



# MAINTENANCE INSTRUCTION

## AUXILIARY RELAYS—6 POLE

### DESCRIPTION

The relays covered by this Maintenance Instruction are all of the same basic construction and are used in a wide variety of applications, see Fig. 1. They differ only in number, and contact arrangement.

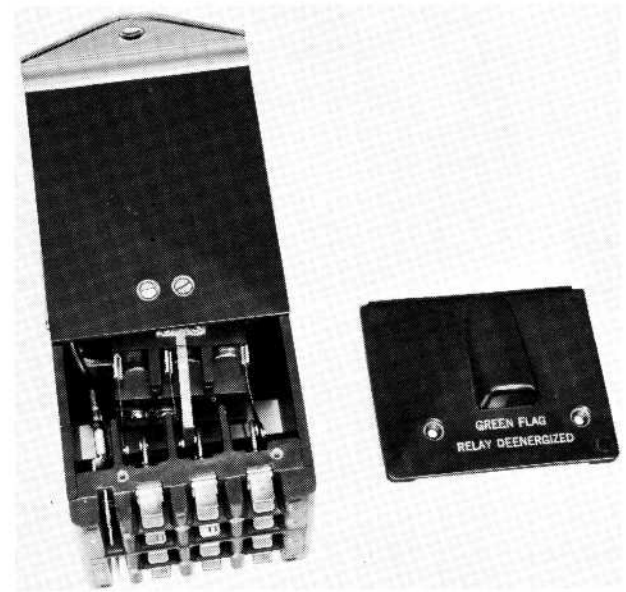
The coils of these auxiliary relays operate off 74 volt control circuits. The contact arrangements are designed to set up a variety of control circuits for product operation. The individual wiring diagrams will indicate relay function.

### MAINTENANCE

Due to simplicity of construction employing a minimum of moving parts together with silver alloy contacts and dust free enclosure, these auxiliary relays will provide satisfactory service over a long period of time. Maintenance requirements center primarily around occasional inspections to qualify the relays for continued service.

### INSPECTION

At the time of inspection, the relay covers should be removed and the contacts checked for pitting or burning. Use a low pressure stream of dry compressed air and blow out any dust or dirt accumulation. In the event that badly burned or pitted contacts are apparent, the relay must be removed from the installation



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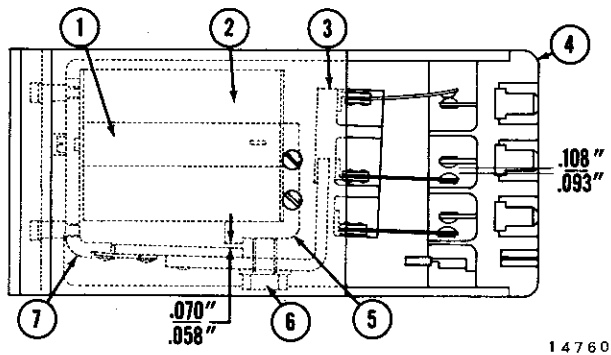
Fig. 1 — Typical Auxiliary Relay

for overhauling. Do not file or dress relay contacts. Relay contacts will turn black (tarnish) in time with normal operation. This will not impair relay operation or indicate a need for servicing.

Inspect the electrical connections for tightness and electrical contact. Inspect the operating coil for burns or discoloration. Check resistance of the coil according to values given in the Maintenance Data. Electrically inspect the relay for pickup and dropout using the values tabulated in the Maintenance Data.

Check the movable mechanical parts of the relay for proper function. Do not apply lubrication of any type to these relays.

NOTE: Information contained herein is applicable to equipment being produced as of the date of publication.



- |                             |                                |
|-----------------------------|--------------------------------|
| 1. Coil Core                | 5. Coil Pole Bracket Assembly  |
| 2. Relay Coil               | 6. Adjusting Screw             |
| 3. Contact Carrier Assembly | 7. Armature And Frame Assembly |
| 4. Contact Housing Assembly |                                |

Fig. 2 -- Cutaway View Of Relay

## DISASSEMBLY PROCEDURE

Remove the two screws and lockwashers holding each cover to the contact housing assembly. See Fig. 2 for identification of parts. Next remove the three screws and lockwashers holding the contact housing assembly to the coil and frame housing. Slowly remove the contact housing assembly just far enough to permit removal of coil leads from terminals using long nose pliers. Now remove contact housing assembly completely being careful not to bend or damage indicator tab or contact arms.

The carrier assembly is mounted to the armature and frame assembly with two screws and lockwashers. This can now be carefully removed.

To remove the coil and frame assembly, first remove the two spacer pads which are held to the relay housing with two screws and lockwashers in each pad. The nameplate can be removed to permit a better view of the adjusting screw clearance. On the mounting plate side of the relay remove two screws and lockwashers towards the center of the

mounting plate. This will free the coil and frame assembly for removal.

To remove the coil from the frame assembly remove the screw on the bottom side of the coil and frame assembly or the end opposite the contact carrier end. Do not remove the screw on the carrier end as the coil core has been permanently cemented to the coil pole bracket assembly when relay was manufactured. When the bottom screw has been removed the frame assembly can be rotated to permit the coil to slide off of the core. If the armature and frame assembly, coil pole bracket assembly or the coil core are in need of repair, these items should be replaced as a matched assembled set and not replaced individually.

## REASSEMBLY PROCEDURE

To reassemble the relay, follow a reverse order to that of disassembly. Make certain all parts are cleaned thoroughly before reassembly.

When replacing the coil make certain the leads are brought up on either side of the coil toward the contact carrier end and the rounded portion of the coil insulators are facing outward. Apply a screw locking material to the threads of the screw and start it into the coil core. Make certain the core end is located in the rectangular slot of the coil frame before tightening the screw securely into the coil core.

With the armature in a de-energized position the stop nut and hex nut must be adjusted to provide .058" to .070" gap between the coil pole bracket assembly and the armature and frame assembly, see Fig. 3.

When replacing the coil and frame assembly within the relay housing make

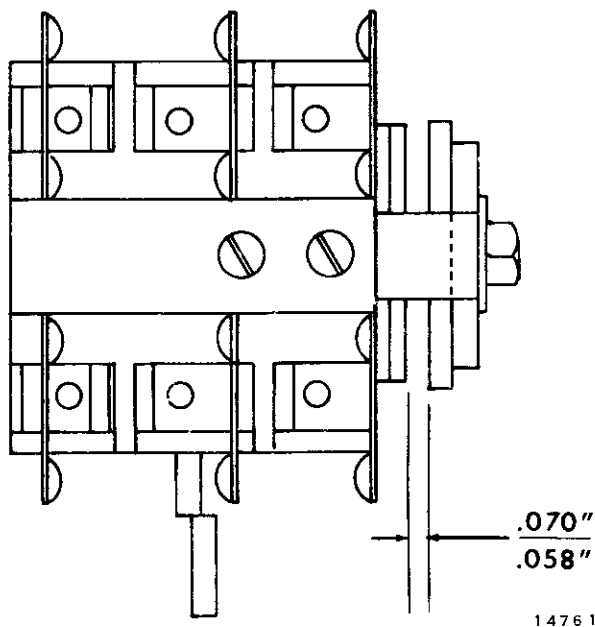


Fig. 3 — Armature And Coil  
Frame Gap

certain that the locating pins on the bottom of the frame are properly seated within the holes at the base of the relay housing. Observe whether the adjusting stop nut is located within the hole in the relay housing. Do not tighten the mounting screws into the relay housing and coil frame assembly until the spacer pads are in place and secure.

When replacing the contact housing assembly, first attach the coil leads to the coil terminals. Manually position the carrier assembly for proper placement of the contact housing to the relay housing, being careful not to bend or damage the indicator tab or contact arms. Arrange the coil leads so they will not interfere with the movement of the armature during normal operation of the relay.

### CHECKING AND ADJUSTING RELAY CONTACT PRESSURE

Check the pressure required to open all normally closed contacts with a gram gauge (5 to 150 range). This check can be made by connecting the normally closed

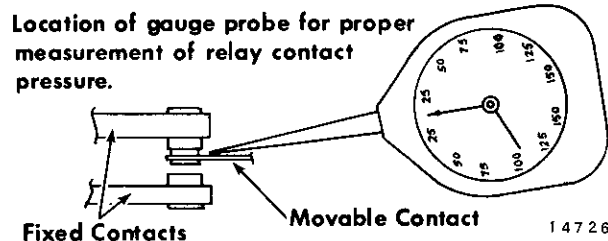


Fig. 4 — Location Of Gauge Probe

contacts in series with a simple low voltage (6 volt) lamp circuit. The reading should be taken at the position the lamp is de-energized. Place the probe of the gauge over the small hole located between each set of contacts on the contact brush assembly, see Fig. 4. A minimum reading of 80 grams pressure and a maximum of 130 grams pressure is acceptable before contact opening.

With a DC voltage of approximately 2 to 3 volts above the rated pick up voltage energize the relay coil. Check the pressure required to open all contacts which close when coil is energized. A minimum reading of 80 grams should be obtained on this test.

If the minimum reading of 80 grams is not obtained, the contact brush assembly will have to be adjusted. Using a bending tool described in Fig. 5 make gradual adjustments along the length of the contact brush assembly. Do not make any sharp creases or bends in the assembly. Since each brush assembly has two contacts, each contact should be checked to be sure that they are on the same plane and make contact with the fixed contacts at the

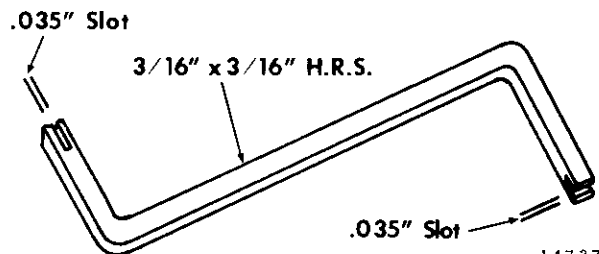


Fig. 5 — Example Of Relay  
Adjusting Tool

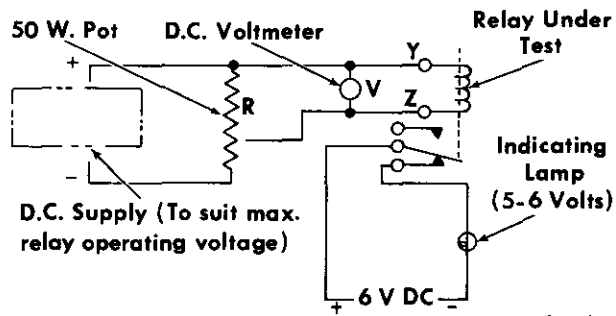
same time. If they do not, twist the assembly very slightly with the adjusting tool, then readjust the assembly for proper pressure. After making any adjustments recheck the contact pressures to be sure they are within the minimum or maximum pressure range.

All normally open contacts when the relay is energized should have a minimum of .0937" (3/32") air gap.

### PICKUP AND DROPOUT VOLTAGE TEST

In order to make the pickup and dropout checks, a variable DC voltage supply should be connected to the relay coil. See Fig. 6 for a schematic wiring of a test setup. Proper readings for various operating voltages will be found in the Maintenance Data.

Set the 50 watt potentiometer as shown in Fig. 6 to maximum resistance then gradually increase the voltage applied to the coil. An indicating lamp connected across the contacts will mark the pickup or dropout points. Slowly reduce the applied voltage to determine the dropout



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Fig. 6 — Suggested Test Set-up

point: the indicating lamp will go out when the dropout point is reached.

If the pickup and dropout points are not obtained as outlined in the Maintenance Data, check lead arrangement, contact pressure and carrier travel gap. Re-adjust if necessary.

Replace the side covers with their respective two screws and lockwashers. After adjustments have been completed the relay should be cycled 25 to 50 times with a 5 to 5-1/3 volt, 1/2 amp load (test lamp) connected across each set of contacts. Positive contact should be accomplished on each cycle or the relay must be reworked.

**MAINTENANCE DATA**

	<u>8357416</u>	<u>8357417</u>	<u>8361775</u>
Contacts: (5 Amps.)	4N.O-2N.C	5N.O-1N.C	3N.O-3N.C
Operating Coil			
Resistance-Ohms			
@20° C. (68° F.)	550 <sup>+</sup> -7%	550 <sup>+</sup> -7%	550 <sup>+</sup> -7%
Operation @ 20° C.			
Working	74VDC	74VDC	74VDC
Max. Pickup	48VDC	48VDC	48VDC
Dropout	5-28VDC	5-28VDC	5-28VDC
Hi-Pot Data: (60 Cycles)			
Coil to Ground	600 V.RMS	600 V.RMS	600 V.RMS
Coil to Contacts	2400 V.RMS	2400 V.RMS	2400 V.RMS
Contacts to Contacts	2400 V.RMS	2400 V.RMS	2400 V.RMS
Contacts to Ground	2400 V.RMS	2400 V.RMS	2400 V.RMS

The following items are applicable to all above listed relays.

Contact Pressure .....	80 Grams Min. 130 Grams Max.
Contact Air Gap .....	.0937" (3/32") Min.
Armature & Coil Frame Gap .....	.058" to .070"