

TELEPHONE APPARATUS



AUTOMATIC  ELECTRIC

CATALOGUE TA-57

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Foreword

This catalogue of Telephone Apparatus provides a listing of telephone instruments, components and accessories that have been developed to provide your subscribers with telephone facilities that are attractive, convenient and efficient. In particular, the Type 80 and similar telephones offer a new concept in telephone set design, combining beauty with advanced engineering. The ten decorative colours in which most Automatic Electric telephones and accessories are now available adds to their attractiveness.

New telephone instruments, and improvements in existing instruments, are constantly being developed. Information on these will be forwarded to you as they become available.

Every effort has been made to furnish complete information on all items, including lists of replacement parts, arranged to assist you in selecting and ordering your requirements. Supplementary literature mentioned will be gladly furnished upon request.

This catalogue covers Telephone Apparatus for subscriber use only. That for central offices will be included in a new catalogue on Telephone Equipment.

AUTOMATIC ELECTRIC SALES (CANADA) LIMITED

Orders

For **reference** purposes only, catalogue numbers are given (to the **left** of descriptions) for many items in this catalogue. These catalogue numbers correspond to those shown in Automatic Electric circulars, bulletins and other publications and are included only for identification in such literature.

To facilitate **ordering**, each item in this catalogue has been given an **order number** (to the **right** of descriptions) and this should be shown on your orders. To avoid errors and delays, however, it is requested that you give a description of each item required as well as the order number. Orders written in this manner, and with the quantity required clearly indicated, will expedite the delivery of material to you. For example, 10 No. L-9027-C5 Type 81 Handsets, Garnet Red, with Coiled Kord.

Unless you have your own purchase order forms, our postage prepaid order forms will be found to be useful in writing and mailing your orders. Supplies of these forms are available on request.

Shipments

Shipments will be made in accordance with instructions received with orders. Please specify whether we should ship by freight, transport, express or parcel post and also indicate preferred routing and shipping address. In the absence of shipping instructions, we will use our best judgment in routing shipments to give you the best service. Please note that prices quoted F.O.B.

destination apply to shipment of the material by freight and, should a more expensive means be specified, the difference in shipping costs will be charged.

Prices

All prices charged will be those in effect at date of shipment. Any increases in prices occasioned by taxes or other causes beyond our control, between the time of quotation or acceptance of the order by us and delivery will be added to the prices quoted.

Terms

Unless otherwise specified on our invoices, all prices are subject to terms of payment of the net amount within 30 days of the date of our invoice.

Minimum Charge

Owing to the cost of processing and handling orders, where the total value of goods ordered is less than two dollars (\$2.00), a minimum of two dollars (\$2.00) will nevertheless be charged. Exceptions to this minimum charge may be applied at our discretion.

Return of Material

No return shipments of material will be accepted by us unless prior authorization has been given by us in writing. Please contact our nearest office, giving full particulars, should it be necessary to return material for any reason.

The Type 80 Desk Telephone



Based on a fresh new concept of telephone instrument design, the Type 80 Desk Telephone combines beauty and convenience with advanced engineering.

With every contour designed to serve a specific functional purpose, the result is a compact and attractive appearance. The lustrous finish of the plastic parts and the freedom from embossings and other purely decorative details assist in keeping the instrument sparkling clean.

In addition to the conventional black, there are ten beautiful colours to choose from, as illustrated in the insert following page 32. The black telephones are available with straight, Extensicord or Koiled Kord handset cords. The coloured telephones are supplied with Koiled Kord handset cords as standard, with both handset and line cords in colour to match the set.

Every detail of the Type 80 Desk Telephone has been designed with the objective of ensuring the highest level of performance without introducing any parts which would involve added maintenance cost. The outstanding features are illustrated and described on the following page, but these represent only part of the story.

The telephone circuit is new in design and embodies desirable improvements in transmission characteristics. The induction coil, condenser and balancing network are all contained in a plastic housing filled with a moisture proofing compound

to protect these components. Each component has been designed to add to the gain in efficiency obtained by improved transmitter and receiver characteristics to provide overall improvement in transmission over a wide range of line conditions.

A line compensating adjustment has been provided to improve the performance on short loops. This adjustment is made with a screw driver and best operating results are obtained by setting this adjustment to a specific value of line current, particularly for telephones on very short lines and in noisy locations.

The Type 80 Desk Telephone may be equipped with a hooklatch which prevents the hookswitch contacts closing fully when the subscriber first removes the handset. This connects the receiver but not the transmitter, keeps a D.C. bridge off the line, and permits a caller on a party line to ascertain whether a call is in progress before making a call. It prevents a second caller from mutilating the dial pulses of an earlier call, or interrupting a conversation with clicks.

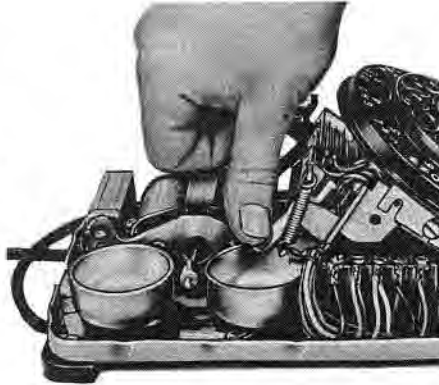
Also as an optional feature, the Type 80 Desk Telephone may be equipped with a grounding pushbutton for transferring trunk calls on certain types of P-A-B-X systems.

From the large finger space for lifting the telephone to the twin contacts on the dial springs, all features of the Type 80 Desk Telephone contribute to user convenience and reliable operation.

Features of the Type 80 Desk Telephone



SUPERIOR TRANSMISSION: Short handset brings transmitter close to mouth, boosting volume and overcoming line loss and noises. Transmitter and receiver are capsule units with superior transmission characteristics giving lifelike reproduction of speech. A simple adjustment enables the installer to adjust the line current for best transmission.



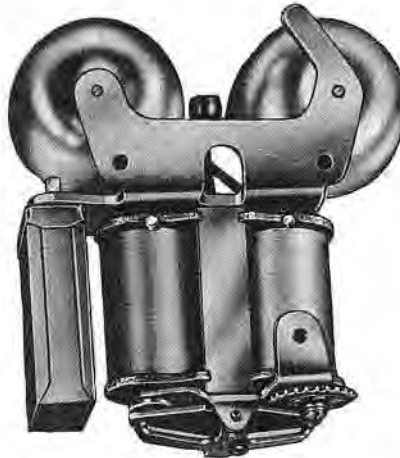
FASTER INSTALLATION: The "Installer's Hooklock" keeps the switch-hook down during installation and maintenance, leaving both hands free and permitting normal operation with the housing removed. This lock is released automatically when the housing is replaced.



FEWER TROUBLE CALLS: The "walking" handset cannot be replaced except in the cradle. This makes "off-hook" trouble calls almost a thing of the past. The spring-mounted dial provides shock mounting and makes a dust-tight joint with the housing.



EASIER MAINTENANCE: A screwdriver is the only tool needed for installation and changes. Connections are made with spade terminals—no soldering is required. Components are grouped in convenient screw-mounted units.



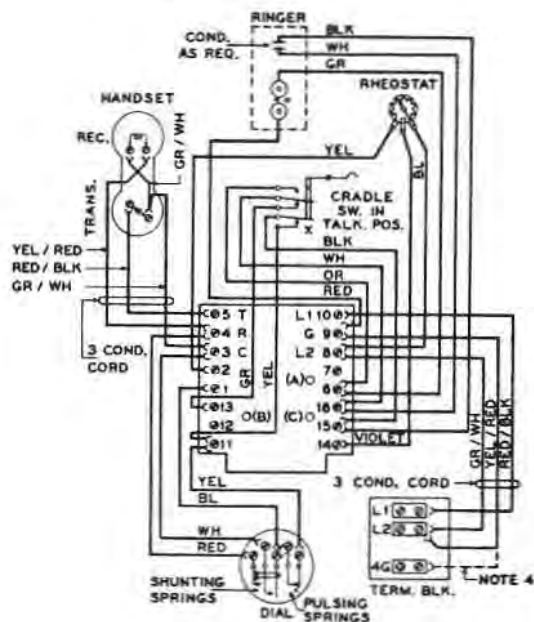
IMPROVED RINGING: Ringers are sensitive yet sturdy, with gongs pitched to give penetrating sound at all frequencies. Straight-line ringers have optional adjustment wheel for control of volume of sound by subscriber. Ringer and ringing condenser mounted as a unit to facilitate changing of ringing frequencies on party lines.



SURER DIALING: The slope of the dial makes dialing easier from either sitting or standing position. Arrowheads guide the eye from the finger holes to the characters on the number plate, helping to prevent dialing errors.

The Type 80 Desk Telephone

Wiring Diagram (Standard)



- Note 1: Contacts "X" break first and make last.
- Note 2: If bells tap during dialing from another telephone on the line, reverse ringer connections at terminals 8 and 9.
- Note 3: If no dial is used, place both blue and yellow dial wires together under centre screw of dial blank. Insulate white and red dial wires from circuit.
- Note 4: Wiring at terminal block shown for metallic (bridged) ringing. For ground (divided) ringing, move yellow/red lead at terminal block from terminal L2 to 4G. To ring from L2 to ground, reverse line leads at terminal block.
- Note 5: Terminals (A) and (B) are for tests. Terminal (C) is not used.

Instructions

Complete instructions for installation and adjustments of the Type 80 Desk Telephone for various services are given in the handy pocket size Automatic Electric Bulletin 700-80, copies of which are available upon request.

Standard Type 80

Dimensions of base are 5½ inches wide by 9 inches long. Overall height is 5½ inches and handset is 9 inches long. Shipping weight, approximately 6¼ lbs.

Special Types

Type 80 Desk Telephones with station identity dials for use with Types A and B SATT (Strowger Automatic Toll Ticketing) Systems are available. Ordering information for these telephones, the special dials and dial replacement parts is given in Automatic Electric Circular 1894, copies of which are available upon request.

Other type 80 Desk Telephones can be supplied with special features for various applications and information on these will be gladly furnished upon receipt of requirements.

How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify type of Telephone	Order No.
Black, without hooklatch	N-80
Black, with hooklatch	N-81
Black, with grounding pushbutton and Kollid Kord handset cord*	L-8001
Full colour, without hooklatch	N-82
Full colour, with hooklatch	N-83
* Available in full colour on special order.	
Step 2: Specify type of Handset Cord	
(If L-8001, omit this step)	
Straight Cord (black only)	0
Extensicord (black only)	1
Kollid Kord (black or colour)*	2
* Standard on full colour Telephones	
Step 3: Specify Colour	
(If black, omit this step)	
Sand Beige	10
Dawn Grey	11
Jade Green	12
Classic Ivory	13
Garnet Red	14
Turquoise	15
Sunlight Yellow	17
Camellia Pink	18
Gardenia White	19
Forget-me-not Blue	30
Step 4: Specify type of Dial	
Dial with 1-0 number plate	-A
Less Dial, with dial hole cover	-B
Dial with ABC number plate	-C
Step 5: Specify type of Ringer	
Straight line, less adjustment wheel	SL
Straight line, with adjustment wheel	SA
16.6 cycle harmonic	16
20 cycle harmonic or decimonic	20
25 cycle harmonic	25
30 cycle harmonic or decimonic	30
33.3 cycle harmonic	33
40 cycle decimonic	40
42 cycle harmonic	42
50 cycle harmonic only	50
50 cycle decimonic only	51
54 cycle harmonic	54
60 cycle decimonic	60
66 cycle harmonic	66
66.6 cycle harmonic	67
Ringer with vacuum tube for superimposed ringing, less adjustment wheel	VT
Ringer with vacuum tube for super- imposed ringing, with adjustment wheel	VA
A.C. Ringer, to operate on 50 volts, 60 cycles, A.C. (for service with Type 34A16 P-A-X)	AC
Less ringer	XX

Example A: For a standard full colour Type 80 without hooklatch (N-82), with Extensicord (1), Sand Beige (10), ABC dial (-C) and with straight-line ringer less adjustment wheel (SL), the complete order number would be: N-82110-CSL.

Example B: For a standard black Type 80 with hooklatch (N-81) with Kollid Kord (2), less dial but with dial hole cover (-B) and 50-cycle harmonic ringer (50), the complete order number would be: N-812-B50.

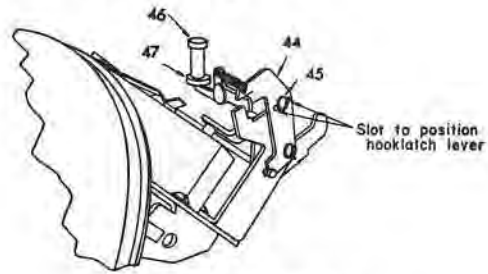
Example C: For a black Type 80 with grounding pushbutton and Kollid Kord (L-8001), ABC dial (-C) and with straight line ringer with adjustment wheel (SA), the complete order number would be: L-8001-CSA.

Replacement parts are listed on the following page.

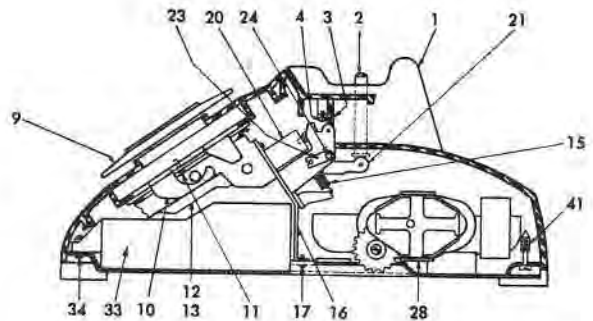
Replacement Parts for the Type 80 Desk Telephone

Ref. No.	Description	Order No.
1	Housing Assembly — standard — for hooklatch or grounding pushbutton	D-49935-*
2	Switchhook Plungers (2)	D-49951-*
3	Cradle Hole Cover	D-67586-A
4	Cradle Hole Cover Screw	D-49937-*
—	Housing Unit, consisting of Items 1, 2, 3 and 4 complete	D-760736-A
5	Circuit Label, Standard (Not Shown)	D-49935- ^R
6	Type 81 Handset, complete with cord (Not shown) — black — coloured	D-530142-A
	(See page 48 for Handset Parts and pages 58-59 for Handset Cords)	L-9024- ^{**} L-9027- ^{**}
7	Handset and Line Cord Clamps (2)	D-731490-A
8	Cord Clamp and Mtg. Bkt. Screws (4)	D-760733-A
9	Dial Assembly — Type 51A — Type 52 (1-0) — Type 52 (ABC)	D-84875- [*] D-84900- [*] D-84901- [*]
	(See pages 51-53 for Dial Parts)	
10	Dial Mounting Bracket	D-731543-A
11	Dial Mounting Screws (3)	D-760730-A
12	Dial Dust Cover	D-49929-A
13	Dial Dust Cover Screws (2)	4-36 x 9/16" RHIMS D-49995- [*] 4 x 3/8" PK2RHS
14	Dial Hole Cover (Not Shown) — Mounting Screws (3) — Escutcheon Ring, Black — Escutcheon Ring, Chrome — Number Card, Black — Number Card, White — Number Card Cover, Clear — Number Card Clamping Plate	D-65112-D D-65112-K D-53620-A D-530182-A D-53176-A D-78541-A D-109780-A
15	Switchhook Coil Spring	D-731471-A
16	Centre Bracket	D-760764-A
17	Centre Bracket Screw	D-760732-A
18	Hookswitch & Mtg. Bkt. Screws (2)	D-735306-X
19	Hookswitch Assembly	D-49928-A
20	Hookswitch Dust Cover	D-16360-A
21	Hookswitch Lever and Buffer Assembly	D-37592-A
22	Hookswitch Bearing Pin	D-58062-A
23	Hookswitch Bearing Pin Lock	3-48 x 3/16" RHIMS
24	Hookswitch Bearing Pin Lock Screw	D-731469-A
25	Mounting Bracket, Right	D-731470-A
26	Mounting Bracket, Left	D-56548- ^{***}
28	Ringer Assembly (See page 56 for Ringer Parts)	D-760735-A
29	Ringer Mounting Screws (3)	CD-616075- ^{AR}
30	Line Cord (3-conductor) — black — Coloured	CD-616975- ^R
33	Transmission Network Assembly	D-38362-A
34	— Mounting Screw	D-760734-A
35	— Mounting Screw Nut	D-77389-A
36	— Terminal Screws (16)	B-7600-B
37	Wire Clamp	D-731510-A
38	Base Plate, Complete with Rubber Feet (4) and Line Compensating Rheostat	D-780659- ^{AR}
39	Transmission Network Clamp	D-731491-A
40	Clamp Screws (2)	6-32 x 3/16" RHIMS
41	Base Plate Screws (3)	D-760719-A
42	Mounting Block	D-660256-A
43	Line Cord Terminal Block, 3-conductor (Not Shown)	D-150000-A
44	Hooklatch Lever Assembly	D-16362-A
45	Hooklatch Lever Assem. Screw	D-760729-A
46	Hooklatch Plunger	D-67429-A
47	Hooklatch Plunger Screw	D-760717-A
48	Grounding Pushbutton Assembly (Not shown)	D-735334-A
49	Grounding Pushbutton Assem. Screws (2) (Not Shown)	D-760732-A

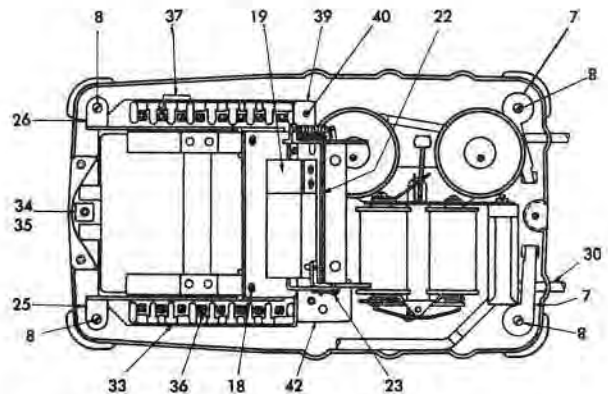
* See page 32 for colour suffix letters.
 ** See page 48 for cord and colour
 suffix letters.
 *** See page 56 for ringer frequency
 suffix letters.



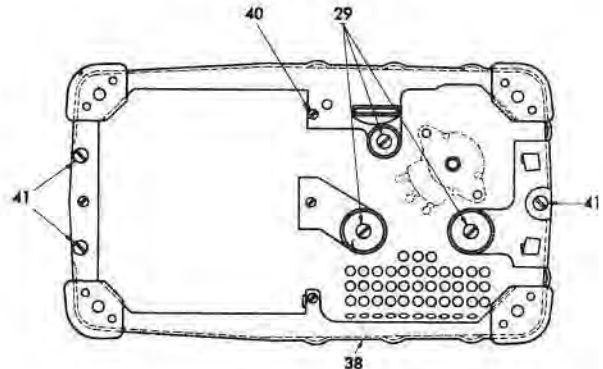
Hooklatch Assembly



Type 80 Side View



Type 80 Top View



Type 80 Bottom View

Do not order by above numbers—see table

The Type 90 Wall Telephone



Although incorporating the same efficient circuit and transmission characteristics as the Type 80 Desk Telephone, the new Type 90 Wall Telephone is not merely an adaptation of a desk set but was completely designed as a most practical wall telephone, convenient for the subscriber to use and easy for the telephone company to install and service.

The side mounting of the handset reduces overall projection from the wall and protects it from being accidentally knocked off. The dial is mounted at a convenient angle for reading the numbers, even in a poor light, and for operating the finger wheel.

In addition to black, there are ten beautiful colours to choose from, as illustrated in the insert following page 32. The black telephones are available with Straight, Extensicord or Coiled Kord handset cords. The coloured telephones are supplied with Coiled Kord handset cords as standard, in colour to match the set.

The Type 90 Wall Telephone is easy to install — the cover slips off by loosening one screw, exposing all working parts which are attached to the base. Four mounting holes permit attachment to any wall surface and three of these holes have stand-off lugs that give a tripod effect to

compensate for any irregularities in the wall surface. These same lugs also hold the base slightly away from the wall to avoid interference with natural mellow tone of the ringer. The line wires are readily connected, even under poor lighting conditions, by a twin screw terminal block mounted above the ringer. An installer's hooklock is not provided, as in the case of the Type 80 Desk Telephone, because the side mounted hook permits removal of the cover and work on the interior of the telephone without disturbing the handset. A hooklatch for party line service, however, may be provided when required. Also as an optional feature, the Type 90 Wall Telephone may be equipped with a grounding pushbutton for transferring trunk calls on certain types of P-A-B-X Systems.

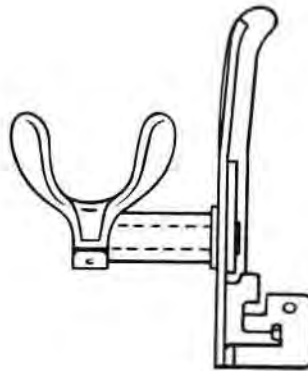
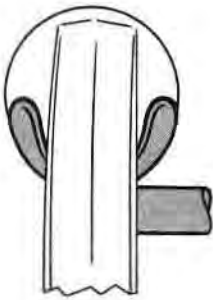
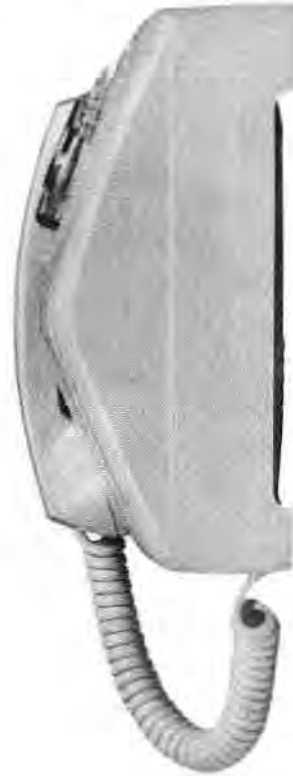
With the cover removed, all working parts and adjustments are accessible from the front. Practically all of the circuit components are interchangeable with those of the Type 80 Desk Telephone, thus greatly simplifying maintenance and the stocking of replacement parts.

The Type 90 Wall Telephone embodies many features for convenient and efficient service, some of which are illustrated and described on the following page.

Features of the Type 90 Wall Telephone

The Type 90 Wall Telephone fits snugly to the wall, a real advantage where it is installed in narrow passageways or in other locations where space is limited. This has been accomplished by mounting the handset beside the set, where it is readily accessible yet not in the way during maintenance.

The angle at which the dial is mounted was carefully selected to insure that the numbers would be easy to read from either a sitting or a standing position. This angle also takes full advantage of available light — most helpful in dark locations.



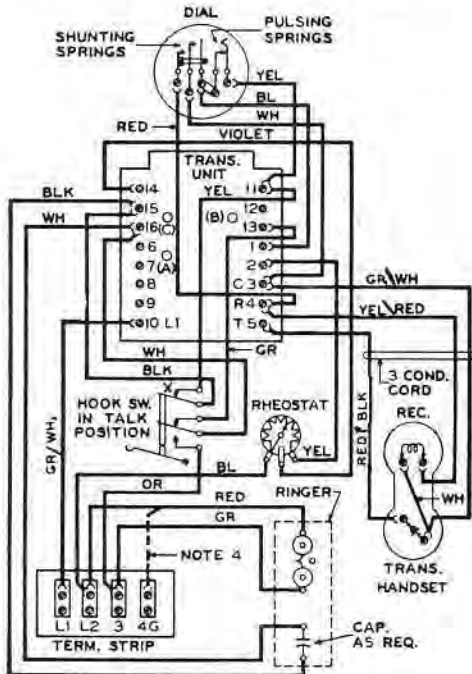
HANDSET SECURELY HELD—The “wrap-around” cradle holds the handset securely — it is almost impossible to brush or knock off the hook. Yet the handset is easy to remove intentionally. The side mounting facilitates installation and maintenance, also permits the telephone to fit snugly to the wall.

STRONG HOOK WON'T BREAK — The tough, die-cast metal cradle is securely fitted to a sturdy shaft which turns in a long-bearing bracket. It is more than a match for the handset-slaming subscriber!

E A S Y I N S T A L L A T I O N A N D M A I N T E N A N C E — By loosening just one screw, the cover lifts off for installation and maintenance (the handset stays in the cradle). All working parts, components and adjustments are easy to reach. The loop compensator is adjusted and the ringer can be changed from the front.

The Type 90 Wall Telephone

Wiring Diagram (Standard)



- Note 1: Contacts "X" break first and make last.
- Note 2: If bell taps during dialing from another telephone on the line, reverse ringer connections at terminal-strip terminals 3 and L2 (or 4G).
- Note 3: If no dial is used, place both blue and yellow wires together under dial blank centre screw. Insulate white and red dial wires from circuit.
- Note 4: Solid lines show terminal strip wiring for metallic (bridged) ringing. For ground (divided) ringing, move yel/red ringer lead at terminal strip from terminal L2 to 4G as shown by dotted line. To ring from L2 to ground, reverse line leads at terminal strip.
- Note 5: Terminals (A) and (B) are for tests. Terminal (C) is not used.

Instructions

Complete instructions for installation and adjustment of the Type 90 Wall Telephone for various services are given in the handy pocket size Automatic Electric Bulletin 700-90, copies of which are available upon request.

Standard Type 90

Dimensions are 8½ inches wide, 10 inches high and 4½ inches deep overall, including handset. Shipping weight, approximately 7 lbs.

Special Types

Type 90 Wall Telephones with station identity dials for use with Types A and B SATT (Strowger Automatic Toll Ticketing) Systems are available. Ordering information for these telephones, the special dials and dial replacement parts is given in Automatic Electric Circular 1894, copies of which are available upon request.

Other Type 90 Wall Telephones can be supplied with special features for various applications and information on these will be gladly furnished upon receipt of requirements.

How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify type of Telephone	Order No.
Black, without hooklatch	N-90
Black, with hooklatch	N-91
Black, with grounding pushbutton and Coiled Kord handset cord*	L-8500
Full colour, without hooklatch	N-92
Full colour, with hooklatch	N-93
* available in full colour on special order.	

Step 2: Specify type of Cord (If L-8500, omit this step)	
Straight Cord (black only)	0
Extensicord (black only)	1
Coiled Kord (black or colour)*	2
* Standard on full colour Telephones	

Step 3: Specify Colour (If black, omit this step)	
Sand Beige	10
Dawn Grey	11
Jade Green	12
Classic Ivory	13
Garnet Red	14
Turquoise	15
Sunlight Yellow	17
Camellia Pink	18
Gardenia White	19
Forget-me-not Blue	30

Step 4: Specify type of Dial	
Dial with 1-0 number plate	-A
Less dial, with dial hole cover	-B
Dial with ABC number plate	-C

Step 5: Specify type of Ringer	
Straight line, less adjustment wheel	SL
Straight line, with adjustment wheel	SA
16.6 cycle harmonic	16
20 cycle harmonic or decimonic	20
25 cycle harmonic	25
30 cycle harmonic or decimonic	30
33.3 cycle harmonic	33
40 cycle decimonic	40
42 cycle harmonic	42
50 cycle harmonic only	50
50 cycle decimonic only	51
54 cycle harmonic	54
60 cycle decimonic	60
66 cycle harmonic	66
66.6 cycle harmonic	67
Ringer with vacuum tube for superimposed ringing, less adjustment wheel	VT
Ringer with vacuum tube for superimposed ringing, with adjustment wheel	VA
A.C. Ringer, to operate on 50 volts, 60 cycles, A.C. (for service with Type 34A16 P-A-X)	AC
Less ringer	XX

Example A: Standard full colour Type 90 less hooklatch (N-92), with Extensicord (1), Sand Beige (10), ABC dial (-C) and with straight-line ringer (SL), the complete order number would be: N-92110-CSL.

Example B: For a standard black Type 90 with hooklatch (N-91), with Coiled Kord (2), less dial but with dial hole cover (-B) and 50-cycle harmonic ringer (50), the complete order number would be: N-912-B50.

Example C: For a black Type 90 with grounding pushbutton and Coiled Kord (L-8500), ABC dial (-C) and with straight line ringer with adjustment wheel (SA), the complete order number would be: L-8500-CSA.

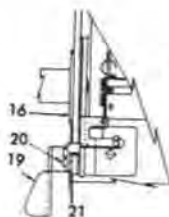
Replacement Parts are listed on the following page.

Replacement Parts for the Type 90 Wall Telephone

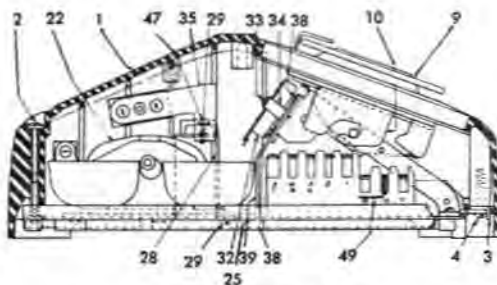
Ref. No.	Description	Order No.
1	Housing Assembly — Standard — for hooklatch or grounding button	D-49976- [*] D-49984- [*]
2	Housing Assembly Screw	D-760773-A
3	Housing Mounting Bracket	D-731536-A
4	Housing Mtg. Bkt. Screws (2)	8-32 x 5/8" RHIMS
5	Circuit Label, Standard (Not Shown)	D-530176-A
6	Type 81 Handset, Complete with cord (Not Shown) — black — coloured	L-9024- ^{**} L-9027- ^{**}
(See page 48 for Handset Parts and pages 58-59 for Handset Cords)		
7	Handset Cord Clamp	D-731490-A
8	Handset Cord Clamp Screw	D-760733-A
9	Dial Assembly — Type 52 (1-0) — Type 52 (ABC)	D-84900- [*] D-84901- [*]
(See pages 51-53 for Dial Parts)		
10	Dial Mounting Bracket	D-731535-A
11	Dial Mtg. Screws (3) (Not Shown)	D-760730-A
12	Dial Dust Cover (Not Shown)	D-49929-A
13	Dial Dust Cover Screws (2) (Not Shown)	4-36 x 9/16" RHIMS
14	Dial Hole Cover (Not Shown) (Dial Hole Cover Parts same as for Type 80 — See page 6)	D-49995- [*]
15	Switch Lever Coil Spring	D-109797-A
16	Switchhook and Bracket Assem.	D-731542- [*]
17	Switchhook Bracket Screws (2)	6-32 x 1/4" RHIMS
18	Switchhook Bracket Screw (upper)	D-760775-A
19	Hooklatch	D-58065-A
20	Hooklatch Screw	D-760774-A
21	Hooklatch Screw Washer	D-17473-A
22	Ringer Assembly (See page 48 for Ringer Parts)	D-56548- ^{***}
23	Ringer Mounting Screws (4)	D-760735-A
24	Ringer Mounting Plate	D-780701-A
25	Centre Bracket Screw	D-760802-A
27	Condenser (.4 MF)	D-68693-A
28	Condenser (1. MF)	D-68563-A
29	Terminal Strip Bracket	D-731534-A
30	Term. Strip Bkt. and Cond. Mtg. Bkt. Screws (2)	D-760764-A
32	Terminal Strip	D-150024-A3
33	Line Compensating Rheostat	D-284068-A
34	Rheostat Mounting Screws (2)	D-760776-A
35	Rheostat Mounting Bushings (2)	D-750233-A
36	Condenser Mounting Bracket	D-731552-A
37	Hookswitch Assembly	D-735337-X
38	Hookswitch Mtg. Screws (2) (Not Shown)	D-760732-A
39	Centre Bracket	D-731471-A
42	Hookswitch Dust Cover	D-49928-A
43	Mounting Bracket, Right	D-731469-A
44	Mounting Bracket, Left	D-731470-A
46	Transmission Network Assembly	D-38362-A
47	Mounting Screws for Transmission Network (1) Terminal Strip (2) and Ringer Mtg. Plate (2)	D-760734-A
48	Transmission Network Mounting Screw Nut	D-77389-A
49	Wire Clamp	D-731510-A
50	Transmission Network Term. Screws (16)	5-40 x 1/4" Bdg. HBrMS
51	Transmission Network Clamp	D-731491-A
52	Clamp Screws (2)	6-32 x 1/4" RHIMS
53	Base Plate Assembly	D-780694-A
54	Grounding Pushbutton Assem. (Not Shown)	D-735340-A
55	Grounding Pushbutton Assem. Screws (2) (Not Shown)	D-760732-A

^{*} See page 32 for colour suffix letters
^{**} See page 48 for cord and colour suffix letters.
^{***} See page 58 for ringer frequency suffix letters

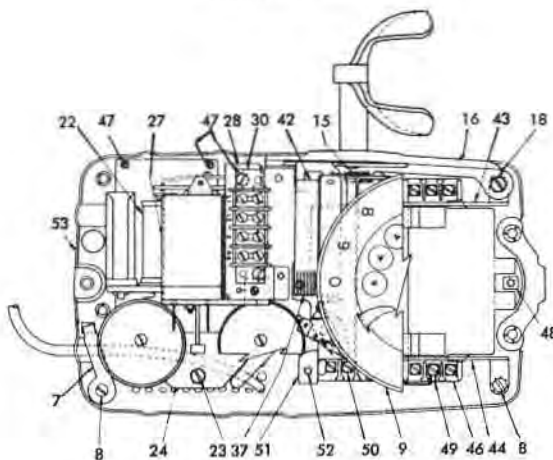
Note: Straight-Line Ringer Assembly with adjusting wheel (D-56548-ASAR) cannot be assembled in Type 90 Wall Telephone.



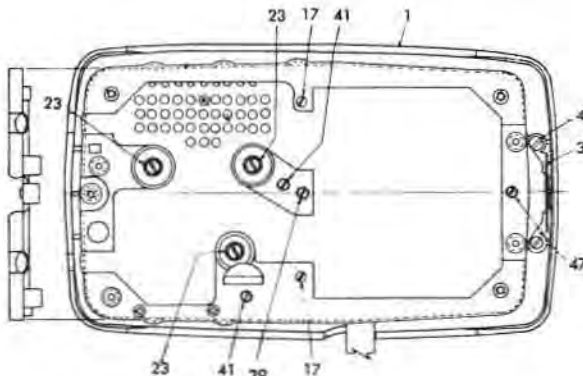
Hooklatch Assembly



Type 90 Side View



Type 90 Top View



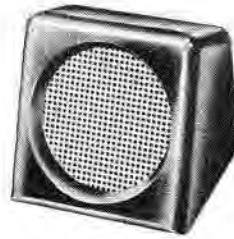
Type 90 Bottom View

Do not order by above numbers—see table

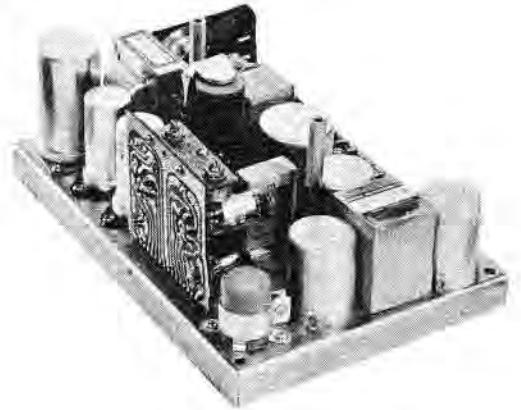
The Type 88 Loud-Speaking Telephone



Telephone



Speaker



Control Unit (Cover removed)

The Type 88 Loud-Speaking Telephone opens a new era in telephone convenience. A regular telephone, a loud-speaking telephone and a conference telephone are all combined in one instruments. It offers maximum convenience to executives, bankers, editors, accountants, and other business and professional people. Invalids and busy homemakers will also enjoy new freedom through the telephone that operates at a touch of a button.

A microphone in the base of the telephone picks up the normal voice, while the other party is heard, clearly and naturally, through the separate speaker. Others nearby may hear and join in the conversation. For privacy, the handset is lifted and used in the regular way; to resume loud-speaking operation, the handset is merely replaced.

To make a call, the ON button is pressed and after dial tone is heard, the required number is dialed without raising the handset. At the end of the call, the OFF button is pressed to disconnect. To answer a call, it is merely necessary to press the ON button and talk. A signal lamp glows to indicate that the loud-speaking service is ready for use, also as a reminder to press the OFF button when the conversation is over. The

speaker volume is controlled by a convenient knob.

The complete set consists of the Loud-Speaking Telephone, Speaker and Control Unit, with all connecting cords, as illustrated. It is supplied ready for installation in the form of the three major components as listed on the following page.

The Type 88 Loud-Speaking Telephone is similar to the Type 80 Desk Telephone and utilizes the same handset, dial, transmission network and ringer. It also includes a tiny yet sensitive microphone, ON and OFF buttons, speaker volume control and signal lamp.

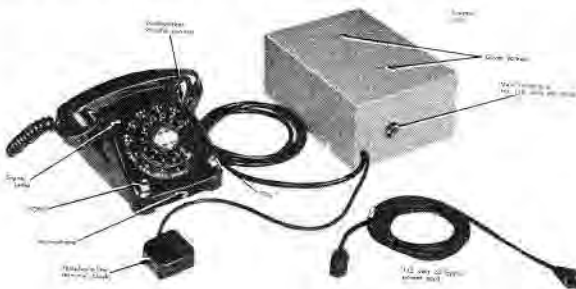
The Type 88 Speaker is only 3½ x 3½ x 3 inches in size, yet provides ample clarity and volume for the average office.

Both the Loud-Speaking Telephone and Speaker are available in black or in any of the 10 colours shown in the insert following page 32.

The Control Unit includes a "plug-in" printed circuit amplifier with miniature "hearing-aid" tubes, which are the only parts requiring replacement after long use, and is mounted inconspicuously under the desk or table. It is only 9½ x 6½ x 4 inches in size, in a grey finished metal cabinet, and operates from any 115 volt, 50 or 60 cycles outlet.

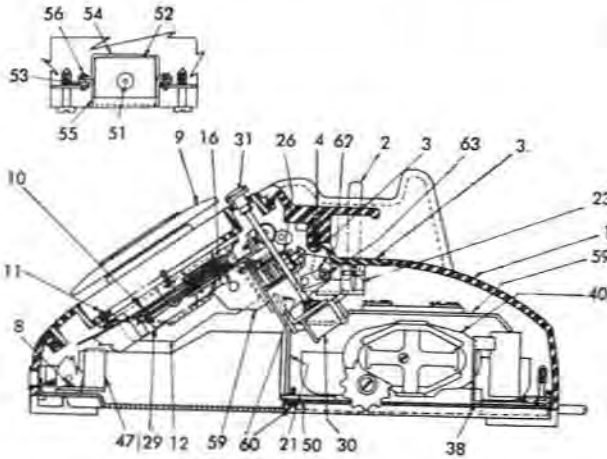
Installation is very simple, as all possible connections and adjustments are made at the factory. Complete installation and adjusting instructions are given in Automatic Electric Bulletin 701-88, copies of which are available upon request.

Ordering information and replacement parts are given on the following pages.

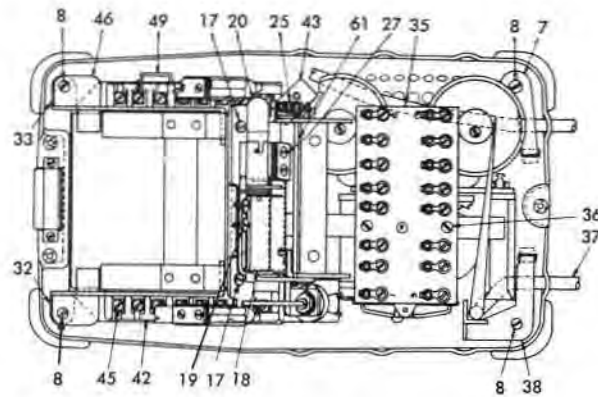


Replacement Parts for the Type 88 Loud-Speaking Telephone

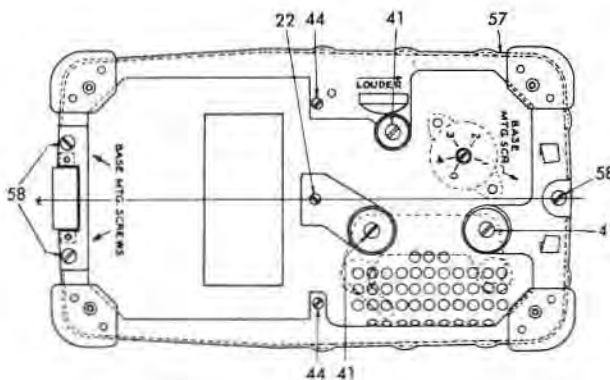
Continued from page 12.



Type 88 Side View



Type 88 Top View

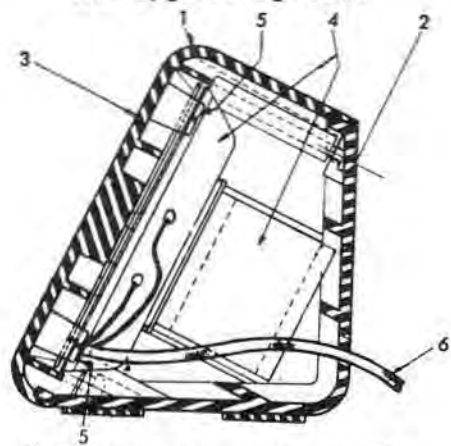


Type 88 Bottom View

Do not order by above numbers—see table

Ref. No.	Description	Order No.
56	Microphone Bracket Screws (2)	3-48 x 1/2" RHIMS
57	Base Plate Assembly, complete with Rubber Feet (4) and Line Compensating Rheostat	D-780692-A
58	Base Mounting Screws (3)	D-760719-A
59	Volume Control and Terminal Mounting Bracket	D-731527-A
60	Bracket Mounting Screws (2)	6-40 x 3/16" RHIMS
61	Hookswitch Lever Bearing Pin	D-37592-A
62	Hookswitch Lever Bearing Pin Lock	D-58062-A
63	Hookswitch Lever Bearing Pin Lock Screw	3-48 x 3/16" RHIMS
*	See page 32 for colour suffix letter.	
**	See page 48 for cord and colour suffix letters.	
***	See page 56 for ringer frequency suffix letters (Ringer with vacuum tube for superimposed ringing cannot be mounted and is not available).	

Replacement Parts for the Type 88 Speaker



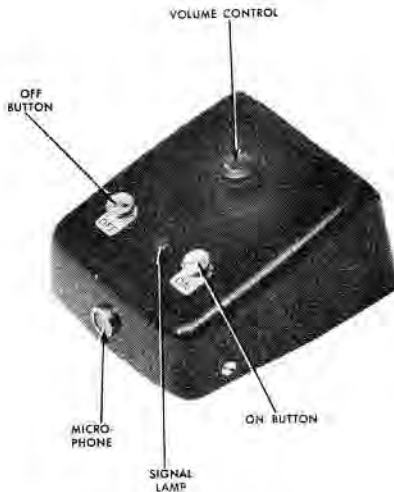
Do not order by above numbers—see table

Ref. No.	Description	Order No.
1	Cover Assembly	D-49973*
2	Mounting Screws (4)	D-760783-A
3	Screen	D-18188-A
4	Speaker	(Jensen) P-3-V
5	Speaker Mounting Screws (4)	D-760788-A
6	Speaker Cord (2-conductor)	CD-620060*
*	See page 32 for colour suffix letter.	

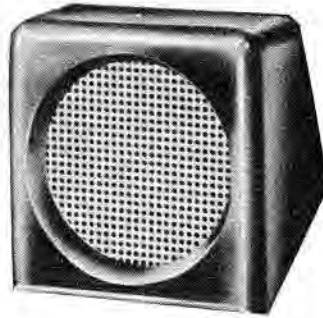
Replacement Parts for Control Unit (Not Shown)

Description	Order No.
Cat. No. AE-84 Plug-in Replacement Amplifier Unit only	D-35286-A
Power Cord, 115-volt (7' 10 1/2" long)	D-543091-A
Power Amplifier Tubes (2) (RCA 3V4)	F-6503-D11
Subminiature Amplifier Tubes (2) (Raytheon) Relay	CK512AX
	RT-21347-B11
Fuse, 1/2-ampere (Littlefuse JAG.312500)	D-27079-B1
Telephone Line Cord, 3-conductor	CD-616075-A
Telephone Line Terminal Block	D-150000-A

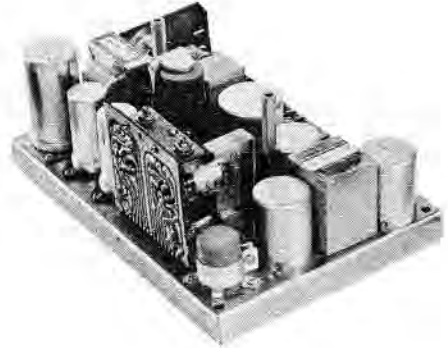
The Type 88A Loud-Speaking Telephone Conversion Set



Adapter Unit



Speaker



Control Unit (Cover removed)

This Conversion Set provides loud-speaking service to a subscriber who has a standard telephone, multiple line telephone or a keyset telephone. It will work with most types of such instruments to provide maximum telephone convenience. Complete instructions for connections to the types of telephones with which the Conversion Set will operate are given in Automatic Electric Bulletin 701-89, copies of which are available upon request.

Operation is similar to that of the Type 88 Loud-Speaking Telephone. A microphone in the Adapter Unit picks up the normal voice, while the other party is heard clearly through the separate speaker. Others nearby may hear and join in the conversation. To keep a conversation private, the handset may be used in the regular way.

To make a call, the line or trunk is selected in the usual manner, the ON button in the Adapter Unit is pressed and, after dial tone is heard, the required number

is dialed without raising the handset. At the end of the call, the OFF button in the Adapter Unit is pressed to disconnect. To answer a call, it is merely necessary to press the ON button and talk. The signal lamp in the Adapter Unit glows to indicate that the loud-speaking service is ready for use, also as a reminder to press the OFF button when the conversation is over. The speaker volume is controlled by a knob in the Adapter Unit. If it is desired to "flash" the operator, the ON and OFF buttons are pressed alternately until the operator answers.

For handset operation, the telephone is used in the regular way. To switch from loud-speaking to handset operation during the course of a conversation, the handset is raised and the OFF button in the Adapter Unit is pressed, which cuts off the microphone and speaker. To resume loud-speaking operation, the ON button is pressed and the handset is replaced.

The complete Conversion Set consists of the Adapter Unit, Speaker and Control Unit, with all connecting cords, as illustrated. It is supplied ready for installation in the form of the three major components as listed on the following page.

The Type 88A Adapter Unit, only 4 x 3¼ x 1¼ inches in size, contains the sensitive, non-directional microphone, ON and OFF buttons, speaker volume control and "busy" lamp.

The Type 88 Speaker is only 3½ x 3½ x 3 inches in size, yet provides ample volume for the average office.

Both the Adapter Unit and Speaker are available in black or in any of the 10 colours shown in the insert following page 32.

(Continued on page 15)



The Control Unit includes a "plug-in" printed circuit amplifier and other high quality components to power the loud-speaking service. It is mounted inconspicuously under the desk or table and is contained in a grey finished metal cabinet only 9½ x 6½ x 4 inches. Operation is from any 115-volt, 50 or 60 cycles outlet.

Installation is very simple, as all possible connections and adjustments are made at the factory. Complete instructions for installing, connecting and adjusting are given in Automatic Electric Bulletins 701-88 and 701-89, copies of which are available upon request.

How to Order

Cat. No.	Description	Order No.
—	Type 88A Adapter Unit only, with 10-conductor cable-cord for connection to Control Unit	L-7028-*O
AE-87	Type 88 Speaker only, with 2-conductor cord	L-7027-*O
AE-86	Control Unit only, CSA approved, with 4-conductor cord for connection to telephone and power cord, for operation on 115 volts, 50 or 60 cycles	L-7026-AO

* Insert Suffix letter for colour (see page 32).

Replacement Parts for The Type 88 Speaker

These are listed on page 13.

Replacement Parts for Control Unit

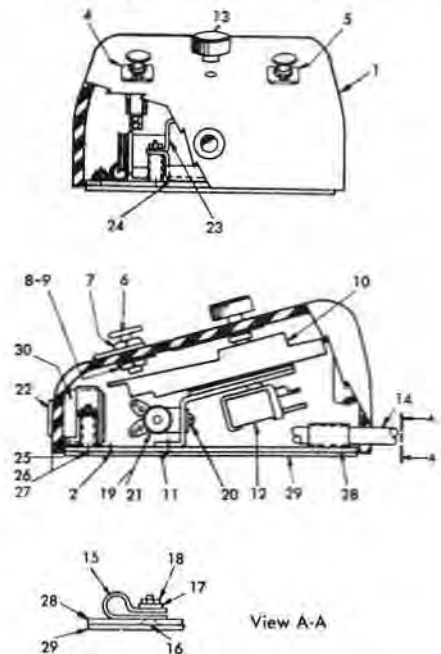
Description	Order No.
Cord for connection to telephone, 4-conductor, 7'6" long	CD-604990

Other parts are listed on page 13.

Note

The Type 88A Loud-Speaking Telephone Conversion Set will operate with many, but not all, makes and types of standard telephones, multiple line telephones and key-set telephones. To ensure satisfactory operation, or the possibility of operation, please furnish us with the make, exact and complete code number and, if possible, a copy of the wiring diagram of the telephone concerned. We will advise if the Conversion Set can be used with it and, if so, the proper connections to be used.

Replacement Parts for the Type 88A Adapter Unit



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Housing Assembly	D-49983*
2	Housing Assembly Screws (3)	4-40 x 3/8" PFK FHS
3	Circuit Label (Not Shown)	D-530187-A
4	ON Plunger Escutcheon	D-550095-A
5	OFF Plunger Escutcheon	D-550095-B
6	ON and OFF Plungers (2)	D-67444-A
7	Plunger Bushings (2)	D-750229-A
8	Plunger Hex. Brass Nuts (2)	D-77398-A
9	Plunger Shakeproof Washers (2)	D-17631-A
10	ON and OFF Spring Assembly	D-735338-A
11	Spring Assembly Screws (2)	4-40 x 3/16" FHIMS
12	Volume Control Potentiometer	D-284155-B
13	Volume Control Knob	D-59274*
14	Cable-Cord (10-conductor)	D-543099-A
15	Cable-Cord Support Clamp	D-731449-C
16	Support Clamp Screw	6-40 x 1/8" Bdg. HIMS
17	Support Clamp Washer	D-1726-A
18	Support Clamp Hex. Nut	D-77299-C
19	Lamp Socket	(Drake) 206-AH
20	Lamp Socket Screw	6-40 x 1/8" Bdg. HIMS
21	Lamp, 28-volt (G.E. 1829)	D-94081-A
—	Lamp Cap (Not Shown)	D-67445-A
22	Microphone	(Shure) MC-26
23	Microphone Upper Bracket	D-731520-A
24	Microphone Lower Bracket	D-731521-A
25	Microphone Bracket Bushings (2)	MP-3895
26	Microphone Bracket Screws (2)	3-48 x 9/16" FHIMS
27	Microphone Bracket Hex. Nuts (2)	D-7719-A
28	Base Plate	D-780700-A
29	Base Cushion	D-67450-A
30	Microphone Cushion	D-67443-A

*See page 32 for colour suffix letters.

The Type 80 Transistorized Telephone



Reception difficulties due to weak incoming signals, noisy locations and low hearing ability may be overcome by the Type 80 Transistorized Telephone. The volume of incoming signals can be amplified up to sixteen times, which is particularly helpful to the hard-of-hearing unable to use a regular telephone.

This instrument does not differ in external appearance from the Type 80 Desk Telephone, with the exception of an inconspicuous yet readily accessible volume control knob located behind the handset cradle. This knob controls a small printed-circuit amplifier utilizing a single transistor and incorporated in the base of the telephone. This amplifier is matched to the high impedance receiver for clear reception and high efficiency throughout the speech range, regardless of volume increase. The special circuit and components of the transmission network substantially improves sidetone balance. Although the sidetone level increases proportionately with increase in volume, it actually appears normal to the hard-of-hearing.

The unique features of the Type 80 Desk Telephone, as outlined on page 4, are incorporated in this transistorized version which provides the combined benefits of subscriber satisfaction and increased revenue.

Other devices for noisy locations and the hard-of-hearing are listed on pages 43-45 and 47.

How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify type of Telephone		Order No.	
Transistorized Telephone, black		SS-80	
Transistorized Telephone, full colour		SS-82	
Step 2: Specify type of Handset Cord			
Straight cord (black only)		0	
Kolled Kord* (black or colour)		2	
* Standard on full colour instruments			
Step 3: Specify Colour			
(If black, omit this step)			
Sand Beige	10	Turquoise	15
Dawn Grey	11	Sunlight Yellow	17
Jade Green	12	Camellia Pink	18
Classic Ivory	13	Gardenia White	19
Garnet Red	14	Forget-me-not Blue	20
Step 4: Specify type of Dial			
Dial with 1-0 number plate		-A	
Less dial, with dial hole cover		-B	
Dial with ABC number plate		-C	
Step 5: Specify type of Ringer			
Straight line, less adjustment wheel		SL	
Straight line, with adjustment wheel		SA	
Less ringer		XX	

For harmonic or declinonic ringers, use same figures as for the Type 80 Desk Telephone (see page 5).

EXAMPLE: For a black Type 80 Transistorized Telephone (SS-80) with straight cord (0), ABC dial (C) and straight line ringer without adjustment wheel, the complete order number would be: SS-800-CSL.

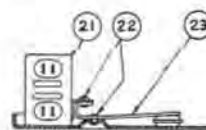
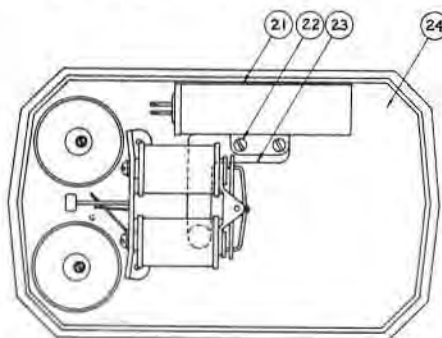
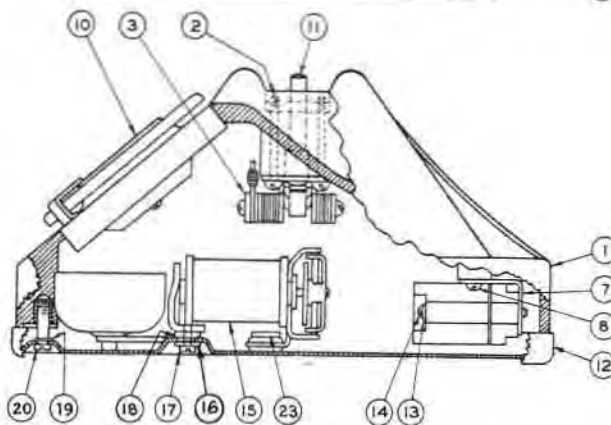
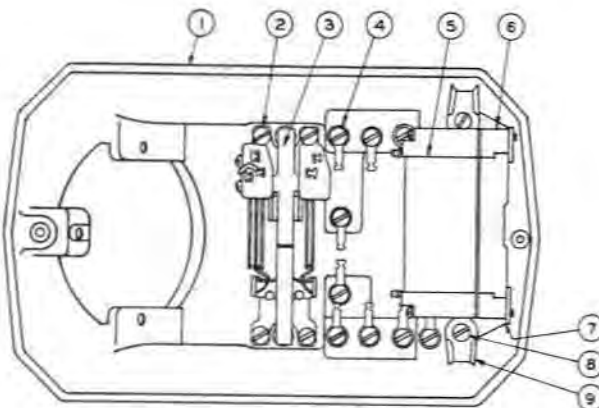
Shipping weight, approximately 7 lbs.

Replacement Parts for the Type 40 Desk Telephone



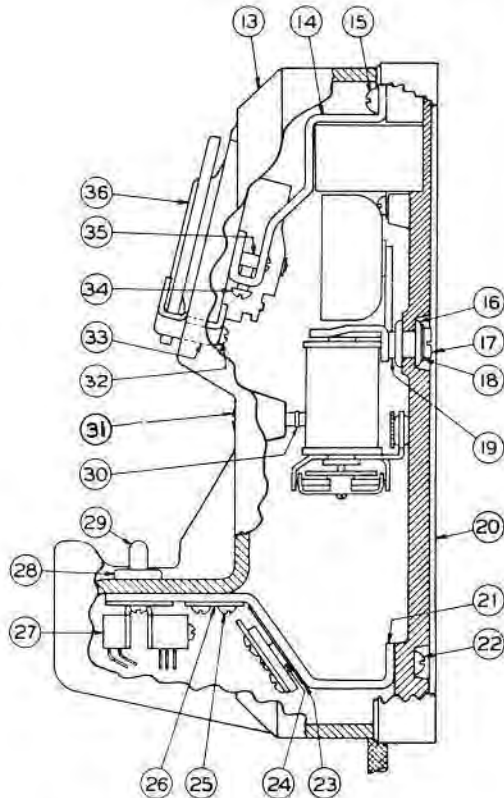
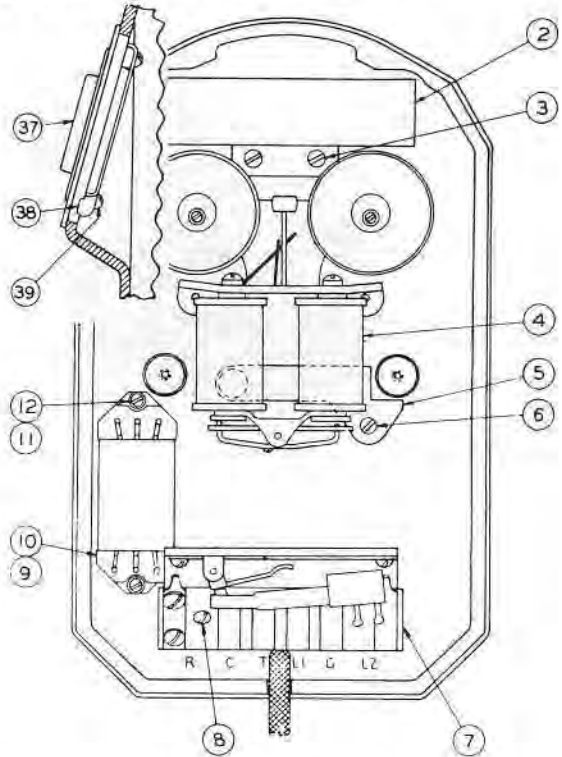
Although manufacture of the Type 40 Desk Telephone has been discontinued, replacement parts are still available for black sets with black trim only, as listed below.

Ref. No.	Description	Order No.
1	Cover, black	D-47945-DR
2	Hookswitch and Lift Block Mtg. Screws (4)	5-40 x 1-3/16" RHIMS
3	Hookswitch Assembly	D-735244-A
4	Terminal Screws (6) (Furnished with Cover)	D-76279-A
5	Induction Coil	D-282996-AR
6	Induction Coil Armature Keeper	D-71561
7	Induction Coil Bracket	Stkl. A
8	Bracket and Cord Holder Screws (2)	D-730987-A
9	Cord Holders (2)	6-32 x 1/2" RHIMS
10	Type 51 Dial — (1-0) black — (ABC) black (See page 50 for Dial Parts)	D-542637-B
—	Dial Blank, black (Not Shown)	B-84130-A
—	Dial Mounting Screws (3) (Not Shown)	B-84132-A
—	Dial Blank Mtg. Screws (2) (Not Shown)	D-49607-A
—	Dial Blank Term. Screw (Not Shown)	4-36 x 3/8" RHIMS
—	Dial Blank Term. Screw Washer (Not Shown)	4-40 x 5/8" RHIMS
11	Hookswitch Plungers (2)	4-40 x 1/4" RHIMS
12	Baseplate Rubber Cushion	D-17377-A
13	Ind. Coil Mtg. Screw Washers (2)	D-67313-A
14	Induction Coil Mtg. Screws (2)	H-870378-1
15	Type 45 Ringer — Straight Line (See page 54 for other Ringers and for Ringer Parts)	D-17468-A
16	Ringer Mounting Screw Washers (2)	5-40 x 1-7/16" RHIMS
17	Ringer Mounting Screws (2)	D-56515-A
18	Ringer Mounting Bushings (2)	D-17445-A
19	Rings for Base Plate Screw (2)	D-760068-A
20	Baseplate Screws (2)	D-67431-B10
21	Condenser — (4. and .4 MF) for straight line ringer (4. and .7 MF) for 16.6 and 20 cy. ringers (4. and .3 MF) for 25 cy. ringer (4. and .2 MF) for 10 and 33.3 cy. ringers (4. and .08 MF) for 40 to 66.6 cy. ringers	D-65270-A
22	Cond. & Clamp Bkt. Mtg. Screw	D-760069-A
23	Clamp Bracket	D-68649-A
24	Baseplate	D-68640-A
—	Type 41 Handset, black, complete with straight Cord (Not Shown) (See page 46 for Handset Parts and pages 58-59 for Handset Cords)	D-68664-A
—	Line Cord Terminal Block, 3-condr. (Not Shown)	D-68648-A
—	Line Cord, 3-conductor (Not Shown)	D-68665-A
—	Lift Bar (Not Shown)	6-32 x 1/8" RHIMS
		D-731405-A
		D-780093-A
		L-885-DO
		D-150000-A
		CD-600072
		D-660189-A



Do not order by above numbers—see table

Replacement Parts for the Type 50 Wall Telephone



Although manufacture of the Type 50 Wall Telephone has been discontinued, replacement parts are still available for black sets with black trim only, as listed below.

Ref. No.	Description	Order No.
1	Type 41 Handset, black, complete with straight Cord (Not Shown) (See page 46 for Handset Parts and pages 58-59 for Handset Cords)	L-885-DO
2	Condenser — (.4 and .4 MF) for straight line ringer (.4 and .7 MF) for 16.6 and 20 cy. ringers (.4 and .3 MF) for 25 cycle ringer (.4 and .2 MF) for 30 and 33.3 cy. ringers (.4 and .08 MF) for 40 to 66.6 cy. ringers	D-68649-A D-68640-A D-68664-A D-68648-A D-68665-A
3	Condenser Mounting Screws (2)	6-32 x 1/8" RHIMS D-56515-A
4	Type 45 Ringer — Straight Line (See page 54 for other Ringers and for Ringer Parts)	
5	Ringer Stop Bracket	D-731404-A
6	Ringer Stop Bracket Screw	8-32 x 3/16" RHIMS D-15807-A
7	Terminal Strip	6-32 x 3/4" RHIMS D-71561
8	Terminal Strip Mtg. Screws (2)	Stkl. A D-282996-AR D-17468-A
9	Induction Coil Armature Keeper	5-40 x 1 1/2" RHIMS D-49696-AR
10	Induction Coil	D-731065-A
11	Ind. Coil Mtg. Screw Washers (2)	10-32 x 5/16" RHIMS D-67431-A14
12	Induction Coil Mtg. Screws (2)	D-760647-A
13	Cover, black	D-17428-A
14	Dial Bracket	D-65462-B
15	Dial Bracket Mtg. Screws (2)	D-47830-A
16	Ringer Mtg. Rubber Grommets (2)	D-731063-B
17	Ringer Mounting Screws (2)	10-32 x 7/16" RHIMS D-440071-A
18	Ringer Mtg. Screw Washers (2)	D-17197-B
19	Ringer Mounting Spacers (2)	6-32 x 3/16" RHIMS D-282804-A
20	Base	D-731066-A
21	Hookswitch Bracket	D-77210-C
22	Hookswitch Bracket Screws (2)	D-41293-D
23	Terminal Strip Insulator	D-65270-A
24	Terminal Strip Spacers (2)	D-76655-D
25	Resistance Coil Mtg. Screws (2)	4-36 x 3/16" RHIMS D-70162-A
26	Resistance Coil	6-32 x 5/16" RHIMS D-76838-A
27	Hookswitch Assembly	R-84130-A
28	Hookswitch Plunger Spanner Nut	B-84132-A
29	Hookswitch Plunger	
30	Cover Screw Locking Rings (2)	
31	Cover Locking Screws (2)	
32	Dial Lug Screw	
33	Dial Lug	
34	Dial Locking Screws (2)	
35	Dial Mounting Studs (2)	
36	Type 51 Dial — (1-0) black — (ABC) black (See page 50 for Dial Parts)	
37	Dial Blank, black	D-49610-A
38	Dial Blank Mounting Strip	D-730848-A
39	Dial Blank Mounting Screws (2)	4-40 x 3/16" RHIMS

Do not order by above numbers—see table

The Type 83 Compact Telephone

This instrument affords wide flexibility in mounting arrangements and use, combined with the superior telephone transmission characteristics of the Type 80 Desk Telephone by utilizing the same circuit components and handset. It includes a complete anti-sidetone telephone circuit with the exception of the ringer, which is contained in a separate ringer box. It is used with the ringer box as a complete subscriber's station; without the ringer box, it may be used as an extension telephone, requiring only two wires for connection to the associated mainline instrument.

The Type 83 mounts readily at the end of a desk or table, behind counters or on a wall or column. It is particularly useful in locations where space is limited. An angle bracket may be used to adapt to unusual positional requirements. Knockout holes in the housing base and cover provide for a variety of mounting arrangements. In all cases, the dial is presented in a position for easy use.

Available in black only with straight or Coiled Kord handset cord.

Complete instructions for installing and mounting are given in Automatic Electric Bulletin 700-83, copies of which are available upon request.

Dimensions: Case, 3¼" wide by 6½" high. Overall, including handset, 6¾" wide by 9" high.

Shipping Weight: Approx. 6 lbs.



How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

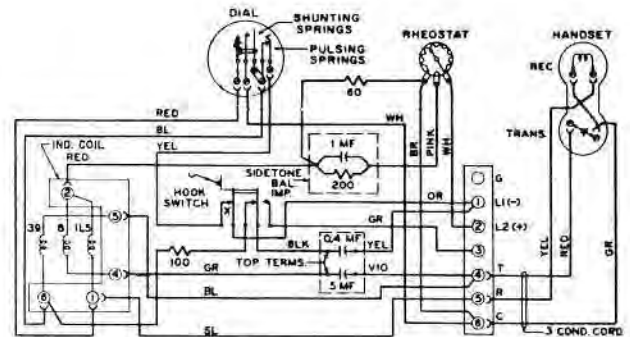
Step 1: Specify Type of Telephone	<i>Order No.</i>
Type 83 Compact Telephone — black	L-8300
 Step 2: Specify Type of Dial	
Dial with 1-0 number plate	-A
Less dial, with dial hole cover	-B
Dial with ABC number plate	-C
 Step 3: Specify type of Handset Cord	
Straight Cord	0
Coiled Kord	2

Example A: For a black Type 83 Compact Telephone (L-8300) with ABC dial (-A) and straight handset cord (0), the complete order number would be: L-8300-A0.

Accessories

<i>Cat. No.</i>	<i>Description</i>	<i>Order No.</i>
—	Type 32 Ringer Box	see page 23
AW-33	Angle Mounting Bracket, with 2 screws for fastening to case	D-731134-A
AW-34	Plug Button for closing unused knockouts in case	D-57125-A
—	Knockout Tool (11/64" punch)	H-69024

Replacement parts for the Type 83 Compact Telephone, and for the Type 43 which it supersedes, are listed on the following page.



Wiring Diagram

Notes:

- 1 — When no dial is used, place both yellow and blue dial leads under screw in dial hole cover and tape white and red dial leads separately to insulate from circuit.
- 2 — "X" contacts to break first and make last.
- 3 — (A) Connect line wires to terminals 1 and 2 (L1 and L2). (B) When ringer box is used and is equipped with a condenser, connect leads from ringer box to terminals 1 and 2 (L1 and L2). (C) When ringer box is used and is not equipped with condenser, connect line leads from ringer box to terminals 1 and 2 (L1 and L2) and connect third lead from terminal R of ringer box to terminal 3.
- 4 — Leads on 100 and 60 ohm resistors are part of resistors.

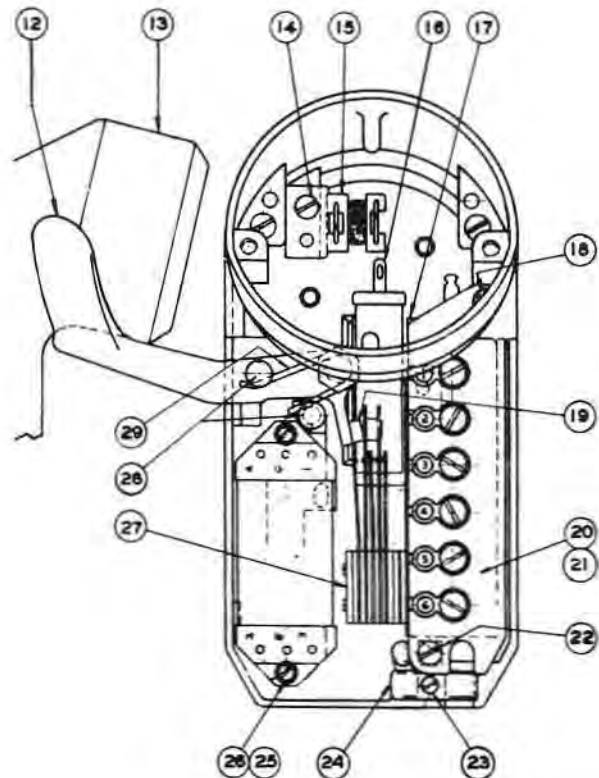
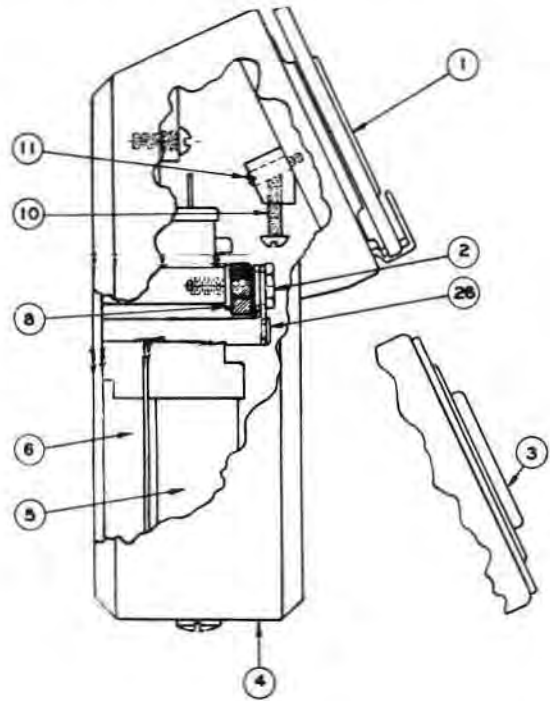
Replacement Parts for the Types 43 and 83 Compact Telephones

Although manufacture of the Type 43 Compact Telephone has been discontinued, replacement parts are still available (for black sets with black trim only) as listed below. Replacement parts for the Type 83 Compact Telephone (black only), which replaces the Type 43, are also listed.

Ref. No.	Description	Order No.	
		Type 43	Type 83
1	Type 51 Dial — (1-0) black — (ABC) black	B-84130-A B-84132-A	B-84130-A B-84132-A
(See page 50 for Dial Parts)			
2	Switchhook Screw	D-760217-A	D-760217-A
3	Dial Blank, black	D-49607-A	D-49607-A
4	Housing Assembly (Cover and Base)	D-48334-A	D-49607-A
5	Induction Coil	D-282996-AR	D-284263-A
6	Ind. Coil Armature Keeper	D-71561 Stkl. A	—
8	Switchhook Bearing Washer	D-17406-B	D-17406-B
10	Dial Locking Screws (2)	D-760231-A	D-760231-A
11	Dial Mounting Lugs (2)	D-76838-A	D-76838-A
12	Switchhook	D-62123-A	D-62123-A
13	Handset — Type 41, black, with straight cord — Type 81, black, with straight cord — Type 81, black, with Kollid Kord	L-885-DO — —	— L-9024-AO L-9024-CO

(See pages 45 and 48 for Handset Parts and Cords)

14	Resistance Coil Mtg. Screw	6-32 x 3/16" RHIMS	—
15	Resistance Coil (100 ohms)	D-282804-A	—
—	Resistor (100 ohms) (Not Shown)	—	D-284080-B38
—	Resistor (62 ohms) (Not Shown)	—	D-284080-B61
16	Ringling Condenser (.4MF) for straight line ringer	D-68247-B	D-68728-A
17	Transmission Condenser (5. MF)	D-68268-A	
18	Term. Strip Mtg. Screws (2)	6-32 x 1/2" RHIMS	6-32 x 1/2" RHIMS
19	Switchhook Buffer	D-75453-A	D-75453-A
20	Terminal Strip Assembly	D-15833-A	D-15852-A
21	Term. Strip Spacer (lower)	D-15831-A	D-15851-A
23	Cord Clamp Screw	5-40 x 3/8" RHIMS	5-40 x 3/8" RHIMS
24	Cord Clamp	D-731135-A	D-731135-A
25	Ind. Coil Mtg. Screws (2)	5-40 x 1 1/2" RHIMS	D-760806-A
26	Ind. Coil Mtg. Screw Washers (2)	D-17468-A	—
27	Hookswitch Assembly	D-735271-A	D-735271-A
28	Switchhook and Tension Spring Shoulder Pin	D-37467-A	D-37467-A
29	Switchhook Tension Spring	D-109547-A	D-109547-A
—	Line Compensating Rheostat (Not Shown)	—	D-284068-A
—	Rheostat Mtg. Screws (2) (Not Shown)	—	D-760776-A
—	Rheostat Mtg. Bushings (2) (Not Shown)	—	D-750260-A
—	Sidetone Balancing Impedance (Not Shown)	—	D-68727-A



Do not order by above numbers—see table

The Type 47 Desk Telephone
for Multiple Line Service



The Type 47 Desk Telephone offers an efficient and flexible means of providing trunk answering service for small organizations where a private branch exchange is not justified. It is also useful in larger organizations, in conjunction with a private branch exchange, for "contact" and other personnel requiring frequent and rapid access to both outside and inside lines and is ideally suited for executive-secretary service.

Some of the services which may be provided are as follows:

- (1) Answering and holding calls on three lines, which may be any combination of outside and local lines. A call can be held on one line while making or answering a call on another line.
- (2) Answering and holding calls on two lines with the third line used for push button signalling and disconnection of an extension telephone or local intercommunicating circuit.

The type 47 Telephone is a self-contained desk instrument of standard size. The foregoing services are made possible by two pairs of "Answering" and "Holding" push buttons mounted below the dial and a "push-pull" button mounted above the dial. The right-hand hookswitch plunger (black) is used for restoring the "Holding" push buttons and the left-hand plunger (chrome) is for "flashing" the operator. The ringer housed within the instrument may be connected to any line. Ringers of different tones for the other lines are provided by Type 32 Ringer Boxes, which must be ordered separately. Auxiliary relay units, lamps, buzzers, etc., are available for various local signalling arrangements.

The operation of the Type 47 Desk Telephone and various applications and wiring plans are given in Automatic Electric Technical Bulletin 519, copies of which are available upon request.

How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify Type of Telephone	<i>Order No.</i>
Standard Type 47 Desk Telephone	L-4111
Step 2: Specify Type of Dial	
Type 51 — (1-0) black	-M
Type 51 — (ABC) black	-E
Less dial, with dial blank	-C
Step 3: Specify type of Ringer	
Straight line only	SL
Step 4: Specify type of Handset Cord	
Straight Cord — black	T
Extensi cord — black	W
Koiled Kord — black	Z

EXAMPLE: For a standard Type 47 Desk Telephone (L-4111) with ABC dial (-E), straight line ringer (SL) and straight handset cord (T), the complete order number would be: L-4111-ESLT.

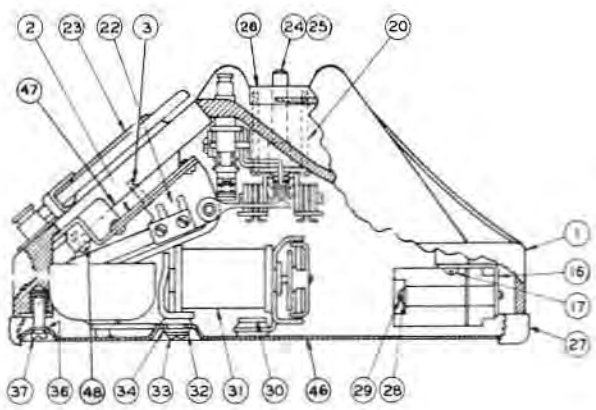
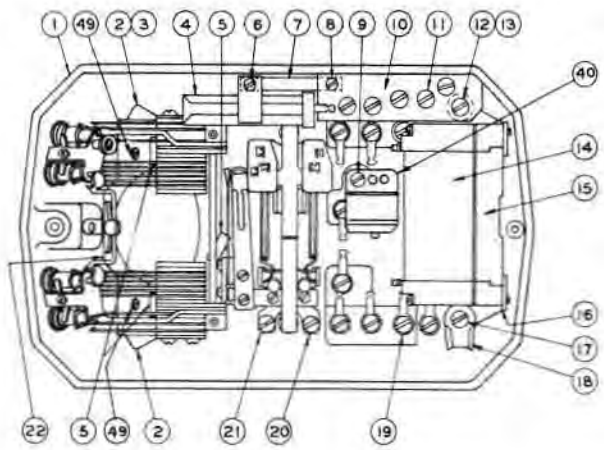
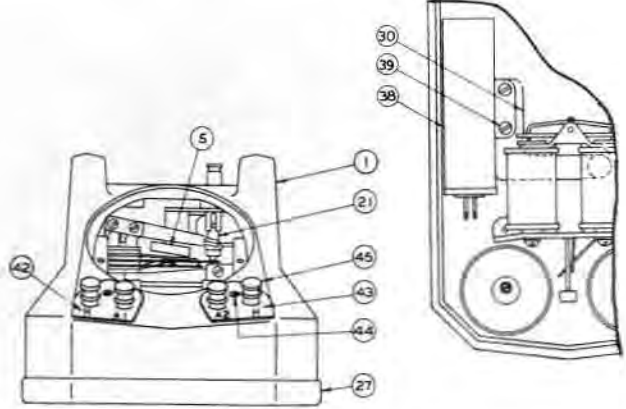
Dimensions of base are 8 $\frac{3}{8}$ " long by 5 $\frac{3}{8}$ " wide. Overall height is 5 $\frac{1}{4}$ " and handset is 9" long.
Shipping Weight, approx. 7 lbs.

Accessories

<i>Description</i>	<i>Order No.</i>
Type 32 Compact Ringer Boxes	See page 23
A.C. Signal Relays (to operate visual signals), consisting of 2 relays and 2 condensers in wall mounting box	H-881153 Assem. 5
Auxiliary Relay Unit (to provide secret service for one station and to control visual signals), consisting of 4 relays and 2 condensers in wall mounting box	H-881153 Assem. 3
Visual Signals and Lamps	See page 62
Buzzers and Push Buttons	See page 62
Loud-Ringing Bells	See page 60

Replacement Parts for the Type 47 Desk Telephone

Ref. No.	Description	Order No.
1	Cover, black	D-47982-AR
2	Adapter for Key Spg. & Bkt. Assem.	D-731431-A
3	Dial Adapter Screws (2)	4-36 x 5/8" RHIMS
4	Ringling Condenser (.4 MF)	D-68262-A
5	Resistors (470 ohms) (3)	D-284081-A9
6	Cond. & Term. Strip Bkt. Support Screw	6-32 x 3/8" RHIMS
7	Term. Strip Bracket	D-731390-A
8	Terminal Strip Mtg. Screw (front)	4-36 x 5/16" RHIMS
9	Rectifier Mounting Screw	6-32 x 3/16" RHIMS
—	Rectifier Mtg. Screw Washer (Not Shown)	D-17366-A
10	Terminal Strip	D-15925-A
11	Terminal Screws (5)	B-7600-B
12	Terminal Strip Mtg. Screw (rear)	6-32 x 5/8" RHIMS
13	Term. Strip Mtg. Screw Bushing	D-750134-A
14	Induction Coil	D-282996-AR
15	Induction Coil Armature Keeper	D-71561-A
16	Induction Coil Mounting Bracket	D-730987-A
17	Cord Clamp Screw	6-32 x 5/16" RHIMS
18	Cord Clamp	D-542637-B
19	Terminal Screws (9)	D-76279-A
20	Hookswitch and Lift Block Mtg. Screws (4)	5-40 x 1-3/16" RHIMS
21	Hookswitch, Pushbutton Switcn and Bracket Assembly	D-735302-A
22	Pushbutton Spgs. & Bkt. Assembly	D-735317-A
23	Type 51 Dial — (1-0) black — (ABC) black (See page 50 for Dial Parts)	B-84130-A B-84132-A
24	Plunger — chrome (left)	D-67313-A
25	Plunger — black (right)	D-67313-C
26	Lift Bar	D-660189-D
27	Base Rubber Cushion	H-870378-1
28	Ind. Coil Mtg. Screw Washers (2)	D-17468-A
29	Induction Coil Mounting Screws (2)	5-40 x 1-7/16" RHIMS
30	Ringer Clamp & Cond. Mtg. Bracket	D-731405-A
31	Type 45 Ringer — Straight Line (See page 54 for Ringer Parts)	D-56515-A
32	Ringer Mtg. Screw Washers (2)	D-17445-A
33	Ringer Mounting Screws (2)	D-760068-A
34	Ringer Mtg. Screw Grommets (2)	D-17443-A
36	Base Screw Retaining Rings (2)	D-65270-A
37	Base Screws (2)	D-760069-A
38	Transmission Condenser (5. MF)	D-68258-C
39	Condenser Bracket Screws (4)	6-32 x 3/16" RHIMS
40	Rectifier Unit (Click Ssupressor)	D-35216-A
42	Pushbutton Escutcheon (left)	D-55596-A
43	Pushbutton Escutcheon (right)	D-55597-A
44	Pushbutton Escutcheon Screws (2)	D-760356-A
45	Pushbuttons (4)	Incl. in Item 22
46	Base	D-780093-B
47	Dial Spacer	D-65489-A
48	Dial Mounting Screw	4-36 x 1/2" RHIMS
49	Pushbutton Spg. & Bkt. Assem. Mounting Screws (4)	4-40 x 3/16" RHIMS
—	Type 41 Handset, black, complete with straight cord (Not Shown) (See page 46 for Handset Parts and Cords)	L-885-DO
—	Line Cord, 9-conductor (Not Shown)	D-543121-A
—	Line Terminal Blocks (2) (Not Shown)	D-15922-A
—	Dial Blank—black (Not Shown)	D-49607-A
—	Dial Blank Mtg. Screws (2) (Not Shown)	4-40 x 9/16" RHIMS



Do not order by above numbers—see table

The Type 32 Ringer Box



The Type 32 Ringer Box forms a neat and compact housing for the signalling equipment, when required, for the Type 83 Compact Telephone (page 19), the Type 47 Desk Telephone for multiple line service (page 21), Series 80 Paystations (page 27) and other applications where an auxiliary audible signal is required.

A Type 45 High Impedance Ringer, with associated condenser and a terminal strip, are mounted on a sturdy black plastic base with rounded corners. A wide recess in the under surface provides for the entry of the line wires and other wiring from either the top or the bottom of the box. Four mounting holes, two of which are slotted, provide for easy attachment to any surface.

The cover, of smooth black plastic, with rounded corners and edges, is attached to the base by means of two "non-loseable" screws with large chrome heads. Large openings at the bottom permit the ringer to be heard clearly and a cloth screen over these prevents the entry of dirt and insects. Matching grooves in the cover and base at one side accommodate the line cord, if used, of an associated instrument.

The small size of the Type 32 Ringer Box makes it ideally suited for mounting on baseboards, under desks and tables, etc. The smooth surfaces shed dust and are easy to keep clean.

Available in black only.

Dimensions are 5½ inches wide, 7¼ inches high and 2⅝ inches deep.

Shipping weight, approximately 5 lbs.

Type 32 Ringer Boxes for Use with Type 83 Compact Telephones (page 19) and with Series 80 Paystations (page 27)

Cat. No.	Description	Order No.
AO-68	With straight line ringer	L-1504-ASLO
—	With harmonic or decimonic ringer	L-1504-A**O
AO-78	With ringer and vacuum tube for super-imposed ringing	L-599-AO

**Insert two figures to indicate frequency, as follows:

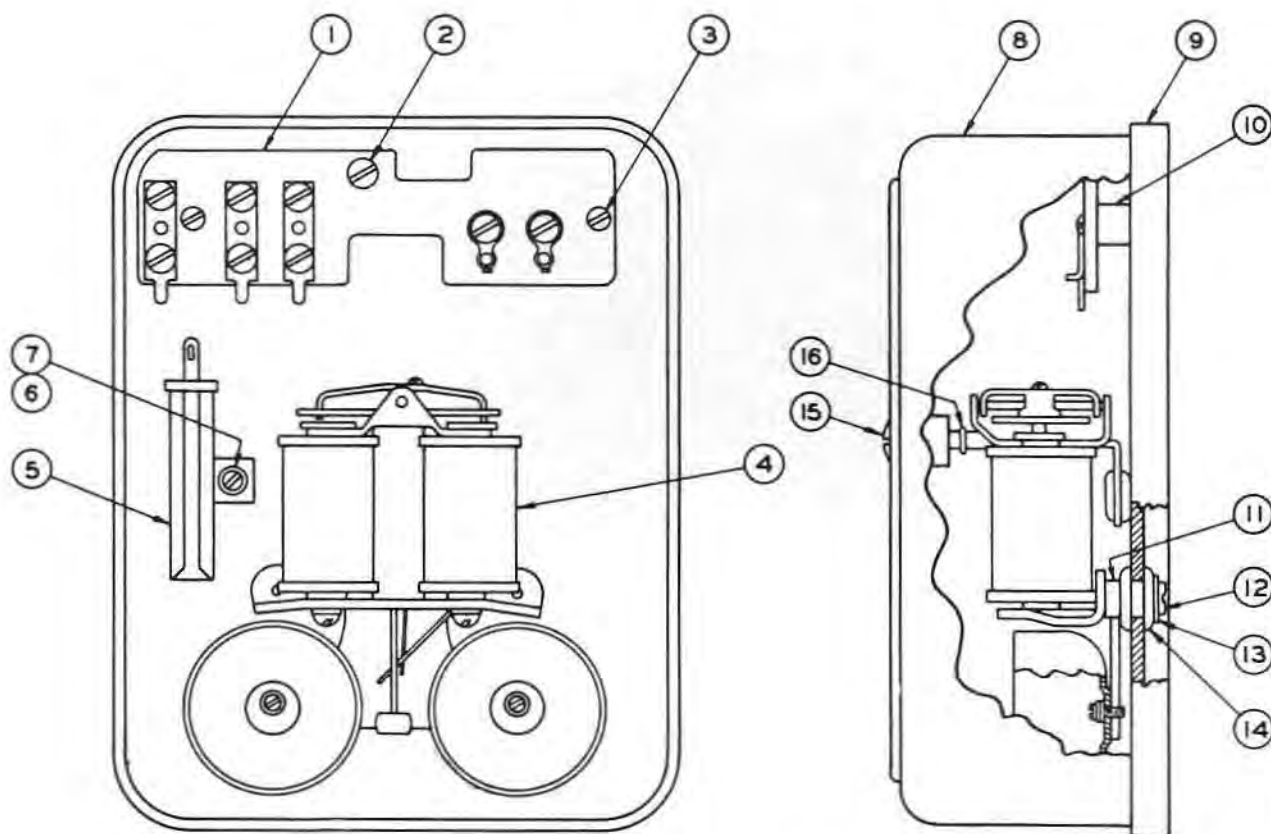
16.6 cycle	16
20 cycle	20
25 cycle	25
30 cycle	30
33.3 cycle	33
40 cycle	40
42 cycle	42
50 cycle	50
54 cycle	54
60 cycle	60
66 cycle	66
66.6 cycle	67

Type 32 Ringer Boxes for Use with Type 47 Desk Telephones for Multiple Line Service (page 21)

Cat. No.	Description	Order No.
AO-76	With standard straight line ringer	L-1503-ASLO
AO-80	With straight line ringer equipped with slotted gongs	L-1503-BSLO

Replacement Parts are listed on the following page.

Replacement Parts for the Type 32 Ringer Box



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Terminal Strip — for L-1504 and L-599 — for L-1505	D-15834-A D-15923-A
2	Terminal Strip Screw	8-32 x 3/16" RHIMS
3	Terminal Strip Mounting Screws (2)	5-40 x 1/2" RHIMS
4	Type 45 Ringer — standard straight line — straight line, slotted gongs	D-56515-A D-56515-C
(See page 54 for other Ringers and Ringer Parts)		
5	Condenser — (.4 MF) for straight line ringer (.7 MF) for 16.6 and 20 cycle ringers (.3 MF) for 25 cycle ringer (.2 MF) for 30 and 33.3 cycle ringers (.08 MF) for 40 to 66.6 cycle ringers	D-68262-A D-68263-A D-68670-A D-68261-A D-68671-A D-17469-A
6	Condenser Mtg. Screw Shakeproof Washer	5-40 x 1/4" RHIMS
7	Condenser Mounting Screw	D-49488-A
8	Cover	D-47865-A
9	Base	D-75204-A
10	Terminal Strip Bushings (2)	D-65462-A
11	Ringer Mounting Spacers (2)	D-760648-A
12	Ringer Mounting Screws (2)	D-17428-A
13	Ringer Mounting Screw Washers (2)	D-75887-A
14	Ringer Mounting Grommets (2)	D-76655-A
15	Cover Locking Screws (2)	D-65270-A
16	Cover Screw Lock Rings (2)	

The Leich 900 Magneto Telephone



The Leich 900 Magneto Telephone meets every requirement for magneto service, since the one instrument provides for either desk or wall installation, without any changes or additions.

The easy conversion to common battery service, either manual or automatic, is another feature which makes this telephone a sound investment and provides real standardization. To make this conversion, all that is necessary is to remove the generator, crank and cover, add a dial blank or dial, and change a few wires.

As a magneto telephone, the Leich 900 has an efficient anti-sidetone circuit and components providing excellent transmission and reception over a wide range of line conditions. The loud two-toned ringer is easily adjusted and the powerful Alnico generator will ring over long, heavily loaded rural lines. All parts are readily accessible by removing the cover, which is fastened by one screw.

Optional features include a pushbutton to enable subscribers on a party line to ring the central office, from one side of the line to ground, without disturbing the other parties on the line. Also available is a hooklatch which prevents the hookswitch contacts from closing fully when the handset is removed. This connects the receiver only and permits a caller on a party line to ascertain if the line is in use before making a call. If the line is clear, a slight pressure on the hooklatch release button

permits full operation of the hookswitch contacts and normal operation.

Available in black only.

Dimensions of base are 5 $\frac{3}{8}$ " wide, 8 $\frac{1}{2}$ " long and 5 $\frac{7}{8}$ " high. The handset is 9 $\frac{1}{4}$ " long.

Shipping weight: Approximately 10 lbs.

How to Order

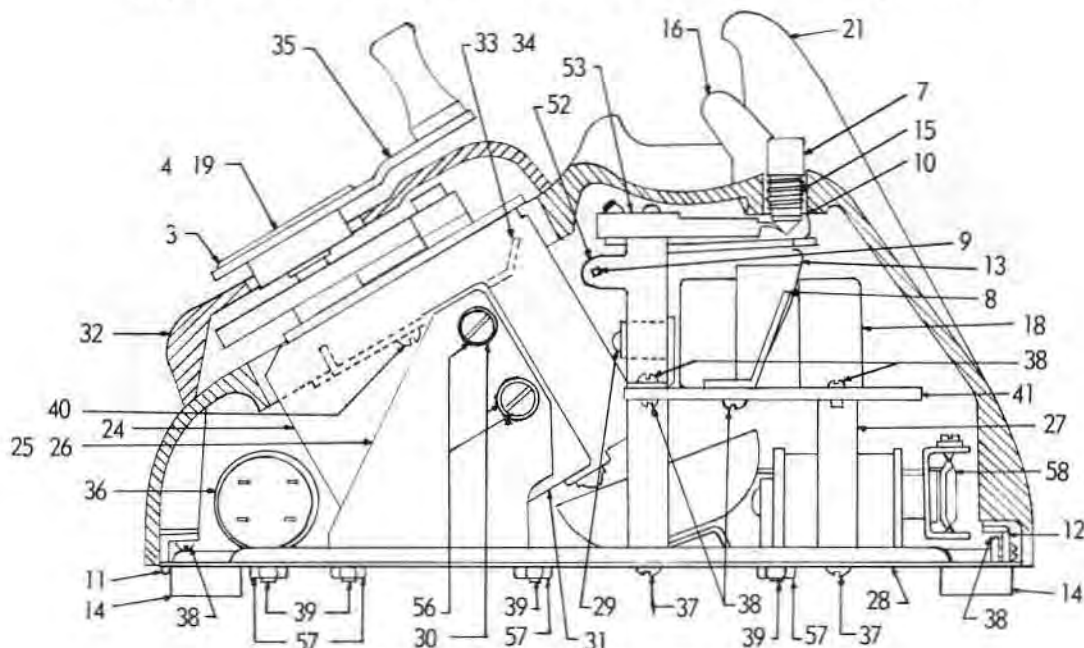
The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify type of Telephone	<i>Order No.</i>
Without pushbutton, without hooklatch	901
With pushbutton, without hooklatch	Z901C
Without pushbutton, with hooklatch	911
With pushbutton, with hooklatch	Z911C
Step 2: Specify Ringer	
1000 ohms	-1000
1600 ohms	-1600
2500 ohms	-2500

EXAMPLE: For a Leich 900 Magneto Telephone with pushbutton and without hooklatch (Z901C) and equipped with 2500-ohm ringer (-2500), the complete order number would be: Z901C-2500.

Replacement Parts are listed on the following page.

Replacement Parts for the Leich 900 Magneto Telephone



Do not order by above numbers — see table below.

Ref. No.	Description	Order No.	Ref. No.	Description	Order No.
3	Paper Disc Retaining Ring	8348	28	Base Plate Assembly	013318
4	Paper Disk Cover-transparent	8349	29	Hookswitch Spring Assembly	012675
5	Line Cord, 4-conductor (Not Shown)	012976-R	30	Generator Mtg. Screw Insulators (4)	12676
7	Pushbutton	11868	31	Generator Mtg. Bkt. Insulators (2)	12677
8	Hookswitch Lever Stop	11869	32	Generator Cover	012685
9	Hookswitch Lever Hinge Pin	11870	33	Generator Cover Clamp - left	12689
10	Pushbutton Snap Ring	11871	34	Generator Cover Clamp - right	12690
11	Case Moulding Front Bracket	11872	35	Generator Crank	012700
12	Case Molding Rear Bracket	11873	36	Condenser — (1. and 1.MF) for 1000-ohm ringer	12702
13	Hookswitch Latch Spring	11874		— (1. and .5MF) for 1600 and 2500-ohm ringer	13103
14	Rubber Feet (4)	13325	37	Mtg. Screws for Term. Panel Bkts. (4)	13328
15	Pushbutton Coil Spring	11891	38	Mtg. Screws for Hooksw. Lever Stop (1), Hooksw. Spg. Assem. (2), Term. Panel (4) and Case Moulding Bkts. (4)	12717
16	Hookswitch Lever Arm Assem.	011902	39	Mtg. Screws for Gen. Mtg. Bkts. (4), Condenser (2) and Ringer (2)	12803
18	Code 28 Induction Coil	011987	40	Mtg. Screws for Gen. Cover Clamps (2)	12720
19	Paper Disc (Number Card)	12285	41	Terminal Panel Assembly — wired	012753
20	Handset		52	Hookswitch Lever Support	
	— Complete with Cord (Not Shown)	012296		— for sets without pushbutton	11866
	— Transmitter (Not Shown)	12297		— for sets without pushbutton	12818
	— Receiver (Not Shown)	12298	53	Pushbutton Spring Assembly	012820
	— Trans. Mouthpiece Clamping Ring (Not Shown)	11751	56	Mtg. Screws for Generator (4)	8-32 x 3/8" RHIMS
	— Trans. Mouthpiece (Not Shown)	11752	57	Hex. Nuts for Mtg. Screws for Gen. Mtg. Bkts. (4) Condenser (2) and Ringer (2)	1441
	— Receiver Cap (Not Shown)	11753	58	Ringer Assembly — 1000 ohms	011934
	— Handle (Not Shown)	012295		— 1600 ohms	011933
	— Cord, 3-conductor (Not Shown)	11853-R		— 2500 ohms	011935
21	Case Molding			Line Terminal Block (Not Shown)	39-M
	— for sets without pushbutton or hooklatch	011900			
	— for sets with pushbutton or hooklatch	012410			
24	Code 7F Generator Assembly	012656			
25	Generator Mtg. Bracket - Right	12665			
26	Generator Mtg. Bracket - left	12666			
27	Terminal Panel Brackets (4)	12668			

Series 80 Paystations



Series 80 Paystations include types to meet every requirement of central battery paystation service. They incorporate the reliable coin mechanism and other mechanical features of the Series 60 Paystations, which they supersede, but offer the superior telephone transmission characteristics and user convenience of the famous Automatic Electric Type 80 Telephone by use of the same circuit components, handset and dial.

In addition, Series 80 Paystations are available in the same complete range of popular colours (see page 32) as the Type 80 Telephone, as well as in black. These bright, cheerful colours make the paystations easier to see and help to dress up their surroundings.

Properly located, both indoors and out, paystations provide an increasing source of revenue. Automatic Electric Circular 1842, "How to make Paystations Pay in your area", contains a wealth of practical ideas for paystation development—copies are available upon request.

Paystation booths, signs and other such items are illustrated and described in our Telephone Supplies Catalogue TS-56.

Standard Types

Type 82 Prepay, Manual or Automatic

These paystations provide prepay local service with automatic or manual central offices. Coins are deposited before connection is made and can be refunded if the call is not completed, if for a toll call or if to prearranged "free" numbers (fire, police, information, etc.). In automatic exchanges, collect and refund operations on local calls are automatic; in manual exchanges they are operator controlled through "Collect" and "Refund" keys. On toll calls, in either automatic or manual exchanges, the operator receives a visual or audible signal to indicate that the call is from a paystation, refunds the deposited coin and proceeds to complete the desired connec-

tion. She may ask for the coins to be deposited at any time and may collect or refund them at will by the operation of the "Collect" and "Refund" keys. For the use of these paystations, special equipment is required at the central office, including 110-volt d.c. supply to operate the coin-control.

Supersedes the Type 62 Paystation.

Type 84 Postpay, Manual (Convertible to Prepay)

Payment for calls is made after connection has been established by the operator, hence no control equipment at the manual exchange is required and it is not necessary to provide for the refunding of coins. A special audible signal is usually given to the operator to indicate that the call is from a paystation. This is the simplest form of paystation service, involving a minimum of equipment, but the services of an operator are required to handle all calls.

Although designed for service with manual exchanges, these paystations may be used for dial operation, but only if all local calls are free. By means of suitable Conversion Kits (see page 30), they may be converted to prepay operation, either manual or automatic.

Supersedes the Type 62 Paystation.

Type 86 Semi-Postpay, Automatic

These paystations can be used only with automatic exchanges which provide for reversal of the transmission battery when the called party answers, which permits collection of charges for local calls without the aid of an operator. Toll calls are handled on a postpayment basis by the operator.

On local calls, the desired number is dialed without depositing a coin. When the called party answers, transmission current is reversed on the calling line, operating a relay in the paystation, which makes the transmitter inoperative. The calling party can hear the called party answer, but must deposit a coin to unlock the transmission circuit. On toll calls, the operator is dialed without depositing a coin; a special audible signal is usually arranged to indicate that the call is from a paystation. The operator completes the connection and requests the deposit of coins. Free local calls to certain numbers can be provided by arranging the central office connections so that when these lines are called the transmission current supply to the calling line is not reversed.

Supersedes the Type 66 Paystation.

Type 88 Postpay, Manual (Convertible to Semi-Postpay)

These paystations operate in the same manner as the Type 84 except that they are convertible to semi-postpay service by means of a suitable Conversion Kit (see page 30) instead of to prepay service.

Supersedes the Type 68 Paystation.

Type 89 Local Prepay, Automatic

These paystations combine the advantages of fully automatic prepay service on local calls and semi-prepay service on toll calls. The automatic central office equipment required is simpler and less costly than that required for regular prepay paystations. They can be used with any automatic exchange which provides reverse transmission battery for collecting the initial coin deposit and requires only a 60-volt booster battery for coin refund.

Series 80 Paystations

Ten Cent Service

All types of Series 80 Paystations can be supplied for the collection of five cents for local calls.

The Type 82 Prepay (automatic only) and the Type 89 Local Prepay Paystations can be arranged for a charge of ten cents for local calls, in the form of either two nickels or one dime. This operation is essentially the same as the five cent charge except that a special latching switch short-circuits the impulsing contacts of the dial when the first nickel is deposited and releases this short-circuit when the second nickel is deposited. The latching switch does not operate when dimes or quarters are deposited. If a call is abandoned after one nickel is deposited, the coin is returned and the latching switch is restored. For toll calls, two nickels or one dime are required to contact the operator.

The Type 86 Semi-Postpay Paystations can be arranged for a charge of ten cents for local calls, in the form of one dime only. A magnet-operated rejector spring, which extends into the nickel coin chute, trips out and returns any nickels deposited on attempted local calls. On toll calls or call backs, the rejector spring is automatically withdrawn and nickels, dimes or quarters may then be deposited as required.

Conversion kits are available to convert existing paystations for five cent service to ten cent service (see page 30).

Automatic and Manual Service

Paystations for automatic service are equipped with Type 52 Dials with extended number plate showing both letters and figures (ABC). For manual service, a dial hole cover (dial blank) is supplied in place of the dial. Conversion kits are available for converting existing paystations from manual to automatic service (see page 30).

Optional Features

Anti-Stuffing Device: This consists of a "pocket" which rests beneath the coin-refund chute and, when money is refunded, the coin or coins slide into this "pocket". A simple flip of the finger causes the "pocket" to tilt forward, making the coin or coins easily accessible. The opening of the coin-refund chute is blocked by the back of the "pocket" so that it is inaccessible to the paystation user and cannot be stuffed with any foreign matter. A special kit



is available for installing this feature on existing paystations (see page 29).

Oversized Card Holder: This is available, if required, for supplementary information and instructions to the paystation user (see page 29).

Sidetone Balancing Impedance: Improves transmission on long cable loops (see page 29).

Self-Locking Coin Receptacle: Paystations are equipped with the 2-A Non-Locking Coin Receptacle as standard, but the 6001-B Self-Locking Coin Receptacle can be supplied if required (see page 29).

How to Order

The complete order number consists of a combination of letters and figures to designate the various features. It is made up by following the steps below and writing down in turn the letters and figures corresponding to the features required.

Step 1: Specify type of Paystation	Order No.
Type 82 Prepay — Manual or Automatic	LP-82
Type 84 Postpay — Manual (convertible to Prepay)	LP-84
Type 86 Semi-Postpay — Automatic	LP-86
Type 88 Postpay — Manual (Convertible to Semi-Postpay — Automatic)	LP-88
Type 89 Local Prepay — Automatic	LP-89

Step 2: Specify type of service	
5 cent service*	20
10 cent service (2 nickels or 1 dime)**	75
10 cent service (1 dime only)***	30

* Available for all types

** Available only for Type 82 Prepay (Automatic only) and Type 89 Local Prepay

*** Available only for Type 86 Semi-Postpay

Step 3: Specify Colour			
Black	00	Turquoise	15
Sand Beige	10	Sunlight Yellow	17
Dawn Grey	11	Camellia Pink	18
Jade Green	12	Gardenia White	19
Classic Ivory	13	Forget-me-Not Blue	30
Garnet Red	14		

Step 4: Specify with or without Dial	
With dial (ABC number plate only)*	-C
Less dial, with dial hole cover**	-B

* For Types 82, 86 and 89

** For Types 82, 84 and 88.

Step 5: Specify if to be equipped with Anti-Stuffing Device, Oversize Direction Card Holder or Sidetone Balancing Impedance (see Note 1 below)

With Anti- Stuffing Device	With Over- size Card Holder	With Balancing Impedance	
—	—	—	0
X	—	—	1
X	X	—	2
—	X	—	3
—	—	X	4
X	—	X	5
X	X	X	6
—	X	X	7

Step 6: Specify type of Coin Receptacle (See Note 1 below)

With 6001-B Self-Locking Receptacle	With 2A Non-Locking Receptacle	
—	—	0
X	—	1
—	X	2

Note 1: In tables for Steps 4 and 5, "X" indicates equipped and "—" indicates not equipped.

Note 2: All Series 80 Paystations, black or coloured, are equipped with Kolled Kord handset cords as standard.

Example: For a prepay type Paystation (LP-82) for 10 cent (2 nickels or 1 dime) service (75), Garnet Red (14), with dial (-C) and equipped with anti-stuffing device, oversize direction card holder, anti-side tone balancing impedance (6), and self-locking coin receptacle (1), the complete order number would be: LP-827514-C61.

Paystation Accessories

Anti-Stuffing Coin Return

This device absolutely prevents the blocking of the coin-refund chute with any foreign matter, such as paper, gum, etc.

New paystations can be supplied with this device as an optional feature and a special kit is available for installation on existing paystations. This kit includes the anti-stuffing device, modified coin-refund chute, new coin-return escutcheon, swivel pin and restoring coil spring, with complete instructions. A special drill jig is also required to properly locate the hinge pin hole.

Description
Anti-Stuffing Coin Return Kit
Anti-Stuffing Coin Return Drill Jig

Order No.
P-70293
P-70294

Over-Sized Card Holder

This large card holder provides additional space for supplementary local information and instructions for the paystation user. It is available as an optional feature on new paystations and is also available for attachment to existing paystations, for which purpose the required mounting material is included.

Description
Over-sized Card Holder

Order No.
1-BA

Sidetone Balancing Impedance

This network improves transmission on long cable loops. It should be used on unloaded cable loops of over 200 ohms resistance, providing any adjacent open wire section is of less than 200 ohms resistance. New paystations may be equipped with this network as an optional feature and it is also available for installation in existing paystations.

Description
Sidetone Balancing Impedance

Order No.
P-60657

Non-Locking Coin Receptacle

These receptacles are simply emptied and removed by the collector. They are supplied with Series 80 Paystations as standard and spare receptacles are also available. Approximately \$30.00 capacity.

Description
Non-Locking Coin Receptacles

Order No.
2-A

Self-Locking Coin Receptacle



This type is equipped with a shutter over the coin opening, which opens to admit coins as the receptacle is inserted in a special rail, but closes and locks as the receptacle is withdrawn. The collector removes a filled receptacle from the paystation and replaces it with an empty one. A folding handle on the front facilitates removal. This saves the collector's time in counting and handling money. The receptacle is opened as the receptacles are opened at the office by breaking a lead seal. A serial number stamped on the front of the receptacle provides identification.

Series 80 Paystations may be equipped with self-locking coin receptacles as an optional feature and they can also be installed in existing paystations, for which purpose they are supplied complete with locking cover and rails. For extra self-locking coin receptacles, the receptacles and locking covers should be ordered separately, as the rails are not required.

Description
Self-Locking Coin Receptacles, Complete
with locking cover and rails
Receptacle only
Locking Cover only

Order No.
P-6001-B
P-60150
P-60311

Receptacle Carrying Case

This sturdy fibre case for collectors holds 9 self-locking coin receptacles. Equipped with a hasp so that it may be sealed for shipment. A "snap-on" carrying handle is also available.

Description
Coin Receptacle Carrying Case
Handle for Carrying Case

Order No.
S-5651
S-5652

Lead Seals and Tool

For re-sealing self-locking coin receptacles, lead seals are supplied in boxes of 1000. They are attached by means of a special tool, which may be furnished engraved with company initials or symbol on special order.

Description
Lead Seals (in lots of 1000 only)
Sealing Tool

Order No.
S-5648
S-5649



Corner Bracket

Sturdy cast iron bracket, finished in black japan, for mounting paystations most accessibly in the corner of a telephone booth or other confined space (not required for Alcoa Aluminum Outdoor Telephone Booth). Provision is made for entry of the line wires. Shipping weight: 18 lbs.

Description
Corner Bracket

Order No.
153-A

Shelf Bracket

For mounting paystations on a horizontal surface such as a shelf or counter. Attractively designed and finished in black japan. An opening is provided for entry of the line wires. Shipping weight: 15 lbs.

Description
Shelf Bracket

Order No.
139-A



Wood Backboard

Heavy wood board, shaped and drilled for wall mounting of paystation and ringer box (immediately below) as a unit. Finished in black.

Description
Wood Backboard

Order No.
S-5650

Long Line Relay

Used with prepay type paystations only to improve the reliability of operation on lines exceeding 750 ohms resistance. Furnished in a black bakelite enclosure for separate mounting.

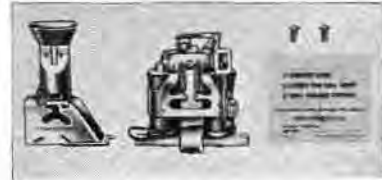
Description
Long Line Relay

Order No.
P-70284

Ringer Boxes

Although all Series 80 (and previous Series 60) Paystations are equipped with all required transmission components, no provision is made for signalling incoming calls. Where such signal is required, it is necessary to install a ringer and ringing condenser, which may be in the form of a Type 32 Ringer Box (page 23) or a Loud-Ringing Bell (page 60), and must be ordered separately.

Paystation Conversion Kits



Conversion Kits are available for changing many models of existing paystations to different types of service or operation, where applicable. Each kit is engineered for maximum ease of installation and minimum out-of-use time. In some cases minor wiring changes are required but most conversions can be performed with only the use of a screwdriver and pliers. All necessary additional and replacing parts as supplied, together with detailed and easy-to-follow instructions. New wiring diagrams and instruction cards are furnished, if required.

When ordering conversion kits, please specify the quantity required, the exact type of paystation to be converted (as indicated by the type number shown at the top of the wiring diagram on the inside of the upper housing) and the service or operation to which the change is to be made.

For Conversion From 5-Cent to 10-Cent Service

5-Cent service prepay and local prepay types of paystations may be converted to 10-cent service (2 nickels or 1 dime) and 5-cent service semi-postpay type paystations may be converted to 10-cent service (1 dime only). These conversions apply to automatic paystations (with dial) only. In some cases the existing dial must be replaced with a special dial having additional shunt springs.

When ordering, specify quantity, exact type number of paystation and "Conversion Kits for 10-Cent Service".

For Conversion of Operation

Manual to Automatic Operation

Existing paystations for manual service can be adapted for automatic operation by simply replacing the dial hole cover (dial blank) with a dial (with extended number plate) and dial wiring, and changing the instruction card. For the older types with fixed transmitter and hand receiver, and with the instruction card over the dial hole, a new card holder and angle bracket are also supplied.

When ordering, specify quantity, exact type number of paystation and "Conversion Kits for Automatic Operation".

Manual Postpay to Prepay Operation

Manual postpay types of Paystations can be converted to prepay operation by installing and wiring in the necessary coin-control relay and hopper and changing the instruction card.

Description

Conversion Kit for Prepay Operation of
Paystation* with handset

Order No.

P-70252-B

Conversion Kit for Prepay Operation of
Paystation* with hand receiver

P-70252-D

* Specify exact type number.

Manual Postpay to Automatic Semi-Postpay Operation

Manual Postpay types of paystations can be converted to automatic semi-postpay operation by installing and wiring in the necessary polarized relay assembly, dial, etc., and changing the instruction card.

When ordering, specify quantity, exact type number of paystation and "Conversion Kits for Automatic Semi-Postpay Operation".

Hand Receiver to Handset Operation

Older types of paystations with fixed transmitter and hand receiver are convertible to modern handset operation by removing the transmitter, receiver and switch-hook, and installing a handset, cradle hook and coin-signal transmitter. For manual paystations, three black-japanned slotless blanking screws are provided for covering the transmitter mounting holes; for automatic paystations, a plate is provided for mounting the instruction card holder (removed from the top of the paystation) over the transmitter mounting holes.

When ordering, specify quantity, exact type number of paystation, "Conversion Kits for Handset Operation" and with straight or Coiled Kord handset cord.

For Conversion to Series 80 Standards

Older types of paystations can be converted to provide the same superior transmission and reception as the new Series 80 Paystations. Conversion kits include the same handset, hookswitch, induction coil and line compensator as supplied with new Series 80 Paystations, plus all mounting parts and a circuit label.

When ordering, specify quantity, exact type number of paystation and "Conversion Kits for Series 80 Standards".

Installation and Maintenance

Detailed instructions for the installation, testing, adjusting and maintenance of Type 62 Prepaystations, illustrated by many photographs and diagrams, are given in Automatic Electric Technical Bulletin 702-62, copies of which are available on request. Except for the transmission circuit, these instructions also apply to the Type 82 Prepay Paystations as the coin mechanism and other mechanical parts are the same.

Similar instructions for the Type 86 Postpay Paystations are given in Automatic Electric Technical Bulletin 702-86, copies of which are also available on request.

Attachment and Compact Paystations

These units provide paystation service for manual central battery and magneto exchanges with a minimum investment in special facilities. Existing standard telephone instruments are utilized and no special equipment is required at the exchange, so that the only cost is that of the paystations themselves.

These paystations provide postpay service only, payment for calls being made after connection has been established by the operator, hence no control equipment is required at the exchange and there is no provision for the refunding of coins.

Types 11 and 11A Side-Mounting Paystations for Wall Telephones



Designed for use with manual central battery or magneto wall telephones having a hand receiver. It is mounted beside the wall telephone, having a mounting plate which extends behind the telephone. This plate conducts the sound of the coin signals through the case of the telephone to the transmitter, thence to the operator.

Type 11 has a coin compartment, with lock, with a capacity of approximately \$10.00. Type 11A has a larger coin compartment, with a capacity of approximately \$13.50.

Type	Dimensions	Shipping Weight	Order No.
11	4½" x 3" x 9" high	13 lbs.	P-70087
11A	4½" x 3" x 11" high	13 lbs.	P-70095

Types 11J and 11AJ Universal Mounting Paystations for Desk or Wall Telephones



Designed for use with manual central battery or magneto desk or wall telephones having either a hand receiver or a handset. They are supplied with a universal mounting plate for either shelf or wall mounting. Mechanical connection to the telephone is not required, so that these paystations may be mounted in any convenient location nearby. They are equipped with a coin signal transmitter which is connected to the transmitter circuit of the associated telephone.

Type 11J has a coin compartment, with lock, with a capacity of approximately \$10.00. Type 11AJ has a larger coin compartment, with a capacity of approximately \$13.50.

Type	Dimensions	Shipping Weight	Order No.
11J	4½" x 3" x 9" high	16 lbs.	P-70104-B
11AJ	4½" x 3" x 11" high	16 lbs.	P-70103

Type 23J Compact Handset Paystation



This type is supplied complete with a Type 41 Handset with straight cord (page 46), handset hook and hook-switch, making a paystation unit which may be used with any standard central battery or magneto ringer box containing suitable transmission components (induction coil, condenser, etc.). Equipped with coin signal transmitter and universal mounting plate for either shelf or wall mounting. The coin compartment, with lock, has a capacity of approximately \$20.00.

Type	Dimensions	Shipping Weight	Order No.
26J	6" x 4½" x 10½" high	21 lbs.	P-70268-G9

Automatic Electric Telephone Colours

Many Automatic Electric telephones and accessories are now available in ten decorative colours. These colours, which are illustrated in the following insert, are those which research and experience have proved to be most popular.

They are smart, modern hues that will delight your subscribers, sell more extensions and create valuable goodwill. These different, exciting shades catch the eye,

capture faithfully the mood of a room and accent it most effectively.

Not only in homes, but also in offices, stores and other commercial locations are telephone instruments in demand to harmonize with or to set off decorative schemes.

With the ten colours offered by Automatic Electric to choose from, every taste can be satisfied.

Merchandising Aids

Several useful aids from Automatic Electric will help you to sell telephone instruments. These include invoice stuffers, which also double as easily-pocketed counter literature; direct mail literature, such as the following insert; counter or window stand-up display cards; colour selectors with samples of the actual instrument colours; and miniature Type 80 Desk Telephones in all ten

colours for counter or window displays. A "do-it-yourself" display sketch book gives many practical ideas for eye-catching counter and window displays.

Most of these valuable selling aids are available without charge, others at a very nominal cost. Contact our nearest office for full details.

Replacement Parts in Colour

Not only are complete Automatic Electric telephone instruments available in ten colours, as well as black, but all coloured components of these are easily obtained and may be ordered without difficulty.

In the lists of replacement parts presented in this catalogue, the order numbers of coloured components are followed by a single asterisk. In such cases, a suffix letter should be added to the order number to indicate the colour desired, in accordance with the accompanying table.

<i>Colour</i>	<i>Suffix</i>
Black	A
Sand Beige	B
Dawn Grey	C
Jade Green	D
Classic Ivory	E
Garnet Red	F
Turquoise	G
Sunlight Yellow	J
Forget-me-not Blue	K
Camillia Pink	L
Gardenia White	M

The Outdoor Telephone



The Automatic Electric Outdoor Telephone is designed for long, trouble-free service in locations exposed to the weather or excessive humidity, such as taxi stands, police and fire reporting service, loading platforms, boiler rooms, lumber yards, mills, etc. No booth or cabinet is required, as the completely weatherproof construction safeguards the instrument from the elements.

The sturdy cast aluminum-alloy housing, with black crackle finish, may be pole or wall mounted with four bolts or lag screws. The door is closed tightly against a rubber gasket by means of the cam action of the handle and is furnished with a lock and keys which may be used to limit the use of the telephone to authorized persons.

The efficient anti-sidetone circuit provides clear transmission and the unique design of the sound vents in the

housing allows the large ringer gongs to be heard easily, yet prevents water from splashing into the interior from below. For extremely noisy locations, Outdoor Telephones may be equipped with Type 25 Anti-Noise Handsets (see page 43) and separate weatherproof loud-ringing bells (see page 60) may be used.

The interior panel, on which the hookswitch and dial are mounted, is easily removed to expose the other circuit components and wiring for installation and maintenance. This panel hangs on a hook provided for that purpose on the inside of the door.

Openings at the top and bottom of the housing are tapped for 1/2 inch conduit to bring in the line wires. All connections are made through a terminal strip and can be changed easily, if required.

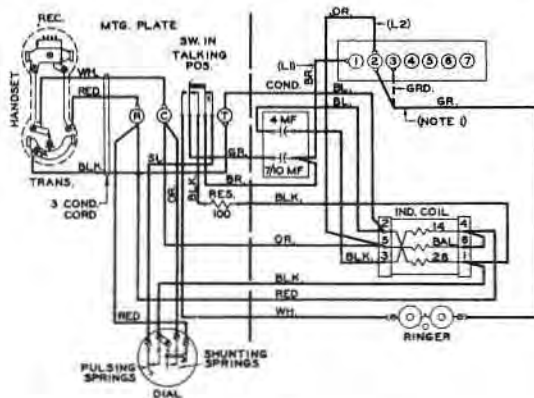
Dimensions: 12" high, 8 5/8" wide and 8 1/2 inches deep.

Shipping Weight: Approximately 43 lbs.

How to Order

Cat. No.	Description	Order No.
AM-10	Outdoor Telephone, equipped with Type 41 Handset, Coiled Kord, 1-0 Type 51 Dial, straight line ringer for metallic or ground ringing and 2 keys for door lock.	L-975-AO
—	Outdoor Telephone, same as Cat. No. AM-10 above, except equipped with ABC dial.	L-975-EO
—	Outdoor Telephone, same as Cat. No. AM-10 above except equipped with Type 25 "Anti-Noise" handset.	L-975-DO*
AM-12	Outdoor Telephone, same as Cat. No. AM-10 above except less dial and with dial blank	L-975-BO

* Specify 1-0 or ABC dial.



Wiring Diagram

Notes:

- (1) For metallic ringing, connect green wire to terminal 2 and for ground ringing connect to terminal 3.
- (2) If bells tap when dialing from another telephone on the line, reverse connections at the ringer.
- (3) When no dial is used, connect slate and black dial wires under one terminal of dial hole cover plate and tape ends of orange and red dial wires.
- (4) "X" contacts to break first and make last.

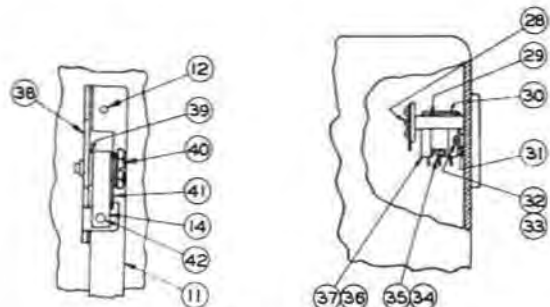
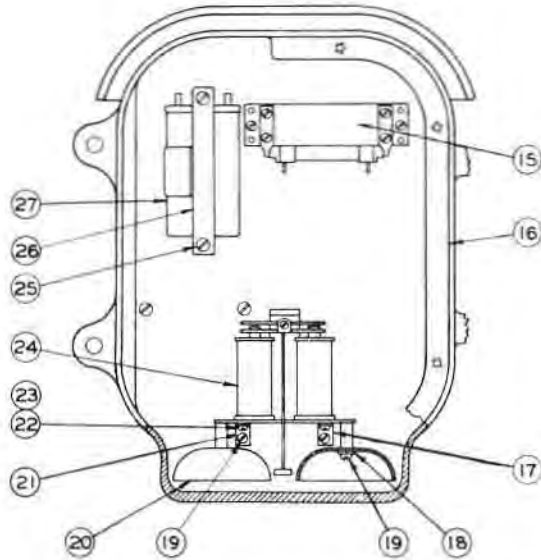
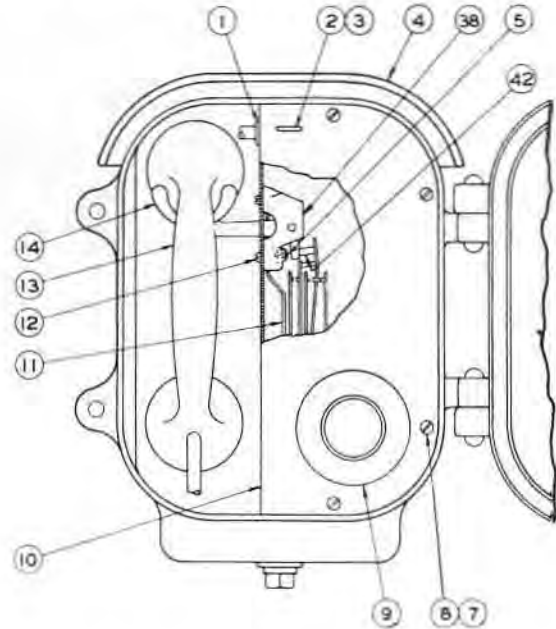
If harmonic ringer is required, prefix the order number with the word "Special" and add "with — cycle ringer", specifying the frequency.

For separate weatherproof loud-ringing bells, see page 60.

Replacement parts are listed on the following page.

Replacement Parts for the Outdoor Telephone

Ref. No.	Description	Order No.
1	Handset Cord Rubber Grommet	D-67431-A20
2	Screw Eye	D-76931-A
3	Screw Eye Hex. Nut	D-77124-A
4	Housing Assembly	D-48312-A
5	Hook Stop Screw	D-760158-A
7	Mtg. Plate Screw Tapped Washers (4)	D-17203-B
8	Mounting Plate Screws (4)	D-76933-A
9	Dial Blank	D-49514-A
	Type 51 Dial —(1-0)	B-84130-A
	—(ABC)	B-84132-A
	(See page 50 for Dial Parts)	
—	Dial Mounting Screws (3) (not shown)	4-36 x 3/16" RHBfMS
10	Mounting Plate	D-78944-B
11	Hookswitch and Bracket Assembly	D-731355-A
12	Hookswitch Mounting Screws (2)	D-76744-E
13	Type 41 Handset Assembly complete with Coiled Kord	L-885-FO
	(See page 46 for Handset Parts and page 59 for Cords)	
14	Switchhook	D-62134-A
15	Terminal Strip Assembly	D-15513-A
16	Mounting Plate Gasket	D-67278-A
17	Ringer Mounting Bracket (right)	H-60694-11
18	Ringer Bkt. and Gongs Lockwashers (4)	D-17375-A
19	Ringer Bkt. and Gongs Screws (4)	10-32 x 5/16" RHfMS
20	Ringer Gongs (2)	H-66551-24
21	Ringer Mounting Bracket (left)	H-60694-10
22	Ringer Mounting Screws (2)	8-32 x 5/16" RHfMS
23	Ringer Mounting Lockwashers (2)	D-17376-A
24	Low Impedance Ringer Movement — Straight Line	D-56292-D
	— Harmonic	D-56300*
	*See page 55 for ringer frequency suffix letter, also for Ringer Movement Parts.	
25	Condenser Bracket Screws (2)	6-32 x 1/4" RHfMS
26	Condenser Mounting Bracket	H-47612-4
27	Condenser (4. and 7 MF)	D-68640-A
28	Terminal Strip Mtg. Screws (2)	5-40 x 1/4" RHfMS
29	Term. Strip Mtg. Screw Bushings (2)	D-750185-A
30	Induction Coil Mounting Bracket	D-730987-A
31	Ind. Coil Mtg. Bkt. Spacers (2)	D-17197-A
32	Ind. Coil Mtg. Bkt. Shakeproof Washers (2)	D-17366-A
33	Ind. Coil Mtg. Bkt. Mtg. Screws (2)	6-32 x 1/4" RHfMS
34	Ind. Coil Mtg. Screw Shakeproof Washers (2)	D-17468-A
35	Induction Coil Mounting Screws (2)	5-40 x 1-7/16" RHfMS
36	Induction Coil	D-282996-AR
37	Ind. Coil Armature Keeper	D-71561-A
38	Hookswitch Mounting Bracket	H-66551-26
39	Switchhook Spacer	D-17528-A
40	Switchhook Bearing Screw	D-760217-A
41	Switchhook Tension Spring	D-109567-A
42	Switchhook Buffer	D-75453-A



Do not order by above numbers—see table

The Type 10 Portable Telephone



This is a complete magneto telephone in portable form, specially designed for hard outdoor use and particularly suitable for construction and maintenance crews, emergency service, etc. It is weatherproof, compact and light in weight.

The local battery talking circuit is designed for efficient transmission with low bridging losses. The transmitter connects into the circuit by operation of a "push to talk" button in the handset handle. When this button is depressed, a high resistance is placed in series with the receiver to prevent excessive drain on the battery. During the listening period, only the receiver is in circuit and the transmitter, being disconnected, does not pick up surrounding noise, such as passing traffic.

A single gong ringer and a compact yet powerful insulated generator with folding crank are provided. Where signalling facilities are not required, telephones may be supplied without either or both the ringer and generator.

Space is provided inside the telephone for the talking battery which consists of four standard flashlight cells. Large binding posts facilitate line connections.

All components are contained in a sturdy case of laminated wood covered with tough fibre, with metal protected corners, hinged top with snap lock and adjustable web shoulder strap. Heavy metal guards protect the ringer gong and hinged generator crank.

Dimensions: 13" long, 5 $\frac{1}{8}$ " wide and 8 $\frac{1}{4}$ " high.

Shipping Weight: Approximately 12 lbs.

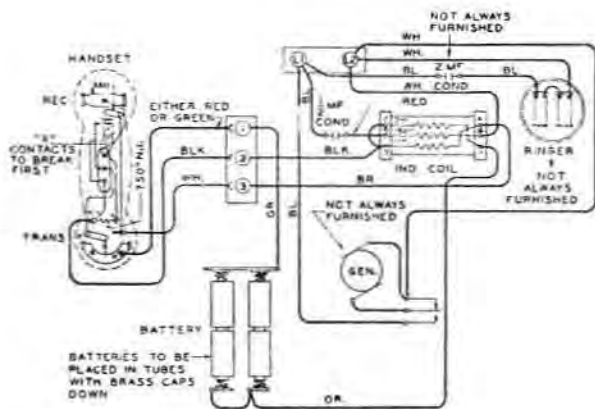
How to Order

Cat. No.	Description	Order No.
AG-18	Type 10 Portable Telephone with generator and ringer	L-7021-A1
AG-19	Type 10 Portable Telephone with generator, less ringer	L-7021-A0
AG-20	Type 10 Portable Telephone less generator, with ringer	L-7021-A3
AG-21	Type 10 Portable Telephone less generator and less ringer	L-7021-A2

Notes:

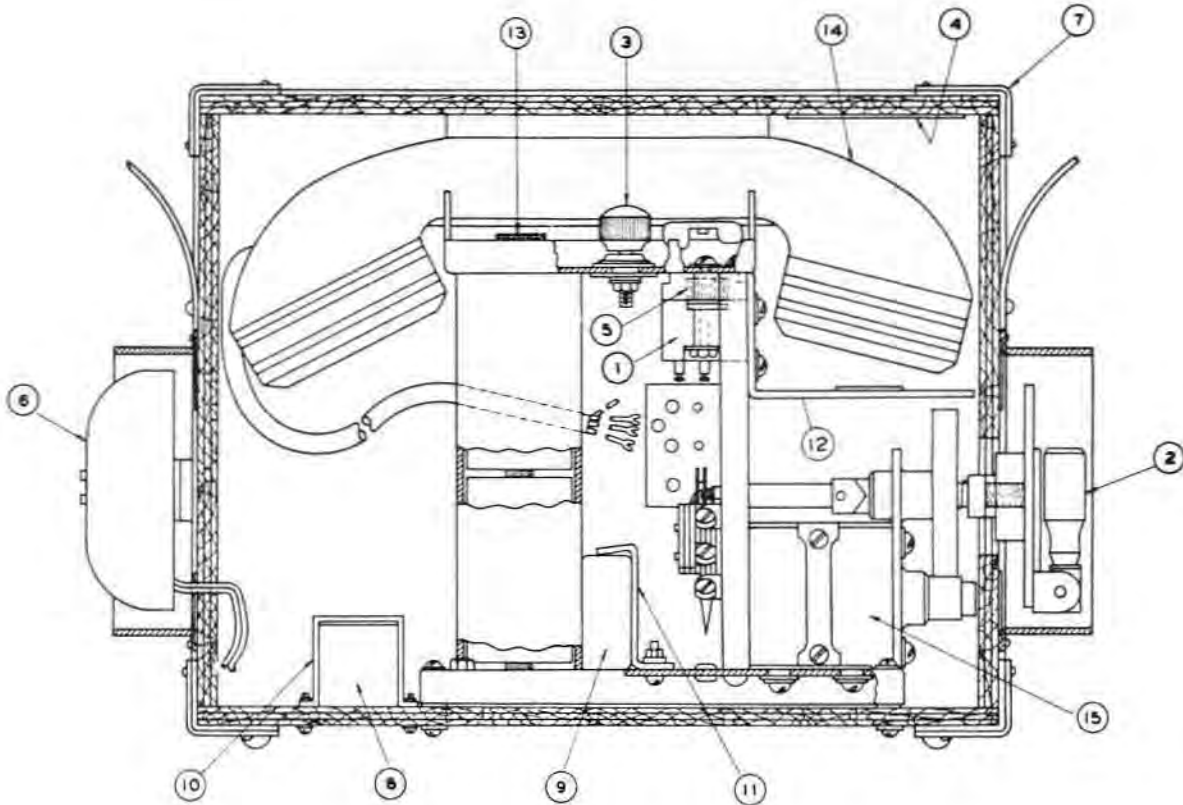
- (1) These telephones are supplied less dry cells. Four "D" size flashlight cells are required, which may be ordered from our Telephone Supplies Catalogue TS-56, page 75.
- (2) A complete kit for modifying old Type 10 Portable Telephones is available, including new receiver assembly, Coiled Kord for handset and insulating parts for generator. Order as No. RS-90 Type 10 Portable Telephone Conversion Kit.
- (3) Universal Line Pole, for quickly connecting portable telephones to open line wires, may be ordered from our Telephone Supplies Catalogue TS-56, page 73.

Replacement parts are listed on the following page.



Wiring Diagram

Replacement Parts for the Type 10 Portable Telephone



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Induction Coil	D-283022-AR
2	Generator Crank Assembly	H-880479-1
3	Binding Posts (2)	D-36090-A
4	Circuit Label	D-53728-A
5	Induction Coil Armature Keeper	D-71561-A
6	Ringer Assembly	D-56454-A
7	Carrying Case Assembly	H-64660-1
8	Ringer Condenser (2. MF)	D-68195-A
9	Talking Condenser (.5 MF)	D-68269-A
10	Ringling Condenser Bracket	D-730787-A
11	Talking Condenser Bracket	D-731096-A
12	Guard Bracket	D-731097-A
13	Battery Retaining Plate Assembly	D-780222-A
14	Type 25 Handset Assembly complete with Koiled Kord*	L-878-DO
15	Generator Assembly	D-9051-B

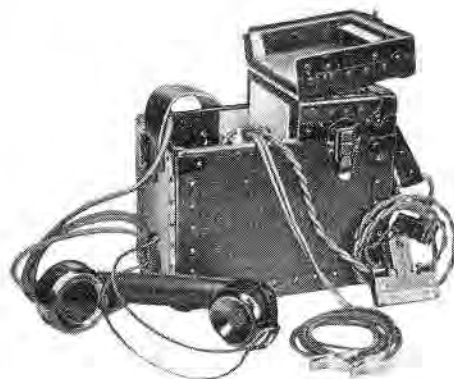
(See page 43 for Handset Parts and page 59 for Handset Cords)

*Straight handset cord shown in diagram now replaced by Koiled Kord as standard.

The West Test Set



Leather Case



Fibre Case

The West Test Set is a complete portable line-testing unit and telephone for the man out on the job. It is simple and reliable, and with it even an inexperienced operator, unaided, can quickly locate any of the following faults:

- | | |
|---------------------|-----------------------------|
| 1. Grounds | 7. Poor ground rods |
| 2. Shorts | 8. Swinging contacts |
| 3. Opens | 9. Short-circuited windings |
| 4. Crosses | 10. Tree grounds |
| 5. "High" joints | 11. Leaky house wiring |
| 6. Faulty arresters | 12. Faults in twisted pairs |

It operates without regard to the presence of bridged inductive windings of comparatively low resistance, such as ringer, repeating, or relay coils.

A compact, convenient hand telephone is an outstanding feature of the West Test Set. The hand unit is light and flexible and can be folded for carrying within the case. A special headband is provided to hold it in place for those tests that require the use of both hands. The telephone can be used on common battery lines without wasting dry cell energy.

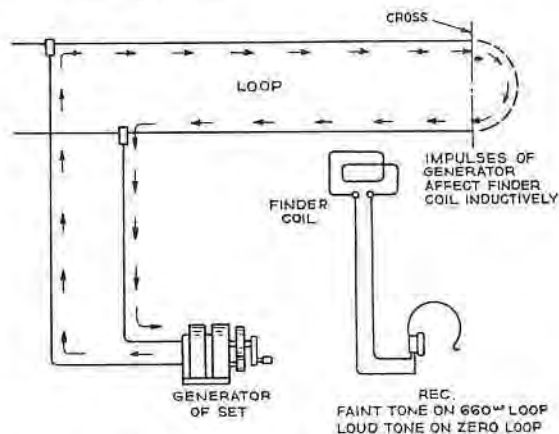
The many advantages of the West Test Set have made it the world's most widely used lineman's set. It is made of standard telephone parts. A magneto-generator, test lamp and level key are mounted in the case, and a pair of test clips, a finder coil, and the handset are removed from the case when making tests.

No buzzer, vibrator, or battery is used for supplying the test tone. The tone is produced by a commutator spring which is timed to discharge the capacity peaks from a condenser at regular intervals. Through the two test clips (see diagram), it passes over the line, and since the circuit is completed only

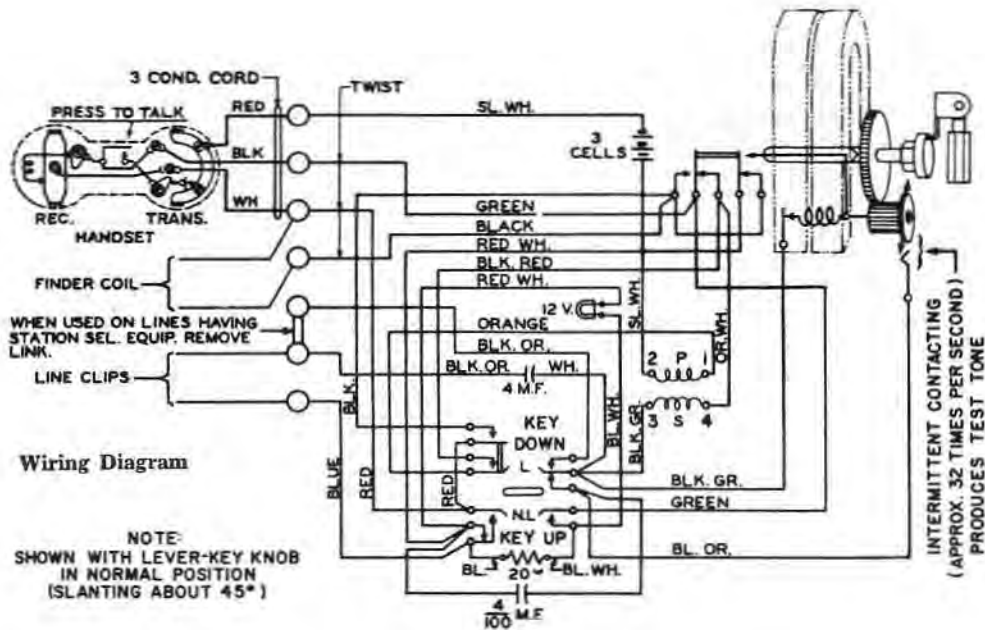
at the fault it flows only in that direction. The tone is therefore induced into the finder coil when the coil is placed on the line *between the test clips and the fault*. The volume of the tone heard in the receiver is dependent on the distance to the fault, and with a little experience the tester learns to estimate the distance with surprising accuracy.

The test clips are provided with needle points, to permit testing on insulated wire. The finder coil is fastened to a spring clip which is easily clamped over the line being tested.

If the resistance of the circuit loop through the fault does not exceed 600 ohms, the tone test may be supplemented by a lamp test. For this test, the lever key is operated, closing the circuit to the test lamp. The lamp will then glow when the generator is operated, and its brilliance will indicate the distance to the fault. This test may be used to locate even momentary shorts, such as swinging lines.



The handset (illustrated) and three flashlight batteries mounted in the case, are used only for telephone (Continued on page 38)



(Continued from page 37)

communication. This is provided by operating the lever key in the proper direction. High-efficiency circuits are used, the same as in standard magneto telephones. Transmission is excellent, and ringing signals carry distinctly over long and heavily-loaded lines.

The West Test Set is contained in a carrying case of leather, or of laminated wood, with an outer covering of black fibre. It is weatherproof, and groundproof except by intention during use. An adjustable carrying strap is provided, and the set may be conveniently carried in the hand or slung over the shoulder. All working parts are mounted on a separate frame which fits snugly into the case without bolts or screws, and may be removed without tools.

Complete instructions for the operation of the West Test Set and the making of all tests are given in Automatic Electric Technical Bulletin 703-36, copies of which are available upon request.

Dimensions: 9" long, 5" wide and 7½" high.

Shipping weight: Approximately 12 lbs.

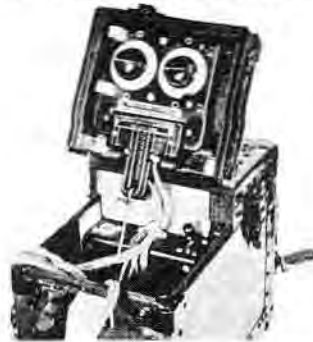
How to Order

Cat. No.	Description	Order No.
TA-21	West Test Set in Leather Case*	L-760-A0
TA-20	West Test Set in Fibre Case*	L-760-A2
TA-23	West Test Set in Fibre Case, Complete with West Ground Tester*	L-762-A1
TA-22	West Ground Tester only	MC-4025

*Supplied with three "D" size flashlight cells. Replacement flashlight cells may be ordered from our Telephone Supplies Catalogue TS-56, page 75.

Replacement parts are listed on the following page.

The West Ground Tester



Ground tests with the West Test Set give an indication of a ground but no measurement of its actual resistance. To provide such a measurement, also other non-reactive resistances, the West Ground Tester may be used in conjunction with the West Test Set. It is designed to mount in the cover of the set (fibre case only) and connections between the two units are made by means of flexible cords.

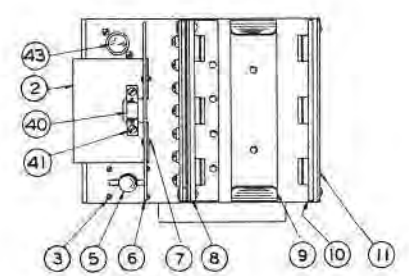
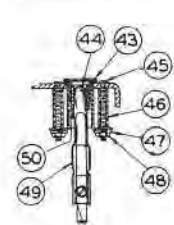
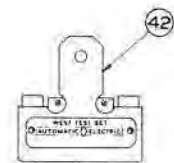
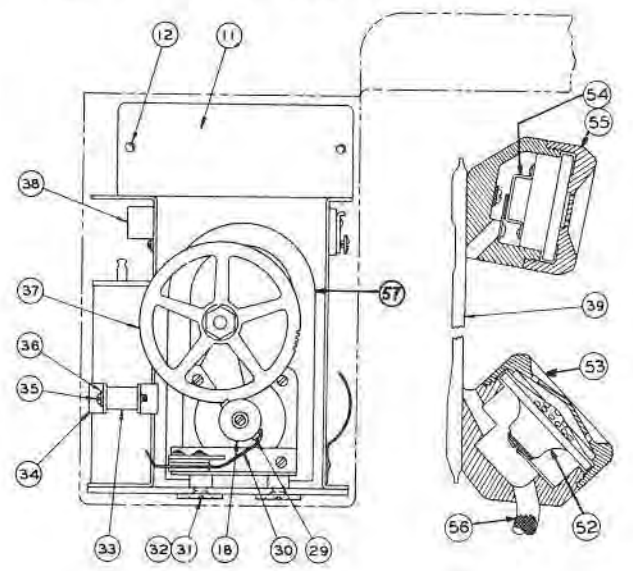
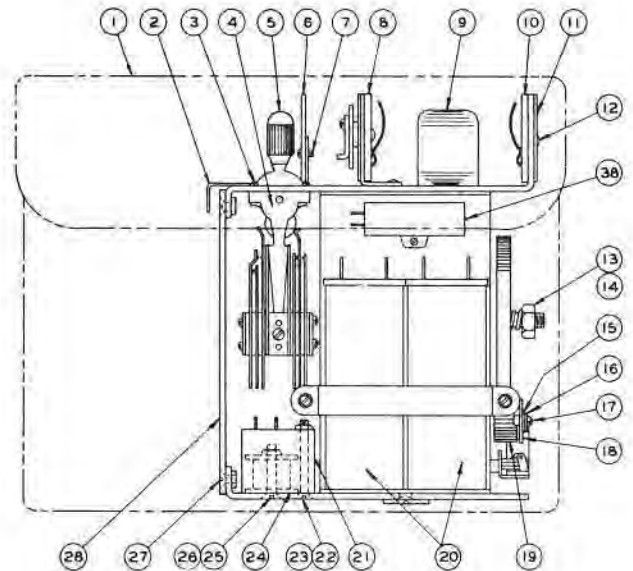
The West Ground Tester contains two rheostats controlled by dials which are accurately calibrated to indicate directly the resistance being tested. The maximum measuring capacity is 1000 ohms, which is more than ample for practical ground testing.

The operation of the West Ground Tester is based on the well known induction balance principle. While the generator crank is being turned, the rheostats are adjusted until no tone, or a minimum of tone, is heard in the receiver. The sum of the rheostat dial readings is then the resistance of the circuit being measured.

Complete instructions for the use of the West Ground Tester are given in Automatic Electric Bulletin 577, copies of which are available upon request.

Replacement Parts for the West Test Set

Ref. No.	Description	Order No.
1	Case Assembly with Strap—Leather —Fibre	M-6725-1 H-69948
2	Bracket (for Leather Case only)	MP-5122
3	Lever Key Mounting Screws (4)	D-76750-A
4	Lever Key Assembly	D-322387-A
5	Lever Key Handle	MP-4195-..
6	Insulating Guard	D-44880
7	Insulating Guard Mounting Screws (2)	D-76286-B
8	Terminal Block and Support Assem.	D-15718-A
9	Battery Retaining Bracket	MP-4326
10	Terminal Block Assembly	MP-4320
11	Terminal Block Insulator	MP-4327
12	Terminal Block Rivets (2)	MP-4323-E
13	Generator Collar Nut	AP-8384
14	Generator Helical Spring	AP-8383
15	Generator Pinion Lock Washer	D-17170-A
16	Generator Pinion Washer	D-17198-C
17	Generator Pinion Screw	4-36 x 3/8" RHIMS
18	Generator Pinion Insulating Washer	MP-4341
19	Generator Pinion (Small)	AP-8375
20	Tone Condensers (2.MF) (2)	D-68195-A
21	Induction Coil	D-284113-A
22	Induction Coil Mtg. Screw Hex. Nuts (2)	D-7721-B
23	Induction Coil Mounting Screws (2)	6-32 x 1 1/8" FHBrMS
24	Resistance Coil (20 ohms)	D-281114-A
25	Res. Coil Mtg. Screw Hex. Nut	D-77344-B
26	Resistance Coil Mounting Screw	8-32 x 7/8" FHBrMS
27	Frame Assembly Screws (4)	5-40 x 1/4" FHBrMS
28	Vertical Support Plate	D-78916-A
29	Tone Interrupter Disc and Generator Pinion Washer	MP-4342
30	Tone Interrupter Spring	MP-3833
31	Generator Mounting Washers (2)	MP-3834
32	Generator Mounting Screws (2)	12-24 x 1/2" FHIMS
33	Condenser Clamp Spacers (2)	MP-6133
34	Condenser Clamp	MP-4343
35	Condenser Clamp Screws (2)	5-40 x 3/4" RHBrMS
36	Condenser Clamp Screw Washers (2)	D-17194-C
37	Generator Gear Assembly (Large)	AP-2051
38	Talking Condenser (.04 MF)	D-68636-A
39	Headset Assembly complete with Head Band and Cord	L-9004-A0
40	Headset Cord Clamp	MP-3861
41	Headset Cord Clamp Screws (2)	D-76809
42	Finder Coil and Clip Assembly	D-283727-A
43	Lamp Cap	MP-4330-A
44	Lamp (12 volt)	D-9490-A
45	Lamp Jack Assembly Mounting Screws (2)	D-76810
46	Lamp Jack Assembly Mounting Spacers (2)	MP-4333
47	Lamp Jack Assem. Mtg. Screw Lock Washers (5)	D-17170-F
48	Lamp Jack Assem. Mtg. Screw Hex. Nuts (2)	D-7721-F
49	Lamp Jack Assembly	D-42562-A
50	Lamp Jack Sleeve	MP-4790
51	Finder Coil Cord (2-conductor) with Clips (Not Shown)	MP-3864-A
52	Receiver Assembly	D-51021-A
53	Receiver Ear Cap	D-67304-A
54	Transmitter Assembly	D-38363-A
55	Transmitter Mouthpiece	D-38306-A
56	Headset Cord (3-conductor)	D-543017-A
57	Generator Assembly	AC-90117-A
—	Generator Crank (Not Shown)	MP-4312-A
—	Head Band (Not Shown)	D-65420-A
—	Line Cord (1-conductor) with Test Clip (Not Shown) (2)	MP-3863-A
—	Test Clip only for Line Cord (Not Shown) (2)	D-15909-A



Do not order by above numbers—see table

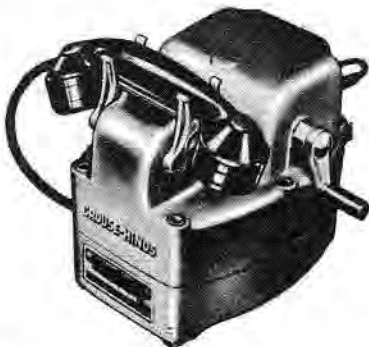
Telephones for Hazardous Locations



AUTOMATIC TELEPHONE — Wall Model



MANUAL TELEPHONE — Desk Model



MAGNETO TELEPHONE — Desk Model

The use of conventional telephone instruments is not permitted in hazardous areas where explosive vapors or dust may be ignited by even a low-voltage spark. In refineries, gas plants, grain elevators and mines, the danger of explosions is generally recognized and guarded against. But it also exists — and is often more treacherous because it is less recognized — in such places as hospital operating rooms, paint shops, cleaning and finishing departments of metal-products plants, dry-cleaning establishments and many other places where telephone service must be provided.

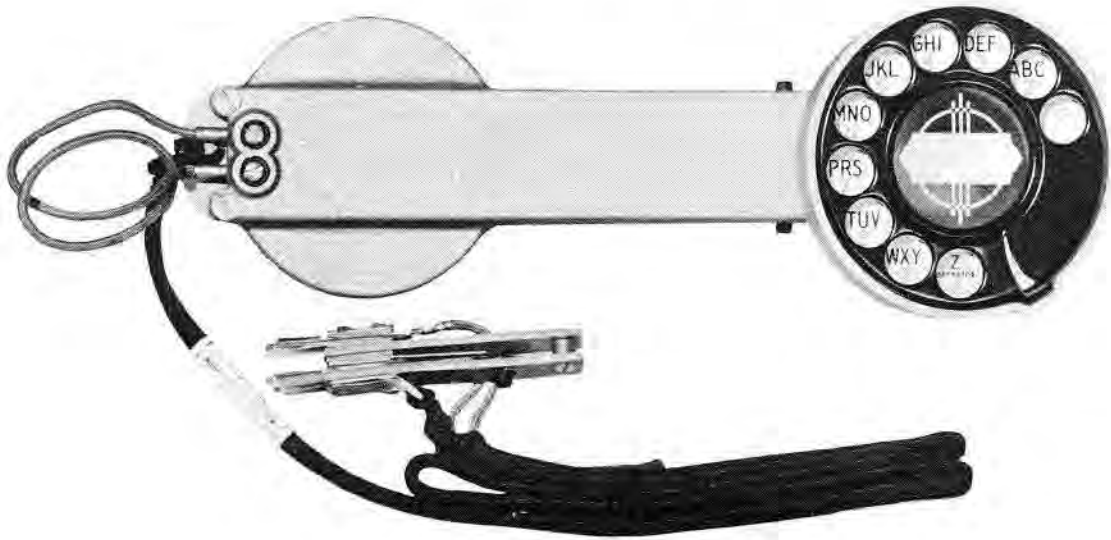
Telephones for Hazardous Locations, a joint product of Automatic Electric and Crouse-Hinds, are designed to meet insurance requirements for telephone service in such locations. The wide choice of instruments and auxiliary signals available makes it possible to provide telephone service in full compliance with safety regulations.

These telephones are available in both desk and wall models and each model is provided for three types of service — automatic, manual and magneto. Surprisingly enough, these telephones, even with their special housings, are only slightly larger than ordinary telephones and are just as easy to use. They provide all the advantages of modern telephone service — plus safety.

In addition to the actual telephone units, there are signals of various types, line and power cut-off switches, relays and other accessories and fittings available for a complete installation.

Only a few typical telephones are illustrated on this page. Complete listings and illustrated descriptions are given in Automatic Electric Circular 4076-B, and instructions for installation are fully covered in Automatic Electric Bulletin 626. Copies of these publications are available upon request.

The Hand Test Telephone



The Hand Test Telephone is essentially a common battery series telephone with a dial, in a very compact and portable form, specially designed for test purposes. All components are assembled in a sturdy aluminum-alloy housing and the dial is protected by a heavy guard.

The telephone has two pushbuttons, marked R and C. Pressing the R button adds a 1200-ohm resistance to the dialing and talking circuit, thus simulating a long (high resistance) subscriber loop for quick checks of Strowger switch pulsing relays, stepping magnets, etc. Pressing the C button opens the impedance coil circuit and permits monitoring a line to ascertain if it is in use without interfering with dialing that may be in progress and without making disturbing clicks. It is also used as a hookswitch to release central office dial equipment between calls.

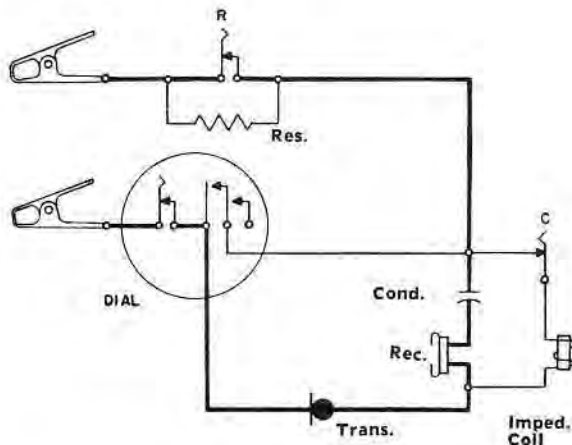
The instrument may also be used to identify the polarity of line wires.

For use by central office switchmen, a test plug, to be inserted into Strowger switch test jacks, is supplied. For use by station installers, inspectors and repairmen, two test clips are provided, which may be snapped onto line wires, terminal screws, ground connections, etc.

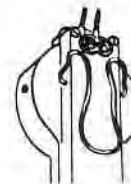
Optional accessories include a belt hook which fits behind the transmitter, providing a convenient means of carrying the instrument, and an aluminum-alloy bracket, for wall or switch frame mounting, for storage of the instrument at central offices or switchboard locations.

Overall dimensions are 3¼" x 3" x 8¾" long.

Shipping Weight: Approximately 3 lbs.



Circuit of Hand Test Telephone



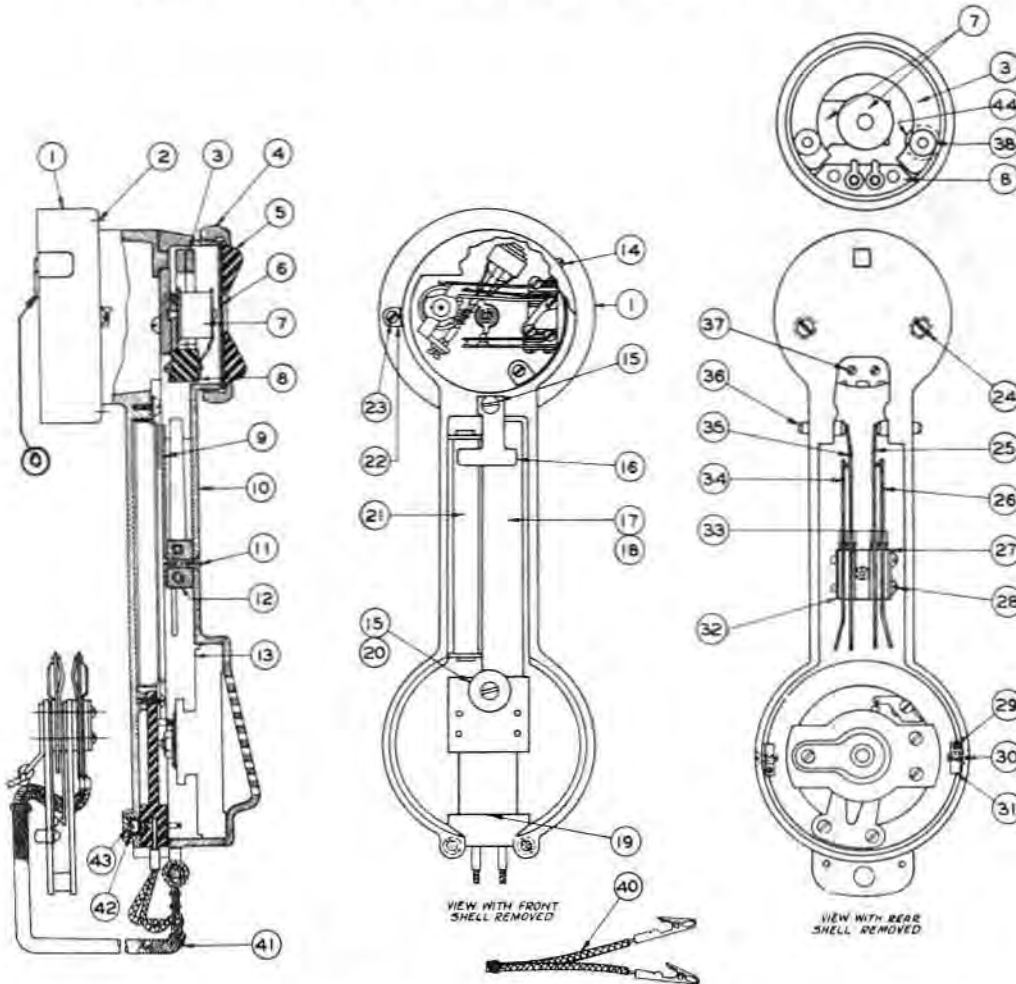
"Belt hook"
(optional accessory)
behind transmitter

How To Order

Description	Order No.
Hand Test Telephone, complete with cord and plug for Strowger switch test jack (as illustrated)	L-965-A8
Hand Test Telephone, complete with cord and test clips	L-965-A2
Belt Hook (optional accessory)	D-62117-A
Hand Test Telephone Bracket (for wall or switch frame mounting)	D-731450-A

Replacement Parts are listed on the following page.

Replacement Parts for the Hand Test Telephone



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.	Ref. No.	Description	Order No.
	Type 51 Dial (ABC) (Not Shown) (See page 50 for Dial Parts)	B-84132-A	24	Receiver Pole Piece Mtg. Screws (2)	6-32 x 11/16" RHIMS
1	Dial Guard	D-78926-A	25	R Push Button Spring (long)	D-104346-A
2	Dial Guard Mounting Screws (2)	4-36 x 1/4" RHIMS	26	R Push Button Spring (short)	D-104348-A
3	Receiver Permanent Magnets (2)	D-56169-B	27	Two-hole Spring Clamping Washer	D-1759-A
4	Receiver Clamp Ring	D-65043-B	28	Spring Clamping Screws (2)	4-36 x 7/8" RHIMS
5	Receiver Cap	D-67063-A	29	Adjustable Clamp Lug Screws (2)	D-76401-A
6	Receiver Diaphragm	D-38194-A	30	Adjustable Clamp Lug Screws (2)	4-36 x 1/4" FHIMS
7	Receiver Magnet and Coil Assem.	D-281456-AR	31	Adjustable Clamp Lugs (2)	D-77115-A
8	Receiver Terminal Block	D-15422-A	32	Two-hole Spring Tapped Washer	D-17125-A
9	Spring Assembly Cover	D-49215-A	33	Spring Insulators (6)	D-44463-A
10	Front and Rear Shell	D-52037-B	34	C Push Button Spring (short)	D-104347-A
11	Spring Assem. and Cover Screw	4-36 x 1/4" BDG-HBrMS	35	C Push Button Spring (long)	D-104351-A
12	Spring Assem. Mounting Block	D-66627-A	36	Push Button Plungers (2)	D-59091-A
13	Transmitter Assembly	D-38269-A	37	Receiver Terminal Screws (2)	4-36 x 3/16" RHBrMS
14	Dial Mounting Screws (2)	3-48 x 1/4" RHIMS	38	Receiver Auxiliary Pole Spacers (2)	D-63028-A
15	Condenser and Coil Clamping Screws (2)	6-32 x 1/4" RHIMS	40	Cord (2-conductor) and Test Clip Assembly (for L-965-A2)	D-542320-A
16	Condenser and Coil Clamp	D-730385-A	41	Cord (2-conductor) and Test Plug Assembly (for L-965-A8)	D-542725-A
17	Condenser Cover	D-49266-A	42	Cord Tip Clamping Screws (2)	6-32 x 1/4" FHIMS
18	Condenser (.43 MF)	D-68119-A	43	Cord Tip Clamping Screw Bushings (2)	D-75601-A
19	Resistance Coil (1200 ohms)	D-281559-A	44	Receiver Magnet Washers (2)	D-17197
20	Round Insulating Washer	D-44569-A			
21	Impedance Coil (95 ohms)	D-281733-A			
22	Dial Mounting Bracket	D-730252-A			
23	Dial Mtg. Bracket Screw	4-36 x 3/16" RHIMS			

The Type 25 "Anti-Noise" Handset



For satisfactory telephone conversations under noisy conditions, the Type 25 Handset is an effective and inexpensive solution in most cases. Simple to use, it efficiently blocks out all of the sidetone that disturbs both parties.

The sidetone is entirely eliminated when the user depresses the non-locking "press-to-listen, release-to-talk" pushbutton in the handle. This permits listening without interference of noise passing from the transmitter to the receiver. Releasing the push-button permits normal operation of the transmitter for talking.

The Type 25 Handset is standard on the Type 10 Portable Telephone and may be supplied with or installed

as an optional feature on the following Automatic Electric Telephones:

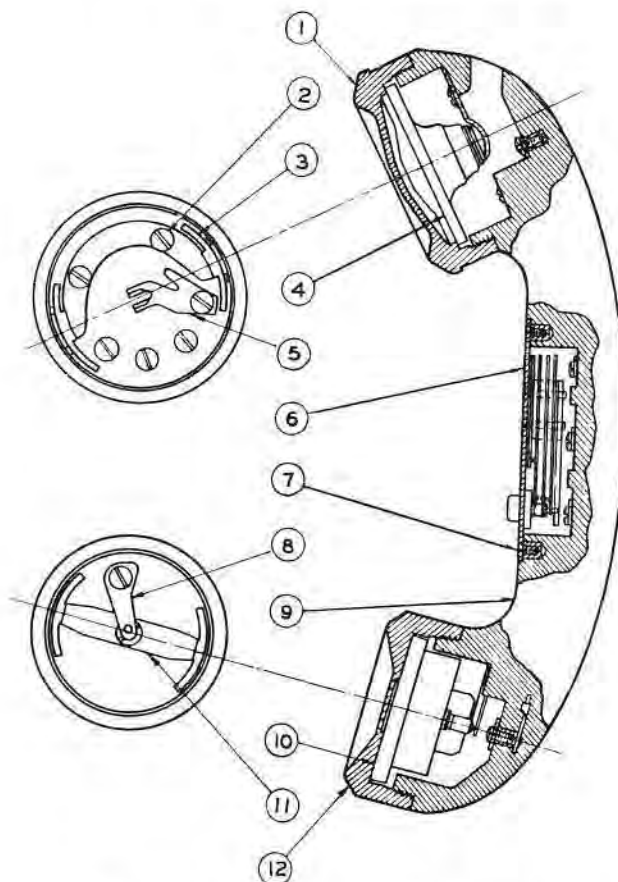
- Type 40 Desk Telephone (page 17)
- Type 50 Wall Telephone (page 18)
- Type 43 (but not 83) Compact Telephone (page 20)
- Type 47 Desk Telephone (page 21)
- Outdoor Telephone (page 33)

Available in black only, with straight or Coiled Kord.

Cat. No.	Description	Order No.
AF-64	Type 25 Handset with straight cord	L-857-AO
—	Type 25 Handset with Coiled Kord	L-857-DO

Replacement Parts

Ref. No.	Description	Order No.
1	Transmitter Mouthpiece	D-38306-A
2	Terminal Screws (12)	B-7600-B
3	Transmitter Clip Spring	D-109484-A
4	Transmitter Capsule	D-38363-A
5	Transmitter Contact Spring	D-109538-A
6	Switch Assembly	D-731373-B
7	Switch Mounting Screws (2)	D-76974-A
8	Receiver Contact Spring	D-109482-A
9	Handset Shell	D-52111-A
10	Receiver Capsule	D-51021-A
11	Receiver Clip Spring	D-109535
12	Receiver Ear Cap	D-67304-A
—	Straight Cord, 3-conductor (Not Shown)	CB-360053-R
—	Coiled Kord, 3-conductor (Not Shown)	D-543003-B



Do not order by above numbers—see table

The Type 27A "Hard-of-Hearing" Handset



This is a low-cost handset designed especially for those with minor hearing difficulties. A special magnetic receiver unit increases the volume of the incoming voice signal 12 decibels above normal.

For use by persons with normal hearing, a resistance pad attenuation network blocks the receiver gain. Depressing the pushbutton in the handle removes this network from the circuit and provides receiver amplification. For prolonged use, the pushbutton may be locked in the depressed position by a slide catch.

The Type 27A Handset may be used for replacement purposes on the same Automatic Electric Telephones as the Type 25 Handset (see page 43).

Available in black only, with straight cord or Coiled Kord.

Cat. No.	Description	Order No.
AF-71	Type 27A Handset with straight cord	L-9015-AO
—	Type 27A Handset with Coiled Kord	L-9015-DO

The Type 27B "Noisy-Locations" Handset



Permits conversations in certain noisy locations by means of a special magnetic receiver unit which amplifies the incoming voice signal 12 decibels above normal. In some cases, a condenser is coupled with the receiver to reduce sidetone from the transmitter. A special cup-shaped transmitter mouthpiece excludes most surrounding noises.

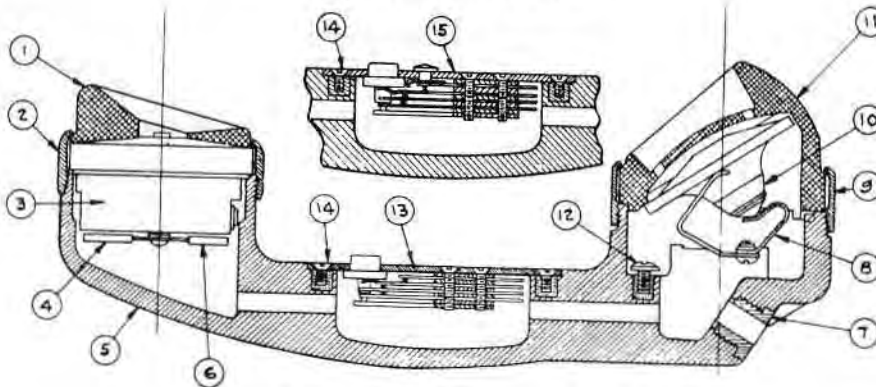
The operation of the handset is controlled by means of a "press-to-listen, release-to-talk" pushbutton in the handle. The gain becomes effective and sidetone is reduced only when the pushbutton is depressed; when released the handset operates as a regular handset.

The Type 27B Handset may be used for replacement purposes on the same Automatic Electric Telephones as the Type 25 Handset (see page 43) and on other older types. When ordering, please specify type of telephone with which the handset will be used.

Available in black only, with straight cord.

Cat. No.	Description	Order No.
AF-69	Type 27B Handset with straight cord	L-9014-AO

Replacement Parts



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.	No. Ref.	Description	Order No.
1	Receiver Ear Cap	H-56715-2	11	Transmitter Mouthpiece	D-38331-A
2	Receiver Retaining Ring	GH-76040-3	12	Stay Cord Screw	D-76351-A
3	Receiver Assembly	H-78094-B	13	Switch Assembly (Type 27B only)	D-731373-B
4	Resistance Coil (200 ohms) (Type 27A only)	D-283717-A	14	Switch Assembly Screws (2)	D-76974-A
5	Handset Shell	D-52075-A	15	Switch Assembly (Type 27A only)	D-731372-A
6	Resistance Coil (450 ohms) (Type 27A only)	D-283718-A	—	Condenser (Type 27B only) (Not Shown)	D-68653-A
7	Cord Bushing	D-75795-A	—	Straight Cord, 3-condr. (Type 27A only) (Not Shown)	CB-360053-R
8	Transmitter Spring Assembly	D-109628-A	—	Koiled Kord, 3-condr. (Type 27A only) (Not Shown)	D-543003-B
9	Transmitter Retaining Ring	D-65124-C	—	Straight Cord, 4-condr. (Type 27B only) (Not Shown)	CB-355053-R
10	Transmitter Capsule	D-38309-A			

The Type 38 "Anti-Noise" Handset



The Type 38 Handset is a low-cost instrument preferred by many users for certain noisy locations. It is particularly suitable for use in places where high-pitched, whining sounds are prevalent, such as in power stations and in rooms housing oil burners or diesel engines. It has also been found useful in noisy shops, factories and similar locations.

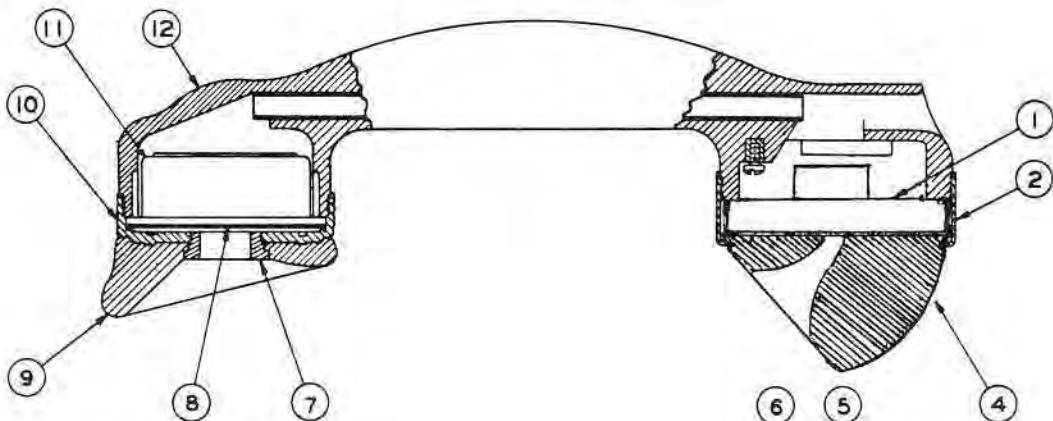
A special mouthpiece and damped diaphragm transmitter are employed to exclude a maximum amount of surrounding noise. The voice of the user speaking directly into the mouthpiece passes through the small hole in its centre to actuate the transmitter; other noises tend to be cut off.

The Type 38 Handset may be used for replacement purposes with the Type 40 Desk Telephone (page 17), Type 50 Wall Telephone (page 18) and the Type 47 Desk Telephone (page 21).

Available in black only, with straight cord or Coiled Kord.

Cat. No.	Description	Order No.
AF-12	Type 38 "Anti-Noise" Handset with straight cord	L-860-AO
—	Type 38 "Anti-Noise" Handset with Coiled Kord	L-860-DO

Replacement Parts



Ref. No.	Description	Order No.
1	"Anti-Noise" Transmitter	D-38225-A
2	Transmitter Retaining Ring	D-65124-C
4	"Anti-Noise" Transmitter Mouthpiece	D-38223-A
5	Transmitter Terminal Link	D-6141-A
6	Terminal Screws (5)	B-7600-B
7	Receiver Cap Bushing	D-75537-A
8	Receiver Diaphragm	D-38194-A
9	Receiver Cap	D-67149-A
10	Receiver Retaining Ring	D-65123-A
11	Receiver Assembly	D-5154-A
12	Handset Shell	D-52048-A
—	Straight Cord (3-condr.) (Not shown)	CD-353053-R
—	Coiled Kord (3-Cond.) (Not shown)	D-543003-B

Do not order by above numbers—see table

The Type 41 Handset



The Type 41 Handset is a standard component of the following Automatic Electric Telephones:

- Type 40 Desk Telephone (page 17)
- Type 50 Wall Telephone (page 18)
- Type 43 (but not 83) Compact Telephone (page 20)
- Type 47 Desk Telephone (page 21)
- Series 80 (but not 80) Paystations (page 27)
- Outdoor Telephone (page 33)

It features a capsule type transmitter and a damped-diaphragm receiver to furnish high transmission quality and volume over an exceptionally wide range of operating conditions.

To provide extra transmission output for service on exceptionally long lines, the Type 41 Handset may be supplied with a "super-volume" cupped transmitter mouthpiece.

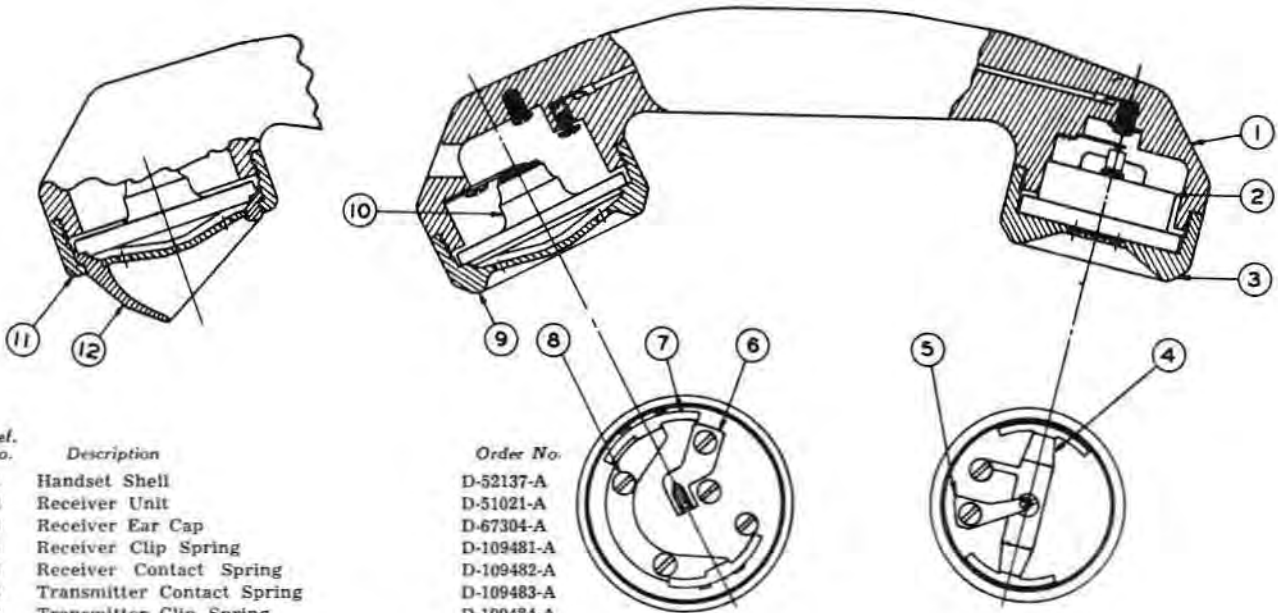
For use in noisy locations, the standard Type 41 Handset

may be equipped with the Roanwell Confidencer (page 47) to neutralize surrounding noises.

Available in black only, with straight cord, Extensicord or Coiled Kord.

Cat. No.	Description	Order No.
AF-48	Type 41 Handset (Regular) with straight cord	L-885-DO
—	Type 41 Handset (Regular) with Extensicord	L-885-EO
—	Type 41 Handset (Regular) with Coiled Kord	L-885-FO
AF-47	Type 41 "Super-Volume" Handset with straight cord	L-895-DO
—	Type 41 "Super-Volume" Handset with Extensicord	L-895-HO
—	Type 41 "Super-Volume" Handset with Coiled Kord	L-895-KO

Replacement Parts



Ref. No.	Description
1	Handset Shell
2	Receiver Unit
3	Receiver Ear Cap
4	Receiver Clip Spring
5	Receiver Contact Spring
6	Transmitter Contact Spring
7	Transmitter Clip Spring
8	Terminal Screws (9)
9	Transmitter Mouthpiece (Standard)
10	Transmitter Capsule
11	Retaining Ring (for Item 12 only)
12	Cupped Mouthpiece — Super-Volume
—	Straight Cord, 3-condr. (Not shown)
—	Extensicord, 3-condr. (Not shown)
—	Coiled Kord, 3-condr. (Not shown)

Order No.
D-52137-A
D-51021-A
D-67304-A
D-109481-A
D-109482-A
D-109483-A
D-109484-A
B-7600-B
D-38306-A
D-38363-A
D-65339-A
D-38297-A
CB-360053-R
CD-995932
D-543003-B

Do not order by above numbers—see table

The Roanwell Confidencer Conversion Kit for the Type 41 Handset



Type 41 Handsets, standard on many types of Automatic Electric Telephones, may be readily converted for use in noisy locations by means of the Roanwell Confidencer.

In many places where surrounding noises previously disturbed the telephone user, such as in power stations, machine shops and industrial plants of many types, telephones equipped with Confidencers have proved to be a complete solution to the problem.



With the Confidencer, the **called party** hears clearly, for the exclusive design permits the caller's voice to be transmitted in ample volume, while surrounding noises are neutralized. The **calling party** hears clearly because the sidetone noise picked up is reduced to a low level.

The Confidencer includes a noise-cancelling carbon microphone and mouthpiece, both of exclusive design. When the user talks directly into the Confidencer microphone assembly, the sound waves unbalance the diaphragm acoustically, and the voice is transmitted in a normal manner. But, at the same time, any surrounding noises are neutralized by being directed through special sound chambers to **both** sides of the diaphragm, where their effect is cancelled as the sound pressure on one side counteracts that on the other side.

Even the slope of the Confidencer mouthpiece has been specially designed so that the user's lips are closer to the mouthpiece than in the standard handset. Thus maximum efficiency is assured, for this channels the voice signal directly into the Confidencer microphone.

The Confidencer is supplied only in the form of a conversion kit, which includes the special mouthpiece, microphone and all parts required for application to the Type 41 Handset. Instructions for the simple modification are furnished with each kit. Available in black only.

<i>Description</i>	<i>Order No.</i>
Roanwell Confidencer Conversion Kit for the Type 41 Handset	S-7564

The Type 81 Handset



The Type 81 Handset is a standard component of the following Automatic Electric Telephones:

- Type 80 Desk Telephone (page 3)
- Type 90 Wall Telephone (page 7)
- Type 88 Loud-Speaking Telephone (page 11)
- Type 80 Transistorized Telephone (page 16)
- Type 83 Compact Telephone (page 19)
- Series 80 Paystations (page 27).

It features a short handle to bring the transmitter closer to the user's mouth, thus boosting transmission volume, and the receiver ear cap seals effectively to the ear to reduce pick-up of room noises.

The high volume transmitter overrides line loss and line noises, particularly on long lines. The improved design of the receiver provides superior frequency response characteristics with adequate volume level.

Available in black, with straight cord, Extensicord or

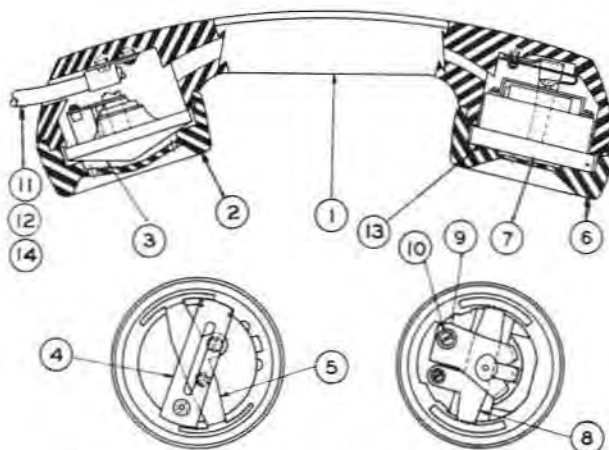
Koiled Kord; or in ten colours to match coloured instruments (see page 32), with Koiled Kord only.

Description	Order No.
Type 81 Handset, black	
—with straight cord	L-9024-AO
—with Extensicord	L-9024-BO
—with Koiled Kord	L-9024-CO
Type 81 Handset, coloured, with Koiled Kord	
—Sand Beige	L-9027-C1
—Dawn Grey	L-9027-C2
—Jade Green	L-9027-C3
—Classic Ivory	L-9027-C4
—Garnet Red	L-9027-C5
—Turquoise	L-9027-C6
—Sunlight Yellow	L-9027-C8
—Camillia Pink	L-9027-C9
—Gardenia White	L-9027-C10
—Forget-me-not Blue	L-9027-C11

Replacement Parts

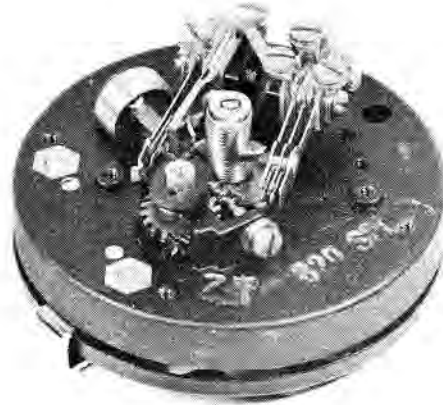
Ref. No.	Description	Order No.
1	Handset Shell — Black	D-52143-A
	— Coloured	D-52146.*
2	Transmitter Cap — Black	D-67422-A
	— Coloured	D-67442.*
3	Transmitter Capsule	D-36363-A
4	Transmitter Contact Spring	D-109794-A
5	Transmitter Clip Spring	D-109756-A
6	Receiver Cap — Black	D-67423-A
	— Coloured	D-67441.*
7	Receiver Capsule	D-51021-A
8	Receiver Clip Spring	D-109757-A
9	Receiver Contact Spring	
	— for black handsets	D-109758-A
	— for coloured handsets	D-109795-A
10	Terminal Screws (5)	B-7600-B
11	Straight Cord, black, 3-condr.	CD-364064-AR
12	Koiled Kord, black or coloured, 3-condr.	D-543118.*
13	Receiver Cap Cork Gasket (for coloured handsets only)	D-67457-A
14	Extensicord, black, 3-condr.	CD-987944

* See page 32 for colour suffix letters.



Do not order by above numbers—see table

The Type 51 Dial



The Type 51 Dial is a standard component of the following Automatic Electric Telephones:

- Type 40 Desk Telephone (page 17)
- Type 50 Wall Telephone (page 18)
- Types 43 and 83 Compact Telephones (pages 19 and 20)
- Type 47 Desk Telephone (page 21)
- Series 60 Paystations (page 27)
- Outdoor Telephones (page 33)
- and other older types.

It is also widely used on miscellaneous telephone equipment and for electrical control applications.

The Type 51 Dial is designed and manufactured for long and dependable service life with a minimum of maintenance, smooth and quiet operation without annoying clicks and reliable operation under a wide range of conditions, including extremes of heat and cold.

The dial impulse and shunt springs are mounted on a removable bracket so that they can be readily replaced or changed as a unit. These spring assemblies are available in various combinations, as shown in the accompanying illustration, for different telephone and electrical control circuit requirements. Cat. No. AK-25 Dial Spring Assembly is standard for most Automatic Electric telephone instruments and is supplied unless otherwise specified.

For use on certain SATT (Strowger Automatic Toll Ticketing) Systems, Type 51 SATT Dials are available, incorporating an additional impulse cam and set of impulse springs

which serve to identify or "spot" the particular party on a party line who is making a toll call.

For use in instruments exposed to excessive moisture or dust, the Type 51 "Splashproof" Dial is recommended. It has a tightly fitting black plastic number plate (1-0 only) to exclude moisture and dust from the dial mechanism.

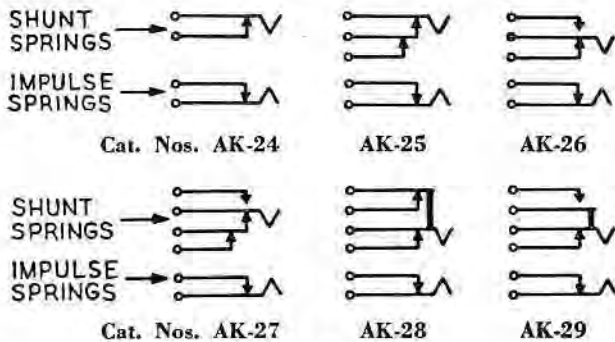
The Type 51 "Radio-Suppressor" Dial is used to prevent the "broadcasting" of dial impulses to sensitive radio receiving sets located near a telephone instrument or associated open wire line. It consists of a standard dial equipped with a 0.1 mf. condenser and a double-wound radio-frequency choke coil mounted on the dial base and wired to the springs. These components are available separately for installation in existing telephones.

Type 51 Dials are equipped with white enamelled number plates with black numbers only (1-0) or with both letters and numbers (ABC), the letters being red and the numbers black.

Several features and modifications for particular applications are available, such as special finger plates, number plates, dial cards, spring assemblies, etc.

Complete instructions for the adjustment and maintenance of Type 51 Dials are given in Automatic Electric Bulletin 527, copies of which are available upon request.

How To Order



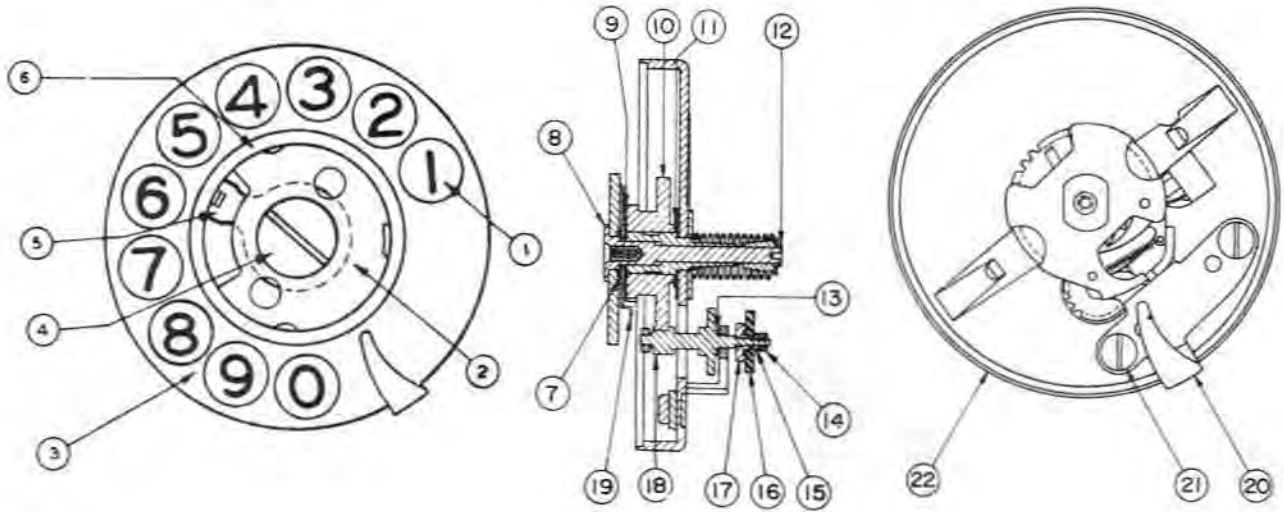
Dial Spring Assemblies

(Shunt springs shown in off-normal position)

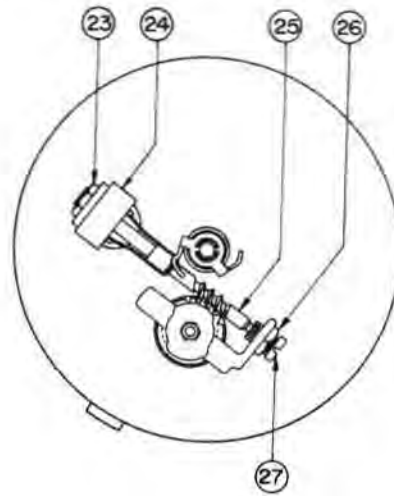
Cat. No.	Description	Order No.
AK-11	Standard Type 51 Dial with 1-0 number plate	D-84820-A
AK-41	Standard Type 51 Dial with ABC number plate	D-84821-A
AK-22	Type 51 "Splashproof" Dial with 1-0 number plate	D-84839-A
AK-47	Type 51 "Radio-Suppressor" Dial with 1-0 number plate	D-84844-A
AK-24	Dial Spring Assembly	D-730498
AK-25	Dial Spring Assembly	D-730479
AK-26	Dial Spring Assembly	D-730535
AK-27	Dial Spring Assembly	D-730471
AK-28	Dial Spring Assembly	D-730496
AK-29	Dial Spring Assembly	D-730339
AK-48	"Radio Suppressor" for existing telephones	H-46526-1

Replacement Parts are listed on the following page.

Replacement Parts for the Standard Type 51 Dial



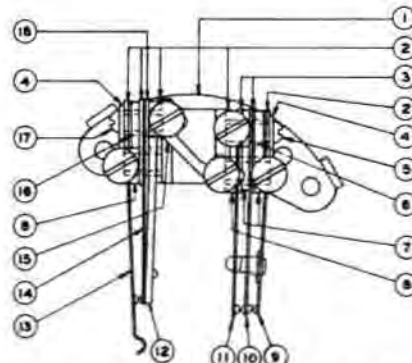
Ref. No.	Description	Order No.
1	Number Plate — (1-0) — (ABC)	D-53146-A D-53772-A
2	Dial Card Clamping Plate	D-78541-A
3	Dial Finger Plate (black)	D-780649-A
4	Finger Plate Mounting Screw	D-76312-A
5	Escutcheon Lock	D-5886-A
6	Escutcheon Ring (black)	D-65112-A
7	Shaft Washer (Steel)	D-17592-A
8	Shaft and Pawl Assembly	D-46192-A
9	Shaft Washer (Fibre)	D-440297-A
10	Ratchet Gear	D-4373-A
11	Lower Thrust Washer	D-17219-A
12	Main Spring Assembly	D-109112-A
13	Worm Wheel Washer	D-17138-A
14	Impulse Cam Lock Nut	D-77333-A
15	Impulse Cam Lock Washer	D-17530-A
16	Impulse Cam	D-83004-A
17	Impulse Cam Hub	D-82102-A
18	Worm Gear Assembly	D-43042-A
19	Pawl Lever	D-16356-A
20	Finger Stop	D-33121-C
21	Finger Stop Screws (2)	D-76309-A
22	Base Assembly	D-78543-A
23	Governor Bearing Nut	D-77041
24	Governor Cup	D-2791-A
25	Governor Worm Gear	D-64057-A
26	Governor Bearing Nut	D-77041-A
27	Governor Bearing Screw	D-76313-A
—	Dial Card, Standard (Not shown)	D-53620-A
—	Dial Card Celluloid Cover (Not shown)	D-53176-A
—	Dial Spring Assem. Mtg. Screws (2) (Not shown)	D-76310-A



Do not order by above numbers—see table

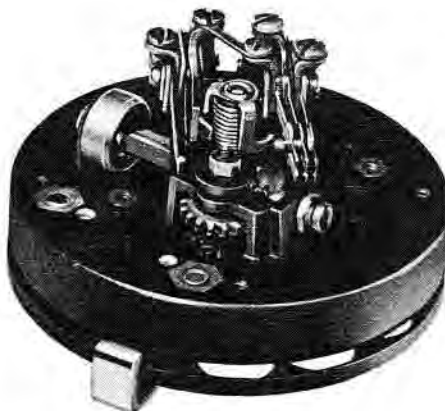
Replacement Parts for the Standard Type 51 Dial Spring Assembly

Ref. No.	Description	Order No.
1	Spring Assembly Bracket	D-730176-A
2	Double Hole Insulating Washer (5)	D-17216-A
3	Double Hole Insulating Washer (2)	D-17216-C
4	Double Hole Clamp Washer (2)	D-17217-A
5	Shunt Spring Clamping Screws (2)	D-76705-F
6	Shunt Spring Bushings (2)	D-75168-A
7	Outer and Centre Shunt Spring Terminal Assemblies (2)	D-15453-A
8	Inner Shunt Spring and Outer Impulse Spring Terminal Assemblies (2)	D-15465-A
9	Outer Shunt Spring	D-107115-A
10	Centre Shunt Spring	D-103241-A
11	Inner Shunt Spring	D-107116-C
12	Impulse Stop Spring and Terminal Assembly	D-15462-A
13	Outer Impulse Spring	D-107255-A
14	Inner Impulse Spring	D-107254-A
15	Terminal Link	D-6138-A
16	Impulse Spring Bushings (2)	D-75511-A
17	Impulse Spring Clamping Screws (2)	D-76705-E
18	Double Hole Washer	D-17216-B



Do not order by above numbers—see table

The Type 51A Dial



The Type 51A Dial was used on black and two-tone Type 80 Telephones (page 3) when these were first manufactured. It has since been replaced by the Type 52 Dial (page 52) but is still available for replacement purposes.

The Type 51A Dial is similar to the Type 51 Dial (page 49) except that a die cast base is used instead of heavy drawn brass, the impulse and shunt springs have twin contacts to reduce the possibility of contact failure and a transparent dust cover may be mounted on the back of the dial to protect the mechanism and spring assembly.

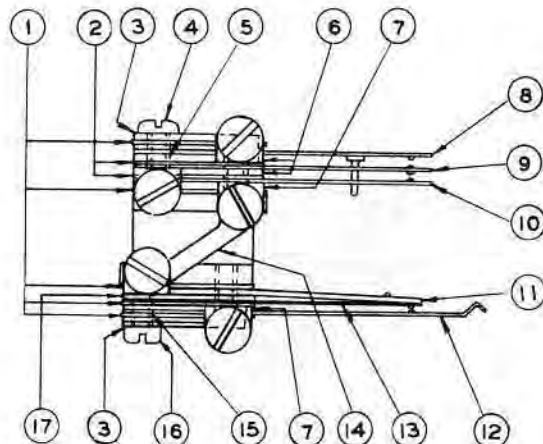
Type 51A SATT Dials, for use on certain types of Strowger Automatic Toll Ticketing (SATT) Systems are available. Ordering information and replacement parts are given in Automatic Electric Circular 1894, copies of which are available upon request.

<i>Description</i>	<i>Order No.</i>
Type 51A Dial, black, less extended number plate	D-84875-A
Extended Number Plate, black, 1-0	D-530138-A
Extended Number Plate, black, ABC	D-530113-A

Replacement Parts are listed below and on page 53.

Replacement Parts for Types 51A and 52 Dial Spring Assemblies

<i>Ref. No.</i>	<i>Description</i>	<i>Order No.</i>
1	Double Hole Insulating Washers (5)	D-17216-A
2	Double Hole Insulating Washers (2)	D-17216-C
3	Double Hole Clamp Washers (2)	D-17217-A
4	Shunt Spring Clamping Screws (2)	D-76705-F
5	Shunt Spring Bushings (2)	D-75168-A
6	Outer and Centre Shunt Spring Terminal Assemblies (2)	D-15453-A
7	Inner Shunt Spring and Outer Impulse Spring Terminal Assemblies (2)	D-15465-A
8	Outer Shunt Spring	D-103772-A
9	Centre Shunt Spring	D-103774-A
10	Inner Shunt Spring	D-103775-A
11	Impulse Stop Spring and Terminal Assembly	D-109784-A
12	Outer Impulse Spring	D-103778-A
13	Inner Impulse Spring	D-103777-A
14	Terminal Link	D-6138-A
15	Impulse Spring Bushings (2)	D-75511-A
16	Impulse Spring Clamping Screws (2)	D-76705-G
17	Double Hole Washer	D-17216-B



Do not order by above numbers - see table

The Type 52 Dial



Type 52 Dial — Black



Type 52 Dial — Coloured

The Type 52 Dial is a standard component of the following Automatic Electric Telephones:

- Type 80 Desk Telephone (page 3)
- Type 90 Wall Telephone (page 7)
- Type 88 Loud-speaking Telephone (page 11)
- Type 80 Transistorized Desk Telephone (page 18)
- Series 80 Paystations (page 27)

This dial retains the same basic design and desirable operating features of the Type 51 Dial (page 49) which have proved so effective in service. Modifications for use on the above instruments include an extended number plate attached to the base as part of the dial assembly, a two-part finger stop, twin contacts on the impulse and shunt springs and a transparent dust cover on the back of the dial.

For use on coloured instruments, the extended number plates are furnished in the full range of ten telephone

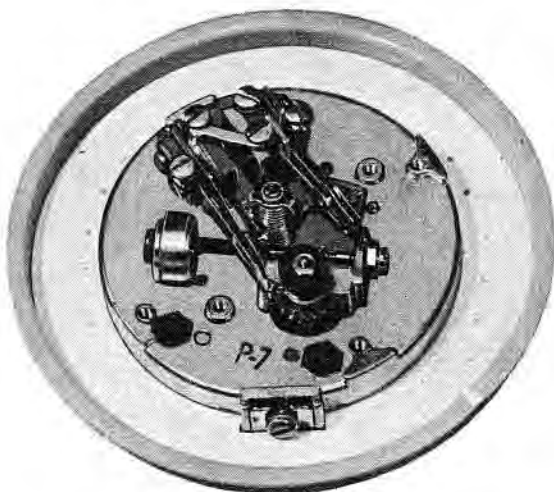
colours (page 32) with white or black figures and numbers to provide a suitable contrast. White dial cards, chrome dial card escutcheon rings and clear plastic finger plates are also supplied for use on coloured instruments.

SATT Dials, designated as Type 53A, are available for use on certain types of Strowger Automatic Toll Ticketing (SATT) Systems. Ordering information and replacement parts are given in Automatic Electric Circular 1894, copies of which are available upon request.

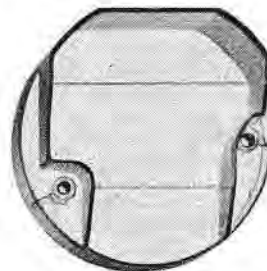
<i>Description</i>	<i>Order No.</i>
Type 52 Dial, black or coloured, with 1-0 extended number plate	D-84900-*
Type 52 Dial, black or coloured, with ABC extended number plate	D-84901-*

*See page 32 for colour suffix letter.

Replacement Parts are listed on Pages 51 and 53.



Rear View — Dust Cover Removed



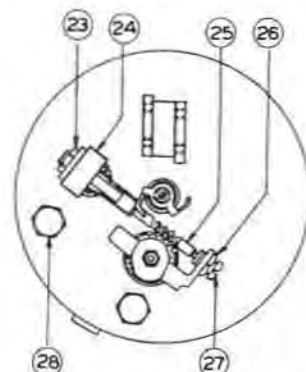
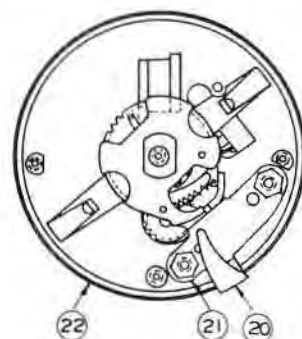
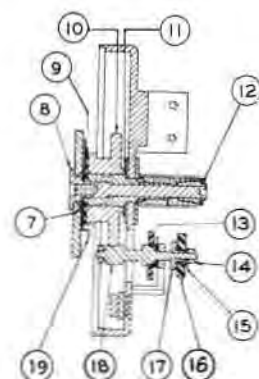
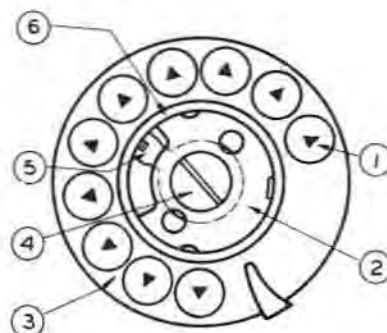
Dust Cover

Replacement Parts for the Types 51A and 52 Dials

Ref. No.	Description	Order by No.		
		Type 51A Black	Type 52 Black	Type 52 Colour
1	Number Plate (Point Marking)	D-530114-A	—	—
2	Dial Card Clamping Plate	D-78541-A	D-78541-A	D-780699-A
3	Dial Finger Plate	D-780649-A	D-780649-A	D-780697-A
4	Finger Plate Mounting Screw	D-76312-A	D-76312-A	D-760777-A
5	Dial Card Escutcheon Lock	D-5886-A	D-5886-A	D-780698-A
6	Dial Card Escutcheon Ring	D-65112-D	D-65112-D	D-65510-A
7	Shaft Washer (Steel)	D-17592-A	D-17592-A	D-17592-A
8	Shaft and Pawl Assembly	D-46192-A	D-46192-A	D-46192-A
9	Shaft Washer (Fibre)	D-440297-A	D-440297-A	D-440297-A
10	Ratchet Gear	D-4373-A	D-4373-A	D-4373-A
11	Lower Thrust Washer	D-17219-A	D-17219-A	D-17219-A
12	Main Spring Assembly	D-109112-A	D-109112-A	D-109112-A
13	Worm Wheel Washer	D-17138-A	D-17138-A	D-17138-A
14	Impulse Cam Lock Nut	D-77333-A	D-77333-A	D-77333-A
15	Impulse Cam Lock Washer	D-17530-A	D-17530-A	D-17530-A
16	Impulse Cam	D-83004-A	D-83004-A	D-83004-A
17	Impulse Cam Hub	D-82102-A	D-82102-A	D-82102-A
18	Worm Gear Assembly	D-43042-A	D-43042-A	D-43042-A
19	Pawl Lever	D-16356-A	D-16356-A	D-16356-A
20	Finger Stop	D-33121-C	D-33128-A	D-33128-A
21	Finger Stop Screw	—	D-760768-A	D-760768-A
22	Base Assembly	D-780300-A	D-780688-A	D-780688-A
23	Governor Bearing Nut	D-77041-A	D-77041-A	D-77041-A
24	Governor Cup	D-2791-A	D-2791-A	D-2791-A
25	Governor Worm Gear	D-64057-A	D-64057-A	D-64057-A
26	Governor Bearing Nut	D-77041-A	D-77041-A	D-77041-A
27	Governor Bearing Screw	D-76313-A	D-76313-A	D-76313-A
28	Bearing and Stop Bracket Screw Nuts (2)	D-7700-A	D-7700-A	D-7700-A
29	Bearing and Stop Bracket Screws (2) (Not Shown)	D-760769-A	D-760769-A	D-760769-A
30	Bearing and Stop Bracket	—	D-731513-A	D-731513-A
31	Number Plate Screws (3) (Not Shown)	—	D-760767-A	D-760767-A
32	Dial Card Escutcheon Locking Plate (Not Shown)	—	—	D-780698-A
33	Extended Number Plate (Not Shown)	—(1-0) D-530138-A	D-530168-A	D-530168*
		—(ABC) D-530113-A	D-530167-A	D-530167*
34	Dial Card Cover, Transparent (Not Shown)	D-53176-A	D-53176-A	D-53176-A
35	Finger Plate Mounting Screw Washer (Not Shown)	—	—	D-17630-A
36	Dial Card (Not Shown)	D-53620	D-53620	D-530182-A

* See page 32 for colour suffix letter.

Replacement Parts for the Dial Spring Assembly are listed on page 51.



Do not order by above numbers—see table

Type 45 High-Impedance Ringers



Type 45 High-Impedance Ringers are standard components of the following Automatic Electric telephone instruments:

- Type 40 Desk Telephone (page 17)
- Type 50 Wall Telephone (page 18)
- Type 47 Desk Telephone (page 21)
- Type 32 Ringer Boxes (page 23)

They are supplied complete with gongs and mounting brackets for replacement purposes.

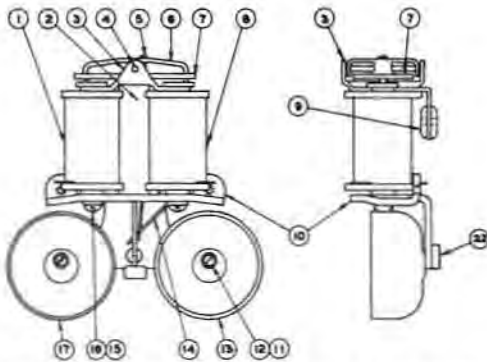
Instructions for the adjustment and installation of Type 45 High-Impedance Ringers are given in Automatic Electric Bulletin 375, copies of which are available upon request.

How To Order

Cat. No.	Description	Order No.
AT-80	Straight line	D-56515-A
AT-81	16.6 cycles harmonic	D-56516-A
AT-82	20 cycles harmonic or decimonic	D-56516-F
AT-83	25 cycles harmonic	D-56516-B
AT-84	30 cycles harmonic or decimonic	D-56516-G
AT-85	33.3 cycles harmonic	D-56516-C
AT-91	40 cycles decimonic	D-56516-L
AT-86	42 cycles harmonic	D-56516-H
AT-87	50 cycles harmonic or decimonic	D-56516-D
AT-88	54 cycles harmonic	D-56516-J
AT-92	60 cycles decimonic	D-56516-M
AT-90	66 cycles harmonic	D-56516-K
AT-89	66.6 cycles harmonic	D-56516-E

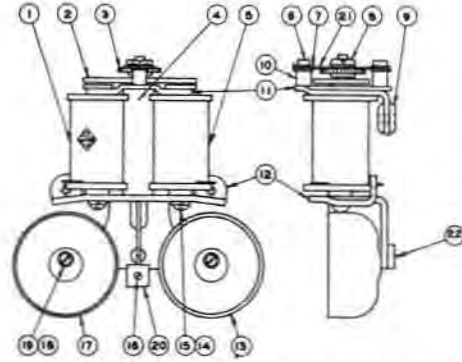
Replacement Parts

Straight Line Ringers



Do not order by above numbers—see table below.

Harmonic Ringers



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Coil, left	D-283750-A
2	Ringer Magnets (2)	D-56497-B
3	Yoke	D-67408-A
4	Armature Bearing Pin	D-37566-A
5	Armature Gap Adjusting Screw	4-40 x 5/16" RHIMS
6	Armature Adjusting Plate	D-780544-A
7	Armature and Clapper Assembly	D-56521-A
8	Coil, right	D-283749-A
9	Yoke Bracket Grommet	D-67431-A12
10	Heelpiece and Bracket	D-63172
11	Gong Lockwashers (2)	D-17464-C
12	Gong Mounting Screws (2)	D-760646-A
13	Gong (heavy)	D-56523-A
14	Bias Tension Arm	D-109705-A
15	Coil Lockwashers (2)	D-17195-E
16	Coil Mounting Screws (2)	8-32 x 3/8" RHIMS
17	Gong (light)	D-56522-A
18	Heelpiece Bracket Grommet	D-67431-C10

Ref. No.	Description	Order No.
1	Coil, left — 16.6 to 54 cycles — 60 to 66.6 cycles	D-283750-A D-284124-A
2	Clapper Assembly	D-56530-B
3	Armature Adjusting Nut	D-77360-A
4	Ringer Magnets (2)	D-56497-B
5	Coil, right — 16.6 to 54 cycles — 60 to 66.6 cycles	D-283749-A D-284123-A
6	Clapper Arm Reed Screws (2)	D-760645-A
7	Clapper Arm Reed Washers (2)	D-1772-A
8	Armature Hex. Nut	D-7734-A
9	Yoke Bracket Grommet	D-67431-A12
10	Clapper Arm Reed Posts (2)	D-36091-A
11	Yoke	D-67410-A
12	Heel Piece and Bracket	D-63172-A
13	Gong (heavy)	D-56523-A
14	Coil Mounting Screws (2)	8-32 x 3/8" RHIMS
15	Coil Lockwashers (2)	D-17195-E
16	Clapper Weight Set Screw	D-7684-A
17	Gong (light)	D-56522-A
18	Gong Lockwashers (2)	D-17464-C
19	Gong Mounting Screws (2)	D-760646-A
20	Clapper Weight	See chart below
21	Clapper Arm Reed	See chart below
22	Yoke Bracket Grommet	D-67431-C10

The Following Parts Vary at Different Frequencies, as shown.

Frequency, cycles	16.6	25	33.3	50	66.5	20	30	42	54	66	40	60
(21) Clapper Arm Reeds	D-10740-B	D-10740-A	D-10740-A	D-10740-A	D-10693-B	D-10740-B	D-10740-A	D-10740-A	D-10693-A	D-10693-B	D-10740-A	D-10693-A
(20) Clapper Weight	D-56534-A	D-56524-C	D-56526-C	D-56528-C	D-56528-B	D-56524-B	D-56526-A	D-56525-B	D-56528-A	D-56528-B	D-56526-B	D-56528-B

Low Impedance Ringers



Low-Impedance Ringers are standard components of the Automatic Electric Outdoor Telephone (page 33) and other older types of telephone instruments.

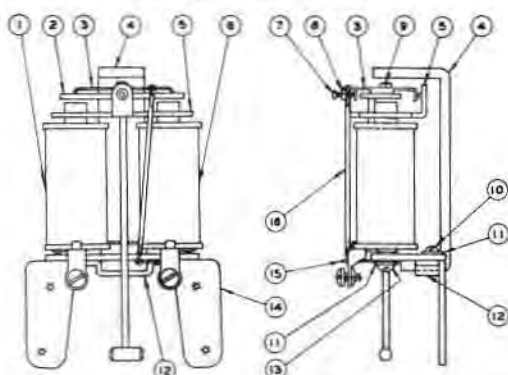
For replacement purposes they are supplied as a movement assembly only, consisting of the armature mounting with armature and clapper, and two ringer coils, as illustrated. The mounting bracket and gongs are parts of the instrument with which the ringer is used.

How To Order

Cat. No.	Description	Order No.
AS-80	Straight line	D-56462-A
AS-81	16.6 cycles harmonic	D-56465-A
AS-82	20 cycles harmonic or declmonlc	D-56465-F
AS-83	25 cycles harmonic	D-56465-B
AS-84	30 cycles harmonic or declmonlc	D-56465-G
AS-85	33.3 cycles harmonic	D-56465-C
AS-86	42 cycles harmonic	D-56465-H
AS-87	50 cycles harmonic or declmonlc	D-56465-D
AS-88	54 cycles harmonic	D-56465-J
AS-89	66.6 cycles harmonic	D-56465-E

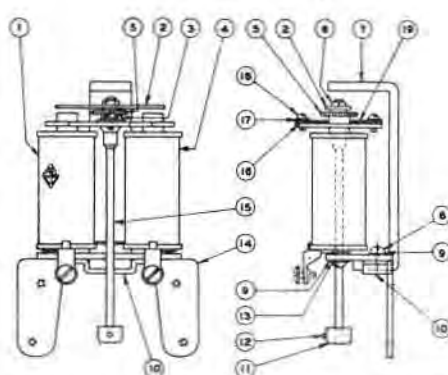
Replacement Parts

Straight Line Ringers



Do not order by above numbers—see table below.

Harmonic Ringers



Do not order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Coil — Left	D-281365-B
2	Clapper Assembly	D-56108-A
3	Armature Adjusting Plate	D-78395-A
4	Ringer Magnet*	D-5648-AR
5	Coil Bracket Assembly	D-730331-A
6	Coil — Right	D-281350-B
7	Clapper Bearing Screw	D-76409-A
8	Clapper Bearing Screw Hex. Nut	D-77041-A
9	Clapper Rod Hex. Head Screw	D-76218-A
10	Magnet Clamp Screws (2)*	8-32 x 5/16"
		RHIMS
11	Magnet Clamp Screw Spring Washers (2)*	D-17195-E
12	Magnet Clamp*	D-7366-A
13	Coil Mounting Screws (2)	8-32 x 7/16"
		RHIMS
14	Mounting Bracket*	D-730988-A
15	Biasing Spring Bracket	D-73261-A
16	Biasing Spring	D-109026-A

Ref. No.	Description	Order No.
1	Coil — Left	See chart below
2	Armature	D-7181-A
3	Reed Locking Nut	D-7734-A
4	Coil — Right	See chart below
5	Armature Adjusting Nut	D-7733-A
6	Armature Locking Nut	D-7747-A
7	Ringer Magnet*	D-5648-AR
8	Magnet Clamp Screws (2)*	8-32 x 5/16"
		RHIMS
9	Magnet Clamp Screw Spring Washers (2)*	D-17195-E
10	Magnet Clamp*	D-7366-A
11	Clapper	See chart below
12	Clapper Set Screw	D-7684-A
13	Coil Mounting Screws (2)	8-32 x 7/16"
		RHIMS
14	Mounting Bracket*	D-730988-A
15	Clapper Rod Assembly	See chart below
16	Clapper Reed Screw Washers—Lower (2)	D-1773-A
17	Clapper Reed Screw Washers—Upper (2)	D-1772-A
18	Clapper Reed Screws (2)	6-32 x 3/16"
		RHIMS
19	Clapper Reed	See chart below

* These parts are not supplied with the ringer movement assembly.

The Following Parts Vary at Different Frequencies, as shown:

Frequency, cycles	16.6	25	33.3	50	55.5	20	30	42	54
(15) Clapper Rod	D-5666	D-5667	D-5667	D-5667	D-5667	D-5667	D-5667	D-5667	D-5667
(11) Clapper	D-5660	D-56127	D-5661	D-5663	D-56025	D-56117-B	D-56009	D-56088	D-5663
(19) Reed	D-10927	D-10740	D-10740	D-10693	D-10699	D-10740	D-10740	D-10740	D-10693
(1) Coil-Left	D-281346-B	D-281355-B	D-281348-B	D-281389-B	D-281389-B	D-281344-B	D-281353-B	D-281348-B	D-281389-B
(4) Coil-Right	D-281347-B	D-281356-B	D-281349-B	D-281390-B	D-281390-B	D-281345-B	D-281354-B	D-281349-B	D-281390-B

Type 80 High-Impedance Ringers

Type 80 High-Impedance Ringers are standard components of the following Automatic Electric Telephones:

- Type 80 Desk Telephone (page 3)
- Type 90 Wall Telephone (page 7)
- Type 88 Loud-Speaking Telephone (page 11)
- Type 80 Transistorized Telephone (page 16)

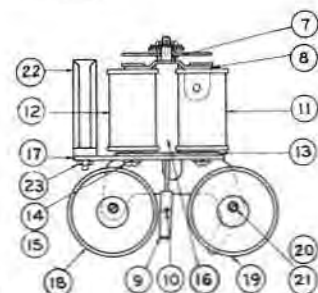
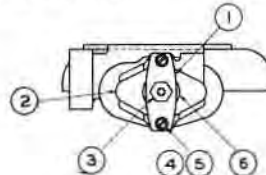
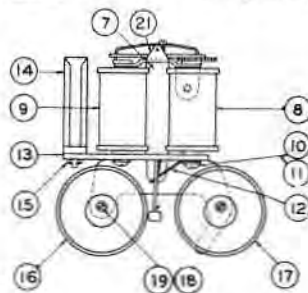
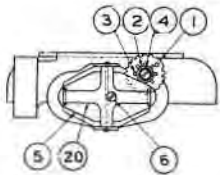


For replacement purposes, the ringer and associated condenser are supplied as a unit on a common mounting bracket. The straight line ringer and ringer with vacuum tube for superimposed ringing may be equipped with a volume control (optional) which can be adjusted by the subscriber (on desk instruments only).

How To Order

Description	Order No.
Straight line, less adjustment wheel	D-56548-ASLR
Straight line, with adjustment wheel	D-56548-ASAR
16.6 cycles harmonic	D-56548-A16R
20 cycles harmonic or declmonic	D-56548-A20R
25 cycles harmonic	D-56548-A25R
30 cycles harmonic or declmonic	D-56548-A30R
33.3 cycles harmonic	D-56548-A33R
40 cycles declmonic	D-56548-A40R
42 cycles harmonic	D-56548-A42R
50 cycles harmonic only	D-56548-A50R
50 cycles declmonic only	D-56548-A51R
54 cycles harmonic	D-56548-A54R
60 cycles declmonic	D-56548-A60R
66 cycles harmonic	D-56548-A66R
66.6 cycles harmonic	D-56548-A67R
With vacuum tube for superimposed ringing, less adjustment wheel	D-56548-AVTR
With vacuum tube for superimposed ringing, with adjustment wheel	D-56548-AVAR
A.C., to operate on 50 volts, 60 cycles A.C. (for service with type 34A16 P-A-X)	D-56548-AACR

Straight Line — Replacement Parts — Harmonic



The unit order by above numbers—see table below.

The unit order by above numbers—see table below.

Ref. No.	Description	Order No.
1	Adjustment Wheel	D-65494-A
2	Adjustment Wheel Shoulder Bushing	D-750221-A
3	Adjustment Wheel Spring Washer	D-17619-A
4	Adjustment Wheel Screw	D-760731-A
5	Armature Assembly	D-56521-A
6	Armature Adjusting Plate Screw	4-40 x 5/16" RHIMS
7	Ringer Magnet	D-56497-B
8	Coil — Right	D-283749-A
9	Coil — Left	D-283750-A
10	Coil Mounting Screw Washers (2)	D-17195-E
11	Coil Mounting Screws (2)	8-32 x 3/8" RHIMS
12	Bias Tension Arm	D-109705-A
13	Heelpiece	D-63196-A
14	Condenser (4/10 MF)	D-68693-AR
15	Condenser Mounting Hex. Nut	D-7700-A
16	Gong (light)	D-56522-A
17	Gong (heavy)	D-56523-A
18	Gong Mounting Screw Washers (2)	D-17464-C
19	Gong Mounting Screws (2)	D-760646-A
20	Armature Adjusting Plate	D-780544-A
21	Armature Yoke	D-67428-A

Ref. No.	Description	Order No.
1	Clapper Arm Reed	See chart below
2	Clapper Assembly	D-56530-B
3	Clapper Assembly Hex. Nut	D-7734-A
4	Reed Post Screws (2)	D-760645-A
5	Reed Post Screw Washers (2)	D-1772-A
6	Clapper Assembly Knurled Nut	D-77360-A
7	Reed Posts (2)	D-36091-A
8	Yoke Assembly	D-67430-A
9	Clapper Weight	See chart below
10	Clapper Weight Set Screw	D-7684-A
11	Coil — Right	See chart below
12	Coil — Left	See chart below
13	Heel Piece Spacers (2) (for 60, 66 and 66.6 cycles only)	D-65501-A
14	Coil Mounting Screws (2)	8-32 x 3/8" RHIMS
15	Coil Mounting Screw Lock Washers (2)	D-17195-E
16	Ringer Magnet	D-56497-B
17	Heel Piece	D-63196-A
18	Gong (light)	D-56522-A
19	Gong (heavy)	D-56523-A
20	Gong Mounting Screws (2)	D-760646-A
21	Gong Mounting Screw Lock Washers (2)	D-17464-C
22	Condenser	See chart below
23	Condenser Mounting Hex. Nut	D-7700-A

The Following Parts Vary at Different Frequencies as shown:

Frequency Cycles	16.6	25	33.3	50	66.6	20	30	42	54	66	90	60	A C
(1) Clapper Arm Reeds	D-10740-B	D-10740-A	D-10740-A	D-10740-A	D-10693-B	D-10740-B	D-10740-A	D-10740-A	D-10693-A	D-10693-B	D-10740-A	D-10693-A	D-10693-A
(9) Clapper Weight	D-56524-A	D-56524-C	D-56526-C	D-56528-C	D-56528-B	D-56524-B	D-56526-A	D-56525-B	D-56528-A	D-56528-B	D-56526-B	D-56528-B	D-56525-B
(11) Coil Right	D-283749-A	D-283749-A	D-283749-A	D-283749-A	D-284124-A	D-283749-A	D-283749-A	D-283749-A	D-283749-A	D-284124-A	D-283749-A	D-284124-A	D-284013-A
(12) Coil Left	D-283750-A	D-283750-A	D-283750-A	D-283750-A	D-284123-A	D-283750-A	D-283750-A	D-283750-A	D-283750-A	D-284123-A	D-283750-A	D-284123-A	D-284014-A
(22) Condenser	D-68695-AR 7/10 MF	D-68692-AR 3/10 MF	D-68691-AR 2/10 MF	D-68690-AR 8/100 MF	D-68695-AR 8/100 MF	D-68695-AR 7/10 MF	D-68691-AR 2/10 MF	D-68690-AR 8/100 MF	D-68690-AR 8/100 MF	D-68690-AR 8/100 MF	D-68695-AR 8/100 MF	D-68690-AR 8/100 MF	D-68695-AR 7/10 MF

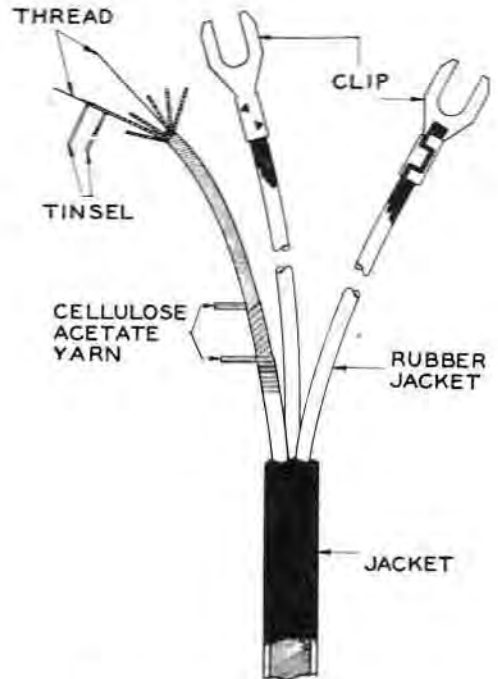
Telephone Cords

These cords are manufactured to the highest standards of quality to provide long and trouble-free service.

The tinsel conductor strands are made up of bronze ribbon wound on a cotton thread in such a manner that the cotton takes all mechanical strain. Six tinsel strands are twisted together around a centre core of cotton thread. This construction provides a maximum of flexibility and eliminates kinking. The conductors bend, instead of separating and breaking, so that they do not develop noises.

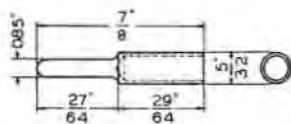
The individual conductors are covered with a double wrap of cellulose acetate yarn and are insulated with rubber, coloured to provide conductor identification. The required number of insulated conductors are assembled together and covered with a plastic (PVC) or Neoprene jacket, or in some cases with an overall cotton braid. The Neoprene jacket has the advantage of long life and resistance to heat, sunlight and to most acids and oils. It will not break or crack under continual bending and is moisture and water proof.

Only those telephone cords in most common use are listed on the following pages. Information on other types will be furnished upon request.

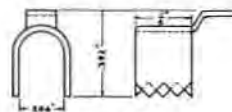


Fittings Used on Telephone Cords

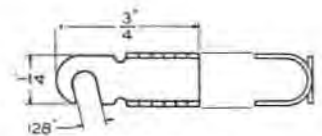
(All fittings, except Test Clips, shown approximately actual size)



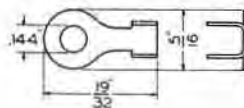
Cat. No. **WA-14**
Order No. **D-15110-A**



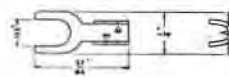
Cat. No. **WB-31**
Order No. **D-543065-A**



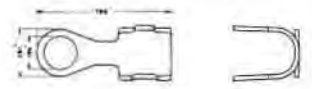
Cat. No. **WA-32**
Order No. **D-15671-A**



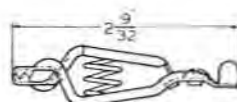
Cat. No. **WA-34**
Order No. **D-15684-A**



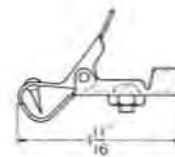
Cat. No. **WA-97**
Order No. **D-150015-B**



Cat. No. **WA-99**
Order No. **D-542697-A**



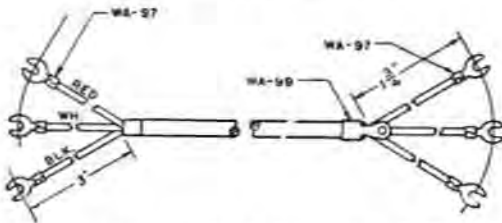
Cat. No. **Universal Test Clip**
Order No. **S-3620**



Cat. No. **Frankel Test Clip**
Order No. **S-3644**

Desk Set Cords

For Type 40 Desk Monophones

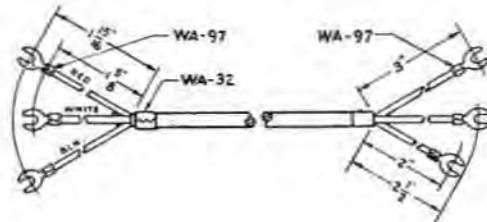


Used on standard central battery Type 40 Desk Monophones for either metallic or ground ringing. Also replaces Cat. No. AD-18 (CD-255872) 2-Conductor Desk Set Cord formerly used on Type 40 Desk Monophones for metallic ringing only. Plastic (PVC) jacket, available in black only. Overall length, 72 inches.

Cat. No.	Description	Order No.
AD-73	3-Conductor Desk Set Cord	CD-600072

Straight Handset Cords

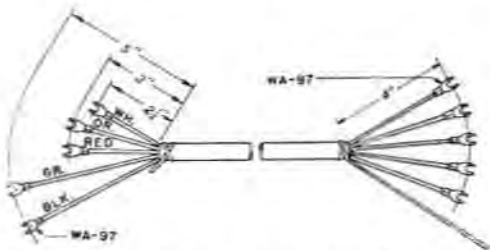
For Types 25, 27A, 27B and 41 Handsets



Plastic (PVC) jacket, available in black only. Overall length, 53 inches.

Cat. No.	Description	Order No.
AH-41	3-Conductor Handset Cord	CD-360053-R

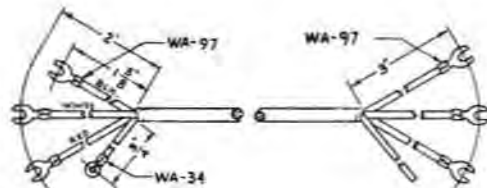
For Type 40 Magneto Desk Monophones



Used on Type 40 Magneto Desk Monophones (convertible to central battery) for either metallic or ground ringing. Also replaces Cat. No. AD-64 (CD-277872) 4-conductor Desk Set Cord formerly used on Type 40 Magneto Desk Monophones for metallic ringing only. Neoprene Jacket, available in black only. Overall length, 72 inches.

Cat. No.	Description	Order No.
AD-79	5-Conductor Desk Set Cord	CD-612072

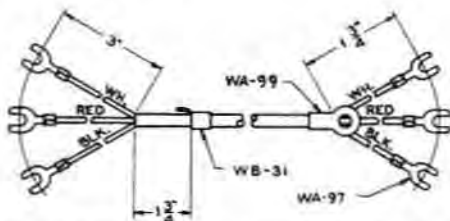
For Type 38 Handsets



Neoprene jacket, available in black only. Overall length, 53 inches.

Cat. No.	Description	Order No.
AH-43	3-Conductor Handset Cord	CD-353053-R

For Type 80 Desk Monophone

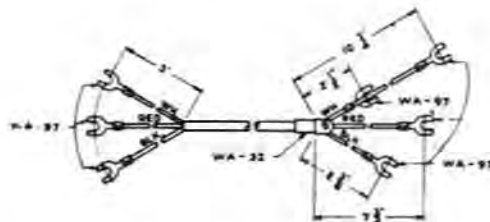


Used on standard and transistorized Type 80 Desk Telephones for either metallic or ground ringing. Neoprene jacket, available in black or in any of 10 colours (see page 32). Overall length, 75 inches.

Cat. No.	Description	Order No.
AD-80	3-Conductor Desk Set Cord	CD-616075-*

* See page 32 for colour suffix letter.

For Type 81 Handsets



Neoprene jacket, available in black only. Overall length, 64 inches.

Cat. No.	Description	Order No.
AH-47	3-Conductor Handset Cord	CD-364064-A

The Extensicord for Handsets



Here is a handset cord that actually *s-t-r-e-t-c-h-e-s!* The Extensicord settles down close to the telephone when not in use, but when the handset is lifted, it stretches easily in a straight line to almost twice its normal length. Thus it permits the user to stand, sit or move about with exceptional freedom. When the handset is replaced, the Extensicord returns to its normal shortened form without kinking, twisting or knotting, or getting snarled with other objects.

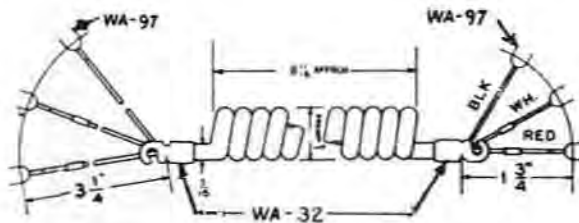
The individual conductors are braid covered and are specially woven into a compact square assembly, available in black only. Overall length, 32 inches contracted.

Cat. No.	Description	Order No.
AH-29	3-Conductor Extensicord for Type 41 Handsets	CD-995932
—	3-Conductor Extensicord for Type 81 Handsets	CD-987944

Koiled Kord for Handsets

These retractible handset cords are permanently molded into a coil spring-like shape, which is very compact when the handset is not in use. They expand and contract effortlessly to several times their contracted length to permit full freedom of movement when using the handset. They have a long service life and are particularly suitable for use in damp and outdoor locations.

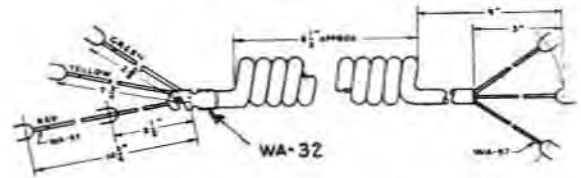
For Types 25, 27A, 27B, 38 and 41 Handsets



Neoprene jacket, available in black only. Overall length, approximately 60 inches extended.

Cat. No.	Description	Order No.
AH-45	3-Conductor Koiled Kord	D-543003-B

For Type 81 Handsets



Available in black, with Neoprene jacket or in any of 10 colours, with PVC jacket, to match telephone instruments (see page 32). Overall length, approximated 64 inches extended.

Cat. No.	Description	Order No.
AH-48	3-Conductor Koiled Kord	CD-543118-*

* See page 32 for colour suffix letter.

Receiver Cords For Hand Receivers



Neoprene jacket, available in black only. Overall length, 36 inches.

Cat. No.	Description	Order No.
AR-25	2-Conductor Receiver Cord	CD-153036



Neoprene jacket, available in black only. Overall length, 33 inches.

Cat. No.	Description	Order No.
AR-13	2-Conductor Receiver Cord	CD-153033



Neoprene jacket, available in black only. Overall length, 33 inches.

Cat. No.	Description	Order No.
AR-14	2-Conductor Receiver Cord	CD-154033

Special Cords

Replacement cords for telephone instruments not listed, including types no longer being manufactured, are available. Also for special circuit requirements and for special applications, cords having a greater number of conductors and of longer length than shown can be supplied on special order.

When ordering, please specify number of conductors, overall length, and the type and description of apparatus to be connected at each end.

Substation Accessories

Loud Ringing Bells

These bells, equipped with 6-inch diameter gongs and a powerful mechanism, produce a loud and penetrating signal for use in noisy or outdoor locations. They are widely used in such places as power stations, boiler rooms, machine shops, taxi stands, loading platforms, yards, construction projects, etc.

Loud-ringing bells are of the vibrating type and operate directly from straight line ringing current, hence may be bridged directly across the line. These bells are 15 inches wide by 12 inches high and have outside lugs for mounting screws.

Weatherproof



Weatherproof Loud-Ringing Bells are recommended for service in exposed outdoor locations. Mechanism is enclosed in a cast aluminum-alloy case, with $\frac{3}{4}$ -inch conduit connections at top and bottom.

Cat. No.	Description	Order No.
AS-51	Weatherproof Loud-Ringing Bell, 1600 ohms, with 1 mf. condenser, for central battery or magneto service	D-56418-A

Splashproof



Splashproof Loud-Ringing Bells are intended for indoor locations and also for outdoor use if protected from direct exposure to the weather. Cast iron case, finished in black japan.

Cat. No.	Description	Order No.
AS-52	Splashproof Loud-Ringing Bell, 1600 ohms, with 1 mf. condenser, for central battery or magneto service	D-56405-E
AS-62	Splashproof Loud-Ringing Bell, 1600 ohms, less condenser, for magneto service only	D-56405-D
AS-64	Splashproof Loud-Ringing Bell, 1000 ohms, less condenser, for magneto service only	D-56405-A
AS-65	Splashproof Loud-Ringing Bell, 2500 ohms, with 0.7 mf. condenser, for central battery or magneto service	D-56405-G
AS-66	Splashproof Loud-Ringing Bell, 2500 ohms, less condenser, for magneto service only	D-56405-F

Power Operated Signals

For extremely noisy locations, or to cover very large areas, power operated signals provide ample volume under all conditions. These signals, in the form of bells or horns, operate from commercial a.c. power supply and are controlled by relays actuated by regular straight line ringing current.

The bells are of the single gong vibrating type, in both indoor and outdoor types. The outdoor type has a weatherproof housing for the mechanism and a rain hood over the gong. The 6-inch diameter gong is most commonly used, but other sizes are available up to 20 inches in diameter and explosion-proof models can also be supplied.

Duplex horns provide a penetrating sound which carries over long distances. They are available with or without single or double projectors, for indoor or outdoor use, and for wall or ceiling mounting.

Telephone Ringing Relay Sets are used to control a number of signals from one line. These consist of a sensitive relay operating from straight line ringing current and a condenser, thus permitting direct connection across the telephone line. The relay contacts, when operated by the telephone ringing current, close the commercial a.c. power supply circuit to the signals. These sets are mounted in either indoor or outdoor housings.

In cases where only one power operated signal is required, "Duo Potential" bells or horns can be supplied. These consist of a standard bell or horn with a telephone ringing relay mounted in the same housing as the signal mechanism. This provides a compact and economical arrangement.

Information and literature on power operated signals and relays will be gladly furnished upon request.



Outdoor Bell



Indoor Duplex Horn
Single Projector
Wall Mounting



Telephone Ringing
Relay Set
Indoor Housing

Neon Signal Light

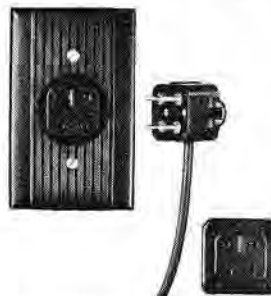


This neon lamp signal operates directly from telephone ringing current. It may be used in place of the conventional ringer in hospitals, libraries and schools where an audible signal would be too disturbing. Also very practical in noisy locations where the regular ringer might not be heard, or in crowded offices where it is difficult to tell which telephone is ringing.

Signal has black finished metal base, 2 3/4 inches in diameter and 1 1/2 inches high, with translucent glass dome, available in three different colours. Supplied complete with neon lamp, having a rated life of approximately 3000 hours, and 6-foot 2-conductor cord for connection across the ringer terminals of the telephone (should not be connected across the line).

Cat. No.	Description	Order No.
AS-96	Neon Signal Light — Red Dome	D-94011-H
AS-97	Neon Signal Light — White Dome	D-94011-J
AS-98	Neon Signal Light — Green Dome	D-94011-K

Portable Telephone Plugs and Jacks



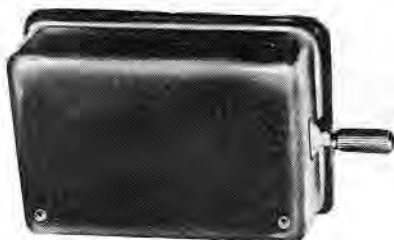
Extension desk telephones equipped with plugs and wall jacks installed at various locations provide extra convenience to subscribers and additional revenue to telephone companies.

The Type 28 Plugs are easily installed on existing telephone line cords, having convenient screw terminals for spade-type cord fittings. The Type 40 Jack has two holes for surface mounting with flat-head screws. For flush mounting in a standard electric switch box (not furnished), the Type 49 Jack is supplied complete with a plastic flush plate, as illustrated above.

Jacks and plugs are available in either brown or ivory.

Cat. No.	Description	Order No.	
		Brown	Ivory
AZ-18	Type 28 Plug, 4-conductor	D-42703-A	D-42703-B
AZ-17	Type 40 Jack for surface mounting, 4-conductor	D-42704-A	D-42704-B
AZ-16	Type 49 Jack with flush plate, 4-conductor	D-57154-A	D-57154-B

Telephone Switching Keys



These keys are used for connecting one telephone to two or more lines, connecting a number of telephones to one line, and other switching arrangements. A locking type lever key is mounted with and wired to a screw-type terminal strip on a steel base and protected by a pressed steel cover, finished in black japan. Overall dimensions (including key handle) are 5 3/4" long, 3 3/8" wide and 1 1/2" high.

Cat. No.	Description	Order No.
AY-10	Telephone Switching Key, 2-conductor, 2-way	MC-88003-C
AY-11	Telephone Switching Key, 2-conductor, 3-way	MC-8885-C

Line Terminal Blocks

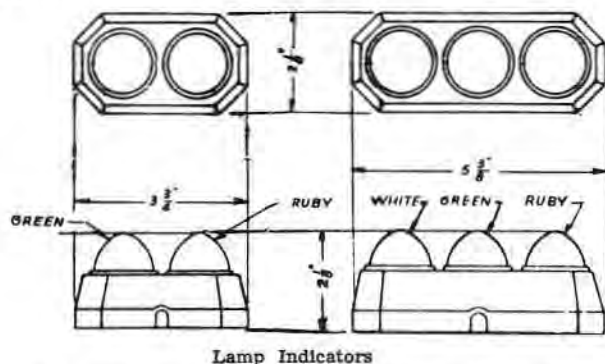


Used for connecting telephone line cords to inside wiring. Cover and base are molded of tough black plastic. Cover is held in place by a black-finished non-loseable screw turning in a brass stud in the base. Two terminal screws in a brass bar are provided for each conductor, with a raised ridge between adjacent terminals to prevent shorting. Supplied with two round head wood screws for mounting.

Cat. No.	Description	Order No.
AV-21	Line Terminal Block, 2- or 3-conductor	D-150000-A
AV-23	Line Terminal Block, 4-conductor	D-150002-A

Signals for Multiple Line Service

The following signals are used in conjunction with Type 47 Desk Monophones (page 21) to provide identification and auxiliary internal signalling for various types of multiple line service systems.



Lamp Indicators

The visual signals have molded black plastic bases, with two or three dome lenses. For operation directly from ringing current, neon lamps are used; and for operation from 24 volts (a.c. or d.c.), filament lamps are used. The lamps are not supplied with the signals and must be ordered separately.

The audible signals are in the form of compact and reliable buzzers, for operation on 12, 24 or 48 volts d.c. Push buttons are available for use at telephones other than Type 47 Desk Monophones. These have extra large button and black bakelite base, 1 1/8" x 1 1/8" x 3/8" high.



Pushbutton

Description	Order No.
Lamp Indicator with 2 dome lenses (ruby and green), less lamps	D-94043-A
Lamp Indicator with 3 dome lenses (ruby, green and white), less lamps	D-94044-A
Neon Lamp (ringing current operation) for Lamp Indicator	D-94042-A
Filament Lamp (24 volts a.c. or d.c. operation) for Lamp Indicator	D-9493-A
Buzzer, 12 volts, d.c.	D-56367-A
Buzzer, 24 volts d.c.	D-56400-A
Buzzer, 48 volts d.c.	D-56317-A
Push Button	S-3220

Maintenance Tools

Several tools, such as wrenches, pliers, spring adjusters, etc., have been specially designed to simplify the adjusting and maintenance of Automatic Electric telephone instruments and components. Damage to apparatus can be avoided and considerable time can be saved by the use of the proper tools.

Monophone Tool



Monophone Tool

Used for removing and tightening the Monophone switch spanner nut on Type 50 (page 18) and other Monophones having a similar switch, also for removing and tightening the receiver cap bushing on the Type 38 Handset (page 45).

Cat. No.	Description	Order No.
AW-17	Monophone Tool	H-43172

Dial Tools



Tool for Dial Escutcheon Lock

Cat. No.	Description	Order No.
AW-13	Dial Escutcheon Lock Tool used for removing the escutcheon ring from Types 51 and 51A Dials (also Type 52 Dials having black or chrome finger plates)	H-26917
AW-14	Dial End Wrench For the governor bearing nut and large impulse cam nut of dials.	H-25937
AW-15	Dial Socket Wrench For the small impulse cam nut of dials.	H-16480
AW-16	Dial Pliers For adjusting the governors, impulse and shunt springs of dials.	H-16290-7

Other special and general use tools for telephone work are illustrated and described in Automatic Electric Bulletin 540-B, copies of which are available upon request.

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