

RELAYS

HIGH SPEED RELAY

TYPE
HCA12A

LOW VOLTAGE SWITCHGEAR DEPARTMENT

GENERAL  ELECTRIC

HIGH SPEED RELAY

TYPE HCA12A

INTRODUCTION

The Type HCA12A relay consists of a main unit and an auxiliary resetting relay mounted together with all necessary resistors in a standard universal case.

APPLICATION

The relay closes one circuit when the operating coil is energized, and re-opens it when its self-contained resetting relay is energized.

It is designed primarily for use as a high speed auxiliary tripping relay for circuit breakers whose tripping currents exceed the contact capacity of the associated protective relays.

RATINGS

The main contact will make and carry 125 amperes for one second. Because of the small contact gap in the open position this contact will not interrupt the trip coil currents normally encountered. Some additional means must be provided for opening the 5-6 contact circuit before resetting the relay by energizing the 15-16 circuit.

The coil circuits of this relay are rated for intermittent duty and should not be energized for more than one second.

BURDENS

D-C Volts	Resistance *			Watts *		
	Oper.	Reset	Aux.	Oper.	Reset.	Aux.
250	35	1175	2940	1790	53	21
125	8.5	300	1620	1840	52	9.6

*Values include internal resistors when used.

CHARACTERISTICS

The main contacts close in 0.0015 to 0.002 second after the operating coil is energized at normal voltage.

INSTALLATION

The relay should be mounted on a vertical surface in a location that is clean and dry, free from dust and excessive vibration, and well lighted to facilitate inspection and testing.

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.

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The outline and panel drilling dimensions are shown in Fig. 1.

CONNECTIONS

Fig. 1 also shows the internal connections. The external connections will depend upon the requirements of the particular installation, but must also meet the following requirements.

1. Studs 7 and 8 must be positive, and 13 and 14 negative.
2. The trip circuit made by the 5-6 contacts must be broken externally before energizing the 15-16 circuit to reset the relay.
3. Each coil must be de-energized promptly when its function is completed.

Complete resetting will occur if the 5-6 contact is connected to open the 15-16 resetting relay circuit.

One of the mounting studs may be permanently grounded, if desired, by a conductor not less than No. 12 B & S gage copper wire or its equivalent.

OPERATION

Assuming that the relay is in the reset position, it is held there by flux from a permanent magnet passing through pole pieces to an armature which operates the main contacts. When the 7-13 coil circuit is energized with positive on 7, some of the permanent magnet flux is thereby diverted from the armature; springs then overcome the remaining flux, thus closing the 5-6 contact circuit.

When this contact circuit has completed its function, the 13-16 resetting relay coil circuit may be energized to reset the main relay. Studs 8 and 14 are continuously energized with positive on 8, so the closure of the contact of the resetting relay energizes the resetting coil of the main relay; the flux from this coil adds to the permanent magnet flux sufficiently to attract the armature and thus reopen the contacts ready for the next operation.

PERIODIC INSPECTION

A periodic operating test and mechanical inspection of the relay is recommended. The initial interval should be from one to three months depending on the frequency of operation, and this interval may then be lengthened as experience indicates.

The main contacts will require occasional adjustment to maintain the armature gap at the small value necessary for resetting at the minimum battery voltage.

Normal adjustment is about $\frac{1}{2}$ turn back from the setting where the contacts are just closed in the reset position of the relay. The contact pressure is sufficient to avoid any necessity for cleaning.

The permanent magnets are constructed of the best available material but some aging may be encountered because of the nature of the service. To detect

this aging and compensate for it, the following procedure is recommended:

1. Measure the voltage required across 7-13 to close the main contacts with the cover on.
2. Measure the voltage required across 8-14 (with auxiliary resetting relay closed by hand) To reopen the main contacts with the cover on.
3. Compare values (1) and (2) with Table I below.
4. If (2) is higher than rated voltage, reduce the spring pressure (counting sixths of turns on the nut) to get operation within this limit, but not enough to raise (1) above the value shown in Table I.

TABLE I

Coil Circuit	Volts to Operate	
	250 V Rating	125 V Rating
7-13	140 or less	70 or less
8-14	170 or less	70 or less
15-16	172-178	72 or less but higher than 8-14 coil circuit

The amount of change in (1) and (2) since the last previous check indicates indirectly the amount of aging that has occurred. When this and the contact wear are both small, the interval between inspections may be increased.

REPAIRS AND RENEWAL PARTS

The relay is simple in construction and minor repairs may be affected easily. If a new main coil is to be installed, care must be taken to assemble it with correct magnetic polarity as well as electrical connections, and the operation and re-setting of the relay should be checked immediately thereafter.

It is recommended that the relay be sent to the factory if major repairs are necessary.

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 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.

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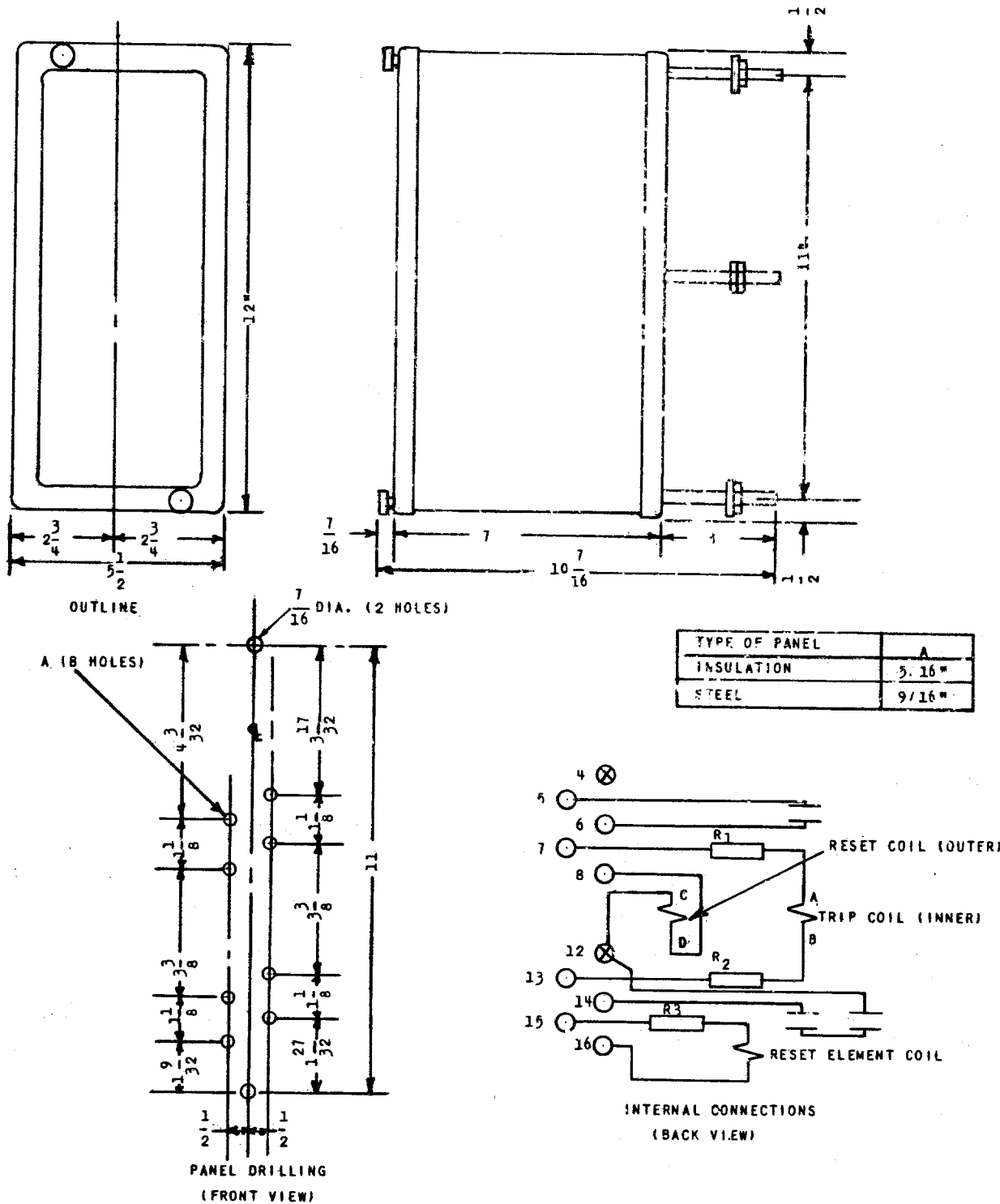


Fig. 1 (K-6306826)

Fig. 1 Outline & Panel Drilling Dimensions and Internal Connections For Type HCA12A Relay.



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