026-125-805

ELEVATOR APPARATUS

SENDER TANDEM 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 sender tandem 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 piece 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.

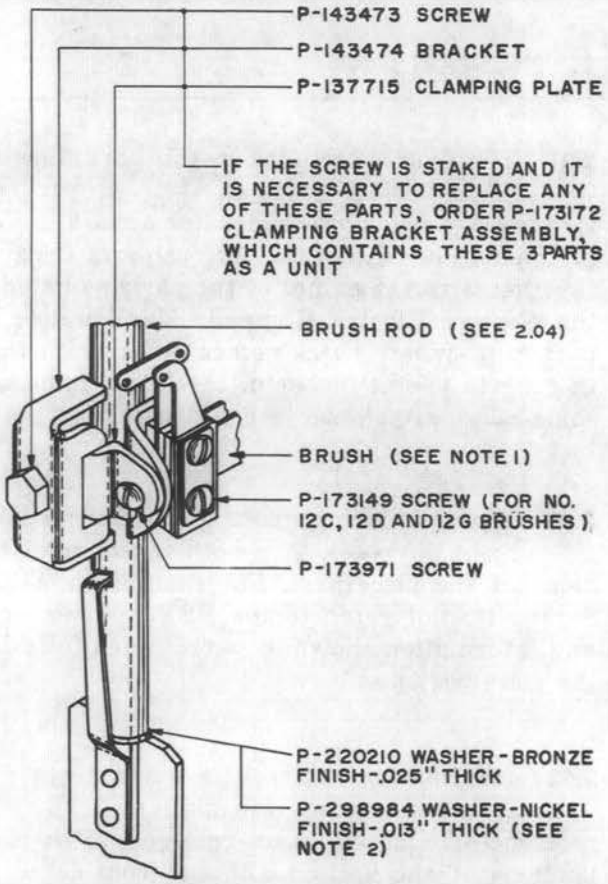
2.03 Information enclosed in parentheses ( ) is not ordering information. It may be references to notes, parts referred to in other portions of the section and not considered replaceable and where the name in general use in the field differs from the part name assigned by the manufacturer.

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 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
DISTRICT FINDER							
100 Point	1009M	—	9G	12C or 12G**, 12D	14A	—	2A

*Includes stop collars.
**See 3.20.



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. 1 — Multiple Brush Parts and Rack Bearing Washer

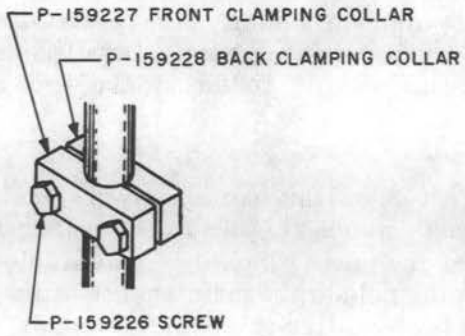
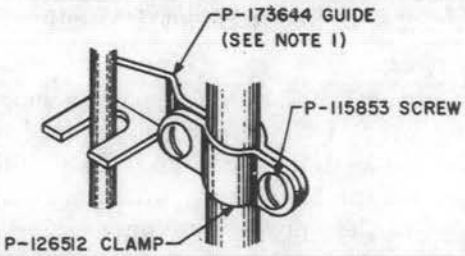


Fig. 2 — Upstop or Downstop Collar



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

Fig. 3 — 1-type Guide

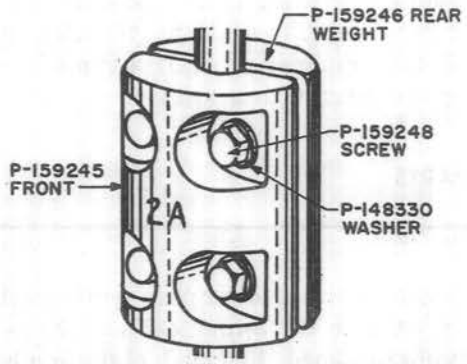


Fig. 4 – Compensator Used on District Finder Rods

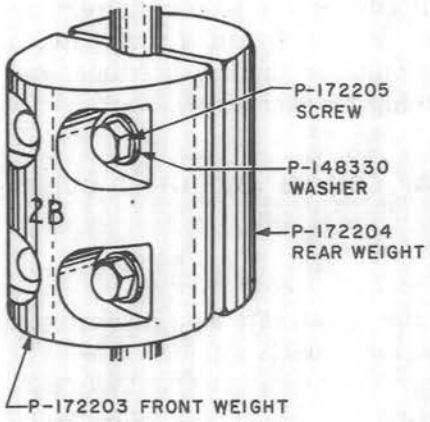


Fig. 5 – Compensator Used on Sender Selector Rods

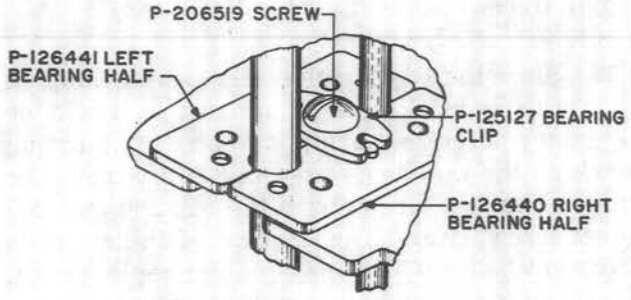


Fig. 6 – No. 3A Bearing Parts

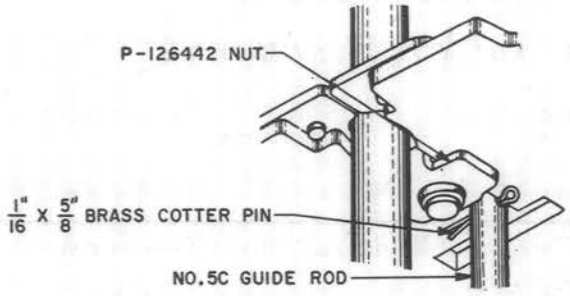


Fig. 7 – No. 3A Bearing Parts and Guide Rod

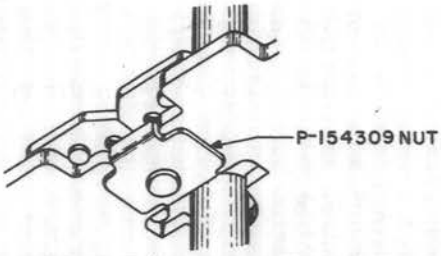


Fig. 8 – 4-type Bearing Part

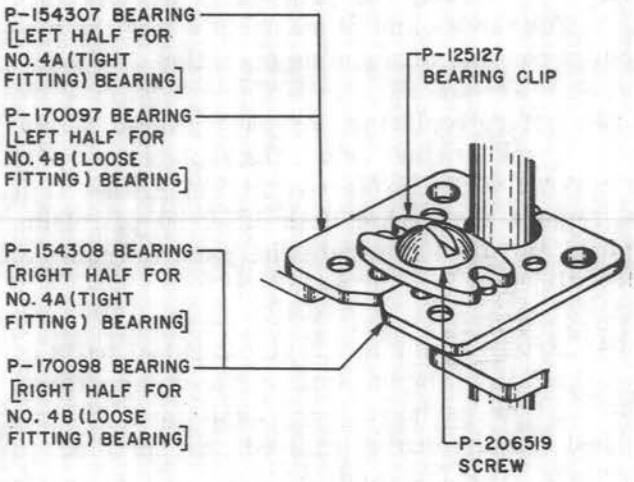


Fig. 9 – 4-type Bearing Parts

3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
206	30-degree Offset Screwdriver
207	90-degree Offset Screwdriver
240	Scriber
400A	Commutator Brush Spacer
555A	3/16-inch Hex. Single-end Socket Wrench
KS-2631	Screwdriver
—	3-inch Cabinet Screwdriver
MATERIALS	
KS-2423	Cloth
KS-7860	Petroleum Spirits
KS-14666	Cloth
—	Canvas (Sufficient to cover all clutches on one 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 or not the replacement 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 A446.008.

3.04 After making any replacement of parts of sender tandem link elevator apparatus, the part or parts replaced shall meet the readjust requirements involved, as specified in Sections A446.008 and A449.002. Other parts whose adjustments may have been disturbed by the replacing operations shall be checked to the readjust requirements and an over-all operation check of the apparatus shall be made 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 show whether or not the clamping bracket screw is staked. If it is, replace the clamping bracket assembly. If not, remove the clamping bracket screw and the clamping bracket and remount them on the new clamping plate. Turn the clamping bracket screw out sufficiently to permit remounting the assembly on the brush frame. Remount the clamping plate on the brush frame, and tighten the clamping bracket screw.

DOWNSTOP COLLARS AND 1-TYPE GUIDES

Downstop Collars

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

3.07 Scribe a mark on the brush rod with the No. 240 scriber at the point where the bottom edge of the stop collar comes in contact with it. Remove the two stop collar screws with the No. 555A wrench. Replace the old collar with a new one, 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. Remove the guide clamping 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, locating it properly by means of the scribed mark.

COMPENSATOR

3.09 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.

MULTIPLE BRUSH REPLACEMENTS

General

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

3.11 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.

3.12 Unsolder the wires at the brush terminals and remove the brush, as outlined below.

3.13 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.

3.14 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 to free them.

No. 0 Brush on Sender Selector

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

3.16 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. 10, and turn the screwdriver just enough to disengage the tongue from the brush rod slot.

Caution: The blade of the screwdriver should be inserted 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.

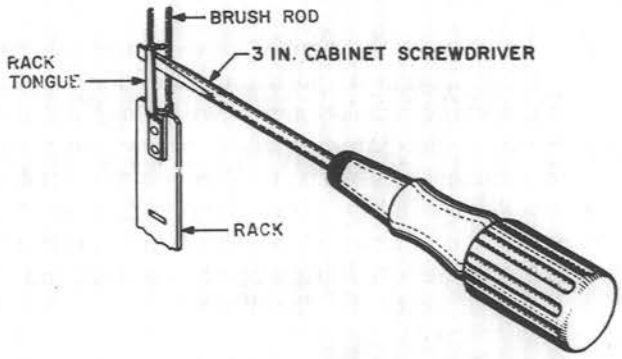


Fig. 10 – Method of Removing Rack From Brush Rod

Then, with the other hand, lift the brush rod away from the rack. 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, as shown in Fig. 11, just above the bearing plate. 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.

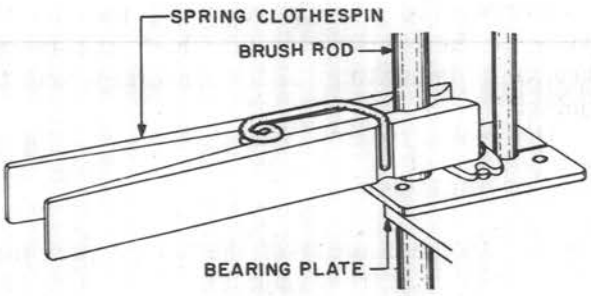


Fig. 11 – Method of Placing Spring Clothespin

3.17 To mount the new brush, loosen the brush clamping bracket screw with the No. 555A wrench. The brush may now be slipped up over the bottom end of the rod. Take care to see that the sleeve springs are spread enough to allow them to pass easily around the guide rod. Locate the brush springs properly on the bank and slide the brush up on the rod to approximately its proper location, as indicated by the mark previously scribed on the rod. Tighten the clamping bracket screw sufficiently to hold it in place. Couple the rod and rack.

All Other Brushes

3.18 To remove the brush, raise the brush rod to its highest position, and 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 bracket 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.

3.19 To mount the new brush, loosen the brush clamping plate screws and remove the clamping bracket 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 approximately 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.

3.20 Where excessive wear is observed on the right-hand 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.

RACK REPLACEMENT

3.21 If an examination of the No. 2A 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 rack, one washer in addition to the one with which the rack is equipped shall be added.

BRUSH ROD REPLACEMENT

Sender Selector Brush Rods

3.22 Raise the brush rod. Uncouple the brush rod from the rack and support the rod with a spring clothespin, as covered in 3.16.

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

3.24 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 clamping 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.

3.25 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.

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

3.27 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.

3.28 Mount the commutator temporarily in position and carefully lower the rod to a horizontal position. Remove the No. 400A commutator brush spacer. Transfer the parts from the old rod to the new one, and mount the rod as covered in 3.29 to 3.38, inclusive.

District Finder Brush Rods

3.29 Proceed as outlined in 3.22 to 3.28, inclusive, except that it will not be necessary to loosen the guide clamping screws.

Other Replacements

3.30 ***Replacement of Brush Rod by Brush Rod Without Assembled Brushes (9-type Rods):*** When the rod to be replaced is to be replaced by a rod on which the multiple or 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 3.32 to 3.38, inclusive.

3.31 ***Replacement of Brush Rod and Assembled Brushes (1009-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 3.32 to 3.38, inclusive.

Remounting Brush Rod

3.32 Insert the No. 400A commutator brush spacer between the springs of the commutator brush, as outlined in 3.25.

3.33 Raise the rod carefully to a vertical position, move the commutator forward, as outlined in 3.27, and insert the commutator into the No. 400A commutator brush spacer. Remount the commutator. 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.

3.34 Allow the rod to come into position in the slots of the bearing plates and support the rod with a clothespin, as covered in 3.16.

3.35 Remount the commutator latch plate and tighten the clamping screws securely. Resolder the wire that was removed from the lower terminal of the commutator.

3.36 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.

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

3.38 Position the commutator brush as required in order to meet the requirements covered in Section A449.002 covering commutator brushes. Also check other apparatus as covered in Section A446.008.

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 replacement (3.13).
6. To amplify the procedure covering rack replacement (3.21).
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).