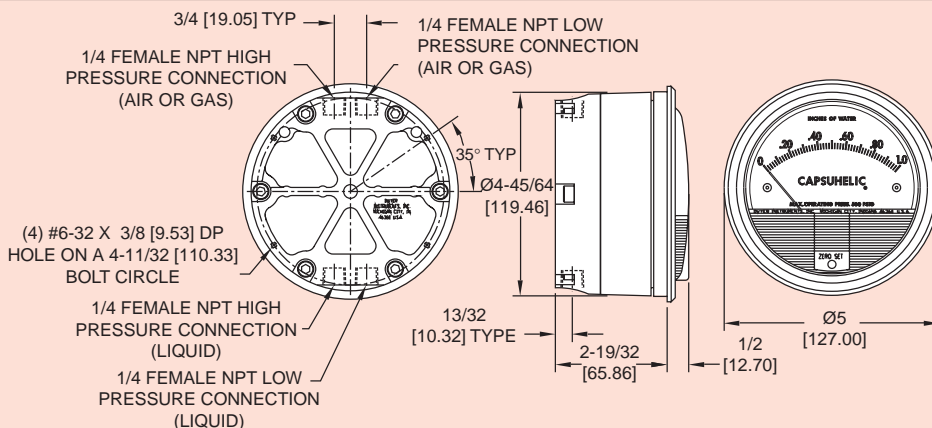




Series  
4000

# Capsuhelic® Differential Pressure Gages

Measures Pressure, Vacuum or Differential, Suitable for Internal Pressures to 500 psig



Capsuhelic® Pressure Gage has a large, easy-to-read 4" (102 mm) dial.

Dimensions, Series 4000 Capsuhelic® Pressure Gages.

The Capsuhelic® gage is designed to give fast, accurate indication of differential pressures. The gage may be used as a read-out device when measuring flowing fluids, pressure drop across filters, liquid levels in storage tanks and many other applications involving pressure, vacuum or differential pressure.

Using the basic design of Dwyer's time-proven Magnehelic® gage, the Capsuhelic® contains a simple, frictionless movement that permits full scale readings as low as 0.5 inch water column. The pressure being measured is held within a capsule which is an integral part of the gage. This containment of the pressure permits the use of the gage on system pressures of up to 500 psig, even when differentials to be read are less than 0.1 inch W.C.

The diaphragm-actuated Capsuhelic® gage requires no filling liquid which might limit its outdoor applications. Zero and range adjustments are made from outside the gage, and there is no need to disassemble the gage in normal service. **NOTE: DO NOT use with hydrogen gas. Toxic and/or explosive gas may form due to reaction with rare earth magnet.**

## SPECIFICATIONS

**Service:** Aluminum Case: Air and compatible gases and oil based liquids. Brass Case: Air and compatible gases and water based liquids.

**Wetted Materials:** Consult Factory.

**Housing:** Die cast aluminum with impregnated hard coating, standard. Optional forged brass housing is required for water or water based fluids. Special material diaphragms available, contact factory.

**Accuracy:** ±3% of full scale at 70°F (21.1°C). (±2% on 4000S models, ±4% on 4200, 4210, 4215, 4220, 4300, 4400, and 4500).

**Pressure Limits:** -20" Hg to 500 psig. (-0.677 bar to 34.4 bar).

**Temperature Limits:** 20 to 200°F. (-6.67 to 93.3°C).

**Size:** 4" (101.6 mm) diameter dial face.

**Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.

**Process Connections:** 1/4" female NPT high and low pressure taps, duplicated -one pair top for air and gas, and one pair bottom for liquids.

**Weight:** 3 lb, 3 oz (1.45 kg) aluminum case; 7 lb, 13 oz (3.54 kg) brass case.

**Standard Accessories:** Two 1/4" NPT plugs for duplicate pressure taps, four flush mounting adapters with screws and four surface mounting screws.

## MOUNTING

Capsuhelic® gages may be flush mounted in a panel or surface mounted. Hardware is included for either. For flush mounting, a 4 13/16" diameter cutout in panel is required. Where high shock or vibration are problems, order optional A-496 Heavy Duty flush mount bracket. Optional A-610 kit provides simple means of attaching gage to 1 1/2"-2" horizontal or vertical pipe. Installation is same as Magnehelic® gage shown on page 5. All standard models are calibrated for vertical mounting. Gages with ranges above 5 in. w.c. can be factory calibrated for horizontal or inclined mounting on special order.



Flush mounted in panel.



Back view shows flush mounting adapters.



Back view for surface mounting.

## OPTIONS AND ACCESSORIES



**Adjustable signal flag** — Integral with plastic gage cover; has external reset screw. May be ordered factory installed on gage or separately for field installation. Specify ASF suffix after model number.



**A-314 bleed fitting** — For easier, safer purging of trapped air when using gage with liquids. Also useful for draining condensate when installed in lower ports. To open, simply loosen hex nut. Solid brass.



**Forged brass case** — For applications involving water or water based liquids. To order, add suffix "B" after model number. Example: 4205B.



**Transparent scale overlays** — Available in bright red or green to accent critical pressure zones. Specify which color and portion of scale to be covered with each.

**A-471 portable kit** — Includes plastic case, mounting bracket, A-309 3-way manifold valve, (2) A-230 high pressure hoses and all necessary fittings. Assembly required. Gage not included.

# Straightforward design assures maintenance-free performance

**Top low pressure connection** (for Air or Gas) connects to chamber in back of diaphragm. High pressure air or gas port (cut away; not shown) connects with chamber in front of diaphragm through passageways in case.

**Precision made case** is offered in two materials. Standard is die cast aluminum coated inside for resistance to most oils and similar fluids. Optional forged brass case is recommended when using water or water based liquids. One case size for all pressure ranges — can be either surface or flush mounted.

**Silicone rubber diaphragm** with integrally molded O-ring is sealed between the case and backplate. Diaphragm motion is restricted to prevent damage due to over-pressure.

**Diaphragm support plate** of stainless steel minimizes position or attitude sensitivity.

**Calibrated range spring** is a flat leaf of nickel plated spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length factory adjusted for calibration.

**Bottom high pressure connection** (for Liquids) connects to chamber in front of diaphragm. Low pressure liquid connection (not visible) connects with chamber in back of diaphragm through passageways in case.

**Range spring calibration** is set by custom camlock. Rate adjust and rate adjust lock are coaxial and are factory set and sealed.

**Bezel** provides flange for flush mounting in panel.

**O-ring seal** for cover assures dust tight integrity of case.

**Clear plastic front cover** is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

**Precision scale**, screen printed on aluminum, is accurate and easy to read.

**Samarium cobalt magnet** mounted at end of range spring rotates helix without mechanical linkages.

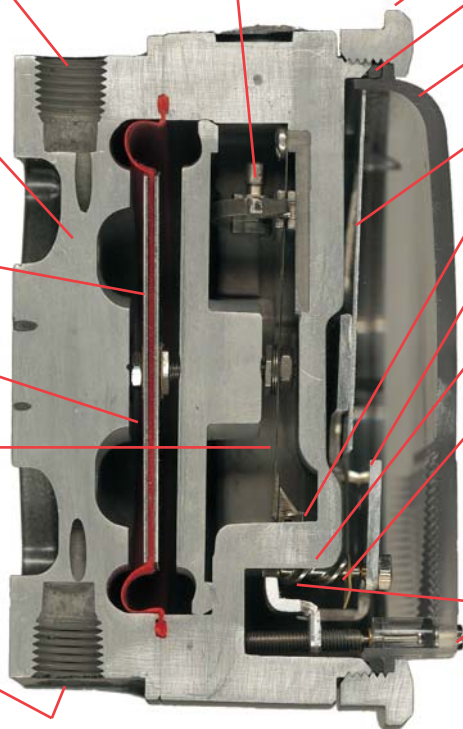
**"Wishbone" assembly** provides mounting for helix, helix bearings and pointer shaft.

**Thin wall magnetic "window"** is well braced and of minimum area for maximum pressure capability.

**Jeweled bearings for helix** are shock resistant mounted. They provide virtually friction-free rotation for helix. Rotation is damped with high viscosity silicone fluid.

**Helix** is precision milled from an alloy of high magnetic permeability, mounted in jeweled bearings, and rotates to align with magnetic field of magnet and transmit pressure indication to pointer.

**Zero adjustment screw** is conveniently located in plastic cover, accessible without removing cover. "O" ring seal provides dust seal.



Patent Nos. 4,011,759  
4,030,365

## SERIES 4000 CAPSUHELIC® — MODELS AND RANGES

Scales reading directly in flow, heights, etc., are also available.

### STOCKED MODELS in bold

Model Number	Range, Inches of Water	Model Number	Range Zero Center Inches of Water	Model Number	Range MM of Water	Model Number	Range, CM of Water	Model Number	Range, Pascals				
*4000-0	0-.50	*4302	1-0-1	*4000-25MM	0-25	4000-15CM	0-15	*4000-125 Pa	0-125				
*4001	0-1.0	*4304	2-0-2	*4000-50MM	0-50	4000-20CM	0-20	*4000-250 Pa	0-250				
*4002	0-2.0	4310	5-0-5	4000-80MM	0-80	4000-25CM	0-25	*4000-500 Pa	0-500				
*4003	0-3.0	4320	10-0-10	4000-100MM	0-100	4000-40CM	0-40	4000-750 Pa	0-750				
*4004	0-4.0	4330	15-0-15	Special Purpose Ranges			4000-50CM	0-50	Zero Center Ranges				
*4005	0-5.0	Model NumberRange PSI					4000-80CM	0-80					
4006	0-6.0						4000-100CM	0-100					
4008	0-8.0	4201	0-1				4000-150CM	0-150	*4300-500 Pa	250-0-250			
4010	0-10	4202	0-2				4000-200CM	0-200	Model NumberRange, Kilopascals				
4015	0-15	4203	0-3				4000-250CM	0-250					
4020	0-20	4204	0-4				4000-300CM	0-300	Zero Center Ranges				
4025	0-25	4205	0-5				Zero Center Ranges					4000-1 kPa	0-1
4030	0-30	4210	0-10									*4300-4CM	2-0-2
4040	0-40	4215	0-15				4300-10CM	5-0-5				4000-2 kPa	0-2
4050	0-50	4220	0-20	4300-30CM	15-0-15	4000-3 kPa	0-3						
4060	0-60	†4230S	0-30	Scale No. 4401 Square Root Specify Range		4000-4 kPa	0-4						
4080	0-80	†4240S	0-40			4000-5 kPa	0-5						
4100	0-100	†4260S	0-60			4000-8 kPa	0-8						
4150	0-150	†4280S	0-80			4000-10 kPa	0-10						
4200	0-200	†42100S	0-100			4000-15 kPa	0-15						
4300	0-300	†42200S	0-200			4000-20 kPa	0-20						
4400	0-400	†42300S	0-300			4000-25 kPa	0-25						
4500	0-500					4000-30 kPa	0-30						
Model Number	Range Feet of Water	Accessories				Options							
4616B	0-16	A-309 3-way manifold valve.....				Add Options as Suffix, Example 4001-ASF							
4635B	0-35	A-314 Bleed Fitting .....			-ASF (Adjustable Signal Flag)								
		A-471 Portable Kit.....			B (Brass Case) .....								
		A-496 Flush Mount Bracket .....			Scale Overlays - Red, Green, Mirrored or								
		A-610 Pipe Mount Kit.....			combination. Specify Locations .....								
					Zero Center Ranges								
					4300-1 kPa								
					4300-3 kPa								
					1.5-0- .5								
					1.5-0-1.5								