**INSTRUCTIONS**

GEI-33833A
SUPERSEDES GEI-33833

# D-C AUXILIARY RELAY

## TYPE HGA17J

GENERAL ELECTRIC

# D-C AUXILIARY RELAY

## TYPE HGA17J

## INTRODUCTION

### APPLICATION

The Type HGA17J relay is a hinge-type auxiliary relay suitable for application wherever a low energy device with time delay dropout is required.

### RATINGS

The relay is available for continuous operation at all standard d-c voltages up to 250 volts.

The contacts will make and carry 12 amperes continuously, or 30 amperes for one minute and will interrupt as shown in Table I.

The interruption ratings given in Table I are for non-inductive loads with contacts set as recommended under ADJUSTMENTS AND INSPECTION for minimum contact gap.

TABLE I

| VOLTS | INTERRUPT (SINGLE BREAK) |
|---|---|
| 115 a-c | 20 Amps |
| 230 a-c | 10 Amps |
| 125 d-c | 0.6 Amps |
| 250 d-c | 0.25 Amps |

### BURDENS

TABLE II

| COIL RATING D-C VOLTS | COIL RESISTANCE OHMS | WATTS |
|---|---|---|
| 250 | 8700 | 7.2 |
| 125 | 2200 | 7.1 |
| 48 | 338 | 6.8 |
| 32 | 146 | 7.0 |
| 24 | 86 | 6.7 |
| 12 | 21.5 | 6.7 |

## 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.

## DESCRIPTION

The Type HGA17J relay consists of a hinge-type auxiliary unit mounted in a single unit, single end drawout case. 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 armature gap and back-contact wipe can be controlled by the screws and the 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 back 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 dropout when the coil is de-energized.

### CASE

The case is suitable for surface or semiflush panel mounting and an assortment of hardware is provided for either method. The cover attaches to the case and also carries the reset mechanism when one is required. Each cover screw has provision for a sealing wire.

The case has studs or screw connections at the bottom for external connections. The electrical connections between the relay unit and the case studs are made through spring backed contact fingers mounted in stationary molded inner and outer blocks between which nests a removable connecting plug which completes the circuits. The outer block, attached to the case, has the studs for the external connections, and the inner block has the terminals for the internal connections.

The relay mechanism is mounted in a steel framework called the cradle

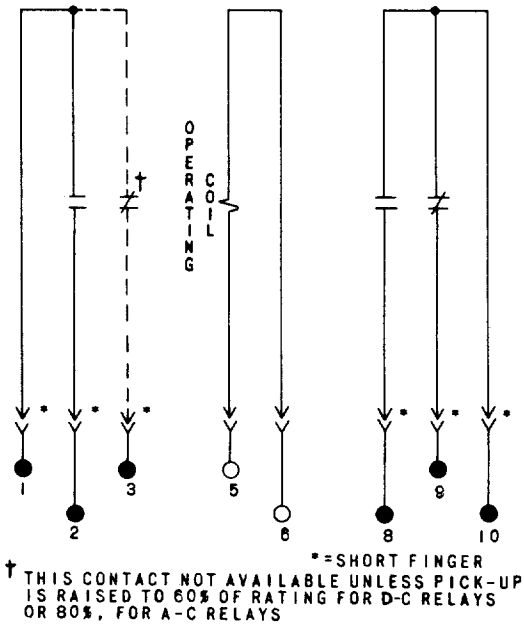


Fig. 1 (K-6507998)

Fig. 1 Internal Connection Diagram for Type HGA17J Relay.

and is a complete unit with all leads terminating at the inner block. This cradle is held firmly in the case with a latch at the top and the bottom and by a guide pin at the back of the case. The case and cradle are so constructed that the relay cannot be inserted in the case upside down. The connecting plug, besides making the electrical connections between the blocks of the cradle and case, also locks the latch in place. The cover, which is fastened to the case by thumbscrews, holds the connecting plug in place.

To draw out the relay unit, the cover is removed and the plug is drawn out. Shorting bars are provided in the case to short the current transformer circuits. The latches are then released, and the relay unit can be easily drawn out.

A separate testing plug can be inserted in place of the connecting plug to test the relay in place on the panel either from its own source of current and voltage, or from other sources. Or, the relay unit can be drawn out and replaced by another which has been tested in the laboratory.

## INSTALLATION

### LOCATION

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

D-C Auxiliary Relay Type HGA17J

## MOUNTING

The relay should be mounted on a vertical surface. The outline and panel drilling diagram is shown in Fig. 2.

## CONNECTIONS

The internal connection diagram is shown in Fig. 1.

One of the mounting studs or screws should be permanently grounded by a conductor not less than No. 12 B & S gage copper wire or its equivalent.

## INSPECTION

At the time of installation, the relay should be inspected for tarnished contacts, loose screws or other imperfections. If any trouble is found, it should be corrected in the manner described under MAINTENANCE.

# MAINTENANCE

## ADJUSTMENTS AND INSPECTION

The Type HGA17J relay has been adjusted at the factory to pick up at 30 per cent of rating. The pick-up value may be affected by the adjustment of time delay but will be approximately equal to the values shown.

As shipped from the factory, the relay is 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 the relay 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 below.

As shipped from the factory, the relay has been adjusted for a time delay on dropout of approximately 0.25 seconds. 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 pickup 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 them each off one full turn and lock them in place with the locknut. The minimum recommended contact gap is 3-3/4 turns of the fixed contact screw. To adjust, turn both screws in until there is zero gap on the "a", or normally open contacts. Then back each screw out 3-3/4 turns and lock in position with the locknut. Lower contact gaps are permissible in special applications provided contact interrupting capacities are prorated according to the table under contact ratings. These ratings are for minimum recommended gap settings.

The pick-up value is adjusted by means of the control spring at the lower

tail-end of the armature. It should be in the upper hole of the spring post for relays adjusted for 30-40 per cent pick-up and in the lower hole for relays adjusted for 60-80 per cent pickup.

## PERIODIC TESTING

Auxiliary relay equipment should be checked for operation at regular intervals, preferable at the same time that the associated protective devices are inspected. Relays should be checked for pick-up values, and drop-out values and time settings when specified. These settings should not require readjustment, but if changes are necessary the points discussed under ADJUSTMENT 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, ressembling 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 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 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.

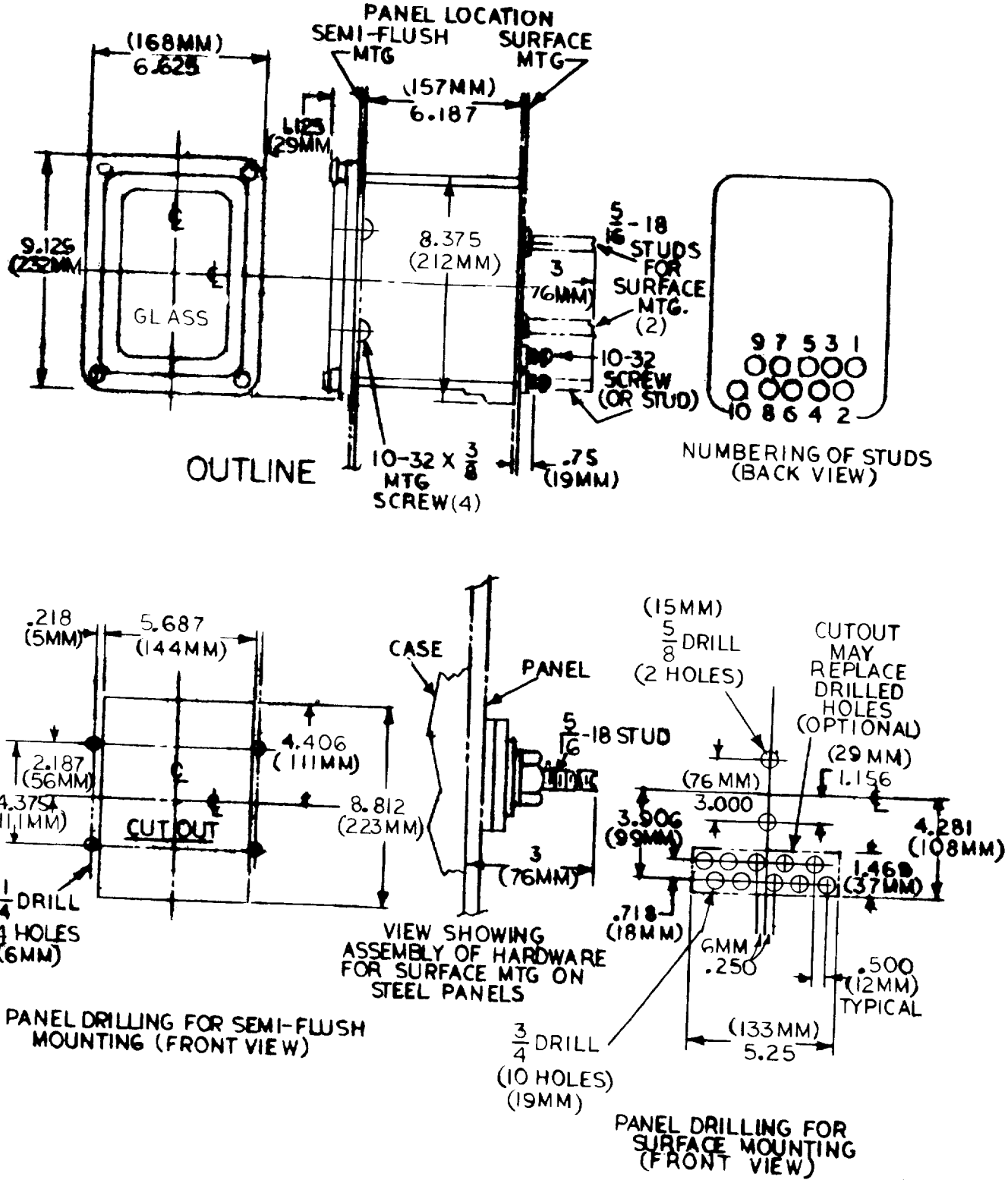


Fig. 2 Outline & Panel Drilling Dimensions for Type HGA17J Relay.