

## 211- AND 212-TYPE SWITCHES

### 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 211 and 212 type switches. It also covers approved procedures for replacing these parts.
- 1.02 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 211 and 212 type switches. 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".
- 1.03 Part 3 of this section covers the approved procedures for 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 construction of the apparatus and the piece part numbers of the various parts together with their corresponding names.
- 2.02 When ordering piece parts for replacement purposes give both the number and the name of the piece part. For example: P-161229 Cover Guide.
- 2.03 Where the names of the piece parts shown on manufacturing drawings differ from those in general use in the field, the latter names, in general, are shown in parentheses.

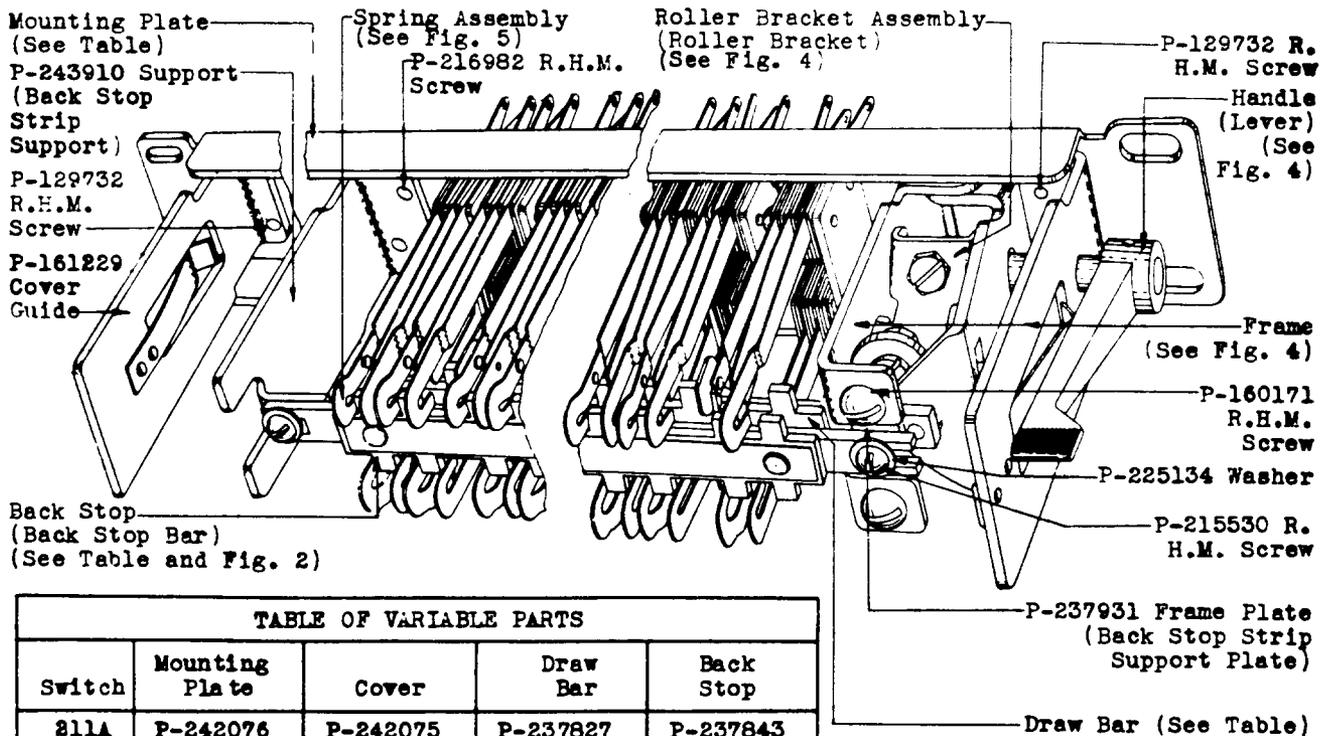
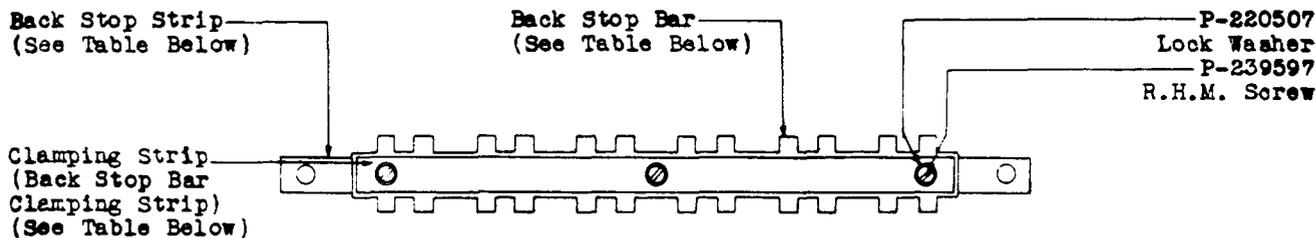


TABLE OF VARIABLE PARTS				
Switch	Mounting Plate	Cover	Draw Bar	Back Stop
211A	P-242076	P-242075	P-237827	P-237843
211B	P-242077	P-242075	P-237828	P-237844
211C	P-237814	P-237822	P-237829	P-237845
211D	P-237815	P-237822	P-237830	P-237846
212A	P-237816	P-237823	P-237831	P-237847
212B	P-237817	P-237823	P-237829	P-237845

Parts Not Illustrated  
Cover  
(See Table)  
P-111868 R.H.M. Screw  
(Spring Assembly Mounting Screw)

Fig. 1 - 211 and 212 Type Switches



*VARIABLE PARTS OF BACK STOP ASSEMBLY			
Switch	Back Stop Strip	Back Stop Bar	Clamping Strip
211A	P-237853	P-237848	P-239589
211B	P-237854	P-237849	P-239590
211C	P-237855	P-237850	P-239591
211D	P-237856	P-237851	P-239592
212A	P-237857	P-237852	P-239593
212B	P-237855	P-237850	P-239591

\*When necessary to replace the back stop bar, back stop strip or clamping strip on switches where the parts are riveted together, order back stop as specified in table on page 1.

Fig. 2 - Back Stop Assembly

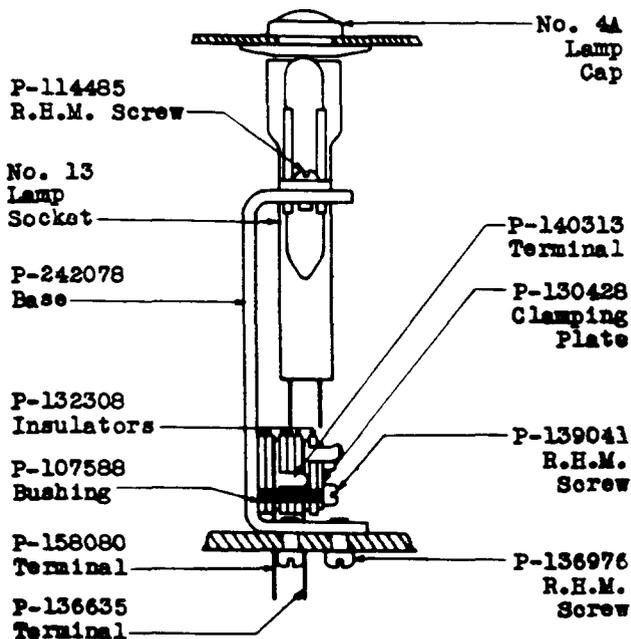


Fig. 3 - Lamp Socket Assembly  
Nos. 211A and B Switches

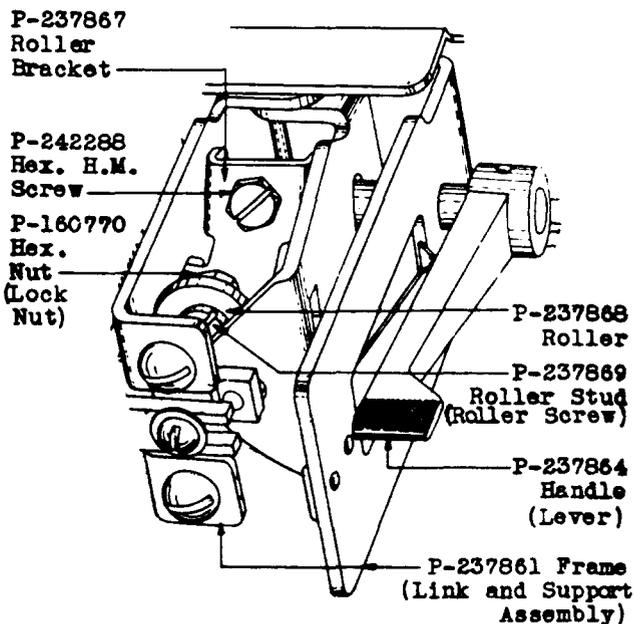
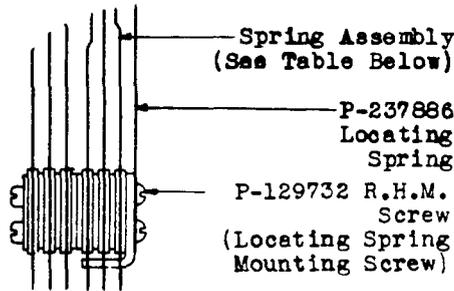


Fig. 4 - Frame, Roller Bracket  
and Handle Assembly



SPRING ASSEMBLIES PER DRAWING A141335												
Switch	*Mounting Plate Positions											
	8	9	10	11	12	13	14	15	16	17	18	19
211A							B	A	A	A	B	A
211B									B	A	B	
211C					B	A	A	A	A	A	B	C
212D	B	A	A	A	A	B	A	A	A	A	B	A
212A		F	D	D	D	D	E	D				
212B	B	A	A	A	A	A	B	C				

\*The mounting plate positions are numbered from left to right beginning with the position nearest the cover guide. When ordering a spring assembly, specify the letter designation of the spring assembly and the "A" drawing number. For example-Spring Assembly "A" per drawing A141335. Squares shown blank are not equipped with spring combinations but may be equipped with other apparatus.

Fig. 5 - Spring Assemblies

**3. REPLACEMENT PROCEDURES**

**3.001 List of Tools**

Code No.	Description
417A	Wrench 1/4" and 3/8" Hex.Open Double-End Flat
-	Bell System Regular Screw-driver 4" per A.T.&T. Co. Drawing 46-X-34
-	Bell System P-Long Nose Pliers 6-1/2 per Specification No. 6267

3.002 Remove the cover to make any replacement of parts. After the replacement has been made, check the switch as outlined in the section covering this apparatus and make any readjustments that are necessary. Remount the cover.

3.003 No replacement procedures are specified for the cover, screws or other small parts where the replacement consists of a single simple operation.

**3.01 Back Stop Strip Support Plate Link and Support Assembly Lever Roller and Associated Parts Roller Bracket**

(1) Back Stop Strip Support Plate Remove the back stop strip mounting screw at the right with the 4" regular screw-driver and remove the washer. Remove the back stop strip support plate mounting screws. Remove the plate and substitute the new part. Insert and tighten the support plate mounting screws securely. Hold the back stop strip washer in place and insert and tighten the back stop strip mounting screw securely.

(2) Link and Support Assembly To remove the link and support assembly, remove the back stop strip mounting screw and washer and back stop strip support plate mounting screws with the 4" regular screw-driver and remove the back stop strip support plate. Loosen the spring assembly mounting screws of the three spring assemblies nearest the link with the 4" regular screw-driver. Grasp the draw bar strip with the long nose pliers at a point opposite the draw bar pin and pull the draw bar strip outward until the pin is free from the link. Remove the link mounting screws with the 4" regular screw-driver and slide the link from the switch. Remove the lever, roller, roller bracket and associated parts as covered in (3) to (5) inclusive, and place these parts on the new link and support assembly. Slide the assembly on the mounting plate and insert the draw bar pin in place. Tighten the link and support assembly mounting screws with the 4" regular screw-driver. Secure the back stop strip support plate in place with the mounting screws. Mount the back stop strip washer in place and insert and secure the back stop strip mounting screws. Tighten the spring assembly mounting screws securely with the 4" regular screw-driver.

(3) Lever To replace the lever, loosen the roller bracket mounting screw with the 4" regular screw-driver and slide the lever and shaft from the bracket and link. If the adjacent apparatus is so close that the screw is inaccessible, remove the link and support assembly as covered in (2) and then remove the lever. Substitute the new part in its proper position in the link and support assembly. Hold the roller bracket and lever in such a po-

3.01 (Continued)

sition that the flat on the shaft is directly beneath the end of the roller bracket mounting screw. Tighten the screw securely.

(4) Roller and Associated Parts Remove the link and support assembly as covered in (2). Remove the roller screw lock nut with the No.417A wrench and remove the screw with the 4" regular screw-driver. Remove the roller. Make the necessary replacement of parts and assemble the roller, screw and lock nut in place on the bracket.

(5) Roller Bracket Remove the link and support assembly as covered in (2). Remove the lever, the roller and associated parts from the bracket and outlined above and mount them in place on the new bracket. Mount the bracket

in place in the link and remount the lever.

3.02 Back Stop Bar Clamping Strip  
Back Stop Bar  
Back Stop Strip

(1) General When the back stop strip and associated parts are riveted together, remove the strip from the switch as outlined in (4) in order to effect a replacement of parts. When the parts are secured together by screws, replace the clamping strip and back stop bar without removing the back stop strip from the switch.

(2) Back Stop Bar Clamping Strip To replace a back stop bar clamping strip, remove the back stop bar clamping strip mounting screws with the 4" regular screw-driver and remove the lock washers and strip from the switch. Hold the

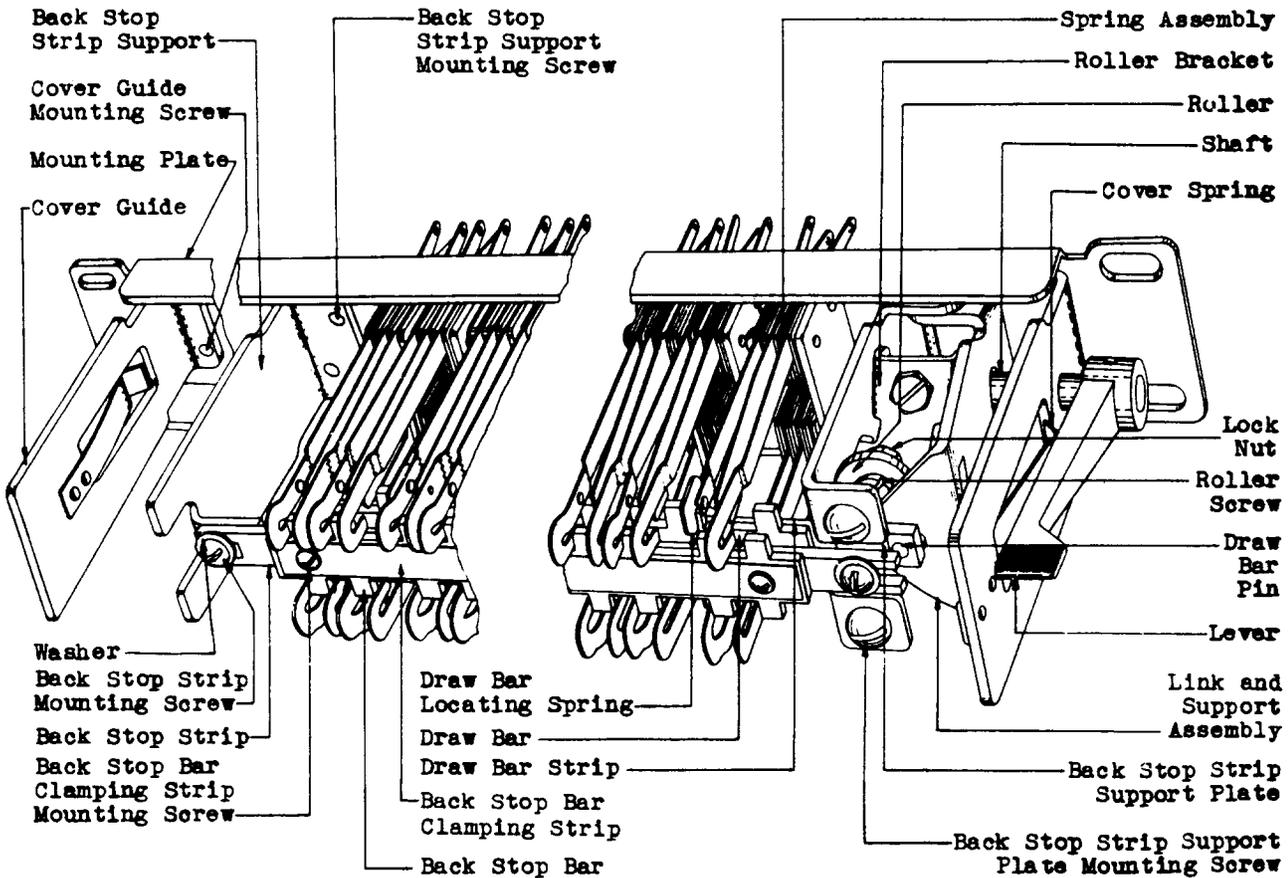


Fig. 6 - 211 and 212 Type Switches

3.02 (Continued)

back stop bar in place and substitute the new part. Remount the lock washers and insert and tighten the screws securely in place.

(3) Back Stop Bar Scribe a line on the back stop strip at the left hand end of the back stop bar in order to facilitate the remounting of the bar. Remove the clamping strip as outlined above and remove the back stop bar. Mount the new part in place, so that the contact springs engage the proper notches. This can be done by holding the left end of the new bar at the scribed mark with the left hand and with the right hand moving the springs to the right or left of the notches, gently pushing the bar into position between the springs. Remount the clamping strip as outlined in (2).

(4) Back Stop Strip To replace a back stop strip, remove the back stop strip mounting screws with the 4" regular screw-driver and remove the strip from the switch. If the parts mounted on the strip are held together by screws, remove the screws and parts as outlined above and mount them on a new strip. If the parts are held together by rivets, substitute a new set of parts. Mount the strip and associated parts in place on the switch as outlined in (3) and insert and tighten the mounting screws securely.

3.03 Draw Bar Strip

(1) To replace a draw bar strip, remove the back stop strip and the back stop strip support plate as outlined in 3.01.

(2) See that the switch is in the un-operated position. Move the left draw bar locating spring to the right, and press the extreme left end of the draw bar backwards as far as it will go. If there is a center draw bar locating spring, release it from the draw bar shoulder by moving the spring to the right. Release the right draw bar locating spring from the draw bar shoulder by moving the spring to the right. Press the left end of the draw bar slightly in and to the right, so as to release the draw bar link from the draw bar pin. While still pressing on the left end of the draw bar with one hand, move the link as far as it will go to the right and with the other hand press the right end of the draw bar back against the locating springs. Rotate the draw bar from a vertical to a horizontal position and draw it free from the switch.

(3) Switches Having Break-Make (Transfer) Spring Combinations Substitute

the new part and proceed as follows in mounting the strip in place. See that the link is as far as possible to the right. Insert the draw bar strip in a horizontal position so that the locating springs will fit into the notches to the right of the shoulders of the strip against which they are normally tensioned. In some cases it may be necessary to move the locating spring with the finger in order to allow the strip to fit into the notches. Rotate the draw bar strip to a vertical position, moving the strip slightly to the right or left to facilitate this operation. Press the left end of the draw bar strip against the locating spring as far as it will go. This will allow the right end of the draw bar strip to extend outward. Allow the right end to spring out until the link can be swung back of the pin. Press the draw bar strip to the right and inward until the pin drops into the hole in the link. Pull the draw bar forward until the locating springs snap into position raising or lowering the draw bar strip slightly to facilitate this operation.

(4) Switches Having Make-Make Spring Combinations See that the link is as far as possible to the right. Hold the draw bar at both ends in its normally mounted position, insert it through the opening in the back stop springs, lining up the shoulders in the draw bar approximately with the locating springs so as to obtain the proper position. It may be necessary to move the back stop springs to the right or left to facilitate inserting the draw bar. With the draw bar inserted past the tangs of the back stop springs, move the locating springs to the right or left so that they rest in the draw bar notches associated with the shoulders. Draw the right end of the draw bar forward enough to allow the link to pass behind the pin and move the link to the left and the draw bar to the right until the end of the pin engages the hole in the link. With the right hand, press the right end of the draw bar against the link and the locating spring. Then, with the left hand, push the draw bar springs to the right or left into their proper notches, working from the right end of the draw bar toward the left. Move the middle spring to the left, and the left spring to the right in order to guide them into their proper notches. If the switch has break-make (transfer) spring combinations also, move the draw bar spring to the right. Proceed to the left of the switch, gradually changing the position of the fingers of the right hand, working them more and more to the left. Continue fitting the draw bar springs into their proper notches until all the springs have been inserted, when the draw bar will snap into its proper position in the locating springs. Move the draw bar

**3.03 (Continued)**

up or down slightly to allow the locating springs to take their proper position on the shoulders of the draw bar. If the draw bar does not snap into position after all the springs are inserted in their proper notches, press it slightly to the right while moving the link to facilitate the complete engagement of the pin in the hole.

(4) After the draw bar strip is satisfactorily located, remount the back stop strip support plate and back stop strip that were removed as outlined in 3.01 and 3.03 respectively.

**3.04 Drawing Bar Locating Spring Spring Assembly**

(1) To replace either the draw bar locating spring or a spring assembly, remove the draw bar strip as outlined in 3.03. Remove the spring assembly mounting screws which secure the spring assembly to be removed with the 4" regular screw-driver. If the draw bar locating spring is to be replaced, remove its mounting screws with the 4" regular screw-driver and remove the spring. Substitute the new part and secure it tightly in place with the 4" regular screw-driver. After the necessary replacement of parts has been made, remount and secure the spring assembly and reassemble the draw bar strip as outlined in 3.03.