



INSTRUCTIONS

GEI-21901C
SUPERSEDES GEI-21901B

CLOSING RELAYS

Type HJA

POWER SYSTEMS MANAGEMENT DEPARTMENT

GENERAL  ELECTRIC

PHILADELPHIA, PA.

TABLE I

Type	Units	Interlocks		Connection	Time Delay Dropout in Seconds	Cover	Duty
		N.C.	N.O.				
HJA11A	1	1	1	Front	None	No	Light
11B	1	1	1	Front	None	Yes	Light
11C	1	0	2	Front	0.25	Yes	Light
11D	1	1	1	Front	None	No	Light
12A	2	1	1	Front	0.25	Yes	Moderate
12B	2	1	1	Front	None	Yes	Moderate
13A	1	2	0	Back	None	No	Light
13B	1	1	1	Back	0.25	No	Light
14A	1	2	0	Back	None	No	Special
14B	1	2	0	Front	None	No	Special
14C	1	0	2	Front	None	No	Special
15A	2	1	1	Front	None	Yes	Moderate
16A	1	0	0	Front	0.25	Yes	Special

TABLE II

Voltage of Circuits In Which Contacts Are Connected	Contacts Will Close And Carry For 5 Seconds Or Interrupt		Special Duty
	Light Duty	Moderate Duty	
24 d-c	80 amps	130 amps	40 amps
48 d-c	80 amps	130 amps	40 amps
125 d-c	80 amps	130 amps	20 amps
250 d-c	30 amps	65 amps	10 amps
220 a-c	80 amps	130 amps	25 amps
260 a-c	80 amps	130 amps	25 amps

TABLE III

Volts	Cycle	Armature Open		Armature Closed	
		Volt-Amps	Watts	Volt-Amps	Watts
110	60	122	19.6	47	17.1
115	60	75	11.4	24	10.1
220	50	140	23	58	19.6
220	60	95	15	33	13.2
260	60	101	16	36	14

CLOSING RELAYS

TYPE HJA

INTRODUCTION

The Type HJA relays covered by these instructions are all basically similar in construction. The relay units consist of a hinged armature pivoted on a laminated magnet core, operated by a coil on the upper leg of the magnet and restrained by an adjustable control spring. The armature carries the main control contact on its upper end and auxiliary interlock contacts on its lower end. The main contact is equipped with a blowout magnet and arc chute which, together with the magnet core assembly is mounted on a molded compound base. Characteristics of the individual types are further described in Table I.

In the two unit relays Types HJA12A, HJA12B, and HJA15A the main contacts are wired in series to secure a higher interrupting rating. Type HJA15A differs from the light duty relays in that the arc chute and blowout magnet have been omitted. These relays are designed for use as auxiliary relays instead of closing relays.

Type HJA16A relay does not have an arc chute, blowout magnet, or auxiliary interlock contacts. It is designed for use on motor lift mechanisms.

APPLICATION

Type HJA relays are used mainly for closing electrically operated air or oil circuit breakers, or in motor starting circuits where the closing or starting current exceeds the rating of the control switch in use.

RECEIVING, HANDLING AND STORAGE

These relays, when not included as a 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 un-

packing the relay in order that none of the parts are injured or the adjustments disturbed.

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.

INSTALLATION

LOCATION

The location should be clean and dry, free from

dust and excessive vibration, and well lighted to facilitate inspection and testing.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

RATINGS

Relays designed for instantaneous operation are available in all standard a-c and d-c voltage ratings of 250 volts or less. Relays having time-delay dropout are available for 125 and 250 volts d-c only.

All relays, except those with time delay-dropout, are continuously rated unless otherwise specified on the nameplate. The time-delay relays except Type HJA16A, are intermittently rated for 15 seconds at rated voltage. Type HJA16A is intermittently rated for five minutes at rated voltage.

CONTACTS

Type HJA relays are available for either light, moderate, or special duty as indicated in Table I. The ratings of the main contacts (for a non-inductive circuit) are given in Table II.

BURDENS

Continuously rated relays have a burden of 10 watts at an ambient temperature of 25°C and 8 watts when hot at rated d-c voltage.

The burdens of continuously rated a-c relays at rated voltage are given in Table III.

The intermittently rated coils of the time delay relays except Type HJA16A, have a burden of approximately 35 watts.

MOUNTING

The relay should be mounted on a vertical surface at or near breaker. The outline and panel drilling diagrams are shown in Figs. 1 to 8 inclusive.

CONNECTIONS

The internal connections for the various relays are shown in Figs. 1 to 8, inclusive. Because of the permanent magnet blowout feature, the polarities given in the internal connection diagram for each relay should be strictly observed. It may also be necessary to consider the direction of the stray field produced by the closing coil of the breaker, if the relay is close to it, or else shield the relay from its effect.

ADJUSTMENTS

The relays have been adjusted at the factory to

pick up at 61 percent of rating for d-c relays and 80 percent for a-c relays. The settings of the various contact gaps and wipes should not be disturbed.

If it is necessary to readjust the relays the following points should be observed.

The wipe of the main contacts should be 1/8 inch measured at the top edge of the pole piece while that of the auxiliary should be 1/8 inch when measured at the rear edge of the armature stops.

If the setting of the control spring must be changed for any reason, care must be taken during the readjustment to see that the control spring is not weakened to the point of permitting the minimum of wipe to exist at the normally closed auxiliary interlock contacts.

MAINTENANCE

A periodic check should be made to insure that the relay units are picking up below the limits given under ADJUSTMENTS, and that the various wipes and contact gaps have not been disturbed.

CONTACT CLEANING

For cleaning fine silver contacts, a flexible burnishing tool should be used. This consists of a flexible strip of metal with an etched roughened surface, resembling in effect a superfine file. The polishing action is so delicate that no scratches are left, yet corroded material will be removed rapidly and thoroughly. The flexibility of the tool insures the cleaning of the actual points of contact. Sometimes an ordinary file cannot reach the actual points of contact because of some obstruction from some other part of the relay.

Fine silver contacts should not be cleaned with knives, files, or abrasive paper or cloth. Knives or files may leave scratches which increase arcing and deterioration of the contacts. Abrasive paper or cloth may leave minute particles of insulating abrasive material in the contacts and thus prevent closing.

The burnishing tool described above can be obtained from the factory.

REPLACEMENT OF MAIN CONTACTS

If it is necessary to replace the main stationary contact it will be necessary to remove the arc chute assembly. All the parts of this assembly are held together between the U-shaped bracket by a long screw extending through a hole in the blowout magnet. If this screw is removed the entire assembly can be lifted out. The main stationary contact can then be easily replaced and replacement securely tightened.

The reassembly procedure can be simplified by fitting the pole pieces to the sides of the arc chutes, placing the permanent magnet between the pole pieces, and then transferring the entire assembly into position on the U-shaped bracket. If an arc shield is used it should be replaced in its correct position on the sides of the bracket and between the arc chute and coil. The screw should then be inserted through the holes in the bracket, pole pieces, and magnet, and secured with a lockwasher and nut. Care must be taken when reassembling the magnet that the north pole of the magnet, the end which is numbered, is on the left side of the relay when viewed from the front; otherwise the reversed polarity will cause the arc to blow downwards. The movable contact finger should not hit the sides of the arc chute in any position of the armature.

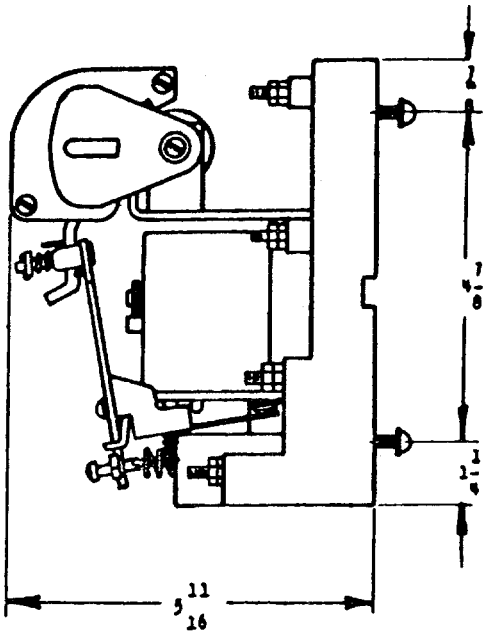
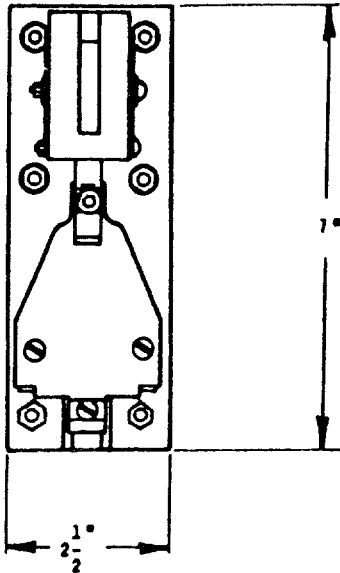
RENEWAL PARTS

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.

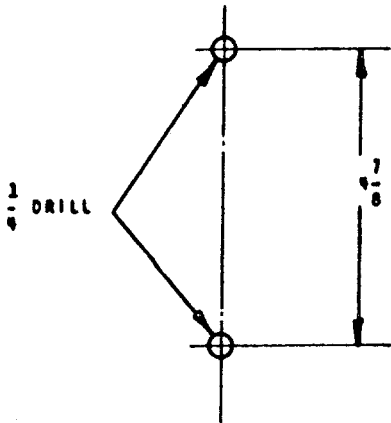
When ordering renewal parts, address the

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

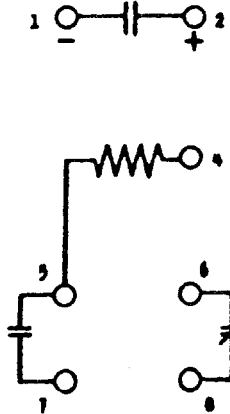
Fig. 1 (K-6154771)



OUTLINE



PANEL DRILLING
(FRONT VIEW)



INTERNAL CONNECTIONS
(BACK VIEW)

Fig. 1 Outline & Panel Drilling Dimensions and Internal Connections for the Type MJ11A Relay

Closing Relays Type HJA

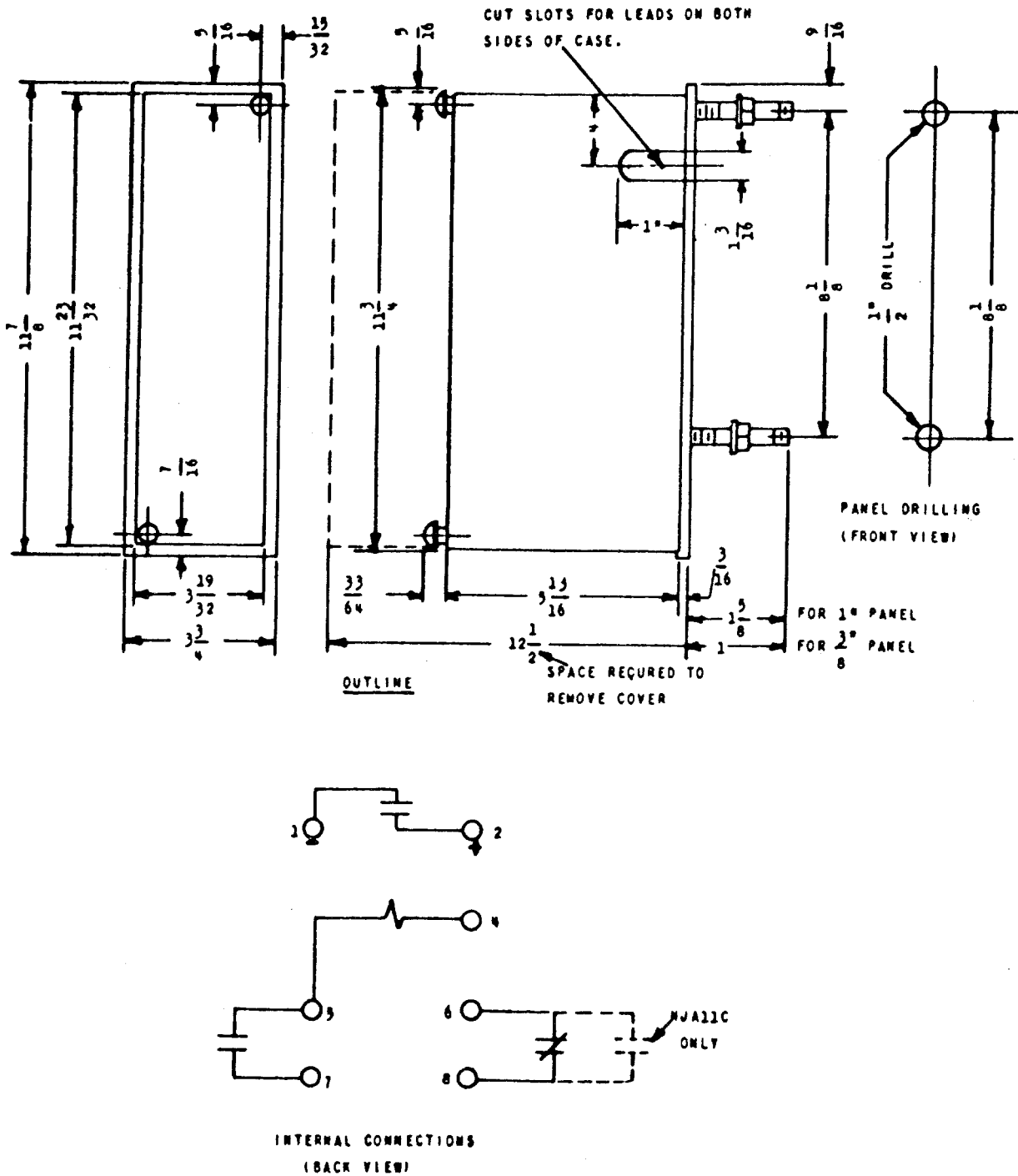
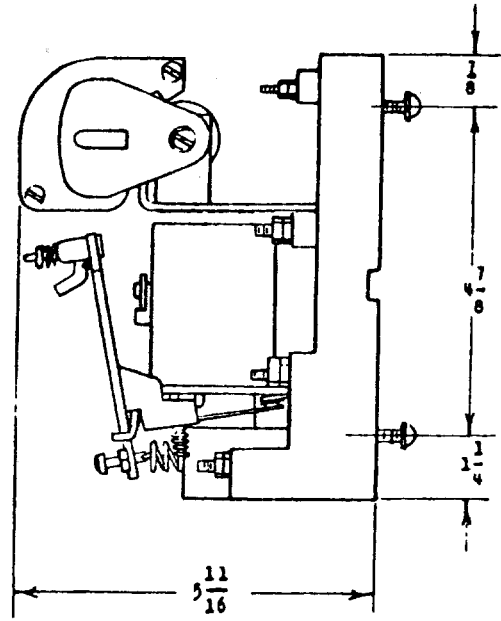
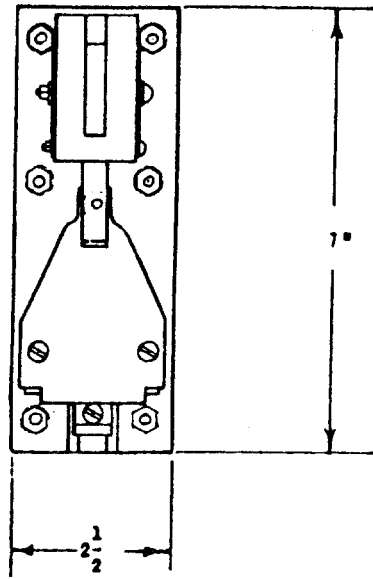


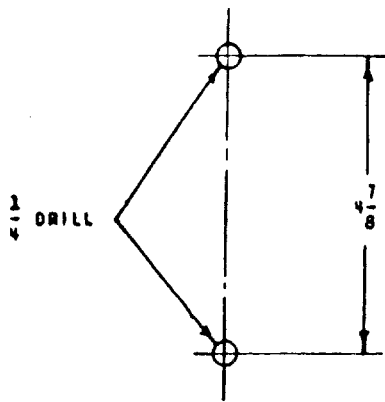
Fig. 2 (K-6400265)

Fig. 2 Outline & Panel Drilling Dimensions and Internal Connections for Relay Types HJA11B & 11C

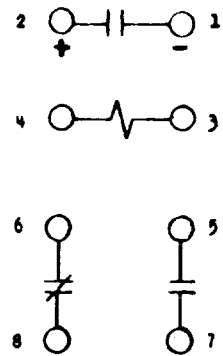
Fig. 3 (376A904)



OUTLINE



PANEL DRILLING
(FRONT VIEW)



INTERNAL CONNECTIONS
(FRONT VIEW)

Fig. 3 Outline And Panel Drilling Dimensions And Internal Connections For Type HJA11D Relay

Closing Relays Type HJA

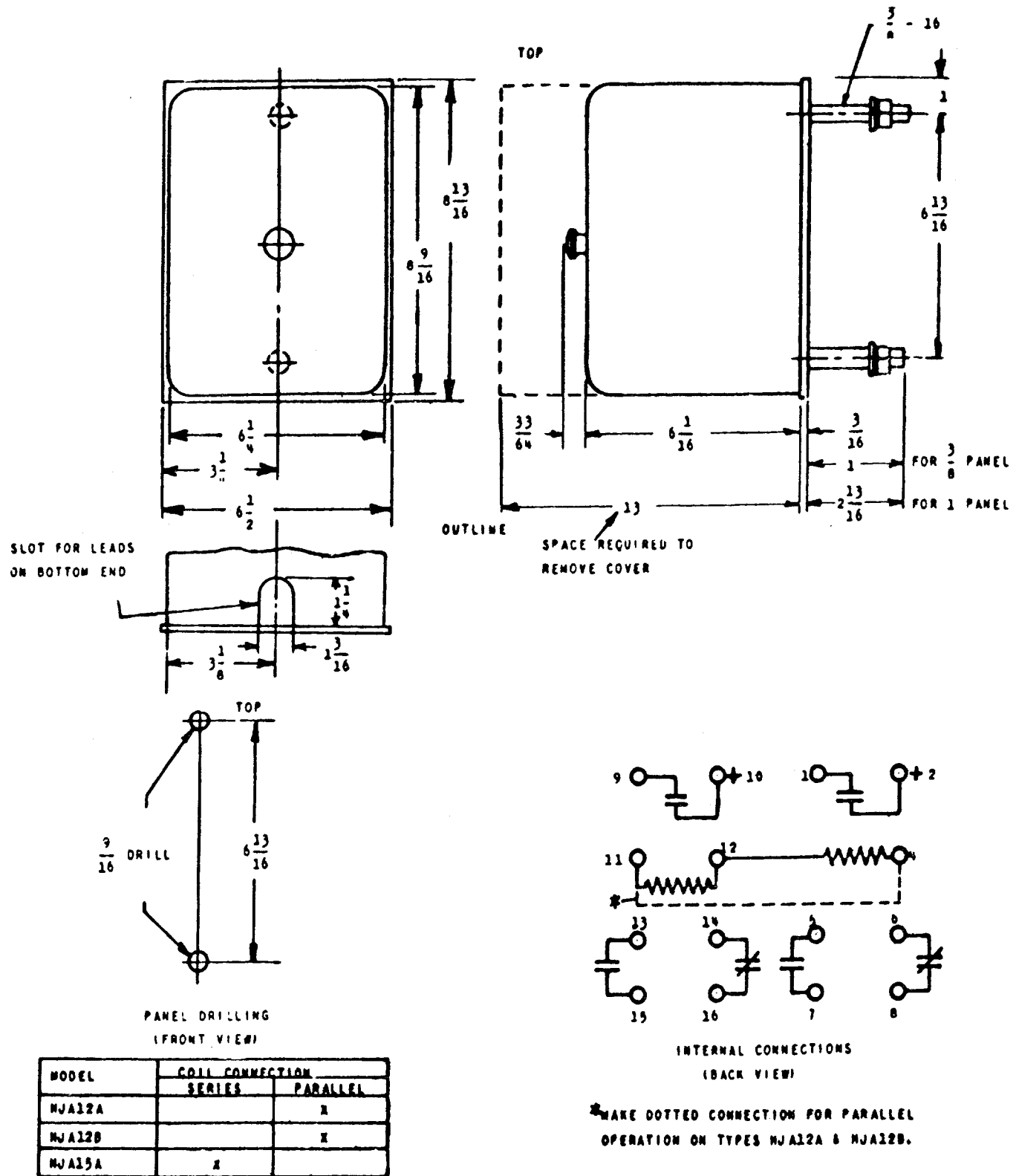
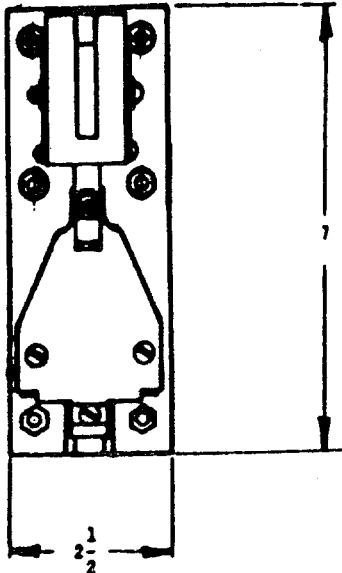


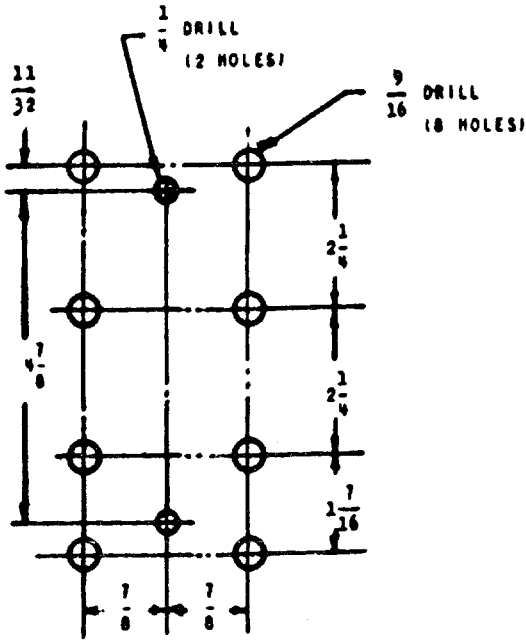
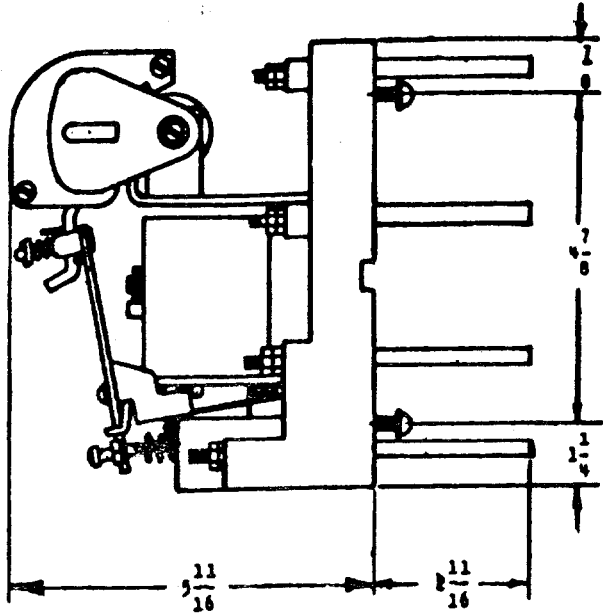
Fig. 4 (K-0154082)

Fig. 4 Outline And Panel Drilling Dimensions And Internal Connections For Relay Types NJA12A, 12B And 15A

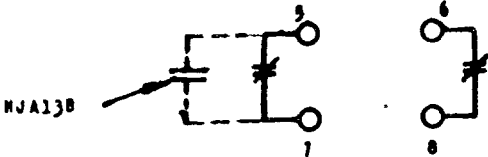
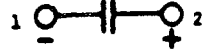
Fig. 5 (K-6600113)



OUTLINE

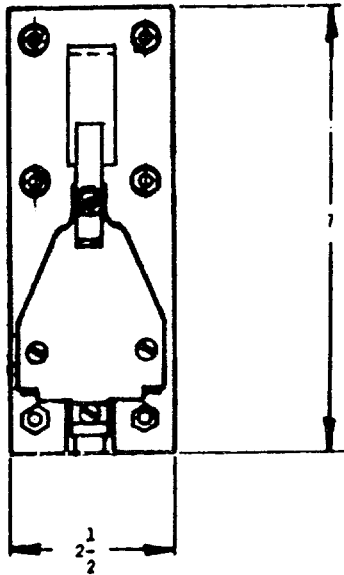


PANEL DRILLING
(FRONT VIEW)

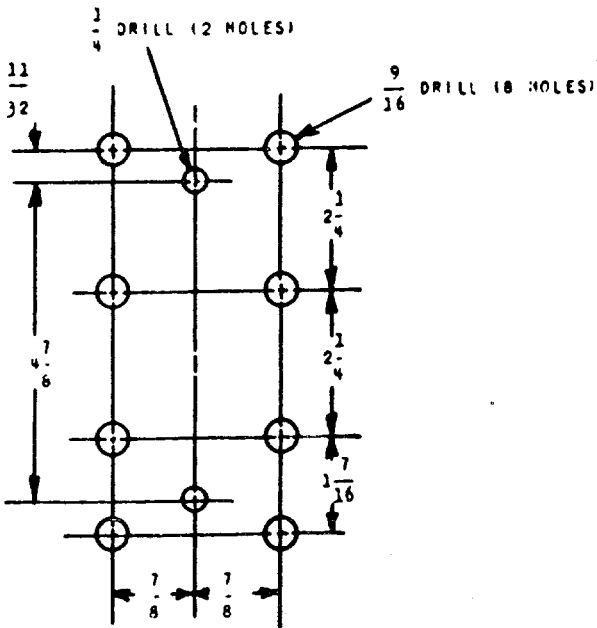
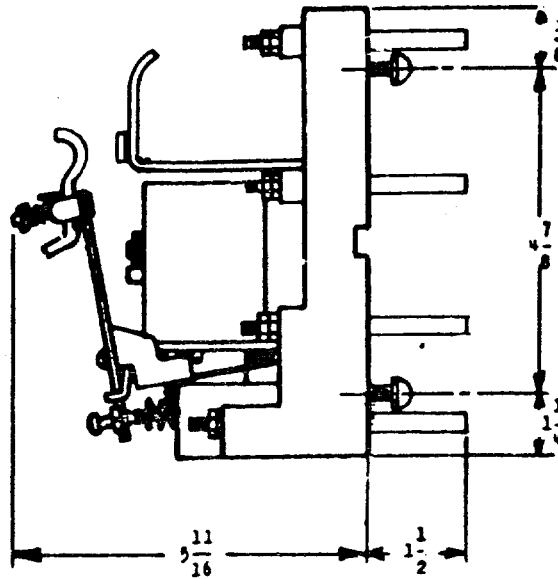


INTERNAL CONNECTIONS
(BACK VIEW)

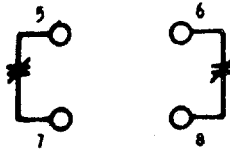
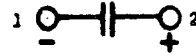
Fig. 5 Outline & Panel Drilling Dimensions and Internal Connections for Relay Types HJA13A & HJA13B



OUTLINE



PANEL DRILLING
(FRONT VIEW)

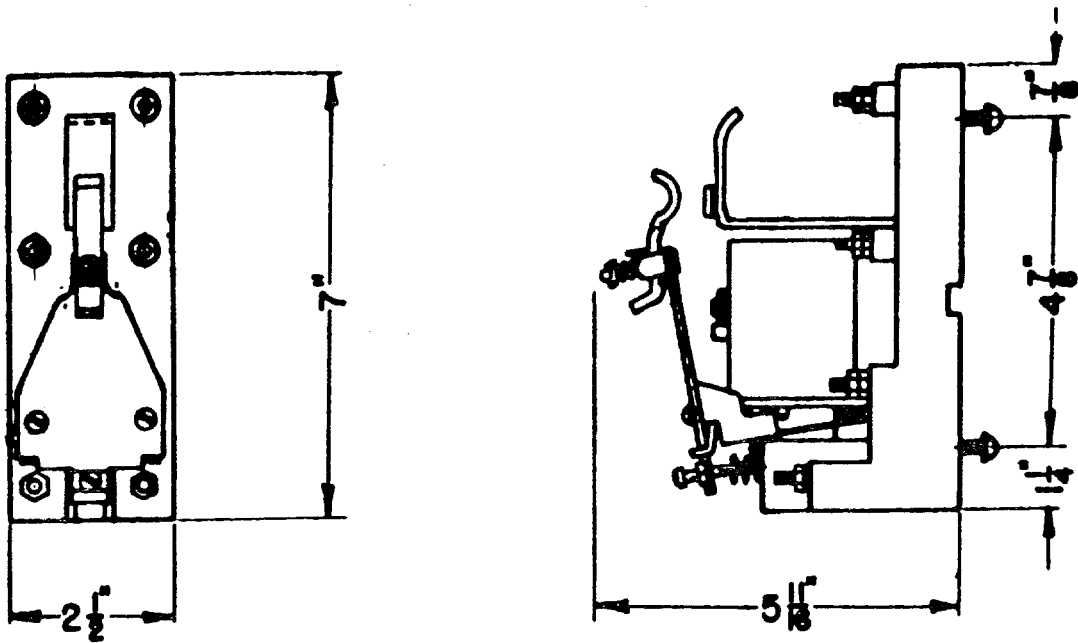


INTERNAL CONNECTIONS
(BACK VIEW)

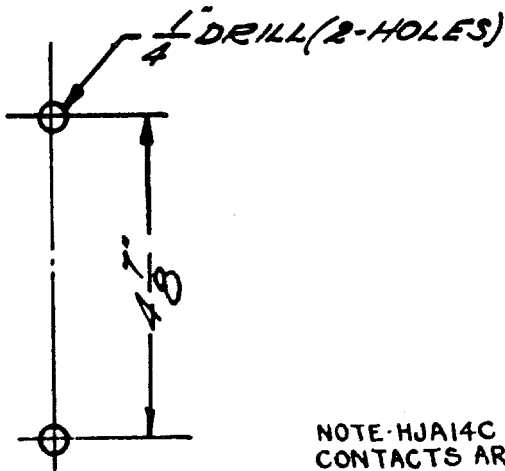
Fig. 6 Outline & Panel Drilling Dimensions and Internal Connections for the Type HJA14A Relay

Fig. 6 (K-6400154)

Fig. 7 (K-040321)

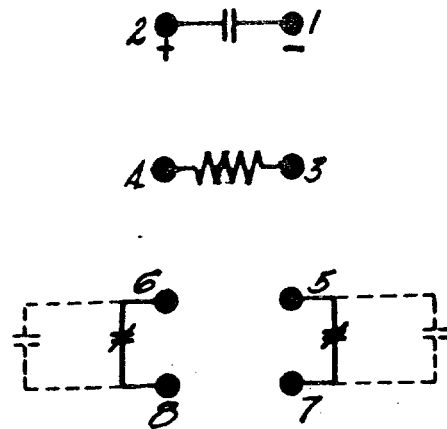


OUTLINE



PANEL DRILLING

NOTE: HJA14C CONTACTS ARE SHOWN DOTTED.



INTERNAL CONNECTIONS
(FRONT VIEW)

Fig. 7 Outline And Panel Drilling Dimensions And Internal Connections For Relay Types HJA14B And 14C

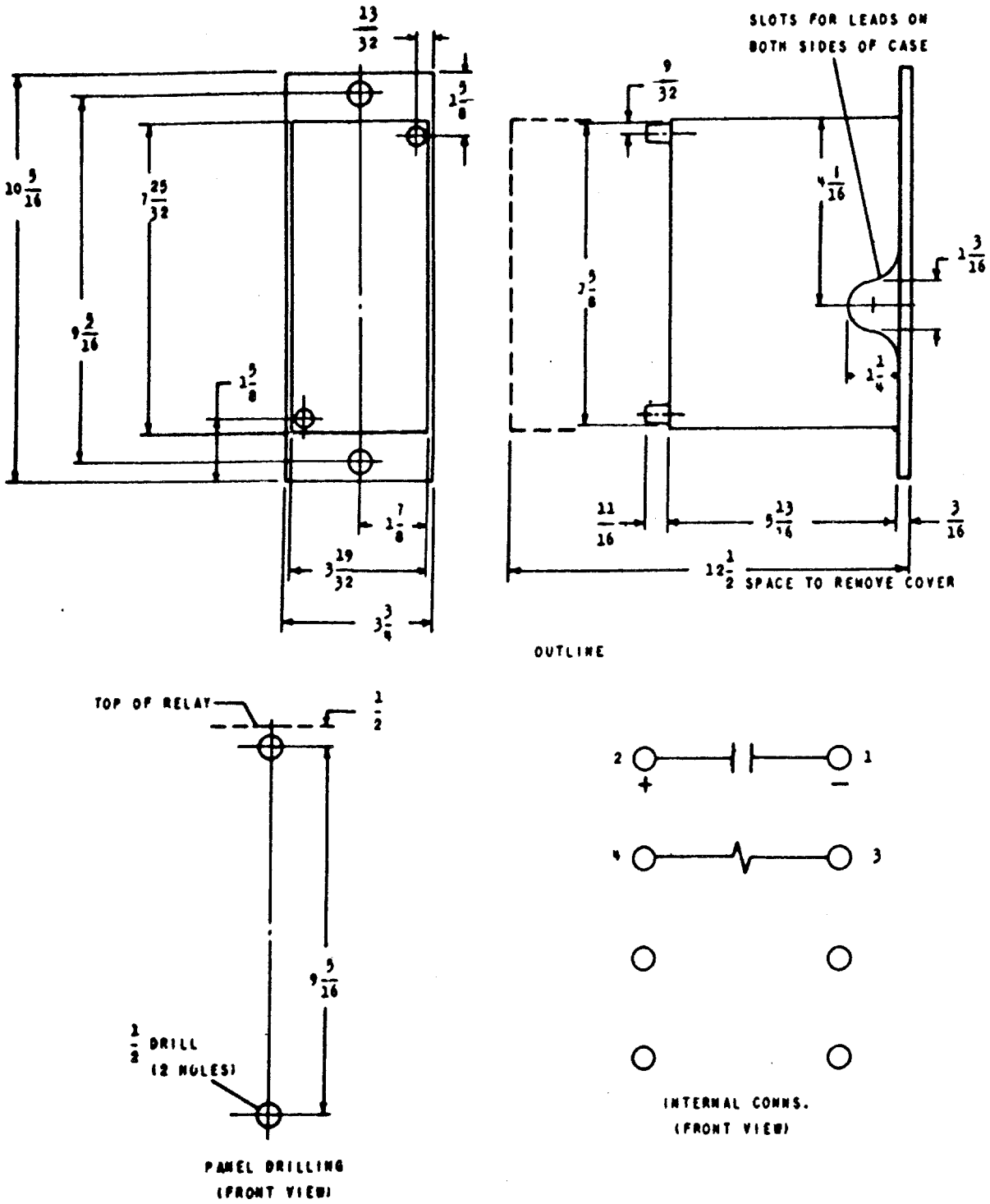


Fig. 8 (K-650797N)

Fig. 8 Outline & Panel Drilling Dimensions and Internal Connections for the Type HJA16A Relay

GENERAL ELECTRIC COMPANY, PHILADELPHIA, PA.

ABB

