

Perfect Valves For The World!

Diaphragm Valve User Manual

Please read this Manual carefully and keep it for future reference



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1 Statements

- 1.1 This Manual is applicable for the following products:
 - A00 Series Pneumatic Diaphragm Valve
 - A01 Series Manual Diaphragm Valve
- 1.2 Please read this Manual carefully before installation and usage of the products, and follow the product specifications. If there are any problems caused by noncompliance with usage instructions or mis-operations, ESG does not bear the corresponding liability.
- 1.3 Improper usage of valves may cause danger to people, equipment and environment nearby!

- 1.4 Please only operate the valves when they are under good conditions, and pay attention to the proper methods for storage, transit, installation and operation!
- 1.5 Please use these products under conditions that comply with Technical Specifications, including applicable medium, pressures and temperatures!
- 1.6 Please do not make unauthorized changes to any internal or external parts of these products. Only trained technical experts can perform installation and maintenance!
- 1.7 Please remove the pressure and drain the pipeline before valve installation or uninstallation!
- 1.8 Please comply with relevant policies for electro-pneumatic device accident prevention and usage safety, to avoid accidentally starting systems or devices! Please do not touch directly the heated surfaces of electrical devices after long periods of operation to avoid getting hurt!

1.9 This Manual is designed to provide information regarding Technical Specifications, Installation and Usage, Uninstallation and Maintenance, as well as Transit and Storage. If you have any questions, please contact ESG sales team or email info@esgvalve.com.

2 Technical Specifications

2.1 Valve Characteristics

Diaphragm valves feature high flowrate and low residue, and are widely used in the fields of pharmaceutical, beverage, food and fine chemical flow control, with high safety and high reliability requirement. The diaphragm meets the safety standards set by trusted authorities, such as FDA and USP, in order to meet the various requirements and conditions of customers in the pharmaceutical and food industries. ESG strives to always adapt to the needs of ever evolving market with high-quality

products.

2.2 Technical Specifications

Valve Body Materials: Investment mold casted 316L

Valve Body Surface: Internal surface mechanical polishing $\leq Ra0.4\mu m$; Electropolishing

Connection Type: welded, tri-clamp

Control Type: manual, pneumatic, pneumatic with position indicator, pneumatic with Intelligent Proportional Control Positioner

Connection Standards: ASME-BPE, SMS-3008, JIS-G3447 ISO-1127, DIN-11850

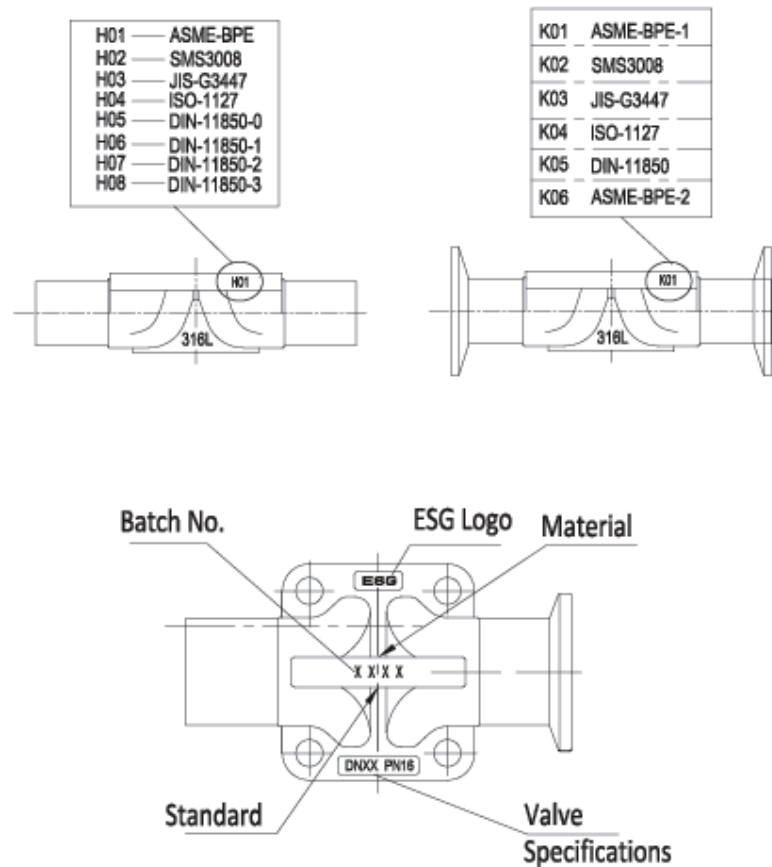
Diaphragm Materials: EPDM+PTFE (two-piece)

Operating Pressure: 0-10 bar

Operating Temperature: $-10^{\circ}C \sim 150^{\circ}C$

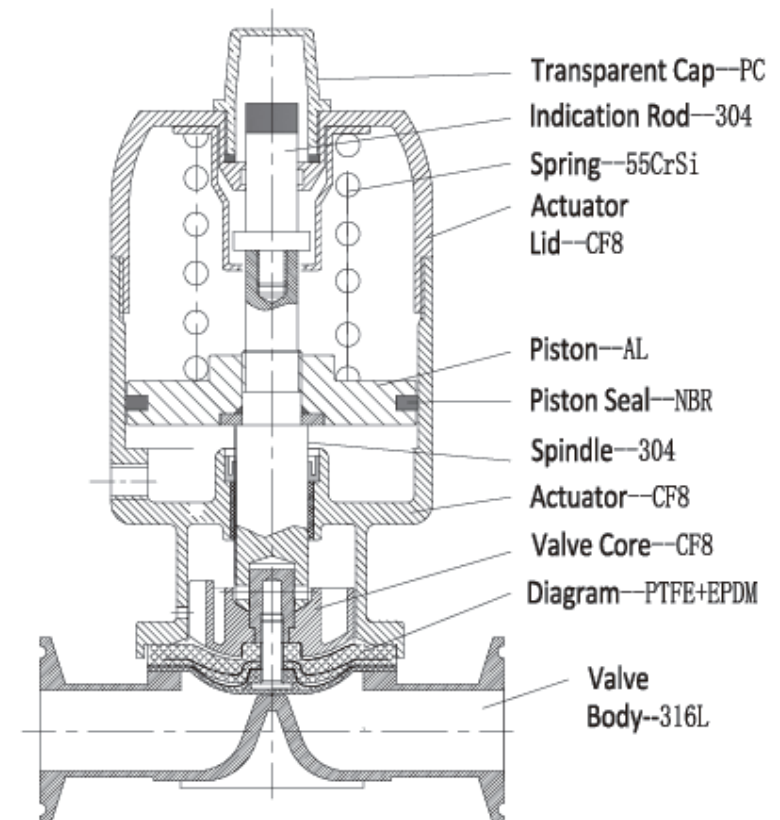
Control Pressure (pneumatic): 4.5-7 bar

2.3 Valve Body Markings

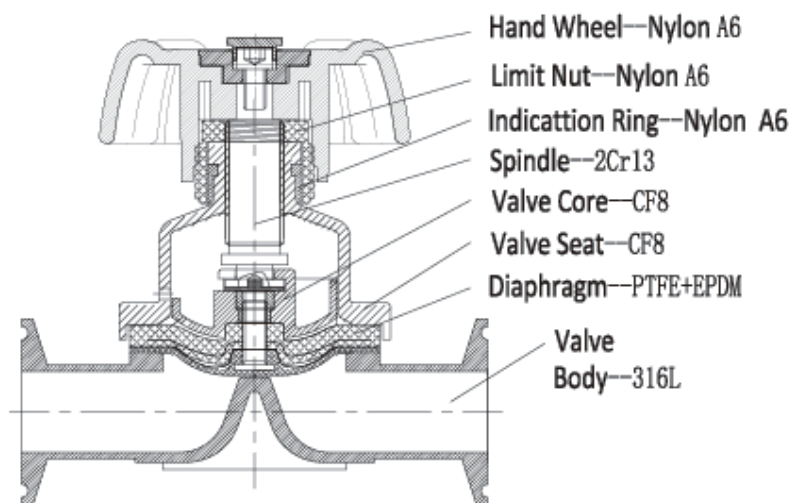


2.4 Product Structure

2.4.1 A00 Series



2.4.2 A01 Series

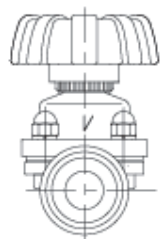


3 Installation and Usage

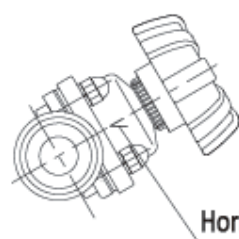
- 3.1 When it is necessary for the valve body of the diaphragm valve to be removed before welding the pipeline, the valve body concave and diaphragm should be carefully protected from any scratch or damage;

- 3.2 During the installation of the pneumatic diaphragm valve, if it is necessary to remove the valve body, connect 3-4bar compressed air to the actuator to remove bolts;
- 3.3 After the valve body is welded, connect the actuator with 3-4 bar compressed air and install it onto the valve body. Then insert 4 bolts and tighten them diagonally and evenly according to the torque requirement;
- 3.4 When installing the tri-clamp valves, the parallelism degree of the tri-clamp joints at both ends should be less than 0.3mm;
- 3.5 After the diaphragm valve installation, put the valve in fully open state, and clean the pipeline with high pressure air or special cleaning fluid;
- 3.6 When the diaphragm valve is installed in a horizontal pipeline and medium residue needs to be minimized for the pipeline, please perform the Minimum Residue Installation shown in the figure below.

Vertical Installation

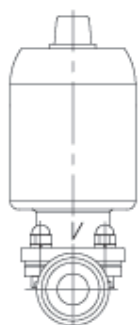


Minimum Residue Installation

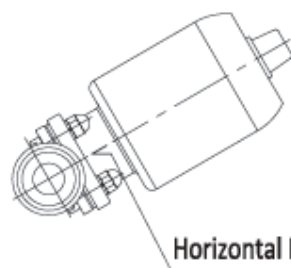


Horizontal Reference

Vertical Installation



Minimum Residue Installation



Horizontal Reference

- 3.7 The pipeline should be supported firmly and without vibration.
- 3.8 Before installation, please check the model, parameters, specifications and connection type on the valve label,

and ensure that the application requirements are satisfied. At the same time, please check the actuator, valve body, transparent cap, etc to ensure that there is no visible damage;

- 3.9 When equipping the valve with control air supply, please ensure that the air source is dry and clean, and the capacity and pressure are enough for valve application;
- 3.10 Before valve installation, please close the pipeline and remove the pressure, and pay close attention to the danger of high-pressured or hazardous medium in the pipeline;
- 3.11 When installing the welded valves, take the actuators off from them first, and then weld the valves onto the pipelines.

4 Uninstallation and Maintenance

4.1 Pneumatic Diaphragm Valve Diaphragm Replacement;

4.1.1 Connect actuator with air supply of 3-4bar pressure;

4.1.2 Remove four bolts and valve bodies;

4.1.3 Remove the air supply and drain compressed air in the actuator;

4.1.4 Rotate counterclockwise to remove the old diaphragm;

4.1.5 Connect actuator with 3-4 bar air supply pressure and make sure the valve core sits properly in the valve seat groove. Install a new diaphragm and tighten it clockwise. Please pay attention to the installation direction of the diaphragm;

4.1.6 Install the valve body, while paying attention to the direction of the valve body and the diaphragm valve seat, then install four bolts, and tighten them diagonally;

4.1.7 Take the air supply off from the actuator, and remove the air tube, then the diaphragm replacement is complete.

4.2 Manual Diaphragm Valve Diaphragm Replacement

4.2.1 Rotate hand wheel until the valve is closed, and uninstall four bolts and the valve body;

4.2.2 Rotate counterclockwise to remove the old diaphragm;

4.2.3 Make sure the valve core sits properly in the valve seat groove. Then install a new diaphragm and tighten it clockwise, paying attention to the installation direction of the diaphragm;

4.2.4 Install the valve body, while paying attention to the direction of the valve body and the diaphragm valve seat, then install four bolts, and tighten them diagonally;

4.3 Diaphragm valve connection bolt torque

No.	Size	Bolts	Torque-N.M
1	DN15	M5	3.5-4
2	DN20	M6	5-5.5
3	DN25	M8	8-9
4	DN40	M10	14-15
5	DN50	M12	18-20

4.4 Valve Maintenance

Device inspections should be performed at least once a year. Short-term maintenance is recommended depending on the usage conditions. If you have any problems, please contact ESG sales team or email info@esgvalve.com.

5 Transit and Storage

- 5.1 Pay attention to protect devices from moisture, dust, and collision during transit and storage;
- 5.2 Recommended storage temperature: -20 ~ +65℃;
- 5.3 Discarding devices improperly may negatively impact the environment. Please ensure that devices and packaging are disposed in an environmentally friendly manner.