



INSTRUCTIONS

GEI-68748A
SUPERSEDES GEI-68748

AUXILIARY RELAYS

Type HFA60

DESCRIPTION

INTRODUCTION

The Type HFA relays are instantaneous, hinged armature, auxiliary relays. They have two (2) electrically separate contact circuits adaptable for either circuit opening or circuit closing application. These relays are designed for use with Type BBA pilot wire checking relays to obtain a transfer-trip function.

The HFA60A and HFA60B relays are available for back connection only.

These relays are suitable for either surface mounting or semi-flush mounting; a steel flange is necessary for the latter.

CAUTION: When pilot wires are used to connect protective relays, it is possible for high voltages to appear between the pilot wires and ground at either or both terminals. These voltages are usually due to differences in station ground potential but may also be due to longitudinal induction if the pilot wires are run parallel to and near power lines for any distance. Since the HFA relays are connected directly to the pilot wires, parts of the relay will be the same potential as the pilot wires, and the necessary precautions should be observed when inspecting the relay or testing it in place.

CHARACTERISTICS

The HFA60A and HFA60B relays are both self reset and have an instantaneous dropout. The HFA60A has a normal armature gap while the HFA60B has a short gap.

* Denotes change since superseded issue.

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.

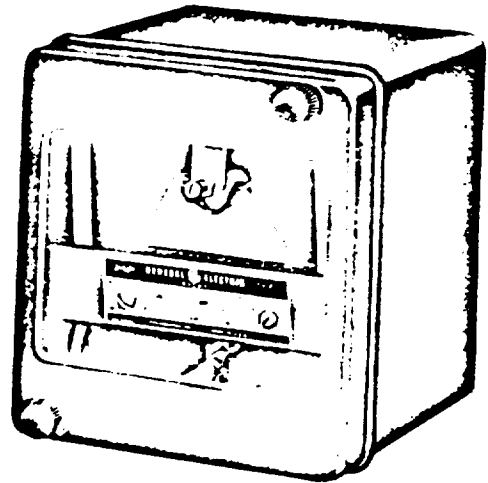


Fig. 1 HFA60 Back Connected Surface Mounted Relay
(Front View)

The maximum pick-up time for the HFA60A is approximately 5 cycles (60 cycle basis). For the HFA60B it is approximately 2 cycles. These times are inherent and are not set by test procedure.

The relays are designed to withstand for one second a hipot of 10kv between the two contact circuits, between contact circuits and coil circuit and between the contact circuits and frame. These relays will not withstand the 10kv hipot across the contact gaps.

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Fig. 1 (8025906)

Unless the relays are ordered with a specific contact arrangement, they will be shipped with circuit closing contacts (Code 20). The contact arrangement can be easily changed to provide any of the combinations shown in Table I.

TABLE I
CONTACT CODES

CODE NO.	20	11	02
POS. NO.	CONTACT ARRANGEMENT		
1	a	a	b
6	a	b	b

RATINGS

The Type HFA relays are available with continuous coil ratings for standard voltages up to 575 volts at 25, 50, or 60 cycles and up to 250 volts d-c.

The current closing rating of each contact is 30 amperes. The current carrying rating is 12 amperes continuous or 30 amperes for one minute. Table II lists the non-inductive interrupting capacity of each contact.

TABLE II
CONTACT INTERRUPTING RATING

D-C			A-C		
VOLTS	AMPERES		VOLTS	AMPERES	
	HFA60A	HFA60B		HFA60A	HFA60B
12	30	10	115	30	15
24	15	5	230	20	10
32	10	3	460	15	5
48	8	2	575	10	--
125	3	0.75	---	--	--
250	1	0.25	---	--	--

BURDENS

The burdens are measured with the relay in the picked up position and at rated voltage. See Table III.

TABLE III
BURDENS

DC COILS		AC COILS		
WATTS		FREQ. CYCLES	VOLT-AMPERES	WATTS
COLD	HOT			
7.8	6.0	25	10	4
		50	23	9
		60	32	12

INSTALLATION

LOCATION

Since the HFA relays are connected directly into the pilot wire circuit which may be subject to high voltages to ground, it is recommended that the relay be located as near as possible to the point where the pilot wires enter the building in order to confine the hazardous voltage to as small a part of the station as possible. The location should also be clean and dry, free from dust and excessive vibration, and well lighted to facilitate inspection and testing.

MOUNTING AND CONNECTIONS

The Type HFA relays should be mounted on a vertical surface. The outline and panel drilling diagrams are shown in Figs. 3 and 4. Surface mounting on steel panels requires an insulating bushing for each terminal.

ADJUSTMENTS

These relays have been calibrated at the factory and no further adjustments are necessary. If the relays should need adjustments, refer to the MAINTENANCE SECTION of this book.

MAINTENANCE

CONTACTS

CLEANING

In 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.

Fine silver contacts should not be cleaned with knives, files or abrasive paper or cloth.

The burnishing tool described is included in the standard XRT11A relay tool kit obtainable from the factory.

ADJUSTMENT

The contacts should not require readjustment since they are self-aligning.

Any contact circuit can be changed from circuit opening to circuit closing, or vice versa, by removing the fixed contact, turning it over and replacing it. (See Table I.) After the change the contacts should be checked to see that all circuit closing contacts make simultaneously when the relay is operated by hand, and that all circuit opening contacts reclose simultaneously when the relay is allowed to drop out. All moving contacts should have at least 3/64 inch wipe when in their operated position. It may be necessary to bend the moving contact arms to realize these requirements.

ELECTRICAL TESTS

PICKUP (HFA60A)

The relays are adjusted at the factory to pickup at 80 percent of rating for AC coils and 60 percent of rating for DC coils. Normally these adjustments should not change; if it is necessary to readjust the relay the knurled adjusting nut should be lifted 1/16 inch, turned clockwise to raise pickup or counter clockwise to lower pickup, and then replaced in the hexagonal groove in the armature tailpiece.

PICKUP (HFA60B)

To adjust for the short armature gap, pick up the armature by hand to the position where the normally open contacts just make. Then turn the backstop screw clockwise until it just touches the armature surface; back it off two (2) full turns. The tension on the control spring should be such that the relays with AC coils pick up at 60% of rating and those with DC coils pick up at 40% of rating.

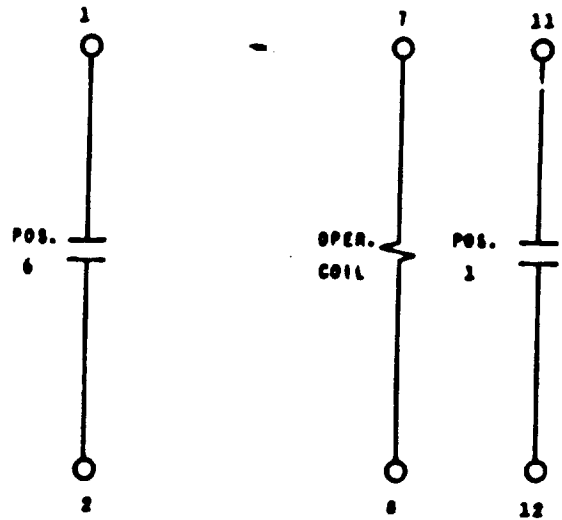


Fig. 2 Internal Connections For HFA60 Relays (Back View)

RENEWAL PARTS

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. The renewal parts publication is GEF-2757.

Fig. 2 (6556598-1)

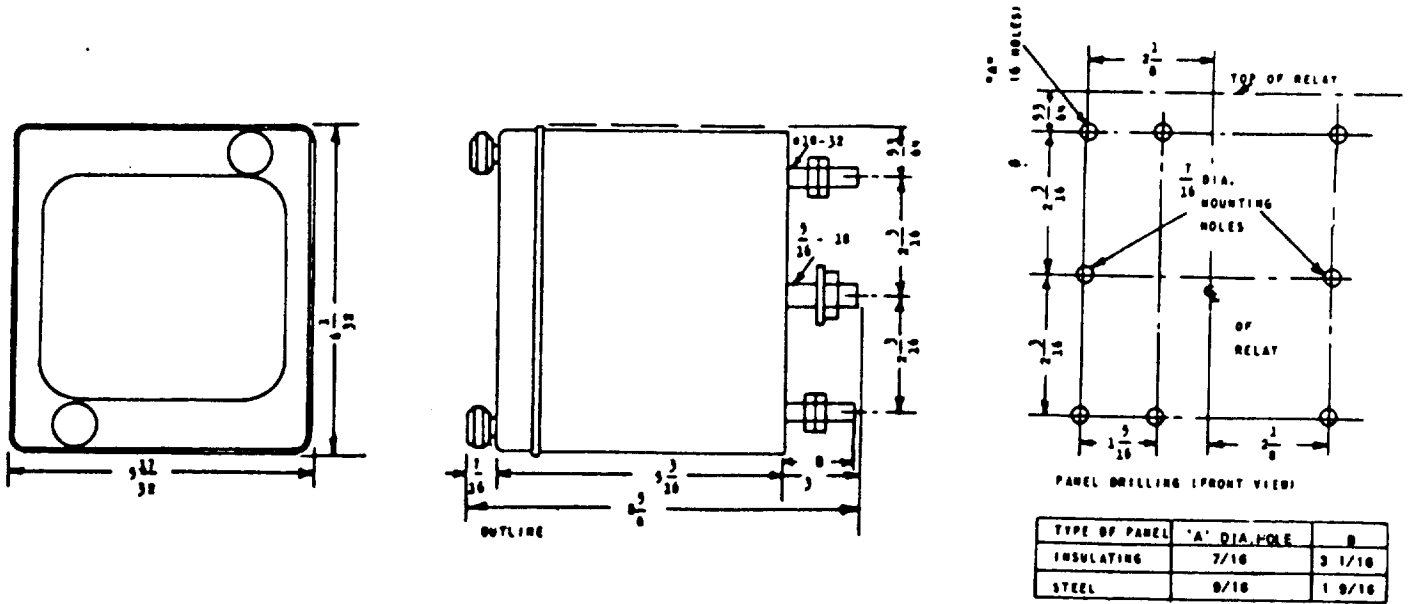


Fig. 3 Outline And Panel Drilling For Surface Mounted NFA60 Relay (Typical Model Number is NFA60A(-))

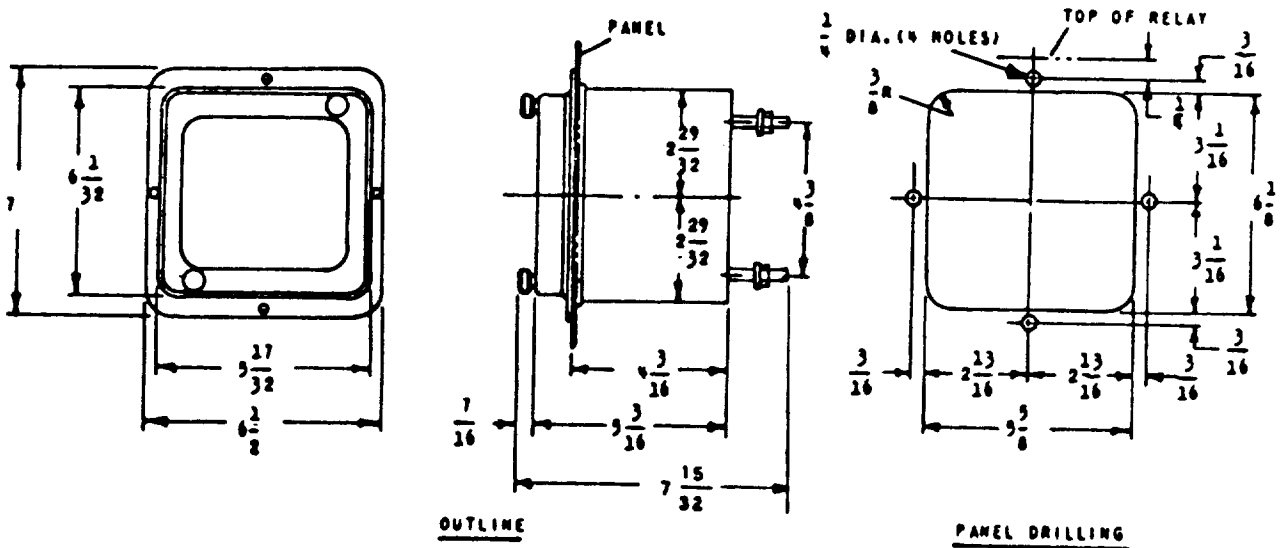


Fig. 4 Outline And Panel Drilling For Semi-flush Mounted NFA60 Relay (Typical Model Number is NFA60A(-)F)