

3-Position Control/Dribble Control DA 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 double acting or 180 actuator with a 3-Position, block-center NAMUR mounted solenoid valve for a complete 3-position control package. 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 807448 on back)

The Double Acting limit switch method 3-position control package utilizes the Automax UltraSwitch XLA series limit switch and a 4-way, 3-position, dual-coil, blocked center NAMUR mount solenoid valve. The XLA series limit switch contains two 15 amp SPDT mechanical switches with an integral cam assembly for mid-position control. Power to terminal block connection #9 will energize one solenoid to drive the actuator clockwise (CW). Power to terminal block connection #11 will energize the other solenoid to drive the actuator counterclockwise (CCW). Power to terminal block connection #10 will drive the actuator to the mid position. At the preset mid-position, the top and bottom switches will trip simultaneously, de-energizing both solenoids 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.

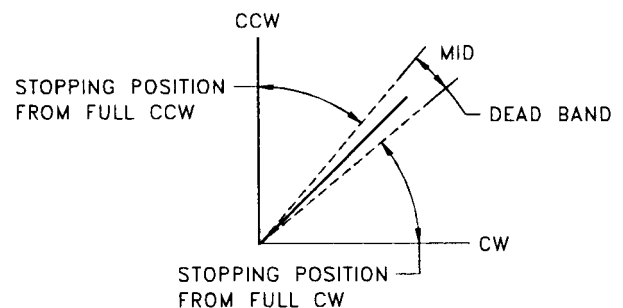
Calibration

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.
4. Adjust the top cam to trip the switch. The switch should remain tripped as the actuator stroke from the full CW through 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 as the actuator strokes from the mid position to full CCW.
8. Tighten the lock-down screw to secure the position of the bottom cam.
9. Test the actuator for smooth operation. If oscillation occurs at the mid position reduce the speed of operation or increase the dead band. 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

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