

SECTION IV

OPERATION

Basic 3120 Controllers provide for Start/Stop functions and Speed Control. The actual operator controls and location of the controls depend on the application and the options selected.

POWER ON/OFF

Series 3120 Controllers energize when the input line circuit breaker is turned-on (i.e., when the AC supply is applied to the 3120M Module). The circuit breaker not only connects and disconnects the AC input power, but also protects the controller and motor from electrical faults. If the circuit breaker trips, reset it by first turning it off, then turning it back on. A tripped circuit breaker indicates an electrical fault (short or ground) which must be corrected. See Indication 1, 2, or 3 in the troubleshooting table (Table 6-1, pages 6-6 - 6-7).

Note: Continual resetting of the circuit breaker can damage the controller.

START

To start the motor, initiate a Start (Run) command. This will cause the motor to accelerate to the setting of the speed control potentiometer (speed reference signal). The rate of acceleration is set by the ACCEL potentiometer on the linear accel/decel board.

STOP

To stop the motor, initiate a Stop command. This will cause the motor to decelerate to a stop at the rate set by the DECEL potentiometer on the linear accel/decel board, or by the motor and load coasting time, whichever is longer.

If the controller has dynamic braking, see “1039 - Dynamic Braking” on page 8-18.

SPEED CONTROL

Motor speed is directly proportional to the magnitude of the speed reference signal (0 to +10 VDC), which may be adjustable with a speed control potentiometer or controlled by an external controller. A speed control potentiometer may be adjusted while the motor is running or may be preset at any position before the motor is started. Clockwise rotation increases speed and counterclockwise rotation decreases speed.

INOPERATIVE MOTOR

If the motor stops and/or won't start, check the following:

- Circuit breaker tripped. See Indication 1, 2, or 3 in the troubleshooting table (Table 6-1, page 6-7).
- Fuse blown. Turn-off all AC supply voltage to the controller before checking fuses.

WARNING

**THE CONTROLLER CONTAINS HIGH VOLTAGE WHICH
CAN CAUSE ELECTRIC SHOCK RESULTING IN
PERSONAL INJURY OR LOSS OF LIFE.**

If a fuse blows, replace it with an exact replacement. Never substitute fuses. Substitute fuses can cause controller damage.

A blown fuse indicates an electrical fault (short or ground) which must be corrected. See Indication 4 or 5 in Table 6-1 (page 6-7), and "Grounds" on page 6-14.

- Motor thermal switch tripped, if used. See Indication 19 in Table 6-1 on page 6-10.
- Overload. Check if the OL Indicator (D25) is illuminated on the 3120M Module control board. See Figure 10-11 (page 10-13) for the location of the OL indicator. Indicator D25 lights and a Stop function initiates if the motor draws 120% armature current for about 80 seconds. See Indication 15 in the troubleshooting Table 6-1 on page 6-9. After correcting the cause of the overload, reset the controller by turning-off all AC supply voltage to the controller and then turning the supply back on.

Note: If an OVERLOAD RESET button or contact is connected across TB2 Terminals 6 and 2 on the control board, close the contact momentarily to reset the controller. The AC supply need not be turned-off.

- Phase Loss. Check if the Ø LOSS Indicator (D11) is illuminated on the 3120M Module control board. See Figure 10-11 (page 10-13) for the location of the Ø LOSS indicator. Indicator D11 lights and a Stop function initiates if an AC supply phase is lost. Check for three-phase rated line voltage, $\pm 10\%$, on the line and load terminals of the input line circuit breaker. After restoring the lost phase, reset the controller by turning-off all AC supply voltage to the controller and then turning the supply back on.

Notes: 1. If a Ø LOSS RESET button or contact is connected across TB2 Terminals 7 and 2 on the control board, close the contact momentarily to reset the controller. The AC supply need not be turned-off.

2. If a jumper wire is connected between TB2 Terminals 7 and 2 on the control board, the controller resets automatically when the lost phase is restored. However, the motor will not restart until a Start command is initiated.

CAUTION

NEVER BYPASS THE Ø LOSS/OVERLOAD CONTACT IN THE RUN/STOP LOGIC. If the contact is bypassed, a lost phase or motor overload can cause controller failure.

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