

3-Position Control/Dribble Control SR Limit Switch Method

Introduction

The Automax UltraSwitch XLA series limit switch is designed to operate an automated valve package through three distinct positions with the mid position fully adjustable. The XLA series can be easily mounted to an Automax SuperNova spring return actuator with line mounted 3-way and 2-way solenoid valves mounted in series for a complete 3-position control package. In the event of electrical or pneumatic failure, the springs return the actuator to the fail position. The XLA UltraSwitch utilizes adjustable cams for precise mid-position calibration. Stopping in the center for a 3-way valve or stopping near the end of travel for tank topping dribble control is easily accomplished by adjusting the pinpoint accurate cams.

Operation (see schematic 807451 on back)

The Spring Return limit switch method 3-position control package utilizes the Automax UltraSwitch XLA series limit switch complete with a 3-way and a 2-way solenoid valve. The XLA series limit switch contains (2) 15 amp SPDT mechanical switches with an integral cam assembly for mid-position control. Power to terminal block connection #7 will drive the actuator counterclockwise (CCW). Power to terminal block connection #6 and #7 will drive the actuator to the mid position from the clockwise (CW) position. Power to terminal block connection #6 will drive the actuator to the mid position from the CCW position. With both solenoids de-energized, the springs will fail the actuator to the full CW position. At the preset mid-position, the top and bottom switches will trip simultaneously, energizing the 2-way solenoid valve and locking the actuator in place.

CAUTION:

To prevent ignition of hazardous atmospheres, keep unit tight while circuits are alive. Disconnect supply circuit before opening.

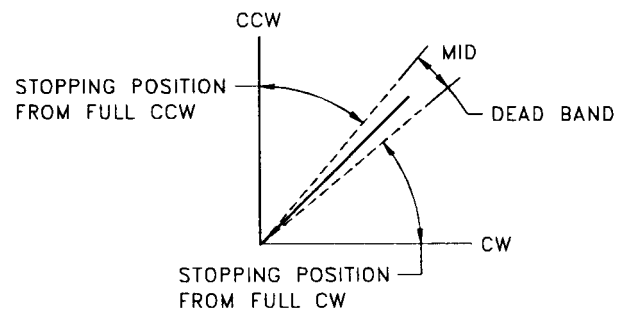
Calibration

1. Loosen the (4) captive cover screws of the UltraSwitch and remove the lid, turning slightly while lifting.
2. Loosen the setscrews in the top cam to allow free rotation of the integral cams.
3. Jog the actuator to the desired mid-position by depressing the solenoid override or applying power to the solenoid. Energizing the 2-way solenoid valve will block air in the actuator at the desired mid position.
4. Adjust the top cam to trip the switch. The switch should remain tripped from the full CW to the mid position.
5. Tighten the setscrews in the top cam.

6. Loosen the lock-down screw on the top cam.
7. Adjust the bottom cam to trip the switch. The switch should remain tripped from the mid to the full CCW position.
8. Tighten the lock-down screw to secure the position of the bottom cam.
9. For accurate setting of the mid position, see calibration notes below.
10. Clean the base and lid flanges of the UltraSwitch and replace the lid on the base. Make sure the wires are not caught between the flanges, and tighten the captive cover screws.

Calibration Notes

The accuracy of the mid position and speed of operation are interdependent. If a more precise location of the mid position is required, then the speed of operation must be reduced through the adjustment of the speed controls. If a faster speed of operation is required, the mid position must be calibrated with a higher dead band, thus reducing the accuracy of the mid position. (Dead band is the overlap between the switches.) (see Fig. 1).



HIGHER DEAD BAND
FASTER SPEED
LESS ACCURACY



LOWER DEAD BAND
SLOWER SPEED
HIGHER ACCURACY

Fig. 1

Flowserve Corporation
Flow Control Division
www.flowserve.com

765 South 100 East
Provo, Utah 84606
Phone: 801 373 3028

1978 Foreman Dr.
Cookeville, TN 38501
Phone: 931 432 4021

