KS-13767 RELAYS

REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the KS-13767 relay.

1.02 Description: This relay, manufactured by Signal Engineering and Manufacturing Company, has a single operating coil and one pair of normally open (NO) contacts.

1.03 Reference shall be made to Section 020-010-711 covering General Requirements and Definitions for additional information necessary for the proper application of the requirements listed herein.

1.04 A relay is said to operate when the armature has moved sufficiently for NO contacts to close with reliable contact.

1.05 A relay is said to release when the armature has moved sufficiently for NO contacts to open.

1.06 When work is done on a relay in an operating circuit, see that service is maintained. Do not touch, at the same time, live terminals or parts which are at different potentials, or otherwise short-circuit them.

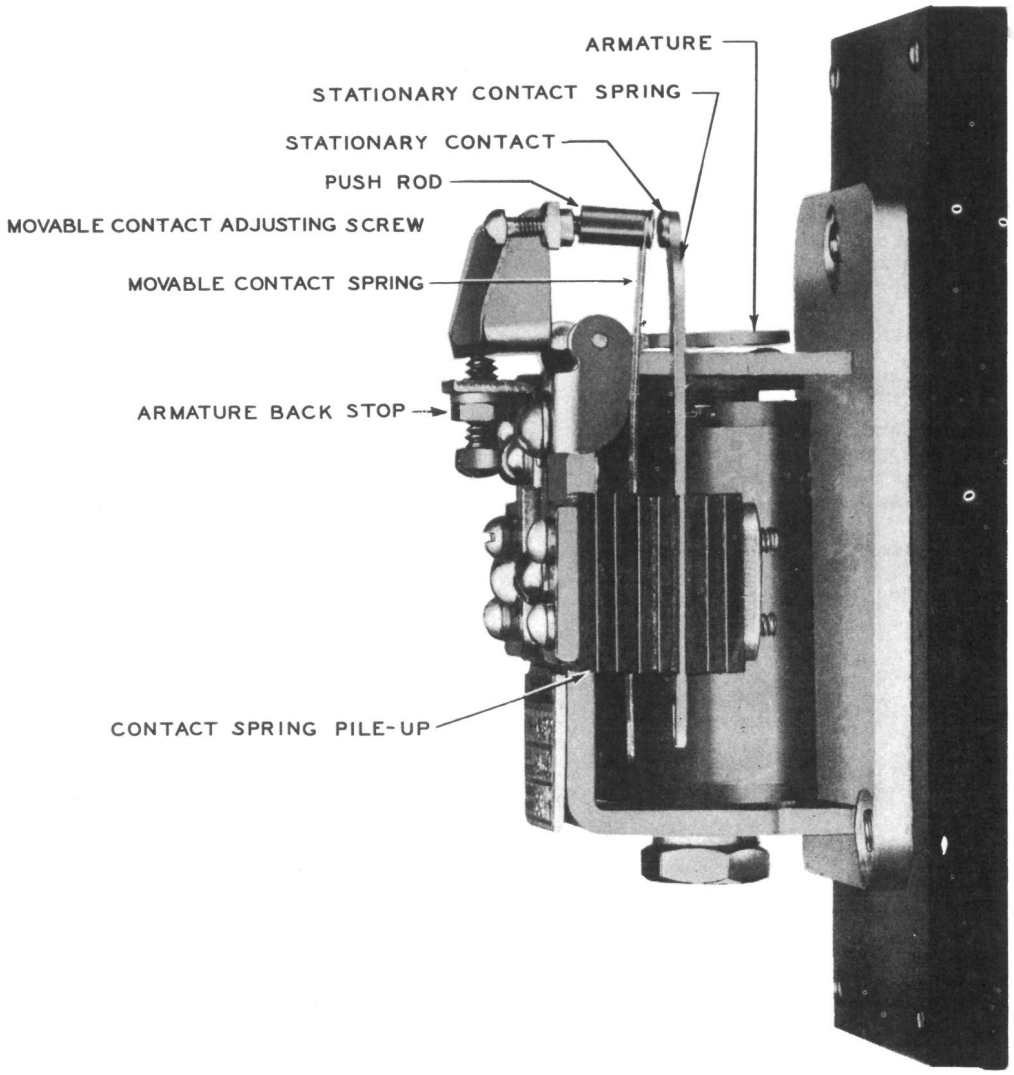

Fig. 1 - KS-13767 Relay

2. REQUIREMENTS

2.01 Mounting: The relay shall be fastened securely to its mounting. The component parts shall be held together securely. Gauge by feel.

2.02 Contact surfaces shall be clean and free from build-ups which might interfere with reliable contact. Gauge by eye.

2.03 Contact Alignment

(a) The contacts shall be so aligned that the misalignment shall not exceed

Max. - 1/32"

Gauge by eye.

2.04 Contact Separation

(a) The contact separation between movable and stationary contacts, with the armature in the released position, shall be

Min. - 0.010"

(b) The contacts shall make with a 0.010" gauge inserted between the armature stop pin and the core, with the armature operated manually.

Use KS-6909 thickness gauge-nest

2.05 Electrical Requirements

(a) The relay shall meet the electrical requirements specified in the Circuit Requirements Table or other job information.

(b) Where electrical requirements are not specified in the Circuit Requirements Table, the relay shall be checked in accordance with the following:

Operate	3 mil-amps.
Release	0.5 mil-amps.

(c) Check of electrical requirements may be at the temperature at which the relay is found, unless H (hot) or C (cold) is specified in the Circuit Requirements Table.

(d) Where H is specified in the Circuit Requirements Table without heating instructions, the relay coil shall be energized for at least one hour prior to the test.

(e) Where C is specified in the Circuit Requirements Table without cooling instructions, the relay shall be deenergized for at least two hours prior to the test.

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges, Materials and Test Apparatus (Equivalents may be substituted if desired)

Tools

Adjuster, Spring No. 507A
Burnisher, Contact, No. 265C Tool
Pliers, Duck-bill, KS-6015, 6"
Screwdriver, KS-6854, 3-1/2"
Wrench and Screwdriver, No. 72 Tool
Wrench, Open, double end, offset, No. 388A

Gauges

Gauge, thickness-nest, KS-6909

Materials (See Sections 065-330-101 and 065-370-101.)

Cloth, Cleaning, twill-jean, D-98063
Spirits, Petroleum

Test Apparatus

Test Set, 35 type

3.002 Strapping and Insulating: Strapping should be used when it is necessary to maintain service while work is being done on a relay. For this purpose No. 1W13A cords (3'-0" long) or No. 1W13B cords (6'-0" long) with No. 365 tools (clips) at each end are suggested. Suitable lengths of wire or flexible cord, such as is used in lighting circuits, with KS-6780 clips, are also satisfactory. Insulation should be used for protection around live parts, and between open contacts. Bond paper is suitable for this purpose, and should be shaped or bent as necessary to minimize interference with the work being done.

3.003 General Procedure

(1) It is recommended that requirements be checked and any required adjustments be made in the order outlined in the following paragraphs.

(2) When checking requirements or making adjustments, disconnect the relay from the working circuit, if practicable. Where this is not practicable, bridge around contacts, insulate between contacts (see 3.002), and disconnect leads, as necessary, to maintain circuit conditions unchanged. Apply the strapping at convenient points in the circuit, other than at the relay itself, if practicable. Insulate around live parts to avoid accidental short circuits or shock. If it becomes necessary to remove the relay from its mounting in order to obtain access

to the parts, see that any working circuit is patched through and disconnect all power supply from the coil and contact circuits by opening switches or removing fuses, as provided. Then disconnect the leads from the terminals and remove the relay.

Caution: Use care when working in close quarters with live parts

(3) The lamp signal in the 35-type test set can be used to indicate contact closure as outlined in Section 100-101-101. It can not be used on a live relay.

3.01 Mounting (Rq. 2.01)

(1) Tighten loose screws with the screwdriver.

3.02 Contact Surfaces (Rq. 2.02)

(1) The purpose of cleaning contacts is to remove any gummy or dirty substance that would interfere with reliable contact. It is not necessary or desirable to keep contacts polished or shining. Clean contacts by wiping with a cloth moistened with petroleum spirits, followed by a dry cloth. The contacts should be disconnected from the power supply during the cleaning operation.

(2) There shall be as little smoothing of contacts as is consistent with satisfactory operation. Contacts should be smoothed while closed. Hold normally open contacts closed by operating the relay manually. With the circuit disconnected from power supply, insert a burnishing tool between the contacts to be cleaned, and draw it back and forth until the build-ups are removed entirely or are reduced sufficiently to insure reliable contact. Then clean the contacts as outlined in (2) above.

3.03 Contact Alignment (Rq. 2.03)

(1) Shape, with pliers, a contact spring that is slightly bent or out of alignment. For misalignment which can not be corrected by this method proceed by loosening the screws which hold the spring pile-up, bringing the springs into the required position and carefully tightening the screws after the correction has been accomplished. Any contact spring which has become badly bent out of shape should be removed and reshaped or replaced with a new spring.

(2) If alignment can not be obtained, install a new relay.

3.04 Contact Separation (Rq. 2.04)

(1) The contacts must be disconnected from power while checking separation with the gauge.

(2) Adjust the contact springs, as required, with a No. 507A spring adjuster.

(3) Adjust the movable contact adjusting screw with the No. 72 tool.

(4) Adjust the armature back stop with the 388A tool and the KS-6854 screwdriver.

(5) After any adjustments, check 2.05.

3.05 Electrical Requirements (Rq. 2.05)

(1) Where requirements are expressed in milliamperes, direct current is meant unless otherwise specified and a 35-type test set should be used. Where test set preparation has not been specified on the Circuit Requirements Table, it is suggested that both relay coil terminals be disconnected and both battery and ground be furnished through the test set with B/G preparation.

(2) Operate and release adjustments are made, as far as possible, by changing the tension in the movable contact spring. Additional changes in these values are made by changing the air gap between the armature and the core, which is done by adjustment of the back stop.