



GE VERNOVA

RELAYS

TIME-DELAY CONTROL RELAY

TYPES HGA33A, HGA33B, HGA33C

GEI-44068B

Supersedes GEI-44068A

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TIME-DELAY CONTROL RELAY
TYPES HGA33A, HGA33B AND HGA33C

DESCRIPTION

The Types HGA33A, HGA33B and HGA33C relays covered by these instructions are hinged-armature auxiliary relays with time delay on dropout, having single-pole, single-throw, double-break contacts. The three type differ only in the mounting and connection arrangements. Table I lists the differences in mounting and connections, as well as the outline, panel drilling and internal connection figure numbers.

TABLE I

RELAY	MOUNTING	CONNECTIONS	OUTLINE, PANEL DRILLING AND INTERNAL CONN.
HGA33A	FRONT	FRONT	FIG. 1
HGA33B	FRONT	BACK	FIG. 2
HGA33C	FLUSH	BACK	FIG. 3

APPLICATION

The Types HGA33A, HGA33B and HGA33C auxiliary relays are intended for use as the control relay for the motor in breaker elevating mechanism circuits. Typical external connections for such applications are shown in Figures 5 and 6 for d-c and a-c control circuits respectively. The relays may also be used in other control circuits where the contact duty will be within the limits shown in the RATINGS section.

RATINGS

These relays are available with intermittent coil ratings of five minutes at 24, 48, 125 and 250 volts DC and can also be supplied with an external rectifier for intermittent use on 120 or 230 volts, 25/60 cycles AC.

The contacts will make, carry for five minutes, and interrupt the non-inductive loads shown in Table II.

TABLE II

	DC			AC	
VOLTS	48	125	250	120	230
AMPS	40	20	13	80	40

CHARACTERISTICS

The relays have been adjusted at the factory to operate at 60 percent of rating (cold) for d-c relays or 80 percent of rating for a-c relays.

As shipped from the factory, the relays have a time-delay dropout of approximately 0.24 seconds.

BURDENS

The d-c rated relays have a burden of approximately 45 watts. The a-c rated relays have a burden of approximately 23 volt-amperes and 11 watts including the external rectifier and capacitor.

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

Type HGA33A relays are time-delay, hinged-armature type relays having single-pole, single-throw, double-break contacts.

The contact circuit is 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 armature, magnet and contact assemblies are all mounted on a compact, molded compound base.

The HGA33A relay is front connected and front mounted and is provided with a molded compound cover. The base is suitably notched to provide for the entrance of the connecting leads.

The HGA33B relay is back connected and front mounted and is provided with a molded compound cover.

The HGA33C relay is back connected and semi-flush mounted. The molded cover has a glass window.

On d-c relays, small horseshoe permanent magnets are mounted in grooves in the base and are held in place by the stationary contact brackets.

The coil is wound on a copper spool which also acts as a damping ring and provides time delay on dropout when the coil is de-energized.

The internal connections are shown by Figs. 1, 2 and 3.

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.

ACCEPTANCE

Check the physical condition of the relay. Check that the armature moves freely when operated by hand.

Check pickup voltage and dropout time against the limits given in the section on ADJUSTMENTS.

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 dimensions of the relays are given in Figs. 1, 2, and 3. The outline and panel drilling dimensions for the external rectifier for a-c relays are given in Fig. 4.

CONNECTIONS

The internal connection diagrams are shown in Figs. 1, 2 and 3. Note that terminal two of the relay must be connected to the positive side of the control power supply in order to obtain the correct magnetic blowout effect.

PERIODIC CHECKS AND ROUTINE MAINTENANCE

Auxiliary relay equipment should be checked for operation at regular intervals, preferably at the same time as the associated protective relays.

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. 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.

ADJUSTMENTS

The relays have been adjusted at the factory to operate at 60 percent of rating (cold). This adjustment can be restored, if necessary, by shifting the control spring to a different notch in the armature tail piece. A coarser adjustment may be obtained by shifting the control spring to a different hole in the anchor pin.

As shipped from the factory, the relay has a time-delay dropout of approximately 0.24 seconds. This time-delay feature results from the dampening effect of the copper spool. It may be adjusted over a small range by regulating the control spring tension. This adjustment, of course, affects the pickup adjustment.

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.

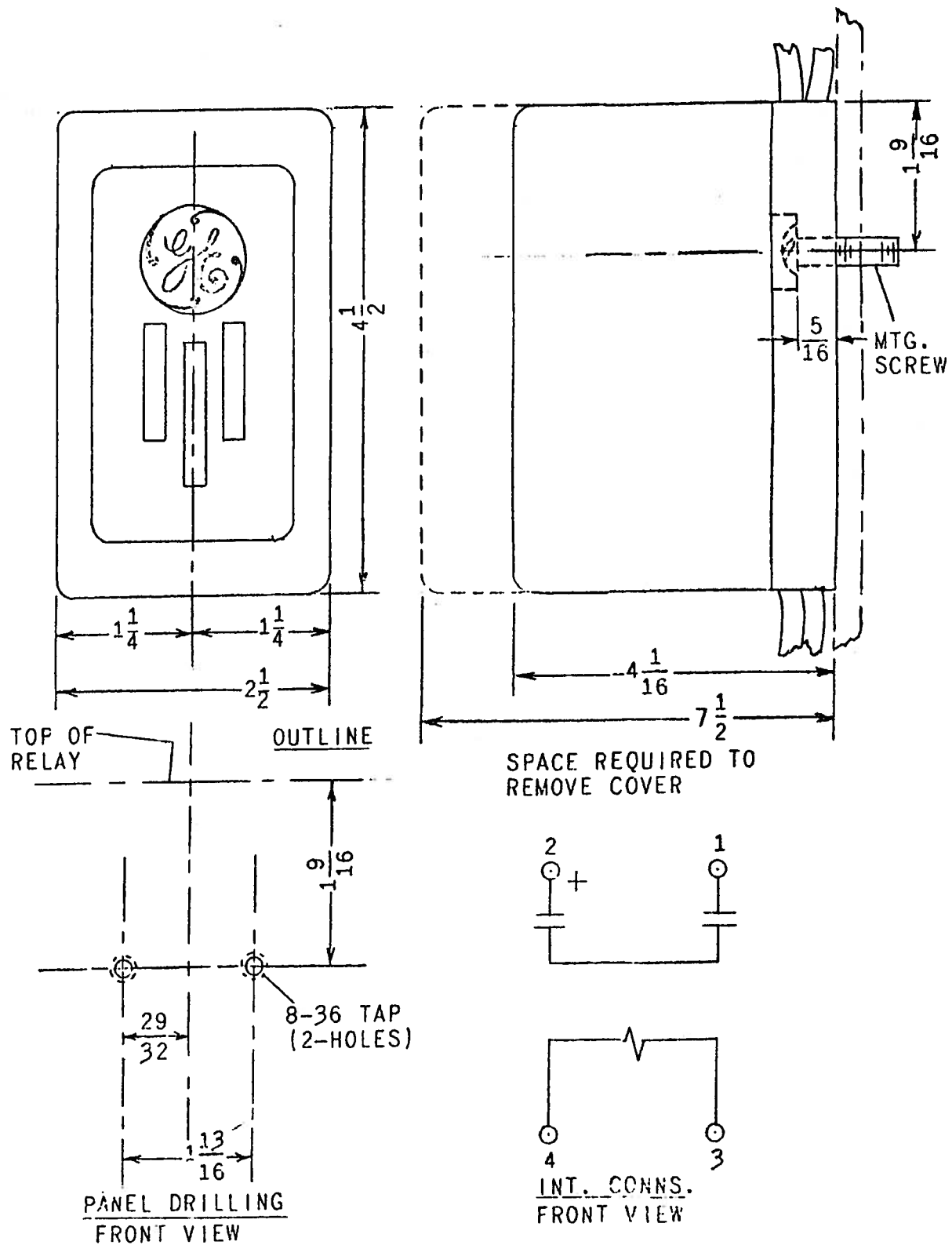


Fig. 1 (389A707-2) OUTLINE, PANEL DRILLING AND INTERNAL CONNECTIONS FOR TYPE HGA33A RELAY.

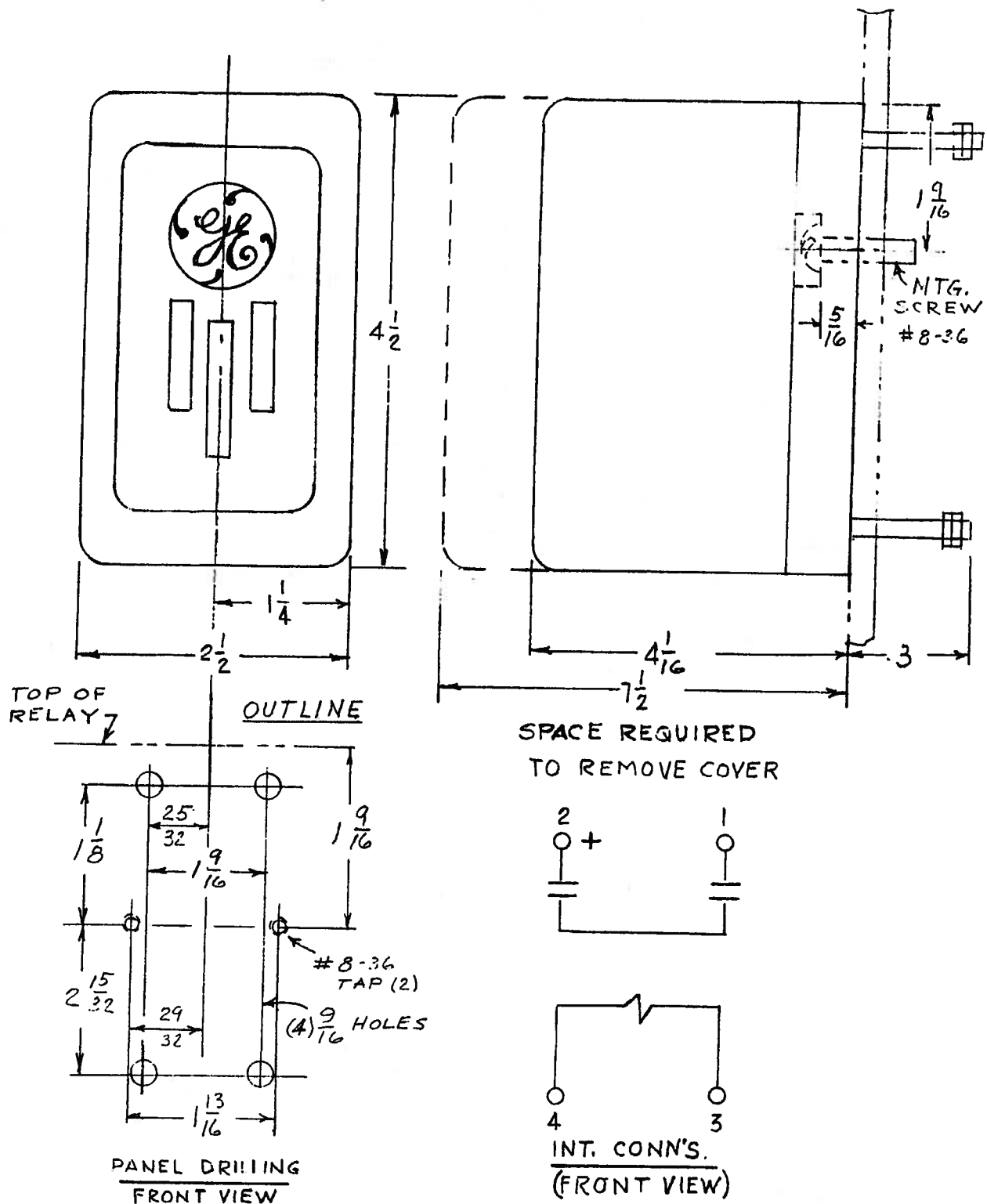


Fig. 2 (0178A7177-2) OUTLINE, PANEL DRILLING AND INTERNAL CONNECTIONS FOR TYPE HGA33B RELAY.

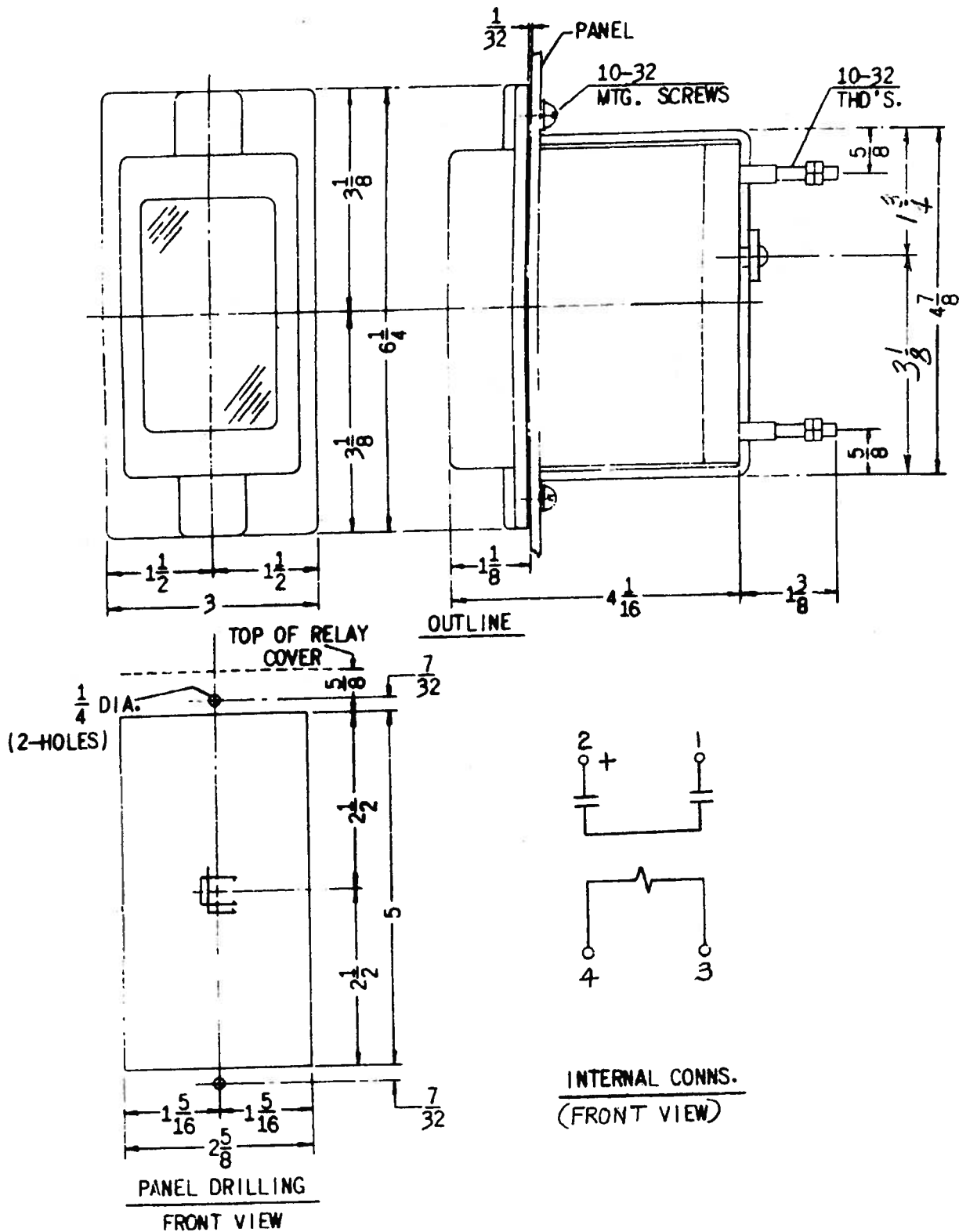


Fig. 3 (0178A9198-1) OUTLINE, PANEL DRILLING AND INTERNAL CONNECTIONS FOR TYPE HGA33C RELAY.

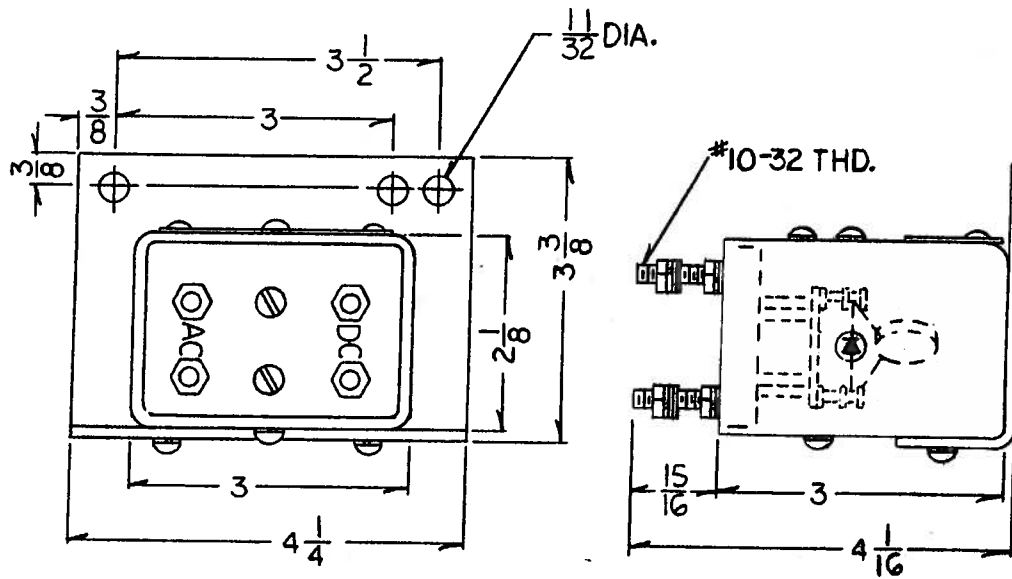
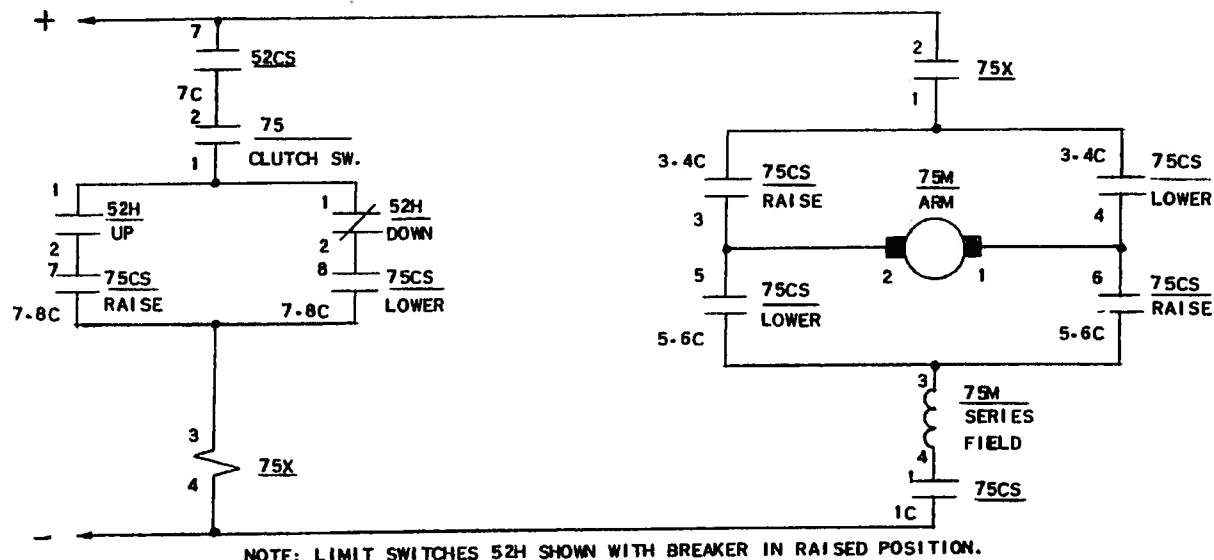


Fig. 4 (0246A6996-0) OUTLINE AND PANEL DRILLING FOR EXTERNAL RECTIFIER USED WITH AC VOLTAGE RATED HGA33 RELAYS.



CONTROL SWITCH 52CS
MODEL 16SB1B10

CONTACT		POSITIONS				
HANDLE END	NO.	CLOSE	NORM. AFTER CLOSE	NORM. AFTER TRIP	TRIP	
1 1-2C 2	1				X	
	2				X	
3 3C 4C 4	3		X	X		
	4	X				
5 5C 6C 6	5	X	X			
	6	X	X			
7 7C 8C 8	7			X	X	
	8			X	X	

SPRING RETURN TO NORMAL
X DENOTES CONTACT CLOSED

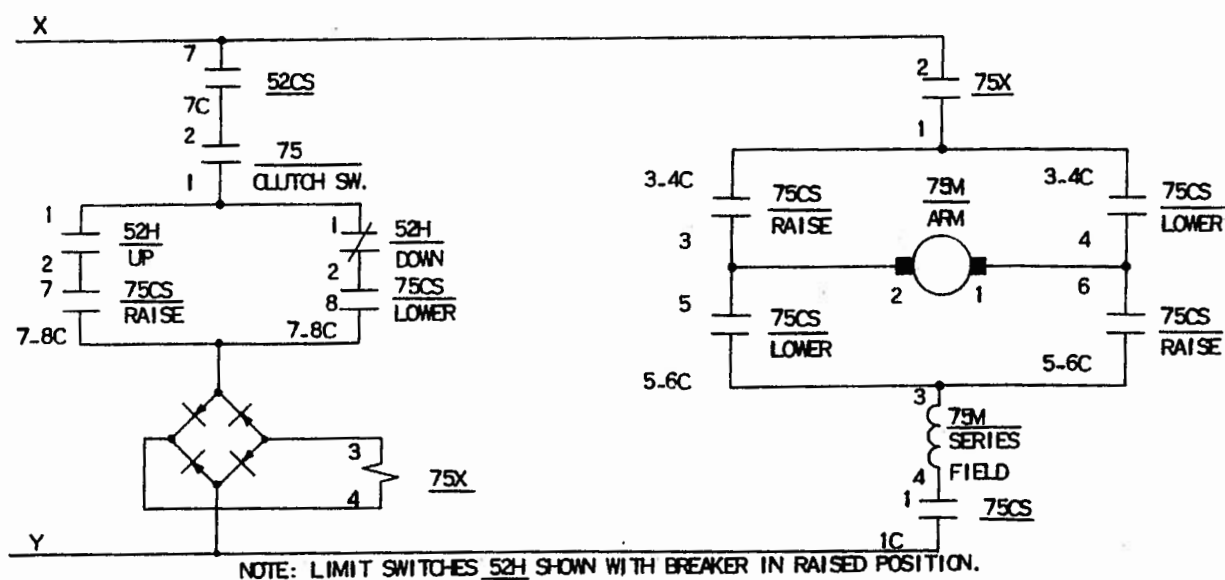
RAISE-LOWER SWITCH 75CS
MODEL 16SB1A4

CONTACT		POSITIONS			
HANDLE END	NO.	LOWER	NORM.	RAISE	
1 1C 2C 2	1	X		X	
	2		X		
3 3-4C 4	3			X	
	4	X			
5 5-6C 6	5	X			
	6			X	
7 7-8C 8	7			X	
	8	X			

X DENOTES CONTACT CLOSED.

LEGEND		
SYMBOL	DEVICE	DESCRIPTION
52CS	16SB1B10	CIRCUIT BREAKER CONTROL SWITCH
52H		MOTOR LIMIT SWITCH
75CS	16SB1A4	RAISE-LOWER SWITCH
75M	P-6517087	ELEVATING MOTOR
75X	HGA33A	CONTROL RELAY

Fig. 5 (389A708-2) TYPICAL EXTERNAL CONNECTIONS FOR TYPE HGA33 RELAY WHEN USED IN ELEVATING MECHANISM CIRCUIT.



CONTROL SWITCH 52CS
MODEL 16SB1B10

CONTACT		POSITIONS			
HANDLE END	NO	CLOSE	NORM. AFTER CLOSE	NORM. AFTER TRIP	TRIP
	1				X
	2				X
	3		X	X	
	4	X			
	5	X	X		
	6	X	X		
	7			X	X
	8			X	X

SPRING RETURN TO NORMAL
X DENOTES CONTACT CLOSED

RAISE-LOWER SWITCH 75CS
MODEL 16SB1A4

CONTACT		POSITIONS		
HANDLE END	NO	LOWER	NORM.	RAISE
	1	X		X
	2		X	
	3			X
	4	X		
	5	X		
	6			X
	7			X
	8	X		

X DENOTES CONTACT CLOSED.

LEGEND		
SYMBOL	DEVICE	DESCRIPTION
52CS	16SB1B10	CIRCUIT BREAKER CONTROL SWITCH
52H		MOTOR LIMIT SWITCH
75CS	16SB1A4	RAISE-LOWER SWITCH
75M	P-6517087	ELEVATING MOTOR
75X	HGA33A	CONTROL RELAY

Fig. 6 (402A923-0) TYPICAL EXTERNAL CONNECTIONS FOR TYPE HGA33 RELAY WHEN USED IN ELEVATING MECHANISM CIRCUIT (FOR A-C CONTROL CIRCUITS).



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