Since 1967...

MASS

Operation Instructions: Pressure & DP Gauges

General:

This Operating Manual contains fundamental and essential advice to be followed for the installation, operation and servicing of the device. It must be read without fail before assembly and start-up of the device by the fitter, the operator and the specialist personnel responsible for the device. This Operating Manual must be available at the point of use at all times.

Failure to respect this safety information, the envisaged uses or the limit values relating to use indicated in the technical data for the device may result in risk or to injury to people, the environment or the plant. Claims for compensation for damage against the device supplier are excluded in such an eventuality.

Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.

This Operating Manual may only be copied and passed on as a complete document without the special permission of the publisher.

Safety:

Pressure gauges are pressurized parts where failure can result in hazardous situations. The selection of pressure gauge should be made in accordance with the rules set out in EN 837.

Before installation, commissioning and operation ensure that the appropriate pressure gauge has been selected in terms of measuring range, design and specific measuring conditions.

The compatibility of the materials under pressure with the medium must be checked.

Intended Use:

The devices are only to be used for the intended purpose as described by the manufacturer.

The devices are used for direct display of pressures, vacuum and compound pressure.

The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

Staff Qualification:

The device may only be installed and started up by specialist staffs that are familiar with installation, start-up and operation of the product.

Specialist staffs are people who are able to assess the work assigned to them on the basis of their specialist training, their knowledge and experience and their knowledge of the relevant standards, and can identify possible risks.

For devices in explosion-protected configuration, these staff must have been trained or instructed in, or be authorized for, working on explosion-protected devices in potentially explosive plants.

Special hazard:

For hazardous media such as oxygen, acetylene, flammable or toxic gases or liquids, and refrigeration plants, compressors, etc., in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.

Residual media in dismounted pressure gauges can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

Mounting:

Commissioning and decommissioning to be undertaken by authorized and qualified specialist staff only.

The mounting of measuring instruments shall be in proximity of measuring point, easily accessible and safe from vibrations and always coincide with the position as indicated on the dial. If no such statement is printed on the dial, the gauges must be mounted in a 90° ±5° position with the vertical dial. If the instrument cannot be protected against shock or vibration, use an additional movement damping feature (liquid filled or pulsation dampener). The measuring instrument must be protected against damages, great pollution, high fluctuation of temperature and one sided heat radiation for the DP gauge. Please note the freezing point of media and choose a frost-protected place for the DP gauges.

If the process temperature at the gauge is in excess of the maximum allowable operation temperature, than depending on the application a syphon, diaphragm seal or sufficient length of pipe/capillary has to be mounted between the pressure tap and the instrument.

When screwing gauges in, the force required for this must not be applied through the case, but rather through the spanner flats (using suitable tool) provided for this purpose on the wrench flats of standard connections.

Correct sealing of pressure gauge connections with parallel threads must be made using suitable sealing rings, sealing washers. The sealing of tapered threads (e.g. NPT threads) is made by

Precision Mass Products Pvt. Ltd.
A JV Partner of Ashcroft India
Plot No: 2306, G.I.D.C, Chhatral, Tal: Kalol,
Dist: Gandhinagar, Chhatral - 382729, India
P: +91 2764 233681/2/3 F: +91 2764 233440
E: sales@precisionmass.com W: www.precisionmass.com

providing the thread with additional sealing material such as, for example, PTFE tape.

The torque depends on the seal used. Connecting the gauge using a clamp socket or a union nut is recommended, so that it is easier to orientate the gauge correctly. When a blow-out device is fitted to a pressure gauge, it must be protected against being blocked by debris and dirt.

In order to avoid any additional heating, the instruments must not be exposed to direct solar irradiation while in operation.

Operations:

When mounting the pressure gauge it must be ensured that, taking into consideration the influence of convection and heat radiation, no deviation above or below the permissible ambient and medium temperatures can occur. The influence of temperature on the display accuracy must be observed.

The operating range corresponds to the scale range or see static pressure limit mark printed on the dial. For DP gauges look for the maximum allowable static pressure. When carrying out pressure test of process pipes and vessels, the instrument must not be exposed to the above limits as mentioned before. The calibration temperature is +20 °C each ±30 °C deviation of this temperature adds ± one class of full scale value to the accuracy.

After installation of the DP gauges the measuring lines must be vented. When using liquid media, the measuring lines must be bled.

Until definitive operation the connection valve remains closed and the compensation valve remains open. Please avoid one-sided charge.

On start up for pressure gauges open the shut off valve slowly.

For DP gauges follow the following sequence for operation:

1. Open balancing valve.
2. Open connection valves.
3. Close balancing valve.

Differential pressure is indicated on dial

For DP gauges follow the following sequence for out of operation

1. Open balancing valve.
2. Close connection valves

Specifications:

Unless otherwise specified the following conditions must be strictly followed
Ambient temperature limits -20 to 60 °C

Storage Temperature limits -40 to 60 °C

Process media temperature maximum limit for general application 200 °C

Process media temperature for hazardous area

The admissible temperature of the process media depends on the instrument construction as well as the ignition temperature of the surrounding gases, vapours or dusts (see table 1):

For gaseous media the temperature can rise as result of compression. Therefore the maximum admissible frequency (not pulsation) is 0,1 Hz. This does not apply to liquid filled gauges.

Table 1:Maximum admissible process media temperature

Temperature Class	Max process media temperature
T6	+55 °C
T5	+70 °C
T4	+100 °C
T3	+100 °C
T2	+100 °C
T1	+100 °C

Zero or functional test:

The shut off valve(s) at the pressure tap(s) for the instrument has to be closed and the pressure has to be released to atmosphere. The pointer tip must stay within the zero mark.

Check for DP gauges: Close both valves at the pressure taps at the same time. The pointer must rest within the scale range. If pointer drops the plus line leaks or the balancing valve is still open. In case of rising pointer, the minus line leaks. If the DP gauge shows no indication, close the minus line and open the plus line. In case the pointer doesn't move the instrument is damaged.

Maintenance:

The instruments require no special maintenance.

In case of any fault, apply for assistance from ourselves or our agents. We will assist you with advice and service.

Zero adjustment:

For instruments with a removable ring, bezel or external zero adjust feature, the zero can be adjusted. For the instruments with internal zero adjustments the bayonet ring or hinged ring bezel must be removed, for gauges with crimp ring please consult factory.