

CMC 100AK SOLID-STATE RELAY INSTALLATION PROCEDURES

1. GENERAL

1.01 This Section describes the procedure for the installation of the **CMC 100AK Solid-State Relay**.

1.02 The CMC 100AK Solid-State Relay is a general purpose replacement for relay contacts. The output contacts are polarity-sensitive and **MAY NOT** be used in circuits requiring polarity reversal during the switching operation. Contacts 1 and 2 are rated at 1 amp. Other contacts are rated at .25 amp. In order to maintain good circuit balance, the existing relay coil is left in the circuit.

2. INSTALLATION PROCEDURES

2.01 In order to install the CMC 100AK Solid-State Relay, it is necessary to remove the switch (Selector/Connector) from the shelf and place it in a switch stand (CMC 197 or equivalent). A Practice

covering the use of the CMC 197 Switch Stand is available, at no charge, by contacting the CMC Publication Department.

CAUTION: Make certain that the 48 V power is REMOVED from the switch stand during installation of the CMC 100AK Solid-State Relay. Failure to observe this caution or improper wiring could result in damage to the CMC 100AK Solid-State Relay.

2.02 With the switch in the switch stand, proceed as follows:

- (1) Remove the back cover from the switch (if equipped).

NOTE: Identify the wires **BEFORE** removing. Use the identification kit included with the Solid-State Relay for this purpose. These wires will be reused

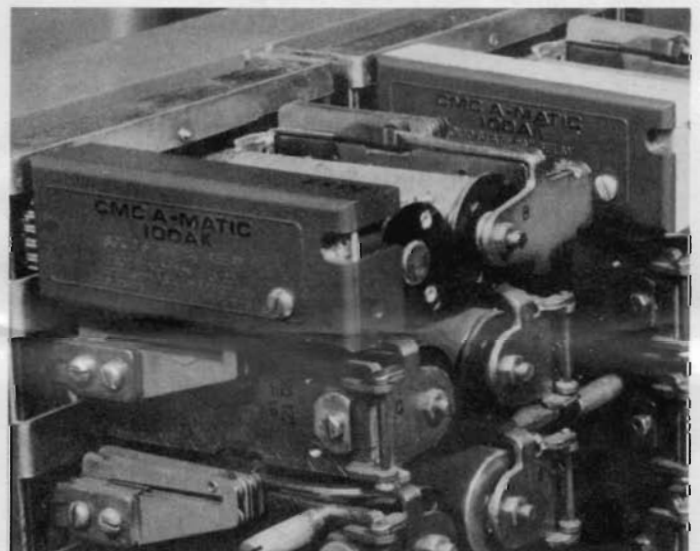
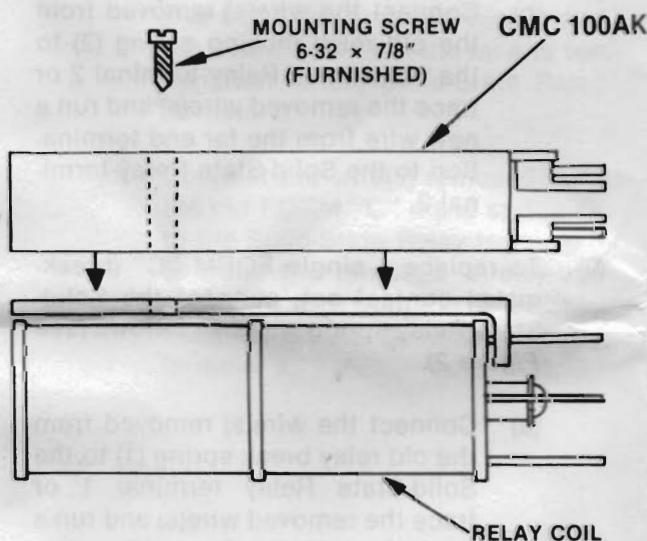


Figure 1 Mounting the CMC 100AK Solid-State Relay on the Relay Heal Piece

**Section CMC 100AK
Issue A**

on the Solid-State Relay or the wires furnished with the unit may be used. Wiring multiples must be maintained when reconnecting to the new Solid-State Relay.

- (2) Unsolder the wires from the relay springs and the 48 V and ground wires from the coil terminals.
- (3) Remove the relay armature and the spring pileup from the mechanical relay and discard them.
- (4) Install the CMC 100AK Solid-State Relay as shown in Figure 1. Use the furnished 6-32 × 7/8" machine screw for mounting the relay.
- (5) Connect the Solid-State Relay coil wires as follows (see Figure 2):
 - (a) Connect the battery (–) wire removed from the relay coil to the Solid-State Relay terminal 7 or run a new wire from a battery terminal to the Solid-State Relay terminal 7.
 - (b) Connect the ground (+) wire removed from the relay coil to the Solid-State Relay terminal 6 or run a new wire from a ground terminal to the Solid-State Relay terminal 6.
 - (c) Connect the Green strap wire (26 gauge) from the relay coil terminal (opposite the Tip terminal) to the Solid-State Relay terminal 9.
 - (d) Connect the Yellow strap wire (26 gauge) from the relay coil terminal (opposite the Ring terminal) to the Solid-State Relay terminal 8.
- (6) Connect the Solid-State Relay "spring" wires as described in steps (7), (8) and (9).

CAUTION: *Terminals 2 and 5 MUST be connected to the positive (+) side of the load. Terminals 1, 3 and 4 MUST be connected to the negative (–) side of the load (see Figure 2).*

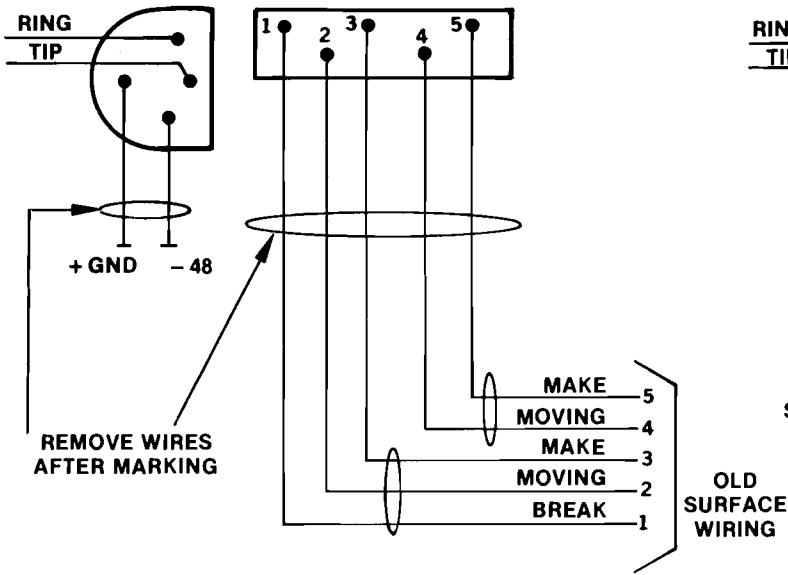
- (7) To replace a single FORM "A" (make) contact set, connect the Solid-State Relay spring wires as follows (see Figure 2).
 - (a) Connect the wire(s) removed from the old relay make spring (2) to the Solid-State Relay terminal 3 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 3.
 - (b) Connect the wire(s) removed from the old relay moving spring (1) to the Solid-State Relay terminal 2 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 2.
- (8) To replace a single FORM "B" (break) contact set, connect the Solid-State Relay spring wires as follows (see Figure 2).
 - (a) Connect the wire(s) removed from the old relay break spring (1) to the Solid-State Relay terminal 1 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 1.
 - (b) Connect the wire(s) removed from the old relay moving spring (2) to the Solid-State Relay terminal 2 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 2.
- (9) To replace a single FORM "C" (break-make) contact set, connect the Solid-State Relay spring wires as follows (see Figure 2).
 - (a) Connect the wire(s) removed from the old relay break spring (1) to the Solid-State Relay terminal 1 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 1.

- (b) Connect the wire(s) removed from the old relay moving spring (2) to the Solid-State Relay terminal 2 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 2.
 - (c) Connect the wire(s) removed from the old relay make spring (3) to the Solid-State Relay terminal 3 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 3.
 - (d) Connect the wire(s) removed from the old FORM "A" moving spring (4) to the Solid-State Relay terminal 4 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 4.
 - (e) Connect the wire(s) removed from the old FORM "A" make spring (5) to the Solid-State Relay terminal 5 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 5.
- (10) To replace a FORM "C" (break-make) and a FORM "A" (make) contact set, connect the Solid-State Relay spring wires as follows (see *Figure 2*).
- (a) Connect the wire(s) removed from the old FORM "C" break spring (1) to the Solid-State Relay terminal 1 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 1.
 - (b) Connect the wire(s) removed from the old FORM "C" moving spring (2) to the Solid-State Relay terminal 2 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 2.
 - (c) Connect the wire(s) removed from the old FORM "C" make spring (3) to the Solid-State Relay terminal 3 or trace the removed wire(s) and run a new wire from the far end termination to the Solid-State Relay terminal 3.
- (11) Wiring diagrams for some typical circuit relay coils are shown in *Figure 3*.
- (12) Install the back cover (if equipped) on the Selector/Connector and replace the switch in its shelf location.
- (13) Verify the switch pulsing with a hand-test telephone (CMC Trub-L-Shooter or equivalent).

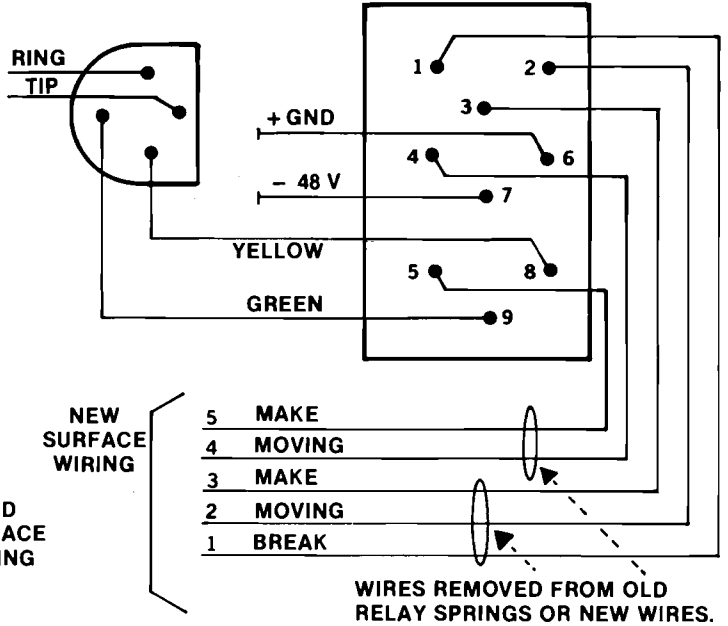
3. REPAIR

3.01 The CMC 100AK Solid-State Relay CAN NOT be repaired due to the epoxy encapsulation of the circuitry. The unit has a 1 year warranty and should be returned to CMC for replacement in case of a failure during this time.

**OLD WAY
(REAR VIEW)**

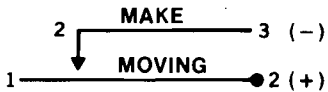


**NEW WAY
(REAR VIEW)**

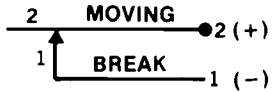


CAUTION: This is typical wiring only. Your circuits may be wired differently.
VERIFY wiring BEFORE connecting the CMC 100AK Relay into the circuit.

FORM A



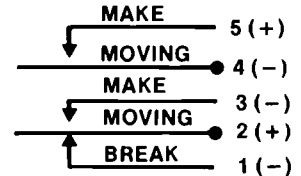
FORM B



FORM C



FORM A AND C



SIMPLIFIED SCHEMATIC

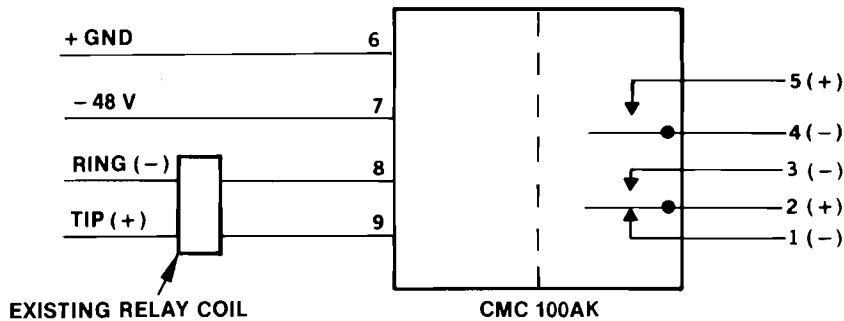


Figure 2 Connecting the CMC 100AK Solid-State Relay

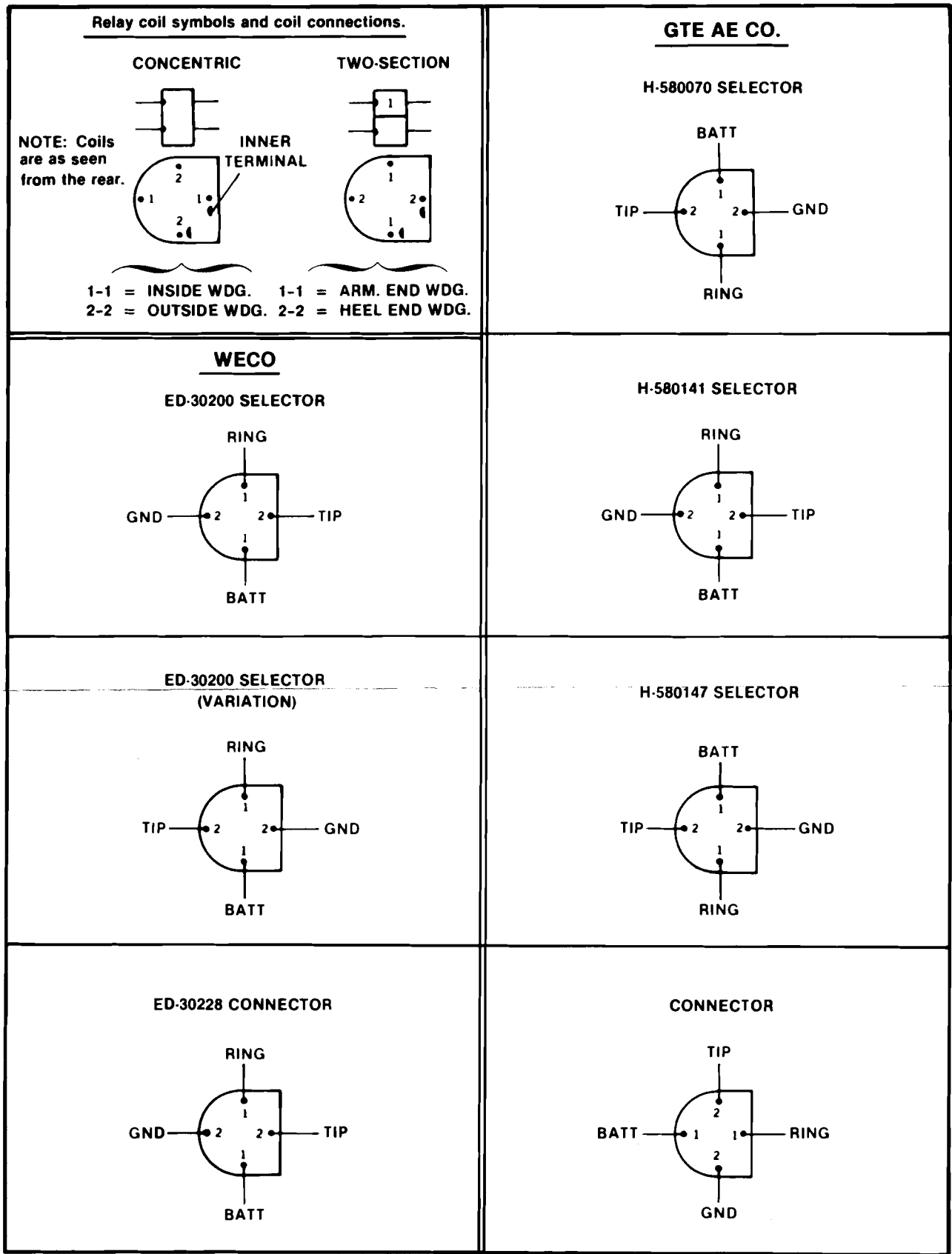


Figure 3 Typical Selector/Connector "A" Relay Wiring.

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COMMUNICATION MFG. CO.
P.O. BOX 2708 • 3300 E. SPRING STREET, LONG BEACH,
CA 90801 • TELEX 65-6440 • CMC LGB • 213 426-8345

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