



28HPX High Purity Gauges

Table of contents:

**1. INTRODUCTION** ..... 1

**2. APPLICATION** ..... 1

**3. TRANSPORTATION, STORAGE, UNPACKING PRECAUTION**..... 1-2

**4. DRAWING**..... 2

**5. INSTALLATION**..... 2

**6. OPERATION** ..... 2

**7. MAINTENANCE**..... 2

**8. TROUBLESHOOTING**.....2-3

**1. INTRODUCTION**

Pressure measurement is an important aspect of manufacturing. Advancement of equipment and plant engineering technology requires higher performance and more versatile instrument functions.

The Ashcroft model 28HPX High-Purity pressure gauge is similar to an ordinary instrument, yet has 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 while adhering to the following instructions will ensure its proper and effective application.

**[Before Using Pressure Gauge]**

It is highly recommended that this instruction manual 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 (EP grade). The pressure gauge is fabricated in accordance with high cleanliness and tightly sealed standards. Consequently, the model 28HPX High-Purity pressure gauge is ideally suited for pressure measurement within the semiconductor production process, etc.

The product footprint design is ultra-compact and incorporates a 1.125" surface mount. The pressure element is a diaphragm which facilitates easy maintenance for cleaning and gas flushing.

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The instrument's pressure element is a thin wall diaphragm. 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. Never hit or drop the pressure gauge.

⚠ **CAUTION**

**The instrument may incur damage if dropped/impacted.**

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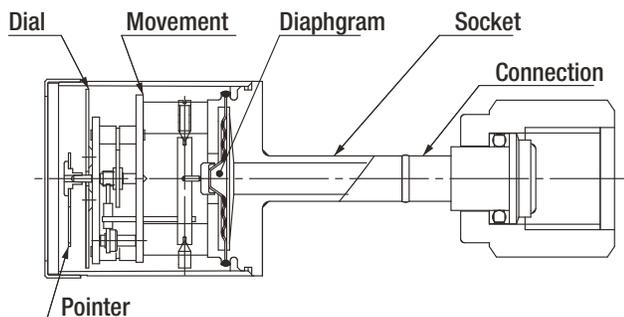
**3.2 Storage**

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. Verify the product has not been damaged and that the instrument fulfills the required specifications. Please contact the dealer or Ashcroft if an issue exists.

### 4. DRAWING



### 4.1 Unpacking

Displacement occurs in the diaphragm once the pressure is applied via the process connection. The pressure is then transmitted to the movement with the pressure being indicated by the movement of the pointer.

### 5. INSTALLATION

- 5.1 Install the instrument where the environment is free from vibration, humidity, dust and high temperature.
- 5.2 The pressure gauge is packaged in a hermetically-sealed polyethylene bag. To avoid contamination, only remove the unit from the bag **immediately before** use/installation.
- 5.3 Take care not to damage the diaphragm surface.

### ⚠ WARNING

Scratches or scoring of the swivel coupling can result in leaking of the measuring device. This may prove hazardous, though this would depend upon the type of application being measured.

- 5-4 Install the pressure gauge where it is held in a stable position.
- 5-5 Utilize a wrench to tighten the process connection coupling nut. Only apply a wrench to the coupling flats; no force should be applied to the gauge housing.

### ⚠ CAUTION

Do not apply force to the gauge housing as this can result in damage and adversely affect product performance.

- 5-6 Reduce pressure pulsation to an absolute minimum.

### 6. OPERATION

- 6.1 Before applying pressure to the gauge, make sure that the pointer is positioned at "0" pressure.
- 6.2 Raise and lower pressure slowly, while avoiding sudden increase/decrease of pressure.
- 6.3 Never apply pressure in excess of the unit's pressure rating.

- 6.4 Use the pressure gauge for measuring pressure less than  $\frac{1}{2}$  to  $\frac{2}{3}$  of the full-scale range.

### ⚠ WARNING

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

- 6.5 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 (diaphragm) may be damaged or burst and it flows out, resulting in injury or damages to the peripheral device and equipment.

### 7. MAINTENANCE

- 7.1 Check the gauge accuracy regularly to ensure correct indication; this is recommended to be once or more per year.
- 7.2 Pressure indication error of approximately 1 graduation is repairable, though units must be replaced when the error is identified as substantial.

### 8. TROUBLESHOOTING

- Refer to the accompanying table and implement appropriate countermeasures. Contact Ashcroft in the event the issue persists.
- 8.1 Refer to the accompanying table and implement countermeasures. Please contact Ashcroft in the event the issues persist.

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 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 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.

