



## INSTRUCTIONS

GEI-31073A

SUPERSEDES GEI-31073

# RECLOSING BLOCKING AUXILIARY RELAYS

## Types

**NAA21B**

**NAA21C**

**NAA21D**

**NAA25A**

---

GENERAL  ELECTRIC



# RECLOSING BLOCKING AUXILIARY RELAY TYPE NAA

## INTRODUCTION

The Type NAA21B auxiliary relay contains three telephone-relay units designated 79X and one telephone-relay unit designated 79Y. The purpose of this relay is to block reclosing on a three-phase fault. The coils of the 79X units are current operated and are placed in series with the phase relay trip circuits so that should a three-phase fault occur, all three 79X units become energized. The 79Y unit has a one cycle pickup and may be operated by a contact of any of the 79X units. One contact on each of the 79X units is connected in series and is used to short down the operating capacitor of the reclosing relay (usually a Type HGA18E relay). A contact of the 79Y unit is also used to initiate reclosing. The one cycle time delay of the 79Y unit allows sufficient time for the 79X unit to short

down the capacitor of the reclosing relay should a three-phase fault occur.

\* The Type NAA21C, NAA21D and NAA25A relays are similar in function to the Type NAA21B relay except the internal circuits are somewhat differently arranged for different circuit application. The Type NAA25A relay also includes a ground-trip unit as well as the three-phase units.

## RATINGS AND BURDENS

The ratings of the relays are given on the nameplates. Resistance values of the telephone-relay units and associated components are given on the internal connection diagrams, Figs. 2, 3, and 4.

## 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 un-

packing 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

### CASE

The case is suitable for either surface or semiflush panel mounting and an assortment of hardware is provided for either mounting. 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 both ends or at the bottom only for the external connections. The electrical connections between the relay units 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 blocks, attached to the case, have the studs for the external connections, and the inner blocks have the terminals for the internal connections.

The relay mechanism is mounted in a steel framework called the cradle and is a complete unit with all leads being terminated 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 cases and cradles are so constructed that the relay cannot be inserted in the case upside down. The connecting plug, besides making the electrical connections between the respective 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 first removed, and the plug 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. To replace the relay unit, the reverse order is followed.

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.

*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.*

*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.*

\* Denotes change since superseded issue.

## INSTALLATION

### LOCATION AND MOUNTING

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

The relay should be mounted on a vertical surface. The outline and panel drilling diagram for the Type NAA21B, NAA21C and NAA21D relays is shown in Fig. 6, and the outline and panel drilling diagram for the Type NAA25A relay is shown in Fig. 7.

### CONNECTIONS

The internal connection diagrams for the \* Types NAA21B, NAA21C, NAA21D and NAA25A relays are shown in Figs. 2, 3, 4 and 5 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.

## MAINTENANCE

An operation test and mechanical inspection of the relay and its connections should be made at least once every six months, preferably at the same time the associated protective equipment is checked.

### ADJUSTMENTS AND INSPECTION

The relays are adjusted at the factory and it is advisable not to disturb the adjustments. If for any reason they have been disturbed, the following points should be observed in restoring them:

Each telephone-relay unit (Fig. 1) should first be adjusted to have a gap of 0.015 of an inch and a wipe of 0.005 of an inch on each contact. The wipe on circuit closing contacts, with the unit in the picked up position, should be checked as follows:

Insert a 0.006 inch shim between the residual screw and the pole pieces with the telephone-relay unit operated by hand, the circuit closing contacts should just make when the residual screw strikes the shim.

The pick-up time may be increased by increasing the armature gap. This is accomplished by bending the contact-operating arm. This adjustment also increases the pick-up value.

The drop-out time may be adjusted by means of the residual screw in the armature. Turning the screw in decreases the drop-out time.

All telephone-relay units, unless specified otherwise in Table I, are adjusted to pick up at 60 percent, or less, of rated voltage as shown on the nameplate. All time checks are made with rated voltage or current applied to the units.

Drop-out time in the 79X relays should be such that continuity is not established between terminal 9 and 1 in the Type NAA21B relay.

\* Denotes change since superseded issue.

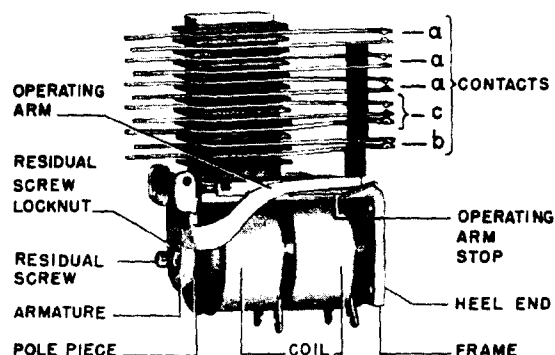


Fig. 1 Typical Telephone-relay Unit

\* TABLE I  
TYPE NAA21B, NAA21C AND NAA21D RELAYS

Relay Unit	Pickup Time Seconds (Max.)	Pickup Current Amperes (Max.)
79X	0.005	1
79X2	0.005	1
79X3	0.005	1
79Y	0.016	--

The Type NAA25A relay has all of its telephone relay units adjusted to pick up in 0.008 seconds, or less, with 1.25 amperes applied.

In these telephone-relay units, drop-out time is not important except that all relays should drop out so that an "a" contact is not closed on one relay while a "b" contact is closed on another.

Fig. 1 (8010942)

Fig. 2 (K-6375789)

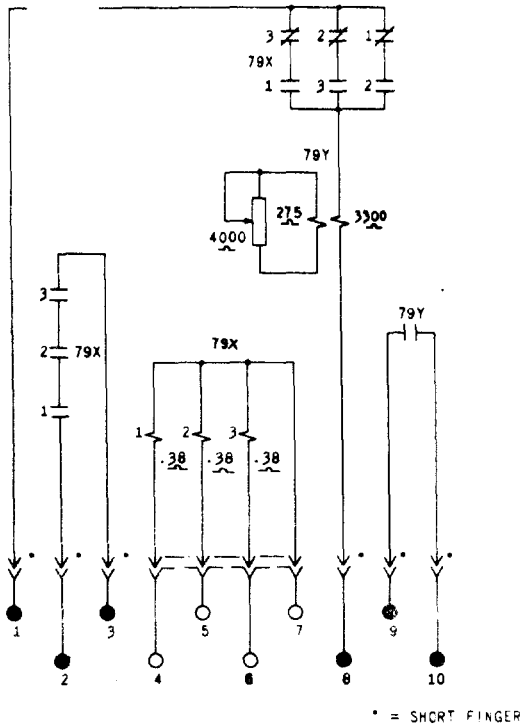


Fig. 3 (K-6507947)

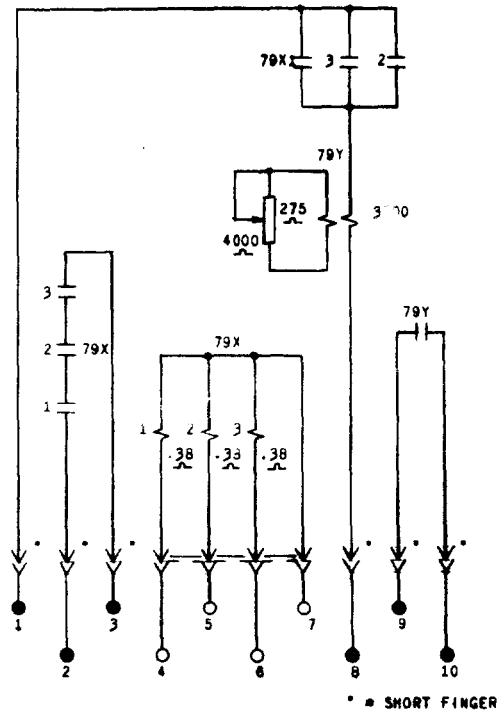


Fig. 2 Internal Connections for Type NAA21B Relay (Front View)

Fig. 3 Internal Connections for Type NAA21C Relay (Front View)

Fig. 4 (459A250)

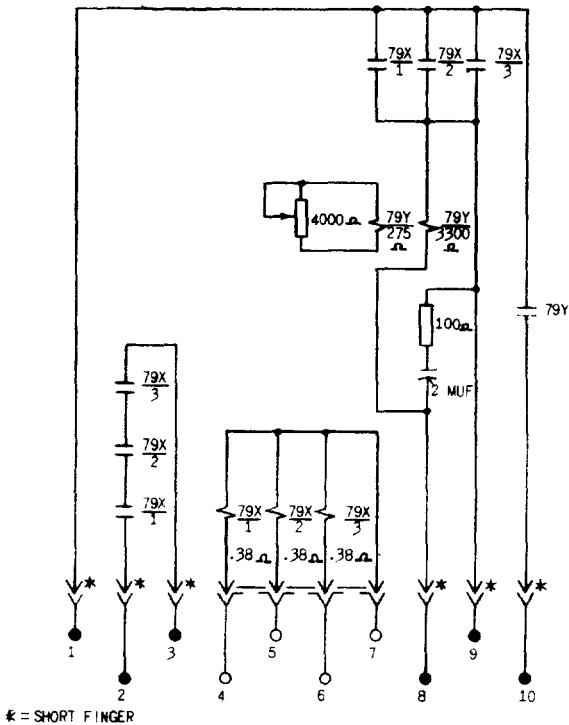
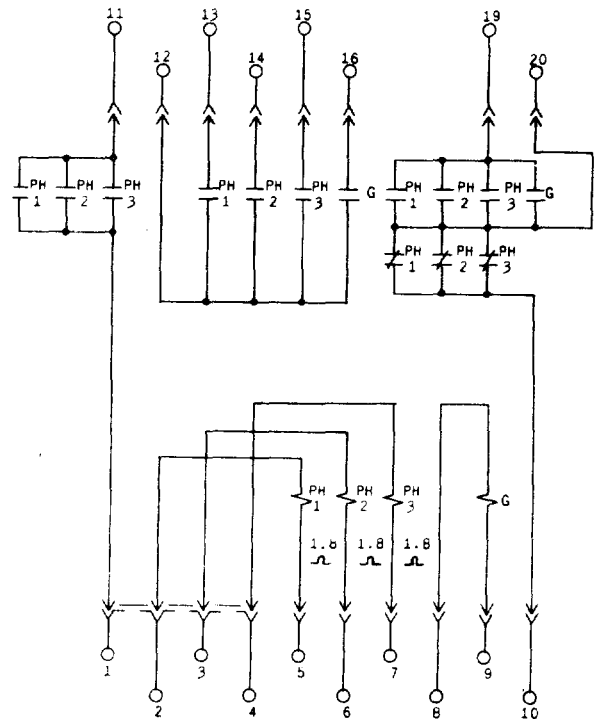


Fig. 5 (K-6375800)



\* Fig. 4 Internal Connections for Type NAA21D Relay (Front View)

Fig. 5 Internal Connections for Type NAA25A Relay (Front View)

\* Denotes change since superseded issue.

## 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.

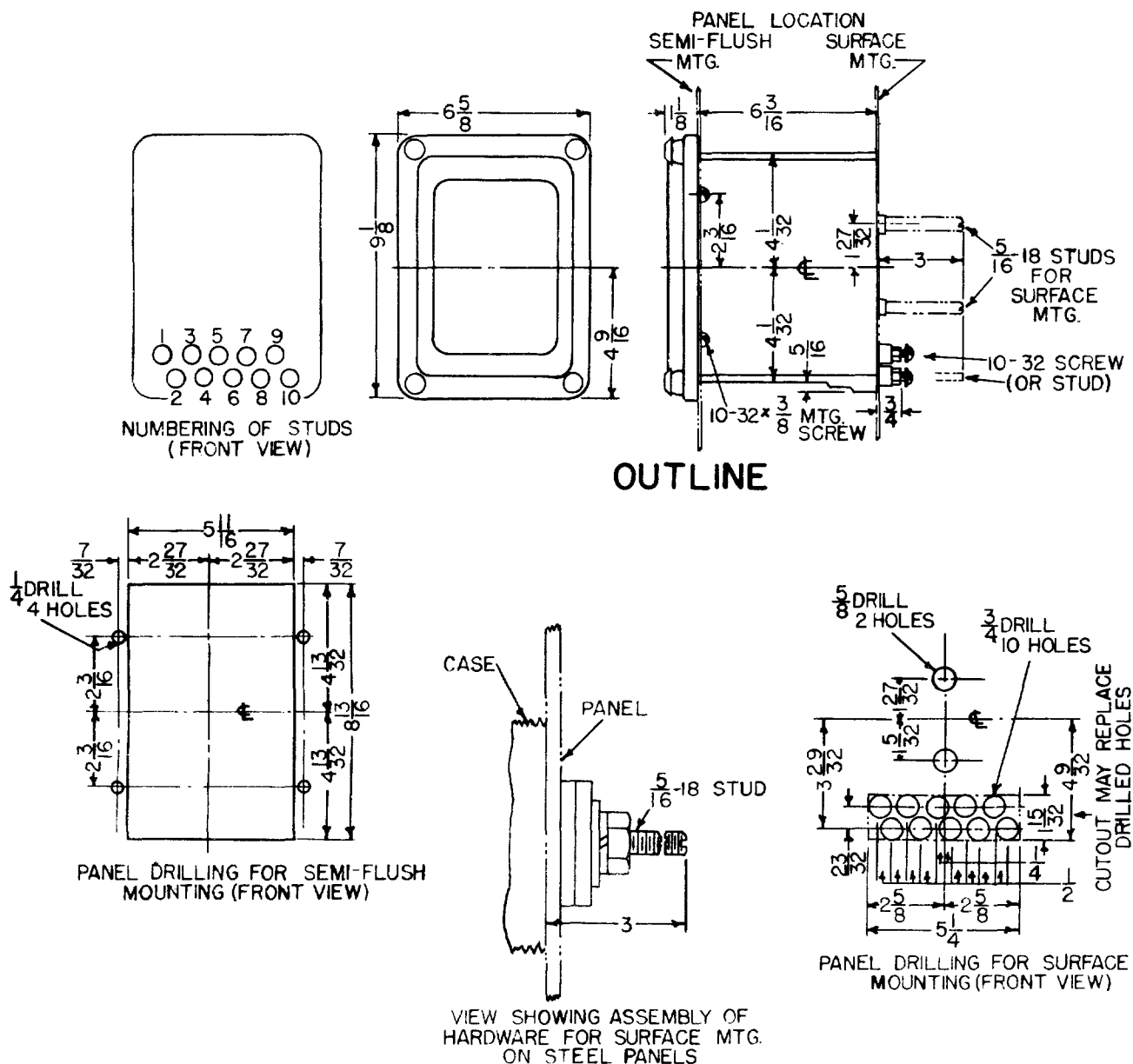


Fig. 6 Outline and Panel Drilling for Types NAA21B, NAA21C and NAA21D Relays

Fig. 7 (K-6209272)

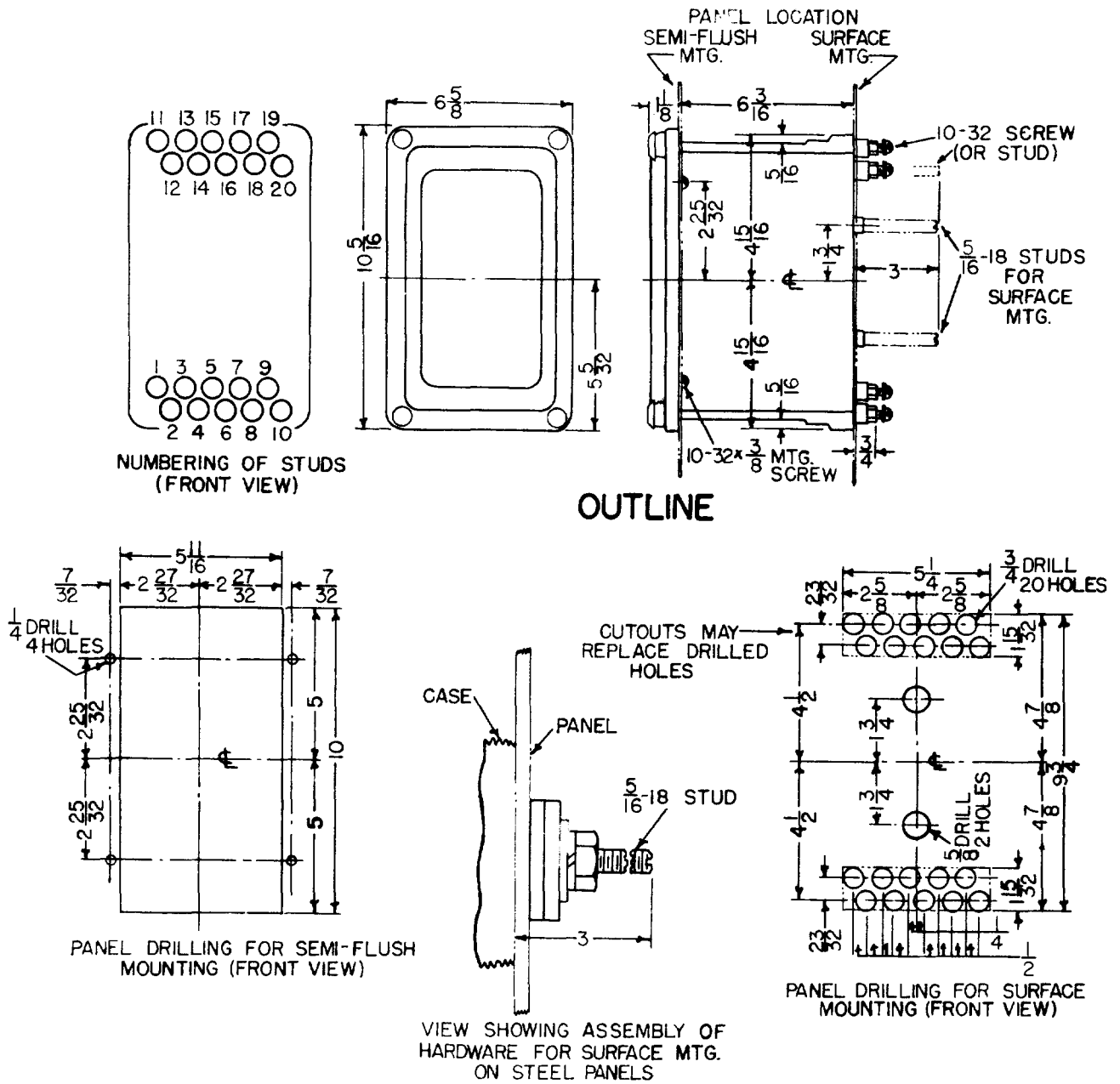


Fig. 7 Outline and Panel Drilling for Type NAA25A Relays.



---

***GE Power Management***

215 Anderson Avenue  
Markham, Ontario  
Canada L6E 1B3  
Tel: (905) 294-6222  
Fax: (905) 201-2098  
[www.ge.com/indsys/pm](http://www.ge.com/indsys/pm)