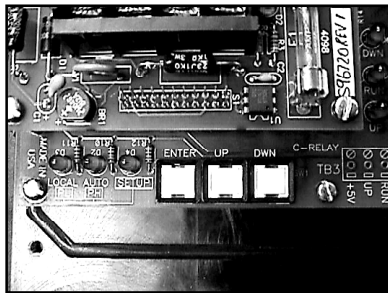




7 Control Modes

The 115 vac ESD version contains a simplified electrical circuit. See section 7.2.3 for details.



Base Circuit Board

There are three modes in which the actuator operates; Local, Auto and Setup. As long as power is applied, the actuator will be in one of these modes. If power is removed and later restored, the actuator will resume operation in the last active mode. In the Auto mode, the actuator responds to the control signal by automatically adjusting its position to match the control signal's target position. The Local mode provides a means of manually adjusting the actuator's position and reviewing the error codes. The Setup mode is used to adjust the actuator stroke to the application.

Located on the base circuit board are a three button keypad and three LED indicators labeled LOCAL, AUTO and SETUP. Each mode is entered by simultaneously pressing and releasing two keys of the three button keypad:

To enter Auto mode, press (E)NTER and Dwn.

To enter Local mode, press (E)NTER and Up.

To enter Setup mode, press Up and Dwn.

7.1 AUTO MODE

In the Auto mode, the actuator tracks the control signal. The actuator may be configured to operate with either an analog loop (4-20 mA), momentary Up/Down contacts or a single end of travel contact. The control signal is continuously sampled and converted to an equivalent target position in terms of the actuator's calibrated stroke. When necessary, the actuator adjusts its position to match the target position.

The Auto mode is distinguishable from the other modes by the illumination of the red Auto LED (center) to the left of the keypad.



The controls monitor the operation of the actuator. If an error condition is detected, the left and right LEDs will begin to blink (Section 7.2).

7.2 LOCAL MODE

Switching to a different mode (AUTO or SETUP) can only be accomplished when the LOCAL LED is steady.

In the local mode, the actuator is under the control of the three button keypad. The actuator is off-line and will not respond to the control signal. Enter the local mode by simultaneously pressing the (E)NTER and Up keys. The left most LED is illuminated.

Manual Operation

Pushing the (E)NTER key will cause the LOCAL LED to blink. The controls are now in manual. Use the Up and Dwn keys to adjust the actuator to any position within the calibrated stroke. The manual mode is exited by again pressing the (E)NTER key. The LOCAL LED will stop blinking.

Error Identification

The LOCAL mode allows identification of any error that is detected during Auto operation. The sequence of operation and the meaning of the errors are described in Section 9.

7.3 SETUP

7.3.1 All Except 115 vac ESD Version

The **Mpac** is equipped with a continuous feedback potentiometer. Stroke calibration is performed in the setup mode by using the three button keypad. The actuator must be fully powered and ready to operate.

The two end points are referred to as Position Low (PL) and Position High (PH). The end points are associated with the control signal. For analog input, the Position Low corresponds to the desired actuator position when the control signal is 4 mA. Either end of travel (extended, retracted, CW, CCW) is acceptable. For contact signals, activation of the CLOSE input causes the actuator to move towards endpoint PL; while activation of the OPEN input causes the actuator to move towards endpoint PH.

Enter the setup mode by simultaneously pressing the Up and Dwn keys. The setup LED and the Position Low (PL) LED will be illuminated. Position Low is set by moving the stem to the actual 4 mA position (analog) or the CLOSED contact position (manual & two position). Pressing the (E)NTER key will cause the PL



LED to begin blinking. Using the Up and Dwn keys, position the actuator to the desired point and press the (E)NTER key again. The position will be set as the Position Low endpoint.

The position of the unit upon spring failure is usually a function of the driven device.

To set the Position High endpoint, toggle to the PH LED by pressing the Up or Dwn key. The PH LED will be illuminated. Position High is set by moving the stem to the actual 20 mA position (analog) or the OPEN contact position (manual & two position). Pressing the (E)NTER key will cause the PH LED to begin blinking. Using the Up and Dwn keys, position the actuator to the desired point and press the (E)NTER key again. The position will be set as the Position High endpoint.

7.4 115 vac ESD VERSION

If the travel limit is exceeded, turn off the electric power, reduce the limit switch stroke and begin adjustment again.

For the 115 vac ESD version, only a simplified base circuit board is required and stroke is set via a mechanical limit switch. An accurate stroke limit is established by having an initial reduced stroke. Electric power is then applied to the actuator. Once the unit is at the reduced stroke position, the limit switch may now be moved slowly to the correct position. The actuator will follow the switch.

MR Series (Rotary) or MD Series (Drive)

Any other switches within the feedback housing are for external indication of position (Appendix B).

The limit switch is located within the circular feedback housing. Remove the cover by unscrewing. Take care to keep the threads clean and free from damage. Locate the limit switch that is wired through to the controls compartment. Reduce the stroke of the actuator by loosening the short set screw on the contact cam and rotating. Turn on the electric power. Adjust the cam until the actuator is at the correct stroke. For fine adjustments, the long set screws can be turned out to reduce the stroke and turned in to lengthen the stroke.

ML Series (Linear)

The limit switch is a proximity go type and is located at the rear of the hydraulic cylinder. Reduce the stroke of the actuator by loosening the two retaining screws and sliding the switch toward the spring failure position. Turn on the electric power. Slide the switch to the correct stroke. Securely tighten the retaining screws.