Switchgear

INSTANTANEOUS AUXILIARY RELAYS

TYPE HGA14AA AND HGA14AB

INTRODUCTION

The relays Type HGA14AA and HGA14AB relays covered by these instructions consist of two hinge-type auxiliary units assembled in a single-unit double-end case of drawout construction. They are suitable for application wherever a high-speed, low-energy relay is required.

RATINGS

The Type HGA14AA and HGA14AB relays are available with coil ratings for standard voltages up to 230 volts at 25, 50, or 60 cycles a-c, and up to 250 volts d-c.

The contacts will make and carry 12 amperes continuously or 30 amperes for 1 minute, and will interrupt the currents listed in the following table:

Volts	*Interrupt Inductive	(Single Break) Non-Inductive
115 a-c	15	20
230 a-c	7	10
125 d-c	0.2	0.6
250 d-c	0.1	0.25

* These interruption values are for the low pick-up adjustment. If pick-up adjustment is raised to 60 percent of rating for d-c relays or 80 percent for a-c with a corresponding increase in contact gaps, as described under ADJUSTMENTS, the d-c interruption rating will be approximately three times that shown, and the a-c rating will increase by approximately 50 percent.

BURDENS

D-C COILS			A-C COILS			
Coil Rating Volts	R Ohms	Watts	Coil V.	Rating Cyc.	Z Ohms	Volt-Amps. **
250	12,900	4.84				
125	3,250	4.82				
48	500	4.61	230	60	3,800	13.9
32	205	4.97	115	60	1,000	13.2
24	130	4.43				
12	35	4.11				
6	9	4.00	230	50	4,250	12.4
			115	50	1,020	13.0
			230	25	7,070	7.5
			115	25	1,768	7.45

** Armature in the closed position. With the armature in the open position, the burden is decreased by approximately 75 per cent of the values listed above.

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.

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.

PROTECTION AND CONTROL
GENERAL ELECTRIC
MALVERN, PA 19355-1337

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

Type HGA14AA and HGA14AB relays are hinge-type in construction and have double-pole contacts. The contacts are closed or opened by moving contact arms controlled by the armature, which in turn is actuated by the operating coil and restrained by an adjustable control spring. The armature, magnet assembly, and contact assemblies are all mounted on a compact molded compound base. The length of the contact gap is adjusted 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 locknuts located on the moving contact arms. These latter features make it possible to reduce the pick-up energy and pick-up time to relatively low values.

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 are shown in Fig. 3.

CONNECTIONS

The internal connection diagrams for the HGA14AA and HGA14AB relays are shown in Figs. 1 and 2 respectively.

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.

In Fig. 1 note that the normally open contacts on both units are connected between upper and lower terminal blocks so that if either of the connection plugs is withdrawn the contact circuit is broken. Note also that shorting bars are provided across all normally closed contacts. These shorting bars can be easily removed if they are not desired.

In the HGA14AB relay the connections from the left unit are made to the upper terminal block, while those from the right unit are made to the lower block. Therefore, either plug can be removed separately without affecting the operation of the other unit. The connections from all normally closed contacts are arranged so that the shorting bar is optional. For example the right-hand contact of the right unit is shown connected between terminals 8 and 10. (If it is necessary for this circuit to remain closed when the connection plug is removed, an internal jumper should be connected between terminals 9 and 10); or if it is desired that the normally open contact circuit between terminals 7 and 8 be completed when the plug is removed, the internal, jumper should be between terminals 7 and 9.

MAINTENANCE

Auxiliary relay equipment should be checked for operation at regular intervals, preferably at the same time that the associated protective devices are inspected. The units should be checked for pick-up and drop-out values. Normally these settings should not require readjustment but if changes are necessary the points discussed under ADJUSTMENTS 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 above can be obtained from the factory.

ADJUSTMENTS

The relays have been adjusted at the factory to pick up at 30 percent of rating for d-c relays and 40 percent for a-c relays, and the contacts have been adjusted so that there is but one normally closed

contact available. This latter feature is necessary with the low pick-up adjustment because of the low control spring tension and short armature gap. Pickup may be adjusted by shifting the position of the control spring in the notches on the armature tail-piece; or a finer adjustment may be made by changing the contact gap by means of the screw contacts and locknuts in the front-fixed-contact positions. The contact gap should not be decreased beyond the minimum recommended gap given in the following paragraph.

With the low pick-up adjustment 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 projection on the contact carrier. They should then be backed off one turn and locked securely in position by the locknut. 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 with the locknut. Note that the left-hand contact screw should be set far enough back so that it clears the left moving contact when the relay is in the dropped-out position.

The preceding adjustments are for minimum recommended contact gap and wipe. If the contact gaps are made shorter it must be realized that the interrupting ratings previously mentioned will no longer apply.

If two normally closed contacts are desired it will be necessary to raise the pick-up level of the relays described. The control spring should be anchored in the rear hole of the spring post. The adjusting screws in the moving contact arms should be backed off to a position where they will no longer engage the moulded contact support and should be locked in this position. Both screw contacts should be backed off to a point where they project approximately 3/32 inch beyond the contact plates and locked securely. There must be 1/32-1/16 inch wipe on the normally closed contacts; this should be adjusted, if necessary, by bending the contact arms. The pickup should be set for 60 percent of rating for d-c relays, or 80 percent of rating for a-c relays, by shifting the position of the spring on the notched armature tail-piece.

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.

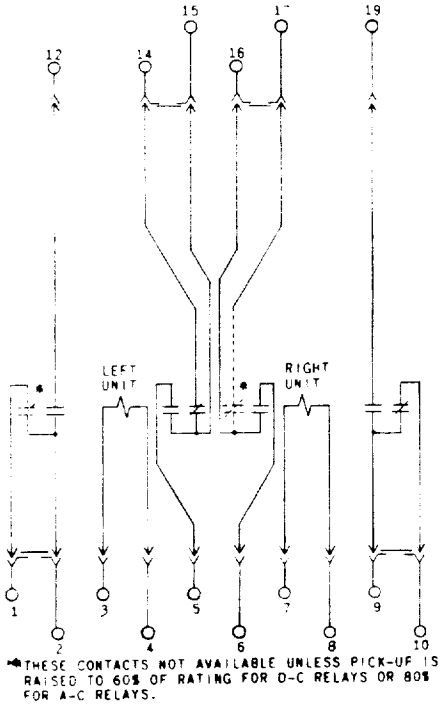

Figure 1 (K-6400746 [1]) Internal Connections for Type HGA14AA Relay

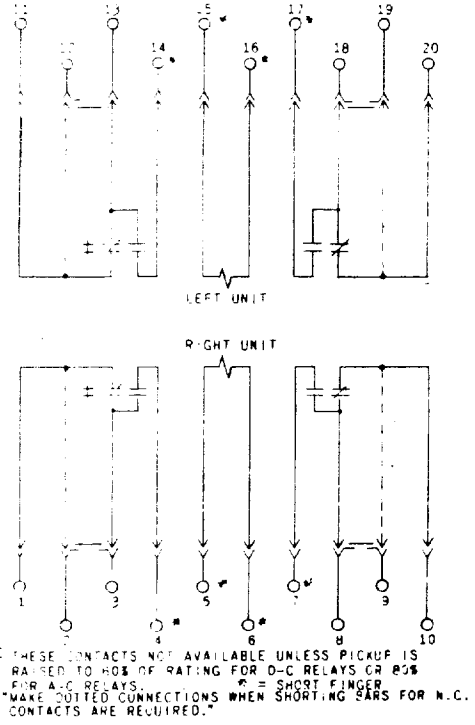

Figure 2 (K-6209255 [3]) Internal Connections for Type HGA14AB Relay

Since the last edition, the three figures have all been revised

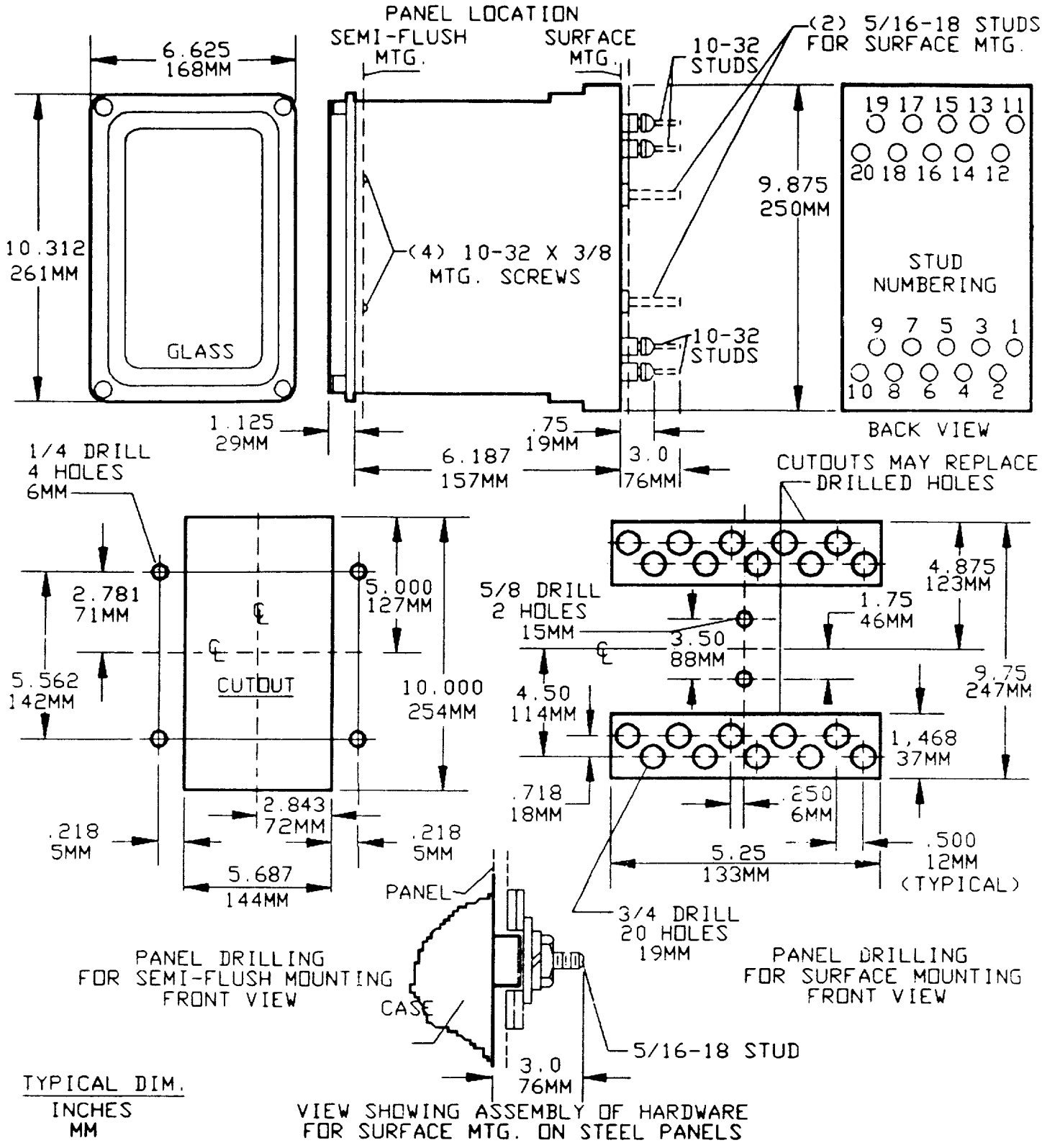

Figure 3 (K-6209272 [7]) Outline and Panel Drilling for Relay Types HGA14AA and HGA14AB