

Diaphragm



DIAPHRAGM GAUGES

- Dial Sizes: 2½", 3½", 4½"
- Four Case Styles
- Accuracy: ASME B40.1 - 2/1/2%

Marsh Instruments Low Pressure Diaphragm Gauges are universally known for their dependable performance and accuracy. Incorporating a unique design feature, the diaphragm element in this gauge allows accurate low pressure readings in a variety of applications. Featuring a bronze diaphragm element, the gauge is capable of ASME Grade A-1% accuracy for ranges above 30" of water. Ranges are available in vacuum and pressure in inches of water, ounces per square inch and millimeters of mercury.

Typical applications include HVAC systems and low pressure gas burner systems.

SPECIFICATIONS

ACCURACY

For ranges 30" H₂O & above:
ASME Grade A = ±2/1/2% (±1% of range across middle half of scale). For ranges below 30" H₂O:
±3/1/3% (±1% of range across middle half of scale)

CASE SIZES

2½", 3½", 4½" diameter

CASE MATERIAL

Steel, black painted

CASE STYLE

CB – Center Back Mount
FF – Three-holed Front Flanged Mount
LM – Lower Mount
UC – U-Clamp Mount

DIAPHRAGM & SOCKET

Phosphor bronze diaphragm soft-soldered to brass socket

MOVEMENT

Brass sector and pinion

CONNECTION

½" & ¼" NPT

DIAL STANDARD

Dual Scale with kPa
Triple Scale: oz/in², in H₂O, & kPa

DIAL COLOR

Black markings on white

POINTER

Aluminum, black painted

WINDOW

2½" & 3½": Acrylic twist-in Clearlok
4½": flat acrylic with steel friction ring

RESTRICTOR

0.013" standard. No restrictor on 0 to 10" H₂O range

STANDARD RANGES & PART NUMBERS

TYPE	DIAPHRAGM GAUGES									
Size	2½"					3½"			4½"	
Case Material	Steel							Steel		
Internal	Copper Alloy							Copper Alloy		
Mounting/Case	LM	LM	U	U	CB	CB	FF	LM	LM	
Connection	¼" NPT	½" NPT	¼" NPT	½" NPT	¼" NPT	½" NPT	¼" NPT	¼" NPT	¼" NPT	
0 to 10" H ₂ O	G22675	G22711	G11181	G11248	G22747	G27110	G11578	G24608	G25756	
0 to 15" H ₂ O	G24500	G24503	G11246	G11313	G26504	G30237	G11642	G24631	G25981	
0 to 30" H ₂ O	G22704	G22740	G11189	G11256	G22776	G11652	G11586	G24625	G25749	
0 to 60" H ₂ O	G22705	G22741	G11208	G11314	G22777	G11671	G11605	G24626	G25844	
0 to 100" H ₂ O	G22687	G22723	G11217	G11284	G22759	G11675	G11609	G24613	G25982	
0 to 160" H ₂ O	G22695	G22731	G11232	G11299	G22767	G11695	G11628	G24617	G25980	
0 to 200" H ₂ O	G22696	G22732	G11233	G11300	G22768	G11696	G33412	G24618	G26021	
0 to 300" H ₂ O	G22697	G22733	G11236	G11303	G22769	G11699	G33413	G24619	G25755	
0 to 3 psi	G22685	G22721	G11215	G11282	G22757	G11678	G11612	G24612	G33414	
0 to 5 psi	G22702	G22738	G10623	G11310	G22774	G22810	G10619	G24624	G26018	
0 to 10 psi	G22699	G22735	G11239	G11306	G22771	G11702	G11635	G24621	G25754	
0 to 10 oz/in ²	G22677	G22713	G11186	G11253	G22749	G11649	G11583	G24609	G33415	
0 to 15 oz/in ²	G22680	G22716	G11194	G11261	G22752	G11657	G11591	G24610	G25753	
0 to 30 oz/in ²	G24501	G33404	G11206	G11273	G24504	G11669	G11603	G24632	G25750	
0 to 60 oz/in ²	G22684	G22720	G11213	G11280	G22756	G11676	G11610	G24611	G25757	
0 to 100 oz/in ²	G22691	G22727	G11226	G11293	G22763	G33411	G11622	G24615	G26025	
0 to 160 oz/in ²	G26062	G33405	G11237	G11304	G33410	G11700	G11633	G26894	G33416	
8.75 oz/in ² and 15" H ₂ O	G22706	G22742	G11185	G11252	G22778	G11648	G11582	G24627	G33417	
20 oz/in ² and 35" H ₂ O	G22709	G22745	G11200	G11267	G22781	G11663	G11597	G24629	G25748	
32 oz/in ² and 55" H ₂ O	G22707	G22743	G11195	G11262	G22779	G11658	G11592	G24628	G25984	
58 oz/in ² and 100" H ₂ O	G22710	G22746	G11214	G11281	G22782	G22947	G11611	G24630	G33418	
0 to 15" H ₂ O VAC	G22912	G33406	G11873	G11906	G22942	G12104	G12071	G24708	G26023	
0 to 30" H ₂ O VAC	G22914	G29804	G11876	G11909	G22944	G12107	G12074	G24709	G26020	
0 to 60" H ₂ O VAC	G22918	G33407	G11884	G11917	G22948	G12115	G12082	G24710	G26016	
0 to 100" H ₂ O VAC	G24502	G26962	G11885	G11918	G22949	G12116	G12083	G24716	G26019	
0 to 200" H ₂ O VAC	G22921	G33409	G11892	G11925	G22951	G12123	G12090	G24711	G33420	

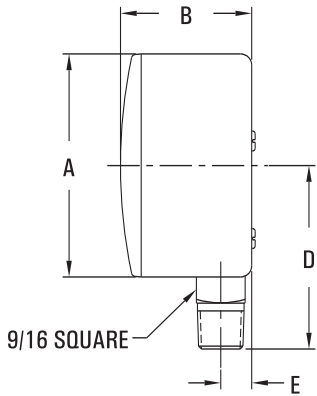
NOTE: Items are available on special order. However, minimums and lead times apply. Consult factory.



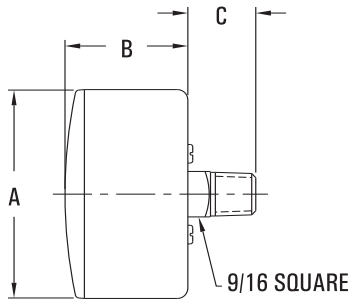
Diaphragm

DIAPHRAGM GAUGE OPTIONS

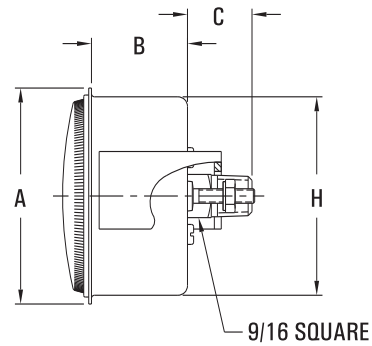
OPTION	TYPE	AVAILABLE ON MODELS
Window	Acrylic (knurled edge)	all models
Restrictors	0.008 Restrictor	all models
	0.016 Restrictor	
	0.018 Restrictor	
	0.025 Restrictor	
Ring	Press ring, chrome	2½" to 3½" Panel Mount
Ring / Window	Glass & Black Steel Ring	2½" to 3½" all models
Cases	Stainless Steel	2½" - Lower Mount or Panel Mount
	Brass	2½" - Lower Mount or Centerback
	Chrome plated	Lower Mount or Centerback
3½" Case	Center Back (CB)	3½"
	U-Clamp (UC)	3½"
Connections	Hose Barb (⅛" OD & ¼" OD)	All models (10 pc. minimum)
Compound Ranges	Vacuum & Pressure with front zero adjustment	All models (10 pc. minimum)
Custom Dials	Logo or custom face	Consult factory for colors and minimums.



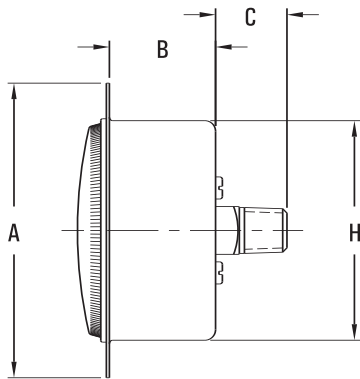
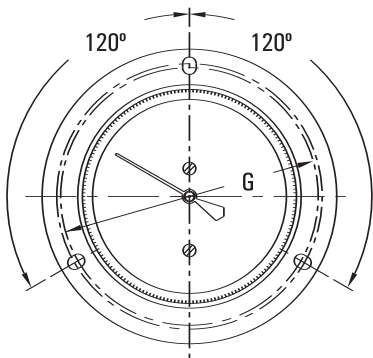
Back Flanged	SIZE	A	B	D	E
	2½"	2.63	1.50	2.19	.38
	3½"	3.69	1.59	2.72	.38
	4½"	4.78	1.47	3.38	.81



Center Back	Size	A	B	C
	2½"	2.63	1.50	.84
	3½"	3.69	1.59	.84



U-Clamp	Size	A	B	C	H
	2½"	2.81	1.25	.84	2.59
	3½"	3.98	1.69	.84	3.66





VACUUM CLEANER TEST GAUGE

- Includes 2½" dial size gauge
- Dual Scale: in. H₂O & kPa vacuum
- Complete with rubber plug to fit vacuum cleaner intake opening

TYPE	82K
Range	Part No.
0 to 60" H ₂ O	G32426
0 to 100" H ₂ O	G24505
0 to 160" H ₂ O	G25759
0 to 200" H ₂ O	G26098



GAS PRESSURE TEST SET

- Includes 2½" dial size gauge
- Triple Scale: Oz./in², in. H₂O & kPa
- Provided in grey polyethylene case with 3 ft. of rubber tubing

TYPE	84K	
Range	Part No.	
0 to 8.75 oz/in ²	0 to 15" H ₂ O	G28145
0 to 20 oz/in ²	0 to 35" H ₂ O	G24507
0 to 58 oz/in ²	0 to 100" H ₂ O	G27038



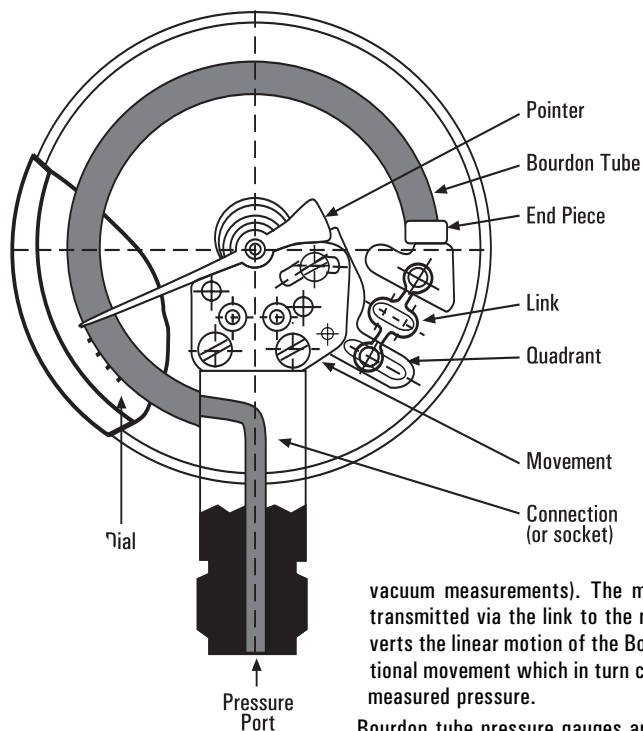
SPECIAL MEDICAL GAUGES

Consult Factory
800-727-5646

Ranges	Figure Intervals	Minor Graduations
0 to 10" H ₂ O	1	0.1
0 to 15" H ₂ O	3	0.2
0 to 30" H ₂ O	5	0.5
0 to 60" H ₂ O	10	1
0 to 100" H ₂ O	10	1
0 to 160" H ₂ O	20	2
0 to 200" H ₂ O	20	2
0 to 300" H ₂ O	50	5
0 to 3 psi	0.5	0.05
0 to 5 psi	1	0.1
0 to 10 psi	1	0.1
0 to 10 psi oz/in ²	1	0.1
0 to 15 psi oz/in ²	3	0.2
0 to 30 psi oz/in ²	5	0.5
0 to 60 psi oz/in ²	10	1
0 to 100 psi oz/in ²	10	1
0 to 160 psi oz/in ²	20	2
8.75 oz/in ² and 15" H ₂ O	1/3	0.2/0.2
20 oz/in ² and 35" H ₂ O	4/5	0.5/1
32 oz/in ² and 55" H ₂ O	4/10	1/1
58 oz/in ² and 100" H ₂ O	10/20	1/2
0 to 15" H ₂ O VAC	3	0.2
0 to 30" H ₂ O VAC	5	0.5
0 to 60" H ₂ O VAC	10	1
0 to 100" H ₂ O VAC	10	1
0 to 160" H ₂ O VAC	20	2
0 to 200" H ₂ O VAC	20	2



PRESSURE GAUGE OPERATING PRINCIPLE



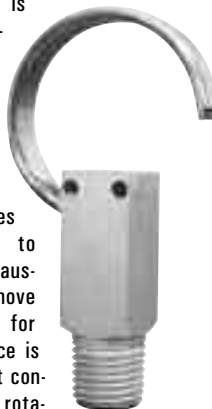
Bourdon tube pressure gauges are widely used in all branches of industry. The construction is simple yet rugged, and operation does not require any additional power source. The Bourdon tube element is directly exposed to the medium being measured and is normal made of copper alloy (brass) or stainless steel as the application demands.

The Bourdon tube measuring element is made of a thin walled tube that is either bent into a semi-circle (C-Shape tube) or spirally wound (coiled safety tube). When pressure is applied to the measuring system through the pressure port, the pressure causes the Bourdon tube to straighten itself, thus causing the end piece to move upward (or downward for vacuum measurements). The movement of the end piece is transmitted via the link to the movement. The movement converts the linear motion of the Bourdon tube end piece to a rotational movement which in turn causes the pointer to indicate the measured pressure.

Bourdon tube pressure gauges are designed for the measurement of pressure and vacuum and are generally suitable for all clean and non-clogging liquid and gaseous media.

Various types of Bourdon tubes are used. C-shape Bourdon tubes are typically used for ranges to 1,000 psi. Higher ranges use coiled Bourdon tubes for safety.

Bourdon tube pressure gauges are available to measure full vacuums, compound and pressure ranges from 0-10 psi to 0-20,000 psi with an accuracy from $\pm 0.25\%$ to $\pm 3/2/3\%$ of span (ASME Grade 3A to Grade B).



HOW THE DIAPHRAGM GAUGE WORKS



Diaphragm gauges are sensitive instruments used in low pressure applications not exceeding 10 psi. The diaphragm capsule is an elastic metal sensing element comprised of two thin wall diaphragms whose sides are soldered together to make the capsule.

Whenever air or gas enters the intake port (gauge connection), it travels into the diaphragm capsule. As vacuum or pressure is applied to the diaphragm capsule, the walls of the capsule expand and contract in response to the change in pressure. This change is then transferred to a rotating rod and arm that rest on the outside of the capsule. The rotating rod is connected to a geared movement through a linkage system. Connected to a shaft, this system then drives the pointer over a dial marked in appropriate pressure or vacuum units.

