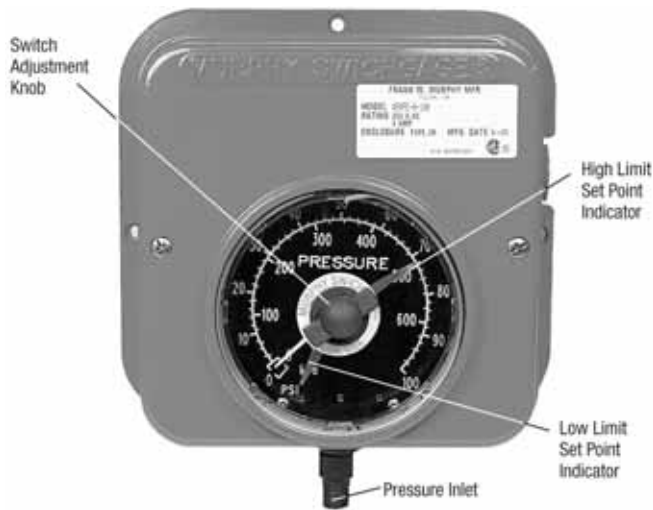# Pressure Swichgage® 45APE Series Instrument

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 Swichgage 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 Swichgage instrument
Surface mount (square case) version.

45APEF Series Swichgage 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%: ±2% for first and last quarters of scale; middle half of scale is ±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 ±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.

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.

45APEBP – 4 – S– 100 – EX

Base Model
45APE   45APEE
45APEF   45APEBPE*
45APEBP*
* Not covered by CSA.

Voltage (BP models only, feature NOT covered by CSA.)
Blank= 120 VAC
2 = 12 VDC
4 = 24 VDC

Bourdon Tube/Socket
A = Bronze/Brass std. < =1,000 psi
S = 316 Stainless Steel/ 316 Stainless Steel

Options (NOTE: Not all options available for every model.)
BC = Back Connected Bourdon Tube
ES = Environmentally Sealed (45APEF models only)
EX = Explosion-proof (approved for hazardous areas Class I, Groups C & D to <= 5000 psig)
EL = (EXLC) Explosion-Proof Less Case
LC = Less Case
OS = Oil Sealed (45APEF models only)
P4L = (PT147) PT147 pressure transmitter w/5 ft. capillary[1] (Pulsation dampener no longer provided)
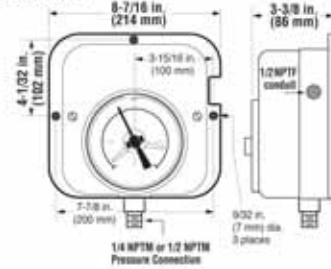P6 = (PT167) PT167 Pressure transmitter direct mount [2]
(1) For capillary greater than 5 ft., specify in 5 ft. increment following designator, example: P4LJ5 (option P4 with 15 ft. capillary).
(2) Available for ranges ≥100-1000 psi only.
NOTE: for detail on P4L, P6 options see FWMurphy sales bulletin OPL-96001B in section 05 of your catalog.

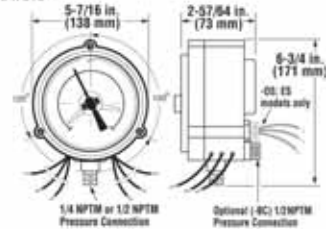### Range

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

45APE Series
Typical Wiring Diagram

LOW SWITCH   HIGH SWITCH
N.C.-Orange   N.C.-Black
3 —   — 6
N.O.-Blue   N.O.-Brown
2 —   — 5
Common-Red   Common-Yellow
1 —   — 4

Contact Ratings: 2-SPDT snap-switches; 2 A @ 250 VAC
NOTE: Diagram shows the pointer in the at rest (shelf) position.

Surface Mount Models

8-7/16 in. (214 mm)
3-3/8 in. (86 mm)
4-1/32 in. (102 mm)
3-15/16 in. (100 mm)
1/2 NPTF conduit
7-7/8 in. (200 mm)
9/32 in. (7 mm) dia. 3 places
1/4 NPTM or 1/2 NPTM Pressure Connection

Panel Mount Models

5-7/16 in. (138 mm)
2-57/64 in. (73 mm)
6-3/4 in. (171 mm)
-OS; ES models only
1/4 NPTM or 1/2 NPTM Pressure Connection
Optional (-BC) 1/2 NPTM Pressure Connection