES,
APPARATUS,
and SUPPLIES**

**Catalog
No. 100**

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KELLOGG SWITCHBOARD AND SUPPLY COMPANY

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San Francisco, Calif.*

Switchboard Section

CUSTOMER INFORMATION

Guarantee

Through the years Kellogg has established with its customers the reputation of selling goods that give a full measure of satisfaction. Further, all goods properly used are fully guaranteed for one year against any defect in material or workmanship and are subject to replacement.

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

Terms

Terms are 30 days net from date of invoice except for some items of construction material which carry a discount for cash within ten days from date of invoice. These terms are shown on invoices.

Charge accounts are invited. New customers who may not be rated by the commercial agencies can help assure prompt service by sending credit information with initial orders. Sight draft or C.O.D. orders receive the same immediate attention as those covered by established charge accounts.

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 must be marked "Confirming" to avoid the possibility of duplication.

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 please specify the routing. In the absence of instructions we shall use our best judgment in selecting 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 without delay to the transportation company handling the shipment. We 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 us as we insure this material and make all adjustments.

Returning Goods

Please notify us 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 and Parcel Post Insurance

Unless otherwise directed, we shall insure against non-delivery all shipments made by steamer or parcel post. A nominal charge will be made to cover the cost of this service.

MASTERBUILT MAGNETO SWITCHBOARDS

SINCE 1897, the Kellogg organization has sponsored the cause of independent telephony — supplying everything it needs to render good telephone service and constantly pioneering new developments for the advancement of the industry. It is Kellogg's policy and constant desire to co-operate closely with every telephone company, so that all may have the full advantage of its tremendous research facilities, extensive equipment, and a wealth of engineering skill and experience.

It is an accepted fact that Kellogg has contributed greatly to the development and progress made by the telephone industry. That the telephone business is profitable, is also largely due to work in designing and building the proper equipment for "low cost, good profit" operation. Today as in the past, Kellogg is continuing to keep faith with the industry, by unceasing research, perfection of new equipment, and in numerous other ways helping the industry reduce costs and improve telephone service.

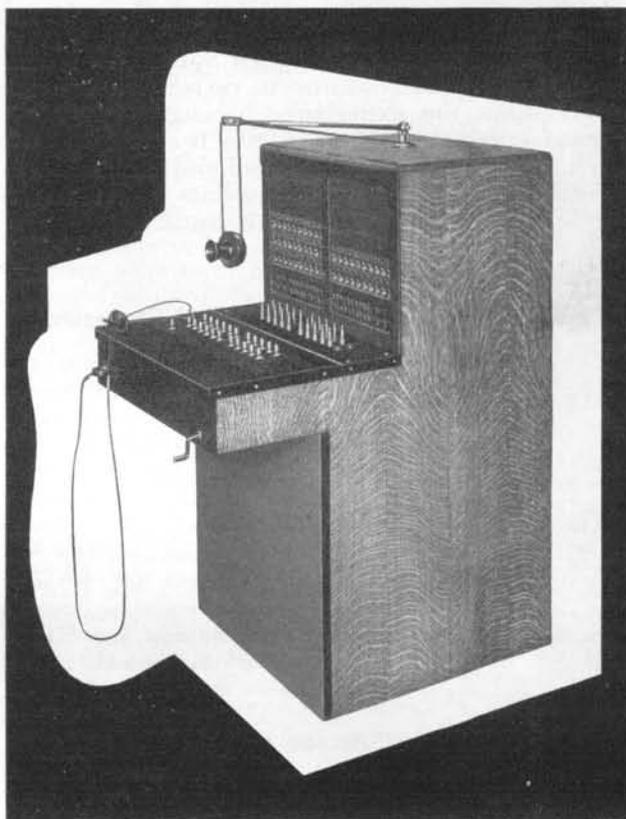
Where Magneto Switchboards are Used

In the early days, local battery or magneto systems were the only type known, and even now magneto most efficiently fills the requirements of the small exchange serving widely scattered subscribers.

This is because: (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 overcome obstacles of distance and outside plant, before which any other type of apparatus would fail.

The proper magneto switchboard must be such that it will give satisfactory service to patrons. Its maintenance expense must be extremely low. Replacements must be negligible. The apparatus itself must be so simple that it can be handled perfectly by persons of very limited training and experience.

Kellogg Masterbuilt Magneto Switchboards meet these requirements. How well this is fulfilled is proven by the



thousands of Kellogg magneto switchboards in service in all the civilized countries of the world. These boards are performing faithfully in the service of departments of the United States government, foreign governments, railroads, oil and gas companies, besides the majority of all magneto exchanges in this country.

The underlying quality in material, design and workmanship of Kellogg switchboards is responsible for the service records established by Kellogg owners everywhere.

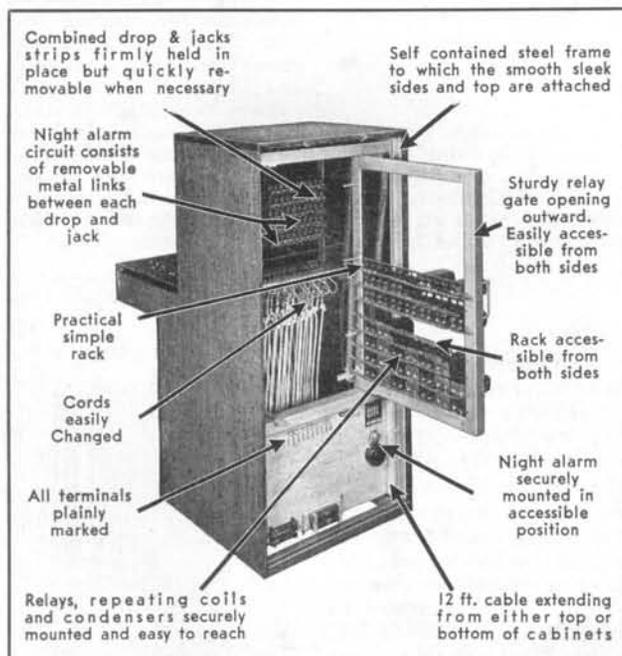
How to Select a Magneto Switchboard

The selection of the proper magneto switchboard depends upon the number of subscribers to be served, the type of line construction, the length of the lines, the number of telephones on each line, and the probability of station growth. These facts make it easy to select the proper size switchboard with sufficient drops and jacks, and cord circuit capacity to adequately care for the needs of the community.

The fact that a magneto switchboard may serve an exchange area for many years makes it necessary to select the equipment on a basis of performance with long service life. Too, the equipment should be flexible enough to meet service demands tomorrow as well as today.

Kellogg Masterbuilt Switchboards are designed specifically to meet these conditions as well as for ease of maintenance. This is achieved by simplicity of design and accessibility of parts. The design and quality of materials used in the manufacture of Kellogg magneto switchboards are responsible for keeping transmission and signalling losses at an absolute minimum. The result is sure ringing and sharp, crisp transmission and reception which gives "telephone satisfaction" to the users.

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.



Accessibility, compactness and modern, efficient construction are shown in this illustration of the Masterbuilt Magneto Switchboard.

MASTERBUILT MAGNETO SWITCHBOARDS

Construction Features

How well your switchboard will operate and how long it will continue to do so depends entirely upon the experience in engineering and manufacturing which goes into it . . . how well each individual part is designed and the materials from which it is made . . . and how well the parts work together to give smooth, satisfactory serv-

ice. All are important . . . from the construction of the frame to the installation of the last cord weight . . . all are vital to the perfect operation of the board. Kellogg, with far sighted engineering and efficient manufacturing methods, developed over a period of many years builds this best performance into all Masterbuilt switchboards.

All-Steel Framework

This modern Kellogg Masterbuilt Switchboard is built upon a rigid, all-steel framework, 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.

convenience. Even the cam key handles have gone modern with color. Miscellaneous keys are red and white and contrast beautifully with the black mountings.

The continual scraping of plugs does not mar the hard finish around the jacks. Also, the problem of large holes being constantly worn around the plug seats is now solved. Every plug space in this switchboard has a plug well bushing to take up this wear . . . and these bushings are replaceable.

The Swinging Gate

Here is another construction feature, comparatively new to magneto users. It is the swinging gate which carries the cord circuit repeating coils and condensers; and in the case of lamp supervision switchboards, the supervisory relays. Below this steel gate is a maple panel which mounts the operator's telephone circuit and night alarm equipment, terminals for ringing current, battery supply, telephone switching circuits; and in the case of lamp supervision switchboards,

the fuses. This panel is conveniently located for easy access. Just swing the gate open and there are the line equipment, cords and both sides of the gate right before you. Nothing obstructs the wiring. Everything is exposed and easy to get at. Inspecting the switchboard is now a pleasure . . . and it's easy to keep the inside clean.

Cabinet Design

You can see that the beautiful hand-rubbed medium golden oak side panels and top are simply attached to the steel framework. Unlike the old fashioned switchboard with its overhanging top, fancy mouldings and panels and extended overlapping sides, this modern switchboard has a smooth, beveled top and sleek, flush sides. The kickboard is completely covered with a solid color battleship linoleum panel.

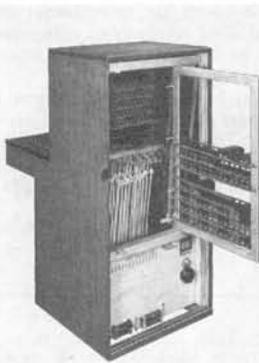
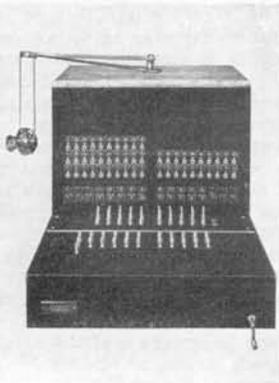
Bakelite Shelves and Panels

Rich, black Bakelite is used for keyshelf and face equipment. Bakelite is used in these switchboards because of its unusual wearing qualities and its permanent lustre. It contrasts beautifully with any surroundings and particularly sets off the cords, plugs, keys, drops and lamps. The keyshelf, hinged with a full length piano hinge, can be raised to provide free and easy access to the key equipment.

Only the finest materials are used and only the most skillful workmanship is employed in manufacturing the Masterbuilt switchboard.

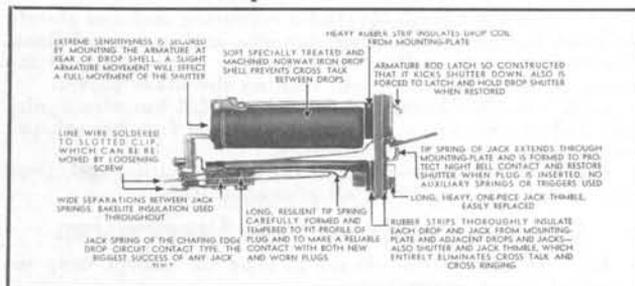
Face Equipment

The close-up picture of the keyshelf emphasizes again the simplicity and attractiveness of the modern designed Kellogg Masterbuilt switchboards. Nothing has been spared to make it convenient for the operator. The black Bakelite background is easy on the eyes. Drop shutters are clearly numbered. Jack thimbles are bright nickel. Shiny brass plugs with red or black fibre sleeves are positioned and spaced for maximum



MASTERBUILT MAGNETO SWITCHBOARDS

Drops and Jacks

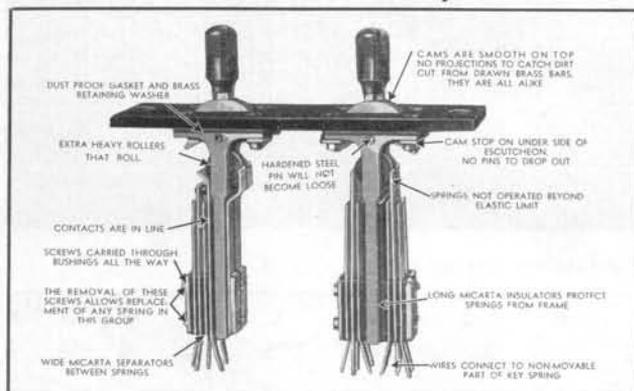


Drops and jacks are really the heart of a magneto switchboard, for drops signal the operator and jacks enable her to connect the parties. Any line is only as good as the drop and jack to which it is connected.

If you will look at the picture above you will see how well the Kellogg drop insures positive operation. The armature which operates the latch is at the back end of the coil. This permits the use of a longer latch rod, with more positive action because the armature can be set closer and be pulled up easier by weaker current. The slightest movement of the armature will cause full movement of the latch. The latch, as it is constructed, not only releases the shutter but kicks it down at the same time. Because of this feature the operation of Kellogg drops is more positive, even on heavily loaded lines where the ringing current is weak.

Jacks with the necessary spring assemblies, are mounted on a rigid frame. The jack thumbles into which the plugs are inserted, are designed to insure a long life and to protect the plugs from excessive wear. When necessary, jack thumbles may be easily and inexpensively replaced in a few seconds.

Switchboard Keys



The picture points out many of the structural features which make for the reputation of Kellogg keys. Unlike a switchboard cord or plug, you can actually see the difference in various manufacturers' key designs, and easily draw your own conclusions as to which has the ruggedness and simplicity to stand the strain. Particularly note such vital things as the long, heavy, evenly shaped and properly tempered springs of nickel silver; contacts of the finest contact metal; heavy "T" shaped brass frame to which the springs are rigidly mounted; the cam and pivot rollers upon which depends smooth operation without wear; the felt dust-protecting cushion; and the extra heavy insulation.

All Kellogg springs are heavily insulated with phenol fibre and withstand the most severe breakdown test of any switchboard key on the market.

Supervision

Probably the most talked of and least understood factor in the performance of a magneto switchboard is supervision. Kellogg offers two types — drop and lamp.

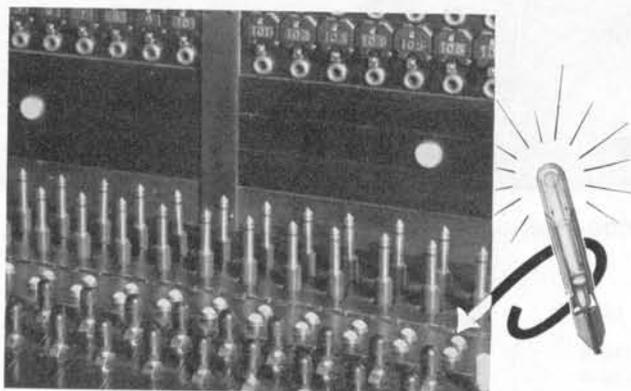
Drop Supervision

Your operator must have some method of supervision so that she will know when to take down the cord connections after each subscriber conversation. Various methods have been employed to signal the operator, some requiring mechanical signals or targets on the keyshelf. These have not always been satisfactory due to becoming clogged with dust, etc., and becoming partly if not wholly inoperative. The simplest and most reliable method is to use the same type of drop as used for each line, and have it mounted on the face of the board. When the subscriber rings off, the shutter falls. The "kick" of the Kellogg latch is double insurance.

Most operators and subscribers prefer double drop, non-ring-through supervision, for then the subscriber ringing off signals only the operator and not the party he was talking to. Single drop supervision permits ringing through.

Lamp Supervision

The newer method of providing operator's supervision is that employing lamps. The brilliant glow of these lamps, located in full view on the keyshelf of the switchboard, attracts and compels the operator's attention far better than drops. Because this is a more positive signal, subscribers get better service. When a subscriber "rings off", a lamp immediately lights and continues to glow until the operator takes down the connection.



Obviously there are many technical advantages to be gained by having lamp supervision in your new switchboard. The foremost is maintenance. There are no moving parts on the keyshelf. The lamps alone will need occasional replacing, but they are very inexpensive and have a long life.

Too much emphasis cannot be placed upon the merits of lamp supervision. If you have commercial current available with which to keep a storage battery charged, by all means insist upon it. Lamps speed service and lighten the operator's job. They provide a combination of satisfied subscribers and happy operators which is hard to beat. Kellogg engineers, as usual, are responsible for this better keyshelf supervision.

Switchboard Section

MANUAL CENTRAL OFFICE EQUIPMENT

MASTERBUILT MAGNETO SWITCHBOARDS

Line and Cord Capacity Lamp Supervision

Cabinet Code No.	Maximum Lines	Capacity Cords	Wired For	
			Lines	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

Drop Supervision

Cabinet Code No.	Maximum Lines	Capacity Cords	Wired For	
			Lines	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

Cord Circuits — 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.

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.

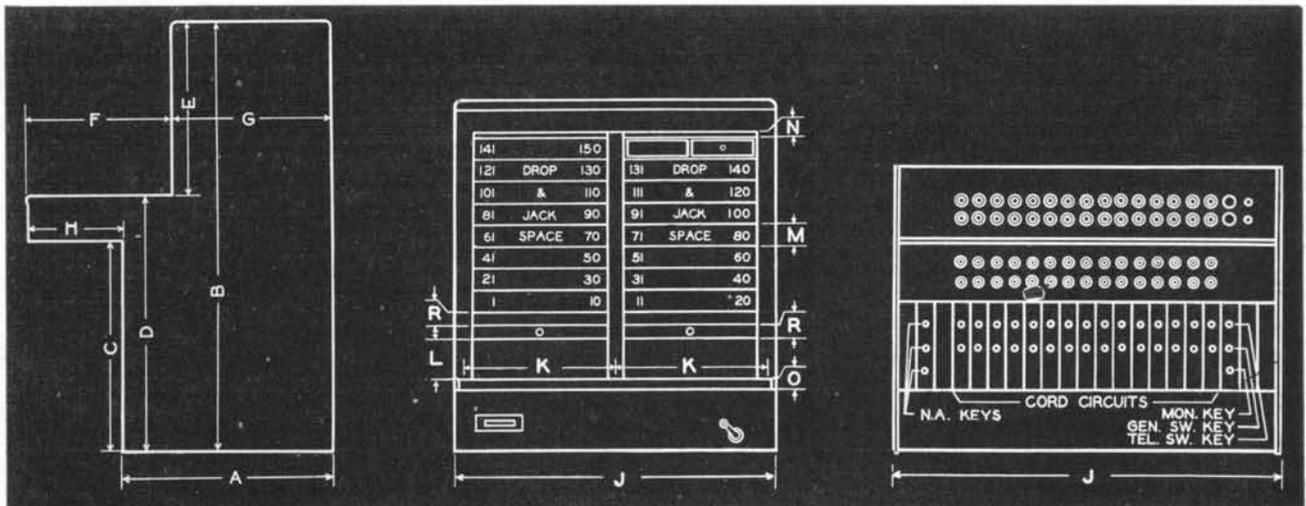
D Double Drop—Same as type L except drop instead of lamp supervision.

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

SRK Single Drop—Same as type SR but with repeating coil cut-out key for through toll connection.

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

Cabinet Dimensions



CODE NO.

DIMENSIONS (All dimensions are in inches)

	A	B	C	D	E	F	G	H	J	K	L	M	N	O	R
50	22 $\frac{3}{4}$	46 $\frac{9}{16}$	24 $\frac{3}{4}$	30	16 $\frac{9}{16}$	18	16 $\frac{3}{4}$	11 $\frac{7}{8}$	23 $\frac{15}{16}$	11 $\frac{5}{32}$	1 $\frac{29}{32}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	1
150-E 150-F	24 $\frac{3}{4}$	50 $\frac{9}{16}$	24 $\frac{3}{4}$	30	20 $\frac{9}{16}$	18	18 $\frac{3}{4}$	11 $\frac{7}{8}$	23 $\frac{15}{16}$	11 $\frac{5}{32}$	1 $\frac{29}{32}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	1
200-E 200-F 200-G	26 $\frac{1}{4}$	58 $\frac{5}{16}$	27 $\frac{3}{4}$	33	25 $\frac{5}{16}$	18	20 $\frac{1}{4}$	11 $\frac{7}{8}$	23 $\frac{15}{16}$	11 $\frac{5}{32}$	1 $\frac{29}{32}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	1

Equipment

CABINET—Three sizes are available. See table of 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.

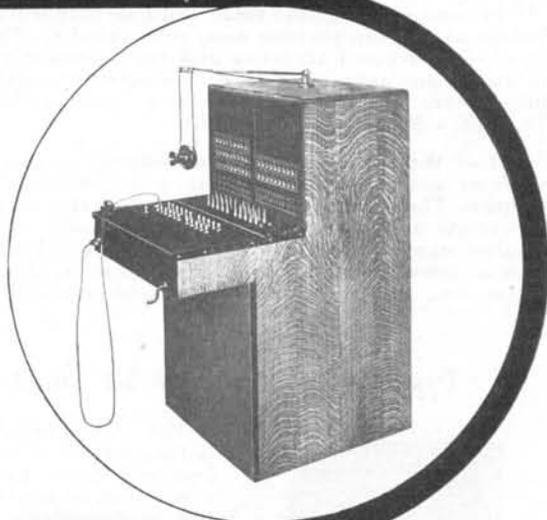
MASTERBUILT MAGNETO SWITCHBOARDS

50-Line Capacity

Type 50 Masterbuilt Magneto Switchboards are wired for 50 lines and 10 cord circuits (ultimate capacity). This Kellogg 50-line switchboard is the smallest of the Kellogg floor types. It is ideally suited for exchanges whose growth is not expected to exceed 50 lines. This switchboard presents no problem to operate and is inexpensive to maintain. It gives the finest type of magneto service.

The medium golden oak finished cabinet is built on a rigid steel frame. The height of its keyshelf permits the operator to use an ordinary chair. Line and cord equipment will be furnished as desired up to the ultimate capacity. Either breastplate or suspended type transmitter may be used.

Complete specifications and ordering information for this switchboard are given on page 6 and in a special bulletin which will be sent on request.



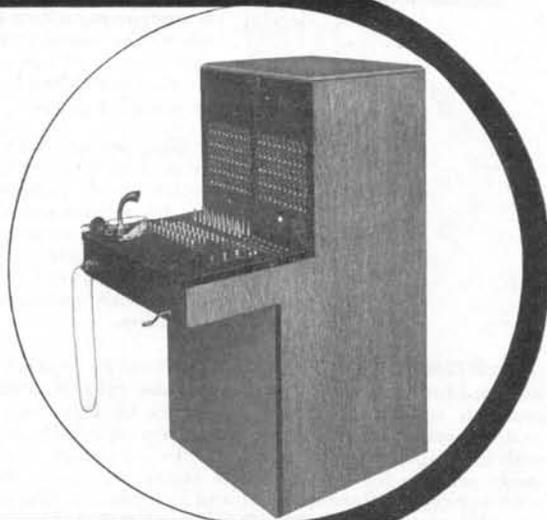
150-Line Capacity

Type 150 Masterbuilt Magneto Switchboards are wired for 100 or 150 lines and 15 cord circuits. This Kellogg 150-line switchboard is a very popular size — one that is found in the average magneto exchange. It presents no problem to operate and is inexpensive to maintain. Like the Kellogg 50 line switchboard, it gives the finest type of magneto service.

The medium golden oak finished cabinet is built on a rigid steel frame. The height of the keyshelf permits the operator to use an ordinary chair.

Either breastplate or suspended type transmitter may be used. Line and cord equipment will be furnished as desired up to the ultimate capacity.

Complete specifications and ordering information for this switchboard are given on page 6 and in a special bulletin which will be sent on request.

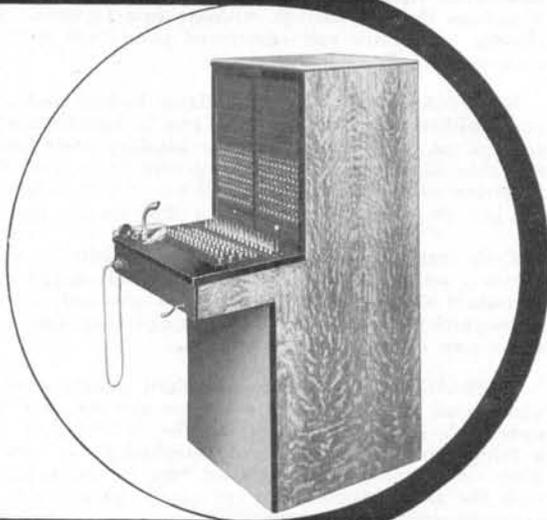


200-Line Capacity

Type 200 Masterbuilt Magneto Switchboards are wired for 100, 150 or 200 lines and 15 cord circuits. This Kellogg 200 line magneto switchboard is the largest single position magneto board of the Kellogg line. The single position cabinet is specially adapted to meet the needs of an exchange where future growth may require added positions. It is usually found impractical for one operator to handle over 200 lines.

This switchboard is provided with a low keyshelf. The cords are of sufficient length to give the maximum reach when two positions are placed together. Either breastplate or suspended type transmitter may be used. Line and cord equipment can easily be added as desired up to the ultimate capacity.

The complete specifications and ordering information for this switchboard are given on page 6 and in a special bulletin which will be sent on request.



Switchboard Section

MANUAL CENTRAL OFFICE EQUIPMENT

WALL TYPE MAGNETO SWITCHBOARDS

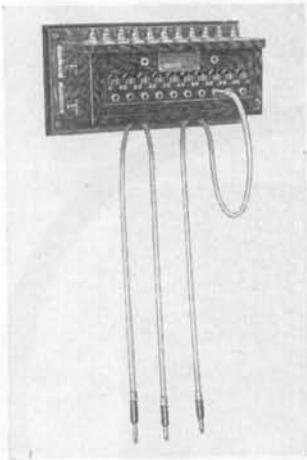
WHEREVER a small number of telephone lines are to be connected together these wall type magneto switchboards answer the purpose most economically. They are small, compact and attractive and can be easily installed in almost any convenient location since they require but little space. There is a size for every need, including a 10, a 15, a 30 and a 50 line unit.

All of these switchboards are designed to give many years of satisfactory service with a minimum of maintenance. The simplicity of these boards makes them easy to operate and maintain. They are ruggedly built and employ standard Kellogg equipment. All major parts such as drops, jacks, cords, plugs, generators, keys, night alarm, etc., are the same as those used regularly in the

larger Kellogg switchboards. Each board is housed in an attractive hand rubbed, medium dark oak cabinet and hinged to a backboard so that the cabinet can be swung open for easy access to the inside.

It is usually best to select a switchboard that has sufficient extra capacity to allow for future growth. All of these switchboards are completely wired at the factory for the maximum equipment, but with the exception of the 9-B type, they can be furnished with just enough equipment to handle your present requirements. As more lines are needed in the future, it is very easy to install the additional parts at that time. When ordering or requesting a price, be sure to state how many lines the board is required to handle at present.

Type 9-B, Capacity 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 board and is recommended for use where the requirements do not exceed 10 lines. It can be used for either grounded or metallic lines.

Gas, power, railway and mining companies find this switchboard indispensable for intercommunicating or dispatching purposes. Once installed it gives very reliable service for many years with practically no attention.

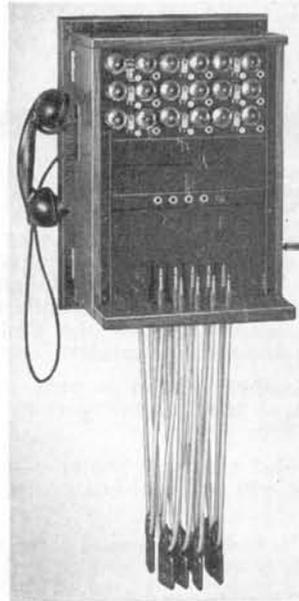
EQUIPMENT AND CONSTRUCTION—The line wires connect to binding posts on the top of the cabinet, and terminate on combined drops and jacks in the face of the switchboard. The binding posts are specially arranged with air gap lightning arresters. Two pairs of connecting cords provide for two complete conversations 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 some one 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 telephone instrument cord attached to a switchboard plug. A suitable operator's set can be furnished along with the switchboard when specified. Shipping weight is approximately 25 pounds.

Type 48, Capacity 15 Lines



Here is an attractive wall switchboard designed especially for rural switching centers where the operator isn't always close to the board 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, and through their code rings, the operator can tell at a distance whether a party line subscriber is signalling the operator or a subscriber on the same line.

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 and additional drop-jack-bell units can be easily installed up to full capacity at any time more lines are needed.

OPERATOR'S SET—An all-Bakelite Masterphone handpiece is furnished for the operator. It contains a capsule type NON-POSITIONAL transmitter unit and a self contained capsule type receiver. This handpiece is supported on a standard Kellogg hookswitch and is wired to an operator's answering cord and plug.

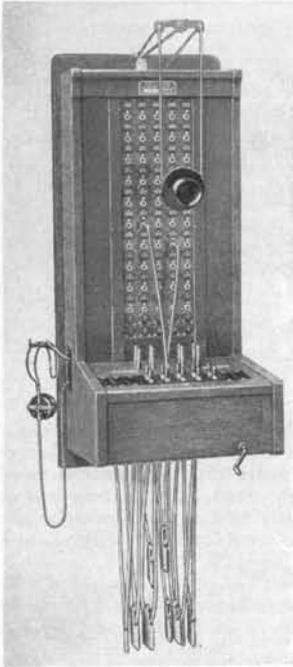
EQUIPMENT AND CONSTRUCTION—All of the plugs are conveniently located on an oak plug shelf in front of the face panel. A hand generator is mounted inside with the crank extending from the right of the cabinet. Also located inside is a night alarm bell, and a button type night alarm control key is mounted in the front of the cabinet in line with the cord circuit jacks. This board comes completely wired with the line wires brought out to binding posts on the back to which is connected an 8-foot cable. Shipping weight is approximately 125 pounds.

How to Order

When ordering or requesting a price for a No. 48 switchboard, please furnish the following information:
 Number of lines to be equipped at present.
 Resistance of drop coils.
 Whether the 8 feet of line cable supplied is sufficient.

WALL TYPE MAGNETO SWITCHBOARDS

Type 7-A, Capacity 50 Lines



When a 50-line magneto switchboard is required and lack of space will not permit a floor type cabinet, this Kellogg 7-A wall switchboard is the popular choice. It is compact, employs standard Kellogg equipment and furnishes very reliable service. The hinged cabinet swings outward permitting free access to the inside.

CAPACITY—The face of the cabinet has space for 50 combined drops and jacks and 5 ring off drops, mounted 5 per strip. The board is wired for its ultimate capacity of 50 lines, but it can be furnished with such equipment as required for present traffic. Additional equipment up to its full capacity, can be added at any time to take care of future growth.

CORD CIRCUITS — A listening key and a combined ringing and ring-back key are furnished with each cord circuit and mount on the tapering key shelf in front of the cords and plugs. This key shelf has a spring lock and is hinged at the back so that it can be raised to permit easy access to the key springs and wiring.

OPERATOR'S SET—This switchboard may be equipped with a suspended type or breastplate type transmitter and headband receiver. As an alternative, the all-Bakelite Masterphone handpiece unit (shown on type 30 switchboard at right) is available.

NIGHT ALARM—A night alarm bell and control key are standard equipment. Code night alarm can also be furnished. This is a very desirable feature for rural communities where party lines using code ringing are heavily loaded. It enables the operator to hear the code signals of party line subscribers at a distance and tell whether or not she must attend the switchboard. For this feature, a buzzer and control key are included so the code and regular alarms are sounded on separate signals.

HAND GENERATOR — A heavy duty, 5-bar generator with a generator switching key is furnished with this switchboard.

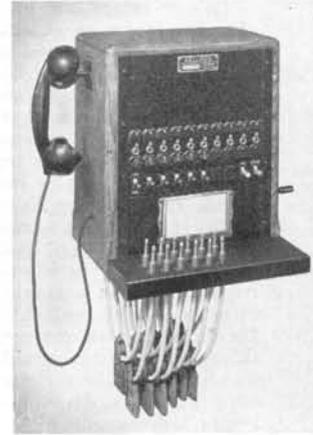
The lines are brought out of the switchboard in a 12 foot length of 50 pair switchboard cable. All circuits are arranged for connecting either to metallic or grounded lines. Shipping weight is approximately 250 pounds.

How to Order

When ordering or requesting a quotation on No. 7-A switchboard, please furnish the following information: The number of lines to be equipped at present.

With or without code alarm.
Type of operator's equipment to be furnished, suspended or breastplate type transmitter with headband receiver, or all-Bakelite Masterphone handpiece unit.
Whether the 12 feet of cable supplied is sufficient.
To be used with metallic or grounded lines, or some of each kind.

Type 30, Capacity 30 Lines



This modern, compact magneto switchboard is by far the most popular of the wall types. It fits most cases where a wall board is required because it can handle any number of lines up to its full capacity of 30 lines. This allows for sufficient expansion for those systems where less than 30 lines are now used.

With its sleek, smooth, round-edged cabinet of rich oak and its face panel and plug shelf of lustrous black Bakelite this is an exceptionally attractive switchboard. A directory card holder is mounted on the face of the board for the convenience of the operator. For performance, operation and appearance it makes a very desirable installation.

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 hand 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 connections 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 that the operator can distinguish between a station to station call on any one line or a call for central.

This switchboard is designed to give very satisfactory service on either metallic or grounded lines. Shipping weight is 65 pounds.

How to Order

When ordering or requesting information on the No. 30 switchboard, please furnish the following information: Number of lines to be equipped at present.
Number to be equipped with code alarm.

Number of cord circuits to be equipped at present, should the first pair be equipped with repeating coil?
Should the 8 foot line cable which comes with the switchboard extend from the top or the bottom of the cabinet.

Switchboard Section

MANUAL CENTRAL OFFICE EQUIPMENT

TESTING EQUIPMENT**The Junior Test Cabinet**

Every telephone exchange, large or small, magneto or common battery, should be equipped with good testing apparatus so that line, instrument or exchange troubles may be quickly and easily located. The Kellogg Junior Test Cabinet saves time and expense, and eliminates service interruptions. It 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.

VOLTMETER — The oak turret includes a special Weston type 267 voltmeter with two scales, reading 0 to 30 volts and 0 to 3 volts. The low scale is calibrated for direct reading in ohms. A single scale voltmeter with one reading of 0 to 30 volts, may be supplied when desired.

TESTS — Tests may be made for short circuits, grounds on either side of the line, for crosses, or for resistance measurements on line or apparatus.

EQUIPMENT — These tests are made through three trunks, one 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.

OPERATOR'S TELEPHONE — A set of terminals is provided for an operator's telephone. No instrument is furnished with the Kellogg Junior Test Cabinet unless specified as it is not always necessary to talk directly to the subscriber through the testing circuit. A standard magneto wall or desk telephone may be used when the cabinet is designed for a magneto exchange. A common battery circuit is furnished in the cabinet for common battery exchanges, and any standard common battery telephone may be used as an operator's set.

KEYS — An order wire key may be furnished when desired. A single frequency ringing key is furnished on all sets, but four or five frequency master key may be included for ringing on party lines.

SIZE — The cabinet is 10 inches wide, 6 inches deep, and 13½ inches high.

MOUNTING — The turret may be placed on or near the switchboard, or on any desk or table. No drilling is necessary as the Junior Test Cabinet is self contained, except for the batteries.

BATTERIES — Telephone dry cells or radio "B" batteries may be used for testing with the Junior Test Cabinet. The operator's telephone uses two dry cells if magneto, or operates from the exchange storage battery if common battery.

Ordering Information

Requests for prices should include the following information:

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

The Senior Test Cabinet

The Kellogg Senior Test Cabinet is designed as an aid to the wire chief in the average common battery exchange where proper maintenance of lines and equipment is of first importance. With this equipment, line, instrument or exchange troubles may be quickly and easily located. The Senior Cabinet is larger, more completely equipped, and more flexible than the Junior model.

VOLTMETER — The Senior Test Cabinet is equipped with a Weston type 24, two-scale voltmeter, reading 0 to 30 and 0 to 150 volts, with resistance of 10,000 and 50,000 ohms.

TESTS — Tests may be made for short circuits, grounds on either side of the line, for crosses, or resistance measurements on lines or apparatus.

KEYS — The voltmeter is controlled with a key and shunt, battery and reversing keys and a grounding key. Other keys in the test circuit are arranged for testing in or out from the main frame, connecting test trunks to switchboard order wire, connecting howler or bridge, flash key, key for reading voltage of test battery, ringing key for any ringing system and a listening key.

EQUIPMENT — Standard equipment includes an alarm buzzer, a two-way trunk to local switchboard with audible alarm, two test trunks to switchboard, one trunk to main frame test shoe, binding posts for Wheatstone bridge or howler and two order wires. No bridge, howler, test shoe, or cords and plugs for local board are included, but may be added when desired. Kellogg engineers will gladly recommend a suitable bridge for use with the Senior Test Cabinet.

MOUNTING — Suggestions on special desks for mounting the turret will also be made, though any standard office desk is suitable. No drilling is necessary in the desk top, as the Senior Turret is self-contained except for the extension alarm bell, batteries, bridge, and howler, which may be mounted in any convenient location.

BATTERIES — Telephone dry cells or radio "B" batteries are required to furnish the testing voltages of 30 and 150. Current for operating the operator's telephone is obtained from the exchange storage battery.

SIZE — The Senior Test Cabinet is 18½ inches wide, 13 7/16 inches deep and 14½ inches high.

OPERATOR'S TELEPHONE — A desk Masterphone is included with the Senior Test Cabinet.

Ordering Information

Requests for prices should include the following 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.

Masterbuilt JUNIOR SWITCHBOARDS

BRING NEW LIFE AND GREATER EARNINGS TO SMALLER EXCHANGES

HERE is the logical equipment to help magneto exchanges out of the rut. It offers so many advantages from the standpoint of earnings, operation and subscriber satisfaction that it merits full consideration as a replacement board for present magneto central office equipment. It is not just another magneto board even though it is in that low price class.

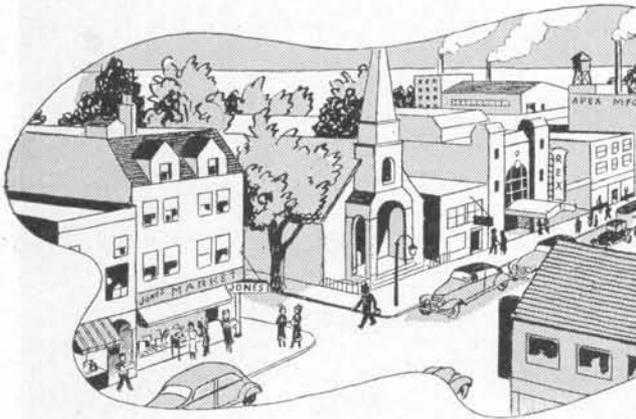
It is a simple, common battery switchboard costing little more, if any, than the usual magneto board. Yet, it can provide the same service now being given to your subscribers, with the assurance that you can change one or more lines at a time to common battery by changing two connections per line at the central office. No additional switchboard expense is incurred.

With the Masterbuilt Junior you can continue to serve magneto subscribers at present rates, but the experience of other operating companies shows that the most subscribers gladly pay more to get common battery service.

The common battery idea spreads quickly because everyone likes "big city" service. Operators are able to handle more calls with less effort, and handle them faster. And this type of service invariably increases the use of the telephone, increases the toll revenue, and increases the subscriber list at higher rates!

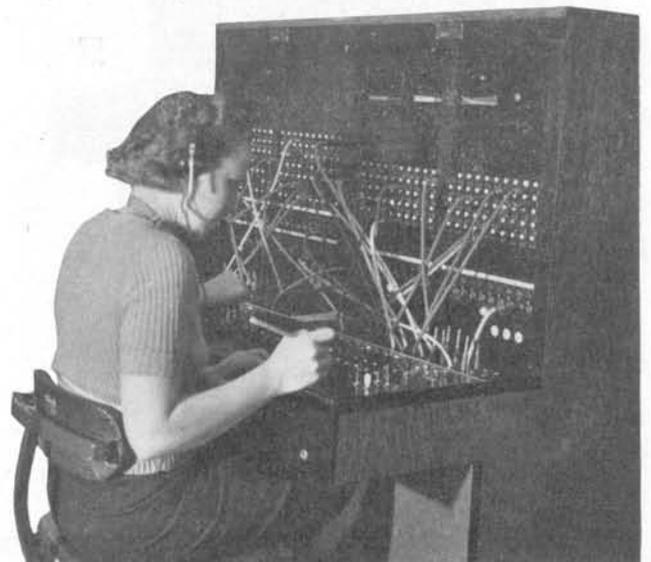
But the Masterbuilt Junior has more than that to offer you. It saves on battery costs. Talking and ringing current can be provided for as little as ten cents per station per year!

You can afford a Masterbuilt Junior. Investigate its possibilities of increasing your earnings this easy, economical way.



Why You Need the Masterbuilt Junior.

- The Masterbuilt Junior increases earnings.
- Makes service more valuable.
- Saves money on operating costs.
- Is simple and easy to operate — saving hours of operating time.
- Eliminates dry cell expense and the time now required to check and replace batteries.
- Speedier, smoother common battery service increases toll revenue.
- Is easy to maintain.
- Provides both common battery and magneto service.
- Changing from magneto to common battery operation may be made one or more lines at a time.
- Provides modern, improved big-city service.
- Increases telephone use.
- Saves on the purchase of new telephones.



Switchboard Section

MANUAL CENTRAL OFFICE EQUIPMENT

MASTERBUILT JUNIOR SWITCHBOARDS

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.

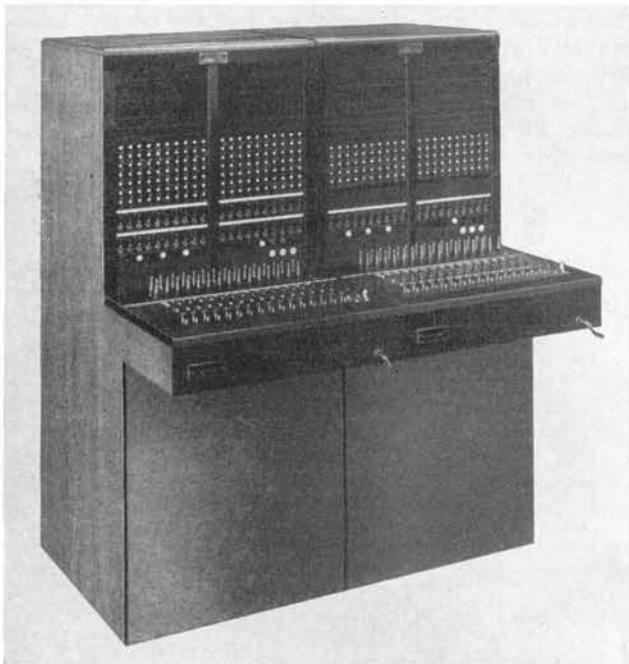
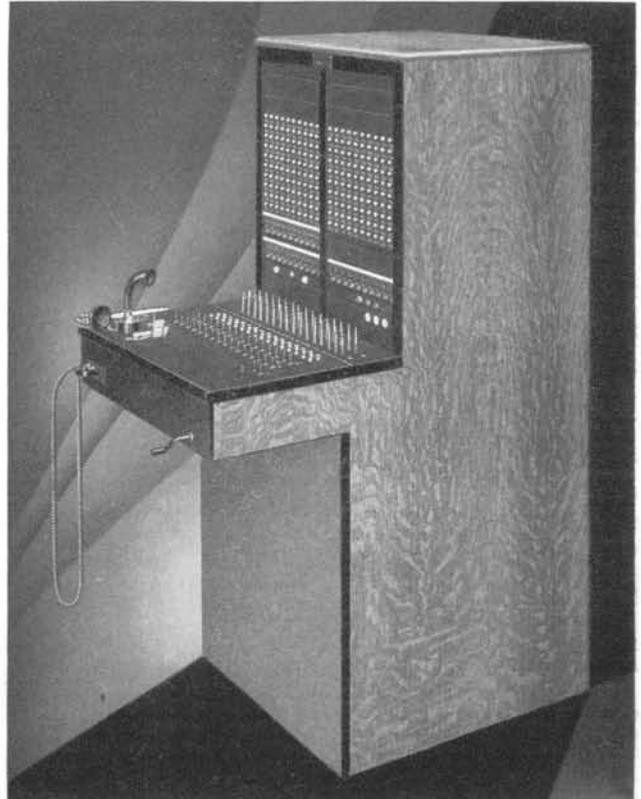
The Masterbuilt Junior is adapted to the modern, progressive town where the anticipated growth will not require a multiple type switchboard. It provides the most modern manual service and the initial cost is little more than that for magneto equipment. Yet with it, the exchange can furnish service to meet both present and future requirements. Both magneto and common battery subscribers may be served with the one switchboard and as these subscribers are changed from magneto to common battery service, the transfer is made by merely switching two wires on the line relay.

The Masterbuilt Junior is designed to improve the earnings of the smaller exchanges. In many cases where the growth of an exchange is apparently static, an improvement in the service such as changing from magneto to common battery increases the number of subscribers. This increase is of course reflected in increased earnings of the exchange.

With the Masterbuilt Junior, important savings in operating cost can be made. There are no dry batteries to be checked or replaced on the subscribers premises in those telephones that have been changed to common battery. At the same time subscribers can be provided with "big city" service which is faster and much more saleable.

Whatever the plant and equipment problems, the Masterbuilt Junior is the answer. You may with assurance install a Masterbuilt Junior with the very same conditions under which your magneto board is working. Any line that will work on your magneto switchboard will work on the Masterbuilt Junior. The magneto switchboard may be disconnected, the Masterbuilt Junior connected in its place and the job is done so far as central office equipment is concerned.

Now the job of changing lines from magneto to common battery service may be started. Here again the Master-



When two Masterbuilt Junior sections are placed together, the switchboard capacity is doubled.

built Junior is the answer. The universal line and cord circuits, designed to function with either magneto or common battery connections or a combination of both make it possible to change one line at a time. Whether it is one line, a group of lines or an entire section that is ready for common battery, just change two connections on the line relay, change the subscribers telephone to a common battery instrument or convert the magneto telephone to common battery and that part of the plant is completely cut over.

It is always more economical for the small exchange to cut over gradually with regular help than it is to put on a large crew and attempt to do all of the central office and outside plant work at the same time. It spreads the expenditure over a longer period and takes up the slack time of regular employees which also means more money in the bank account.

Each Masterbuilt section has a capacity for 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 doubles the capacity of one section. When this is done all lines are in easy reach of either operator.

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 chiefs tests, generator switching key, operator's telephone switching key and night alarm key are all standard equipment. Code alarm and hand generator will be furnished when specified.

MASTERBUILT JUNIOR SWITCHBOARDS

Operating Features

Common Battery Operation — Lamp lights when subscriber removes telephone from hookswitch.

Magneto Operation—Hand generator at subscribers telephone provides means of signalling operator over magneto lines with either drop and jack or lamp signal.

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.

Rural Line Circuits — These are magneto, with either drop or lamp signals.

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. No additional switchboard wiring or equipment is required to change to common battery.

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 in 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 audi-

ble to the calling subscriber when the called subscriber is being rung on a common battery line. Available when machine ringing is specified. For a more complete description of revertive ringing refer to page 18.

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.

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.

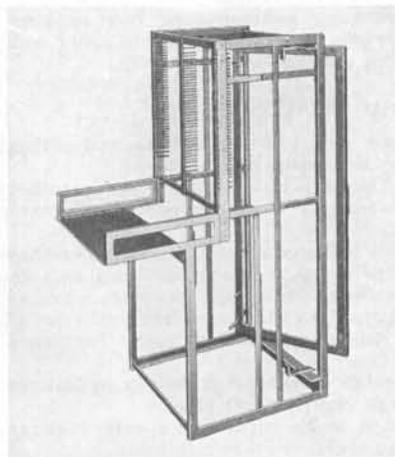
Repeating Coils—Repeating coils are necessary to provide the best universal cord circuits and are recommended under all conditions.

Capacity — The ultimate capacity per position is 200 local lines and 40 magneto lines. When two positions are lined up together the ultimate capacity is 400 non-multiple local lines and 80 magneto lines.

Construction Features

HOW well your switchboard will operate and how long it will continue to do so depends entirely upon the experience in engineering and manufacturing which goes into it . . . how well each individual part is designed, the material from which it is made . . . and how well the parts work together to give smooth, satisfactory service. All are important . . . from the construction of the frame to the installation of the last cord weight . . . all are vital to the perfect operation and long life of the board. Kellogg, with farsighted engineering and efficient manufacturing methods, developed over a period of many years, builds this best performance into all Masterbuilt Switchboards.

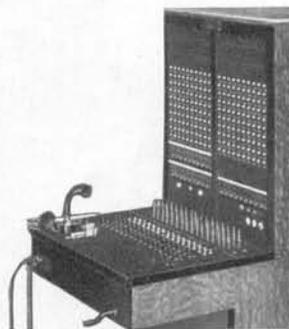
All-Steel Framework



The modern Kellogg Masterbuilt switchboard is built upon a rigid, all-steel framework, 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.

Face Equipment

The close-up picture of the keyshelf emphasizes again the simplicity and attractiveness of the modern design of Kellogg Masterbuilt Junior Switchboards. Nothing has been spared to make it convenient for the operator. The black Bakelite background is easy on the eyes. Jack thimbles are bright nickel. Shiny brass plugs with red or black fibre jackets are positioned and spaced for maximum convenience. Even the key handles have gone modern with color. Miscellaneous keys are red and white and contrast beautifully with the black mountings.



The continual scraping of plugs does not mar the finish around the jacks. Also, the problem of large holes being constantly worn around the plug seats is now solved. Every plug space in this switchboard has a plug well bushing to take up this wear . . . and these bushings are replaceable.

Bakelite Key Shelves and Panels — Rich, black Bakelite is used for keyshelf and face panels. Bakelite is used in these switchboards because of its unusual wearing qualities and its permanent lustre. It contrasts beautifully with any surroundings and particularly sets off the cords, plugs, keys, drops and lamps. The keyshelf, hinged with a full length piano hinge, can be raised to provide free and easy access to the key equipment.

MASTERBUILT JUNIOR SWITCHBOARDS

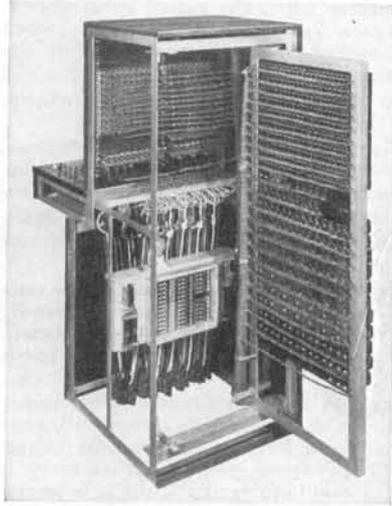
Construction Features

The Swinging Gate

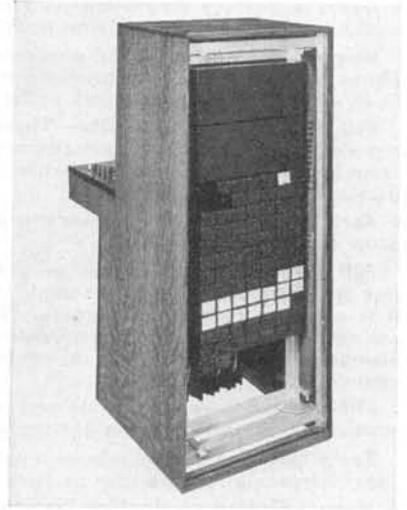
The swinging gate of the Masterbuilt Junior carries the repeating coils, condensers, relays, etc. Below this steel gate is a maple panel which mounts night alarm equipment, terminals for ringing current, battery supply, fuses, telephone switching circuits. This panel is conveniently located for easy access. Just swing the gate open and there are the line equipment, cords and both sides of the gate right before you. Nothing obstructs the wiring. Everything is exposed and easy to get at.

Cabinet Design — You can see that the beautiful, hand-rubbed, medium golden oak side panels and top are simply attached to the steel framework. Unlike the old fashioned switchboard with its overhanging top, fancy mouldings and panels and extended overlapping sides, this modern switchboard has smooth, rounded top edges and sleek, flush sides. The kick-board is completely covered with a solid color battleship linoleum panel.

Key boards are low allowing operators to use ordinary desk chairs.

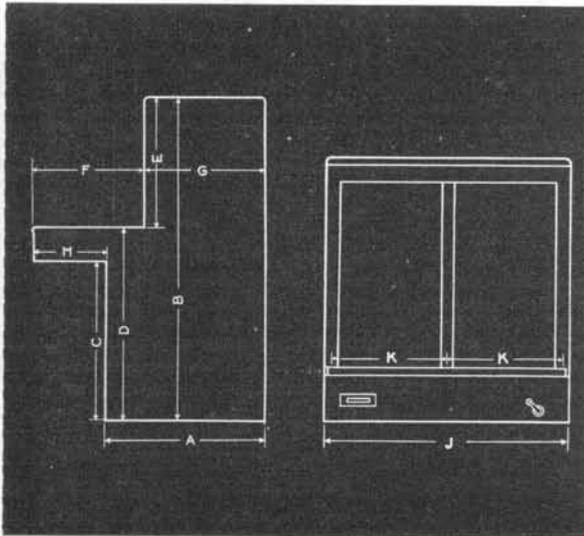


Here, the relay gate has been swung open and the side panel has been removed for easy access to all apparatus.



This picture shows the Masterbuilt Junior with the back panel removed and the relay gate closed. This back panel is easily demountable.

Cabinet Dimensions



The side view of a Masterbuilt Junior Switchboard is shown at the left. Above on the right is the front view of the Masterbuilt Junior face plate.

All dimensions are in inches.

A	B	C	D	E
26 1/4	58 5/16	27 3/4	30	25 5/16
F	G	H	J	K
18	20 1/4	11 7/8	23 15/16	11 5/32

Equipment

Operator's Set — Suspended or breastplate type *Non-Positional* transmitters and featherweight, watch case type head band receivers.

Generator — Switchboard may be furnished with or without 5 bar hand generator.

Keys, Drops and Jacks and Lamps — are of the latest type and are designed to give long service with minimum attention.

Repeating Coils — The well balanced repeating coils and battery feed coils used in Kellogg cord circuits insure the best transmission.

Cable — 15 feet of switchboard cable is furnished and may extend from either the top or bottom of the cabinet.

Blue Prints — A complete set of blue prints covering all circuits used in the Masterbuilt Junior is furnished.

Packing — Masterbuilt Junior Switchboards are packed in wooden boxes lined with waxed paper and are securely braced to prevent damage in transit.

Guarantee — The Kellogg guarantee of free replacement of all defective parts accompanies each order and assures the purchaser of satisfaction in service.

How to Order

When ordering your new switchboard or requesting quotations, give us the following information:

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

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

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.

Number of feet of cable to extend from top or bottom of cabinet and from the right or left side.

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

Kellogg

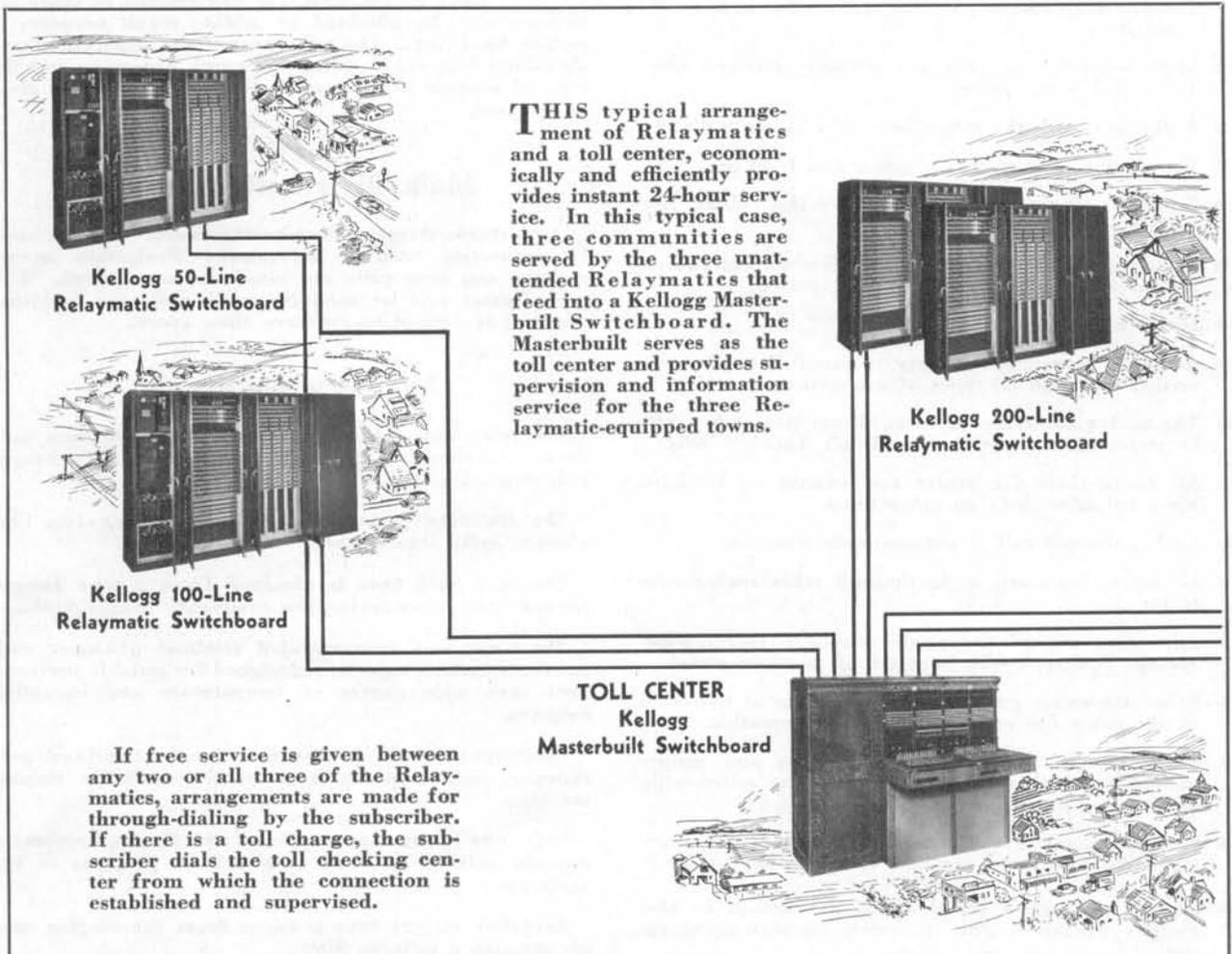
RELAYMATIC SWITCHBOARDS

THE Kellogg Relaymatic is an automatic switching unit for main exchanges or intercommunicating service. Because it operates with relays only, its operation is easily understood. It is composed of line circuits, connecting circuits and auxiliary circuits much the same as manual equipment. The only functional difference is that 24-hour service is provided without operator attendance.

The Relaymatic is not a cure-all, but is ideal in exchanges where mechanical switching is economically practicable. The Relaymatic is particularly suitable for use in unattended exchanges because all functions are performed by relays. These relays have dual contacts of precious metal. There are no shafts, cams, plungers, ratchets or other wearing parts to require frequent lubrication, adjustment and replacement. Because of the simplicity and accessibility of parts, the Relaymatic is easy and economical to maintain.

Kellogg Relaymatic Switchboards are manufactured to meet the requirements of any exchange from the smallest, with as few as 2 or 3 lines up to the very largest. These switchboards are available in standard sizes having capacities of 10, 30, 50, 100, 150, 200, 1000 and 10,000 lines. The 200-line unit may be installed initially with 50 or less lines and can be economically expanded to its full capacity of lines and connecting circuits (links). Relaymatic's up to 200 lines are further simplified by the omission of selector equipment.

In addition, Kellogg manufactures similar units for inter-office or private branch exchange use. These Relaymatic PBX's are easy to understand, easy to install and maintain, reliable in operation and faithful in performance.



Kellogg Switchboard & Supply Company, Chicago

Switchboard Section

RELAYMATIC EQUIPMENT FOR CENTRAL AND PRIVATE OFFICES

KELLOGG RELAYMATIC SWITCHBOARDS**These Operating Features Show Why
More and More Exchanges are
Going Relaymatic**

- Local line circuits are all of the metallic type.
- Line adapters are used for grounded lines.
- Any line circuit can be converted into a trunk by the addition of a trunk adapter.
- A station dialing the trunk number is automatically connected to an idle trunk.
- All links (connecting circuits) have access to all lines.
- Incoming trunk or long-distance calls get first use of links (connecting circuits).
- Calls are assigned to links (connecting circuits) in rotation. This distributes the load equally among all links.
- Links are automatically freed from any line which may be in trouble due to incorrect dialing, receiver left off the hook, shorts, grounds, wet cables, etc.
- All local calls are dialed in the same manner, using the directory number, including revertive calls on the same line.
- Links on revertive calls are instantly released when the called party answers.
- A dial tone tells the subscriber when to begin dialing.
- Busy tone indicates that a called line is in use.
- Revertive ringing tone is heard by the calling subscriber at each ringing interval.
- A time cut-off feature if desired, limits local conversations to a predetermined talking period.
- Maximum transmission is assured.
- Adequate transmitter battery is supplied to the subscriber's line on all types of connections.
- The calling subscriber releases all equipment instantly by restoring his receiver on "Don't Answer" calls.
- All connections are secret and cannot be intruded upon by subscribers on other lines.
- Each answered call is automatically counted.
- All connections are made through relay spring contacts.
- All relays are of the angle armature type having springs equipped with contacts of precious metal.
- Relay armatures and spring contacts are at the front of the relay for easy cleaning and inspection.
- Relay springs are of sufficient length and proper gauge to give ample tension and cleaning action without causing unnecessary wear or pitting.
- Precious metal is used exclusively on all relay contacts. No base metal contacts or wipers are used.
- Circuits and relays are designed throughout to give positive operation with minimum current consumption.

Classes of Service

The line circuits of the Relaymatic may be assigned for common battery local and rural, trunk or pay station service. Local lines provide single-party or multi-party service up to 10-party selective or 16-party code ringing per line. Adapters are available for grounded rural lines.

Wiring

The circuits of the Relaymatic are all wired, connected and tested at the factory. All lines are wired to terminal strips at the top of the bays to facilitate cabling to the main distributing frame and protection equipment.

Trunks to Manual Exchanges

The Relaymatic may be arranged to operate with any type of trunk line. The trunk lines may be provided singly or in groups with not more than 10 trunks equipped in each group. When more than one trunk is equipped in a group they are arranged for progressive allotment so that an idle trunk is automatically selected when the number assigned to the group is dialed. A busy signal indicates that all the trunks are busy.

Trunk lines, as required, for connections to other exchanges may be obtained by adding trunk adapters to certain local lines. The adapter provides supervision and signalling features required for trunk operation and the type of adapter depends upon the kind of outside plant to be used.

Main Distributing Frame

Any standard main distributing frame may be used in connection with a Relaymatic. Protectors having carbons and heat coils are usually recommended. Wall type frames can be used in small exchange buildings where it is desired to conserve floor space.

Auxiliary Equipment

The relay type, code ringing interrupter operates only while a connection is being established and produces well defined codes.

The dial tone generator produces a pleasing tone without radio interference.

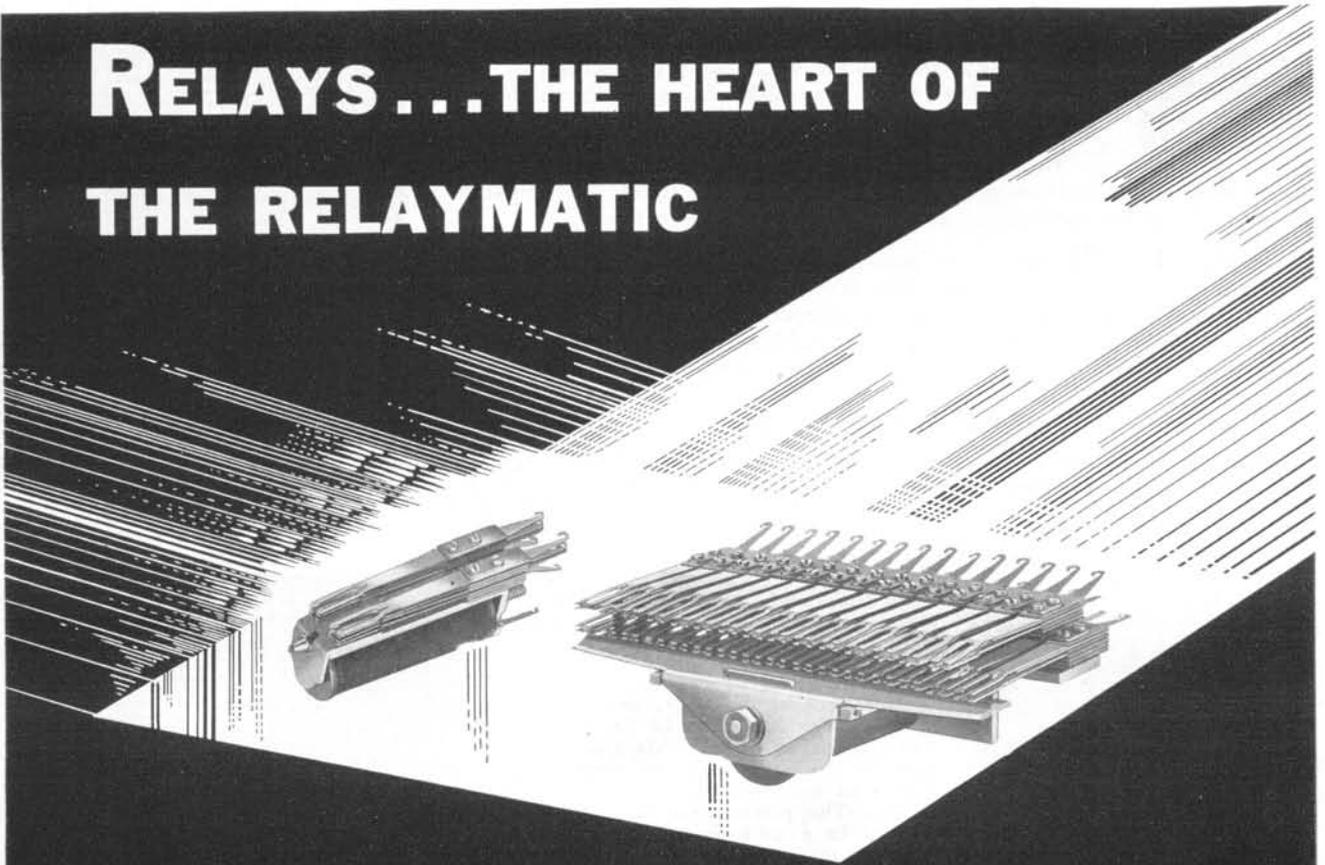
The busy back tone is obtained from a tone generator with relays producing the customary interruptions.

The timer is a gas-controlled solenoid plunger with mercury contacts especially designed for reliable performance over wide ranges of temperature and operating voltages.

The ringing current is derived from standard pole changer equipment or from another suitable ringing machine.

The tone generators, timer and ringing equipment operate only while there is a call in progress in the exchange.

Revertive ringing tone is taken from the ringing supply through a suitable filter.

KELLOGG RELAYMATIC SWITCHBOARDS**RELAYS...THE HEART OF
THE RELAYMATIC****SIMPLE · RUGGED · RELIABLE****THE RESULT OF OVER 40 YEARS EXPERIENCE**

Practically every phase of operation of a dial switchboard is dependent upon the action of relays, for the relays furnish the means by which the switchboard performs its functions. They operate by electrical impulses to answer the calls, select the proper links, lines and telephones, set up the connections, start the ringing and ringing tone or busy tone, restore the equipment to normal after the calls and perform all the other jobs required in handling telephone connections.

Because dial switchboards operate without an attendant, the relays must carry the full responsibility for the excellence of the service. This responsibility includes faithful operation on a continuous 24-hour basis without attention or supervision. Therefore, in the selection of a dial switchboard the reliability and dependability of the relays are of prime importance.

For nearly 50 years, Kellogg has been building telephone and switchboard relays to the highest performance standards. This experience is evidenced in the gang relays and individual relays used in all Relaymatic Switchboards. They are literally "jewels" of Kellogg engineering skill and design.

Precious metal is used on all relay contacts which means quieter operation and increased dialing range. By employing such special metal as this, good connec-

tions are assured. This is particularly important on toll connections.

All relays used in Kellogg Relaymatic have twin contacts. This is a feature that provides a broad margin of safety because the extra contact on each relay practically eliminates every possibility of failure. Because of these twin contacts, the best service is assured with minimum maintenance.

In designing these relays, Kellogg engineers provided another feature that is equally important in assuring perfect connections. The armature is arranged so that even after the relay contacts are closed, there is some armature travel. This action has a cleaning effect which removes dust that may have settled on the contact.

Since the relays are capable of performing all the functions required by a Kellogg Relaymatic Switchboard, no mechanical switches are used. Consequently, there are no intricate moving parts involved and this is important from a maintenance standpoint.

The relay springs are made of a special nickel silver. This alloy was adopted because it is highly flexible and maintains its tension. Special Bakelite insulation is used throughout because of its insulating qualities and because it is least affected by moisture, temperature variations, contraction and expansion.

Switchboard Section

RELAYMATIC EQUIPMENT FOR CENTRAL AND PRIVATE OFFICES

KELLOGG RELAYMATIC SWITCHBOARDS

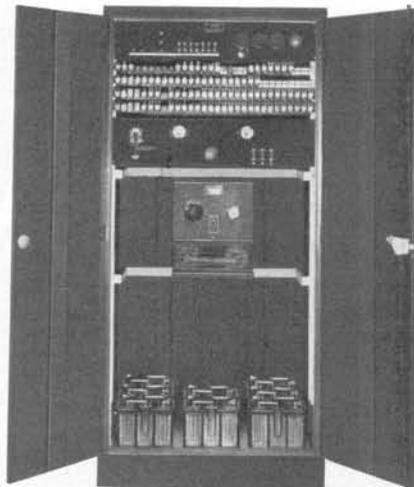
General information for six standard size Relaymatics is given below and on the following pages. These Relaymatics have ultimate capacities of 10, 30, 50, 100, 150 and 200 lines, without being equipped with selectors.

In addition to these standard Relaymatics, Kellogg manufactures equipment with selectors to meet the requirements of larger exchanges up to any capacity required.

In furnishing Relaymatic equipment for many exchanges in various parts of the country, the Kellogg Company has accumulated a wealth of experience on the subject of building plans. This experience is available to anyone considering the installation of this type of equipment.

10-Lines Capacity

This Relaymatic has an ultimate capacity of 10 lines and 2 links. All the line, connecting and power equipment is mounted in a one-bay cabinet, 36 inches wide, 18 inches deep, and 78 inches high. Any line may be converted into a trunk.

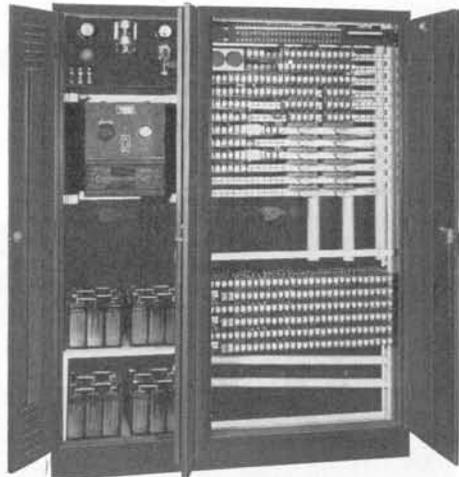


10-Line Relaymatic

30-Lines Capacity

30 lines and 5 links is the ultimate capacity of this Relaymatic. Any line may be converted into a trunk.

The line and connecting equipment is mounted in one bay, occupying a space 36 inches wide, 18 inches deep and 78 inches high. This Relaymatic may be equipped with any number of lines and links up to the ultimate capacity. The power equipment may be located in a 24-inch auxiliary cabinet attached to the relay bay as shown, or in a separate floor or wall rack if desired.



30-Line Relaymatic

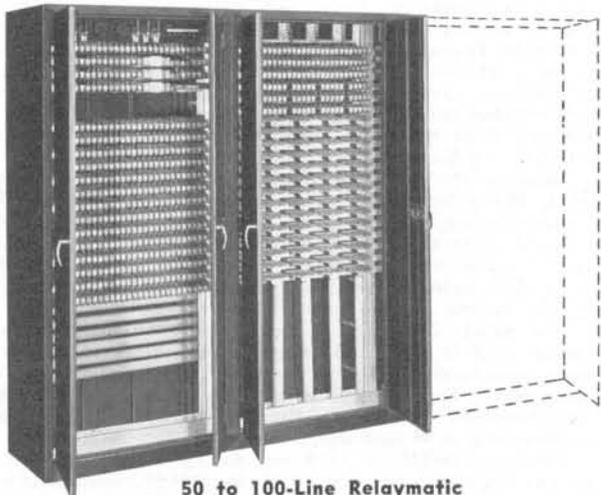
50 to 100-Lines Capacity

The capacity of this Relaymatic as shown is 50 lines and 10 links. It may be equipped with as many lines and links as are immediately required. Any line may be converted into trunks as needed.

An additional fifty lines can be supplied in a third bay which is indicated by dotted lines in the illustration. This bay is wired completely and may be equipped as desired.

The power equipment may be mounted in a cabinet attached to the equipment bays or it may be mounted on an outside rack.

Floor Space Requirements. Each bay is 36 inches wide, 78 inches high and 18 inches deep.



50 to 100-Line Relaymatic



Typical space-saving buildings that house Kellogg Relaymatics.

KELLOGG MASTERBUILT CORDLESS PBX SWITCHBOARDS

THE Kellogg Masterbuilt Cordless PBX Switchboard has more uses than the ordinary cordless board. Its service features are practically unlimited. And it can operate 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!

These switchboards are low and compact; of modern, up-to-date appearance. They fit into all types of surroundings. They are attractive with black Bakelite face panels contrasting with metal keys and colored handles, and fine dull-rubbed cabinets. The cabinets can be furnished as standard in either oak or walnut, or special in any other wood or finish.

There are many new construction features. The front panel is hinged at the bottom with a full length piano hinge. This gives easy access to the keys and lamps. The whole cabinet can be lifted off as one piece, giving full access to all equipment.

All of the equipment such as relays, conden-



sers, fuse panel and connecting rack is mounted on a steel frame chassis which is fastened to the base board. The generator crank is in front.

Nine Operating Features Cover Complete Service Requirements For Cordless PBX Users

1. Operates With Either Common Battery Manual, Dial or Magneto Main Exchanges.

The trunk and connecting circuits are so arranged that they will operate with either a manual or dial main exchange, or both. To obtain dial operation, it is only necessary to add a dial to the PBX operator's set.

This feature is extremely advantageous because this switchboard can be moved from one exchange area to another regardless of whether it provides common battery manual, or dial, or magneto service. When connected to a magneto main exchange, a single line adapter is required for each trunk in the central office.

2. Through Battery Feed on Trunks.

The circuits are arranged to provide through feed talking battery to the PBX stations from the main exchange.

This feature assures the PBX subscriber of excellent transmission on both toll and local connections. The subscriber will have the advantage of 48-volt talking battery if it is used on toll connections or if the main exchange is of the dial type which is usually operated from a 48-volt source.

3. Through or Attendant Dialing.

Through dialing on trunk connections from PBX stations, attendant dialing on trunk connections.

When the PBX is served by a dial exchange, the PBX stations can dial their own numbers on trunk connections without the assistance of a PBX attendant. This provides valuable service to an industrial concern whose executives might have occasion to make a series of calls over a trunk.

4. Balanced Battery Feed.

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

This feature assures the PBX subscriber of excellent transmission on all connections, as well as prompt re-call or disconnect.

5. Trunk Holding.

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

This feature permits an excellent service by the PBX attendant on "in-trunk" calls as it is impossible to lose the trunk connection at the main exchange while the attendant is handling the call. The hold supervisory lamp on such connection enables the attendant to properly supervise the connection to insure the calling party on the trunk of prompt service in reaching the called PBX station.

6. 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.

Low current consumption is an outstanding feature of Kellogg Cordless PBX Switchboards. Thus it is unnecessary for the PBX subscriber to be concerned about the cost of the power required to maintain the service.

7. Positive Supervision.

Positive supervision is provided for all types of connections.

Positive supervision means that the PBX service will be of the best quality possible. It assures the attention of the attendant on connections when it is required by the telephone users.

8. Night Connections.

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

Night connections make it possible to have telephone service on the premises during the night, on Sundays,

Switchboard Section

MANUAL PBX AND SPECIAL PURPOSE SWITCHBOARDS

KELLOGG MASTERBUILT CORDLESS PBX SWITCHBOARDS

Nine Operating Features Cover Complete Service Requirements For Cordless PBX Users

holidays, or other times when the PBX switchboard is unattended. At such times the battery can be entirely removed from the PBX by the operation of the battery cut-off key.

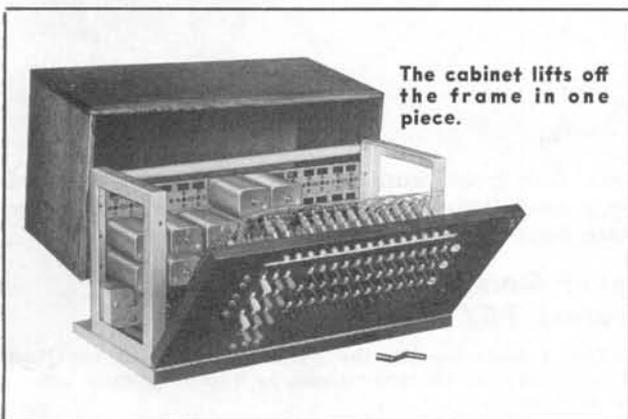
9. Through Trunk Supervision.

The through-battery-feed trunks provide through supervision to the main exchange from the PBX station, thus permitting a prompt recall or disconnect at the main exchange.

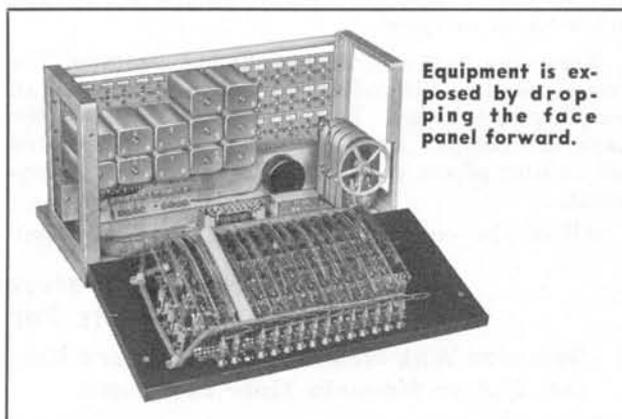
With this feature, the PBX subscriber is assured of

correct timing on toll connections because the toll operator will receive a disconnect when the PBX station user hangs up. Another advantage to the subscriber is that the PBX station user can place sequence calls to the main exchange without the assistance of the PBX attendant. The recall on such connections is handled directly by the main exchange equipment. With feature cord circuits or dial main exchange the connections are released at the main exchange when the PBX station user hangs up, releasing the trunk circuits to the PBX for other incoming or originating calls.

All Equipment is Easily Accessible



The cabinet lifts off the frame in one piece.



Equipment is exposed by dropping the face panel forward.

Easy Accessibility — All equipment is freely exposed upon dropping the Bakelite faced panel forward. Keys, lamps and wiring are readily available as are the generator, condenser, induction coils, relays, etc. Roominess, neatness and convenience are paramount features.

Chassis Construction — All equipment, such as relays, condensers, fuse panel, connecting rack and buzzer is mounted on a steel frame chassis which is fastened to the base board. Front panel hinged at the bottom. Cabinet lifts off in one piece.

Capacities of Stock Boards Code 1007-CC

	Wired	Equipped
Lines (less relays).....	12	10 or 12
Trunks to Main Exchange.....	3	2 or 3
Connecting Circuits.....	5	5
Cabinet Finish: Oak or Walnut		

Code 1007-CC (Special)

Lines (with relays).....	12	12
Trunks to Main Exchange.....	5	5
Connecting Circuits.....	5	5
Cabinet Finish: Walnut (Oak on Special Order)		

Code 2007-II

Lines (less relays).....	20	15
Trunks to Main Exchange.....	5	3
Connecting Circuits.....	5	5
Cabinet Finish: Oak or Walnut		

Masterphone Operator's Set



All Kellogg Cordless PBX's come with a modern, all Bakelite Masterphone operator's handset. These instruments are equipped with either a dial or dial blank, as specified on the order.

Cabinet Dimensions and Weights

All dimensions are in inches.

Code No.	Height	Length	Depth	Shipping Weight
1007-CC	12	23	12	120 lbs.
1007-CC (Special)	12	24-13/16	12	135 lbs.
2007-II	12	30	12	140 lbs.

How to Order

To order a Cordless PBX, select the code number of the PBX desired and furnish the details indicated below:

- Type of Cabinet (oak or walnut)
- Number of lines equipped (with or without relays)
- Number of Trunk Circuits
- Operator's Handset (with or without dial)

MAGNETO CORDLESS PBX SWITCHBOARDS

THE magneto type cordless switchboard is favorite among oil, gas, electric, railway, and other companies operating a number of long lines they wish to cross connect for inter-communicating. It is also very suitable for small rural switching centers and others who want a magneto switchboard with a limited capacity.

The cabinet of this switchboard is of the same design and dimensions as described on page 20 for the 1007 type common battery switchboard. The line and supervisory signals, connecting, listening, ringing, and miscellaneous keys are securely mounted to the front panel.

The cabinet includes miscellaneous apparatus, and wiring for a total of 10 lines, 2 trunks, and 3 connecting circuits. The line and trunk equipment will be furnished as desired. As the line and trunk circuits are identical, any line may be used as a trunk line to a magneto main exchange.

Line Equipment

Each equipped line includes a drop, listening and ringing keys and connecting keys. The connecting circuit are common to all lines and each has a single-supervisory drop located at the extreme left and in line with the respective connecting circuit keys.

Line drop coils are usually furnished with 500-ohm windings; however, 100-ohm coils will be furnished if requested.

Code Night Alarm

All drops are equipped with regular night alarm contacts, but the code ringing feature can be furnished on request.

This feature causes the night alarm to give a code signal to correspond with the ring on the line. This permits the attendant to go about duties away from the switchboard and be able to distinguish between calls for him or someone else on the same line of the party calling.

Trunks

Two trunks may be equipped for connecting with a manual main exchange, when this switchboard is used as a PBX. When used for other purposes these trunks may be used for toll lines or long, heavily loaded trunk lines etc. The equipment includes a line signal of the drop type similar to the regular line signals except the shutter number plates will be stamped as T-1 and T-2, respectively. These trunks are operated in the same manner as the local lines.

Night Service

Magneto PBX switchboards are designed to permit the connection of one or more PBX stations to each trunk for service to and from the main exchange when the operator is not in attendance. When such connections have been established, the PBX stations may be used as though they were main exchange stations. To establish night service on a magneto PBX, connect lines to trunks as desired, by means of the connecting circuits.

Miscellaneous Apparatus

Standard equipment includes a hand generator, generator switching key, night alarm, and night alarm control key. The operator's telephone may be either a Masterphone or a desk stand. The Masterphone will be furnished on all orders unless otherwise instructed.

Operation

To answer an incoming call the operator throws the



first key immediately under the line drop in the upward (listening) position. She is then connected with the calling party.

To call a subscriber, she presses the same key under the line wanted, in the downward (ringing) position. If hand ringing is used, she also operates the hand generator while holding this key down.

To connect two parties for talking, she operates the keys in an idle connecting circuit, under the two respective lines, in the same direction.

Operating her listening keys will permit her to listen in and supervise connections.

Cabinet Dimensions and Weights

Cat. No.	Height	Length	Depth	Shpg. Weight
1007-E	12 in.	23 in.	12 in.	110 lbs.
1007-F	12 in.	23 in.	12 in.	110 lbs.

Capacities of Cordless Magneto PBX Switchboards

No. 1007-E and 1007-F are wired for the number of lines shown below and may be equipped for the number of lines desired.

Code No. 1007-E		
Regular Night Alarm Contacts (Shutter).		
Lines	.....	12 Lines
Trunks to Main Exchange	.....	3 Lines
Connecting Circuits	.....	3 Lines
Cabinet Finish: Oak or Walnut		

Code No. 1007-F		
With Code Night Alarm Contacts.		
Lines	.....	12 Lines
Trunks to Main Exchange	.....	3 Lines
Connecting Circuits	.....	3 Lines
Cabinet Finish: Oak or Walnut		

How to Order

To order the Cordless PBX select the code number of the PBX desired and furnish the details indicated below:

- Type of Cabinet (oak or walnut).
- Number of lines equipped.
- Number of trunk circuits equipped.
- Number of connecting circuits equipped.
- If drops are to be 500-ohm or 1000-ohm.

Switchboard Section

POWER AND PROTECTION EQUIPMENT

PROTECTION and CROSS-CONNECTING EQUIPMENT

PROTECTION and cross-connecting equipment is mounted on a main distributing frame in the central telephone office.

Three types of protector units are available for mounting on the main frame:

1. Carbon lightning arresters and heat coils.
2. Carbon lightning arresters and fuses.
3. Carbon lightning arresters, fuses and heat coils.

Every switchboard should be protected from lightning 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.

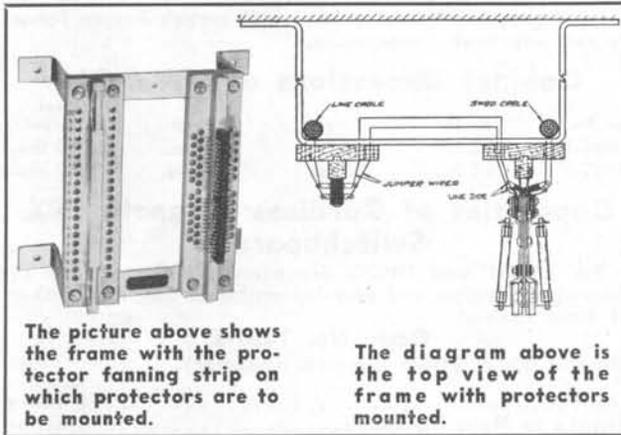
Fanning strips mounted on the distributing frame make it possible to connect any switchboard number by means of a jumper wire to any outside line. This jumper wire provides a flexible link between the switchboard and line cables as a means of connecting or transferring any switchboard number to any cable 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.

ALL PROTECTION APPARATUS SHOULD BE WELL GROUNDED

Cook Type "L" Main Distributing Frame

Cook No. L-9 Wall Type Distributing Frame



The picture above shows the frame with the protector fanning strip on which protectors are to be mounted.

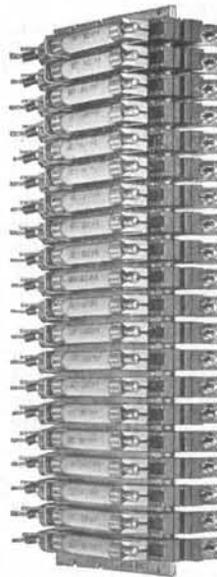
The diagram above is the top view of the frame with protectors mounted.

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, skin 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 Overall, Inches	Shipping Weight
1050	20	26	13	10 lbs.
1052	40	52	23 1/2	18 lbs.
1054	60	78	34	32 lbs.
1056	80	102	..	46 lbs.
1058	100	130	..	60 lbs.

Cook H-36 Central Office Protector



Designed to protect circuits where heat coils are not required.

Construction — This protector is built in 10 and 20 pair sections on metal plates. The pairs are on 1/2-inch centers.

Fuse Clips — Fuses are held under positive tension in Cook clips, but may easily be removed and replaced. The lightning arresters are held under constant pressure between heavy nickel silver springs and ground plate.

Terminals — Line terminals are on one side and switchboard terminals are on the other. Each terminal is thoroughly insulated and tinned.

Insulation — All current carrying parts are separated by rubber insulation.

Lightning Arresters — Two carbons, No. 2081 grooved and No. 2080 plain, separated by No. 2090 acetate dielectric, .005 inch thick, are standard. Under the influence of a continuous arc, this protector

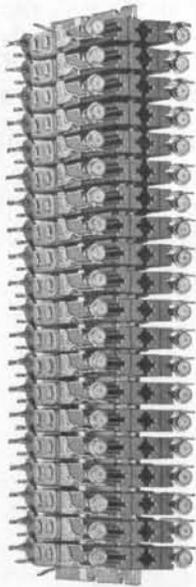
will ground the outside line until the fuse opens the circuit. No. 4500 True Gap Dischargers, which do not ground the line, will be supplied when specified.

Fuses — Unless otherwise specified, this protector is furnished with No. A-45 composition fuses that blow at 1 ampere. No. A-46 wood fuses will be furnished when specified.

Cat. No.	Description	Dimensions, Inches			Shpg. Weight
		Length	Width	Depth	
1202	H-36, 10 pr. section	5 1/2	1 1/2	5 1/2	21 lbs.
1203	H-36, 20 pr. section	10 1/2	1 1/2	5 1/2	21 lbs.
2109	Type A-45 Composition Fuse (1 ampere) for No. H-36 Protector				
2110	Type A-46 Wood Fuse (1 ampere) for No. H-36 Protector				

PROTECTION and CROSS-CONNECTING EQUIPMENT

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 $\frac{1}{2}$ -inch centers. Testing may be done easily without removing heat coil.

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 resoldered.

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 $\frac{1}{2}$ -inch centers. The circuit from the heat coil spring to the switchboard terminal is carried between the grounded mounting plates and is well shielded.

Insulation — All current carrying parts are thoroughly insulated with hard rubber and Bakelite.

Lightning Arresters — These consist of two No. 2625 grooved carbons, separated by a No. 2090 acetate dielectric .005 in. thick and will permanently ground under continuous discharge. No. 2612 Sealed Gap unit dischargers are furnished when specified.

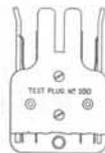
Heat Coils — These No. 100 self-soldering, wire wound heat coils have approximately $3\frac{1}{2}$ ohms resistance, will carry .35 amperes for 3 hours and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.



No. 1232
Heat
Coil

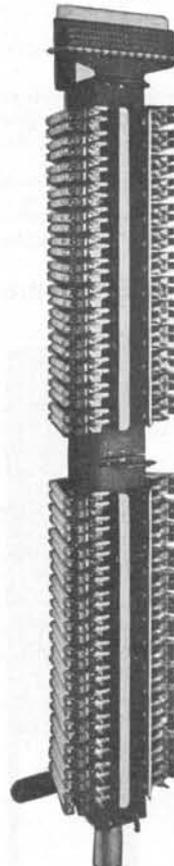
Temporary Disconnect — Before opening the circuit, insert toothpick through the slot of the carbon to keep the ground and alarm spring from making the contact when the operating spring is released.

Testing — The No. 100 test plug can be slipped over any pair of protectors and offers means to test the outside line, the heat coils, and the switchboard circuit. When test plug is withdrawn the protector is left in operating position.



No. 1234
Test Plug

Cook Type "T" Main Distributing Frame



Type "T",
50 Pairs

The type "T", wall mounting, main distributing frame is the unit of the Cook Trans-Mount system designed for the termination and distribution of the outside paper-wrapped, lead covered cable directly to the line cable terminals. This eliminates the splicing of silk, cotton or wool ends to the paper-wrapped cable for termination on exposed terminal blocks.

The type "T" is equipped with a moisture-proof, roomy but compact steel corebox, metal fanning strip with insulating bushings in fanning holes and a white designation strip for quickly and clearly numbering pairs. Other features are the self-soldering nozzle insuring tight cable sheath joints, rubber covered rings for distributing cross-connection jumpers, solder clips for both ends of the jumpers, and strong, rigid, wall-mounting brackets.

The terminal block provided for switchboard cable has a Bakelite fanning strip and a white designation strip for numbering pairs.

This frame is furnished in standard 26, 52 and 104 pair units but multiples of these sizes are available. The Cook type "H" protector with standard fuse and high-potential discharge block is installed only as required and also is standard equipment for the other apparatus in Cook's Trans-Mount system.

Catalog No.	Capacity	Dimensions, Inches	Shpg. Weight
519-1	26-Pair	$26\frac{1}{2} \times 7\frac{1}{2} \times 7$	26 lbs.
519-2	52-Pair	$46\frac{1}{2} \times 7\frac{1}{2} \times 7$	37 lbs.
519-3	104-Pair	$50 \times 19\frac{1}{2} \times 7$	82 lbs.

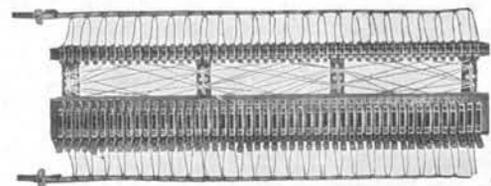
Cook Type "H" Protector Mounts



This type "H" protector unit is used in all apparatus of the Cook Trans-Mount system. Built on a strong, 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. Non-corrosive studs and washers, phosphor bronze springs and clips, and True-Gap dischargers are standard.

Kellogg No. 6 Arrester



No. 6 is a combination lightning arrester, fuse and cross-connecting rack. The capacity is 25 metallic lines or 50 grounded lines and the arrester is so arranged that

Cat. No.	Description	Dimensions, inches			Shpg. Weight per 100 Pair
		Length	Width	Depth	
1230	No. 100—10 pr. section	$5\frac{1}{2}$	2	$3\frac{1}{2}$	17 lbs.
1231	No. 100—20 pr. section	$10\frac{1}{2}$	2	$3\frac{1}{2}$	17 lbs.
1232	No. 100 Heat Coil				
2090	Acetate Dielectric (.005 in.) for No. 100 Protector				
1234	No. 100 Test Plug				
2625	Carbons for No. 100 Protector				
2612	Unit Dischargers				

Switchboard Section

POWER AND PROTECTION EQUIPMENT

PROTECTION and CROSS-CONNECTING EQUIPMENT

Kellogg No. 6 Arrester — Cont.

any line can be cross connected to any switchboard drop. Additional racks may be added to obtain any capacity desired.

It is equipped with No. 11 fuse and carbon arresters with mounting centers spaced on $\frac{5}{8}$ -inch centers. The carbons used are $1\frac{1}{4}$ inches long, $\frac{3}{8}$ inch wide and $\frac{1}{4}$ inch thick.

Cat. No.	Description	No. of Pairs Capacity	Length in Inches
6	Arrester	25	32 $\frac{1}{2}$

Cook No. L-10 Main Distributing Frame

This floor type main frame is of all steel construction and is used for mounting H-51 central office protectors. It consists of two vertical upright angle iron supports with cross pieces, wall braces, jumper rings, and necessary bolts. Additions may be made to either the right or left side. The top cross piece is drilled to attach a cable bracket to the switchboard.

The vertical uprights are 6 feet 9 inches high. The frame is 16 inches wide and the adjustable wall braces are 18 inches long. All steel parts are finished in gray enamel.

H-51 Protector

These protectors are made in sections of 10 pairs. Each section consists of a steel panel, on which are mounted a combination of line terminals, fuses and lightning arresters. This protector is fire-proof.

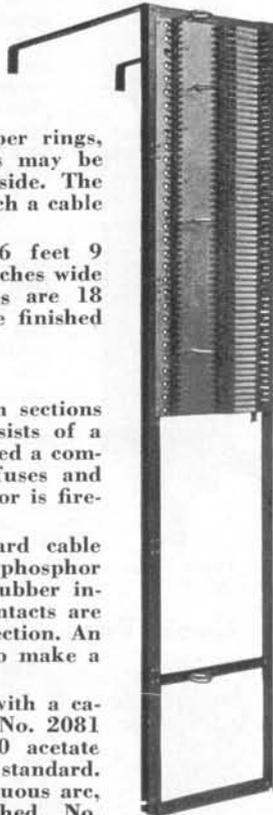
Outside cable and switchboard cable are soldered directly to the phosphor bronze terminals set in hard rubber insulation. Screw and washer contacts are provided for proper cross connection. An extra solder clip is furnished to make a common ground.

No. A-12 composition fuses with a capacity of 1 ampere are used. No. 2081 grooved carbons and No. 2090 acetate dielectrics .005 inch thick are standard. Under the influence of a continuous arc, a permanent ground is established. No. 4500 True Gap Dischargers that do not ground the line will be supplied when specified. Arresters ground on a copper ground strip that runs the length of the mounting plate, with provisions to make the ground continuous.

Jumper rings are mounted in the center of each plate. Metal pins on the back are provided for tying up the cable. Where wires run through the metal base, fibre insulation is provided.

Cat. No.	Description	Dimensions, Inches			Shpg. Weight
		Length	Width	Depth	
1260	L-10 Frame, 50 Pairs	82	12	24	16 lbs.
1040	H-51 Protector, 10 Pairs	11 $\frac{1}{4}$	12	2 $\frac{3}{8}$	6 lbs.

2081 Grooved Carbons for H-51 Protector.
2090 Acetate Dielectrics (.005 in.) for H-51 Protector.
4500 True Gap Dischargers for H-51 Protector.
2106 A-12 Composition Fuses, (1 ampere) for H-51 Protector.

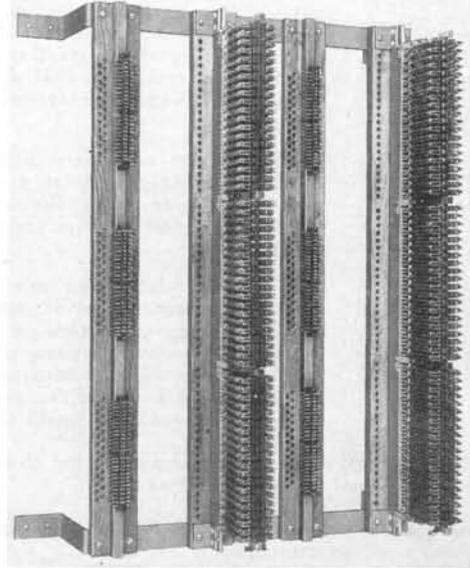


No. L-10
Frame with
No. H-51
Protector

Reliable No. 307 Wall Type Distributing Frame

Each vertical section of this substantial wall type frame has a capacity of 60 pairs of No. 303-F or 303-H switchboard protectors, mounted in banks of 20 pairs each, and 78 pairs of No. 104-H line terminals in 26-pair groups.

Verticals are equipped alternately with protectors and line terminals. The maximum capacity of this wall type frame is 240 pairs of protectors and 312 pairs of line terminals.



Cat. No.	Description	Net Weight
307	Iron Work Only—60-Pair Unit	12 $\frac{1}{2}$ lbs.

Reliable No. 303-H Switchboard Protector



The No. 303-H heat coil and air gap central office protector is used for protection against sneak currents, lightning, and direct crosses with power circuits.

The heat coil, which may be reset repeatedly, is of the quick, wide opening type which will protect against crosses with power circuits as efficiently as a standard telephone fuse.

Each protector pair consists of two No. 107 heat coils, two No. P-945 saw-tooth discharge blocks, and two No. P-633 carbons.

Cat. No.	Description	Net Weight
303-H	20-Pair Bank Protector Unit	4 $\frac{1}{2}$ lbs.
107	Heat Coil for No. 303-H Protector	
P-945	Discharge Block for No. 303-H Protector	
P-663	Carbon for No. 303-H Protector	

POWER APPARATUS

All telephone switchboards require a source of current for ringing and talking purposes. Magneto switchboards are provided with hand generators wired to a generator switching key so that power ringing may be used if desired. Unless otherwise specified the operator's set is designed to operate from dry cell batteries which may be replaced by a battery eliminator. Power ringing may be used for magneto service

when the operator must handle a large number of calls. All common battery boards require storage batteries both for ringing and talking.

The type of ringing equipment best suited for an individual exchange varies with each installation. Kellogg engineers will, upon request, and without obligation, recommend the most reliable and economical type for your exchange.

Storage Batteries

In selecting the proper battery for a telephone installation, the purchaser should consider the requirements of his particular exchange and the ratio of cost to potential life of the battery that will meet these requirements. Generally the life of a battery is determined by two factors: type of plates, and method of charging.

There are two general types of plates — Planté and Faure. Both types have been proved in telephone work; however, longer life is generally conceded to the Planté type while the Faure type usually has lower unit capacity cost.

Planté plates (as used in the Gould XPE and YPE batteries shown in the next column) are formed from lead with the active material electro-chemically deposited on ribbons or grooved strips inside. The Faure or pasted plate (as used in the Exide BTER batteries shown below) is formed by the mechanical pasting of the active material in the open spaces of the grid-shaped, lead-antimony sheet. This construction is used by virtually all manufacturers of Faure cells.

The following listings of storage batteries are confined to the sealed glass-jar type which, due to their construction, completely confine the spray within the cells. This eliminates the need for special compartments, trays or battery rooms. However, open-type batteries are still available for large installations. These, as well as repair parts, can be furnished on order.

Sealed, glass-jar type batteries are shipped complete with electrolyte, inter-cell connectors, and other necessary parts to insure quick and satisfactory installation. Cells are shipped charged, ready for immediate service.

Exide BTER — Pasted Plate Type



The elements are made up of plates of the pasted type, assembled with both wood and rubber separators in strong, sealed glass jars.

In these Exide pasted plate type batteries, the active material is deposited on both sides of the plate frame work in vertical strips between horizontal bars which are staggered for greater strength. Spray-proof, easy to remove vent plugs are furnished. Each container has one cell equipped with pilot balls to give an indication of the state of charge.

Multi-Cell Units in Wood Crates*

Type and Size	Capacity in 8-Hour Rate, 1.75 Volts	No. of Cells Per Unit	Dimensions in Inches			Shipping Weight Per Unit, Lbs.
			Length	Width	Height	
3-BTER-5	14.4	3	9	5 $\frac{3}{8}$	8 $\frac{3}{8}$	37
3-BTER-7	21.6	3	9	5 $\frac{3}{8}$	8 $\frac{3}{8}$	40
11-BTER-5*	14.4	11	21 $\frac{7}{8}$	12	9 $\frac{7}{8}$	141
11-BTER-7*	21.6	11	21 $\frac{7}{8}$	12	9 $\frac{7}{8}$	163

Gould XPE and YPE, Planté Type

Gould Planté cells have elements made up of Planté positive and Faure negative groups insulated with white cedar separators. The positive plates are shaped from lead sheets by the Gould "spinning operation" and the active material is formed directly from the pure lead base. This type of Gould battery should be selected where the primary consideration is long life and a minimum of maintenance.

All Gould cells are assembled in blown glass jars with hard rubber covers.



Planté Cells in Wood Trays

Type	Ampere Hour Capacity	No. of Cells per Tray	Dimensions in Inches			Ship- ping- Wt.
			Length	Width	Height	
XPE-3	16	1 No Tray	2 $\frac{3}{8}$	6 $\frac{5}{8}$	10 $\frac{3}{4}$	15
XPE-3118	16	11 Single Row	33 $\frac{1}{2}$	8 $\frac{1}{4}$	12 $\frac{1}{2}$	165
XPE-311D	16	11 Double Row	19 $\frac{1}{4}$	15 $\frac{3}{4}$	12 $\frac{1}{2}$	165
YPE-3	28	1 No Tray	2 $\frac{3}{8}$	6 $\frac{5}{8}$	15 $\frac{1}{2}$	23
YPE-3118	28	11 Single Row	33 $\frac{1}{2}$	8 $\frac{1}{4}$	17 $\frac{1}{4}$	250
YPE-311D	28	11 Double Row	19 $\frac{1}{4}$	15 $\frac{3}{4}$	17 $\frac{1}{4}$	250

Philco CF and PF — Flote' Type

Philco sealed-type, spray-proof telephone batteries are available in capacities ranging from 12 to 1120 ampere hours. Composition covers have funnel type vents to condense moisture so that battery tops are kept clean and dry. Water can be added without removal of vents.

Flote' Type — Philco batteries are of the Faure or pasted plate type and feature Floté special grids and plate construction. The active material is firmly pressed into the plate and locked in place, by virtue of crossing grid members on opposite plate surfaces.

Charge Indicators — All types have built-in charge indicators to show the state of charge without the use of hydrometer.

Crates — Sturdy UXB type cabinets without covers can be furnished. They are finished with two coats of acid-proof asphaltum paint.



Switchboard Section

POWER AND PROTECTION EQUIPMENT

STORAGE BATTERIES and CHARGING EQUIPMENT

Philco CF and PF — Cont.

These batteries are shipped fully charged, sealed and with all necessary connectors, ready for service.

The 96-PF is a rugged, 3-cell unit, recommended for manual and dial PBX, central office No. 2 battery service and other low discharge requirements.

Single-cell units may be had with built-in charge indicators. Specify the number of cells required. Multi-units have one cell fitted with built-in charge indicator.

Multi-Cell Units

Type and Size	Unit Volts	Capacity in Ampere Hours, 8-Hour Rate, 1.75 Volts	No. of Cells Per Unit	Dimensions in Inches			Shipping Weight Lbs.
				Length	Width	Height	
52-CF	2	10	1	2 $\frac{3}{8}$	3 $\frac{5}{8}$	7 $\frac{3}{4}$	8
54-CF	4	10	2	2 $\frac{1}{8}$	7 $\frac{1}{4}$	7 $\frac{3}{4}$	12
92-PF	2	20	1	4 $\frac{3}{8}$	3 $\frac{5}{8}$	7 $\frac{3}{4}$	13
94-PF	4	20	2	4 $\frac{3}{8}$	10 $\frac{1}{8}$	7 $\frac{3}{4}$	25
96-PF	6	20	3	4 $\frac{3}{8}$	10 $\frac{3}{8}$	7 $\frac{3}{4}$	29

Kellogg Battery Racks

Two types of Kellogg steel battery racks are available: the tier type and the step type.

The more popular step type is used wherever space permits. This type of rack permits easy servicing of the batteries as the tops of all the cells are out in the open exposed to view, and are easily accessible for hydrometer readings, addition of water, etc.

The tier type battery rack is built up in shelves, one directly above the other. This rack will be the same length as the step type but will be higher and will not be as wide. The tier type is used where space is a deciding factor and as one shelf is above the other it is not as easy to add water, take readings and make inspections as with the step type.

Either type of rack can be built for any size or any number of glass jar battery cells. They are built of 1 $\frac{1}{4}$ in. to 2 $\frac{1}{2}$ in. angle iron, depending on the size, weight, and number of cells of battery to be mounted. All joints are spot welded—the frame is finished in gray.

Fansteel Balkite Taper Rectifiers

The Fansteel Balkite Rectifier is used for float charging small storage batteries for telephone exchange and PBX switchboards. In the Fansteel Balkite taper charge system the tantalum rectifier automatically raises and lowers the rate of battery charge over a wide range in direct proportion to the load demand on the battery. No relays or other control devices are necessary.

All Balkite Taper Rectifiers are full wave with dial tap switches for close adjustment and are provided with choke and self-healing tantalum condenser for complete filtering.

Type G



Type G full wave rectifier is designed for float charging small 16 to 24 volt batteries at rates up to .5 amperes. It consists of four small rectifier cells, transformer and

output adjustment tap switch assembled in a steel cabinet arranged for shelf mounting. Flexible rubber covered leads are provided for battery and AC line connection.

Type	Battery Volts	AC Supply Volts	AC Supply Cycles	Dimensions in Inches			Shipping Weight
				Length	Width	Height	
G-30	16-25	115	50-100	12	8 $\frac{1}{2}$	6 $\frac{1}{2}$	65 lbs.
G-31	16-25	230	50-100	12	8 $\frac{1}{2}$	6 $\frac{1}{2}$	65 lbs.

Raytheon Rectifiers



Raytheon Rectifiers are used to obtain telephone DC power direct from an AC source. They are designed particularly for PBX switchboards, either dial or manual.

Rectifiers provide long, trouble-free, economical operation. Each Rectifier will operate a telephone system for 24 hours a day as long as the maximum current demand does not exceed the rating. Current ratings are based on

installations being in live air where the maximum ambient temperature does not exceed 95° F.

Rectifiers are available with change of source relays which make it possible to furnish DC with dry cells during an interruption.

Rectifiers Using Copper Oxide Rectifying Units

Catalog No.	DC Output for Talking Volts	DC Output Amps.	AC Supply Frequency	AC Supply Width	Cabinet Size, Inches		Shipping Weight, Lbs.
					Depth	Height	
1024	6	0.5	50/60	7	6 $\frac{1}{4}$	10 $\frac{1}{2}$	17

Raytheon Rectifiers

Battery Eliminator for Operators' Transmitters on Magneto Switchboards



A full 4 volts is furnished by this Rectifier for the best operation of telephone operator's headset transmitters. Lifetime copper oxide rectifying units are used.

Operates from 115 volts, 50/60 cycle AC light socket. Delivers 4 volts DC. Current consumption is 4 $\frac{1}{2}$ watts. Powers 1 or 2 transmitters.

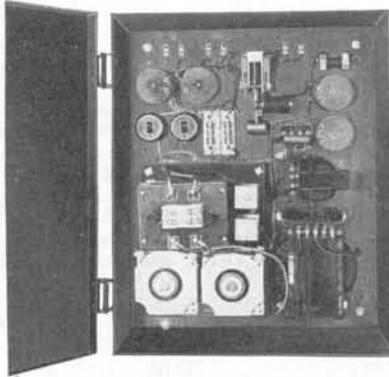
If there is an AC power interruption, a relay automatically disconnects the Rectifier and connects a set of dry cells provided by the telephone company for this emergency. The Rectifier is automatically reconnected as soon as the AC power circuit is restored to service.

Cat. No.	DC Output Volts	DC Output Amps.	AC Supply Frequency	AC Supply Width	Cabinet Size, Inches		Shipping Weight, Lbs.
					Depth	Height	
1057-R	4	0.23	50/60	7	6 $\frac{1}{4}$	10 $\frac{1}{2}$	17

POWER UNITS and RINGING EQUIPMENT

No. 2-A Power Unit

The Kellogg 2-A Power Unit, used with a twenty-four volt storage battery, forms a complete power installation for PBX, magneto or small common battery switchboards handling any number of calls up to 2500 a day. It supplies adequate ringing current of 100 volts, 20 cycle, and does not interfere with radio reception.



This compact unit combines in one cabinet all the necessary fuses, switches, condensers, pole changer, transformer, dry charger, and filter equipment. All of the equipment is mounted on a wood backboard inside the black enameled steel cabinet. Dimensions of mounting cabinet: 20 inches high, 16 inches wide, 8 inches deep. Two conduit knockout holes are provided at top, one for entrance of commercial current and ringing leads to switchboard; the other for direct current leads to storage battery.

The direct current charging rate of the Copper Oxide charger used is variable from approximately 100 milliamperes to 1 ampere by means of slide band resistors.

Code No.	Operating Cycles	Current Voltage	Ringing Cycle	Current Voltage	Net Weight
2-A	60	110-115	20	100	100 lbs.

Operator's Battery Fansteel CAB-4 Power Unit



The CAB-4 power unit consists of a small Fansteel charger and a sealed type, 4-volt Exide battery, operating from 110-volt, 60-cycle A.C. current. It provides a constant battery supply for the operator's telephone circuit and night alarm, year after year without interruption. This is a popular unit with those who do not want to rely on dry cells or primary batteries.

With this unit, supplying a continuous, uniform current flow to the operator's set, transmission of the highest quality is assured at all times. The charger has a direct current output of from 25 to 250 milliamperes. The 2-cell, 4-volt battery has a capacity of 14 ampere hours.

The CAB-4 power unit is large enough to furnish current for 2 or 3 operators' transmitters. It has sufficient battery reserve for approximately 4 days, should the commercial current fail. This unit is enclosed in an attractive steel case, 9½" deep, 8½" wide, and 8½" high.

This power unit will pay for itself in a short time by the saving in dry cells or other batteries of the primary type. The only attention required is the addition of water to the battery and rectifying cell, 2 to 3 times a year.

Ringing Equipment

Single phase, 75 to 115 volt alternating current, at 16 to 25 cycles is ordinarily used for ringing subscribers' telephones except on selective party lines. As the particular types of ringing current required are not obtainable directly from commercial lighting and power circuits, it is necessary to use some kind of converting apparatus.

Magneto Ringing Set — No. MG-125

This MG-125 Magneto Ringing Set using "Alnico", a new powerful, magnetic material provides simplicity of construction and the ability to run long periods without attention. Operation is quiet, causes no interference with radio reception and has close voltage regulation.

A two bearing frame is used, with stationary windings for both motor and generator.

Motor and generator terminals are mounted on insulating blocks in recesses cast in the base which are used as junction boxes with facilities for direct conduit connection.

In cases where this type of machine is used in supplying ringing current for exchanges which employ machine ringing and superimposed battery for tripping purposes, an insulating transformer furnished by the manufacturer is specified.

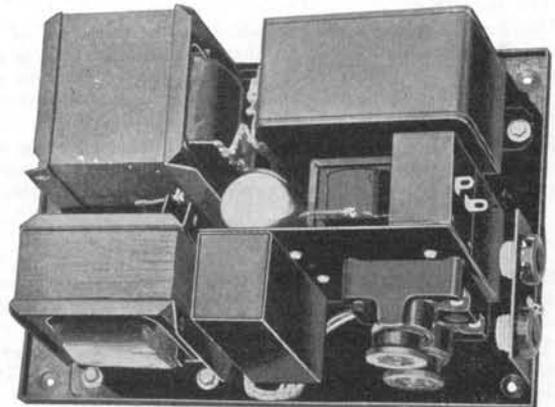
Performance Characteristics of the 60 Cycle Set.

Watts input: running idle, 60; full load, 75; average, 65. The motor may be 115 volts, 60 cycles, 1140 R.P.M. or 230 volts, 60 cycles, 1140 R.P.M. Generator, 15 watts, 80 volts, 19 cycles.

The floor space required is 11x7½ inches. Shipping weight is 63 pounds.



Sub-Cycle Ringing Converter



Produces a powerful ringing current entirely independent of frequency variations in the commercial power supply. Has no moving parts — nothing to adjust, requires no routine maintenance. The output frequency is always one-third of the input frequency, regardless of fluctuations in the power supply.

With 60-cycle input current the output is 20 cycles; with 50-cycle input the output is 16⅔ cycles.

Model S — For Offices up to 1600 Stations

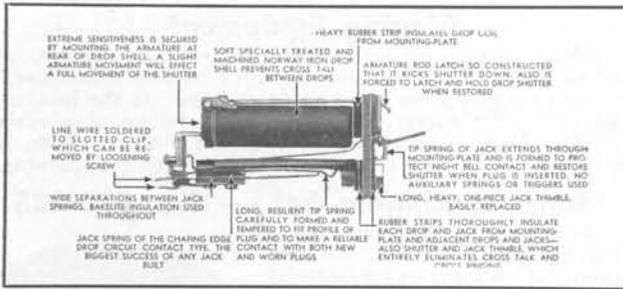
Produces 16⅔ or 20-cycle ringing A.C. supply. Operates on 105-125 volts, 50 or 60-cycle A.C. supply. Output is approximately 20 watts at 90 volts. It is necessary to indicate the frequency desired when ordering.

Cabinet is finished in black, wrinkle lacquer. Size 8x-11½x5 inches. Shipping weight, 30 lbs.

Switchboard Section

SWITCHBOARD APPARATUS

COMBINED DROPS and JACKS



The Kellogg combined drop and jack is extremely sensitive. It operates with a minimum current, and gives a good clear signal. The mechanism is designed so the drop shutter will always restore even if the plug is badly worn. Kellogg drops and jacks are practically free from trouble and burn-outs.

If you will look at the picture above you will see how well the Kellogg drop insures positive operation. The armature which operates the latch is at the back end of the coil. This permits the use of a longer latch rod, with more positive action because the armature can be set closer and pulled up easier by weaker current. The slightest movement of the armature will cause full movement of the latch. The latch, as it is constructed, not only releases the shutter but kicks it down at the same time. Because of this feature the operation of Kellogg drops is more positive, even on heavily loaded lines where the ringing current is weak.

The outstanding feature of the Kellogg combined drop and jack is the extreme simplicity of construction and freedom from trouble. The long combined tip and restoring spring of heavy, even tempered German silver is the only spring making contact with the plug. The action of this spring places all jack wear on the inexpensive and easily replaced jack thimble. A positive electrical contact is always insured.

The break contact spring which cuts one side of the drop off from the line when the plug is inserted, is also constructed of heavy German silver being so formed that the chafing knife edge always makes a good electrical contact.

The drop shutter is of the punched hinged type construction and falls to an angle of 65 degrees when released. The shutter is plainly visible from any angle.

Kellogg Night Alarm

The Kellogg night alarm has been proven by many years of service. Here again, a long flexible spring having a non-corrosive contact insures maximum operation.

The code ringing night alarm, often called the armature contact, is separate from the regular night alarm. It is easily adjusted from the face of the switchboard.

Heavy insulators separate the springs, and thick blocks of hard rubber insulate drops and jacks from the frame, insuring maximum protection against lightning and other foreign current. Coils are easily removable but the liberal insulators make such removal rarely necessary.

Kellogg drops and mountings can be used in boards of other manufacture. In ordering give board number if Kellogg, if otherwise name of manufacturer and dimensions of the mounting.

Standard Combined Drops and Jacks

No. 300 and 301, 2-Conductor, Single Cut Off

The No. 300 combined drop and jack is provided with code ringing night alarm. An adjustment screw protrudes

through the mounting strip, allowing easy, positive adjustment.

No. 300 and 301 combined drops and jacks are standard in current Kellogg magneto drop supervision switchboards.

No. 301 combined drop and jack is standard where the code ringing feature is not desired. It will mount on the same type of mounting as the No. 300 type.

In ordering indicate the resistance of the winding of the drop coil desired. This resistance may be indicated by using the letters in the table below along with the code number of the drop and jack. For example Code No. 301-DJE drop and jack has a coil whose resistance is 500 ohms. If the drops and jacks are to be mounted specify the code number of the mounting.

Code No.	Resistance	Plug Used
300	500 Ohms DJE	42
301	1000 Ohms DJC	42

Piece parts for No. 300 and No. 301 are shown on page 10.

Drop and Jack to Fit W. E. 47 Plug

2-Conductor — Single Cut Off

No. 303 drop and jack fits the W. E. 47 plug. It is identical with the No. 301 except for the different jack thimble. Use No. 395 mounting shown on page No. 11.

Code No.	Resistance	Fits Plug
303	500 Ohms DJE	247
	1000 Ohms DJC	

Drop and Jack for Toll Lines

2-Conductor — Double Cut Off

No. 103 drop and jack is similar in construction to No. 301 except that the jack is provided with double cut off springs to cut the drop coil completely out of the circuit when plug is inserted.

Code No.	Resistance	Plugs Used
103	500 Ohms DJE	42
	1000 Ohms DJC	

Drop and Jack for Rural Lines Common Battery Switchboards

3-Conductor — Single Cut Off

No. 105 drop and jack is similar in construction to No. 103 but fits a three conductor plug.

Code No.	Resistance	Plugs Used
105	500 Ohms DJE	106
	1000 Ohms DJC	

For Rural Toll Lines, Common Battery Switchboard

3-Conductor — Double Cut Off

No. 107 drop and jack is similar to No. 105 except it is provided with a double cut off so that the drop coil is cut from the line completely when the plug is inserted.

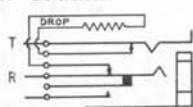
Code No.	Resistance	Plugs Used
107	500 Ohms DJE	106
	1000 Ohms DJC	

COMBINED DROPS and JACKS--PIECE PARTS

Drop and Jack for Dial Trunks

2-Conductor — Double Cut Off

No. 113 drop and jack is two conductor, and has double cut off springs and one make contact.



Code No.	Resistance Ohms	Code No.	Resistance Ohms	Plug Used
113	500 DJE		1000 DJC	42

Coils Only for Drops

Standard drop and jack coils for Kellogg combined drops and jacks. They are quickly and easily replaced in the mounting.

Code No.	Resistance	Code No.	Resistance
DJA	100 ohms	DJC	1000 ohms
DJE	500 ohms	DJS	2500 ohms

Piece Parts Used in No. 300 Combined Drop and Jack

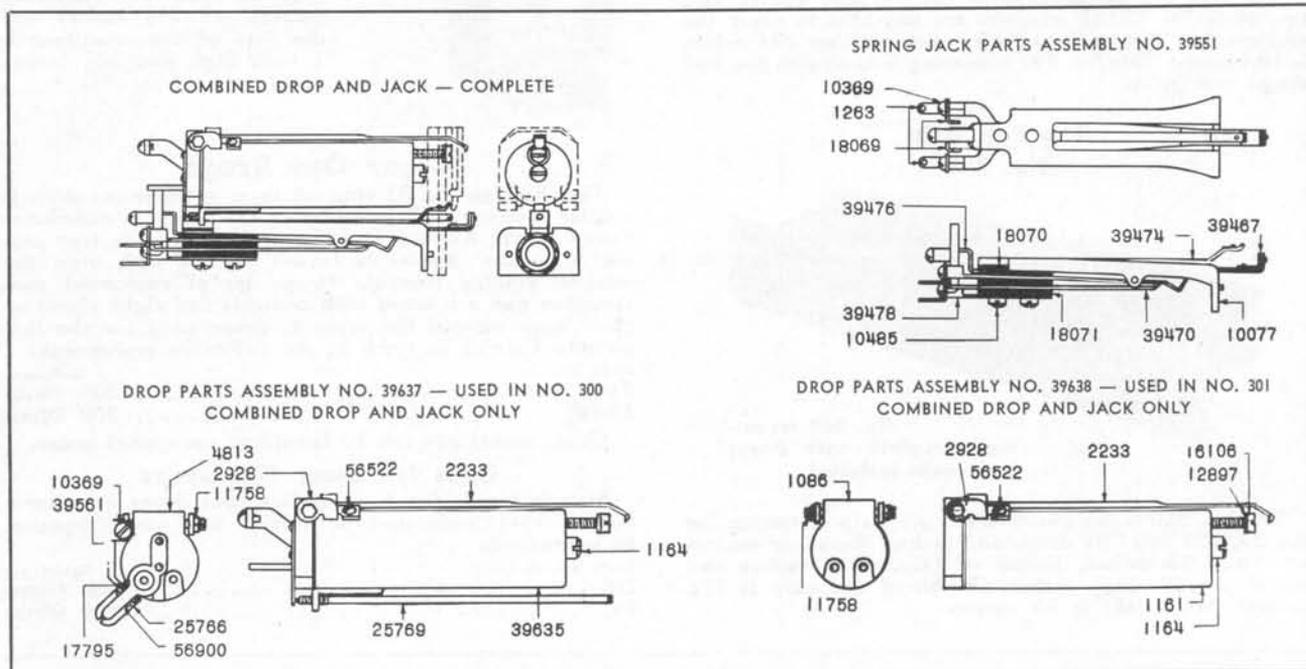
No. of Pieces	Piece Number	Description
1	42225	Sleeve
1	10001	Washer
Drop Parts Assembly 39637		
1	4813	Armature
1	2928	Armature Support
2	11758	Pivot Screw Assem.
2	59581	Rivet
1	25761	Cont. Spring
1	2233	Hook
1	25769	Cont. Screw Assem.
2	17795	Insulation
1	25766	Washer
1	39561	Terminal
2	16216	Bushing
1	39635	Shell
1	16106	Washer

Piece Parts No. 300 — Cont.

No. of Pieces	Piece Number	Description
1	10639	Screw, R. H. Mach.
2	56900	Screw, R. H. Mach.
1	1164	Screw, F. H. Mach.
1	12897	Screw, F. H. Mach.
2	56522	Screw, R. H. Mach.
Spring Jack Assembly 39551		
1	39470	Cont. Spring
1	39467	Cont. Spring Assem.
1	39474	Spring with Contact
1	39476	Terminal
1	39478	Terminal
1	10077	Frame
2	18071	Insulation, Thick
2	18070	Insulation, Thin
2	1263	Terminal
2	18069	Terminal
2	2936	Bushing
4	10369	Screw
2	10485	Screw

Piece Parts Used in No. 301 Combined Drop and Jack

No. of Pieces	Piece Part No.	Description
1	42225	Sleeve
1	10001	Washer
Drop Assembly No. 39638		
1	1086	Armature
1	2928	Armature Support
2	11758	Pivot Screw Assem.
1	2233	Hook
1	1161	Shell
1	16106	Washer
1	1164	Screw
1	12897	Screw
2	56522	Screw
Spring Jack Assembly No. 39551		
Same as for No. 300 Combined Drops and Jacks.		



Piece Parts Diagram of Combined Drops and Jacks No. 300 and No. 301.

Switchboard Section

SWITCHBOARD APPARATUS

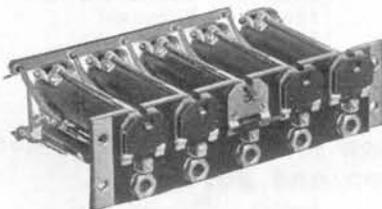
DROP and JACK MOUNTINGS and CLEAR OUT DROPS

Drop and Jack Mountings

Kellogg mountings for the above drops and jacks are made in strips accommodating five or ten drops and jacks. The strips proper are made of steel, copper plated. Heavy blocks of insulation are used to insulate the drop and the jack from the mounting. The shutters which are furnished are fastened to the mounting. Net weight complete with drops and jacks: five per strip, 2½ lbs.; ten per strip, 4 lbs.

Note: The drop and jack mountings shown here are not shipped equipped with drops and jacks unless so ordered.

Five Per Strip No. 257



No. 257 mounting, complete with Drops and Jacks installed.

inches and the width of strip is 1¾ inches. Weight is 10 ounces.

No. 257 mounting strip is the standard five per strip. It will mount No. 29, 101 and 301 type drops and jacks. The mounting centers are 6¼ inches. Length of the face is 5-55/64 inches; overall length is 6-11/16

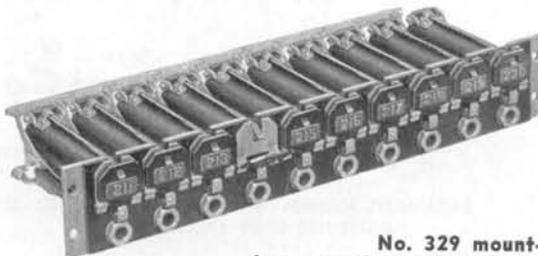
No. 333

The No. 333 mounting strip is similar to No. 257 but is drilled for code ringing night alarm. Mounts No. 59, 100 and 300 type drops and jacks. Net weight is 10 ounces.

No. 395

The No. 395 is identical to the No. 257 except that two piece No. 28421 adapters are provided to cover the end spacing. This permits flush type mounting. Net weight is 10 ounces. This No. 395 mounting is used with No. 303 drops and jacks.

Ten Per Strip No. 329



No. 329 mounting, complete with Drops and Jacks installed.

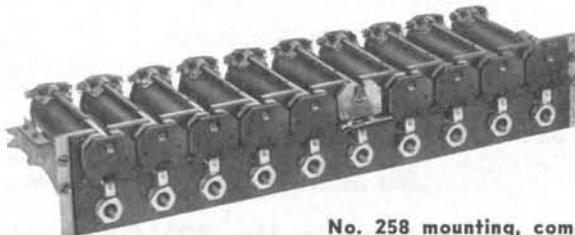
The No. 329 is the standard ten per strip mounting for No. 29, 101 and 301 drops and jacks. Mounting centers are 10-21/32 inches, length of face, 10¼ inches and length overall, 11½ inches. Width of the strip is 1¾ inches. Net weight is 10 ounces.

Drop and Jack Mountings

No. 426

The No. 426 is the standard ten per strip mounting for No. 59, 100 and 300 type drops and jacks. It is similar to the No. 329 except it is drilled for adjustable code ringing night alarm. Net weight is 1 pound.

No. 258



No. 258 mounting, complete with Drops and Jacks installed.

No. 258 is of the lug mounted type and mounts 10 drops and jacks. It may be used to mount type No. 29, 101 and 301 drops and jacks. Width of the strip is 1⅞ inches, overall length is 10¾ inches, length of face is 10¼ inches and mounting centers are 11-5/32 inches. Net weight is 1 pound.

Individual Drop and Jack Mounting

One No. 29, 100 or 301 combined drop and jack may be mounted.

Code No.	Dimensions of Face		Mounting Centers
	Height	Width	
306	1¾ in.	1½ in.	1¼ in.

Individual Clear Out Drop Mounting



No. 296

One No. 51 clear out drop may be mounted. Mounting centers are 1¼ inches and the face of the mounting is 1 inch high and 1½ inches wide.

Clear Out Drops

This Kellogg No. 51 ring off drop or clear out drop is similar in design and embodies all the points of excellence found in the Kellogg line drop. This drop is very sensitive so the shutter is forced to fall with even the weakest ringing current. Drops are of rust-proof construction and are fitted with contacts for night alarm or pilot lamp signals, the same as drops used for the line circuit. Carried in stock in the following resistances:

Code No.	Resistance
51-DC	1000 Ohms
51-DE	500 Ohms

Other resistances can be furnished on special order.

Coils for Clear Out Drops

Standard coils for Kellogg clear out drops are shown below. These coils may be quickly and easily replaced in mountings.

Code No. of Coil	Resistance
DE	500 Ohms
DC	1000 Ohms

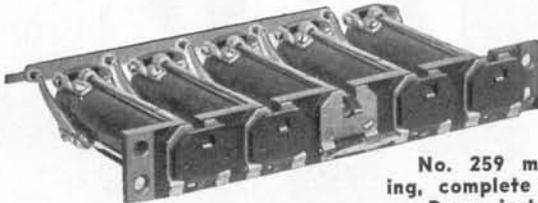
Piece parts for Combined Drops and Jack Mountings are shown on page No. 32.

CLEAR OUT DROPS and MOUNTINGS

Mountings for Clear Out Drops

While a mounting can be furnished to meet practically any requirement, Kellogg recommends using the standard mountings shown below which are carried in stock for prompt shipment. Net weight complete with drops: five per strip, 2½ lbs.; eight per strip, 2¾ lbs.; ten per strip, 3 lbs.

Five Per Strip Mounting No. 259



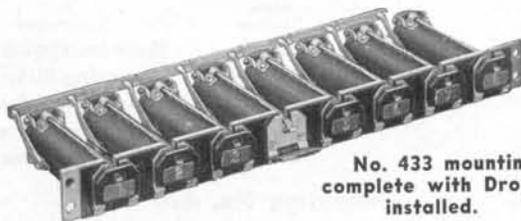
No. 259 mounting, complete with Drops installed.

The No. 259 drop mounting is standard for mounting five No. 51 drops. In general construction it is similar to the drop and jack mounting strip. The mounting screw centers are 6¼ inches, length of face is 5-27/32 inches and width is 1 inch. The drop mounting centers are 1-3/16 inches. Net weight, 4 ounces.

Mounting No. 449

The No. 449 mounting is the same as No. 259 except the face strip is 1-3/16 inches wide. The face is of the flush type and the strip fits Dean Switchboards.

Eight Per Strip Mounting No. 433



No. 433 mounting, complete with Drops installed.

The No. 433 is the standard for mounting eight No. 51 or No. 22 type drops. Overall length is 10-21/32 inches, length of face is 10¼ inches, width is 1 inch and mounting centers, 10-21/32 inches. Drop mounting centers, 1-9/32 inches. Net weight, 10 ounces.

Ten Per Strip Mounting No. 427

The No. 427 drop mounting is similar to the No. 433 and it takes ten drops per strip. Overall length is 10-31/32 inches, mounting centers are 10-21/32 inches, length of face is 10¼ inches and width is 1 inch. Drop mounting centers, 1 inch. Net weight is 12 ounces.

Mounting No. 260



No. 260 mounting, complete with Drops installed.

The No. 260 drop mounting is standard for mounting ten No. 51 drops. It is similar in construction to the drop and jack mounting strip of the lug mounted type. The mounting screw centers are 11-5/32 inches, length of face is 10¼ inches, width of strip is 1 inch and length overall is 10¾ inches. The drop mounting centers are 1 inch. Net weight, 12 ounces.

Note: Other types of mounting strips are available. When ordering send in sample and specify code number and make of switchboard.

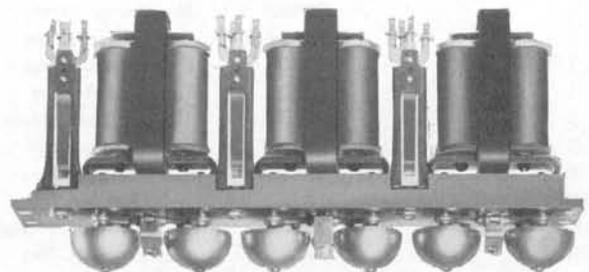
Combined Ringer, Drop and Jack Type No. 3

The No. 3 type combined ringer, drop and jack is used where a bell signal is required instead of a drop. The gongs are made of nickel plated brass and their diameter is 1-13/32 inches. The nickel plated shutter is operated by the armature clapper and must be restored manually. The jack has the same standard construction as Kellogg combined drops and jacks. Uses plug No. 42.

They are furnished in different resistances as follows:

Code No.	3-A	3-D	3-E
Resistance in Ohms	1000	1600	2500

Mountings for Combined Ringer, Drop and Jack Mounting No. 455

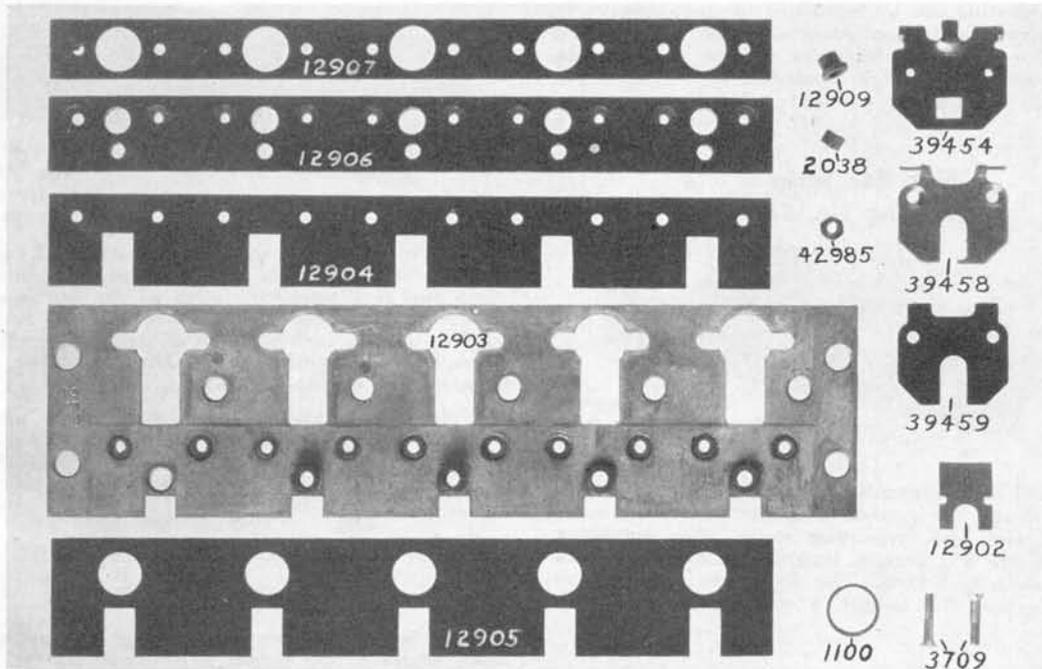


Code No. 455 mounting takes the same space as the standard ten per strip combined drop and jack mounting. Screw mounting centers are 10-21/32 inches, length of face is 11-3/32 inches and width is 1¾ inches. Mounts three No. 3 type combined ringers and drops.

Piece parts for Clear Out Drop Mountings are shown on page No. 33.

Switchboard Section

SWITCHBOARD APPARATUS

COMBINED DROP and JACK MOUNTINGS--PIECE PARTS**Drop and Jack Mounting No. 257**

Piece part numbers and a description of each part used in Combined Drop and Jack Mounting No. 257 are listed below along with piece parts used in the other Combined Drop and Jack Mountings.

Mounting No. 257

No. of Pieces	Piece Number	Description
1	12907	Rear Insulation
5	12909	Bushing
5	1100	Bushing
1	4098	Connector Assem.
1	10056	Night Bell Wire
4	12995	Mounting Screw
1	14154	Terminal
4	30336	Terminal
1	12903	Mounting Strip
1	12904	Front Insulation
1	12905	Front Insulation
1	12906	Rear Insulation
5	39459	Shutter Insulation
5	39458	Shutter Support
5	39454	Shutter
10	2038	Bushing
5	12902	Cont. Term. Assem.
10	49285	Shutter Mtg. Nut
10	3709	Shutter Mtg. Screw

Mounting No. 333

Combined drop and jack mounting No. 333 uses the same parts as No. 257 except No. 333 uses No. 25858 front insulation instead of No. 12905.

Mounting No. 395

Combined drop and jack mounting No. 395 uses the same parts as No. 257 except No. 395 uses No. 28739 screws instead of No. 12995 and has two No. 28241 adapters.

Mounting No. 329

Combined drop and jack mountings No. 329 uses the same parts as No. 257 except for the following which apply to No. 329.

No. of Pieces	Piece Number	Description
1	12919	Rear Insulation
1	25927	Mounting Strip
1	12928	Front Insulation
1	12916	Front Insulation
1	12918	Rear Insulation

Mounting No. 426

Combined drop and jack mounting No. 426 uses the same parts as No. 329 except No. 426 uses one No. 8955 terminal in addition to those shown for No. 329 and that No. 426 uses No. 29350 front insulation instead of No. 12928.

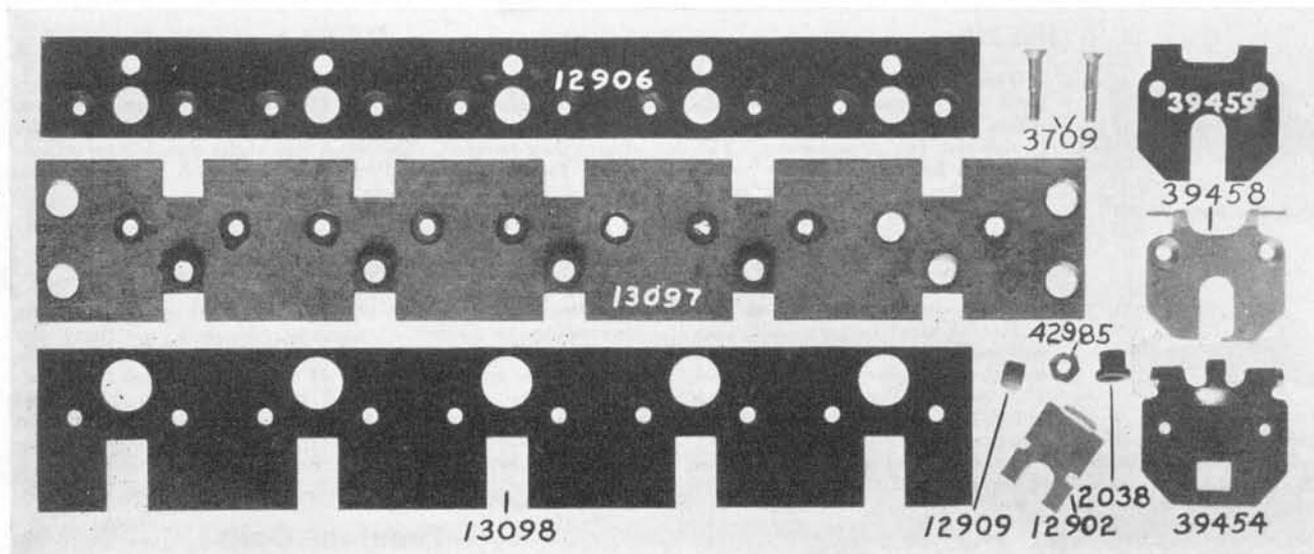
Mounting No. 258

Combined drop and jack mounting No. 258 uses the same parts as No. 257 except for the following parts which apply to No. 258.

No. of Pieces	Piece Number	Description
1	12918	Rear Insulation
1	9304	End Lug Assem. L.
1	9305	End Lug Assem. R.
4	42033	Screw
1	12915	Mounting Strip
1	12916	Front Insulation
1	12917	Front Insulation
1	12918	Rear Insulation

MOUNTINGS for CLEAR OUT DROPS -- PIECE PARTS

Drop Mounting No. 259



Piece part numbers and a description of each part used in Clear Out Drop Mounting No. 259 are listed below along with piece parts used in the other Mountings for Clear Out Drops.

Mounting No. 259

No. of Pieces	Piece Number	Description
1	13097	Steel Mtg. Strip
1	13098	Front Insulation
1	12906	Rear Insulation
5	39459	Shutter Insulation
5	39458	Shutter Support
5	39454	Shutter
10	2038	Bushing
5	12909	Bushing
5	12902	Cont. Term. Assem.
1	4098	Connector Assem.
1	12996	Night Bell Wire
1	14154	Terminal
4	30336	Terminal
10	3709	Shutter Mtg. Screw
10	42985	Shutter Mtg. Nut
4	12995	Mounting Screw

Mounting No. 433

No. of Pieces	Piece Number	Description
1	30967	Steel Mtg. Strip
4	12995	Mounting Screw
1	25015	Front Insulation
1	25013	Rear Insulation
8	39459	Shutter Insulation
8	39458	Shutter Support
8	39454	Shutter
16	2038	Bushing
8	12909	Bushing
8	12902	Cont. Term. Assem.
16	42985	Nut
1	8955	Night Bell Wire
1	14154	Terminal
7	30336	Terminal
16	3709	Screw

Mounting No. 426

No. of Pieces	Piece Number	Description
1	30205	Mounting Strip
4	12995	Mounting Screw
1	13109	Front Insulation
1	12918	Rear Insulation
10	39459	Shutter Insulation
10	39458	Shutter Support
10	39454	Shutter
20	2038	Bushing
10	12909	Bushing
10	12902	Cont. Term. Assem.
1	14154	Terminal
9	30336	Terminal
1	8955	Night Bell Wire
20	3709	Screw
20	42985	Nut

Mounting No. 260

No. of Pieces	Piece Number	Description
1	13102	Steel Mtg. Strip
1	9304	End Lug Assem. L
1	9305	End Lug Assem. R
4	42033	Mounting Screw
1	13103	Front Insulation
1	12918	Rear Insulation
10	39459	Shutter Insulation
10	39458	Shutter Support
10	39454	Shutter
20	2038	Bushing
10	12909	Bushing
10	12902	Cont. Term. Assem.
1	14154	Terminal
9	30336	Terminal
1	8955	Night Bell Wire
20	3709	Screw
20	42985	Nut

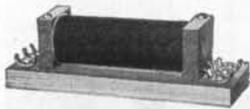
Switchboard Section

SWITCHBOARD APPARATUS

SWITCHBOARD COILS

Induction Coils for Switchboards

No. 7-D



The No. 7-D induction coil is used on magneto switchboards when a third or tertiary winding is desired for monitoring. The primary has a resistance of 4 ohms, the secondary 90 ohms and the tertiary 435 ohms. Net weight, 12 ounces.

No. 108-A



The primary winding of this universal local battery induction coil has a resistance of 1.3 ohms and the secondary a resistance of 11.1 ohms. Terminals are provided for either screw or solder connections. It is used in magneto switchboards using dry cells for primary batteries. The overall length is $4\frac{1}{4}$ inches, the spool heads are 1 inch square and the net weight is $4\frac{1}{2}$ ounces.

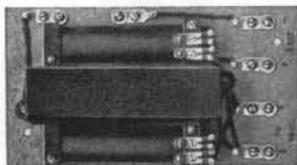
No. 81-A



No. 81-A induction coil is used with battery feed coils where operator's sets on magneto switchboards are supplied from 24-volt storage battery.

The primary winding has a resistance of 4 ohms and the secondary $37\frac{1}{2}$ ohms. Terminals are provided for either screw or solder connections. The spool heads are 1 inch square and the overall length is $4\frac{1}{4}$ inches. Net weight is $4\frac{1}{2}$ ounces.

No. 3-A Operator's Feed Coil



These No. 3-A coils are used in magneto switchboards with No. 81-A induction coils to supply operator's transmitter with current from storage battery. One No. 81-A induction coil and one battery feed coil is used for each position. These coils

each consist of a 2 M. F. condenser in combination with two retardation coils, one in each side of the circuit. They are wound to secure the proper impedance to feed the right amount of current to the transmitter and prevent cross talk between positions. The base is of maple, $3\frac{3}{4}$ inches wide and 6 inches long. Net weight is $1\frac{1}{2}$ lbs.

Insulating Transformers

No. 19-B



The 19-B insulating transformer is well balanced and withstands a breakdown test of 7500 volts. It can be used either as an insulating transformer or drainage coil on telephone lines paralleling high tension electric light lines. The three single windings of 29, 58 and 29 ohms resistance are brought out with six heavy rubber covered leads. It is furnished without cover or base and can be mounted as desired. The length is 7 inches, width is $4\frac{3}{4}$ inches and the height is $4\frac{1}{2}$ inches. Net weight is 17 lbs.

Insulating Transformers — Cont.

No. 19-A

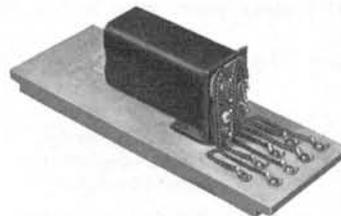
No. 19-A insulating transformer has the same construction and dimensions as No. 19-B but it has four tandem windings and will stand a breakdown test of 5500 volts alternating current. The 19-A has eight flexible terminals which facilitate grounding either or both halves of the transformer for drainage purposes.

Repeating Coils

Kellogg takes every engineering and manufacturing precaution to insure a superior coil that will meet the most exacting demands in both ringing and talking efficiency. The cores are made of silicon steel and the windings are completely enclosed in heavy, cross talk proof cases. The transmission losses are considerably less than one half mile of standard cable. For additional information on repeating coils write for bulletin No. 206.

Phantom Coils

No. 24-A, Ring and Talk Through



The No. 24-A repeating coil has extremely low transmission loss and is used with phantom circuits or for the termination of metallic lines which are continued as grounded or one-wire circuits.

The laminated nickel iron alloy closed core permits high efficiency on both the talking and ringing circuits. It is housed in a cross-talk proof shell cover. Windings are perfectly balanced. There are two parallel and two tandem windings with resistance of 20.6, 20.6, 25.5 and 25.5 ohms, respectively. It is mounted on a $10\frac{3}{4}$ x 4 in. maple base for convenient rack mounting. Terminals are brought out to numbered soldering connections on the wood base. It replaces Kellogg No. 17-F, and 18-A and 18-B repeating coils. Height overall is $3\frac{1}{4}$ inches. Shipping weight is 6 lbs.

No. 21-A, Ring and Talk Through

No. 21-A repeating coil is the same as No. 24-A except it is furnished without the maple base. They mount on standard 2000 type relay strips or on individual relay mountings.

This coil is recommended only where there are standard Kellogg relay mounting strips or where space is at a premium. Overall length is $4\frac{3}{4}$ inches, width is $2\frac{3}{8}$ inches and height is $1\frac{7}{8}$ inches. Shipping weight is 3 lbs.

For mounting, use the repeating coil mounting brackets Nos. 1012, 1013 or 1014 shown on page No. 6.

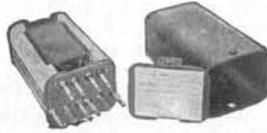
No. 22-A

No. 22-A consists of two No. 21-A repeating coils. It is mounted on a maple panel that mounts on a W. E. coil rack. This arrangement is particularly convenient for phantom circuits and saves space. All connections are brought out to numbered soldering connections on the base. Dimensions are the same as for No. 24-A. Shipping weight is 8 lbs.

SWITCHBOARD COILS and CONDENSERS

Switchboard Type Repeating Coils No. 20-A, Talk Through Only

The No. 20-A repeating coil meets the demand for an efficient "talk through only" coil that can be mounted on standard relay mountings. Having four concentric windings of 12.1, 13.7, 15.2 and 16.6 ohms resistance, respectively, wound about a large core, it is unexcelled for use in magneto or other types of cord circuits to connect dissimilar lines together for communication purposes.



The No. 20-A coil is particularly suitable for magneto and universal cord circuits where a non-ring through feature is required. It is also used for common battery cord circuits where the battery feed is through the windings of the coil, also for toll and local and PBX trunks where the ring through feature is not desired. It has an open laminated iron core and is housed in a cross-talk proof shell cover.

Eight terminals are provided. The coil will mount in the same space occupied by two 1000 type relays. It will mount on standard 2000 type relay strip mountings and will also mount on the individual mountings shown below. Height overall is 1 7/8 inches, width 2 3/8 inches, and length 4 3/4 inches. Net weight less mounting is 2 1/4 pounds.

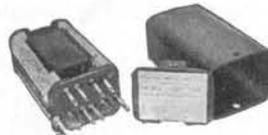
No. 16-A, Talk Through Only



The No. 16-A repeating coil has the same electrical characteristics and uses as the No. 20-A but is designed to mount on wood. Made of two concentric wound coils, each coil being placed upon one leg of a horseshoe lamination. Resistance of windings are 20, 16, 20, 16 ohms respectively. Height 3 3/4 inches, width 3-21/32 inches, length 2-5/32 inches. Net weight 3 pounds.

No. 19-A, Ring and Talk Through

The No. 19-A repeating coil is similar in construction to the No. 20-A except the laminations are of the closed iron core type making a very efficient "ring and talk through" coil. It has a cross-talk proof shell cover and is ideal for use in magneto cord circuits. Should be used as a battery feed coil wherever a ring through coil is desired such as in cord or trunk circuits or in line circuits which are not phantom or simplex.



Four concentric windings having resistance of 15.3, 17.1, 18.8 and 20.9 ohms respectively, connect to eight terminals. Mounts same as No. 20-A. Length overall is 4 3/4 inches, height is 1 7/8 inches and width is 2 3/8 inches. Net weight less mounting is 2 1/4 lbs.

Mountings for Repeating Coils



No. 1014 No. 1012 No. 1013

Code No.	Mounts On	Net Weight
1012	Right Side	6 oz.
1013	Left Side	6 oz.
1014	Top	6 oz.

Switchboard Condensers

Kellogg condensers are manufactured by the most modern processes and with the best materials obtainable. The foil and paper are the finest the market affords. The impregnating compound is a special formula developed after years of laboratory research. To insure long life a special sealing compound is used. This compound will not crack at 0 degrees nor flow at 150 degrees Fahrenheit.

Kellogg condensers are made to meet the maximum voltage that may be required in the class of work for which they are designed.

These working voltages are given below. In addition each condenser receives a fifteen second flash test of double the rated working voltage.



No. 24

1/2 M. F.

The No. 24 is used on various types of pole changers, requiring a high breakdown condenser. Overall dimensions are 2 5/8 inches long, 2-1/16 inches in diameter. Working voltage 400 volts direct current.

No. 25

1 M. F.

The No. 25 condenser is the same as No. 24 except capacity. Working voltage 400 volts direct current.

No. 68

1/2 M. F.



The No. 68 condenser is for use in older type magneto switchboard cord circuits. The can is 3 1/8 inches long, 1 1/2 inches wide and 1-1/32 inches thick. The working voltage is 400 volts direct current. Equipped with mounting ears.

No. 67

1 M. F.

The No. 67 condenser is used in magneto cord circuits. Working voltage is 200 volts direct current. The dimensions are 3 1/4 inches long, 1 1/2 inches wide and 1-1/32 inches thick. Equipped with mounting ears.

No. 64

2 M. F.

The No. 64 condenser mounts on a steel relay mounting strip. Dimensions are 3-15/64 inches long, 1-1/32 inches wide and 21/32 inch thick. Working voltage 160 volts direct current.

No. 66

2 M. F.

The dimensions of No. 66 condenser are 3 1/8 inches long, 1 1/2 inches wide and 21/32 inch thick. The No. 66 condenser is the same as No. 68 except capacity and the working voltage is 160 volts direct current. Equipped with mounting ears.

Switchboard Section

SWITCHBOARD APPARATUS

PLUGS and JACKS

Switchboard Plugs

Kellogg switchboard plugs are made to give maximum service. The heavy brass tips resist wear, and the hard rubber insulation will not break down even after years of severe usage.

Every part carefully made to eliminate plug breakage. Connections are protected by fibre sleeve held securely in place.

Note: Whit. is the abbreviation for Whitworth tap having rounded top threads which prevent cutting cords.

Two Conductor Plugs

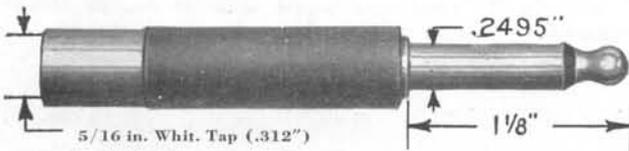
For Kellogg Jacks

No. 42 Plug



No. 42 is the standard two conductor plug used on practically all self restoring type drops and jacks. It fits cords No. 301-TO and 304-ST. No. 42 plug is used with No. 300 and 301 type drops and jacks.

No. 109 Plug



The No. 109 two conductor plug will operate three conductor jacks of plug group No. 152. It fits cords No. 301-TO and 304-ST. Replaces Leich plug.

For Jacks of Other Makes

No. 247 Plug



No. 247 plug replaces W. E. No. 47. It fits cords No. 397-TO and 304-ST.

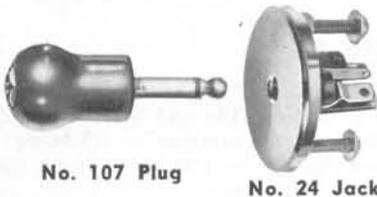
Operator's Plugs and Jacks

Two Conductor

No. 75 and No. 107 Plugs and No. 24 Jack

No. 107 Plug

The construction of No. 107 plug is similar to that of a standard switchboard plug. It is used with No. 24 jack. It fits No. 708-OR cord.



Operator's Plugs and Jacks

No. 75 Plug

No. 75 plug is identical to 107 except that it is provided with piece No. 13034 bushing to take a smaller diameter cord. It is used with No. 24 jack. No. 237-OR cord may be used with this plug.

No. 24 Jack

Jack No. 24 mounts from the rear with machine screws. The face has a diameter of 1 7/8 inches. It is used with the No. 75 or No. 107 plug.

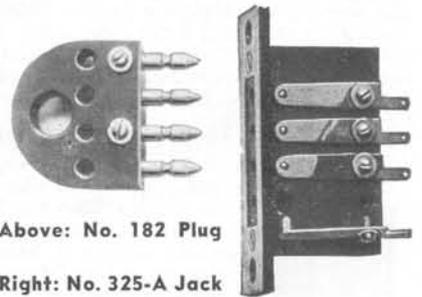
Code No. of Jack	Spring Combination	Fits Plug No.	Description
24	1 Make Contact	75 107	Brass, nickel plated.

Four Conductor

No. 182 and No. 245 Plugs and No. 325-A Jack

No. 182 Plug

No. 182 plug is the standard operator's plug used in Kellogg switchboards equipped with the breast-plate type operator's set. It is with No. 325-A jack. No. 722-O or 713-O cords may be used with this plug.



Above: No. 182 Plug

Right: No. 325-A Jack

No. 245 Plug

No. 245 plug replaces S. C. No. 23 plug. It is used with No. 325-A jack.

No. 325-A Jack

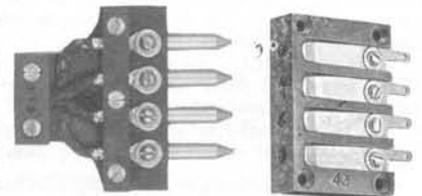
This jack has a black fibre frame and mounts on 7/16 inch centers with mounting No. 452.

Code No.	Spring Combination	Fits Plug	Description
325-A	182 245	182 245	Metal escutcheon

No. 145 Plug and No. 43 Jack

No. 145 Plug

The prongs of plug No. 145 are mounted in a hard fibre strip which is provided with terminal screws, conductor separators and an adjustable strip to grip the cord and prevent any strain on the terminal connections. It is used with No. 43 jack. No. 721-O and 711-O cords may be used with this plug.



No. 145 Plug

No. 43 Jack

No. 43 Jack

The face plate of this jack is 2 1/4 x 1/2 inch in size. The frame mounts on 7/16 inch centers.

Code No.	Spring Combination	Fits Plug	Description
43	145	145	Hard rubber frame

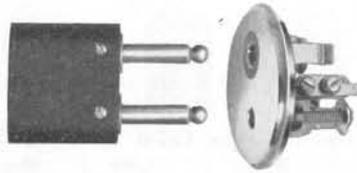
LAMP JACKS, etc.

Operator's Plugs and Jacks Four Conductor

No. 25 and No. 136 Plugs and No. 57 and No. 224 Jacks

No. 25 Plug
No. 25 consists of two plugs under one cover. It is used with No. 57 jack. No. 712-O cord may be used with this plug.

No. 136 Plug
No. 136 plug is identical to No. 25 except it is provided with bushing No. 28818 to take a smaller diameter cord. It is used with No. 57 jack.



No. 25 Plug

No. 57 Jack

No. 57 and No. 224 Jacks

Jacks No. 57 and 224 are nicked brass and mount from the rear with machine screws. They are used with breastplate type transmitters.

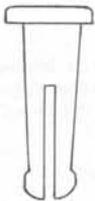
Code No.	Spring Combination	Fits Plug	Size Face of Strip
57		25	2 in. diameter
		136	
224		25	2 in. diameter
		136	

Drop and Jack Type Number Plates No. 10



No. 10 number plates are standard for numbering drops and jacks. They are carried in stock, numbered from 0 to 999 and are made of German silver having a black lacquered finish. The numerals are brightly polished. Dimensions of number plate: $\frac{5}{8}$ inch by $\frac{5}{16}$ inch.

No. 134-B Plug Hole Blanks



No. 134-B dummy plug is made of maple with a black ebony-finished top. It is used with the Kellogg standard plug bushing No. 19222. The diameter of the plug is .484 inches, and the length is 1-39/64 inches.

Plug blanks can be furnished in other sizes and finishes upon request.

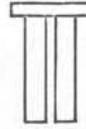
Trouble Sleeves



Trouble sleeves are made of fibre tubing and are used for designating defective cords and plugs. The tubing is split to allow for variation in plug diameters. They are furnished in two sizes.

Code No.	Description
163	For plugs .2495 inch in diameter.
223	For plugs .2215 inch in diameter.

Dummy Plugs



Dummy plugs are used for designating lines in trouble, service discontinued, etc. They are available in two sizes for jacks taking plugs of the diameter shown and are made of brass, finished with enamel in the colors shown below. They fit all $\frac{1}{4}$ inch diameter jacks.

Code No.	Diameter of Plug, Inches	Color	Code No.	Diameter of Plug, Inches	Color
83	.2495	White	93	.219	White
84	.2495	Black	94	.219	Black
85	.2495	Red	95	.219	Red
86	.2495	Blue	96	.219	Blue
87	.2495	Yellow	97	.219	Yellow
88	.2495	Green	98	.219	Green

Lamp Jacks

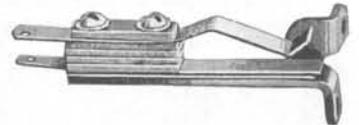
All Kellogg lamp jacks are designed so that the standard switchboard lamp is securely held in proper position, furnishing maximum light to the caps.

Strips are available with either 5 or 10 jacks per strip. The lamp jack strip has a heavy brass frame finished in a dull nickel. The springs are German silver, and the insulators are phenol fibre insuring lasting electrical qualities. The face of the strip is of heavy brass, finished with a durable coating of black enamel that will not chip under ordinary usage.

Each lamp is partitioned by a brass strip preventing leakage of light to the adjoining caps.

Individual Lamp Jacks No. 39

No. 39 is an individual lamp jack the frame of which is made of steel and given a rust-proof coating. To give the standard switchboard lamp the proper brilliancy this jack must be mounted on a $\frac{7}{8}$ inch panel. The overall length of the jack including springs is 1-11/16 inches. Mountings are on $\frac{9}{8}$ inch centers.



No. 49

No. 49 individual lamp jack has a steel frame with a rust-proof coating. This jack is for mounting on a $\frac{9}{64}$ inch panel and on $\frac{9}{16}$ inch centers. No. 154 type lamp cap is used. Single hole mounting.



Switchboard Lamp Caps

Type No. 9



Type No. 9 lamp caps fits $\frac{19}{32}$ inch holes. The nickel plated shank is $\frac{7}{16}$ inch long. This cap is used generally for pilot and signal work.

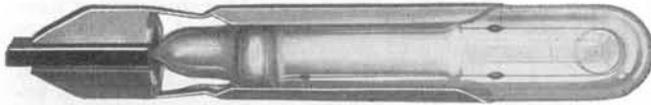
Code No.	Color	Face of Lens	Description
9	White Opalescent	Diamond	
9-A	Clear Red Glass	Diamond	Back of lens ground
9-B	Clear Green Glass	Diamond	Back of lens ground
9-C	Clear Glass	Diamond	
9-D	Clear Amber Glass	Diamond	Back of lens ground

Switchboard Section

SWITCHBOARD APPARATUS

SWITCHBOARD LAMPS and LAMP CAPS

Switchboard Lamps



Kellogg switchboard lamps are manufactured by skilled workmen with highly perfected machinery, specifically designed for the job, Kellogg lamps are the best obtainable. Uniform size, current consumption, and brilliancy are assured. Kellogg lamps will fit all standard lamp jacks.

Extreme care is used to make sure that the glass is of uniform thickness and texture and is shaped without a tip so as to concentrate the light at the proper point. The brass contact terminals give strength and protection to the lamp as well as perfect contact when placed in the jack. The phenol fibre separator, the glass support for the filament, the specially prepared filament, the almost perfect vacuum produced by the mercury air exhausting pumps, and many other features insure a switchboard lamp of long life and superiority to any other lamp now on the market.

Tungsten or Carbon Filaments

Both carbon and tungsten filament lamps are available. Tungsten has greater brilliance and gives more satisfactory illumination over a wider voltage range than do carbon lamps. Carbon lamps, however, in certain cases meet circuit requirements that tungsten lamps do not. For instance, in certain types of circuits a momentary current is carried to the lamps when a signal actually is not intended. Tungsten lamps will light up briefly under such a condition and signal the operator. Carbon lamps on the other hand will not glow as quickly and consequently will not light up from a brief impulse of current.

Users of Kellogg switchboard lamps are assured uniformity, reliability and lowest cost per year of service.

Overall length is 1-11/16 inches, diameter overall is 5/16 inch. The following voltages are carried in stock:

Code Numbers	Voltage	Current Consumption	
		Minimum Amperes	Maximum Amperes
Carbon			
3-A	3	.200	.260
4-A	4	.170	.210
6-A	6	.120	.160
6-B	6	.300	.380
6-C	6	.170	.210
8-A	8	.085	.115
10-A	10	.085	.115
12-A	12	.085	.115
12-C	12	.025	.035
14-A	14	.085	.115
16-A	16	.085	.115
18-A	14 to 26*	.035	.045
20-A	20	.085	.115
24-A	24	.075	.115
24-C	24	.085	.115
24-E	24	.025	.035
27-A	27	.085	.115
30-A	30	.080	.115
32-A	27 to 36**	.025	.035
36-A	36	.060	.080
40-A	40	.045	.060
40-B	35 to 47***	.025	.0375
44-A	44	.045	.060
48-A	48	.045	.060
55-A	55	.045	.060

* Current limits shown are with 18 volts on lamp.

** Current limits shown are with 32 volts on lamp.

*** Current limits shown are with 40 volts on lamp.

Standard Mazda Lamps

This standard mazda lamp with an Edison base is used in ringing circuits.

Code No.	Volts	Watts
110-A	110	15

Switchboard Lamp Caps Type No. 154

Type No. 154 lamp caps fit 11/32 inch holes. The lacquered brass shanks are 9/32 inch long. This cap is used with Nos. 25, 31, 32, 33, 34, 37, 43, and 44 types of lamp jacks. Specify numbering desired on No. 154-C.



No. 154	No. 154-D	No. 154-F	No. 154-G	No. 154-U
Code No.	Marking	Color	Shape of Lens	Description
154	○	White Opalescent	Convex	Groove for extractor
154-A	○	Clear Red Glass	Convex	Back of lens ground
154-B	○	Clear Green Glass	Convex	Back of lens ground
154-C	⊙	Clear Glass	Semi-Convex	Arranged for numbering
154-F	○	Clear Glass	Semi-Convex	
154-G	○	White Opalescent	Flat Lens	
154-D	⊕	White Opalescent	Convex	Marked with black enamel
154-H	⊖	White Opalescent	Convex	Marked with black enamel
154-J	⊙	White Opalescent	Convex	Marked with black enamel
154-K	⊕	White Opalescent	Convex	Marked with black enamel
154-L	⊙	White Opalescent	Convex	Marked with black enamel
154-M	⊖	White Opalescent	Convex	Marked with black enamel
154-U	○	Clear Red Glass	Semi-Convex	Back of lens ground
154-V	○	Clear Green Glass	Semi-Convex	Back of lens ground
154-W	○	Clear Green Glass	Convex	Back of lens ground, front sand blasted
154-N	○	Blue Opalescent	Convex	
154-R	○	Green Opalescent	Convex	Green lacquer on back
154-P	○	Clear Red Glass	Convex	Back of lens ground, front sand blasted
154-Q	○	Clear Green Glass	Convex	Back of lens ground, front sand blasted



Type No. 79

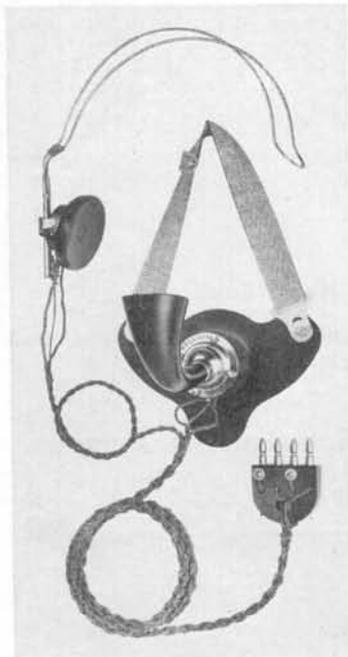
Type No. 79 lamp caps fit 5/16 inch holes and the shanks are 1/2 inch long. These caps are used with Nos. 35, 36, and 41 types of lamp jacks.

Code No.	Marking	Color	Shape of Lens	Description
79	○	White Opalescent	Convex	
79-A	○	Clear Red Glass	Convex	Back of lens ground
79-E	⊕	White Opalescent	Convex	
79-F	⊖	White Opalescent	Convex	
79-G	○	Clear Green Glass	Convex	Back of lens ground,
79-K	⊙	Clear Green Glass	Convex	Marked with white enamel, Back of lens ground
79-L	⊖	White Opalescent	Convex	Marked with black enamel
79-M	⊕	Red Opalescent	Convex	Marked with white enamel

OPERATOR'S BREASTPLATE SETS

Operator's Breastplate Set

With The Kellogg NON-POSITIONAL Transmitter



The Kellogg NON-POSITIONAL transmitter is used in the No. 177 type lightweight operator's breastplate set. This feature eliminates the possibility of "dead" talking positions and means that transmission efficiency remains at its peak regardless of the position or angle of the instrument. The patented spherical electrode construction of this NON-POSITIONAL transmitter guarantees a constant and uniform flow of current between the electrodes at all times, and the carbon granules will not pack. Because this transmitter covers a wide range of the voice frequencies, there is a decided gain in articulation and understandability of the transmitted voice.

This new breastplate transmitter is small in

size, weighs only 6 $\frac{3}{8}$ ounces, and is moistureproof. When used in anti-side tone circuits there is a decided gain in the effective reception because the operator's receiver does not have to compete with the side tone and room noises.

The NON-POSITIONAL unit is sealed in a sturdy aluminum housing only 1-13/16 inches in diameter. The hard rubber mouthpiece screws into a nickel plated front with a ball and socket joint that permits adjustment to any talking position. The black enameled aluminum breastplate is 4 in. x 5 $\frac{7}{8}$ in. The adjustable band is made of a high grade, gray cotton tape with clips at both ends for easy removal or attachment. Overall length, including mouthpieces, is 6 in. and the total weight including band, is only 6 $\frac{3}{8}$ ounces.

No. 177-C NON-POSITIONAL Breastplate Transmitter, Mouthpiece and Band for magneto and common battery switchboards.

No. 177-L — Same as No. 177-C but for local battery operation only, for railway dispatchers, etc., and where extra transmission is more important than battery consumption.

Major Parts Used in No. 177-C and 177-L Operator's Breastplate Set

No. of Pieces	Piece No.	Description
1	5176	Joint Spring
1	58012	Band Assembly
1	58004	Mouthpiece
1	59847	Breastplate Assem.

Featherweight Operator's Receiver

This receiver is illustrated in the picture in the left hand column.

There's real comfort for operators in this small watch-case type receiver. It weighs only 1 $\frac{3}{4}$ ounces and with headband, only 3 ounces. The diameter of the case is only half that of older types but the Bakelite cap is large and so shaped that the receiver is more comfortable to the wearer and better reception is assured. Cobalt steel magnets make possible the lighter weight and smaller size and this assures long life and unusual sensitivity. The diaphragm is not affected by temperature variations . . . the wire headband is adjustable, and cord terminals are concealed but easily accessible without removing the cap. The resistance of this receiver is 56 ohms, and its impedance is 300 ohms at 1000 cycles. It can be used equally well on magneto or common battery switchboards.

This new featherweight receiver and headband makes an ideal companion unit for the new type 177 NON-POSITIONAL Breastplate Transmitter. They were developed to improve efficiency and to assure greater comfort for your operators.

No. 85-A — Featherweight Receiver for magneto or common battery switchboards.

No. 14 — Headband for No. 85-A Receiver.

Major Parts Used in No. 85-A Receiver

No. of Pieces	Piece Part No.	Description
1	59915	Shell Assembly
1	59891	Cap
1	59892	Coil Assembly
1	59893	Coil Assembly
1	59907	Magnet
1	59918	Diaphragm

Mouthpieces for Breastplate Type Operator's Sets

Piece No. 29776 — Used with No. 76 type breastplate operator's set.

Piece No. 39354 — Used with No. 1076 type breastplate operator's set.

Piece No. 58004 — Used with No. 177 type breastplate operator's set.

Operator's Breastplate Set No. 1076-C & 1076-L

Piece Parts

No. of Pieces	Part No.	Description
1	15761	Bridge Assembly
2	9175	Cushion
4	2975	Nut
1	2972	Mouthpiece Support
1	5176	Joint Spring
1	59241	Breastplate Assem.
1	12834	Throat
1	8542	Union Assembly
1	17099	Insulator
1	39354	Mouthpiece
1	58012	Band Assembly
1	39353	Cover
1	29637	Diaphragm Assem. (No. 1076-C Only)
1	9448	Diaphragm Assem. (No. 1076-L Only)

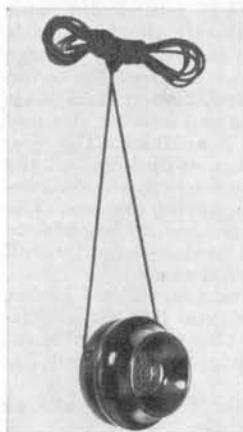
Switchboard Section

SWITCHBOARD APPARATUS

OPERATOR'S SETS and TRANSMITTER ARMS

Suspended Type Operator's Sets

With One-Piece Bakelite Transmitter Front and Mouthpiece, and the Kellogg Non-Positional Transmitter



No. 157

Molded of rich, black Bakelite this one-piece unit is practically indestructible. It takes the famous NON-POSITIONAL transmitter and makes this one unit standard for all sets. The locating lugs on the transmitter case slip into corresponding guide slots in the Bakelite housing. The electrical connections are made by two heavy blades engaging the bronze contact clips. These blades are formed with one end providing a slotted terminal to which the transmitter cord may be soldered. Each blade is positioned between two Bakelite

shoulders and anchored by a single screw.

These suspended type transmitters are standard for all types of switchboards using this style of operator's sets. Furnished with two 72-inch transmitter cords.

No. 157-C is used for common battery or for local battery operation. No. 157-L is used for local battery operation only, such as railways, oil field lines, etc., where extra transmission is more important than battery consumption.

Major Parts

Code No. of Operator's Set	Piece Parts Transmitter Assembly	
	Front	
157-C	57340	61926
157-L	58799	61926



Operator's Receivers

No. 65-A

The No. 65-A type operator's receiver, combining efficiency and permanent, satisfying service, is an equipment that will be appreciated by the operator and manager alike. The total weight of receiver and band is 3.9 ounces. The total width is 2-3/16 inches and the depth or thickness 7/8 inches. Terminals are entirely enclosed within the shell and solid horse-shoe permanent magnet, and electro-magnets of high grade wire are wound on cores of special magnet iron. The head band is arranged to permit the receiver to be adjusted in any position that is most comfortable to the wearer. Standard for all switchboards.



Code No.	Resistance	Shipping Weight
65-A	100-Ohms	8 oz.

Operator's Receiver No. 65-A—(Continued)

Major Parts

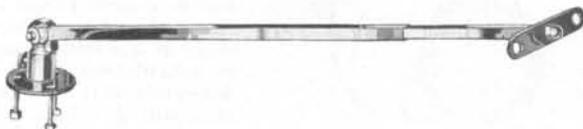
Piece Number	Description	Quantity Used
58016	Diaphragm	1
44354	Body Assembly	1
56131	Magnet	1
44358	Cap	1
43371	Coil Assembly	1
43396	Coil Assembly	1

No. 12 Head Band

Wire head band for single receiver. For No. 65-A Transmitter only. Weight 2 oz.

Switchboard Transmitter Arms

No. 48



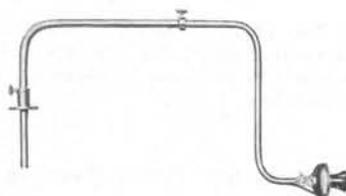
The No. 48 transmitter arm is of the suspended adjustable type, made of heavy brass with a durable nickel finish. It can be used on all types of small switchboards.

This type of arm eliminates the use of a cord weight. It is equipped with both horizontal and vertical swivel joints, making it easy to place the transmitter in any position convenient for the operator. This arm is especially valuable for use with PBX or magneto switchboards where the operator or attendant has other work to do and uses an adjoining desk or counter.

No. 48 transmitter arms are arranged for type 157 transmitters. The standard length is 15 1/2 inches and net weight is 1 5/8 lbs. The base is made of malleable iron and the base and front are black enameled.

No. 28

This transmitter arm is used on desk type or small, floor type boards. It is made of brass tubing, heavily nickel plated. The cords are concealed in this tube. The arm is equipped with a swivel joint so that it can be swung to the right or left.



Lengths from 16 1/4 inches to 22 3/4 inches are available. No. 28 transmitter arm is arranged for the type 121 transmitter down on the next page.

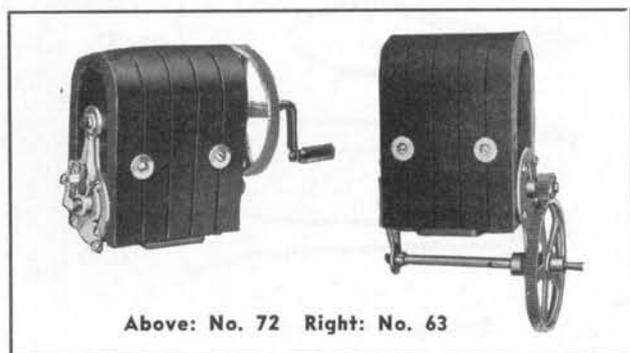
NOTE: For operator's handset see Page No. 58.

SWITCHBOARD GENERATORS

The secret of the Kellogg generator's extraordinary strength lies not only in its permanent magnet, but in the superior design of its revolving electro-magnet or armature upon which the wire is wound.

All generator parts are well protected from rust and corrosion. Magnets are given a heavy coating of special blue paint. The gear, pinion, shaft field and screws are all nickel plated, dull finish.

No. 72 generator mounts from the bottom and No. 63 is the same as No. 72 except the mechanism is inverted in the magnets.



For Alternating Current

Code No.	No. of Bars	Height	Depth	Width With Handle
72	5	5½ in.	4 in.	8¼ in.
63	5	8½ in.	4 in.	8¼ in.

Major Parts

No. 63 Generators			No. 72 Generators		
No of Pieces	Piece Part No.	Description	No of Pieces	Piece Part No.	Description
1	15911	Crank Assembly	1	15911	Crank Assembly
1	12974	Armature Assembly	1	12974	Armature Assembly
1	42679	Spring Assembly	1	12172	End Bracket Assembly
1	29034	End Bracket Assembly	1	12175	End Bracket Assembly
1	29035	End Bracket Assembly			

Generator Extension Shafts

Used With Pc. No. 15911 Generator Cranks.

Code No.	Length
9	24 in.
14	12¼ in.
17	20-1/32 in.

SWITCHBOARD TOOLS

Lamp Cap Extractors



No. 24



No. 38

Gauges



No. 40



No. 51

Miscellaneous



No. 21



No. 22



No. 42

Lamp Cap Extractors

Code No.	Description
24	Supervisory lamp cap extractor.
25	Steel lamp extractor for 7/16 inch jacks.
27	Fibre lamp extractor.
38	Line lamp cap extractor.

Gauges

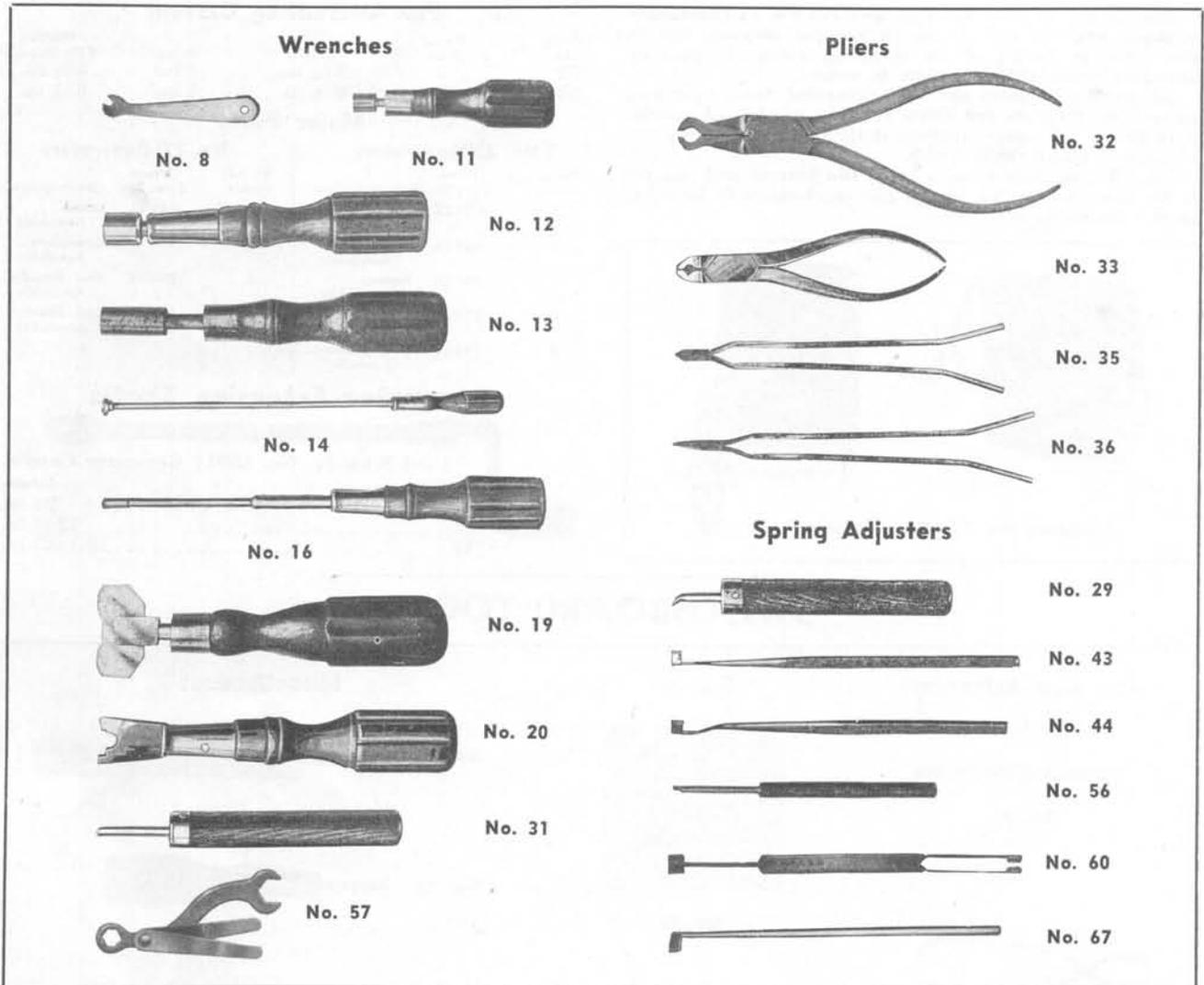
Code No.	Description
40	For gauging worn No. 106, 137 and 156 plugs.
41	For gauging worn No. 201 plugs.
46	For gauging worn No. 152 plugs.
47	For gauging worn No. 112 and 187 plugs.

- 50 For gauging worn No. 42 plugs.
- 48 For gauging worn No. 239 type jacks.
- 49 For gauging worn No. 258 type jacks.
- 51 For gauging worn jacks taking the No. 42 plug.

NOTE: All plug gauges are furnished with strong leather cases.

Miscellaneous

Code No.	Description
21	Small board screw driver.
22	Screw driver for hollow screws on plugs.
42	Tool for skinning switchboard cable.
62	Plug seat burnishing tool.
65	Tool Kit. Consists of a No. 61 tool, a No. 62 tool and a No. 54140 holder. For drilling .368 in. plug seats.
68	Contact cleaning tool.

SWITCHBOARD TOOLS**Wrenches**

Code No.	Description
8	Flat wrench for adjusting drop armatures.
11	Socket wrench for relay armature nuts — also for arrester nuts.
12	Socket wrench for sleeve of combination drop and jack and for 72 relay shell, hexagonal nut.
13	Socket wrench for mounting major relays on mounting strips.
14	Socket wrench for fastening jacks in switchboard with Pc. No. 989 nuts.
16	Socket wrench for stop nuts on No. 1000 type cam keys.
17	Socket wrench with adjustable feature for No. 989 nuts for switchboard jacks.
18	Socket wrench for nuts on relay gate.
19	Wrench for removing No. 22 type major relay shells.
20	Screw driver wrench for removing No. 72 type major relay shell with round nut.
31	Wrench for regular size removable sleeve of jacks.
57	For adjusting No. 555 relay on Nos. 6 and 7 converters.

Pliers

Code No.	Description
32	Pliers for removing heat coils.
33	Pliers for removing 4-party key buttons.
35	Long handle diagonal Swedish cutters.
36	Long handle, long nose chain pliers.
39	Pliers for placing terminals on tinsel cords.

Spring Adjusters

29	Adjusters for tip springs on No. 116 type jacks.
43	Relay spring adjuster, right hand bend.
44	Relay spring adjuster, left hand bend.
56	For bending and adjusting springs in spring jack.
58	Double ended spring adjuster.
60	Relay spring adjuster — special construction to adjust center or B spring assembly.
67	Key spring adjuster.

KELLOGG TELEPHONES

Kellogg telephones have attained an enviable reputation for having the finest transmission and reception. This dominant advantage, and the superiority it gives users of Kellogg telephones is, in a measure, responsible for the fact that thousands of companies throughout the world have standardized on them. Kellogg has successfully held this prominent position of leadership in the industry for nearly half a century by constant research and pioneering; through ability to foresee the needs of the telephone industry and being able to fill these needs.

Kellogg telephones have always played an important part in the advancement of Telephony. They are today the recognized standard for transmission and reception. They are dependable and trouble-free. Kellogg telephones are simple in design and ruggedly constructed . . . manufactured with care and precision. They require practically no maintenance attention and assure satisfactory service for many years.

Throughout the history of the telephone industry, Kellogg's pioneering has been outstanding. Among the many vitally important things that Kellogg introduced to the manufacturing branch of this industry was that

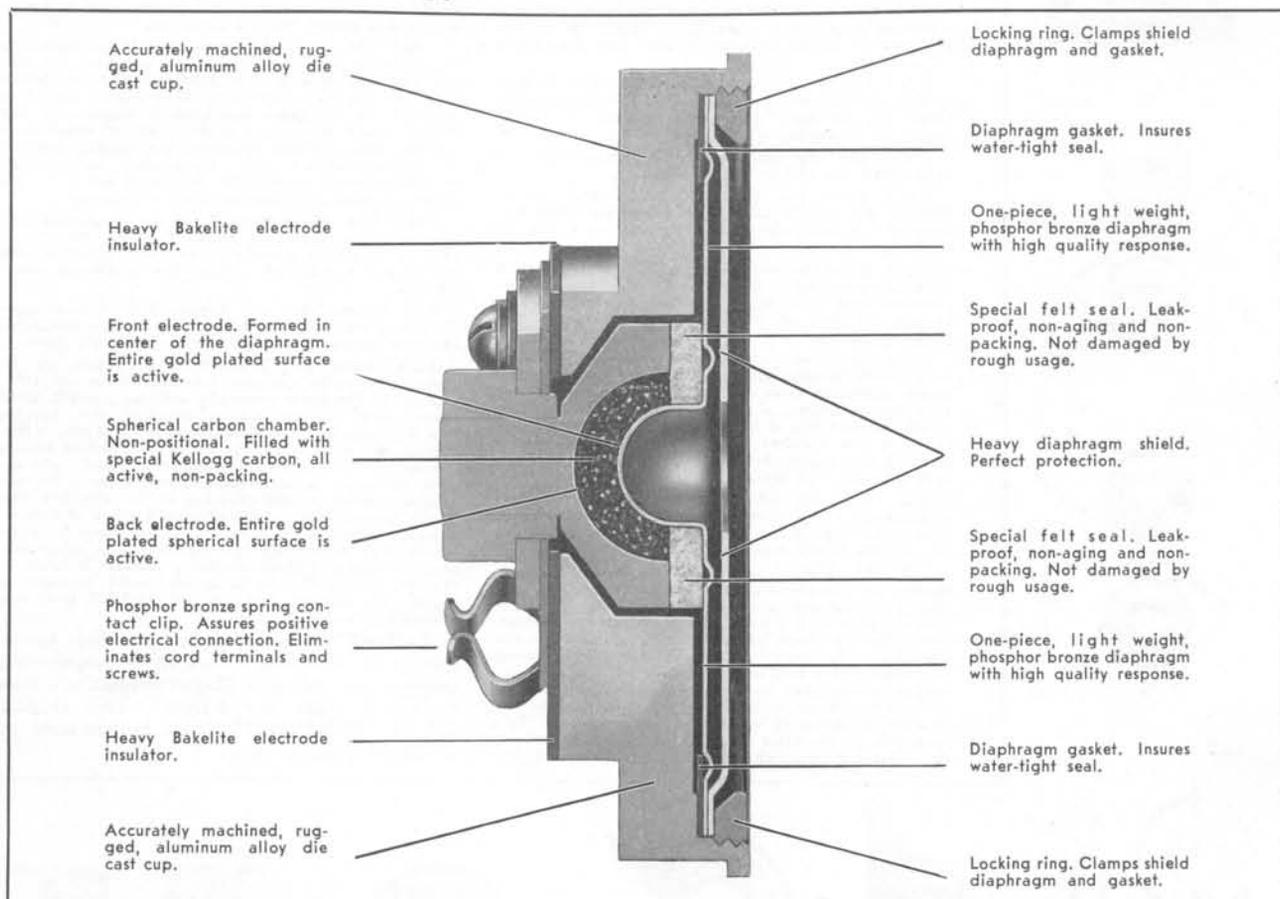
of plastics. It installed one of the very first plastic molding plants in the United States. Kellogg telephones were the first to make use of Bakelite and other similar materials.

Today, plastics are as universally necessary to good telephone construction as are gold, silver, nickel, steel, copper and the other metals and materials essential to the production of high quality communication apparatus. That others continued to follow Kellogg's lead in major developments proves again and again that this leadership is maintained by the same pioneering instinct and complete understanding of telephony that first brought recognition to Kellogg products in the early days.

This leadership in design and construction is further illustrated by the present efficiently constructed Kellogg Masterphones. These telephones are practically unbreakable, parts are easily accessible and a screw driver is the only tool necessary to remove any part.

In its modern, million dollar plant, Kellogg manufactures a complete line of telephones and apparatus, built to the highest efficiency standards. Whenever Kellogg telephones are given the opportunity to perform, they prove to be the finest instruments that money can buy.

Kellogg NON-POSITIONAL Transmitters



Kellogg NON-POSITIONAL transmitters are especially designed to give the best transmission under modern operating conditions. Because of the patented, spherical shape of the carbon chamber there can be no "dead" talking positions to limit or restrict subscribers in the way in which the modern telephone must be held. These compact, self-contained NON-POSITIONAL transmitters

have also established new higher standards of transmission efficiency.

They come with all Kellogg Masterphones and can be adapted to all Kellogg desk stands and old type standard wall sets. Likewise, they can be used with suspended type operator's sets, and smaller units come as standard equipment in breastplate sets.

Kellogg NON-POSITIONAL Transmitter

KELLOGG was the first manufacturer to recognize that popular use of the handset had created a new problem. Now, a transmitter is never stationary . . . or even nearly so. It may be used at any angle, in any position. Therefore, the old, conventional transmitters would go "dead" when tipped beyond the limits of a vertical plane. The only answer was to develop a transmitter which was fully NON-POSITIONAL and which was rugged enough to stand the rougher usage.

Kellogg did this shortly after the original Masterphone was first introduced. It was a distinct, new development, the first of its kind since the advent of the handset. This patented, spherical electrode construction is exclusive with the Kellogg NON-POSITIONAL transmitter and comes as standard equipment in all Masterphones without extra charge.

So that equal transmission may also be available in other types of Kellogg telephones and so that operating companies can standardize on one transmitter throughout, Kellogg developed a combination Bakelite transmitter front and mouthpiece unit for deskstands and wall phones employing the standard Masterphone NON-POSITIONAL transmitter.

The How and Why of This Great Development

What happens in the carbon chamber of any conventional transmitter when it is tipped at various positions or angles is shown by the first illustration on the left.

(A) In the vertical position the carbon is held so that the current flow between the diaphragm electrode and the back electrode is gauged to provide maximum transmission.

(B) The transmission remains practically the same when the carbon cup is tilted.

(C) When the transmitter is tipped on its "face", the carbon falls away from the large surface of the back electrode, resulting in a loss of efficiency.

(D) When the transmitter is laid on its back it becomes practically "dead", because the carbon granules have fallen away from the diaphragm which reduces the flow of current between the back and front electrodes.

Since subscribers will use their handsets in every conceivable position, and since the conventional transmitter obviously does not function uniformly in all positions or angles, a new type of transmitter of a strictly non-positional character had to be developed expressly for handset use. How this all-important problem was approached and solved by the engineers is now to be explained.

(E) By partly filling a hollow ball with carbon and rolling it up, down, or sidewise, the carbon always contacts the same amount of inner wall, and the top surface of the carbon is always level.

(F) The hollow ball idea is now carried a step further by placing a smaller ball within the larger. The space between the two represents the ideal carbon chamber of a strictly non-positional transmitter, while the side walls of each ball represent the two electrodes. By partly filling the space with carbon and rolling this ball over and over we find that the carbon is constantly in contact with the same amount of wall space of each electrode, regardless of the position or angle in which the ball is tipped. This, naturally, is the ideal arrangement for a carbon cup in a handset transmitter because the current flow

would always be steady and uniform, and transmission would always remain the same.

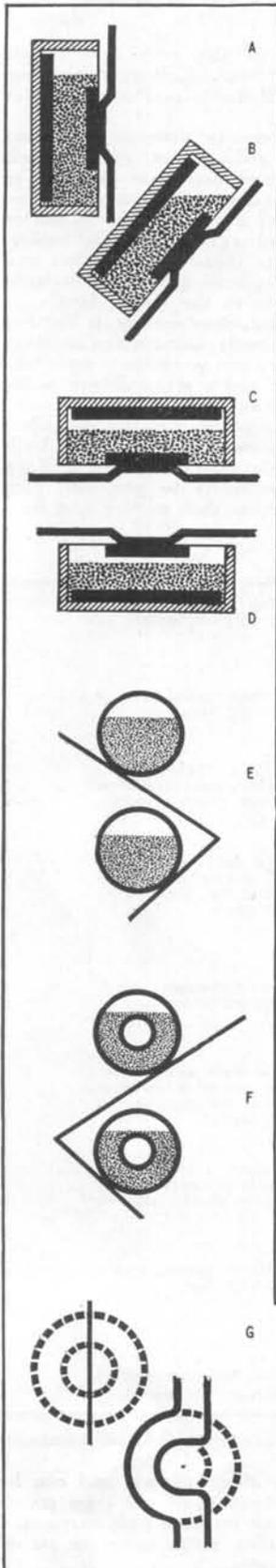
(G) This illustrates how the "ball-within-the-ball" idea is used, practically, in designing the carbon chamber of a true NON-POSITIONAL transmitter. The two balls have now been cut in half with the walls of the inner ball slightly lengthened. The flanges which have been added make it possible to control, with extreme accuracy, the spacing between the surfaces of the balls. Thus, when an insulated ring is inserted between the flanges of the ball electrodes, a perfect carbon chamber is formed.

(H) This illustration shows the completed carbon chamber of a NON-POSITIONAL transmitter held in a vertical position. The space is filled with the proper amount of carbon for maximum transmission.

(I) By revolving and tipping it to various positions and angles we find that the carbon maintains uniform coverage of both electrodes at all times.

(J) When this transmitter is tipped on its "face", the carbon cannot fall away from any large portion of the back electrode, and as a result, good transmission is maintained because the current flow between the electrodes remains constant. (K) Due to the front electrode being a spherical hollow formed in the center of the diaphragm itself, and the back electrode a spherical hollow formed in the carbon cup block, the granules in the chamber uniformly contact both electrodes even when the transmitter is laid on its back. Thus we have a transmitter that is strictly non-positional in character, and operates at highest efficiency whether it is on its "back", on its "face", or at any other position or angle. The current flow, at any and all positions, is continuous and positive.

Kellogg engineers developed this transmitter to meet the needs of the operating companies. All new Masterphones are now equipped with the **FIRST and ONLY REAL NON-POSITIONAL** transmitter as standard equipment.



Kellogg NON-POSITIONAL Transmitter

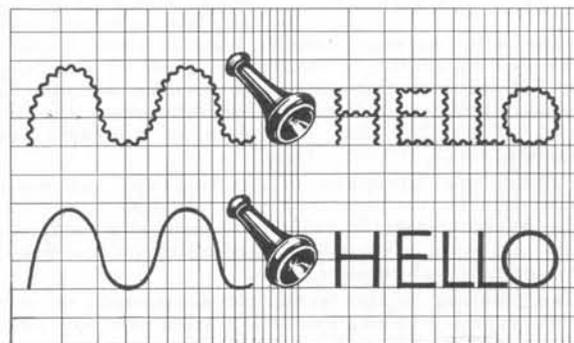
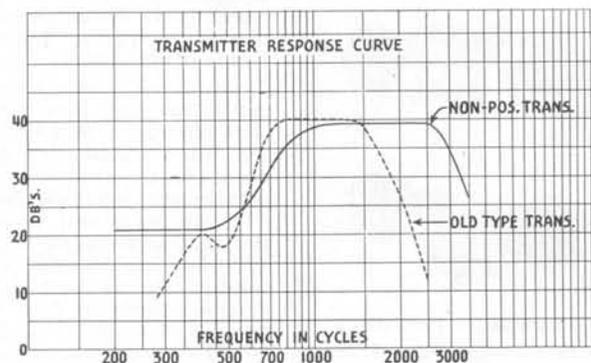
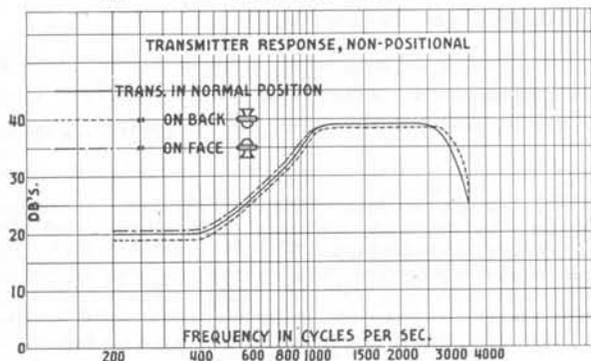
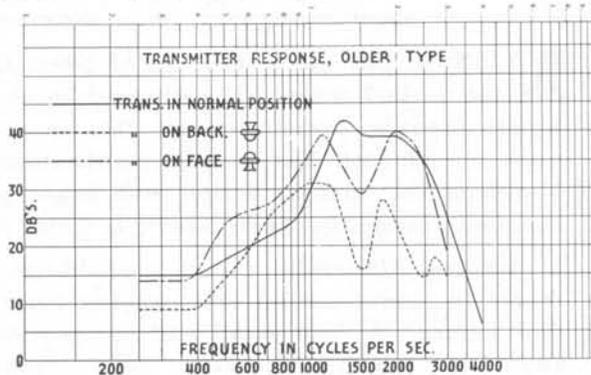
The illustrations on this page show a graphic comparison, in terms of transmission, between the conventional or "fixed position" transmitter and the Masterphone NON-POSITIONAL transmitter. These charts show the degree of improvement of the NON-POSITIONAL type over the old style in transmission volume, response at various positions, voice frequency range, articulation, and understandability.

The first chart indicates the "rough" or "uneven" response produced by the conventional transmitter when it is revolved. In its normal position, indicated by the solid line, the transmitter response is very poor below 1,000 cycles and above 2,700 cycles. When the transmitter is tipped on its "face", the dot and dash curve records a highly irregular response, reaching peaks only around 1,200 and 2,000 cycles. The dotted line shows a very ragged response throughout the range when the transmitter is on its "back", and shows a radical drop of a minimum of approximately 10 decibels.

Subjecting the NON-POSITIONAL transmitter to the same test and revolving it in the same manner we find that the curves recorded on the second chart are uniform for all positions. The solid line represents the transmitter in its normal or vertical position; the dot and dash curve shows the transmitter on its "face"; and the dotted line, when the transmitter is on its "back". The character of these curves indicates the uniformity of transmission of the NON-POSITIONAL transmitter as contrasted with the highly irregular curves of the conventional or "fixed position" transmitter shown on the upper chart. The fact that all three lines of chart two take the same curve, proves that this transmitter is strictly a NON-POSITIONAL unit.

The third chart shows the difference in range of frequency response between the old style transmitter and the NON-POSITIONAL unit. Since frequency response is the measurement of a transmitter's ability to reproduce faithfully all of the vibrations of the human voice, we see here the volume of sound reproduced at any given vibration, expressed in frequencies or cycles per second. Because all tones below 280 cycles and over 2,500 cycles are not recorded by the old style transmitter, articulation is seriously impaired for the human voice goes beyond these limits. Considering that the NON-POSITIONAL unit actually covers a frequency range of from 200 cycles to 3,500 cycles, a general improvement in articulation is a natural result and therefore provides clearness, naturalness, and understandability to a far greater degree. In addition, the NON-POSITIONAL transmitter has a much more even response over the full voice range. This is especially true of high frequencies or higher voice tones, which the old type transmitters failed to reproduce with fidelity, and which are all important if the transmitted voice is to sound natural.

The reproduction of all tones within the range of the NON-POSITIONAL transmitter not only assures good articulation, but its degree of improvement, when measured scientifically in testing laboratories, is shown as being at least 15% over that of the older types. Chart Number 4 conveys this idea graphically to show the quality of reception of the NON-POSITIONAL transmitter as compared to that of the conventional type. A transmitter with poor articulation brings the voice to the receiver fuzzy and distorted. The NON-POSITIONAL transmitter, on the other hand, brings the naturalness of a face-to-face conversation. This condition does not necessarily mean greater volume of sound, but it does mean that more of the frequencies or sound waves of the human voice, plus the overtones or harmonics, are transmitted with fidelity, and this makes for clear, crisp and distinct reception of the natural voice.



Kellogg Receivers



The design of Kellogg compact, self-contained receivers secures a uniform clearness of tone and accurate articulation. The diaphragm is cadmium plated, of the proper thickness and is always

held in the correct position to respond freely and accurately to the voice currents. Kellogg Masterphone receivers are of the standard bi-polar type, using cobalt magnets which have more magnetic saturation and longer life.

Kellogg Masterphones

KELLOGG has the distinction of being the oldest manufacturer of handset telephones in the United States. It pioneered in the design, development and marketing of the first American-made instruments of this type, back in 1906. Since that time all engineering work on handsets has been a modification of the original Kellogg Grabaphone. This broad knowledge of handset design and long-experienced engineering development furnishes unequalled leadership upon which is based the Kellogg Masterphone line.

Kellogg Masterphones are available in a complete range of wall and desk type instruments for main station and extension use; and for magneto, common battery manual and dial service. All are small and compact with simple lines that harmonize with any surroundings, whether in home, office, factory, school, hospital, or wherever modern telephones are required.

Smart styling and easy handling are almost as important to today's telephone as good transmission, reception and ringing. Kellogg engineers were the first to recognize this trend and set the pace for beautiful, practical telephones.

THE famous Kellogg NON-POSITIONAL transmitter comes as standard equipment with all Masterphones. The balanced 4-conductor TRIAD (anti-side tone) circuit is also a standard Masterphone feature. These important factors, plus Kellogg's highly efficient, yet small sized ringers, condensers, induction coils, self-contained capsule type transmitter and receiver units and practical designing . . . all go to make these Masterphones the finest quality instruments obtainable.



Masterphone Handpiece
with Capsule Type Transmitter and Receiver

The Masterphone handpiece was the first with streamlined, smooth-flowing lines, unmarred by projecting earcaps and mouthpiece rings; the first with no exposed metal parts, all Bakelite exterior and the first handpiece comfortable to hold and designed to fit the face. It was the first with self-contained capsule type transmitter and receiver units. The first to employ bronze contact clips on these units in place of screw terminals. The first to provide a strong handpiece by eliminating the hole through the center and molding into the solid Bakelite handle two heavy bronze reinforcing conductor bars. It was the first handpiece to overcome costly maintenance.

Today this handpiece is standard with all Kellogg Masterphones whether wall type or desk type, which consequently provides uniform transmission and reception and most economical standardization of handles, transmitters and receiver units.

Forerunners to the trend which appeared in recent years toward smaller, less bulky telephone instruments were the availability of new materials on a commercial scale and new engineering principles. In the Kellogg research and engineering laboratory, new smaller components were developed which equaled or surpassed the older, larger parts in efficiency. These new, small parts were not merely miniature copies but were the result of new engineering advances, new principles of design, new material developments, new requirements . . . parts which were better, regardless of size.

Because of these highly efficient small parts, Kellogg was able to produce telephone housings so trim and compact that they experienced immediate acceptance. The unusual popularity of the Kellogg Combination Masterphones is the result of combining in the base of the telephone all of the parts formerly mounted in a separate desk set box. Most telephone installations today, for desk use, are of this Combination type.

In the design of parts and equipment, Kellogg engineers have earned a reputation for careful planning to provide for economical interchangeability. This is illustrated by the fact that with the exception of the condenser, all of the parts in the Masterphone Combination desk sets, the new small Masterphone wall sets and the Bakelite desk set boxes are interchangeable. Thus, a Combination Masterphone may be purchased less ringer, coil and condenser for use with a Bakelite desk set box. Parts from the box, with the exception of the condenser, may be transferred to the telephone to make a complete Combination Masterphone when such is required. This interchangeability feature alone makes it worthwhile to standardize on the Kellogg Masterphone line.



Side Mounting Masterphone
for Manual Service

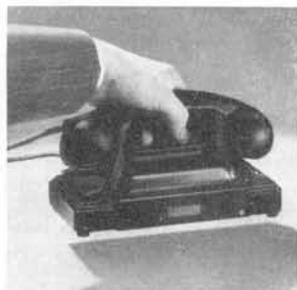


Side Mounting Masterphone
for Dial Service

Kellogg Masterphones

Masterphone handsets are designed for easy handling. It is easy to hand the telephone across a desk. Only one hand is necessary, for the Masterphone is easy to grip and light to carry. Its compactness, low center of gravity and lightweight, yet rugged construction protect your investment.

The Kellogg wall Masterphones have some uses beyond the regular desk type handsets. They are equally efficient for the office or home. They may be placed over a table or desk leaving the surface free for writing. They may be placed high on the wall, out of reach of children, still permitting their use by a person of any height. Used with them is the Masterphone handpiece, same as used with all other Masterphones.



Kellogg Masterphones May Easily Be Picked Up with One Hand

it is in the normal position for a convenient, firm and comfortable grip.

Because parts have been standardized and are interchangeable Masterphones may be purchased with just as much equipment as needed at the time. To meet new conditions new parts may be ordered, or transferred from other telephones or desk set boxes.

Kellogg's long experience in the use of Bakelite for telephones is brought out in efficient yet beautiful design which has not only cut down the possibilities of breakage but makes all parts easily accessible. A screw driver is the only tool necessary to remove any part used in the Masterphone line of telephones. Even this is not necessary to remove the transmitter and receiver.

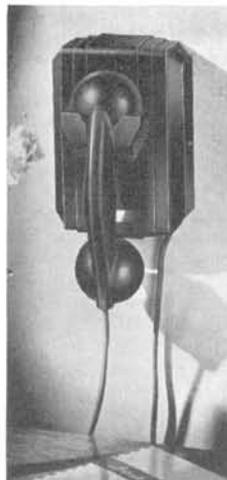
Handsets must stand abuse. Subscribers will drop them or knock them over in spite of all precautions. That's why Kellogg Masterphones are built so ruggedly and reinforced at every point of strain. A glance inside the base tells the story. Here, molded of solid Bakelite, are extra supports, inserts and extra wall thickness. These reinforcements are provided at every possible point of strain. For less maintenance use Masterphones.



9917 Type Wall Masterphone



925 Type Desk Masterphone



9900 Type Wall Masterphone



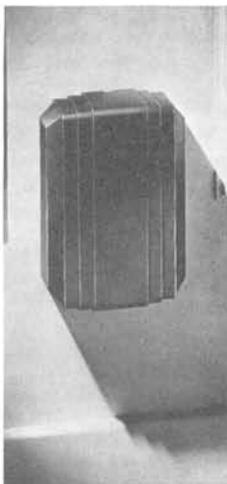
900 Type Desk Masterphone



Side Mounting Masterphone with Switching Key



The Masterphone Handpiece Cannot Be Knocked Down



700 Type Desk Set Box



700 Type Masterphone with 700 Desk Set Box

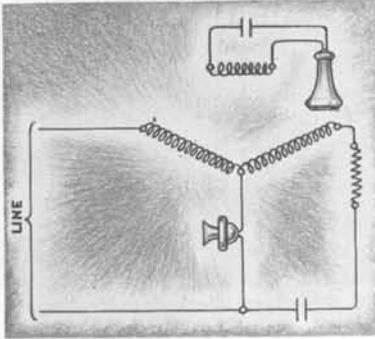
Telephone Section

Kellogg TRIAD Circuit

Kellogg Circuits

Kellogg talking circuits are designed in connection with the Kellogg transmitter, receiver and induction coil for maximum transmission and reception. These circuits are simple and efficient. The ringing circuits are also designed for the greatest efficiency.

Kellogg TRIAD Circuit



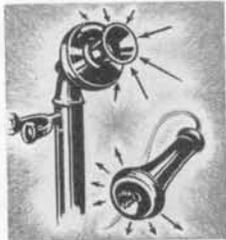
Kellogg Masterphones are wired for the TRIAD anti-side tone circuit, a Kellogg development that represents a great advance in gaining top transmission and reception under modern operating conditions.

The TRIAD circuit was developed because the increasing use of the handset, under all kinds

of conditions and by all types of people, presented a problem not present with the other types of telephones. The illustrations show just what these problems are.

It is well known to every telephone man that with the ordinary booster circuit all sounds picked up by the transmitter are carried direct to the receiver and then to the ear of the person talking. That is, he hears not only his own voice but all extraneous nearby sounds.

This effect is shown graphically in the illustration at the left. If the extraneous sounds get to the point where they interfere with his hearing, he generally changes his voice to overcome them, and thus further destroys the reception. If he is naturally a loud talker he can get farther from the mouthpiece.



The experienced subscriber using a phone with the old booster circuit has acquired the habit of putting his hand over the mouthpiece

to shut out the extraneous sounds while listening. Some desk phones have even been made with push buttons to cut out the transmitter. The illustration below shows this effect. Of course, this is only a makeshift for it still permits these sounds to annoy him when again talking, and still has the effect of making him talk too loud. In other words, he now hears better but he still destroys or injures his own transmission.

All of these things are present to some degree when a handset is used with the ordinary circuit, but now, as shown in the next illustration, the subscriber can't get farther away from the mouthpiece. If he raises his voice above the extraneous sounds, he not only suffers himself but he makes life miserable for the party he is talking to. With the modern types of handset transmitters this is magnified.



The subscriber, as shown in the next illustration, now has no recourse to his old stunt of putting his hand over the mouthpiece. And anyway, one of the chief advantages of the handset is that it is supposed to set one hand free. So, about all he can hope to do now is to clamp the receiver tighter to his ear (and probably cut down his hearing) and then cup his free hand around the mouthpiece.

While perhaps these problems have been exaggerated to illustrate the point, the fact remains that due to the type of construction and due to the development of finer transmitters in handsets, these problems are very real and must be met. It isn't very hard to rig up some so-called anti-side tone circuit, but it is difficult to do it without the sacrifice of transmission and without making the tone "lifeless" and the enunciation mushy. . . . The TRIAD circuit is the result of years of study and development —



it didn't just happen, although the sketch in the left hand column might make it appear simple. It is simple, now that it is perfected, but it does permit clear, sparkling transmission with little or no loss and it does handle those annoying outside noises.



As a further refinement the No. 106-A TRIAD circuit induction coil used in common battery Masterphones has been provided with an extra balancing tap for short loop subscribers. The coil is regularly

connected for maximum transmission on average battery supply values, but by moving the wire from terminal 6 to 7 on the coil, additional resistance may be cut in to balance the circuit for the subscriber on a minimum loop with a high battery supply.

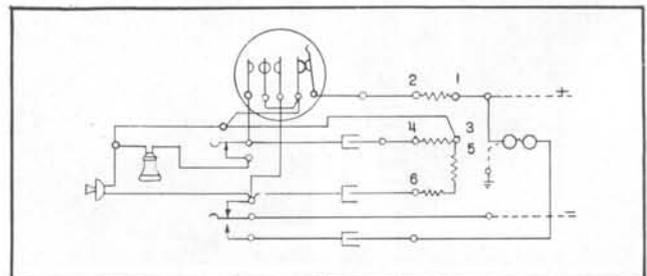
Thus, the anti-side tone feature adjusts itself to long or short loops and provides the same clear cut, side tone-free transmission on short as well as long loops.

Ringing and Dialing Circuit Used in Kellogg X Type Masterphones

All Kellogg X type TRIAD circuit Masterphones are supplied with ringing condenser windings independent of the talking circuit. Thus all Masterphones are suited to either single party metallic, multi-party bridged, or divided ringing without alteration.

In harmonic codes the capacity of the ringer condenser is matched with the individual ringer characteristics, thus providing maximum ringing efficiency at all frequencies. As the higher frequency ringers have a better response with low capacity condensers, the use of 1/2 microfarad windings in these cases, reduces the over-all capacity of party lines and makes for high efficiency dialing.

A further refinement in the ringer circuit is the ringer cut off in the switch. Thus, a subscriber on a party line removes both ringer and condenser before dialing, further increasing dialing efficiency.



Schematic Diagram of "X" Type Masterphone Circuit

Kellogg Masterphones

Desk Masterphones, 930 Type

This complete local battery talking set is convertible to common battery service, either dial or manual by changing the induction coil and adding ringer, condenser and dial. It is used with the 2500 series of desk set boxes to make a complete telephone or with any available desk set box containing a serviceable ringer and generator.

It is made of polished, black Bakelite and with it is used the Masterphone F-27-C handset, equipped with the Kellogg patented NON-POSITIONAL transmitter and high efficiency receiver. It is wired with the TRIAD anti-side tone local battery circuit. Furnished with a four-conductor cord for battery and line connections.

The base is 9 inches long and 6 inches wide and with the handset in position the set is 5½ inches high.



set. Used with 2500 series of desk set boxes containing generators and ringers.

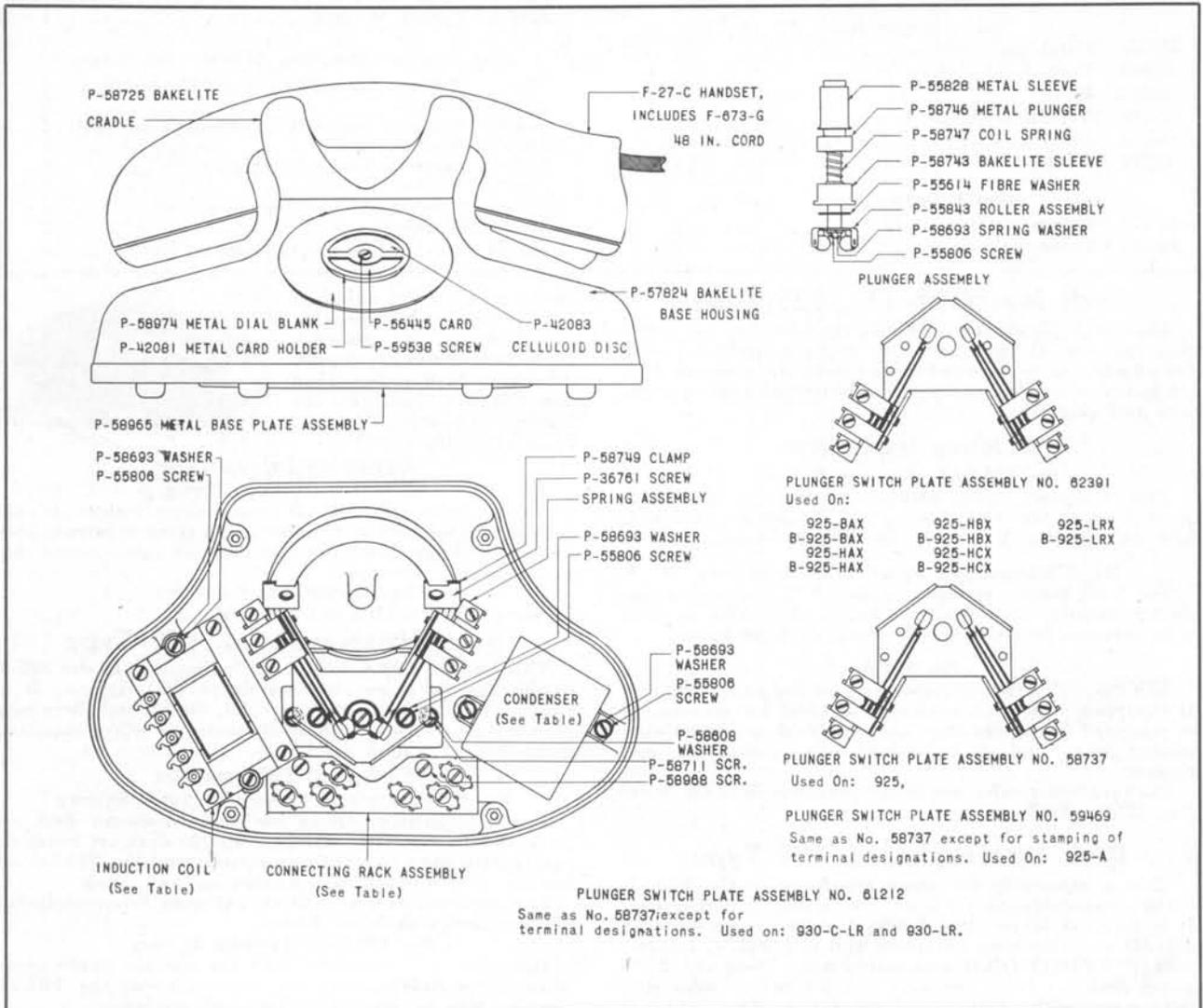
Ordering Information

No. 930-C-LR, Local Battery

Masterphones with TRIAD local battery induction coil No. 109-A, four conductor cord and condenser No. 199 in receiver circuit. Makes an excellent extension talking

No. 930-LR, Local Battery

Same as 930-C-LR but less condenser.



Telephone Section

Kellogg ^{Master}phon^{es}

Major Parts Which Apply to Specific 925 and 930 Types

Other piece parts for 925 type are shown in the table on opposite page.

Telephone Code No.	Ringer	Induction Coil	Condenser	Interior Conn. Rack	Base Cord	Connecting Block	Plunger Switch Plate Assembly	Shipping Weight Each, Lbs.	
925-BAX	Biased	116-G	106-A	203	58729	F-665-D	24-A	62391	9
925	None	None	None	None	None	F-685-D	None	58737	7
925-A	None	None	None	None	None	F-674-D	None	59469	7
930-C-LR	None	109-A	199	60168	60168	F-685-D	24-A	61212	8
930-LR	None	109-A	None	60168	60168	F-685-D	24-A	61212	8

Parts Used in All 925 and 930 Type Masterphones

Part or Code No.	Description	Quantity Used	Part or Code No.	Description	Quantity Used
F-27-C	Handset, used with all Masterphones	1			
58724	Bakelite Base Housing	1			
58725	Bakelite Cradle	1			
58965	Metal Base Plate Assembly, Rubber Feet	1			
58964	Base Plate Retaining Screws	4			
Dial Blank Number Plate					
Parts are furnished when dial is not specified and mounted.					
58974	Metal Dial Blank	1			
42081	Metal Card Holder	1			
56445	Round Card	1			
42083	Round Celluloid Disc	1			
59538	Screw	1			
55352	Washer	1			
Dial Mounting Parts					
58749	Clamp	2			
36761	Screw	2			
				Plunger Switch Parts	
			58746	Chromed Metal Plunger	1
			55828	Chromed Metal Sleeve	1
			58747	Coil Spring	1
			58743	Bakelite Sleeve	1
			55843	Roller Assembly	1
			55806	Roller Assembly Screw	1
			55614	Fiber Washer	1
			58693	Spring Washer	1
			Miscellaneous Mounting Screws and Washers		
			58711	Screw to Fasten Cradle to Housing	2
			58608	Washer	2
			55806	Screw to Mount Plunger Switch Assembly	2
			58693	Washer	2
			55806	Screw to Mount Condenser	2
			58693	Washer	2
			55806	Screw to Mount Induction Coil	2
			58693	Washer	2
			58968	Screw to Mount Connecting Rack	2

Desk Masterphones, 925 Type

This set is identical to the 930 type but has no induction coil and is equipped with a three-conductor cord for attachment to standard three-conductor magneto desk set boxes containing two winding induction coils, generators and ringers.

Ordering Information

No. 925-BAX, Common Battery

This complete, self-contained set for use on single party lines or for code ringing service may be used with kick coil service. It is wired for TRIAD circuit.

No. 925 Local Battery or Common Battery

For local battery service use the 4300 series four-conductor anti-side tone desk set boxes. May also be used with common battery TRIAD circuit desk set boxes.

No. 925-A

The No. 925-A Masterphone has no induction coil and is equipped with a three-conductor cord for attachment to standard three-conductor magneto desk set boxes containing two winding induction coils, generators and ringers.

For magneto service use three-conductor desk set boxes Nos. 2328, 2361, etc.

Desk Masterphones, 950 Type

This is essentially the same telephone as the 930-LR listed above except that it is not convertible to dial service. It is finished in polished black Bakelite, complete with TRIAD anti-side tone induction coil and F-27-C handset with NON-POSITIONAL transmitter unit. Used with 2500 series desk set boxes or with any available boxes containing serviceable ringers and generators. The 950-LR is

easily converted to common battery service by changing the induction coil and adding a ringer and condenser. The base is 9 inches long and 5 inches wide. With the handset in position the set is 5 inches high.



Ordering Information

No. 950-C-LR, Local Battery

Masterphone with TRIAD local battery induction coil, four-conductor cord and condenser in receiver circuit. May be used with No. 2500 series of desk set boxes containing generators and ringers.

No. 950-LR, Local Battery

Same as 950-C-LR but less condenser.

Desk Masterphones, 900 Type

This set, No. 900-A, is essentially the same as the 925-A except that it is not convertible to dial service. It is equipped with transmitter, receiver, switch and three-conductor cord for use with 2300 series or other standard three-conductor desk set boxes.

Ordering Information

No. 900-A Common Battery or Local Battery

For local battery service use three-conductor desk set boxes No. 2328, 2361, etc. If available desk set boxes do not contain induction coils we recommend the 950-LR set for the most modern transmission and reception.

For common battery service use with three-conductor booster circuit desk set boxes.

No. 900-BAX, Common Battery

Complete, self-contained unit for use on single party lines or for code ringing service, wired with the TRIAD circuit. May be used with kick-coil service.

Kellogg Masterphones

Kellogg Side-Mounting Masterphones

Subscribers like the convenience of Side-Mounting Masterphones. Their low price, low installing cost and low maintenance make them more profitable. They mount anywhere because the universal bracket has over fifty different positions to fit under or on extended table and desk tops, moldings, overhanging shelves, paneled walls, recessed cabinets and other locations where conventional wall and desk sets would be difficult to use.



These Masterphones may be used for all types of service . . . as complete talking sets, or, as talking and ringing sets when used with desk set boxes or extension bells. The small steel case is practically indestructible . . . an ideal telephone for rough use.

Like all other types of Masterphones these sets come equipped with the standard Kellogg all-Bakelite handpiece and the famous Kellogg patented NON-POSITIONAL transmitter which assures the finest transmission regardless of the position in which the handpiece is held.

The illustration at the right shows how convenient the Side-Mounting Masterphone is to users who want their telephones mounted on the wall so that desks and tables are kept clear. Also, these Side-Mounting Masterphones may be mounted on either the left or right side of a desk or table. The installer simply selects the most convenient mounting position for the bracket so that the instrument extends far enough to clear the over-hanging desk top. One of the more than 50 bracket mounting arrangements is sure to make a neat, handy, efficient installation.

The metal case is finished in satin-smooth, durable black baked enamel. It measures 3¼ inches wide, 5⅝ inches high and 1¾ inches deep. With the handset in position the overall width is 6¾ inches. The long side of the mounting bracket is 2¾ x 2 inches and the short side is 1¾ x 2 inches. Shipping weight of each Side-Mounting Masterphone is 8 pounds.



Ordering Information

No. 9735, Common Battery or Local Battery

Furnished less induction coil and condenser. May be used with 2300 series magneto desk set boxes.

No. 9830, Local Battery

With the 9830 side-mounting Masterphone you can convert your present desk set boxes into complete, modern wall telephones. Simply screw the bracket onto the side of the cabinet, run 4 wires from the terminal rack to the cord binding posts in the desk set box, and the job is complete.



Furnished with local battery TRIAD circuit induction coil. May be used as a complete telephone with 2500 series desk set boxes, containing ringer and generator or with available desk set boxes containing serviceable ringers and generators.

Major Parts Which Apply to Specific Types

Tel. Code	Induction Coil	Condenser	Hook-switch Assem.	Conn. Rack Assem.
9735	None	None	164	58853
9830	109-A	None	169	58853

F-27-C Handset Used with All Masterphones.

With the 9735 side-mounting Masterphone, present desk set boxes can be converted into complete, modern wall telephones. Simply screw the bracket onto the side of the cabinet, run a piece of three-wire twist from the terminal rack to the cord binding posts in the desk set box, and the job is complete.



Magneto Desk Stands

This rugged Kellogg desk stand is offered for those who prefer the pedestal type of desk telephone. It is equipped with transmitter, receiver, switch and three-conductor cord for use with the 2300 series of desk set boxes listed on page 58. It is also convertible to dial operation by adding a dial and connecting it with a suitable three-conductor desk set box or it may be used for common battery manual operation by connecting it to the proper box.

Equipped with Bakelite transmitter front and mouthpiece unit, containing the Kellogg NON-POSITIONAL transmitter.

The Kellogg 301 type desk stand is practically unbreakable. It has a permanent transmitter adjustment that will not loosen up in service. The trouble-free hookswitch and universal connecting rack are located in the roomy base and are readily accessible for inspection. The steel base plate is equipped with a heavy felt rim which protects furniture and absorbs shock.

The steel upright is covered with a black, hard rubber tube. All other parts, with the exception of the Bakelite receiver and mouthpiece are finished in durable black enamel. Dimensions: Height, 10¾ inches, base diameter, 5¼ inches. Shipping weight is 6 lbs.

Dial is furnished and mounted only when specified.



No. F-301

Equipped with three-conductor cord for use with booster circuit desk set boxes.

Major Parts

Piece Part No.	Description	Quantity Used	Piece Part No.	Description	Quantity Used
53586	Hookswitch Assembly	. . . 1	F-41-A	Receiver	. . . . . 1
121-C	Transmitter	. 1	50360	Conn. Rack	. . . 1
43194	Spring Assem.	. 1	F-640-D	Cord	. . . . . 1

Telephone Section

DESK SET BOXES and HANDSETS

Magneto Desk Set Boxes

2500 Series

These boxes were specially designed for use with the 950-LR, 930-LR, 9830 and 9837 Masterphones. They contain no induction coils but are equipped with the Kellogg sensitive non-adjustable ringer and powerful three or five-bar generators. Three binding posts are provided for line and ground connections and four for cord or wire terminals from the Masterphone. Cabinets are built of solid oak, durably finished and measure 10¼ in. high, 8 in. wide and 6 in. deep.



No. 2528, 1000 Ohm Ringer, 3 Bar Generator

For local lines with one or more phones and for lightly loaded farm lines.

No. 2561, 1600 Ohm Ringer, 5 Bar Generator

For long and heavily loaded lines.

No. 2562, 2500 Ohm Ringer, 5 Bar Generator

For long and heavily loaded lines.

Major Parts

Code No.	Generator	Ringer	Shipping Weight
F-2528	15	78-A	14 lbs.
F-2561	53	78-D	17 lbs.
F-2562	53	78-G	17 lbs.

2300 Series

We recommend these boxes for use with existing three-conductor handset telephones and desk stands. For those who purchase complete sets we recommend the 2500 series listed above in connection with the 950-LR, 930-LR, 9830 or 9837 sets equipped with anti-side tone induction coils.

The mounting space required is 10¼ in. by 8 in. The overall depth of the oak cabinet is 4½ in. Shipping weight with 3-bar generator is 14 lbs. and with 5-bar, 17 lbs.

No. F-2328, 1000 Ohm Ringer, 3-Bar Generator

For local lines and for lightly loaded farm lines.

No. F-2361, 1600 Ohm Ringer, 5-Bar Generator

For long and heavily loaded lines.

No. F-2370, 1600 Ohm Ringer, 5-Bar Generator

Furnished with a ½ MF condenser in the receiver circuit. Will ring through heavily loaded lines even if receivers are down.

No. F-2362, 2500 Ohm Ringer, 5-Bar Generator

For long and heavily loaded lines.

No. F-2371, 2500 Ohm Ringer, 5-Bar Generator

Furnished with a ½ MF condenser in the receiver circuit. Will ring through heavily loaded lines even if receivers are down.

Major Parts

Code No.	Generator	Ringer	Induction Coil	Condenser
F-2328	15	78-A	108-A	none
F-2361	53	78-D	108-A	none
F-2370	53	78-D	108-A	28
F-2362	53	78-G	108-A	none
F-2371	53	78-G	108-A	28

Masterphone Handset

This all-Bakelite handset is used as standard equipment with all Kellogg Masterphones. Other handsets for special applications are shown below.

The Kellogg patented NON-POSITIONAL transmitter is furnished in all these handsets and the receiver is of the bi-polar type using a cobalt magnet which has more magnetic saturation and longer life.

Both transmitter and receiver are of the capsule type, eliminating cord terminals and screws and as two brass bars molded into the Bakelite handle serve as conductors, to the transmitter and receiver, the cord connections are simple. Shipped with cords attached.

Length is 9 inches. Shipping weight each is 1½ lbs.

Major Parts

F-27-C Three Conductor Handset

Part No.	Description	Quantity Used	Part No.	Description	Quantity Used
55367	Handset Body Assembly	1	55369	Ring	1
55919	Receiver Assem.	1	58028	Ear Cap	1
57340	Transmitter Assembly	1	58015	Diaphragm	1
62505	Mouthpiece	1	F-673-G	Cord	1
			60788	Cord Attachment Screw	3



Conversion Handset

No. F-40-C

A four-conductor set, for attachment to wall telephones in place of the transmitter and receiver, without changes in the internal wiring. See Conversion Kits on Page No. 63.

Operator's Handset

No. F-39-C

A four-conductor handset with transmitter and receiver conductors separate. Fits No. 145 plug—for use as operator's handset. Also available with cord to fit Nos. 182 or 139 operator's plug. Specify type of plug used.

Major Parts

Nos. F-27-C, F-39-C and F-40-C use the same parts except for the cord. Nos. F-39-C and F-40-C have one clip omitted from the transmitter.

Code No. of Handset	Transmitter	Receiver	Cord	Use
F-39-C	57340	55919	F-698-G	Operator's Handset
F-40-C	57340	55919	F-699-G	Conversion Unit

Kellogg Telephones, Magneto

Wall Type Masterphones



This Kellogg Wall Type Masterphone consists of a standard Kellogg oak cabinet and a moulded Bakelite handset suspended on a special Masterphone hookswitch. This F-27-C handset is the same as that used with other Masterphones and is equipped with the Kellogg patented NON-POSITIONAL transmitter.

The ringer is the Kellogg non-adjustable, non-sticking type. Permanent magnets are of high quality steel, and

carefully wound high impedance coils with cores of soft annealed iron are used.

Kellogg generators are ruggedly constructed to withstand hard usage, and will give many years of service without attention. The 3-bar generator is designed for local lines having one or more telephones, or for lightly loaded rural lines. The 5-bar generator supplies ample current for long and heavily loaded rural lines. The mounting space required for this Wall Masterphone is 7½ inches by 10 inches.

A battery saver is not supplied with the 5809-M Masterphone unless specified.

Ordering Information

No. 5809-M, 1000 Ohm Ringer, 3-Bar Generator

For local lines with one or more phone and for lightly loaded farm lines.

No. 5812-M, 1600 Ohm Ringer, 5-Bar Generator

For long and heavily loaded lines.

No. 5816-M, 1600 Ohm Ringer, 5-Bar Generator

Condenser in receiver circuit. For ringing through heavily loaded lines even if receivers are down.

No. 5859-M, 2500 Ohm Ringer, 5-Bar Generator

For long and heavily loaded lines.

No. 5880-M, 2500 Ohm Ringer, 5-Bar Generator

Condenser in receiver circuit. For ringing through heavily loaded lines even if receivers are down.

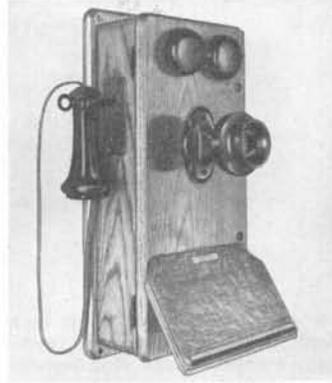
Major Parts

Telephone Code No.	Ringer	Generator	Condenser	Shipping Weight Each, Lbs.
5809-M	78-A	15	none	15½
5812-M	78-D	53	none	18½
5816-M	78-D	53	200	18½
5859-M	78-G	53	none	18½
5880-M	78-G	53	200	18½

Parts Used in All of This Type Masterphone

Part No.	Description	Quantity Used
F-27-C	Handset	1
105-A	Induction Coil	1
165	Hookswitch	1

Compact Type Wall Telephones



Kellogg compact type wall sets are complete with battery compartment and writing shelf. The transmitter and receiver are of the same high quality as those used in the Kellogg desk stand.

The ringer is Kellogg's famous non-adjustable, non-sticking type. Permanent magnets of high quality steel and carefully wound; high impedance coils assure response to the weakest current. The hookswitch assures

positive contact and will remain free from rattle.

The generator is ruggedly constructed to withstand hard usage and will give many years of service without attention. The 3-bar generator is designed for local lines having one or more telephones or for lightly loaded farm lines. The 5-bar generator will supply ample current for even the longest and most heavily loaded lines.

The attractive oak cabinet is compact, yet all parts contained within it are conveniently located and easily accessible.

The length is 19 inches; depth, 9¾ inches; width of backboard, 8¾ inches; width, including hookswitch and crank, 11¼ inches.

Ordering Information

No. 4809, 1000 Ohm Ringer, 3-Bar Generator

For local lines with one or more phones and for lightly loaded farm lines.

No. 4812, 1600 Ohm Ringer, 5-Bar Generator

For long and heavily loaded lines.

No. 4816, 1600 Ohm Ringer, 5-Bar Generator

Condenser in receiver circuit. For ringing through heavily loaded lines even if receivers are down.

No. 4880, 2500 Ohm Ringer, 5-Bar Generator

Condenser in receiver circuit. Same as No. 4816 except for ringer.

No. 4820, 1600 Ohm Ringer, 5-Bar Generator

Condenser and secret calling button with special pulsating and alternating current generator for secret signalling.

Major Parts

Telephone Code No.	Ringer	Generator	Condenser	Shipping Weight Each, Lbs.
4809	78-A	15	none	26
4812	78-D	53	none	29
4816	78-D	53	184	29
4820	78-D	59	184	29
4880	78-G	53	184	29

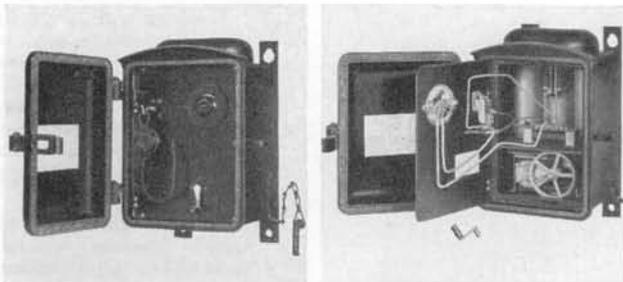
Parts Used in All Compact Types

Part No.	Description	Quantity Used
105-A	Induction Coil	1
F-41-A	Receiver	1
129	Hookswitch	1
121-C	Transmitter	1
50	Transmitter Arm	1

Telephone Section

WEATHERPROOF TELEPHONES and LOUDRINGING BELLS

Kellogg Weatherproof Telephones



This rugged telephone is designed for outdoor locations where a magneto telephone is required. It represents the best in transmission, reception and ringing efficiency. The set is sealed against the entrance of rain or snow, but the cast-iron housing is ventilated to prevent condensation of moisture. All parts are treated to resist corrosion; the housing is painted black.

The housing has a cast-in shelf for three dry batteries. Ample space is provided for the standard Kellogg 5 or 6-bar generator which mounts on a sliding Bakelite shelf and is easily removed for inspection. A Kellogg standard non-adjustable 2500-ohm ringer is used and the 3-inch adjustable brass gongs extend through the top of the housing, protected by a heavy steel hood. The silicon steel induction coil which mounts the connecting rack is fastened to another sliding Bakelite shelf and also provides space for a condenser when specified. The highly efficient Kellogg transmitter and the watch case type receiver with cobalt steel magnets are both mounted on the inner door. Simplified wiring is used throughout. The inner door swings out, giving free access to all parts.

There is a hole in top of case, tapped for standard 1/2-inch pipe fitting. Slotted screw holes in the mounting straps permit the setting of the upper lag screws before the housing is hung in place. The entire telephone may be handled and installed by one man. The cast-iron door is equipped with reinforced hinges and a heavy-duty clasp . . . can be locked with a standard padlock.

Dimensions: Height is 14 1/8 inches; width, 11 5/8 inches; depth, 10 1/4 inches. The shipping weight of No. 4883 is 69 pounds and No. 4888, 73 pounds. Horizontal mounting centers, 7 5/16 inches, vertical 14 1/4 inches.

Ordering Information

No. 4883, With 5-Bar Generator, 2500 Ohm Ringer.
No. 4888, With 6-Bar Generator, 2500 Ohm Ringer.

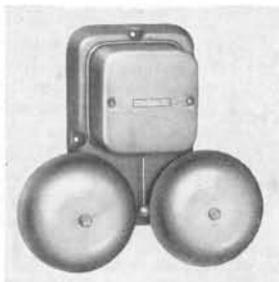
Major Parts, No. 4883

Part No.	Description	Quantity Used
56981	Inner Door Assembly	1
55-G	Ringer	1
53	Generator	1
121-L	Transmitter Assembly	1
159	Hookswitch	1
81-A	Receiver	1
682-TR	Receiver Cord	1
100-A	Induction Coil	1

Major Parts, No. 4888

Same as No. 4883 except that 6-bar generator, No. 75, is used.

Weatherproof Loudringing Bells



For indoor or outdoor use with either common battery or magneto service. Especially adapted for taxi stands, coal yards, lumber yards, police or fire alarms and all other places where loudringing weatherproof bells are required. These bells are completely weatherproof and operate perfectly under any climatic condition. They are sturdily constructed, dependable and efficient and guaranteed to give many years of satisfactory service with practically no maintenance.

Either straight line or harmonic ringers can be furnished with these bells. The rugged, 6-inch cadmium plated steel gongs are easily adjusted. The housing consists of a heavy cast iron base with a removable cast-iron cover, all finished with a durable coat of gray zinc paint.

These bells can be mounted in a few minutes with three ordinary screws or bolts. Outside mounting holes eliminate removing the cover upon installation. Size overall is 13 in. wide, 12 1/2 in. high and 4 1/2 in. deep. The shipping weight is 14 pounds each.

Ordering Information

No. 65-SA. 1000 Ohm Ringer, straight line type. No condenser unless specified.

No. 65-SD. 1600 Ohm Ringer, straight line type. No condenser unless specified.

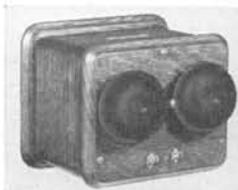
No. 65-SG. 2500 Ohm Ringer, straight line type. No condenser unless specified.

No. 65-HB. Harmonic Ringer, frequency of 30, 42, 54 or 66 cycles. Furnished with No. 12, 1 MF condenser.

No. 65-HA. Harmonic Ringer, frequency of 33 1/3, 50, 66 2/3 or 16 2/3 cycles. Furnished with No. 12, 1 MF condenser.

When a condenser is required with straight line ringers order one No. 12 condenser, one No. 3460 mounting strap and two No. 57238 screws.

Magneto Extension Bells



The Kellogg 37 type magneto extension bell consists of a small, neat oak cabinet with ringer and two binding posts. The ringer is the No. 78 non-adjustable armature type and is extremely efficient. It responds to the weakest current, yet will not freeze or stick. Coils are accurately wound with highest grade copper wire. The

brass bells are finished in heavy, black enamel. Cabinet is 5 1/2 in. high, 6 3/8 in. wide and 4 3/4 in. high. Shipping weight is 3 pounds each.

Ordering Information

Code No.	Resistance	Description
37-SA	1000 Ohms	Straight Line
37-SD	1600 Ohms	Straight Line
37-SG	2500 Ohms	Straight Line
37-BA	1000 Ohms	Biased Ringer
37-HB	Harmonic	30, 42, 54 or 66 cycles

Condensers are not supplied with these bells.

KEY BOXES

Kellogg 3001 Type Portable Telephone



The Kellogg No. 3001 Portable Telephone meets every service requirement where a simple rugged set is required. It will talk and ring over the longest and most heavily loaded line. It is durable and compact — built to withstand hard usage, yet light enough to be easily transported in trouble cars. The net weight is 19 pounds.

This telephone is equipped with a metal handset, which contains the NON-POSITIONAL transmitter and a high-grade receiver unit. Battery current is supplied by a standard 3-cell flashlight battery. A button in the handset cuts in the battery when talking.

This set is equipped with a Kellogg standard 2500 ohm ringer, a powerful 5-bar generator, one-half microfarad condenser, and an accurately balanced induction coil. Connections to the line are made direct to two heavy contact clips.

The cabinet is varnished birch with heavy brass reinforcements, equipped with a 54-inch adjustable carrying strap, 1 1/8 inches wide.

Dimensions: 10 1/4 in. high, 10 in. wide, 5 in. deep. Shipping weight, 29 pounds. Shipped less battery.

Major Parts

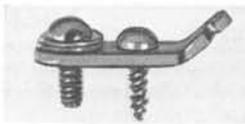
Part No.	Description	Quantity Used	Part No.	Description	Quantity Used
86	Generator	1	32-L	Handset	1
F-108-A	Induction Coil	1	28	Condenser	1
109-G	Ringer	1	39420	Crank Assem.	1

Battery Saver



The principle of the Kellogg No. 1 battery saver is extremely simple. It stops the receiver hook after it has closed the receiver contact, but before the battery contact has been closed, thus permitting reception without the use of batteries. Pressing the stop lever releases the receiver hook which closes the battery contact permitting complete conversation. Net weight is 3 ozs.

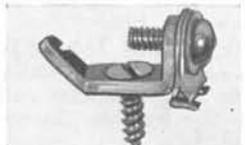
Binding Posts



screw is furnished for base are 5/16 inch by 1 inch.

No. 11

No. 11 binding post is made of tin-plated brass. Its small size adapts it to a wide variety of uses. It is made to take spade tips. One No. 4482 wood mounting. Dimensions of the



No. 63

No. 63 is provided with a clip to take spike or pin tips. A very satisfactory binding post for universal use. One No. 11033 mounting screw is furnished.

Bakelite Key Boxes



A compact, attractive key box that makes an ideal installation for any location. Made of moulded Bakelite, the sturdy housing will retain its rich, black lustre permanently. It contains all the equipment and mounts on a nickel-plated steel back plate. A simple, positive locking catch rigidly secures the housing to this back plate.

This key box can be mounted in any position — flat, upright, or on its side. The back plate is simply attached to the wall or desk with two screws. Since all of the

equipment is in the housing, connections are easily and conveniently made before the unit is snapped into place.

All wires in the unit terminate in soldered tips fastened under screw terminals on the connecting racks. The racks are clearly numbered and easy to get at. There are extra terminals on each rack which can be used to terminate bell, buzzer or other circuits that are independent of the switching key. These extra terminals can also be used where special spring arrangements are desired. Line wires enter the key box through an opening in the bottom.

Standard Kellogg keys are used in these key boxes. They are rugged and simple and have long, heavy, evenly shaped and properly tempered springs of nickel silver; precious metal contacts; heavy "T" shaped brass frame to which the springs are rigidly mounted; long life cam and pivot rollers upon which depend smooth operation without wear; felt dust protecting cushion, and extra heavy insulations. All Kellogg springs are heavily insulated with micarta and withstand the most severe breakdown test.

These key boxes are 5 1/2 in. high, 3 5/8 in. wide, and 1 1/2 in. deep. Shipping weight each is 1 lb.

No. 12 — Two-Way

Wired to switch a telephone to either of two incoming lines. The key locks in two positions.

No. 13 — Three-Way

Similar to No. 12, except it switches a telephone to one of three lines. The key locks in all three positions. Often used with systems having two trunks and a separate circuit for intercommunication.

Major Parts

No. 12			No. 13		
Part No.	Description	Quantity Used	Part No.	Description	Quantity Used
60287	Cover Assembly	1	60287	Cover Assembly	1
60286	Conn. Rack		60286	Conn. Rack	
	Odd Nos.	1		Odd Nos.	1
60283	Base Assembly	1	60283	Base Assembly	1
1028	Key	1	1030	Key	1
60457	Conn. Rack		60457	Conn. Rack	
	Even Nos.	1		Even Nos.	1

Telephone Section

INDUCTION COILS for TELEPHONES

No. 100-A



A combined two winding local battery induction coil and 7 point connecting rack providing for line and cord terminals. This coil is used in Kellogg 3800-M series of magneto wall Masterphones. Makes

a convenient replacement unit for rebuilt old type telephones and desk set boxes.

Dimensions are $4\frac{1}{4}$ in. long, $1\frac{1}{2}$ in. deep and $1\frac{1}{4}$ in. high. Distance between mounting centers is $3\frac{3}{4}$ in.

No. 105-A

A three winding local battery induction coil for use with the Kellogg TRIAD anti-side tone circuit, equipped with 8 point connecting rack. Used in the Kellogg 4800 series of wall telephones and 5800 series of magneto wall Masterphones. May also be used to advantage in converting old telephones to the TRIAD circuit. Similar to No. 100-A, illustrated above.

Dimensions are $4\frac{1}{4}$ in. long, $1\frac{1}{2}$ in. deep and $1\frac{1}{4}$ in. high.

No. 108-A



A two winding local battery induction coil of the latest design for well balanced transmission and reception. Used in Kellogg 2800 series telephones and 2300 series desk set boxes. Replaces No. 28-C induction coil but is also an excellent replacement in all types of

magneto wall and desk telephones using two winding coils.

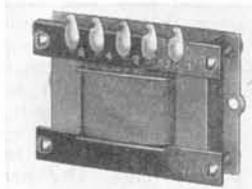
Dimensions are $4\frac{1}{4}$ in. long, 1 in. deep and 1 in. high.

No. F-108-A

A two winding local battery induction coil, same as No. 108-A, except arranged for mounting in No. 3001 type portable telephones.

Dimensions are $3\frac{3}{4}$ inches long, $1\frac{3}{8}$ in. deep and 1 in. high.

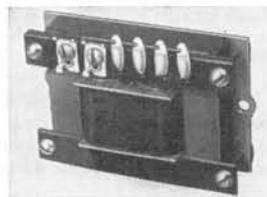
No. 109-A



A three winding, closed core, local battery induction coil with 5 point connecting rack, used in Nos. 950-LR, 930-LR, and 9830 Kellogg TRIAD circuit Masterphones.

Dimensions are 3 in. long, 1 in. deep and $2\frac{1}{4}$ in. high.

No. 106-A



A three winding, closed core, common battery induction coil, with 6 point connecting rack. Used in all Kellogg common battery, moulded Bakelite handset Masterphones. Furnished with two screw connections to obtain greater side tone reduction when required.

May be used in telephones used for kick coil service.

Dimensions are 3 in. long, 1 in. deep and $2\frac{1}{4}$ in. high.

CONDENSERS for TELEPHONES

Kellogg condensers are manufactured in Kellogg's own plant by the most modern processes and with the best materials obtainable and under the supervision of Kellogg's own engineers. The foil and paper are the finest the market affords. The impregnating compound is a special formula developed after years of laboratory research. To insure long life a special sealing compound is used. This compound will not crack at 0 degrees nor flow at 150 degrees Fahrenheit.

Kellogg condensers are made to meet the maximum voltage that may be required in the class of work for which they are designed, and are modern and compact with no sacrifice in efficiency.

No. 28

$\frac{1}{2}$ M.F.



For telephones used on long party lines the No. 28 condenser in the receiver circuit is of great benefit as it enables other telephones to ring by when the receiver is off the hook. The No. 28 condenser is furnished with a mounting ear and can be fastened in place in any magneto telephone with a single screw. Nearly all Kellogg telephones have a small punching or loop so that this condenser can be installed even when not furnished with the telephones. On other makes it can be added by putting in a third receiver binding post, connecting the condenser between the new post and one of the old ones and then removing the receiver cord from the old post to the new one. Net weight, 3 ounces. Height is $2\text{-}27/64$ inches, width is $1\frac{1}{4}$ inches, and thickness is $1\text{-}1/16$ inches.

Height is $2\text{-}27/64$ inches, width is $1\frac{1}{4}$ inches, and thickness is $1\text{-}1/16$ inches.

No. 184

$\frac{1}{2}$ M.F.

The No. 184 condenser is of the same construction as the No. 28 except it is provided with 7 inch flexible leads to which spade tip terminals are soldered. Dimensions of the can are $2\frac{1}{2}$ inches long, $1\frac{1}{4}$ inches wide and $\frac{3}{4}$ inches thick. Working voltage is 200 volts, direct current.

No. 67

1 M.F.

It is sometimes desirable to place a condenser in series with the ringer of magneto telephones in order to have a line clear of all battery leaks for testing purposes. This condenser meets this need. Net weight is 6 ounces, height is $3\text{-}5/16$ inches, width is $1\frac{1}{2}$ inches and thickness is $1\text{-}23/32$ inches.

No. 53

2 M.F.



The No. 53 condenser is similar to No. 67 but is provided with two mounting ears, one on the base and one on the side for mounting the condenser in the corner of the box. It may be used with No. 97 desk stands.

Dimensions of can are $3\frac{3}{8}$ inches long, $1\frac{1}{2}$ inches wide and $1\text{-}1/32$ inches thick. Working voltage is 160 volts direct current.

No. 193

1 M.F.

No. 193 condenser is used in No. 950-C-LR Masterphones. It has two leads with spade tips and the dimensions of the can are $1\frac{3}{4}$ inches wide, 1 inch thick and $3\frac{1}{8}$ inches long.

No. 199

1 M.F.

No. 199 condenser is used in No. 930-C-LR Masterphones. It has two leads with spade tips and the dimensions of the can are $1\frac{1}{2}$ inches wide, $1\frac{1}{8}$ inches thick and $2\text{-}3/16$ inches long.

No. 203

1, 1 and $1\frac{1}{2}$ M.F.

No. 203 is a 3 winding condenser used in the No. 925-X series of Masterphones which may be used with kick coil service. It has six leads with spade tips and the dimensions of the can are the same as No. 199.

No. 209

1, 1 and $1\frac{1}{2}$ M.F.

No. 209 is a 3 winding condenser used in the No. 900-X series of Masterphones which may be used with kick coil service. It has six leads with spade tips and the dimensions of the cans are the same as No. 193.

Kellogg Masterphones, Common Battery

Conversion Kits

Surplus idle wall telephones, accumulating in the stockroom, can be quickly and easily converted to modern attractive wall Masterphones and placed in profitable service. Each Masterphone conversion gives new "sales appeal" to the instrument. It puts idle wall phones into service.

A Masterphone Conversion Kit consisting of a few parts, together with an ordinary screw driver, a pair of long nose pliers, a hammer and a soldering iron are the only things necessary to complete the job.

Kit No. 7

For converting wall magneto telephones into wall Masterphone handset instruments. The conversion may be made without removing the telephone from the wall.

Consists of:

- 1 No. 40-C Handset, NON-POSITIONAL Transmitter
- 1 No. 56280 Switch Hook Lever
- 1 ES-2410 Cover Plate

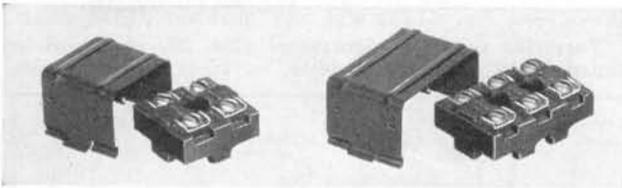
Kit No. 8

Same as Kit No. 7 with the addition of a complete hookswitch assembly, No. 155 to replace present hookswitch assembly not adapted to the Masterphone switch hook lever.

Consists of:

- 1 No. 40-C Handset, NON-POSITIONAL Transmitter
- 1 No. 155 Hookswitch Assembly
- 1 ES-2410 Cover Plate

Kellogg Connector Blocks



No. 25-A, Rack and Cover — Two Point

No. 25-B, Rack and Cover — Three Point

Kellogg Connector Blocks are one-piece, made of moulded Bakelite and take every type of cord tip and all sizes of wire. When used for connecting the telephone cord to the line wire leads, connections may be made quickly and easily, eliminating the nuisance of soldering and taping.

The blocks may be attached in any position and in almost any place with ordinary wood screws. Counter-sunk screw holes eliminate the possibility of shorts across the screw heads. The neat, compact appearance of these blocks makes them unobtrusive wherever they are used.

As all metal parts are Everdur mounted in Bakelite, there can be no rust, corrosion or shorts. The connector bars are moulded right in the Bakelite so that they cannot loosen and come off. Lugs act as reinforcements and provide means to fasten stay cords. Deep slots in the Bakelite base hold cord tips in position, guard against lateral movement of cord tips and prevent loosening of screws.

Furnished with or without "Snap-on" Everdur cover. Specify when ordering.

Ordering Information

No.	Description
25-A	Two-Point Block for connecting up two wires. Less Cover.
58887	Cover for 25-A.
25-B	Three-Point Block for connecting up three wires. Less Cover.
58889	Cover for 25-B.

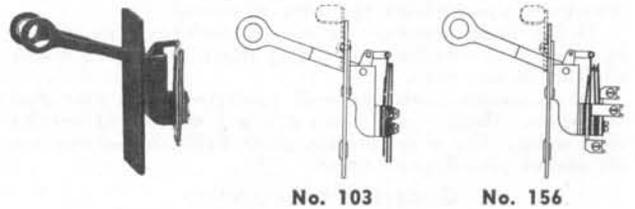
Kellogg Hookswitches

Kellogg Hookswitches are mounted on steel frames. The springs are of heavy nickel silver and assembled with a steel reinforcing spring insuring positive contact. The hook is easily removed by simply pushing the spring forward. Phenol fibre insulations are used. Kellogg hookswitches are simple in construction, yet reliable in operation.

Kellogg hookswitches are divided into two main classes: for regular hand receivers and for handsets. Each of these two classes is available: with escutcheon plate for mounting on wood sets, with bracket for mounting on the base of steel sets or with neither escutcheon plate nor bracket for mounting directly on steel sets.

With Escutcheon Plate — For Hand Receivers

Battery saver latch shown on No. 103 and 156 hookswitches furnished only when specified.



No. 103

No. 156

With Escutcheon Plate — For Handsets

No. 165



Hookswitch No. 165 is equipped with switch hook lever No. 56280 for handsets instead of No. 46811 for regular receivers.

Switch Hook Levers



No. 56280

For handsets.

Writing Shelves

Quarter-sawed oak writing shelves are furnished in two standard styles as illustrated. Other shelves may be had to use on old style telephones, but the use of these standards are recommended if possible in order to avoid the extra expense of having the older styles made up to order.

No. 26743. Writing shelf, two brackets.

No. 43720. Writing shelf, single bracket as used on standard telephones. Extra sloping.



Pc. No. 26743



Pc. No. 43720

Hinge



Piece No. 37778 is the standard telephone hinge, being 1½" long, 1¼" overall width. Screws which are not furnished unless specified are Piece No. 7865.

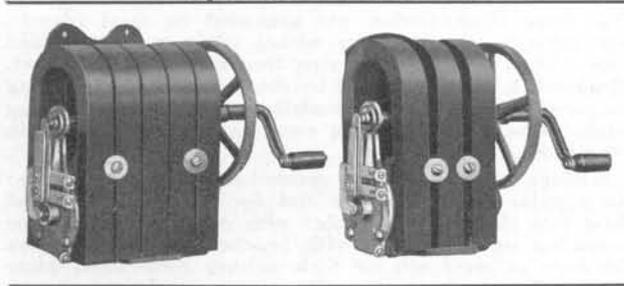
Cabinet Lock

Standard cabinet lock for all types of wood telephones, code No. 14.

Telephone Section

KELLOGG GENERATORS

Telephone Generators



No. 53, 5 Bar

No. 15, 3 Bar

The secret of the Kellogg generator's extraordinary strength lies not only in its permanent magnet, but in the superior design of its revolving electro-magnet or armature, upon which the wire is wound.

The Kellogg armature is of the shaftless type, allowing plenty of winding space and the maximum amount of iron in the core.

All generator parts are well protected from rust and corrosion. Magnets are given a heavy coating of special blue paint. The gear, pinion, shaft field and screws are all nickel plated, dull finish.

Ordering Information

Code No. of Generator	No of Bars	Height	Size Overall, Inches		Width
			Length		
15	3	5 3/4	6 1/2		4
53	5	5 3/4	8		4
75	6	5 3/4	9		4

Note: Pulsating current generators can be furnished on request.

Parts Used in All No. 15, 53 and 75 Generators

Part No.	Description	Quantity Used	Part No.	Description	Quantity Used
42687	Spring Assembly	1	12172	End Bracket	
3272	Stop Collar	1		Assembly	1
3266	Spring	1	12175	End Bracket	
4453	Escutcheon	1		Assembly	1
15911	Crank Assembly	1	5019	Washer	2
3265	Collar Assembly	1	6130	Screw (No. 15	
3267	Gear Assembly	1		and 53 Only)	1
3273	Pinion	1			

Major Parts

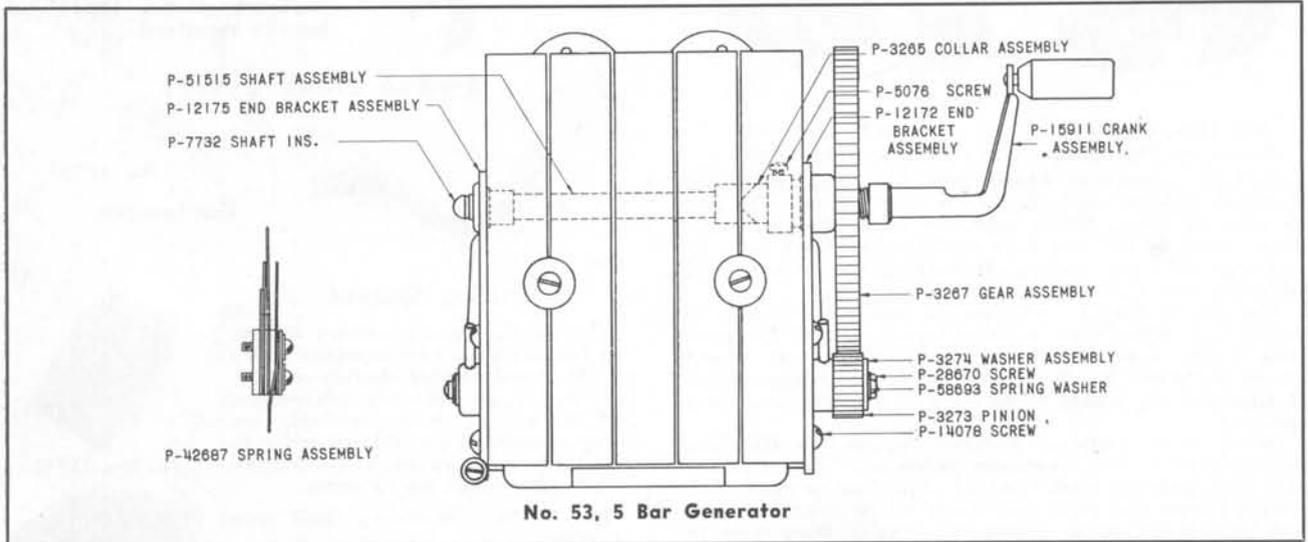
Code No. of Generator	Magnet	Arma-ture Assem-bly	Mount-ing Bracket	Shaft Assem-bly	Shaft Ins.
15	3276 (3)	12973	4748	51527	7732
53	13459 (2)	12974	13461	51515	7732
	29992 (1)				
75	57856 (3)	53965	39918	51525	7732
	57857 (3)				

No. 51527 Shaft Assembly consists of one No. 51512 sleeve, one No. 51513 Pin and one No. 51526 Shaft.

No. 51515 Shaft Assembly consists of one No. 51512 sleeve, one No. 51513 Pin and one No. 51514 Shaft.

No. 51525 Shaft Assembly consists of one No. 51512 sleeve, one No. 51513 Pin and one No. 51524 Shaft.

Parts for four bar Generators (No. 22, etc.) will be found in list of parts for either No. 15 or 53 Generators.



Number Plates



No. 87

Can be lettered by the user as desired. Fits over and is held in place by the threads of the transmitter mouthpiece.

No. 88

Can be lettered by user as desired. Held in place by two of the transmitter back screws.

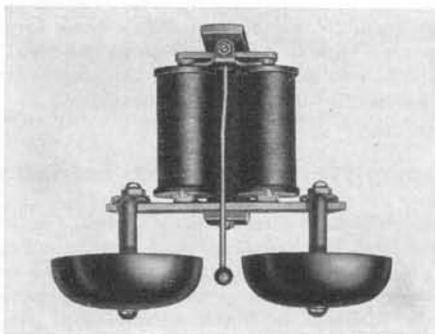


RINGERS and RECEIVERS

Kellogg Ringers

These Kellogg ringers are constructed throughout of the best materials and are so designed that they will not magnetize and stick. They are furnished in the non-adjustable type and are fitted with high-grade brass gongs which are sand blasted and heavily black enameled. The long-type, high-impedance coils have cores of soft, annealed Norway Iron. The spools are carefully insulated and wound with highest grade copper wire. Connectors are attached to spools eliminating breakage of coil wires. The permanent magnet is of high quality magnet steel. The armature has a thin strip of special metal attached to it which prevents sticking. The taper rod is of proper length to give sure, instant signaling. Adjustable gong posts keep the center type gongs in the correct position. These ringers are used in steel and wood sets.

Magneto Type — Non-Adjustable



The Kellogg No. 78 type ringer has a non-adjustable armature and is standard for magneto telephones. This ringer is built for maximum efficiency and the armature adjustment cannot be changed. This adjustment insures ringer's response to the weakest currents, yet it will not freeze or stick. Can mount on wood of any thickness up to $\frac{3}{4}$ in.

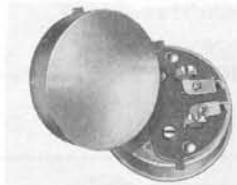
Ordering Information

Code Number	Resistance	Size of Gong	Description
78-A	1000 Ohms	2½ in.	Straight Line, Bridging
78-D	1600 Ohms	2½ in.	Straight Line, Bridging
78-G	2500 Ohms	2½ in.	Straight Line, Bridging

Major Parts Used in Ringers 78-A, 78-D and 78-G

Part No.	Description	Quantity Used
12160	Armature Support Assembly	1
12154	Magnet	1
50411	Heel Iron Assembly	1
12157	Armature	1
30488	Gong	2
51098	Coil Assembly (78-A Only)	2
51156	Coil Assembly (78-D Only)	2
51140	Coil Assembly (78-G Only)	2

Masterphone Capsule Type Receiver



Front and Back Views of No. P55919 Receiver

The No. 55919 Masterphone handset receiver is a compact, self-contained unit which is easily removable. It has no cord connections, but as in the transmitter, two heavy bronze clips make the electrical connections. Locating lugs slide easily into the guide slots in the housing. The Bakelite cap grips the diaphragm firmly and evenly. Both receiver and transmitter caps screw directly into the housing. No metal retaining rings are necessary. The receiver is of the standard bi-polar type using a cobalt magnet which has more magnetic saturation and longer life. It is in perfect electrical balance.

The diaphragm is cadmium plated and carries Kellogg part No. 58015. Diameter of diaphragm is $2\frac{1}{8}$ in.

Subscribers' Hand Receivers



Standard hand telephone receiver with long magnets of the bi-polar type, with heavy brass retaining cup, 36-inch moisture-proof receiver cord with heavy tinsel conductors and high-grade insulation.

The Bakelite shell is highly polished and the cord hole in the end of the case is rounded out which prevents excessive wear on the cord. The ear cap securely holds the diaphragm and receiver in the shell and is shaped to perfectly fit the orifice of the ear and has no objectionable lettering around the edge.

The shell and cap are of a standard size so that many other makes of receivers will fit the shell perfectly.

The cord terminals are so designed that either spade or spike tip cord terminals can be used. The cord is regularly supplied with spade tips on both ends.

Ordering Information

Code No.	D. C. Resistance	Description
F-41-A	62 ohms	Standard
F-41-B	650 ohms	High Impedance

Major Parts

F-41-A Part No.	F-41-B Part No.	Description	Quantity Used
32269	32269	Shell Assembly—Shell & Cap.	1
F-644-TR	F-644-TR	Cord	1
45210	55884	Coil Assembly	1
45211	55885	Coil Assembly	1
58015	58015	Diaphragm (Diam., $2\frac{1}{8}$ in.)	1

Bakelite Telephone Mouthpieces

No. 29779



No. 29779 telephone mouthpieces are made of Bakelite which is unbreakable in ordinary service. These mouthpieces retain their glossy finish and are not affected by heat, chemicals, moisture, etc.

No. 34419

Special for Stromberg-Carlson telephones, Monarch, American, Electric, etc.

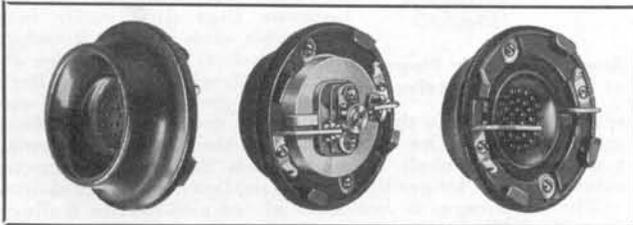
Kellogg can furnish composition mouthpieces for those desiring them. Also Bakelite mouthpieces to fit other makes of telephones.

Telephone Section

TRANSMITTERS

Kellogg Transmitters One-Piece Bakelite Transmitter Front and Mouthpiece With The Kellogg NON-POSITIONAL Transmitter

Type 121



This one-piece, molded Bakelite transmitter front and mouthpiece unit fits all types of Kellogg wall sets and desk stands using transmitter arms. The same assembly also fits all Western Electric wall sets and desk stands and it is easily adapted to some other makes by using Piece No. 46279 black enameled back described in next column.

Molded of rich, black Bakelite with a wide mouthpiece opening, this one-piece unit is practically indestructible. It takes the famous NON-POSITIONAL transmitter and makes this one unit standard for all sets. The locating lugs on the transmitter case slip into corresponding guide slots in the Bakelite housing. The electrical connections are made by two heavy metal blades engaging the bronze contact clips. These blades are formed with one end providing a slotted terminal to which the transmitter cord may be soldered. Each blade is positioned between two Bakelite shoulders and anchored by a single screw.

No. 121-C

Bakelite front and mouthpiece unit with NON-POSITIONAL transmitter, for common battery or local battery operation. Uses transmitter unit No. 57340.

No. 121-L

Bakelite front and mouthpiece unit with NON-POSITIONAL transmitter, for local battery operation only, such as railways, oil field lines, etc., where extra transmission is more important than battery consumption.

Parts Used in No. 121-C Transmitter Front

Part No.	Description	Quantity Used	Part No.	Description	Quantity Used
62178	Bakelite Front	1	60419	Washer	2
60416	Terminal	2	5191	Mounting Screw	4
55806	Screw		60016	Transmitter Unit	1
	(Terminal)	2			
59033	Screw	2			

Masterphone Transmitter



No. 57340

This transmitter provides the Masterphone with the finest type of transmission available in handset telephones. It is a self-contained, capsule type, NON-POSITIONAL transmitter, designed as a unit with no cord connections. It is easily installed without the use of tools. Two different sized locating lugs correspond to guide slots in wall of housing which insures the transmitter of always being in correct position. The heavy bronze clips make positive electrical contact by gripping bar conductors firmly on both sides.

Fits in Masterphone handpieces as well as Types 117 and 121 transmitter fronts.

No. 46279 Transmitter Back

Kellogg standard metal transmitter back furnished unless otherwise specified. Handsomely finished in black enamel. Will attach to any make telephone arm requiring two screws for mounting transmitter.

Transmitter Arms for Telephones

Kellogg adjustable transmitter arms are of pressed brass and steel construction, and are free from heavy or brittle castings. They adjust readily and easily, and are so designed as to keep their adjustment. They are attractively finished in black enamel and all wiring is concealed.

No. 50



This arm consists of the base of No. 42 and the transmitter mounting of the No. 41 arm. This is the standard arm for magneto telephones. Depth from transmitter to back is $2\frac{5}{8}$ inches.

No. 42



The No. 42 transmitter arm was formerly used on Kellogg compact wall telephones and can be used on a large variety of instruments. A handsomely finished, pressed steel arm with adjustable hinge. Net weight, 8 ounces, overall length is $4\frac{1}{2}$ inches.

Telephone Tools



No. 9

Flat wrench for $\frac{1}{4}$ and $\frac{3}{8}$ inch ringer nuts.



No. 10

Flat wrench for $\frac{1}{4}$ and $\frac{5}{8}$ inch ringer nuts.



No. 71

Used for removing the Masterphone transmitter ring and receiver cap. Also valuable aid in removing caps from other types of receivers.

Why Kellogg Cords Are Your Best Buy!

Year after year in thousands of exchanges everywhere, Kellogg cords are on the job. They are the standard in so many exchanges because most telephone men know that these good, long life cords eliminate subscriber complaints and keep operating costs down.

Kellogg's modern laboratory is constantly developing new and better materials and finding improved methods of manufacture and construction. These are the reasons why Kellogg cords are uniformly superior. They stand the hard test of everyday service far better and longer than do ordinary cords.

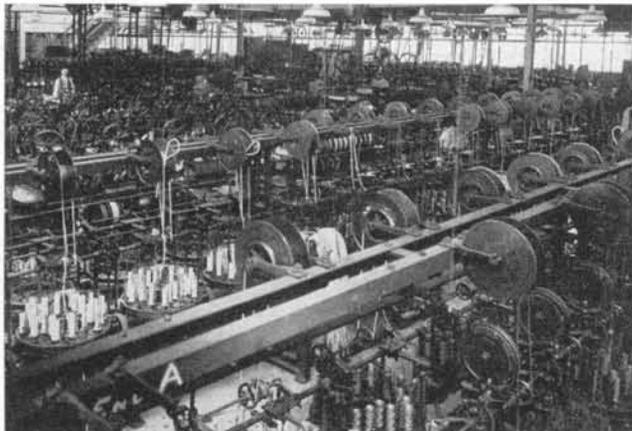
25% to 35% More Life!

The newer materials and modern methods used in the manufacture of Kellogg cords have increased their life by 25% to 35%! This means longer wear and lower cost per year of service.

Conductors of all Kellogg cords are made up of six strands of a high quality bronze tinsel. Each strand consists of two ribbons of this tinsel spirally wrapped over a long-fibre cotton center. The conductors are of a tough, elastic material having high conductivity and the ability to stand up under the most exacting requirements.

Over this strong, pliable conductor, two wraps of silk or cellulose acetate yarn are applied in opposite directions. The covering is then impregnated with a moisture-proof sealing compound of high dielectric strength. One of the advantages of this special compound is that it does not harden and become brittle. This moisture-proof conductor is then covered with a closely woven, soft cotton braid and, in the case of instrument cords, is finished with an application of closely woven, mercerized cotton outer braid.

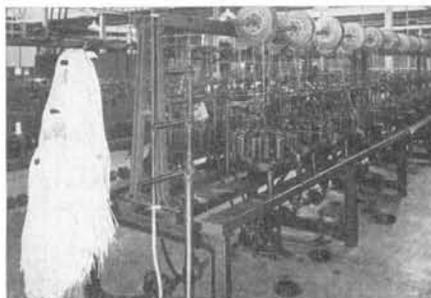
On finishing switchboard cords, an overall braid of selected glazed cotton is applied, and, for extra reinforcement at the plug end, this braid is doubled for a distance of twelve inches. Both instrument and switchboard cords employ braids that have been carefully chosen for their long wearing qualities and good appearance.



EXPERIENCE COUNTS: Vast floor space in the great new Kellogg factory is devoted to the manufacture of telephone and switchboard cords. Here is where machines, materials and experts collaborate in the production of these cords which have long been recognized as the finest in the industry. The average experience of Kellogg cord department operators covers more than 10 years each.

Braiding . . . An Important Factor in Cord Endurance

The proper application of the braid is one of the most important factors in producing a cord that will stand up well in service.

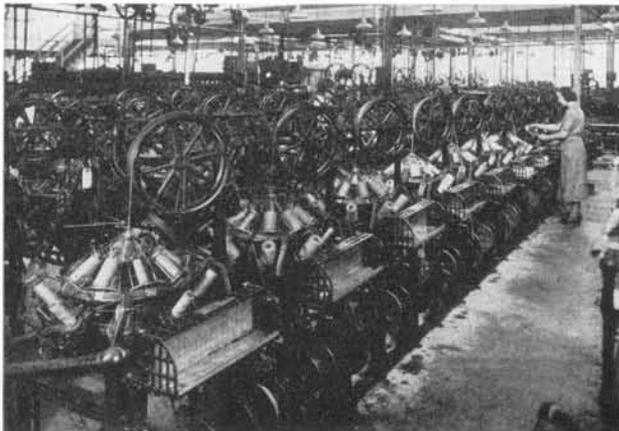


Some of the braiding machines in the cord department of the Kellogg plant.

A loosely woven braid wears quickly—a too tightly woven braid binds the tinsel. It takes exacting equipment and long experience to braid cords properly. But that isn't all! . . . the type of fibre used, the size and quality of thread, the setting of machines, etc., are details which must have exacting attention. All raw materials used by Kellogg are thoroughly tested in the laboratory before going into production. In this way, raw material is kept under observation to assure uniformity of quality and production. Every lot of tinsel is laboratory checked to see that it meets Kellogg specifications. Every cord is tested in the final inspection for shorts, conductivity, evenness of braid, strength of terminal attachment, etc. This watchfulness and precision in Kellogg production are your assurances of getting the finest quality in every cord.

Kellogg Cords are Better . . . Yet Cost No More!

The ever increasing volume of Kellogg cord sales is concrete evidence of the high regard telephone men have for them. Years of experience, skilled workmen, modern machines, a fully equipped laboratory and vast buying power mean tremendous production, unequalled quality and lowest prices.



1200 TO 2000 FEET EVERY 8 HOURS! These are the speedy 16-spindle automatic braiding machines which handle all of the individual conductors for Kellogg telephone and switchboard cords, jumper wire, etc. Each machine in this giant battery can produce over one-third of a mile of braided conductors per day.

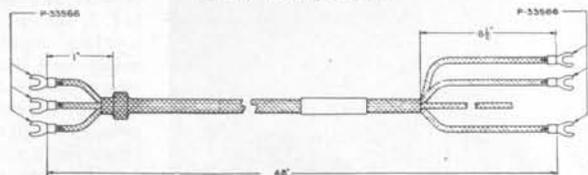
Cord Section

KELLOGG CORDS

Handset Cords

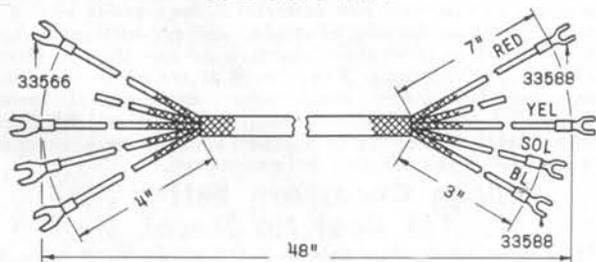
The conductors of Kellogg handset cords, like the desk stand cords, are made of six strands of highest quality bronze tinsel, each strand having spiral ribbons. This tinsel is absolutely sealed against moisture and oxidation by a special insulation. This is then protected by a closely woven cotton inner braid, and followed by the application of a heavy brown mercerized cotton outer braid. Terminals are firmly fastened, and grommets or tie cords are provided to take the strain off the conductors while in use. This construction gives Kellogg cords the stamina to withstand the use and abuse of everyday service.

Three Conductor Code No. F-673-G



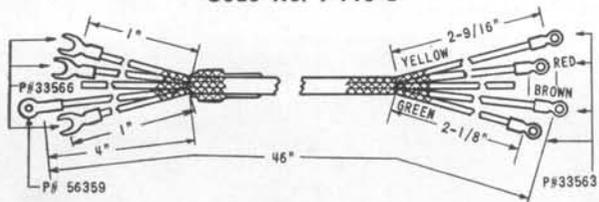
Tracer colors red, yellow, green. Fits Kellogg F-27-C handset used on Kellogg Masterphones of all types. Standard lengths are 48 inches. Also available in 72 inch lengths.

Four Conductor Code No. F-454-G



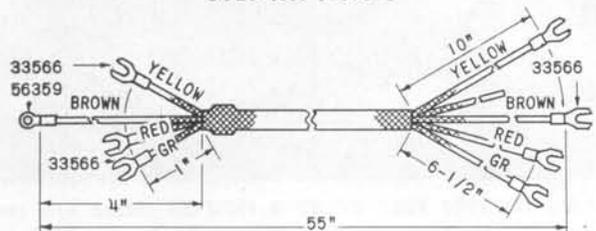
Tracer colors solid, black, red and yellow. Fits Kellogg No. F-11 and F-12 handsets.

Code No. F-718-G



Tracer colors solid, yellow, red and green. Used with Kellogg No. 39 handset and No. 139 plug.

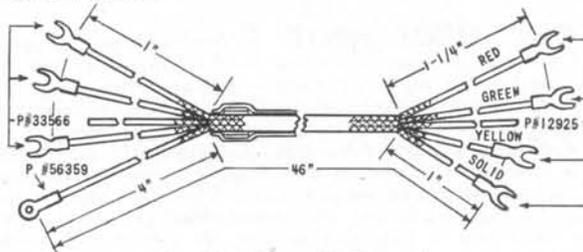
Code No. F-699-G



Tracer colors red, green solid and yellow. Terminals fit the receiver and transmitter binding posts in wall telephones when the conventional parts are replaced with a handset. Fits Kellogg No. F-40-C handset.

Four Conductor Code No. F-698-G

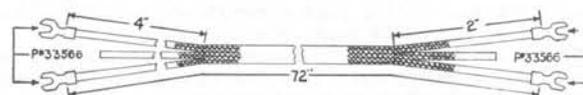
Tracer colors red, green, yellow and solid. Box end arranged to fit Kellogg No. 145 plug and Kellogg No. F-39-C handset.



Desk Stand Cords

Kellogg desk stand cords are of the same sturdy construction as Kellogg handset cords. This insures long life, high conductivity and resistance to moisture. The cords listed here fit Kellogg equipment and equipment of other makes. Cords to meet other requirements than those listed can be quickly furnished on order.

Two Conductor Code No. F-665-D

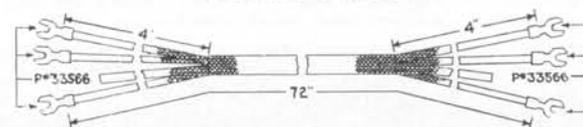


Tracer colors solid and black. Fits Kellogg No. F-39, F-75, F-97, F-111 and other stands provided with terminals for flat type tips and the No. 900 and 925 type Combination Masterphones. Replaces Kellogg No. F-100-D cord and S. C. D-2-C cord.

Code No. 665-D

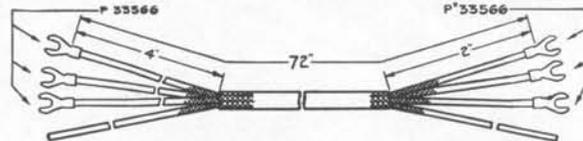
Same as Code No. F-665-D except having No. 5006 spike or pin tips. Replaces Kellogg No. 100-D cord.

Code No. F-640-D



Tracer colors green, red and yellow. Fits Kellogg No. F-115-A, F-118, F-118-B, F-135, F-138 and F-301 stands and the 900 and 925 "B" type Combination Masterphones. Replaces Kellogg No. F-636-D cord. Standard length is 72 inches. Also available in 96, 120 and 144 in. lengths.

Code No. F-641-D



Tracer colors solid, black and yellow. Fits Kellogg No. F-84, F-110, F-115 and other stands provided with terminals for flat tips. Replaces Kellogg No. F-150-D cord. Standard length is 72 inches. Also available in 96 and 120 in lengths.

Code No. 641-D

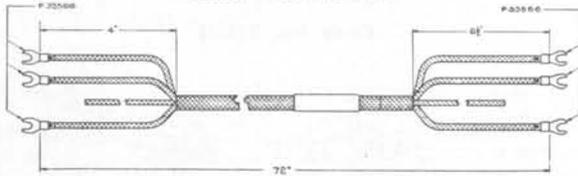
Same as above except having No. 5006 spike or pin tips. Replaces Kellogg No. 150-D cord.

KELLOGG CORDS

Desk Stand Cords

Three Conductor

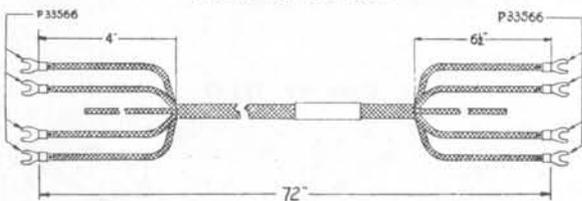
Code No. F-674-D



Tracer colors red, yellow and green. Fits Kellogg type 700, 725, 900-A and 925-A Masterphones.

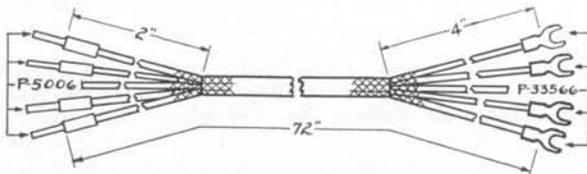
Four Conductor

Code No. F-685-D



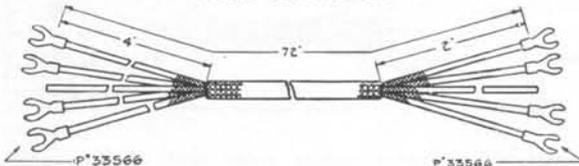
Tracer colors solid, red, yellow and green. Fits Kellogg type 710, 730, 900 and 925 Masterphones.

Code No. 189-D



Tracer colors solid, black, red and yellow. Fits most four-conductor stands where a spike or spade terminal can be used.

Code No. F-666-D

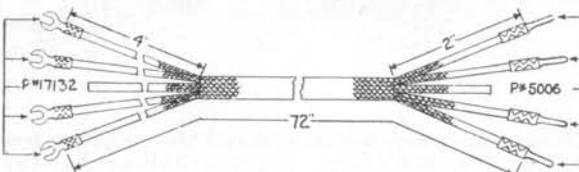


Tracer colors solid, black, red and yellow. For four-conductor magneto stands and desk set boxes provided with terminals for flat type tips. Replaces Kellogg No. F-102-D cord.

Code No. 666-D

Same as No. F-666-D, except has spike or pin tips No. 5006. Replaces Kellogg No. 102-D cord.

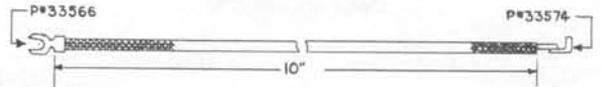
Code No. 487-D



Tracer colors solid, black, red and yellow. Fits Monarch magneto stands.

Desk Stand Transmitter Cords

Code No. 505-T

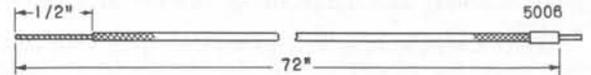


Code No. 505-T transmitter cord replaces W. E. No. 548. It is of the same construction as Kellogg desk stand cordage except with green overall braid.

Switchboard Suspended Type Transmitter Cords

Kellogg switchboard transmitter cords are of the same construction as Kellogg desk stand cords. They can be relied upon for long life, high conductivity and resistance to moisture.

Code No. 499-T



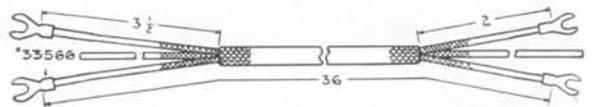
For Kellogg suspended type transmitter.

Receiver Cords

Kellogg receiver cords, like Kellogg desk stand cords are so widely used because of their long life, high conductivity and resistance to moisture qualities. They are of the same construction as the desk stand cords. Listed below are cords to fit all standard Kellogg receivers, and receivers of other makes. Cords requiring length and terminals differing from those here listed, can be quickly furnished to meet special requirements. Simply send a rough sketch showing size, trim and terminal specifications, or better yet, send one of your old cords as a sample.

Two Conductor

Code No. F-644-TR

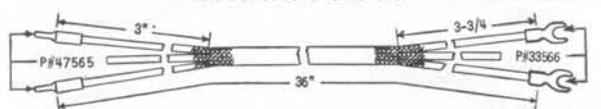


Tracer colors solid and black. Replaces Kellogg No. F-98-TR, Leich No. 11-C and A. E. No. D-541846 cords. Fits Kellogg F-41-A and F-41-B receivers, etc.

Code No. 644-TR

The 644-TR is the same as F-644-TR except with spike or pin tips No. 5006. Replaces Kellogg No. 98-TR cord and Leich No. 11-B cord.

Code No. F-642-TR



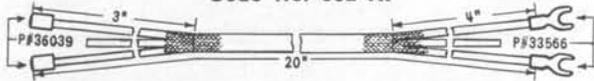
Tracer colors solid and black. Replaces Kellogg No. 197-TR cord; S. C. No. MR-2-1 cord; A. E. No. AR-11, CD-104436 and MC-5430 cords and Leich No. 11-A cord.

Cord Section

KELLOGG CORDS

Receiver Cords — Cont.

Two Conductor
Code No. 682-TR



Tracer colors solid and black. Used with Kellogg weather-proof telephone No. 4883 and Kellogg receiver No. 81-A.

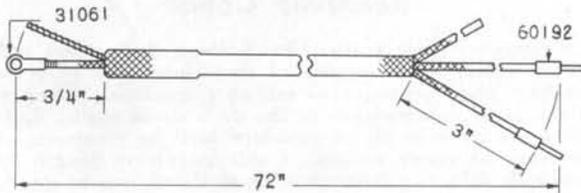
Operator's Cords — For Head Receivers

Kellogg operator's cords are of the same construction as Kellogg desk stand cords. They are purchased for their long life, high conductivity and resistance to moisture qualities.

The conductors are made of a high quality bronze tinsel scientifically braided to give maximum wear and flexibility. Kellogg cords withstand the twisting, jerking and bending which operator's cords are constantly subjected to without noising up. The tinsel conductor is absolutely sealed against moisture and oxidation by the use of special insulation.

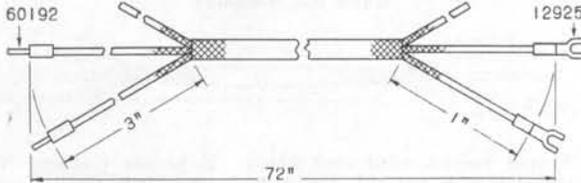
NOTE: Cords with spike tips may be used with equipment requiring plug type tips by simply trimming the ends off the spike tips.

Two Conductor
Code No. 708-OR



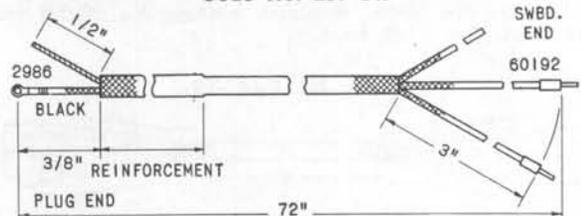
Tracer colors solid and black. Diameter at plug end .292 to .312 inch for 5/16 inch, 18 Whit. Tap. Formerly standard on Kellogg switchboards. Replaces Kellogg No. 26-OR cord and Leich No. 31 operator's receiver cord. Fits Kellogg No. 107 and 247 and W. E. No. 47 plugs.

Code No. 710-OR



Tracer colors solid and black. Replaces Kellogg No. 110-OR cord. Standard on Kellogg boards using suspended type transmitter. Fits Kellogg No. 145 and 146 plugs and Kellogg receiver No. 85-A.

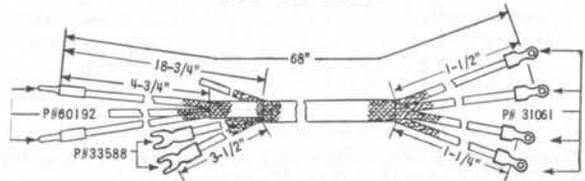
Code No. 237-OR



Tracer colors solid and black. Diameter at plug end .196 to .216 inch for 12-24 Whit. Tap. Fits Kellogg No. 75 plug.

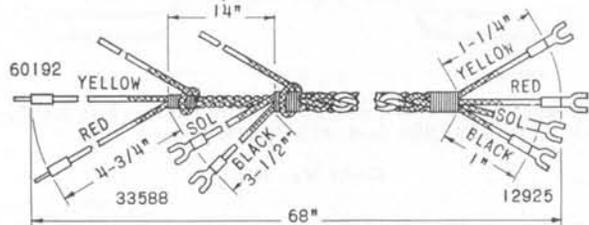
Operator's Cords — For Breastplate Transmitter Type Operator's Sets

Four Conductor
Code No. 712-O



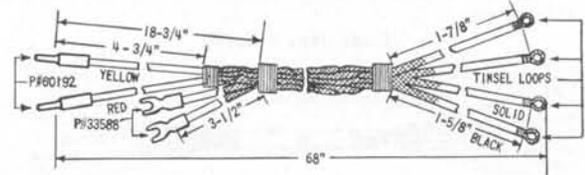
Transmitter tracer colors solid and black; receiver tracer colors red and yellow. Replaces Kellogg No. 67-O cord. Fits Kellogg No. 25 plug.

Code No. 711-O



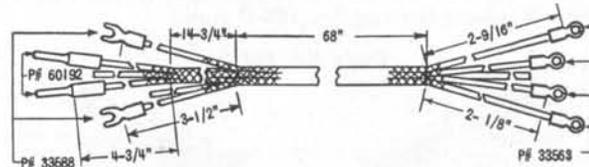
Transmitter tracer colors solid and black; receiver tracer colors red and yellow. Replaces Kellogg No. 111-O cord. Used with Kellogg No. 145 plug.

Code No. 713-O



Transmitter tracer colors solid and black; receiver tracer colors red and yellow. Replaces Kellogg No. 439-O cord; A. E. cords No. DB-12, MC-54220 and CD-509464 and Leich No. 30-RL cord. Used with Kellogg No. 182 plug.

Code No. 709-O



Transmitter tracer colors solid and blue; receiver tracer colors are red and yellow. Replaces Kellogg No. 199-O cords; W. E. No. 14B cords and Leich No. 14-B cords. Fits Kellogg No. 139 plug and W. E. No. 103, 112 and 137 plugs.

KELLOGG CORDS

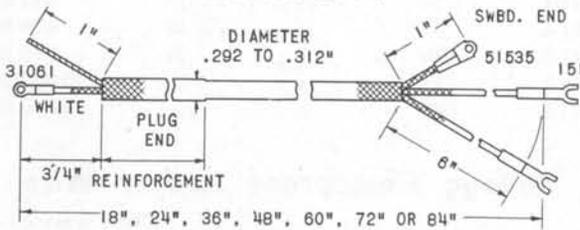
Switchboard Cords — Tinsel

The use of Kellogg all tinsel switchboard cords is a real economy in switchboard maintenance. They combine low resistance, extreme flexibility and long life.

The conductors are made of a high quality bronze tinsel. A durable, moisture-proof covering of the finest insulating material obtainable is applied to the conductors. The individual conductors are then twisted together with sufficient rope filler to make a smooth, round cord. A cotton inner braid, and then a tough glazed outer braid is woven over the insulated conductors. A double layer of this tough outer braid material is applied for a distance of 12 inches from the plug end to give that extra reinforcement which prolongs cord life.

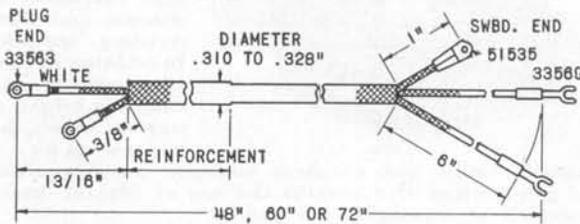
The standard color of the outer braid is white, but red or green can be furnished when specified. When desired, cords will be furnished complete with switchboard plugs attached. In such cases, furnish the code number of the plugs wanted. Specify the color of the outer braid.

Two Conductor Code No. 301-TO



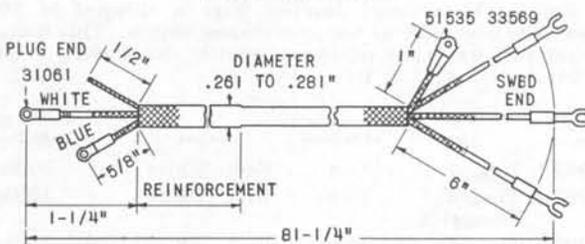
Diameter at plug end .292 to .312 inches. Fits Kellogg No. 3, 42, 70, 138 and 109 plugs and Leich No. 3A plug.

Code No. 397-TO



Diameter at plug end .310 to .328 inches. Fits W. E. No. 47 plug and Kellogg No. 247 plug. Replaces W. E. No. 493 and S-2-A cords.

Three Conductor Code No. 390-TO



Diameter at plug end .261 to .281 inches. Replaces Kellogg cord No. 396-TO; S. C. cord No. MS-32-K and

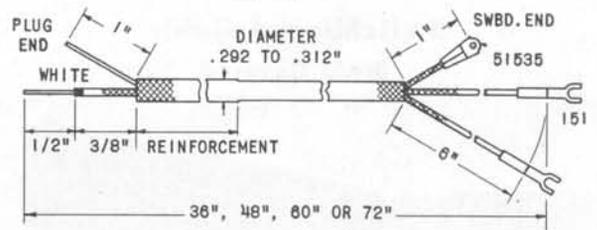
W. E. cord No. S-3-A. Fits Kellogg No. 185 plug and W. E. No. 109 plug.

Switchboard Cords — Steel and Tinsel

Kellogg steel and tinsel cords are known for their durability and the ease with which they may be cut back. They consist of spiral steel piano wire conductors wrapped over the finest quality braided tinsel. The steel gives the cord long life, while the tinsel furnishes low resistance. This construction assures a most satisfactory cord from a transmission standpoint, and the most economical cord from the standpoint of service life.

When it is desired to have switchboard plugs attached to the cords at the Kellogg factory, please be sure to specify on your order the code number of the plug desired.

Two Conductor Code No. 304-ST



Kellogg standard diameter at plug end .292 to .312 inches. Fits Kellogg No. 3, 42, 70, 130 and 187 plugs and A. E. No. 1188 plugs.

Cord Weight



Code No. 9 cord weight is the standard weight for promptly restoring switchboard cords to their proper position after use. Weighing from 9 to 11 ounces, this cord weight will perform its task quickly yet not damage the cord by being too heavy. The steel casing is given a rustproof treatment before being filled with lead to add weight. Dimensions are 4 inches long, 1-23/32 inches wide and 1/2 inch thick.

Cord Fasteners

No. 4



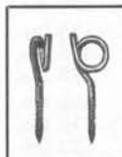
Made of brass, dull nicked. Illustrated at left.

No. 5

Made of steel, hot tin plated. Illustrated at right.



Cord Hooks



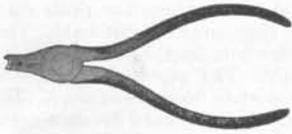
No. 2 cord hook is made from No. 11 B&S gauge brass. Bent to form loop to prevent cord from slipping off.

Cord Section

SWITCHBOARD CABLE

Cord Tools

No. 39



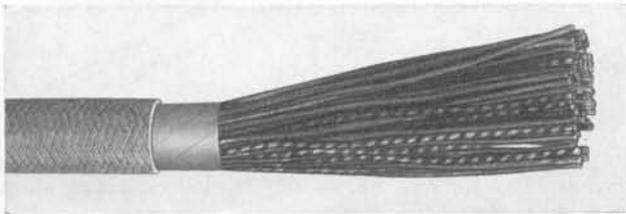
These pliers are used for attaching terminals No. 31061 to conductors in cutting back switchboard cords. The connection formed is neat and permanent and prevents loose connection trouble in cord circuits.

No. 42



Tool for skinning switchboard cable.

Switchboard Cable Braid Covered



Kellogg switchboard cables are manufactured from the best grades of selected raw materials by specially designed machinery, and are furnished in several styles and sizes.

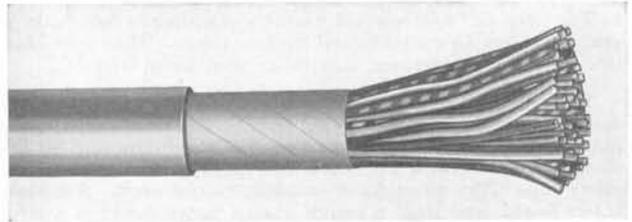
The wires are tinned, thoroughly annealed, and are of not less than 98 per cent pure copper, evenly coated with tin. Only the best grade of cellulose acetate yarn and cotton wrappings are used for insulation. After the insulation is applied, the twisted pairs are formed into a cable and covered with several wraps of heavy manila paper and then thoroughly saturated with beeswax. This cable is regularly furnished with single wrappings of cellulose acetate yarn over enameled wire or with a double wrap of cellulose acetate yarn and cotton insulation over tinned wire. The standard overall covering is of braided cotton, saturated with a lead colored, fire-proof paint.

A standard color code is used so that each pair of wires can be identified. Short lengths of cable will be shipped in boxes. Longer lengths will be packed and shipped on suitable reels. When reels are furnished they will be charged for. Full credit will be allowed for their return in good condition, prepaid to the Kellogg factory.

Round Type, 22 B.&S. Gauge, Wax Core Two Cellulose Acetate Yarn and One Cotton-Tinned

Code No.	No. of Pairs	No. of Singles	Diameter Overall, Inches	Approximate Net Weight Per 1000 Ft.
56-A	7	..	$\frac{5}{16}$	63 lbs.
65-A	11	..	$\frac{3}{8}$	86 lbs.
99-A	11	11	$\frac{3}{8}$	120 lbs.
42-A	21	..	$\frac{3}{8}$	145 lbs.
41-A	21	21	$\frac{3}{8}$	206 lbs.
112-A	26	..	$\frac{3}{8}$	173 lbs.
125-A	41	..	$\frac{5}{8}$	252 lbs.
63-A	51	..	$\frac{5}{8}$	312 lbs.
62-A	102	..	$\frac{1}{2}$	622 lbs.

Lead Covered Cable



The construction of this lead covered cable is the same as the cable shown at left except that a lead sheath instead of a painted braid covers the paper wrapping.

22 B.&S. Gauge, Wax Core One Cellulose Acetate Yarn and One Cotton-Tinned

Code No.	No. of Pairs	Thickness of Sheath, Overall	Diameter Overall, Inches	Approximate Net Weight Per 1000 Ft.
148-L	13	$\frac{3}{4}$	$\frac{3}{4}$	442 lbs.
144-L	16	$\frac{3}{4}$	$\frac{3}{4}$	544 lbs.
121-L	21	$\frac{3}{4}$	$\frac{3}{4}$	670 lbs.
147-L	26	$\frac{3}{4}$	$\frac{3}{4}$	730 lbs.
146-L	51	$\frac{1}{2}$	$\frac{1}{2}$	1080 lbs.
145-L	102	$\frac{1}{2}$	$1\frac{1}{2}$	1790 lbs.

Kellogg Flameproof Jumper Wire



This special Kellogg wire was designed to meet a demand for a jumper wire of small diameter with high insulation resistance and flame resisting qualities. In addition to these advantages the wire comes in bright, attractive colors, has a low mutual

capacity rating and excellent moisture proof qualities. Its construction also permits the use of highest quality materials at reasonably low prices.

This jumper wire is made of 22 B.&S. gauge tinned or tinned-enameled copper wire. Two wrappings of cellulose acetate yarn are applied to it in reverse directions and then an outer covering of cotton. These wrappings are then impregnated with a special Kellogg cellulose acetate lacquer, giving the wire a hard, smooth, dust-free finish. This compound resists flame, moisture and corrosion.

Kellogg Flameproof Jumper Wire is shipped in 500 and 1000 foot coils of one continuous length. This flameproof wire has a lay of approximately two inches, or six twists per foot.

Code No.	Type Wire	Number of Strands	Colors	Weight Per 1000 Feet
3002	Tinned	Two	Red, White	10 lbs.
3002-E	Tinned, Enameled	Two	Red, White	10 lbs.
3003	Tinned	Three	Red, White, Blue	15 lbs.
3003-E	Tinned, Enameled	Three	Red, White, Blue	15 lbs.

PAY STATIONS

Gray Post-Payment Attachment Type

Non-Electrical, for Local or Central Battery Service

The operation of these pay stations is accomplished without the aid of moving parts or electrical connections, the signals being produced by the coins striking gongs or chimes, the sound of which is transmitted to the central office operator through the transmitter of the telephone at which the pay station is located. Because of

the simplicity and reliability of these pay stations, their maintenance cost is extremely low.

In the case of the handset type pay stations, the signals are picked up by a special signal transmitter, mounted within the box. These pay stations cannot be used for pre-payment service, as the coin is not under the control of the central office operator.

No. 11 Side Mounting Type



No. 11 will fit any regular wall telephone in present use. It is connected to the telephone by a mounting plate furnished with the pay station. Has nickel, dime and quarter slots.

Furnished less telephone set . . . unless instrument code number is specified.

Size is 9 in. high, 4½ in. wide, 3 in. deep. Shipping weight 16 lbs.

No. 14 Portable Type



Designed for general portable business — made to fit any make desk telephone. Equipped with three slots, for nickels, dimes and quarters.

The pay station is so arranged that by unlocking the back, inspection and repairs can be made without unlocking the coin compartment. Each compartment requires a different key. A spiral chute enables the station

to operate satisfactorily even when tipped at an angle.

Furnished less desk stand and desk set box.

For a complete installation the following additional parts should be ordered:

- 1 No. F-41-A Receiver
- 1 No. 22-C Transmitter
- 1 No. F-602-BA Common Battery Desk Set Box or any standard 3-conductor magneto desk set box.

The size of No. 14 Pay Station is 11 in. high, 4½ in. wide, 3¼ in. deep, and the shipping weight is 16 pounds.

No. 11-J Handset, Side Mounting Type



Same as No. 11 but arranged for use with a wall type or desk type Masterphone.

A universal mounting plate is arranged for either wall or shelf mounting and a No. LD-72 signal transmitter is mounted within the box to pick up the coin

signals. It is not necessary to mechanically connect the pay station to the telephone set but the signal transmitter must be cut into the handset transmitter circuit, preferably at the ringer box terminal block. A two-conductor cord is required for this purpose.

Furnished less telephone set . . . unless instrument code numbers is specified.

The size of No. 11-J Pay Station is 9¾ in. high, 4¾ in. wide and 3⅝ in. deep. The shipping weight is 16 pounds.

No. 14-J Handset, Portable Type



Same as No. 14 Pay Station but arranged for use with a handset. No. 14-J is furnished with a No. LD-72 coin signal transmitter, switch-hook and hook-switch springs.

Furnished less handset and desk set box.

For a complete installation the additional parts listed below should be ordered:

- 1 No. F-27-C Handset
- 1 No. 610-BA or 700-BA Desk Set Box

The size of No. 14-J Pay Station is 12¼ in. high, 4½ in. wide, 4½ in. deep, and the shipping weight is 12 pounds.

Line Supplies Section

PAY STATIONS

Gray Post-Payment Type Pay Stations Non-Electrical, for Local or Central Battery Service

The operation of these pay stations is accomplished without the aid of moving parts or electrical connections, the signals being produced by the coins striking gongs or chimes, the sound of which is transmitted to the central office operator through the transmitter of the telephone at which the pay station is located. Because of the simplicity and reliability of these pay stations, their maintenance cost is extremely low.

In the case of the handset type pay stations, the signals are picked up by a special signal transmitter, mounted within the box. These pay stations cannot be used for pre-payment service, as the coin is not under the control of the central office operator.

No. 23-D Post-Payment Type



No. 23-D station, compact and neat in appearance is the three slot type, for nickels, dimes and quarters.

The upper compartment is hinged, allowing inspection without opening the money drawer or disconnecting any wiring, the repair man and inspector being confined to the top section while the collector has the lower. Each compartment has a lock.

The universal mounting plate on this station allows either wall

or shelf mounting. Standard equipment includes the mounting for the transmitter, switch-hook and hook-switch springs.

Furnished less transmitter, receiver and ringer box.

For a complete installation a No. F-41-A Receiver, a No. 22-C Non-Positional Transmitter and a No. F-602-BA Common Battery Desk Set Box or any standard 3-conductor magneto desk set box should be ordered.

No. 23-D Pay Station is 10½ in. high, 6 in. wide, 4½ in. deep, and the shipping weight is 20 pounds.

No. 23-J Handset, Post-Payment Type

Similar to No. 23-D but arranged for use with a handset. Standard equipment includes switch-hook, hook-switch springs and No. LD-72 signal transmitter.



Furnished less handset and desk set box.

For a complete installation a No. F-27-C Handset and a No. 610-BA or 700-BA Desk Set Box should be ordered.

No. 23-J Pay Station is 10½ in. high, 6 in. wide, 4½ in. deep, and the shipping weight is 20 pounds.

Gray Pre-Pay and Convertible Post-Pay Type Pay Stations

The Gray No. 34 Series of Pay Stations can be furnished for pre-payment or post-payment service on manual or machine switching exchanges.

They are arranged for wall mounting, but may be mounted in a corner by means of a No. 153-A bracket or on a shelf by means of a No. 139-A backboard.

These stations are sturdily constructed of heavy, pressed steel and the cash compartment door is hardened to prevent burglary. They are furnished in black japan with chromium plated trimmings.

When used for pre-payment service, special central office equipment is required to switch 110-volt direct current onto the line to operate the coin collecting and refunding magnet.

No. 34-A-9 Handset Pre-Payment Type, for Dial or Manual Service



The dial of this station is normally inoperative until a coin is deposited. The deposited coin closes a switch which serves to unlock the dialing circuit so that a local call can be made. The deposited coin is held in suspension and through a special chain of relays in the central office, is automatically collected or refunded depending upon the completion or non-completion of the connection.

To make a long distance call the subscriber dials the operator and gives her the order. The operator calls for the deposit of the charge and, as each coin is put into the slot, a distinctive signal is sounded, which is audible to the operator. The coins are held in a coin hopper and may be deposited or refunded at will.

This pay station has an anti-side tone circuit requiring the use of a desk set box with a three winding coil.

No. 34-A-9 Pay Station is 18¼ in. high, 7 in. wide, and 6 in. deep, and the shipping weight is 32 pounds.

Furnished less handset and desk set box.

For Dial Service

When ordering specify Catalog No. 34-A-9 for Dial Service which includes a No. 10-L Lock, No. LD-72 Signal Transmitter, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation a No. 27-C Non-Positional Handset and Cord, a No. 700-BA Desk Set Box, a No. AK-11 Dial and a No. D-53594 Extended Dial Number Plate should be ordered.

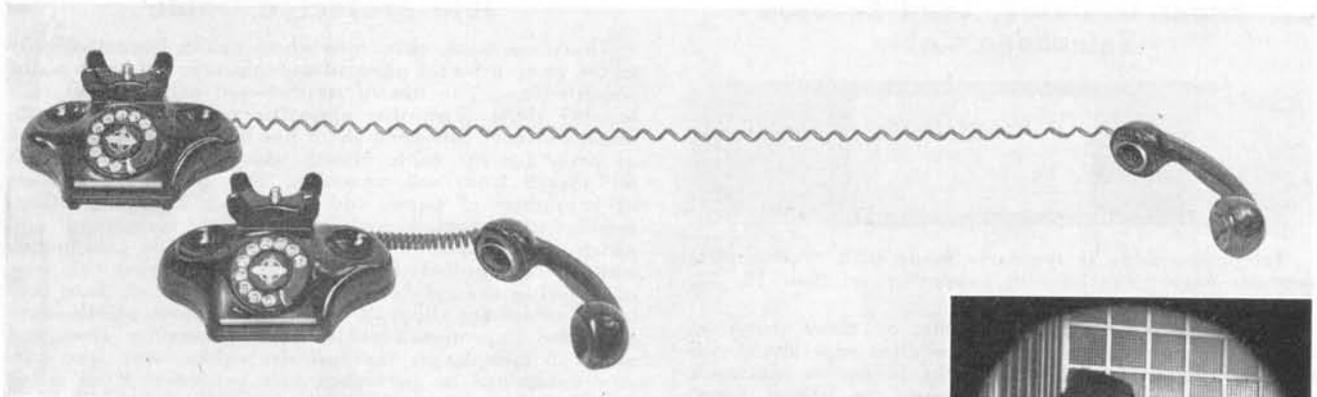
For Manual Service

When ordering specify Catalog No. 34-A-9 for Manual Service which includes a No. 10-L Lock, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, No. LD-72 Signal Transmitter and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation a No. 27-C Handset and Cord, and a No. 700-BA Desk Set Box should be ordered.

Line Supplies Section

KELLOGG KOILED KORDS



Here's the newest idea in retractable instrument cords that combines ALL the things you and your subscribers want. They work as smooth as a coil spring and stretch out with the greatest ease from 6 to 7 times their normal 9-inch contracted length. Yet, they are always ready to retract again into a short, neat, out-of-the-way spiral. These cords save telephone breakage because they are not apt to tangle with other objects or catch under desk or table corners.

The expanding and contracting action of Kellogg Koiled Kords is entirely secured by molding the outer rubber covering into this permanent coiled shape. This patented construction makes it the finest, longest-wearing cord of this type because it does not depend upon any other mechanical means such as metal springs, formed wires, braided conductors, sewed-in rubber bands, etc., to provide the retractable action. Thus, there is no undue wearing of the insulation. The insulated tinsel conductors are molded through the center of the rubber covering where they are free from sharp bends and folds, assuring long, satisfactory cord life. Long life of the rubber sheath is assured by molding the cord in spiral form so that it is not under tension when at rest.

Kellogg Koiled Kords are substantially kink-proof and soil-proof. The coils are only $\frac{5}{8}$ inch in diameter. In ordering specify catalog numbers and make of phone. Net weight, each is 4 ounces.

Supershyne Plug Polishing Cloth

Many transmission complaints from telephone subscribers can be traced directly to dirty plugs on switchboards.

The Supershyne Polishing Cloth cleans plugs quickly and easily. It is a specially treated cloth developed expressly for the purpose of removing dust and dirt film without harming the brass. Each cloth lasts for months. Packed singly.

Doe's Plug Burnishing Paste

For polishing cord plugs in telephone exchanges. It insures an electrically perfect contact and insulates between tip and ring. Guaranteed to be absolutely non-corrosive and electrically perfect.

Doe's Commutator Burnishing Paste

For use on the commutator of signal machines. Applied while machine is running and in service.

Specially prepared for tone test, ringing current, out of order, busy back or any other circuit where a clear distinct interruption is desired. Guaranteed to be absolutely non-corrosive and electrically perfect.

Four Conductor Cords

Cat. No. KH-4A, used for Kellogg handsets. Tracer colors are red, green, orange and black. Trim lengths: handset end — black, 4 in., other three, 1 in.; instrument end—black, and orange, 10 in., red and green, 6 $\frac{1}{2}$ in.



Three Conductor Cords

Cat. No.	Used for Handset:	Tracer Colors
KH-3A	Kellogg	Red, Yellow, Green
WH-3A	Western Elec., North Elec.	Red, White, Black
SH-3A	Stromberg-Carlson	Green, Red, Orange
AH-3A	Automatic Electric	Brown, Red, Orange
LH-3A	Leich Electric	Orange, Red, Green

Two Conductor Cords

Cat. No. LR-2A, used for receivers. Extended length is 36 in., condensed length, 6 in. Trim length: 4 in., spade tips; 3 in., spike tips.

Mouthpieces

Bakelite and composition for Kellogg, Western Electric, Sterling, Chicago, Dean, Swedish American, Automatic, American Electric, Leich, Monarch and Stromberg transmitters. In ordering specify make and type of phone.

Switchboard Jack Cleaners

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 $\frac{1}{4}$ -inch in diameter; No. 22, diameter .221, fits all Jacks using No. 201 Kellogg plugs.

Carbon Tetrachloride

A non-inflammable liquid to be used in place of denatured alcohol. Used for cleaning contact points and jacks and for removing paint and ink residue from jack strips. Can be supplied in pints, quarts or gallons.

TESTING EQUIPMENT

Stewart Type L Cable Tester



Locates high resistance water leaks, wet spots, shorts, crosses, and grounds. Locates the cable trouble to the inch. Equipped with exploring coil that will not pick up the tone on the sheath of cable due to its patented circuit that balances out the tone that carries past the trouble.

Operates on two No. 6 dry cells.

Cat. No.	Description	Size	Weight Each
L	Cable Tester	4x10½x11 in.	18 lbs.

Stewart Cable Tester and Locator

Locates crosses, shorts, grounds and wet spots and is equipped with neutral exploring coil. Also is a cable locator — tells exactly where and how deep a cable is buried.

Equipped with a lamp to tell when all connections are correct and when trouble is still in.

Uses four No. 6 dry cells.

Cat. No.	Size	Shipping Weight Each
10	7½x11½x13 inches	12½ lbs.

Trouble-Man's Friend



Direct reading resistance meter — enables the trouble man to make all tests for the detection, nature of the trouble and the approximate location of the fault either in the central office, on the line or at the subscriber's station.

The ohmmeter, designed especially for this instrument is the dead beat type with jewel bearings, mounted in a dust-proof bakelite case. Large scale assures easy, accurate readings. Two ohm-

meter readings are provided; low scale 0-200 ohms and high scale 0-10,000 ohms. Within the range of 0-2000 ohms the accuracy is within 2%.

A battery compensator, zero adjuster for the meter, cam type key switches and one meter on low and high scale are provided. Also equipped with a buzzer with switching keys for "buzzing out" cable, circuit wiring, testing fuses, heat coils, etc. Uses two National Carbon Co. No. 950 dry cells.

All parts are mounted upon a chassis which is easily removed from the case to replace battery and for inspection. The black walnut carrying case has a door to protect the meter when not in use and a leather carrying case. Net weight each, 5 lbs.

Cat. No.	Description	Height	Width	Depth	Shipping Weight Each
628	Trouble-Man's Friend	8½ in.	6 in.	4 in.	6 lbs.



Teleohm (Pocket Size)

For testing and locating line circuit, telephone and switchboard trouble, shorts, grounds, high resistance, and open circuits in coils of all kinds, also partially shorted coils, high resistance transmitters, cut-outs in receiver, desk stand and switchboard cords, hook switch contacts, etc.

Uses two No. 950 dry cells. Equipped with a Weston 0-3 Volt Direct Reading Ohmmeter 0-10,000 Ohm Scale, mounted in a walnut case.

Cat. No.	Description	Size	Weight Each
4300	Teleohm Test Unit	1½x3½x6 in.	1¼ lbs.



Vincent Rare Gas Relays

An electronic device for use on telephone lines instead of mechanical ringing relays. Has no moving parts, may be placed in any position and may be used on either harmonic or coded ringing bells.

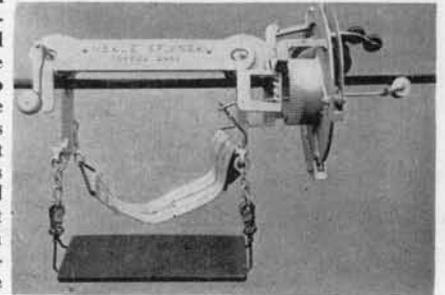
Lines equipped with the Vincent Rare Gas Relay are free from grounds in normal operations and therefore free from noise which would ordinarily be picked up through grounds. Prevents premature tripping in machine ringing from manual or dial offices and acts as a protector against lightning discharges.

Inserted in series with the bell, condensers are left in the circuit as usual.

Cat. No.	Description	Size	Wt. Each
RTC-2	Vincent Rare Gas Relay	2½x1½ in.	8 oz.

Neale One Man Cable Spinning Machine

Saves one-third the cost of placing new cable and there are no grade clamps or ties to crush or cut the cable which is held rigid against the strand. This eliminates all whipping in sleet storms or high winds. The machine lashes the cable tightly to



the messenger strand with 091 wire held at a tension of 35 pounds and as the machine moves along the strand, makes a complete spiral every 13 inches.

In general, new cable is first placed in the usual manner except that aerial cable rings should be spaced at 10 to 15 foot intervals instead of the usual 18 inches. The lineman then rides the cable car under the cable spinning machine and propels it along the strand by turning a crank. A pre-formed coil of wire rotates about both strand and cable, lashing them tightly together. The lineman works the machine with one hand and removes the rings with the other.

Stops ring cutting, bowing and crystallization in old cables. The procedure of lashing old cable already supported by rings is similar to that for new cable.

The machine is light in weight and may easily be handled by one man.

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