INSTRUCTIONS

GEK-65671

AUXILIARY RELAY

TYPE HAA99AE

GENERAL ELECTRIC

AUXILIARY RELAY
TYPE HAA99AE

DESCRIPTION

The HAA99AE relays covered in this book consist of three target units mounted in an S1 case. The HAA99AE is designed for direct current operation. The characteristics of the HAA99AE relays are shown in Table I.

APPLICATION

These HAA relays may be used wherever a number of target units with contacts are required. A typical application would be to obtain a local annunciation of an abnormal condition and to relay the alarm to a central annunciator. In such an arrangement the abnormal condition would operate one of the HAA unit coil circuits dropping a target and causing the associated unit contacts to relay the alarm to the remote annunciator.

RATINGS

The contacts will make and carry 30 amperes momentarily and will carry six amperes continuously.

The current ratings, resistance values, pickup values (see ELECTRICAL TESTS for pickup limits) and the continuous rating of the operating coils are given in Table I.

TABLE I

MODEL NUMBER	TARGET INFORMATION			
	12HAA99AE001A		12HAA99AE002A	
	0.2 AMP TAP	2.0 AMP TAP	1.0 AMP TAP	4.0 AMP TAP
Minimum operating	0.2 amp	2.0 amps	1.0 amp	4.0 amps
Carry continuously	0.4 amp	3.5 amps	2.5 amps	6.0 amps
Carry 30 amps for	-----	4 secs.	1.0 sec.	5.0 secs.
Carry 10 amps for	0.1 sec.	30 secs.	10.0 secs	50.0 secs.
DC resistance	7 ohms	0.13 ohm	0.25 ohm	0.034 ohm
60 cycle impedance	52 ohms	0.53 ohm	2.0 ohms	0.13 ohm

CHARACTERISTICS

The maximum operating values of current are given in Table I. Operation (pickup) occurs at or below this maximum value. The pickup and dropout time characteristic is shown in Fig. 3.

CONSTRUCTION

The HAA relays covered by this instruction book contain target units which are small hinged armature type relays each with a "U" shaped magnet frame, a fixed pole piece, an armature which operates the normally open contact and the target, and an operating coil.

These relays consist of three target units mounted in a single ended S1 drawout case.

The target units are mounted on a cradle assembly which is latched into a drawout case when the relay is in operation.

To remove the cradle, first remove the connection plugs which complete the electrical connections between the case block and the cradle.

The cover is attached to the front of the relay case and contains both the target and reset mechanism and an interlock arm which prevents the cover from being replaced until the connection plugs have been inserted.

Relays with dual rated coils are connected for the higher ampere rating when shipped from the factory.

Every circuit in the drawout case has an auxiliary brush as shown in Fig. 1 to provide adequate overlap when the connecting plug is withdrawn or inserted.

The relay case is suitable for either semi-flush or surface mounting on all panels up to two inches thick and appropriate hardware is available. However, panel thickness must be indicated on the relay order to insure that proper hardware will be included. For outline and drilling dimensions, see Fig. 4.

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 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.

Also check the nameplate stamping to insure that the model number and rating of the relay received agree with the requisition.

Manually check the operation of each unit and that the contact gap is at least 3/32 inch and the wipe is 1/32 inch.

ACCEPTANCE TESTS

PRELIMINARY CHECK

1. Check wiring using the internal connections diagram, Fig. 2. Check continuity of contact circuits with the armature picked up.

2. Manually check the operation of each unit and that the contact gaps are at least 3/32 inch. Both contacts of each target seal-in unit should close at approximately the same time.

3. With the armature against the pole piece, the upper and lower contact buttons should be reasonably parallel and at least 3/4 of each contacting surface should be engaged. This means that an unengaged surface may not extend more than 3/64 inch.

4. In the de-energized position, the "T" spring should rest on the turned-in prongs of the front molded block. The cross member of the "T" spring should overlap the prongs by at least 1/32 inch so that the armature can never drop down.

5. With the armature against the pole piece, the cross member of the "T" spring should lie in a horizontal plane and there should be at least 1/32 inch wipe on the contacts. To check this wipe, raise the armature by hand until the contacts just make. There should be approximately 1/64 inch air gap between the armature and freeze pin of the pole piece; also, hold the armature flush against the pole piece by hand and raise the orange target with a sharp tool such as a knife. It should be possible to raise this target at least 1/64 inch.

ELECTRICAL TESTS

Drawout Relays, General

Since all drawout relays in service operate in their cases, it is recommended that they be tested in their cases or an equivalent steel case. In this way, any magnetic effects of the enclosure will be accurately duplicated during testing. A relay may be tested without removing it from the panel by using a 12XLA13A test plug. This plug makes connections only with the relay and does not disturb any shorting bars in the case. Of course, the 12XLA12A test plug may also be used. Although this test plug allows greater testing flexibility, it requires CT shorting jumpers and the exercise of greater care, since connections are made to both the relay and the external circuitry.

Power Requirements, General

Relays requiring DC control power should be tested using DC and not full wave rectified power. Unless the rectified supply is well filtered, many relays will not operate properly due to the dips in the rectified power. As a general rule the DC source should not contain more than five percent ripple.

TARGET AND SEAL-IN UNIT

For the 0.2-2.0 amp or 1.0-4.0 amp dual rated current units, make sure that the tap screw is in the desired tap. The relay is shipped from the factory with the tap screw in the higher ampere position. The tap screw is the screw holding the right-hand stationary contact. To change the tap setting, first remove one screw from the left-hand stationary contact and place it in the desired tap. Next remove the screw from the undesired tap and place it on the left-hand stationary contact where the first screw was removed. This procedure is necessary to prevent the right-hand stationary contact from getting out of adjustment. Screws should never be in both taps at the same time.

1. Check pickup using a variable power source. Check pickup of both taps of dual rated units. Armatures should pick up with a snap action and seat against the pole piece.

   The pickup limits for DC current operated relays are:

Rating	Pickup Amps
0.2	0.16 - 0.20
1.0	0.8 - 1.0
2.0	1.6 - 2.0
4.0	3.2 - 4.0

2. Check that dropout of DC operated seal-in units is 25 percent of tap value or higher.

3. To check latching-in of targets, energize the seal-in units of DC current operated relays at approximately 95 percent of rating.

   Then de-energize the seal-in unit and tap the top of the unit several times to ensure that the target will not drop on vibration.

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 diagrams are shown in Fig. 4.

INSPECTION

At the time of installation, the relay should be inspected for tarnished contacts, loose screws or other imperfections.

CONNECTIONS

The internal connection diagram is shown in Fig. 2.

Unless mounted on a steel panel which adequately grounds the relay case, it is recommended that the case be grounded through a mounting stud or screw with a conductor not less that #12 B&S gage copper wire or its equivalent.

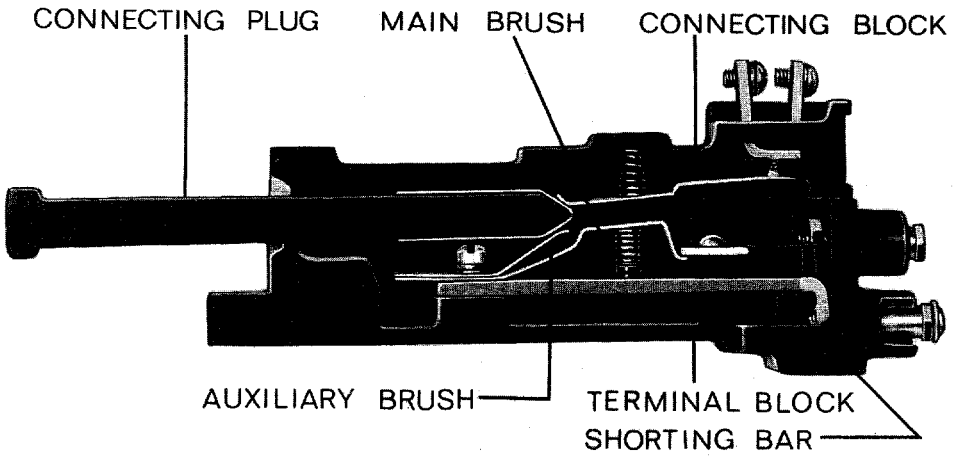
SERVICING

For cleaning fine silver contacts, a flexible burnishing tool should be used. This consists of an etched-roughened strip of flexible metal, resembling a superfine file, which removes corroded material quickly without scratching the surface. The flexibility of the tool insures the cleaning of the actual points of contact. Never use knives, files, abrasive paper or cloth to clean fine silver contacts. A burnishing tool as 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. If possible give the General Electric Company requisition number on which the relay was furnished.



NOTE: AFTER ENGAGING AUXILIARY BRUSH CONNECTING PLUG TRAVELS 1/4 INCH BEFORE ENGAGING THE MAIN BRUSH ON THE TERMINAL BLOCK

Fig. 1 (8025039) Cross Section of Drawout Case Showing Position of Auxiliary Brush

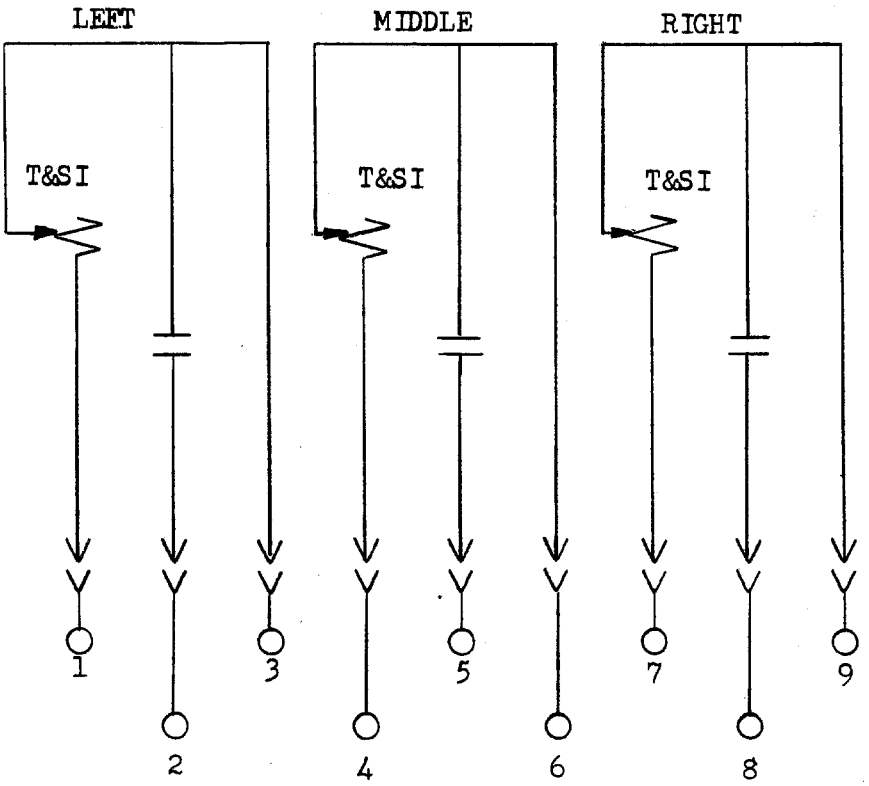


Fig. 2 (0178A9168-0) Internal Connections of the HAA99AE Relay
(Front View)

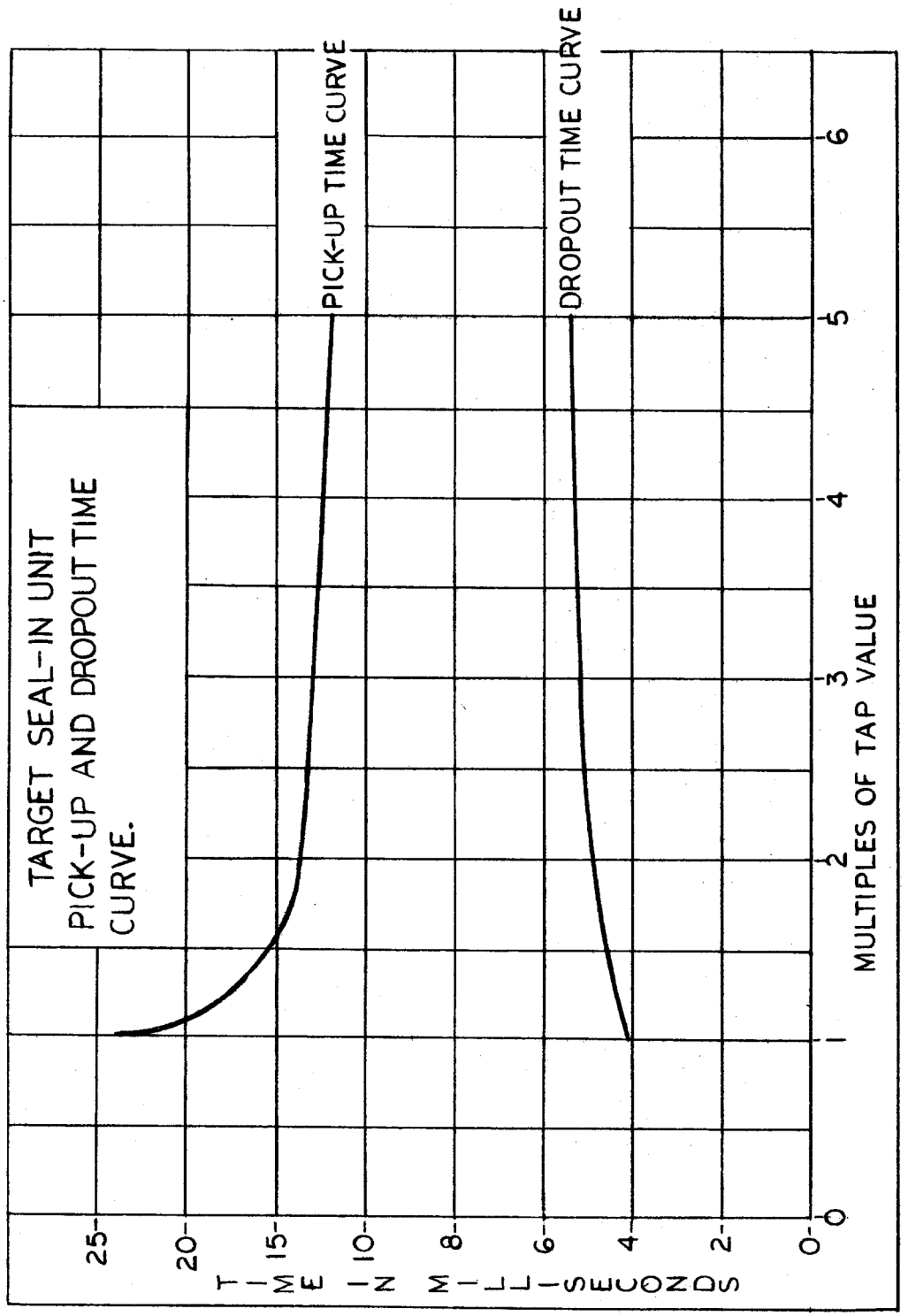


Fig. 3 (0273A9131-0) Pickup and Drop-out Time Curve for Type HAA Unit

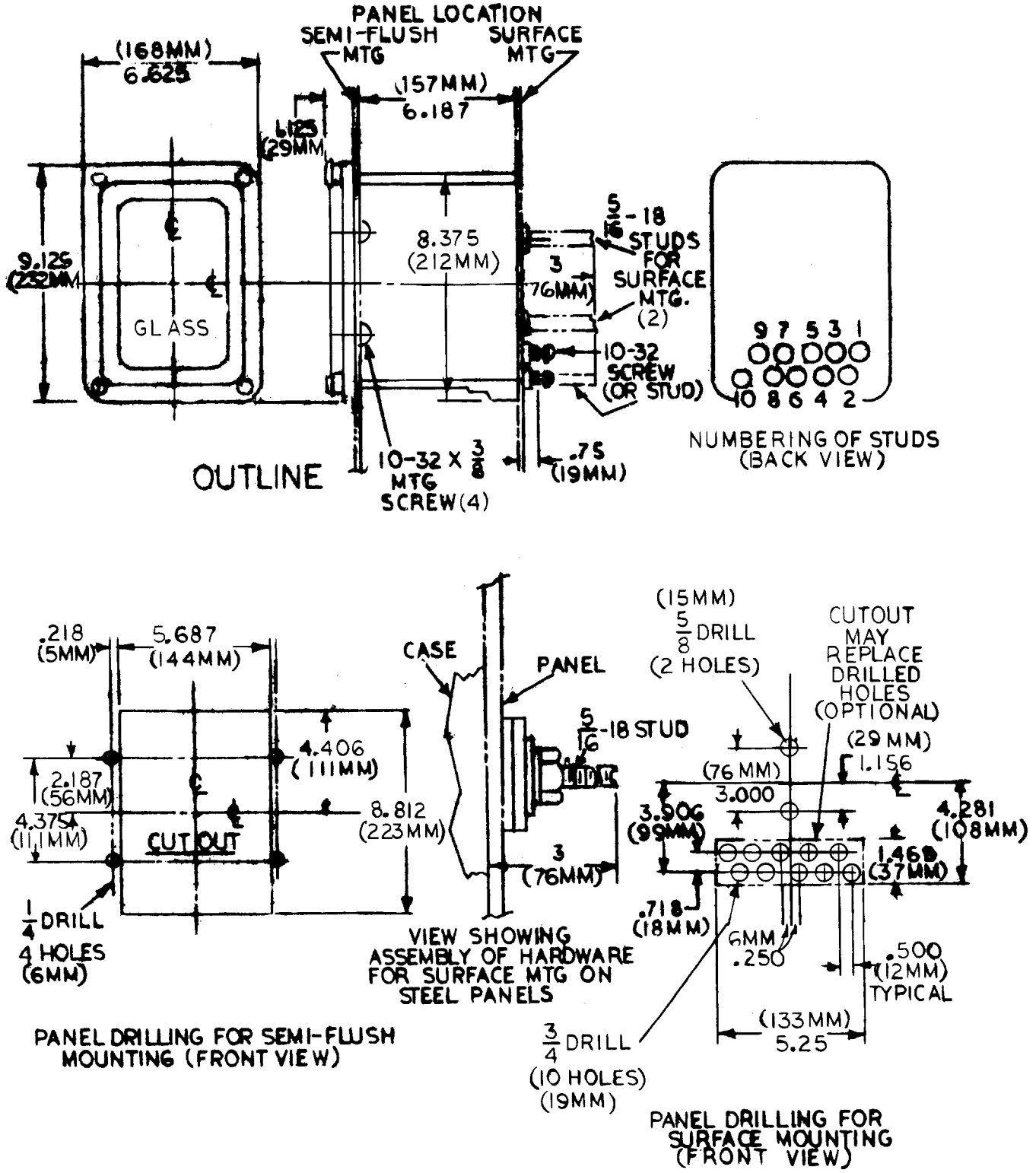


Fig. 4 (6209271-5) Outline and Panel Drilling for Drawout Relays - Size S1

GENERAL ELECTRIC COMPANY
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PRINTED IN U.S.A.