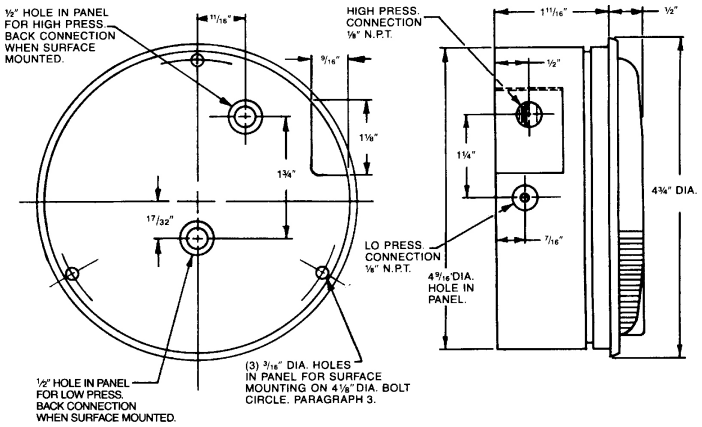
MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE

2000 Series

Specifications

Dimensions: 4-3/4" dia. X 2-3/16" deep (12 cm dia. X 5.56 cm dia.)
Weight: 1 lb. 2 oz. (.54 kg)
Finish: Baked dark gray enamel.
Connections: 1/8 N.P.T high and low pressure taps, duplicated, one pair side and one pair back.
Accuracy: Plus or minus 2% of full scale, at 70°F (21°C). (Model 2000-0, 3%; 2000-00, 4%).
Pressure Rating: 15 PSI.
Ambient Temperature Range: 20° to 140°F (-7°C to 60°C)
Standard gauge accessories include two 1/8" (3.18 mm) N.P.T. plugs for duplicate pressure taps, two 1/8" (3.18 mm) pipe thread to rubber tubing adapters, and three flush mounting adapters with screws.



Caution: For use with air or compatible gases only.

For repeated over-ranging or high cycle rates, contact factory.

Hydrogen Gas Precautionary Note: The rectangular rare earth magnet used in the standard gauge may not be suitable for use with hydrogen gas since a toxic and explosive gas may form For hydrogen service, consult the factory for an alternate gauge construction.

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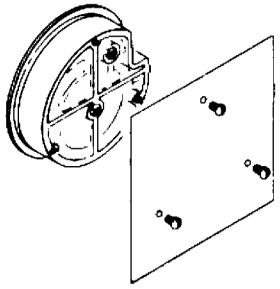
Installation

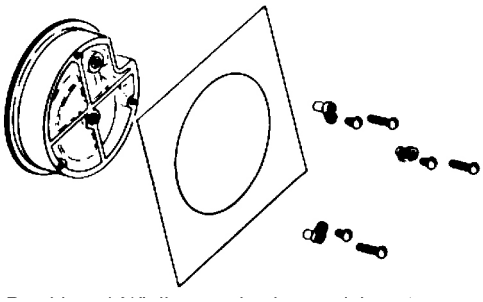
1. Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C) Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
2. All standard Magnehelic gauges are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gauges are to be used in other than vertical position, this should be specified on the order. Many higher range gauges will perform within tolerance in other positions with only rezeroing. Low range Model 2000-00 and metric equivalents must be used in the vertical position only.
3. Surface Mounting

Locate mounting holes, 120° apart on a 4-1/8" (10.48 cm) dia. circle. Use No. 6-32 machine screws of appropriate length.

4. Flush Mounting



Provide a 4 9⁄16" (11.59 cm) dia. opening in panel. Insert gauge and secure in place with No. 6-32 machine screws of appropriate length, with adaptors, Part No. 360c, firmly secured in place. To mount gauge on I-1⁄4" to 2" (3.16 cm to 5.08 cm) pipe, order optional A-610 pipe mounting kit.



5. To zero the gauge after installation

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

Operation

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.

Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.

Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports. When one side of gauge is vented in a dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gauge clean.

a. For portable use or temporary installation, use 1/8" (3.18 mm) pipe thread to rubber tubing adapter and connect to source of pressure with rubber or Tygon tubing.

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Maintenance

b. For permanent installation, 1/4" (3.18 mm) 0. D., or larger, copper or aluminum tubing is recommended. See accessory bulletin S-101 for fittings.

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gauge to atmosphere and rezero. Optional vent valves, (bulletin S-101), should be used in permanent installations.

Calibration Check: Select a second gauge or manometer of known accuracy and in an appropriate
range. Using short lengths of rubber or vinyl tubing, connect the high pressure side of the Magnehelic gauge and the test gauge to two legs of a tee. Very slowly apply pressure through the third leg. Allow a few seconds for pressure to equalize, fluid to drain, etc., and compare readings. If accuracy unacceptable, gauge may be returned to factory for recalibration.To calibrate in the field, use the following procedure.

1. With gauge case, P/N 1, held firmly, loosen bezel, P/N 4 by turning counterclockwise. To avoid damage, a canvas strap wrench or similar tool should be used.
2. Lift out plastic cover and "O" ring.
3. Remove scale screws and scale assembly. Be careful not to damage pointer.
4. The calibration is changed by moving the clamp, P/N. 70-b. Loosen the clamp screw(s) and move slightly toward the helix if gauge is reading high, and away if reading low. Tighten clamp screw and install scale assembly.
5. Place cover and O-ring in position Make sure the hex shaft on inside of cover is properly engaged in zero adjust screw, P/N 230-b.
6. Secure cover in place by screwing bezel down snug. Note that the area under the cover is pressurized in operation and therefore gauge will leak if not properly tightened.
7. Zero gauge and compare to test instrument. Make further adjustments as necessary

Caution: If bezel binds when installing, lubricate threads sparingly with light oil or molybdenum disulphide compound.
Warning: Attempted field repair may void your warranty, Recalibration or repair by the user is not recommended. For best results, return gauge to the factory. Ship prepaid to:

CAMCORP, Inc.
9732 Pflumm Road
Lenexa, KS 66215

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Troubleshooting Tips

Gauge won't indicate or is sluggish

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O" ring damaged, missing.
5. Pressure sensors, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C) order gauge with low temperature, (LT) option.

Pointer stuck-gauge can't be zeroed

1. Scale touching pointer.
2. Spring/magnet assembly shifted and touching helix.
3. Metallic particles clinging to magnet and interfering with helix movement.
4. Cover zero adjust shaft broken or not properly engaged in P/N 230-b adjusting screw.

We generally recommend that gauges needing repair be returned to the factory. Parts used in various sub-assemblies vary from one range of gauge to another, and use of incorrect components may cause improper operation or failure. Gauges repaired at the factory are carefully calibrated and tested to assure "like-new" operation. After receipt and inspection, we will be happy to quote repair costs before proceeding.

Consult factory for assistance on unusual applications or conditions.

Use with air or compatible gases only.

Ordering Instructions

When corresponding with the factory regarding Magnehelic® gauge problems, refer to the call-out numbers in this view on the next page. Be sure to include model number, pressure range, and any special options. Field repair is not recommended; contact the factory for repair service information.

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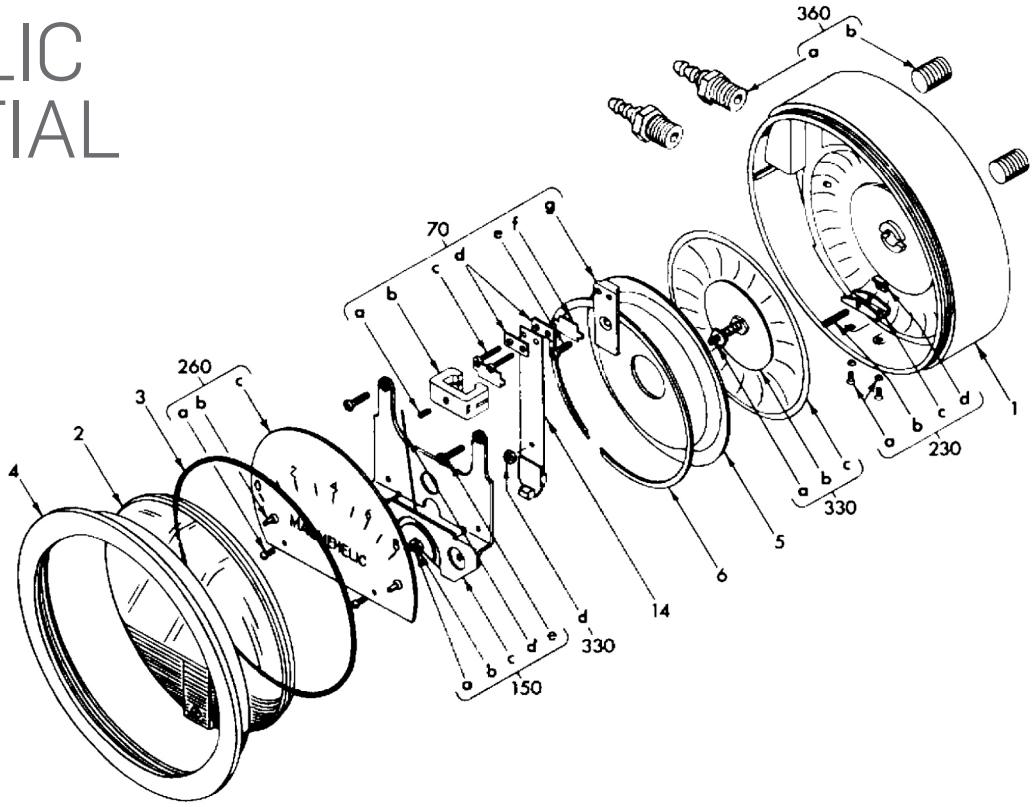
Magnehelic Gauge Exploded View



1. Case
2. Cover with zero adjust assy.
3. "O" ring seal
4. Bezel
5. Diaphragm sealing plate
6. Retaining ring
70. Range Spring assembly
    a. Clamp set screw
    b. Clamp
    c. Mounting screws (2 req'd)
    d. Clamping shoe (2 req'd)
    e. Clamp plate screw
    f. Spacer (2 req'd)
    g. Clamp plate
14. Range Spring with magnet
150. Wishbone Assembly -consists of:
    a. Front jewel
    b. Locking nut
    c. Wishbone
    d. Pointer
    e. Mounting screws (2 req'd)
    f. Helix assembly (not shown)
    g. Pivots (2 req'd) (not shown)
    h. Rear jewel (not shown)
230. Zero adjust assembly-consists of:
    a. Foot screws with washers (2 req'd)
    b. Adjust screw
    c. Foot
    d. Finger
260. Scale Assembly-consists of:
    a. Mounting screws (2 req'd)
    b. Bumper pointer stop (2 req'd)
    c. Scale
330. Diaphragm Assembly -consists of:
    (Arbor press needed to install)
    a. linkage assy., complete
    b. Front plate
    c. Diaphragm
    d. Rear plate (not shown)
    e. Plate washer (not shown)
360. Mounting Hardware Kit
    a. Adapter -pipe plug 1/8" (3.18 mm) NPT to rubber tubing - (2 req'd)
    b. Pipe plug 1/8" (3.18 mm) NPT-(2 req'd)
    c. Mounting lug (3 req'd)
    d. Long screw (3 req'd)
    e. Short screw (3 req'd)