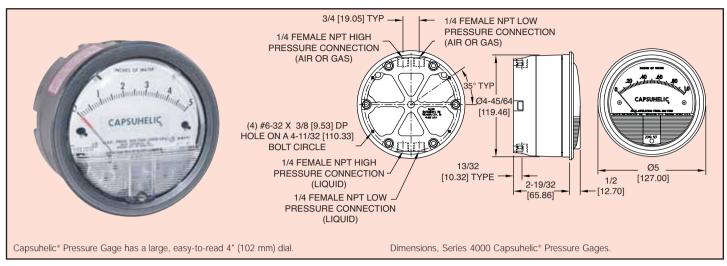
# Series 4000 Capsuhelic® Differential Pressure Gages Measures Pressure, Vacuum or Differential, Suitable for Internal Pressures to 500 psig



The Capsuhelic® gage is designed to give fast, accurate indication of differential pressures. The gage may be used as a readout 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® gage 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: May be used with hydrogen where pressures are less than 35 psi.

#### **SPECIFICATIONS**

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

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 facto-

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 41% 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 11/2-2" 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, green or yellow 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.

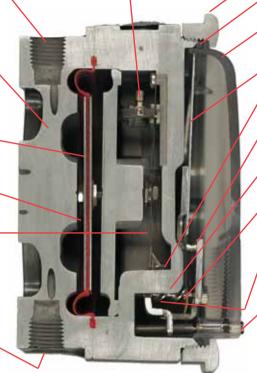
**Silicone rubber diaphragm** with integrally molded O-ring is sealed between the case and backplate. Diaphragm motion is restricted to prevent damage due to over-pressure.

**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

### SERIES 4000 CAPSUHELIC® GAGE— MODELS AND RANGES

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

#### **MODELS**

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 *4001 *4002 *4003 *4004	050 0-1.0 0-2.0 0-3.0 0-4.0	*4302 *4304 4310 4320 4330	1-0-1 2-0-2 5-0-5 10-0-10 15-0-15	*4000-25MM *4000-50MM *4000-80MM *4000-100MM	0-25 0-50 0-80 0-100	4000-15CM 4000-20CM 4000-25CM 4000-40CM 4000-50CM	0-15 0-20 0-25 0-40 0-50	*4000-125PA *4000-250PA *4000-500PA *4000-750PA	0-125 0-250 0-500 0-750
*4005 4006 4008	0-5.0 0-6.0 0-8.0	Model Number 4201	Range PSI 0-1			4000-80CM 4000-100CM 4000-150CM 4000-200CM	0-80 0-100 0-150 0-200	Zero *4300-500PA	Center Ranges 250-0-250
4010 4015 4020 4025	0-10 0-15 0-20 0-25	4201 4202 4203 4204	0-1 0-2 0-3 0-4	Special Purpose Ranges Scale No. 4401 Square Root Specify Range Scale No. 4402 Blank Scale		4000-250CM 4000-300CM	0-250 0-300	Model Number	Range, Kilopascals
4025 4030 4040 4050	0-25 0-30 0-40 0-50	4205 4210 4215	0-5 0-10 0-15			*4300-4CM 2-0-2 *4300-10CM 5-0-5 4300-30CM 15-0-15	*4000-1KPA 4000-1.5KPA 4000-2KPA	0-1 0-1.5 0-2	
4060 4080 4100	0-60 0-80 0-100	4220 †4230S †4240S	0-20 0-30 0-40				5-0-5	4000-3KPA 4000-4KPA 4000-5KPA	0-3 0-4 0-5
4150 4150 4200 4300	0-100 0-150 0-200 0-300	†4260S †4280S †42100S	0-60 0-80 0-100	Specify				4000-8KPA 4000-10KPA 4000-15KPA	0-8 0-10 0-15
4400 4500	0-400 0-500	†42200S †42300S	0-200 0-300					4000-20KPA 4000-25KPA 4000-30KPA	0-20 0-25 0-30
Model Number	Range Feet of Water	Accessories Options  A-298 Flat Flush Mounting Bracket  A-309 3-way Manifold Valve Add Options as Suffix, Example 4001-ASF						Zero Center Ranges	
4616B 4635B	0-16 0-35	A-314 Bleed	Í Fitting nting Bracket		-ASF (Adjustable Signal Flag) B (Brass Case) Scale Overlays - Red, Green, Mirrored or			*4300-1KPA 4300-3KPA	.5-05 1.5-0-1.5
Available with brass case only  A-471 Portable Kit  A-496 Flush Mount Bracket  A-610 Pipe Mount Kit				combination. Specify Locations					

<sup>\*</sup>These ranges available for vertical scale position only.

<sup>†</sup>These ranges use Spirahelic® gage movement.