



INSTRUCTIONS

GEK-45455

D.C. AUXILIARY RELAY

NGA19C(-)A

GENERAL  ELECTRIC

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D.C. AUXILIARY RELAY

NGA19C(-)A

DESCRIPTION

The NGA19C is a DC type auxiliary relay in which two telephone type relays are provided. Each of the telephone units has associated with it three electrically separate normally open contacts. Internal connections for the relay are shown in Figure 1. Outline and panel drilling dimensions for the relay are shown in Figure 3.

APPLICATION

The type NGA19C is a DC auxiliary relay that is suitable for application where the operating characteristics and ratings as described in this book are required.

RATINGS

The relay contacts will close and carry 30 amperes DC momentarily for tripping duty at control voltages of 250 VDC or less. These contacts will carry 3 amperes continuously and have an interrupting rating as given in Table A.

The resistance values of the operating coil circuits are given in Table B. The relay has been adjusted to pick up at 80 percent of rated voltage or less.

TABLE AINTERRUPTING RATINGS

A-C VOLTS	AMPS	
	INDUCTIVE*	NON-INDUCTIVE
115	0.75	2.0
230	0.5	1.5
D-C VOLTS		
48	1.0	3.0
125	0.5	1.5
250	0.25	1.0

* The inductive rating is based on the inductance of an average trip coil.

CHARACTERISTICS

The NGA19C relay is a fast pick up and time delay drop out type auxiliary relay. It incorporates two telephone type relay units and utilizes three N.O. contacts from each unit.

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.

TABLE BBURDEN

RELAY	VOLTAGE RATING	OHMS (Right Unit)	OHMS (Left Unit)
NGA19C1A	125 VOLTS	1000 ohms - Relay Coil +2500 ohms-Series Resistor = 3500 ohms $\pm 10\%$	1000 ohms - Relay Coil +2500 ohms-Series Resistor = 3500 ohms $\pm 10\%$

The NGA19C relay is rated for a continuous voltage operation. The NGA19C relay should pick up in 8 to 16.5 MS at rated voltage and time delay drop out in 116 to 167 MS when rated voltage is removed.

CONSTRUCTION

These relays are assembled in the small size, double ended (S2) drawout case having studs at both ends in the rear for external connection. The relay and case studs are electrically connected through stationary molded inner and outer blocks between which rests a removable connecting plug. The outer blocks have the terminals for the internal connections.

Every circuit in the drawout case has an auxiliary brush as shown in Figure 2M to provide adequate overlap when the connecting plug is withdrawn or inserted.

The relay mechanism is mounted in a steel framework called the cradle and is a complete unit with all leads terminated at the inner blocks. This cradle is held firmly in the case with a latch at both top and bottom and by a guide pin at the back of the case. The connecting plug, besides making the electrical connections between the respective blocks of the cradle and the case, also locks the latch in place. The cover, which is drawn to the case by thumbscrews, holds the connecting plugs in place.

The relay case is suitable for either semiflush or surface mounting. Outline and panel drilling is shown in Figure 3.

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. The relay can be drawn out and replaced by another relay which has been tested in the lab.

The right and left units as shown in the internal connections Figure 1 are telephone-type relays.

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.

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.

ACCEPTANCE TESTSMECHANICAL INSPECTION

With the relay deenergized, each normally open contact should have a gap of .010" - .015".

The wipe on each normally open contact should be approximately .005". This can be checked by inserting a .005" shim between the residual screw and the pole piece and operating the armature by hand. The normally open contacts should make before the residual screw strikes the shim.

ELECTRICAL TESTS

Since all drawout relays in service operate in their case, it is recommended that they be tested in their case 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 also required C.T. shorting jumpers and the exercise of greater care since connections are made to both the relay and the external circuitry.

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. Zener diodes, for example, can turn off during these dips. As a general rule, the DC source should not contain more than 5% ripple.

The NGA19C(-)A should pick-up at 80 percent of rated voltage or less.

INSTALLATION PROCEDURE

Mount the relay vertically in a clean, dry, and well lighted place to afford accessibility for cleaning, inspection, and testing. The mounting location should not be subjected to excessive vibration or heat from resistors and other sources.

When the relay is mounted, operate the contacts manually a few times to make sure that the moving parts do not bind and that the contacts meet in alignment. The contact "wipe" should be inspected.

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 than #12 B&S gage or copper wire or its equivalent.

PERIODIC CHECKS AND ROUTINE MAINTENANCE

In view of the vital role of protective relays in the operation of a power system, it is important that a periodic test program be followed. It is recognized that the interval between periodic checks will vary depending upon environment, type of relay and the user's experience with periodic testing. Until the user has accumulated enough experience to select the test interval best suited to his individual requirements, it is suggested that the points listed under ACCEPTANCE TEST be checked at an interval of from one to two years.

CONTACT CLEANING

For cleaning relay 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 it will clean off any corrosion thoroughly and rapidly. Its flexibility insures the cleaning of the actual points of contact. Do not use knives, files, abrasive paper or cloth of any kind to clean relay contacts.

SERVICING

If it should become necessary to adjust this relay, the following procedures should be observed.

The dropout time of the relay may be adjusted by means of the residual screw in the armature. The more the residual screw is turned in the shorter the dropout time. Be sure to tighten the locknut after adjusting this screw. The residual screw must not be removed completely. The minimum gap must be 0.002 inch between the armature and the pole face.

The dropout time may also be adjusted a small amount by varying the amount of restraining force against the contact operating arm. This can be done by slightly bending the movable flexible contact arms.

In order to decrease the pickup time of the relay, reduce the restraining force of the movable flexible contact arms by bending slightly away from the frame.

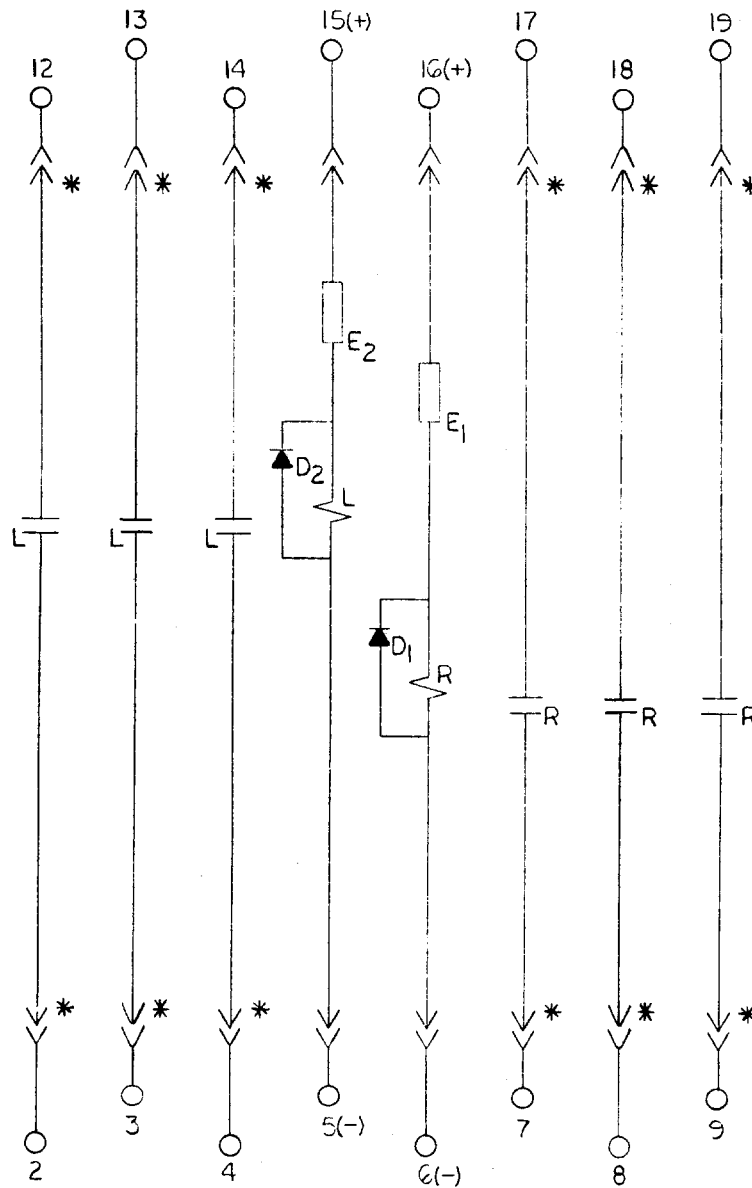
After each adjustment, the contact gap and wipe must be rechecked and the contact pressure should never be less than 10 grams measured at the contact tips. Gap should be .010-.015", Wipe should be .005".

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

RENEWAL PARTS

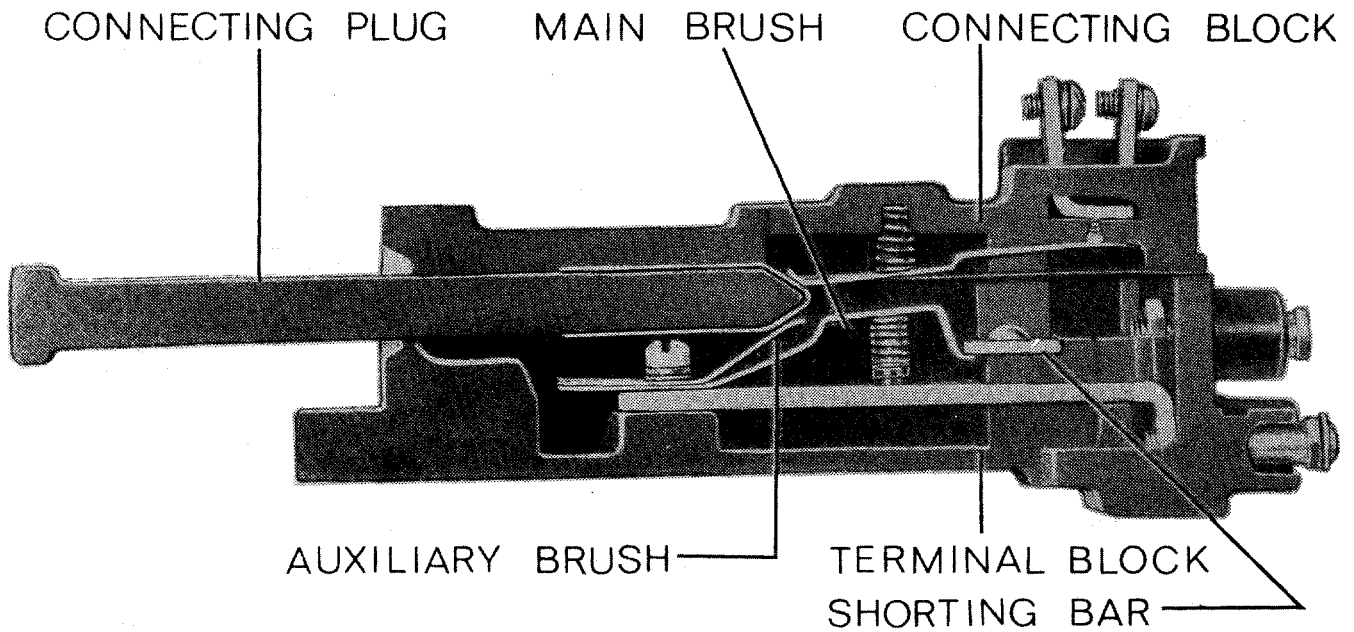
It is recommended that sufficient quantities of renewal parts be carried in stock to enable the prompt replacement of any that are worn, broken, or damaged.

When ordering renewal parts, address the nearest Sales Office of the General Electric Company, specify quantity required, name of the part wanted, and the complete model number of the relay for which the part is required.



*=SHORT FINGER

FIGURE 1 (0257A9614) INTERNAL CONNECTIONS DIAGRAM FOR NGA19C(-)A



NOTE: AFTER ENGAGING AUXILIARY BRUSH, CONNECTING PLUG TRAVELS $\frac{1}{4}$ INCH BEFORE ENGAGING THE MAIN BRUSH ON THE TERMINAL BLOCK

FIGURE 2 (8025039) CROSS SECTION OF DRAWOUT CASE SHOWING POSITION OF AUXILIARY BRUSH AND SHORTING BAR

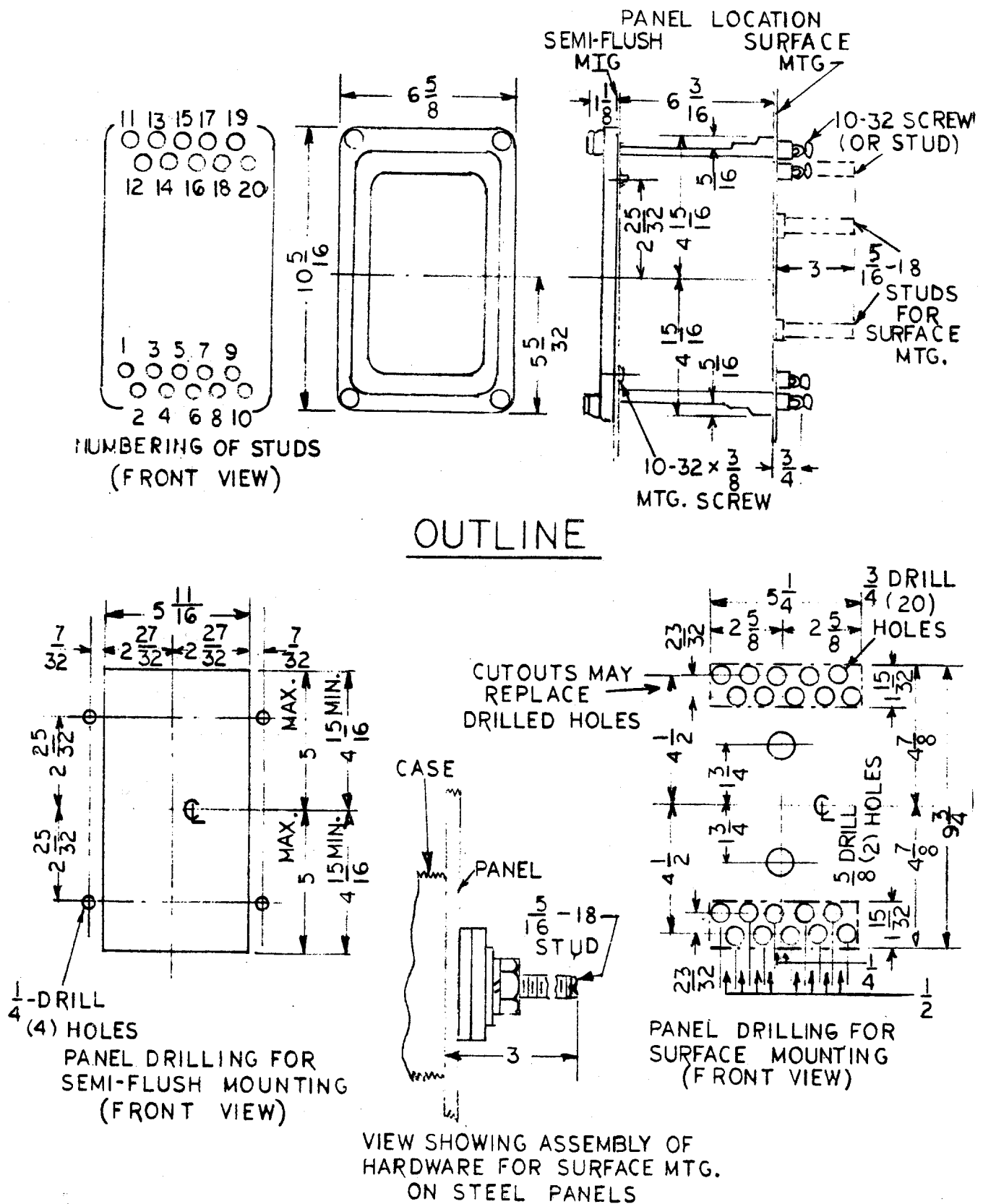


FIGURE 3 (K-6209272-2) OUTLINE AND PANEL DRILLING DIMENSIONS FOR THE NGA19C(-)A