THERMAL TIME-DELAY WESTINGHOUSE RELAYS, KS-15518
REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers thermal-type time-delay relays, KS-15518 which are intended for use in the 900-type automatic engine-alternator plants per J86620.

1.02 This section is reissued to change the operate time of the list 1 relay. Changes are marked with arrows.

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 In this section the term resistor is used for all apparatus coded as either a resistor or a resistance.

1.05 The KS-15518 relay contains two bimetallic strips arranged to actuate a push-rod and lever mechanism and a specially designed spring which carries the movable contact at its center. A thermal element heats one of the strips, causing the contact spring to close the contacts with a snap action. On removal of the heating current, the contacts remain closed until a latch is released manually. The latch may be removed to provide for automatic reset of the contacts, which will occur with a snap action as the strip cools. The time required for operation depends on the magnitude of the heating current and is adjustable over a limited range. The list 2 relay has in series with the heater, a variable resistor which is adjusted when the relay is installed.

1.06 Requirements and associated procedures marked with an asterisk (*) need not be checked during maintenance unless the apparatus or part is made accessible for other reasons, or performance indicates that such a check is advisable.

2. REQUIREMENTS

2.01 Mounting: All mounting bolts and the screws which hold the heater shall be drawn up tightly. Gauge by feel.

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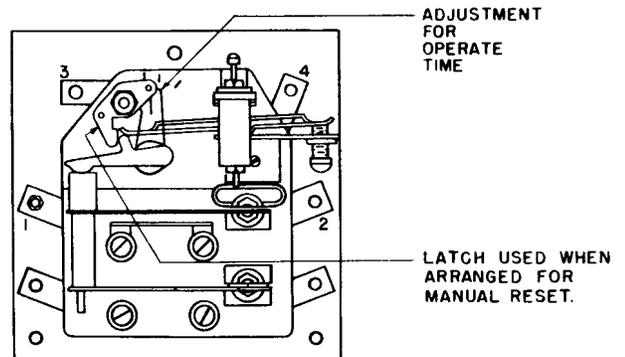

Fig. 1 - KS-15518 Relay

*2.03 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 relays shall meet the following requirements when room temperature is between 68 and 86F (20 and 30C).

| Applied Volts, D-C | Operate Time | |
	Min.	Max.
List 1 24	30 sec	40 sec
List 2 32(Note)	1 min 40 sec	2 min 20sec

Note: On list 2 relays, the applied voltage is measured across one side of the relay heater and the far side of the associated variable resistor which is in series with the other heater terminal.

3. ADJUSTING PROCEDURES

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

Burnisher, contact, No. 265C tool
Clip, No. 365 tool (two required per cord) (or KS-6278)
Cloth, abrasive, 150 grade (see Section 065-370-101)
Cloth, cleaning, twill jean, D-98063
Cord, No. 1W13A or 1W13B

KS-14510 volt-ohm-milliammeter or replaced M9B meter or voltmeter, d-c, Weston Model No. 280, ranges 150-60-30
Rheostat, W.L. Cat. 1107-8, 16 ohms, 2.5 amperes, with enclosure per dwg. 13540-7
Screwdriver, 3" cabinet →
Spirits, Petroleum →
→ Watch or clock

3.002 General Procedure

(1) Electrical requirements should be checked or work done on the contacts with the relay removed from service. The use of 1W13A cords (3'-0") or 1W13B cords (6'-0"), with No. 365 tools (clips) or KS-6278 clips, at both ends is suggested. When checking the electrical requirements, set up a temporary testing circuit using a battery such as the engine starting battery as a source of potential, with the rheostat in series with the list 1 relay and the voltmeter connected across it. When checking the list 2 relay, connect the voltmeter across one side of the relay heater and the far side of its associated resistor which is in series with the other heater terminal. The resistor is usually located near the relay.

3.01 Mounting (Rq. 2.01)

(1) Check the tightness of all 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. Operate the relay manually; insert a burnishing tool or strip of abrasive cloth (if contacts are alive use abrasive cloth only) between the contacts 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 above.

(3) Replace contacts which are badly worn. When replacing a worn movable contact, replace the contact spring, to which the contact is attached by riveting.

*3.03 Electrical Requirements (Rq. 2.03)

(1) Use the second hand of an ordinary watch or clock to time the interval between the closing of the test circuit and the click which occurs as the relay operates. Allow at least 10 minutes between readings, for the heater and bimetallic strip to cool. If the relay fails to operate, it should be checked for an open circuit in the heater. Disconnect one or both heater leads and check for continuity with the ohmmeter, if available.

(2) If an ohmmeter is not available, connect the d-c voltmeter in series with the heater and apply the voltage. If the voltmeter shows no indication, the heater is open.

(3) Operating time is adjustable by means of a lever located on the base between the supports for the stationary contact and the latch. If the list 1 relay cannot be adjusted to meet the limits, it should be replaced. If the list 2 relay cannot be adjusted to meet the limits, the associated variable heater series resistor may be readjusted. If this adjustment is insufficient the relay should be replaced.