INSTRUCTIONS

GEI-38945D

D-C TIME-DELAY AUXILIARY DELAY

TYPES

HGA14D
HGA14BD

GENERAL ELECTRIC

CONTENTS

D-C TIME-DELAY AUXILIARY RELAY

TYPES HGA14D, HGA14BD

DESCRIPTION

Relay Types HGA14D and HGA14BD consist of a hinged armature type auxiliary unit, external capacitor and variable resistor. The auxiliary relay unit is mounted on a compact molded compound base. HGA14D is back connected and is available in flush or surface-mounted constructions. HGA14BD is surface-mounted front-connected. The internal connections are shown by Fig. 1 and the outline and panel drilling by Fig. 2, 3 and 4. The outlines of the external capacitor and resistor are shown by Fig. 5. Typical external connections are shown by Fig. 6.

APPLICATION

Type HGA14D and HGA14BD relays are auxiliary relays designed for application where an adjustable time delay on pickup is required.

RATINGS, CHARACTERISTICS AND BURDENS

The Type HGA14D and HGA14BD relays are available in d-c ratings of 48, 125, 220 and 250 volts.

The current-closing rating of the contacts is 30 amperes. Current-carrying rating is 12 amperes continuously or 30 amperes for one minute.

Interrupting ratings (non-inductive circuits) for the various voltages are given in Table I.

TABLE I

	D-C				A-C	
Volts	24	48	125	250	115	230
Amps	3	1.5	0.6	0.25	20	10

Power consumption of the relay in watts depends upon the setting of the external variable resistor. Table II gives the circuit resistance and capacitance as well as the time range for the models covered by these instructions. Table II also shows the factory adjusted pickup voltage values with the variable resistor shorted out.

TABLE II

Model	D-C Volts	Coil Ohms	Resistor Ohms	Pickup Time Range (Cycles)*	Capacitance Microfarads	Pickup Volts
HGA14D1 HGA14BD1	48	760	0-700	2-4	100	15 or Less
HGA14D2 HGA14BD2	125	12900	0-4000	2-6	25	61-67
HGA14D3 HGA14BD3	125	3250	0-4000	1-3	25	30-35
HGA14D4 HGA14BD4	250	12900	0-12000	1-6	25	65-70
HGA14D5 HGA14BD5	250	12900	0-12000	1-9	50	65-70
HGA14D6 HGA14BD6	125	12900	0-4000	2-12	50	65-70
HGA14D7 HGA14BD7	125	12900	0-4000	4-24	100	65-70
HGA14D8 HGA14BD8	220	12900	0-12000	4-24	100	65-70

*On 60 cycle bases

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.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.

CONSTRUCTION

The auxiliary unit is of the hinged armature type construction with double-pole contacts. Contact circuits are closed or opened by moving contact arms, controlled by the hinged armature, which in turn is actuated by the operating coil and restrained by an adjustable control spring. The contact gap is adjusted by means of the screw contact and locknut in the right-front fixed-contact position. Armature gap and back contact wipe can be controlled by the screws and locknuts located on the moving contact arms. The latter features make it possible to reduce the pickup energy to a relatively low value. These adjustments have been made at the factory and for normal operation should not be changed. Armature, magnet assembly, and contact assemblies are all mounted on a compact molded compound base.

HGA14D is back connected and is available in flush or surface-mounted constructions. HGA14BD is surface-mounted front-connected.

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 unpacking 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 AND MOUNTING

The relay should be installed in a location that is clean, dry, and free from excessive vibration. It should be mounted on a vertical surface. Care should be taken to allow sufficient clearance in front of the relay to remove the cover.

The outline and panel drilling diagrams are shown in Figs. 2, 3 and 4.

Resistor and capacitor outlines are shown in Fig. 5.

CONNECTIONS

Internal and external connections for the relays covered by these instructions are shown in Figs. 1 and 6 respectively.

PERIODIC TESTING AND MAINTENANCE

PERIODIC TESTING

Auxiliary relay equipment should be checked for operation at regular intervals, preferably at the same time that the associated protective devices are inspected. The relays should be checked for pickup voltage, pickup time and condition of the contacts. Pickup voltage and time are listed in Table II.

ADJUSTMENTS

Under normal operating conditions it should not be necessary to change settings. If, however, the adjustments are disturbed, the following points should be observed in restoring them.

Pickup may be adjusted by shifting the position of the control spring in the notches on the armature tailpiece. A finer adjustment may be made by changing the armature gap by means of the screw contact and locknut in the front fixed-contact position. The contact gap should not be decreased beyond the minimum recommended gap given below.

Minimum recommended wipe for the normally-open contacts is one full turn of the wipe adjusting screws. To make this adjustment, close the armature by hand and turn the screws in until they are just touching the projections on the contact carrier. Then, back off each screw one full turn and secure in place with the locknut.

Minimum recommended contact gap is 1/16 inch. To adjust, turn the right-hand screw contact in until the normally open contacts just make. Then back the screw out 3-3/4 turns and lock in position with the locknut. Back out the left-hand contact screw far enough to clear its moving contact with the armature dropped out.

It should be noted that adjustments are for minimum recommended contact gap and wipe. If the contact gaps are made shorter, the interrupting ratings listed under RATINGS will no longer apply.

The relays are adjusted at the factory to pick up at the mid-point of the pickup time range unless a different setting is specified on the purchase order. To check pickup time, connect the capacitor in parallel with the relay coil and the resistor in series with the combination. Apply rated voltage across this circuit and check with an electronic timer. Measure the closing time using an "A" contact, vary the time, if necessary, by means of the adjustable resistor. It is permissible to reduce the resistor setting to zero if required to obtain the minimum time of the pickup time range. This can be done by jumpering the slider to its adjacent terminal.

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 ensures the cleaning of the actual points of contact.

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.

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, specifying the quantity required and describing the parts by catalog numbers as shown in Renewal Parts Bulletin No. 2623.

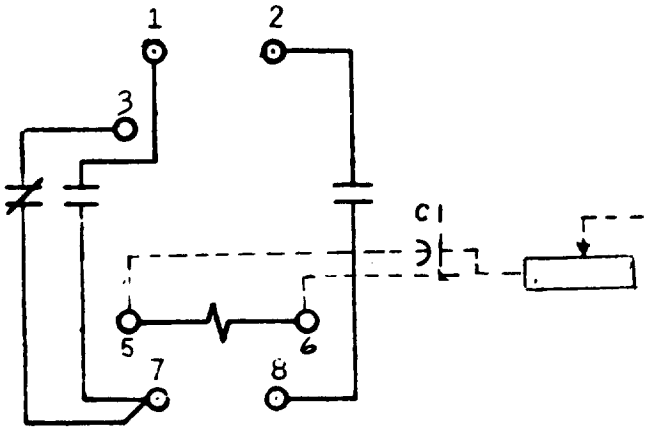


Fig. 1 (K-6400533-4) Internal Connections for Relays HGA14D and HGA14BD.

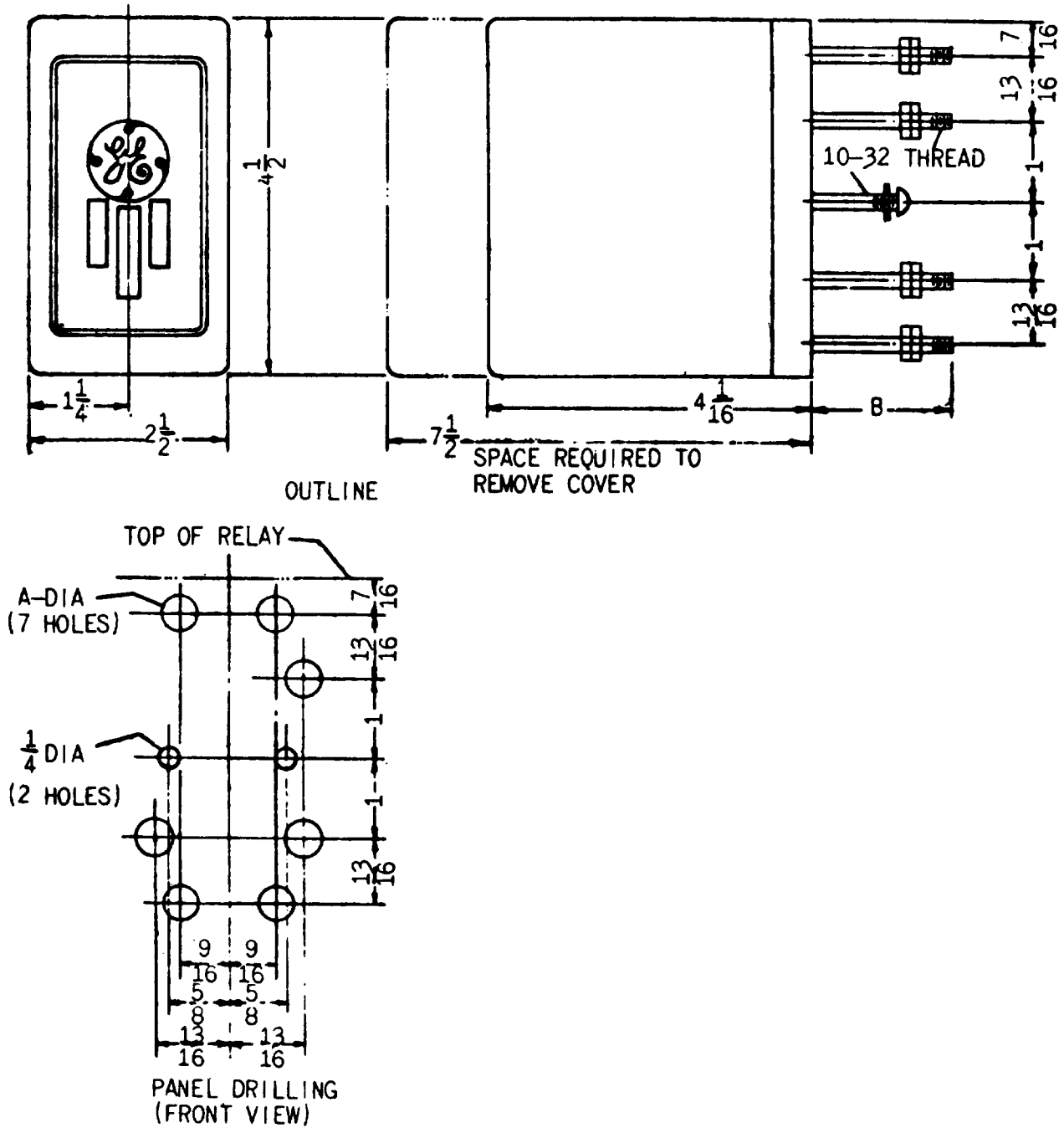


Fig. 2 (K-6400533-4) Outline and Panel Drilling for Surface Mounted Back Connected HGA14D Relay.

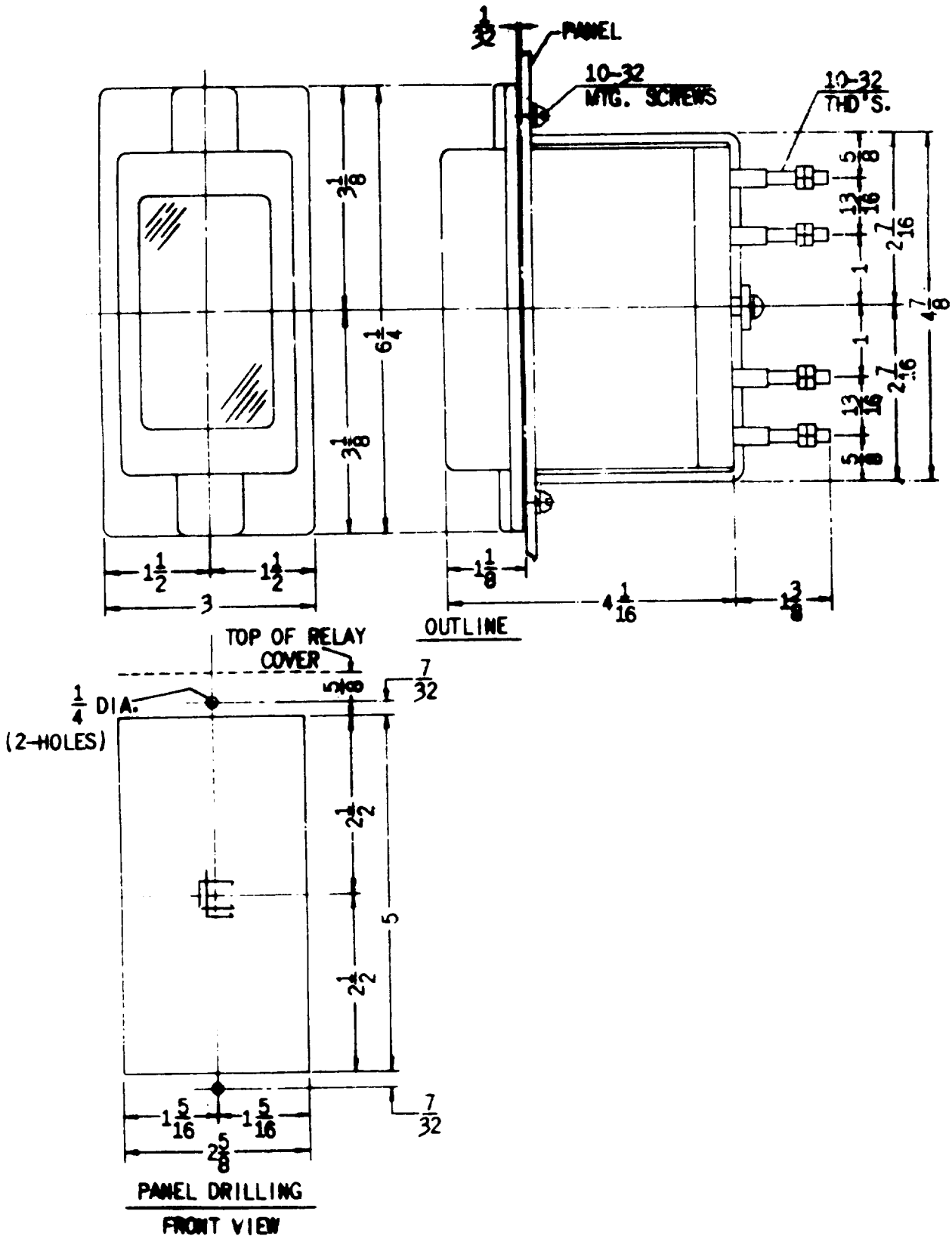
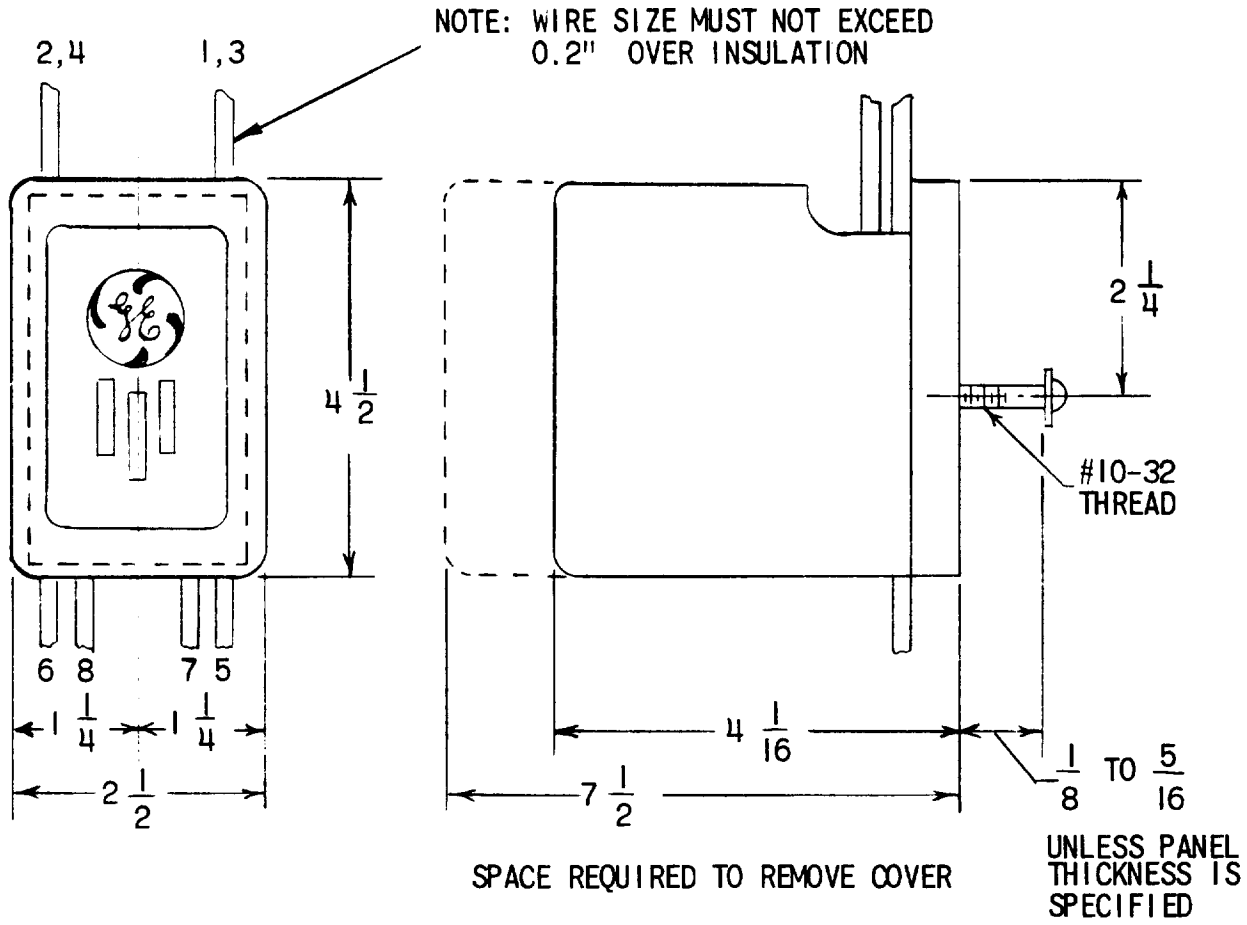
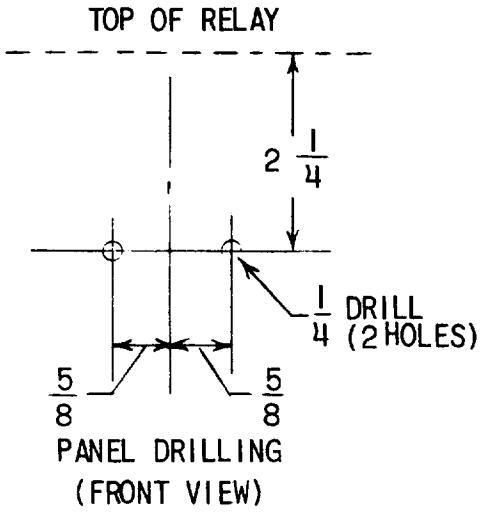


Fig. 3 (104A8558-2) Outline and Panel Drilling for Flush Mounted Back Connected HGA14D Relay.

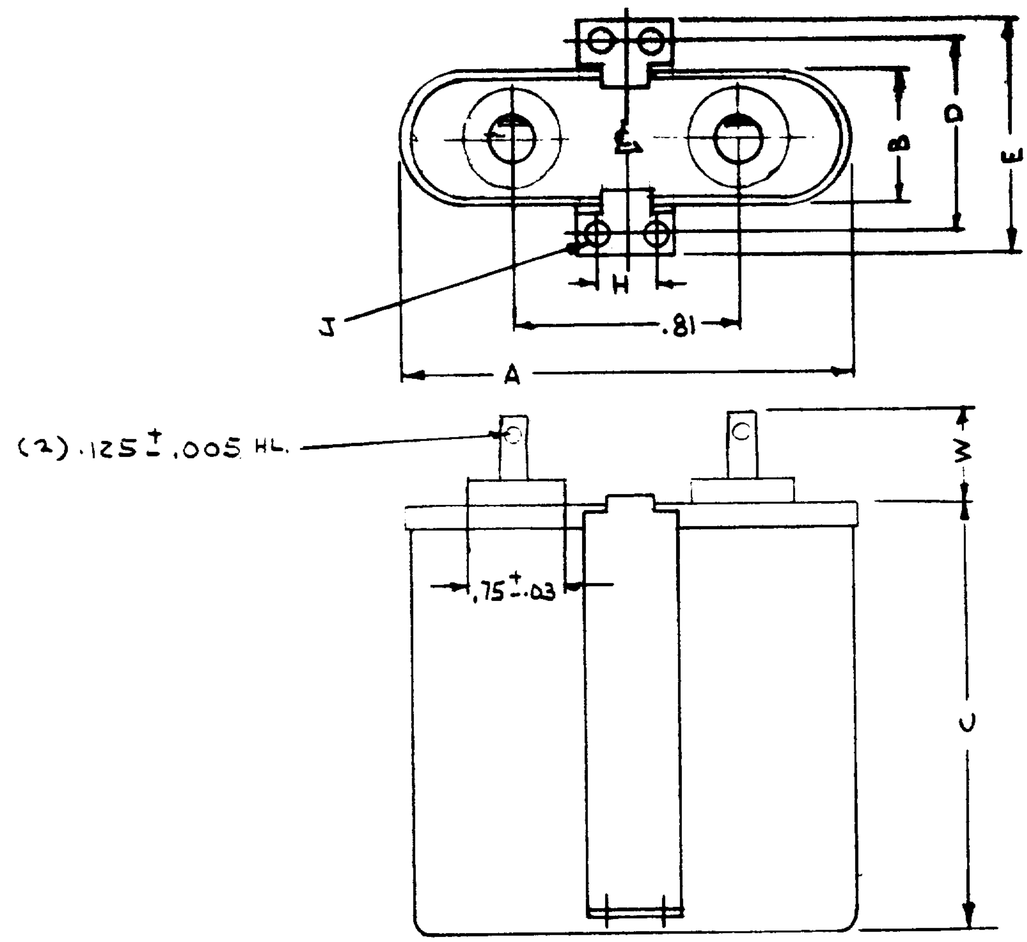


OUTLINE



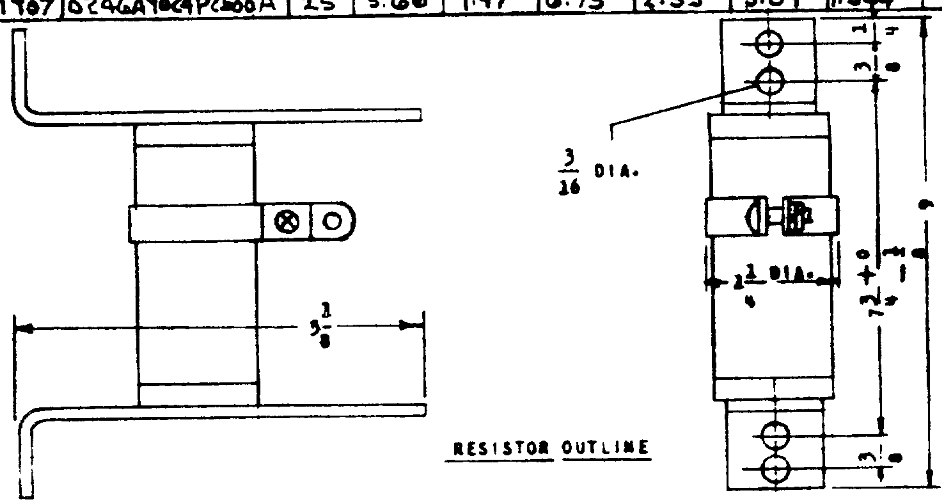
PANEL DRILLING
(FRONT VIEW)

Fig. 4 (K-6375628-5) Outline and Panel Drilling for Surface Mounted Front Connected HGA14BD Relay.



CAPACITOR OUTLINE

CAPACITOR DIMENSIONS										
RELAY MODEL	CAT. NO.	MUF	A ± 1/16	B ± 1/16	C ± 1/16	D ± 1/32	E ± 1/16	H ± 1/64	J	W ± 1/16
~~HGA14D2 TO 6 INCL.~~	~~23F949~~	~~25~~	~~3-3/4~~	~~2-1/2~~	4.3/4	~~4-3/8~~	4.15/16	~~2-1/4~~	~~.213 DIA.~~	~~13/16~~
~~HGA14D3~~	~~23F713~~	~~50~~	~~4-9/16~~	~~3-3/4~~	5.1/8	~~4-1/2~~	5.1/16	~~2-5/8~~	~~[illegible] DIA.~~	~~13/16~~
HGA14D1707	0246A9024P2500A	25	3.66	1.97	6.75	2.53	3.09	1.344	.218	.520



RESISTOR OUTLINE

Fig. 5 (376A986 [4]) Outlines of External Capacitor and Resistor for HGA14D and HGA14BD Relays

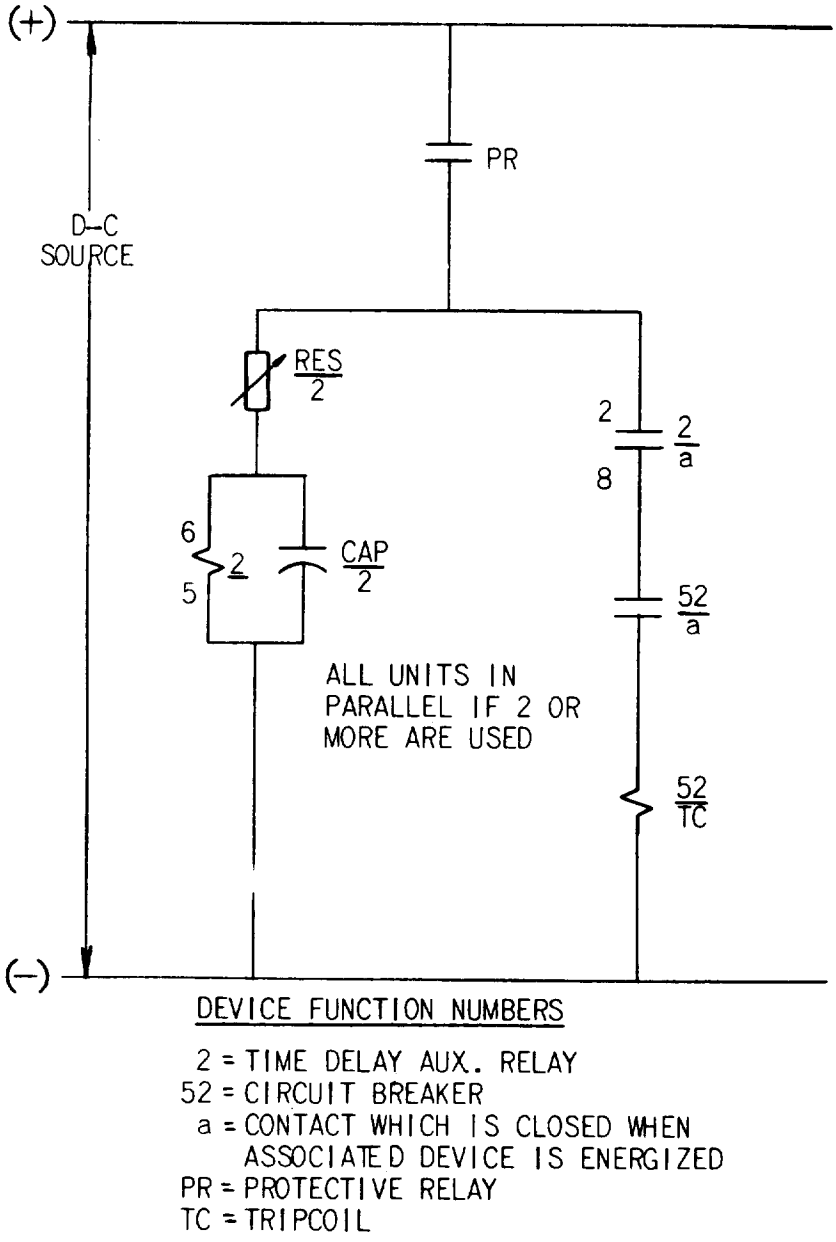


Fig. 6 (K-6178805-1) Typical External Connections for HGA14D and HGA14BD Relays

Since the C revision, Figure 5 has been updated.

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