280-TYPE RELAYS
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 280-type relays. It also covers approved procedures for replacing these parts.

1.02 The section is reissued to include the 280FW, 280FY, and 280GA through 280GG relays; to revise Fig. 4 and 5 to include the P-40Y101 armature assembly which is common to all relays; and to delete the armature assembly ordering information from the table. Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

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 280-type relays. 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 covered in Part 2. This information is called Replacement Procedures.

1.05 When a 280-type relay is dismounted for any reason, make sure that, in remounting it or in replacing it, the same number of washers is used under the heads of the mounting screws as was used before the relay was dismounted.

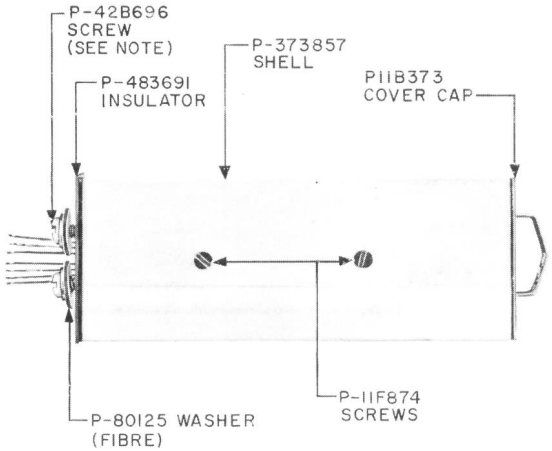
2. PIECE-PART DATA

2.01 The figures included in this part show the various piece parts in their proper relation to the other parts of the relay. The piece-part numbers of the various parts are given together with the names of the parts listed by the Western Electric 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 the name of the piece part, for example, P-483695 Bracket. Do not refer to the BSP number or any information shown in parentheses following piece-part numbers.

2.03 Section 040-015-811 covers cases where the P-484762 contact screw is recommended for use on certain relays in circuits where heavy contact erosion occurs.

2.04 The table shown on page 3 is a list of the numbers and corresponding names of piece parts which are not common to all 280-type relays.



NOTE: IF THE NO. 26A TERMINAL PUNCHING IS TO BE USED WITH A 280-TYPE RELAY, ORDER P-IIA4I7 SCREWS FOR USE IN PLACE OF P-42B696 SCREWS. (TERMINAL PUNCHING IS MOUNTED UNDER HEADS OF SCREWS)

Fig. 1 – 280-Type Relay — Bottom View

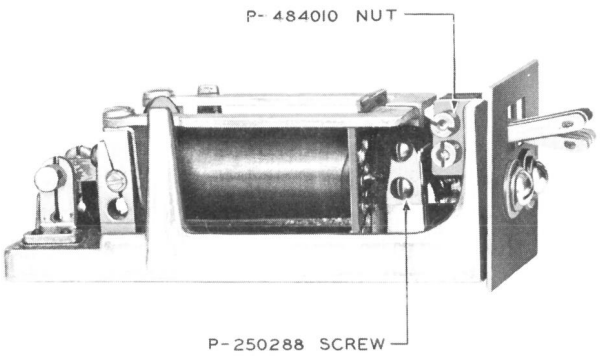


Fig. 2 – 280-Type Relay — Side View With Shell and Cover Cap Removed

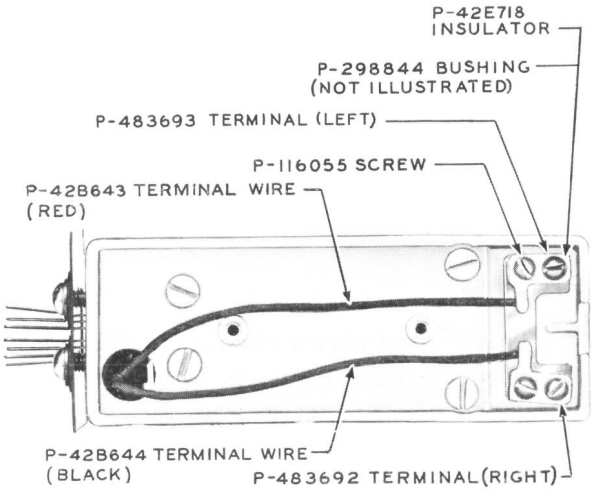


Fig. 3 – 280-Type Relay — Bottom View With Shell and Cover Cap Removed

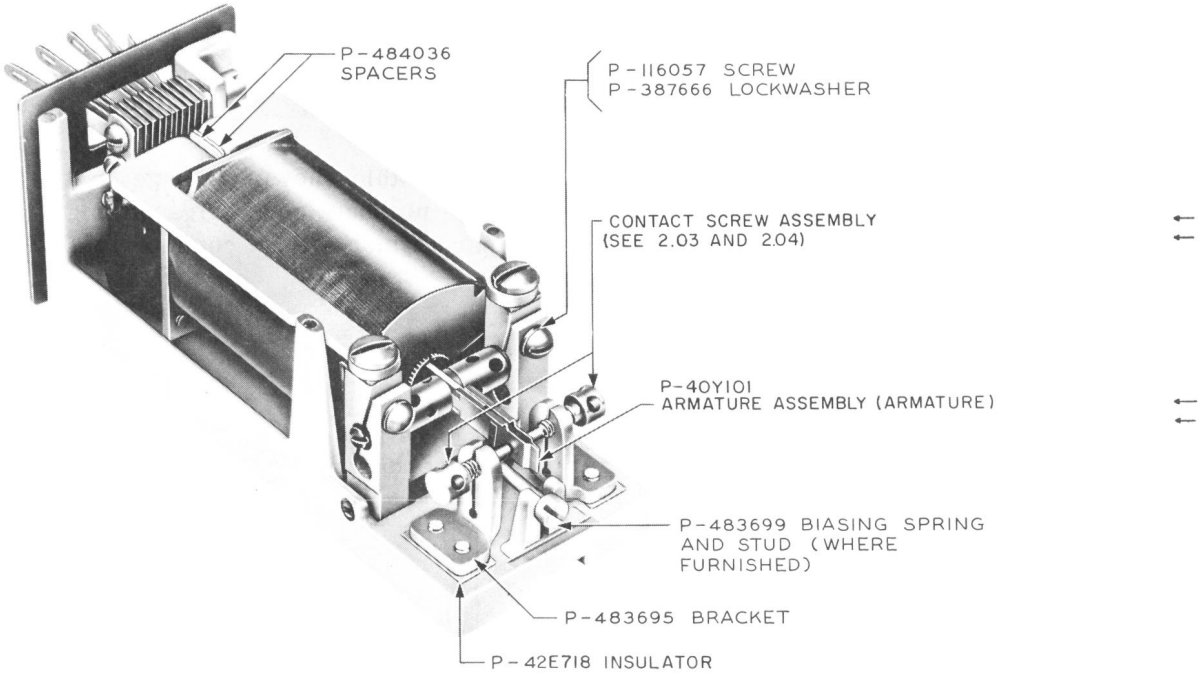


Fig. 4 – 280-Type Relay — General View With Shell and Cover Cap Removed

RELAY CODE	CONTACT SCREW ASSEMBLY
280A	P-484761
280B	P-484761
280C	P-484761
280D	P-484761
280E	P-484761
280F	P-484761
280G	P-484761
280H	P-484761
280J	P-484761
280K	P-484761
280L	P-484761
280M	P-484761
280N	P-484761
280P	P-484761
280R	P-484761
280S	P-484761
280T	P-484761
280U	P-484761
280W	P-484761
280Y	P-484761
280AA	P-484761
280AB	P-484761
280AC	P-484761
280AD	P-484761
280AE	P-484761
280AF	P-484761
280AG	P-484761
280AH	P-484761
280AJ	P-484761
280AK	P-484761
280AL	P-484761
280AM	P-484761
280AN	P-484761
280AP	P-484761
280AR	P-484761
280AS	P-484761
280AT	P-484761
280AU	P-484761
280AW	P-484761
280AY	P-484761
280BA	P-484761
280BB	P-484761
280BC	P-484761
280BD	P-484761
280BE	P-484761
280BF	P-484761
280BG	P-484761
280BH	P-484761
280BJ	P-484761
280BK	P-484761

RELAY CODE	CONTACT SCREW ASSEMBLY
280BL	P-484761
280BM	P-484761
280BN	P-484761
280BP	P-484761
280BR	P-484761
280BS	P-484761
280BT	P-484761
280BU	P-484761
280BW	P-484761
280BY	P-484761
280CA	P-484761
280CB	P-484761
280CC	P-484761
280CD	P-484761
280CE	P-484761
280CF	P-484761
280CG	P-484761
280CH	P-484761
280CJ	P-484761
280CK	P-484761
280CL	P-484761
280CM	P-484761
280CN	P-484761
280CP	P-484761
280CR	P-484761
280CS	P-484761
280CT	P-484761
280CU	P-484761
280CW	P-484761
280CY	P-484761
280DA	P-484761
280DB	P-484761
280DC	P-484761
280DD	P-484761
280DE	P-484671
280DF	P-484761
280DG	P-484761
280DH	P-484761
280DJ	P-484761
280DK	P-484761
280DL	P-484761
280DM	P-484761
280DN	P-484761
280DP	P-484761
280DR	P-484761
280DS	P-484761
280DT	P-484761
280DU	P-484761
280DW	P-484761
280DY	P-484761

RELAY CODE	CONTACT SCREW ASSEMBLY
280EA	P-484761
280EB	P-484761
280EC	P-484761
280ED	P-484761
280EE	P-484761
280EF	P-484761
280EG	P-484761
280EH	P-484761
280EJ	P-484761
280EK	P-484761
280EL	P-484761
280EM	P-484761
280EN	P-484761
280EP	P-484761
280ER	P-484767
280ES	P-484761
280ET	P-484761
280EU	P-484761
280EW	P-484761
280EY	P-484761
280FA	P-484761
280FB	P-484761
280FC	P-484767
280FD	P-484761
280FE	P-484761
280FF	P-484761
280FG	P-484761
280FH	P-484761
280FJ	P-484761
280FK	P-484761
280FL	P-484761
280FM	P-484761
280FN	P-484761
280FP	P-484761
280FR	P-484762
280FS	P-484761
280FT	P-484767
280FU	P-484767
280FW	P-484762
280FY	P-484762
280GA	P-484762
280GB	P-484762
280GC	P-484762
280GD	P-484762
280GE	P-484761*
	P-484762§
280GF	P484761*
	P-484761§
280GG	P-484762

*Left contact screw assembly.
§Right contact screw assembly.

3. REPLACEMENT PROCEDURES

3.01 *List of Tools*

CODE OR SPEC NO.	DESCRIPTION
340	Adjusting Key
—	3-Inch C Screwdriver
—	4-Inch E Screwdriver
—	P-Long-Nose Pliers

3.02 The figures included in this part are for the purpose of identifying the various parts referred to in the following text.

3.03 After making any replacement of parts of a relay, the part or parts replaced shall meet the readjust requirements involved as covered in Section 040-267-701. Other parts, whose adjustments may have been directly disturbed by the replacing operations, shall be checked to the readjust requirements and an overall operation check shall be made of the relay before restoring the circuit to service.

3.04 ***Caution: No provision has been made for remagnetizing the magnets of 280-type relays in the field; therefore, care should be taken not to disturb the magnetic circuit consisting of the magnet and the two pole pieces clamped together by the magnet clamping screw, two pole-piece screws, and two pole-piece brackets since breaking this circuit will seriously demagnetize the magnet. If the relay cannot be adjusted to meet requirements and a defect in any of the above-mentioned magnetic parts is suspected, remove the relay from service.***

3.05 In replacing some parts of these relays, it will be necessary to remove the relay from the mounting plate to obtain access to the parts. Remove the relay from the mounting plate by removing the mounting screws with the 4-inch E screwdriver. To remove the shell, remove the shell mounting screws with the 3-inch C screwdriver.

3.06 After replacing any part, check to see that the pole pieces, pole-piece screws, and contacts are free from dirt, especially magnetic particles, and, if necessary, clean these parts as covered in Section 069-306-801.

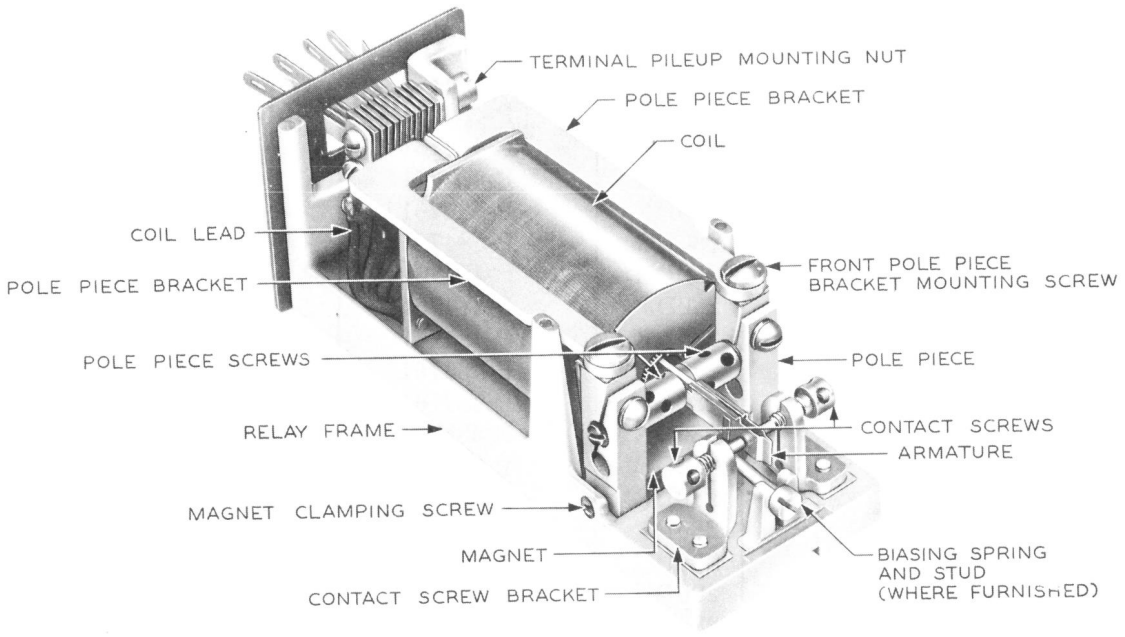


Fig. 5 – 280-Type Relay — General View With Shell and Cover Cap Removed

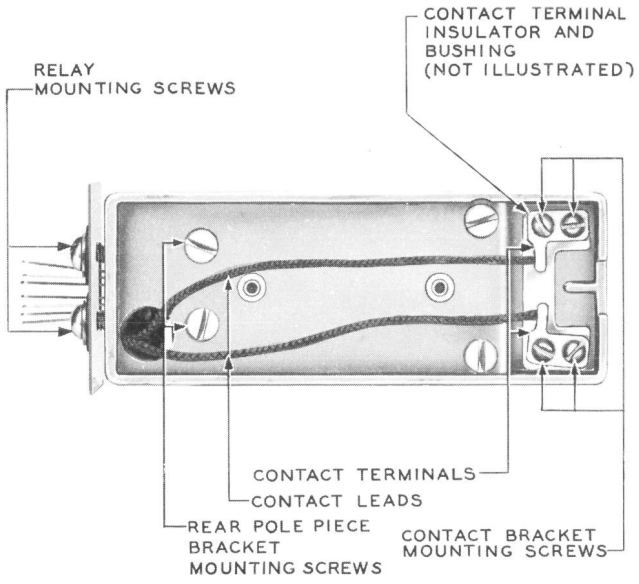


Fig. 6 – 280-Type Relay — Bottom View With Shell and Cover Cap Removed

3.07 ***Armature:*** Loosen the armature clamping screws with the 3-inch C screwdriver. If the relay is equipped with a biasing spring, back the biasing spring away from the armature with the 3-inch C screwdriver. Withdraw the armature from the front of the relay. If the armature cannot be withdrawn, it may be necessary to loosen the front and rear mounting screws of one pole-piece bracket, using the 4-inch E screwdriver. This will permit the bracket to move ***slightly.*** Insert the new armature, position it so that the contacts line up, and tighten the armature clamping screws lightly to hold the armature in position. Tighten screws and reposition the biasing spring in the following order.

(1) Give the pole-piece bracket mounting screws a preliminary tightening (if loosened).

(2) Tighten the armature clamping screws securely.

(3) Tighten the pole-piece bracket mounting screws securely (if loosened).

(4) Reposition the biasing spring if the relay is equipped with one.

3.08 ***Biasing Spring and Stud:*** Remove the left-hand contact screw. Remove the biasing spring and stud by grasping the head of the stud with the P-long-nose pliers and pulling the stud out while turning it slightly back and forth. When the shoulder of the stud is free of the support, withdraw it until the small diameter shank can be lifted out through the support jaws. With the biasing spring and stud held in an angular position, move it to the left and the rear until the biasing spring is past the contact screw mounting bracket, then lift the biasing spring and stud out. Substitute the new part in the reverse manner and reassemble the contact screw. Reposition the biasing spring.

3.09 ***Contact Screw Bracket:*** To replace a contact screw bracket, remove the contact screw from the bracket using the 340 adjusting key. Remove the contact bracket mounting screws with the 3-inch C screwdriver, taking care not to lose the associated insulators and bushings. Check that the insulators and bushings are in good condition; if they are not, replace them. Reassemble the contact screw in the new bracket. Reassemble the parts, taking care that the contact screw is positioned correctly so that the contacts line up properly. Tighten the contact bracket mounting screws securely.

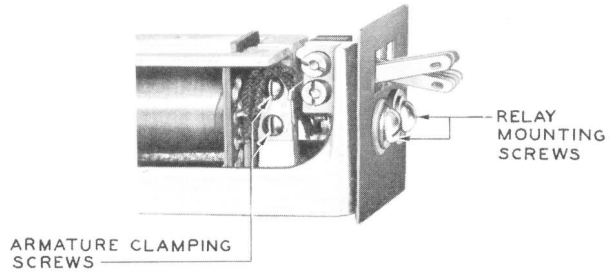


Fig. 7 – 280-Type Relay — Partial Side View With Shell and Cover Cap Removed

3.10 ***Contact Terminal:*** To replace a contact terminal, unsolder the contact lead from the terminal. Remove the contact screw bracket as covered in 3.09, except that it is unnecessary to remove the contact screw from the bracket. Replace the contact terminal and reassemble the parts as covered in 3.09. Resolder the contact lead to the new terminal.

3.11 ***Contact Lead:*** To replace a contact lead, unsolder the old lead from the contact terminal to which it is connected, remove the two terminal pile-up mounting nuts, and lift the terminal pile-up away from the frame suffi-

ciently to permit unsoldering the lead at the terminal pile-up. Unsolder the old lead at the terminal pile-up and pull it out through the hole in the bottom of the frame. Run the new lead through the hole in the bottom of the frame and solder one end of it to its terminal on the terminal pile-up. Reassemble the terminal pile-up to the frame. Solder the other end of the new lead to its contact terminal allowing approximately the same slack in the space between the coil and the terminal pile-up as there is for the other leads, in order to permit the terminal pile-up to be lifted out again if necessary. During this procedure, care must be taken to prevent damage to the other leads connected to the terminal pile-up.