

ICOT 5000/6000 VALVE POSITIONER

(Complete Installation and Operations Manual, TECH-439 (5200/5300 series),
TECH-473 (6300 series XP) and TECH-469 (5400 series), available at westlockcontrols.com)


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Initial Setup

Mount unit onto actuator using instructions in Figure 1 that match the fail direction of the valve (choose Condition 1 or Condition 2). **Pay careful attention to the orientation of the symbols on the magnet assembly with respect to the positioner housing, as the positioner will not function properly if beacon orientation is wrong.**

1. Direct Acting – 4mA Closed / 20 mA Open with Fail Clockwise (Fail Closed valve)

- Ensure that the actuator is at the fail position.
- Install the Beacon so that the  symbol is facing the front of the positioner (In line with the manifold) when the valve is in the fail-closed position (see Condition 1, Figure 1).
- Port 2 (Pneumatic) is piped to the closed port on the actuator. Air will be directed from Port 2 when the mA signal is lost because the spring inside the relay spool will fail that way. (Port 1 is piped to the open port on the actuator)
- Perform a standard Autocal procedure (see Automatic Calibration).
- As you increase the mA signal to the positioner, air pressure will increase from port 1 which will force the actuator counter clockwise to open the valve.

2. Reverse Acting – 4mA Open / 20mA Closed with Fail Counter Clockwise (Fail Open valve)

- Ensure that the actuator is at the fail position.
Install the Beacon so that the  symbol is facing the front of the positioner (in line with the manifold) when the valve is in the fail-open position (see Condition 2, Figure 1).
- Port 2 (Pneumatic) is piped to the open port on the actuator. Air will be directed from port 2 when the mA signal is lost because the spring inside the relay spool will fail that way. (Port 1 is piped to the closed port on the actuator)
- Perform a standard Autocal procedure (see Automatic Calibration).
- As you increase the mA signal to the positioner, air pressure will increase from port 1 which will force the actuator clockwise to close the valve.

3. Reverse Acting and Reverse signal – 20mA Open / 4mA Closed with Fail Counter Clockwise (Fail Open valve position)

- Follow the same set-up as in Reverse Acting (Set-up 2. above)
- After the Autocal is complete, enter the manual calibration menu (MCAL) & perform a “LO” calibration, inputting 20mA to the positioner when LCD asks, “Set mA for fail position”. For more detail on this, follow the flow chart for the MCAL menu below.
- After the LO calibration is complete, perform a “HI” calibration, inputting 4mA to the positioner when LCD asks, “Set mA for span position”. For more detail on this, follow the flow chart for the MCAL menu below.
- If you view the % Open on the display, it may be reading reverse to the actual valve position. If this is the case go into the “Config” menu & set the “Flop” parameter to “ON”. If you cycle the valve it should now be set up as reverse acting with the display now aligned to the valve position. Return to the home screen & check that the valve is functioning correctly.
- Be sure to check that the package failsafe functions correctly when the mA signal is removed from the unit.

Condition 1:
Actuator fails in a clockwise direction.

Spring Return Actuator
Output Port 2 is plugged
Output Port 1 is piped to turn the actuator Counter clockwise

Double Acting Actuator
Output Port 2 is piped to turn the actuator clockwise
Output Port 1 is piped to turn the actuator counter clockwise

┌ Placed at 6:00

|| Placed at 3:00

The diagrams for Condition 1 show two actuator types. For the Spring Return Actuator, the fail position is clockwise, indicated by a '6:00' clock face. For the Double Acting Actuator, the fail position is counter-clockwise, indicated by a '3:00' clock face. Both diagrams show the actuator being piped to Port 1 and Port 2, and the resulting fail position relative to the inner beacon.

Condition 2:
Actuator fails in a counter clockwise direction.

Spring Return Actuator
Output Port 2 is plugged
Output Port 1 is piped to turn the actuator clockwise

Double Acting Actuator
Output Port 2 is piped to turn the actuator counter clockwise
Output Port 1 is piped to turn the actuator clockwise

┌ Placed at 9:00

|| Placed at 6:00

The diagrams for Condition 2 show two actuator types. For the Spring Return Actuator, the fail position is counter-clockwise, indicated by a '9:00' clock face. For the Double Acting Actuator, the fail position is clockwise, indicated by a '6:00' clock face. Both diagrams show the actuator being piped to Port 1 and Port 2, and the resulting fail position relative to the inner beacon.

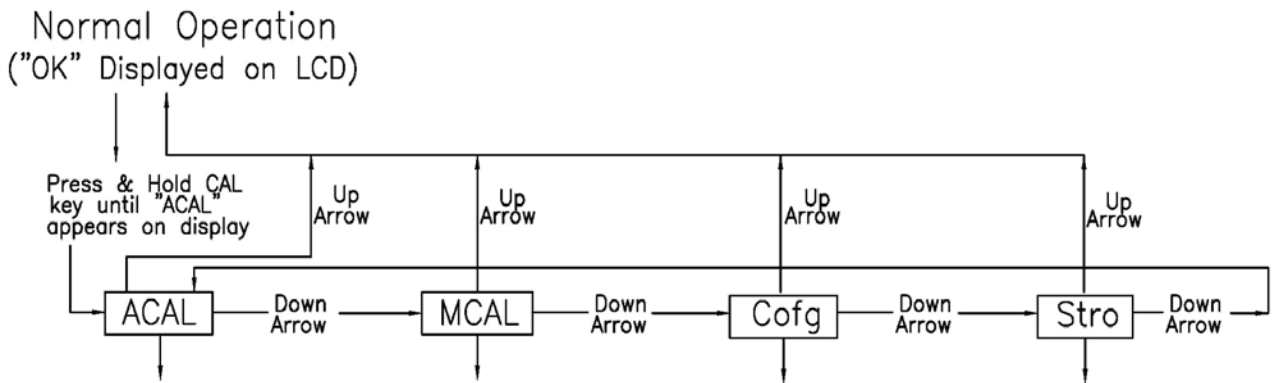
Figure 1

Calibration

The ICOT positioner has an on-board menu structure that can be accessed by pressing the Cal button. Exit any function by pressing both up and down arrow buttons simultaneously, anytime during calibration.

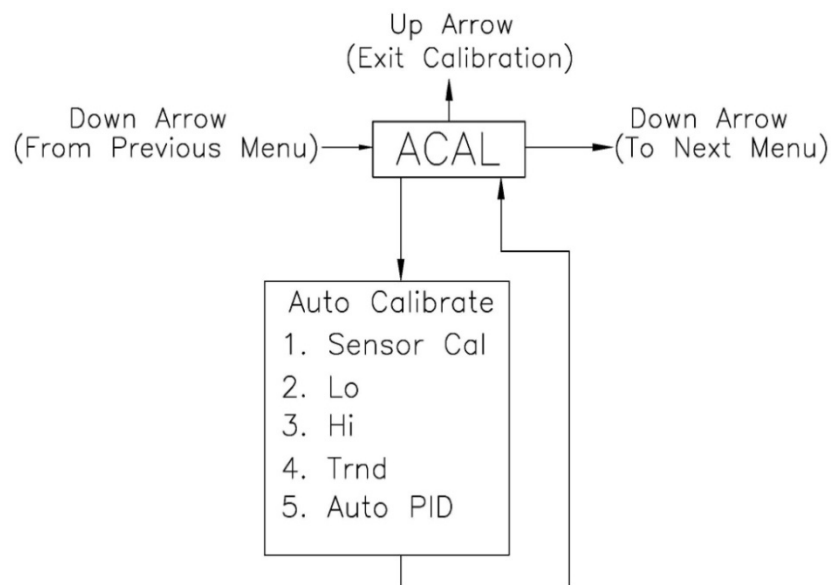
Enter Calibration (Menu Level)

Enter the calibration menu by pushing the CAL button. **ACAL** (Auto Cal Menu) is the first of four menus. Press the CAL button again to enter a lower level menu or start a routine. Push the down arrow button to cycle through the menus. The remaining three menus are **MCAL** (Manual Cal Menu), **Cofg** (Configuration Menu), **Stro** (Manual Position Override Menu). Push the up arrow to exit the menu or go to an upper level menu. The menu level is shown below.



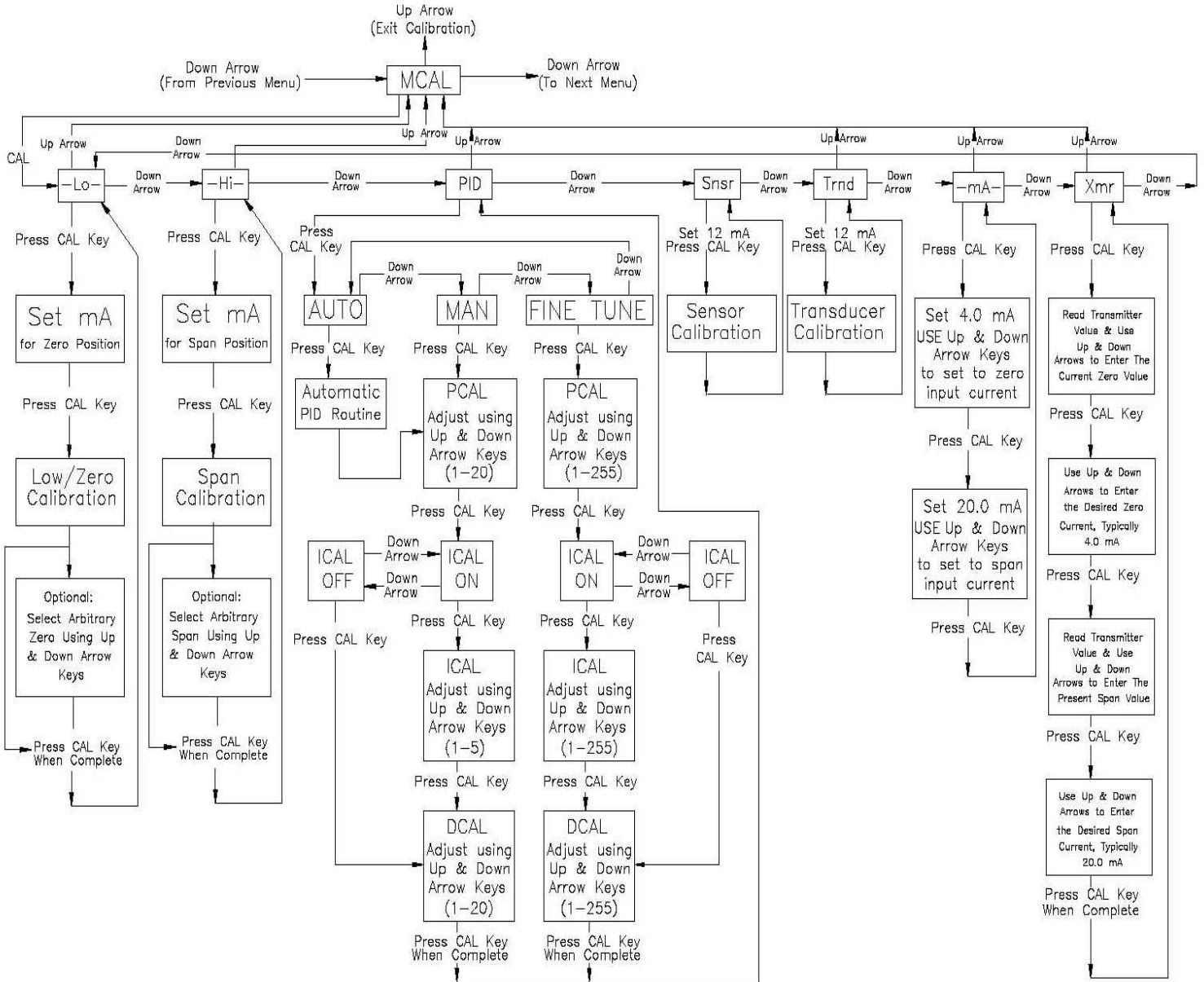
Automatic Calibration

The Automatic Calibration (ACAL) performs several self-adjustments, as well as a zero calibration, a span calibration, and tunes the positioner's PID gain settings. From the normal operation screen, press the CAL button until ACAL is shown on the display (the ACAL routine is shown to the right). Press and hold the CAL button until it starts the automatic calibration, of which the first step in the sequence is the Sensor Calibration.



Advanced Calibration

After the completion of an Automatic Calibration (ACAL) the calibration of the positioner is complete. The Automatic Calibration that was performed is adequate for most applications. If no advanced calibration is required proceed to exit calibration. If the advanced settings are required to fine tune the positioner, proceed with the remainder of this step and perform adjustments and calibrations in the Manual Calibration Menu (MCAL). From the menu level press the down arrow button until MCAL is shown on the display (MCAL Routine shown below for all models except 5400).



For ICOT 5400 models, the MCAL routine is as shown below:

