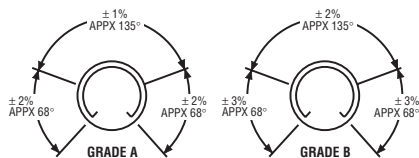


ACCURACY:

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 $\pm\frac{1}{2}\%$ means $\pm\frac{1}{2}\%$ of span.

GRADE 4A:

gauges offer the highest accuracy and are calibrated to $\pm 0.1\%$ of span over

the entire range of the gauge. The 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.

GRADE 3A:

gauges are calibrated to an accuracy of $\pm 0.25\%$ of span over the entire range of the gauge. The 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 $\pm 0.5\%$ of span over the entire range of the gauge. These gauges are generally used by the petrochemical industry for process pressure measurement. 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 $\pm 1\%$ 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 $\pm 1\%$ of span over the middle half

of the scale and $\pm 2\%$ of span over the first and last quarters of the scale. These gauges are often referred to as industrial gauges and are usually supplied in 2½", 3½" and 4½" case sizes.

GRADE B:

gauges are calibrated to an accuracy of $\pm 2\%$ of span over the middle half of the scale and $\pm 3\%$ of span over the first and last quarters of the scale. This accuracy of gauge represents the majority of those manufactured and used for pressure measurement on water pumps, swimming pool filters, air compressors, filter regulations, etc. 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 $\pm 3\%$ of span over the middle half of the scale and $\pm 4\%$ of span over the first and last quarters of the scale. These are used in similar applications as Grade B gauges except that they are less accurate.

GRADE D:

gauges are calibrated to an accuracy of $\pm 5\%$ of span over the entire scale. These 5% gauges are used as indicators when minimal accuracy is required for application on water pumps and pool filters.

ACCURACY EXAMPLES				
Range	Accuracy Span	Grade	Permissible Error % of Span	Dial Units
0/100 psi	100 psi	1A	1.0	1 psi
0/400 kPa	400 kPa	2A	0.5	2 kPa
0/1000 bar	1000 bar	B	3 (0/250 & 750/1000 bar) 2 (250/750 bar)	30 bar 20 bar
-100/400	400 kPa	2A	0.5	2 kPa
30 in.Hg/	44.7 psi	4A	0.1	.045 psi
30 psi				.022 in.Hg

The last item (30 in. Hg/30 psi) deserves some explanation. The span is defined as the algebraic difference between the limits of the scale. 30 in. Hg = -14.7 psi Span = 30 psi - (-14.7) = 44.7 psi. 0.1% of 44.7 psi = .045 psi or .022 Hg.

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

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, 1008)	B	3.0	2.0	3.0	2.0

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