Installation and Maintenance Instructions for 50mm-63HPXmm High Purity Gauges

ASHCROFT®

50mm HPX High Purity Gauges

63mm HPX High Purity Gauges

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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 50HPX/63HPX High-Purity 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.

[Before Using Pressure Gauge]

It is highly recommended that this instruction be thoroughly reviewed to prevent improper instrument handling and/or implementation. Consult Ashcroft on related topics not covered within this document.

[Warranty]

Instruments are repaired or replaced, at no cost, if determined to be within the 1-year warranty period and non-conforming 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

This pressure gauge has an electropolished wetted surface for measuring materially-compatible gas pressure. The pressure gauge is fabricated in accordance with high cleanliness and tightly sealed standards. Therefore, the models 50/63HPX High-Purity pressure gauges are ideally suited for pressure measurement within the semiconductor production process, etc.

⚠ **WARNING**

The instrument's pressure element is a Bourdon tube. Do not use the pressure gauge with the wetted material exposed to any corrosive gas or atmosphere. Additionally, it is industry practice for the gas detector's to be installed within the same environment; this will provide an alert to escaping gas that may adversely affect people and/or equipment

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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.

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.

⚠ 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.

⚠ CAUTION
If a pressure gauge with a range of 0 to 0.1 mPa is installed one meter higher than the pressure outlet port, the instrument reading will reflect a lower than actual pressure. This error corresponds to 10% of the span. On the contrary, if a pressure gauge is one meter lower than the pressure outlet port, the unit will register a value that is 10% higher than the actual gauge.
In the event the installation point is known, the pointer may be adjusted higher or lower to coincide with the estimated error. A pressure gauge with a zero adjustment pointer can be re-zeroed after it has been installed.

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.

⚠ CAUTION
Do not apply force to the enclosure as this will cause damage and adversely affect product performance.

4.8
Leave a space around the installation point of the instrument. The blow-out disk and clearance hole of the gauge is designed to relieve pressure to the outside environment once the Bourdon tube has ruptured. Immediately shut off pressure source and relieve pressure to the instrument once a leak has been detected.

⚠ WARNING
Leave a space of ½ inch or more around the blow-out disk and clearance hole of the pressure gauge. Blocking the blow-out disk can render the pressure relief function ineffective; this may result in dangerous accidents/injuries and damage to the instrument.

4.9
Take precautions to ensure the unit is not exposed to temperatures where process media is liable to freeze.

4.10
It is recommended that a siphon or length of pipe be utilized when high-temperature fluids are being measured.

4.11
Take precautions on the use of $^{9}/_{16}$-18UNF connections.
❶ Take care not to damage the seat surface.

⚠ WARNING
Scratches or scoring can result in the measuring device to leak. This may prove hazardous, though this would depend upon the type of application being measured.

❷ Do not use previously removed packing and filter packing. Replace with new parts whenever they are disassembled.

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 less than ½ to $^{2}/_{3}$ 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
Measured fluids, gas or liquid, should be compatible and not corrosive to SUS316L.

⚠ WARNING
Do not use this pressure gauge with fluids that may corrode the instrument's wetted parts. If corrosive fluid flows through this pressure gauge, the pressure element (Bourdon tube) may be damaged or burst and it flows out, resulting in injury or damages to the peripheral device and equipment.

5.6
Pull-up on yellow vent plug of the blow-out disk when pressure range less than 1 mPa (145 psi) for Model 63HPX (63mm).

⚠ WARNING
An error will occur if the vent plug is not pulled-up; this is due to the increase of the internal case pressure.

5.7
Do not modify the pressure gauge.

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

5.8
Do not apply glue to the blow-out disk, tear a hole, interspace, or make any other alterations to the instrument. If ignored, the unit will fail to function as designed. Failure to relieve pressure properly, this could result in quite dangerous accidents.

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
Pressure indication error of approximately 1 graduation is repairable, yet the instrument must be replaced when the error is identified as substantial.

7. TROUBLESHOOTING

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

TROUBLES	CHECKPOINTS	POSSIBLE CAUSES	COUNTERMEASURES
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 Bourdon tube 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 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.