RELAYS

229, 230, AND 232 TYPES

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 229, 230 and 232 type relays.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows 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 these 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 tools and general information incident to the replacement of the parts covered under part 2. This information is called "Replacement Procedures".

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 number of the various parts are given together with the names of the parts as listed by the Western Electric Company Merchandise Department. When these names differ from those in general use in the field the latter names in some cases are shown in parenthesis.

2.02 When ordering parts for replacement purposes, give the piece part number as well as the name of the part. Example: "P-218409 Coil." When necessary to replace a contact spring or any other part associated with a spring combination, other than spring combination mounting screws which are covered separately, order the complete combination. Example: Comb. A per A-148150. Do not refer to the BSP number or any information shown in parentheses following the piece part numbers.

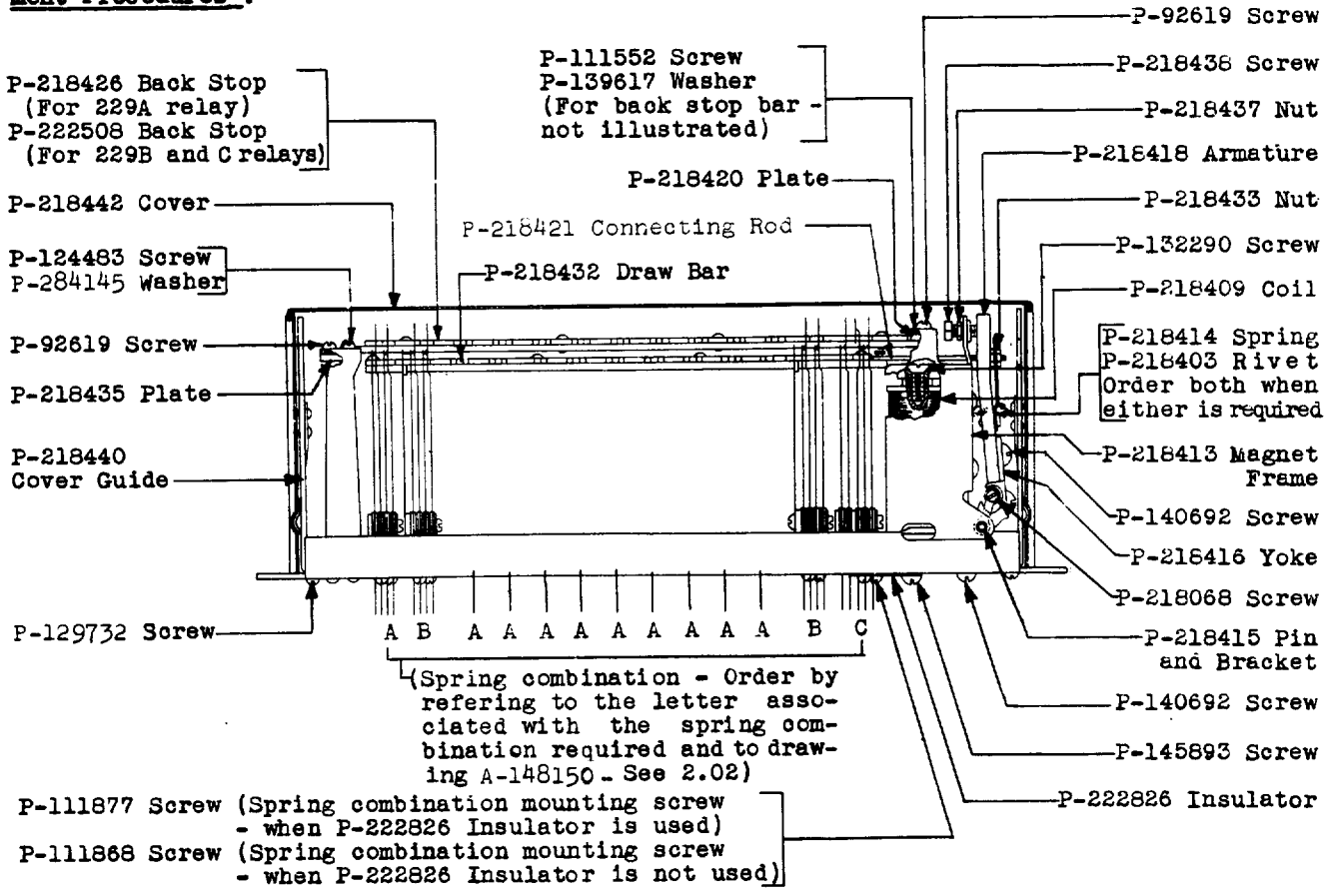

Fig. 1 - 229 Type Relay

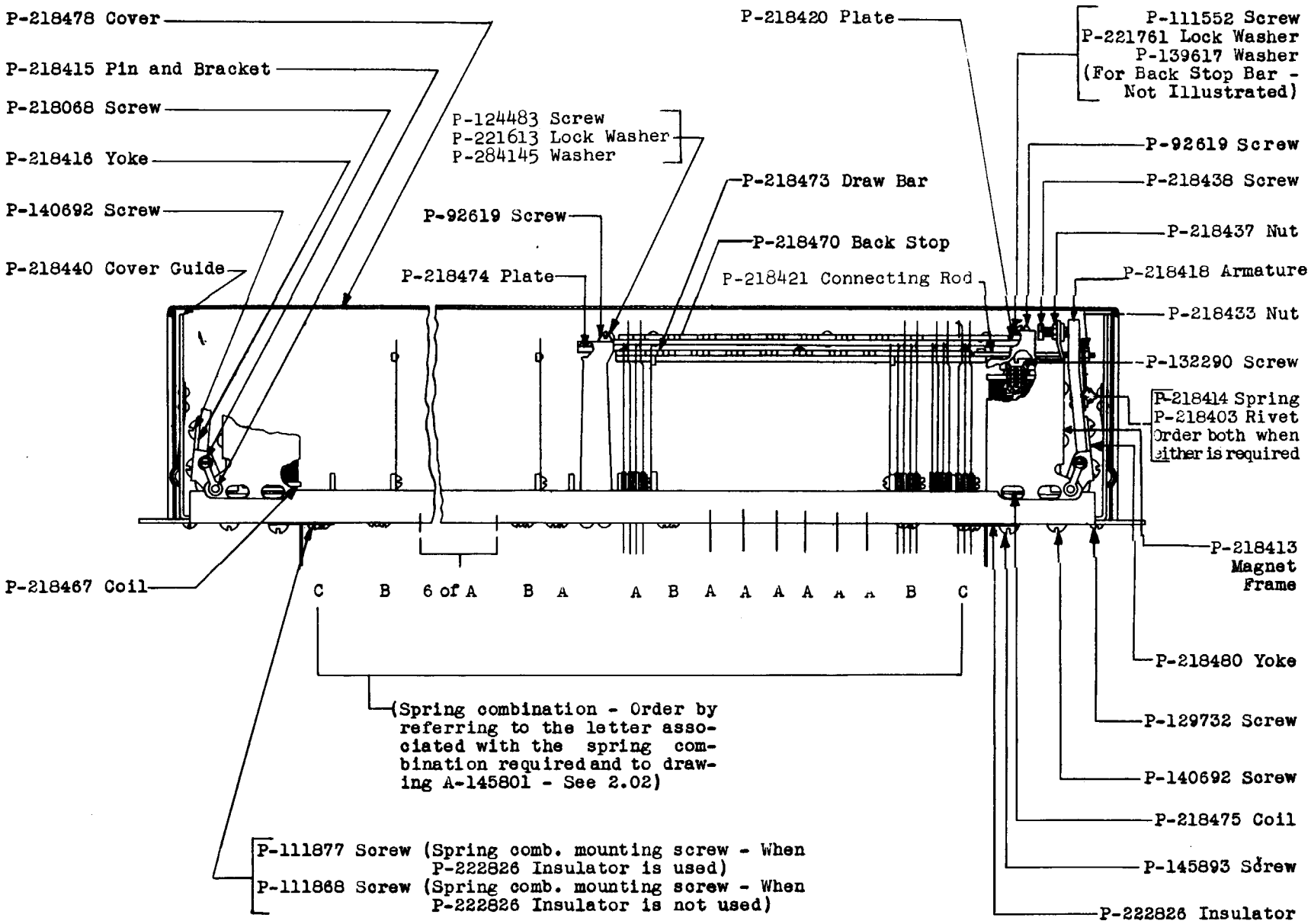

Fig. 2 - 230 Type Relays

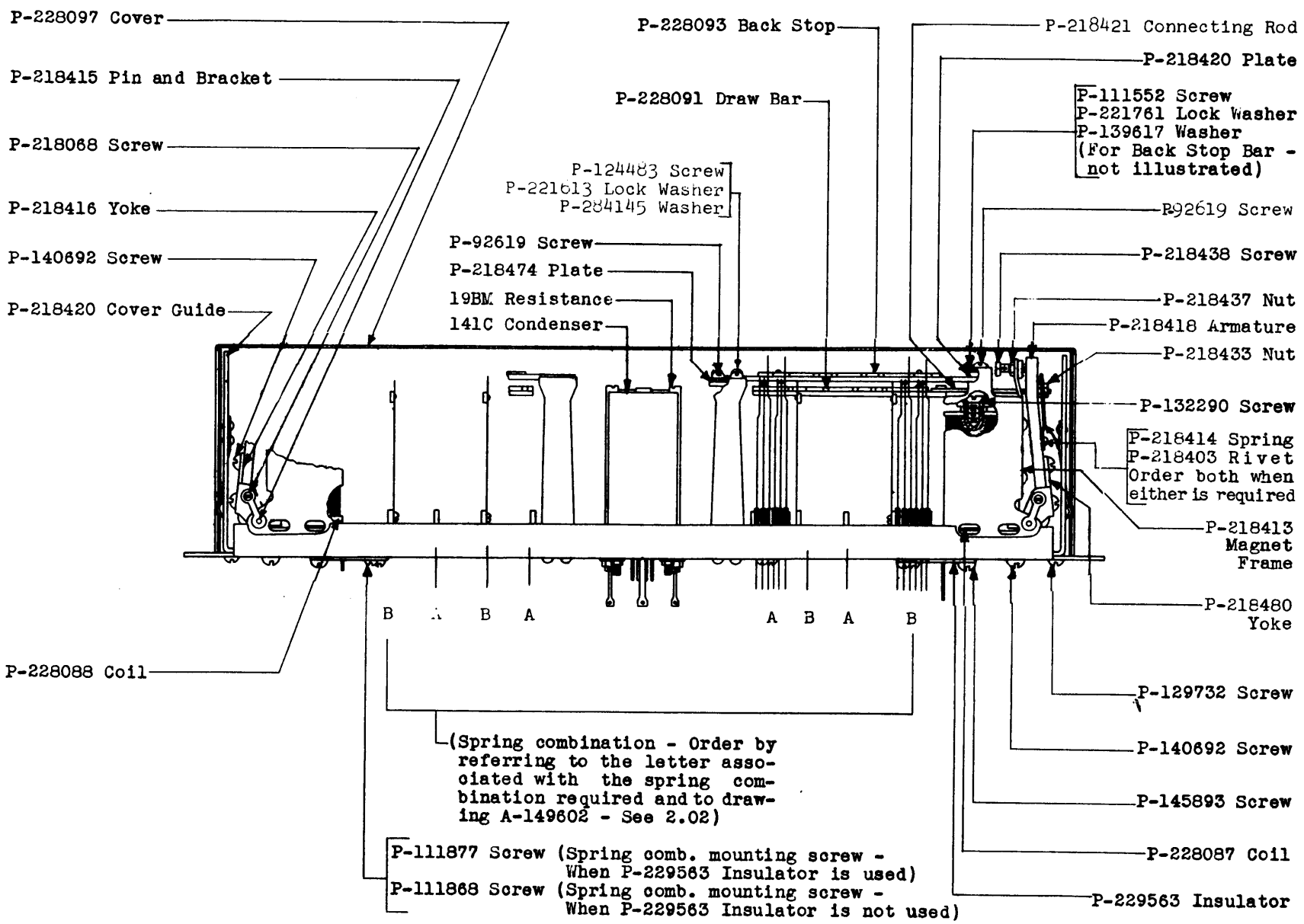

Fig. 3 - 232 Type Relays

3. REPLACEMENT PROCEDURES

3.01 List of Tools

Code or Spec. No.	Description
Tools	
310B	9/32" Hex. Open Double-end Offset Wrench (2 required)
485A	Smooth Jaw Pliers
KS-6320	Orange Stick
-	3" Cabinet Screwdriver
-	4" Regular Screwdriver
-	4 Oz. Riveting Hammer

3.02 After making any replacement of the draw bar, back stop bar, draw bar link, yoke, magnet frame, pin and bracket, coil or spring assembly, check the relay to see that it meets the requirements specified in Section 040-241-701 covering this apparatus.

3.03 No replacement procedures are specified for screws and other parts where the replacement consists of a single operation.

Back Stop Bar
Draw Bar Link
Draw Bar
Spring Assembly

3.04 Back Stop Bar: To replace a back stop bar first note the separation between any pair of contacts, for use as a reference when replacing the back stop bar. Remove the back stop bar clamping screw at each end of the back stop bar with the 4 in. regular screwdriver. Remove the back stop bar by pulling the end which is furthest from the magnet forward and then sliding the other end from behind the back stop bar support.

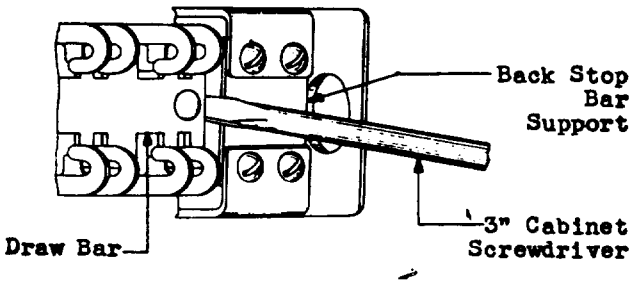

Fig. 4 - Method of Relieving Draw Bar Link of Spring Load

3.05 Replace the back stop bar by inserting the proper end of the back stop bar behind the back stop bar support and gradually working the back stop bar into place, exercising care that each spring is engaged by the proper slot in the back stop bar. Replace the back stop bar clamping screws, position the back stop bar so that the separation between the contacts previously taken for a reference, as outlined in 3.04, is the same as it was before any screws were removed and then tighten the screws securely.

3.06 Draw Bar Link - To remove the draw bar link first remove the back stop bar as outlined in 3.04. Relieve the draw bar link of the spring load and disconnect it from the draw bar as follows: Insert the 3" regular screwdriver between the draw bar and the adjacent back stop bar support furthest from the magnet, as shown in Fig. 4 and move the draw bar toward the magnet by twisting the screwdriver. Grasp the draw bar link with the No. 485A pliers and disconnect it from the draw bar pin as shown in Fig. 5. Remove the nut from the draw bar link with the No. 310Bwrench. Place the new draw bar link in the armature and screw the nut on the link to approximately the same position that it was on the old link.

3.07 Insert the 3" regular screwdriver behind the end of the draw bar furthest from the magnet and the adjacent back stop spring support, as shown in Fig. 4 and move the draw bar toward the magnet by twisting the screwdriver. Replace the draw bar link over the draw bar pin. Replace the back stop bar as outlined in 3.05.

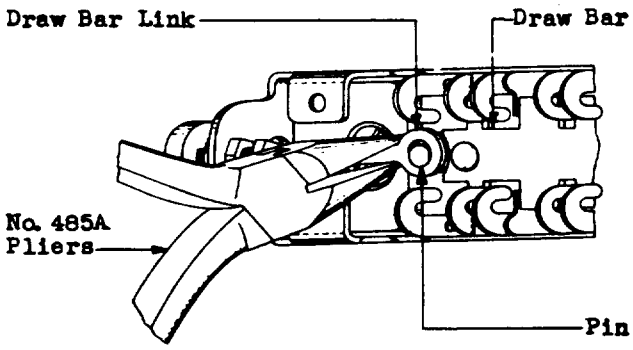

Fig. 5 - Method of Disconnecting Draw Bar Link from Spring Load

3.08 Draw Bar - To remove the draw bar first remove the back stop bar, and the draw bar link as outlined in 3.04 and 3.06, respectively, except the hex nut should not be removed from the draw bar link. Remove the locating spring from the shoulders of the draw bar at the end furthest from the magnet, simultaneously pressing the draw bar pin inward, thus permitting the other end of the draw bar to move forward. Remove the remaining locating spring from the draw bar.

Grasp the bar near the pin with the fingers and pull it outward in such a manner that the tangs of the back stop springs pass through the slots of the draw bar.

3.09 Replacing Draw Bar of 229 and 230 Type Relays - Insert the draw bar in its normal position, so that the tangs of the back stop springs pass through the slots of the draw bar. Move the locating springs away from the magnet while applying an inward pressure on the draw bar until these springs fall into their proper slots. Remove the inward pressure on the draw bar, and apply a longitudinal pressure to it in a direction away from the magnet, moving the draw bar until the slots in it line up with the tangs of the armature springs. Apply a slight inward pressure on the draw bar, causing it to slide into place. If necessary, move the draw bar slightly until the locating springs snap into their final position on the shoulders of the draw bar. Replace the draw bar link and the back stop bar as outlined in 3.07 and 3.05 respectively.

3.10 Replacing Draw Bar of 232 Type Relays - Insert the draw bar in its normal position, so that the tangs of the back stop springs pass through the slots of the draw bar until it comes to rest against the outer edges of the locating springs. Apply an inward pressure to the draw bar at the draw bar pin and at the far rivet head, using the forefinger and fourth finger of the left hand as shown in Fig. 6. With the orange stick in the right hand, move the locating spring which is nearer to the magnet, into the proper slot of the draw bar. Make sure that the draw bar link is not behind the draw bar metallic strip. Starting with the spring assembly nearest the magnet, move the armature springs to the right or left until their tangs slip into the proper slots of the draw bar, still maintaining the pressure as indicated. To facilitate this, it will probably be necessary to rock the draw bar about a vertical axis, pushing the magnet end of it in toward the frame. If it is found impossible to rock the draw bar sufficiently, move it longitudinally away from the magnet until the tangs of the armature springs fall into the slots at the outward end of the draw bar, thus permitting further movement. Proceed away from the magnet until the tangs of the armature springs fail to slip into the proper slots of the draw bar (See Fig. 6). Then move the remaining locating spring away from the magnet until it slips into its proper slot. Proceed with the armature springs, working away from the magnet until all springs are in position. Move the locating springs into their final position on the shoulders of the draw bar. Replace the draw bar link and the back stop bar as outlined in 3.07 and 3.05, respectively.

3.11 Spring Assembly - To remove a spring assembly first remove the back stop bar, the draw bar link and the draw bar as outlined in 3.04, 3.06 and 3.08, respectively, except the Hex nut should not be removed from the draw bar link. Unsolder the wires from the terminals of the spring assembly being removed. Remove the spring assembly bracket mounting screws using the 4" regular screwdriver and remove the spring assembly.

3.12 Mount the new spring assembly on the mounting plate and tighten the spring assembly bracket mounting screws securely. Make sure that the springs of each assembly

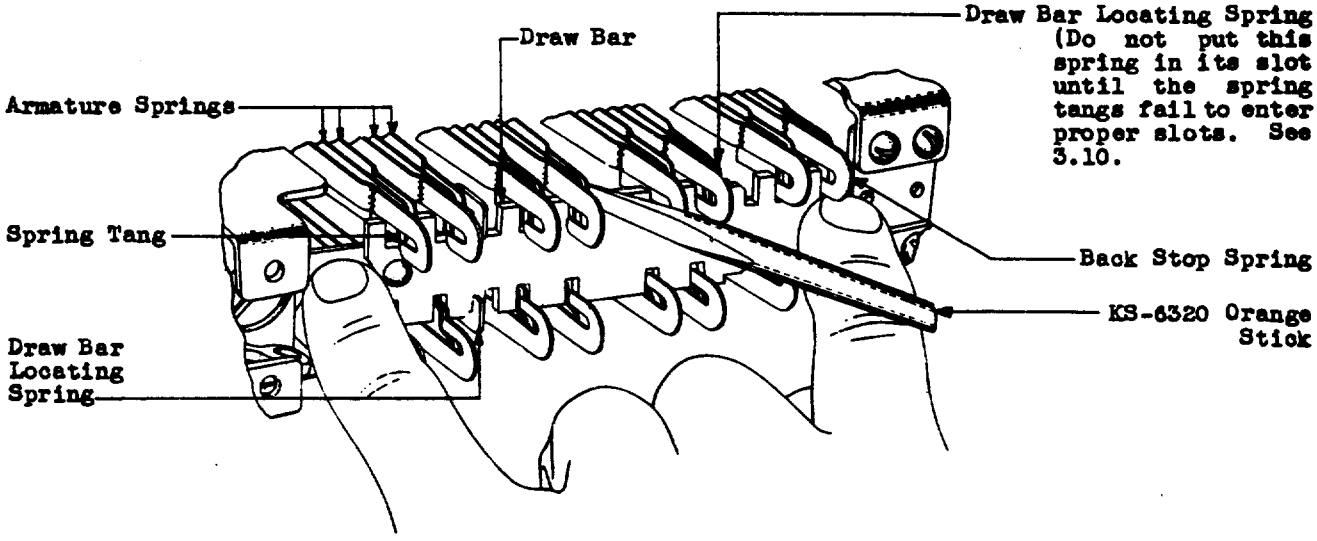

Fig. 6 - Method of Replacing Drawbar

line up with the springs of every other assembly. Replace the draw bar of 229 or 230 relays as outlined in 3.09 or the draw bar of 232 relays as outlined in 3.10. Replace the draw bar link and the back stop bar as outlined in 3.07 and 3.05 respectively.

Armature
Magnet Frame
Pin and Bracket Assembly
Yoke
Coil

3.13 To replace any of these parts first remove the back stop bar and the draw bar link as outlined in 3.04 and 3.06 respectively, except the nut should not be removed from the draw bar link unless the armature or associated spring is being replaced. Unsolder the leads from the coil terminals. Remove the magnet frame mounting screws with the 4" regular screwdriver. Remove the magnet frame and associated parts from the relay frame. If only the coil is to be replaced, remove the coil mounting screw with the 4" regular screwdriver, replace the coil and tighten the coil mounting screws securely. If the magnet frame is to be replaced, do not replace the coil at this time. Remove the pin and bracket assembly mounting screw with the 3" cabinet screwdriver and withdraw the pin, which will free the armature assembly from the magnet frame. Replace the armature, magnet frame, pin and bracket assembly and yoke, as required, using the 4" regular screwdriver to remove the yoke mounting screws. If the armature spring is being replaced, it will be necessary to rivet the spring to the armature, using the 4 oz. riveting hammer. Reassemble the parts and tighten all screws securely. Remount the magnet frame and associated parts in the relay frame and tighten the magnet frame mounting screws securely. Resolder the leads. Replace the draw bar link and back stop bar as outlined in 3.07 and 3.05 respectively.