

STATION SETS INDOOR LOCATION INSTALLATION

1. GENERAL

- (a) This section covers general information and procedures pertaining to the installation of station sets at indoor locations.
- (b) This section is reissued to revise tabular information on fasteners used for mounting station sets and to include installation procedures for current production station sets.

2. INSTALLATION

(a) *Planning:*

- (1) In planning the location of the telephone instrument, the customer's choice of location is given prime consideration. The customer should be made aware of any safety hazard or maintenance problem that location might have.
- (2) Planning is a very important part of any station installation. Hazards to consider are the following:
 - (a) Concealed electrical wires behind a surface to be drilled for mounting a telephone set or making entrance holes for wires or cables.
 - (b) Concealed water, gas, or drainage pipes.
 - (c) Drilling through sliding doors or section of wall intended for sliding door receptacle.
 - (d) Furniture or built-in cabinets against the opposite side of the wall being drilled.
 - (e) Damage to rugs, flooring, or ceiling when drilling through floors.

(f) When attaching telephone instruments, wires, cables, or connecting blocks to a table or desk, avoid placing fasteners that will interfere with normal operation of the table or desk. Do not drill through or use fasteners that extend into a drawer or other movable parts of the table or desk.

(g) Fasteners can become a hazard if allowed to penetrate through a mounting surface or are not properly seated against the apparatus being mounted. (See Table A for suggested fasteners to be used on common mounting surfaces.)

(b) *Tools and Apparatus:*

- (1) When installing a telephone instrument, the proper tools should be used to prevent physical injury.
 - (2) Tools and telephone equipment should be kept out of aisles and other areas where the public might fall over them.
 - (3) Tools hanging on a workman's belt can also become a hazard during the installation. These tools could scratch furniture when working in close quarters or snag on cords to electrical appliances or table lamps.
 - (4) Use a step ladder when working at heights beyond your reach.
 - (5) Protective devices such as safety glasses and helmets should be used per local instructions.
- (c) *Uncrating:* All boxes, packaging material, and surplus wire should be disposed of in a proper receptacle or removed from the customer's premise. Make a final check that no hazardous or unsightly conditions have been created by the installation.♦

◆ TABLE A ◆

FASTENERS USED FOR MOUNTING STATION APPARATUS

MOUNTING SURFACE	NUMBER OF FASTENERS (NOTE 1)				SIZE AND TYPE OF FASTENERS
	AC1 TEL. BASE	WALL TYPE TEL SETS (NOTE 4)	200 SERIES HANG-UP TYPE TEL SETS	SUB. SETS	
Hardwood (including Wooden Backboards)	2	2	4	2	1-1/4 in., No. 8 RH blued wood screws
Softwood	2 (Note 2)	2 (Note 2)	4	4	1-1/2 in., No. 8 RH blued wood screws
Plaster on Wood Lath	2 (Note 2)	2 (Note 2)	4	4	2-in., No. 8 RH blued wood screws (Note 3)
Side of Wood-paneled Desk (place fastener in framing around panel when possible)	2	2	4	3	See type of wood sur- face above.
Metal Desks	2	2	4	2	1-in., No. 8 RH self- tapping screws
Plaster on Masonry or Plaster Block	2	2	4	4	2-1/2 in., No. 8 RH blued wood screws No. 10 plastic anchor
Masonry	2	2	4	4	1-1/2 in., No. 8 RH blued wood screws No. 10 plastic anchor
Sheetrock, Beaver, or Similar Composition Board	2 (Note 2)	2 (Note 2)	4	4	Wall screw anchor
Solid Metal	2	2	4	2	10-24 x 1 in., FH bright machine screws
Plaster on Metal Lath; Plaster on Plaster Board	2 (Note 2)	2 (Note 2)	4	2 (Note 2)	Wall screw anchor or 2-in. No. 8 RH blued wood screw (Note 3)
Metal Sheath on Solid Wood	2	2	4	4	1-1/2 in., No. 8 RH blued wood screws
Metal Sheath over Furring on Brick	2	2	4	4	1-1/4 in., No. 8 RH blued wood screws
Metal Sheath over Furring or Plaster on Lath	2	2	4	4	1-1/2 or 2-in., No. 8 RH blued wood screws

Notes:

- Where two fasteners are specified, place fasteners diagonally opposite each other, locate one fastener near the handset cord.
- Additional fasteners may be placed to ensure mounting.
- When mounting on plasterboard, plaster on lath, etc. fasteners must be embedded in stud at least 1 inch.
- Early production sets have a baseplate which does not provide the proper hole arrangement for fastening directly to conduit outlet boxes, 157A adapter, 630 or KS-19407L1 prewire bracket.

(d) **Installing:**

(1) **Fastening Station Sets:**

- (a) Telephone sets, subscriber sets, and associated station apparatus should be fastened securely to a substantial mounting surface. Refer to Table A for recommended fasteners.
- (b) All screws must enter studding when mounting station apparatus to thin paneling, plaster on wood lath, beaver, or similar composition board. Where a screw does not strike the studding try to slant the screw or move the set so as not to expose the first hole but still allow the screw to strike the stud.
- (c) Where wire is not concealed at subscriber set or wall set, a fastener should be placed approximately 2 inches from the set.
- (d) Baseplate of the 500-type wall telephone sets manufactured after 1959 is provided with additional holes which can be used to fasten set directly to a conduit outlet box.
- (e) 1500- and 2500-type wall telephone sets can be fastened to an electrical outlet box or prewire brackets if a 155A adapter is used. The 157A adapter provides a means of fastening early production or

current model 500-type wall phones to either an electrical outlet box or prewire bracket.

- (f) See the appropriate section in Division 463 for information on fastening an apparatus box used with panel-type telephone sets.

(2) **Subscriber Sets:**

- (a) A combination of a subscriber set and a hangup-type hand telephone set commonly called a 2-piece set, must be considered as a single unit when installed in a given location.
- (b) In cases where subscriber set and hangup-type hand telephone set are separated, the following should be observed:

Signal must be heard satisfactorily in area served by talking set.

To provide adequate transmission and to prevent crosstalk, maximum wire lengths in feet between subscriber set and hangup- or desk-type hand telephone set are shown in Table B.

- (c) Early production subscriber sets with open core induction coils and ringers or amplifier type subscriber sets should not be mounted side by side with similar

◆ TABLE B ◆

MAIXMUM WIRE LENGTHS — SUBSCRIBER SET TO HAND TELEPHONE SET

TYPE STATION	NO. OF CIRCUITS	INSIDE WIRING CABLE	LEAD-COVERED CABLE	STATION WIRES
			FEET	
Common Battery	One	250	250	250
	Two or more paralleling	15	20	90
Local Battery Talking—Common Battery Signaling	One	100	100	100
	Two or more paralleling	5	5	20

station apparatus. Crosstalk and feedback may be encountered if a minimum separation of 12 inches is not maintained.

(d) Subscriber sets with relays should always be mounted in a plumb, vertical position.

(e) A typical method of terminating wire and mounting cord in 686-type subscriber set and a method of securing mounting cord in 685-type subscriber set is shown in Fig. 1.

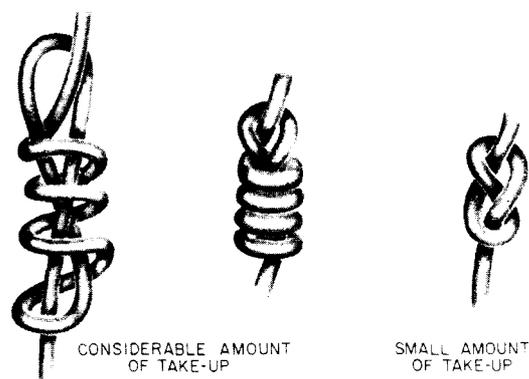


Fig. 2—Mounting Cord Take-Up

(g) Subscriber sets equipped with a ringer volume control should be located so customer will have access to the ringer volume adjusting arm.

(h) Ringer volume control on current production subscriber sets as well as 500-type wall telephone sets normally comes locked in the high position. To enable customer to adjust ringer volume, the push rivet stud has to be removed from ringer adjusting arm and stored in the hole provided for this purpose (Fig. 1)



Ringer cutoff feature should not be provided unless authorized by service order.

(i) Normally place subscriber sets with ringer gongs down. A typical exception to this general rule occurs when sets are installed horizontally under desks or tables.

(3) Hangup-Type Hand Telephone Set:

(a) Whenever possible, hangup-type hand telephone sets should be mounted on walls with switch hook to right or left of mounting. Dial should be mounted parallel to wall. This arrangement will reduce the possibility of handset's being knocked from cradle and will prevent cutoffs while dialing (Fig. 3 and 4).

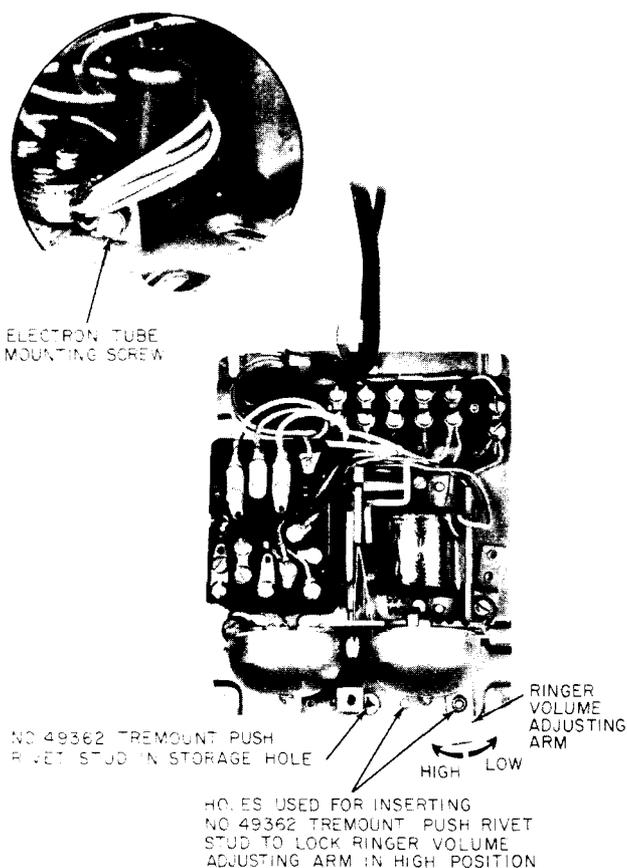


Fig. 1—Wire and Mounting Cord Terminated in 685- and 686-Type Subscriber Sets

(f) Where location of a subscriber set does not result in raising cord above floor level, cord may be shortened by knotting (Fig. 2). Locate cord knot near subscriber set.

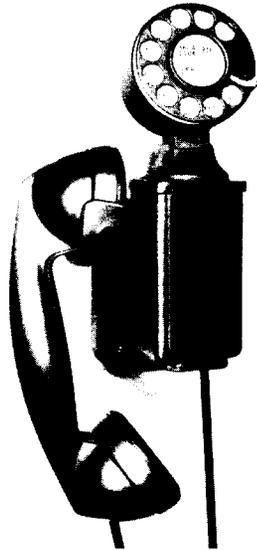


Fig. 3—Handset at Left



Fig. 4—Handset in Front

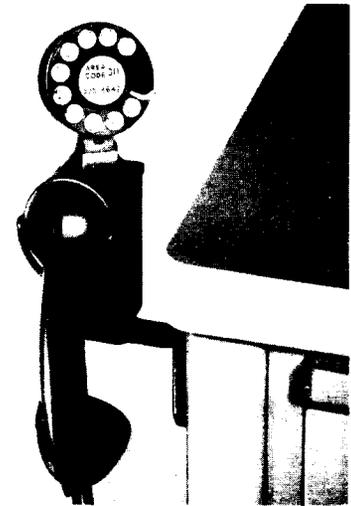


Fig. 5—Installed on Desk

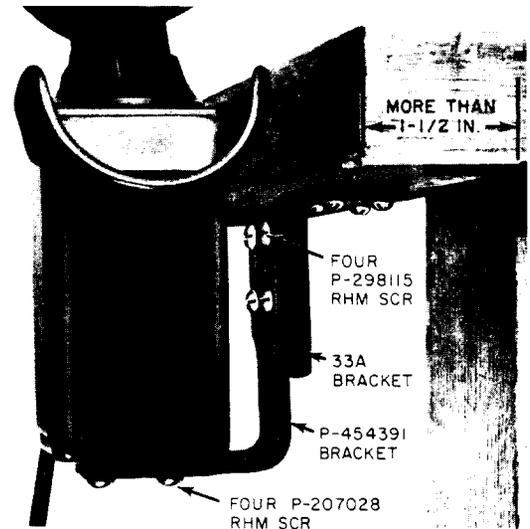


Fig. 6—Installed With 33A Auxiliary Bracket

- (b) When installing hangup-type set on desks or tables, handset should normally line up with front of desk or table. This will reduce the chance of accidentally knocking handset off the switch hook. A 33A auxiliary bracket is used when a G-type mounting is attached to a desk or table where the top overhangs more than 1-1/2 inches (Fig. 5 and 6).
- (c) When required, use a 164-type backboard for mounting hangup-type hand telephone

sets. Fasten backboard to mounting surface as shown in appropriate section in Division 463. Where no backboard is used, fasten mounting bracket to mounting surface with four screws of the type specified in Table A.

- (d) Dial should be adjusted to the most suitable position for the customer.
- (e) The 41A and 43A dial mountings used with G-type handset mounting are arranged so dial may be rotated. Dial is

locked in one of 12 positions, 30-degree intervals, by means of notches in base of dial mounting. Notches engage two studs at the top of handset mounting. Dial may be rotated as follows (Fig. 7):

Loosen dial positioning screw.

Lift dial slightly and revolve to the desired position.

Lower dial into place.

Retighten dial positioning screw.

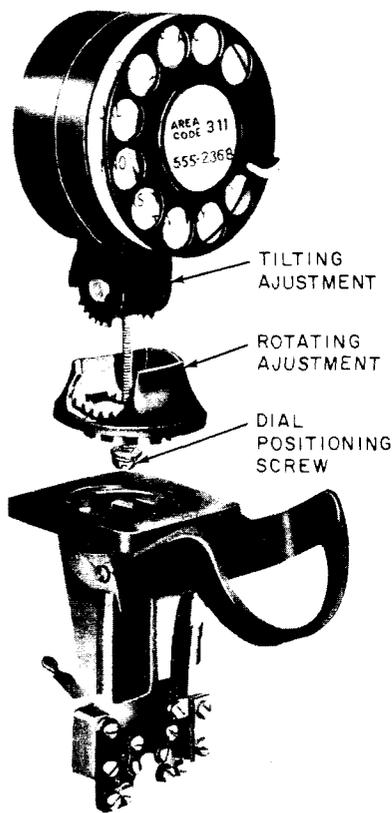


Fig. 7—Positioning Adjustments of 43A Dial Mounting

(f) The 43A dial mounting may also be tilted as much as 45 degrees backward in 15 degree intervals. Dial is tilted as follows (Fig. 15):

Loosen dial positioning screw.

Raise dial and tilt to desired angle.

Lower dial into place.

Retighten dial positioning screw.

(g) The 39A dial mounting used with C1 handset mounting has two mounting holes in base and can be attached directly to C1 handset mounting with the two screws furnished (Fig. 8).

Dial can be faced to any of the four sides of the C1 mounting.

An adapter and two mounting screws are furnished with 39A dial mounting (Fig. 8).

By mounting this adapter on C1 mounting and placing 39A dial mounting on adapter, the dial can be positioned to each of the four corners of C1 mounting.

The above operations allow the dial to be placed in eight positions.

Mount 39A dial mounting directly to C1 mounting whenever practical.

Use an offset screwdriver to place these mounting screws.

(4) Station Wire and Mounting Cords:

(a) When terminating wire inside a hangup-type hand telephone set, leave sufficient slack to enable switch hook assembly to be reassembled in housing. Fig. 9 shows typical wiring of hangup-type hand telephone set.

(b) Concealed wiring may enter 500-type wall telephone sets through the opening provided in metal base (Fig. 10).

(c) The 554-type wall telephone sets have a separate entrance hole provided for inside wire (Fig. 11).

(d) Where it is necessary for exposed wire to enter the top of the wall-type telephone set, set may be mounted on a backboard and wire brought down wiring

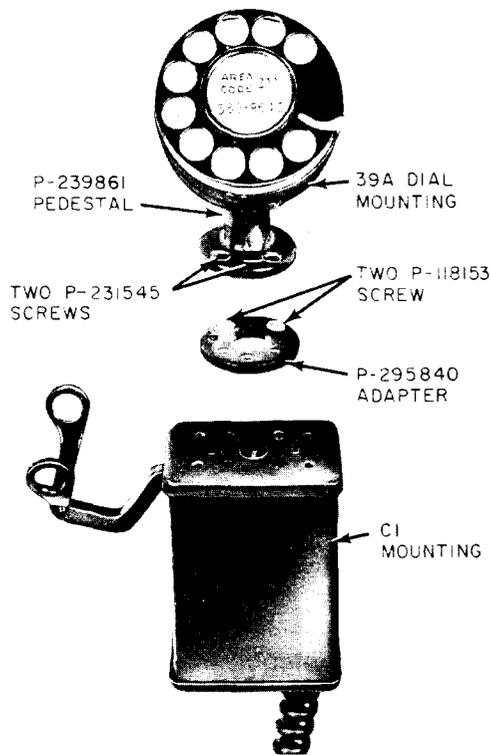


Fig. 8—39A Dial Mounting With C1 Handset Mounting

channel in the backboard and through hole in metal base of the set.

(e) The 3- or 4-conductor mounting cords associated with desk-type telephone sets are normally terminated on 42-type connecting blocks (Fig. 12).

(f) Cord conductors shall be terminated so that they do not lie directly over screw terminals or center post of connecting block, nor project beyond the edge of connecting block.

(g) Where desk-type telephones having mounting cords with five or more cord conductors are installed, 44A-type connecting blocks should be used (Fig. 13). At desk locations, mounting cords should be fastened so that no portion of the cord rests on the floor.

(h) Avoid leaving excessive slack in station wire within station sets. Leave only enough slack to allow for possible retermination

of the wire, such as reversing the tip and ring due to a change in class of service.

(i) Spare cord conductors may be terminated under spare screw terminals. If spare terminals are not available, the KS-19147L1 cord tip insulator should be used. The use of this insulator will prevent damage to the cord conductor when the insulator is removed to terminate the conductor. Adhesive type insulators are not recommended.

(j) All cord and wire conductors within the station set should be formed and terminated so that they will not interfere with any moving part. Spade tips or skinned wire should come in contact only with terminal to which the connection is made.

(k) Station wire and spade-tipped conductors should be terminated on screw terminals as shown in Fig. 15. To avoid interference, cord tip is turned down when two wires and a cord tip are connected to a terminal.

(l) Station wire and spade-tipped conductors should be terminated on quick connect terminals as shown in Fig. 16.

(m) 153-type adapters (Fig. 14) are provided so that the station wire or mounting cords of keyless stations can be connected to connector cables, 66E3 terminals or 149-type adapters.

(n) Refer to the appropriate sections in Division 461 for terminating and dressing conductors at connecting blocks or plugs for portable telephone sets.

(5) ♦ **Dial-Light or Night-Light:**

Caution: Do not exceed the rated lamp load of the transformer being installed (refer to Section 501-136-100).

(a) When a telephone set equipped with night-light or dial-light feature is installed a transformer must be used as a source of low-voltage AC power.

(b) A 2012A transformer is required when a single telephone set with night-light or dial-light feature is installed.

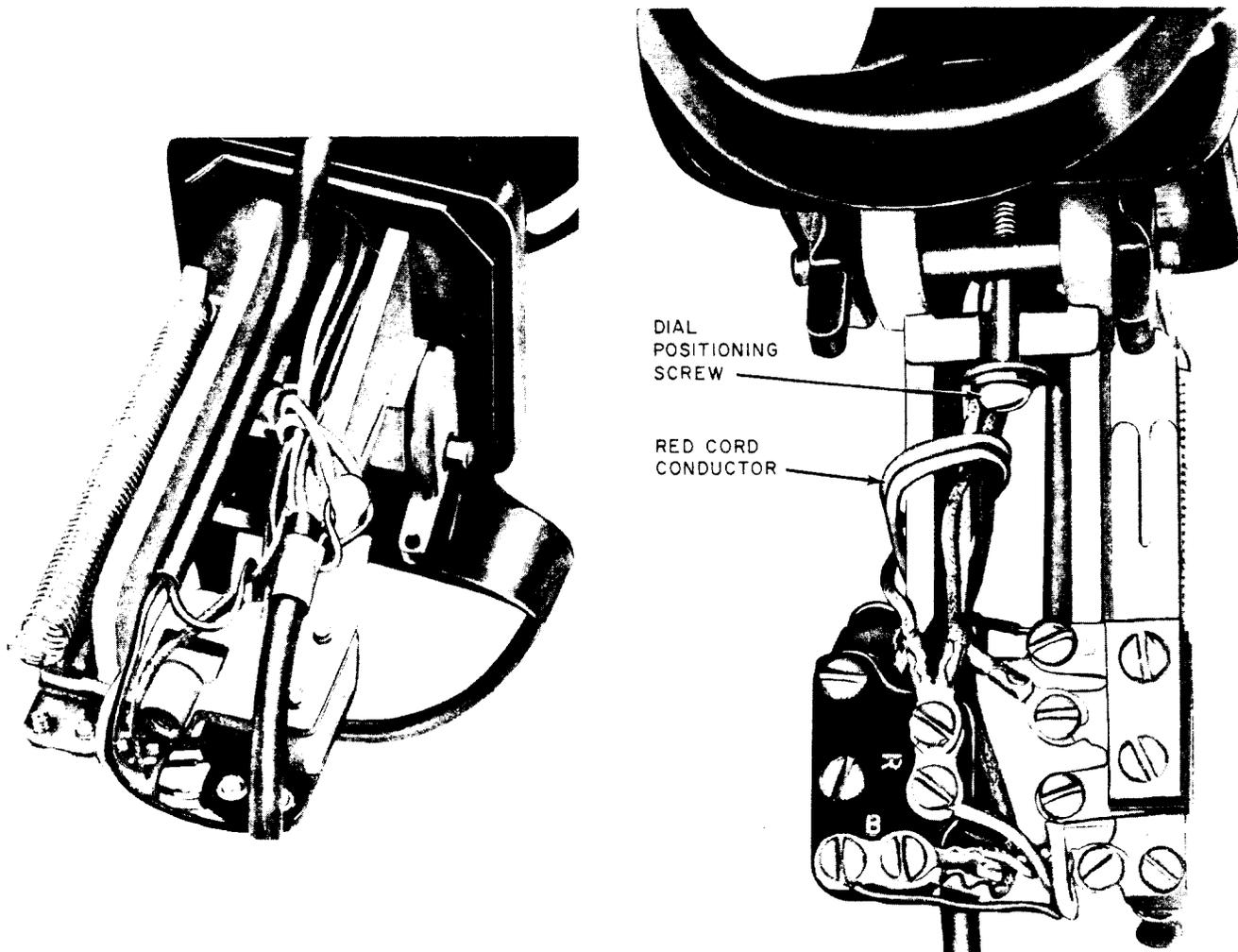


Fig. 9—Wiring of Hangup-Type Hand Telephone Set

(c) The KS-20426L3 transformer is required when up to, but no more than five, telephone sets with night-light or dial-light features are installed.

(d) Connect lamp leads from transformer output terminals to a connecting block. The connecting block used depends upon the number of feeder pairs required. Plug transformer into 115-volt, 60-cycle convenience outlet not under control of a wall switch and secure with a 2A clamp. For BEST illumination, not more than 150 feet of "D" Station Wire or inside wiring cable should be used between the transformer and station set(s).◆

Note: Because of added resistance, do not use 25-foot mounting cords on PRINCESS® telephone sets. When the combined lengths of mounting and handset cords exceed 15 feet on TRIMLINE® telephone sets the 53B lamp may be replaced by a 53A lamp.

(6) **Backboards:**

- (a) Backboards should be used only when required. **Do not** use backboard unless:

Mounting surface is uneven or damp.

A secure mounting could not otherwise be obtained.

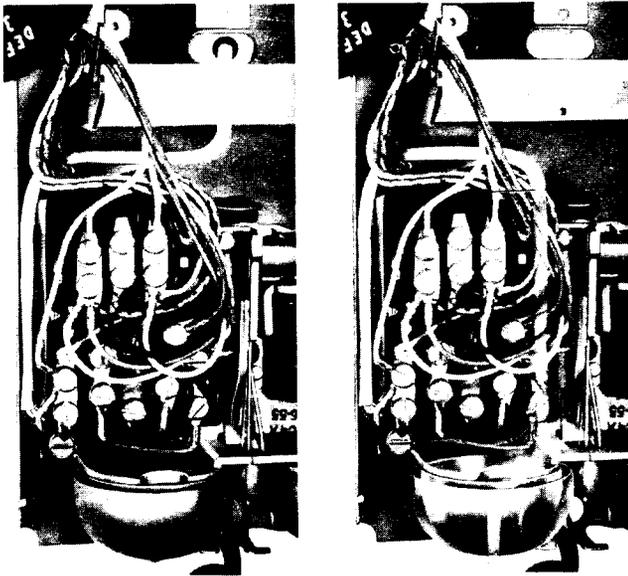


Fig. 10—Inside Wire Terminated in 554 Wall-Type Telephone Set

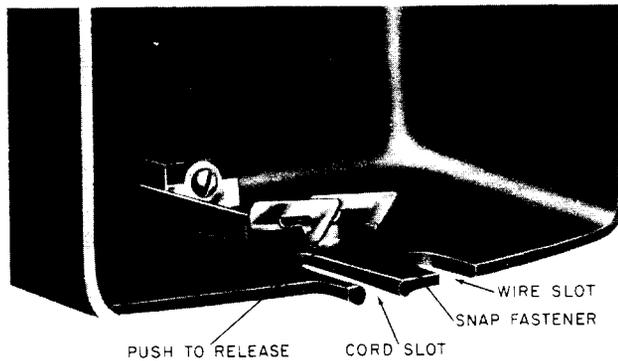


Fig. 11—Entrance Hole in Housing of 554 Wall-Type Telephone Set

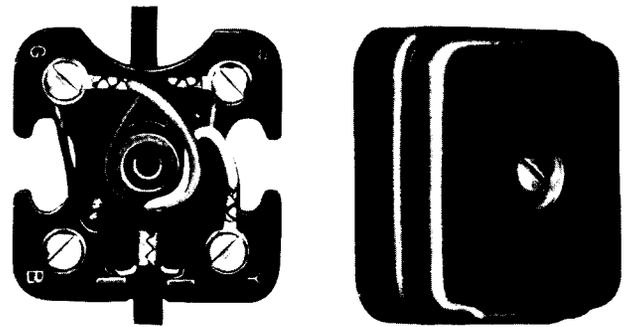


Fig. 12—Terminating 1-5/8 Inch Cord Conductor

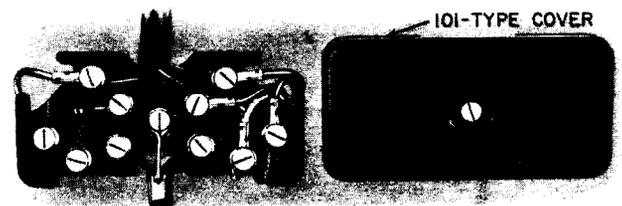


Fig. 13—5-Conductor Cord Terminated on 44A Connecting Block

It is necessary to insulate special apparatus from metal mounting surfaces.

It is necessary to avoid drilling excessive holes in order to provide better appearance at desk locations.

(e) *Service Check:*



As an aid in satisfying the customer and providing trouble-free service, the following items should be verified before leaving the job:

- (1) Adequate telephone service on premises.
- (2) Proper operation of all station equipment.
- (3) Customer's understanding of correct use of his equipment.

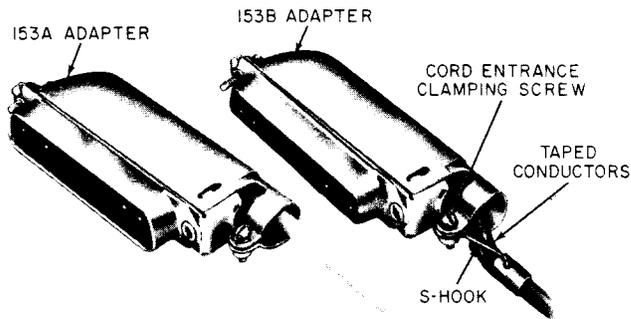


Fig. 14—153A and 153B Adapters

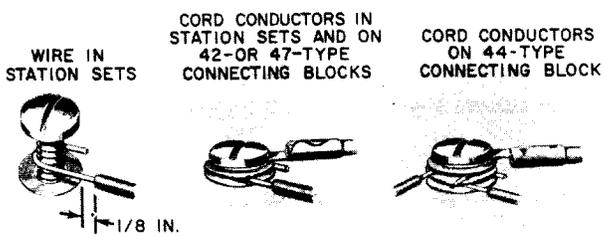


Fig. 15—Terminating Station Wire and Cord Conductors on Screw Type Terminal

- (4) Customer's possession of current directory.
- (5) Customer's acceptance of ringer tone and volume.
- (6) Customer's possession of instruction card.
- (7) Correct telephone number in number card holder.
- (8) Overall appearance of installation.

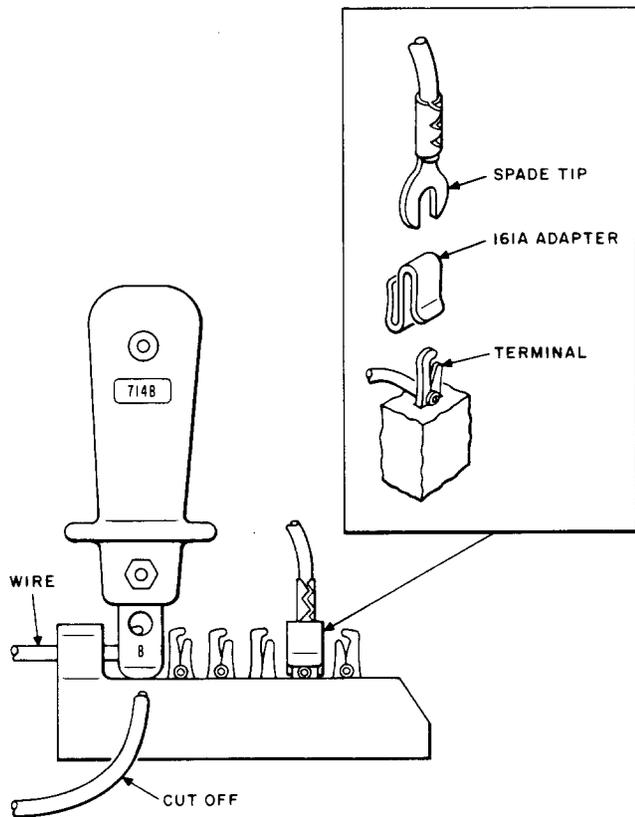


Fig. 16—Terminating Station Wire and Spade Tip Cord Conductor on Clip-Type Terminals