

A20 and A25 Series Pressure SWITCHGAGE®



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) SWITCHGAGE® models 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 (MURPHY-GAGE®) 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 SWITCHGAGE®

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

A20PE and A25PE SWITCHGAGE®

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 SWITCHGAGE®

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

A20PG and A25PG MURPHYGAGE®

Gage without contact(s).

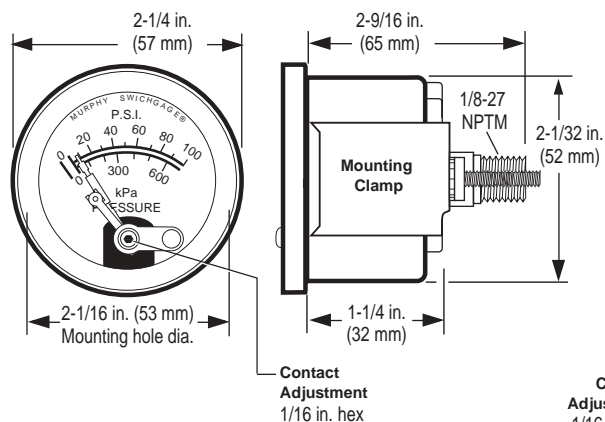
Warranty

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.

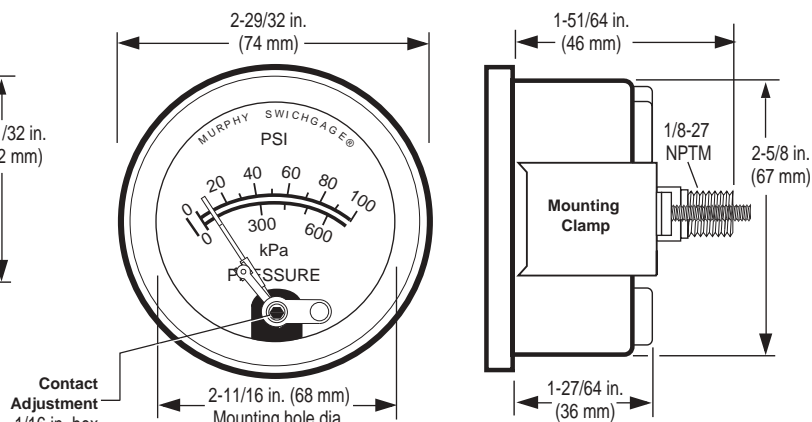
**Products covered by this bulletin comply with EMC Council directive 89/336/EEC regarding electromagnetic compatibility except as noted.

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	(1.0 MPa)	[7.0]	300	(2.1MPa)	[20]	75	(517)	[5.0]	150	(1MPa)	[10]

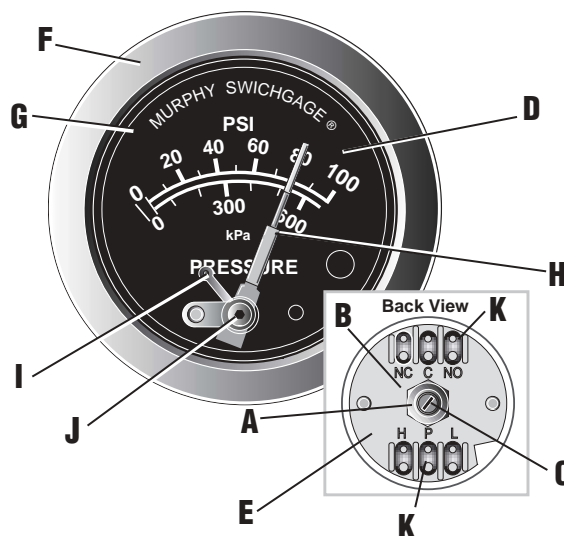
**Low settings for Hi/Lo option same as standard settings. Hi/Lo option available for A20P and A25P models only.

†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.

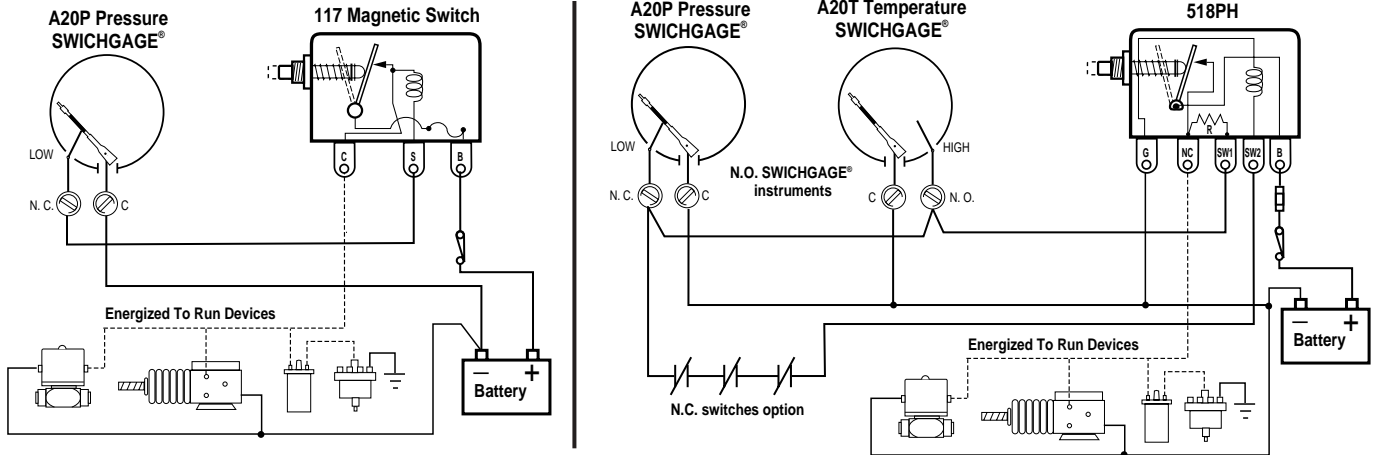
Typical For All Series (A25P Series Shown)



Magnetic Switch

INDUCTIVE AND HIGH CURRENT LOADS REQUIRE THE USE OF A MAGNETIC SWITCH. The 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.

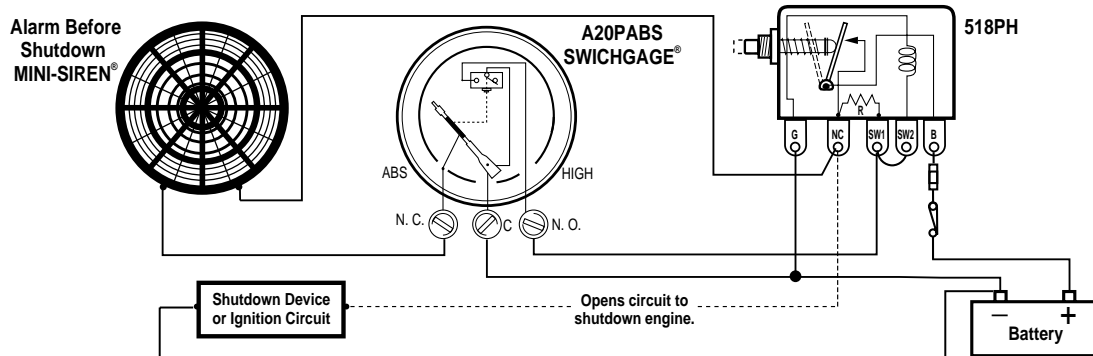
TATTLETALE® Magnetic Switches show the cause of shutdown for applications that include: capacitor discharge or magneto ignitions, battery systems and electric motor driven equipment. Typical wiring diagrams are shown below.



Pre-Alarm Using A20/A25PABS

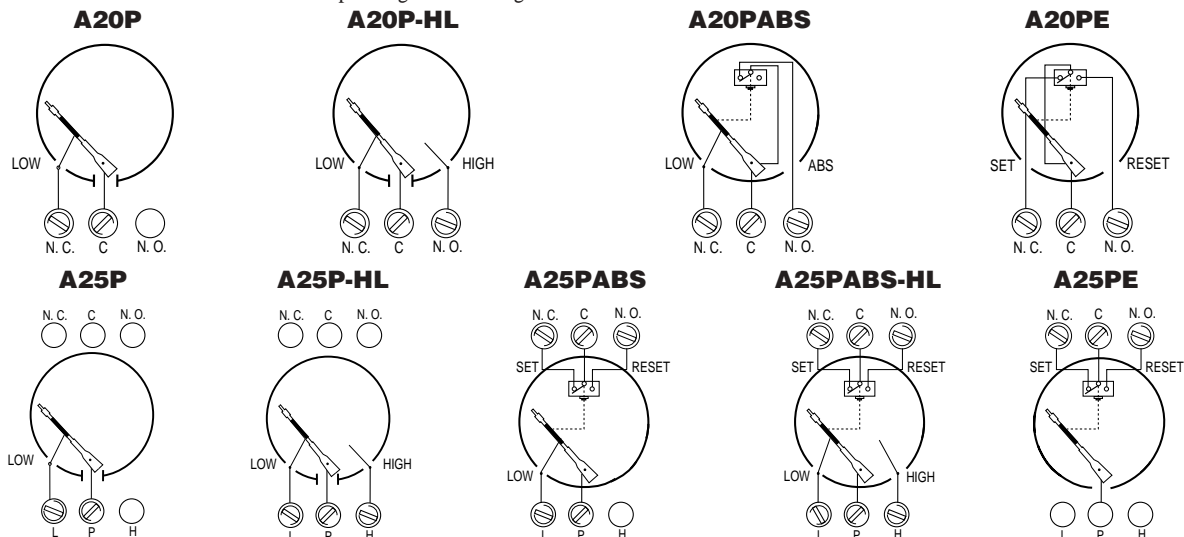
The A20PABS and A25PABS features a standard limit contact for equipment shutdown on low pressure. It also has an internal SPDT snap-switch to signal an alarm before shutting down. When the snap-switch trips (preset point), on falling pressure, the switch completes a circuit to activate an alarm. If the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

cuit 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.



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

<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.	

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.



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