

BARTON®

# Differential Pressure Switches

*Models 289A and 291B*

BARTON DP switches are available in a wide variety of safe working pressures and differential pressure ranges. Widely used in applications that require measurement of differential pressure, flowrate, and liquid level, they provide accuracy, narrow deadband, and repeatability of switch action at set point.

## Features

- SWP to 6,000 PSI (414 bar)
- BARTON DPU Sensor/Actuator
- NEMA-4/IP65 & Explosionproof Cases
- Wide Selection of DP Ranges (including absolute, zero-center, and split ranges)
- Pulsation Dampening (selected models)

## Actuating Units

- The indicator is actuated by a rupture-proof bellows differential pressure unit (DPU) with integral temperature compensation.
- The M199 DPU features dual, liquid-filled, bellows designed to withstand repeated overranges equal to the safe working pressure of the housings without a change in calibration.

## Indicating Mechanism

- The indicating pointer traverses a 270° arc, providing excellent readability. It is driven by a precision-jeweled rotary movement that multiplies rotation of the torque tube through a gear and pinion to the pointer. The movement employs a thermally stable Ni-Span-C hair spring.
- The movement has a micrometer screw for convenient range adjustments. Zero/range adjustments

can be made without removing the scale plate or pointer. Linearity adjustments are readily accessible after removal of the scale plate.

## Switch Contacts

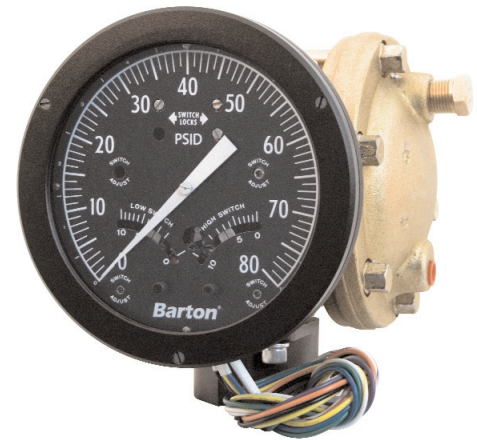
- BARTON switches are available in configurations with 1 to 4 adjustable snap-action type SPDT switches, with DPDT and hermetically-sealed switches available as specials on selected models. Switches can be set for high or low, or both high and low on units with two or more contacts.
- Chosen for their reliability under severe shock and vibration conditions, the contacts are adjustable from 5 to 95% of full scale range, and are set with a control screw located flush with the scaleplate. Contacts can be set to open or close (by reversing wires at terminal) with increasing or decreasing differential pressure – providing maximum flexibility.

## Relays

- Some models can be ordered with one or two relays mounted inside the case. The addition of a relay allows greater flexibility of switching action and increased current handling capacity without the need for external mounting or wiring – important in applications that require explosionproof housings.

## Cases

- BARTON switches are available in indicating and blind case versions. The standard case is die-cast aluminum with a special baked epoxy black finish, which is NEMA-4/IP65



rated. Optional "S" version 316 Stainless Steel case is available for offshore/corrosive environments.

- The optional explosionproof case is rated for use in Class I, Div. 1, Groups B, C, & D areas.

## Scales

- All indicating scales can be graduated uniformly for measurement of differential pressure or liquid level, or square root for direct reading of flowrate. Special scales can be furnished for indicating liquid level in horizontal or non-uniform tanks. Scales are available in black with white lettering (standard) and in white with black lettering (optional, as shown).

## M199 DPU Actuated Units

- Model 289A / 289AS / 289A NACE
  - A 6-in. (152 mm) indicating switch that features a NEMA-4 case, operating pressure ratings up to 6,000 PSI (414 bar) and a differential pressure range from 0-10-in. w.c. to 0-100 PSID (0-25 mbar to 0-6.9 bar).

- Model 291B/291B NACE
  - An explosionproof version of the M289A, it is housed in a CSA certified case rated for Class I, Div. 1, Groups B, C, & D areas.

### Specifications

- M199 DPU Housings (Material/SWP)
  - Forged Steel: 2500, 4500, & 6,000 PSI (172, 310, & 414 bar)
  - 316 SST: 1,000 & 3,000 PSI (69 & 207 bar)
  - Bellows Material: 316 SST & Inconel
  - DP Ranges: 0-10-in. w.c. to 0-100 PSID (0-25 mbar to 0-6.9 bar)
- Switch (Indication Accuracy)
  - SPDT: 0-10-in. w.c. to 0-349-in. w.c.  $\pm 1.0\%$  F.S. (0-25 mbar to 0-867 mbar  $\pm 1.0\%$  F.S.)
  - 0-350-in. w.c. to 0-100 PSID  $\pm 1.25\%$  F.S. (0-869 mbar to 0-6.9 bar  $\pm 1.25\%$  F.S.)
  - DPDT: Add 1% to SPDT values
  - Point of Actuation Accuracy: Add 1/2% to SPDT values
  - Repeatability: 0.25%
- Switch Deadband
  - SPDT:  $\pm 5.0\%$  max. F.S. DP
  - DPDT:  $\pm 6.0\%$  max. F.S. DP
  - Temperature Limits: -40°F (-40°C) to +180°F (+82°C)

### Ordering Information

When ordering, specify the following items:

- Quantity
- Model number
- Housing pressure rating (SWP)
- Housing material
- Bellows material
- Material contacting bellows
- Differential pressure range
- Number of switches (3 max.)
- Switch type (SPDT or DPDT)
- Switch detpoints (5-95%)

M289A High Shock Mount



- Optional relays (1 or 2)
- Type of scale (uniform, square root)
- Color of scale and scale lettering
- Scale graduations

### Contact Ratings

	AC	DC
Contact	Inductive – 5 amps up to 125 V Resistive – 2.5 amps up to 250 V	Inductive – 1.0 amp up to 30 V Resistive – 3.0 amps up to 30 V

### Relay Ratings

	AC	DC
Contact	Inductive – 5 amps up to 115 V Resistive – 10 amps up to 115 V	Inductive – 5 amps up to 26.5 V Resistive – 10 amps up to 26.5 V
Coil	6 V, 12 V, 24 V, 115 V – 5 VA max.	6 V, 12 V, 24 V 115 V – 5 VA max.

### Weights (includes DPU)

	Forged Steel			Forged SST	
	2500	4500	6000	1000	3000
<b>SW Model 289A / AS</b>					
Approximate Gross Weight (lbs/kg)	48	49	51	39	49
Material/Safe Working Pressure (PSI)	(22)	(22)	(23)	(18)	(22)
<b>SW Model 291B</b>					
Approximate Gross Weight (lbs/kg)	55	55	58	46	56
Material/Safe Working Pressure (PSI)	(25)	(25)	(26)	(21)	(25)

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### MEASUREMENT SYSTEMS

HOUSTON HEAD OFFICE | **281.582.9500**

NORTH AMERICA | **1.800.654.3760**  
ms-us@c-a-m.com

ASIA PACIFIC | **+603.5569.0501**  
ms-kl@c-a-m.com

EUROPE, MIDDLE EAST & AFRICA | **+44.1243.826741**  
ms-uk@c-a-m.com

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