



GEI-83945D

INSTRUCTIONS

TRANSFER TRIP AUXILIARY RELAY

NAA27M

GENERAL ELECTRIC

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TRANSFER TRIP AUXILIARY RELAY
NAA27M

DESCRIPTION

The NAA27M is an auxiliary relay that was designed specifically for use with carrier and audio-tone channels in transformer-differential transferred-tripping schemes. The relay contains two telephone-type units, several silicon diodes and a target seal-in unit, all mounted in a S2 drawout case. One NAA27M is required for each receiver used in the scheme of protection.

The original forms were forms 1-2-3. The internal-connections diagram for these forms is shown in Figure 2.

The above forms were superseded by forms 11-12-13. The new forms differed from the original three forms only in that a different "GX" unit was used. The original "GX" units had an adjustable residual pin and the new "GX" unit had a fixed residual pin. The internal-connections diagram for these forms is also Figure 2.

Forms 11-12-13 have now been superseded by forms 15-16-17. These new forms have capacitors connected in parallel with the diodes to improve the surge-withstand capability of the relay. The internal-connections diagram is shown in Figure 3.

APPLICATION

The NAA27M is a special-purpose auxiliary relay used in transformer-differential transferred-tripping schemes at the receiving end, in conjunction with Type 50 or Type 51 frequency-shift-carrier equipment, or Type 40 frequency-shift audio-tone equipment. The relay contains a GX unit and a TX unit that operate from the trip and guard contacts in the associated receiver to perform the following functions.

- a. Sound an alarm on prolonged loss of guard.
- b. Incapacitate the channel, if desired, on prolonged loss of guard.
- c. Sound an alarm on receipt of a transferred-tripping signal.
- d. Block reclosure of the breaker(s) being transfer tripped.

These instructions do not purport to cover all details or variations in equipment nor 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.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.

OPERATING CHARACTERISTICS

The TX unit has a maximum pickup time of four milliseconds (4 ms).

The GX unit has a pickup of 80% rated voltage and a dropout time of 0.3 to 0.5 second.

RATINGS

The Type-NAA27M relay is rated for continuous operation at rated nameplate voltage. The resistance values of the telephone relays and associated resistors are listed on the internal-connection diagrams shown in Figures 2 and 3.

The combination target and seal-in unit is rated as shown in Table I.

The current-closing rating of the contacts is 30 amperes for voltages not exceeding 250 volts. The current-carrying ratings are affected by the selection of the tap on the target-and-seal-in coil, as indicated in the following table:

TABLE I
RATINGS OF TARGET AND SEAL-IN UNIT

		DUAL RATED			
		0.2/2.0		0.6/2.0	
		0.2	2.0	0.6	2.0
Carry 30 amps for	(sec)	0.05	2.2	0.5	3.5
Carry 10 amps for	(sec)	0.45	20	5.0	30
Carry continuously	(amp)	0.37	2.3	1.2	2.6
Minimum operating	(amp)	0.2	2.0	0.6	2.0
Minimum dropout	(amp)	0.05	0.5	0.15	0.5
DC resistance	(ohms)	8.3	0.24	0.78	0.18
60 hertz impedance	(ohms)	50	0.65	6.2	0.65
50 hertz impedance	(ohms)	42	0.54	5.1	0.54

If the tripping current exceeds 30 amperes, an auxiliary relay should be used, the connections being such that the tripping current does not pass through the contacts or the target and seal-in coils of the protective relay.

INSTALLATION

RECEIVING

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 the relay, an examination should be made for any damage sustained during shipment. If injury or damage resulting from rough handling is evident, a claim should be filed at once with the transportation company, and the nearest Sales Office of the General Electric Company should be notified promptly.

Reasonable care should be exercised in unpacking the relay in order that none of the parts are injured nor the adjustments disturbed.

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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.

INSPECTION

The relay should be inspected at the time of installation, and the following points checked:

1. Contacts should not be tarnished.
2. The normally-open contacts of both telephone relays should have a gap of 0.015 to 0.020 inch.
3. The normally-closed contacts should have a 0.004 to 0.008 inch wipe.
4. When the telephone relays are operated by hand, the open contacts should have a 0.015 to 0.020 inch gap and the closed contacts should have a 0.004 to 0.008 inch wipe.

CHECK TESTS

TX UNIT

With 80% of rated voltage suddenly applied to terminals 17 and 18, the TX unit should pick up.

The unit should drop out with a minimum of 60% rated voltage applied to studs 17 and 18.

With rated voltage applied across studs 17 and 18, the time to close the contacts across studs 6 and 7 should be four milliseconds (4 ms) or less. The GX contact connected across studs 6 and 7 must be blocked open for this test.

If the voltage is removed from studs 17 and 18, the time to open the same contact is four milliseconds (4 ms) or less.

GX UNIT

With 80% rated voltage applied to studs 15 and 18, the GX unit should pick up.

With rated voltage suddenly applied to studs 15 and 18, the time to close the normally-open contact across studs 3 and 5 should be between 0.045 and 0.070 seconds.

When rated voltage is removed from studs 15 and 18, the time to open the GX contact across studs 3 and 5 should be between 0.3 and 0.5 second.

CONNECTIONS AND MOUNTING

The internal-wiring diagram is shown in Figures 2 and 3.

The relay should be mounted on a vertical surface. The outline and panel-drilling diagram is shown in Figure 4.

Type NAA27M relays are shipped from the factory completely calibrated, but in the event that the GX or TX units should get out of calibration, the adjustments under the **SERVICING** section may be performed. When performing these adjustments, refer to Figure 1.

SERVICING

CONTACTS

For cleaning the GX or TX unit contacts, a flexible burnishing tool should be used. This consists of a flexible strip of metal with an etch-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 ensures the cleaning of the actual points of contact.

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

PICKUP

To decrease the percentage of rated voltage at which the GX or TX unit picks up, decrease the spacing of the armature from the pole face by bending the contact-operating-arm stop. After this adjustment, all contacts must be readjusted to have a 0.004 to 0.008 inch wipe and a gap of 0.015 to 0.020 inch.

To increase the percentage of rated voltage at pickup, reverse the above procedure.

PICKUP TIME

In order to decrease the pickup time of the TX unit, reduce the pressure of the normally-closed contacts by bending slightly the movable flexible-contact arm.

The pickup time may be increased by reversing this procedure.

NOTE: The residual screw must not be removed completely. The minimum gap must be 0.002 inch between the armature and the pole piece.

Forms 11-12-13-15-16-17-18

The residual screw has been eliminated from the GX unit. The new GX unit has a fixed residual pin.

The dropout time of both units may be adjusted a small amount by varying the amount of pressure on the closed contacts.

All the adjustments in this section may be most easily made with the tools supplied in the relay tool kit, XRT11A1.

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 the quantity required and the 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.

Since the last edition, Figures 3 and 4 have been revised.

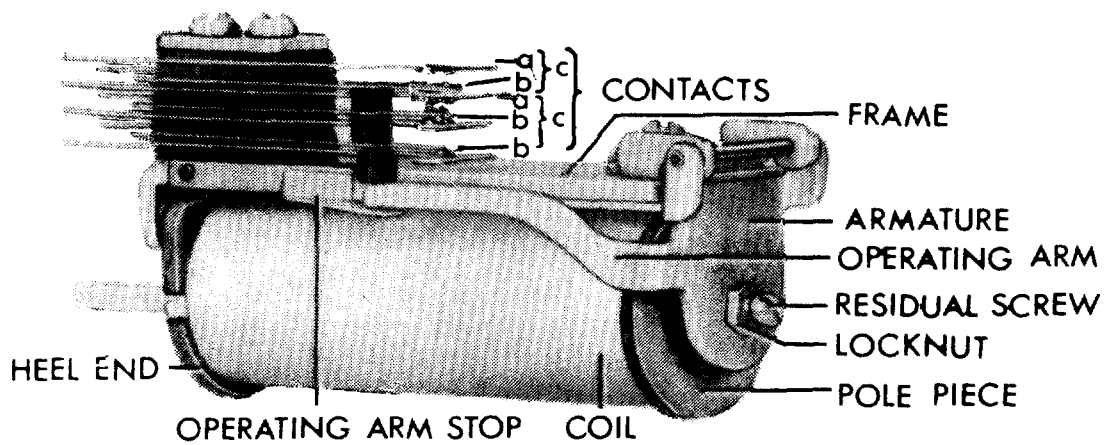
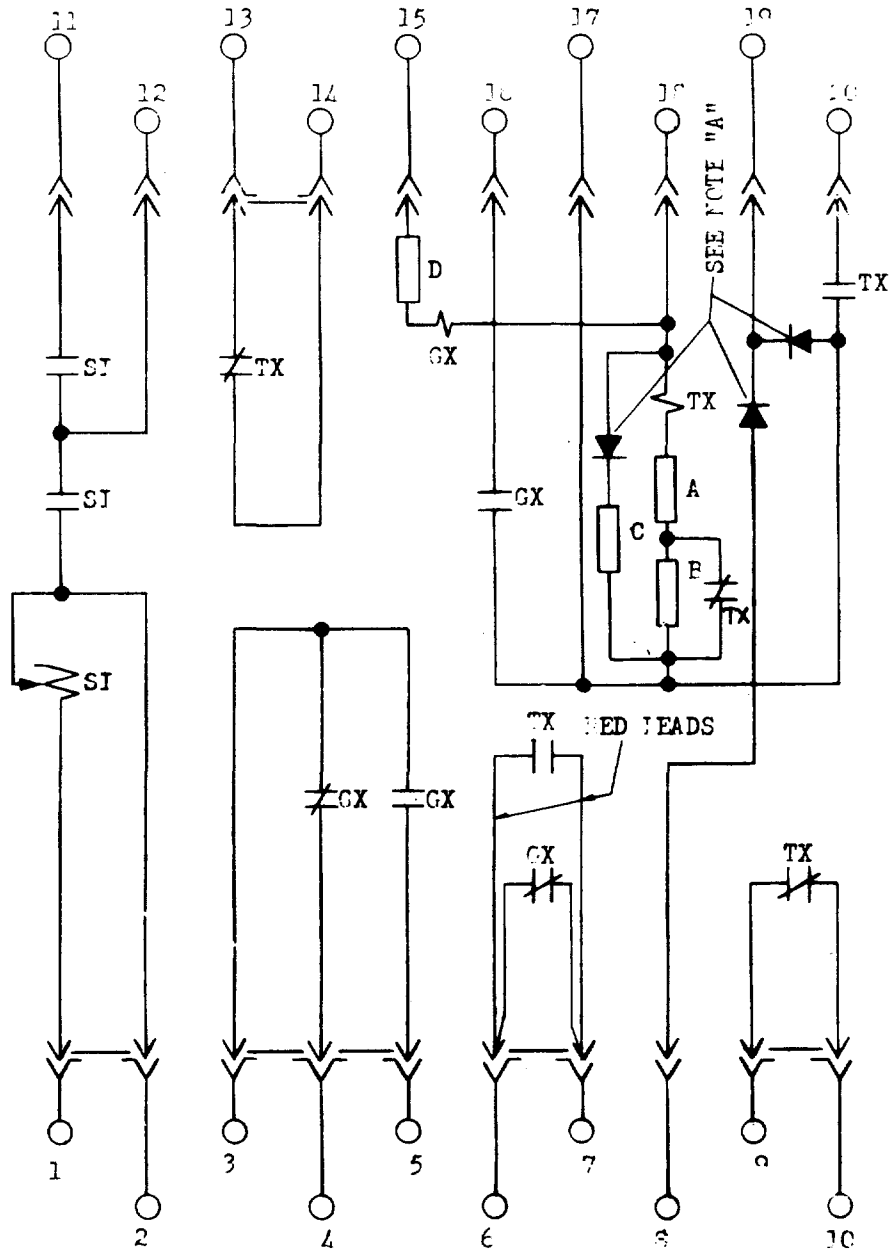


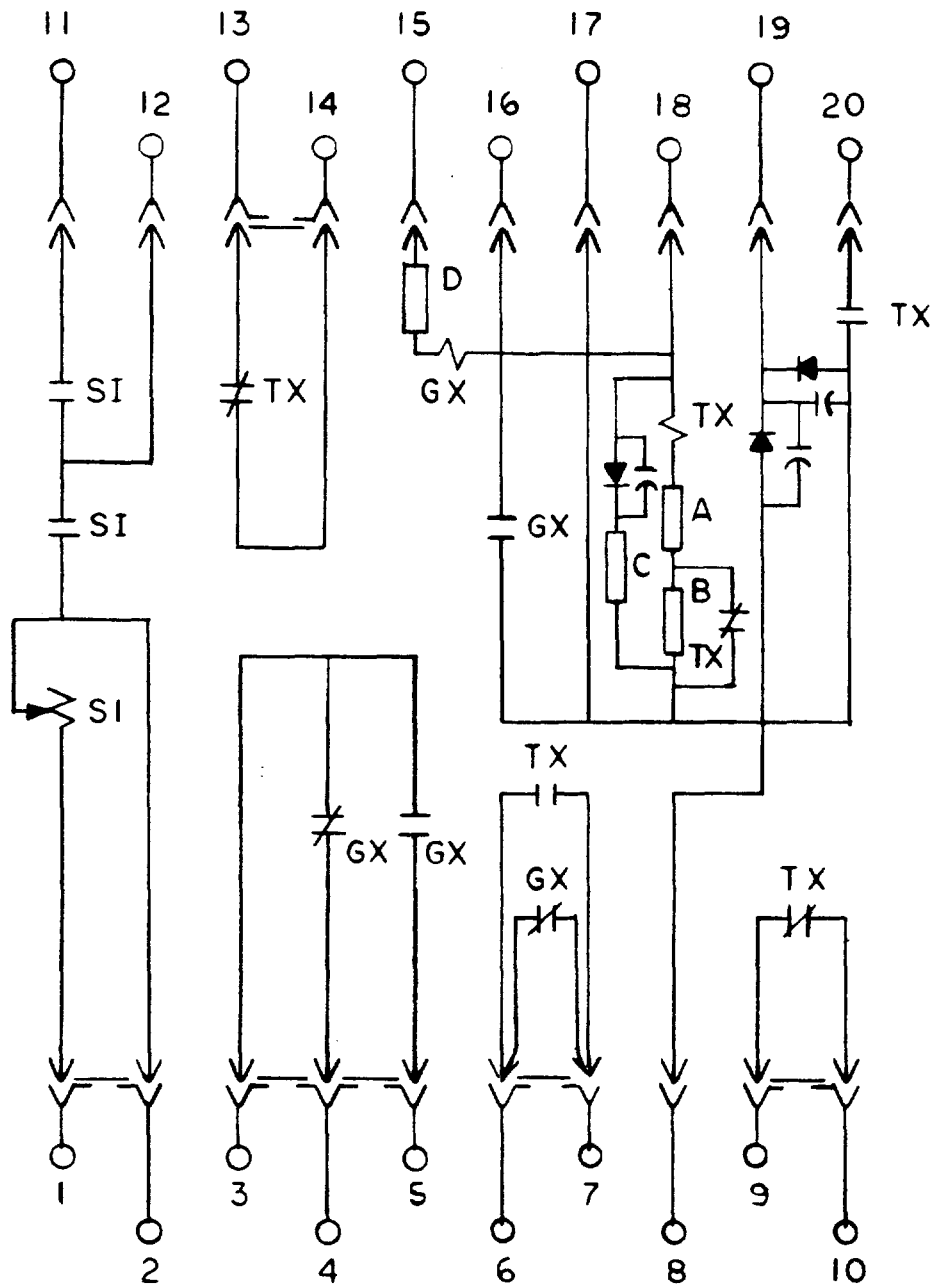
Figure 1 (8012106) Typical Telephone-Relay Unit Used in Type-NAA Relays.



"A" - REVERSE THE RED LEADS AT THE DIODE TERMINAL BOARD TO CHANGE THE DIODE POLARITY.

MODEL	RATED	TX		GX		A	B	C	D
		P.U. (SECS)	OHMS	P.U. (SECS)	OHMS				
121AA27M1A	250	.004	53	.4-.5	2500	800	4000	1500	5000
2A	125	.004	53	.4-.5	2500	300	2000	500	1500
3A	43	.004	10	.4-.5	300	50	350	100	200

Figure 2 (0148A4085 Sh 1 [1], Sh 2) Internal-Connection Diagram for Relay Type NAA27M, Forms 1-2-3-11-12-13



MODEL	RATED	TX		GX		A	B	C	D
		P.U. (SECS.)	OHMS	D.O. (SECS.)	OHMS				
12NAA27M 15A	250	.004	58	.3-.5	2500	800	4000	1500	5000
12NAA27M 16A	125	.004	58	.3-.5	2500	300	2000	500	1500
12NAA27M 17A	48	.004	10	.3-.5	800	50	350	100	200
12NAA27M 18A	125	.004	58	.3-.5	2500	300	2000	500	1500

Figure 3 (0195A4947 Sh 1 [2], Sh 2 [4]) Internal-Connection Diagram for Relay Type NAA27M, Forms 15-16-17

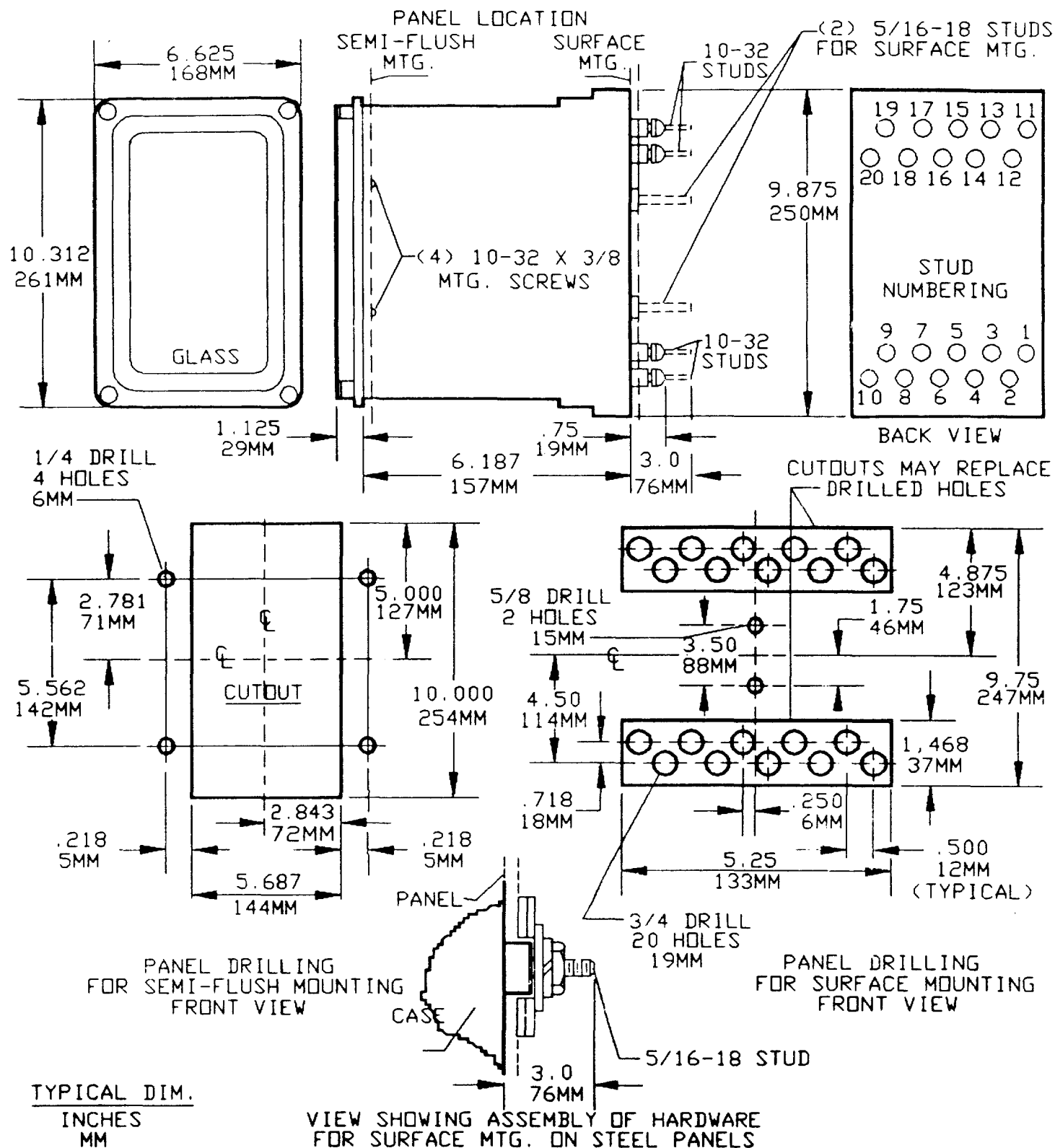


Figure 4 (K-6209272 [7]) Outline and Panel-Drilling Diagram
for Relay Type NAA27M



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