

1. ENCLOSURE REQUIRED

If the OC1 control is furnished as an open-chassis unit (standard), mount control in an enclosure 12"x 10"x 5" or larger and mount enclosure where room temperature does not exceed 40 C. If other heat generating equipment is located in the same enclosure, increase enclosure size or install an in-cabinet circulating fan. Temperature in enclosure should not exceed 55 C. Do not install transformers larger than 250VA in the enclosure with OCI.

2. AC SERVICE AND MOTOR REQUIRED

CONTROL MODEL	AC LINE VOLTAGE REQUIRED	MOTOR REQUIRED	
		ARM. VOLTAGE	FIELD VOLTAGE
115V MODELS	115 ± 10 VAC	90 VDC	100 VDC*
230V MODELS	230 ± 20 VAC	180 VDC	200 VDC*

\*Use high voltage connection if motor has 4-wire field.  
Suitable for use with PM motors: see note 3, page 3.

Motor horsepower must match OC1 "model number" and "control HP" given in note 4, Page 3. The applied ac line voltage must match the warning tag on the OC1. 115VAC controls may be converted for 230VAC service by the procedure of section 5.

3. FUSING REQUIRED

WARNING	
AC LINE FUSE (FUSES) MUST BE INSTALLED PER PAGE 3. USE ONLY THE SPECIFIED FUSES:	
CHASE- SHAWMUT	A25 X 20
INTERNATIONAL RECTIFIER	SF25 X 20
FAILURE TO INSTALL FUSES OR THE USE OF SUBSTITUTE FUSES WILL VOID WARRANTY.	

The optional 230 volt conversion kit contains the second line fuse required for 230 volt service.

If the purchase order specifies omission of the fuse kit, the user must procure and install the fuses and fuse holders.

4. INSTALLATION

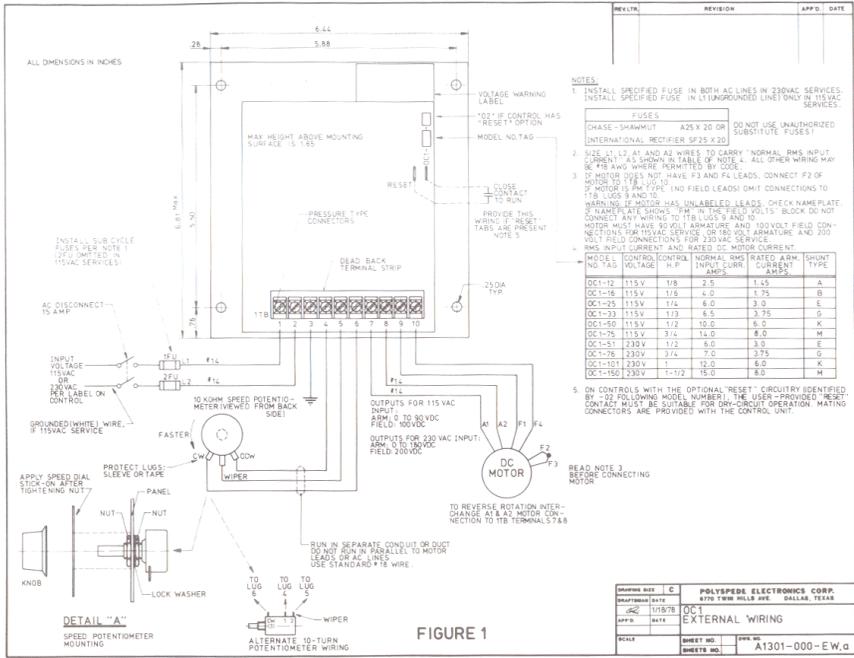
Mount the OC1 in a enclosure which meets the requirements of Section 1. Wire per page 3 (or wire per job prints if applicable). If the OC1 is equipped with “reset” option (identified by “02” following model number), crimp wires to the Faston connectors on the “reset” tabs and connect per job prints (see note 5, page 3). Insulate speed pot lugs. Check all wires for shorts to ground before applying ac power. Only 1TB lug 3 should show a ground.

Apply ac power and check for correct operation of speed pot. If speed pot works backward, be sure wiper is connected to 1TB lug 5, and then reverse connections to the CW and CCW terminals of the pot.

5 ADJUSTMENTS

All adjustments are factory preset except “IR”. With motor running, rotate “IR” clockwise until instability (bumping) occurs, than back off about 33% of this setting. Alternately adjust “IR” for desired load regulation in actual service.

Do not increase “Torque” setting on the OC1-75 or the OC1-150 controls.



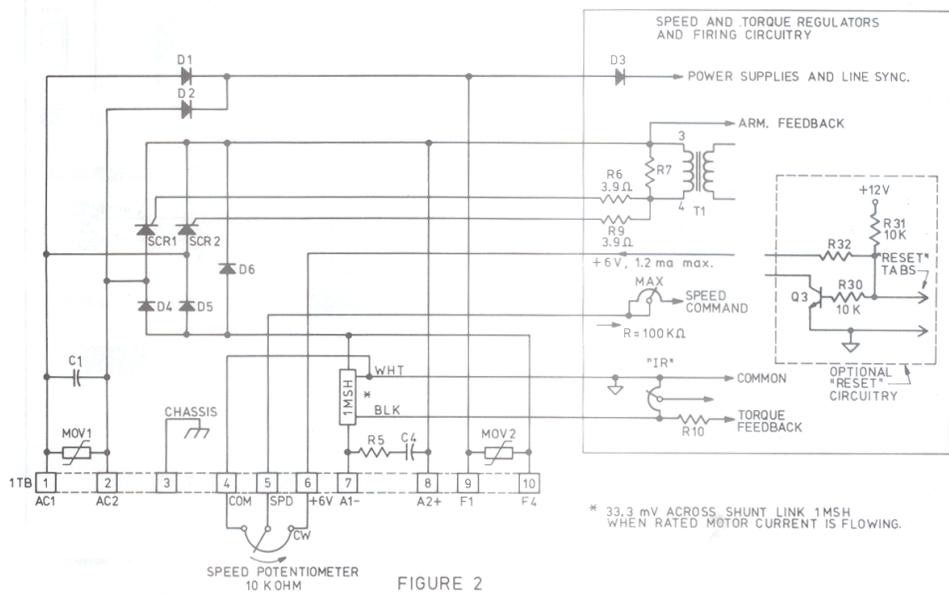
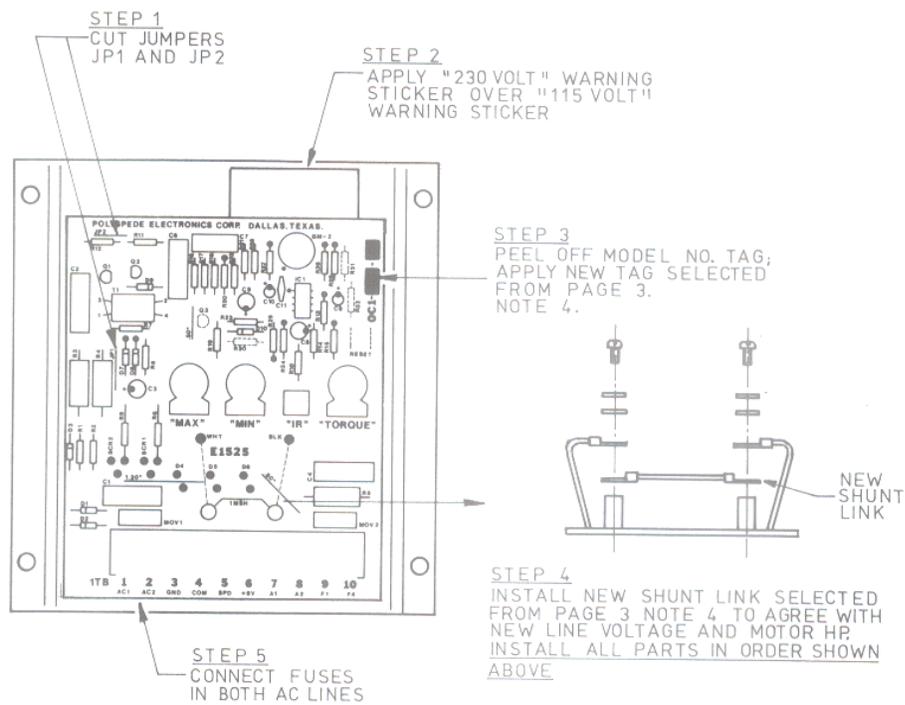


FIGURE 2  
OC1 SIMPLIFIED SCHEMATIC

## 6. CONVERSION INSTRUCTIONS

### 6.1 CONVERT 115 VAC UNIT FOR 230 VAC SERVICE

If this conversion is desired perform steps 1 through 4 below. Converted control must be connected to a motor with 180 volt armature/200 volt field ratings or a 180 volt PM motor.



### 6.2 CONVERT TO ANOTHER HP, SAME LINE VOLTAGE

Perform only steps 3 and 4 above.

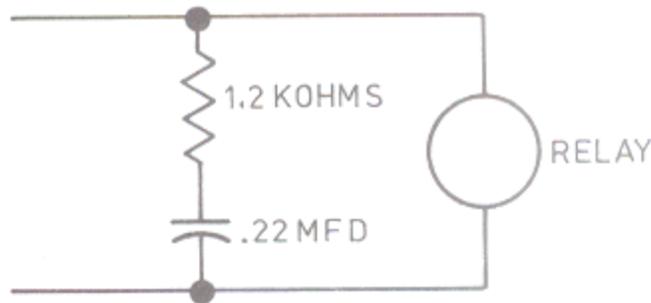
### 6.3 CHANGE PANEL LABELS

If the OC1 control is installed on a panel as a part of a system or is installed in an enclosure, change the HP and/or the line voltage notation on the panel label to agree with labels installed in 6.1 or 6.2.

## 7 APPLICATION INFORMATION

### 7.1 RELAY-SELECTED PRESET SPEEDS

Design relay circuitry to open the CW and wiper lugs of all inactive speed pots and to connect the wipers of only one speed pot to 1TB lug 5 at any given time. Short lug 4 to lug 5 of 1TB when no speed pot is active to avoid creeping. Use 10K ohm pots. Use relays with gold contacts (Potter and Brumfield KH series or equivalent) or reed relays. Connect RC networks across all relay coils as follows:



### 7.2 SWITCHING OF ARMATURE LEADS

If a contactor or switch is used to open the armature leads (example -as when applying a dynamic-braking resistor), an OC1 equipped with “reset” option must be used (see page 3, note 5). The user-provided “reset” contact, which may be a suitable auxiliary contact on a contactor, must be opened at any time the armature circuit is opened to prevent possible fuse blowing when the armature circuit is re-closed. **Caution:** If a reversing contactor or switch is added, the “reset” contact must be opened and the motor must be forced to stop before reversing the armature leads.

### 7.3 STARTING AND STOPPING

The motor may be started and stopped by switching the ac disconnect off and on. Wait 2 seconds after turning disconnect off before turning it back on. Do not jog the motor by switching ac power off and on.

### 7.4 JOGGING

Jogging may be done by using a relay (contact material per 7.1) in the speed-pot circuitry or connected to the “reset” tabs (if so equipped).

### 7.5 EXTERNAL SIGNAL CONTROL OF SPEED

An external dc voltage source, 0 to 6 volt range, may be connected to lugs 4 (neg.) and 5 (+) instead of the normal speed pot. The signal source must be completely isolated from ground and from the ac lines and must have negligible capacitance to line or ground.

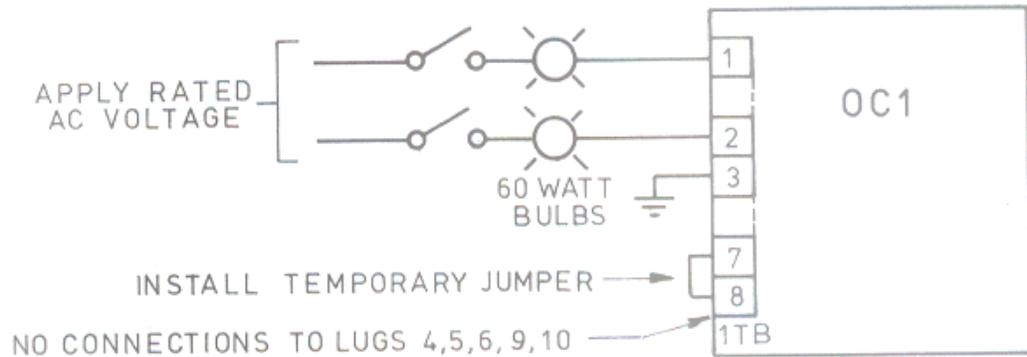
## 8. TROUBLE-SHOOTING

In all of the following turn ac power off before making any wiring changes and then back on to test.

### 8.1 FUSES BLOW REPETITIVELY

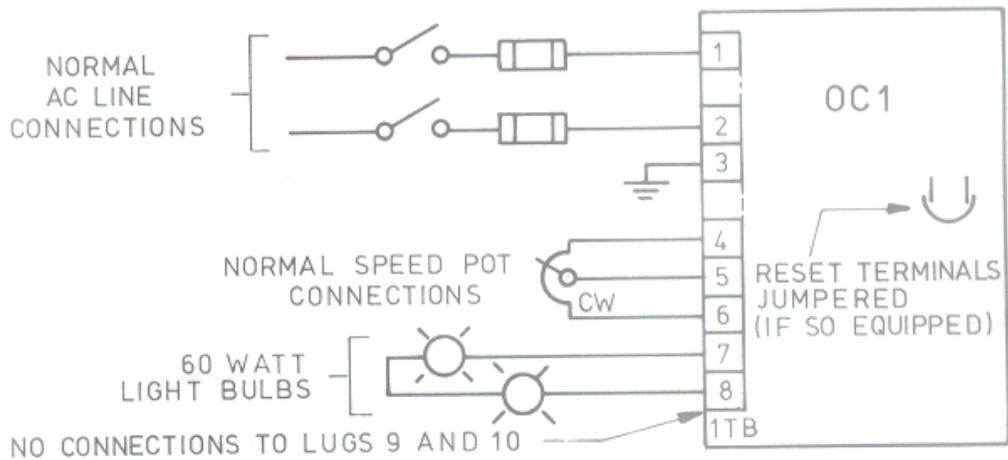
#### 8.1.1 CHECK OC1 FOR SHORTS

Remove normal connections to the OC1 and substitute the following. If bulbs burn the OC1 is shorted and requires repair.



#### 8.1.2 FUNCTIONAL TEST WITHOUT MOTOR

Perform the following test only if light bulbs did not burn in 8.1.1. Be sure no speed pot wires are shorted to ground.



The speed pot should control brightness of the bulbs from zero to maximum. If so, the OC1 is working correctly. (NOTE: this test does not check torque limit).

If a fuse blows during this test, either the OC1 contains a short and requires repair or speed pot wiring is grounded (recheck wiring).

If the tests of 8.1.1 and 8.1.2 did not show up problems in the OC1, the problem is probably in the motor or in wiring external to the OC1. Check motor and all wiring for grounds. Replace motor if required.

## 8.2 MOTOR STOPS

Possibly caused by:

- a) No field voltage (doesn't apply to PM motors). Checks field volts.
- b) Motor jammed. Check for binding.
- c) "Reset" circuit not closed (if so equipped). Check for zero volts between "reset" tabs.
- d) Motor overload. Measure armature current with a dc ammeter (not a clamp-on type). If current is greater than note 4, page 3, motor is overloaded.
- e) No speed-command voltage. Test between lugs 4 and 5 of 1TB.

## 8.3 MOTOR RUNS TOO SLOW

Check voltage between 1TB lugs 4 and 6 with and without speed pot connected. Should be 5.7 to 6.3 volts. If voltage is low with pot disconnected, the OC1 require repair. If speed pot pulls voltage down, check speed pot value (10K ohms). For small speed increase: rotate "MAX" pot clockwise.

## 8.4 MOTOR IS UNSTABLE (BUMPS)

Possibly "IR" pot setting is too high. Rotate "IR" counterclockwise.

## 9.0 REPAIRS

It is recommended that repairs to be made at the factory. Cost of repairs is covered under warranty during the warranty period for material and workmanship defects. Damage due to incorrect external connections, grounded wiring, and improper fusing is not covered. Controls with burned circuit board conductors are not covered under warranty and are usually not repairable. Non-warranty repair charges on repairable controls are as follows:

- a) Minimum repair charge.....\$25.00
- b) Replace SCR's, power diodes, field diodes ("short" indication, tests of 8.1.1 or 8.1.2).....30%\*
- c) Maximum repair charge.....50%\*

\*Net price as percentage of current list price.