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1. Introduction

As measurement is an important aspect of manufacturing. Equipment and plant engineering technology advancements require higher performance and more versatile instrument functions. The Ashcroft 63HPT anti-corrosion pressure gauges are similar to standard instruments, yet they have been assembled under a significantly different process where treatment, control, and inspection are rigidly maintained. This manual describes the basic operation of this product for the semiconductor industry; adhering to the following instructions will ensure their proper and effective application.

1.1 Warranty

Instruments are repaired or replaced, at no cost, if determined to be within the 1-year warranty period and nonconforming in accordance with defects due to design or manufacture by Ashcroft.

Please note that the following instances are excluded.

1. Delivered products are disassembled, altered, parts replaced, or where any new function is added by the user or any third party.
2. Directions described within the instruction manual or catalog have not been observed.
3. Non-conformance is caused by deterioration due to use, natural disaster, fire or other force majeure events.
4. Secondary damage caused by the non-conformance of the products including the above.

Regardless of recognized mishandling, any apparent evidence of deformation, abrasion, burnout or other identified issue shall be excluded from the warranty scope with the cost being incurred by the customer.

Definition of safety terms

Safety precautions within this manual have been classified as follows:

- **DANGER** - Ignoring this warning may result in serious injury or death.
- **WARNING** - Ignoring this warning may result in serious injury or death.
- **CAUTION** - Ignoring this warning may result in the material damage and render instrument performance defective.

2. Application

The HTP pressure gauge’s wetted parts have excellent chemical resistance because the wetted parts are made of fluororesin. The pressure gauge is fabricated in accordance with high cleanliness and tightly sealed standards. Therefore, the models 63HPT pressure

gauges are ideally suited for pressure measurement to use for equipment applications related to semiconductor or medicine, medical instrument, chemical plants, or equipment related to high-purity fluid or corrosive fluid.

• **WARNING**

Do not use this instrument for equipment concerning life support without permission of our company. This instrument is manufactured for measuring uniform pressure applied to the bellows. The bellows are made of a thin plate, and if it is pushed with fingers or some object, it may be deformed or broken, resulting in a compromised bellow. Never apply undue force to the bellows.

3. Transportation, Storage, Unpacking Precaution

3.1 Transportation

Units should be handled the same as electronic or test measurement instruments. Be very careful not to apply vibration to the pressure gauge during transportation. Do not hit or drop the pressure gauge.

• **CAUTION**

The instrument may incur damage if dropped/impacted.

3.2 Storage

Store in a temperature-controlled environment free from dust, humidity, and vibration. Prevent temperature variances as this may result in condensation developing in the product.

3.3 Unpacking

Handle product with great care during unpacking. Physically inspect the instrument to ensure no damage exists and that the instrument fulfills the required specifications. Please contact the dealer or Ashcroft if an issue exists.

4. Installation

4.1

Install the instrument where the environment is free from vibration, humidity, dust and high temperature. The ambient temperature should be from 50°F to 85°F.

4.2

The pressure gauges are packaged in a hermetically-sealed polyethylene bag. To avoid contamination, only unpack the bag immediately before use.

4.3

Direct connected pressure gauges should be properly and securely threaded into the process piping.

4.4

Install the pressure gauge so that the dial reading is vertical and is not exposed to direct sunlight, rain or dew.

• **CAUTION**

An error in accuracy that will result in the event the pressure gauge is not installed in a vertical position.

4.5

In liquid measurement, the pressure head difference between the pressure outlet port and pressure gauge has a negative effect upon the accuracy.

4.6

Reduce pressure pulsation to an absolute minimum.

4.7

When installing the instrument, be sure to apply a wrench to the flats of the gauge's pressure connection and rotate clockwise. Do not apply force to the enclosure as this will cause the dial to move and result in zero-point shift. Never try to tighten or loosen the screw by applying your hand to the casing because the screw is made of fluororesin and susceptible to damage.

5. Operation

5.1

Make sure that the pointer is at the '0' position prior to applying pressure to the gauge.

5.2

Raise and lower pressure slowly, while avoiding sudden increase/decrease of pressure.

5.3

Never apply pressure in excess of the unit's pressure rating.

5.4

Use the pressure gauge for measuring pressure 1/3 to 1/2 of the full-scale range.

• **WARNING**

Never apply pressure beyond the maximum pressure (e.g., full-scale value). Injury and/or damage may occur if pressure element ruptures due to extreme pressure in excess of the unit's pressure rating.

5.5

Do not modify the pressure gauge.

• **WARNING**

Do not attempt to modify the product or provide it with additional functions.

5.6

Do not apply (or reduce) suddenly pressure on the pressure gauge; it may cause it a failure.

6. Inspection and Maintenance

6.1

Check gauge accuracy regularly to ensure correct indication; this is recommended to be once or more per year.

6.2

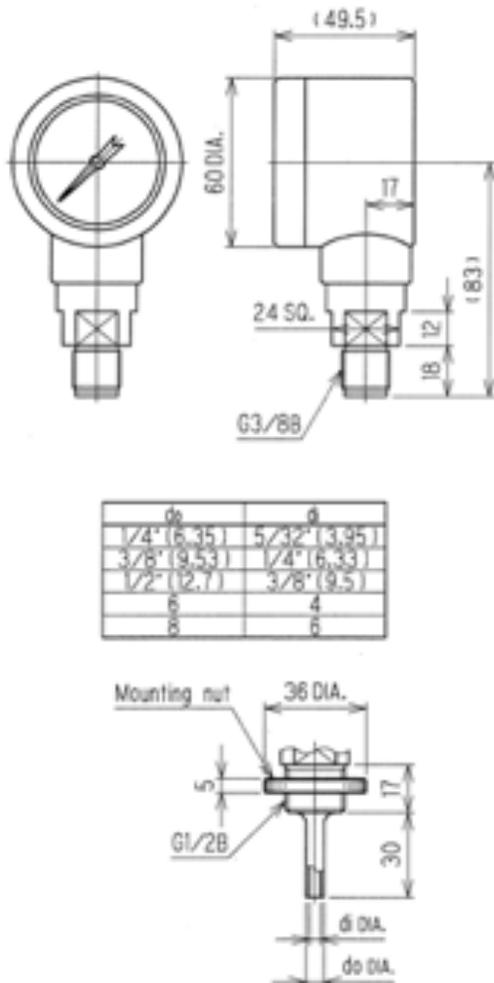
Use clean N2 gas for testing. The following inspection items are recommended.

- Indication check
- Withstand pressure and pressure-tight inspection
- External appearance and wetted part corrosion check

6.3

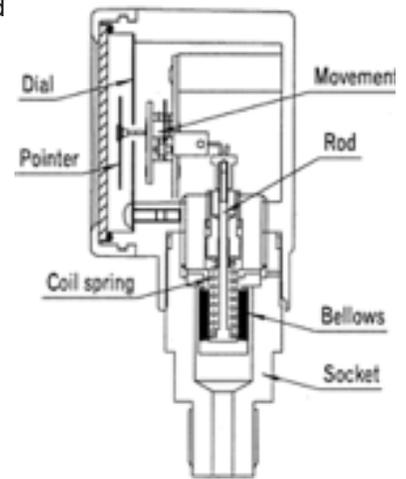
Since this pressure gauge is frequently used under, severe conditions because of its purpose, early replacement and preparation of a spare pressure gauge at any time are recommended.

7. Outside Dimensions



8. Gauge Drawing

When pressure is applied to the bellows through the pressure inlet which is surrounded by the socket, the bellows, which are made of fluoro-resin, shrinks and pushes the rod upward until it reaches at balance with the force of the coil spring. This shift is multiplied by the extension mechanism (Movement) and transmitted to the pointer indication. The movement has a special high-precision design and is made of parts with low coefficient of friction.



9. Trouble Shooting

Refer to the accompanying table and implement appropriate countermeasures. Contact Ashcroft in the event the issue persists.

Troubles	Checkpoints	Possible Causes	Counter-measures
The pointer does not move.	1. Check if the pressure had been applied to the pressure gauge.	1. The pressure is zeroed	1. Apply pressure.
The pointer does not indicate pressure.	1. Check whether the fluid and ambient temperature are within the operating temperature range of the pressure gauge. 2. Check whether excessive vibration exists. 3. Check whether excessive pressure fluctuations exist.	1. The operating temperature range has been exceeded. 2. Movement wears due to vibration. 3. Movement wears due to pressure fluctuations.	1. Re-install pressure gauge in a different position. 2. Re-install pressure gauge in a different position. 3. Reduce pressure fluctuations.
The pointer does not read zero when the pressure gauge is removed from the piping	1. Check whether excessive pressure had been applied. 2. Check whether excessive vibration or fluctuating pressure had been applied.	1. The diaphragm has been deformed due to excessive pressure. 2. Movement wears due to vibration or fluctuating pressure.	1. Use a higher pressure range. 2. Re-install pressure gauge in a different position.
The pointer does not read zero when the pressure gauge is removed from the piping. The pointer indicates overpressure reading.	1. Check whether excessive pressure had been applied. 2. Check whether the gauge was exposed to excessive vibration or if it was dropped/impacted	1. Deformed sensing element due to excessive pressure. 2. Pointer shift or material deformation due to excessive pressure or impact.	1. Use a higher pressure range. 2. Be careful not to drop/impact gauge.