



INSTRUCTIONS

GEI-33918B

SUPERSEDES GEI-33918A

HIGH-SPEED AUXILIARY RELAYS

Types

**HMA14A HMA14F
HMA14B HMA14H
HMA14J**

LOW VOLTAGE SWITCHGEAR DEPARTMENT

GENERAL  ELECTRIC

PHILADELPHIA, PA.

HIGH-SPEED AUXILIARY RELAYS

TYPE HMA

INTRODUCTION

The HMA relays are high-speed auxiliary relays designed for use in conjunction with high-speed circuit breakers. Their contacts are opened and closed by the movement of a hinge-type armature. The two movable contacts are electrically separate and are held in position on the armature by means of a Textolite** contact carrier and spring housing. The armature is hinged on the uprights of a molded Textolite base which also supports the stationary contacts and the coil and magnet assembly. The operation of the armature is controlled by a stiff spring which prevents closure of the contact circuits from shock. The contact springs are stiff to eliminate bounce during contact closure.

Special features of each relay are given in Table I.

TABLE I

Relay	Type of Conn.	Cover	Contact Norm. Open	Arrangement Norm. Closed
HMA14A	back	yes	2	0
HMA14B	back	yes	2	0
HMA14F	back	yes	1	1
HMA14H	front	no	1	1
HMA14J	back	yes	2	1

OPERATING CHARACTERISTICS

The high-speed operation of the HMA relays is obtained by decreasing the armature travel. Armature travel is adjusted by means of an adjustable screw backstop or contact in the position usually occupied by a normally-closed contact. All types except HMA14A are provided with wiper adjusting screws which, when used in conjunction with the backstop, provide a convenient method of adjusting the armature gap independently of contact gap and wiper.

Types HMA14B and HMA14J are supplied with external resistors of the proper value to secure a

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low time constant for the coil circuit, giving even faster operation than the other types covered by these instructions.

OPERATING TIMES

As previously mentioned, these relays are designed for high-speed operation. Type HMA14B and HMA14J are adjusted at the factory to operate within 0.25 cycle or less on a 60 cycle basis. All other types are adjusted to operate within 0.5 cycle or less.

Under normal conditions, it should not be necessary to change the time or pick-up adjustments. If, however, the correct values are not obtained, they may be adjusted as indicated under ADJUSTMENTS.

RATINGS

The coil circuits of the HMA relays are rated for intermittent duty and should not be energized for more than 10 seconds.

The contacts will make and carry 12 amperes continuously or 30 amperes for one minute. Because of their small gap in the open position, the contacts will not interrupt the trip coil currents normally encountered. Some additional means must be provided for opening the contact circuit before the relay is de-energized.

BURDENS

D-C Volts	Coil Watts †	
	Without Res.	With Res.
24	12.1	9.6
125	25.4	34.9
250	32.9	69.5

† Watts dissipated in coil only. Additional watts will be dissipated in the external resistor for those relays having resistors.

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.

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 diagrams are shown in Figs. 1, 2 and 3.

CONNECTIONS

The internal connection diagrams are shown in Figs. 1, 2 and 3.

ADJUSTMENTS

If it becomes necessary to readjust the relays, the following points should be observed.

HMA14A

The moving contacts should make simultaneously when the armature is closed by hand. The contact gap should be set for approximately 1/32 inch by turning the backstop screw in all the way and then backing it off two full turns. After this adjustment,

the backstop screw should be secured by means of the locknut. The armature should travel (wipe-in) at least 1/32 inch after the contacts have made; this is to be measured at the top of the armature. These adjustments should give a close approximation of the specified pick-up time.

HMA14B, HMA14F, HMA14H AND HMA14J

The moving contacts should make simultaneously when the armature is operated by hand. The contact gap should be set for approximately 1/32 inch by turning the backstop screw in all the way and then backing it off two full turns. After this adjustment, the backstop screw should be secured by means of the locknut. The armature should travel (wipe-in) about 1/32 inch after the contacts have made when the armature is closed by hand. This can be set as follows. With the armature held closed by hand, run both adjusting screws in the movable contact arms in until they strike the contact carrier. Then back out these adjusting screws one full turn and lock in position by means of the locknuts.

All of the relays covered by these instructions should pick up at 60 per cent or less of rated voltage, using the series resistor when it is specified. If the pickup is above 60 per cent, the value may be lowered by decreasing the control spring tension.

MAINTENANCE

An operation test and mechanical inspection of the relay should be made once every six months.

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.

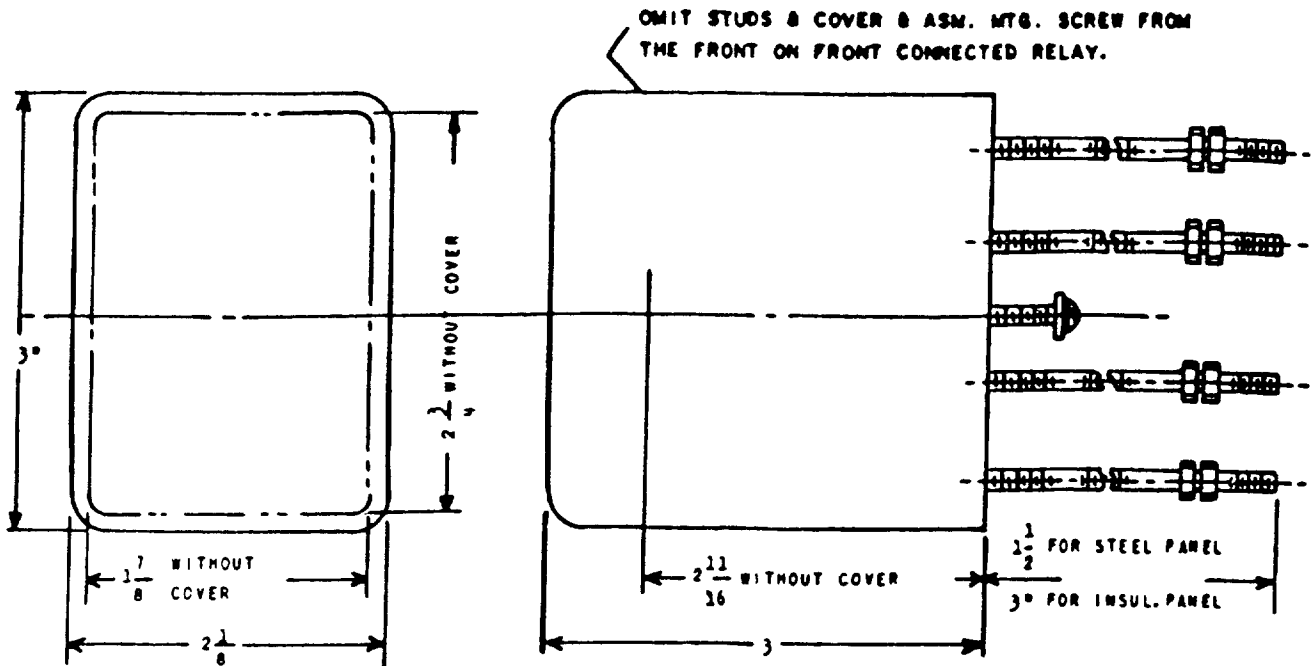
The burnishing tool described is included in the standard relay tool kit obtainable from the factory.

RENEWAL PARTS

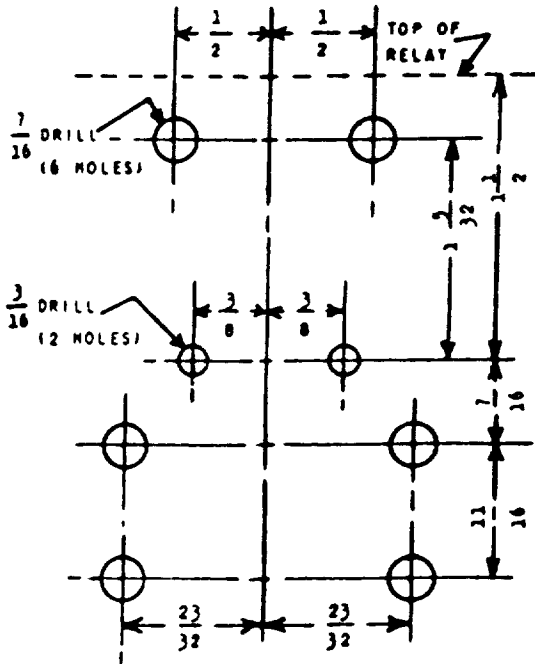
Because of the nature of the relay construction it is not recommended that replacement parts be installed. Instead spare units should be available for installation in case of emergency. Order for

spare units should be addressed to the nearest Sales Office of the General Electric Company giving the complete model number and voltage rating of the relay desired.

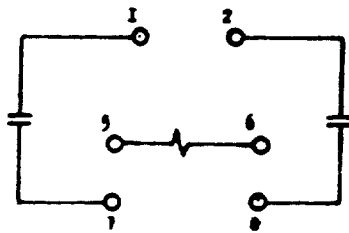
Fig. 1 (K-6200701)



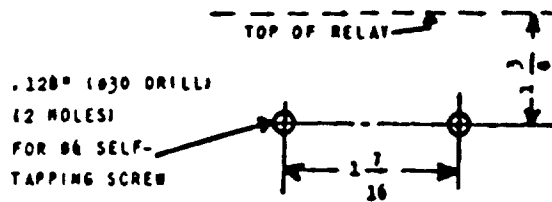
OUTLINE
FRONT & BACK CONNECTED RELAYS



PANEL DRILLING



INTERNAL CONNECTIONS
BACK VIEW



FRONT CONNECTED
PANEL DRILLING

(FRONT VIEW)

Fig. 1 Outline, Panel Drilling, And Internal Connections For Relay Types HMA14A And HMA14B

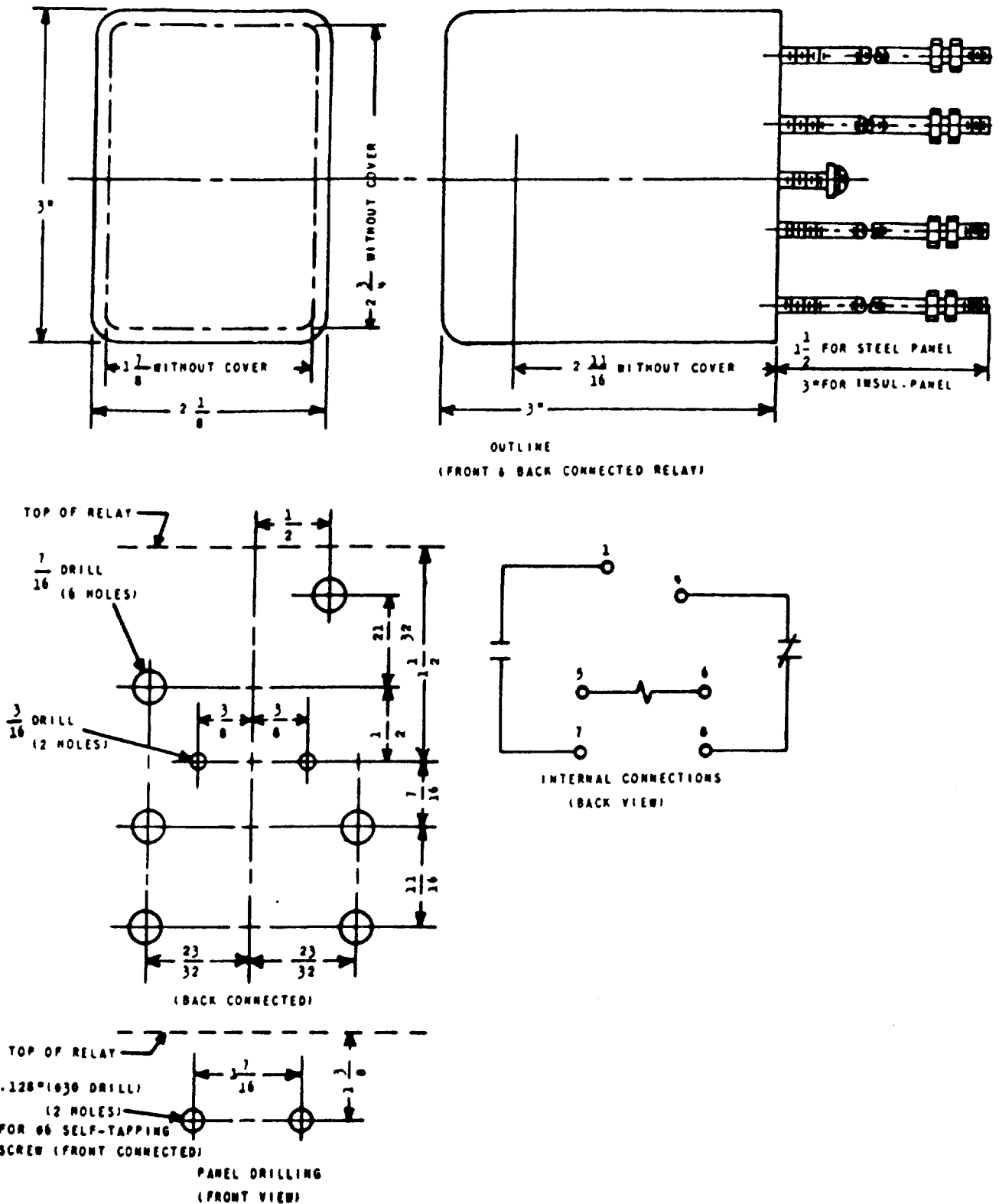


Fig. 2 (K-6305886)

Fig. 2 Outline, Panel Drilling, And Internal Connections For Relay Types HMA14F And HMA14N

Fig. 3 (K-6507985)

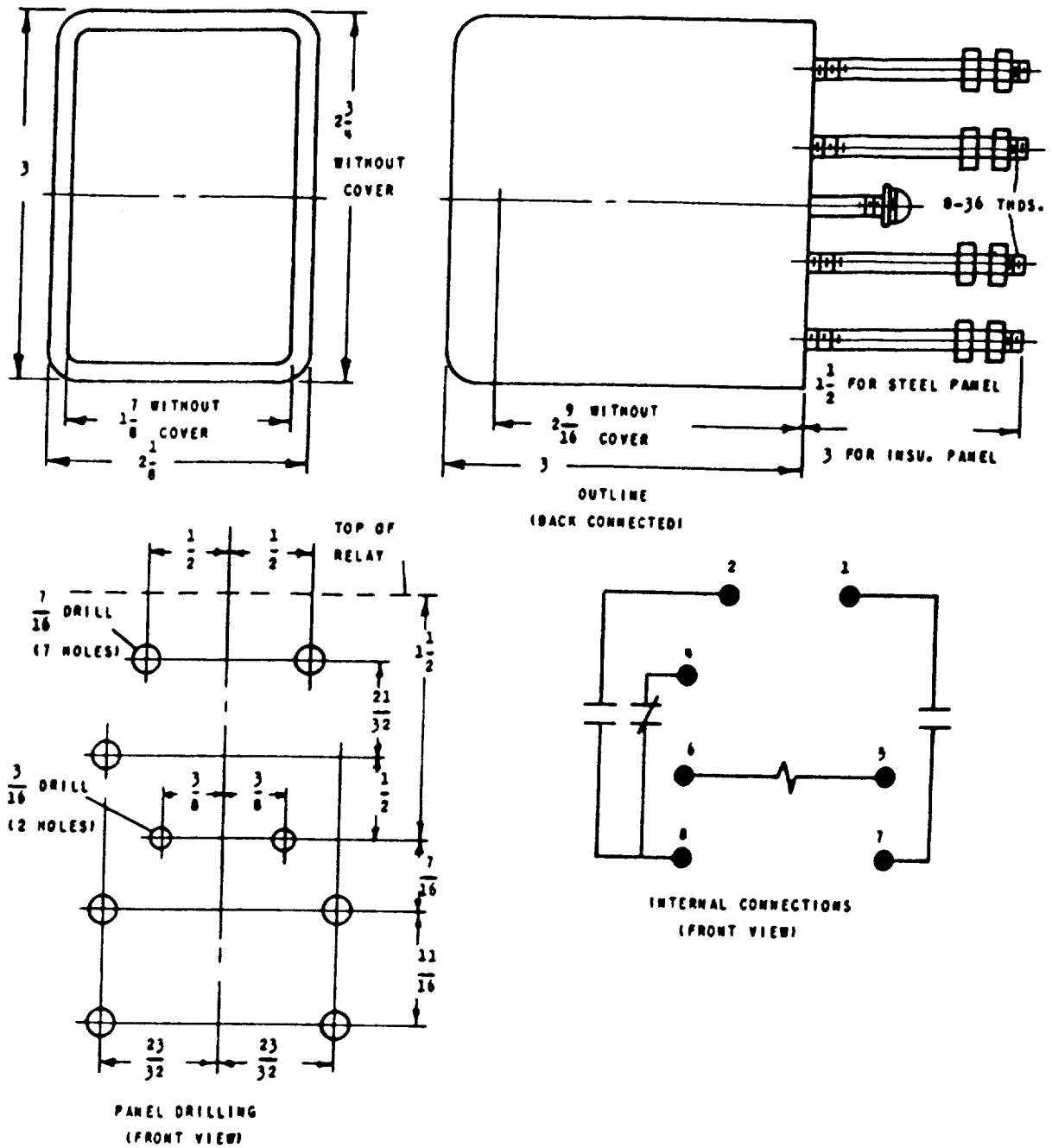


Fig. 3 Outline, Panel Drilling And Internal Connections For Type HMA14J Relay



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