

# DIN 16003:2018-04 (E)

## Mechanical pressure and temperature gauges - Differential pressure gauges - Dimensions, metrology, requirements and testing

---

<b>Contents</b>		<b>Page</b>
<b>1</b>	<b>Scope</b> .....	<b>5</b>
<b>2</b>	<b>Normative references</b> .....	<b>5</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>6</b>
<b>4</b>	<b>Nominal sizes</b> .....	<b>6</b>
<b>5</b>	<b>Pressure ranges</b> .....	<b>6</b>
<b>6</b>	<b>Accuracy classes</b> .....	<b>7</b>
<b>7</b>	<b>Dimensions</b> .....	<b>8</b>
7.1	General tolerances .....	8
7.2	Cases and flanges .....	8
7.3	Pressure connections .....	9
7.3.1	General .....	9
7.3.2	Centre-to-centre distances for the pressure connections .....	9
7.3.3	Gaskets .....	10
7.4	Type of mounting and position of the connection .....	10
<b>8</b>	<b>Pressure connections and pressure ranges</b> .....	<b>13</b>
<b>9</b>	<b>Requirements</b> .....	<b>13</b>
9.1	Measurement accuracy .....	13
9.2	Hysteresis .....	14
9.3	Effect of the static pressure .....	14
9.4	Temperature effect .....	14
9.5	Endurance .....	14
9.5.1	General .....	14
9.5.2	Steady pressure load .....	14
9.5.3	Over-pressure (one-sided exposure to pressure) .....	14
9.5.4	Cyclic pressure .....	14
9.6	Operating conditions .....	15
9.6.1	Operating temperature range .....	15
9.6.2	Temperature range for storage .....	15
9.6.3	Protection against ingress of water and foreign particles (degree of protection) .....	15
9.6.4	Effect of mechanical shock .....	15
9.6.5	Effect of mechanical vibration .....	15
9.6.6	Leak rate .....	15
9.6.7	Mounting position .....	15
9.7	Dials and pointers .....	15
9.7.1	Scale angle .....	15
9.7.2	Scale interval .....	15
9.7.3	Scale marks .....	15
9.7.4	Scale numbering .....	15
9.7.5	Pointer dimensions .....	16
9.7.6	Knife edge pointer .....	16
9.7.7	Information on the dial .....	16
9.7.8	Pointer stop .....	17
9.8	Safety .....	17

9.8.1	General .....	17
9.8.2	Pressure gauges with blow-out device .....	17
9.8.3	Safety pattern gauges .....	17
9.9	Pressure gauges for oxygen or acetylene .....	18
9.10	Liquid-filled pressure gauges .....	18
9.11	Additional design requirements for pressure gauges in legal metrology .....	18
10	Testing .....	18
10.1	General .....	18
10.2	Type approval and production piece tests .....	19
10.3	Accuracy, hysteresis and effect of static pressure .....	21
10.3.1	Accuracy and hysteresis .....	21
10.3.2	Effect of the static pressure .....	21
10.4	Temperature effect .....	21
10.5	Endurance .....	21
10.5.1	General .....	21
10.5.2	Exposure to static pressure and over-pressure .....	21
10.5.3	Cyclic pressure .....	21
10.6	Accuracy after endurance test .....	21
10.7	Operating temperature range .....	21
10.8	Temperature range for storage .....	22
10.9	Protection against ingress of water and foreign particles (degree of protection) .....	22
10.10	Effects of mechanical shock .....	22
10.11	Effects of mechanical vibration .....	22
10.12	Leak test .....	22
10.13	Mounting position .....	22
10.14	Safety .....	22
10.14.1	Pressure gauges with blow-out device .....	22
10.14.2	Safety pattern gauges .....	22
11	Packaging for transportation .....	23
12	Designation .....	24
Figures	Figure 1 -- Dimensions .....	8
	Figure 2 -- Pressure connections .....	10
	Figure 3 -- Example of information on the dial (corresponds to the example in Clause 12) .....	16
Tables	Table 1 -- Preferred pressure ranges for differential pressure .....	7
	Table 2 -- Nominal size compared to the accuracy class .....	7
	Table 3 -- Dimensions .....	9
	Table 4 -- Preferred centre-to-centre distances .....	9
	Table 5 -- Preferred type of mounting and position of connections .....	10
	Table 6 -- Minimum length of pointer .....	16
	Table 7 -- Type approval and production piece tests .....	20