

ELEVATOR APPARATUS

PANEL CALL DISTRIBUTING "B" LINK

PIECE-PART DATA AND REPLACEMENT PROCEDURES

1. GENERAL

1.01 This section covers the information necessary for ordering parts to be used in the maintenance of panel, local, and central "B" switchboard call distributing "B" link elevator apparatus. It also covers approved procedures for replacing these parts.

1.02 This section is reissued to omit the procedures covering the repair of brush rods since the information is covered in Section A560.024 and to amplify the procedures for multiple brush replacements. Detailed reasons for reissue will be found at the end of the section.

1.03 Part 2 of this section covers the piece-part numbers and the corresponding names of the parts which it is practicable to replace in the field in the maintenance of the above apparatus. No attempt should be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts. This information is called Piece-part Data.

1.04 Part 3 of this section covers the approved procedures for the replacement of the parts listed in Part 2. It also contains the approved procedures for replacing multiple brushes and for reconditioning brush rods worn excessively at the rack coupling end. This information is called Replacement Procedures.

1.05 In general, before making replacements of any part of the apparatus covered herein, make the associated circuit and the circuits associated with the brush rods which are adjacent to it busy, in the approved manner.

1.06 A brush rod which is worn excessively at the bottom where it rests on the rack shoulder or which is cracked or broken at the rack tongue slot should be repaired in accordance with Section A560.024.

2. PIECE-PART DATA

2.01 The figures included in this part show the various piece parts in their proper relation to other parts of the elevator apparatus. The piece-part numbers of the various parts are given together with the names of the parts as listed by the Western Electric Company Merchandise Department. Where these names differ from those in general use in the field, the latter names, in some cases, are shown in parentheses.

2.02 When ordering piece parts for replacement purposes, give both the number and name of the piece part. For example, P-173971 Screw. Do not refer to the BSP number or to any information shown in parentheses following the piece-part numbers.

2.03 Information enclosed in parentheses () is not ordering information. It may be references to notes, parts referred to in other portions of the section and not considered replaceable and where the name in general use in the field differs from the part name assigned by the manufacturer.

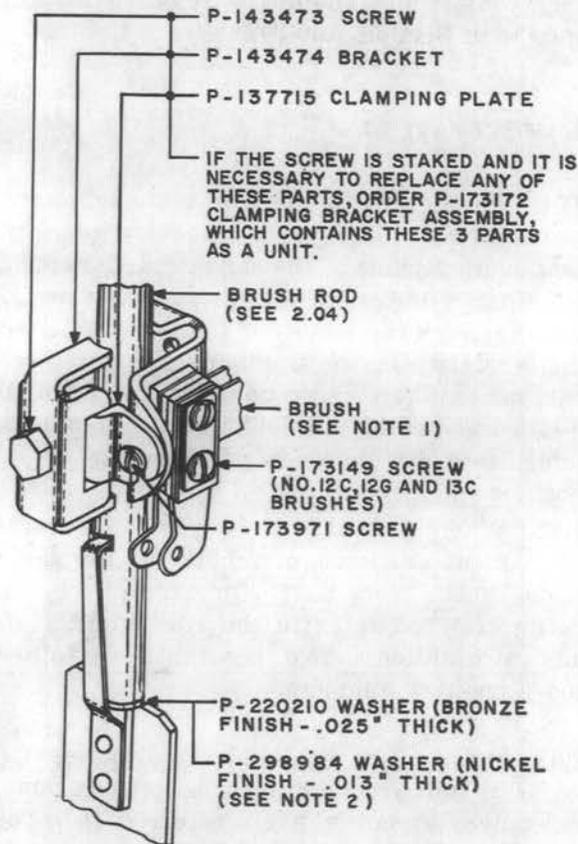
2.04 **Brush Rods:** Brush rods are coded both with and without multiple and commutator brushes. When a completely assembled rod (including multiple and commutator brushes) is required, order the rod by the code number as shown in the second column of Table A. When an individual item is required order the item as shown in the table under the proper heading.

TABLE A

USAGE	CODE NO. OF ROD ASSEMBLED	CODE NO. OF GUIDE ROD ONLY	CODE NO. OF BRUSH ROD ONLY*	CODE NO. OF BRUSH (MULTIPLE)	CODE NO. OF BRUSH (COMMUTATOR)	CODE NO. OF GUIDE	CODE NO. OF COMPENSATOR
SENDER SELECTOR							
100 Point	1009L	5C	9F	12C or 12G**	14E	1B	2B
TRUNK FINDER	1013A	—	13A	13C	14A	—	2A

*Includes stop collars.

**See 3.25.



Note 1: Specify code number of brush desired. Brushes are furnished less the P-173971 screws and P-173172 clamping bracket assembly if specified in order.

Note 2: Washer used only in obtaining proper clearance between rack tongue and notch in brush rod, particularly when earlier-type rack without washer is replaced by later-type rack with washer.

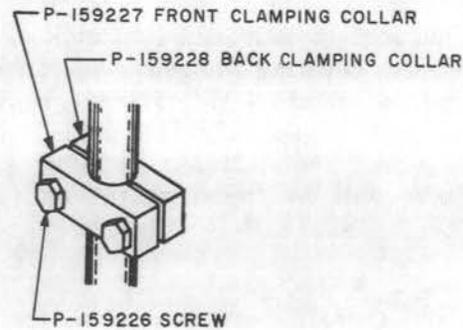
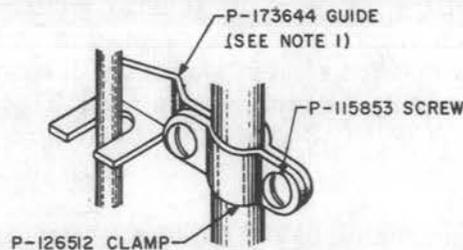


Fig. 2 - Upstop or Downstop Collar



NOTE
 I. REPLACEMENT PART FOR BOTH NO. 1A AND 1B GUIDES.

Fig. 1 - Multiple Brush Parts and Rack Bearing Washer

Fig. 3 - 1-type Guide

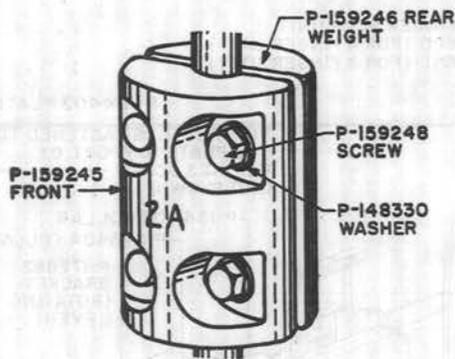


Fig. 4 - Compensator Used on Trunk Finder Rods

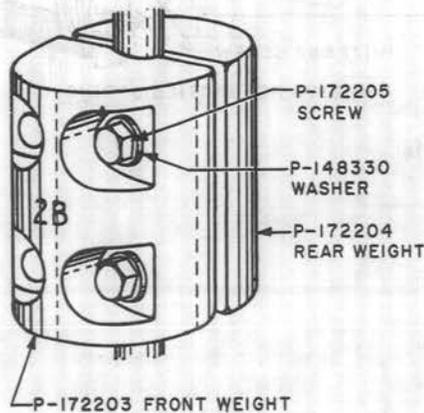


Fig. 5 - Compensator Used on Sender Selector Rods

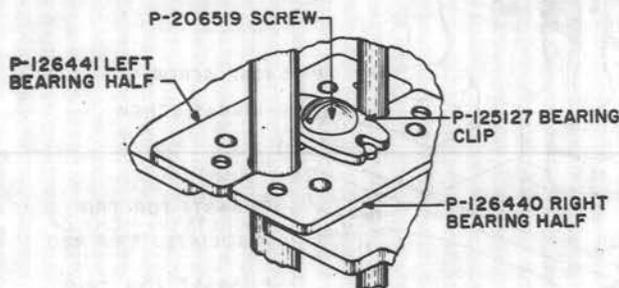


Fig. 6 - No. 3A Bearing Parts

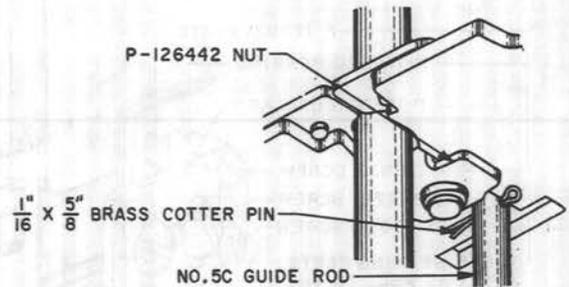


Fig. 7 - No. 3A Bearing Parts and Guide Rod

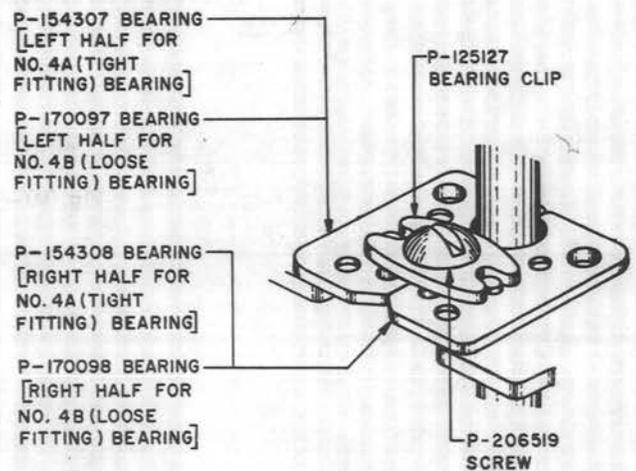


Fig. 8 - 4-type Bearing Parts

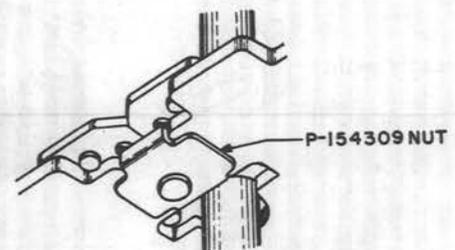


Fig. 9 - 4-type Bearing Part

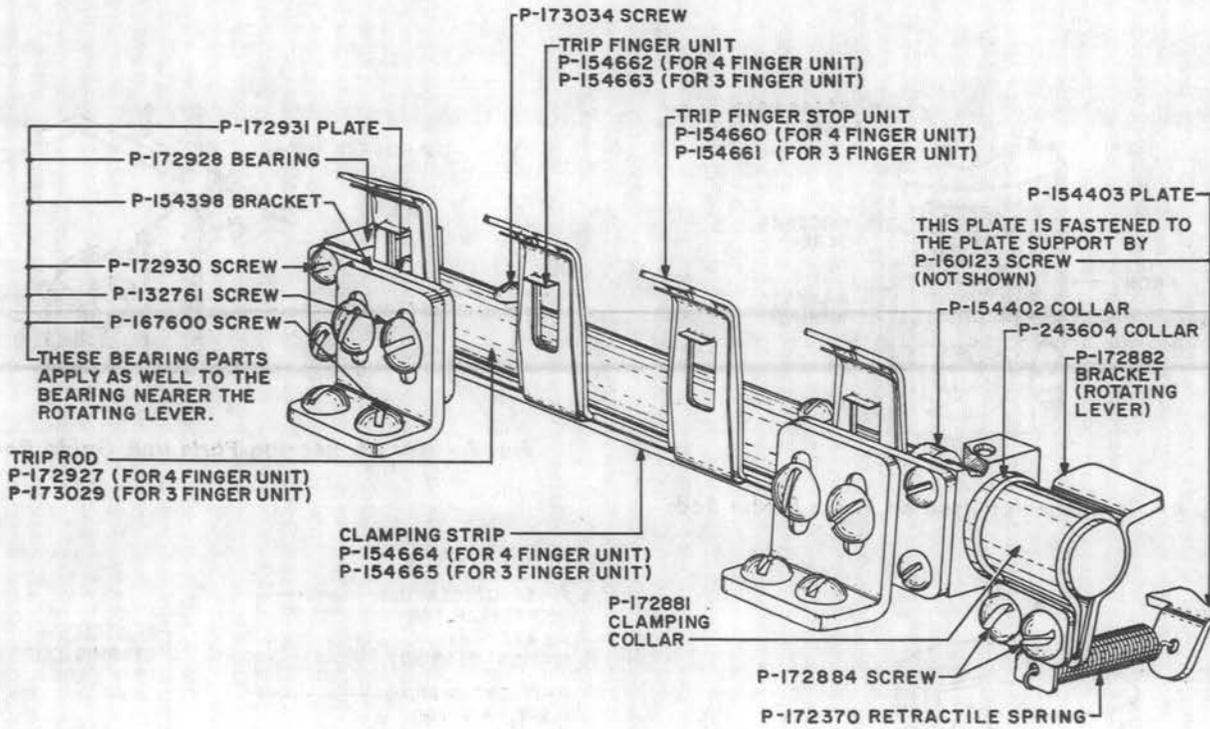


Fig. 10 - Trip Rod Parts

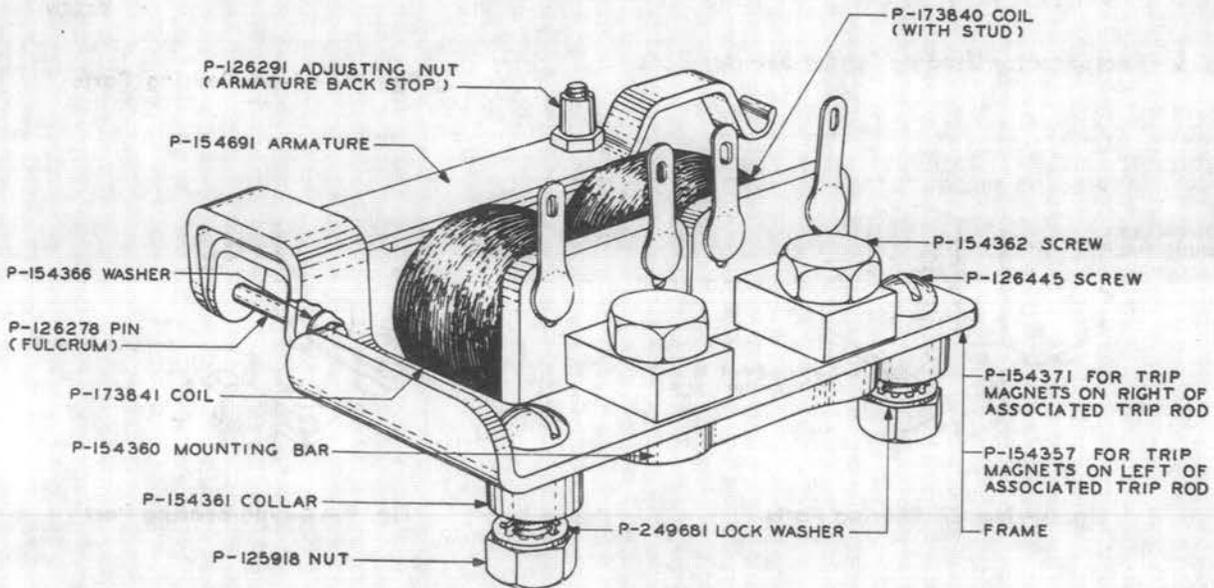


Fig. 11 - 1-type Trip Magnet Parts

3. REPLACEMENT PROCEDURES**3.01 List of Tools and Materials**

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
48	Combination 7/32-inch and 1/4-inch Hex. Double-end Socket Wrench and Screwdriver
206	30-degree Offset Screwdriver
207	90-degree Offset Screwdriver
240	Scriber
245	3/8-inch and 7/16-inch Hex. Open Double-end Flat Wrench
344	Offset Screwdriver
400A	Commutator Brush Spacer
417A	1/4-inch and 3/8-inch Hex. Open Double-end Flat Wrench
555A	3/16-inch Hex. Single-end Socket Wrench
KS-2631	Screwdriver
KS-8097	12-point Offset Box Wrench 7/16 inch and 5/8 inch.
KS-14439	Cut Nippers
—	P-long-nose Pliers
—	3-inch Cabinet Screwdriver
—	4-inch Regular Screwdriver
MATERIALS	
KS-2423	Cloth
KS-7860	Petroleum Spirits
KS-14666	Cleaning Cloth
—	Toothpicks, Hardwood, Flat at One End and Pointed at the Other
—	Canvas (Sufficient to cover all the clutches on the side of a frame)
—	Spring Clothespin

3.02 No replacement procedures are specified for screws and other parts where the procedure consists of a simple operation.

3.03 Before replacing any part covered herein, check whether the replacing part is covered with a protective film of grease. If it is, remove the grease with KS-7860 petroleum spirits and then lubricate the part, if required, as outlined in Section A446.007.

3.04 After making any replacement of parts of this apparatus, the part or parts replaced shall meet the readjust requirements involved, as specified in Sections A446.007 and A449.002. Other parts whose adjustments may have been disturbed by the replacing operation shall be checked to the readjust requirements and an over-all operation check shall be made of the apparatus before restoring the circuit to service.

BRUSH PARTS**Clamping Plate**

3.05 Loosen the two clamping plate mounting screws with the 3-inch cabinet screwdriver after having loosened the brush clamping bracket screw with the No. 555A socket wrench. Raise and remove the clamping bracket assembly. A visual inspection will now show whether or not the brush clamping bracket screw is staked. If it is, replace the whole assembly. If not, remove the brush clamping bracket screw and the clamping bracket and remount them on the new clamping plate. Make sure that the brush clamping bracket screw is loose to allow plenty of play in the clamping bracket. Remount the assembly on the brush frame and fasten the clamping plate to the frame. Then tighten the brush clamping bracket screw.

DOWNSTOP COLLARS AND 1-TYPE GUIDE**Downstop Collars**

3.06 If the collar acts as a downstop, raise the brush rod partway.

3.07 Scribe a mark with the No. 240 scriber on the brush rod at the point where the bottom edge of the stop collar comes in contact with it and then remove the two stop collar screws with the No. 555A wrench. Substitute the new collar, setting it in the proper location by the scribe mark.

1-Type Guide

3.08 Since the 1-type guide acts as an upstop on this type of elevator apparatus, it will be necessary before removing it to scribe a locating

mark on the rod, as covered in 3.07. To remove the guide, remove the guide screws with the No. 206 and 207 offset screwdrivers. The removal of these screws frees any parts which may require replacement. Reassemble the guide assembly and locate it properly by means of the scribe mark.

GUIDE ROD PARTS

3.09 Remove the cotter pin near the upper end of the guide rod with the long-nose pliers. Draw the guide rod upward through the bearing. When remounting the rod, take care to pass the rod inside the guide and spread the ends of the cotter pin at least 1/16 inch after passing it through the hole in the rod.

COMPENSATOR PARTS

3.10 Remove the four clamping screws and washers with the No. 555A wrench. This will release the front and back weights for replacement purposes. Remount the compensator, using the reverse of this procedure.

TRIP ROD PARTS

Rotating Lever, Clamping Collar, and Retractable Spring

3.11 Loosen the rotating lever mounting screws with the 4-inch regular screwdriver and turn the rotating lever so that the tension is removed from the retractile spring. Remove the end of the rotating lever retractile spring where it loops around the lug on the plate. A toothpick, inserted between the retractile spring and the back of the lug and used as a pry, will assist in the removal of the spring without distorting it.

3.12 Draw the rotating lever from the end of the trip rod. If necessary, loosen the trip magnet mounting screws, as covered in 3.18, so that the trip magnet may be raised to permit the removal of the rotating lever from the rod. Remove the other end of the rotating lever retractile spring from the rotating lever, using the long-nose pliers to assist in forcing the spring loose. Exercise care not to distort the spring.

3.13 If the rotating lever retractile spring is defective, replace it with a new one at this time. Connect the retractile spring to the rotating lever and place the lever in its proper position on the rod so that the retractile spring

assumes a position similar to that of the springs on other levers. Place the lever in its proper position on the rod and tighten the mounting screws with the 4-inch regular screwdriver. Remount the retractile spring on the lug so that when the spring is finally positioned, the end of the loop passes through the hole in the lug of the plate from the front and hooks over the outside edge of the lug at either side, but not at the bottom. Tighten the trip magnet screws which were loosened.

Bearings and Locating Collars

3.14 Remove the bearing mounting screws of the bearing nearer the rotating lever with the 3-inch cabinet screwdriver. Remove the rotating lever retractile spring from the adjusting lug, as covered in 3.11. Draw the trip rod free from the bearing further from the rotating lever, loosening the screws holding the trip magnet to the frame, as covered in 3.18, if it is found necessary to move the trip magnet to allow the trip rod to be moved. Replace, if necessary, either or both bearings and collars, first removing the rotating lever and clamping collar.

3.15 Remount, in their proper positions, all parts which have been removed by following the reverse of the operations listed above.

Trip Rods, Clamping Strips, Trip Fingers, and Trip Finger Stops

3.16 Remove the trip rod, as covered in 3.14. If it is necessary to remove the clamping strip, trip fingers, and trip finger stops, do this by removing the two screws which fasten these parts to the trip rod with the 3-inch cabinet screwdriver. Substitute any necessary new parts and remount them on the trip rod. Remount the trip rod.

Plate

3.17 To remove the plate, the lugs of which are used to hold the rotating lever retractile springs, disengage the loops of the springs which are attached to the lugs and remove the screw holding the plate to the bearing plate with the No. 245 wrench. Substitute a new plate and attach the retractile springs to the lug, as covered in 3.13.

TRIP MAGNET PARTS**Trip Magnet Mounting Screws and Collars**

3.18 Remove the mounting screws, collars, and hexagon nuts which mount the trip magnet on the frame with the No. 344 offset screwdriver and the No. 417A wrench. Substitute the new parts, placing them in their proper positions and tighten the nuts securely.

Mounting Bar

3.19 If the mounting bar is mounted underneath the frame and the core mounting screwheads rest on the magnet cores, remove these screws with the KS-8097 wrench. This will release the mounting bar. If the mounting bar is mounted on the upper side of the magnet cores and the head of the screws are on the underside of the frame, remove the trip magnet mounting screws, as covered in 3.18, and remove the trip magnet. Then remove the core mounting screws. In remounting the bar, always make sure that the mounting bar is placed beneath the frame with the screwheads on top. This will facilitate the adjustment and replacement of these parts in the future.

Armature Backstop

3.20 Remove the armature backstop with the No. 48 wrench and substitute the new part.

Coils

3.21 Unsolder the wires from the terminals of the coils. Remove the trip magnet mounting screws, as covered in 3.18, and remove the trip magnet. Then with the KS-8097 wrench, remove the core mounting screw which mounts the coil to be replaced. If the coil is the one further from the fulcrum, also remove the armature backstop, as covered in 3.20. Substitute the new part, remount the trip magnet, and resolder the wires.

Fulcrum Pin, Armature, and Washers

3.22 Clip the fulcrum pin at the end further from the trip magnet mounting screws with the cutting edges of the KS-14439 cut nippers. Withdraw the pin with the long-nose pliers, shaping the cut end of the pin with these pliers, if necessary, to insure its easy removal. Exercise

care to prevent the loss of the spacing washers which hold the armature from the frame. After the fulcrum pin has been removed, remove the armature backstop with the No. 48 wrench if it is necessary to replace the armature. Substitute the new armature and remount the armature backstop. Insert a sufficient number of spacing washers between each side of the armature and the frame to limit the side play of the armature without causing bind between the parts. Insert a new fulcrum pin from the side of the frame nearer the trip magnet mounting screws. Position the cut nippers on the unformed end of the pin approximately 1/16 inch from the frame so that the pin is centered in the rectangular notches in the jaws of the cut nippers. Crimp the pin by compressing the handles of the cut nippers.

Frame

3.23 Remove the trip magnet mounting screws and collars, as covered in 3.18. Remove all of the parts except the armature backstop, as covered in 3.19 to 3.22, inclusive. The removal of these parts will permit the replacement of the frame. Substitute the new frame, mounting the aforementioned parts in their proper positions, as covered above. Remount the trip magnet in position.

MULTIPLE BRUSH REPLACEMENTS**General**

3.24 Cover the clutches on the side of the frame being worked on with a piece of canvas to protect against falling solder or screws.

3.25 Where excessive wear is observed on the right side of the terminals, consideration should be given to replacing the No. 12C brush by the No. 12G brush, which has its contact and insulating shoes reversed on the springs.

3.26 Raise the brush rod until the multiple brush to be removed is approximately in the middle of the bank. Scribe a mark on the brush rod with the No. 240 scriber, as an aid in properly locating the new brush. Unsolder the wires at the brush terminals and remove the brush, as outlined below.

3.27 When a multiple brush is mounted on a brush rod reinforcing sleeve and the sleeve is not soldered to the rod, make sure

when mounting the new brush to position the sleeve so that the top of the slot lines up with the top of the slot in the brush rod.

3.28 After the brush has been replaced in accordance with the following procedures, solder the wires to the brush terminals. The proper colors can be ascertained by referring to a similar brush on an adjacent rod. If the rollers of the new brush bind, due to the presence of excess wax in their bearings, manually rotate the rollers so as to free them.

No. 0 Brush on Sender Selector

3.29 To remove the brush, loosen the multiple brush clamping bracket screw with the No. 555A socket wrench.

3.30 Uncouple the brush rod from the rack by inserting the blade of the 3-inch cabinet screwdriver between the rack tongue and brush rod, as shown in Fig. 12, and turn the screwdriver just enough to disengage the tongue from the brush rod slot.

Caution: Insert the blade of the screwdriver just below the horizontal portion or lip of the rack tongue so as to affect the tension of the rack tongue as little as possible.

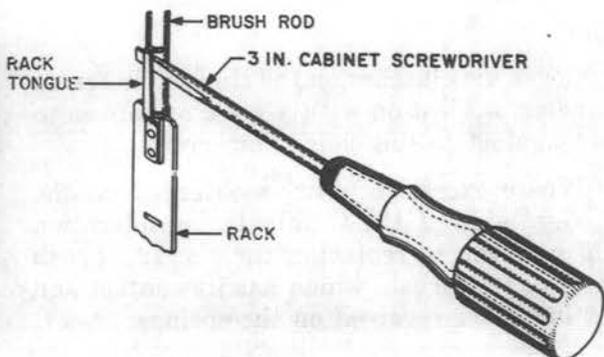


Fig. 12 — Method of Removing Rack From Brush Rod

3.31 Lift the brush rod away from the rack with the other hand. The rod now has no means of support so it will be necessary to hold it in place by clamping it with a spring clothespin just above a bearing plate, as shown in Fig. 13.

3.32 Slide the brush off the lower end of the rod. Spread the sleeve springs of the brush enough to allow them to pass by the guide rod and then lower the brush rod.

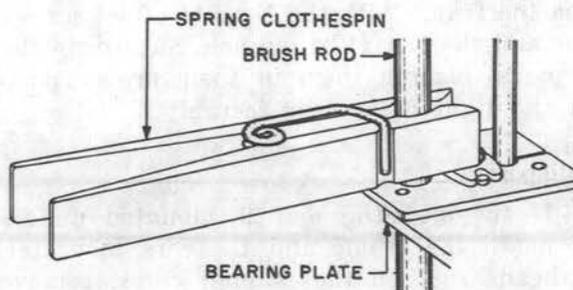


Fig. 13 — Method of Placing Spring Clothespin

3.33 To mount the new brush, loosen the brush clamping bracket screw with the No. 555A wrench. Raise the brush rod so that the multiple brush may be slipped up over the bottom end. Exercise care to see that the sleeve springs are spread enough to permit them to pass easily around the guide rod. Locate the brush springs so that they are in their proper positions with respect to their associated bank terminals and slide the brush up on the brush rod to approximately its proper location, as indicated by the mark previously scribed on the rod. Tighten the brush clamping bracket screw sufficiently to hold it in place. Couple the rod and rack.

All Other Brushes

3.34 To remove the brush, raise the brush rod to its highest position, loosen the brush clamping bracket screw with the No. 555A wrench and the clamping plate screws with the 3-inch cabinet screwdriver. Remove the clamping plate assembly. Move the brush up on the rod until the springs clear the bank terminals and remove the brush, tipping the contact end of the brush upward to facilitate this operation.

3.35 To remount the new brush, loosen the brush clamping plate screws and remove the clamping plate assembly. Raise the brush rod to the top position, and set the brush in place by pressing the brush springs down over the top terminals, spreading the sleeve springs so that they pass easily over the sleeve terminals. Slide the brush down on the rod to ap-

proximately its correct location, as indicated by the mark previously scribed on the rod. Attach the clamping plate assembly and tighten the brush clamping bracket screw sufficiently to hold the brush in place.

RACK REPLACEMENT

3.36 If an examination of the No. 2A or 5A rack indicates that the rack shoulder has been worn, replace the rack as covered in Section A508.131.

Note: When one of these racks is replaced by a No. 2C or 5C rack, one washer in addition to the one with which the rack is equipped shall be added.

BRUSH ROD REPLACEMENT

Sender Selector Brush Rods and Guide Rod

3.37 Raise the brush rod. Uncouple the brush rod from the rack and support the rod with a spring clothespin, as covered in 3.30.

3.38 Lower the rack to its lowest position. Lower the brush rod until it is about 2 inches above its normal (down) position.

3.39 Loosen the bearing clip mounting screws with the KS-2631 screwdriver and remove the bearing halves. Keep the halves together to facilitate replacement. Loosen the guide clamp screws with the No. 206 and 207 offset screwdrivers and turn guide sideways to disengage the guide rod. Remove the frame cross member, so as to provide sufficient room to permit removal of the rod.

3.40 Unsolder the wire from the lower terminal of the associated commutator. Insert the No. 400A commutator brush spacer between the springs and commutator just above the brush frame and raise the spacer until it rests against the tips of the commutator brush springs.

3.41 Loosen the commutator latch plate clamping screws with the 3-inch cabinet screwdriver, and remove the latch plate.

3.42 Remove the spring clothespin, hold the top of the rod, and move the top of the commutator forward to disengage the notch at the

cross member at the top of the commutator. Raise the commutator until the bottom end is free from the frame. Pull the commutator upward so that it is freed from the brush rod and commutator brush.

3.43 Mount the commutator temporarily in position and remove the rod. Remove the No. 400A commutator brush spacer. Transfer the parts from the old rod to the new one. Reassemble rods as covered in 3.47 to 3.53, inclusive.

Trunk Finder Brush Rod

3.44 Proceed as outlined in 3.37 to 3.43, inclusive, except that it will not be necessary to loosen the guide clamp screws.

Other Replacements

3.45 *Replacement of Brush Rod by Brush Rod Without Assembled Brushes (No. 9 or 13-type Rods):* When the rod to be replaced is to be replaced by a rod on which the multiple and commutator brushes are not mounted, remove the brushes from the rod to be replaced and mount them in approximately the same positions on the new rod. Proceed as outlined in 3.47 to 3.53, inclusive.

3.46 *Replacement of Brush Rod and Assembled Brushes (1009- or 1013-type Rods):* When the rod to be replaced is to be replaced by a rod to which the multiple and commutator brushes are attached, proceed as outlined in 3.47 to 3.53, inclusive.

Remounting Brush Rod

3.47 Insert the No. 400A commutator brush spacer between the springs of the commutator brush, as outlined in 3.40.

3.48 Raise the rod carefully to a vertical position, move the commutator forward, as outlined in 3.42, and insert the commutator into the No. 400A commutator brush spacer. Remount the commutator and press the top of the commutator against the back of the slot in the cross member at the top of the commutator so that the locating slot in the rear of the commutator engages the plate properly.

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3.49 Allow the rod to come into position in the slots of the bearing plates, and support the rod with a clothespin, as covered in 3.30.

3.50 Remount the commutator latch plate and tighten the clamping screws securely. Resolder the wire to the lower terminal of the commutator.

3.51 Remove the No. 400A commutator brush spacer by sliding it down until it rests on the commutator brush frame, and then withdraw it from the brush assembly.

3.52 Remount the bearings. Raise the rack, couple it to the brush rod, and remove the spring clothespin.

3.53 Position the commutator brush as required, in order to meet the requirements covered in Section A449.002. Also check other apparatus as covered in Section A446.007.

REASONS FOR REISSUE

1. To add a paragraph referring to Section A560.024 covering repair of brush rods (1.06).
2. To add a paragraph defining the information enclosed in parentheses (2.03).
3. To revise Fig. 1.
4. To omit No. 108A brush rod gauge and smooth cut flat file (3.01).
5. To amplify the procedure covering multiple brush replacements (3.27).
6. To amplify the procedure covering rack replacement (3.36).
7. To omit the procedure covering brush rod reinforcing sleeve (covered in Section A560.024).
8. To omit the procedure and figure covering reconditioning brush rods worn by rack (covered in Section A560.024).