OPERATING INSTRUCTIONS

DCM100-1,2 (MAX, MIN, IR COMP)
DCM100-3 (MAX. MIN, IR COMP, CL, ACCEL)
DCM100-3SI (SIGNAL INPUT OPTION)
ADJUSTMENT

Trim pots are factory adjusted. Do not change settings unless absolutely necessary. The DCM100 has been factory set to provide 0 to full speed using the main speed control knob. Minimum and maximum speed trim pots are provided to change the speed range if desired. Acceleration control is factory set to provide motor acceleration from 0 to full speed over a time period of 2 seconds when AC power is applied. The current limiting (CL) adjustment is set to approximately one and a half times the motor rating. IR Compensation (IR) is also factory adjusted for excellent motor regulation under normal operating conditions.

IMPORTANT NOTES:
1. For correct IR Comp. and CL trim pot settings, the proper Horsepower resistor must be installed.
2. Readjusting the Accel time will affect the max speed and IR Comp. setting which will have to be readjusted.

The following procedure, presented in order of sequence, should be used if readjustment is necessary:

ACCELERATION

If Accel requires adjustment, rotate CW for slower or CCW for more rapid starting.

MAXIMUM SPEED ADJUSTMENT

Turn main speed control knob to full speed (full CW position). Adjust Max. speed trim pot to desired setting.

MINIMUM SPEED ADJUSTMENT

To readjust the Minimum speed turn the main speed control knob to zero(full CCW). Then adjust the Min. speed trim pot to the new desired setting.

NOTE: Min. and Max. speed setting interact slightly. A second adjustment may be required.

CURRENT LIMIT (TORQUE ADJUSTMENT)

CL is provided to protect the motor and control against overloads. CL also limits the inrush current to a safe level during startup. The CL trimmer is factory set to approximately 1.5 times the full load rating of the motor. (CL trim pots are factory set to approx. 70% full CW rotation.)

TO RESET CL, ADJUST AS FOLLOWS:

1. Set speed control knob to approx. 40-50% position. Set CL trim pot to full CCW (minimum) position.
2. Connect a DC ammeter in series with the armature lead.
3. Lock shaft of motor. Apply power and rotate CL pot CW slowly until DC ammeter reads 1.2 to 1.9 times motor rating. (Do not exceed 2x motor rating.)

IR COMPENSATION

IR compensation is provided to improve load regulation. If the load does not vary substantially, the IR adj. may stay at the factory settings, (approx. ¼ of full setting). If superior regulation is desired the IR Comp. should be adjusted as follows:

NOTE: Excessive IR Comp. will cause motor cogging.

1. Set IR Comp. at approx. 25% of CW rotation. Run motor unloaded at approx. ¼ to 1/3 speed and record RPM.
2. Run motor at maximum load and adjust IR Comp. so that the motor speed under maximum load equals the no load speed.
3. Recheck unloaded RPM. If unloaded RPM has changed, repeat steps 1 and 2 for more exact regulation.

The control is now compensated for 1% or less speed change of base speed from no load to full load.

AC LINE SWITCHING

The DCM100 can be turned "on" and "off" by disconnecting the AC line. Acceleration start and current limit (CL) provide a smooth start each time the AC line is connected. For rapid cycling use **S1**, **S2**.

IMPORTANT NOTE: Do not disconnect and reconnect the Armature with the AC line applied or damage to control will result.

ARMATURE SWITCHING (S1, S2)

If the armature is to be disconnected with AC power applied the electronic switching circuit (terminals S1 and S2) should be used. Connect S1 and S2 together to Remove armature power.

VOLTAGE FOLLOWING (VF+ and VF -) Models DCM100 - 1,2,3

All DCM100 Motor Controls can be controlled with an Isolated analog voltage (0 - 10VDC) in place of the main speed control. The control output voltage will linearily follow the input voltage. the Min. and Max. trimpots are inoperative in the voltage following mode.

Caution: Do not ground VF+ or VF- terminals to set up a ground reference. Do not bundle potentiometer connectrions (P1, P2, P3) or electronic switch connections (S1, S2) with AC line or motor wires.

SIGNAL INPUT OPTION (SI)

Model DCM100 - 3SI can be controlled with an isolated or non-isolated control signal as follows:

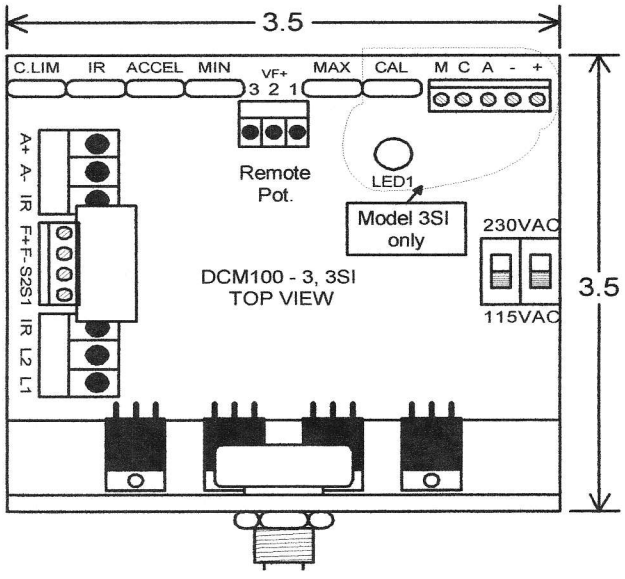
FOR AUTO CONTROL:

Jumper ***A*** (auto) to ***C*** (common)
4 mA = 0 volts to motor
20 mA = Max. Output Voltage (12mA = 50% of Max. Output) **
Cal Pot allows range adjustment and Min/Max pots. are inoperative in Auto Mode
Led 1 indicates input signal on.

***Note: Input Signals other than 4 - 20mA must be specified when ordering*

FOR MANUAL CONTROL:

Jumper ***M*** (man.) to ***C*** (common)
Set Min/Max pots. as required
A SPDT Switch can be used for Man/Auto change-over



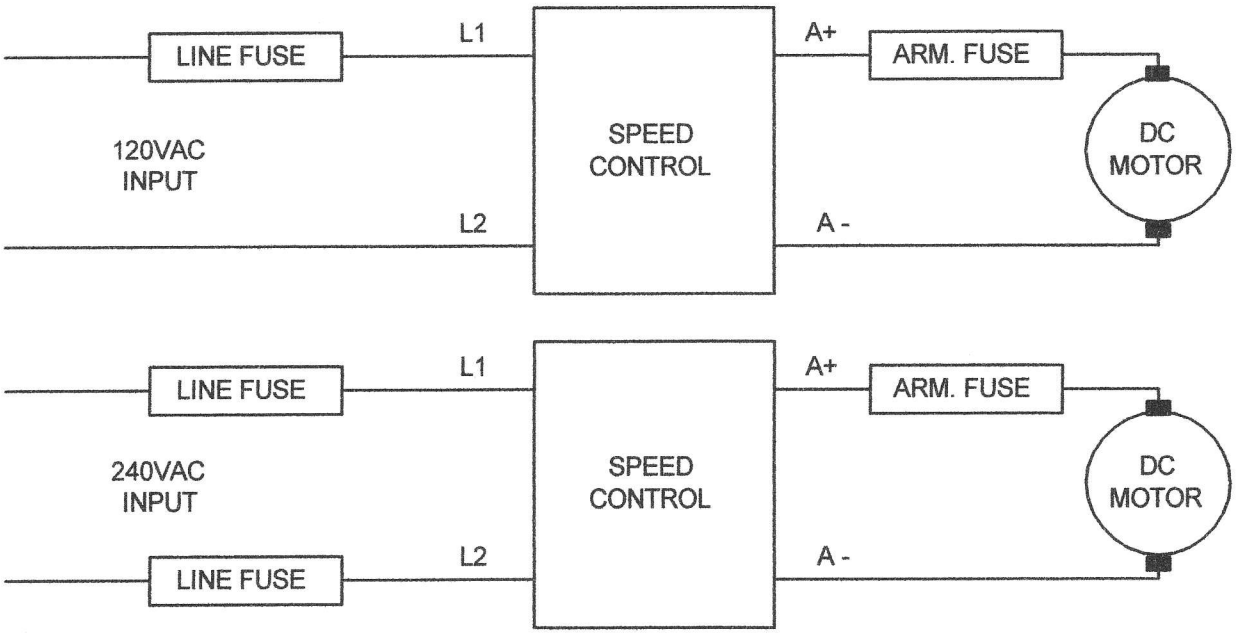
FUSING

The DCM100 series can be supplied with AC Line Fuse and/or Armature Fuse. The AC Line Fuse protects against shorts, grounds and miswired controls. The armature Fuse provides overload protection for the motor and control.

ARMATURE FUSE = 1.5 D.C. MOTOR AMPS (See table below)
LINE FUSE = ARMATURE FUSE

IMPORTANT NOTES:

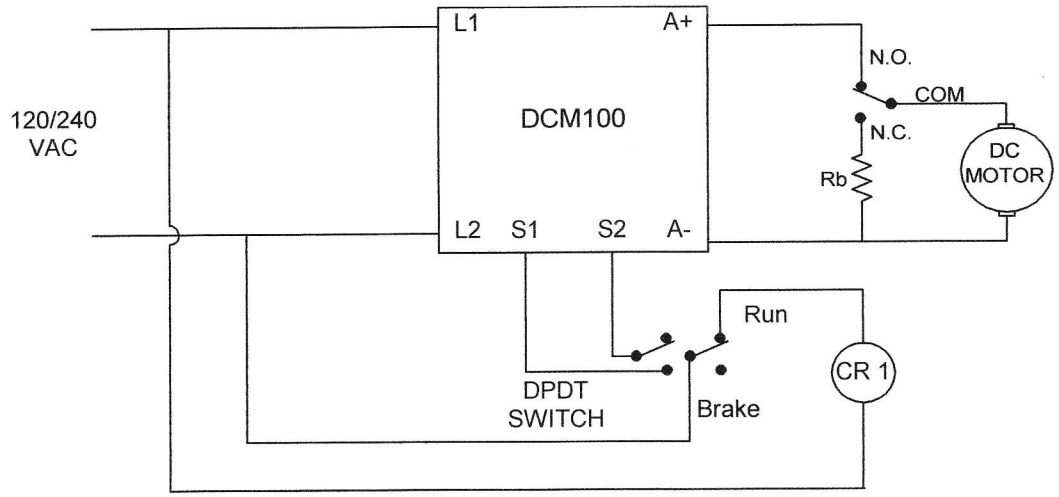
1. Separate branch protection must be provided on 240 VAC lines.
2. Follow NEC and other electrical codes that apply to installation.
3. Be sure that control and motor voltage are matched. (90 - 130 VDC on 120 VAC line and 180 VDC motor on 240 VAC line.)



HORSEPOWER RESISTOR/FUSE SELECTION CHART

MOTOR HORSEPOWER		HORSEPOWER RESISTOR Value (Ohms)	FUSE RATING (approx.) (AC Amps)
ARMATURE VOLTAGE 90 - 130VDC	ARMATURE VOLTAGE 180 VDC		
1/50 - 1/30	1/25 - 1/15	.50	1/2
1/20 - 1/12	1/10 - 1/6	.3	3/4 - 1 1/2
1/8 - 1/5	1/4 - 1/3	.1	2 - 3
1/4 - 1/3	1/2 - 3/4	.05	5
1/2 - 3/4	1 - 1 1/2	.025	8 - 12
1	2	.01	15
1 1/2	3	.005	25

DYNAMIC BRAKE CIRCUIT (OPTIONAL)



*DPDT switch or relay contacts on DPDT relay

OPERATION:
In Run position, CR1 is energized and electronic stop terminals S1 & S2 are open. In Brake, S1 & S2 are closed removing power from ARM. and CR1 De-energizes to apply brake resistor Rb.

HEAT SINKING
For motors 1/4 HP and below or for light duty operation, mounting is not critical. For larger HP motors the DCM100 bracket should be firmly bolted against a flat metal surface using 3/8" diameter hole and/or "U" slots.

For application assistance contact factory.

SAFETY WARNING

This control should be installed and serviced by qualified personnel who are familiar with its operation and any hazards involved. Main power should be disconnected before attempting any service or adjustment. Controls should be mounted in a grounded enclosure and fused as required.

Installation should be in compliance with local, state, and national safety codes.

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