# Pneumatic Butterfly Valve

## Product Overview

A pneumatic butterfly valve is an automated valve that uses compressed air as its power source. A pneumatic actuator drives the valve stem, causing the disc to rotate 90° within the valve body, thereby enabling rapid shutoff and precise regulation of the medium flowing through the pipeline.

The product primarily consists of a valve body, disc, valve stem, sealing ring, and pneumatic actuator. It can be equipped with accessories such as smart positioners and solenoid valves, supports remote automatic control and local manual operation, and is suitable for various automated control systems. Pneumatic butterfly valves feature a compact structure, small size, and light weight. They open and close rapidly with low operating torque, offer minimal flow resistance when fully open, and provide excellent flow regulation characteristics at partial opening angles.

In terms of sealing types, this product offers two options: soft seals (such as EPDM and PTFE) and metal hard seals. Soft seals are suitable for normal-temperature applications and can achieve zero leakage; metal hard seals are suitable for high-temperature, high-pressure, and abrasive media environments. Connection methods include wafer-type and flanged-type. Valve body materials include cast iron, carbon steel, and stainless steel. Nominal diameters range from DN15 to DN1400 mm, with pressure ratings covering PN0.6 to PN2.5 MPa and above, and an operating temperature range of -20°C to 450°C.

Pneumatic butterfly valves are widely used in piping systems handling liquids, gases, and powders across industries such as water treatment, chemicals, petroleum, power generation, metallurgy, building materials, food, pharmaceuticals, and papermaking. They serve as an ideal fluid control solution for achieving automated control and remote management of industrial pipelines.

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## Technical Specifications

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|---|---|---|
| Nominal Diameter DN | DN40 → DN3000 | Commonly used sizes range from DN50 to DN1200; large-diameter sizes can reach DN2000 to DN3000 |
| Nominal Pressure PN | PN 0.6 MPa → PN 4.0 MPa | Corresponds to U.S. standards Class 150 / Class 300; standard PN1.0, PN1.6 |
| Operating Temperature | -40°C (low-temperature type) → +425°C (metal hard seal) | Soft seal: -10 to 120°C; PTFE: -20 to 180°C; Hard seal: -29 to 425°C |
| Valve Body Material (Temperature and Pressure Resistance: Low → High) | Cast iron HT200 → Ductile iron → Carbon steel WCB → Stainless steel 304/316 | Selecting a Model Based on the Corrosiveness of the Medium and Pressure and Temperature Conditions |
| Seal Material (Temperature Resistance: Low → High) | Nitrile rubber (NBR) 80°C → Ethylene-propylene rubber (EPDM) 120°C → Fluorinated rubber (FKM) 200°C → PTFE 260°C | Soft seal (rubber/PTFE) or metal hard seal |
| Connection Types (Pressure Rating: Low → High) | Clamp-on → Flanged → Butt-welded | Clamp-type connections are economical and compact; flanged connections facilitate maintenance; butt-welded connections are used for high-temperature, high-pressure applications. |
| Drive Type | Electric → Pneumatic → Manual | Select Based on the Level of Automation and Energy Conditions |
| Actuator Voltage (Electric Butterfly Valve) | AC 380 V → AC 220 V → DC 24 V | |
| Air Supply Pressure (Pneumatic Butterfly Valve) | 0.7 MPa → 0.4 MPa | |

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## Key Benefits and Features of the Product

### Speed and Automation

Extremely fast opening and closing speeds (approximately 0.5–2 seconds)

Supports remote centralized control and automated interlocks

Can be equipped with a positioner for continuous adjustment

### Safety and Explosion Protection

Powered by compressed air, intrinsically safe

Superior to electric solutions in flammable and explosive environments

Single-acting (spring-return) design ensures fail-safe operation

### Stability and Lifespan

High output force and stable response, suitable for high-frequency operations

The actuator features a simple design and strong environmental adaptability

Can be equipped with a solenoid valve, limit switches, and an air preparation unit

## Applications

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Basic and Heavy Industry: Used to control various process media in industries such as metallurgy, mining, building materials, and power generation. For example, in thermal power plants, they are widely used for flow control in cooling water systems.

Petroleum and Chemical Industries: This is the core application area, where these valves are used to control pipelines carrying petroleum, coal gas, natural gas, and various corrosive chemical media (such as sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, and alkaline solutions).

Light Industry and Textiles: They play a role in fluid conveyance and process control in industries such as papermaking and light textiles.

Water Supply, Drainage, and Water Treatment: They serve as critical control equipment in municipal engineering projects such as urban water supply and drainage, as well as wastewater treatment.

Fire Protection Systems: Used as reliable shut-off and regulating valves in fire protection water supply networks at industrial sites.

District Heating: Widely used in district heating pipeline networks.

HVAC Systems: Used to regulate the flow of chilled water and cooling water in building HVAC water systems.

Industrial Refrigeration: Indispensable in refrigeration applications such as ice storage air conditioning systems and chilled water systems.

Food and Pharmaceuticals: Designed to meet hygiene requirements, they are suitable for production piping in the food, pharmaceutical, brewing, and dairy industries.

Energy and Gas: Used for the transmission and control of energy gases such as coal gas and natural gas.

Powders and Granules: They can also be used in piping systems for special media such as solid powders and semi-fluids.

Sulfuric Acid Industry: Manual butterfly valves are among the preferred valve types for critical process sections in sulfuric acid production lines, including gas piping, sulfur burning, conversion, and dry absorption.

Ventilation and Environmental Protection: Used to regulate flow or shut off airflow in dust-laden gas pipelines for industrial ventilation and environmental dust removal.

Marine Industry: They are also used in various fluid systems on ships.

## Why Choose Us?

Expert Technical Team: Over 10 years of experience in R&D of mixing equipment, providing customized solutions

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Quality Assurance: Rigorous quality control system; ISO 9001-certified company

After-Sales Service: Global service network, 24-hour response, and lifetime technical support

Success Stories: Serving over 500 companies across more than 20 countries and regions

## FAQ

1.

Q: What is the minimum order quantity for your products?

A: For larger equipment such as mixers, our minimum order quantity is one unit; for smaller products such as valves and fittings, the minimum order quantity ranges from 50 to 100 pieces. Please contact our sales representatives to confirm the specific minimum order quantity.

2.

Q: From which port do you ship?

A: Since our company is located in Qingdao, most of our shipments depart from the Port of Qingdao.

3.

Q: Are you a factory or a trading company?

A: We are a manufacturing company with our own factory; all our equipment is produced in our factory's production lines.

4.

Q: What is the difference between a butterfly valve and a gate valve?

A: Butterfly valves feature a rotary design; they are compact, lightweight, open and close quickly, and are cost-effective, making them suitable for large-diameter, low-pressure applications. Gate valves feature a linear lifting design; they offer better sealing performance and lower flow resistance, but are bulky, more expensive, and open and close more slowly, making them suitable for small-diameter, high-pressure applications or situations requiring full bore.

5.

Q: What is the difference between a butterfly valve and a ball valve?

A: Ball valves offer excellent sealing performance and can shut off media containing particles, but they are costly for large-diameter applications. Butterfly valves offer far better value for money than ball valves for large-diameter applications, but their sealing and shutoff performance is slightly inferior to that of ball valves for small-diameter applications. Butterfly valves are preferred for large-diameter applications, while ball valves are preferred for small-diameter applications where high sealing performance is required.

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6.

Q: How do you choose between manual, pneumatic, and electric butterfly valves?

A: For non-powered, low-frequency, or explosion-proof applications, prioritize manual valves; for applications requiring rapid remote automation or involving flammable or explosive substances, prioritize pneumatic valves; for applications requiring precise control, integration with a bus system or PLC, or in locations without a compressed air supply, prioritize electric valves.

7.

Q: What is the nominal diameter range for butterfly valves?

A: Typically, DN40–DN3000. Common sizes range from DN50 to DN1200, while large-diameter valves for water treatment plants, utility tunnels, and similar applications can reach DN2000–DN3000.

8.

Q: Do butterfly valves have high flow resistance?

A: No, it is very low. When the disc is fully open, it is almost flush with the pipe, resulting in a low flow resistance coefficient. They offer better energy efficiency than gate valves or globe valves and are suitable for high-flow applications.

9.

Q: Do butterfly valves require routine maintenance?

A: Yes. Periodically inspect the sealing surfaces and packing/shaft seals for leaks; clean the air supply for pneumatic components; and check the limit switches and signals for electric components. For soft seals, prevent dry friction and scratches caused by contaminants.

10.

Q: How should I troubleshoot a malfunctioning pneumatic butterfly valve actuator?

A: First, check the air supply pressure and ensure the piping is not blocked or leaking. For single-acting valves, check the spring; then inspect the solenoid valve and limit switches. It is recommended to install a handwheel mechanism to allow for manual operation in the event of a malfunction.

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11.

Q: What parameters are needed to select a butterfly valve?

A: Medium and its characteristics, temperature, pressure, nominal diameter (DN), connection type, actuation method, voltage/air supply, leakage class, installation environment (explosion-proof/protection), and standard requirements.