## *Overview*

The NSA-DBL Series Differential Pressure Switches are general purpose pressure switches designed for both HVAC and Energy Management applications. These pressure switches can be used to sense positive, negative, or differential air pressures when used in conjunction with an NSA-DBZ-06 DBL Series Duct Mount Kit. The NEMA 3 (IP54) rated weather proof plastic enclosure contains an On/Off, single stage micro switch and two pressure chambers separated by a silicone diaphragm. The enclosure also contains a ½" conduit knockout and guards against accidental contact with the live switch terminal screws as well as the factory calibrated linear set point adjusting knob. The set point can be adjusted without comparing to a field gauge, manometer or magnehelic.

**Applications**: Monitoring Filter Blockage, Proof of Flow, Prove Excessive or Insufficient Flow, Alarms and Control

## *Part Numbers*

**NSA-DBL-205B** **NSA-DBL-205D** **NSA-DBL-205E** **NSA-DBL-205L**

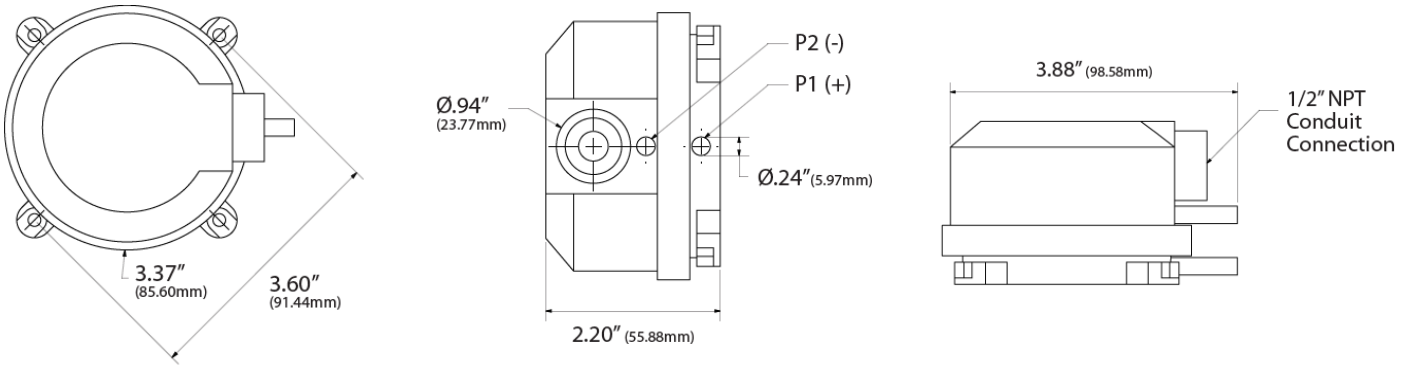
**NSA-DBZ-06**

## *Specifications*

| | |
|---|---|
| **Adjustable Set Point Range*:** Inch WC(Pa) | **NSA-DBL-205B**: 0.20 to 2.0 (50 to 500)<br>**NSA-DBL-205D**: 0.80 to 4.0 (200 to 1000)<br>**NSA-DBL-205E**: 2.0 to 10.0 (500 to 2500)<br>**NSA-DBL-205L**: 0.08 to 0.8 (20 to 200) |
| **Adjustable Set Point Switching Differential:** | Factory Default: +/- 15% of Trip / Set Point; Factory set switching differential is+ 15% of trip/setpoint. See ordering grid below for adjustable switching differential range. |
| **Contact (Load) Rating:** | 250 VAC maximum, 1.0A Resistive (0.4A Inductive) |
| **Contact Arrangement:** | SPDT (Form 1C) w/ Automatic Reset |
| **Measured Media:** | Air and other non-combustible, non-aggressive gases |
| **Diaphragm Material:** | Silicone |
| **Maximum Operating Pressure:** | 40" wc (10 kPa) |
| **Life Expectancy:** | 1,000,000 cycles |
| **Operating \| Storage Temperature Range:** | -4 to 185ºF (-20 to 85ºC) |
| **Mounting Direction:** | Any vertical plane |
| **Enclosure Material:** | Base = PA6.6 / Cover = Polystyrene (Transparent) |
| **Enclosure Rating:** | NEMA 3 (IP54) |
| **Sample Line Connections:** | Accepts 3/16" ID (8mm) Push on plastic/poly tubing |
| **Electrical Connections:** | Spade (Maximum 16 AWG (1.5 $mm^2$)) |
| **Conduit Opening:** | Accepts ½" NPT Conduit |
| **Agency Approvals:** | CE, ISO 9001, RoHS2, WEEE |
| **Dimensions (Diameter x Height):** | 4.00" x 2.30" (100 x 58 mm) |
| **Weight:** | 0.40 lbs (0.20 kg) |

***** The adjustable trip/setpoint within the control range is calibrated for vertical mounting position pressure, port connection pointing downwards. If mounted in horizontal position, deduct 0.08 inch WC (20 Pa) from desired setpoint for offset adjustment. If setpoint at the bottom of range, do not mount DBL in horizontal position.

## *Dimensional Drawing*




| Front View | Right View | Top View |
|---|---|---|

*Figure 1*

## *Accessories*

| Part Number | Description |
|---|---|
| NSA-DBZ-06 | Duct Mounting Kit – Contains two metal right angle pitot tubes, two grommets and 6.5’ (2.0m) tubing |

## *Mounting Position*

Mounting the switch in the vertical position, with the pressure port connection pointing downwards (Figure 2). If mounted in horizontal position, deduct 0.08 inch WC (20 Pa) from desired setpoint for offset adjustment. If the setpoint is at the bottom of the range, do not mount the pressure switch in the horizontal position. Never install the switch where the setpoint knob faces downward. This will cause incorrect switch performance.

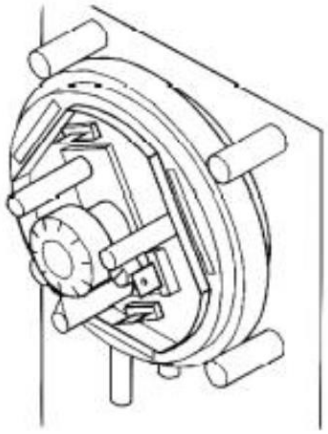


*Figure 2*

## *Surface Mounting*

Mount with four screws through bracket (Figure 3). Do not tighten the screws excessively. It could deform the pressure switch and lead to air leakage.

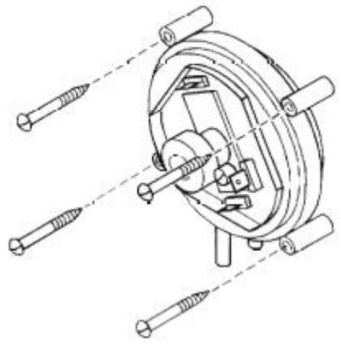


*Figure 3*

## *Duct Air Pickup*

To insure good airflow to the pressure switch, it is suggested to use the tubing and pitot kit DBZ-06 (Figure 4).

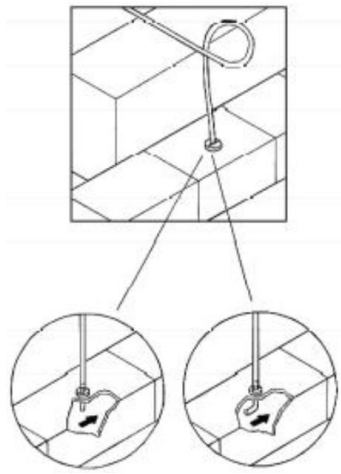


*Figure 4*

## *Pressure Port Connections*

Pressure port P1 (+) = high pressure, it is located on the lower part of the housing base. Pressure port P2 (-) = low pressure, it is located on the upper part of the housing base (Figure 5).

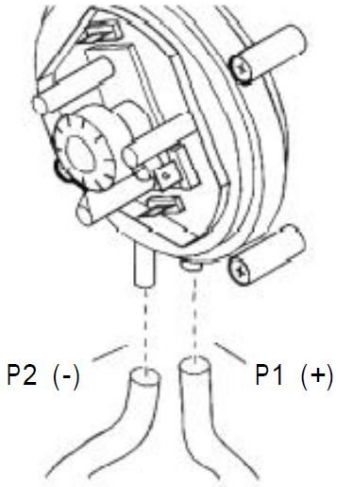



*Figure 5*

## *Electrical Connections*

Electrical connection and switching function Electrical wiring connections must be done per local building and electrical codes.

## *Control Settings*

Do not adjust the setpoint knob or screw adjustment for the switching differential (Figure 6) when high voltage power is connected to the pressure switch.

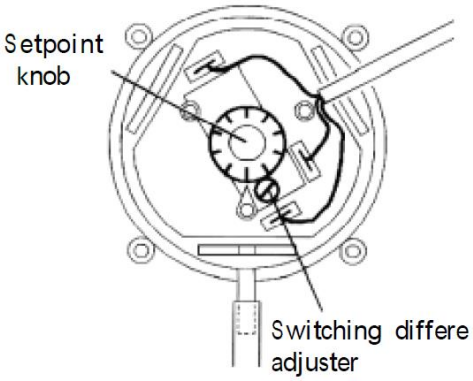



*Figure 6*

## *Housing Cover Installation*

Mount housing cover (Figure 7) prior to operating the pressure switch.

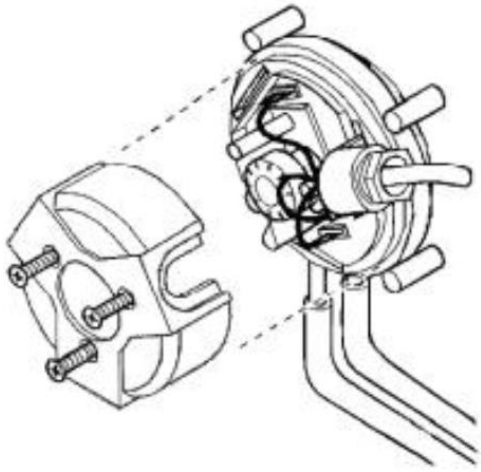
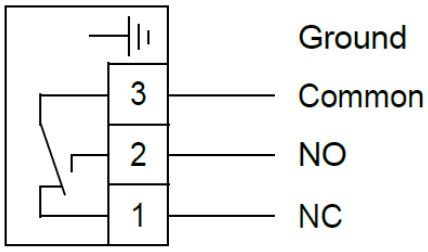


*Figure 7*

## *Wiring Diagram*




Pressure increase, contact connection:3 to 2
Pressure decrease, contact connection:3 to 1
Pressure port $P^1$ (+) = high pressure
Pressure port $P^2$ (-) = low pressure