

Air Piloted Valves: Benefits, Applications & How They Work



Air piloted valves utilize air pressure to control the flow of compressed air, liquids, or gases within a pneumatic system. These valves are favoured by manufacturers for their ability to operate without electrical power or manual intervention, making them ideal for environments where electrical hazards or extreme conditions are present, such as in wet, dirty, or volatile settings.

To provide a clearer understanding of air piloted valves, this guide covers:

- What Are Air Piloted Valves?
- How Do Air Piloted Valves Work?
- Benefits of Air-Driven Valves
- Applications Best Suited for Air Piloted Valves
- Unique Features of Humphrey Products Air Piloted Valves
- Customizing Air Piloted Valves for Specific Systems

What Are Air Piloted Valves?

Air piloted valves are controlled by pneumatic pressure, typically generated by the output of other pneumatic devices. Available in configurations such as 2-port, 3-port (for controlling pressurized fluids like water and chemicals), and 2-way, 3-way, and 4-way (for managing compressed air or vacuum), these valves facilitate more efficient, reliable, and cost-effective solutions by using fewer and smaller solenoid or manual pilot valves, which are often positioned away from the main site of use.

These valves are especially useful in hazardous environments where electricity or manual operation poses a risk. They are also beneficial in systems already equipped with an air pressure-based operational setup, allowing them to perform multiple functions simultaneously.

Other Terms for Air Piloted Valves Manufacturers and retailers might use alternative terms for air piloted valves, including:

- Air Operated Valves
- Remote Air Pilot Valves
- Air Operated Slave Valves
- Air Piloted Pneumatic Valves
- Air Piloted Process Valves
- Air Operated Pneumatic Valves
- Air Operated Directional Control Valves
- Pneumatically Operated Valves

How Do Air Piloted Valves Work?

Air piloted valves operate by applying compressed air to a piston or diaphragm, which shifts the valve to an actuated position. The required pilot pressure is specified by the manufacturer based on the controlled pressure. At Humphrey, we offer a range of 2, 3, and 4-way air piloted valves designed for pneumatic applications and mild liquid handling, featuring industry-leading diaphragm-poppet configurations suited for various conditions including vacuum, dirty air, and ultra-clean air.

Benefits of Air-Driven Valves The primary advantages of using air-driven valves include:

- Cost efficiency: Utilizes less air and requires simpler, smaller piloting valves.
- Reliability: Simple design minimizes mechanical parts, enhancing durability and sealing.
- Safety: Ideal for use in hazardous or unclean environments.
- Enhanced flow capacity: Provides a robust solution for systems requiring high flow rates.

Applications Best Suited for Air Piloted Valves Air piloted valves are versatile and can be used in various applications such as:

- Slave valves for simultaneous operations
- Lockout valves for safety interlocking
- High-flow systems where a simple and safe solution is needed
- Environments with unstable or poor-quality compressed air
- Systems transitioning from contaminated to clean air



What Makes Humphrey Products Air Piloted Valves Unique?

Humphrey Products' air piloted valves are built around our Classic Diaphragm-Poppet Series, which ensures non-sticking operation and leak-proof performance. Unlike spool valves, our diaphragm-poppet valves do not have sliding seals that degrade over time, making them suitable for separating contaminated system air from clean, instrumental air or inert gases. Optional brass and stainless steel constructions are available for handling corrosive environments or specific gases and liquids.

Customizing Air Piloted Valves for Specific Systems If standard valves do not meet your system's requirements, Humphrey Products specializes in designing custom solutions that maintain high performance and durability tailored to your specific needs.

Get Better Air Piloted Valves with Humphrey Products For more information on our air piloted valves or to discuss how to integrate these solutions into your systems effectively, contact Humphrey Products. We are ready to assist you with expert advice and customized solutions.

