

## 1010, 1017, 1220 Pressure Gauge

### FEATURES

- PLUS!**<sup>™</sup> Performance (optional) dampens vibration, shock and pulsation effects
- Wide selection of Bourdon tube materials, pressure connections and pressure ranges
- Solid-front case designed for safety
- Epoxy-coated system offers superior corrosion resistance



### SPECIFICATIONS

Accuracy:	±1% of span (ASME B40.100 Grade 1A)
Process Connection Location:	1017: Back 1010/1220: Lower or lower back
Ranges:	1017: Vacuum, compound to 20,000 psi 1010/1220: Vacuum, compound to 30,000 psi
Movement:	400 SS, Teflon <sup>®</sup> coated pinion gear and segment
Window Material:	Glass (standard)
Pointer:	Micrometer Adjustable
Weather Protection:	IP54
Mounting Option:	Stem, surface, flush
Dampening Options	<b>PLUS!</b> <sup>™</sup> Performance and throttle plugs
Dial:	Aluminum, white background, black figures and intervals

### WETTED COMPONENTS

Models	Bourdon Tube	Process Connection Materials
1010	Phosphor bronze tube	Brass brazed
1017	316L SS	316L SS
1220	K Monel <sup>®</sup>	K Monel <sup>®</sup>

### NON-WETTED COMPONENTS

Models	Case	Ring
1010	4½", 6", 8½" & 12" Black epoxy coated aluminum solid front	4½" and 6" threaded, reinforced black polypropylene ring 8½" hinged ring, black epoxy coated 12" slip fit, steel ring black epoxy painted
1017	4½" & 6" black epoxy coated aluminum solid front	Hinged aluminum, black textured enamel
1220	4½" phenolic, solid front, polycarbonate back cover 6" black polypropylene, solid front 8½" black aluminum, solid front	4½" threaded, polycarbonate ring 6" threaded, reinforced black polypropylene ring 8½" hinged ring, black epoxy coated

### MIN/MAX TEMPERATURE LIMITS

Version	Ambient	Process	Storage
Dry	-20°F to 200°F (-29°C to 93°C)	-20°F to 250°F (-29°C to 121°C)	-40°F to 250°F (-40°C to 121°C)



**1010**  
4½", 6", 8½" & 12"  
dial sizes



**1017**  
4½" & 6" dial sizes



**1220**  
4½" 6" & 8½" dial  
sizes



## 1010, 1017, 1220 Pressure Gauge

ORDERING CODE	Example:	451010	A	02	B	XC4	100#
<b>Dial Size/Model Code</b>							
451010 - 4½" aluminum case, solid front		451010					
601010 - 6" aluminum case, solid front							
851010 - 8½" aluminum case, solid front							
121010 - 12" aluminum case, solid front							
451017 - 4½" aluminum case, solid front, back only							
601017 - 6" aluminum case, solid front, back only							
451220 - 4½" phenolic case, solid front							
601220 - 6" polypropylene case, solid front							
851220 - 8½" aluminum case, solid front							
<b>System</b>							
A - Phosphor bronze tube, brass process connection (1,000 psi max.)			A				
P - K-Monel® tube, Monel® 400 process connection (30,000 psi max.)							
S - 316L SS, (20,000 psi max.)							
<b>Process Connection Size</b>							
02 - ¼ NPT Male				02			
04 - ½ NPT Male							
<b>Process Connection Location</b>							
L - Lower							
B - Lower back					B		
<b>Options (if choosing an option(s) must include an "X")</b>							
C4 - Individual calibration chart (in accordance with ASME B 40.100 Accuracy of unit traceable to NIST)						X	C4
LL - <b>PLUS!</b> Performance							
TS - Throttle screw, (standard with <b>PLUS!</b> )							
PD - Acrylic window							
SG - Safety glass							
EP - Maximum pointer, adjustable (4½" and 6" dial only) (dry only)							
SH - Red set hand, stationary							
NH - SS tag wired to case							
DA - Dial marking (text marking on dial)							
EO - Red set hand adjustable (dry only)							
EQ - Minimum pointer (dry only)							
BD - Black dial							
OS - Overload stop							
VS - Underload stop							
6B - Cleaned for oxygen service (not available with bronze/brass system)							
56 - Flush mounting ring (451220 only)							
PR - Receiver gauge							
<b>Range (see range table on page 34 for all standard ranges)</b>							
100# - 100 psi							100#

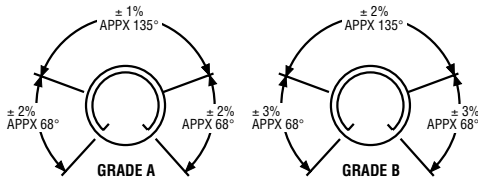
## Standard Pressure Ranges

Single Scale Models: 1008S, 1009, 1010, 1017, 1020 & 2008						Notes
	psi	bar	kPa	MPa	kg/cm <sup>2</sup>	
<b>Vacuum</b>	30IMV	N1BR	N100KP	N0.1MP	N1KG	
	-	N1/0.6BR	N100/60KP	N0.1/0.06MP	N1/0.6KG	
<b>Compound</b>	30IMV&15#	-	-	-	-	
	-	N1/1.5BR	N100/150KP	N0.1/0.15MP	N1/1.5KG	
	30IMV&30#	-	-	-	-	
	-	N1/3BR	N100/300KP	N0.1/0.3MP	N1/3KG	
	30IMV&60#	-	-	-	-	
	-	N1/5BR	N100/500KP	N0.1/0.5MP	N1/5KG	
	-	-	-	-	-	
	30IMV&100#	-	-	-	-	
	-	N1/9BR	N100/900KP	N0.1/9MP	N1/9KG	
	15#	1BR	100KP	0.1MP	1KG	
-	1.6BR	160KP	0.16MP	1.6KG		
30#	-	-	-	-		
-	2.5BR	250KP	0.25MP	2.5KG		
60#	4BR	400KP	0.4MP	4KG		
-	6BR	600KP	0.6MP	6KG		
100#	-	-	-	-		
-	10BR	1000KP	1MP	10KG		
160#	-	-	-	-		
200#	-	-	-	-		
-	16BR	1600KP	1.6MP	16KG		
300#	-	-	-	-		
-	25BR	2500KP	2.5MP	25KG		
400#	-	-	-	-		
600#	40BR	4000KP	4MP	40KG		
800#	-	-	-	-		
-	60BR	6000KP	6MP	60KG		
1000#	-	-	-	-		
1500#	100BR	10000KP	10MP	100KG		
2000#	-	-	-	-		
-	160BR	16000KP	16MP	160KG		
3000#	-	-	-	-		
-	250BR	25000KP	25MP	250KG		
4000#	-	-	-	-		
5000#	-	-	-	-		
6000#	400BR	40000KP	40MP	400KG		
-	600BR	60000KP	60MP	600KG		
8000#	-	-	-	-		
10000#	-	-	-	-		
15000#	1000BR	100000KP	100MP	1,000KG		
20000#					4½", 6" 1009, 1010, 1017 SS systems only	
30000#					4½", 6" 1009, 1010, 1017 Monel <sup>®</sup> systems only	

**ACCURACY:**

Accuracy – the conformity of indication to an accepted standard or true value. Accuracy is the difference (error) between the true value and the indication expressed as a percent of the span. It includes the combined effects of method, observer, apparatus and environment. Accuracy error includes hysteresis and repeatability errors but not friction error. It is determined under specific conditions. (Normal position, 73.4°F (23°C), and 29.92 in Hg barometric pressure.)

The following tables define the ASME B40.1\* accuracy grades used by Ashcroft products.



Accuracy of a pressure gauge may be expressed as percent of span or percent of indicated reading. Percent of span is the most common method. Percent of indicated reading is usually limited to precision test gauges and unless specifically spelled out, it may be assumed that an accuracy of ±0.5% means ±0.5% of span.

**GRADE 4A:**

Gauges offering the highest accuracy and calibrated to ±0.1% of span over the entire range of the gauge. These gauges are called laboratory precision test gauges and are generally 8½", 12" or 16" dials. These high-accuracy gauges may be temperature compensated. They must be handled carefully in order to retain accuracy.

**ACCURACY EXAMPLES**

Range	Accuracy Span	Grade	Permissible Error % of Span
0/100 psi	100 psi	1A	1.0
0/400 kPa	400 kPa	2A	0.5
0/1000 bar	1000 bar	B	3 (0/250 & 750/1000 bar) 2 (250/750 bar)
-100/400	400 kPa	2A	0.5
30 inHg/ 30 psi	44.7 psi	4A	0.1

The last item (30 inHg/30 psi) deserves some explanation. The span is defined as the algebraic difference between the limits of the scale. 30 inHg = -14.7 psi Span = 30 psi - (-14.7) = 44.7 psi. 0.1% of 44.7 psi = 0.045 psi or 0.022 Hg.

\*ASME B40.1 may be ordered from:  
 American Society of Mechanical Engineers  
 Three Park Avenue, New York, NY 10016

**GRADE 3A:**

Gauges are calibrated to an accuracy of ±0.25% of span over the entire range of these gauges. These gauges are called test gauges and are generally 4½", 6" or 8½" dials. The gauges are generally not temperature compensated (except Ashcroft Type 1082).

**GRADE 2A:**

Gauges are calibrated to an accuracy of ±0.5% of span over the entire range of the gauge. They are often referred to as process gauges and are usually supplied as 4½" and 6" cases and are not temperature compensated.

**GRADE 1A:**

Gauges are calibrated to an accuracy of ±1% over the entire range of the gauge. These gauges are high-quality industrial gauges and are supplied in 2½", 3½" and 4½" sizes.

**GRADE A:**

Gauges are calibrated to an accuracy of ±1% of span over the middle half of the scale and ±2% of span over the first and last quarters of the scale.

**GRADE B:**

Gauges are calibrated to an accuracy of ±2% of span over the middle half of the scale and ±3% of span over the first and last quarters of the scale. These gauges are often referred to as commercial or utility gauges and are supplied in 1½", 2", 2½", 3½" and 4½" case sizes.

**GRADE C:**

Gauges are calibrated to an accuracy of ±3% of span over the middle half of the scale and ±4% of span over the first and last quarters of the scale.

**GRADE D:**

Gauges are calibrated to an accuracy of ±5% of span over the entire scale.

**ACCURACY EXAMPLES**

Type of Gauge	Grade	Permissible Error % of Span			Max. Friction (% of Span)
		Lower 25%	Middle 50%	Upper 25%	
Precision Test (A4A)	4A	0.1	0.1	0.1	See Note
Test (1082)	3A	0.25	0.25	0.25	0.25
Process (1279)	2A	0.5	0.5	0.5	0.5
Industrial/Hydraulic (1009)	1A	1.0	1.0	1.0	1.0
Industrial/Hydraulic (1010, 1188, 1490)	A	2.0	1.0	2.0	1.0
Commercial/Utility (1005, 3005, 1008A)	B	3.0	2.0	3.0	2.0

Note: Grade 4A gauges must remain within 0.1% before and after being lightly tapped.