

INSTRUCTIONS

GEI-10190G
SUPERSEDES GEI-10190F

D-C AUXILIARY RELAYS

TYPE HGA

DESCRIPTION

INTRODUCTION

The Type HGA relays included in these instructions are double-pole, hinge-type relays suitable for application wherever a low-energy device with time-delay dropout is required. Table I lists the differences between the relays covered by these instructions.

CHARACTERISTICS

* TABLE I

RELAY	Type of Connection	Contact Arrangement		+Approx. Time Delay Cycles	
		N. O.	N. C.	P. U.	D. O.
HGA17A	BACK	2	1	+	15
HGA17B	FRONT	2	1	+	15
HGA17C	FRONT	2	1	+	15
HGA17D	FRONT	2	2	3.5	+
HGA17E	FRONT	0	2	3	15
HGA17F	BACK	0	2	3	15
HGA17H	BACK	2	2	3.5	+

+ At rated voltage and on a 60 cycle basis
+ No factory calibration made

All of these relays have a cover with the exception of the HGA17B relay.

RATINGS

The relays are available for continuous operation at all standard DC voltage ratings up to 250 volts. They can also be supplied with a rectifier for use in AC circuits at 115 and 230 volts.

* Denotes change since superseded issue.

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 listed in Table II.

TABLE II

VOLTS	Interrupt (single break) (Amps)	
	HGA17A, HGA17B HGA17C	HGA17D, HGA17E HGA17F, HGA17H
115 AC	20	30
230 AC	10	20
24 DC	3	20
48 DC	1.5	10
125 DC	0.6	3
250 DC	0.25	0.75

BURDENS

The burdens of the coils for the Type HGA relays are listed in Table III.

TABLE III

Coil Ratings (Volts)	Coil Resistance (Ohms)	Cold Watts	+ Volt Amperes
250 DC	8700	7.2	—
125 DC	2200	7.1	—
48 DC	338	6.8	—
32 DC	146	7.0	—
24 DC	86	6.7	—
12 DC	21.5	6.7	—
115 AC	—	—	11
230 AC	—	—	22

+ Includes burden of rectifier and resistor when used.

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.

LOW VOLTAGE SWITCHGEAR DEPARTMENT

GENERAL  ELECTRIC

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CONSTRUCTION

The relays covered by these instructions are of the same basic construction. The contact circuits are closed or opened by moving contact arms, controlled by a hinge-type armature, which in turn is actuated by an 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 fixed-contact positions. The arma-

ture gap and back-contact wipe can be controlled by the screws and locknuts located on the moving-contact arms. This latter feature makes it possible to reduce the pick-up energy to a relatively low value. Because of this, it is necessary to back off the front left stationary-contact screw to insure sufficient contact pressure on the remaining normally-closed contact. The coil is wound on a copper spool which also acts as a damping ring and provides a time delay on pickup and dropout.

INSTALLATION

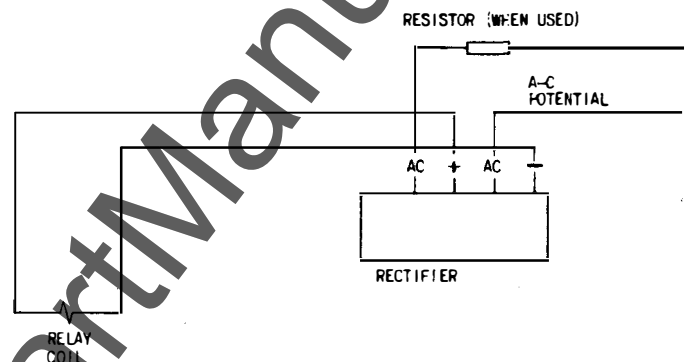
LOCATION AND MOUNTING

The relays should be installed in a location that is clean, dry, and free from excessive vibration. It should be mounted on a vertical surface by means of the steel mounting strap on the back of the molded compound base. Care should be taken to allow sufficient clearance in front of the relay to remove the cover, if one is included.

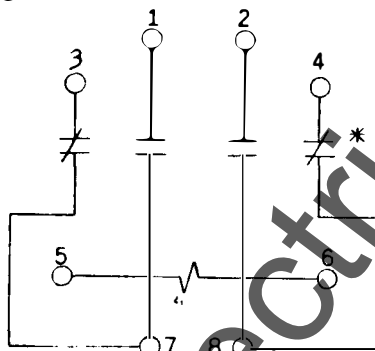
- * The outline and panel drilling diagrams are shown in Figs. 4 to 8. The outlines of the external resistor and external rectifiers used with AC relays are shown in Figs. 9, 10 and 11.

CONNECTIONS

The internal connection diagrams are shown in Figs. 2 and 3. The external connection diagram showing the use of a rectifier with AC relays is shown in Fig. 1.



* Fig. 1 External Wiring Diagram For AC Operated HGA17 Relays



- * 4 IS NOT USED UNLESS PICKUP IS RAISED TO 60% (DC) OR 80% (AC) OF RATING

Fig. 2 Internal Connection Diagram For HGA17A, HGA17B, HGA17C, HGA17D, And HGA17H Relays (Back View)

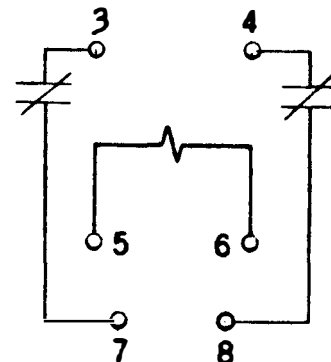


Fig. 3 Internal Connection Diagram For HGA17E And HGA17F Relays (Back View)

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 pick-up and drop-out values and time settings. These settings should not require readjustment, but if changes are necessary the points discussed under ADJUSTMENTS AND INSPECTION should be observed.

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.

ADJUSTMENTS AND INSPECTION

Relay types HGA17A, HGA17B, and HGA17C have been adjusted at the factory to pick up at 30 per cent of rating for DC relays and 40 per cent of rating for AC relays. Relay types HGA17D, HGA17E, HGA17F, and HGA17H have been adjusted to pick up at approximately 60 per cent of rating for DC relays and 80 per cent of rating for AC relays. These values may be affected by the adjustment of time delay but will be approximately equal to the values given above.

The relays adjusted for the 60 per cent pickup are set so as to produce contact pressure and wipe on two normally-closed contacts. As shipped from the factory, all relays having low (30 per cent) pickup are provided with one normally-closed contact circuit. 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 used on these relays is not great enough to give sufficient pressure on two normally-closed

contacts. The low control-spring tension is necessary to facilitate the adjustment of time delay on dropout, as described in the following paragraphs.

As shipped from the factory, all relays have been adjusted for the approximate time delay as listed in Table I. This time delay feature results from the damping effect of the copper spool. It may be adjusted over a small range by regulating the tension in the control spring. This of course affects the pick-up adjustment.

The minimum recommended contact wipe is one turn of the screw in the moving contact arm. To set the wipe, close the armature by hand and adjust the screws so that they are just touching the contact carrier. Then back off each screw one full turn, and lock in place with the locknut. The minimum recommended contact gap is 3-1/2 turns of the fixed contact screw. To adjust, turn both screws in until the normally-open contacts just make. Then back off each screw 3-1/2 turns and lock in position with the locknut. Lower contact gaps are permissible in special applications but the interrupting capacities listed in TABLE II will not apply. These ratings are for the minimum recommended gap settings previously mentioned.

The pick-up value is adjusted by means of the control spring located at the lower end of the armature. The control spring should be in the front hole of the spring post for relays adjusted for 30-40 per cent pickup and in the rear hole for relays adjusted for 60-80 per cent pickup.

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 No. GEF-2623.

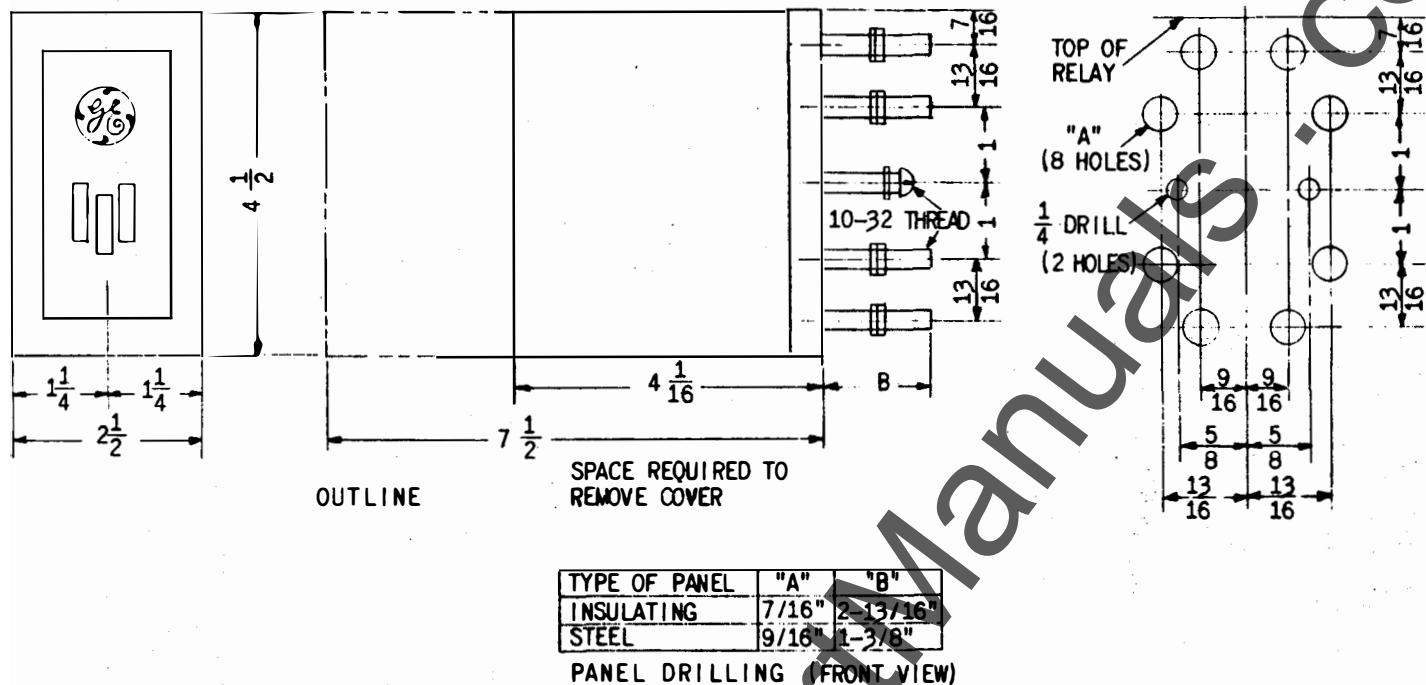


Fig. 4 Outline And Panel Drilling For Surface Mounting Of HGA17A And HGA17H Relays

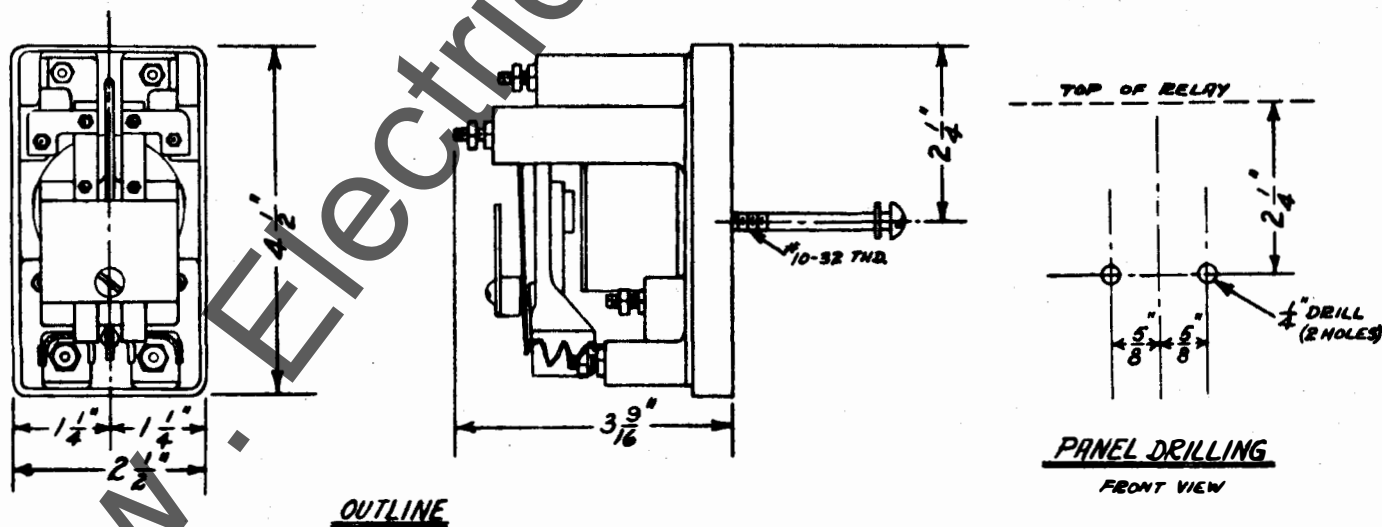
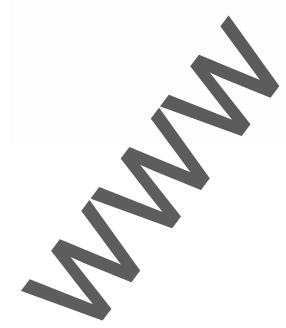


Fig. 5 Outline And Panel Drilling For Surface Mounting Of HGA17B Relay



Fig. 7 (6400409-2)



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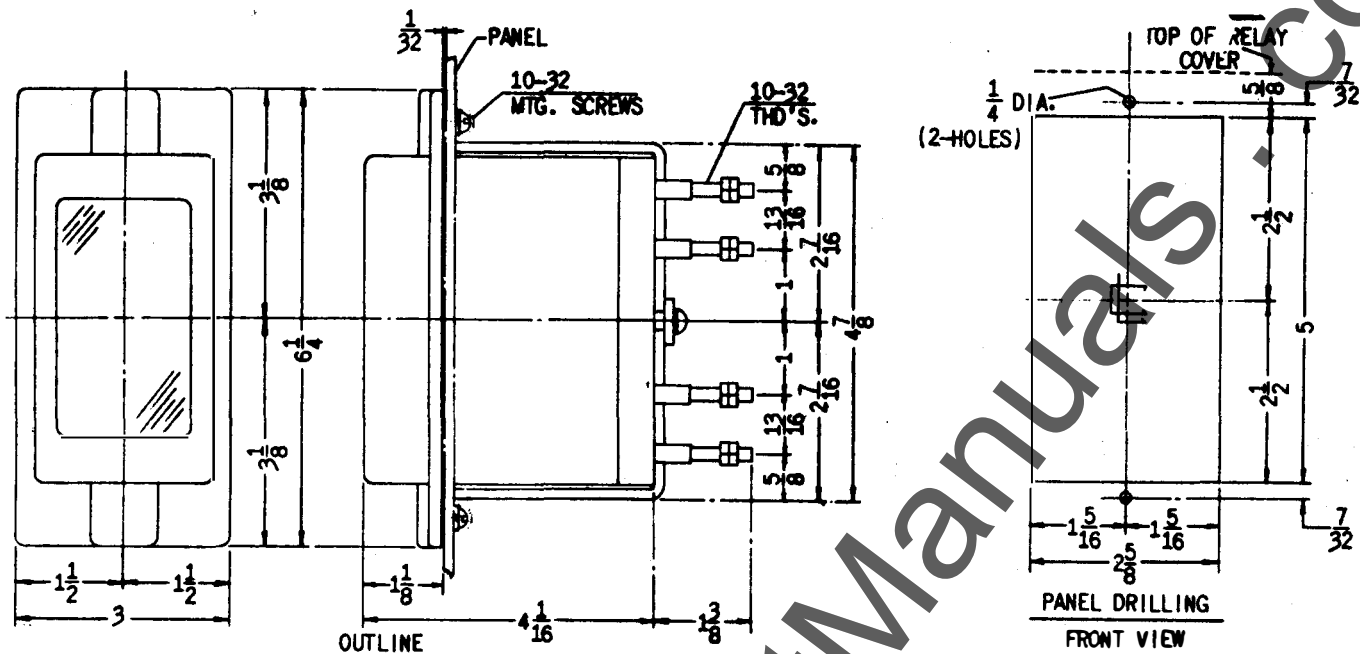


Fig. 8 (1048559-1)

* Fig. 8 Outline And Panel Drilling For Semi-Flush Mounting Of HGA17A, HGA17F And HGA17H Relays

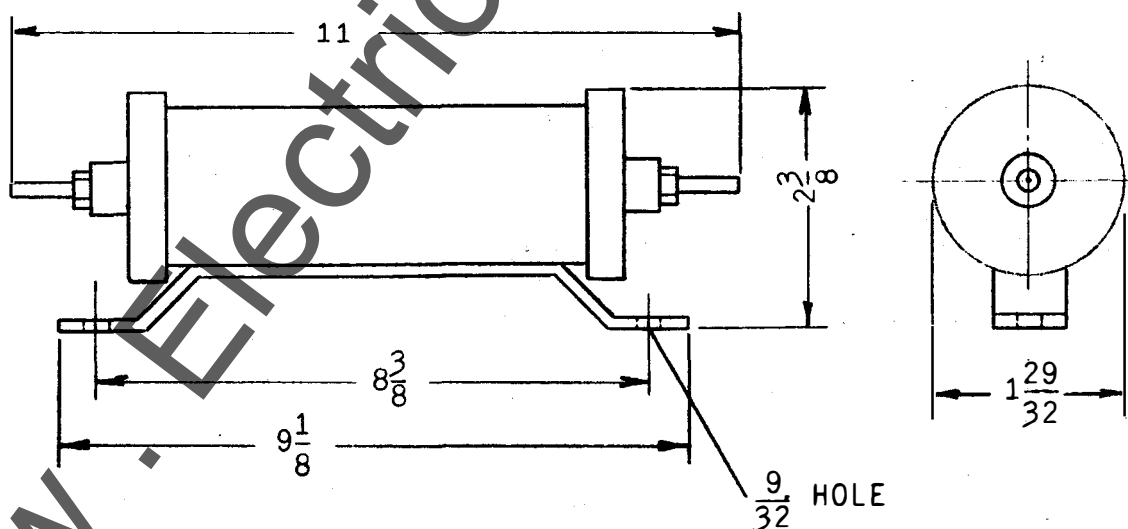
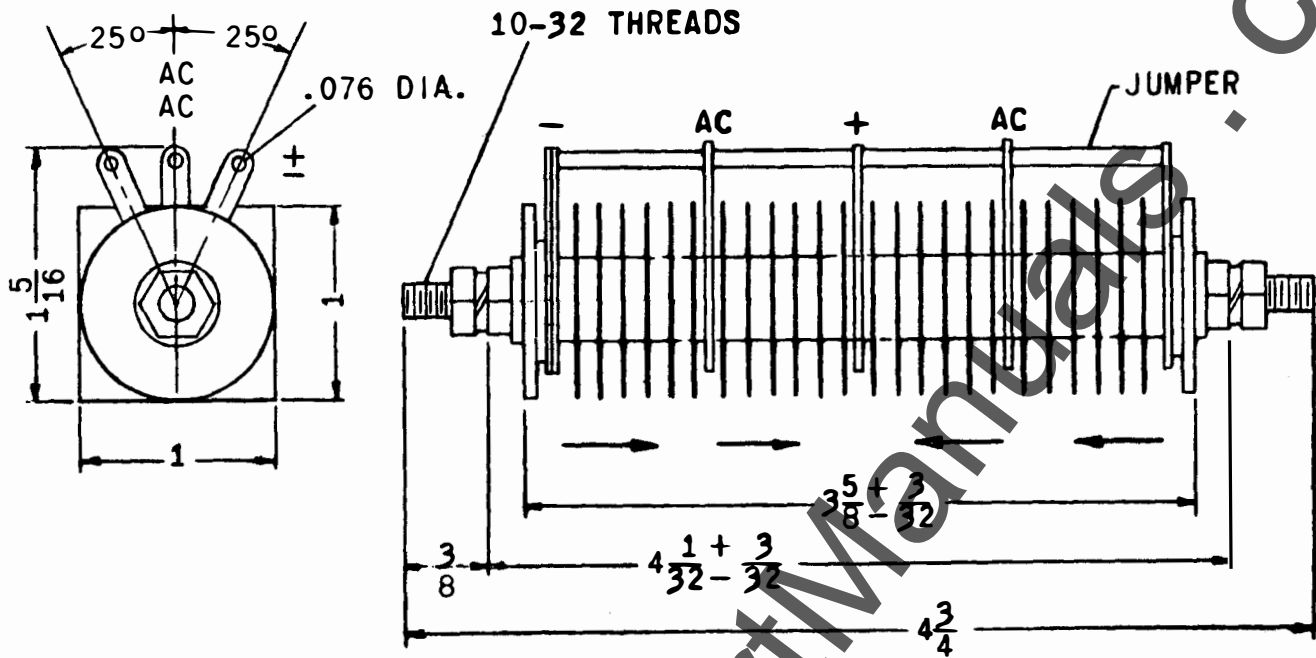
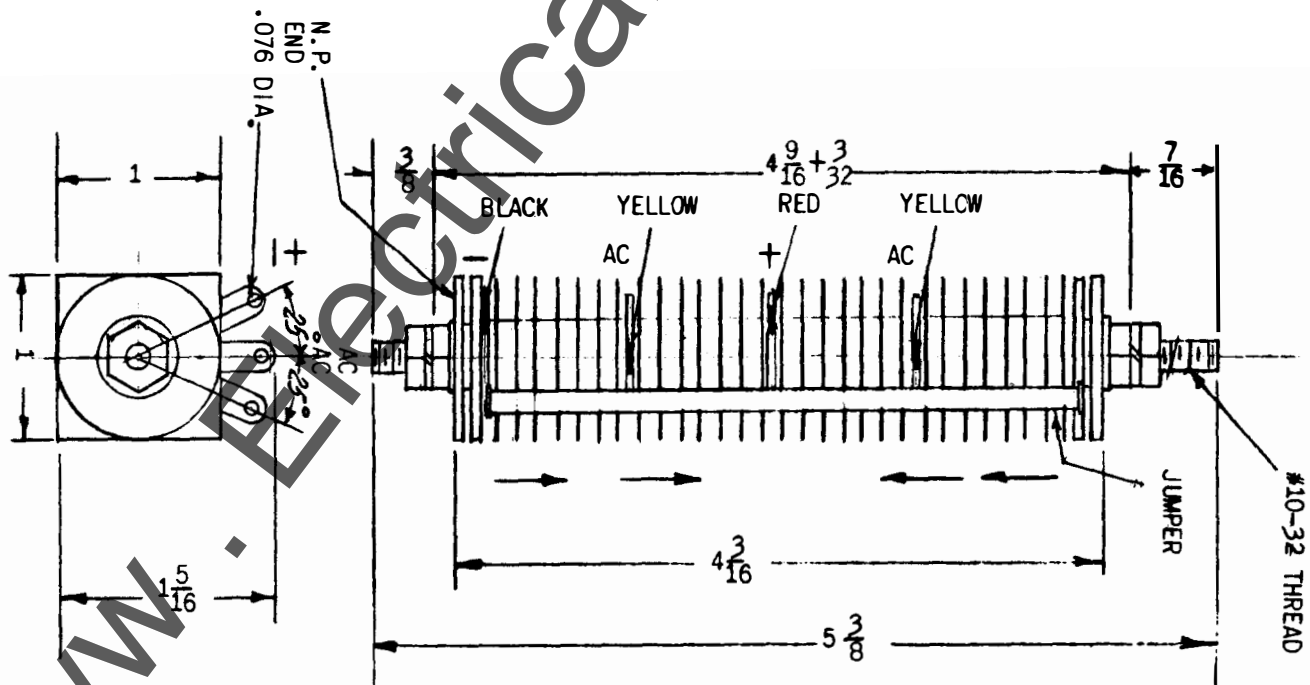


Fig. 9 (389A752-0)

* Fig. 9 Outline Of External Resistor Used With 230 Volt AC HGA17 Relays



* Fig. 10 Outline Of External Rectifier Used With 115 Volt AC HGA17 Relays



* Fig. 11 Outline Of External Rectifier Used With 230 Volt AC HGA17 Relays

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