FLEXIBLE STOP SPRINGS FOR GRAVITY TYPE RELAYS

1. GENERAL:

1.1 This section describes the method of attaching phosphor bronze stop springs to gravity type relays.

1.2 This issue differs from Issue 1 with respect to the numbers assigned to the stop springs, armature assemblies and screws covered in paragraphs 2.1 to 2.4. No changes have been made in the parts themselves with the exception of the screws, which have been drilled through the center to facilitate handling with the KS-2348 cord repair screwdriver.

1.3 Two types of springs are available, one for use on the 101 and similar type relays and one for use on the 190-F relay and 118 type relays.

1.4 These springs are not recommended for gravity type relays in all circuits and therefore should be used only when specified.

1.5 When the 101 type relay is mentioned in this practice, it is intended to cover all gravity relays of the type on which the armature rests against a back stop adjusting nut when in the unoperated position. When the 190-F relay is mentioned, it is intended to cover all gravity relays of the type on which the armature rests against a back stop screw.

2. APPARATUS:

2.1 Flexible Stop Springs per P-215436 (for use on 101 and similar type relays) see Fig. 1, Detail 1.

2.2 Flexible Stop Springs per P-215437 (for use on 190-F and 118 type relays) see Fig. 2, Detail 1.

2.3 Armature Assemblies for 190-F and 118 type relays per P-215438. See Fig. 2.

2.4 Screws covered by piece part P-220336. (for use on 101 type, 190-F and relays of similar types).

2.5 No. 265-B Tool (contact burnisher).

2.6 No. 90 Gauge (.030 inch thickness gauge).

2.7 Bell System Cabinet Screwdriver, 3½ inch, per A. T. & T. Co. Drawing 46-X-40.

2.8 KS-2348 Tool (cord repair screwdriver).

2.9 No. 48 Twist Drill; No. 2-56 Tap; Drill-press or Wheel-drill and Vice; Tap-wrench. (For use when it is necessary to drill and tap armatures, as covered in paragraphs 3.3 and 3.4.)

3. METHOD:

3.1 To apply a spring to the 190-F relay, first remove the armature from the relay. In the case of the 101 type relay, the spring can usually be applied without removing the armature, after increasing the armature travel by means of the back stop adjusting nut.

3.2 For 101 type relays having the armature drilled and tapped to accommodate a screw for holding a bonding wire proceed as follows: If the relay is equipped with a bonding wire the flexible stop spring should be placed between the bonding wire and the armature. If the relay is not equipped with a bonding wire and if there is a screw in place, this screw should be used for attaching the spring. If there is no screw in place, a screw known as P-220336 should be used.

3.3 It is thought that in most cases the armatures of the 101 type relays will be drilled and tapped as covered in 3.2. However, where this is not the case, it will be necessary to drill and tap the armature to accommodate the P-220336 screw. The hole should be located 9/32 inch above the knife edge and ⅛ inch from the right edge of the armature as shown in Fig. 1. A No. 48 drill and a No. 2-56 tap should be used.

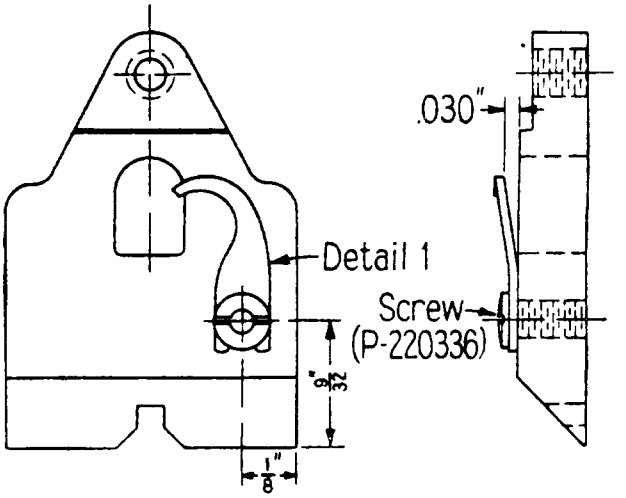

Fig. 1.

3.4 For 190-F relays the armature assembly listed under 2.3 and shown in Fig. 2, should be used where drilled armatures are not available. However, where the armatures are to be drilled and tapped locally, the hole should be located ¼ inch above the knife edge and 5/64 inch from the right edge of the armature as shown in Fig. 2. A No. 48 drill and a No. 2-56 tap should be used.

3.5 For either the 101 type or 190-F relay, before placing the armature assembly in position, check to see that the .030 inch (± .005 inch) clearance requirement shown in Figs. 1 and 2 is met. This clearance can be checked by the No. 90 gauge. If the clearance between the spring and the armature is too small, insert the blade of the No. 265-B tool (or the thin blade of a knife) between the spring and the armature and position the spring so that the clearance is correct. This can be done by moving the tool toward the retaining screw and, if necessary, exerting a slight prying action against the spring. Care should be taken not to exceed the required separation. If the clearance is excessive, loosen the retaining screw and remove the spring. Straighten the spring so that when it is replaced and the retaining screw tightened, the clearance obtained will be equal to or slightly less than .030 inch. If when the spring is replaced, the clearance is less than .025 inch, correct as outlined above.

3.6 The springs should be in an upright position as shown in Figs. 1 and 2. In the case of the 101 type relay this tends to insure that there is a clearance between the spring and the adjusting stud when the side play of the armature is taken up to the left, and that the spring rests against the back stop adjusting nut when the side play of the armature is taken up to the right. In the case of the 190-F relay it tends to insure that the disc on the spring will rest against the back stop screw. All of these requirements must be met and if in some cases, when the armatures are placed in position, they are not met, it will be necessary to shift the springs sufficiently to correct this condition.

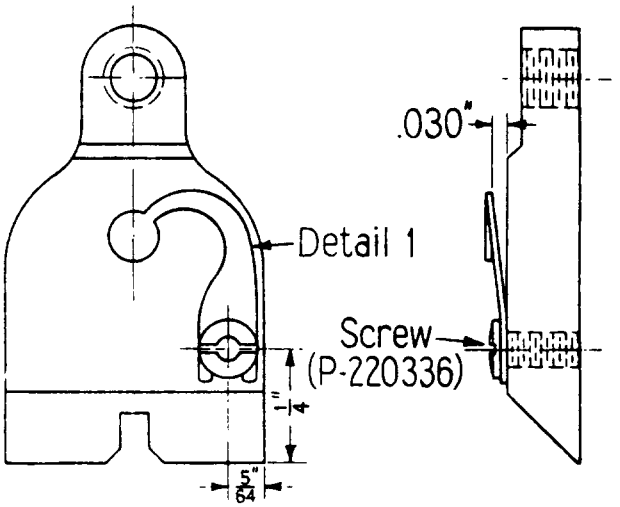

Fig. 2.

3.7 With the armature assembly for either the 101 type or the 190-F relay in position, the relay should be adjusted to meet the electrical requirements, or both the electrical and flashing requirements if specified. The addition of the spring should not have any appreciable effect upon the "release" requirement of the relay.

3.8 When making the adjustment, care should be taken to see that there is a clearance between the spring and the armature when the relay is in the unoperated position. The clearance will be somewhat less than the .030 inch shown on Figs. 1 and 2 due to the weight of the armature tending to reduce this clearance. With the relay in the operated position, there should be a slight clearance between the spring and the back stop screw or adjusting nut. This clearance, however, should be kept toward a minimum consistent with meeting the electrical requirements.