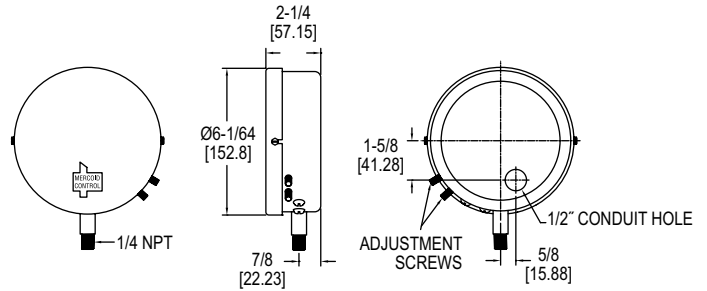
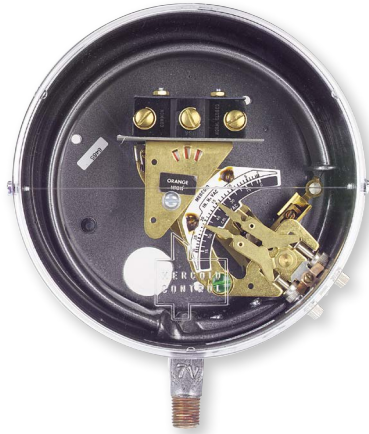




Series DA/DS-7000 Bourdon Tube Pressure Switches

Specifications - Installation and Operating Instructions



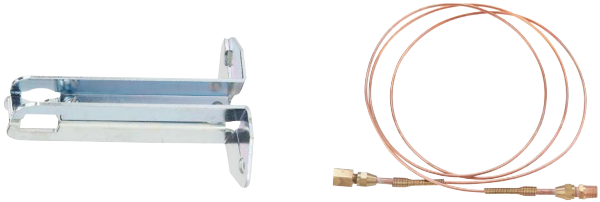
Series DA/DS-7000 Bourdon Tube Pressure Switches are SPDT snap-action switches that combine extremely high sensitivity and repeatability with easily adjustable set and reset points through non-interactive external adjustments. These switches have visible calibrated dials for set points and on-off indicators to indicate switch actuation. DA models are equipped with two external adjustments. One sets the high pressure operating point; the other sets the reset point. Deadband or the difference between set and reset points is adjustable over the full scale. DS models have a fixed deadband.

Note: The DS7300 has no status indicator.

INSTALLATION

The switch may be mounted in any position. Select a location recommended by equipment manufacturer. Where excessive vibration occurs, mount the switch remotely, using an appropriate remote connection and mounting bracket. See accessories, below.

ACCESSORIES



Mounting bracket
33-25

Remote connection
49-62: 6 ft copper - 300 psig max
49-62HP: 6 ft copper - 2500 psig max
49-210: 12 ft 316 SS - 3000 psig



Pigtail siphon
42-52: 250 psig max
42-58: 2000 psig max

SPECIFICATIONS

Wetted Materials: Brass, 403 SS, or 316 SS.
Temperature Limit: 180°F (82°C).
Pressure Limit: Maximum pressure of the operating range.
Enclosure Rating: General purpose, weatherproof or explosion-proof.
Repeatability: ±1% of full operating range.
Switch Type: See circuit chart.
Electrical Rating: See electrical ratings chart.
Electrical Connections: Screw terminal.
Conduit Connection: General purpose: 1/2" hole for conduit hub; Weatherproof: 1/2" conduit hub; Explosion-proof: 3/4" female NPT.
Process Connection: General purpose and weatherproof: 1/4" male NPT, 1/2" male NPT on ranges 15S and 16S; Explosion-proof: 1/2" male NPT and 1/4" female NPT.
Mounting Orientation: Vertical.
Set Point Adjustment: Thumbscrew.
Weight: General purpose: 4 lb (1.8 kg); Weatherproof: 6 lb (2.7kg); Explosion-proof: 8 lb (3.5 kg).
Deadband: See Ranges and Differentials Chart.

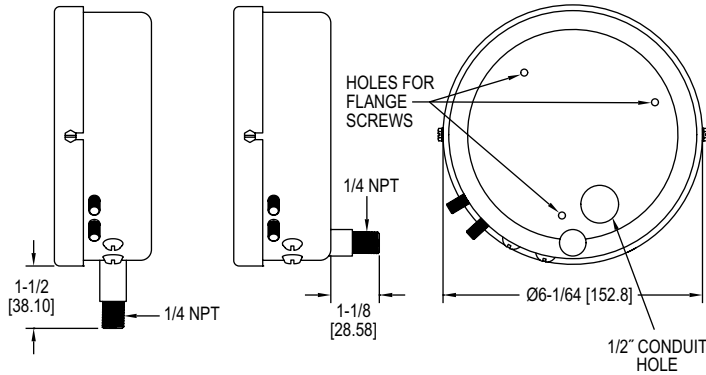
CAUTION Control movement must not be oiled. Do not overload. Note electrical rating on name plate and be sure that total current passing through the switch is within specified rating.

When testing a boiler or system, never exceed maximum pressure rating on control or it may be seriously damaged. Remove control if higher pressures are required.

Do not fail to use a siphon on steam where range is 35 lb (2413 mbar) or more.

GENERAL PURPOSE CONTROLS, TYPES DA, DL, DR, DS

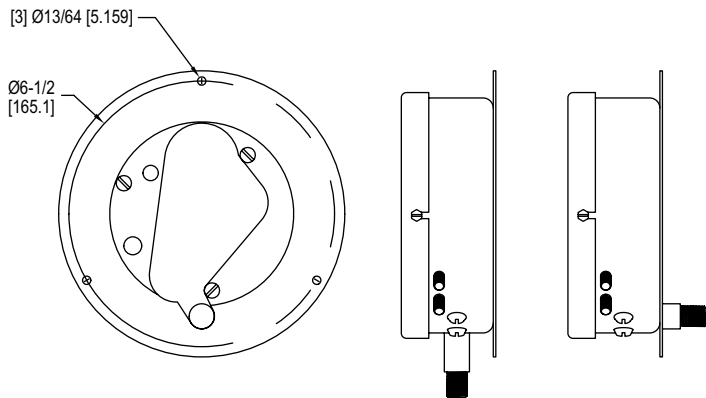
Mount control in any position. Do not twist the case when installing. Use a wrench on the square part of the control connection. On controls with operating Range No. 15S (500 to 5000 psi (34.47 to 344.75 bar)) or Range No. 16S (800 to 8000 psi (55.16 to 551.6 bar)), be sure the special sealing nut (with PTFE insert) is turned to the uppermost threaded section of the 1/2" pressure connection. Apply a flat open-end wrench to the flat side of the bottom pressure connection when piping the control. After properly connecting the control, tighten the sealing nut to assure a leak-proof connection.



General purpose types DA, DS, DR, DL

FLANGED CASE CONTROLS

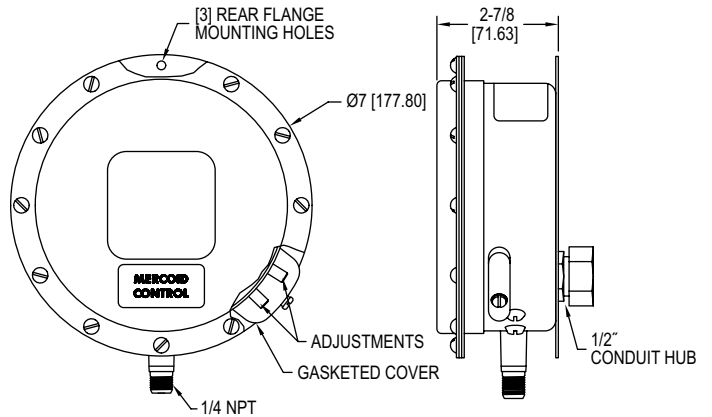
Mount by means of the three holes in the flange. **Note:** Series D7030 when used for steam with operating ranges of 35 psi (2.413 bar) or higher, must be siphoned to prevent live steam entering the Bourdon tube. With high-pressure steam exceeding 100 psi (6.895 bar), use a remote connection. (**Note:** accessories on Page 1.) Series D-7020 incorporate an orifice as standard in the pressure connection to dampen surges or pulsations.



Flange for surface mounting

WATERTIGHT AND WEATHERPROOF NEMA 2, 3, 4, 5, TYPES DAW, DRW, DSW

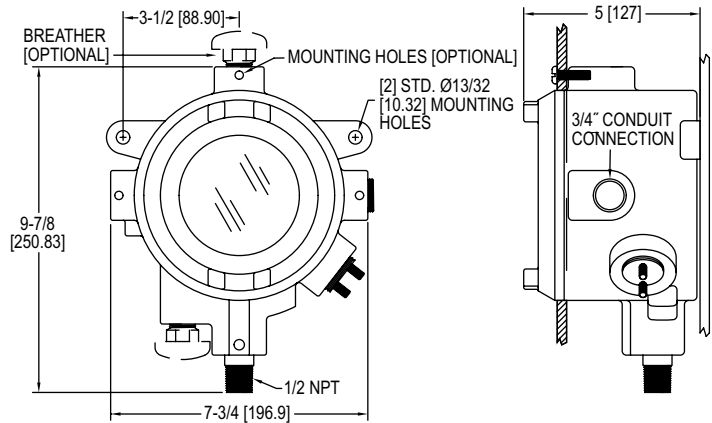
These switches are supplied with flanged case, bottom connection, for surface mounting only.



Weather-proof types DAW, DSW, DRW

EXPLOSION-PROOF TYPES DAH, DRH, DSH

Mount with mounting lugs attached to control housing.



Explosion-proof types DAH, DRH, DSH

WIRING

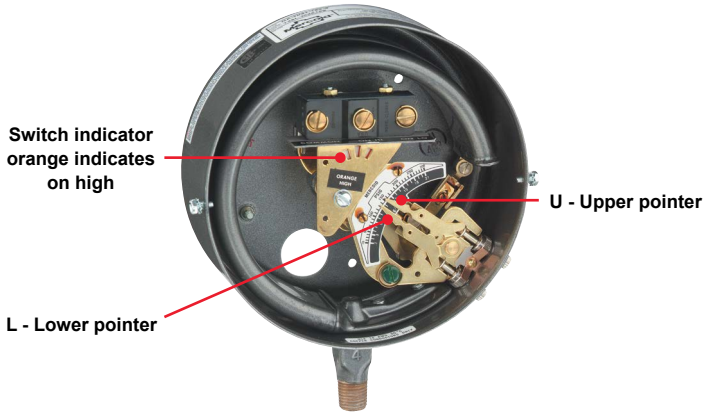
Wire in accordance with the National Electrical Code and local regulations. For general purpose controls, use a short piece of BX between the rigid conduit and the control so the control will not be subjected to conduit expansion and contraction. Where the control is directly connected into the load circuit, it should be connected into the hot side of the line. Do not exceed electrical rating as stamped on the control nameplate. DS-7300 controls are equipped with a terminal block. Field connection should be made to terminal block pole in common with required pole of the control's switch. The color code is:

- Black - Common
- Blue - ON Hi
- Red - ON Lo

ADJUSTMENTS: HOW TO SET OPERATING POINT

Double Adjustment Types - Fully Automatic:

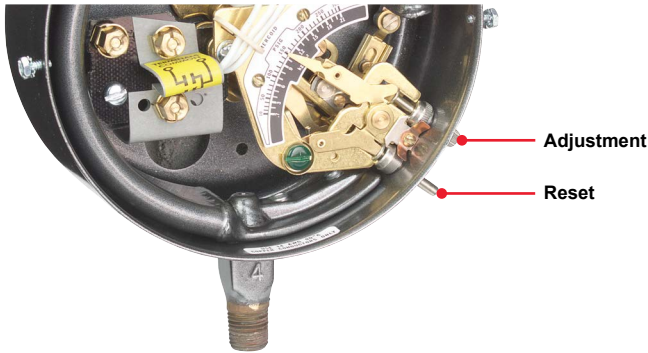
With double-adjustment switches (prefixed DA, DAH or DAW), adjust the upper pointer "U" to set HIGH PRESSURE POINT for switch operation and adjust the lower pointer "L" to set LOW PRESSURE OPERATING POINT. The difference between the "U" and "L" pointers is the operating differential between "on-off" switch operation.



Double-adjustment types fully automatic

Semi-Automatic Control with Manual Reset:

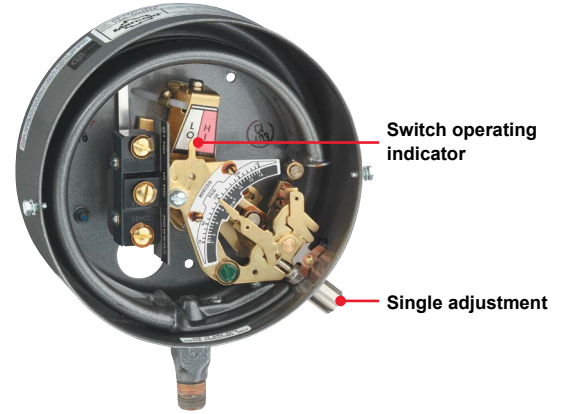
Models prefixed DR, DRH, DRW and with suffix L or U (example: DR-7021-153U) have a single adjustment that sets the operating point for automatic operation. A push-button reset must be operated manually to restore the circuit to the original position after automatic operation. Example: Type DR-7021-153L has a circuit that opens automatically on a pressure rise to the pressure indicated by the pointer on the scale; no matter how much the pressure drops, the circuit will not re-close until the reset button is operated. Suffix L denotes control will operate automatically on an increase. Suffix U denotes control will operate automatically on an decrease.



Semi-automatic types with manual reset

SINGLE ADJUSTMENT TYPES — FULLY AUTOMATIC:

Models prefixed DS, DSH, DSW, N3DSW are equipped with a single adjustment. Differential is fixed (not adjustable). The single pointer on the scale sets the pressure at which switch operation occurs. Differential is listed in chart indicates approximate fixed differential.



Single adjustment types fully automatic

LOCKING DEVICE

When the control has been adjusted to desired range, the locking bar may be inserted between the adjustment screws with the slot passing over the projecting lugs. By placing a sealing wire between the locking bar and the hole in the lug protruding from the adjustment assembly, adjustments cannot be tampered with.

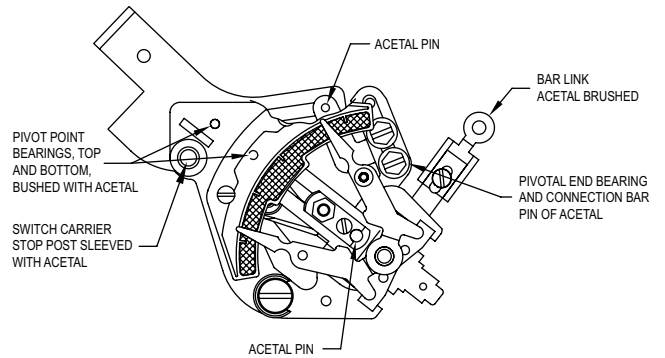
For DRF, DAW, DRW, adjusting knob cover may be sealed in place with sealing wire through cover bolt hole. For DAH, sealing wire may pass through locking bar and hole in hub above adjusting knobs.

ACETAL BUSHED MOVEMENT "B"

Acetal bushed movements prolong control life by alleviating wear of metal surfaces due to excessive vibration and/or pulsation. They also prolong switch life in environments where corrosion may be a factor. Models with Acetal movements are identified by the letter "B" after the suffix number. Examples: -153B, -153UB, etc.

CONTROL NUMBER

Part of the control number (the fourth number in the sequence) identifies the type of control case. Digit 1 of 7021, 7031, 7041, denotes a plain case with bottom connection. Digit 2 of 7022, 7032, etc., denotes a plain case with back connection. Digit 3 of 7023, 7033, 7043, etc., denotes a flanged case with bottom connection. Digit 4 of 7024, 7034, etc., denotes a flanged case with back connection.



Acetal bushed movement "B"

CIRCUITS (SWITCH OPERATION)

Suffix number after control number denotes switch action:

Suffix -153 designates SPDT; one circuit closes as other circuit opens.

Suffix - 804 designates two SPDT switches; two close, two open.

Ranges			TYPE DA Double Adjustment Minimum Differential (psig)	TYPE DS Single Adjustment Fixed Differential (psig)			
Bourdon Tube Material	Range Number	Adjustable Operating Range (psig)	SPDT DA-7031-153 DAW-7033-153 DAH-7031-153	SPDT DS-7231-153 DSW-7233-153 DSH-7231-153	(2) SPDT DS-7231-804 DSW-7233-804 DSH-7231-804		
Brass Bourdon Tube	2 3 1 3A 4 27 5 6 7 8 9	0 to 30 in Hg VAC 1.0 in Hg VAC-12 1/8 to 15 1/8 to 20 1 to 35 25 in Hg VAC-50 2 to 60 5 to 100 5 to 150 10 to 200 10 to 300	13.5 in Hg 6 6 6 7 12 9 13.5 24 24 37.5	3 in Hg 1.5 1.5 1.5 1.5 2.5 2 2.5 3.5 4.75 6	2.5 in Hg 1.25 in 1.25 1.25 1.5 2 1.5 2 3.5 4 6		
403 SS Bourdon Tube	Range Number	Adjustable Operating Range (psig)	SPDT DA-7021-153 DAW-7023-153 DAH-7021-153	SPDT DS-7221-153 DSW-7223-153 DSH-7221-153	(2) SPDT DS-7221-804 DSW-7223-804 DSH-7221-804		
	25S 26S 5S 6S 8S 9S 9AS 10S 11S 12S 13S 15S 16S	30 in Hg VAC-60 30 in Hg VAC-75 2 to 60 5 to 100 10 to 200 10 to 300 40 to 350 25 to 600 50 to 1000 100 to 1500 300 to 2500 500 to 5000 800 to 8000	18 22.5 13.5 19.5 22.5 28.5 30 67.5 142.5 195 390 1350 2250	3.5 3.5 3 3.5 4.75 7 7 12 22 35 60 200 500	3 3 2.5 3 4 6 6 10 20 30 50 110 180		
316 SS Bourdon Tube	Range Number	Adjustable Operating Range (psig)	SPDT DA-7041-153 DAW-7043-153 DAH-7041-153	SPDT DS-7241-153 DSW-7243-153 DSH-7241-153	(2) SPDT DS-7241-804 DSW-7243-804 DSH-7241-804		
	26E 23E 6E 24E 9E 21E 22E 11E 13E	30 in Hg VAC-75 5 to 75 10 to 100 10 to 150 10 to 300 30 to 400 75 to 800 100 to 100 200 to 2500	15 12 15 16.5 42 78 180 285 600	3.5 4 3.5 4.5 8 12 25 35 75	4 2.5 4 3 6 10 17 30 95		
316 SS Bourdon Tube Carbon Steel Bottom Connection	Range Number	Adjustable Operating Range (psig)	SPDT DA-7041-153 DAW-7043-153 DAH-7041-153	SPDT DS-7241-153 DSW-7243-153 DSH-7241-153	(2) SPDT DS-7241-804 DSW-7243-804 DSH-7241-804		
	23K 24K 9K	5 to 75 10 to 150 10 to 300	12 16.5 42	4 4 8	2.5 3 6		
	Electrical Ratings		See Code F*	See Code E	See Code D		
	Electrical Ratings						
	AC Capacity		DC Capacity		AC Horsepower		
Code	120 V	240 V	480 V	120 V	240 V	120 V	240 V
D	10A	10A	NA	.5A	.25A	1/8	1/4
E	15A	15A	15A	NA	NA	1/4	1/2
F	12A	10A	5A	.5A	.25A	1/4	1/2
G	5A @ 250 AC. Resistive and Inductive; 30V DC Resistive						
Circuit Suffix No.	Switch Action on Pressure Increase			Electrical Rating			
				D-7000	D-7200		
-153	SPDT: one OPENS as one CLOSES (2)			D	E		
-804	SPDT: two OPEN as two CLOSE			F*	G		

*Minimum differentials increase when using multiple circuits. Controls using #804 circuits in ranges over 35 psig have 30% higher minimum differentials; ranges under 35 psig are not available in Code F.