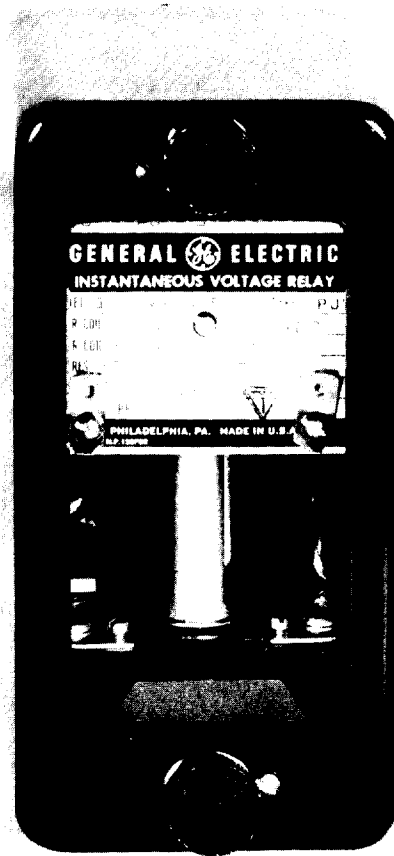




INSTRUCTIONS

GEI-83951
SUPERSEDES GEI-23986

INSTANTANEOUS UNDERVOLTAGE RELAY PJV17A



POWER SYSTEMS MANAGEMENT DEPARTMENT
GENERAL  ELECTRIC
PHILADELPHIA, PA.

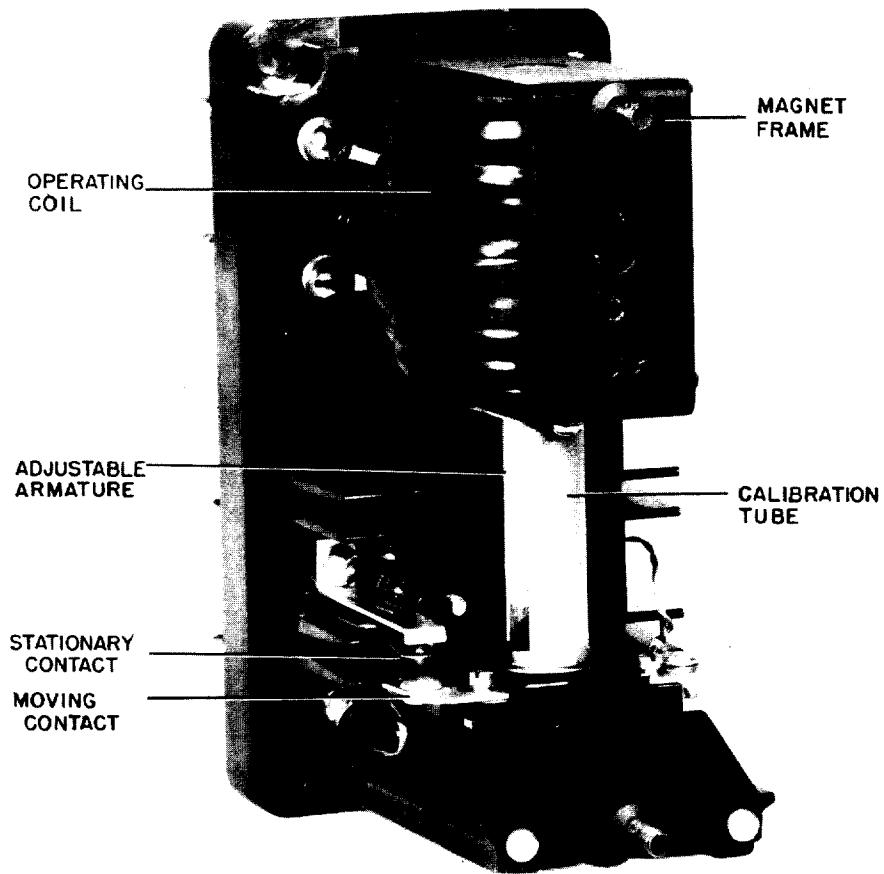


Fig. 1 (8030295) PJV17A Relay with Cover and Nameplate Removed

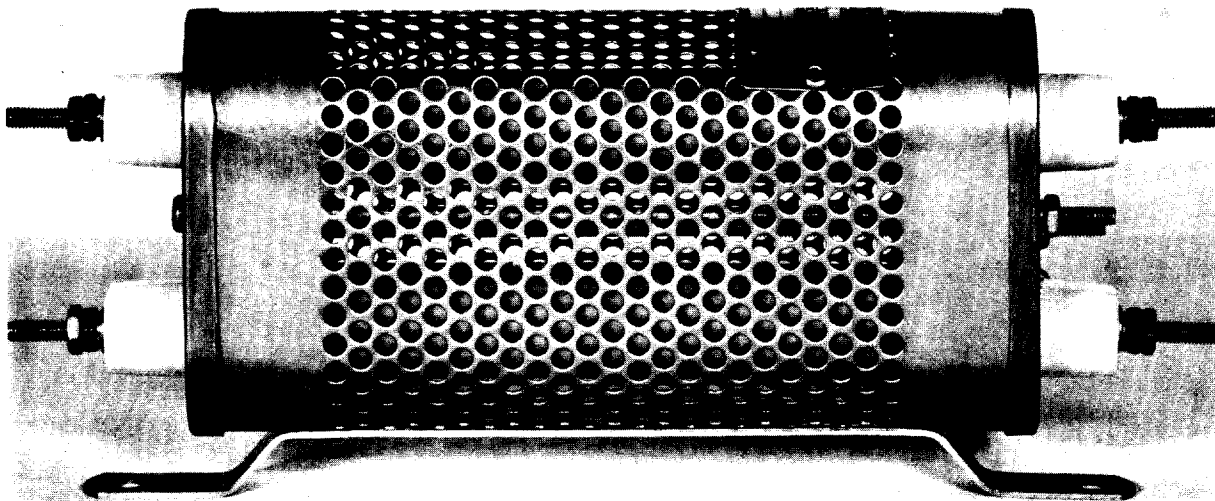


Fig. 2 (8030294) Two Stick Cage Resistor Typical of the External Resistor Used with PJV17A Relays

Cover (8030296)

CHARACTERISTICS

OPERATING PRINCIPLES

The PJV17A is a plunger-type relay which operates by electromagnetic attraction. The contacts are opened and closed by an armature drawn up vertically into a solenoid. The high dropout feature results from limiting the armature travel to retain a sizeable air gap in the magnetic circuit when the relay is picked up. The action of the a-c coil also helps to establish a positive dropout point.

The PJV17A relay can be adjusted by changing the vertical position of the armature on its threaded shaft. The relay will drop out at 95% or more of the pickup voltage at any setting.

BURDEN

The volt-ampere burden of the a-c winding is approximately 40VA.

The resistances of the d-c windings are given in Table A.

CONSTRUCTION

The PJV17A relay contacts are operated directly by the plunger (armature) which moves vertically inside the calibrating tube. This adjustable armature is mounted on the threaded portion of a plunger rod which carries the moving contacts upward as the armature is drawn upward into the solenoid by the flux established by the operating coils. Guides for the plunger rod are provided at the top by a hole in the pole piece and at the bottom by the fit of the molded contact carrier inside the calibrating tube.

A projection of the molded base parallel to the moving contact support prevents rotation of the moving contacts. Openings in the side of the calibrating tube allow access to the armature to permit adjustment.

The stationary contacts, magnet frame and coil, are mounted on a compound base. The normally closed fixed contacts are similar to the normally open fixed contacts except they are mounted below the moving contact and the backstop arm is omitted. The cover is attached to the front of the relay by means of two thumb screws. See Fig. 5 for dimensions and panel drilling.

RECEIVING, HANDLING AND STORAGE

These relays, when not included as part of a control panel, will be shipped in cartons designed to protect them against damage. Immediately upon receipt of a relay, examine it for any damage sustained in transit. If injury or damage resulting from rough handling is evident, file a damage claim at once with the transportation company and promptly notify the nearest General Electric Apparatus Sales Office.

Reasonable care should be exercised in unpacking the relay. If the relays are

not to be installed immediately, they should be stored in their original cartons in a place that is free from moisture, dust and metallic chips. Foreign matter collected on the outside of the case may find its way inside when the cover is removed and cause trouble in the operation of the relay.

ACCEPTANCE TESTS

Immediately upon receipt of the relay an inspection and acceptance test should be made to insure that no damage has been sustained in shipment and that the relay calibrations have not been disturbed.

VISUAL INSPECTION

Check the nameplate stamping to insure that the model number, rating and calibration range of the relay received agree with the requisition.

Remove the relay from its case and check by visual inspection that there are no broken or cracked molded parts or other signs of physical damage, and that all screws are tight. Also check to see that the flexible moving contact leads extending back from the contacts have not been deformed.

MECHANICAL INSPECTION

It is recommended that the following mechanical adjustments be checked:

1. Operate the plunger by hand and allow it to reset to insure that all parts are free from friction or binds.
2. The wipe on a normally open or normally closed contact should be approximately 1/64 inch. The normally open contact gap with the armature fully reset should be 1/32 inch. A backstop should be present above the normally open contact. The gap between the backstop and contact brush at the tip should be approximately 1/16 inch with the armature reset.

ELECTRICAL TESTS

It is recommended that the following electrical checks be made immediately upon receipt of the relay. Note that all tests should be made with the relay in its case and in a level position.

1. Pickup and Reset - The units are normally supplied from the factory with the bottom of the armature aligned with a mark on the calibration tube which corresponds to a dropout of 98% of rated voltage. It should be sufficient to check the dropout at this setting. Apply rated AC voltage to the AC coil (studs 5-6) in series with the AC resistor. Gradually increase DC test voltage applied to the DC coil (studs 1-2) in series with the DC resistor. The relay should pick up, closing its normally open contacts with one continuous motion. The test voltage should then be gradually decreased until the contacts reset at approximately 98% of rated DC voltage. The pickup value should be no more than 106% of the dropout voltage.

INSTALLATION PROCEDURE

If after the performance of the ACCEPTANCE TESTS, the relay is held in storage before shipment to the job site, it is recommended that the visual and mechanical inspection described in the section on ACCEPTANCE TESTS be repeated before installation.

Also the relay should be set at the dropout value to be used and it should be checked. When making this check, the relay should be installed in its permanent location and preheated. The position of the armature should be adjusted, if necessary, to obtain the desired dropout. After the dropout is set, check that the relay will pick up at the lowest acceptable battery charger output voltage with normal a-c voltage on the outer operating coil.

PERIODIC CHECKS AND ROUTINE MAINTENANCE

In view of the vital roll of protective relays in the operation of a power system it is important that a periodic test program be followed. It is recognized that the interval between periodic checks will vary depending upon environment, type of relay, and the user's experience with periodic testing. Until the user has accumulated enough experience to select the test interval best suited to his individual requirements it is suggested that the following points be checked at an interval of from one to two years:

MECHANICAL CHECKS

Manually operate the armature and allow it to reset to make sure that there is no excessive friction or tendency to bind.

Check the contact gap and wipe and the backstop position; values should agree with those given in the section under ACCEPTANCE TESTS.

Examine the contact surfaces for signs of tarnishing or corrosion. These fine silver contacts should be cleaned with a burnishing tool, which consists of a flexible strip of metal, with an etched, roughened surface. Burnishing tools designed especially for cleaning relay contacts can be obtained from the factory. Do not use knives, files or abrasive paper or cloth of any kind to clean relay contacts.

Using connections as indicated in Fig. 4 check the relay pickup and dropout. Set the battery charger at its lowest charging rate and vary the test resistor to check the pickup and dropout. The pickup voltage should be 106% or less of the dropout voltage. A voltmeter with at least 1000 ohms per volt should be used for making the test. If it is necessary to make adjustments refer to the section on SERVICING.

SERVICING

If any of the mechanical or electrical check points described in the previous sections are found to be out of limits, the following points should be observed in restoring them.

1. Friction

If there is any tendency to bind or if excessive friction is present, check to see

that the moving contact molded support has adequate (0.010 inch) clearance from the compound relay base. Inadequate clearance would indicate that the relay has been damaged and probably the damage would be deformation of the calibrating tube. This tube would have to be straightened and/or a shim placed behind the magnet frame to move it away from the base. Also check to see that the armature and the molded contact guide move freely inside the calibrating tube and that no foreign matter is present between them and the calibrating tube.

If the flexible leads from the moving contact have been damaged, they should be reformed as follows:

- a. The flexible leads should be twisted no more than one turn over the complete length of the lead.
- b. There should be a 90° bend in the lead at the terminal screw.

c. The leads should be free over the complete travel of the contacts; that is, they should touch no part of the relay except the terminals to which they are connected.

d. The leads should not pull the contact assembly towards the base.

Note that if the flexible leads are not correctly formed, they may seriously affect the relay calibration.

If it is necessary to replace a contact proceed as follows:-

a. Each stationary contact brush should be adjusted to have an initial tension of about 15 grams as measured with a standard gram gauge.

b. There should be about a 1/32" gap between the upper stationary and movable contacts when the lower contact is just barely open.

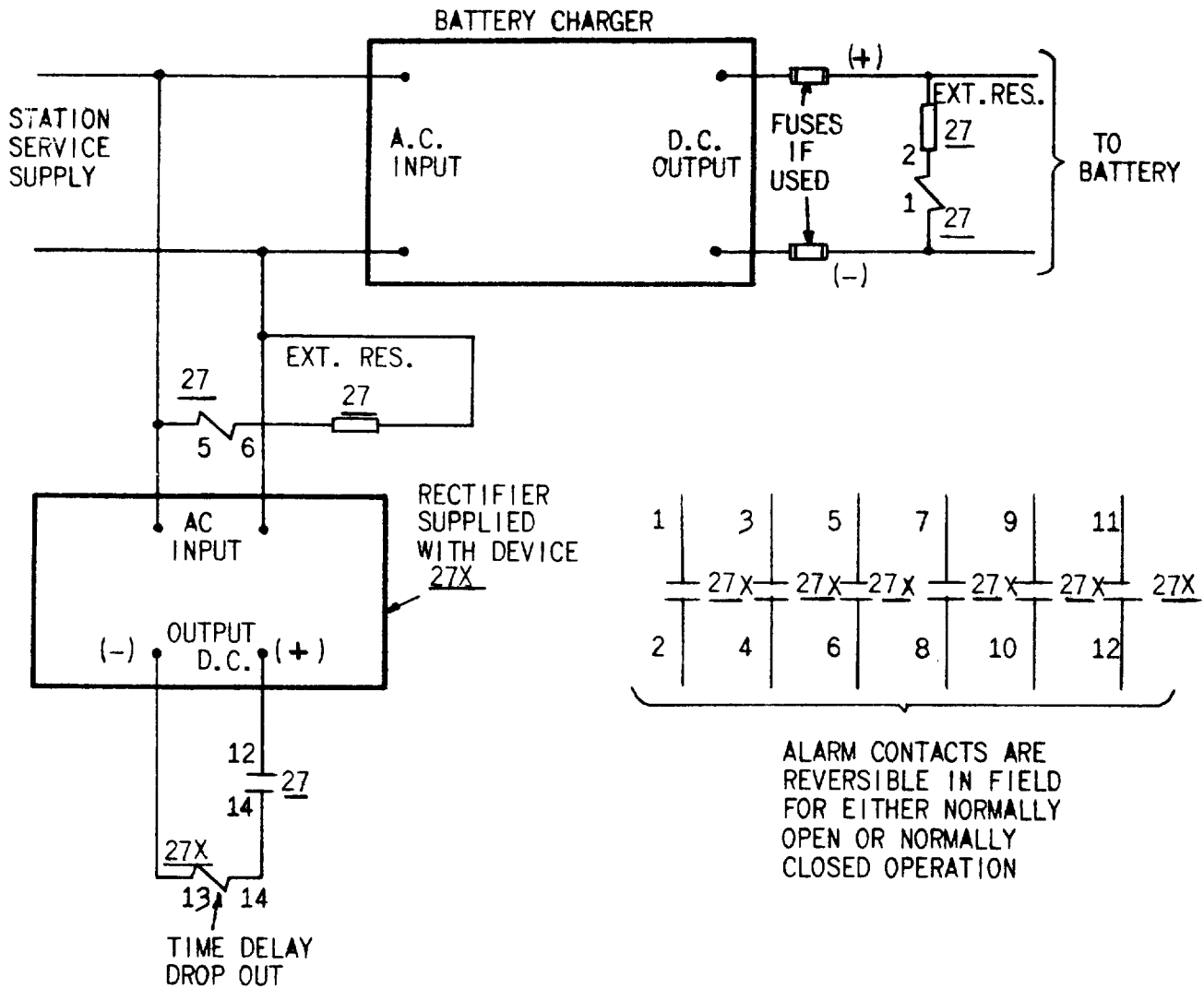
c. Both normally open and normally closed contacts should have a 1/64 inch wipe.

e. After adjustments are complete the section of the fixed contact brush to which the contact tip is attached should be nearly horizontal.

RENEWAL PARTS

It is recommended that sufficient quantities of renewal parts be carried in stock to enable the prompt replacement of any that are worn, broken, or damaged.

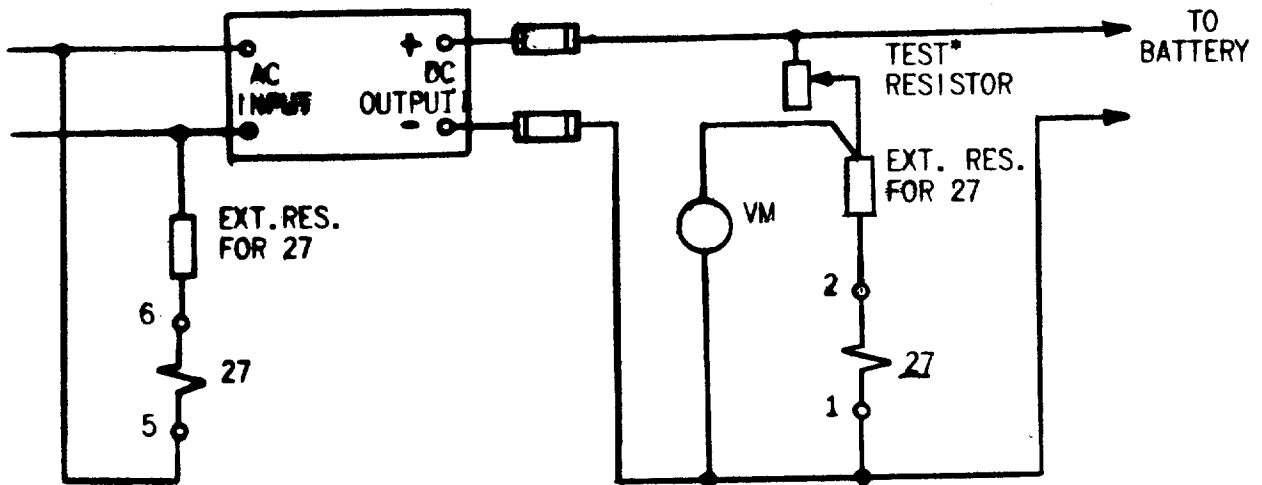
When ordering renewal parts, address the nearest Sales Office of the General Electric Company, specify quantity required, name of the part wanted, and give complete nameplate data. If possible, give the General Electric requisition number on which the relay was furnished.



LEGEND

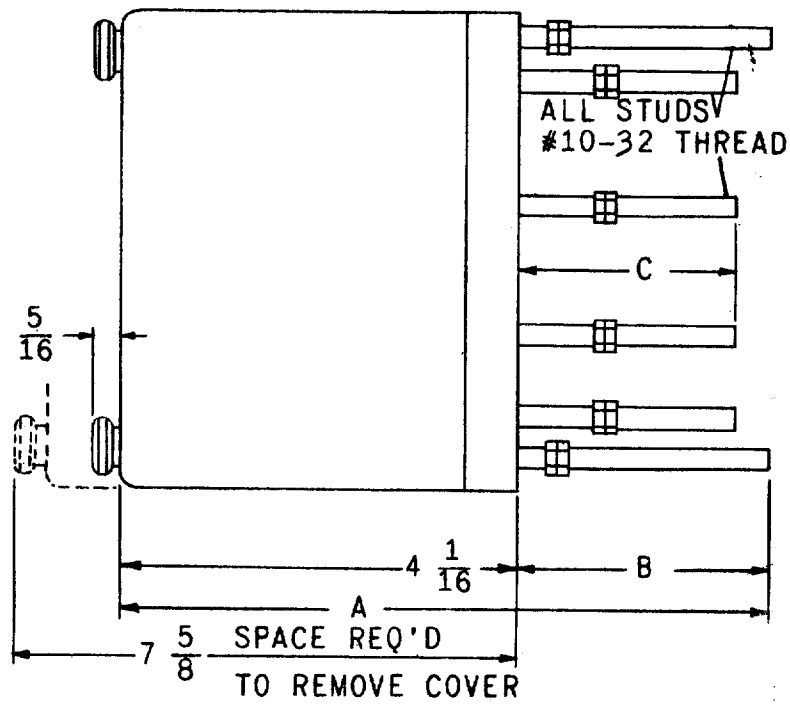
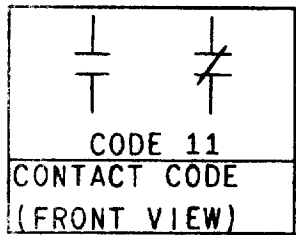
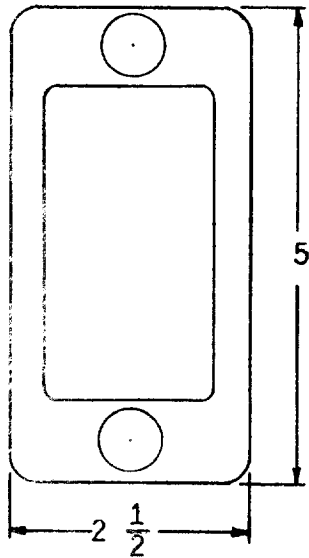
- 27 - PJV17A
- 27X - HFA65D

Fig. 3 (0148A4093-2) External Connections For The PJV17A Relay Used With The HFA65D Relay For Low Battery Voltage Indication



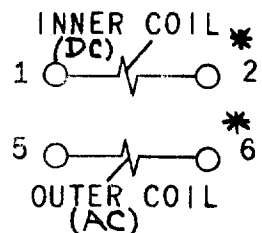
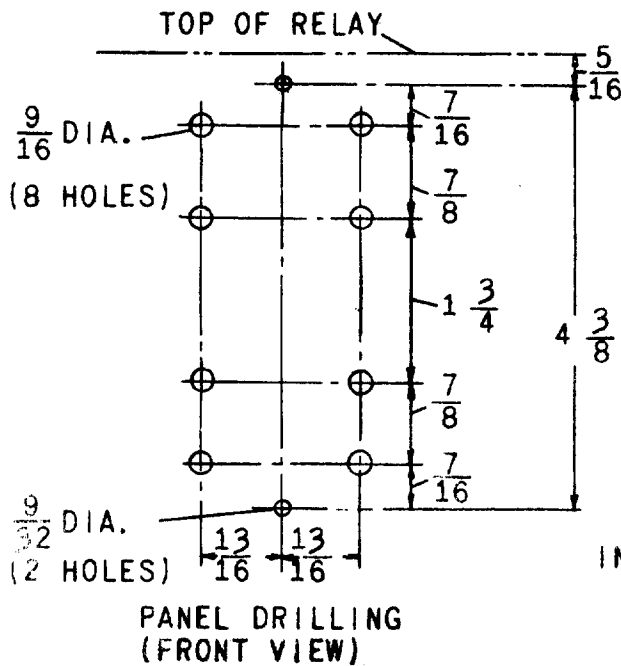
*VARIABLE TEST RESISTOR INSERTED
IN DC OPERATING CIRCUIT TO VARY
27 RELAY VOLTAGE FOR TEST.

Fig. 4 (0165A6010-0) Test Connection Diagram For The PJV17A Relay

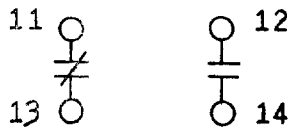


OUTLINE

TYPE OF PANEL	A	B	C
INSULATING	$7 \frac{3}{16}$	$3 \frac{1}{8}$	$2 \frac{7}{8}$
STEEL	$5 \frac{11}{16}$	$1 \frac{5}{8}$	$1 \frac{3}{8}$



*** NOTE**
FOR
EXT. SERIES
"R" REQ'D.
FOR EACH
COIL- SEE
SHEET 2



INTERNAL CONNECTIONS
 (BACK VIEW)

Fig. 5 (6400678-3) Outline, Panel Drilling And Internal Connections For The PJV17A Relay