

KS-5189-03 EMERGENCY LIGHTING RELAY SWITCH

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1. GENERAL INFORMATION

1.1 Scope

1.11 This section contains information for testing and adjusting the KS-5189-03 Emergency Lighting Relay Switch, SD-80713-01.

1.2 Precautions

1.21 When making any mechanical checks or adjustments on these switches, both ac and dc power must be removed.

1.22 When testing the main switch for operation, keep fingers away from the trip and latch mechanism, as the armature of the dc relay closes with considerable force.

1.3 Description

1.31 These switches automatically connect a number of emergency lamps to central office battery if regular ac power service fails or drops below a predetermined value and extinguishes these lamps when the ac service is restored to normal. For a single-phase service, only the main switch is furnished. For a three-phase service, two ac control relays are furnished in addition to the main switch. See Figure 1.

1.32 The main switch has two parts, an ac control relay and a dc relay. The ac power source holds the ac control relay operated, electrically locking out the dc relay and holding out the latching mechanism for the dc relay. Failure of the ac source drops out the ac control relay. This drops the latching mechanism for the dc relay armature into position and connects the dc relay coil to the battery. The dc relay armature begins to pull up to the operated position. After the armature has moved a certain distance, it opens an auxiliary switch which opens the dc relay coil circuit. The inertia of the armature causes it to move to the full-operated position where it latches into place and connects the emergency lamps to the battery. Upon return of ac power the control relay operates to unlatch the armature of the dc relay which drops out, opening the circuit to the emergency lamps.

1.33 Main and arcing contacts are furnished on each pole of the dc relay. The movable main contacts are laminated brush type while the stationary main contacts are solid copper. Auxiliary arcing contacts are metal-to-metal type on 30 and 60 ampere sizes, and metal-to-carbon type on 100 ampere size.

1.34 Two control relays, furnished with the emergency lighting switch for three-phase ac power sources, have their coils connected across the two phases to which the ac control relay in Paragraph 1.32 is not connected. These control relay contacts are in series and connect the third phase to the coil of the ac control relay. Thus, if any phase of the three-phase source is lost, or if, voltage of any phase drops below a predetermined value, the dc relay operates to turn on the emergency lights.

2. MAIN SWITCH

NOTE: The following adjustments are to be checked with NO power, ac or dc, applied to the Relay Switch.

2.1 Contact Pressure

2.11 Pressure of the brush contacts (dc relay) against their associated stationary contacts shall be approximately equal.

Gauge by sight or feel.

2.12 Pressure of brush arm springs (ac relay) against their associated button contact shall be approximately equal.

Gauge by sight or feel.

2.2 Contact Sequence (DC Relay)

2.21 Arcing contacts shall close ahead of the brush-type contacts on the main poles of the dc relay. The carbon arcing contact, when provided, shall close first, next, the arcing tip on the brush, and lastly, the main brush contact. They shall open in the reverse order.

Gauge by sight or feel.

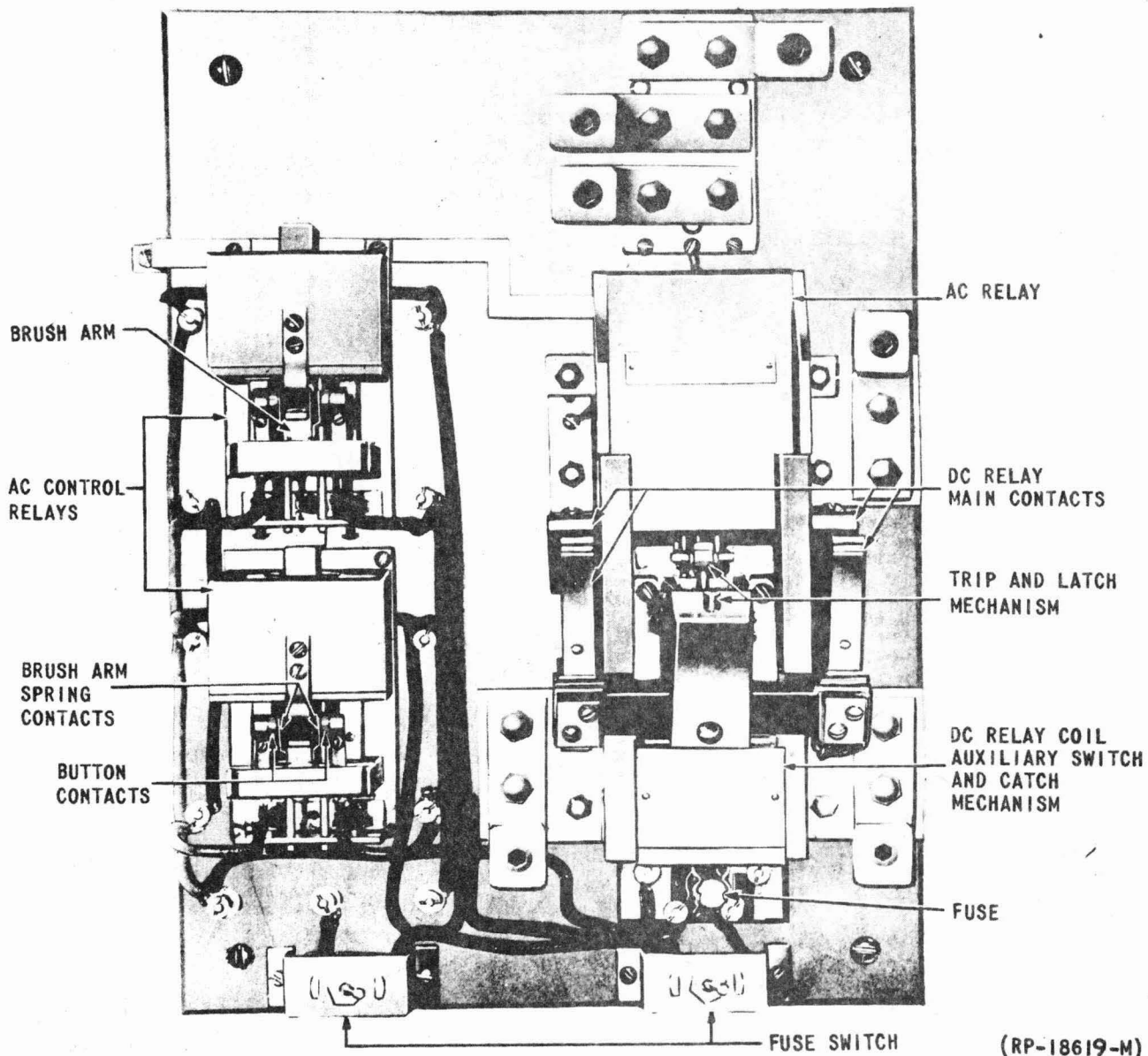


FIG. 1 EMERGENCY LIGHTING RELAY SWITCH FOR 3-PHASE SERVICE (WITHOUT CABINET)
(PAR. 1.31)

2.22 To adjust sequence loosen the screws on the crossbar and move or shape the movable members for correct sequence.

2.3 Contact Alignment

2.31 The brush arm springs (ac relay portion) shall be approximately in the center of the button contacts when the contacts close. Manually push plunger up and gauge alignment by eye.

2.4 Miscellaneous

2.41 Hold down the lock and push the armature (carrier arm) of the dc relay to the operated position so that it latches in place. There shall be approximately 1/32 inch clearance above the tip of the latch and a clearance from 1/32 to 1/16 inch between the side of the latch and the outer edge of the lock.

2.42 Slowly release the armature (carrier arm) of the dc relay from the operated position toward the non-

operated position. The auxiliary switch mechanism shall be engaged and the auxiliary switch shall close before the armature reaches its nonoperated position. Gauge by feel. The small fuse panel may be lowered to check this visually.

3. AC CONTROL RELAYS (Where Provided)

3.1 Contact Pressure

3.11 When the plunger is raised the spring contacts shall have a firm and approximately even pressure against the associated button contact. The pressure shall be such that the weight of the plunger, after it has been slowly lowered to rest on the brush arm lever will allow the contacts to open without binding.

Gauge by eye and feel.

3.12 Adjust pressure by loosening the screw holding the button contact in place, move the button, then tighten the screw.

3.2 Contact Alignment

3.21 When the plunger is raised, the brush springs shall be approximately in the center of the button contacts.

Gauge by eye.

No arrows are shown due to extensive changes.

Vertical line at side of paragraphs indicates requirements.

3.22 To adjust alignment, shape the springs supporting the button contacts with pliers.

3.3 Miscellaneous

3.31 When the plunger is down it shall rest on the stop screw and there shall be a slight clearance between the plunger and the brush arm lever.

Gauge by eye and feel.

4. OPERATIONAL TEST

4.1 Install all ac and dc fuses associated with the Relay Switch, and verify that no emergency lamps are lighted.

4.2 Momentarily operate the Test Switch on the relay panel to the test position and verify that the emergency lamps are lighted.

4.3 Return the switch to the normal position and verify that the emergency lamps are extinguished.

4.4 If there are two test switches repeat paragraphs 4.2 and 4.3 for the other test switch.

Manager, Product Engineering

Reasons for Reissue:

- (1) To remove unnecessary and incorrect information.
- (2) To improve method of testing.

Replaces Section 19 dated 2-19-59.