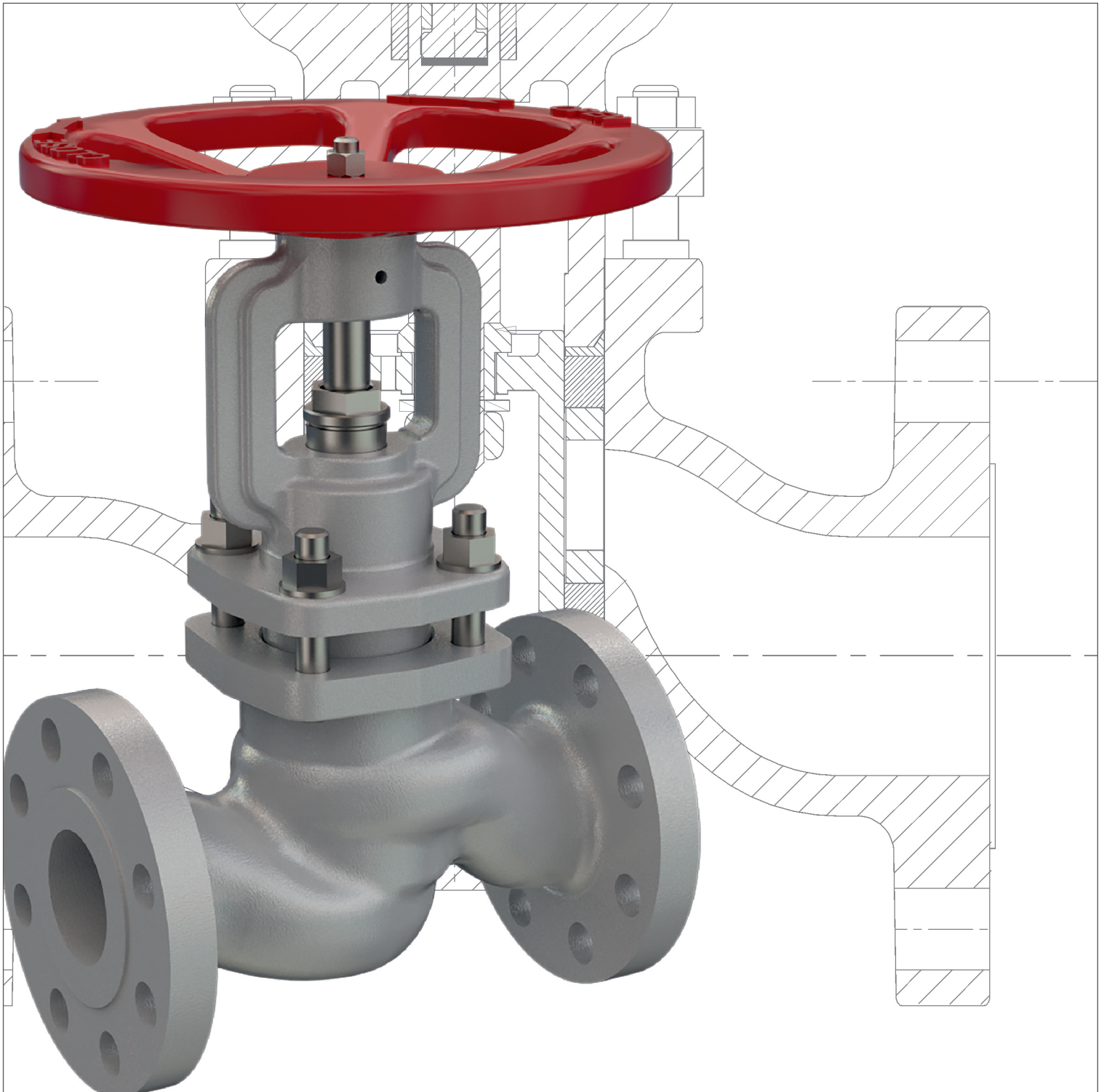
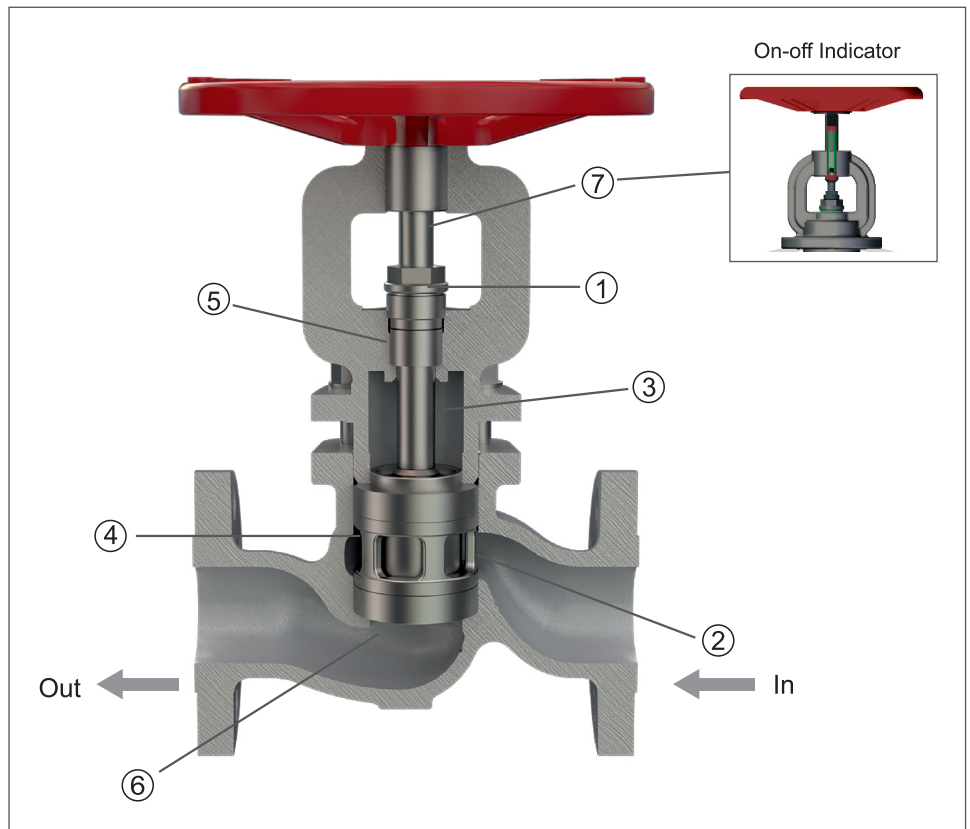


# Zero Leak Valves That Last

## FM Piston Valves



# Piston Valves



Energy audits of steam systems across industry have revealed that in a typical 5 year old plant, over 30% of the isolation valves leak. These could be either leakage to atmosphere which is easily visible and easy to quantify, or inline leakage, where it is difficult to identify the quantum of loss. Bellow sealed valves are the conventional choice to avoid leakages. However, inline leakages occur even with the best designed bellow sealed valves.

For over 75 years Forbes Marshall has been providing innovative solutions to help businesses improve their process and energy efficiency and be more environmentally responsible.

Forbes Marshall Piston Valves are the best technical fit to cater to a variety of fluid isolation applications in the industrial sector. They find application for a variety of media in process and utilities like saturated steam, superheated steam, heat transfer fluids, nitrogen and more.

Forbes Marshall piston valves are glandless valves with Class VI shut off. A burnished piston seals against metal reinforced graphite rings, providing a perfect inline shut off. This ensures zero inline/external leakage, and extended lifetime. Additionally, these valves are easy to maintain. This results in reduced costs towards spares inventory, seat replacement and manpower costs.

## Features and Benefits

(\*Refer to the diagram for numbering)

- |   |   |  |
|---|---|--|
| 1 | Self-lubricating spindle  | Ensures no wear and tear of spindle due to corrosion or foreign particles<br>Enables free movement of spindle.           |
| 2 | Higher sealing area with class VI shut-off  | Greater contact between piston and sealing surface results in tight shut off and higher leakage class                    |
| 3 | Compressible sealing rings (upto 25% of initial size)   | Allows periodic tightening of gland nut to prevent leakage<br>Enhanced life; 4000 cycles / 4 years, whichever is earlier |
| 4 | Interchangeability lower and upper sealing rings<br>Higher temperature suitable sealing rings | Ease of maintenance<br>Lower inventory required<br>Can handle temperatures upto 425°C                                    |
| 5 | Dust proof design   | Prevents ingress of foreign particles on spindle and piston<br>Protects the spindle surface from harsh environments      |
| 6 | Balance pressure piston design  | Reduces overall thrust force required to close the valve   |
| 7 | On-off indicator assembly   | Prevents overstressing of valve internals during operation.  |

## Why Forbes Marshall Piston Valves

Gate, globe, ball and bellow sealed valves are the conventional choice for isolation. These valves are designed to in line leakage class IV as per ANSI / FCI 70-2-1991 standards, and generally have metal to metal seating and asbestos contained gland packing / bellows. Due to this, steam passes through the ports at the rate of 0.5 % of the rated flow. Over a period of time, the tightness of the gland packing also loosens, or the bellows gets punctured resulting in gland leakage. These leakage losses can be very high, and can be prevented with the help of Forbes Marshall's piston valves that are uniquely designed to ensure long life even at temperatures of up to 425°C (797°F).

### Piston Valve Vs Other Valves

Parameter \ Type of Valve	Piston Valve	Ball Valve	Globe Valve	Gate Valve
Size of Effective Area	Very High	Very High	Low	High
Replace Gland Seal	NA	Y	Y	Y
Replace Internals	Y**	Y	N/Y	Y
Replace Seat	Y**	Y	N/Y*	N
Leakage	Nil	Nil	Medium	High
Purchase Cost	High	Medium/High	Medium / High	Low
Cost of Ownership over 5 to 10 Years	Low	Medium	High	High

\* Valve to be removed from line. \*\* Can be done inline (Valve need not be removed)

#### Benefits



##### Increased Productivity

Effective isolation of valves results in improved productivity and reduced losses



##### Energy Savings

Correct operation of piston valves results in optimum steam consumption



##### Improved Equipment Uptime

Elimination of maintenance hassles that otherwise may occur due to inline and external leakages

#### Available Variant

(with Gear Box)



Design Standard : ASME B16.34

Face to Face Dimensions: ASME B36.10

Testing Standard: API 598

#### Certifications:



**IBR**  
Approved

**PED**

#### Media



Air / Nitrogen



Water / Condensate



Steam



Thermal Oil

## Our Services

Our energy conservation services include comprehensive plant audits that ensure optimised reductions by enhancing steam generation, steam distribution, steam utilisation and condensate recovery.

At the equipment level our digital services focus on sustaining uptime at >95% levels. Equipment specific data is analysed to remotely monitor health and diagnose issues, enabling proactive maintenance and reducing downtime.

### Forbes Marshall Surveys



Plant surveys to map opportunities

### Forbes Marshall Energy Audits



Take your plant to benchmark performance

### Forbes Marshall Design Consultancy



Design for benchmark performance

### Forbes Marshall Care



Sustained performance of your steam assets

### Forbes Marshall Digital



Beyond connectivity

## Customer Speak

We have installed piston valves from Forbes Marshall in our system and observed no steam leakages. These glandless piston valves have effectively eliminated steam losses due to valve leaks and resulted in significant energy savings.

- A paper mill in North India

Forbes Marshall Piston valves ensure zero inline leakage as well as zero leakage to atmosphere, thereby eliminating wastage due to valve leaks. Hence, there has been substantial savings using Forbes Marshall Piston valves. We are very satisfied with the performance.

- A petrochemical plant in Western India

Forbes Marshall piston valves offer leak-proof sealing and class IV shut-off. They are maintenance friendly and maintenance can be done without removing the valve from the line. We are satisfied with the after sales service of Forbes Marshall and happy to involve Forbes Marshall as our energy conservation partner.

- A dairy plant in Western India

## Innovation Experience

>75 years

## Installed Base

300,000+

## Satisfied Customers

15,000+



www.forbesmarshall.com

Forbes Marshall

Krohne Marshall

Forbes Marshall Arca

Codel International

Forbes Vyncke

Forbes Marshall Steam Systems

### Forbes Marshall Pvt. Ltd.

Opp 106th Milestone, CTS No. 2220,  
Mumbai-Pune Road, Kasarwadi,  
Pune- 411034 INDIA  
Tel: +91(0)20-68138555  
Fax: +91(0)20-68138402

Email : [enquiries@forbesmarshall.com](mailto:enquiries@forbesmarshall.com)

### Forbes Marshall International Pte. Ltd.

16A, Tuas Avenue 1,  
#05-21, JTC Space @Tuas  
Singapore - 639533  
Tel: +65 6219 3890

© All rights reserved. Any reproduction or distribution in part or as a whole without written permission of Forbes Marshall Pvt Ltd, its associate companies or its subsidiaries ("FM Group") is prohibited.

Information, designs or specifications in this document are subject to change without notice. Responsibility for suitability, selection, installation, use, operation or maintenance of the product(s) rests solely with the purchaser and/or user. The contents of this document are presented for informational purposes only. FM Group disclaims liabilities or losses that may be incurred as a consequence of the use of this information.