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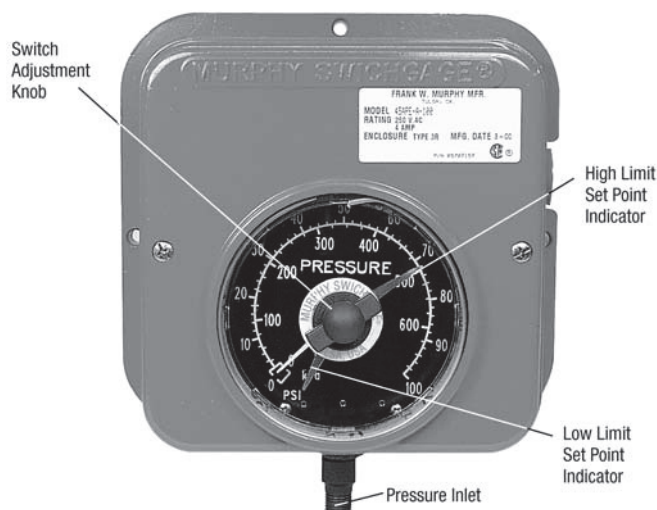
Call - (800) 333-7976



Instrument Sales and Service, Inc.

**16427 NE AIRPORT WAY, PORTLAND, OREGON 97230
WWW.ISSDISTRIBUTION.COM**

Pressure Switchgauge® 45APE Series Instrument



Features

- Combination Indicating Gage with Independent Low and High Snap-Acting Switches
- Field-Adjustable and Highly Visible Low and High Pressure Trip Point Indicators
- Dual-Sector Geared Movement Allows for Full-Scale Indication and Set Point Control
- Panel and Surface Mount Versions Available
- Latching Control Relay Versions Available



* Listed for non-hazardous locations Pending for hazardous location.

The 45APE Series Switchgauge instrument is a mechanical gage for pressure indication. It includes 2 adjustable SPDT switches. These snap-acting switches can be used for start and stop, to trip alarms and to shut down equipment. Ranges are available from 30"vac (-100 kPa) [-1 bar] thru 10,000 psi (138 MPa) [1379 bar], see back page.

Basic Operation

The 45APE Series utilizes a bourdon tube sensing unit with a stainless steel dual-sector geared movement. Each of the sectors drive separate pointers when pressure is applied to the bourdon tube. The indicating pointer (visible pointer) shows actual pressure reading, including below and beyond the low and high trip points. The low and high trip points are adjustable independently on the gage front lens. The switch operator pointer (behind the dial) is calibrated to follow the indicating pointer. The low and high trip point indicators "arrest" the switch operator pointer, and as pressure decreases or increases, through "the principal of lost motion" the respective snapswitch is tripped.

Basic Models

45APE Series Switchgauge instrument
Surface mount (square case) version.

45APEF Series Switchgauge instrument
Panel mount (round case) version.

45APEBP Latching Control Relay Series

These models have a latching control relay for automatic ON/OFF control. They are designed to start and stop electric motor driven equipment.

45APEE and 45APEBPE

These models (square case) have the same features as the 45APE/45APEBP, but suitable for panel mounting.

Applications

The 45APE Series models are widely used in applications requiring pressure indication and Form "C" low and high pressure switches.

Specifications

Dial: White on black, dual scale, psi and kPa standard, 4-1/2 in. (114 mm) diameter.

Case: Die cast aluminum, surface or panel mount.

Overrange: Do not exceed 10% FS above full range.

Process Connection: 1/4 NPTM thru 1000 psi; 1/2 NPTM 1500 - 10,000 psi; back connection optional.

Sensing Element: Bronze or 316 stainless steel bourdon tube.

Gage Accuracy: Indicating pointer within switch points with hysteresis of <1%: $\pm 2\%$ for first and last quarters of scale; middle half of scale is $\pm 1\%$.

Indicating pointer above or below trip point:

Range	Accuracy (+/-) above & below trip point only
< 100 (except 15 psi)	10
15	15
100-300	4
400-1500	2
2000	12
3000-5000	8

Reading based on testing performed with switch point at mid scale which represents worst case. Switch accuracy $\pm 1.5\%$.

Pressure Relief Disc: Back of case (except EX models).

Switch Reset Deadband: Approximately 10% FS.

Snap-Acting Switches: 2-SPDT; 2 A @ 250 VAC.

Dry Relay Contact ("BP" Models): 10 A @ 28 VDC or 10 A @ 120 VAC.

Wire Connections (Surface Mount): 1/2 NPTFconduit/ terminal block.

Wire Connections (Panel Mount): Wire leads, 18 AWG (1.0 mm²) x 9 in. (229 mm) long.

Wire Connections (-ES, -OS): 1/2 NPTM conduit and wire leads, 24 AWG (0.22 mm²) x 30 in. (762 mm) long.

Item Weight: 5 lbs 6 oz (2.4 kg) approximately.

Explosion-proof models: 21 lb. (9.5 kg) approx.

Item Dimensions: 10 x 9 x 6 in. (254 x 229 x 152 mm) approximately.

Explosion-proof models: 12 x 12 x 9 in (305 x 305 x 229 mm) approximately.

CSA Certified Models: 45APE Series models with pressure range thru 5000 psig (34.4 MPa) [344 bar] are CSA approved for Non-Hazardous locations, except options BC, ES, LC and OS. Explosion-proof "EX" models with pressure range thru 5000 psig (34.4 MPa) [344 bar] are CSA approved for Hazardous locations Class I, Groups, C & D. 45APEBP and 45APEBPE models are not CSA certified.

Specify model number. **NOTE:** No designator is required for **Standard** configurations. List options in alphabetical order (A to Z). Place a dash (–) between each option. See example below.

45APE Series
Typical Wiring Diagram

LOW SWITCH
N.C.-Orange 3
N.O.-Blue 2
Common-Red 1

HIGH SWITCH
N.C.-Black 6
N.O.-Brown 5
Common-Yellow 4

Contact Ratings: 2-SPDT snap-switches; 2 A @ 250 VAC

NOTE: Diagram shows the pointer in the at rest (shelf) position.

8-7/16 in.
(214 mm)

4-1/32 in.
(102 mm)

3-15/16 in.
(100 mm)

7-7/8 in.
(200 mm)

3-3/8 in.
(86 mm)

1/2 NPTF
conduit

9/32 in.
(7 mm) dia.
3 places

1/4 NPTM or 1/2 NPTM
Pressure Connection

5-7/16 in. (138 mm)

120°

120°

1/4 NPTM or 1/2 NPTM Pressure Connection

2-57/64 in. (73 mm)

6-3/4 in. (171 mm)

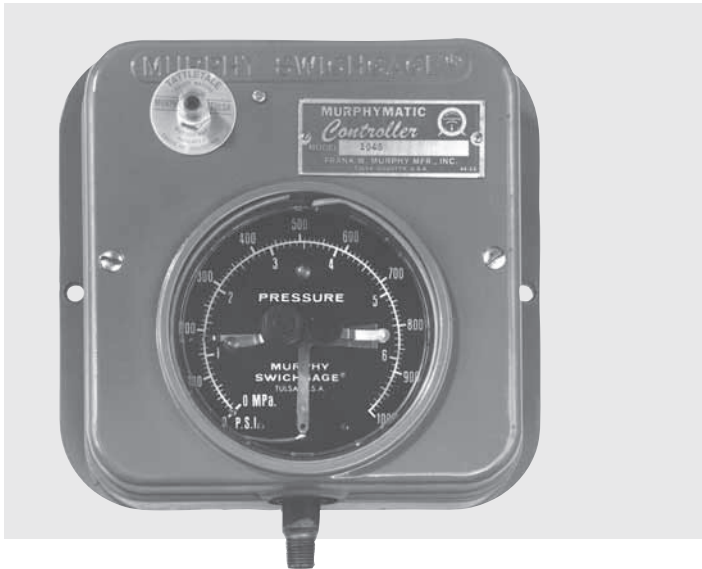
-OS: ES models only

Optional (-BC) 1/2 NPTM Pressure Connection

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45 Series Pressure Switchgauge® instrument To Disable Magneto, CD and Battery Ignition Systems

45-96003B
Revised 07-06
Catalog Section 05



- Combination Pressure Switchgauge instrument and Built-in Electromagnetic Switch
- High and Low Contacts Can Disable Engine's Ignition Due to Critical Pressure
- Magnetic Switch Will Not Allow Engine Restart Due to Flywheel Inertia
- Semi-Automatic Low Pressure Override Push Button for Engine Startup

Description

The 45 Series pressure Switchgauge instrument incorporates a built-in electromagnetic switch to disable an ignition whenever the gage contacts operate.

Flywheel inertia cannot restart the engine since the electromagnetic switch will not allow the ignition to operate until manually reset.

A semi-automatic lockout push button overrides the low pressure contact for equipment startup. The lockout automatically disengages when pressure is established allowing the low limit contact to be armed for operation should a low pressure condition occur.

Models are available for conventional magnetos, capacitor discharge (CD) ignitions, 12/32 VDC battery systems, and 120 VAC power sources.

Ranges are available from 30" vac (-101 kPa) [-1.01 bar] thru 10,000 psi (138 MPa) [1379 bar].

Applications

Recommended instrument for most field gathering pumps, the 45 Series instantly stops your pump when pressures drop due to line breaks, leaks or when your tank is pumped out. Overpressure shutdown can occur due to closure of valves in the line, or other line restrictions.

Specifications

Dial: White on black, dual scale, psi and kPa standard, 4-1/2 in. (114 mm) diameter.

Case: Die cast aluminum.

Process Connection:

1/4 NPT thru 1000 psi (6.9 MPa) [69 bar];
1/2 NPT 1500 psi (10 MPa) [103 bar] thru
10,000 psi (138 MPa) [1379 bar].

Overrange: Do not exceed 10% above full range.

Sensing Element: Select from bronze or 316 stainless steel bourdon tube.

Gage Accuracy: $\pm 2\%$ for first and last quarters of scale; the middle half is $\pm 1\%$.

Pressure Relief Disc: Located in rear of case.

Contact Ratings:

45B = 12/30 VDC coil; 10 A, 32 VDC contacts
45CD = CD ignition coil; 10 A contacts
45M = Magneto ign. coil; 10 A contacts
45N = 120 VAC coil; 10 A, 120 VAC contacts

Wire Connections:

1/2 NPT conduit and terminal block.

Item Weight:

5 lbs 9 oz (2.5 kg) approximately.

Item Dimensions:

10 x 9 x 6 in. (254 x 229 x 152 mm).

Basic Models

45B Series Switchgauge instrument

For use with 12-32 VDC battery ignition systems; it includes battery ignition type magnetic switch.

45CD Series Switchgauge instrument

For use with (CD) capacitor discharge ignitions; it includes CD ignition type magnetic switch.

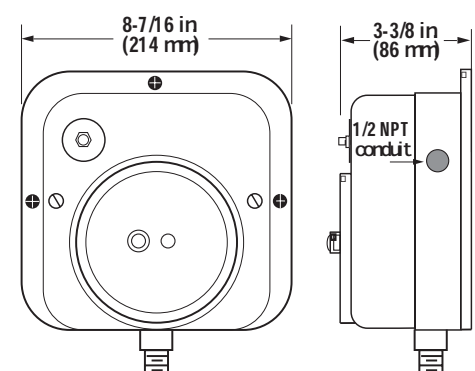
45M Series Switchgauge instrument

For use with magneto type ignitions; it includes magneto ignition type magnetic switch.

45N Series Switchgauge instrument

For specific use with 110 VAC Power Sources; it includes 120 VAC type magnetic switch.

Dimensions



How to Order

Specify model number. **NOTE:** No designator is required for **Standard** configurations.
List options in alphabetical order (A to Z). Place a dash (–) between each option. See example below.

45B – S – 60 –

Base Model

45B
45CD
45M
45N

Bourdon Tube/Socket

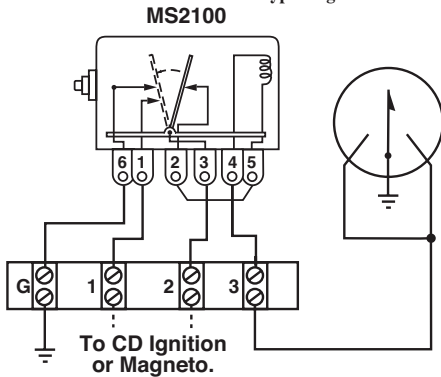
A = Bronze/Brass (/std. <=1,000 psi)
S = Stainless Steel/Stainless Steel

Options (NOTE: Not all options available for every model.)

BC = Back connected bourdon tube
LC = Less case
P4L = PT147 Pressure transmitter w/ 5ft. capillary*
(Pulsation dampener no longer provided)
*For capillary greater than 5 ft., specify in 5 ft., increments following designator, example: P4LI5
P6 = PT167 pressure transmitter direct mount

45 Series Typical Wiring Diagram

Shown with CD Ignition
type magnetic switch



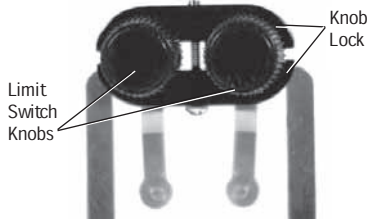
Contact Rating: 12/32 VDC coil, 10 A 32 VDC battery ignition contacts;
Magneto ignition coil, 10 A magneto ignitions contacts; CD ignition coil, 10 A
CD ignition contacts; 120 VAC coil, 10 A, 120 VAC contacts.

Range

Code	Vacuum/psi	kPa/MPa	bar
30HV60H	30" Hg/Vac - 60" Hg/Press.	-101 kPa–203 kPa	-1.01–2.03
30V	30" vac - 0 psi	-101 kPa–0 kPa	-1.01 - 0
30V15	30" vac - 15 psi	-101 kPa–103 kPa	-1.01 - 1.03
30V30	30" vac - 30 ps	-101 kPa–207 kPa	-1.01 - 2.07
30V100	30" vac - 100 psi	-101 kPa–689 kPa	-1.01 - 6.89
30V200	30" vac - 200 psi	-101 kPa–1.38 MPa	-1.01 - 13.79
30V300	30" vac - 300 psi	-101 kPa–2.03 MPa	-1.01 - 20.68
15	15 psi	0 - 103 kPa	0 - 1.03
30	0 - 30 psi	0 - 207 kPa	0 - 2.06
60	0 - 60 psi	0 - 414 kPa	0 - 4.13
100	0 - 100 psi	0 - 689 kPa	0 - 6.89
160	0 - 160 psi	0 - 1.10 MPa	0 - 11.03
200	0 - 200 psi	0 - 1.38 MPa	0 - 13.78
300	0 - 300 psi	0 - 2.07 MPa	0 - 20.68
400	0 - 400 psi	0 - 2.76 MPa	0 - 27.57
600	0 - 600 psi	0 - 4.14 MPa	0 - 41.36
1000	0 - 1000 psi	0 - 6.89 MPa	0 - 68.95
1500	0 - 1500 psi	0 - 10.34 MPa	0 - 103.42
2000	0 - 2000 psi	0 - 13.79 MPa	0 - 137.89
3000	0 - 3000 psi	0 - 20.68 MPa	0 - 206.84
5000	0 - 5000 psi	0 - 34.48 MPa	0 - 344.73
10000	0 - 10,000 psi	0 - 68.95 MPa	0 - 689.47

Tamperproof Contact Accessory

Order 05000610



Dials

Dials are dual scaled psi and kPa/MPa. Single scale and custom dials are available.

Warranty

A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

MURPHY

www.fwmurphy.com

918.317.4100 Email sales@fwmurphy.com

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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.

45-96003B page 2 of 2

ISSDistribution.com - Call (800) 333-7976

A20 and A25 Series Pressure Switchgauge® instrument

AP-94030B
Revised 03-06
Catalog Section 05



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

- Corrosion Resistant Polycarbonate Case
- Indicating Gage and Limit Switch
- Switch Can Activate Alarms and/or Shut Down Equipment
- Critical Pressure Limit Switch Is Visible and Adjustable (Most Models)
- Contact(s) Isolated From Ground

Description

The A20 Series (2 inch/51 mm dial) and the A25 Series (2-1/2 inch/64 mm dial) Switchgauge instruments are diaphragm-actuated, pressure-indicating gages, with built-in electrical switches 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].

All models of these rugged, built-to-last instruments are face sealed from the environment by the unique combination of a polycarbonate case and lens, a polished stainless steel bezel and O-ring seals. Ranges above 30 psi (207 kPa) [2 bar] are totally sealed from the external environment (except PE Series).

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 series A20P and A25P, 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 have self-cleaning motion to ensure electrical continuity.

Models A20PE and A25PE have internal snap-acting SPDT switches for three wire control; can be wired to make or to break a circuit.

Gage-only models, without switches (Murphygage instrument) are also available.

Applications

A20/A25 Series applications include: engines/equipment in Oil Field, Marine, Irrigation, Construction and Trucking Engines for Lube Oil 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 (see How to Order).

Case: Polycarbonate/glass filled, corrosion-resistant; steel mounting clamp included.

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

Pointer: Tempered nickel silver; Red tip.

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 2.

Adjustable Limit Contact (A20P and A25P):

SPST contact; pilot-duty only, 2 A @ 30 VAC/DC;

Closed when the low limit is met. Open when pointer is in normal operating range.

Contacts are gold flashed silver.

Limit Contact Adjustment: by a 1/16 in. hex wrench thru 100% of the scale.

Wiring: A20P: Number 4 screw terminals;

A25P: Number 6 screw terminals.

Snap-Switch Rating (A20PE and A25PE):

SPDT, 3 A @ 30 VDC inductive; 4 A @ 125 VAC inductive.

Wiring: A20PE: Number 4 screw terminals;

A25PE: Number 6 screw terminals.

Unit Weight: A20 Series: 8 oz. (0.23 kg).

A25 Series Models: 11 oz. (0.31 kg).

Unit Dimensions: A20 Series: 3 x 3 x 3 in. (76 x 76 x 76 mm). A25 Series Models: 4-3/4 x 4-3/4 x 2-3/4 in. (121 x 121 x 70 mm).

Base Models

A20P and A25P Series Switchgauge

The gage pointer makes with an adjustable contact to complete a pilot-duty circuit.

A20PE and A25PE Switchgauge

A20PE (was A20EO) and A25PE (was A25PEO).

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 (refer to wiring diagram on page 3).

Model A25PE is CSA listed for non-hazardous areas.

Model A25PE-EX is CSA listed for Class I, Division 1, Groups C and D hazardous areas.

A20PABS and A25PABS Switchgauge instrument

Sames as A20P and A25P with internal SPDT snap-switch for pre-alarm.

A20PG and A25PG Murphygage instrument

Gage without contact(s).

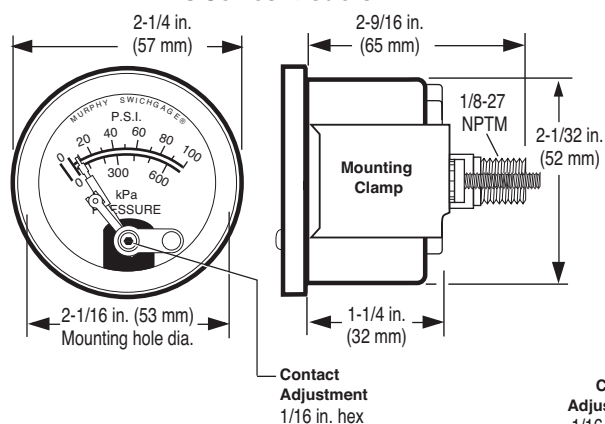


**Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.

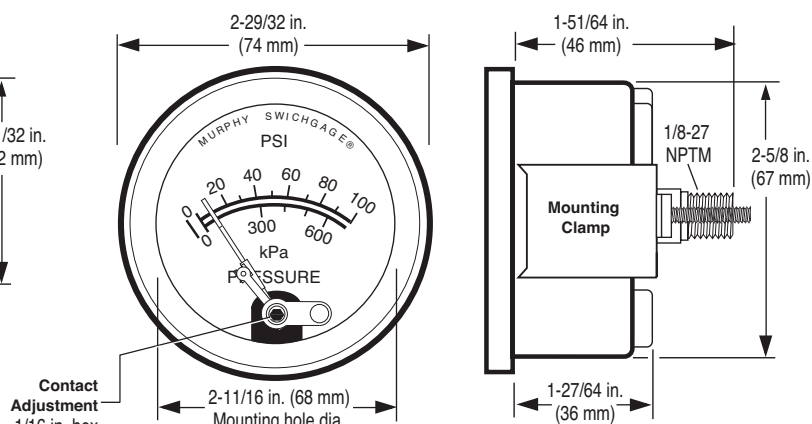


Dimensions

A20 Series Models



A25 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					
psi	(kPa)	[bar]		psi	(kPa)	[bar]	psi	(kPa)	[bar]	Low			Alarm†		
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 (1.0MPa)	15	(103)	[1.0]	60	(414)	[4.0]	15	(103)	[1.0]	18	(124)	[1.5]
0-100	(690)	[7.0]	200 psi (1.4MPa)	20	(138)	[1.5]	80	(552)	[5.5]	20	(138)	[1.0]	23	(159)	[1.5]
0-150	(1.0MPa)	[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	(1.6MPa)	[15]	75	(517)	[5.0]	78	(538)	[5.0]
0-400	(2.8 MPa)	[28]	500 psi (3.4 MPa)	150	(1.0MPa)	[7.0]	300	(2.1 MPa)	[20]	75	(517)	[5.0]	150	(1MPa)	[10]

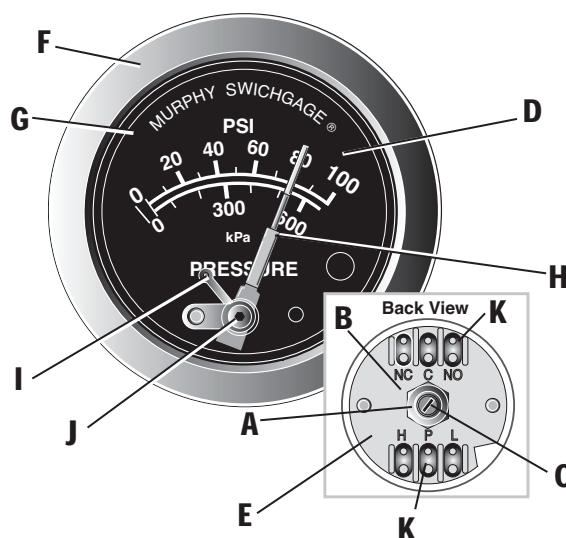
**Low settings for Hi/Lo option same as standard settings. Hi/Lo option available for A20P and A25P models only.

†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—see How to Order.
- 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.

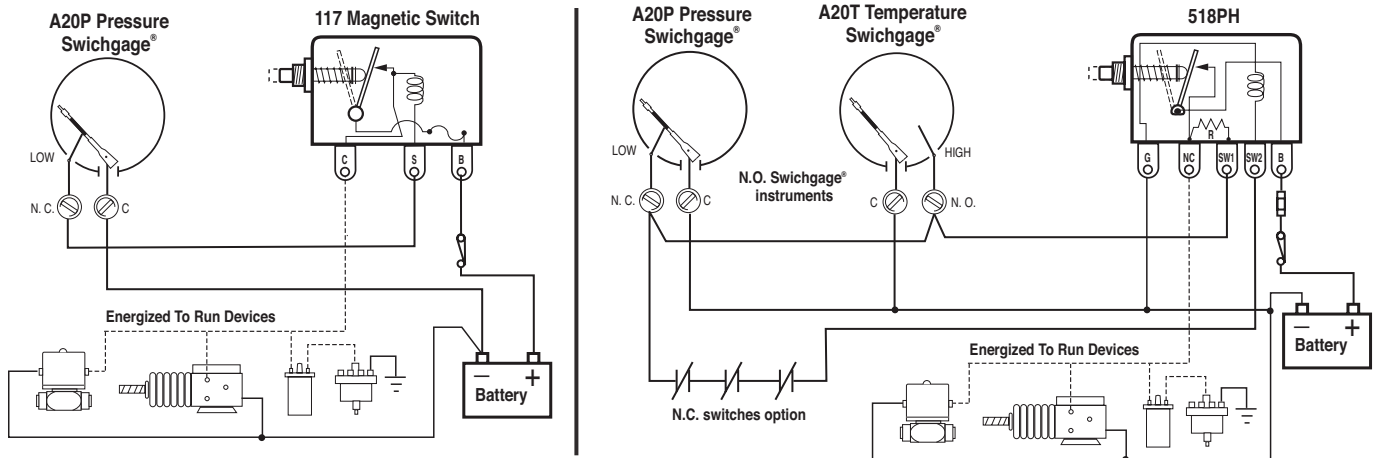
Typical For All Series (A25P Series Shown)



Magnetic Switch

INDUCTIVE AND HIGH CURRENT LOADS REQUIRE THE USE OF A MAGNETIC SWITCH. The Switchgag contacts are for light-duty electrical switching to operate alarms or control devices. Murphy manufactures the Magnetic Switch for protection of the pilot-duty Switchgag limit contacts.

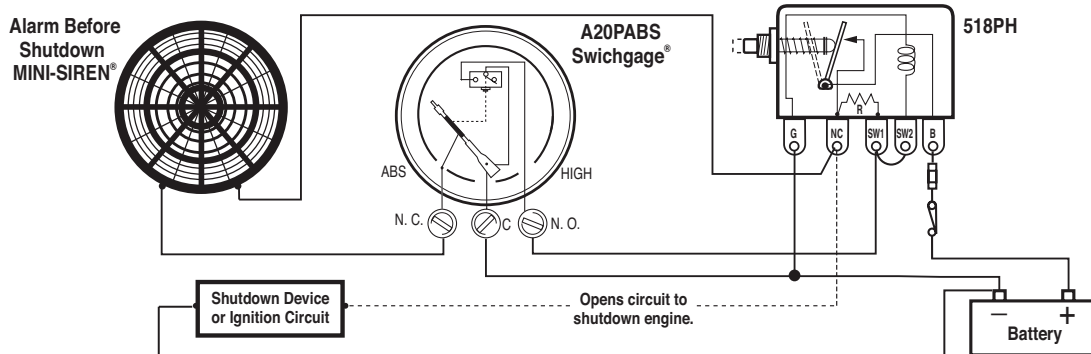
Tattletale® Magnetic Switches show the cause of shutdown for applications that include: capacitor discharge or magneto ignitions, battery systems and electric motor driven equipment. Typical wiring diagrams are shown below.



Pre-Alarm Using A20/A25PABS

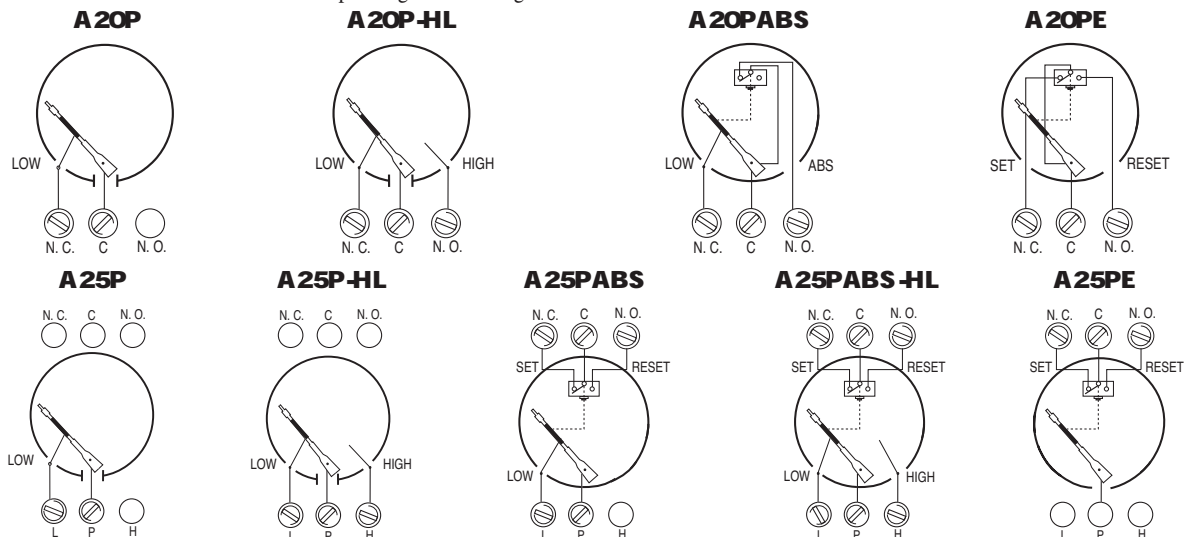
The A20PABS and A25PABS features a standard limit contact for equipment shutdown on low pressure. It also has an internal SPDT snap-switch to signal an alarm before shutting down. When the snap-switch trips (preset point), on falling pressure, the switch completes a circuit to activate an alarm. If the 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 pre-set at the factory. Refer to "Pressure Ranges and Factory Settings" table on opposite page for settings. For alternative alarm before shutdown, see Magnetic Switch model 760A or 761APH.

The front contact shutdown limit setting (which is adjustable) and the snap-switch are pre-set at the factory. Refer to "Pressure Ranges and Factory Settings" table on opposite page for settings. For alternative alarm before shutdown, see Magnetic Switch model 760A or 761APH.



Typical Internal Wiring Diagrams

Pointer shown in the shelf position. Pointer type contact rating: pilot-duty 2 A @ 30 VAC/VDC resistive. Snap-acting switch rating: 3 A @ 30 VDC inductive, 4 A @ 125 VAC inductive.



How to Order

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

Base Model	
A20P	A25P
A20PE	A25PE
A20PABS	A25PABS
A20PG	A25PG

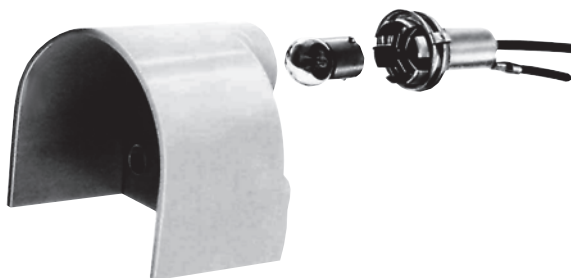
Options[†]	
B1 = Black bezel	
EX = Explosion-proof (CSA Listed for Class I, Div. 1, Groups C & D)*	
EL = Explosion-proof less case	
HL = High and low contacts	
K = Knob adjusting face contact	
OS = Oil sealed (Silicone Oil)	
[†] Options not available on all models or configurations.	
*A25PE-EX only is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

Range^{††}		
Dual scale (psi/kPa)		Single scale (bar)
	<i>psi</i>	<i>kPa/MPa</i>
15	= 0-15	0-103
30	= 0-30	0-207
50	= 0-50	0-345
75	= 0-75	0-517
100	= 0-100	0-689
150	= 0-150	0-1.03
200	= 0-200	0-1.38
300	= 0-300	0-2.07
400	= 0-400	0-2.76
		1B = 0-1 bar
		2B = 0-2 bar
		3.5B = 0-3.5 bar
		5B = 0-5 bar
		7B = 0-7 bar
		10B = 0-10 bar
		14B = 0-14 bar
		20B = 0-20 bar
		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.



Find us on the internet: → <http://www.fwmurphy.com>

Warranty

A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

MURPHY
www.fwmurphy.com

91 8.31 7.41 00 Email: sales@fwmurphy.com

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ISSDistribution.com - Call (800) 333-7976

Differential Pressure for Filter Restriction

20DP, 25DP, A20DP and A25DP Series

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

20DP-50



- Monitors Engine Oil and Fuel Filters
- Actuates Alarm or Shutdown System When Filter Becomes Clogged
- Combination Indicating Gage and Limit Switch
- Actuates Filter Backwash
- Signals Coolant Loss or Aeration On Engine Water Pump

Description

The 20DP and A20DP Series (2 inch/51 mm dial) and the 25DP and A25DP Series (2-1/2 inch/64 mm dial) Switchgauge instruments are diaphragm-actuated, differential pressure-indicating gages, with a built-in electrical switch. This switch is used for tripping alarms and/or shutting down equipment. These gages are intended to monitor and indicate oil, fuel or water filter restriction and can reduce the risk of dangerously high pressure which may rupture the filter, resulting in contaminants entering the system.

The 20DP and 25DP series mechanism is enclosed in a steel case coated to resist corrosion. The A20DP and A25DP series have a polycarbonate case and are sealed from the environment. All feature a polycarbonate, break-resistant lens and a polished, stainless steel bezel to help protect these rugged, built-to-last instruments.

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 have self-cleaning motion to ensure electrical continuity.

Features

- **CONSTANT VISUAL INDICATION** of the condition of your filter is shown on the dial.
- **TWO INSTRUMENTS IN ONE** – an accurate indicating gage and adjustable p.s.i.d. limit switch. Reduces inventory and installation time.
- **ADJUSTABLE CONTACT** lets you set the monitoring range of the gage. The contact is tamperproof and can be set only with a 1/16 Allen-head wrench.
- **DURABILITY** – All gages are made of durable materials allowing them to withstand rugged applications.

- **EARLY FILTER CHANGES** cost you money and increase the risk of contaminants entering the system. A Murphy filter restriction Switchgauge instrument will let you know when to change the filter and maintain peak efficiency.

Specifications

Dial: White on black, dual scale; U.S.A. standard scale is psi/kPa. Other scales available—inquire.

Case: 20DP and 25DP Series: *plated steel.*

A20DP and A25DP Series: *polycarbonate.*

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

Lens: Polycarbonate, high-impact.

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: ±3% maximum across scale.

Adjustable Limit Contact: SPST contact; pilot-duty only, 2 A @ 30 VAC/DC; closed when the low limit is met, open when pointer is in normal operating range. Contacts are gold flashed silver.

Limit Contact Adjustment: *by 1/16 in. hex wrench thru 100% of scale.*

Limit Contact Wire Leads (20DP and 25DP Series): *18 AWG (1.0 mm²) x 12 in. (305 mm).*

Limit Contact Terminals: *A20DP Series number #4 screw terminals. A25DP Series number 6 terminals.*

Snap-Switch Rating (“DPE” models):

SPDT, 3 A @ 30 VDC inductive; 4 A @ 125 VAC inductive.

Unit Weight:

20DP and A20DP Series: *9 oz. (0.25 kg);*

25DP and A25DP Series: *11 oz. (0.29 kg).*

Unit Dimensions:

20DP and A20DP Series: *3 x 2-3/4 x 2-3/4 in. (76 x 70 x 70 mm).*

25DP and A25DP Series: *4-3/4 x 4-3/4 x 2-3/4 in. (121 x 121 x 70 mm).*

Base Models

20DP, 25DP, A20DP and A25DP Switchgauge instrument

The gage pointer makes with an adjustable contact to complete a pilot-duty circuit.

20DPE, 25DPE, A20DPE and A25DPE Switchgauge instrument

20DPE (was 20DPEO), 25DPE (was 25DPEO), A20DPE (was A20DPEO) and A25DPE (was A25DPEO).

Features an internal snap-acting SPDT switch, instead of the single pole/pointer contacts. When the switch closes on rising pressure, it becomes Set, as pressure falls the switch Resets.

20DPG, 25DPG, A20DPG and A25DPG Murphygage instrument

Gage without contact(s).

Warranty

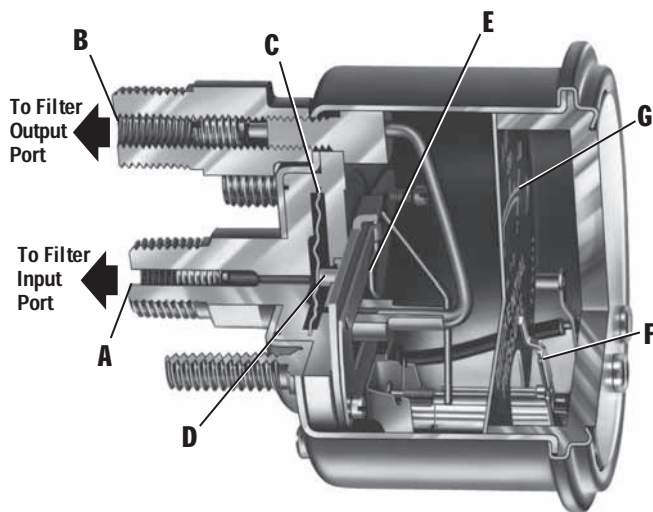
A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to

www.fwmurphy.com/support/warranty.htm

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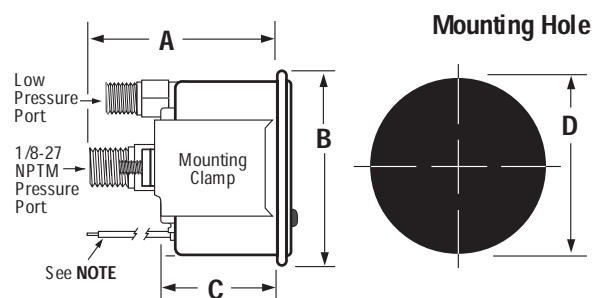


Operating Characteristics



Port **A** connects to the input side of the filter. Pressure pushes diaphragm **C** forward thus pushing the button **D** which turns the crank arm **E** which in turn moves pointer **F** to register the amount of pressure on dial **G**. Port **B** connects to the outlet side of the filter. Pressure is exerted through tube **H** and pushes on the diaphragm thus applying pressure on both sides of the diaphragm. The pointer displays pressure in the amount that the input pressure is greater than the outlet pressure. As the filter is restricted by contaminants and the pressure difference reaches the critical point, the pointer touches the pre-set limit contact and shuts down the system or activates a visual or audible signal to alert the operator.

Dimensions



	20DP Series	A20DP Series	25DP Series	A25DP Series
A	2-7/32 (56)	2-9/64 (54)	2-1/8 (54)	1-51/64 (46)
B	2-15/64 (57)	2-1/4 (57)	3-1/8 (79)	2-29/32 (74)
C	1-5/16 (33)	1-27/64 (36)	1-3/8 (35)	1-27/64 (36)
D	2-1/16 (53)	2-1/16 (53)	2-11/16 (68)	2-11/16 (68)

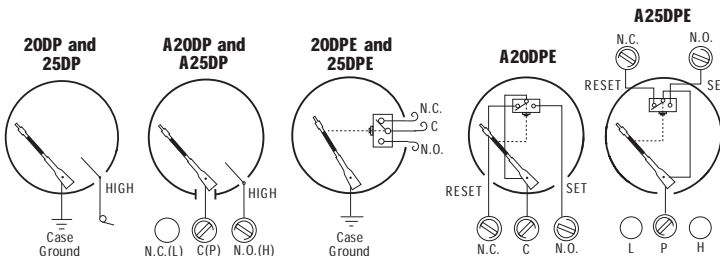
NOTE: 20 and 25 Series have 18 AWG (1.0 mm²) wire. A20 Series has #4 screw terminals and A25 Series has #6 terminals. Dimensions are in inches and (millimeters).

Ranges and Factory Settings

Ranges* Available	Max. Static Pressure	Max. Differential Pressure	Contact Setting
0-15 (0-103) [0-1.0]	200 (1.4) [14]	30 (207) [2.0]	10 (69) [0.8]
0-30 (0-207) [0-2.0]	300 (2.1) [20]	60 (414) [4.0]	20 (138) [1.0]
0-50 (0-345) [0-3.5]	300 (2.1) [20]	100 (690) [7.0]	30 (207) [2.0]
0-75 (0-517) [0-5.0]	300 (2.1) [20]	150 (1.0) [10]	50 (345) [3.5]
0-100 (0-690) [0-7.0]	300 (2.1) [20]	200 (1.4) [14]	60 (414) [4.0]

*Values are shown in psi, (kPa/MPa) and [bar]. Values in kPa/MPa and bar are mathematical conversions from psi—they do not reflect actual second scale range.

Internal Wiring



How to Order

To order, use the diagram below. List options in ascending alphabetical order (A-Z). Example: **20DP-F-30**.

Base Model	Range ^{††}
20DP	15 = 0-15
A20DP	30 = 0-30
20DPE	50 = 0-50
A20DPE	75 = 0-75
20DPG	100 = 0-100
A20DPG	

^{††}Select scale so your normal operating pressure is in the middle half of the scale.

Options[†]

A = Argon filled case (not available for A25DP, 25DPE, 20DPE Series)
B1 = Black bezel
B2 = Bezel 05051857 (was "HP")
B3 = Bezel 05051836 (was "HBB")
EX = Explosion-proof
EL = Explosion-proof less case

F = "FS" contact (includes "ES" as appropriate)
K = Knob adjusting face contact

[†]Options not available on all models or configurations.

MURPHY

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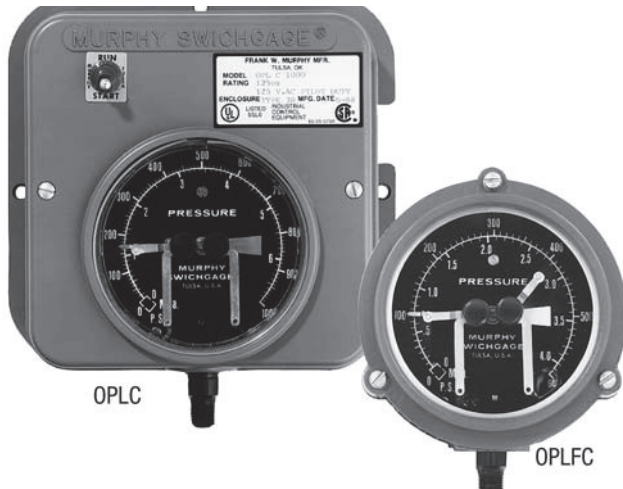
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DP-96041B page 2 of 2

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Pressure Gage and Swichgage® Instruments

OPL Series 4-1/2 in. (114 mm) Diameter Dial



Features

- Combination Indicating Gage and Critical Pressure Limit Switches
- High and Low Pressure Limit Contacts Are Visible and Adjustable
- Panel and Surface Mount Versions
- Indicating-only Murphygage® Available
- Latching Control Relay Versions Available



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

† Selected configurations are third party listed. Consult factory for details.

The OPL-series pressure Swichgage instruments are combination pressure indicating gages with adjustable low and high limit switches. Limit switches can be wired directly to electric pilot circuits to operate alarms, shutdown or start/stop of engines and electric motors.

Surface mount or panel mount enclosure is available for most versions. All versions feature a 4-1/2 in. (114 mm) dial for easy viewing. Adjustable limit switches are accessible from front of the Swichgage instrument. Limit contacts have self-cleaning motion to enhance electrical continuity.

Other versions available (see page 2):

- Gage-only without contacts (Murphygage instrument)
- Swichgage instrument with built-in latching relay for start-stop operations.

Specifications

Case: Die cast aluminum; weatherproof.

Contacts: See Electrical page 3, for contact ratings.

Dial: 4-1/2 in. (114 mm) white on black, dual scaled psi / kPa. Other dial configurations available. Consult factory.

Gage Accuracy: ±2% for the **first** and **last** quarters of the scale, the **middle** half is ±1%.

Geared Movement: 302 and 304 stainless steel.

Lens: Optically clear polycarbonate.

Pointer: High visibility with a pointer calibration hub.

Process Connection: Available in 1/4 NPT and 1/2 NPT. See **Table B**, page 5.

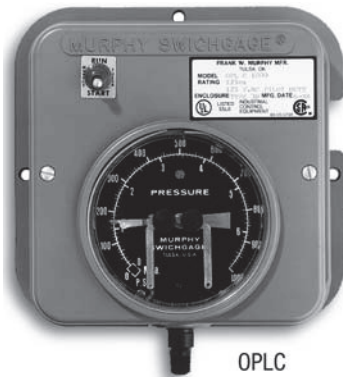
Sensing Element: Select from bronze or 316 stainless steel bourdon tube. See **Table B**, page 5 for bourdon tube/socket combinations.



Product Selection Information

WARNING: Selection of the proper gage/Swichgage instrument should include consideration for the service application, the medium being measured, electrical ratings, hazardous area requirements and general operating conditions. Improper selection and/or application may be detrimental to the gage/Swichgage instrument, could cause failure in the operating system and possibly personal injury or property damage. If in doubt consult our sales/engineering staff.

Base Models



OPLC

OPLC

OPLC, OPLCE and OPLG

The **OPLC** is a surface mount, indicating, pressure gage and switch. Adjustable high and low limit, ungrounded contacts are used to operate alarm, shutdown or start-stop circuits. Pointer closure against either of the adjustable contacts completes the pilot-duty circuit. An SPST toggle switch is provided to override the low limit contact for equipment startup. Suitable for engines or electric motors with appropriate Murphy magnetic switch or transformer relay assembly.

The **OPLCE** features a panel mount square case. It has all the features of the OPLC except the low limit contact lockout.

The **OPLG** is an indicating-only pressure Murphygage instrument. Same as the OPLC except without switch (limit) contacts.



OPLFC

OPLFC

OPLFC and OPLFG

The **OPLFC** is a panel mounting version of the OPLC. It has all of the features of the OPLC except the low limit contact lockout. The lockout must be done externally through the control circuit or with the optional "SA" lockout. The OPLFC is typically used in control panels such as for compressors, pumps, etc. This version can be environmentally sealed with either the "ES" or "OS" options. Contact lead termination is by pigtail wires.

The **OPLFG** is an indicating-only pressure Murphygage instrument. Same as the OPLFC except without switch (limit) contacts.



OPLBP

OPLBP

OPLBP and OPLBPE

The **OPLBP** is a specialized version of the OPL series designed for start-stop operation of engines and electric motors. The pilot-duty limit switches are connected to an internal latching control relay for ON/OFF automation. Available for various voltages.

The **OPLBPE** is the same as the OPLBP except has a panel mount square case.



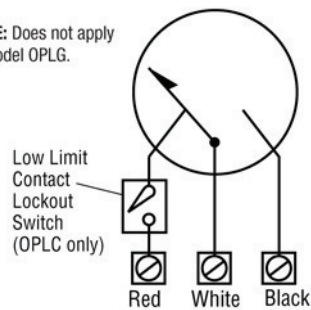
* Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.

† Selected configurations are third party listed. Consult factory for details.

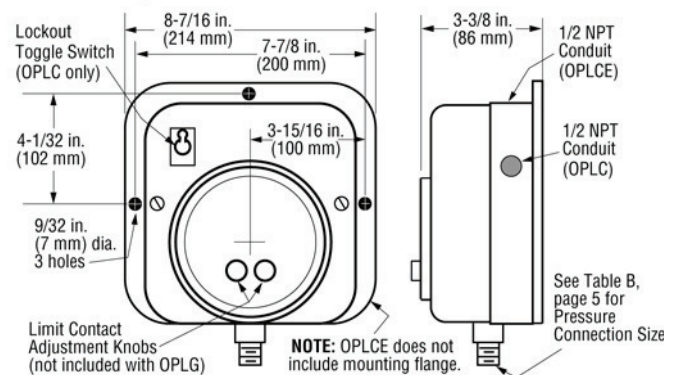
Warranty - A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to <http://www.fwmurphy.com/warranty>

OPLC and OPLCE

NOTE: Does not apply to model OPLG.



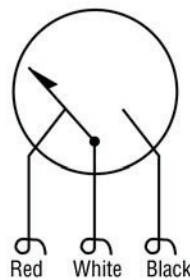
Contact Rating: 1 SPDT; Center off; 2 A, 30 VDC, 1 A, 125 VAC pilot duty

OPLC, OPLCE and OPLG

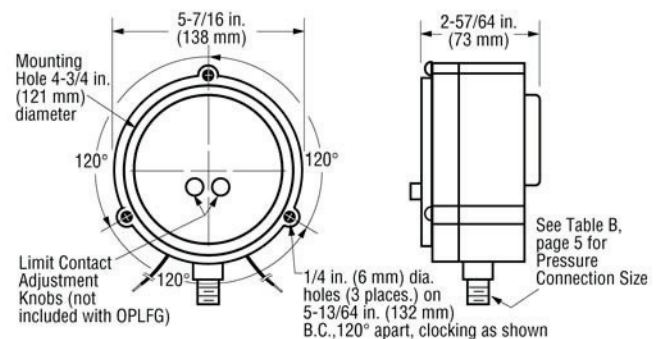
See Table B, page 5 for Pressure Connection Size

OPLFC

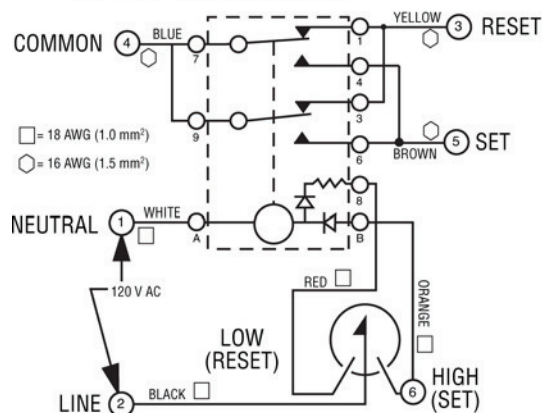
NOTE: Does not apply to model OPLFG.



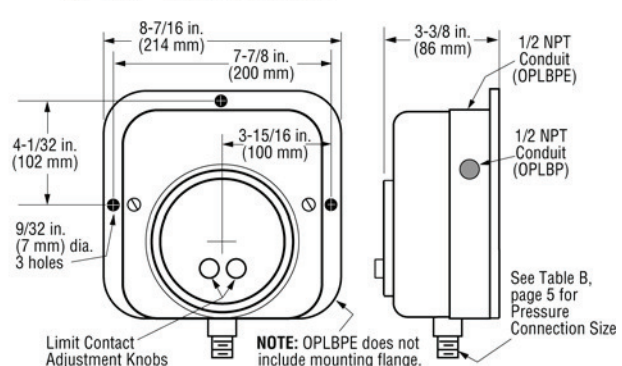
Contact Rating: 1 SPDT; Center off; 2 A, 30 VDC, 1 A, 125 VAC pilot duty

OPLFC and OPLFG

See Table B, page 5 for Pressure Connection Size

OPLBP and OPLBPE

Contact Rating: SPDT dry relay contacts; 10 A, 125 VAC.

OPLBP and OPLBPE

See Table B, page 5 for Pressure Connection Size

Options and Accessories

P4 and P6 Options

The **P4 (was PT147)** option provides a remote seal mechanism to protect the Swichgauge instrument sensing element from line pressures of highly viscous and mildly corrosive fluids. Ranges 100 thru 5,000 psi (689 kPa thru 34.5 MPa) [6.9 thru 344.7 bar]. A sealed stainless steel capillary tube, with stainless steel armor, transmits the pressure from the diaphragm seal to the Swichgauge instrument. Standard capillary length is 5 ft. (1.5 m). Optional lengths to 50 ft. (15 m) in 5 ft. (1.5 m) increments are available. Oil well lead lines and pumps with highly viscous liquids are typical applications. If required, customer should provide a pulsation dampener.

The **P6 (was PT167)** option is a diaphragm sealed to a 2 NPT housing which attaches directly to the pressure gage connection. The gage sensing element and the diaphragm chamber are filled with a silicone fluid so that pressure against the diaphragm causes the gage to respond. The diaphragm housing is plated machined steel. Typical application is for oil well lead lines. Ranges 100 thru 1,000 psi (689 kPa thru 6.8 MPa) [6.89 thru 68.9 bar]. The P4 and P6 can be ordered as optional features to the Swichgauge or indicating-only Murphygauge instrument. See *How to Order* on pages 5 and 6.

NOTE:

P4 option not available for scales below 100 psi.

P6 option available for scales 100 psi thru 1,000 psi only.



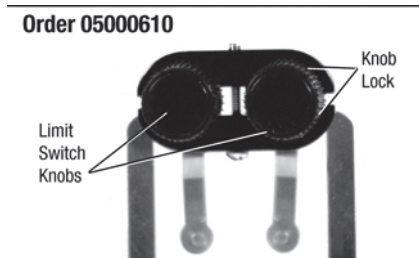
OPLFC-A-600-OS-P6



OPLFC-A-1000-OS-P4L

Tamperproof Contact Accessory

Order 05000610



Pulsation Dampener

- Eliminate pointer contact flutter on pressure Swichgauge and Murphygauge instruments which are subject to pulsating pressure from reciprocating pumps or compressors.
- Allow close high-low contact settings for more accurate pressure indication and equipment control.
- Decrease wear on internal geared movement and increase the life of your instrument by eliminating excessive strain and unnecessary pointer movement.
- Available in brass, carbon steel and stainless steel.
- **Must be ordered separately.** See bulletin PD-95145B.



How to Order

Selecting a Model:

1. Select a Base Part Number from **Table A**
2. Select Bourdon Tube and Socket code from **Table B**
3. Select "BP" Relay Voltage code (applies to "BP" models only) from **Table C**
4. Select Range code from **Table D**⁽¹⁾
5. Select Options from **Table E**⁽²⁾

OPLBP - S - 2 - 1000 -

⁽¹⁾ For metric only dials specify scale and unit of measure; example: kPa or bar.

⁽²⁾ List options in alphabetical order (A to Z) followed by numeric in ascending order. Place a dash (-) between each option. See example above.

Table A: Base Models

OPLC	Switchgag, surface mount, with low limit lockout switch
OPLCE	Switchgag, panel mount square case
OPLFC	Switchgag, panel mount
OPLBP*	Switchgag, surface mount, with latching control relay
OPLBPE*	Switchgag, panel mount square case, with latching control relay
OPLG	Murphygag, surface mount
OPLFG	Murphygag, panel mount

* This version not covered by the CE mark.

Table C: "BP" Relay Voltage

Code	Voltage
Blank ⁽³⁾	120 VAC
2	12 VDC
4	24 VDC

NOTE: Relay Voltage applies to "BP" models only.

⁽³⁾ No code is required for 120 VAC voltage.

Table B: Bourdon Tube and Socket

Code	Process Connection	Tube Type	Range Selection Limits psi (MPa) [bar]	Bourdon Tube and Tip Material (all joints TIG welded except "A")	Socket Material
A ⁽⁴⁾	1/4 NPT	Drawn C-Tube	Thru 1,000 psi (6.89 MPa) [68.95 bar]	Grade A Phosphor Bronze Tube (Brass Tip, Silver Brazed)	Brass
S ⁽⁵⁾ ⁽⁶⁾	1/4 NPT	Drawn C-Tube	Thru 1,000 psi (6.89 MPa) [68.9 bar]	316 Stainless Steel	316 Stainless Steel
	1/2 NPT	Drawn Helical	1,500/10,000 psi (10.3/68.9 MPa) [103.42/700 bar]		

⁽⁴⁾ Standard thru 1,000 psi (6.89 MPa) [68.95 bar].

⁽⁵⁾ Standard 1,500 psi (10.3 MPa) [103.42 bar] thru 10,000 psi (68.9 MPa) [700 bar].

⁽⁶⁾ Optional all ranges.

Table D: Ranges

Code	Vacuum/psi	kPa/MPa	bar	Dials All dials are dual scaled psi and kPa/MPa. Single scale dials and custom dials available. Additional charges may apply. Gages All 4-1/2 inch (114 mm) Switchgauge instruments are available for Class I, Division 1, Groups C & D hazardous applications. Division 2 locations can also be covered by our Non-Incendive or Intrinsically Safe systems. See the full catalog or contact any Murphy representative for complete details.
30HV60H	30" Hg/Vac-60" Hg/Press.	-101 kPa-203 kPa	-1.01-2.03	
30V	30" vac-0 psi	-101 kPa-0 kPa	-1.01-0	
30V15	30" vac-15 psi	-101 kPa-103 kPa	-1.01-1.03	
30V30	30" vac-30 psi	-101 kPa-207 kPa	-1.01-2.07	
30V100	30" vac-100 psi	-101 kPa-689 kPa	-1.01-6.89	
30V200	30" vac-200 psi	-101 kPa-1.38 MPa	-1.01-13.79	
30V300	30" vac-300 psi	-101 kPa-2.07 MPa	-1.01-20.68	
15	0-15 psi	0-103 kPa	0-1.03	
30	0-30 psi	0-207 kPa	0-2.06	
60	0-60 psi	0-414 kPa	0-4.13	
100	0-100 psi	0-689 kPa	0-6.89	
160	0-160 psi	0-1.10 MPa	0-11	
200	0-200 psi	0-1.38 MPa	0-14	
300	0-300 psi	0-2.07 MPa	0-20	
400	0-400 psi	0-2.76 MPa	0-28	
600	0-600 psi	0-4.14 MPa	0-40	
1000	0-1000 psi	0-6.89 MPa	0-70	
1500	0-1500 psi	0-10.34 MPa	0-100	
2000	0-2000 psi	0-13.79 MPa	0-140	
3000	0-3000 psi	0-20.68 MPa	0-200	
5000	0-5000 psi	0-34.48 MPa	0-350	
10000	0-10,000 psi	0-68.95 MPa	0-700	

Table E: Options[†]

Option	Description	Option	Description
BC	Back connected bourdon tube	P6	(PT167) PT167 pressure transmitter, direct mounting
ES	Environmentally sealed	TA	(TCA) Tickler contact
EX	Explosion-proof: SWITCHGAGE® enclosed within explosion proof case; Class I, Div. 1, Groups C & D		
EL	(EXLC) Explosion-proof less case		
LC	Less case		
OS	Oil sealed case		
P4L	(PT147) Pressure transmitter with 5 ft. (1.5 m) capillary* (Pulsation dampener no longer supplied.) * For capillary greater than 5 ft., specify in 5 ft increments following designator; example: P4L15		

[†]Options not available on all models or configurations.

Shipping Information****Shipping Weights:**

OPLC: 5 lbs 9 oz (2.5 kg)

OPLG: 5 lbs 6 oz (2.4 kg)

OPLFC and OPLCE: 3 lbs 4 oz (1.5 kg)

OPLFG: 3 lbs 4 oz (1.5 kg)

OPLBP and OPLBPE: 5 lbs 11 oz (2.6 kg)

Shipping Dimensions:

OPLC, OPLG and OPLFG:

9-1/2 x 9-1/4 x 5-3/4 in. (241 x 235 x 146 mm)

OPLFC and OPLCE:

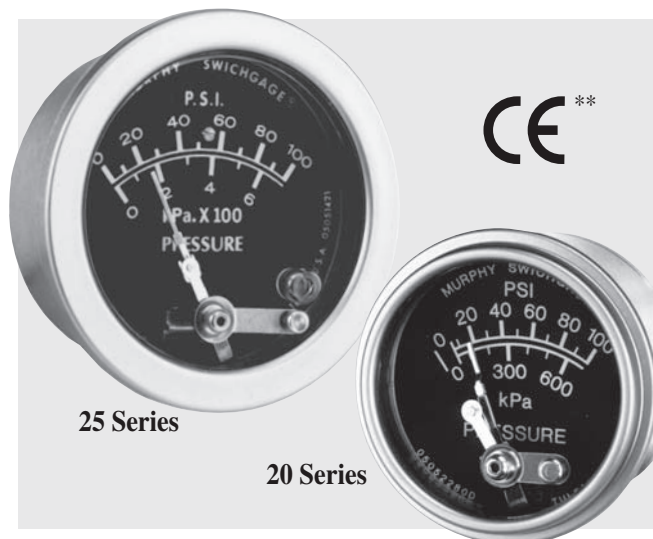
9-1/4 x 8-1/4 x 5-1/2 in. (235 x 210 x 140 mm)

OPLBP and OPLBPE:

9-1/4 x 8-1/4 x 5-1/2 in. (235 x 210 x 140 mm)

** Some options could alter shipping weights and dimensions. Consult factory.

20 and 25 Series Pressure SWICHGAGE®



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 (see How to Order).

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

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

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 2.

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 thru 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 12 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 (see page 3 for details).

20PG and 25PG MURPHYGAGE®

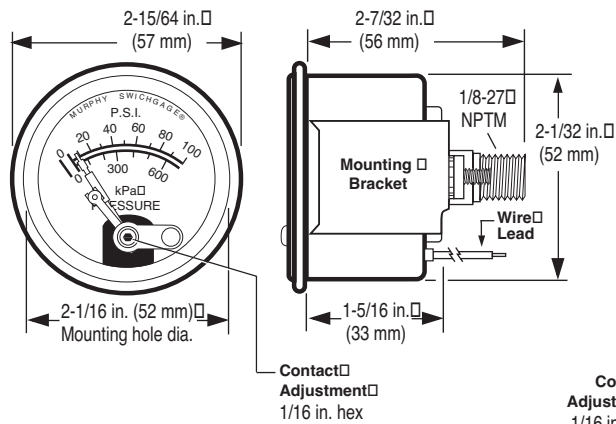
Gage without contact(s).

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

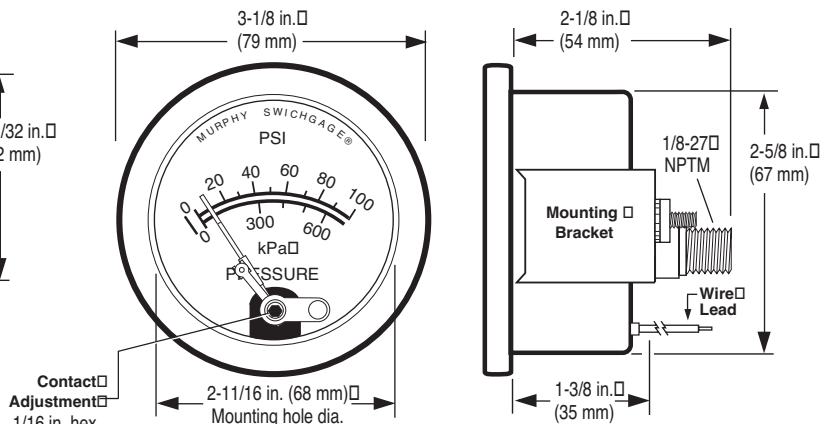


Dimensions

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 20PE and 25PE; 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.

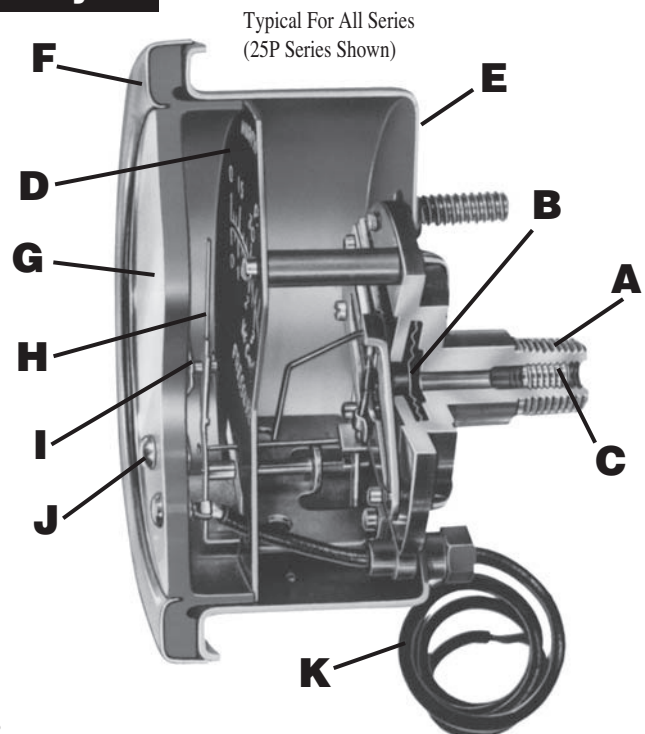
Ranges Available			Maximum Pressure	Standard Settings			High Settings*			20PABS and 25PABS Settings					
psi	(kPa)	[bar]		psi	(kPa)	[bar]	psi	(kPa)	[bar]	Low			Alarm†		
									psi	(kPa)	[bar]	psi	(kPa)	[bar]	
0-15	(103)	[1.0]	2 x scale	3	(21)	[0.2]	12	(83)	[0.8]	3	(21)	[0.2]	6	(41)	[0.3]
0-30	(207)	[2.0]	2 x scale	7	(48)	[0.4]	24	(165)	[1.6]	7	(48)	[0.4]	10	(69)	[0.6]
0-50	(345)	[3.5]	2 x scale	10	(69)	[0.8]	40	(276)	[2.8]	10	(69)	[0.8]	13	(90)	[1.0]
0-75	(517)	[5.0]	2 x scale	15	(103)	[1.0]	60	(414)	[4.0]	15	(103)	[1.0]	18	(124)	[1.5]
0-100	(690)	[7.0]	2 x scale	20	(138)	[1.5]	80	(552)	[5.5]	20	(138)	[1.0]	23	(159)	[1.5]
0-150	(1.0MPa)	[10]	2 x scale	30	(207)	[2.0]	120	(827)	[8.0]	30	(207)	[1.5]	33	(228)	[2.0]
0-200	(1.4MPa)	[14]	2 x scale	50	(345)	[3.0]	150	(1MPa)	[10]	50	(345)	[3.0]	53	(365)	[4.0]
0-300	(2.1MPa)	[20]	1-2/3 x scale	75	(517)	[5.0]	225	(1.6MPa)	[15]	75	(517)	[5.0]	78	(538)	[5.0]
0-400	(2.8MPa)	[28]	1-1/4 x scale	150	(1.0MPa)	[7.0]	300	(2.1MPa)	[20]	75	(517)	[5.0]	150	(1MPa)	[10]

*Low settings for Hi/Lo option same as standard settings. Hi/Lo option available for 20P and 25P models only.

†SPDT Snap-switch is the alarm switch.

The Inside Story

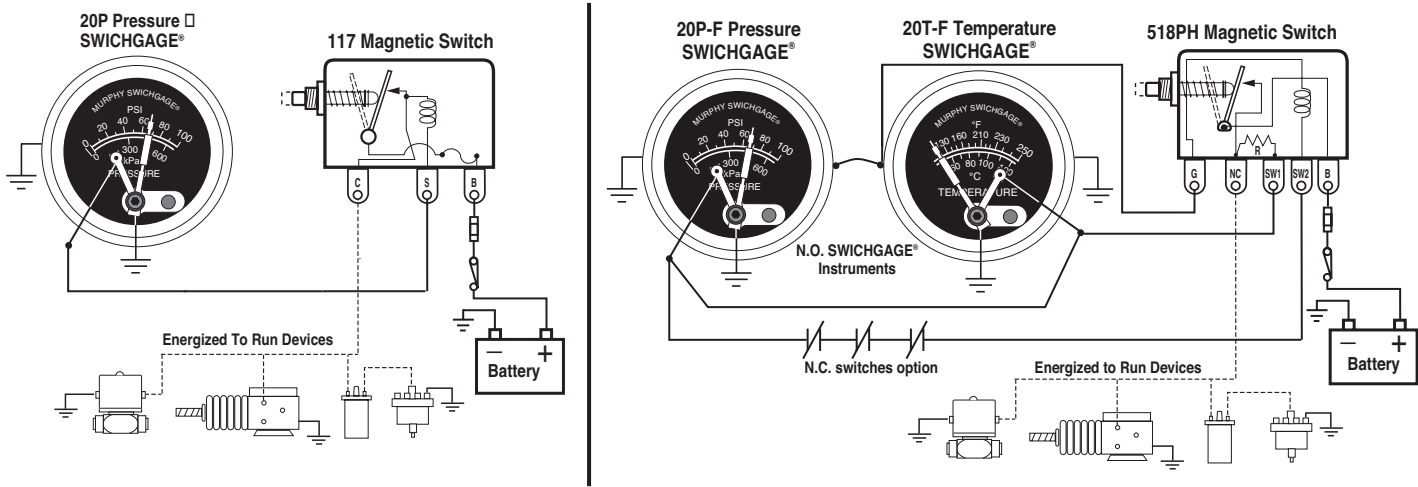
- Process Connection and Port:** Machined from brass bar stock. Together with the diaphragm forms the diaphragm chamber.
- Diaphragm:** Beryllium copper; material is die formed and heat treated to very close physical and metallurgical specifications.
- Pulsation Dampener:** Designed to minimize undesirable pointer chatter. It is removable for cleaning.
- Dial:** White letters on a black background, dual scale (psi & kPa) standard; others available on request (see How to Order on page 4).
- Case:** Steel with zinc and iridite; mounting clamp included (except for direct mount models).
- Bezel:** Polished stainless steel standard, black bezel also available.
- Lens:** Made of polycarbonate glass, high-impact treated.
- Pointer:** Tempered nickel silver for continuity and corrosion resistance. It is mounted on a machined brass post.
- 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.
- Wire Leads:** 12 in. (305 mm) long, 18 AWG (1.0 mm²) for face-adjustable contacts. 20 AWG (0.75 mm²) for Snap-switches models.



Magnetic Switch

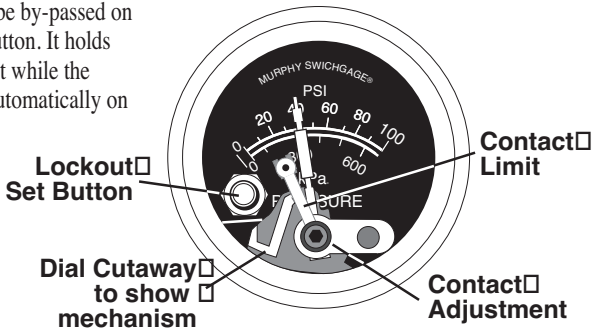
INDUCTIVE AND HIGH CURRENT LOADS REQUIRE THE USE OF A MAGNETIC SWITCH. The SWITCHGAGE® contacts are for light-duty electrical switching to operate alarms or control devices. Murphy manufactures the Magnetic Switch for protection of the light-duty SWITCHGAGE® limit contacts.

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.



Start-Up Lockout

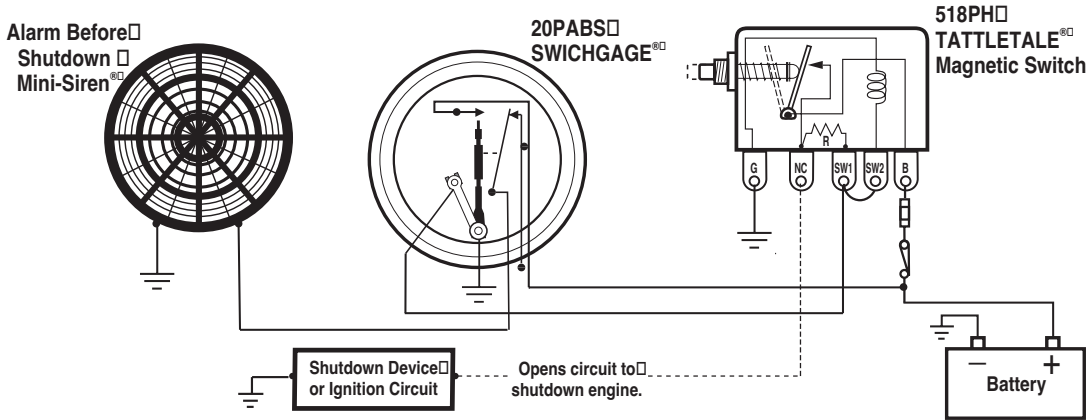
The SWITCHGAGE® low limit contact can be by-passed on start-up by pushing this optional lockout button. It holds the pointer away from the shutdown contact while the engine starts. The lockout will disengage automatically on rising pressure.



Pre-Alarm Using 20/25PABS

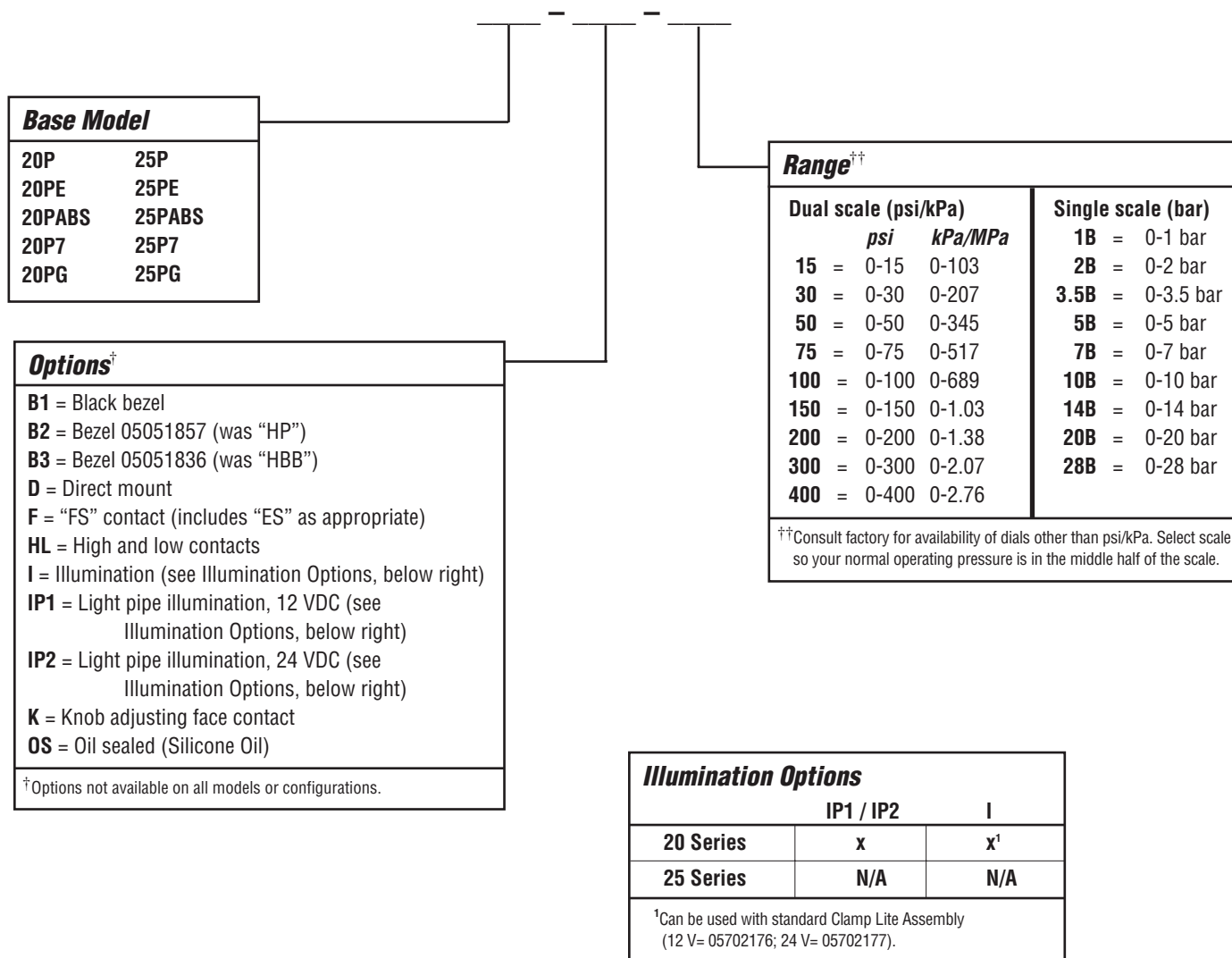
The 20PABS and 25PABS features a standard limit contact for low pressure equipment shutdown. It also has an internal SPDT snap-switch to signal an alarm before shutting down. When the low side of the snap-switch trips (preset point), on falling pressure, the switch completes a circuit to activate an 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 opposite page for settings. For alternative alarm before shutdown, see Magnetic Switch model 760A or 761APH.



How to Order

To order, use the diagram below. List options in ascending alphabetical order (A-Z). Example: **20P-IP1-100**.



Find us on the internet: <http://www.fwmurphy.com>

Warranty

A limited warranty on materials and workmanship is given with this FW Murphy product.
A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm



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Direct Mount Pressure Switch Model PSB



Features

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



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

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 Switchgauge® instrument. 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 nonclassified areas.

Applications

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

Features

- Fits all engine applications
- SPDT snap-switch
- Activates indicator lights, alarms, or shut down equipment
- Time-proven SWITCHGAGE® 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 reverse side.

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 back).

Pressure Range: Specify from 0-400 psi (0- 2.76 MPa) [0- 27.58 bar]. See Trip Point Chart on reverse side.

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

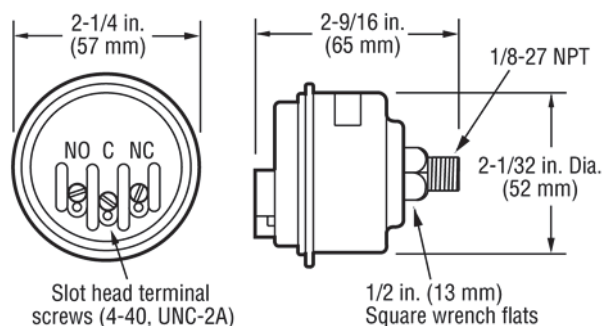
Shipping Weight: 8 oz. (0.25 kgs).

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

NOTE: No customer replacement parts.

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Dimensions



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]

How to Order

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.

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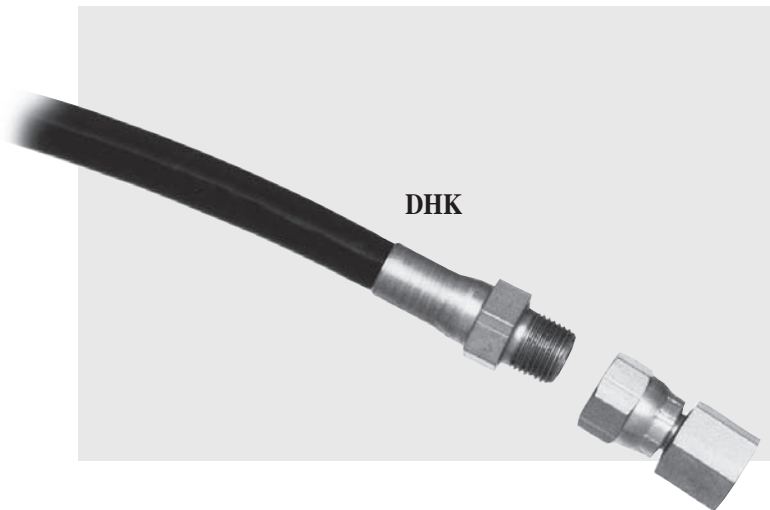
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08/20/09

Warranty - A limited warranty on materials and workmanship is given with this FW Murphy product.
A copy of the warranty may be viewed or printed by going to <http://www.fwmurphy.com/warranty/>

Oil Pressure Tubing Kit

PTK-8165B
Revised 03-99
Catalog Section 05
(00-02-0032)



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

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.

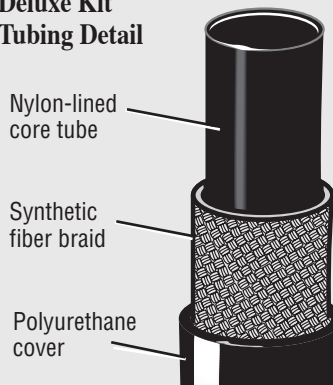
The Deluxe kit allows you to choose the type of gauge and engine fittings for your application. Choose straight or elbow fittings for both gauge and engine connections. In addition, the kit offers a variety of engine adapters to fit your application. These adapters are available in U.S. or metric threads.

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:

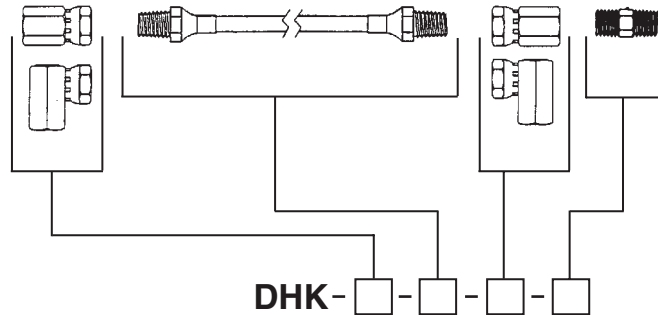
10,000 psi (68.9 MPa) [689.0 bar]
@ 200°F (93°C).



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 adaptor is required). Model number example: **DHK-A-72-C-Z**

Deluxe Tubing Kit



Gauge Fitting

Z: No fitting

A: 1/8 NPT female x 1/8 NPSM swivel, straight (89-09-0202)

B: 1/8 NPT female x 1/8 NPSM swivel, 90° (85-04-0202)

Tubing Length

Specify end to end length in inches (1/8 I.D. with 1/8 NPT male both ends).

For meters specify "m" after length.

For millimeters specify "mm" after length.

Engine Connection Fitting

Z: No fitting

C: 1/8 NPT female x 1/8 NPSM swivel, straight (89-09-0202)

D: 1/8 NPT female x 1/8 NPSM swivel, 90° (85-04-0202)

Engine Connection Adapter

Z: No adapter

G: 1/8 NPT male x 1/8 NPT, male, straight (86-03-0204)

H: 1/8 NPT male x 1/4 NPT, male, straight (65-05-0460)

K: 1/8 NPT male x M10-1.0, straight (65-05-0461) with seal washer (65-05-0465)

M: 1/8 NPT male x M12-1.5, straight (65-05-0462) with seal washer (65-05-0456)

N: 1/8 NPT male x M14-1.5, straight (65-05-0463) with seal washer (10-05-0601)

O: 1/8 NPT male x M18-1.5, straight (65-05-0474) with seal washer (10-05-0605)

P: 1/8 NPT male x 1/8 BSPT, male, straight (65-05-0464)



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Lead Line Pressure Swichgage® instrument

PT-96107B
Revised 03-06
Catalog Section 05

Model PT167EX

4-1/2 in. (114 mm) Diameter Dial



- Designed to Monitor Line Pressures of Highly Viscous and Mildly Corrosive Fluids
- Combination Indicating Gage and Critical Pressure Switch
- High and Low Pressure Limit Contacts Are Visible and Adjustable
- Explosion-proof Enclosure

Description

The Murphy PT167EX is a pressure Swichgage instrument connected to a threaded pressure diaphragm housing. The Swichgage instrument is enclosed in an explosion-proof case and is CSA rated for Class I, Division 1, Groups C and D.*

A Swichgage instrument is a pressure indicating gage with adjustable low and high pressure limit switches. When the gage pointer touches the low or high limit switches, an electrical circuit is completed which can operate alarms and/or shut down equipment.

The 2 NPT, sealed-diaphragm housing is attached directly to the Swichgage connection. The diaphragm housing is filled with a silicone fluid so that pressure against the diaphragm causes the Swichgage instrument to respond. The housing seals the Swichgage sensing element from the medium being measured.

Applications

Applications include highly viscous liquids such as crude oil on lead line applications. Other applications have included asphalt, sludge, abrasive materials, etc.

Specifications

Case: Explosion-proof, sand cast aluminum. Lens is removable. CSA Listed for Class I, Division 1, Groups C and D*.

Contact Rating: 1 A, 125 V AC.

Dial: 4-1/2 in. (114 mm) white on black, dual scaled psi /kPa. Other dial configurations available. Consult factory.

Ranges: See *How to Order* on reverse side.

Gage Accuracy: ±3% full scale.

Process Connection: 2 NPT.

Maximum Pressure: 30% overpressure.

Diaphragm Housing:

Plated steel, Ni-Span®; silicon filled.

Diaphragm Fluid: Silicone 200.

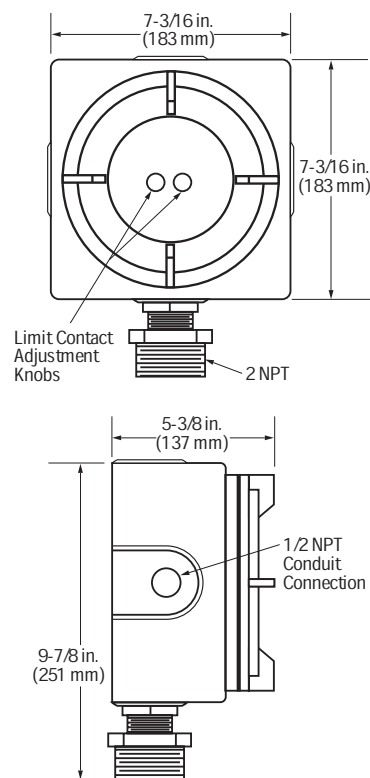
Shipping Weight: 16.5 lb (7.5 kg).

Shipping Dimensions: 12 x 12 x 9 in.
(305 x 305 x 229 mm).

Warranty

A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

Dimensions



* The PT167EX is CSA listed for ranges 100 to 5000 psi (689 kPa to 34.5 MPa) [6.89 to 344.74 bar].

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

MURPHY

How to Order

To order, specify pressure range, bourdon tube and options. Example: **PT167EX-R-200-T1**.

PT167EX - -

Bourdon Tube Socket-Material/Size

Specify	Tube/Socket Material	Tube Type	Range Selection Limits psi (MPa) [bar]
A	Grade A Phosphor Bronze (Tube) Brass (Socket)	C-Tube	Thru 1,000 psi (6.89 MPa) [68.95 bar]
S	316 Stainless Steel (Tube and Socket)	C-Tube	Thru 1,000 psi (6.89 MPa) [68.95 bar]

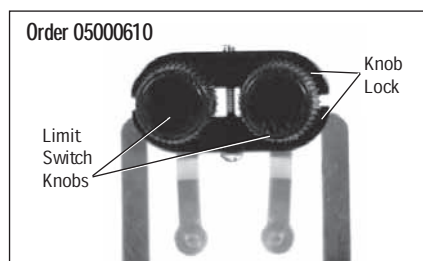
Ranges

Specify	vacuum/psi	kPa/MPa	bar
100	0 - 100 psi	0 - 689 kPa	0 - 6.89
160	0 - 160 psi	0 - 1.10 MPa	0 - 11.03
200	0 - 200 psi	0 - 1.38 MPa	0 - 13.78
300	0 - 300 psi	0 - 2.07 MPa	0 - 20.68
400	0 - 400 psi	0 - 2.76 MPa	0 - 27.57
600	0 - 600 psi	0 - 4.14 MPa	0 - 41.36
1000	0 - 1000 psi	0 - 6.89 MPa	0 - 68.95

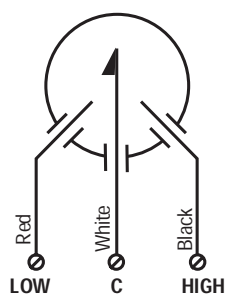
If specifying range in bar, kPa/MPa or kg/cm², specify appropriate designator after value.
Example: **20B** = 20 bar.

B = Bar
K = kPa/MPa
M = kg/cm²

Tamperproof Contact Accessory



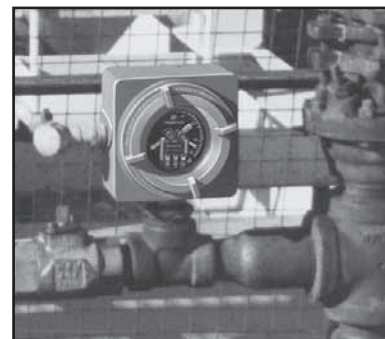
Internal Wiring



Contact Rating: 1 A, 125 V AC

Typical Installation

The photo at right shows the PT167EX installed in a lead line. For optimum effectiveness, the PT167EX should be installed ahead of all other devices or valves; by positioning it immediately adjacent to the well outlet, the Switchgag instrument monitors the entire lead line, sensing any blockage whether sludge build-up in the line or an accidental closed valve. The pressure transmitter threads into a 2 NPT tee on the lead line.



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Pressure Transmitters PXT Series



Features

- 4-20 mA Output Signal
- Precision Etched Silicon Sensor
- Corrosion Resistant Construction
- High Stability



The PXT Series pressure transmitter is a state-of-the-art instruments providing 4 to 20 mA outputs. It features a precision micro-machined silicon diaphragm with fully welded stainless steel pressure port for greater accuracy, stability and a wide range of compatibility.

Silicon technology is used to provide a miniature micro-machined diaphragm which is electrostatically bonded to a glass substrate and is then stitch-bonded within a glass to metal seal assembly to provide exceptional thermal and stress isolation. This technology assures you of high accuracy and stability over a wide range of operating conditions.

The enclosure is made of 316 stainless steel and all wetted parts are 316L stainless steel or HASTELLOY C276.

Applications

The PXT can be used in applications such as Compressors, Engines, Process Control, Liquid Level and Pumps.

Specifications

Accuracy (Full Scale, Best Straight Line):

±0.25% including non-linearity, hysteresis and repeatability. Long term stability better than 0.2% FS over twelve (12) months.

Zero Setting: ±0.5% of full scale (0.25% typical).

Span Setting: ±0.5% of full scale BSL (RSS).

Overpressure/Proof Pressure: 400% for up to 500 psi (3.45 MPa) [34 Bar]. 200% for higher ranges.

Burst Pressure: Ranges 0-1000 psi = 600% of full scale or 4000 psi whichever is lower. Ranges 2000 psi [137 Bar] = 20,000 psi (27.5 MPa) [275 Bar].

Response Time: Frequency response better than 2 kHz.

Storage Temperature: -65 to 200°F (-54 to 93°C).

Operating Temperature: -40 to 180°F (-40 to 82°C).

Compensated Temperature: -20 to 160°F (-29 to 71°C).

Total Thermal Effects Over Compensated Range: ±2% FS TEB.

Physical:

Enclosure: Weather Resistant.

Body: 316 stainless steel. Meets NACE MR01-75.

Wetted Parts: 316L stainless steel or HASTELLOY C276.

Process Connection: 1/4 NPT female.

Electrical Cable: Integral; 60 in. (914 mm); vented. 1/2 in. NPT male conduit connection

Environmental Effect:

Humidity: No effect.

Mounting: Position/orientation has negligible effect.

Reverse polarity protected

Shock: 1000g 1ms Half sine Pulse in each of 3 mutually perpendicular axis will not affect performance.

Vibration: Effect on output response is less than 0.05% FS/g at 30g Peak 10Hz to 2kHz, limited by 0.05 in double amplitude. (MIL STD 810C Proc. 514.2-2 curve L). PXT Power Requirements: Typically 24 VDC is required, using the Loop Resistance Graph, 9-30 VDC.

PXT Series Transmitter Output: 4-20 mA, 2-wire.

Insulation: Greater than 10 Mohms @ 500 VDC.

RFI Protection: To the European standards of BS EN 50082-2:1991 in accordance with IEC 801 parts 1 to 6 for susceptibility to EMC and to BS EN 50081-1992 for emissions.

Voltage Surge/Spike: Protected against a 600 V spike to IEC 60-2. Reverse polarity protected.

Sealed: Sealed at one atmosphere at sea level for ranges > 1000 psi (6.89 MPa) [68 Bar].

Vented: Vented for ranges ≤ 1000 psi (6.89 MPa) [68 Bar].

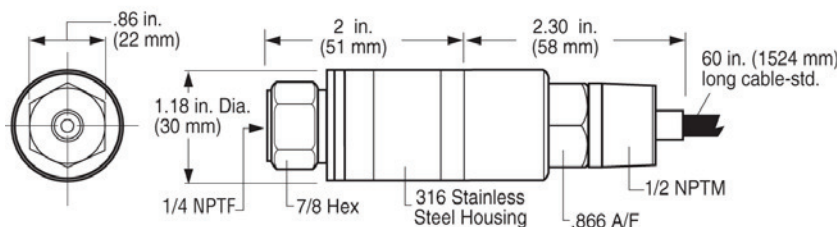
UL Certification: Class I, Division 2, Groups A, B, C and D; Class II, Groups E, F and G. Pressure transmitter, Model PXT. Intrinsically safe when installed per system, Diagram No. 05-08-0754. UL File #E169675

Shipping Weight: 0.90 lb. (408 g).

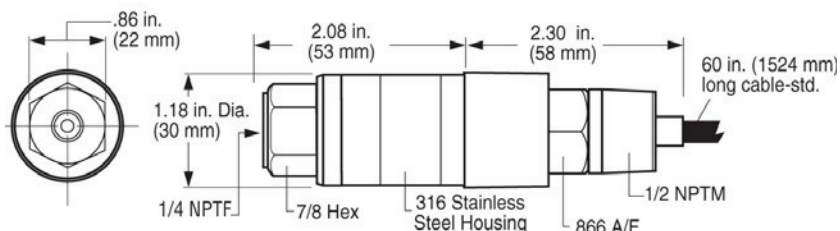
Shipping Dimensions: 5 x 5 x 5 inches (127 x 127 x 127 mm).

Product Dimensions

Low Pressure Units

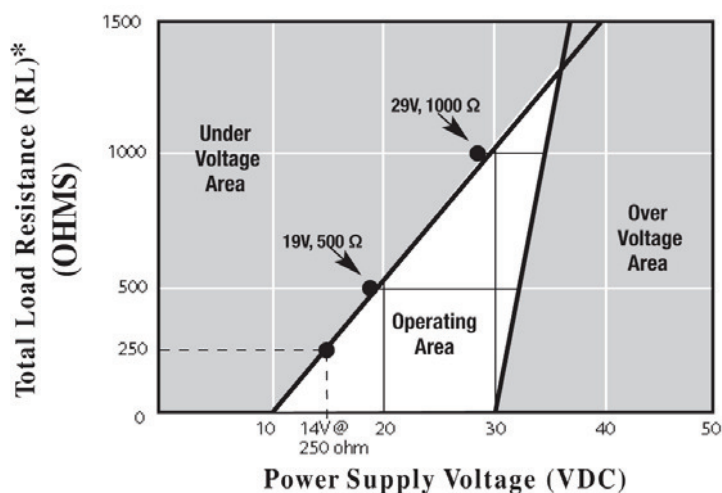


High Pressure Units



Loop Resistance Graph

Supply voltage for the PXT must be within range of 9-30 VDC. The Graph below shows the minimum supply voltage (VDC) required for a given load resistance (RL).



*NOTE: Cable resistance effect included in RL.

Warranty - A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to <http://www.fwmurphy.com/warranty>

How to Order

To order, please use the part number designation below. Part number example: **PXT-100**

Model

PXT =

Pressure Range†:			
Specify	For this range		
30V30WC	-30" H2O to +30" H2O (-76 cm H2O to +76 cm H2O) [+/-0.075 Bar]		
30V30	-30" Hg to +30 psig (-76 cm Hg to 207 kPa) [2.07 Bar]		
30V100	-30" Hg to +100 psig (-76 cm Hg to 689 kPa) [6.89 Bar]		
15	0-15 psi	(103.4 kPa)	[1.03 Bar]
60	0-60 psi	(413.7 kPa)	[4.13 Bar]
100	0-100 psi	(689 kPa)	[6.89 Bar]
200	0-200 psi	(1.38 kPa)	[13.78 Bar]
300	0-300 psi	(2.07 kPa)	[20.67 Bar]
400	0-400 psi	(2.75 MPa)	[27.56 Bar]
600	0-600 psi	(4.14 kPa)	[41.34 Bar]
1000	0-1,000 psi	(6.89 MPa)	[68.9 Bar]
2000	0-2,000 psi	(13.79 MPa)	[137.8 Bar]
3000	0-3,000 psi	(20.69 MPa)	[206.7 Bar]
5000	0-5,000 psi	(34.48 MPa)	[344.5 Bar]
6000	0-6,000 psi	(41.37 MPa)	[413.4 Bar]
†NOTE: Conversions are approximate.			

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20, 25, A20 and A25 Series Vacuum Switchgauge® instrument

VAC-96023B
Revised 03-06
Catalog Section 05



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

- Combination Indicating Gage and Limit Switch
- Critical Vacuum Limit Switches Are Visible and Adjustable (Most Models)
- Switch Can Activate Alarms and/or Shutdown Equipment
- Monitor Engine Load

Description

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

The 20 and 25 series gage mechanism is enclosed in a steel case coated to resist corrosion.

The A20 and A25 series gage has a polycarbonate case and is sealed from the environment. All gages feature a polycarbonate, break-resistant lens and a polished, stainless steel bezel to help protect these rugged, built-to-last instruments.

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 have a self-cleaning motion to ensure electrical continuity.

Gage-only models, without contacts (Murphygage® instruments), are also available.

A pulsation dampener (PD2160) is included with each Switchgauge to help eliminate pointer flutter. When monitoring intake manifold vacuum, the PD2160 is mounted in the manifold. The PD2160 has a 1/8-27 NPT connection.

A vacuum tubing kit (V5179) is available for all models to help reduce pulsations. The kit includes 48 inches (1.2 m) of copper tubing and two compression fittings. Specify tubing kit V5179.

Applications

Commonly used to measure loading of spark ignition engines through intake manifold vacuum. Also can serve as overspeed protection from sudden loss of load on these engines. Use anywhere the vacuum source is compatible with port materials.

Specifications

Dial: White on black, dual scale; U.S.A. standard scale is Inches of Hg/kPa.

Case (mounting clamp included):

20 and 25 Series: *Plated steel.*

A20 and A25 Series: *Polycarbonate/glass filled.*

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

Lens: Polycarbonate, high-impact.

Process Connection: 1/8-27 NPTM brass.

Sensing Element: Beryllium copper diaphragm.

Gage Accuracy: $\pm 2\%$ of scale in operating range (mid 1/3 of scale).

Adjustable Limit Contacts:

2-SPST contacts; pilot- duty only, 2 A @

30 VAC/DC. Contacts are gold flashed silver.

Limit Contact Adjustment: *by a 1/16 in. hex wrench.*

Limit Contact Wire Leads (20 and 25 Series):

18 AWG (1.0 mm²) x 12 in. (305 mm).

Limit Contact Terminals: *A20 Series number 4 screw terminals; A25 Series number 6 screw terminals.*

Unit Weight

20 Series: 8 oz. (0.23 kg).

25 Series: 11 oz. (0.31 kg).

A20 Series: 6 oz. (0.17 kg).

A25 Series: 10 oz. (0.28 kg).

Unit Dimensions

20 and A20 Series: 3 x 3 x 3 in. (76 x 76 x 76 mm).

25 and A25 Series: 4-3/4 x 4-3/4 x 2-3/4 in. (121 x 121 x 70 mm).

Warranty

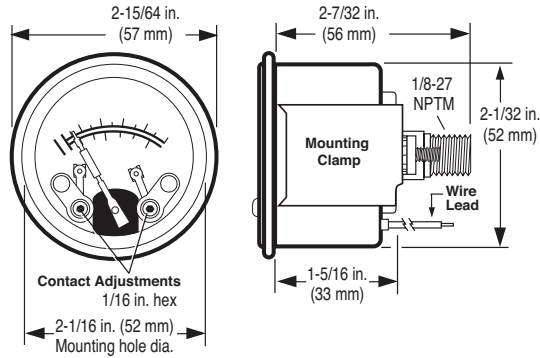
A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

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

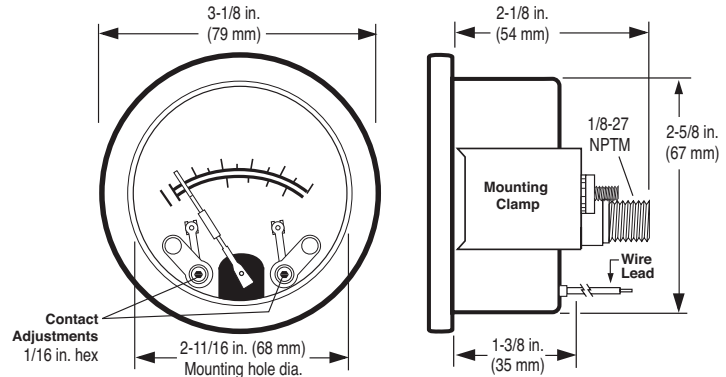


Dimensions

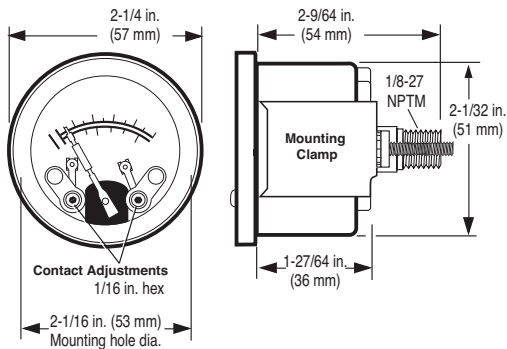
20 Series Models



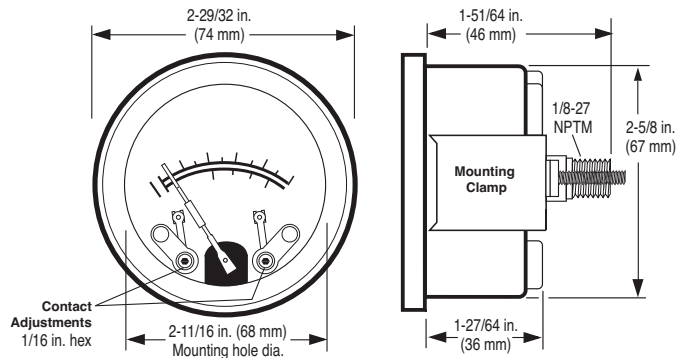
25 Series Models



A20 Series Models

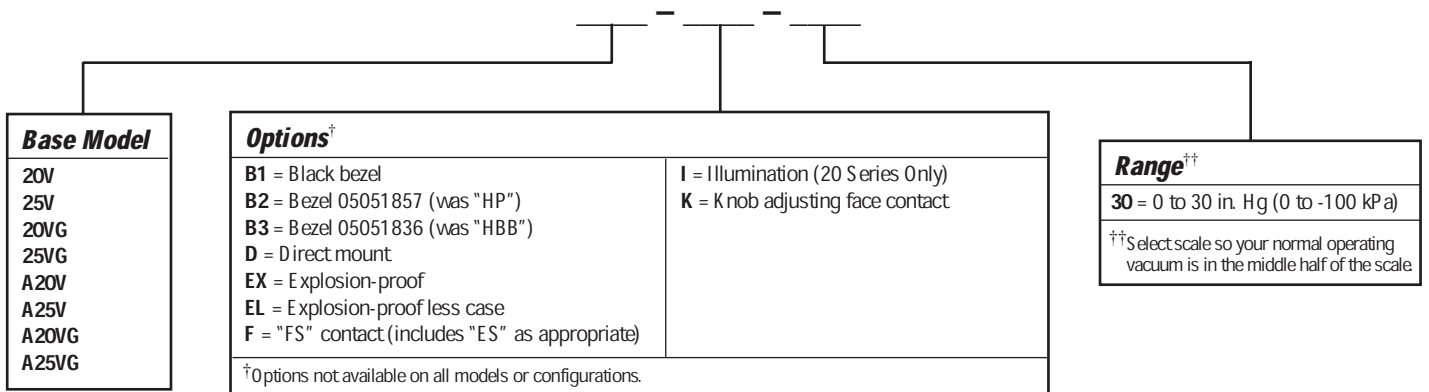


A25 Series Models



How to Order

To order, use the diagram below. List options in ascending alphabetical order (A-Z). Example: **20V-I-30**.
Order the **vacuum tubing kit** as a separate item (specify **V5179**).



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Air Filter Restriction Switchgauge®

VWC-7540B
Revised 04-05
Catalog Section 05



VWC Series

- 2 in. (51 mm) and 2-1/2 in. (64 mm) dia. Water Column Switchgauge for Detecting Restricted Dry Air Filters.
- Indicating Gage and Limit Switch in One.
- Use the Switch to Activate Alarms and/or to Shut Down Equipment
- Dependable and Accurate
- Dual Scale Reading
- Dash Mounting for Easy Viewing



Description

The VWC Series Switchgauge instruments are direct reading gages for use with dry air filters. As the filter deteriorates, air inflow will decrease creating increased vacuum between the air filter and the carburetor. The vacuum is monitored by the Switchgauge instrument which gives a visual read-out of the filter condition. A built-in adjustable limit contact can operate an alarm to alert the operator when it is time to service or replace the air filter element. Murphygage indicating-only instruments are also available.

20VWC and 25VWC models feature a steel case and are available with dial illumination. The A25VWC model has a glass filled polycarbonate case. Standard models have a range of 0 to 30 in. (0-76 cm) of water restriction. Optional 0-50 in. (0-1.27 m) range is available. Please consult your engine operators manual for the recommended restriction limit for dry air filter servicing.

Applications

The VWC Series Switchgauge instruments can be used on any type of dry air filters for Gasoline or diesel engines.

They are particularly useful for engines operated in dusty environments such as agricultural and construction equipment, industrial engines and mobile equipment. Unlike traditional pop-up or latch-up type indicators, the VWC Series gives constant readout in meaningful terms of the changing condition of your filter.

Specifications

Ranges Available (H ₂ O Vacuum)	Contact Setting
0-30 in. (0-76 cm)	20 in. (508 mm)
0-50 in. (1.270 m)	40 in. (1.016 m)

Contact Rating: 2 A @ 30 V AC/DC.

Contact Adjustment: Allen head.

Wire: 18 AWG x 12 in. (1.0 mm² x 305 mm), (#4 screw on A25VWC)

Dial: White on black.

Clamp: Metal.

Mounting hole:

20VWC: 2-11/16 in. (52 mm).

25VWC/A25VWC: 2-11/16 in. (68 mm).

Maximum panel thickness: 1/4 in. (6 mm)

Port: Brass 1/8-27 NPT.

Bezel: Stainless steel.

Case: 20VWC and 25VWC: *plated steel*.

A25VWC: *glass filled polycarbonate*.

Lens: Polycarbonate.

Mounting Studs: 10-32 UNF.

Calibration: ± 3 in. (76 mm) H₂O across scale.

Unit Weights: 20VWC: 8 oz (249 g).

25VWC: 10 oz (311 g).

A25VWC: 10 oz (311 g).

Unit Dimensions:

20VWC: 3 x 2-3/4 x 2-3/4 in. (76 x 70 x 70 mm).

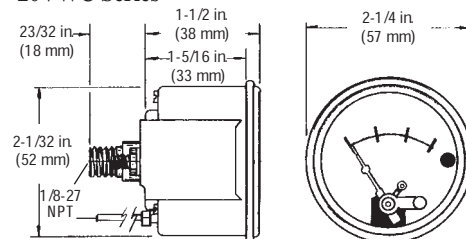
25VWC and A25VWC: 4-3/4 x 4-3/4 x 3-1/4 in. (121 x 121 x 83 mm).

Warranty

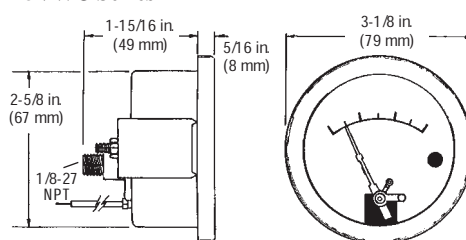
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Dimensions

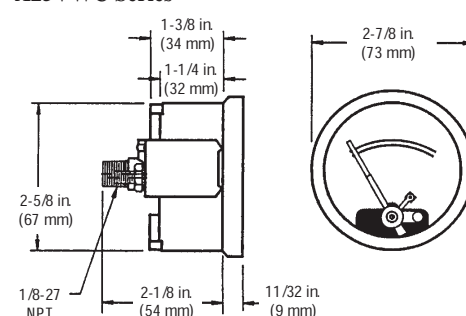
20VWC Series



25VWC Series



A25VWC Series

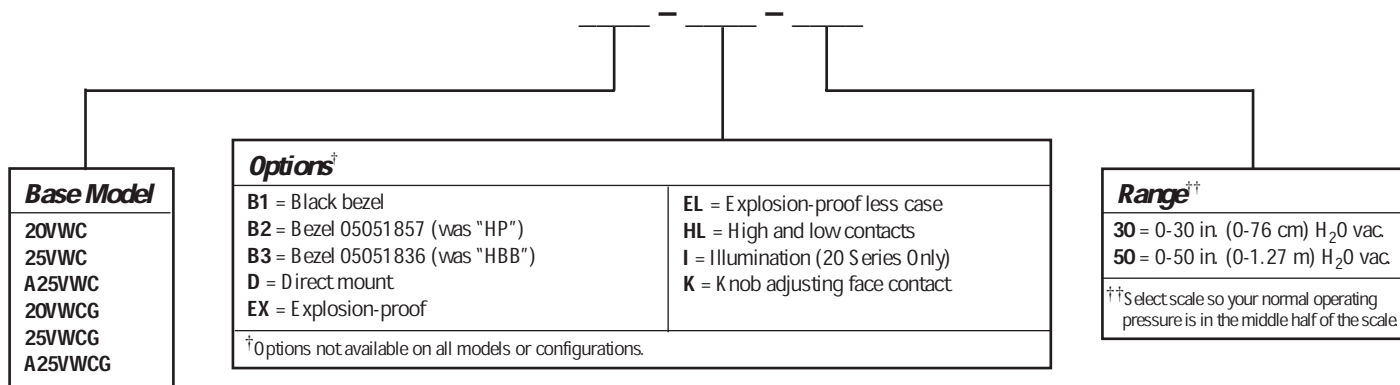


* Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.



How to Order

To order, use the diagram below. List options in ascending alphabetical order (A-Z). Example: **20VWC-I-50**.



Installation Instructions

WARNING

Before beginning installation of this Murphy product:

- ✓ Disconnect ALL electrical power to the machine.
- ✓ Make sure the machine CANNOT operate during installation.
- ✓ Follow all safety warnings of the machine manufacturer.
- ✓ Read and follow all installation instructions.

Murphy VWC-series air filter restriction gages are designed for either direct or dash mounting. A 1/8-27 male pipe thread is provided on the back of the case for the vacuum connection line. The electrical connecting wire is 18 AWG x 12 in. (1.0 mm² x 305 mm) long or #4 screw.

- A flexible section is essential at some point in the vacuum connecting line for elimination of vibration.

CAUTION: Mount gage away from engine vibration.

- The vacuum connecting line from the gage should be tapped into the engine air intake system between the air cleaner and the engine on a naturally aspirated engine, and between the air cleaner and blower on a turbocharged engine.
- When used on a carbureted engine, the vacuum line should be tapped into the engine air intake piping between the air cleaner and the carburetor.

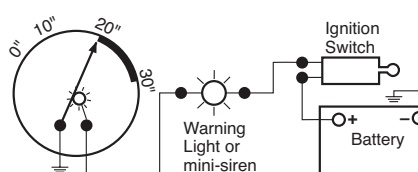
CAUTION: Do not connect below the carburetor.

- Either of these installations will provide the equipment operator a direct reading of the restriction to airflow for the entire air induction system.
- A lower than normal reading indicates a ruptured intake line or a leaking connection, while a sudden, sharp increase in restriction indicates a collapsed filter or plugged intake system.
- When installing in an ungrounded panel provide a grounding wire from the Switchgag instrument to a common ground. Install only in a 12 or 24 V system. Make certain warning light or audible signal is same voltage as battery, and current draw does not exceed contact ratings of the Switchgag instrument. (A TL-7/mini-siren audible alarm is ideal for these applications.)

NOTE: Ordinary incandescent lights are damaging to the Switchgag contact. Murphy TL-7 flashing lamp and/or SAH mini-siren are recommended.

Typical Wiring Diagram

WARNING: Perform the wiring operation with the power source off.



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