GEK-1277E
Insert Book GEH-2058

INSTRUCTIONS

AUXILIARY RELAYS

ELECTRIC RESET WITH TARGET

TYPE HEA63

(With Time Delay Control Relay Type HGA33)

GENERAL ELECTRIC

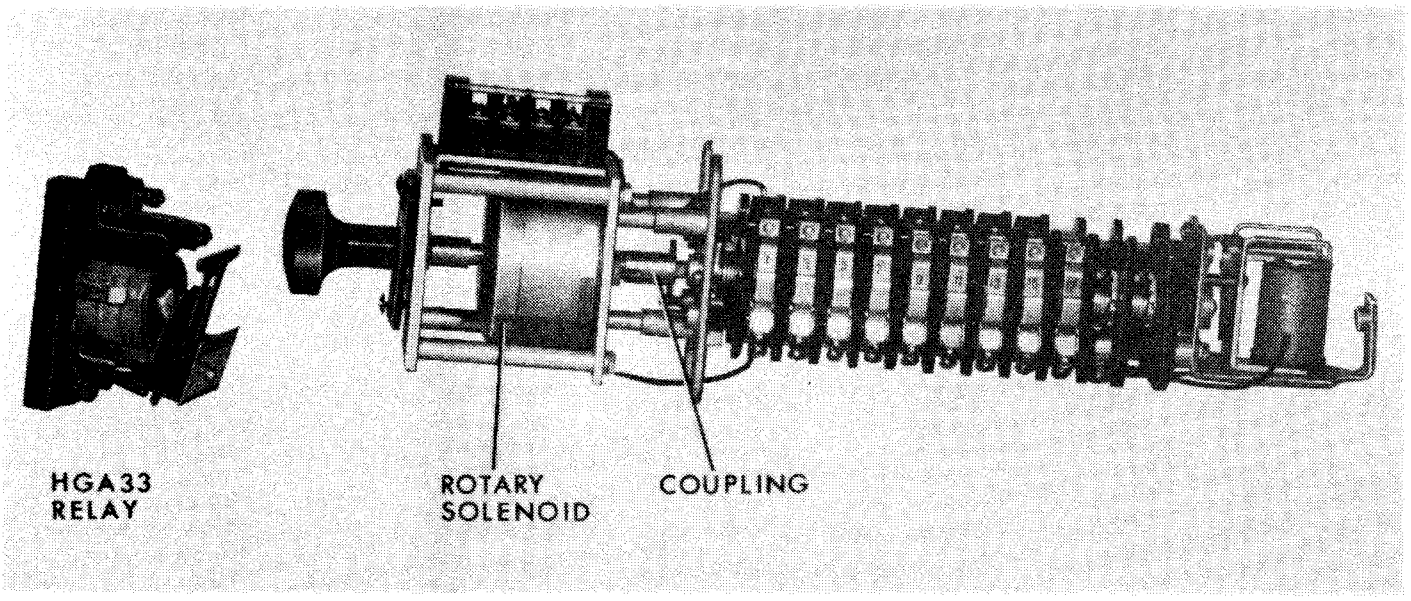


Fig. 1 (8034092) Fifteen Contact Electric Reset HEA63 Relay, in Tripped Position, Shown with Separate Auxiliary Relay HGA33. Covers Removed.

AUXILIARY RELAYS - ELECTRIC RESET

TYPE HEA63

(With Time Delay Control Relay Type HGA33)

INTRODUCTION

These instructions are a supplement to instruction book GEH-2058 which is included with this book. The combination of the two forms the instructions for auxiliary relay Type HEA63.

DESCRIPTION - HEA63

The Type HEA63 is a high speed multi-contact auxiliary relay which can be either hand or electrically reset. The relay is basically a standard Type HEA61 relay with the addition of a rotary solenoid which is used to electrically reset the relay.

Table I shows the available models and the differences between them.

TABLE I

TYPE	FIGURE	USABLE NUMBER OF CONTACTS	FRONT OR BACK CONNECTED HGA33
HEA63A	2	5	Front
HEA63B	3	9	Front
HEA63C	4	15	Front
HEA63D	2	5	Back
HEA63F	3	9	Back
HEA63G	4	15	Back

NOTE: In addition to usable contacts, each HEA63 has two contacts for use in interrupting the HEA trip coil, and one contact for use in interrupting the auxiliary HGA coil.

CONNECTIONS - HEA63

Internal connections and outline drawings of the HEA63 relay may be seen in Fig. 2 through 5.

OPERATING CHARACTERISTICS - HEA63

The operation of the relay may be understood by referring to the internal connections. When electrical resetting is desired, a contact or switch is closed, which completes the HGA33 relay (which is a part of the overall HEA63 relay) coil circuit through a contact of the HEA relay. This contact is closed in the trip position. Closure of the HGA33 contacts energizes the rotary solenoid which imparts enough rotational force to the HEA shaft through a coupling to cause the HEA to reset and latch. When the HEA resets, the contact which energized the HGA33 coils opens and de-energizes the HGA33 relay. This HGA is of the time delay dropout variety with approximately 0.25 second dropout time. The time delay insures that the HEA has fully latched. The contacts of the HGA33 then interrupt the rotary solenoid operating current. The HGA33 contacts have a high interrupting rating, which is required because the rotary solenoid current is of a relatively high magnitude.

Rating:	Rotary Solenoid Coil Current
125	5.5 amperes
250	2.8 amperes
48	13.2 amperes
24	26.8 amperes

The total reset time from energizing the HGA33 control relay until HEA contacts are closed and latched is 150 milliseconds plus or minus ten percent.

DESCRIPTION - HGA33

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

TABLE II

RELAY	MOUNTING	CONNECTIONS	OUTLINE, PANEL DRILLING AND INTERNAL CONNECTIONS
HGA33A	Front	Front	Fig. 6
HGA33B	Front	Back	Fig. 7

RATINGS

These relays are available with intermittent coil ratings of five minutes at 24, 48, 125 and 250 volts DC.

CHARACTERISTICS - HGA33

The relays have been adjusted at the factory to operate at 60 percent of rating (cold) for DC relays.

As shipped from the factory, the relays have a time delay dropout of approximately 0.25 second.

BURDENS

The DC rated relays have a burden of approximately 45 watts.

CONSTRUCTION - HGA33

Type HGA33 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.

On DC 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.

CONNECTIONS - HGA33

The internal connection diagrams are shown in Fig. 6 and 7. 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 blow-out effect.

ADJUSTMENTS - HGA33

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 tailpiece. 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 0.25 second. This time delay feature results from the damping 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.

RECEIVING, HANDLING AND STORAGE

These relays, when not included as part of a control panel will be shipped in cartons designed to protect them against damage. Immediately upon receipt of the relays, examine them 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 relays to assure 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 relays. 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 relay are given in Fig. 5, 6 and 7.

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 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.

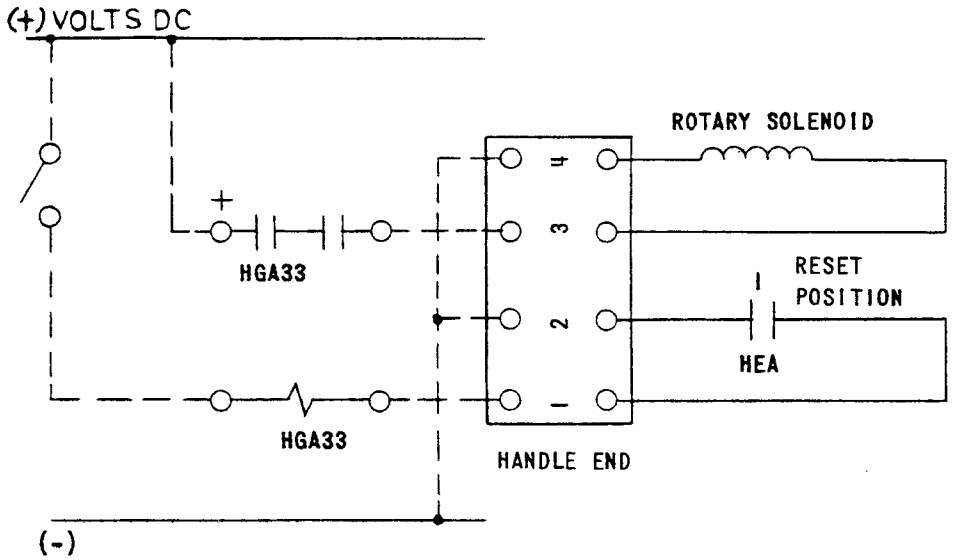
Fine silver contacts should not be cleaned with knives, files, or abrasive paper or cloth. Knives or files may leave scratches which increase arcing and deterioration of the contacts. Abrasive paper or cloth may leave minute particles of insulating abrasive material in the contacts and thus prevent closing.

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

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.

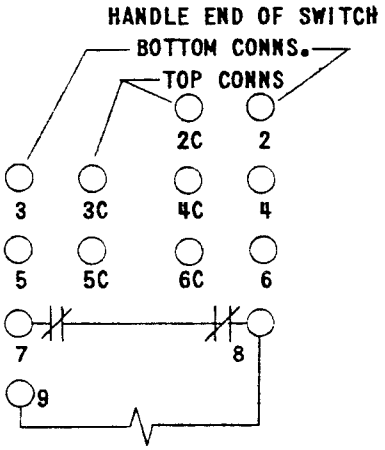
When ordering renewal parts, address the nearest Sales Office of the General Electric Company, specify quantity required, name of the part wanted, and give complete nameplate data, including the serial number. If possible give the General Electric Company requisition number on which the relay was furnished.



EXTERNAL INTERNAL

CYCLES	RELAY FORM NUMERAL DC	DC	DC	DC	SPECIAL						CONTACT ARRANGEMENT RESET	POSITION
VOLTS	250	125	48	24	✳						OPEN	CLOSED
MODEL 12HEA63A	211	221	331	241	231						NONE	2 TO 6
	212	222	332	242	232						2	3 TO 6
	213	223	333	243	233						2 TO 3	4 TO 6
	214	224	334	244	234						2 TO 4	5 TO 6
	215	225	335	245	235						2 TO 5	6
	216	226	336	246	236						2 TO 6	NONE

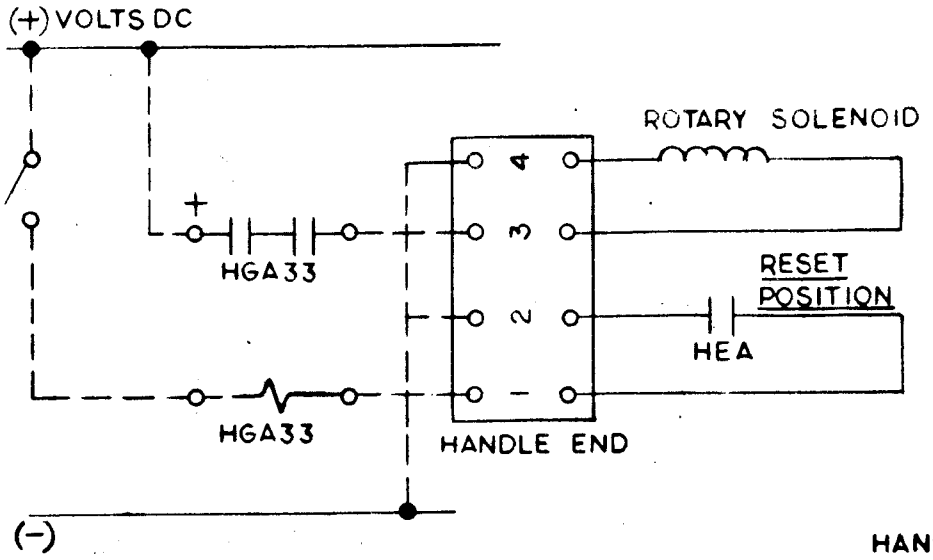
✳ SPECIAL 125V DC. WITH 9 OHM COIL



HEA INTERNAL CONNS

NOTE - CONTACTS 7 & 8 SHOWN IN RESET POSITION

Fig. 2 (0165A7747-5) Internal Connections for Relay Type HEA63A and D

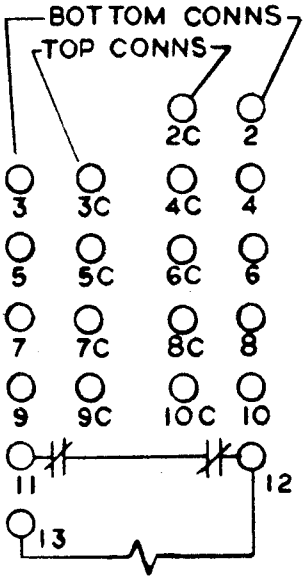


EXTERNAL

	RELAY FORM NUMERAL									INTERNAL CONTACT ARRANGEMENT	
CYCLE	D C	D C	D C	D C	SPECIAL	D C				RESET POSITION	
VOLTS	250	125	48	24	*	220				OPEN	CLOSED
MODEL 12HEA63B											
	212	232	252	272	262	282				2	3 TO 10
	213	233	253	273	263	283				2 TO 3	4 TO 10
	214	234	254	274	264	284				2 TO 4	5 TO 10
	215	235	255	275	265	285				2 TO 5	6 TO 10
	216	236	256	276	266	286				2 TO 6	7 TO 10
	217	237	257	277	267	287				2 TO 7	8 TO 10
	218	238	258	278	268	288				2 TO 8	9 TO 10
	219	239	259	279	269	289				2 TO 9	10
	220	240	260	280	270	290				2 TO 10	NONE

* SPECIAL 125V DC WITH 9 OHM COIL

HANDLE END OF SWITCH

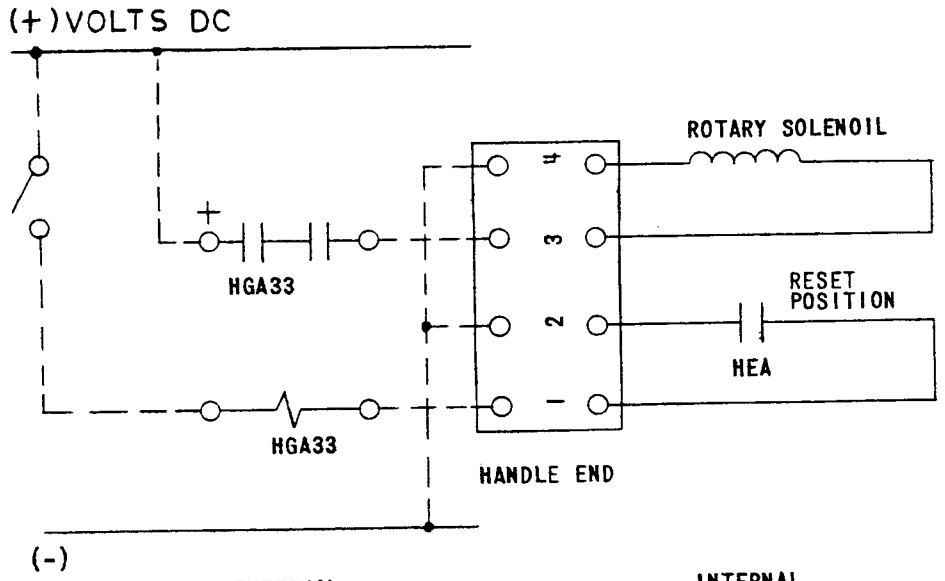


HEA INTERNAL CONNS

NOTE - CONTACTS 11 AND 12 SHOWN IN RESET POSITION

*Fig. 3 (0165A7748-8) Internal Connections for Relay Type HEA63B and F

*Indicates Revision

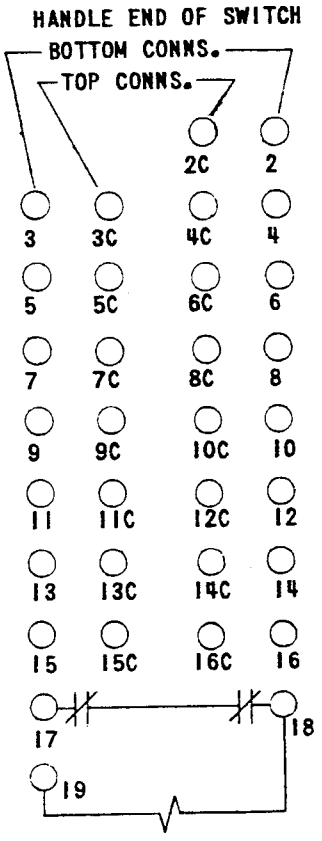


EXTERNAL

	RELAY FORM NUMERAL												CONTACT ARRANGEMENT	
CYCLES	DC	DC	DC	DC	SPECIAL	DC							RESET OPEN	POSITION CLOSED
VOLTS	250	125	48	24	*	220								
MODEL 12HEA63C	218	238	278	318	258	338							2 TO 8	9 TO 16
	219	239	279	319	259	339							2 TO 9	10 TO 16
	220	240	280	320	260	340							2 TO 10	11 TO 16
	221	241	281	321	261	341							2 TO 11	12 TO 16
	222	242	282	322	262	342							2 TO 12	13 TO 16
	223	243	283	323	263	343							2 TO 13	14 TO 16
	224	244	284	324	264	344							2 TO 14	15 TO 16
	225	245	285	325	265	345							2 TO 15	16
	226	246	286	326	266	346							2 TO 16	NONE

* SPECIAL 125V DC WITH 9 OHM COIL

INTERNAL

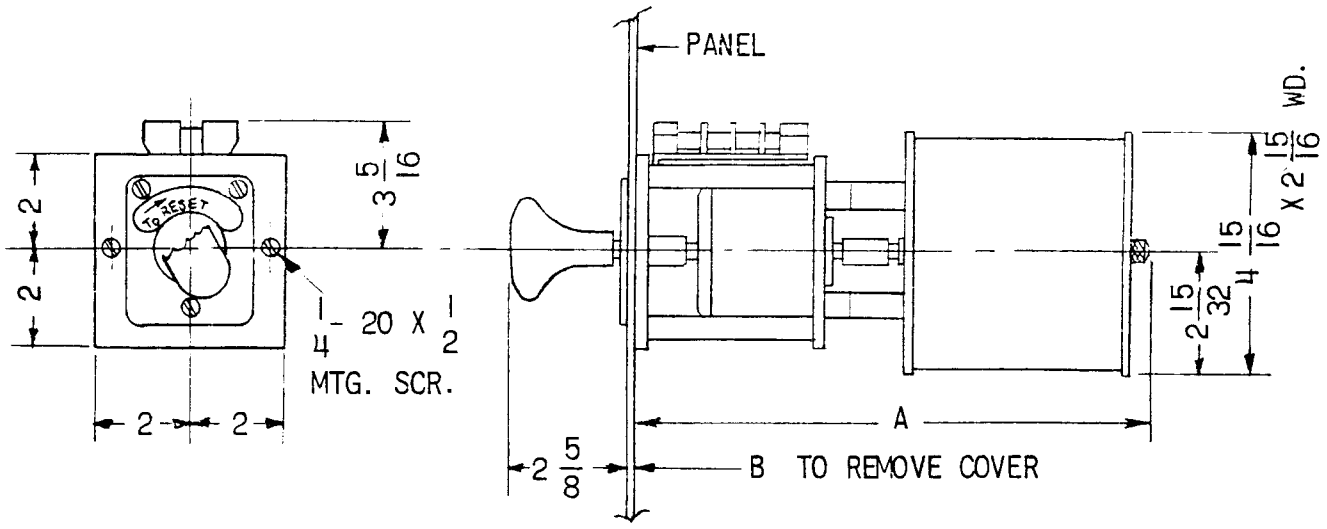


HEA INTERNAL CONNS.

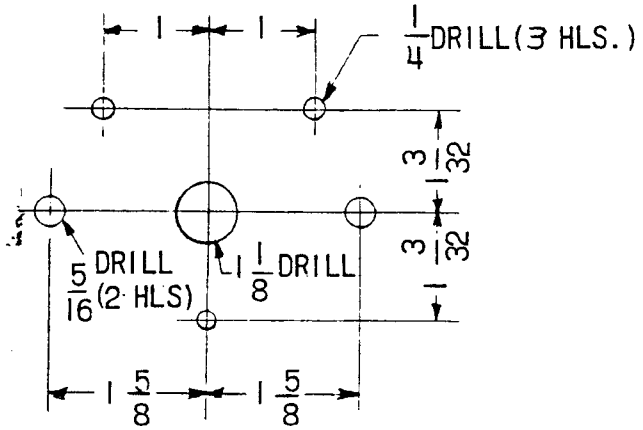
NOTE-CONTACTS 17 & 18 SHOWN IN RESET POSITION.

* Fig. 4 (0165A7749 [7]) Internal Connections for Relay Type HEA63C and G

* Revised since last issue



OUTLINE



PANEL DRILLING
(FRONT VIEW)

MODEL	A	B
12HEA63A, D	16-3/16	25-7/8
12HEA63B, F	17-11/16	28-13/16
12HEA63C, G	19-7/8	33-1/2
12HEA63K	19-7/8	33-1/2
0257A1321	17-11/16	28-13/16
12HEA99AN	19-7/8	33-1/2

* Fig. 5 (0165A9276 [6]) Outline and Panel Drilling DimensionsFor Relay Type HEA63

* Revised since last issue

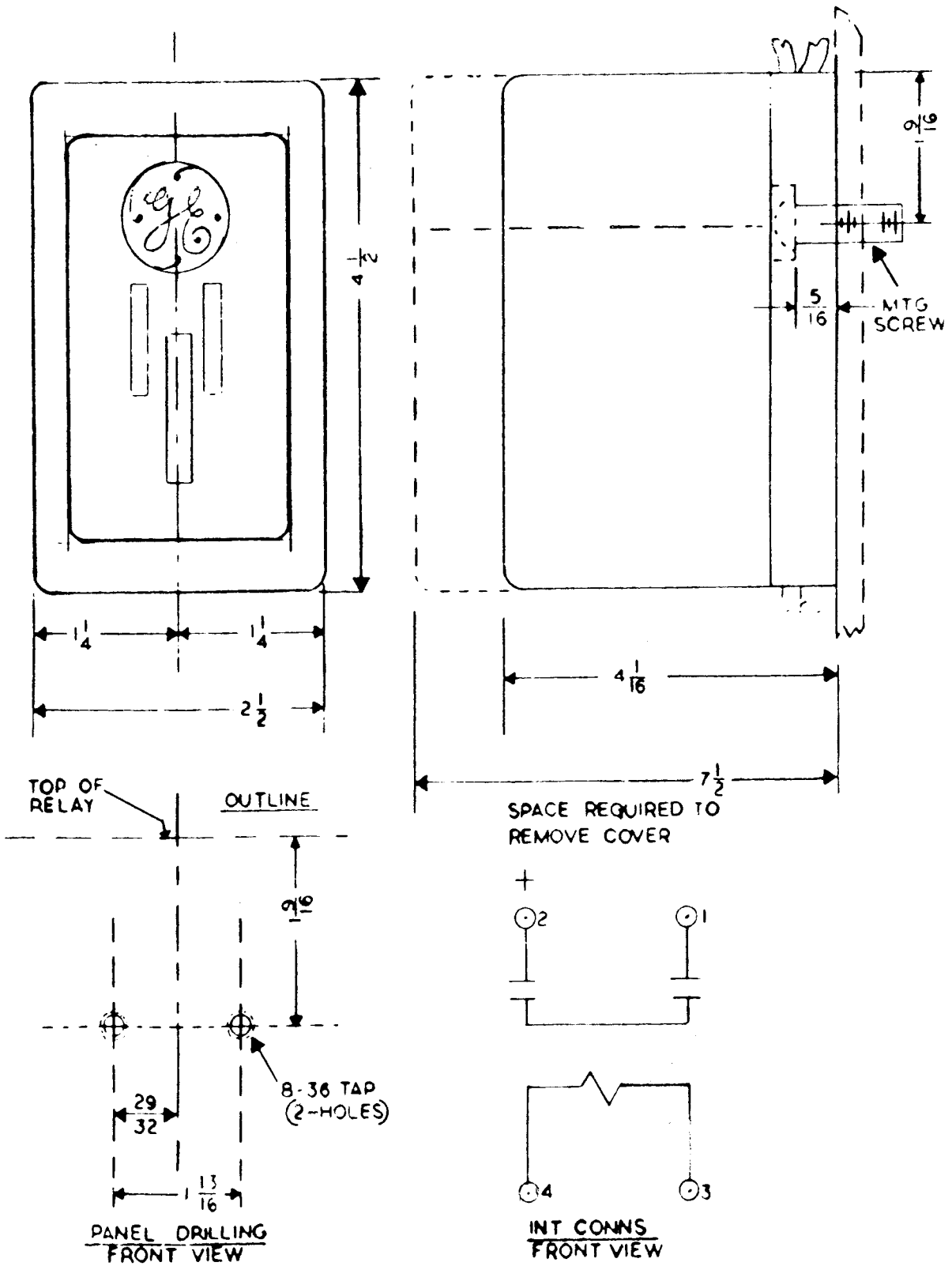


*Fig. 6 (389707-3) Outline, Panel Drilling Dimensions and Internal Connection Diagram for Relay Type HGA33A

*Indicates Revision

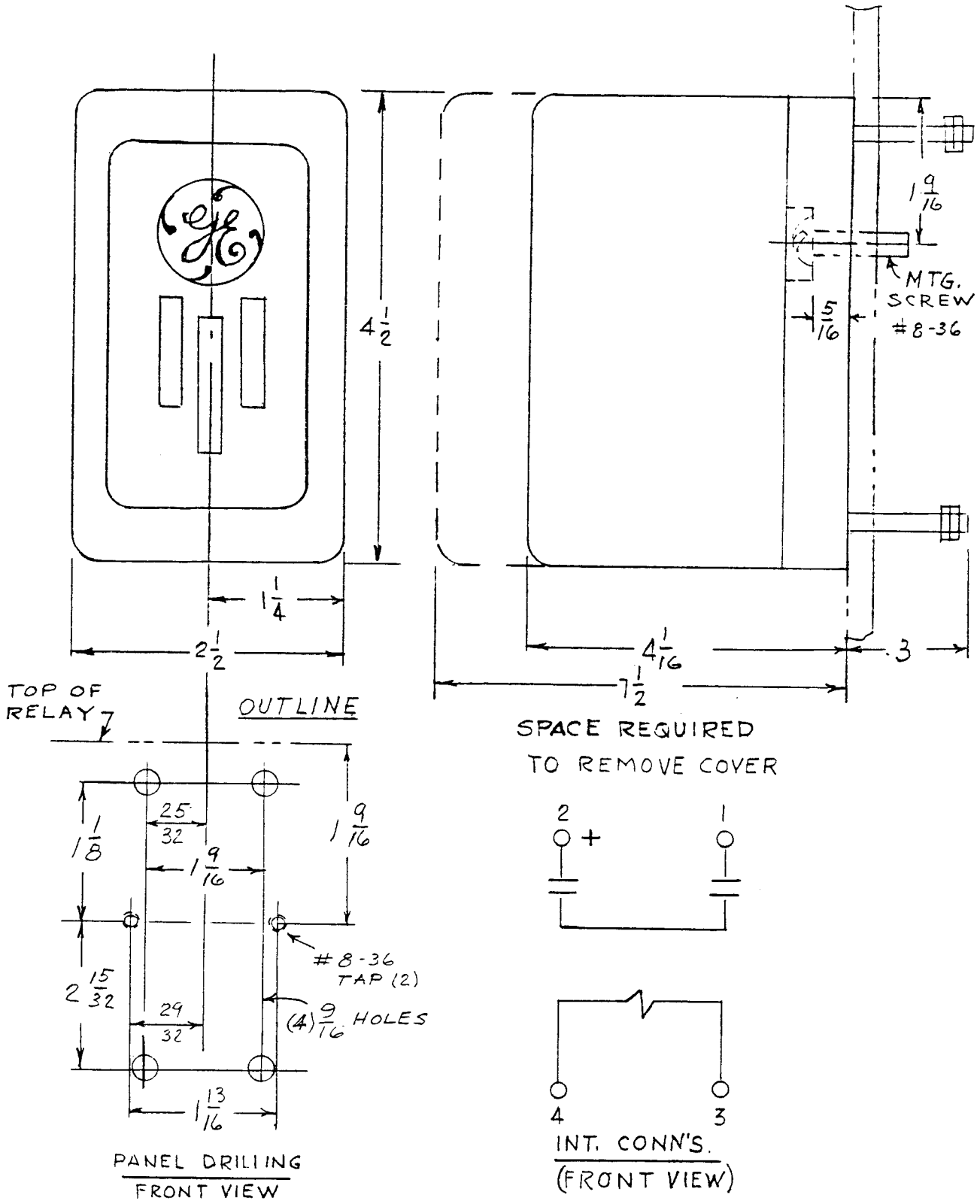


Fig. 7 (0178A7177-2) Outline, Panel Drilling Dimensions and Internal Connection Diagram for Relay Type HGA33B.

Meter and Control
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