



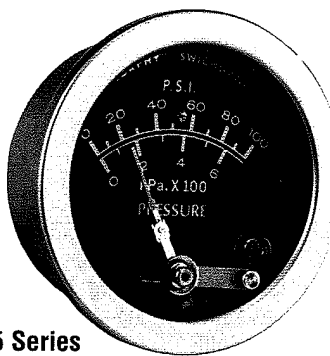
1074 Kenran Industrial Dr.
St. Louis, MO 63137
Phone: 1-800-381-9968

HUMCO ENGINE ROOM

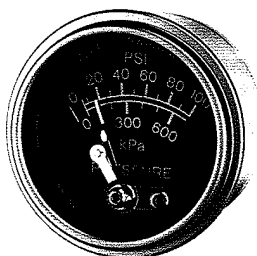
Murphy Pressure Switchgag[®]



20 and 25 Series Pressure SWICHGAGE[®]



25 Series



20 Series

2 and 2-1/2 in. (51 and 64 mm.) Dial

- Combination Indicating Gage and Limit Switch
- Critical Pressure Limit Switch Is Visible and Adjustable (Most Models)
- Switch Can Activate Alarms and/or Shutdown Equipment
- Exceeds SAE Standards

Description

The 20 Series (2 inch/51 mm. dial) and the 25 Series (2-1/2 inch/64 mm. dial) SWICHGAGE[®] models are diaphragm-actuated, pressure-indicating gages, with built-in electrical switches. These switches are used for tripping alarms and/or shutdown devices.

Ranges are available from 0-15 PSI (103 kPa) [1.0 bar] thru 0-400 PSI (2.8 MPa) [28 bar].

The gage mechanism is enclosed in a steel case coated to resist corrosion. A polycarbonate, break-resistant lens and a polished, stainless steel bezel help protect this rugged, built-to-last instrument.

Accuracy and protection from moderate overpressure is assured by a unique, unitized diaphragm chamber. A built-in pulsation dampener helps eliminate pointer flutter and is removable for cleaning.

For models 20P and 25P, the gage pointer acts as a pressure indicator and as one switch pole which completes a circuit when it touches the adjustable limit contact. Contacts are grounded through the SWICHGAGE[®] case and have self-cleaning motion to ensure electrical continuity. Models 20PE and 25PE have internal snap-acting SPDT switches.

Gage-only models, without the switches (MURPHYGAGE[®]) are also available.

Applications

The SWICHGAGE[®] was specifically designed to protect engines/equipment in Oil Field, Marine, Irrigation, Construction and Trucking applications to monitor Engine Lube Pressure, Water Pump Pressure, Hydraulic Pressure, Air Pressure, etc.

Specifications

Dial: White on black, dual scale; U.S.A.

standard scale is psi/kPa; U.K. standard scale is psi/bar; others available

Case: Plated steel; mounting clamp included (except for direct mount models).

Bezel: Polished stainless steel, standard; others are available (see How to Order on page 517).

Lens: Polycarbonate, high-impact.

Oil: Silicon Oil.

Temperature Range:

Ambient: -40°F (-40°C) thru 150°F (66°C).
Process: -40°F (-40°C) thru 250°F (121°C).

Process Connection: 1/8-27 NPTM brass.

Sensing Element: Beryllium copper diaphragm.

Gage Accuracy (% of Full Scale):

RANGE	LOWER 1/4	MIDDLE 1/2	UPPER 1/4
≤300 psi (20 Bar)	±3%	±2%	±3%
400 psi (28 Bar)	±3%	±3%	±5%

Maximum Pressure: See Pressure Ranges and Factory Settings table on page 515.

Adjustable Limit Contact (20P and 25P):

SPST contact; pilot-duty only, 2 A @ 30 VAC/DC; Normally Close (NC) when the low limit is met. Normally Open (NO) when pointer is in normal operating range. Contacts are gold flashed silver. Limit Contact Adjustment: by a 1/16 in. hex wrench through 100% of the scale. Limit Contact Wire Leads: 18 AWG (1.0 mm²) x 12 in. (305 mm.).

Snap-Switch Rating (20PE and 25PE):

SPDT, 3 A @ 30 VDC inductive; 4 A @ 125 VAC inductive. Snap-Switch Wire Leads: 20 AWG (0.75 mm²) x 2 in. (305 mm.).

Unit Weight: 20 Series: 8 oz. (0.23 kg).
25 Series Models: 11 oz. (0.31 kg).

Unit Dimensions: 20 Series: 3 x 3 x 3 in. (76 x 76 x 76 mm.). 25 Series Models: 4-3/4 x 4-3/4 x 2-3/4 in. (121 x 121 x 70 mm.).

Base Models

20P and 25P Series SWICHGAGE[®]
The gage pointer makes with an adjustable contact to complete a pilot-duty circuit.

20PE and 25PE SWICHGAGE[®]
20PE (was 20EO) and 25PE (was 25EO). Features internal snap-acting SPDT switches, instead of the single pole/pointer contacts. When the switch closes on falling pressure, it becomes Set, as pressure rises the switch Resets.

20PABS and 25PABS SWICHGAGE[®]
Same as 20P and 25P with internal SPDT snap-switch for pre-alarm.

20P7 and 25P7 Lockout SWICHGAGE[®]
Same as 20P and 25P Series. They also include a front, semi-automatic lockout for startup override. This built-in device holds the pointer away from the contact on startup. When pressure exceeds the set point, the lockout is automatically disengaged

20PG and 25PG MURPHYGAGE[®]
Gage without contact(s).

Warranty

A two-year limited warranty on materials and workmanship is given with this Murphy product. Details are available on request and are packed with each unit.

**Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.



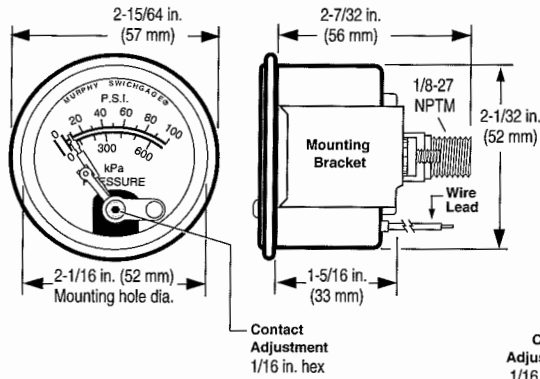
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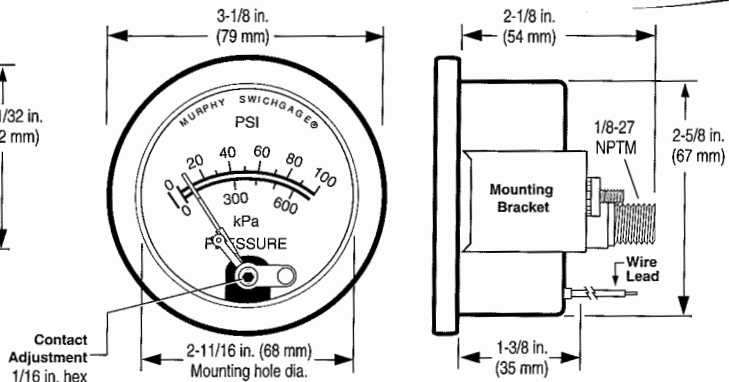
Murphy Pressure Switchgauge®

Dimensions

20 Series Models



25 Series Models



Pressure Ranges and Factory Settings

NOTES

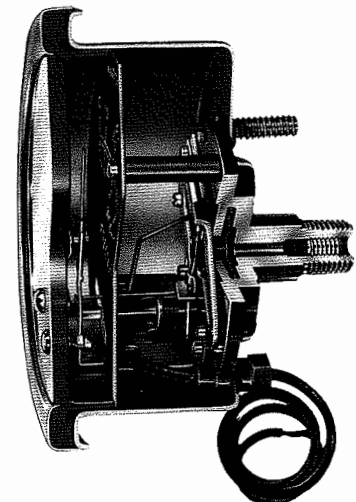
- Values in () are mathematical conversions from psi to kPa/MPa—they do not reflect actual second scale range. U.S.A. standard scale is psi/kPa; U.K. standard scale is psi/bar—exact set-point shown. Consult factory for other scales.
- For models A20PE and A25PE; the switch trip point cannot be set at either the low or high extreme of the scale. The trip point must allow for the reset differential.
- For adjustable switch models, the trip point is adjustable only over the lower half of the scale.

Ranges Available			Maximum Pressure	Standard Settings			High Settings*			A20PABS and A25PABS Settings Alarm†					
psi	(kPa)	[bar]		psi	(kPa)	[bar]	psi	(kPa)	[bar]	Low			Alarm†		
									psi	(kPa)	[bar]	psi	(kPa)	[bar]	
0-15	(103)	[1.0]	30 psi (207)	3	(21)	[0.2]	12	(83)	[0.8]	3	(21)	[0.2]	6	(41)	[0.3]
0-30	(207)	[2.0]	60 psi (413)	7	(48)	[0.4]	24	(165)	[1.6]	7	(48)	[0.4]	10	(69)	[0.6]
0-50	(345)	[3.5]	100 psi (690)	10	(69)	[0.8]	40	(276)	[2.8]	10	(69)	[0.8]	13	(90)	[1.0]
0-75	(517)	[5.0]	150 psi (1.0 mpa)	15	(103)	[1.0]	60	(414)	[4.0]	15	(103)	[1.0]	18	(124)	[1.5]
0-100	(690)	[7.0]	200 psi (1.4 mpa)	20	(138)	[1.5]	80	(552)	[5.5]	20	(138)	[1.0]	23	(159)	[1.5]
0-150	(1.0 MPa)	[10]	300 psi (2.1 mpa)	30	(207)	[2.0]	120	(827)	[8.0]	30	(207)	[1.5]	33	(228)	[2.0]
0-200	(1.4 MPa)	[14]	400 psi (2.8 mpa)	50	(345)	[3.0]	150	(1 MPa)	[10]	50	(345)	[3.0]	53	(365)	[4.0]
0-300	(2.1 MPa)	[20]	500 psi (3.4 mpa)	75	(517)	[5.0]	225	(1.6 MPa)	[15]	75	(517)	[5.0]	78	(538)	[5.0]
0-400	(2.8 MPa)	[28]	500 psi (3.4 mpa)	150	(1.0 MPa)	[7.0]	300	(2.1 MPa)	[20]	75	(517)	[5.0]	150	(1 MPa)	[10]

**Low settings for Hi/Lo option same as standard settings. Hi/Lo option available for A20P and A25P models only.
†SPDT Snap-switch is the alarm switch.

Features

- Process Connection and Port: Machined from brass bar stock. Together with the diaphragm forms the diaphragm chamber.
- Diaphragm (not shown): Beryllium copper die formed and heat treated to very close physical and metallurgical specifications.
- Pulsation Dampener: Designed to minimize undesirable pointer chatter. It is removable for cleaning.
- Dial: White letters on a black background, dual scale; others available on request.
- Case: Polycarbonate/glass filled, corrosion resistant; mounting clamp included.
- Bezel: Polished stainless steel standard, black bezel also available.
- Lens: Made of high-impact resistant treated polycarbonate.
- Pointer: Tempered nickel silver for continuity and corrosion resistance—mounted on a machined brass post. Red tip.
- Limit Contact: SPST contact; N.C. when low limit is met. N.O. when pointer operates above limit.
- Limit Contact Adjustment: by 1/16 in. hex type wrench thru 100% of the scale. Easy adjustment knob available.
- Electrical Connections: Number 4 screw terminals for A20 Series; and number 6 screw terminals for A25 Series models.



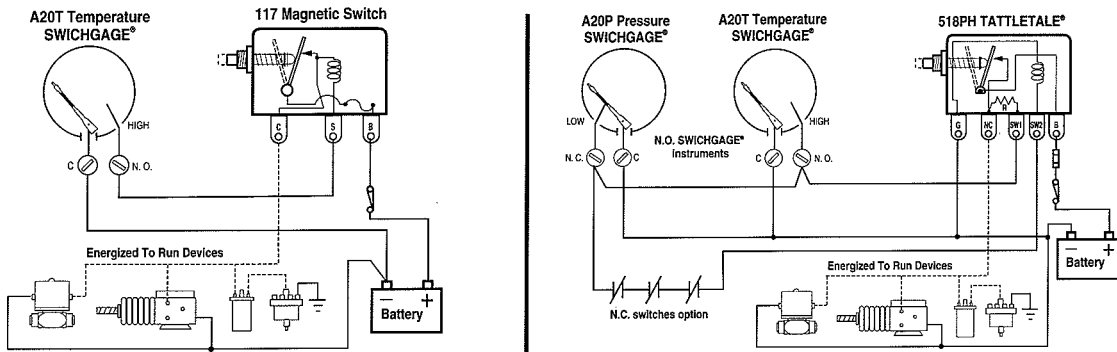
Murphy Pressure Swichgag®

Magnetic Switch



Inductive and high current loads require the use of a Magnetic Switch. The SWICHGAGE® contacts are for light-duty electrical switching to operate alarms or control devices. Murphy manufactures the Magnetic Switch for protection of the pilot-duty SWICHGAGE® limit contacts. TATTLETALE®

Magnetic Switches show the cause of shutdown for applications that include: capacitor discharge or magneto ignitions, battery systems and electric motor driven equipment. Typical wiring diagrams are shown below.

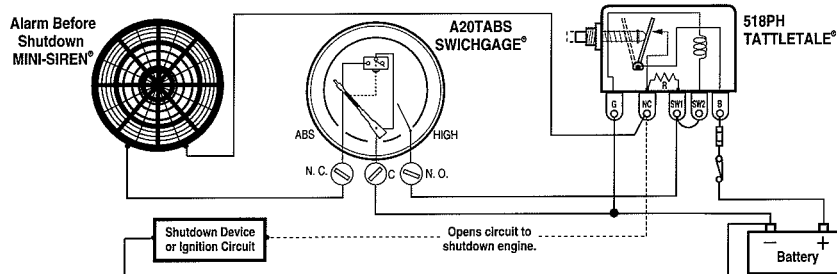


Pre-Alarm Using A20/A25PABS

The A20PABS and A25PABS features a standard limit contact for equipment shutdown on low pressure. It also has an internal SPDT snap-switch to signal an alarm before shutting down. When the snap-switch trips (preset point), on falling pressure, the switch completes a circuit to activate an alarm. If the pressure continues to fall, the face-adjustable pointer contact will make and the shutdown circuit will be

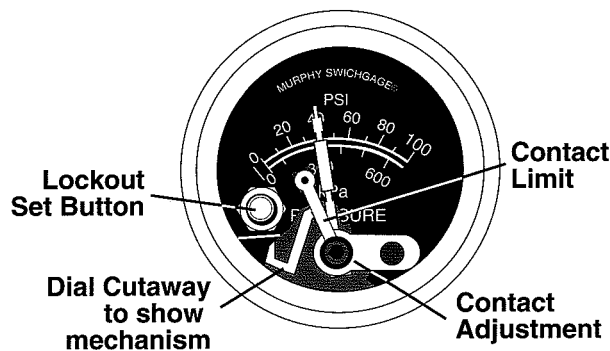
completed (see the typical diagram below for reference). The front contact shutdown limit setting (which is adjustable) and the snap-switch are preset at the factory. Refer to "Pressure Ranges and Factory Settings" table on page 515 for settings.

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Start-Up Lockout

The SWICHGAGE® low limit contact can be by-passed on start-up by pushing this optional lockout button. It holds the pointer away from the shutdown contact while the engine starts. The lockout will disengage automatically on rising pressure.





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Murphy Pressure Switchgauge®

How to Order



To order, use the diagram below. List options in ascending alphabetical order (A-Z). Example: A20P-K-100.

<i>Base Model</i>	
A20P	A25P
A20PE	A25PE
A20PABS	A25PABS
A20PG	A25PG

<i>Options†</i>
B1 = Black bezel
EX = Explosion-proof (CSA Listed for Class I, Div. 1, Groups C & D)*
EL = Explosion-proof less case
HL = High and low contacts
K = Knob adjusting face contact
OS = Oil sealed (Silicone Oil)
† Options not available on all models or configurations. *A25PE-EX only is CSA listed for hazardous locations.

<i>Range††</i>			
<i>Dual scale (psi/kPa)</i>		<i>Single scale (bar)</i>	
	<i>psi</i>	<i>kPa/MPa</i>	
15	= 0-15	0-103	1B = 0-1 bar
30	= 0-30	0-207	2B = 0-2 bar
50	= 0-50	0-345	3.5B = 0-3.5 bar
75	= 0-75	0-517	5B = 0-5 bar
100	= 0-100	0-689	7B = 0-7 bar
150	= 0-150	0-1.03	10B = 0-10 bar
200	= 0-200	0-1.38	14B = 0-14 bar
300	= 0-300	0-2.07	20B = 0-20 bar
400	= 0-400	0-2.76	28B = 0-28 bar
††Consult factory for availability of dials other than psi/kPa. Select scale so your normal operating pressure is in the middle half of the scale.			

Illumination – Order Separately
A20 Series: Clamp Lite Assembly; 12 V= 05702176; 24 V= 05702177
A25 Series: N/A.

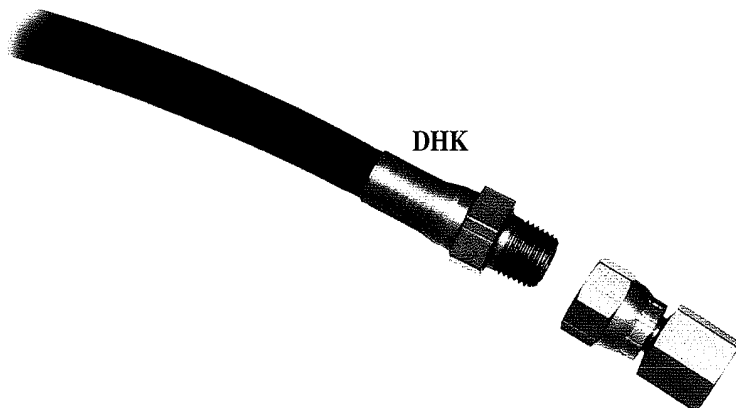
CAUTION: "OIL FILLED INSTRUMENTS CONTAIN SILICON OIL." Exposure may be hazardous under certain circumstances. "Keep out of Eyes, Mouth and Do Not expose to Skin". Keep out of reach of children. Flush thoroughly with water and seek medical attention. If swallowed, call physician immediately. MSDS Sheets are available by calling: 800-381-9968.

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

Murphy Oil Pressure Tubing Kit



Oil Pressure Tubing Kit



DHK Model

- Custom Fit Oil Pressure Line for Any Engine
- Swaged Fittings
- Wide Pressure and Temperature Compatibility
- Tough Materials for Industrial Use
- Adapters for U.S. or Metric

7

Description

The Deluxe (DHK) oil pressure tubing kit can be used with a variety of Murphy SWICHGAGE® and MURPHYGAGE® instruments. This kit consists of gauge fitting, pressure tubing, and engine fitting.

The Deluxe kit is ideal for heavy-duty industrial applications. The nylon core is reinforced with a synthetic fiber braid and polyurethane cover. Both ends of the pressure tubing have swaged fittings.

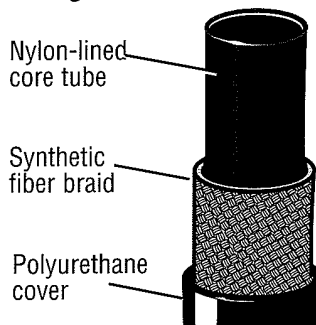
The Deluxe kit allows you to choose the type of gauge and engine fittings for your application. Choose straight or elbow fittings for both gauge and engine connections. In addition, the kit offers a variety of engine adapters to fit your application. These adapters are available in U.S. or metric threads.

Features

Deluxe Kit

- Tubing will not swell or absorb fluids which can cause restriction of the I.D. or release contaminants into the system.
- Synthetic fiber reinforcing braid eliminates wire that often fatigues, breaks, and may puncture the core tube.
- Thermoplastic core tube is resistant to practically all oils and hydraulic fluids.
- Swaged fittings for tough applications.

Deluxe Kit Tubing Detail



Specifications

Tubing: Nylon, 1/8 in. (3 mm.) I.D. suitable for continuous service from -40 to 200°F (-40 to 93°C). Intermittent service +250°F (121°C).

Fittings: Brass and steel.

Adaptors: Brass and steel.

Washers: Copper (supplied with all non-tapered thread fittings).

Working Pressure:
2,500 psi (17.2 MPa) [172.0 bar].

Minimum Burst Pressure:
10,000 psi (68.9 MPa) [689.0 bar]
@ 200°F (93°C).



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Murphy Oil Pressure Tubing Kit

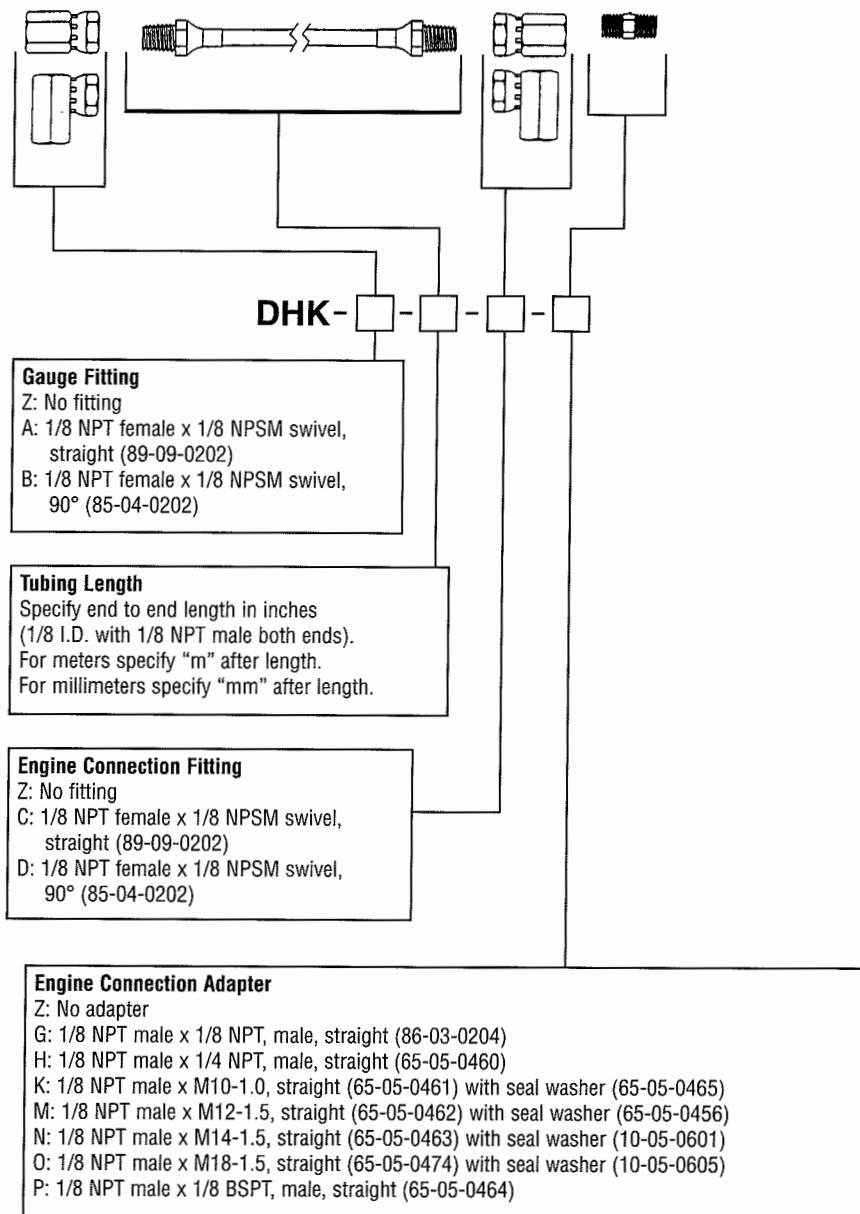
Oil Pressure Tubing Kit



How to Order

To order the oil pressure tubing kit to fit your application use the diagram below. Specify the Deluxe base model number, gauge fitting, length of hose in inches, engine fitting, and engine adapter (Note: designate "Z" if no gauge fitting, engine fitting or adapter is required). Model number example: DHK-A-72-C-Z

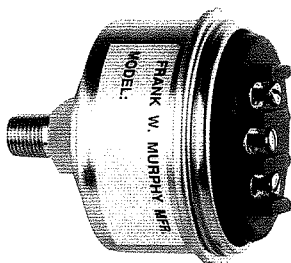
Deluxe Tubing Kit





Murphy Direct Mount Pressure Switch

Direct Mount Pressure Switch



MODEL PSB

- Limit Switch for Critical Pressure
- Operate Alarms or Shutdown Equipment
- SPDT Snap-Acting Switch
- Fits Most Engine Applications

Description

The PSB switch is a direct mount switch for critical pressure points. It has one limit contact that can be used to activate an alarm, actuate indicator lights or shutdown equipment.

The construction of this instrument is the same as our time-proven SWICHGAGE®. A precision machined brass mounting plate and port captures a high quality stamped beryllium copper diaphragm. The single-pole, double-throw (SPDT) snap-switch is operated directly from the diaphragm for quick acting and positive switching. Trip point is factory preset according to your specifications.

Housing is weather sealed to prevent entry of moisture, dust, etc. A glass-filled nylon terminal block with quick screw terminal connections gives the PSB switch a real advantage in industrial engine applications. The PSB is ideal when reading is not desired, but pressure is critical to operational efficiency.

Intended for use in general purpose non-classified areas.

Applications

- Engine Lubrication
- Water pumps
- Compressors
- Oil field systems
- Irrigation systems
- Construction Equipment
- Mobile Equipment
- Marine engines
- Generators

Features

- Fits all engine applications
- SPDT snap-switch
- Activates indicator lights, alarms, or shut down equipment
- Time-proven SWICHGAGE® construction
- Easy wiring terminal block
- Steel housing specially coated to resist corrosion
- Factory preset to your specifications

Specifications

- Housing:** Plated steel.
Pressure Connection: 1/8-27 NPT, Brass.
Diaphragm: Formed beryllium copper (heat treated).
Pulsation Dampener: Brass (it is removable for cleaning).

Terminal Block: Three #4-40 screws.
Accuracy: Trip point: $\pm 3\%$ of full scale.
Switch reset differential: $\pm 7\%$ of full scale.
Repeatability: $\pm 1\%$ of full scale.

Contact Rating: SPDT 3 A @ 30 VDC inductive.

Maximum Pressure: See Trip Point Chart on page 521.

Temperature Range:
Ambient= -40°F (-40°C) thru 150°F (66°C).
Process= -40°F (-40°C) thru 250°F (121°C).

Factory Trip Point Setting: See Trip Point Chart on page 521.

Pressure Range: Specify from 0-400 psi (0-2.76 MPa) [0- 27.58 bar].

Contact: Operates on rising or falling pressure (specify).

Shipping Weight: 8 oz. (0.25 kgs).

Shipping Dimensions: 3 x 2-3/4 x 2-3/4 in. (76 x 70 x 70 mm.).

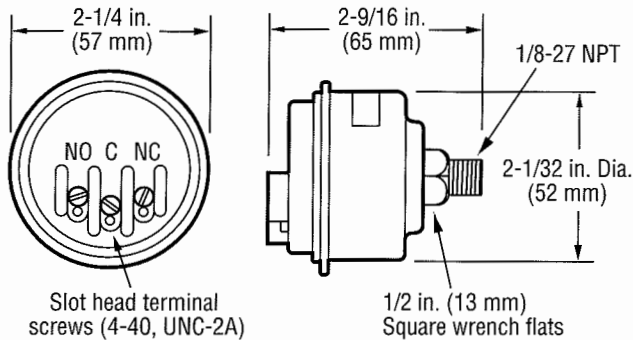
NOTE: No customer replacement parts.



Murphy Direct Mount Pressure Switch

Direct Mount Pressure Switch

Dimensions



Installation Instructions

Mounting

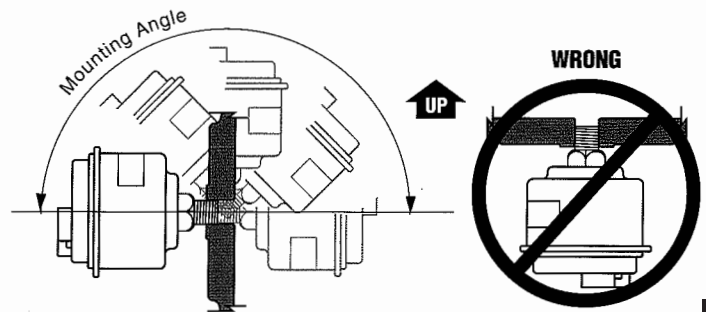
CAUTION: Use wrench on shank to tighten or loosen pressure connection. DO NOT TWIST CASE, which will damage the unit and void the warranty.

1. Before installing the PSB switch, apply sealant, such as Teflon tape, to the threads (be sure sealant does not block the inlet orifice).
2. The PSB can be mounted in horizontal or vertical angles (do not mount switch facing down).

Trip Point Chart

Ranges available psi (kPa/MPa) [bar]	Factory setting* psi (kPa) [bar] Falling	Maximum pressure psi (kPa) [bar]
0-15 (0-103) [0-1.03]	3 (21) [.21]	30 (207) [2.07]
0-30 (0-207) [0-2.07]	7 (48) [.48]	60 (414) [4.14]
0-50 (0-345) [0-3.45]	10 (69) [.69]	100 (0-689) [0-6.89]
0-75 (0-517) [0-5.17]	15 (103) [1.03]	150 (0-1.03) [0-10.34]
0-100 (0-689) [0-6.89]	20 (138) [1.38]	200 (0-1.38) [0-13.79]
0-150 (0-1.03) [0-10.34]	30 (207) [2.07]	300 (0-2.07) [0-20.70]
0-200 (0-1.38) [0-13.79]	50 (345) [3.45]	400 (0-2.76) [0-27.60]
0-300 (0-2.07) [0-20.70]	75 (517) [5.17]	500 (3.45) [34.50]
0-400 (0-2.76) [0-27.60]	150 (1.03) [10.34]	500 (3.45) [34.50]

*These points will be used if switch trip point is not specified.



3. Locate the unit in place and secure it by tightening the 1/8-27 NPT fitting into the desired location (do not over tighten). DO NOT TWIST CASE.

To order the PSB model use the diagram below.

PSB - -

Pressure Range
Specify maximum value from chart above.

Switch Trip Point†
F= Factory set to trip on falling. Specify "F" and the set point value.
 Example: PSB-100-F20.
R= Factory set to trip on rising. Specify "R" and the set point value.
 For units of measure other than psi, specify the set point value followed by unit of measure as follows:
B = Bar
K = kPa/MPa
M = kg/cm2
 Example: PSB-7B-2B
 †Switch set point value will be stated on label.

Wiring

CAUTION: DISCONNECT Electrical power before wiring.

1. Switch contacts (below) are shown with no pressure applied to the PSB switch.
2. A spade (forked) terminal is recommended for all PSB switch connections.
3. Complete the wiring operation making sure the voltage and current requirements are within the PSB switch electrical rating (see the typical wiring diagram at right).

