

RELAYS

111 (PART OF 163), 121, 122, 125, 149, 162, 178, AND 179 TYPES

1. GENERAL

1.001 This addendum supplements Section A460.014, Issue 3.

1.002 This addendum is reissued to revise the requirement for armature travel, to revise the timing requirements, and to revise the procedure for applying the KS-7246 separator and the procedure for meeting electrical requirements.

2. REQUIREMENTS

The following changes apply to Part 2 of the section:

- (a) 2.16 — revised
- (b) Fig. 4, title — revised
- (c) 2.17(a) — revised
- (d) 2.23(a) — revised

2.16 *Armature Travel:* Fig. 4(I) — The armature travel shall be as specified on the circuit requirement table or in Table 2. Where no armature travel is specified, the values in Table 1 shall be used as a guide in readjusting the armature travel. However, deviations from these values are permissible if difficulty is experienced in meeting the electrical requirements.

TABLE 1			
FIGURES	TEST	ARMATURE TRAVEL	
		READJUST	
		MIN	MAX
A,B,C,D,S, and X	No Req	0.025 in.	0.030 in.
E,F,G,H, and K	No Req	0.020 in.	0.025 in.
L and M	No Req	0.015 in.	0.020 in.

TABLE 2		
For the following relays the armature travel (Test and Readjust) shall be		
RELAY	ARMATURE TRAVEL	
	MIN	MAX
149BD	0.015 in.	0.030 in.
162A	0.020 in.	0.050 in.
162Y	0.020 in.	0.040 in.
162AP	0.020 in.	0.040 in.
178AC	0.025 in.	0.045 in.
178AK	0.020 in.	0.030 in.
178AL	0.015 in.	0.030 in.
178AS	0.020 in.	0.035 in.
178BC	0.020 in.	0.045 in.
178CA	0.020 in.	0.030 in.
178CN	0.020 in.	0.040 in.
178DA	0.020 in.	0.030 in.
178DC	0.020 in.	0.035 in.
178DG	0.020 in.	0.035 in.
178DN	0.020 in.	0.045 in.
178EB	0.020 in.	0.045 in.
178EH	—	0.025 in.
178EL	0.020 in.	0.030 in.

Use the 92-type gauges.

Fig. 4 — 162-type Relay — Top View

2.17 *Contact Pressure*

(a) Where no definite limits for contact pressure are specified herein or on the circuit requirement table, spring tensions shall conform to the requirements as given in the particular figure on page 3 of the section, which is referred to in the Fig. No. Column of the circuit requirement table, or be in accordance with the table of special requirements for particular codes as covered in (b).

2.23 Timing Requirements

(a) The relay shall meet the timing requirements specified on the circuit requirement table or in Section A493.051 covering timing requirements. When the circuit requirement table refers to timing adjustments 1 to 7 per "X" specification, R.A.P., or BSP, the following timing adjustments are referred to. To check timing requirements, use the 35-type test set in conjunction with the test equipment provided at the office for this purpose. Where no testing equipment is available, the timing requirements shall be considered as having been met if the relay functions satisfactorily in the circuit in which it is used.

3. ADJUSTING PROCEDURES

The following changes apply to Part 3 of the section:

- (a) 3.05(3) — revised
- (b) 3.15 — revised requirement reference in heading
- (c) 3.17 through 3.22(10) — revised

3.05 Application of Separator per KS-7246 (Rq 2.05)

(3) Moisten the surface of the pole piece on which the insulator rests with the finger, or the KS-6320 orange stick, dipped in water. Place the gummed side of the separator against the moistened surface of the pole piece so that the end of the separator is flush with one edge of the pole piece and the rear edge of the separator is parallel to, and approximately flush with, the rear edge of the pole piece. Press the separator firmly and smoothly against the moistened surface of the pole piece using the finger or an eraser. Then, while holding the separator firmly against the moistened surface of the pole piece, wrap the separator around

the surface of the pole piece which is nearest the armature. The separator must not extend beyond the rear edge of the pole piece. Moisten the free end of the separator strip for a short distance adjacent to the pole piece and wrap it evenly around the edge and over the pole piece, taking care that the separator is smooth and tight against the surface of the pole piece adjacent to the armature. Press the moistened portion of the separator against the part already stuck to the pole piece. This end must overlap the end previously stuck for the full width of the pole piece. If the pin in the pole piece interferes with the separator, press the separator into contact with the pole piece around the pin, taking care not to tear the separator more than is necessary to insure that the insulator will rest flat on the pole piece. Cut off any excess paper and remount the pole piece on the relay, taking care that the end of the armature is properly located between the pole piece and the adjusting screw. Replace the insulator, taking care to see that springs are in their proper grooves.

→3.15 Armature Alignment (Rq 2.15)

3.17 Contact Pressure (Rq 2.17)

3.18 Stud Gap (Rq 2.18)

3.19 Contact Separation (Rq 2.19)

3.20 Contact Follow (Rq 2.20)

3.21 Spring Sequence (Rq 2.21)

3.22 Electrical Requirements (Rq 2.22)

(10) If difficulty is experienced in adjusting No. 178AD, 178CL, or 178CW relays to meet electrical requirements, check to see if the relay is equipped with a hydrogen-annealed magnetic-iron pole piece. (Hydrogen-annealed pole pieces are stamped with an "H" which is visible from the front of the relay.) If it is not so equipped, replace the pole piece with a hydrogen-annealed pole piece. This should relieve the difficulty.