

THERMAL RELAY
PER D-80493
FOR PNEUMATIC TUBE SYSTEM BLOCKADE ALARM
REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the thermal (time delay) relay per D-80493. Each of the two thermostat units of this relay operates independently and shall be tested and adjusted individually in accordance with the requirements and adjusting procedures outlined herein.

1.02 This section is reissued to ~~change~~ the normal operate time of this relay. Detailed reasons for reissue will be found at the end of the section.

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 Operate: This relay is said to operate when current thru the winding causes the thermostat spring to bend sufficiently to make contact with the opposing contact spring.

1.05 Release: This relay is said to release if the thermostat spring moves from the operated position sufficiently to break contact with the opposing contact spring.

1.06 All electrical requirements shall be applied with the relay cover in place.

1.07 In testing or adjusting the thermostat units the heating current shall be removed as soon as possible after the unit has functioned in order that the unit may cool preparatory to the next operation. If the heating current is left on for prolonged periods, a permanent set may be produced in the thermostat spring with a resultant loss of adjustment.

2. REQUIREMENTS

2.01 Cleaning: The contacts shall be cleaned when necessary in accordance with the section covering cleaning of relay contacts and parts.

2.02 Relay Mounting: Relays shall be fastened securely to the mounting plate. Gauge by feel.

2.03 Relay Cover: No part of the mica insulators on the heating element or the contact springs shall touch the cover. Gauge by eye.

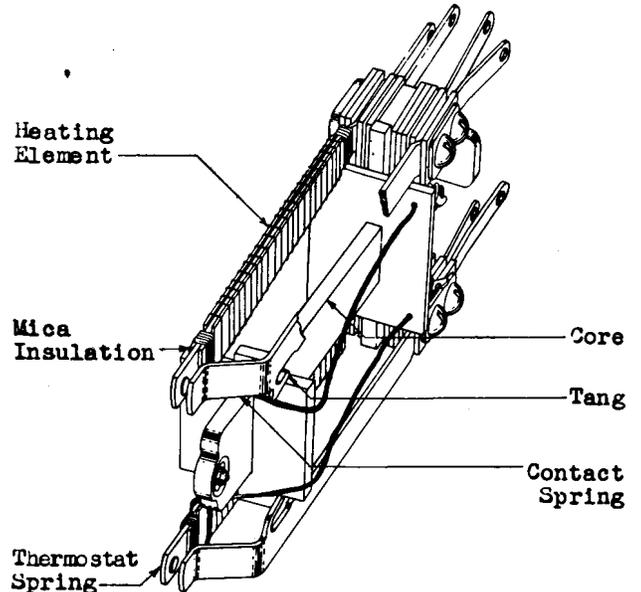


Fig. 1 - Relay Assembly (Cover Removed)

2.04 Tightness of Assembly: All springs in a given assembly shall be held in their relative position to one another. If it is found necessary to measure the tightness of assembly such tightness shall be considered as satisfactory if the springs in a given assembly do not move in their mounting when a pressure of 680 grams (24 ounces) is applied in a vertical direction at the contact end of all springs in the same assembly taken together. Gauge by feel.

2.05 Contact and Spring Alignment

(a) Contacts shall line up so that the point of contact falls wholly within the boundary of the opposing contact. Gauge by eye.

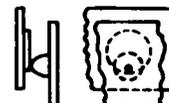


Fig. 2 - Contact Alignment

(b) All springs shall be free of sharp bends or kinks due to adjustment. A gradual bow in a spring is permissible. Gauge by eye.

2.06 Spring Tang Position

(a) Spring tangs shall rest on the spoolhead so that the ends of the tangs are below or above the projection of the top or bottom edges, respectively, of the spoolhead
Min. 1/32"
Gauge by eye.

(b) The tang shall not rub on the spoolhead when moved slightly in the direction of travel of the spring from its normal position of rest on the spoolhead. Gauge by eye.

2.07 Timing: With the normal heater current flowing through the winding of the thermostat unit the operate time of the relay at various room temperatures shall be as given in the following table. The operate time for other values of room temperature and current may be estimated from the table.

Operate Time in Seconds ± 20%

<u>Normal Heater</u> <u>Current - Amp.</u>	<u>Room Temperature</u>		
	<u>80°F</u>	<u>75°F</u>	<u>70°F</u>
.080	40	50	60
.075	50	65	75
.070	65	85	110
.065	90	115	-

Use 0-200°F. thermometer or ordinary room thermometer. Gauge by timing.

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges and Test Apparatus

<u>Code No.</u>	<u>Description</u>
<u>Tools</u>	
206	30° Offset Screw-driver
207	90° Offset Screw-driver
259	Spring Adjuster
-	4" Regular Screw-driver
-	3" Cabinet Screw-driver

Test Apparatus

35 Type	Current Flow Test Set
-	Thermometer 0-200°F. or Ordinary Room Thermometer

3.01 Cleaning (Rq.2.01)

(1) Clean the contacts in accordance with the section covering cleaning of relay contacts and parts.

3.02 Relay Mounting (Rq.2.02)

(1) To tighten loose mounting screws use the 4" regular screw-driver.

3.03 Relay Cover (Rq.2.03)

(1) If the heating element touches the cover, shift the thermostat spring, by loosening the spring assembly mounting screws until the clearance requirements are met. The 206 and 207 offset screw-drivers should be used to make this adjustment. Move the thermostat spring as required, exercising care not to injure the heating element. Tighten the spring assembly mounting screws securely after completing this adjustment.

(2) If the contact springs touch the cover an attempt should be made to correct the trouble by applying pressure with the No. 259 spring adjuster to the end of the springs, exercising care not to distort or otherwise damage the springs. If the springs cannot be shifted, loosen the spring assembly mounting screws with the No. 206 and No. 207 offset screw-drivers or remove the relay from the mounting plate and loosen the spring assembly mounting screws with the 3" cabinet screw-driver and shift the springs so as to correct the fault. Tighten the spring assembly mounting screws securely if they were loosened.

3.04 Tightness of Assembly (Rq.2.04)

(1) To tighten loose spring assembly mounting screws use the 206 and 207 offset screw-drivers. If the mounting centers of the relays do not permit the use of the offset screw-drivers, remove the relay from the mounting plate and tighten the spring assembly mounting screws with a 3" cabinet screw-driver. Take care not to destroy the adjustment described under 3.03, 3.05 and 3.06.

3.05 Contact and Spring Alignment (Rq.2.05)
3.06 Spring Tang Position (Rq.2.06)

(1) If the contacts do not line up properly or if the tang does not overlap the spoolhead sufficiently an attempt should be made to correct the trouble by applying pressure with the No. 259 spring adjuster to the end of the springs, exercising care not to distort or otherwise damage the springs. If the springs cannot be shifted, loosen the spring assembly mounting screws with the 206 and 207 offset screw-drivers or remove the relay from the mounting plate

and loosen the spring assembly mounting screws with the 3" cabinet screw-driver and shift the springs so as to correct the fault. Tighten the spring assembly mounting screws securely if they were loosened. If necessary, make the adjustment outlined under 3.03 and 3.04 before mounting the relay. Tighten the mounting screws securely.

(2) If the springs are not straight the condition may be corrected by adjusting the springs, where they are bent, with the No. 259 spring adjuster.

(3) No attempt shall be made to adjust or straighten the thermostat spring as such adjustments may result in changes in "build-up" due to changes in the friction which exists between the mica sheets and the thermo-metal.

3.07 Timing (Rq.2.07)

(1) If the thermostat unit fails to meet the timing requirements adjust as follows: The air temperature should be checked by placing a thermometer near where the relay is located. To increase

the operate time increase the separation between the contacts. To decrease the operate time decrease the separation between the contacts. A separation of about 1/32" is advisable. These adjustments should be made as covered in the preceding paragraphs. Tests made after the adjustments should be with the relay cover in place. At least 4 minutes must be allowed to elapse between each trial operation in order to permit the thermostat unit to return to its normal position.

REASONS FOR REISSUE

1. To add paragraph 1.02.
2. To remove paragraph stating that part 1 and Part 2 are part of Western Electric Installation Department Handbook.
3. To revise the definitions for operate and release. (1.04 and 1.05).
4. To change heater current and operate time requirements. (2.07)
5. To change 3.05-3.06 (3) so that no attempt is made to adjust thermostat springs.