

AUTOMATIC SWITCH COMPANY RELAYS HAVING NO KS DESIGNATIONS REPLACEMENT PARTS AND PROCEDURES

1. GENERAL

1.01 This section covers the information necessary for ordering parts to be used in the maintenance of the following relays manufactured by the Automatic Switch Company. It also covers procedures for replacing these parts.

Bulletin 1054

Type 5406
Type 5412
Type 5420
Type 5421
Type 5426

Bulletin 1054-107

Type 107S11
Type 107S13

Bulletin 1054-161

Type 161S5

Bulletin 1255-166

Type 16620

1.02 Part 2 of this section covers ordering information for those 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 except small items such as screws. Part 2 also contains explanatory figures showing the different parts. This information is called Replacement Parts.

1.03 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.

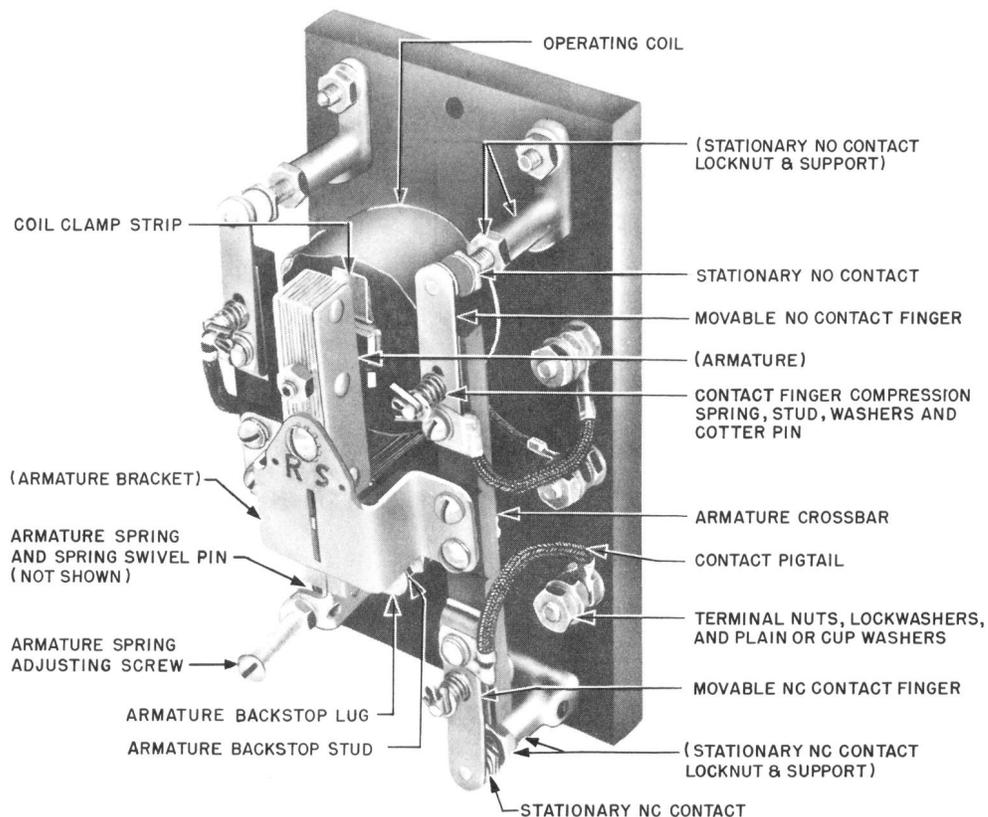
2. REPLACEMENT PARTS

2.01 The figures included in this part show the various replacement parts with their corresponding names in their proper relation to other parts of the apparatus.

2.02 When ordering parts for replacement purposes, give the name of the part as shown in the figure of this section and also the nameplate data of the relay for which the part is ordered, including the manufacturer's name, the voltage range of the coil and type of current, rating of contacts in volts (ac or dc), and amperes. For example, one NO movable contact finger for the Automatic Switch Company 107S11 relay, coil voltage range 180-253 volts ac, 60 cycles, contact rating 230 volts, 60 cycles ac, 5 amperes. Do not refer to the BSP number.

2.03 Information enclosed by parentheses () is not ordering information. This information may be references to notes, parts referred to in other portions of the section and not considered replaceable, or part names in general use in the field if these names differ from those assigned by the manufacturer.

2.04 Miscellaneous parts, for example, screws, etc, which are not named in the illustrations and which cannot be obtained locally should be ordered by describing the part and giving the complete nameplate data as referred to in 2.02.



**Fig. 1 – General Construction of Magnetically-Held Relays
(Bulletin 1054, Type 5421 Shown)**

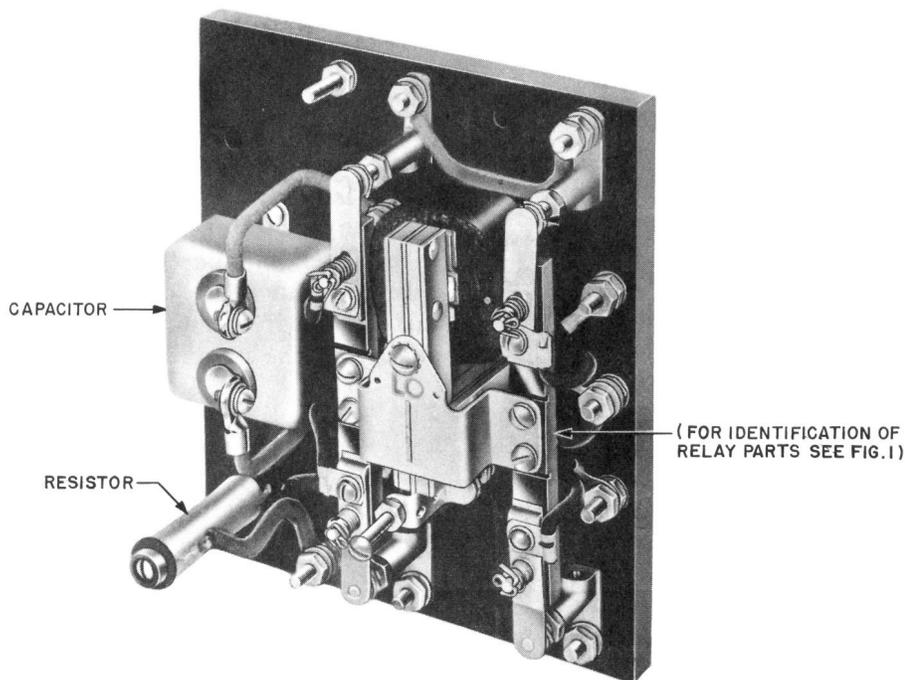


Fig. 2 – Typical Bulletin 1054-101 Relay (Type 101539 Shown)

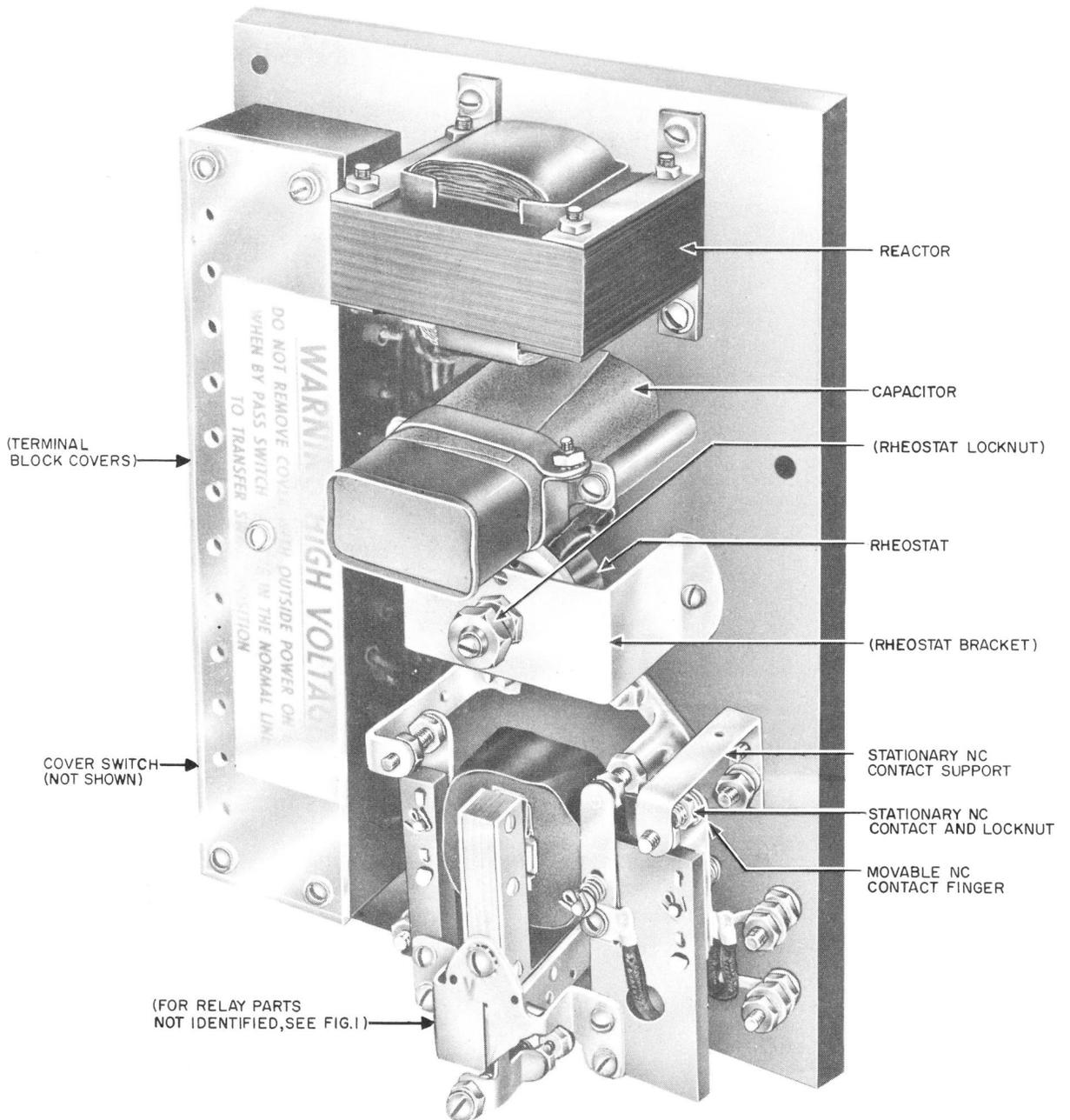


Fig. 3 - Typical Bulletin 1054-107 Relay (Type 107511 Shown)

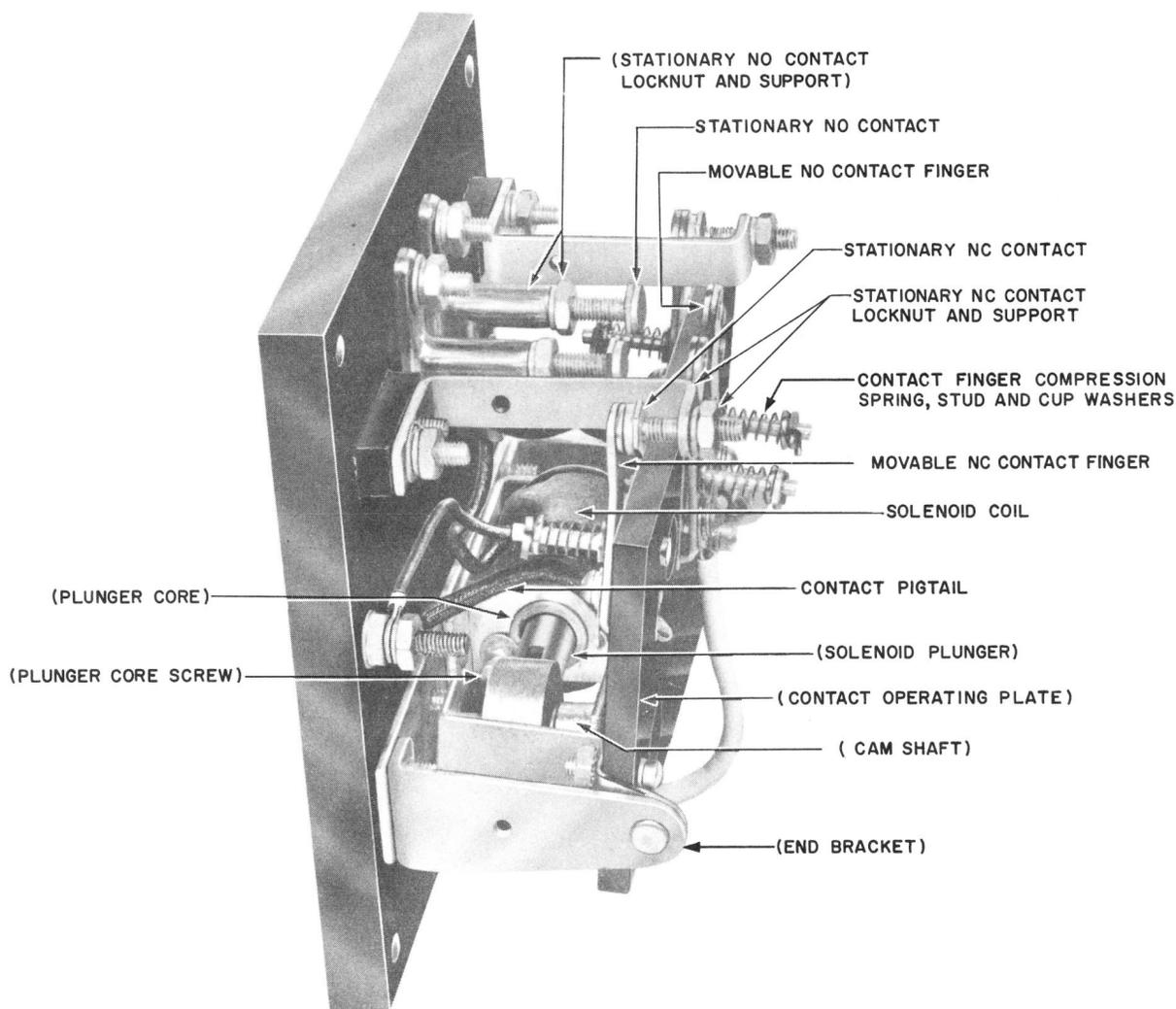


Fig. 4 – Bulletin 1255-166, Type 16620 Relay

3. REPLACEMENT PROCEDURES

3.01 List of Tools and Materials

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
417A (2 Reqd)	1/4- and 3/8-inch Hex. Open Double-End Flat Wrench
418A	7/32- and 5/16-inch Hex. Open Double-End Flat Wrench
KS-6015	Duckbill Pliers
KS-7139	Diagonal Pliers
R-1542	Adjustable Wrench

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
—	3-inch C Screwdriver
—	4-inch E Screwdriver
—	Long-Nose Pliers
MATERIALS	
KS-2423	Cotton Twill Cloth
KS-14090	Gray Plastic Adhesive Tape

3.02 Caution: Before making any replacement of parts, the high voltage should be removed from the contact terminals when present.

To shut off high voltages, refer to the sections covering the associated control equipment. After replacing any of the parts, restore the circuit to service.

3.03 After making any replacement of parts of a control relay, the part or parts replaced shall meet the readjust requirements involved, as specified in Section 040-804-701. Other parts whose adjustments may have been directly disturbed by the replacing operations shall be checked. The readjust requirements and an overall operation check shall be made of the relay before restoring the circuit to service.

3.04 No replacement procedures are specified for screws and other parts where the replacement procedure consists of a simple operation.

3.05 Whenever it is necessary to disconnect leads, care should be taken to mark or record the position of the leads to facilitate their correct replacement.

3.06 *Relay Movable Contacts and NC and NO Relay Contact Fingers:* To replace a relay movable contact, it is necessary to replace the relay contact finger, which includes the contact. To replace a NO relay contact finger, remove the contact finger cotter pin using the long-nose pliers and remove the contact spring stud, contact spring washers, and compression spring. Remove the screw and washers which fasten the pigtail terminal to the contact finger, using the 3-inch C screwdriver, and remove the finger from its mounting block. If the NC relay contact finger is to be replaced, the finger must be removed from its mounting block and turned over before the screw which fastens the pigtail terminal to it can be removed. Replace the finger and reassemble in the reverse order. Pigtails associated with movable contacts should be replaced when the movable contacts are replaced.

3.07 *Relay Stationary Contacts:* Note the amount the stationary contact to be replaced projects beyond the contact support. With the No. 417A wrench, loosen the nut. Remove the contact with the No. 417A wrench. Assemble the nut on a new contact with the lockwasher, and insert the contact in the contact support so that an amount approximately equal to the amount noted above projects beyond the contact

support. While holding the contact with one No. 417A wrench, securely tighten the nut with another No. 417A wrench.

3.08 *Relay Operating Coils*

(1) ***Bulletin 1054, 1054-101, 1054-107 and 1054-161 Relays:*** Disconnect the coil leads using the 4-inch E screwdriver or the No. 417A wrench, as required. To gain access to the armature pivot pin, remove the screw and lockwasher which fastens the armature bracket to the armature. Remove the pivot pin by pulling it out. If it resists being pulled out, its removal can be aided by tapping it lightly with the side of the KS-6015 pliers. Allow the armature to be held by the armature spring. Bend the coil clamp strip outward with the pliers, holding the coil to the frame. Remove the coil, taking care not to lose the fish-paper insulator and the bakelite wedge. Replace the coil and reassemble in the reverse order. Do not change any adjustments.

(2) ***Bulletin 1255-166 Relays:*** Disconnect the coil leads and terminal leads using the 3-inch C screwdriver or the No. 417A wrench, as required. Remove the sealing compound which covers the end bracket screws and solenoid assembly screw on the underside of the base and remove the screws, using the 4-inch E screwdriver. Save the pieces of compound which were removed as they can be pressed back in the holes again after the replacement operation is finished. Remove the end brackets and withdraw the plunger and solenoid assembly. With the C screwdriver, spread the horseshoe washer at the end of the cam shaft and remove the washer. Remove the cam shaft using the No. 417A wrench and withdraw the cam, plunger and plunger spring from the solenoid. Remove the plunger core screw with the C screwdriver and pull out the plunger core. Replace the coil and reassemble in the reverse order.

3.09 *Relay Armature Spring:* To replace the armature spring on magnetically-held relays, unhook the spring from the spring adjustment screw and swivel pin with the long-nose pliers and replace with a new spring.

Bulletin 1054-107 Relay

3.10 *Relay:* Replace relay parts as covered in 3.06, 3.07, 3.08(1), and 3.09.

3.11 Reactor: Remove the terminal block covers using the 4-inch E screwdriver to remove the mounting screws. Note the color of each reactor lead and the designation of the terminal to which it is connected and disconnect them from the terminal block. If the leads of the replacement reactor are not equipped with terminal lugs, it will be necessary to unsolder the terminal lugs from the leads of the reactor to be replaced and solder them on the leads of the replacement reactor. Use the KS-7139 pliers to skin the leads for soldering. Remove the reactor mounting screws and washers, using the screwdriver. Replace the reactor and mount it to the base with the mounting screws and washers. Connect the reactor leads to their respective terminals on the terminal block. Reassemble the terminal block covers in the reverse order.

3.12 Rheostat: Remove the terminal block covers and rheostat bracket mounting screws using the 4-inch E screwdriver. Note and disconnect the rheostat and capacitor leads from the terminal block terminals. Remove the capacitor mounting strap and mounting screws using the screwdriver and the No. 418A wrench, and disconnect the rheostat lead from the capacitor terminals using the No. 417A wrench. If the replacement rheostat is not equipped with leads or terminal lugs, unsolder the leads or terminal lugs from the rheostat to be replaced

and solder them to the replacement rheostat. Use the KS-7139 pliers to skin the leads for soldering and insulate soldered connections with KS-14090 adhesive tape. If the replacement rheostat is not equipped with a mounting bracket, remove the bracket from the rheostat to be replaced using the R-1542 wrench to remove the locking nut and mounting nut and assemble the replacement rheostat to the bracket. Connect the rheostat lead to the capacitor and connect the rheostat leads and capacitor lead to the terminal block as previously wired. Fasten the rheostat assembly and capacitor to the base and reassemble the terminal block covers using the 4-inch E screwdriver.

3.13 Capacitor: Remove the capacitor mounting strap and mounting screws using the 4-inch E screwdriver and the No. 418 wrench. Remove the insulating material which is wrapped around the capacitor and lift up the capacitor to gain access to its terminals. Note the position of the leads and disconnect them from the capacitor using the No. 417A wrench. Connect the leads to the new capacitor and reassemble all parts in the reverse order.

3.14 Cover Switch: With the 4-inch E screwdriver, remove the terminal block covers and remove the fixed and movable contact spring of the cover switch. Reassemble the new springs and terminal block covers in the reverse order.