



INSTRUCTIONS

GEI-68750

SUPERSEDES

GEI-38944A

GEI-44230A

INSTANTANEOUS AUXILIARY RELAYS

Type HGA

GENERAL  ELECTRIC

INSTANTANEOUS AUXILIARY RELAYS

TYPE HGA

DESCRIPTION

INTRODUCTION

The relays covered by these Instructions are double-pole hinged armature type relays that are suitable for use wherever a high-speed, low energy device is required.

Table I lists the general features of each relay covered by these Instructions. Each of these relays is provided with a cover.

TABLE I

Relay	Type Of Connection	Contact Arrangement	
		Normally Open	Normally Closed
HGA14AS	Front	2	1
HGA14AT	Back	2	1
HGA14AY	+	-	-
HGA14B	Back	2	1
HGA14BC	Front	1	1
HGA14J	Back	2	1
HGA14K	Back	2	1
HGA14M	Front	1	1
HGA14N	Back	2	2
HGA14V	Back	2	1
HGA14W	Back	2	2
HGA14X	Back	2	2

+ 2 - HGA14AT Relays Mounted Side-by-Side.

RATINGS

The current-closing rating of the contacts is 30 amperes. The current carrying rating is 12 amperes continuously or 30 amperes for one (1) minute. Interrupting ratings (non-inductive circuits) for the various voltages are listed in Table II.

TABLE II

Volts Amperes	DC				AC	
	24	48	125	250	115	230
	3	1.5	0.6	0.25	20	10

All operating coils in these relays are continuously rated except those in the HGA14AS and HGA14B relays. These two (2) relays have coils that are rated intermittently (30 seconds).

BURDENS

Type	Ratings		Cycles	Watts	± Volt-Amps
	Volts	Amps			
HGA14B	250	62.5	DC	17.1	
	125			18.8	
	96			18.0	
	48			15.6	
	42			14.4	
	24			17.9	
HGA14AS	6	3.75		13.9	
	6			10.3	
	0.6			11.9	
	0.6			14.9	
HGA14J	115				13.2
	115				7.5
HGA14AT HGA14AY HGA14BC	250	3	DC	4.03	
	125			4.28	
	48			4.49	
	32			4.11	
	24			3.60	
	6			3.48	
HGA14K	12	2		3.65	
	6			3.24	
	3			3.37	
	1			3.42	
HGA14M	250		DC	6.50	
	125			6.33	
	48			6.12	
	32			4.11	
	24			5.85	
HGA14N	24		DC 60	1.12	3.50
	115				
HGA14V	208		50) dual 60) freq.	9.8	
	230			10	
HGA14W	250		DC 50/60	1.73	5.1
	115				
HGA14X	115		50/60 50/60	13.2	12
	230				

± Armature in the closed position - with the armature in the open position the burdens are approximately twice the values listed.

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 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 lengths of contact and armature gaps are adjustable by means of screw contacts and locknuts in the front contact positions. The armature gap (and back-contact wipe) can also be controlled by the screws and locknuts located on the moving contact arms. The latter features make it possible to reduce the pick-up energy and pick-up time to relatively low values. When these relays are adjusted for short gap and low pickup, only one normally-closed contact may be used. If two normally-closed contacts are required, it will be necessary to readjust the relay to standard gap operation as described under MAINTENANCE.

Details pertaining to a specific relay are given below:-

The HGA14AS and HGA14B relays have intermittently rated (30 seconds) operating coils to obtain high speed pickup. They also have extra strong contact springs which are used to eliminate contact bounce.

The HGA14J has strong contact springs. Special adjustments are made in testing to secure pick-up time settings as specified by the customer.

The HGA14K, HGA14AT, HGA14AY (2 HGA14AT relays mounted side-by-side in a drawout type case) and HGA14BC relays have strong contact and control springs. It is recommended for use in locations where the relay is subject to mechanical shock during operation; i.e., on circuit-breaker mechanisms.

The HGA14M relay is similar to the HGA14J relay except it is designed for use with the HJA12A relay in an X-Y control scheme.

The HGA14N relay has an operating coil designed to offer a very low burden at rated voltage. It is designed for use as an auxiliary relay in conjunction with protective devices whose contacts are not capable of handling the current required by a standard HGA relay.

The HGA14V relay has its coil designed for a dual frequency rating.

The HGA14W relay has no adjustment for the back contact wipe. Its operating coil is designed for use in an ambient of 75 degrees C.

The HGA14X relay is similar to the HGA14W relay except it uses a standard operating coil.

INSTALLATION

LOCATION AND MOUNTING

The location should be clean and dry, free from dust and excessive vibration, and well lighted to facilitate inspection and testing. The relays should be mounted on a vertical surface. The outline and panel drilling diagrams are referred to in Table III.

CONNECTIONS

The internal connection diagrams for these relays are referred to in Table III.

TABLE III

Relay	Int. Conn. (Fig.)	Outline and Panel Drilling (Fig.)
HGA14AS	1	1
HGA14AT	2	2
HGA14AY	6	7
HGA14B	2	2
HGA14BC	3	3
HGA14J	4	4
HGA14K	4	4
HGA14M	5	5
HGA14N	4	4
HGA14V	2	2
HGA14W	4	4
HGA14X	4	4

MAINTENANCE

ADJUSTMENTS

PICKUP

The HGA14B and HGA14AS are adjusted at the factory to pickup at 80% of rating. The HGA14J is adjusted to pick up at less than 50 percent of rating, depending on the time required. All other relays covered by these instructions are adjusted to pick up at 60 per cent of rating for DC relays or 80 percent of rating for AC relays.

The type HGA14J relay is provided with only one normally-closed contact. 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 the two "b" contacts. Both "b" contacts can be utilized if the control spring tension is increased sufficiently to raise the pickup to 80 percent of rating. This is accomplished by the following procedure:

The control spring should be anchored in the hole located at the rear of the spring post. Back off the adjusting screws in the contact arms to a position where they will not engage the molded contact support. Both screw contacts should be backed off approximately 3/32-inch beyond the contact plates. Check the wipe on the normally-open contacts so that it measures from 1/32-inch to 1/16-inch. This may be adjusted by bending the contact arms. After these steps are completed, the pickup can be set by shifting the position of the control spring on the notched armature tailpiece.

The HGA14B, HGA14K, HGA14M, HGA14V, HGA14AS, HGA14AT and HGA14AY relays should not be adjusted to have two normally-closed contacts.

CONTACT WIPE

With the "short-gap" adjustments, 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 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 locknuts. Note that the left-hand contact screw should be set back far enough to clear 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 in Table II will no longer apply.

PERIODIC TESTING

Auxiliary relay equipment should be checked for operation at regular intervals, 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.

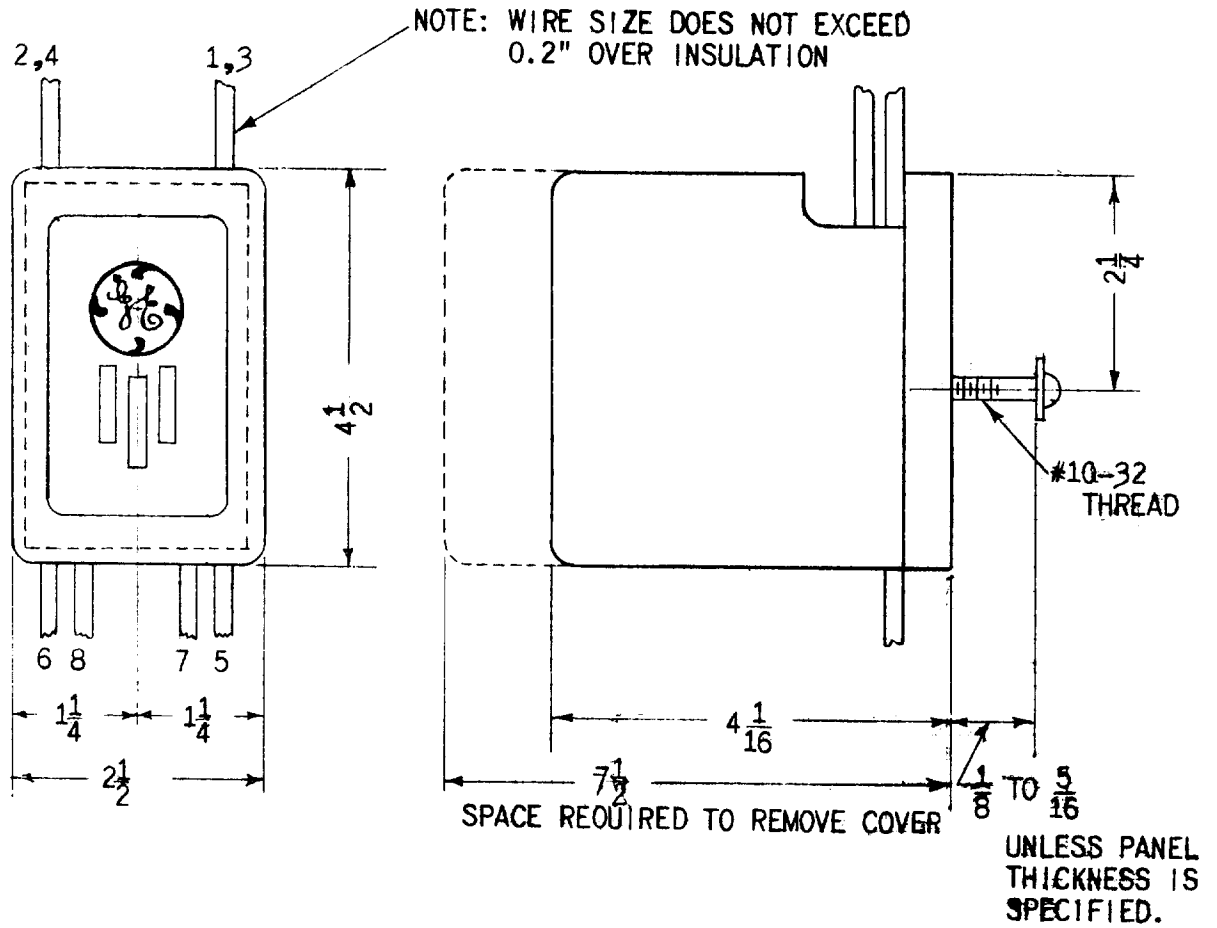
Fine silver contacts should not be cleaned with knives, files, or abrasive paper or cloth. Knives or files may leave scratches which increase arcing and deterioration of the contacts. Abrasive paper or cloth may leave minute particles of insulating abrasive material in the contacts and thus prevent closing.

The burnishing tool described 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 catalogue numbers as shown in Renewal Parts Bulletin GEF-2623.



OUTLINE

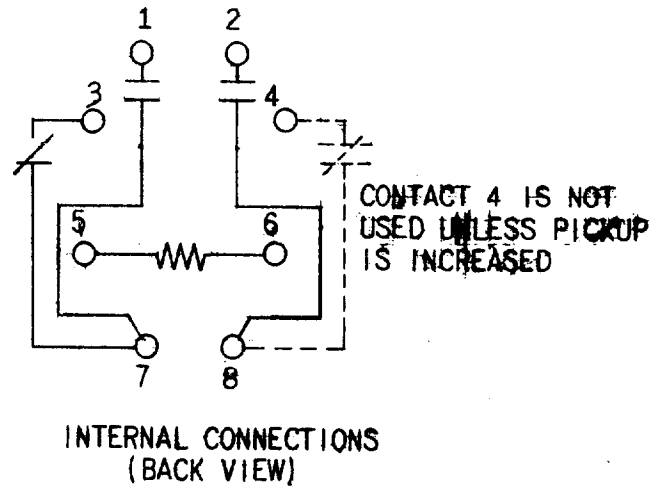
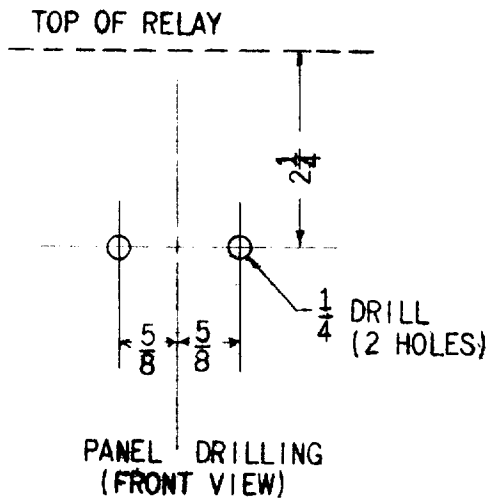
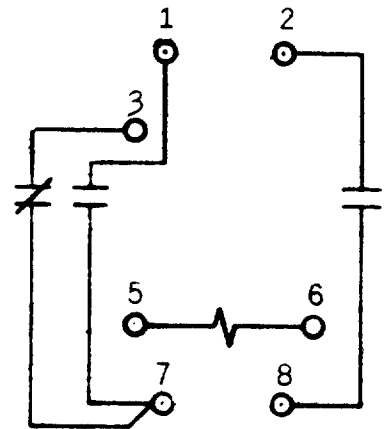
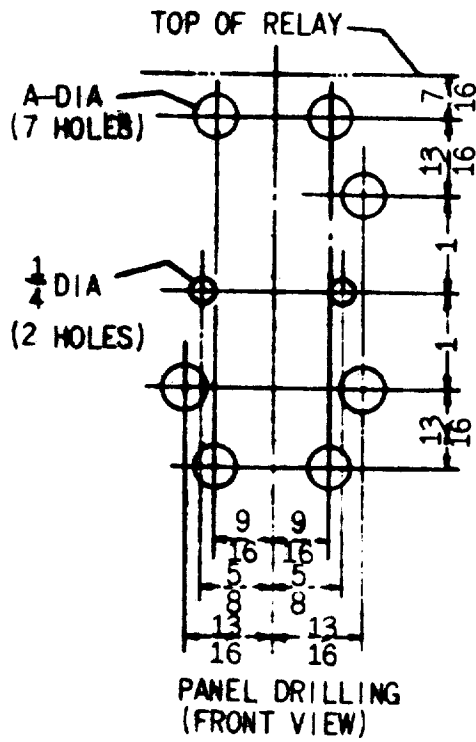
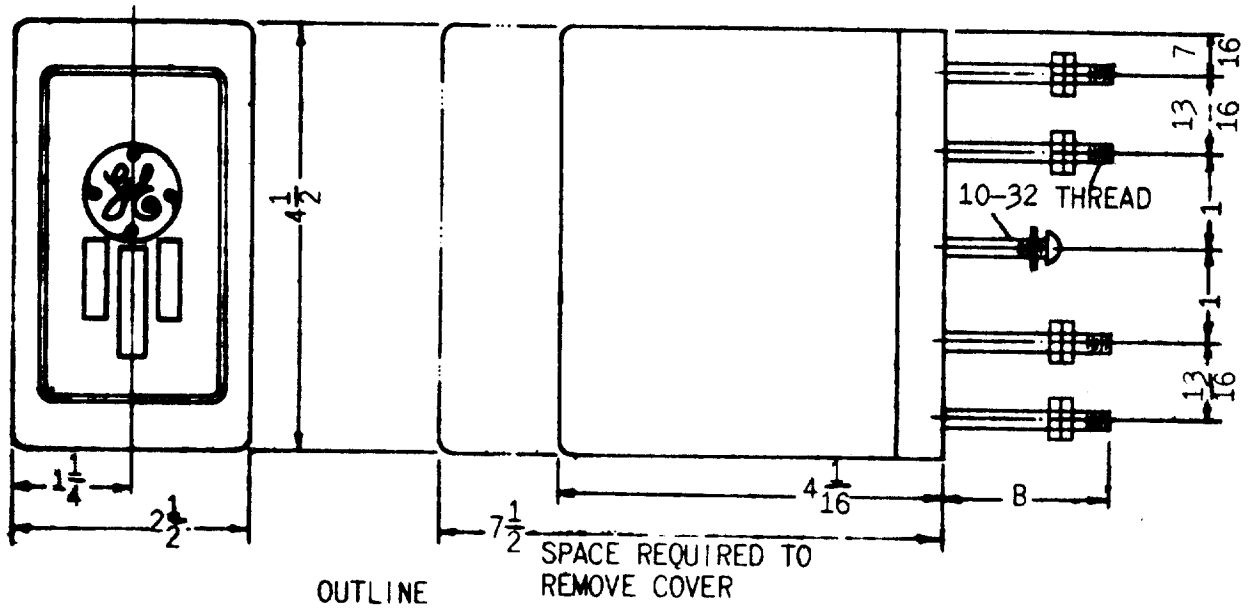


Fig. 1 Outline, Panel Drilling and Internal Connections for HGA14AS Relay

Fig. 2 (6400533-3)



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

Fig. 2 Outline, Panel Drilling and Internal Connections for HGA14AT, HGA14B, and HGA14V Relays

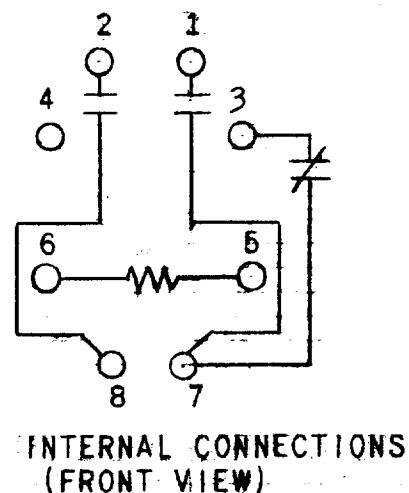
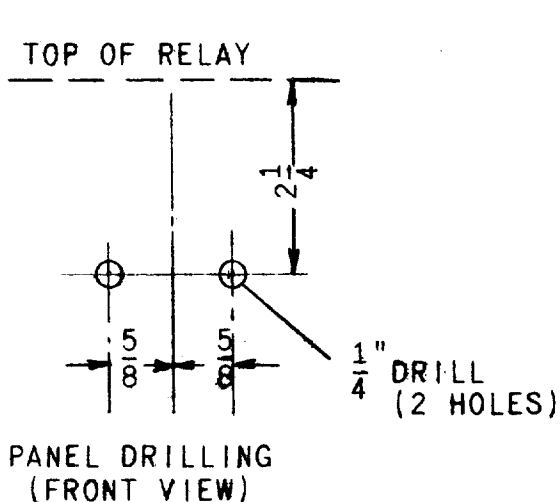
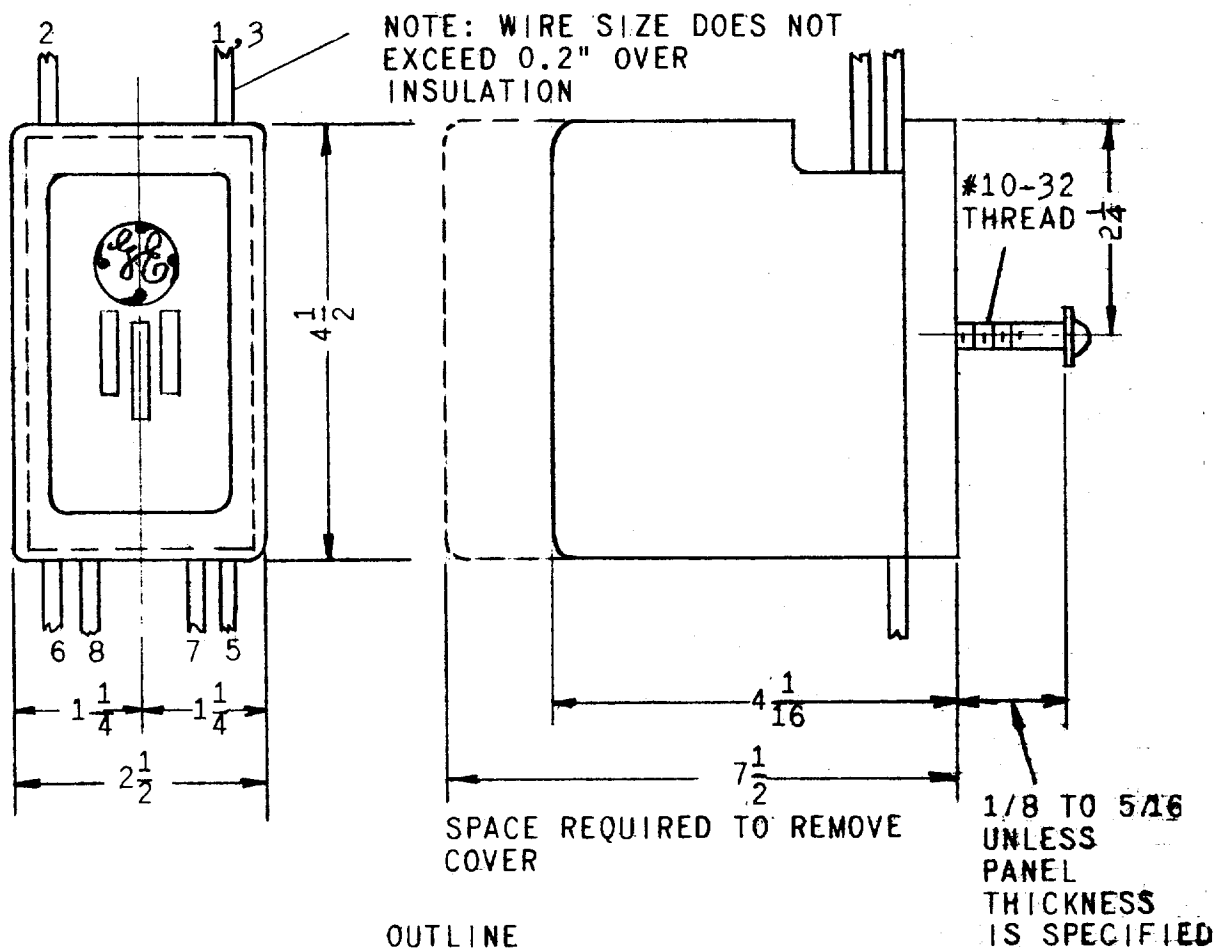
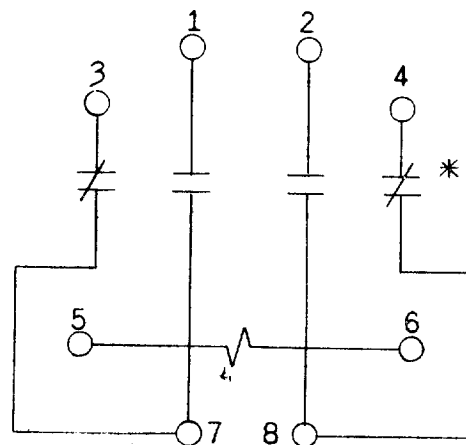
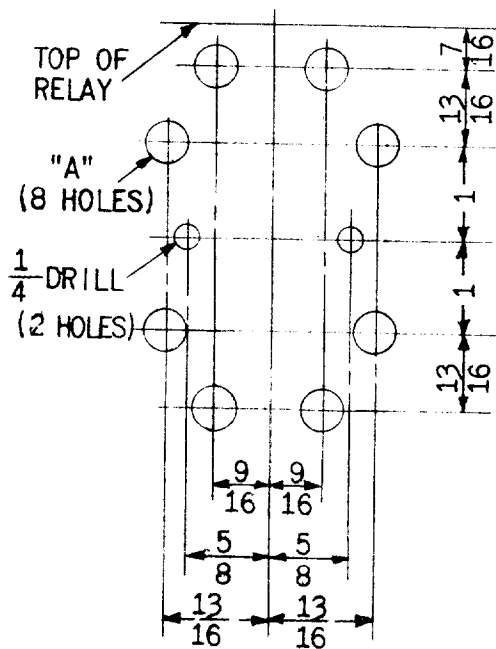
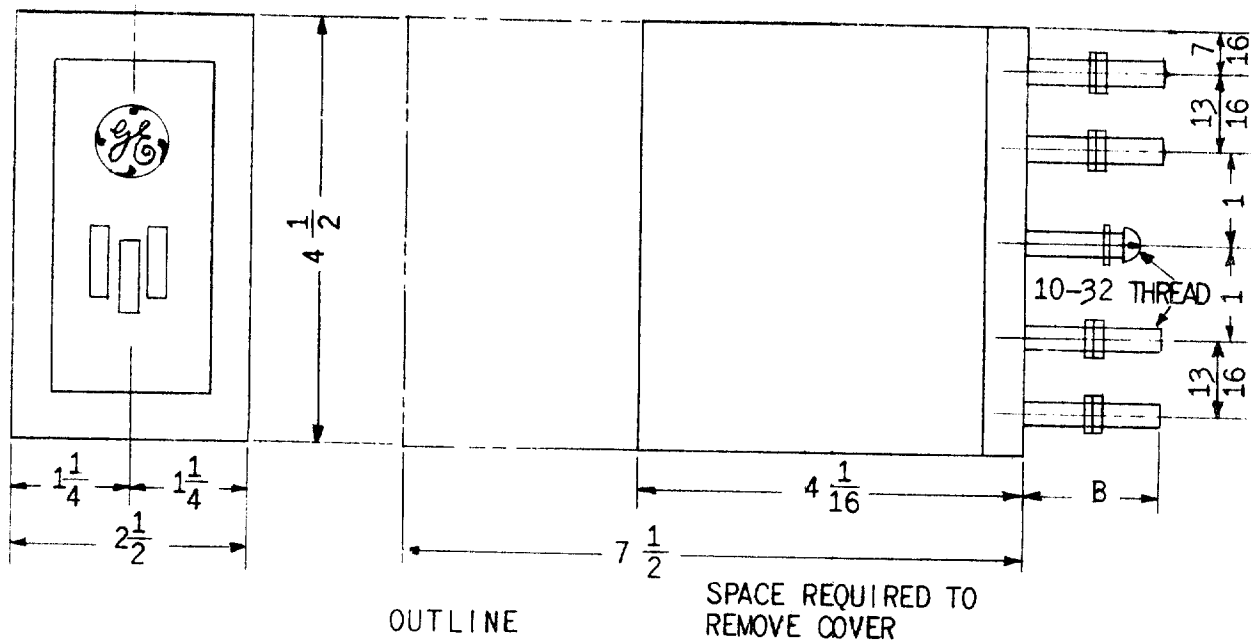


Fig. 3 Outline, Panel Drilling and Internal Connections for HGA14BC Relay



* WITH HGA14A, 14J, 14K, 14N CONTACT 4 IS NOT USED UNLESS PICKUP IS RAISED TO 60% (DC) OR 80% (AC) OF RATING

TYPE OF PANEL	"A"	"B"
INSULATING	$7 \frac{7}{16}$ "	$2-13 \frac{13}{16}$ "
STEEL	$9 \frac{9}{16}$ "	$1-3 \frac{3}{8}$ "

PANEL DRILLING (FRONT VIEW)

Fig. 4 Outline, Panel Drilling and Internal Connections for HGA14J, HGA14K, HGA14N, HGA14W, HGA14X Relays

Fig. 4 (6077058-19)

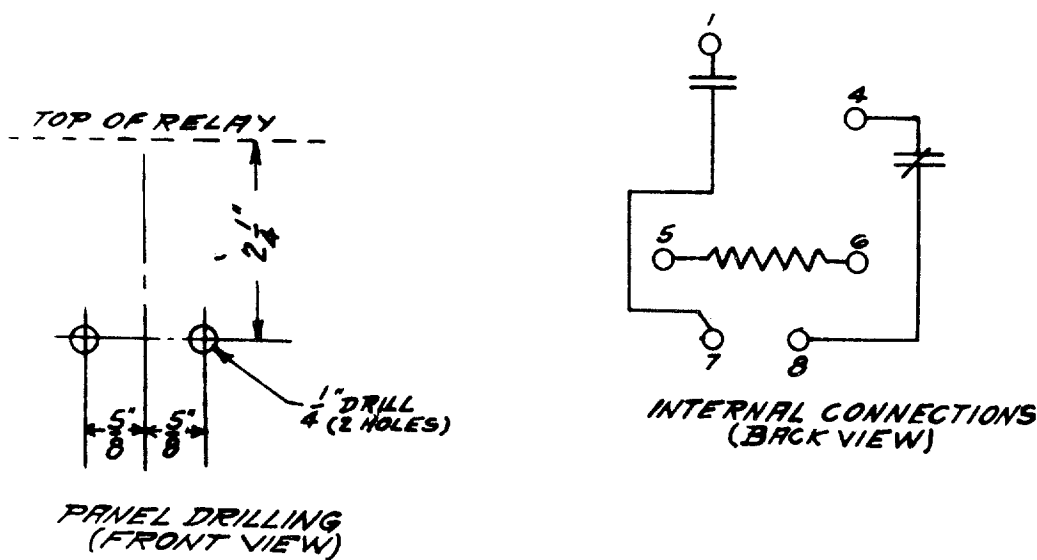
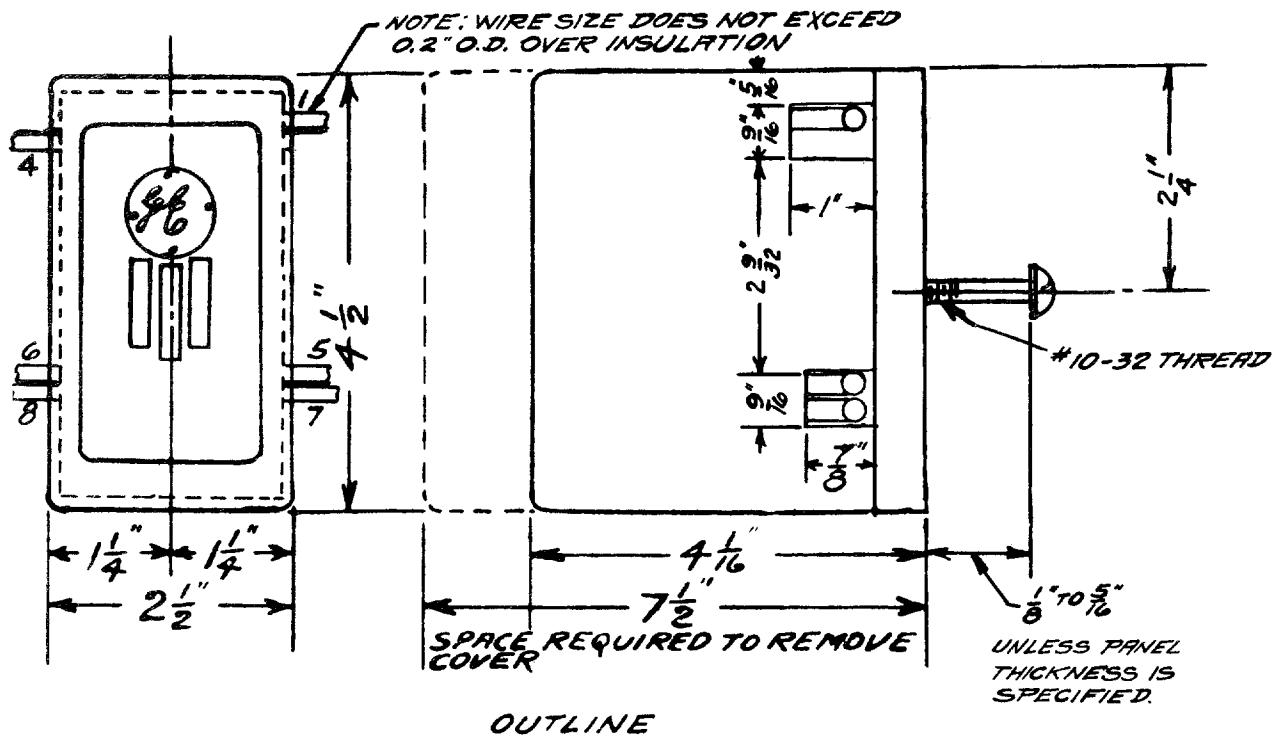
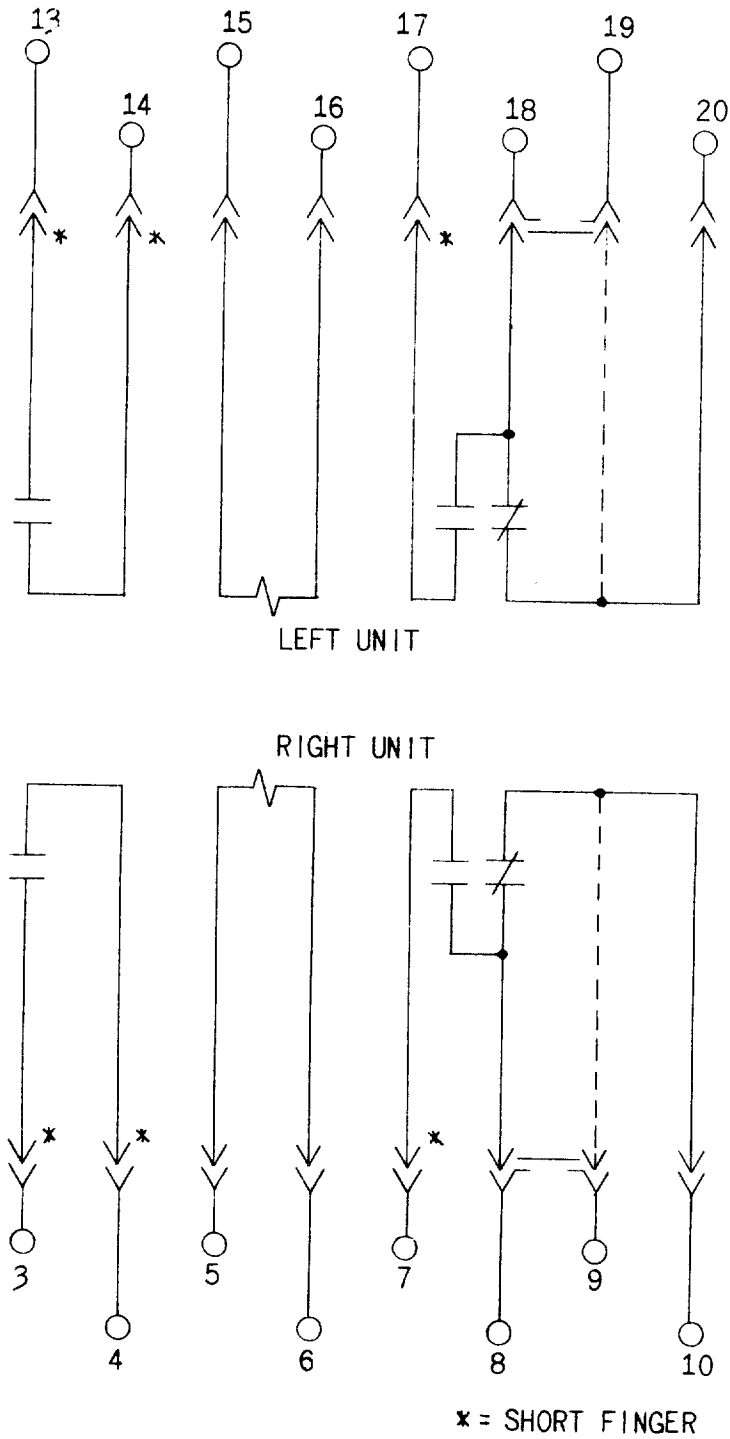


Fig. 5 Outline, Panel Drilling and Internal Connections for HGA14M Relay

Fig. 6 (418A821-1)



"MAKE DOTTED CONNECTIONS WHEN SHORTING BARS FOR N.C. CONTACTS ARE REQUIRED"

Fig. 6 Internal Connections for HGA14AY Relay (Front View)

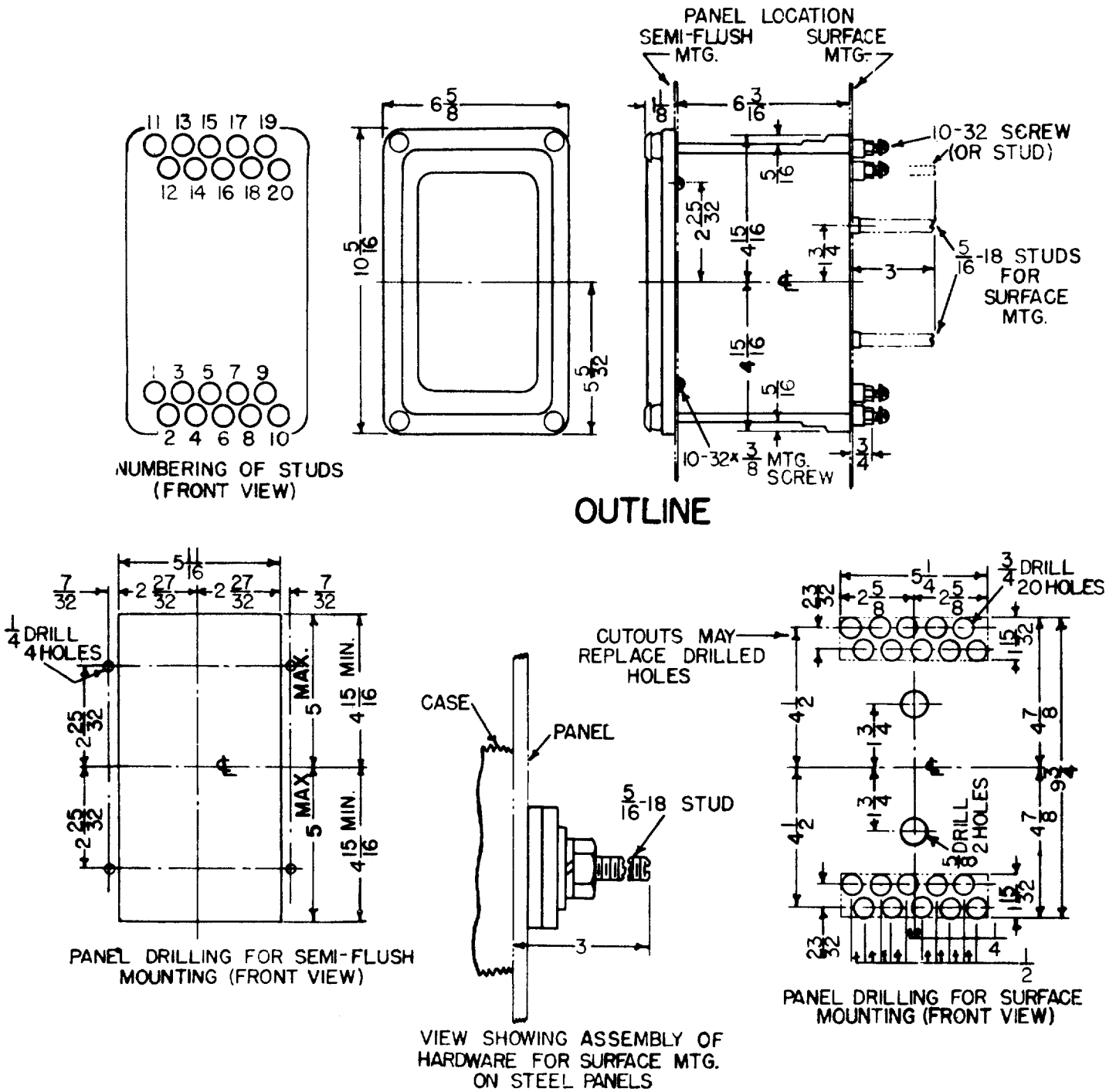


Fig. 7 (6209272-2)

Fig. 7 Outline and Panel Drilling for HGA14AY Relay