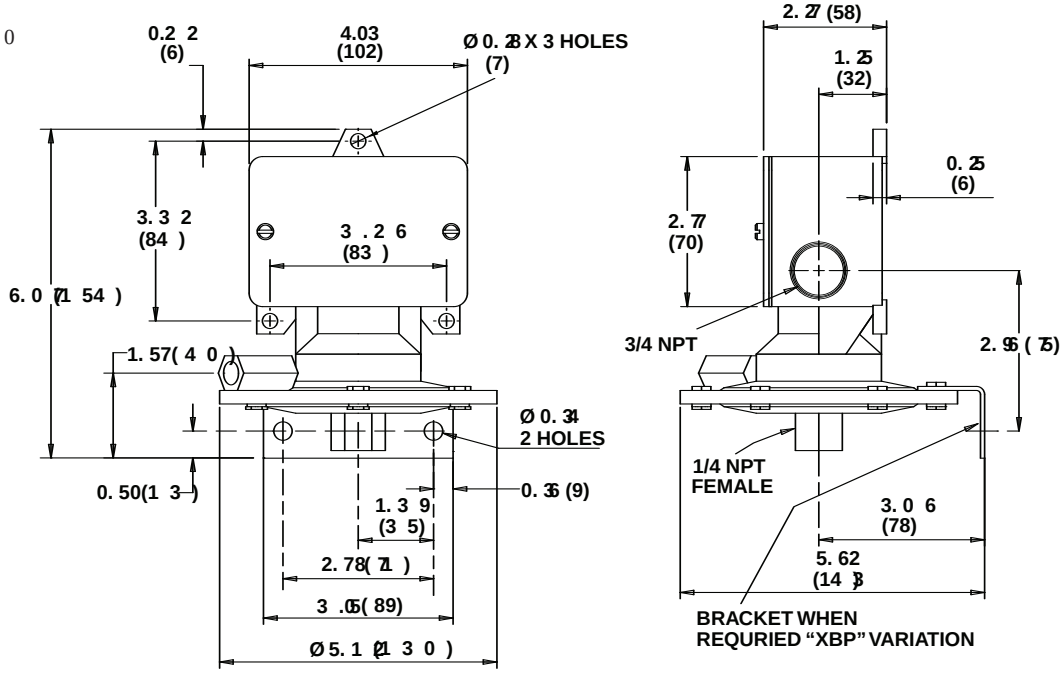
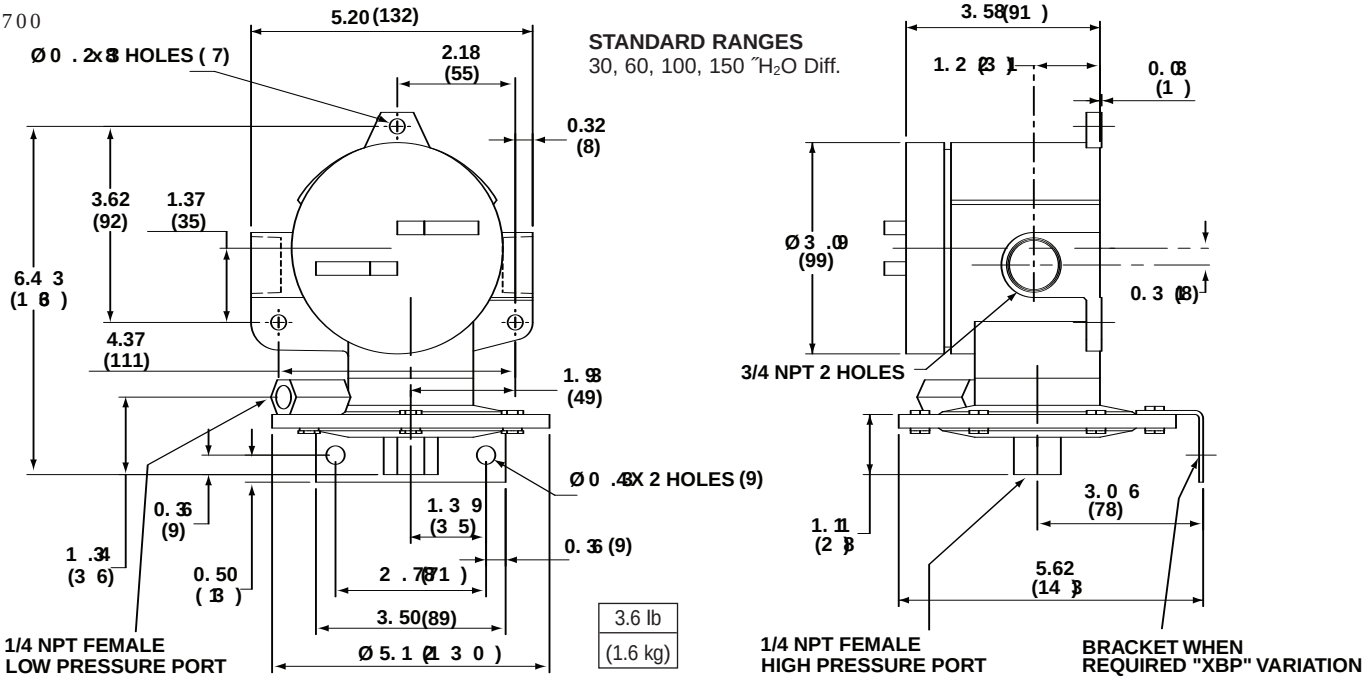
Installation and Maintenance Instructions for D400 & D700 ASHCROFT® Snap Action Switches for Low Range Differential Pressure Control

D400



2.7 lb
(1.2 kg)

D700



3.6 lb
(1.6 kg)

INTRODUCTION

The Ashcroft differential pressure switch is a precision built control device which features a mechanical snap action switch. Controllers are available for operation on various pressure differentials with fixed or variable switching differentials. Also, manual reset types are available for operation on increasing or decreasing pressure. The manual reset types remain trlpped until reset by pressing a button on the top of the enclosure. The standard electrical switch Is SPDT and is available with various electrical characteristics. Two SPDT switch elements mounted together are available except on variable deadband and manual reset types. Various wetted material constructions for compatibility with a wide range of pressure media maybe obtained.

The Ashcroft snap action differential pressure switch is furnished in the standard NEMA 4 and explosion proof NEMA 7 and 9 enclosure styles. Both enclosures are epoxy coated aluminum castings.

All D400 Series controls with the suffix XG5 as part of their catalog number are Underwriters Laboratories listed for gas and oil service. Any control so marked has a pressure limit of 5.4 psi on both the high and low side. Controls marked XG5HX are constructed to increase the pressure limit to 40 psi.

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ASHCROFT®

INSTALLATION

These controls are precision instruments and should never be left with internal components exposed. After installation, ensure that the covers are in place and the conduit openings are closed.

MOUNTING 0400 AND 0700 SERIES

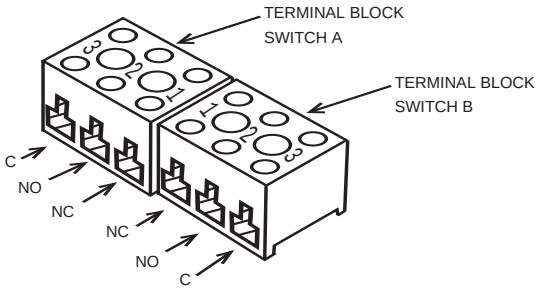
There are three holes external to the enclosure for surface mounting. The locations of these holes are shown on the general dimension drawing. The controls may also be mounted directly on the pressure line using the pressure connection. When tightening the control to the pressure line, always use the wrench flats or the hex on the lower housing.

For operation as a pressure control, connect the pressure source to the lower port marked "H." If venting is required, connect the vent line to the side port marked "L." If no venting is required, side port "L" must be left open.

For operation as a differential pressure control, connect the high pressure source to the lower port marked "H" and connect the low pressure source to the side port marked "L."

ELECTRICAL CONNECTIONS

Remove Cover
D400 Series – two screws hold cover to enclosure
D700 Series – cover unscrews



CONDUIT CONNECTIONS

Note – It is recommended that Teflon tape or other sealant be used on the conduit, bushing, or plug threads to ensure the integrity of the enclosure.

D400 Series Standard – one ¾ NPT conduit hole right side.
D700 Series Standard – two ¾ NPT conduit holes with one permanent plug. NEMA7 and 9 enclosures require proper conduit seals and breathers as per the National Electrical Code.
D400 and D700 Series – XJL variation – two ¾ NPT conduit holes with two ¾ to ½ NPT reducing bushings.
D400 Series – XJK variation – two ¾ NPT conduit holes.

D400 SERIES

SPDT – Wire directly to the switch according to circuit requirements. On controls with pilot lights, wire lights according to circuit diagram on the inside of the cover. See special wiring instruction tag for single switches with two pilot lights and dual switches with one or more pilot lights.

2-SPDT – Dual switching elements consist of two SPDT switches mounted together in a bracket. The switches are calibrated to have simultaneous operation within 1% of range either on increasing or on decreasing pressure, but not in both directions. Wire directly to the front and rear switches according to circuit requirements. Leads provided on the rear switch and leads provided for hermetically sealed switch elements are color coded as follows:

Common	– White
Normally Closed	– Red
Normally Open	– Blue

See SPDT instructions for pilot light hook up.

D700 SERIES

SPDT – Wire directly to the switch according to circuit requirements.
2-SPDT – Wire to front switch terminal block (left) and rear switch terminal block (right) as marked. Strip insulation 5/16″, insert in proper terminal connector, and tighten clamping screw to secure.

D400 AND D700 SERIES

Adjustment of Setpoint – A Single setpoint adjustment nut (7/8″) is located centrally at the bottom on the inside of the enclosure. The direction of turning is indicated on a label affixed to the inside of the control enclosure. XG5 controls have a setpoint indication scale adjacent to the adjustment nut. To adjust the control, align the top of the adjustment nut hex with the indicator line on the scale. Do no force adjustment or attempt to exceed the maximum setting shown on the scale or nameplate.

For accurate setpoint calibration or for controls without a scale mount the control on a calibration stand so that the HIGH and LOW pressures expected under operating conditions may be obtained. Suitable reference standards are necessary for each pressure.

Note – Due to the sensitivity of these controls it Is imperative that the LOW pressure side volume be large to prevent a setpoint shift between calibration and field installation. If this is not possible, an approximate setpoint under operating conditions can be obtained by setting the operating point with the low side open to atmosphere. A final setpoint adjustment can be made after installation.

Apply the LOW pressure. Then apply the HIGH pressure to the required setpoint and turn the adjustment nut until the switch operates. When the setpoint has been achieved, raise and lower HIGH pressure to ensure that the differential pressure between the HIGH and LOW pressures is correct.

After installation of the control, replace the cover to ensure electrical safety and to protect the internal parts from the environment.

D400 AND D700 VARIABLE DEADBAND SWITCHES

Deadband is varied by rotating the wheel on the precision switch. When viewed from the front of the enclosure, rotation to the left increases deadband and rotation to the right decreases deadband. The letters on the wheel may be used as a reference. Deadbands obtainable will vary from 2% to 9% of the pressure range depending on the range segment and the type of diaphragm.

Adjustment of Setpoint – As received, the pressure switch will normally be set to approximately 90% of range. Rotate the wheel on the MICRO SWITCH all the way to the right. This will provide the smallest deadband. Pressurize the system to the required setpoint and turn the adjustment nut until the switch changes mode. Lower the pressure to reset the switch. Rotate the wheel on the MICRO SWITCH until the desired deadband is obtained. The upper setpoint will be changing upward with this adjustment. Lower the pressure to reset the switch. Increase the pressure to the desired setpoint and turn the adjusting nut until the switch changes mode. Lower the pressure and check the re-setpoint and dead band.

Note – As indicated above, adjustment of setpoint is made by use of the 7/8″ nut. The precision switch element mounting screws and bracket adjusting screw are factory sealed and should not be tampered with.