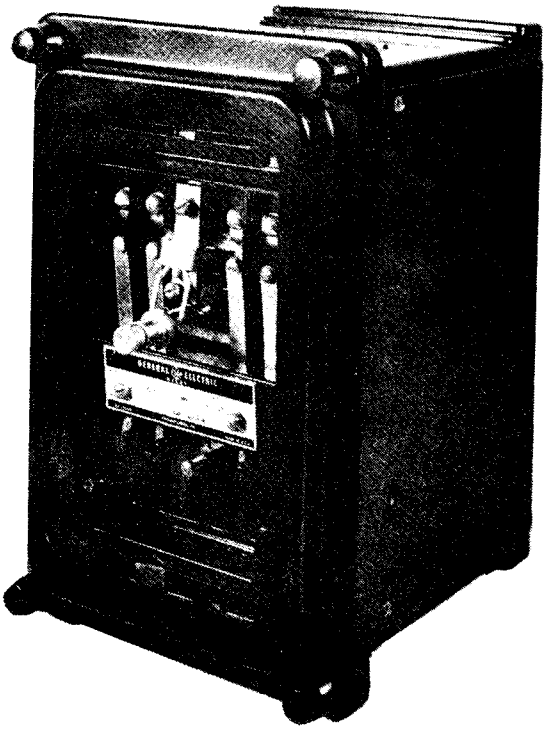
INSTRUCTIONS

GEK-41897C

MULTI-CONTACT AUXILIARY RELAYS

TYPE
HFA71



GENERAL ELECTRIC

CONTENTS

	PAGE
DESCRIPTION	3
INTRODUCTION	3
CHARACTERISTICS	3
TABLE I	4
RATINGS	4
TABLE II	4
BURDENS	4
TABLE III	4
RECEIVING, HANDLING AND STORAGE	5
INSTALLATION	5
MOUNTING AND CONNECTIONS	5
ADJUSTMENTS	5
MAINTENANCE	5
CONTACT CLEANING	5
ADJUSTMENTS	5
CONTACTS	5
PICKUP	5
RENEWAL PARTS	

MULTI-CONTACT AUXILIARY RELAYS

TYPE HFA71

DESCRIPTION

INTRODUCTION

The HFA71A and HFA71B relays are instantaneous, hinged armature, multi-contact, auxiliary relays. They have six electrically separate contact circuits adaptable for either circuit opening or circuit closing application. This arrangement permits a number of operations to be performed simultaneously.

The relays are mounted in single-unit double-end drawout type cases. The case has studs for external connections at both ends. The electrical connections between the relay and the case are made through stationary molded inner and outer blocks between which rests a removable connecting plug which completes the circuits. The molded outer blocks carry the studs for the external connections while the inner blocks carry the terminals for the internal connections. The operating coil is connected in parallel with both the upper and the lower inner molded blocks while the contact circuits are connected in series with these blocks. In this way, insertion of either the upper or lower connecting plug will energize the operating coil but the contact circuits will not be completed until the second connecting plug is inserted.

The internal connection diagram for these relays is shown by Figure 1 of this instruction book. Outline and panel drilling are shown by Figure 2.

CHARACTERISTICS

The HFA71A relay is self reset and has an instantaneous dropout.

The HFA71B relay is hand reset by means of a plunger assembly installed through the transparent cover.

Unless the relays are ordered with a specific contact arrangement, they will be shipped with six circuit closing contacts (Code 60). The contact arrangement can be easily changed to provide any of the combinations shown in Table I.

TABLE I

CODE NO.	60	51	42	33	24	15	06
POSITION NO.	CONTACT ARRANGEMENT						
1	a	a	a	a	a	a	b
2	a	a	a	a	b	b	b
3	a	a	b	b	b	b	b
4	a	b	b	b	b	b	b
5	a	a	a	b	b	b	b
6	a	a	a	a	a	b	b

Note: a = Normally Open b = Normally Closed

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.

The operating coil should pick up at 80 percent of rated voltage for AC relays and 60 percent of rated voltage for DC relays. (See ADJUSTMENTS SECTION of this book). The drop out voltage is 45 to 60 percent of rated voltage for AC relays and 5 to 10 percent of rated voltage for DC relays.

The operating time at rated voltage is 45 to 65 milliseconds and at 65 percent of rated voltage is 130 to 170 milliseconds.

RATINGS

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

The current closing rating of each contact is 30 amperes. The current carrying rating is 12 amperes continuous, 30 amperes for one minute or 125 amperes for one second.

Table II lists the non-inductive interrupting capacity of each contact.

TABLE II

DC		AC	
VOLTS	AMPERES	VOLTS	AMPERES
12	30	115	30
24	15	230	20
32	10	460	15
48	8	575	10
125	3		
250	1		

BURDENS

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

TABLE III

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

RECEIVING, HANDLING AND STORAGE

These relays, when not shipped 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 rough handling is evident, a damage claim should be filed at once with the transportation company and the nearest General Electric Sales Office should be notified promptly.

Reasonable care should be exercised in unpacking the relay in order that none of the parts get injured or the adjustments disturbed.

If the relays are not to be installed immediately, they should be stored in their original carton in a place that is free from moisture, dust, and metallic chips.

INSTALLATION

MOUNTING AND CONNECTIONS

The Type HFA71 relays should be mounted on a vertical surface. The outline and panel drilling diagram is shown in Figure 2. The internal connections are shown in Figure 1.

After the relay has been mounted it should be operated a few times to be certain that the mechan'sm operates freely, and that the contact surfaces align properly and open quickly when the coil is de-energized.

ADJUSTMENTS

These relays have been calibrated at the factory and under normal conditions will require no further adjustments. If further adjustments are required, refer to the MAINTENANCE SECTION of this book.

MAINTENANCE

CONTACT 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.

ADJUSTMENTS

CONTACTS

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. 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. It may be necessary to bend the moving contact arms to realize these requirements.

It may be necessary to increase the armature travel by means of the armature adjusting screw to get sufficient wipe on the normally closed contacts. All pigtails should be checked to insure that they exert no force on the contacts. If the above changes are required, the pickup should be rechecked.

PICKUP

The relays are adjusted at the factory to pickup at 80 percent (minimum 73 percent, maximum 81 percent) of rating for a-c coils and 60 percent (minimum 55 percent, maximum 61 percent) of rating for d-c coils. Normally these adjustments should not change; if it is necessary to readjust the relay the adjusting nut should be lifted 1/16 inch, turned clockwise to raise pick-up or counterclockwise to lower pickup, and then reseated in the hexagonal groove in the armature tailpiece.

After all adjustments are completed, the relay should be operated a few times to be certain that the mechanism operates freely, and that the contact surfaces align properly and open quickly when the coil is de-energized.

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.

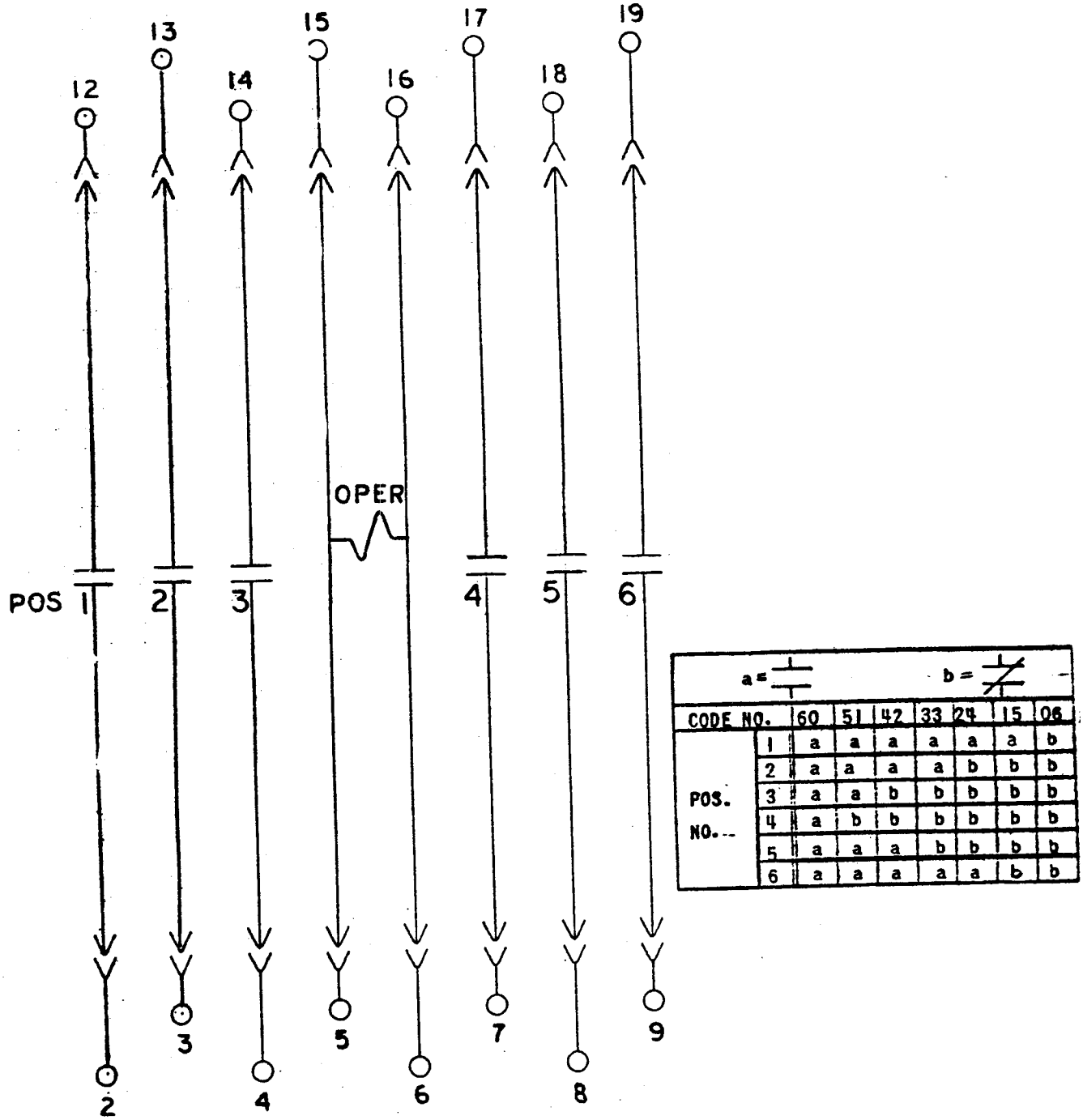


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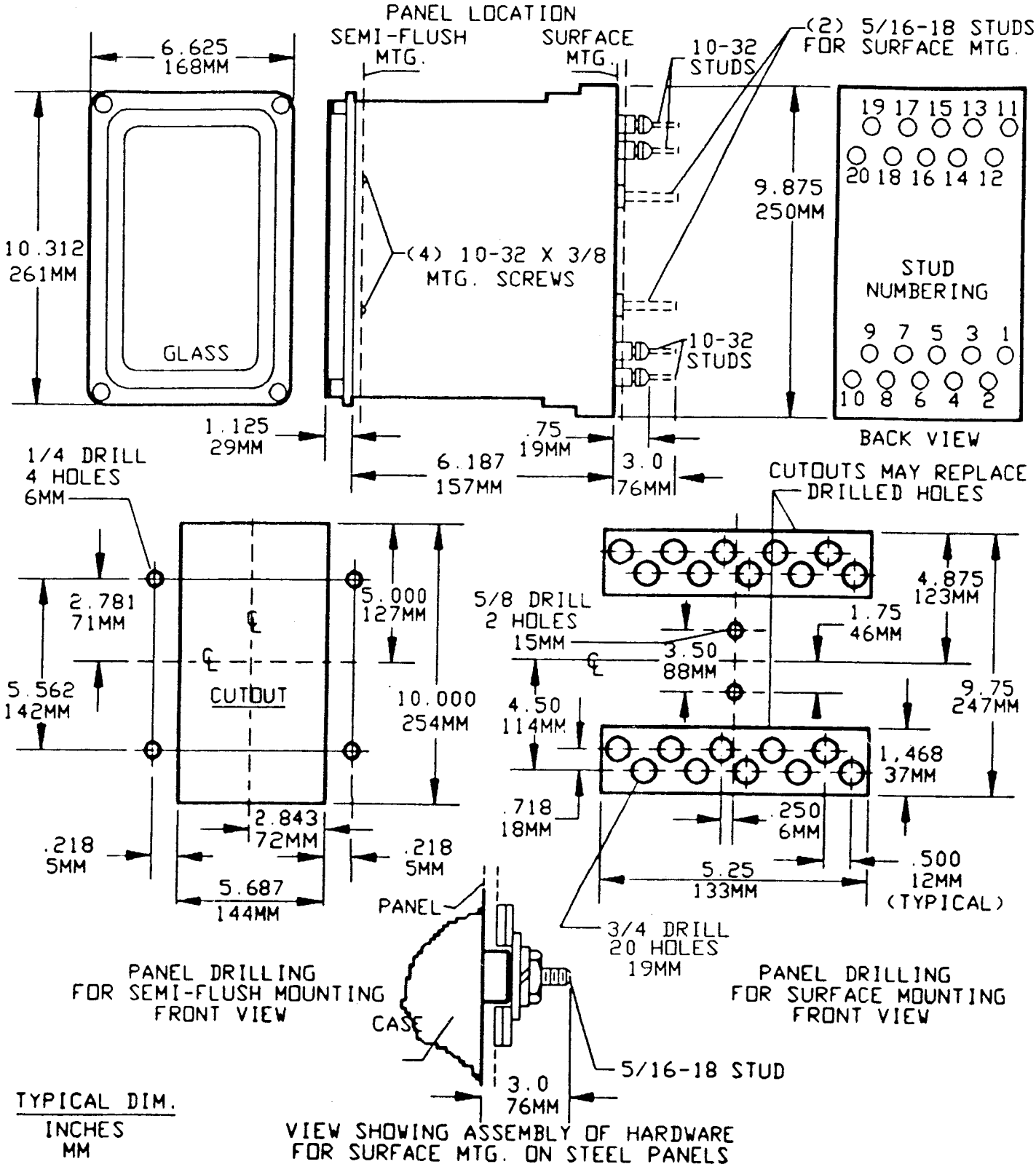
FIG. 1 (0246A6935-0) Internal Connection Diagram For Type HFA71 Relays (Front View)



* Fig.2 (K-6209272 [7]) OUTLINE AND PANEL DRILLING DIAGRAM FOR HFA71 RELAYS

* Indicates revision

Meter and Control Business Department

ST-6/93 (300)

General Electric Company
205 Great Valley Parkway
Malvern, PA 19355