

Navy Series 4A PLC – 60, 100, 200 lb Machines

Water Level Switch Setup Procedure

Equipment Required

Manual operator (to open and close valves and drain), two flat-blade screwdrivers for adjusting water level switch setscrews (blades of screwdrivers must closely fit the slots of both types of setscrews to avoid damaging the soft plastic while making adjustments).

Step 1: Initialization of Setpoints

Apply power to machine and turn on control. Do not select a formula. Drain all water from cylinder, then close drain. Locate water level switch inside electrical enclosure. Refer to Fig. 1 to identify the six setscrews used to adjust the various levels. Using a flat-blade screwdriver that fits each slot width closely, pre-set the setscrews to match the depths as shown in Fig. 2 and Fig. 3. Set the larger diameter setscrews for levels X5, X6, and X7 approximately 3/8" below the upper rim of the adjustment collars as shown in Fig. 2. Set the smaller diameter setscrews for levels X5 DELTA, X6 DELTA, and X7 DELTA approximately flush with the upper rims of the adjustment collars as shown in Fig. 3. Locate the PLC X-input LEDs for inputs 5, 6, and 7 on the main PLC (Fig. 5). LEDs for inputs 5 and 6 should now be OFF, and the LED for input 7 should be ON. If any of these three LEDs do not match this pattern, adjust the X-setscrew for that LED up or down until the LED agrees. Only slight readjustments should be required. If an LED cannot be set, discontinue procedure and check for wiring or switch problem.

Step 2: Setting Safety level switch upper limit (X7)

Fill cylinder with water to the X7 level as shown on sight glass (Fig. 4). Turn X7 setscrew counterclockwise until X7 LED on PLC turns OFF. Do not drain any water - continue adding water to the previous level only in doing steps 3 and 4.

Step 3: Setting Low Water level switch upper limit (X5)

Fill cylinder with water to the X5 (LOW FILL) level as shown on sight glass (Fig. 4). Turn X5 setscrew counterclockwise until X5 LED on PLC turns ON.

Step 4: Setting High Water level switch upper limit (X6)

Fill cylinder with water to the X6 (HIGH FILL) level as shown on sight glass (Fig. 4). Turn X6 setscrew counterclockwise until X6 LED on PLC turns ON.

Step 5: Setting High Water level switch lower limit (X6 DELTA)

Drain water from cylinder until level X6 DELTA (HIGH RESET) is reached. **Do not drain cylinder any more than needed.** If level drops too low, switches may reset out of order and procedure will need to be repeated from Step 1. Turn X6 DELTA setscrew clockwise until X6 LED on PLC turns OFF. Continue draining from previous level in doing steps 6 and 7.

Step 6: Setting Low Water level switch lower limit (X5 DELTA)

Drain water from cylinder until level X5 DELTA (LOW RESET) is reached. **Do not drain too low to avoid incorrect resets.** Turn X5 DELTA setscrew clockwise until X5 LED on PLC turns OFF.

Step 7: Setting Safety Water level switch lower limit (X7 DELTA)

Drain water from cylinder until level X7 DELTA (SAFETY RESET) is reached. **Do not drain too low.** Turn X7 DELTA setscrew clockwise until X7 LED on PLC turns ON. This completes the setup procedure for the water levels.

Step 8: Level Verification

Drain all water from cylinder. With cylinder empty, verify that LEDs for PLC inputs X5, X6, and X7 match the initialization pattern described in Step 1 above. Close the drain and refill the cylinder to the high level. Verify that

the X5, X6, and X7 LEDs change state at the correct water levels. Drain the cylinder and verify that the LEDs also reset at their correct water levels.

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FIGURES

