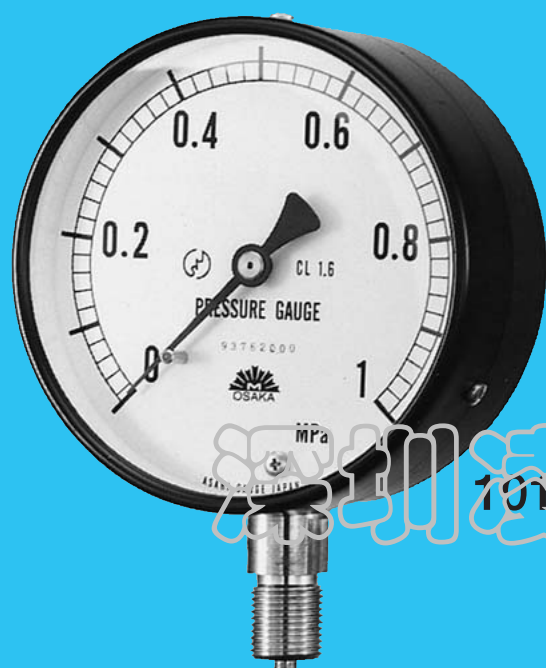
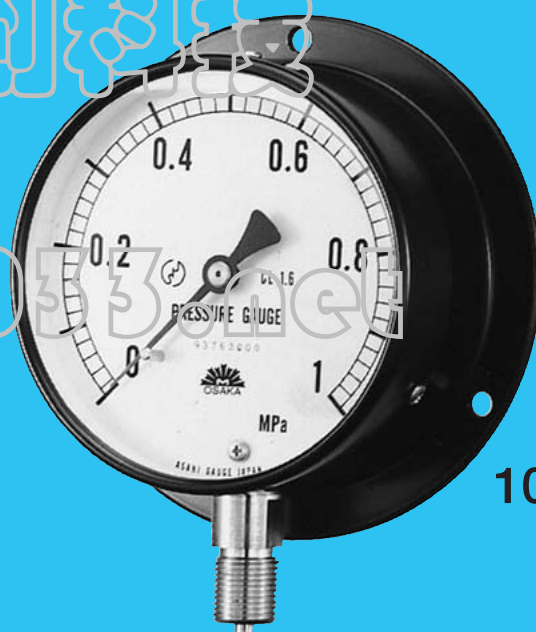


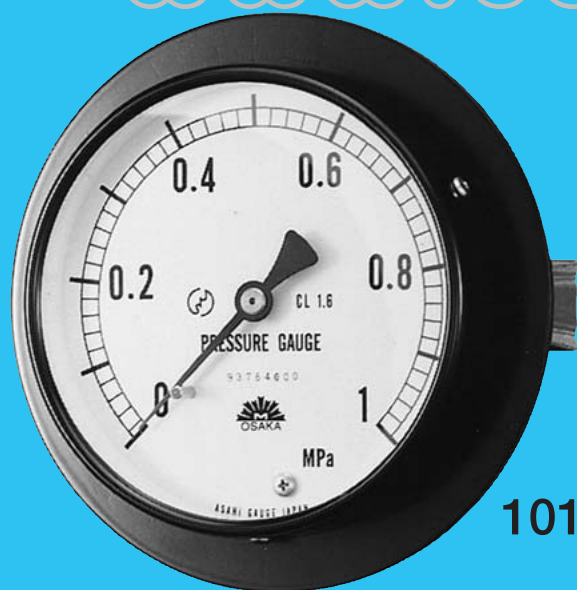
BOURDON TUBE PRESSURE GAUGES



101-A



101-B



101-D



ASAHI GAUGE MFG. CO., LTD.
JAPAN

JIS B7505

Application

These standards apply to a round concentric single-needle gauge, such as the pressure, vacuum and compound gauges, which measures gauge pressures by directly indicating the quantity of displacement transferred from a Bourdon tube and mechanically magnified.

Pressure Units

Name	Symbol	JIS	Remarks
Megapascal	MPa	○	
Kilopascal	kPa	○	Option
Bar	bar	×	

Pressure range and scale graduation

Note:

- Gauge of 0.6 and 1.0 precision classes and in sizes 75 and smaller are not available.
- Available pressure ranges may vary depending on gauge size.
- JIS-qualified gauges of 1.6 class and in sizes 60 to 200 have the same scale graduations.
- Non-JIS gauges in sizes 60 and 75 are available with graduations half those of the gauges listed on the table.

Pressure Gauges

	Size(mm)	150•200	100•150•200	60•75•100•150•200	JIS
	Accuracy	0.6	1.0	1.6	
MPa	0 ~ 0.04	200	80	40	○
	0.05	100	50	—	×
	0.06	120	60	—	○
	0.07	140	70	35	×
	0.1	100	50	—	○
	0.16	160	80	40	○
	0.2	100	100	—	×
	0.25	125	50	—	○
	0.3	60	—	—	×
	0.35	175	70	35	×
	0.4	200	80	40	○
	0.5	100	50	—	×
	0.6	120	60	—	○
	0.7	140	70	35	×
	1	100	50	—	○
	1.6	160	80	32	○
	2	100	100	40	×
	2.5	125	50	—	○
	3	150	60	—	×
	3.5	175	70	35	×
	4	200	80	40	○
	5	100	50	—	×
	6	120	60	—	○
	7	175	70	35	×
	10	100	50	—	○
	16	160	80	32	○
	20	100	100	40	×
	25	125	50	—	○
	30	60	60	—	×
	35	175	70	35	×
	40	200	80	40	○
	50	100	50	—	×
	60	120	60	—	○
	70	140	70	35	×
	100	—	50	—	○
	200	—	40	—	×

Vacuum Gauges

	Size(mm)	150•200	100•150•200	60•75•100•150•200	JIS
	Accuracy	0.6	1.0	1.6	
MPa	— 0.04 ~ 0	200	80	40	×
	— 0.05	100	50	—	×
	— 0.06	120	60	—	×
	— 0.07	140	70	35	×
	— 0.1	100	50	—	○

Compound Gauges

	Size(mm)	150•200	100•150•200	60•75•100•150•200	JIS
	Accuracy	0.6	1.0	1.6	
MPa	— 0.1 ~ 0.1	100	100	40	○
	0.15	—	50	—	×
	0.16	130	52	—	○
	0.2	—	30	—	×
	0.25	175	70	35	○
	0.3	—	40	—	×
	0.35	—	45	—	×
	0.4	100	50	—	○
	0.5	—	60	—	×
	0.6	140	70	35	○
	0.7	—	40	—	×
	1	110	55	—	○
	1.5	—	32	—	×
	1.6	85	85	34	○
	2	—	42	—	×
	2.5	130	52	—	○
	3.5	—	35	—	×
	4	—	82	41	○

Size, Kind, Symbol

Item					Size	60	75	100	150	200
Kind	Pressure gauge		Accuracy Grade	Ambient Temp		○	○	○	○	○
	Vacuum gauge					○	○	○	○	○
Compound gauge										
Application	Application			Symbol						
	Ordinary Type	0.6 (CL 0.6)	—5 ~ 45℃	—	—	—	—	○	○	
		1.0 (CL 1.0)		—	—	—	○	○		
		1.6 (CL 1.6)		○	○	○	○	○		
		2.5 (CL 2.5)		○	—	—	—	—		
	Ordinary Type for Steam	1.6 (CL 1.5)	10 ~ 50℃	M	○	○	○	○	○	
—5 ~ 80℃			H	—	—	—	—	—		
—5 ~ 45℃			V	○	○	○	○	○		
10 ~ 50℃			MV	○	○	○	○	○		
—5 ~ 80℃			HV	—	—	○	○	○	—	
External Shape	Stem Mounting			A	○	○	○	○	—	
	Surface Mounting			B	○	○	○	○	○	
	Flush Mounting			D	○	○	○	○	○	
Shape of Connection	Square			T	○	○	○	—	—	
	Parallel Faced			U	○	○	○	○	○	
	Hexagonal			S	—	—	○	○	○	

Model Coding

General pressure gauges

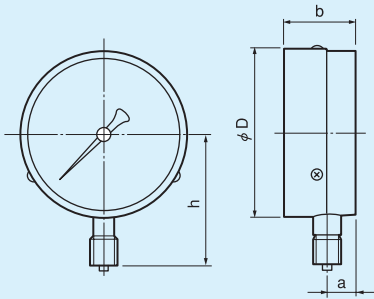
Model	101—	□	□	□	□
Type of casing	A Type B Type D Type	[A] [B] [D]			
Connection screw	1/4 G 3/8 G 1/2 G 1/4 R 3/8 R 1/2 R Other	[2] [3] [4] [6] [7] [8] [x]			
Size	60 75 100 150 200	[3] [4] [5] [8] [9]			
Material	BRASS SUS316				[0] [1]

Note: SUS316 gauges in sizes 75 and up with 101-model coding are not available.
Closed pressure gauges in our Catalog No.1002 are recommended as alternatives.

Bourdon Tube Pressure Gauges

Appearance and Dimensions

Stem Mounting (Type A) 101-A



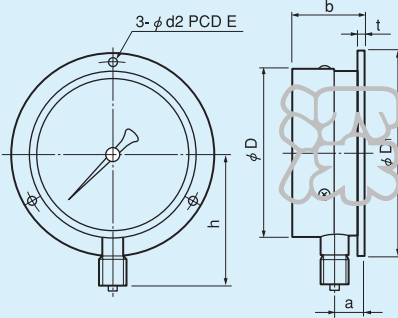
Unit: mm

Model	Screws	Connector	Size	D	a±1	b±2	f	g, k	L1, L2 L×M	h±2	Weight
101-A230	G	T 1/4	60	63	14	32.5	16	10	17	59.5	170
-A630	R										
-A240	G	T 1/4	75	78	13	34.0	16	12	17	68	250
-A640	R										
-A340	G	T 3/8	100	103	18	42.5	18	12	14	82	300
-A740	R										
-A350	G	U 3/8	150	153	19	51.5	18	12	14	110	730
-A750	R										
-A450	G	S 1/2					20	12	24×28	96	400
-A850	R										
-A380	G	U 3/8					18	12	14	110	730
-A780	R										
-A480	G	S 1/2					20	12	24×28	125	810
-A880	R										

Size 50φ not included.

Common Specifications for Type A, B, and D
 Finish : Black
 Wet Part Materials: Stock C3604 C3771
 Bourdon Tube/7MPa or under C2700T,
 C6872T(φ60, 5MPa or under)
 80kgf/cm² or over SNCM, SUS316
 Screws NPT screws made to order
 Zero Adjustment Needle:
 Available for φ100 or over models
 Blowout: Standard equipment for 10 MPa
 or over models
 Case Materials SS, ADC, ZDC

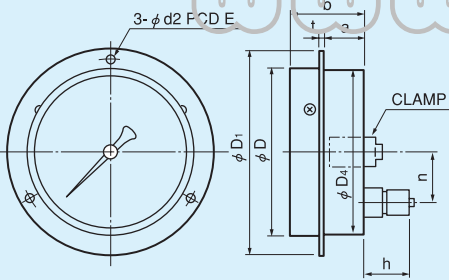
Surface Mounting (Type B) 101-B



Unit: mm

Model	Screws	Connector	Size	D	D1	a±1	b±2	t	d2	E	f	g, k	L1, L2 L×M	h±2	Weight
101-B230	G	T 1/4	60	63	80	13.0	31.0	1.5	4.5	72	16	10	17	59.5	180
-B630	R														
-B240	G	T 1/4	75	78	98	13.5	35.5	2.5	4.5	88	16	12	17	68	370
-B640	R														
-B340	G	T 3/8	100	103	128	20.5	44.5	2.5	5.5	115	18	12	17	70	380
-B740	R														
-B350	G	U 3/8	150	153	178	23.0	54.5	3.0	5.5	165	18	12	14	82	650
-B750	R														
-B450	G	S 1/2									20	12	24×28	96	750
-B850	R														
-B380	G	U 3/8									18	12	14	110	760
-B780	R														
-B480	G	S 1/2									20	12	24×28	125	860
-B880	R														

Flush Mounting (Type D) 101-D

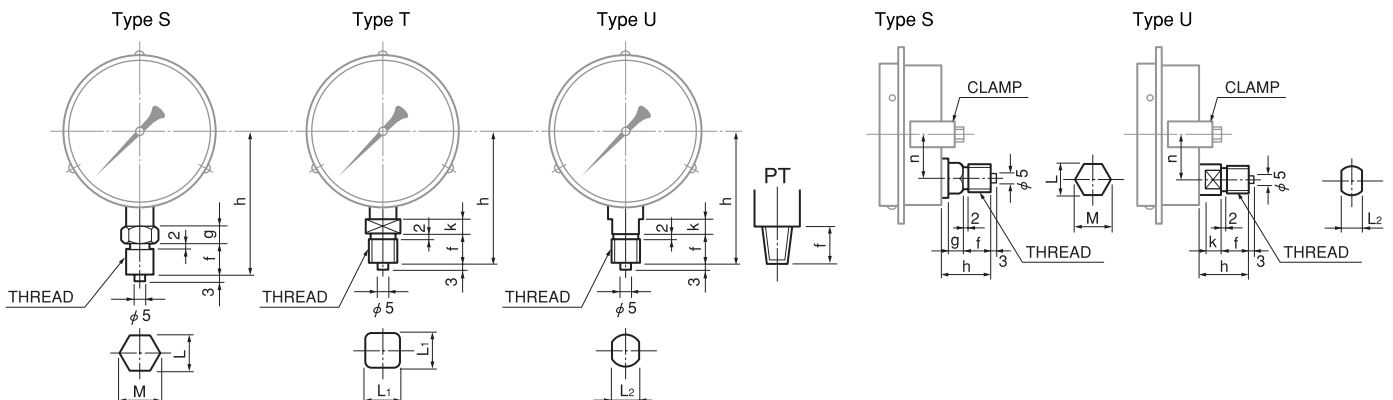


Unit: mm

Model	Screws	Connector	Size	D	D1	D4	a	b±2	t	d2	E	n	f	g, k	L2 L×M	h±2	Weight
101-D230	G	U 1/4	60	65	80	62	17.5	31	2.0	4.5	72	18	16	10	14	28	280
-D630	R																
-D240	G	U 1/4	75	78	98	77	18.0	38	2.5	4.5	88	25	16	11	14	28	390
-D640	R																
-D340	G	U 3/8	100	103	128	102	25.0	46	2.5	5.5	115	32	18	12	14	30	400
-D740	R																
-D350	G	U 3/8	150	153	178	152	25.0	46	2.5	5.5	115	32	18	11	14	30	330
-D750	R																
-D450	G	S 1/2											20	12	24×28	35	400
-D850	R																

Specify so, when mounting brackets are required.

Type of Shank



Remakes : Screw bores and fixtures are custom-made. NPT screws also available.

How to Choose Pressure Gauge Specifications

Which pressure gauge to use will be determined first by the purpose of measurement; for the safety of a factory or for obtaining accurate data. They will also be chosen by the function; indication only or recording as well, or equipped with an electric contact for controlling systems.

Choose pressure gauges on the following conditions:

1. Application

Variation	Description
General Pressure Gauges	Most-widely-used, JIS-designated industrial gauges.
Differential Pressure Gauges	Indicate pressure differences at 2 points to measure flow rates and fluid levels.
Compound Pressure Gauges	2 pressure sensors and pointers show each value on the same indicator.
Pressure Gauges with Electric Contacts	Control systems; vary by contact method, capacity.
Pressure Gauges for Plants (incl. Medium-Sealed Type)	Measure/record pressures of corrosive fluids and fluids with high viscosity or temperature or pulsation pressure.
Recorders	Record time changes of pressure.
Pressure Transmitters	Send pressure values from the sensor to a remote indicator.

2. Environments

2-1. Pulsation, Vibration

Subject to strong pulsation or vibration, pressure gauges installed at pump outlets or on vehicles often wear off in about a month, and the Bourdon tube broken very quickly. The gauges must have a damper or other shock-absorbing devices. JIS conditions that those gauges have higher vibration resistance than other pressure gauges.

Our line includes steam and general-use vibrationproof gauges and heat- & vibrationproof gauges, all meeting JIS.

Even those JIS products are often insufficient for the places with severe vibration. We have devised the movement to provide pressure gauges with super-high vibration resistance. Yet, equip these gauges with a damper or, instead, use an oil-sealed super vibrationproof gauge under still high pulsation pressures.

2-2. Fluids

Usually SU316 and, in rare instances, Monel are used to make corrosionproof Bourdon tubes. Diaphragm pressure gauges are recommended for measuring highly corrosive fluids; wet part materials are available to order.

2-2-1. Chlorine

Use diaphragm pressure gauges for measuring chlorine, as it combines with the moisture on brass and steel to produce hydrochloric acid which corrodes wet parts.

2-2-2. Acetylene

The gas parts of a gauge for acetylene measurement must not contain more than 60% of copper, for combined acetylene and copper produces explosive substances. (Our standard pressure gauges have safe gas parts.)

2-2-3. Viscous Fluids

For viscous fluid measurement, use diaphragm pressure gauges with a large inlet to prevent sticking and wrong reading.

2-2-4. Atmosphere

Use sealed gauges in the atmosphere containing dust, rain water, salt, ammonia, and/or corrosive gases. Choose case materials from plastic, stainless steel, aluminum alloys, and zinc alloys to protect the case from corrosive gases.

2-2-5. Temperature

Temperature changes the elastic coefficient of a Bourdon tube made mostly with brass, phosphor bronze, or steel.

This, coupled with the expansion/contraction of inside parts, produces ± 0.6 to 0.8% of reading error when ambient temperatures change ± 20 deg.

JIS Class 1.6 gauges, except the heatproof version, are supposed to maintain designed accuracy in an ambient temperature range of 20 ± 15 and Class 0.6 gauges, $20 \pm 5^\circ\text{C}$. Use heatproof gauges when the temperature is out of the above ranges. Insulate heat when installing the gauge near a boiler, or install it elsewhere. Operating temperature ranges for our pressure gauges are as follows:

Standard	-5°C to 45°C
Heatproof	-5°C to 80°C
Steam	10°C to 50°C

If fluid temperature exceeds 80°C , siphon or capillary tubes must be used.

3. Working Pressures and Calibration

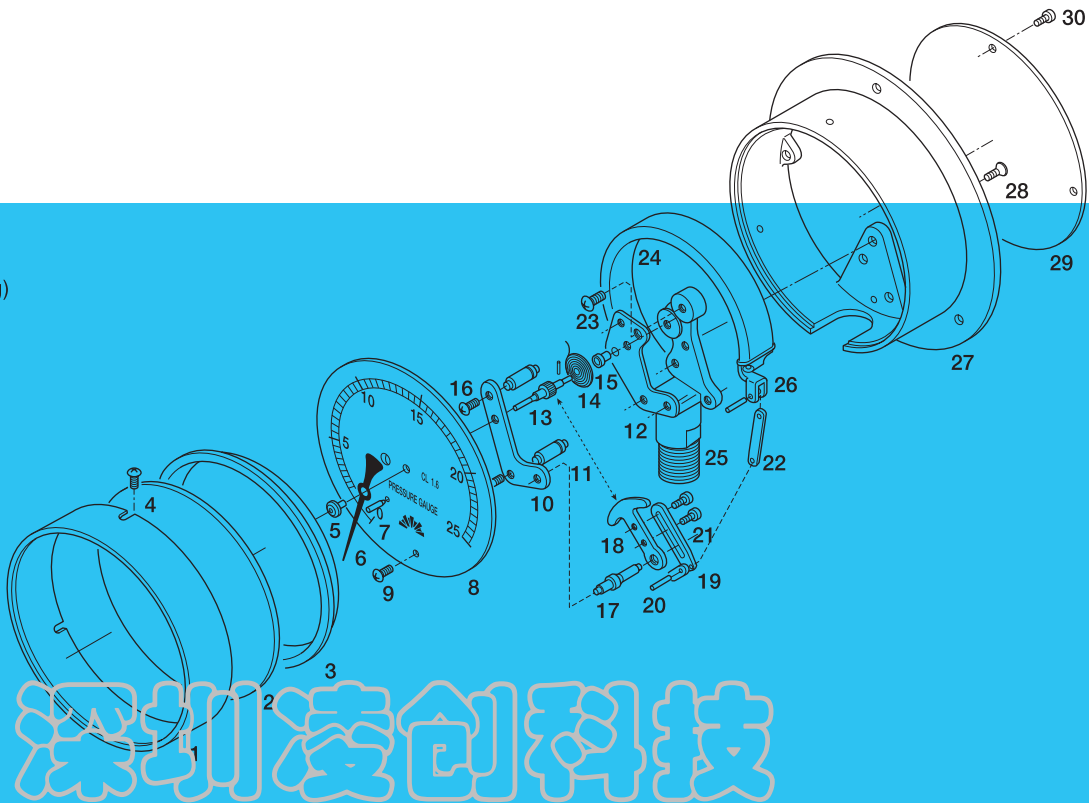
JIS B7505 specifies maximum operational pressures for pressure gauges, as follows:

Static Pressure	3/4 F.S.
Fluctuating Pressure	2/3 F.S.

Component Names

- 1. Other Frame (Bezel)
- 2. Glass
- 3. Transparent Plate (Spacer Ring)
- 4. Stop Screw (Bezel Screw)
- 5. Pointer Pin
- 6. Pointer
- 7. Pointer Stopper
- 8. Scale (Dial)
- 9. Dial Screw
- 10. Movement Upper Plate

- 11. Movement Pole
- 12. Lower Bearing Plate
- 13. Pinion
- 14. Hair Spring
- 15. Movement Bushing
- 16. Movement Screw
- 17. Sector Gear Shaft
- 18. Sector Gear
- 19. Adjuster
- 20. Rod Pin
- 21. Adjuster Screw
- 22. Rod
- 23. Movement Screw
- 24. Bourdon Tube
- 25. Stock
- 26. Tube end Piece
- 27. Case
- 28. Stem Screw
- 29. Back Plate
- 30. Back Plate Screw



Conversion Table for Pressure Units

MPa	kgf/cm ²	bar	atm	lb/in ²	kPa	Hg		H ₂ O(Aq)	
						m	in	m	ft
0.0981	1	0.9807	0.9678	14.22	98.07	0.7356	28.96	10.000	32.81
0.1	1.0197	1	0.9809	14.50	100.00	0.7501	29.53	10.197	33.43
0.1013	1.0332	1.0133	1	14.70	101.32	0.760	29.92	10.33	33.90
0.0069	0.0703	0.0689	0.0680	1	6.894	0.0517	2.036	0.703	2.03
0.0010	0.0102	0.0100	0.0099	0.0630	1	0.0075	0.2950	0.1020	0.3343
0.1233	1.3595	1.3332	1.3158	0.1451	133.32	1	39.37	13.6	44.60
0.0034	0.0345	0.0338	0.0334	19.34	3.383	0.0254	1	0.345	1.133
0.0098	0.1000	0.0981	0.0967	0.491	9.807	0.0735	2.896	1	3.281
0.0030	0.0305	0.0299	0.0295	1.422	2.991	0.0224	0.88	0.305	1

Specifications subject to change without notice.

