OVERLOAD PROTECTION ASSEMBLY FOR USE WITH TYPE GCA SIZE 5 CONTACTORS

DESCRIPTION

The Type A Thermal Overload Relay can be integrally mounted on the Type GCA Size 5 Contactor to build the assembly shown in Fig. 1. When used with the specially designed Type GCO Current Transformers, the Type A relay provides motor overload protection without requiring additional panel drilling or external wiring. The reset rod location of the Type A relay when mounted on the contactor is shown in Fig. 4.

A typical Type A relay and the associated Type GCO transformers for providing three phase overload protection are shown in Fig. 2. The antirattle springs for transformer mounting and a relay shorting clip are also shown. The antirattle springs prevent movement of the Type GCO transformers on the load terminal straps which provide both the mounting and the single turn transformer primary. The relay shorting clip and its caution tag are installed to prevent damage to the Type GCO transformers if they are inadvertantly energized with the secondary wires open circuited. This might occur prior to heater installation when the Type A relay is shipped without heaters. (Heaters generally ordered separately)

Additional Descriptive Information

Additional information and detail instructions are available in the following Instruction Leaflets:

- Type A Thermal Overload Relay, see I.L. 13193
- Type GCA Size 5 Contactor, see I.L.15-825-14A
- Type GCO Current Transformers, see below

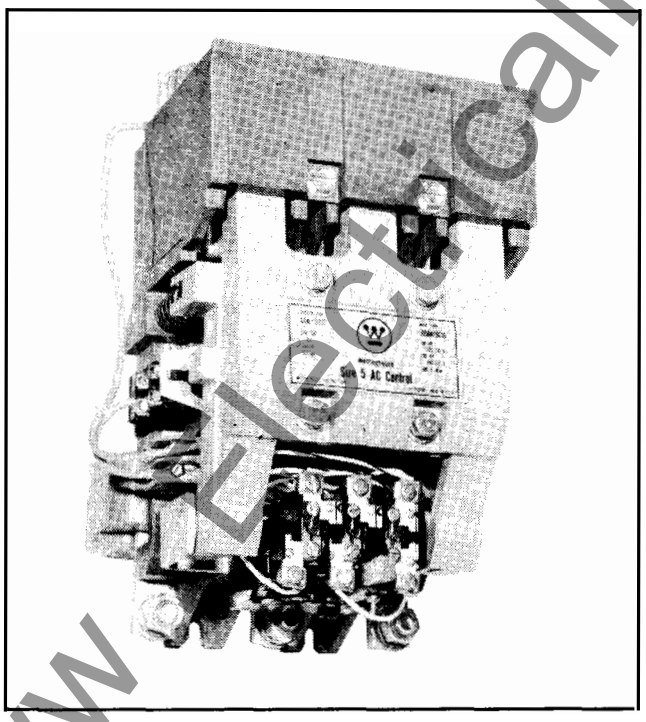


Fig. 1 (Photo BD 70–0879)
Type A Thermal Overload Relay and Type GCO Current Transformers mounted on the Type GCA Size 5 Contactor

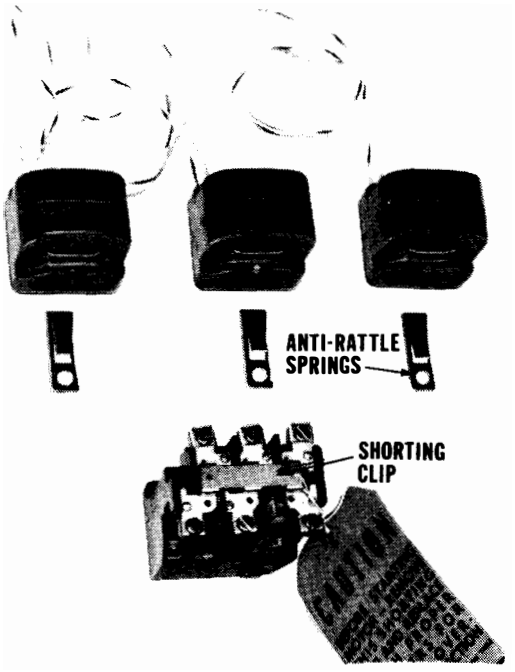


Fig. 2 (Photo BD 70–0878)
Type A Thermal Overload Relay and Three Type GCO Current Transformers for Mounting on a Type GCA Size 5 Contactor

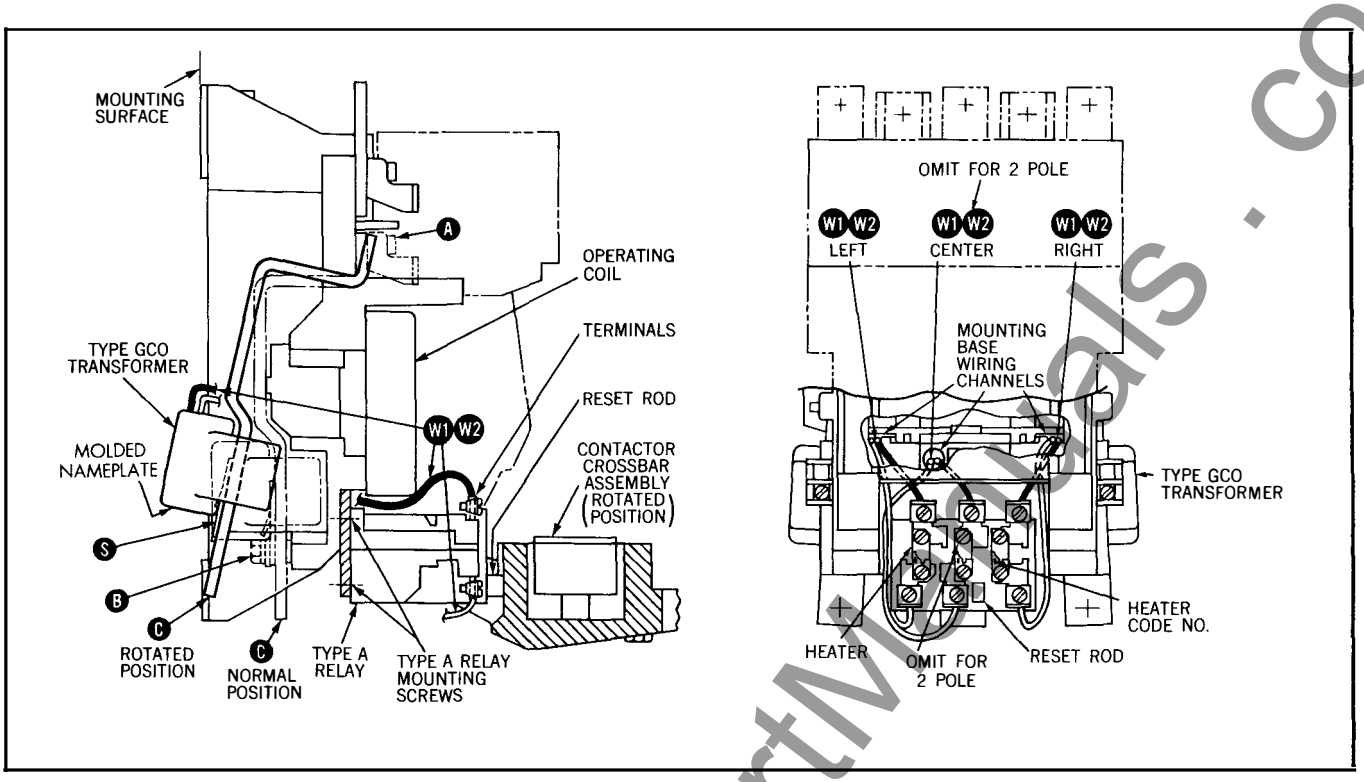


Fig. 3 (From Dwgs. 667C295 and 667C296)
Type GCO Current Transformer Installation and Type A Thermal Overload Relay Wiring.

Type GCO Current Transformers

The Type GCO Current Transformers were specially designed to mount on the Type GCA Size 5 contactor and operate the Type A Thermal Overload Relay.

300/5 ratio Type GCO transformers are identified by a red case and molded nameplate. Their single turn primary winding is provided by the contactor load connection straps. The secondary wires -- one white, the other black -- are color coded for polarity identification.

For special applications, a 400/5 ratio is available and is identified by a gray case, molded nameplate, and secondary wires – one black, the other white.

These Type GCO current transformers are not to be used to power additional auxiliary devices and should never be energized with the secondary leads open circuited since the open circuit overvoltage can damage the transformer.

RATINGS

The combination of Type GCO 300/5 Ratio Current Transformers, Type A Thermal Overload Relay, and Type GCA Size 5 Contactor is intended to provide motor overload protection for motors with full load amperes (FLA) from 135 to 300 amps, 600 volts. See Fig. 5 for heater selection table.

INSTALLATION

This industrial type control is designed to be installed, operated, and maintained by adequately trained workmen. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check-out, safe operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

The Type GCO transformers are installed as shown in Fig. 3. Rotate the contactor crossbar assembly into the position shown. Loosen the lower stationary contact mounting bolt (A), remove the load connection strap clamping bolt (B), and rotate the load connection strap (C) as shown. Push the Type GCO transformer onto the contactor load connection strap (C), with the secondary wires (W1) & (W2) at the top, and insert the antirattle spring clip (S). Channel the secondary wires (W1) and (W2) through the contactor's molded base. Remove the operating coil to ease this wiring. Rotate the load connection strap (C) back into position and tighten the bolts (A) & (B) (the stationary contact bolt (A) must be tightened to 150 - 175 inch pounds). Replace the operating coil. (W1) & (W2) must not be clamped between the operating coil and its mounting surfaces. If only two Type GCO transformers are used, they should be installed on the right and left straps and the center transformer omitted.

The Type A relay must be installed in a vertical position as shown with adjustment knob and reset rod at the bottom. Two 7/16" long 8–32 machine screws mount the Type A relay to the two tapped mounting holes in the contactor's bearing bracket.

Type AA Thermal Overload Relay (Black Reset Rod)

The Type AA Thermal Overload Relay (ambient compensated) is compensated for ambient temperature variations and is identified by its black reset rod. Select heaters from Fig. 5 regardless of ambient temperature variations between motor and relay.

MOTOR FULL LOAD CURRENT - FOR USE WITH THREE HEATERS ONLY					
Open Starter		Enclosed Starter		Heater	
Type AA13 Compensated OL Relay	Type AN13 Non-Compensated OL Relay (1)	Type AA13 Compensated OL Relay	Type AN13 Non-Compensated OL Relay (1)	Code Marking	Style
118-129	118-129	118-129	110-119	FH24	177C524G24
130-141	130-141	130-141	120-131	FH25	177C524G25
142-155	142-155	142-155	132-143	FH26	177C524G26
156-170	156-170	156-170	144-158	FH27	177C524G27
171-187	171-187	171-187	159-173	FH28	177C524G28
188-205	188-205	188-205	174-190	FH29	177C524G29
206-224	206-224	206-224	191-208	FH30	177C524G30
225-244	225-244	225-244	209-227	FH31	177C524G31
245-263	245-263	245-263	228-247	FH32	177C524G32
264-292	264-292	264-270	248-270	FH33	177C524G33
293-300	293-300			FH34	177C524G34

(1) Based on outside ambient of 40° C (104° F).
(2) Relay will ultimately trip at 125% of the minimum full load current shown in the table above.
(3) Type AA13 ambient compensated OL relays have black reset rods.
(4) Type AN13 non-compensated OL relays have red reset rods.
(5) Heaters must be installed with the serpentine heating element portion away from the reset rod.
(6) Heater currents are not those shown above, but obtained from the secondaries of 300/5 current transformers.
(7) The table above is given for a 100% setting of the adjustment knob on the bottom of the relay. Turning the knob towards the 85% setting will result in the relay tripping in shorter time. Turning the knob towards the 115% setting will result in the relay tripping at a longer time.

Fig. 5 Overload Protection Table – For Use with GCA Size 5 Contactors From Dwg. 2084A48

RENEWAL PARTS

Complete renewal parts data is listed in RPD 16–100B5 .

Westinghouse Electric Corporation
General Control Division
Asheville, N.C. 28813

Printed in U.S.A.

The Type GCO transformer secondary wires W1 & W2 are then connected as shown to the Type A relay terminals with the white wire to the top terminal. The wire pairs W1 & W2 (one black, the other white) must be connected to the same Type A relay pole -- and so on. If only two Type GCO transformers are used, the left and right Type A relay poles should be wired leaving the center Type A relay pole unwired. Rotate the contactor cross bar assembly back onto its original position and install and tighten the bolts which were removed. The wiring must not hinder crossbar movement.

Overload heaters properly selected from the heater selection table (Fig. 5), must be installed to provide motor protection.

All bolts, loosened or removed, must be installed and tightened before the assembly shown in Fig. 1 is installed per I.L. 15-825-14A and wired per the appropriate starter diagram.

Type A Thermal Overload Relay Reset Rod Location

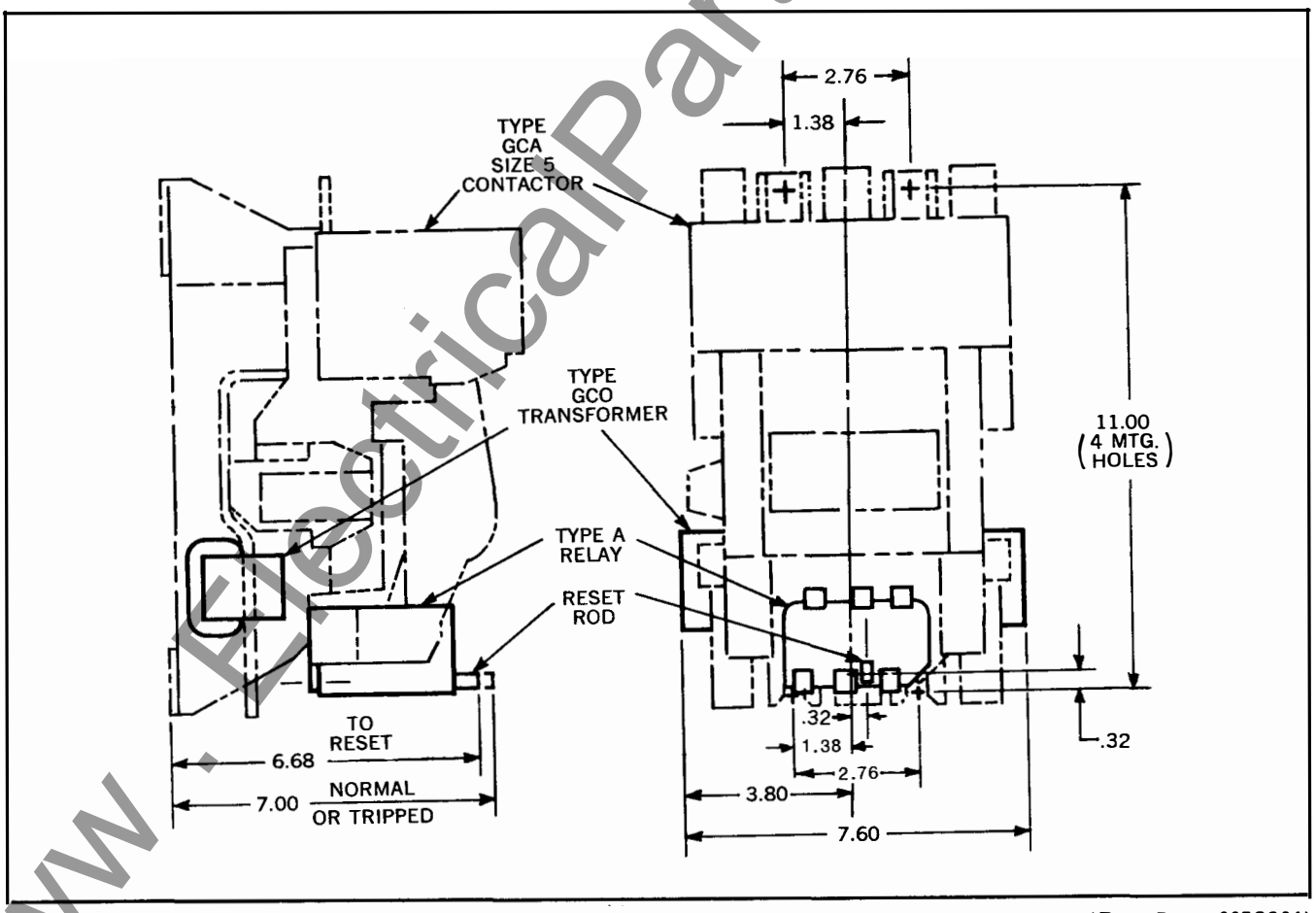
Fig. 4 shows the location of the Type A Thermal Overload Relay reset rod with respect to the Type GCA Size 5 Contactor mounting holes.

HEATER SELECTION

The Type A Thermal Overload Relay for use with the Type GCA Size 5 Contactor is available in two basic types -- the Type AN (non-compensated) and the Type AA (ambient compensated). Either can be used as a two or three pole relay by installing and wiring two or three Type GCO transformers as desired. (See Installation)

Type AN Thermal Overload Relay (Red Reset Rod)

The Type AN Thermal Overload Relay (non-compensated) is not compensated for ambient temperature variations and is identified by its red reset rod. When used where motor and relay ambients differ, select heaters from Fig. 5 using adjusted motor current as follows: Decrease rated motor full load amperes (FLA) 1% (.01) for each degree centigrade (°C) motor ambient exceeds relay ambient; Increase rated motor full load amperes (FLA) 1% (.01) for each degree centigrade (°C) relay ambient exceeds motor ambient.



(From Dwg. 667C294)

Fig. 4
Type A Thermal Overload Relay Reset Rod Location After Proper Installation on the Type GCA Size 5 Contactor.