### Pressure Conversion Chart

<table>
<thead>
<tr>
<th>PSI</th>
<th>bar</th>
<th>N/Hg</th>
<th>in/H2O</th>
<th>Kg/cm²</th>
<th>Kpa</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>1.0</td>
<td>0.0689</td>
<td>7.5</td>
<td>27.71</td>
<td>0.3451</td>
<td>2.489</td>
</tr>
<tr>
<td>2.0</td>
<td>0.1379</td>
<td>15.0</td>
<td>55.36</td>
<td>0.6902</td>
<td>5.000</td>
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<td>3.0</td>
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<td>22.5</td>
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<td>4.0</td>
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<td>6.0</td>
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<td>2.0706</td>
<td>15.05</td>
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<td>7.0</td>
<td>0.4826</td>
<td>52.5</td>
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<td>2.4157</td>
<td>17.57</td>
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<td>8.0</td>
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<td>9.0</td>
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<td>10.0</td>
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<td>75.0</td>
<td>276.00</td>
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</tr>
</tbody>
</table>

**Conversion Factors**

- PSI x 2.036 = in. Hg
- PSI x 68.95 = mbar
- PSI x 27.71 = in. H2O
- PSI x 0.0689 = bar

**Technical Support**

Have an application question? Our technical support professionals are trained to provide you with the answers you need.

**Prompt Shipments**

After you place your order, Dwyer's dedicated shipping staff packs and ships your order promptly and completely - within 24 hours on most in-stock items.

**Website**

Dwyer Instrument's website delivers the convenience you want. Go to www.dwyer-inst.com for the most complete ordering and product support information at your fingertips - anytime, day or night. Installation and operating manuals are available on products that are easily downloadable to your computer or printer.

Total customer service the way you need it.
Dwyer Instruments has and continues to be the leading manufacturer and innovator in specialty gage application and design. Most notably, the Dwyer Magnehelic® remains the hallmark of the industry for low pressure indication and measurement, and has been industry proven through its robust design and field performance.

Dwyer is proud to compliment this versatile instrument with the new Magnehelic® Accessory Guide. This guide will assist with selecting the proper features, options and accessories required in your unique applications that utilize the Magnehelic® gage. From air flow scales to the new flush mounting kit for panels to popular static pressure sensors, this guide includes the complete offering of Magnehelic® options and accessories.

We have always felt that the best does not have to cost you the most, and encourage you, the customer, to check out our value and what we believe to be the most competitively priced products on the market.

Sincerely,
Dwyer Instruments Team

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<th>PAGE</th>
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<td>Flush-Mount Space Pressure Sensor</td>
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<td>Pitot Tubes for Sensing Air Velocity</td>
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<td>Series DH Digihelic® Differential Pressure Controller</td>
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<td>Pressure Conversion Chart</td>
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Magnehelic® Differential Pressure Gages

Indicate Positive, Negative or Differential, Accurate within 2%

**Select the Dwyer Magnehelic® gage for high accuracy — guaranteed within 2% of full scale — and for the wide choice of models available to suit your needs precisely. Using Dwyer’s simple, frictionless Magnehelic® movement, it quickly indicates low air or non-corrosive gas pressures — either positive, negative (vacuum) or differential. The design resists shock, vibration and over-pressures. No manometer fluid to evaporate, freeze or cause toxic or leveling problems. It’s inexpensive, too.**

The Magnehelic® is the industry standard to measure fan and blower pressures, filter resistance, air velocity, furnace draft, pressure drop across orifice plates, liquid levels with bubbler systems and pressures in fluid amplifier or fluidic systems. It also checks gas-air ratio controls and automatic valves, and monitors blood and respiratory pressures in medical care equipment.

**NOTE: May be used with Hydrogen where pressures are less than 35 psi.**

**Quality Design and Construction Features**

- **Bezel** provides flange for flush mounting in panel.
- **Clear plastic face** is highly resistant to breakage. Provides undistorted viewing of pointer and scale.
- **Precision litho-printed scale** is accurate and easy to read.
- **Red tipped pointer** of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.
- **Pointer stops** of molded rubber prevent pointer over-travel without damage.
- **“Wishbone” assembly** provides mounting for helix, helix bearings and pointer shaft.
- **Jeweled bearings** are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.
- **Zero adjustment screw** is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.
- **Helix** is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

**SPECIFICATIONS**

**Service:** Air and non-combustible, compatible gases. (Natural Gas option available.)

- **Wetted Materials:** Aluminum, silicone, acrylic, polycarbonate, high carbon steel, low carbon steel, brass, paper, acrylic paint, enamel paint, alkyl coating, nickel plate, zinc plate, Helsel® FC, 300 series stainless steel, Teflon®, Loctite® AV sealant, commercial black rubber, neoprene, samarium cobalt, nickel alloy steel, beryllium copper.

- **Housing:** Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.

- **Accuracy:** ±2% of full scale (±3% on -0, -100PA, -125PA, 10MM and ±4% on -00, -60PA, -6MM ranges), throughout range at 70°F (21.1°C).

- **Pressure Limits:** -20” Hg. to 15 psig. (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar). For applications with high cycle rate within gage total pressure rating, next higher rating is recommended.

- **Overspressure:** Relief plug opens at approximately 25 psig (1.72 kPa), standard gages only.

- **Temperature Limits:** 20 to 140°F (-6.67 to 60°C).

- **Size:** 4” (101.6 mm) Diameter dial face.

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

- **Process Connections:** 1/8” female NPT duplicate high and low pressure taps - one pair side and one pair back.

- **Weight:** 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).

- **Standard Accessories:** Two 1/8” NPT plugs for duplicate pressure taps, two 1/8” pipe thread to rubber tubing adapters and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for 3 adapters in MP & HP gage accessories.)

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

**Blowout plug** of silicone rubber protects against overpressure on 15 psig rated models. Opens at approximately 25 psig.

**Die cast aluminum case** is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

**Silicone rubber diaphragm** with integrally molded O-ring is supported from front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

**Calibrated range spring** is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

**Samarium Cobalt magnet** mounted at one end of range spring rotates helix without mechanical linkages.
## STOcked Models

### In Bold

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Range</th>
<th>Model Number</th>
<th>Range</th>
<th>Model Number</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-00N/1**</td>
<td>0-25</td>
<td>2201</td>
<td>0-1</td>
<td>2000-00AV/1**</td>
<td>0-25</td>
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<td>2000-01/1**</td>
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<td>2202</td>
<td>0-3</td>
<td>2000-01AV/1**</td>
<td>0-1.5</td>
</tr>
<tr>
<td>2000-02/1**</td>
<td>0-20</td>
<td>2203</td>
<td>0-4</td>
<td>2000-02AV/1**</td>
<td>0-2</td>
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<td>2204</td>
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<td>2000-03AV/1**</td>
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<td>0-4-0</td>
<td>2205</td>
<td>0-10</td>
<td>2000-04AV/1**</td>
<td>0-10</td>
</tr>
<tr>
<td>2000-05/1**</td>
<td>0-5</td>
<td>2210*</td>
<td>0-15</td>
<td>2000-05AV/1**</td>
<td>0-10</td>
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<tr>
<td>2000-06/1**</td>
<td>0-6</td>
<td>2215*</td>
<td>0-20</td>
<td>2000-06AV/1**</td>
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<td>0-10-0</td>
<td>2230**</td>
<td></td>
<td>2000-10AV/1**</td>
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</table>

### Options (add below suffixes to model number, example: 2001-SB)

- ASF, Adjustable Signal Flag
- SP, Set Point Indicator
- AT, Aluminum Tag
- ST, Stainless Steel Tag
- BUNA, BUNA-N Elastomers
- VIT, Viton® Elastomers
- HP, High Pressure Option, rated for internal pressures up to 80 psig
- MP, Medium Pressure Option, rated for internal pressures up to 35 psig
- LT, Low Temperature, temperatures to -20°F (-29°C)
- NIST, NIST Certificate of Calibration
- CB, Chrome Bezel
- SB, 304 Stainless Steel Bezel
- SF, Silicone Free
- R, Red Scale Overlay
- Y, Yellow Scale Overlay
- G, Green Scale Overlay
- M, Mirror Scale Overlay

**Natural Gas Model**
- BUNA-IC, BUNA-N Elastomers & Impregnated Case
## Magnehelic® Options

### AVAILABLE OPTIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>LED Setpoint Indicator</strong></td>
<td>Bright red LED on right of scale shows when setpoint is reached. Field adjustable from gage face, unit operates on 12-24 VDC. Setpoint indicator option comes with medium pressure (MP) bezel.</td>
</tr>
<tr>
<td><strong>Adjustable Signal Flag</strong></td>
<td>Integral with plastic gage cover. Available for most models except those with medium or high pressure construction. Can be ordered with gage or separate.</td>
</tr>
<tr>
<td><strong>Transparent Overlays</strong></td>
<td>Furnished in red, yellow, or green to highlight and emphasize critical pressures.</td>
</tr>
<tr>
<td><strong>-R (Red)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>-Y (Yellow)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>-G (Green)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mirrored Scale Overlay</strong></td>
<td>A Mirrored Scale Overlay is also available to assist in reducing parallax error.</td>
</tr>
<tr>
<td><strong>-M</strong></td>
<td></td>
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</tbody>
</table>

### MODELS FOR HIGH STATE PRESSURE APPLICATIONS

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Medium Pressure Option:</strong></td>
<td>for pressures to 35 psig.</td>
</tr>
<tr>
<td><strong>-MP</strong></td>
<td></td>
</tr>
<tr>
<td><strong>High Pressure Option:</strong></td>
<td>for pressures to 80 psig.</td>
</tr>
<tr>
<td><strong>-HP</strong></td>
<td></td>
</tr>
</tbody>
</table>

### VELOCITY AND VOLUMETRIC FLOW UNITS

Scales are available on the Magnehelic® that read in velocity units (FPM, m/s) or volumetric flow units (SCFM, m³/s, m³/h). Stocked velocity units with dual range scales in inches w.c. and feet per minute are shown on page 2. For other ranges contact the factory.

When ordering volumetric flow scales please specify the maximum flow rate and its corresponding pressure. Example: 0.5” w.c. = 16,000 CFM.

### PRIVATE LABELED GAGES

Special scales with company logo or information can be crafted for the Magnehelic®. Please consult the factory for pricing.
**NEW! Magnehelic® Chrome/Steel Bezels**

**Stainless Steel Bezel Option:**
304 Stainless Steel Electro polished Ra 16 finished bezel for the Magnehelic® is now available. This stainless steel bezel is ideal for Magnehelics® mounted in clean rooms, pharmaceutical plants, medical and bio-medical facilities and in many locations where a chemical washdown occurs.

To Order Add Suffix -SB

**Chrome Bezel Option:**
A Chrome Plated Aluminum Bezel is now available on the Magnehelic® gage for an aesthetically pleasing finish when mounting on metal surfaces such as control panels.

To Order Add Suffix -CB

**Portable Magnehelic® Pressure-Air Velocity Gages**

Use with Pitot tube for air velocity measurement or without for pressure measurement. Easy and quick to use, Portable Magnehelic® Gages with dual scale are less sensitive to level than liquid gages, yet offer accuracy to ±2% over the full scale.† Air Velocity Scale provides direct reading for standard air without conversions. They are handy to use on a ladder or in confined locations encountered in field testing. Dwyer magnetic linkage provides exceptionally responsive, consistently accurate indication of air velocity, positive, negative or differential pressures in air and non-corrosive gases. Pointer movement is inertia-free and drift-free. Highly resistant to shock and vibration.

**Portable Magnehelic® Unit Includes:**
Choice of 5 models — Scales from 0-.25" w.c., 300-2000 FPM, to 0-10" w.c., 2000-12,500 FPM. Maximum total pressure rating 15 psig. Ambient temperature range 30 to 140°F. Aluminum stand iridite-dipped; gage has baked gray hammerloid finish. Furnished in gray plastic carrying case. Connections include 1/8" NPT high and low pressure taps, duplicated—one pair side and one pair back. Two 1/8" NPT plugs included. Rubber Tubing and Adapters — One 9 ft. length of 3/16" I.D. tubing, terminal tube and two pipe thread to tubing adapters.

**POPULAR MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure, Inches w.c.</th>
<th>Velocity, FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-00AV-Port†</td>
<td>0-.25</td>
<td>300-2000</td>
</tr>
<tr>
<td>2000-0AV-Port†</td>
<td>0-.50</td>
<td>500-2800</td>
</tr>
<tr>
<td>2001AV-Port</td>
<td>0-1.0</td>
<td>500-4000</td>
</tr>
<tr>
<td>2002AV-Port</td>
<td>0-2.0</td>
<td>1000-5600</td>
</tr>
<tr>
<td>2010AV-Port</td>
<td>0-10</td>
<td>2000-12,500</td>
</tr>
</tbody>
</table>

†2000-00 - 4% accuracy; 2000-0 - 3% accuracy
Mounting Accessories

MOUNTING. A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. Complete mounting and connection fittings plus instructions are furnished with each instrument. A 4-9/16” hole is required for flush panel mounting.

Flush mounting is easily accomplished with the new A-300 Flush Mounting bracket. This bracket provides a solution to quickly and conveniently flush mount the Magnehelic®. The A-300 is ideal for mounting the Magnehelic® on control panel doors.

The A-368 is a simple bracket for quickly surface mounting the Magnehelic® gage. After securing the Magnehelic® to the A-368 bracket, mount the bracket on any flat surface.

The A-369 allows the Magnehelic® to be easily carried to locations where pressure readings need to be taken. The A-369 can stand on its own or hang on a nail or hook.

Other Mounting Options

A-299, Mounting Bracket, flush mount for Magnehelic® Gage. Bracket is then surface mounted. Steel with gray hammertone epoxy finish

A-371, Surface Mounting Bracket. Use with medium pressure (-MP) or high pressure (-HP) models only

A-610, Pipe Mounting Kit for installing on 1-1/4” to 2” horizontal or vertical pipe
NEW! Flush-Mount Kit for Magnehelic®
Ideal for Clean Rooms & Control Panels

Advantages and Specifications of the A-464 Kit
- Provides an innovative solution for flush mounting Magnehelic®
gages.
- Space pressure reference integral to mounting plate.
- Mounting applications include: Sheetrock walls, control panel
  enclosures and air handling equipment.
- Eliminates the need for special hole saws.
- Creates a professional look.
- Saves installation time and money.
- Outside dimensions: 6-1/4 x 6-1/4 x 1/4 inches (15.9 x 15.9 x 0.6 cm).
- Material: White ABS plastic.

STOCKED MODEL
A-464

NEW! Flush-Mount Space Pressure Sensor
Ideal for Clean Rooms

Advantages and Specifications of the A-465 Kit
- The professional way to sense space pressure.
- Mounting options include: Sheetrock walls, ceiling tiles or single
  gang electrical boxes.
- Non block reference opening prevents plugging.
- Saves time and money.
- Outside dimensions: 2-3/4 x 4-1/2 x 1/4 inches (6.9 x 11.4 x 0.6 cm).
- Attractive design blends in with building decor.
- Materials: White ABS plastic.

STOCKED MODEL
A-465
Sensing Static Pressure

For most industrial and scientific applications, the only air measurements needed are those of static pressure, total pressure and temperature. With these, air velocity and volume can be quickly calculated.

To sense static pressure, six types of devices are commonly used. These are connected with tubing to a pressure indicating instrument.

**Fig. 1-A** shows a simple thru-wall static pressure tap. This is a sharp, burr-free opening through a duct wall provided with a tubing connection of some sort on the outside. The axis of the tap or opening must be perpendicular to the direction of flow. This type of tap or sensor is used where air flow is relatively slow, smooth and without turbulence. If turbulence exists, impingement, aspiration or unequal distribution of moving air at the opening can reduce the accuracy of readings significantly.

**Fig. 1-B** shows the Dwyer No. A-308 Static Pressure Fitting. Designed for simplified installation, it is easy to install, inexpensive, and provides accurate static pressure sensing in smooth air at velocities up to 1500 FPM.

**Fig. 1-C** shows a simple tube through the wall. Limitations of this type are similar to wall type Fig. 1-A.

**Fig. 1-D** shows a static pressure tip which is ideal for applications such as sensing the static pressure drop across industrial air filters and refrigerant coils. Here the probability of air turbulence requires that the pressure sensing openings be located away from the duct walls to minimize impingement and aspiration and thus insure accurate readings. For a permanent installation of this type, the Dwyer No. A-301 or A-302 Static Pressure Tip is used. It senses static pressure through radially-drilled holes near the tip and can be used in air flow velocities up to 12,000 FPM. The angled tips shown have 4˝ insertion depth. Each has four radially drilled .040˝ sensing holes. All except Model A-303 mount in 3/8˝ hole in duct. For portable use, a magnet holds No. A-303 in place.

**Fig. 1-E** shows a Dwyer No. A-305 low resistance Static Pressure Tip. It is designed for use in dust-laden air and for rapid response applications. It is recommended where a very low actuation pressure is required for a pressure switch or indicating gage — or where response time is critical.

*A-304, Duct Connector*

*A-305, Static Pressure Tip, low resistance application, furnished with two (2) hex jam nuts and two (2) mounting washers for duct mounting and with 1/8˝ NPT pipe thread for pressure connection*

*A-305-SS, same as A-305 in Stainless Steel*
Fittings & Connectors

Fittings - Adapters

A-323, Elbow Compression Fitting, brass \( \frac{1}{8} \) NPT to \( \frac{1}{8} \) metal tubing
A-324, Compression Fitting, brass \( \frac{1}{8} \) NPT to \( \frac{1}{8} \) metal tubing
A-326, Compression Fitting, brass \( \frac{1}{8} \) NPT to \( \frac{3}{16} \) tubing
A-330, \( \frac{1}{8} \) Pipe Plug, socket hex, plated steel
A-332, Bushing, brass, \( \frac{1}{8} \) to \( \frac{1}{8} \) NPT
A-333, Bushing, brass, \( \frac{1}{8} \) to \( \frac{1}{8} \) NPT
A-334, Close Nipple, brass, \( \frac{1}{8} \) NPT
A-336, 90° Street L, brass, \( \frac{1}{8} \) NPT
A-337, Coupling, brass, \( \frac{1}{8} \) NPT
A-339, Adapter, brass, \( \frac{1}{8} \) NPT to \( \frac{1}{16} \) rubber and \( \frac{1}{8} \) I.D. plastic tubing
A-340, Adapter, nylon, \( \frac{1}{8} \) NPT to \( \frac{1}{16} \) I.D. rubber or \( \frac{1}{8} \) plastic tubing
A-342, "T" Assembly, plastic, for \( \frac{1}{8} \) I.D. rubber or \( \frac{1}{8} \) plastic tubing
A-343, "T" Assembly, plastic, for \( \frac{1}{8} \) plastic tubing
A-343-1, "T" Assembly, plastic, for \( \frac{1}{8} \) I.D. plastic tubing
A-346, "T" Compression Fitting, brass, \( \frac{1}{8} \) metal tubing
A-349, Reducer, brass, \( \frac{1}{8} \) female NPT to \( \frac{1}{8} \) male NPT

Valves - Connectors - Snubbers

A-310A, 3-Way Vent Valve, plastic, \( \frac{1}{8} \) NPT to \( \frac{1}{8} \) metal tubing. Positions are:
(1) Line: Gage connected to pressure source. (2) Off: Both gage and connection to pressure source closed. (3) Vent: Gage vented to atmosphere and connection to pressure source closed. 80 psi rating. Replaces former model A310 (brass). In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage.
A-310B, same as A-310A but with 10 PSI rating
A-311, Shut Off Valve, brass, \( \frac{1}{8} \) NPT to \( \frac{1}{8} \) NPT
A-312, Shut Off Valve, brass, \( \frac{1}{8} \) NPT to \( \frac{1}{8} \) metal tubing
A-355, Porting Valve, acrylic plastic, \( \frac{1}{8} \) NPT inserts. Used for convenient indication of pressure at two points with a single gage
A-365, Dual Porting Valve, acrylic plastic, \( \frac{1}{8} \) NPT fittings. For monitoring three pressures, two at a time, with one gage
Series PS Pressure Snubber
Designed to protect pressure instrumentation by dampening surges and pulsations and assuring steady average pressure readings
PS114, Brass 1/8" NPT
PS214, Stainless Steel 1/8" NPT

Optional Accessory Kits for Air Filters

A-602, Air Filter Kit. Accessory package includes two pressure tips with integral compression fittings, two 5 ft. lengths of 1/4" aluminum tubing and two 1/8" NPT to 1/4" tubing compression fittings
A-603, "T" Kit. Accessory package for using a pressure switch in conjunction with an air filter kit equipped Magnehelic®. Includes two 1/8" NPT to 1/4" tubing compression fittings and two compression tees.
A-604, "T" Kit. Accessory package for using a pressure switch in conjunction with a Magnehelic®. Includes two plastic tubing connector tees and two plastic tubing to 1/8" NPT adapters.
A-605, Air Filter Gage Accessory package. Adapts any standard Magnehelic® for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft. (1.5 m) lengths of 1/4" aluminum tubing, two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves.
**Miscellaneous Accessories**

### Filters

- **A-331**, \( \frac{1}{8} \) NPT Filter Vent Plug, nylon and sintered metal
- **A-391**, Line Filter, \( \frac{1}{4} \) female NPT x \( \frac{1}{4} \) male NPT
- **A-392**, Line Filter, \( \frac{1}{8} \) female NPT x \( \frac{1}{8} \) male NPT

**F222**, Liquid/Particle Filter for compressed air. Removes dirt, water and oil. 22 scfm maximum flow, \( \frac{1}{4} \) female NPT inlet and outlet
- 1201-2, Replacement Filter Element for F222 filter, package of 3

**F451**, Liquid/Particle Filter for compressed air. Removes dirt, water and oil. 45 scfm maximum flow, \( \frac{1}{8} \) female NPT inlet and outlet
- 1201-3, Replacement Filter Element for F451 filter, package of 3

### Gage Tubing

**Clear Tubing for Inspection**
Clear plastic tubing is easily inspected and is therefore best for test applications where a possibility of fluid entering the tubing exists.
- **A-220**, Flexible Vinyl Tubing, Clear \( \frac{3}{16} \) I.D. x \( \frac{5}{16} \) O.D., lengths to 500 ft, 45 psi maximum pressure @ 73°F
- **A-221**, Flexible Vinyl Tubing, Clear \( \frac{1}{8} \) I.D. x \( \frac{3}{16} \) O.D., lengths to 500 ft, 40 psi maximum pressure @ 165°F
- **A-222**, Flexible Vinyl Tubing, Clear .240” I.D. x .375” O.D., lengths to 500 ft, 35 psi maximum pressure @ 73°F

**Rubber Tubing for Portable Work**
Rubber tubing has less tendency to kink in storage and occupies less space, thus is best for portable work.
- **A-201**, Rubber Tubing, \( \frac{3}{16} \) I.D., 9 ft length
- **A-202**, Rubber Tubing, \( \frac{3}{16} \) I.D. length to 50 ft

**Metal Tubing for Permanent Installation**
Metal tubing is the most durable and is recommended for use in permanent installations.
- **A-210**, Aluminum Tubing, \( \frac{1}{4} \) O.D., 5 ft length, 500 psi maximum pressure 200°F
- **A-211**, Aluminum Tubing, \( \frac{1}{4} \) O. D., lengths to 50 ft, 500 psi maximum pressure @ 200°F

### Pumps

**Air Source for Bubbler Level Systems**
A-394, Electric Air Pump. Provides convenient source of purge air in bubbler type liquid level systems. Dual diaphragm design allows operation of two systems simultaneously.

**Aspirator Bulb for Quick Leak Checks**
A-350, Aspirator Bulb. Used as pressure source in calibration and leakage tests.

**Calibration Pump with Precise Adjustment**
A-396A, Calibration pump. Serves as pressure source to calibrate gages and transmitters or to set pressure switches. Use with manometer or other pressure standard. Includes volume adjuster enabling fine pressure control and bleed valve. Generates pressures from a fraction of an inch w.c. to 72 psig (5 bar). Includes barbed fitting, tee connector and three 36' lengths of vinyl tubing.
**Related Products**

**Series A-304 Duct Connector**

The Series A-304 Duct Connector allows for easy and fast connection of sensing tubes to ducting for static pressure reading to be taken. The low profile plastic connector is supplied complete with two screws and extension piece (80 mm long) for use with lagged or insulated ducts. The A-304 is suitable for use with 5 mm ID, PVC tubing.

**STOCKED MODEL**

**Series A-304 Duct Connector**

**Model A-720 Strap Wrench**

The A-720 offers the user a versatile tool to grip, undo & tighten a wide variety of awkwardly shaped and sized objects. The A-720 also makes the job of fitting Adjustable Signal Flags (ASF) to Magnehelic® Gages much easier by simply following the instruction included with each cover supplied.

**STOCKED MODEL**

**Model A-720 Strap Wrench**

**Clean Room Pressure Sensors**

The Stainless Steel room sensors are a static pressure pick-up point for use in clean rooms and other contained environment areas. The all stainless steel construction offers a low profile, cleanable and neat answer to tubing termination within these areas. Three models exist to cover all needs: The A-414 has a push-on termination suitable for 5mm flexible plastic tubing, the A-415 has a compression fitting, for use with 6mm OD SS tubing and the A-416 is designed for fixing to standard partitions so that no fittings are shown on the clean room side; this model is clamped in place across the partition. The A-414 and A-415 are supplied with stainless steel mounting screws.

**SPECIFICATIONS**

**APPLIED APPLICATIONS**

- All Stainless Steel construction (satin finish).
- Supplied with SS mounting screws (not A-416).

**APPLICATIONS**

These units offer a convenient, cost effective and neat way to terminate the static pressure connection points in Clean Rooms and Controlled Environments.

**STOCKED MODELS in bold**

A-414  
A-415  
A-416
Do you need a Magnehelic® gage and a transmitter? The Dwyer Series 605 offers both in one product! The 605 Magnehelic® indicating transmitter provides for both visual monitoring and electronic control of very low differential pressure. The Series 605 is ideal for control applications in building HVAC systems where local indication is desired during routine maintenance checks or necessary when troubleshooting the system. The easily read dial gage is complimented by the two-wire, 4-20 mA control signal utilizing the time-proven Dwyer Magnehelic® gage mechanical design and Series 600 transmitter technology. The compact package reduces needed panel space by eliminating an additional transmitter plus reduces installation time.

The Transmitter can be surface mounted or flush mounted in a 4-13/16 (122 mm) diameter panel hole. Hardware is included for either option. Duplicate 1/8” female NPT pressure connections on side and back ease installation. Based on its unique combination of price and performance, the Series 605 transmitter is ideal for use in commercial and industrial energy management systems. Typical applications include control of variable speed fans and blowers as well as the positioning of system dampers. Continuous data on air velocities in ducts and air filter pressure drops can be fed to the controlling computer.

### Stocked Models in bold

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Range in w.c.</th>
<th>Maximum Pressure</th>
<th>Electrical Accuracy ±/%</th>
<th>Mechanical Accuracy ±/%</th>
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<td>2</td>
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### TRANSMITTER SPECIFICATIONS

**Accuracy:** See chart.

**Stability:** ±1% F.S./yr.

**Pressure Limits:** See chart.

**Temperature Limits:** 20 to 120°F (-6.67 to 48.9°C).

**Process Connections:** 1/8” female NPT.

**Size:** 4” (101.6 mm) dial face, 5” (127 mm) O.D. x 2-11/16” (68.3 mm).

**Weight:** 1 lb, 12.6 oz (811 g).

**Agency Approvals:** CE.
Ideal for use with our precision manometers and air velocity gauges, Dwyer Pitot Tubes are constructed from corrosion resistant stainless steel for a lifetime of service. ASME design meets AMCA and ASHRAE specifications for maximum accuracy over a wide variety of flow conditions. No correction factors required as ASHRAE tip design yields a calibration factor of 1. ASHRAE design needs no calibration! Permanent, stamped insertion depth graduations on sides of 160 series facilitate accurate positioning. Static pressure port is parallel to sensing tube allowing quick, easy alignment of tube with air flow. Low sensitivity to misalignment gives accurate reading even when tube is misaligned up to 15 degrees. Various standard sizes are available for use in ducts as small as 4” dia. or as large as 36 ft. dia. A universal model fits user supplied 3/4” schedule 40 (standard) pipe in any length. Several convenient mounting options are available for permanent installations.

- No calibration needed.
- Precisely located, burr-free static pressure holes.
- Hemispherical tip design, best for accuracy if imperfectly aligned and nearly impossible to damage.
- Long lasting 304 stainless steel construction.
- Silver soldered connections for leak-proof operation.
- ASME design meets AMCA and ASHRAE specifications.
- Coefficient of “1.”
- 5/16” models rated to 1500°F.
- Extended static connection helps guide tip within recommended 15° of air flow direction.
- Inch graduations on sides of 160 series to quickly determine exact insertion depth.
- Dwyer Air Velocity Calculator, direct reading flow charts and instructions included.
- Use 1/8” models in ducts as small as 4”, 5/16” models in ducts 10” or larger.
- Optional mounting gland or split flange make permanent installation fast and simple.

**STOCKED MODELS** in bold

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Insertion Length</th>
<th>Model Number</th>
<th>Insertion Length</th>
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<tr>
<td>160-72</td>
<td>72”</td>
<td>167-12</td>
<td>12”</td>
</tr>
</tbody>
</table>

* Universal model for permanent installation and connection to metal tubing. Make any length Pitot tube with 3/4” schedule 40 pipe, 3/8” to 1/2” reducing bushing and 1/4” metal tubing.

**ACCESSORIES**


No. A-159 Mounting Gland — Versatile adapter slips on any Series 160, 5/16” standard Pitot tube made after Dec. 1990. Two-part stainless steel fitting slides over tube and provides permanent, secure mounting. Where duct interior is accessible, use the washers and jam nut supplied. For blind applications or in thicker materials, use model A-156 flange mounting plate. Once tube is adjusted to proper depth and angle, tighten smaller hex bushing to lock position. Graphite bushing inside assures leak-proof seal even at higher temperatures. Teflon® bushing also available. **NOTE:** For full insertion with this fitting, order next longer Pitot tube.

No. A-397 Step Drill. For fast, convenient installation of Pitot tubes in sheet metal ducts. No center punch needed; automatic de-burring. Drills six sizes from 3/16” - 1/2” in 1/16” increments.
Capsuhelic® Pressure Gage has a large, easy-to-read 4” (102 mm) dial.

Do you need to monitor low differential pressures but have potentially high system static pressures. If the answer is yes, then the Capsuhelic® is the perfect solution!

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: May be used with Hydrogen where pressures are less than 35psi.

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).

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

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 1-1/4”-2” horizontal or vertical pipe. Installation is same as Magnehelic® gage shown on page 1. 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.
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.

### SERIES 4000 CAPSULEHELIC® — MODELS AND RANGES

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

### STOCKED MODELS in bold

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Range, Inches of Water</th>
<th>Model Number</th>
<th>Range MM of Water</th>
<th>Model Number</th>
<th>Range, CM of Water</th>
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<td>*4302</td>
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<td>A-309</td>
<td>-ASF (Adjustable Signal Flag)</td>
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<td>A-311</td>
<td>-B (Brass Case)</td>
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<td></td>
<td>A-314</td>
<td>Scale Overlays - Red, Green, Mirrored or combination. Specify Locations</td>
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<td>A-496</td>
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<td>A-610</td>
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</table>

*These ranges available for vertical scale position only.
†These ranges use Spiralhelic® movement.
The Dwyer Series DH Digihelic® Differential Pressure Controller is the ideal instrument for pressure, velocity and flow applications, achieving a 0.5% full scale accuracy on ranges from 5 to 100 in. w.c.

The Digihelic® provides a 4-20 mA process output, 2 SPDT relays with adjustable dead bands, and selection of pressure, velocity or flow operation. Units operate from either 120/220 VAC or 24 VDC. Programming is simplified using a menu key, and includes: security level; set point or set point and alarm operation; auto or manual alarm reset; English or Metric engineering units; K-factor adjustment for use with various Pitot tubes and flow sensors; and circular or rectangular duct size for volumetric flow operation.

### FEATURES
- Field Programmable for Pressure, Velocity or Flow Operation
- 4-20 mA Process Output
- 2 SPDT Relays with Selectable Dead Bands
- Universal Power Supply of 120/220 VAC & 24 VDC
- Retrievable Peak and Valley Readings
- 0.5% Full Scale Accuracy Sensor
- Modbus® Communications
- Compact, 1/8 DIN Housing with NEMA 4X (IP66) Front Face

### SPECIFICATIONS
- **Service:** Air and non-combustible, compatible gases.
- **Wetted Materials:** Consult factory.
- **Housing Material:** ABS plastic, UL approved 94-V-0.
- **Accuracy:** ±0.5% at 77°F (25°C) including hysteresis and repeatability.
- **Stability:** < ±1% per year.
- **Pressure Limits:** 3 X range.
- **Temperature Limits:** 32 to 140°F (0 to 60°C).
- **Compensated Temperature Limits:** 32 to 140°F (0 to 60°C).
- **Thermal Effects:** 0.020%/°F (0.036/°C) from 77°F (25°C).
- **Power Requirements:** High Voltage Power = 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC. Low Voltage Power = 24 VDC ±20%.
- **Power Consumption:** Low Voltage Power = 24 VDC - 130 mA max. High Voltage Power = 100 to 240 VAC, 132 to 240 VDC - 7VA max.
- **Zero & Span Adjustments:** Accessible via menus.
- **Response Time:** 250 ms.
- **Display:** 4 digit LCD 0.4˝ height LED indicators for set point and alarm status.
- **Electrical Connections:** Screw terminals.
- **Process Connections:** Compression fitting for use with 1/8˝ ID X 1/4˝ OD tubing (3.175 mm ID x 6.35 mm OD).
- **Enclosure Rating:** Face designed to meet NEMA 4X (IP66).
- **Mounting Orientation:** Mount unit in horizontal plane.
- **Size:** 1/8 DIN. Panel Cutout: 1.772 x 3.620 in (45 x 92 mm).
- **Weight:** 14.4 oz. (408 g).
- **Serial Communications:** Modbus® RTU, RS485, 9600 Baud.

### SWITCH SPECIFICATIONS
- **Switch Type:** 2 SPDT relays.
- **Electrical Rating:** 8 Amps at 240 VAC resistive.
- **Set Point Adjustment:** Adjustable via keypad on face.

### STOCKED MODELS in bold

<table>
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<tr>
<th>Model No.</th>
<th>in. wc</th>
<th>ft. wc</th>
<th>mm wc</th>
<th>cm wc</th>
<th>psi</th>
<th>in. Hg</th>
<th>mm Hg</th>
<th>mbar</th>
<th>Pa</th>
<th>kPa</th>
<th>hPa</th>
<th>oz. in.</th>
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<td>.4167</td>
<td>127.0</td>
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<td>.1806</td>
<td>.3678</td>
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<td>1245</td>
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Bi-Directional Ranges also available: DH-015 Range: 2.5 - 0 - 2.5 in. w.c. DH-016 Range: 5 - 0 - 5 in. w.c.

Note: Velocity and volumetric flow only available on models DH-006 & DH-007.
Magnehelic®

Accessory Guide

Corporate Headquarters
Dwyer Instruments, Inc.
102 Indiana Highway 212
P.O. Box 373
Michigan City, IN 46361 U.S.A.
Telephone: 219/879-8000
Fax: 219/872-9057

Houston Office
Telephone: 281/446-1146
Fax: 281/446-0696

Australia AUS
Dwyer Instruments, Pty. Ltd.
Unit 4, 11 Waverley Drive
Unanderra, NSW 2526 Australia
Telephone: 61 2 4272 2055
Fax: 61 2 4272 4055

United Kingdom UK
Dwyer Instruments Ltd
Unit 16, The Wye Estate, London Road
High Wycombe, Bucks HP11 1LH-U.K.
Telephone: (+44) (0)1494 461707
Fax: (+44) (0)1494 465102

www.dwyer-inst.com

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