New

# MG

## Low Differential Pressure Gauge

User Manual


ABUS TECHNOLOGIES INC.

## WARNING

- This manual should be passed on to the end user.
- The contents of this manual are subject to change without prior notice.
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- ABUS gives no warranty of any kind with regard to this manual, including, but not limited to, fitness for a particular purpose.
- If any question arises or errors are found, or if any information is missing from this manual, please inform your supplier or inform at info@abustek.com.
- The specifications mentioned in this manual are limited to those for the standard type under the specified model number break-down and do not necessarily apply for customized instruments.
- Please note that changes in the specifications, construction, or component parts of the instrument may not immediately be reflected in this manual at the time of change.
- If the customer or any third party is harmed by the use of this product, ABUS assumes no responsibility for any such harm owing to any defects in the product which were not predictable, or for any indirect damages.

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all Warning and Caution notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of Technical Communications Department, ABUS Technologies

## HEALTH AND SAFETY

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given. Any deviation from these instructions will transfer the complete liability to the user.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

# CATALOGUE

# 1. INTRODUCTION

The magnet-helix type gauges are designed to give fast, accurate indication of differential pressures. The gauge may be served as a readout device when measuring fluids (Air and non-combustible, compatible gases). Guaranteed within 2% of full scale – and for the wide choice of 81 ranges available to precisely suit your needs. A simple, frictionless movement, which caused by pressure difference, forces the magnetic helix to turn in order to maintain the gap and the pointer fixed to the helix turns accordingly. It quickly indicates low air or non-corrosive gas pressures – positive, negative or differential. This design resists shock, vibration and over-pressures. No manometer fluid to evaporate, freeze or cause toxic or leveling problems.

## Applications

The MG are designed to measure positive, negative, or differential pressure of low air and non-corrosive gases with a full span accuracy of 2% at a competitive price. They are widely used for filter condition checks, HVAC control, and the measurement of fan and blower pressures, air velocity, and pressure drop across orifice plates applications, as well as other applications in the pharmaceutical and semiconductor manufacturing industry.

# 2. PRESENTATION

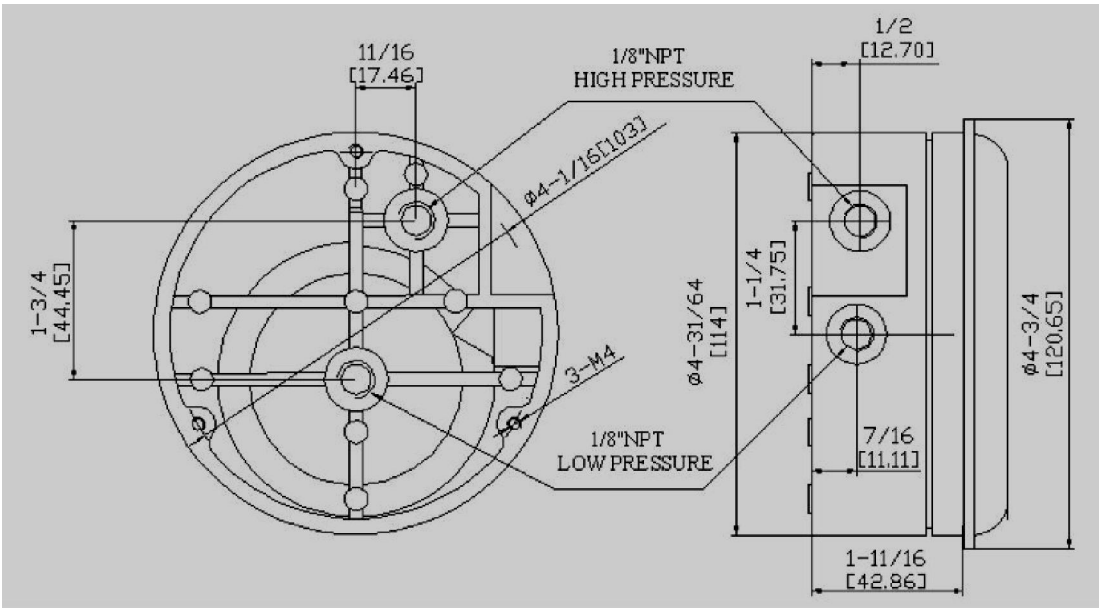
## 2.1 Features

1. Magnet-helix indicating mechanism ideal for low DP measurement
2. A wide selection of ranges from 0Pa to 60Pa at up to 2.5KPa
3. Accuracy 2% of FS
4. Inertia-free, drift-free pointer indication
5. OEM solutions available

## 2.2 Technical Parameters

| | |
|---|---|
| **Service:** | Air and non-combustible, compatible gases |
| **Ranges:** | Refer Ordering Table below. |
| **Accuracy:** | ±2% of full span at 21°C (±3% on MG-0.50IN, MG/Z-0.5IN, MG-10MM, MG-100Pa, MG-125Pa and ±4% on MG-0.25IN, MG-6MM, MG-60Pa ranges). |
| **Ambient Temperature:** | -7 ~ 60°C |
| **Pressure Limit:** | -68 ~ 100KPa |
| **Overpressure:** | Relief plug opens at approximately 25Psig (172KPa) |
| **Process Connections:** | 1/8″ female NPT duplicate high and low pressure taps: one pair side and one pair back |
| **Case and Bezel Material:** | Die cast aluminum |
| **Weight:** | 460g |
| **Dial Size**: | 4″ Diameter |
| **Mounting Position:** | Vertical |
| **Standard Accessories:** | Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapter, and three flush mounting adapters with screws. |

# 3. DIMENSIONS




**All Dimensions in mm**

## 4. ORDERING DETAILS

| Model No. | Range ($inH_2O$) |
|---|---|
| MG-0.25IN** | 0-0.25 |
| MG-0.50IN* | 0-0.50 |
| MG-1.0IN | 0-1.0 |
| MG-2.0IN | 0-2.0 |
| MG-3.0IN | 0-3.0 |
| MG-4.0IN | 0-4.0 |
| MG-5.0IN | 0-5.0 |
| MG-6.0IN | 0-6.0 |
| MG-8.0IN | 0-8.0 |
| MG-10IN | 0-10 |
| MG-15IN | 0-15 |
| MG-20IN | 0-20 |
| MG-25IN | 0-25 |
| MG-30IN | 0-30 |
| MG-40IN | 0-40 |
| MG-50IN | 0-50 |
| MG-60IN | 0-60 |
| MG-80IN | 0-80 |
| MG-100IN | 0-100 |
| MG-150IN | 0-150 |

| Model No. | Range Zero Center ($inH_2O$) |
|---|---|
| MG/Z-0.5IN* | 0.25-0-0.25 |
| MG/Z-1.0IN | 0.5-0-0.5 |
| MG/Z-2IN | 1-0-1 |
| MG/Z-4IN | 2-0-2 |
| MG/Z-10IN | 5-0-5 |
| MG/Z-20IN | 10-0-10 |
| MG/Z-30IN | 15-0-15 |

| Model No. | Range ($mmH_2O$) |
|---|---|
| MG-6MM** | 0-6 |
| MG-10MM* | 0-10 |
| MG-25MM | 0-25 |
| MG-50MM | 0-50 |
| MG-80MM | 0-80 |
| MG-100MM | 0-100 |

| Model No. | Range (psi) |
|---|---|
| MG-1PSI | 0-1 |
| MG-2PSI | 0-2 |
| MG-3PSI | 0-3 |
| MG-4PSI | 0-4 |
| MG-5PSI | 0-5 |
| MG-10PSI | 0-10 |
| MG-15PSI | 0-15 |
| MG-20PSI | 0-20 |
| MG-30PSI | 0-30 |

| Model No. | Range ($cmH_2O$) |
|---|---|
| MG-15CM | 0-15 |
| MG-20CM | 0-20 |
| MG-25CM | 0-25 |
| MG-50CM | 0-50 |
| MG-80CM | 0-80 |
| MG-100CM | 0-100 |
| MG-150CM | 0-150 |
| MG-200CM | 0-200 |
| MG-250CM | 0-250 |
| MG-300CM | 0-300 |

| Model No. | Range (Pa) |
|---|---|
| MG-60Pa** | 0-60 |
| MG-100Pa* | 0-100 |
| MG-125Pa* | 0-125 |
| MG-250Pa | 0-250 |
| MG-300Pa | 0-300 |
| MG-500Pa | 0-500 |
| MG-750Pa | 0-750 |

| Model No. | Range (KPa) |
|---|---|
| MG-1KPa | 0-1 |
| MG-1.5KPa | 0-1.5 |
| MG-2KPa | 0-2 |
| MG-3KPa | 0-3 |
| MG-4KPa | 0-4 |
| MG-5KPa | 0-5 |
| MG-8KPa | 0-8 |
| MG-10KPa | 0-10 |
| MG-15KPa | 0-15 |
| MG-20KPa | 0-20 |
| MG-25KPa | 0-25 |
| MG-30KPa | 0-30 |

| Model No. | Zero Center Range |
|---|---|
| MG/Z-20MM | 10-0-10 mmH2O |
| MG/Z-4CM | 2-0-2 cmH2O |
| MG/Z-10CM | 5-0-5 cmH2O |
| MG/Z-30CM | 15-0-15 cmH2O |

**Zero Center Ranges**

| Model No. | Range (Pa/KPa) |
|---|---|
| MG/Z-250Pa | 125-0-125 |
| MG/Z-500Pa | 250-0-250 |
| MG/Z-1KPa | 0.5-0-0.5K |
| MG/Z-3KPa | 1.5-0-1.5K |

**Dual Scale English/Metric Models**

| Model No. | Range ($inH_2O$) | Range (Pa/KPa) |
|---|---|---|
| MG/D-0.5 | 0-0.5 | 0-125 |
| MG/D-1.0 | 0-1.0 | 0-250 |
| MG/D-2.0 | 0-2.0 | 0-500 |
| MG/D-3.0 | 0-3.0 | 0-750 |
| MG/D-4.0 | 0-4.0 | 0-1.0 |
| MG/D-6.0 | 0-6.0 | 0-1.5K |
| MG/D-8.0 | 0-8.0 | 0-2.0K |
| MG/D-10 | 0-10 | 0-2.5K |

# 5. CONNECTIONS

## 5.1 Positive Pressure Measurement

Connect the pressure tubing to either of the two ports marked “high pressure” on the gage and plug the other one. Vent the ports marked “low pressure” to atmosphere.

## 5.2 Negative Pressure Measurement

Connect the pressure tubing to either of the two ports marked “low pressure” on the gage and plug the other one. Vent the ports marked “high pressure” to atmosphere.

## 5.3 Differential Pressure Measurement

Connect the higher pressure tubing to either of the two ports marked “high pressure” on the gage and plug the other one. Connect the lower pressure tubing to either of the two ports marked “low pressure” on the gage and plugging the other one.

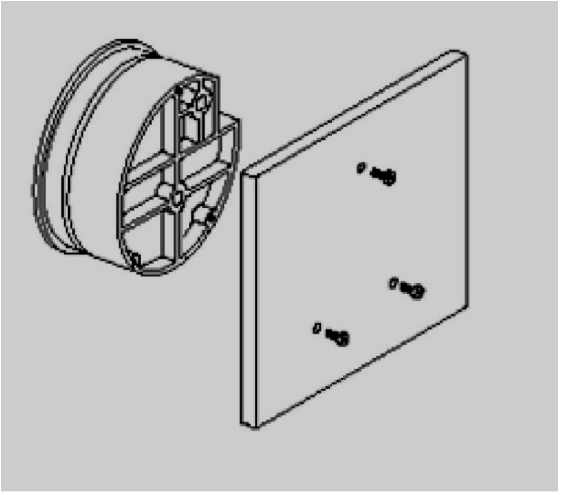
# 6. INSTALLATION

## 6.1 Recommendation

- Upon receipt please inspect the instrument for the intended application range.
- The instrument should be installed in a place where excessive pressure is not present and the ambient temperature is less than 140°F (60°C).
- All standard MG gauges are calibrated in the vertical position. To maintain the specified accuracy, the gauge must be mounted in the vertical position.

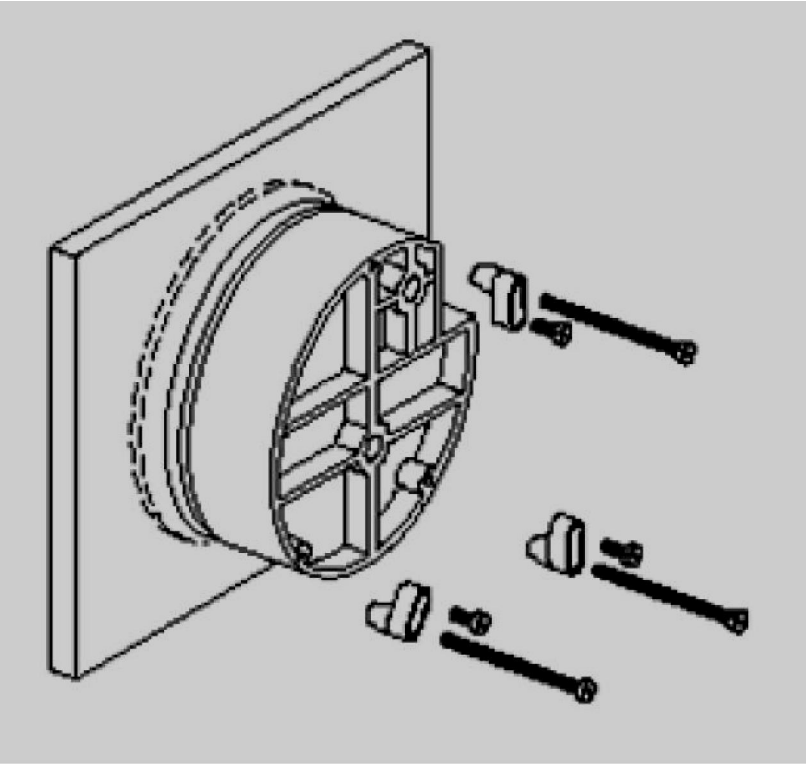
## 6.2 Surface Mounting

Drill 3 holes spaced equally apart on a 4 1/16" diameter circle to match the holes on the back of the gauge. Secure the gauge with 3 mounting screws of suitable length provided.



### 6.3 Flush or Panel Mounting

Cut an opening in the panel 4 9/16" in diameter. Put the gauge in the panel cutout, attach adapters, and use the 6 mounting screws provided to fasten the gauge in place.



## 7. CONFIGURATION

### 7.1 Zero Point Adjustment

Zero adjustment can be made after the installation. Use the zero adjusting screw at the bottom of the cover to zero the pointer while both the high and low pressure ports are open to atmospheric pressure.

### 7.2 Indicating Mechanism

When pressure is applied to both sides of the diaphragm in operation, any difference in pressure causes the diaphragm, the spring that the diaphragm is linked to, and the magnet attached to the spring to move. The movement of the magnet forces the magnetic helix to turn in order to maintain the gap, and the pointer fixed to the helix turns with it.

## 8. SAFETY PRECAUTIONS

1. The unit should be powered for 15 minutes before use for electronic device.
2. Use in ambient temperature of 0-60˚C.
3. Avoid vibrations, shock, excessive dust, corrosive chemical materials or gaseous environment.
4. Input wire should not be too long. If measured signal have to be far away from the unit, please use 2-core shielded cable.
5. Use this instrument in the scope of its specifications, otherwise fire or malfunctions may result.
6. Contact of the instrument, with organic solvents or oils should be avoided.
7. Do not turn on the power supply until all of the wiring is completed. Otherwise electrical shock, fire or malfunction may result.
8. Do not disassemble, repair or modify the instrument.
9. All connections should be tightened properly.
10. Power supply should be constant, should not be fluctuating.

## 9. WARRANTY

ABUS provides the original purchaser of this instrument a one (1) year warranty against defects in material and workmanship under the following terms:

- The one year warranty begins on the day of shipment as stated on the sales bill.
- During the warranty period all costs of material and labor will be free of charge provided that the instrument does not show any evidence of misuse.
- For maintenance, return the instrument with a copy of the sales bill to our factory.
- All transportation and insurance costs should be covered by the owner of the equipment.
- Should any sign of electrical or mechanical shock, abuse, bad handling or misuse be evident the warranty voids and maintenance costs will be charged.