

**INSTRUCTIONS**

**GEI-50250**

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# **RELAYS**

**GROUND DISTANCE AUXILIARY RELAY**

**TYPES NAA15C AND NAA15D**

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**LOW VOLTAGE SWITCHGEAR DEPARTMENT**

**GENERAL  ELECTRIC**

**PHILADELPHIA, PA.**

## NOTES

# GROUND DISTANCE AUXILIARY RELAY

## TYPES NAA15C AND NAA15D

### INTRODUCTION

#### APPLICATION

The NAA15C relay provides interlocking for the trip circuits of three GCX17G relays in ground distance protection. In its normal application, the PJC unit coil is connected to receive CT residual current, and its contacts control tripping by means of the GCX17G relays through the RPM timer, so that the Zone 3 setting of the timer can be chosen without reference to the corresponding settings of adjacent phase distance relays for phase-to-phase faults. Where the PJC is used, the tripping circuits are carried through terminals 12, 14, and 16, and the NAA relay functions as an auxiliary blocking relay on phase-to-phase faults. When a phase fault occurs, two of the telephone relays will be energized by the GCX starting unit contacts for the two phases affected by the fault and thus all tripping circuits will be open. On the other hand, a ground fault will cause operation of the GCX starting unit for only the faulted phase, and thus only one telephone relay in the NAA relay will be energized. This permits tripping of the faulted phase.

If tripping on a three phase fault is desired, the PJC relay should not be used, and the tripping circuits should be taken from terminals 11, 13, and 15.

With either of the two connections described above, the internal connections among the auxiliary units in the NAA15 are intentionally arranged to block tripping by the GCX relay in the leading phase of any pair of phases involved in a fault (since the ohm unit of that phase will overreach) and to permit tripping by only the GCX relay in the lagging phase of the faulted pair since the ohm unit of that phase will underreach rather than overreach.

The NAA15D relay is similar to the NAA15C except the PJC unit has a mechanical target.

#### CASE

The case is suitable for either surface or semi-flush 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 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,

*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.*

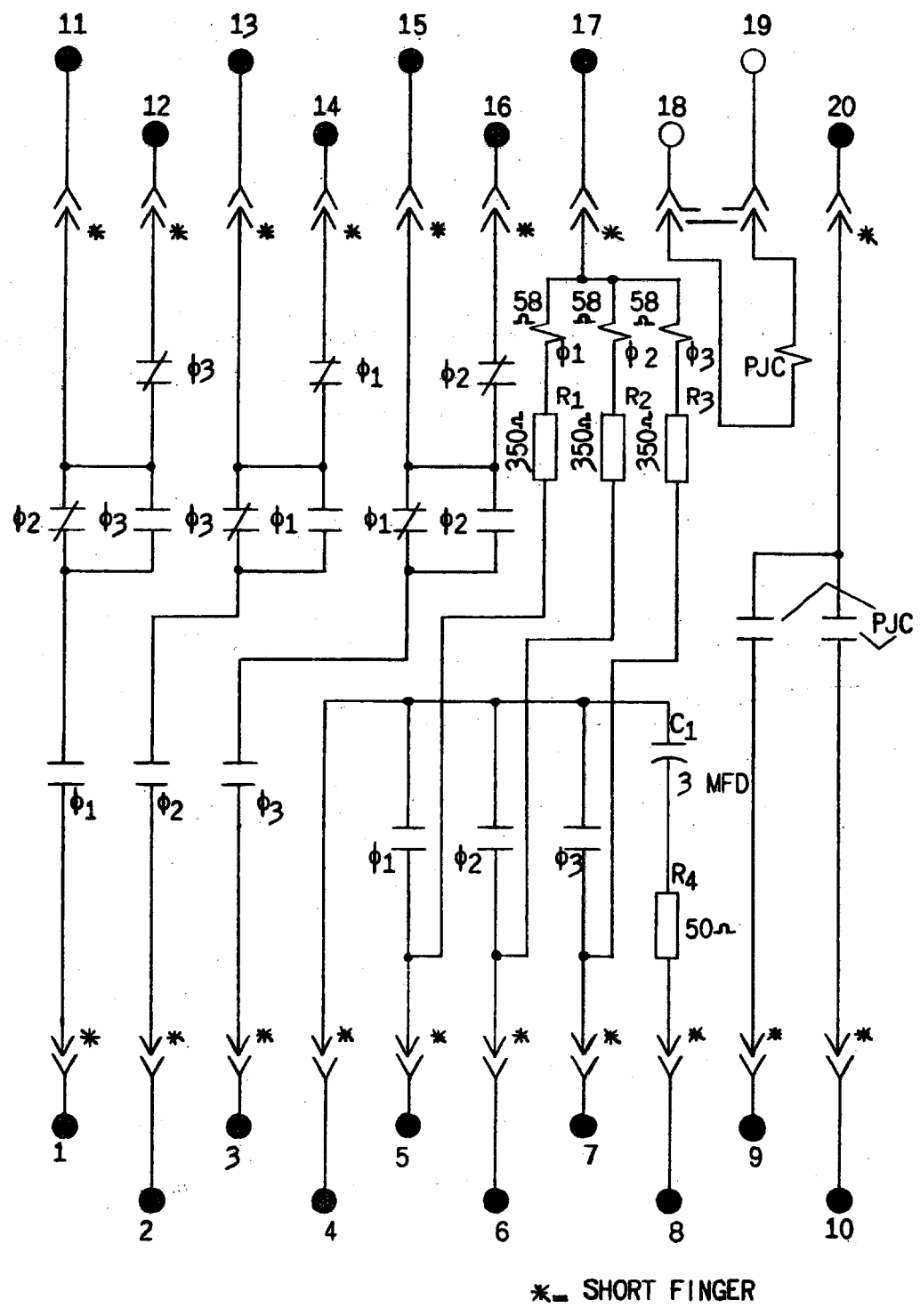


Fig. 1 (418A725)

Fig. 1 Internal Connection Diagram

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.

## 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 unpack-

ing 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.

## 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 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.

### ADJUSTMENTS

The telephone relays have been adjusted at the factory to pick up at 60 per cent or less of the rated d-c voltage.

The pickup of the PJC unit is adjustable from 1/3 to 1-1/3 of continuous rating.

## MAINTENANCE

### 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. 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 insulating abrasive material in the contacts and thus prevent closing.

The burnishing tool described above can be obtained from the factory.

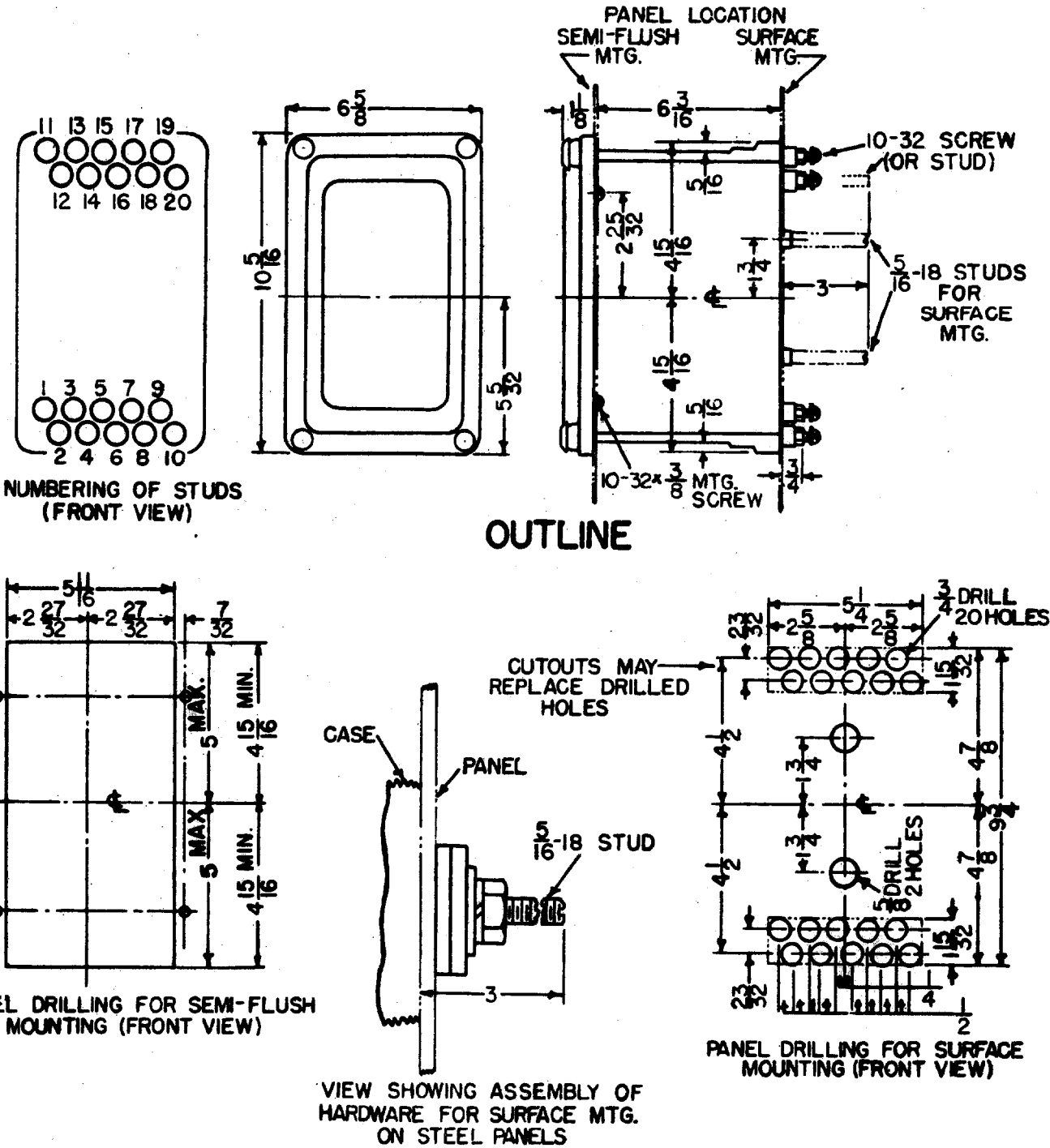


Fig. 2 (K-6209272)

Fig. 2 Outline and Panel Drilling Dimensions

## 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 near-

est 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.