



## DIFFERENTIAL PRESSURE SWITCH

24-013, 24-014



### DESCRIPTION

The **Delta-Pro Models 24-013 and 24-014 NEMA 4 Differential Pressure Switches** offer a unique blend of small size, excellent performance, environmental protection, and attractive price. They can be used with liquids or gases.

The precision snap-acting switch and sensitive opposing diaphragms combine to provide a narrow deadband and repeatability of approximately  $\pm 1\%$  of span. Mechanical contact life is 10 million cycles, and actual switch life can be very long with typical pilot duty loads. The Delta-Pro NEMA 4 enclosure is small, yet it can still accommodate a 1/2" NPT conduit connection and terminal block wiring.

The Delta-Pro is not only lightweight but also strong and durable. The multiturn adjustment screw is externally accessible for convenience and excellent resolution. The Delta-Pro's force-balance design provides excellent vibration resistance.



24-013

### FEATURES

- **SPDT switch with screw terminals**
- **Gasketed zinc-plated steel cover**
- **Strong, corrosion-resistant polyester enclosure**
- **External, multiturn adjusting screw for excellent resolution**
- **7/8" hole for 1/2" NPT conduit connection**
- **Corrosion-resistant brass port**
- **Front accessible holes for surface mounting**
- **NEMA 4 enclosure**

### APPLICATION

**Models 24-013 and 24-014** are used typically to sense differential pressure across devices such as oil or water filters, pumps, heat exchangers, chillers, coils, etc. They normally provide an alarm or shutdown function in applications where there is insufficient flow in a system or when excessive pressure differential indicates a problem. They may also be used to indicate pump status.

### SPECIFICATIONS

<b>Contact Rating</b>	5A resistive and inductive @ 125 VAC and 250 VAC, 1/4 hp 5A resistive and 3A inductive @ 30 VDC 0.5A resistive and 0.25A inductive @ 125 VDC gold clad silver contacts for minimum loads of 5 mA @ 6 VDC, 2 mA @ 12 VDC, and 1 mA @ 24 VDC	<b>Vibration Resistance</b>	MIL STD 810C, 2.5G, 5-500 CPS
<b>Contact Type</b>	SPDT	<b>Operating Temperature</b>	30° to 160°F (-1° to 71°C)
<b>Adjustments</b>	Multiturn screw, accessible from outside enclosure	<b>Wetted Parts</b>	Polyurethane diaphragm, ethylene propylene, polysulphone, brass
<b>Repeatability</b>	Typically $\pm 1\%$ of span	<b>Media Temperature Range</b>	200°F (93°C) @ 100 psig (689.5 kPa) working pressure
<b>Overpressure</b>	150 psid (1034.3 kPa) with surges up to 160°F (71°C) air temp, without loss of adjustability	<b>Storage Temperature</b>	-20° to 180°F (-29° to 82°C)
<b>Operating Pressure</b>	0-150 psig (0-1034.3 kPa) up to 160°F (71°C) air temp	<b>Enclosure Rating</b>	Reinforced nylon body, zinc-plated steel cover with neoprene gasket, NEMA 4
<b>Life Expectancy</b>	10 million cycles (actual life depends on load and cycle frequency)	<b>Mounting</b>	Surface mount with two screws through clearance holes or mount by ports
<b>Shock</b>	15G, 10 ms duration	<b>Process Connection</b>	1/4" FNPT brass
		<b>Wiring Terminations</b>	7/8" hole for 1/2" conduit connector (not provided), three screw terminals 16 AWG max wire size
		<b>Approvals</b>	UL File E42272, CSA, CE
		<b>Weight</b>	1 lb (0.45 kg)
		<b>Warranty</b>	1 year



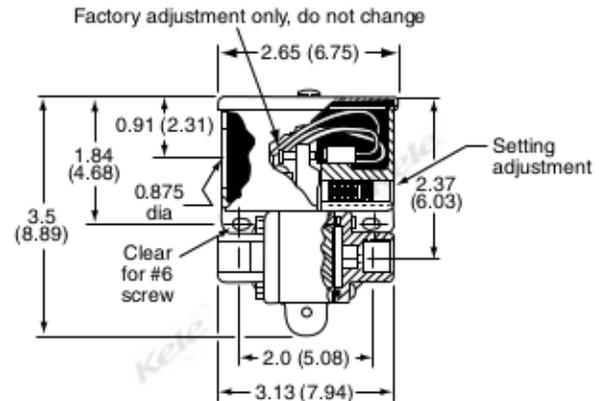
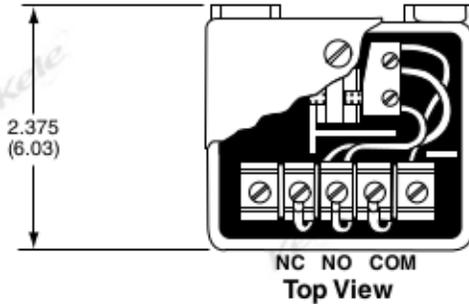
# PRESSURE

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### DIMENSIONS

in  
(cm)



### INSTALLATION

#### Mounting

Mount unit in any position. Locate where shock and vibration are minimal and ambient temperature is below 160°F (71°C).

#### Surface mounting

Insert two #6 screws through holes on 2" (5.08 cm) centers (recommended mounting for maximum vibration resistance).

#### Suspended unit mounting

Mount unit from its two ports. Always hold a wrench on the pressure port when making pressure connection.

#### Making pressure connection

Connect the high side pressure to the port labeled high. Use a wrench on the pressure port and hold the unit steady. Then, thread a 1/4 NPTM fitting into the port.

**CAUTION: Never tighten by turning the switch body into the fitting.**

#### Wiring

Back out the screw terminal just enough to put stripped wire under this terminal block clamp. Maximum wire size is 16 AWG.

#### Setpoint adjustment

Use a screwdriver to turn the external adjusting screw. Turn "in" (clockwise) to increase differential pressure setting. For best setting accuracy, set the switch using the actual working pressures encountered in the application. The switch will make on a differential pressure rise to setpoint and break on a fall below setpoint minus the deadband (subtractive deadband).

### PERFORMANCE CHART

MODEL *	ADJUSTABLE SETTING RANGE psid (kPa)				PORT	SWITCH	DEADBAND psig (kPa)
	On fall		On rise				
	Minimum	Maximum	Minimum	Maximum			
24-013	1.0 (6.895 kPa)	9.0 (62.1 kPa)	2.0 (13.8 kPa)	10.0 (69.0 kPa)	1/4 FNPT	5A	0.75 (5.2)
24-014	4.0 (27.6 kPa)	43.5 (299.9 kPa)	5.5 (37.9 kPa)	45.0 (310.3 kPa)	Brass	5A	1.0 (6.9)

\* Add the suffix -C to have the unit precalibrated. Please specify the setpoint.

### ORDERING INFORMATION

MODEL	DESCRIPTION
24-013	Differential pressure switch 1-10 psi SPDT
24-013-C	Differential pressure switch 1-10 psi SPDT, custom calibrated
24-014	Differential pressure switch 4-45 psi SPDT
24-014-C	Differential pressure switch 4-45 psi SPDT, custom calibrated