INNOVATIVE SOLUTIONS DRIVEN TO PROVIDE VALUE

MERIT BRASS
DIRECTING THE FLOW OF *Quality*

MERIT'S COMPREHENSIVE PACKAGE

- "V" Series Full Port NPT Threaded Ends
- Size Range: 1/4" - 3" (T-Pattern) and 1/2" - 2" (Y-Pattern)

SWING CHECK VALVE

Class 200 Stainless Steel Swing Check Wye Pattern

"V" Series

T-pattern and Y-pattern swing check valves are commonly used in piping systems to prevent backflow, and each design offers specific benefits depending on the application.

Learn more. www.meritbrass.com/valves

Feature	T-Pattern	Y-Pattern
Flow Path	Straight	Angled (typically 30-45°)
Preasure Drop	Higher	Lower
Flow Efficiency	Lower	Higher
Footprint	Lower	Higher
Cost	Tipically, Lower	Tipically, higher
Installation	Horizontal only	Horizontal or vertical

T-Pattern Swing Check Valve

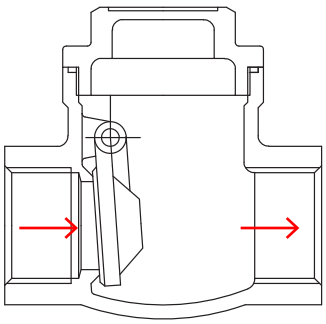
The T-pattern swing check valve has a body shaped like a "T". The **fluid flows along a straight line**, while the disc is hinged to swing out of the way, and resides in the branch section of the T.

The **advantages** are that this is compact and easy to install/maintain.

The **disadvantages** are that it is not ideal for high-speed or high-flow systems, and it leads to a higher pressure loss. The best use for T-pattern swing check valves is in horizontal pipelines where there is little space.

Y-Pattern Swing Check Valve

The Y-pattern swing check valve has the disc and body aligned at an angle, typically 30-45°, which allows for smoother flow. The flow path is more gradual, which leads to minimal turbulence.



The pressure drop is lower compared to T-pattern designs. The advantages are **greater flow efficiency** and reduced pressure loss.

The **disadvantages** are a larger footprint and slightly higher cost to manufacture. The best use for Y-pattern swing check valves is in applications that require high flow rates and installation flexibility (horizontal or vertical).

T-pattern and Y-pattern swing check valves are commonly used in piping systems to prevent a reversal of flow, and each design offers specific benefits depending on the application. Below are the key advantages of using T-pattern and Y-pattern swing check valves, particularly in piping, valves, and fittings (PVF) installations:

T-PATTERN SWING CHECK VALVES BENEFITS

T-pattern swing check valves have a straight-through flow path with a disc that swings on a hinge, resembling a "T" shape in cross-section.

Low Pressure Drop

The straight-through design minimizes flow resistance, resulting in a low pressure drop across the valve, which is ideal for applications requiring high flow efficiency, such as water distribution or oil and gas pipelines.

Simple and Robust Design

The T-pattern has a simple design, making it durable and easy to maintain, reducing downtime and maintenance costs in industrial systems like HVAC or wastewater treatment.

Stops Reverse Flow

The swinging disc provides reliable sealing against reverse flow, preventing damage to pumps, compressors, or other equipment in systems like fire protection or chemical processing.

Versatility Across Applications

Suitable for a wide range of fluids (water, oil, gas) and compatible with high-pressure systems, making them ideal for industries like power generation, oil and gas, and municipal water systems.

Cost-Effective

T-pattern valves are generally simpler to manufacture, making them more economical for applications where complex flow dynamics are not a primary concern.

High-Pressure Capability

The robust construction allows T-pattern swing check valves to handle high-pressure environments, such as in steam systems or hydrocarbon processing.

Easier Maintenance and Inspection

Many T-pattern valves have a removable cover or access point, allowing for easier inspection, cleaning, or repair without removing the valve from the pipeline, which is beneficial in industries like pharmaceuticals or food processing.

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Y-PATTERN SWING CHECK VALVES BENEFITS

Y-pattern swing check valves have a body shaped like a "Y," with the disc and hinge positioned at an angle to the flow path, offering a more streamlined flow.

Reduced Flow Resistance

The angled flow path in Y-pattern valves creates less turbulence compared to T-pattern valves, resulting in a lower pressure drop and improved flow efficiency, especially in high-velocity systems like chemical plants or refineries.

Compact Design

The Y-pattern is more compact than T-pattern valves, making it suitable for installations with space constraints, such as in marine systems or compact industrial setups.

Better Performance in High-Velocity Flows

The streamlined design reduces wear on the disc and seat caused by high-velocity fluids, making Y-pattern valves ideal for applications like steam systems or gas pipelines.

Easier Maintenance and Inspection

Many Y-pattern valves have a removable cover or access point, allowing for easier inspection, cleaning, or repair without removing the valve from the pipeline, which is beneficial in industries like pharmaceuticals or food processing.

Reduced Water Hammer

The angled design can help minimize water hammer (pressure surges) by allowing smoother flow transitions, which is advantageous in water treatment or HVAC systems.

Corrosion Resistance (with Proper Materials)

When made from stainless steel or other corrosion-resistant materials, Y-pattern valves are well-suited for corrosive environments, such as chemical processing or marine applications.

Suitability for Thicker Fluids

The Y-pattern's design can handle viscous or particulate-laden fluids better than T-pattern valves, reducing the risk of clogging in applications like wastewater or slurry systems.

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COMPARISON AND APPLICATION CONTEXT	
T-Pattern	**Y-Pattern**
Best for applications requiring a simple, cost-effective solution with minimal pressure drop in large-diameter, low-to-moderate velocity systems (e.g., municipal water, oil pipelines). They are less suited for high-velocity or viscous fluids due to potential turbulence. Common in water supply, fire protecion, oil & gas pipelines and HVAC systems where cost and simplicity are priorities.	Preferred in systems with high-velocity flows, space constraints, or where maintenance access is critical (e.g., steam systems, chemical plants). Their streamlined design reduces wear and turbulence, making them more suitable for demanding conditions. Preferred in steam systems, chemical processing, refineries, and compact installations where flow efficiencies are critical.

SHARED BENEFITS OF **BOTH PATTERNS**

Non-Return Functionality
Prevents backflow, protecting upstream equipment like pumps and compressors.

Material Versatility
Available in materials like stainless steel, bronze, or cast iron, making them adaptable to corrosive or hygienic environments (e.g., food processing, marine).

Wide Range of Sizes
Suitable for both small and large PVF systems, from residential plumbing to industrial pipelines.

Automatic Operation
No manual intervention is required, as the disc operates based on flow pressure, ensuring reliability in automated systems.

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APPLICATIONS IN **PVF INSTALLATIONS**

T-Pattern

Common in water supply, fire protection, oil and gas pipelines, and HVAC systems where cost and simplicity are priorities.

Y-Pattern

Preferred in steam systems, chemical processing, refineries, and compact installations where flow efficiency and maintenance access are critical.

If you have a specific application in mind or need help choosing between T-pattern and Y-pattern swing check valves for a particular PVF system, contact our sales team at contactus@meritbrass.com.