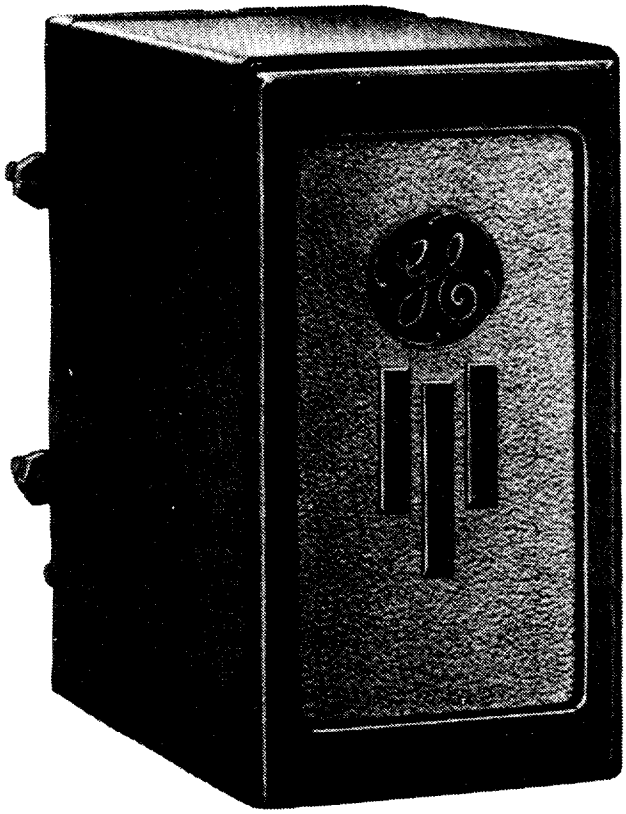
INSTRUCTIONS

GEI-30912F
Supersedes GEI-30912E

INSTANTANEOUS AUXILIARY RELAYS

Types

HGA14A
HGA14AE
HGA14AF
HGA14AV
HGA14BF



GENERAL ELECTRIC

INSTANTANEOUS AUXILIARY RELAYS

TYPE HGA

INTRODUCTION

The HGA relays are double-pole, hinged armature type relays suitable for application wherever a high-speed, low-energy device is required. Details of construction of these relays are given in the paragraphs entitled **CONSTRUCTION.**

Relay	Main Features*
HGA14A	Back-connected, with cover
HGA14A(-)F	Back-connected, with cover; semi-flush mounted
HGA14AE	Front-connected, with cover; strong control spring for mounting on circuit breaker
HGA14AF	Front-connected, with cover
HGS14AV	Front-connected, with shock-proof cover
HGA14BF	Front-connected, with cover and provisions for front mounting

* All relays are surface mounted except as noted.

RATINGS

These relays are available with coil ratings for standard voltages up to 575 volts at 25, 50, or 60 cycles AC and up to 250 volts DC. The relays are also available with coil current ratings up to 5 amperes DC and up to 15 amperes AC.

The current-closing rating of the contacts is 30 amperes. The current-carrying rating is 12 amperes continuously or 30 amperes for one minute. The interrupting ratings (non-inductive circuits) for the various voltages are as follows:

	DC				AC		
Volts	24	48	125	250	115	230	460
Amps.	3	1.5	0.6	0.25	20	10	

BURDENS

DC Coils				AC Coils			
Coil Rating		R		Coil Rating		Z**	Volt-
Volts	Amps	Ohms	Watts	Volts	Cycles	Ohms	Amps.
250		12900	4.84	575	60	22000	15.0
125		3250	4.82	460	60	14200	14.9
48		500	4.61	230	60	3960	13.9
32		205	4.97	115	60	1000	13.2
24		130	4.43	575	50	26700	12.4
12		35	4.11	460	50	17000	12.4
6		9	4.00	230	50	4270	12.4
	1	4.43	4.43	115	50	830	13.0
	2	1.10	4.40	575	25	33500	9.87
	3	0.46	4.14	460	25	28300	7.50
	4	0.244	3.90	230	25	7070	7.50
	5	0.16	4.00	115	25	1768	7.45

** Impedance measured with relay in picked-up position.

CONSTRUCTION

The contact circuits of these auxiliary relays are closed or opened by moving contact arms, controlled by a hinge-type armature, which in turn is actuated by the operating coil and restrained by an adjustable control spring. The length of contact gap is adjustable by means of screw contacts and locknuts in the front contact positions. The armature gap and back-contact wipe can be controlled by the screws and locknuts located on the moving contact arms. These latter features make it possible to reduce the pickup energy and pickup time to relatively low values.

When these relays are adjusted for short gap and low pickup, **only one** normally-closed contact should be used. If two normally-closed contacts are required, it will be necessary to readjust the relay to standard gap operation, as described under Pickup in the **INSTALLATION** section.

The HGA14AV relay has a thumb nut on its cover to prevent the cover from coming off when the relay is subjected to shock.

INSTALLATION

LOCATION

The location should be clean and dry, free from dust and excessive vibration, and well lighted to facilitate inspection and testing.

MOUNTING

The relay should be mounted on a vertical surface. The outline and panel drilling diagrams for each model are given in the following Table.

Relay	Outline	Panel Drilling
HGA14A	Fig.2	Fig.8
HGA14A(-)F	Fig.3	Fig.9
HGA14AE	Fig.4	Fig.7
HGA14AF	Fig.4	Fig.7
HGA14AV	Fig.4	Fig.7
HGA14BF	Fig.5	

CONNECTIONS

The internal connection diagram for all these relays is shown in Figure 6.

ADJUSTMENTS

Pickup

These relays have been adjusted at the factory to pick up at 30% of rating (cold) if for DC, or 40% of rating if for AC.

When the relays are shipped from the factory they are provided with only one "b", or normally-closed, contact circuit and two "a", or normally-open contacts. The left-hand (front view) screw contact is backed out of engagement with its moving contact. This is necessary since the low control spring tension does not give sufficient pressure on two "b" contacts. Both "b" contacts can be utilized if the control spring tension is increased sufficiently to raise the pickup to 60% of rating DC, or 80% of rating AC. This can be done by the following procedure.

> The control spring should be anchored in the rear hole of the spring post. The adjusting screws in the contact arms should be backed off to a position where they will no longer engage the molded contact support, and should be locked in this position. Both screw contacts should be backed off to a point where they project approximately 3/32 inch beyond the contact plates, and securely locked. There must be from 1/32 inch to 1/16 inch wipe on the normally-open contacts; this should be adjusted, if necessary, by bending the contact arms. The pickup should now be set by shifting the position of the spring on the matched armature tailpiece.

It is not recommended that the Type HGA14AE relay, or those relays using current coils (DC coils rated 1-5 amperes), be readjusted to have two normally-closed contacts.

Contact Wipe

With the "short gap" adjustments (e.g. as shipped from the factory), the minimum recommended contact wipe is one full turn of the screw in each moving contact arm. In setting the wipe, the armature should be closed by hand and the screws turned in until they just touch the projections on the molded contact support. They should then be backed off one turn, and locked securely in position by means of the locknuts.

The minimum recommended contact gap is 3-3/4 turns of the back (stationary) contact screw. This adjustment is made by turning the right-hand contact screw in until the normally open contacts are just making, and then backing it off 3-3/4 turns and locking it securely in position by means of the locknut. Note that the left-hand contact screw should be set far enough back so that it clears the left moving contact with the relay 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 will no longer apply.

PERIODIC CHECKS AND ROUTINE MAINTENANCE

In view of the vital role of protective relays in the operation of a power system, it is important that a periodic test program be followed. 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 points listed under ADJUSTMENTS in the **INSTALLATION** section be checked at least once every six months, preferably at the same time the associated devices are inspected.

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.

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 is included in the standard relay tool kit obtainable from the factory.

RENEWAL PARTS

Sufficient quantities of renewal parts should be kept in stock for 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 the name of the part wanted, quantity required, and complete nameplate data, including the serial number, of the relay. If possible, give the General Electric Company requisition number on which the relay was furnished.

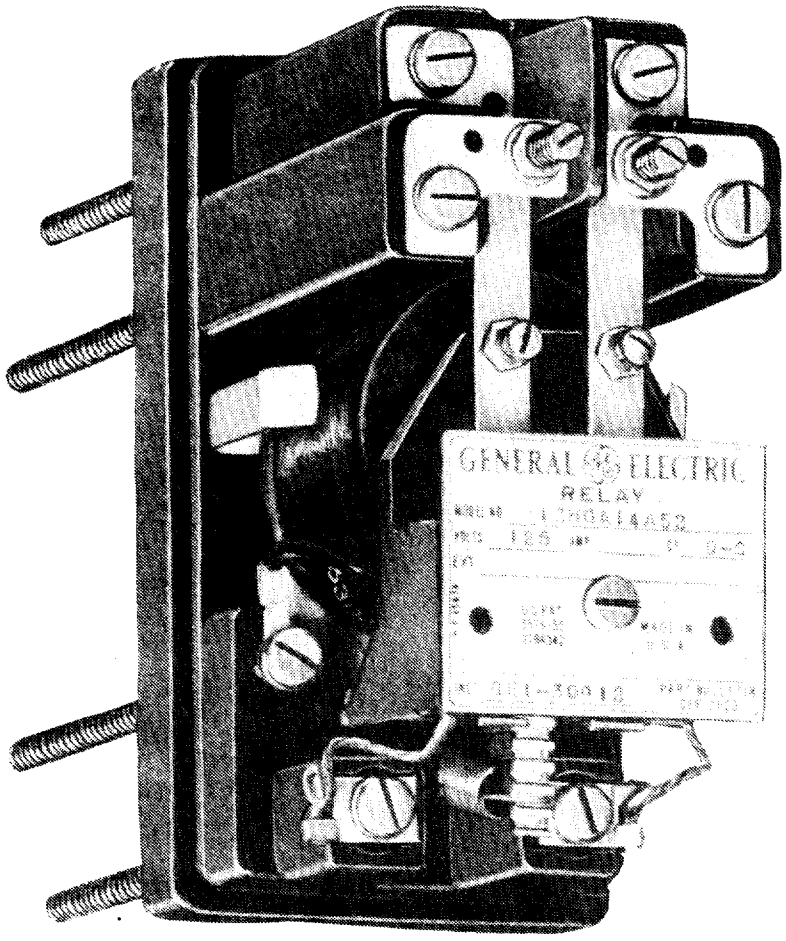


Figure 1 (8009113) Type HGA14A Relay with Cover Removed

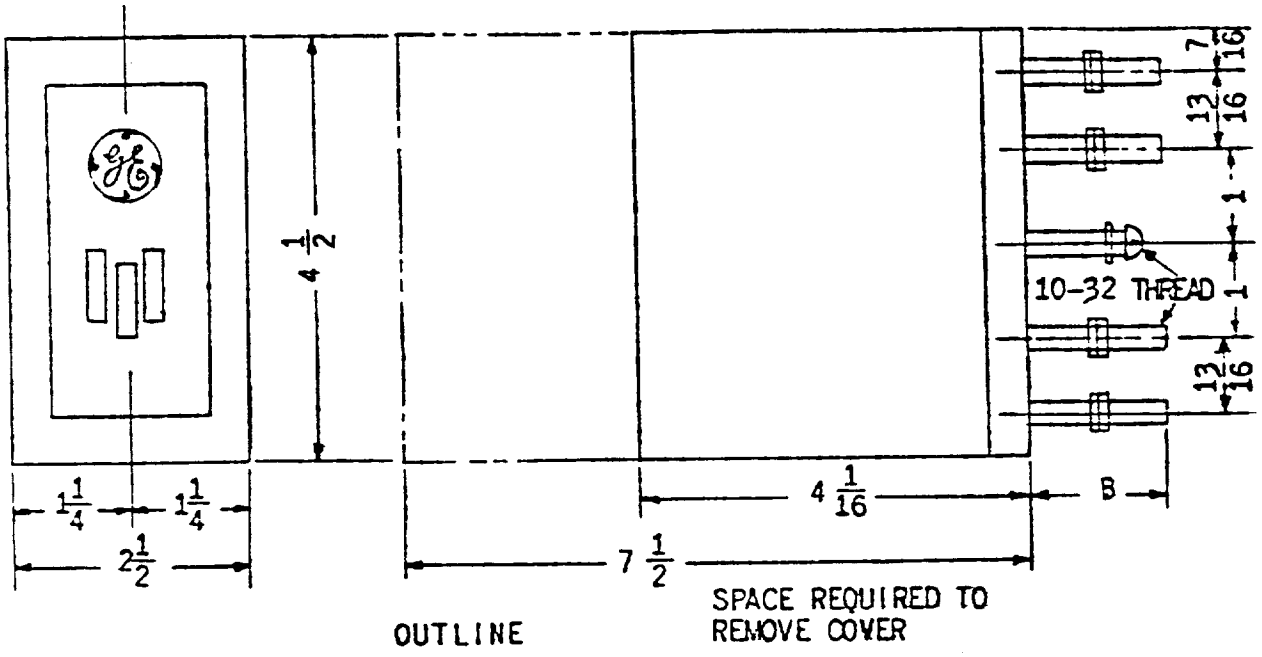


Figure 2 (6077058-20) Outline Dimensions for the HGA14A Relay

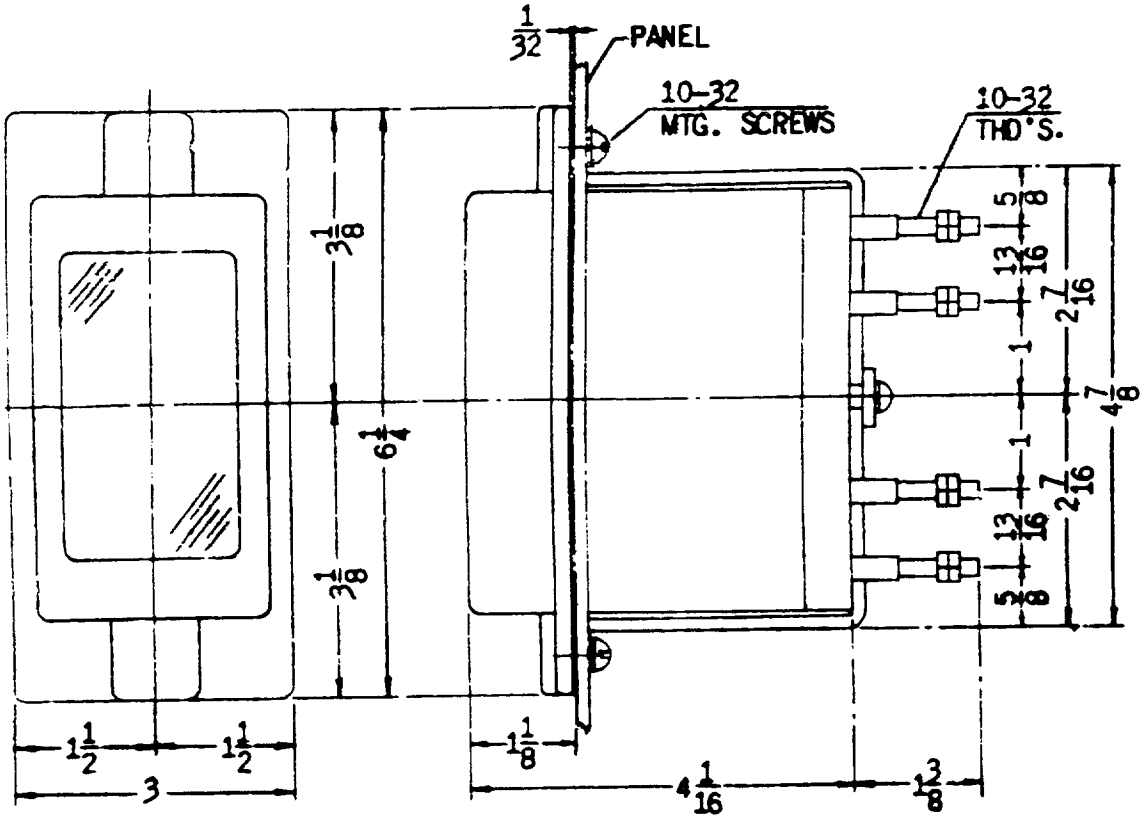


Figure 3 (0104A8557-2) Outline Dimensions
for the HGA14A(-)F Semi-flush Mounted Relay

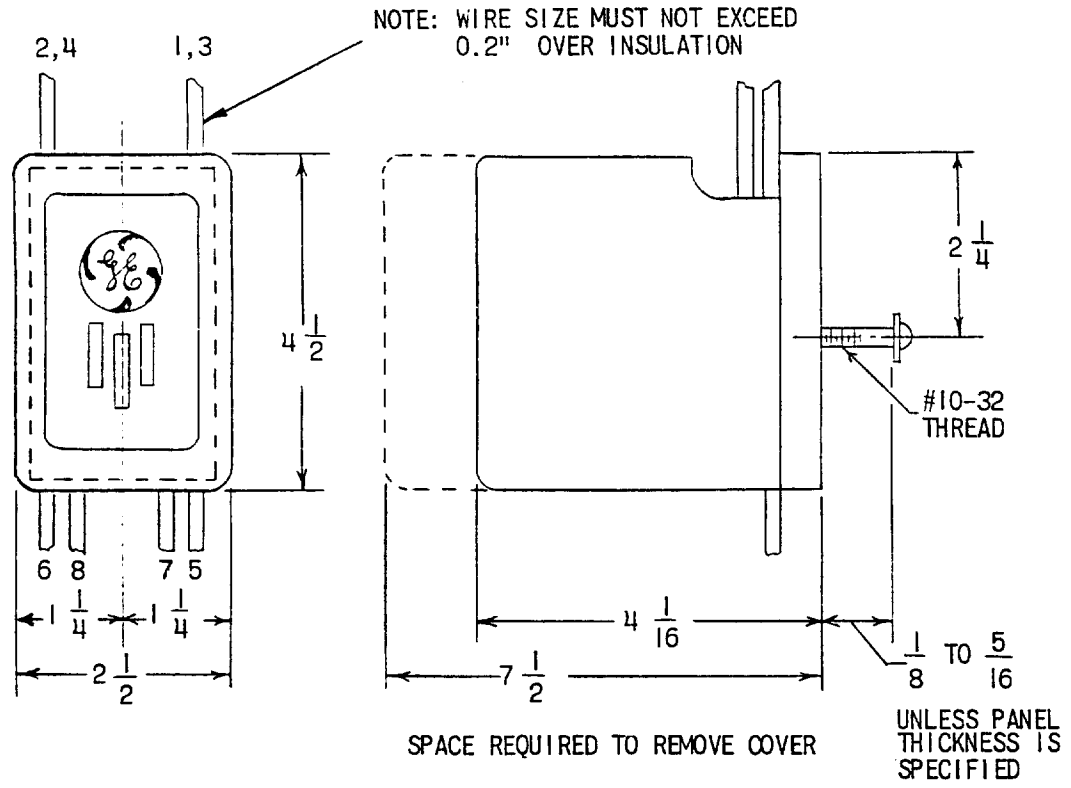


Figure 4 (6375628-5) Outline Dimensions for the HGA14AE, HGA14AF, and HGA14AV Relays

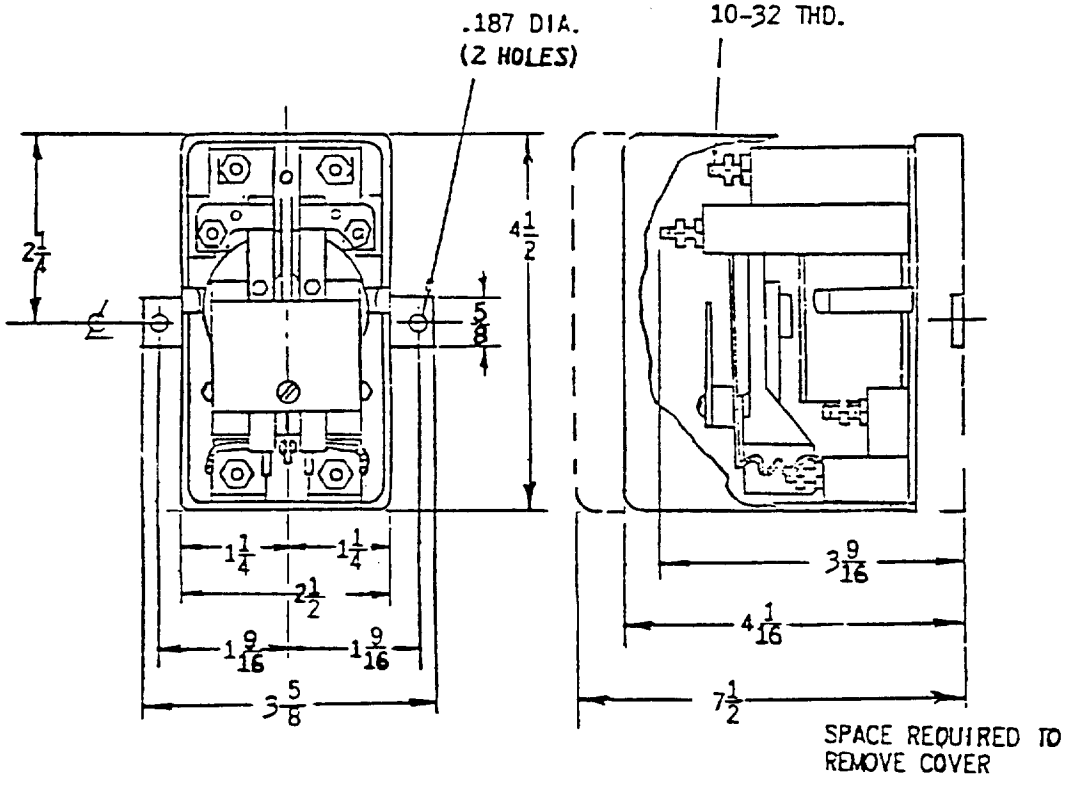


Figure 5 (0165A7757-2) Outline Dimensions and Panel Drilling for the HGA14BF Relay

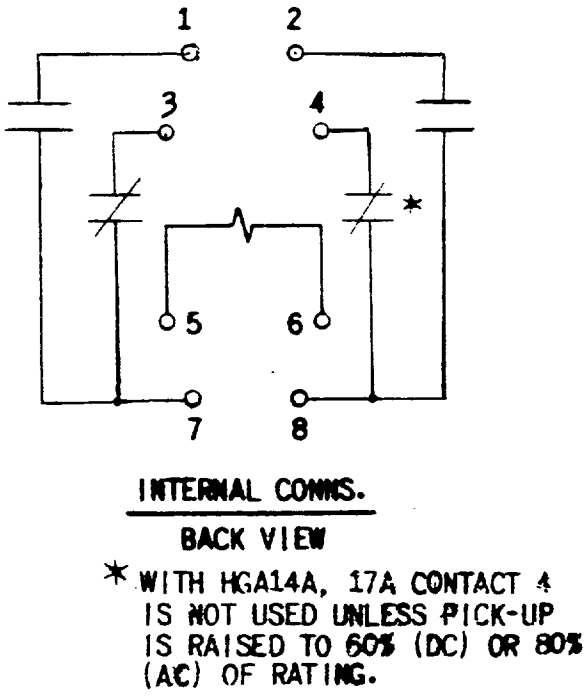


Figure 6 (0104A8557-2) Internal Connection Diagram for HGA14 Relays (Back View)

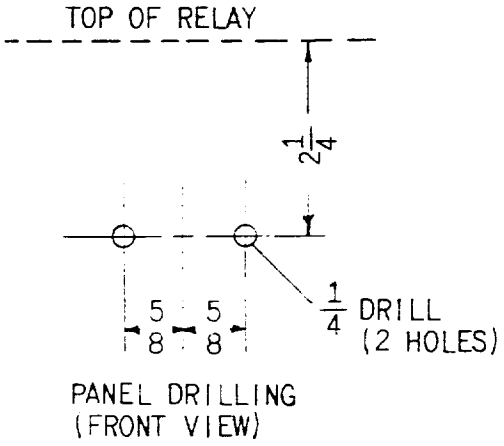
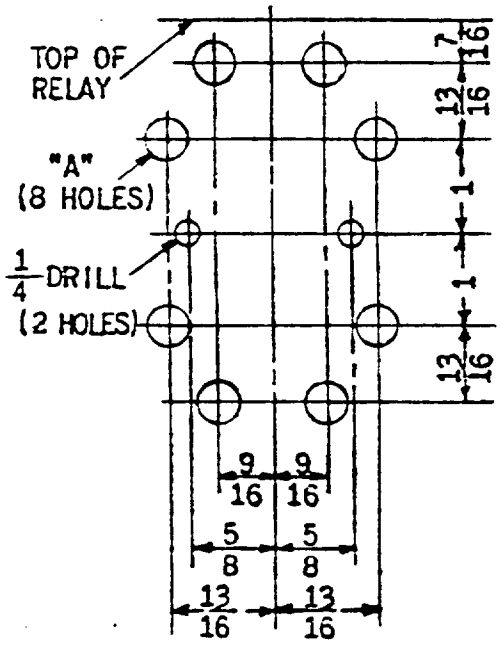


Figure 7 (0418A0755-0) Panel Drilling Diagram
for HGA14AE, HGA14AF and HGA14AV Relays (Front View)



TYPE OF PANEL	"A"	"B"
INSULATING	7/16"	2-13/16"
STEEL	9/16"	1-3/8"

PANEL DRILLING (FRONT VIEW)

Figure 8 (6077058-20) Panel Drilling Diagram for HGA14A Relay (Front View)

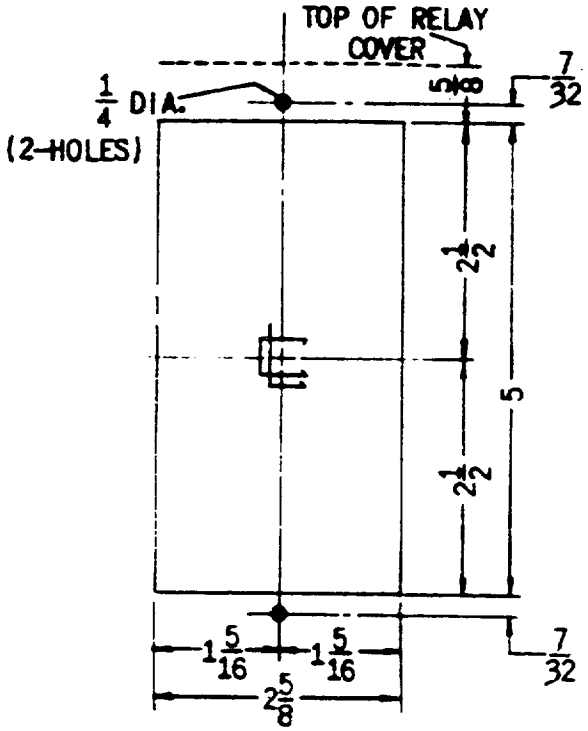


Figure 9 (0104A8557-2) Panel Drilling Diagram for HGA14A(-)F Relay (Front View)

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