



Process Gas Equipment Common Precautions 1

Be sure to read this before handling products.

Design

Warning

1. Confirm the specifications.

The compatibility of the product with specific equipment must be decided by the person who designs the equipment or decided its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

Selection

Warning

1. Confirm the specifications.

When selecting a product, confirm the operating conditions, such as type of gas, operating pressure (inlet and outlet), flow rate, operating temperature, etc., and use within the operating range specified in the catalog. The product may not be suitable for use with certain gases and applications/environments. Check the compatibility of the product materials and the process gas.

Design the equipment and select a product with full understanding of the characteristics of gas to be used.

2. Follow the regulations and laws defined by the country or local government, and organization standards.

Reference: High Pressure Gas Safety Act, Labor Safety and Sanitation Law, etc.

Mounting

Warning

1. Operation manual

Mount and operate the product after reading the operation manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

Caution

1. Flush the piping thoroughly with inert gas before installing the product.

Remove any dust or scales thoroughly, as they could cause the malfunction or failure of the product. Do not flush with a gas other than inert gas, as this could cause dangerous situations.

2. Do not touch the fitting or the wetted parts of the product by hand. Do not apply grease or oil to the product.

3. Unpack the hermetically-sealed package in a clean environment (with the exception of the AK series).

Products intended for high purity processes are double packed inside a clean room. Make sure to unpack the sealed inner bag inside a clean room or clean environment.

4. Ensure sufficient space for maintenance activities.

Ensure sufficient space for maintenance and inspection.

Mounting

Caution

5. Connect face seal fittings.

Use same size face seal fittings (metal gasket sealing type) for mating connections.

Place the gasket at the end of the fitting and tighten the female nut by hand, and then tighten the nut an additional 1/8 turn using a torque wrench. For gasket material, use either stainless or nickel.

6. Connect tube welds.

Follow the industry standards (refer to SEMI F78) when welding the piping. Make sure the valve is in the open position when supplying purge gas. If welding the inlet side, supply purge gas from the outlet side of the product, and if welding the outlet side, supply purge gas from the inlet side of the product.

7. Connect compression fittings.

Tighten the nut an additional 1-1/4 turn after hand tightening once the tube has been inserted into the fitting. Please use stainless steel material for piping. After installation, perform a leak test.

8. Connect pipe thread fittings.

Thread fitting or piping into the body and tighten it at the recommended torque. When holding the product, hold its body section.

Apply PTFE tape or sealant on the thread of the piping, fitting, etc. When using sealant other than PTFE, it will be difficult to fully remove the sealant and this could cause the malfunction or failure of the product.

9. After installation, perform a leak test.

Perform a leak test, such as a helium leak test, pressure decay test, bubble leak test, etc., appropriate for the application. It is recommended to perform a helium leak test on all face seal connections and tube welds as per the industry standards (refer to SEMI F1).

Storage and Operating Environment

Warning

1. Do not use in an area containing chemicals, sea water, or water, or where there is direct contact with any of these.

2. Do not use in a place subject to heavy vibration and/or shock.

3. Keep ambient temperature and use gas within the specified operating temperature. Remove any sources of excessive heat.

4. Do not keep the product in storage in an area where any dust or water may enter. Also, keep in dry conditions where there is no contact with humidity.



Process Gas Equipment Common Precautions 2

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Maintenance

Warning

1. Perform routine maintenance.

Performing routine maintenance, by taking into consideration the operating conditions of the equipment, is the customer's responsibility. It is recommended to perform routine maintenance for the following:

External leakage, internal leakage (across the seat leakage), performance, etc.

2. Shut down the system before removing the product for repair or replacement.

Follow the proper procedures to shut off the process gas supply, and vent the system.

3. Purge hazardous gases from the system before removing the product.

4. Do not disassemble products under warranty.

The warranty may be voided if the product is disassembled.

Operation

Warning

1. Do not put heavy objects on the product. Do not use the product as scaffold.

2. Do not use the product in conditions that do not meet the product specifications.

Product Returns

When returning a product to SMC, make sure to properly purge to remove all hazardous materials and return the product in accordance with SMC's specified procedures. For details, please contact SMC.

Export

Warning

These products fall within the United States Export Administration Regulations (EAR) regarding sale, export, and re-export. It is the exporter's responsibility to assure that these regulations are followed when the products are exported. The Export Control Classification Number (ECCN) related to the products is as follows.

Regulations (including ECCN) are subject to change with the amendment of laws.

The latest information regarding these regulations should be checked by the customer.

Reference: Bureau of Industry and Security (USA)
<http://www.bis.doc.gov/>

1) 2B350.g.1 <Applicable conditions>

(1) Product name: Diaphragm valve

(2) Body material: Ni-Cr-Mo alloy

(3) Connection size: 1/2 inch or more to less than 1 inch *1

*1 Refer to 2B999.g for connections 3/8" inch or smaller

2) 2B350.g.2 <Applicable conditions>

(1) Product name: Diaphragm valve

(2) Body material: Ni-Cr-Mo alloy

(3) Connection size: 1 inch or more to less than 4 inches

3) 2B999.g <Applicable conditions>

(1) Product name: Regulator, Back pressure regulator, Diaphragm valve, Check valve, Vacuum generator module (integrated with valve and check valve)

(2) Body material: 316 SS, 316L SS, 316L SS secondary remelt, Ni-Cr-Mo alloy regardless of connection size

4) EAR99 <Applicable conditions>

(1) Regulator and Back pressure regulator with brass bodies

(2) Vacuum generator, Flow switch, Other options (Pressure gauge, LOTO)