

PRODUCT CATALOG

Excess Flow Valves - Check Valves - Relief Valves
Emergency Shutdown Valves - Isolation Valves



TWO ENGINEERED
TWO PRODUCTS

TVS ENGINEERED PRODUCTS

INDUSTRIES

LNG
Terminals



LPG
Processing



Petrochemical
Processing



Oil Tanker
Terminals



Truck
Terminals



Oil
Production



SERVED

CERTIFICATIONS



American
Petroleum
Institute



American Society
of Mechanical
Engineers



European
Conformity (CE)



National Fire
Protection
Association



International
Organization For
Standardization



Underwriters
Laboratories



Det Norske
Veritas (DNV)



United States
Coast Guard

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Valve Selection Guide



Models 2100, 2105, 2106

Slim Wafer Profile
Optional Bypass
Internal Piping and Flanges
Exclusive to 2105: High Flow, Low dP

Models 2120, 2125, 2600

Double Flanged
Optional Bypass
Fits Between Flanges
Exclusive to 2125: High Flow, Low dP



Models 2130-2190

Threaded
Optional Bypass
Multiple Mounting Configurations
Exclusive to 2155: High Flow, Low dP

Model 2400

Internal to Tank/Vessel
Multiple Reset Options
Fire Tested to API 6FA



Models 3200-3600

Low Pressure Relief
One Direction Flow
Reverse Flow Change
Critical Check/Nozzle Check

Atlas Valve

Control Valve
Back pressure Regulation
Low Torque Requirements
Injection Pump Pressure Control



Models 6200-6810

Emergency Shutdown
Quick Closing
Multiple Shutdown Methods Available

Model 6820

Remote or Manual Reset
Fire Safe
High Capacity, Set Pressures
ASME Non-Reclosing Relief Device



Model 7400

Slurry and Coarse Media
Multiple Metal Seat Options
Triple Port Purge System
Low Emission System Design

Model 8000

Diverter/Isolation/Changeover
Visual Indicator and Lockout Feature
Fire Safe and Low Emission Design
Low Profile Design



Model 8800

Diverter/Isolation/Changeover
Optimized Flow Coefficient
Low Emission Design

ValvChem

FFKM and FEPM Compounds
High Temperature Resistance



The valves listed above represent only TVS Engineered Product's most popular valves according to their respective applications. Fire safe designs per API 6FA on most products

Excess Flow Valves

Excess Flow Valves (EFVs) prevent excessive flow or surges in flow caused by line breaks, power disruptions, or pressure spikes. Excess Flow Valves internally sense flow and close automatically. Standard Valves have no reset.

Styles

Wafer
 Double Flanged
 Threaded/Welded
 Internal to Tank

Options

Automatic Reset
 Manual Bypass
 Gauges
 Soft Seats

Industries

Chemical Processing
 Refineries
 Drilling Rigs
 Pharmaceutical Bio Tech
 Food Plants

Benefits

Stop Flow Surges - Flow Shut-Off on Line Ruptures
 Reset Options - Fire Safe Design to API 6FA
 Multiple Flange Ratings Available - Bi-Directional Normal Flow
 Preset Factory Closing Flow Rate in One Direction
 Vertical or Horizontal Installation - Proven Reliability in Harsh Conditions

Alternative Names

Velocity Check - Emergency Shutdown Device
 Seismic Valve - Shutdown Valve - Surge Preventer
 Earthquake Valve - Line Rupture Valve

Wafer

Designed to easily insert into piping, between ASME/ANSI flanges
 Valves are durable and provide generous flow paths
 Closing flow rates are factory preset to customer's specifications
 See table below for dimensions of common sizes

Model 2100



(Shown with automatic reset)

Model 2105

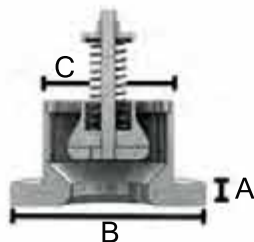


(Shown with manual bypass)

Model 2106



(Standard, no reset)



Basic options include carbon steel bodies and stainless steel internals with other materials and pressure classes available upon request.

Nominal Size	A Width*	B Dia	C Insert Dia
.75	.625	1.69	.70
1	.625	2.0	.90
1.5	.625	2.88	1.50
2	.625	3.62	1.90
3	.75	5.0	2.88
4	.75	6.19	3.75
6	1.0	8.50	5.69
8	1.0	10.62	7.50
10	1.25	12.75	9.63
12	1.30	15.00	11.50
14	1.50	16.25	12.88

These dimensions are for standard designs as reference only. Valves can be custom-engineered as needed.

*Valves with bypasses have different dimensions. Please contact us for more information.

Double Flanged

Designed and manufactured with standard ASME/ANSI flanges.

Optional Components:

- Automatic Reset - External Manual Bypass (Stainless Steel Tubing with Needle Valve)
- Weld On or Internal Flanged Body
- Differential of Static Pressure Gauges
- Exotic Materials Available upon Request

Closing flow rates are factory preset to the customer's specifications.
See table below for dimensions of common sizes.

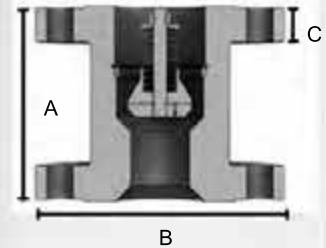


Model 2120

This valve comes standard with 150#, 300# or 600# ANSI/ASME class flanges. It is TVS Engineered Products' most widely used product due to its versatility and reliability.

Flange Size	150#			300#			600#		
	A	B	C	A	B	C	A	B	C
.755	4.50	3.88	.44	4.50	4.62	.56	5.0	4.62	.62
1	4.50	4.25	.50	4.50	4.88	.62	5.0	4.88	.69
1.5	4.75	5.0	.62	5.0	6.12	.75	5.50	6.12	.88
2	5.0	6.0	.69	5.75	6.50	.81	6.50	6.50	1.0
3	6.25	7.50	.88	6.50	8.25	1.06	7.50	8.25	1.25
4	6.30	9.0	.88	7.44	10.0	1.19	8.25	10.75	1.50
6	8.0	11.0	.94	9.0	12.50	1.38	10.50	14.0	1.88
8	12.0	13.50	1.06	12.50	15.0	1.56	13.0	16.50	2.19
10	13.50	16.0	1.12	14.25	17.50	1.81	15.0	20.0	2.50
12	18.0	19.0	1.19	19.0	20.50	1.94	22.0	22.0	2.62

2120



These dimensions are for standard designs as reference only. Valves can be custom-engineered as needed.



This high flow version of the Model 2120 is heavily constructed and can withstand years of service. It comes standard with 150#, 300# or 600# ANSI/ASME class flanges. Face-to-face dimensions are ASME B16.10 globe valve standard.

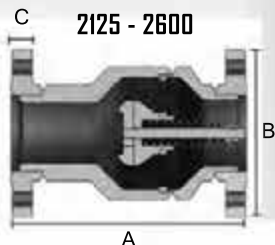
An externally adjustable EFV with a top entry design, which enables ease of adjustment and maintenance. Face-to-face dimensions are ASME B16.10 globe valve standard.



Model 2125

Flange Size	150#			300#			600#		
	A	B	C	A	B	C	A	B	C
1	5.0	4.25	.50	8.0	4.88	.62	8.50	4.88	.69
1.5	6.50	5.0	.62	9.0	6.12	.75	9.50	6.12	.88
2	8.0	6.0	.69	10.50	6.50	.81	11.50	6.50	1.0
3	9.50	7.50	.88	12.50	8.25	1.06	14.0	8.25	1.25
4	11.50	9.0	.88	14.0	10.0	1.19	17.0	10.75	1.50
6	16.0	11.0	.94	17.50	12.50	1.38	22.0	14.0	1.88
8	19.50	13.50	1.06	22.0	15.0	1.56	26.0	16.50	2.19
10	24.50	16.0	1.12	24.50	17.50	1.81	31.0	20.0	2.50
12	27.50	19.0	1.19	28.0	20.50	1.94	33.0	22.0	2.62
14	31.0	21.0	1.31	33.0	23.0	2.06	35.0	23.75	2.75

Model 2600



These dimensions are for standard designs as reference only. Valves can be custom-engineered as needed.

Threaded/Welded

Designed and manufactured with standard National Pipe Threaded (NPT) connections.
ASME B16.34 Wall Thickness

Closing flow rates are factory preset to the customer's specifications.
See table below for dimensions of common sizes.



Model 2130

Male Inlet x Female Outlet Standard Rating: 300#

Female Inlet x Male Outlet Standard Rating: 300#

Model 2140



Model 2150

Female Inlet x Female Outlet Standard Rating: 600#

Female Inlet x Female Outlet Standard Rating: 600#
High Flow, Low dP

Model 2155



Model 2160

Male Inlet x Male Outlet Standard Rating: 300#

Socket Weld Standard Rating: 600#

Model 2170

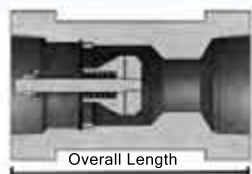


Model 2180

Female Inlet x Female Outlet Standard Rating: 600#
Selectable Flow During Field Service

Butt Weld Standard Rating: 600#

Model 2190



Overall Length

Basic options include carbon steel bodies and stainless steel internals. Other materials and pressure classes available.

NPS	2130	2140	2150	2155	2160	2170	2180	2190
.75	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
1	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
1.5	4.50	4.50	4.50	6.50	4.50	4.50	4.50	4.50
2	5.63	5.63	5.63	7.63	5.63	5.63	5.63	5.63
3	7.25	7.25	7.25	9.25	7.25	7.25	7.25	7.25
4	9.0	9.0	9.0	11.0	9.0	9.0	9.0	9.0

Internal to Tank: Model 2400

NFPA 58 Compliant
 API 6FA Rating
 Seat Internal to Tank
 Low Pressure Drops, High Cv Models

All Nozzle Mounting Options Available

- ASME B16.5 (Standard)
- Wafer
- Through Hole
- Double Flanged



Standard

Heavy Duty Spring & Seat Design
 Optional Weep Hole



Actuated Reset

Pneumatic or Hydraulic Reset



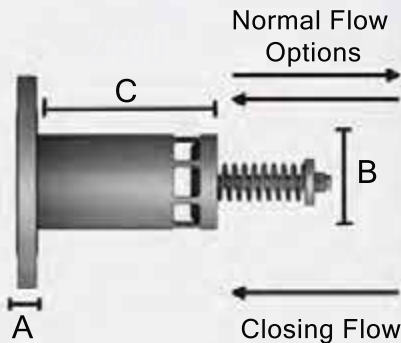
Manual

Manual External Handle
 with Locking Device



Custom

Custom Inlets & Outlets
 Start-up & Shutdown Options Available



Size	Standard		Manual/Actuated		Pipe B	Length C
	150#	300#	150#	300#		
	A		A			
2	.75	.88	2.50	2.50	1.90	0.25" increments added over the customer nozzle length to desired clearance.
3	.94	1.13	2.50	2.50	2.50	
4	.94	1.25	3.13	3.13	3.50	
6	1.0	1.44	3.13	3.13	5.56	
8	1.13	1.63	11.25	11.25	7.63	
10	1.19	1.88	13.68	13.68	8.63	
12	1.25	2.0	12.50	12.50	10.75	
14	1.38	2.13	16.0	16.0	12.75	
16	1.44	2.25	18.50	18.50	14.0	

Basic options include carbon steel bodies & stainless steel internals, with other materials & pressure classes available upon request.

Check Valves

Check Valves are designed to provide protection in liquid, gas or vapor services where flow is required in one direction. All designs are non-slam, have high capacity and are designed per API 6FA standards. Cracking pressure rates are factory preset per customer specifications.

Alternative Names

Vacuum Valve - Low Pressure Relief
Vent Valve - Non-Slam - Critical Check
Back Flow Preventer - Nozzle Check

Applications

One Direction Flow - Reverse Flow Change
Bulk Storage - Vessel Inlets
Custom Cracking Pressure

Model 3200

Wafer Design - High Flow Capacity
Designed API 6FA Standards
For dimensions, see Model 2100



Model 3220

Double Flanged
Soft or Metal Seat Designs
For dimensions, see Model 2120

Model 3255

Threaded End Connections
High Flow Capacity
For dimensions, see Model 2155



Model 3400

Internal to Tank
Soft or Metal Seat Designs
For dimensions, see Model 2400



Model 3600

Top Entry, Field Servicable
Adjustable Cracking Pressure
Turn Down Shut-Off Capability
For dimensions, see Model 2600



Atlas Valve

Partnered with Valve Systems International

The simple, least restrictive linear flow path of Atlas directs fluid flow to the center of the discharge and connection. During choked flow conditions, vaporized fluid recovers pressure gradually rather than abruptly because it does not impact flow path surfaces, and avoids cavitation damage.

The unique, least disruptive, axis-symmetrical annular flow path directs high velocity, vaporized fluid away from fluid boundaries throughout the entire range of control.

Applications

- Hydrocarbon refining systems requiring high pressure, high differential precision pressure control
- Injection pump pressure control
- Back pressure regulation for pump testing systems
- Boiler feed water injection flow control
- Natural gas production flow control when fluid is contaminated with water and erosive solids
- Any fluid control application where cavitation damage to control valves has been observed



Features

- Multi-turn valve stem for precise control with low torque requirement
- Complies with API 6A of ASME B16.34 for materials and construction
- Ultralube coated flow path and actuation components
- 316 or 440c seat, hard face option available
- End configurations to suit wide variety of applications
- Rotary to linear internal actuation employing the helical bevel gear drive system

How it Works

The valve stem rotates by a multi-turn electric actuator in response to a control signal. The pinion gear on the stem engages teeth on the sleeve arranged on a helical path. The power threads on the sleeve have the same pitch as the helix of the sleeve teeth, causing it to translate as it rotates. The plug is fixed to the intake hub of the valve body, with the contoured center portion suspended in the center by vanes on the upstream side. Fluid flow is modulated as the distance between the seat and plug changes.



Emergency Shutdown Valves

Emergency Shutdown Valves detect and immediately stop the flow of potentially hazardous materials. Shutdown options can be custom built to customer needs.

Options

Hydraulic, Pneumatic or Manually Operated
Thermal, Remote, Manual or Local Shutdown
Loss of Supply Closing

Applications

Pipelines and Storage Facilities, Tank Farms,
LPG, Chemical and Power Plants, Shipyards,
Rail Loading Facilities, Pumping Stations

Model 6200



Standard Features

Rapid closing, reverse flow
Local and remote monitoring & reset options
Low emission design

An automated, reverse flow check valve designed to immediately halt the flow of fluid during an emergency. Standard sizes are 4" and up

A manual, spring loaded, reverse flow check valve designed to immediately halt the flow of fluid during an emergency.

Standard Features

Fusible thermal device for tripping valve
Rapid closing, reverse flow
Remote monitoring options
Low emission design



Model 6250

Model 6810

This model features an API 607 ball valve, actuator and module. The valve's module controls pneumatic/hydraulic operated valves. This model coupled with the Model 2400 meets the specifications of NFPA 58.

Optional Accessories

Gauges - Valve Position Sensors - Manual Override
NAMUR & ISO Interfaces Fire Proof Blanket



Ball Valve with Actuator



Manifold Assembly

Standard Features

Pneumatic or hydraulic actuator
NFPA 58 manifold assembly

Relief Valves - Model 6820 TRV

The 6820 TRV is TVs Engineered Products' proprietary system to open or close a valve at a desired set pressure. This patented system includes the TRV Module, an actuator, and an isolation valve, typically a triple offset butterfly valve, due to performance and durability.

The 6820 TRV allows the user to operate within 90% of the valve's desired set pressure with no fatigue. The relief capacity is much greater than typical relief systems on the market, allowing for lower overall system costs. No external power is required for this device with required pneumatic source and back pressure independent models are available.

Advantages

- Class 5/Class 6 shut-off performance or better
- Instant reset with manual or remote options
- Partial stroke option to meet plant reliability requirements
- No pins required, proven performance with factory testing
- ASME and API certified. Cert. No. TVO-M00606

Options

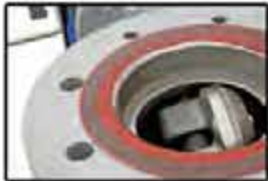
- Available in sizes ranging from 6" to 84"
- Classes: 150#, 300#, 600#
- Set Pressure: 1psi to 1500psi
- Remote closure system
- Accumulator

Key Components



TRV Module

Our patented technology allows for complete control of valve set pressures down to 2% for certain pressure ranges. Set pressures can be adjusted. Key options for dual sensing lines and fluid media filters provide industry leading system reliability.



Triple Offset Valve

Triple offset butterfly valves deliver proven performance across the spectrum of temperature, pressure and sealing classes. They operate from -450 F to 1500 F in accordance with valve specifications. Non-rubbing seat design offers bubble tight sealing performance. Options include all standard pressure classes.



Actuation System with Key System Options

Proven pneumatic actuation systems are integrated to the valve and TRV module. The modular design allowed the use of special valve features including accumulator tanks, thermal protection plugs and other devices according to customer specifications.



Operating Pressure Ratio

TRV's technology provides outstanding resistance to operating pressure conditions. System performance in our independent model is not impacted by system back pressures.

Pressure Cycling Service

This system has superior performance to pin type valves and rupture discs due to the TRV module's advanced design. The system does not rely on a prediction of a material failure as in buckling or rupture pin valves and rupture discs.

Field Testing & Resetting

The unit's optional field test connection port affords in-the-field testing. New settings can be reset in the field if a desired set pressure change is required. The feature allows smoother start-ups and quicker resets (as low as 3 seconds) when the device opens, versus the process for other valve types.

Isolation Valves

Isolation Valves are designed to stop or re-direct flow, allowing for maintenance or process operations.

Options

- Bleed Valves - Bypass
- Lock Out - Steam Purge
- Visual Indicator

Applications

- Gas - Steam
- Liquid - Coarse Materials



Model 7400

Features

- Slurry Valve - Metal Seating
- Triple Port Purge System
- Low Emission System Design

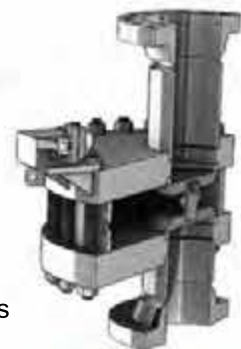
This model is used with slurry, coarse media, or viscous fluids. The valve has an excellent shut-off performance due to a self-lapping twin disc design.

Options

- Fail-safe actuation systems available
- Steam traces body and internals
- PFTE internal coating - Live position feedback

Specifications

- 6" to 20" sizing
- ASME B16.34 - 150#, 300#, 600#
- Temperature up to 1200 F
- ASME B16.5 - End Connections
- Hydraulic Actuation and Lifting Lugs
- Fire safe design to API 6FA



Model 8000



The Model 8000 changeover valve grants continued production while the relief device is being serviced. The valve is designed to incorporate two relief devices to protect in an overpressure emergency. Only one relief device is in service at a time, while the other serves as a back-up. If a problem occurs, the device can be easily switched to the alternate relief device, and the faulty device can then be serviced.

Standard Features

- Automatic pressure balance at start of position change
- Pressure bleed valve at each position also serves for in-line testing
- Safety handle locks in either position with external indicator
- Low profile design for easy installation in tight areas
- Low pressure drop conforms to API RP 520 Part 2 and ASME Section VIII, Division 1, Appendix M
- Field servicable with modular body

Specifications

- Size options: .5" to 4"
- Flanged or threaded connections available
- Temperature: -250 F up to 700 F +
- MAWP: Up to 6000 psig. on threaded connections
- Seal Options: Buna-N, EPDM, Neoprene, FKM, Silicon, PTFE, FFKM
- Trim: Stainless steel, other materials available
- Body: Carbon steel, other materials available
- Low E design available for low emission requirements

Model 8800



The 8800 Series Changeover Valve is designed to incorporate two safety relief valves installed on a single vessel system to protect in an over pressure emergency.

Only one safety valve is in operation at a time, while the other is installed as an interactive back-up.

If a problem occurs, such as a leak, switch to the other relief valve, and remove the faulty valve for repair.

Standard Features

Optimized flow coefficient (Cv) to ensure less than 3% drop per API RP520 Part II.

Designed for gas/vapor, liquid, mixed phase and steam service including ASME BPCV Section I boiler applications.

Low profile design for easy installation. Designed to API 622 and API 624 standards for low fugitive emissions.

Pressure bleed valve installed at both outlets.

Engineered, manufactured and tested in Broken Arrow, Oklahoma, USA



Technical Information:

- Available in sizes 2" to 10"
- Gas/vapor, liquid, steam, mixed phase
- RF, RTJ end connections (others available)
- ANSI 150-2500 pressure classes
- Temperatures from -250 F to 1200 F
- Complies with API RP520 Part II, ASME BPVC Section VIII, ASME BPVC Section I Code Case 2254, ASME B16.34, API 598, API 622, API 624

ValvChem

Our own line of Fluorinated Valve Seals.
FFKM and FEPM compounds offer unparalleled advantages.



O-rings and other seals made from thermoset fluorinated elastomers, such as Kalrez® (FFKM) and Aflas® (FEPM), are exceptionally well suited for a wide range of severe service applications.

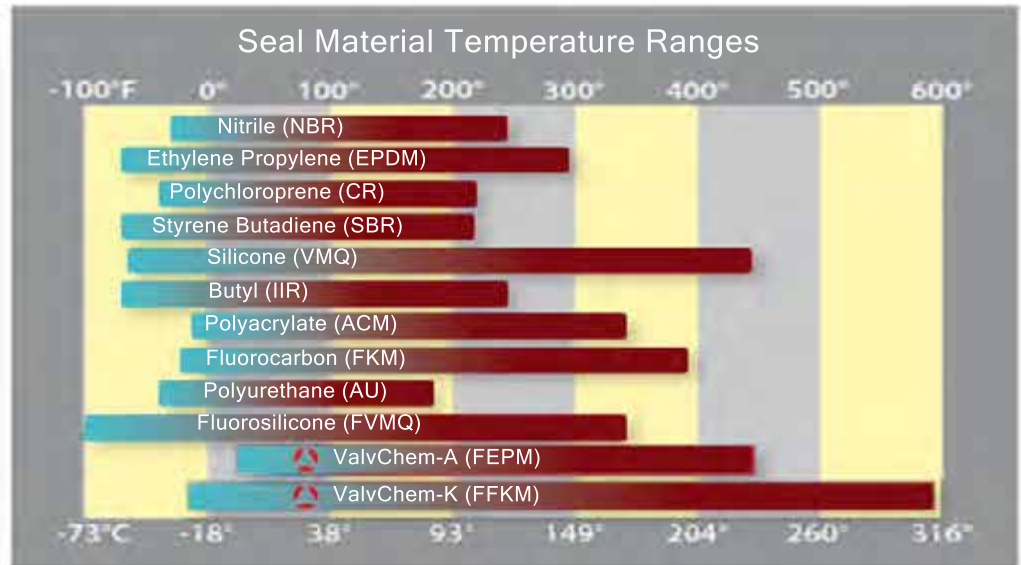


The challenge to the use of these specialized materials has always been cost, and more recently the challenge is availability. TVS Engineered Products' is addressing both of these issues with our new ValvChem™ premium fluoroelastomer valve sealing compounds that offer both competitive pricing and immediate availability.

Options:

ValvChem-A (FEPM)

ValvChem-K (FFKM)



Worldwide supply chain disruptions have led to a chronic shortage of perfluoroelastomer (FFKM) seal materials. In response, the technical engineering team at TVS Engineered Products has launched a proprietary range of FFKM (compare to Kalrez® from DuPont) and FEPM (compare to Aflas® from AGC) O-rings designed for challenging valve applications. Our materials meet or exceed the specs of the marketleading compounds and our O-rings are manufactured in our hometown of Tulsa, Oklahoma.



Valve Warranties

Standard Products and Services

L6, Inc. d/b/a Total Valve Systems, TVS Engineered Products warrants as follows: (a) That each new TVS product and service is free from defects in material and workmanship if installed and used in accordance with ASME or accredited symbol has no implied or express warranty. Any valve repair/service not performed under ASME or accredited symbol has no implied or express warranty. (b) That each new TVS product and service is fit for the purpose for which similar type product and services are ordinarily intended. Purchaser shall be solely responsible for determining suitability for use and in no event shall TVS Engineered Products be liable in this respect.

Duration

The warranty period shall begin on the date of shipment to the first purchaser and extend for twelve (12) months.

Exclusive Remedy

TVS Engineered Products will repair or replace at its sole discretion, any product and service it finds to be defective under this warranty, upon return of the product and service, prepaid, to Total Valve at 1300 East Memphis, Broken Arrow, Oklahoma 74012 or any warehouse designated by Total Valve. Such repairs or replacements are clients exclusive remedy and Total Valve SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY OR ANY OTHER THEORY OR RECOVERY.

Disclaimer

TVS Engineered Products excludes from this warranty failures due to corrosion, erosion, abrasion, cavitations, or other application related failures. Further, it is the end user's responsibility to account for environmental influences such as traffic, wind, earthquake or other external loadings, decomposition of unstable fluids, simultaneous loadings or loadings due to fluid weight. There are no warranties that extend beyond the terms hereof and no one is authorized to assume for TOTAL VALVE any other liability in connection with the sale of TOTAL product and services. This warranty supersedes all previous warranties.

Custom Valve Warranty (manufactured valves to customer specifications)

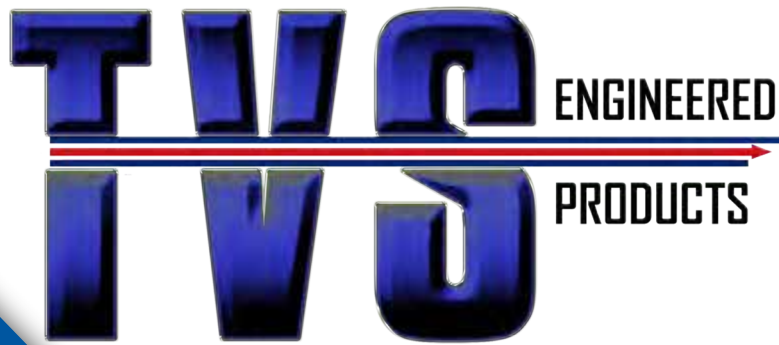
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Design

We reserve the right to make design changes without notice.

CAUTION: Users should consult tvsengineeredproducts.com to see complete specifications for the product selected from this catalog.

WARNING: Improper selection or use of products and related items in this catalog can cause death, serious injury, or property damage. As industry requirements change, Total Valve reserves the right to modify the contents of this catalog and program parameters without notification. Updates on this program can be obtained online at tvsengineeredproducts.com or by calling 1-800-324-7035, or by contacting your local TVS Engineered Products representative or distributor.



QUALIFIED

QC Dimensional Inspections
PMI Technology Utilized for Raw & WIP Materials
ASME Certifications for Valve Manufacturing & Assembly
Critical Dimensions Measured with Precision Measuring Equipment
Established ISO QC Systems & Processes
PED & CRN Registrations, UL when Required

ENGINEERED & TESTED

Latest Modeling with Flow (CFD) & Stress (FEA) Analysis
Solid Modeling & System Modeling for Projects
Vibration & Acoustic Modeling / Physical Testing Capabilities
Years of Technical & Engineering Valve Experience Using a Wide Range of Materials
All Types of Custom Valves Engineered to Meet Unique Customer Requirements
Calibrated Flow Lab Testing / Real Time Test Results on Total Valve Live Website
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PTC 19.5, ANSI, ASME & UL Testing are Standard Operating Procedures
Spring Manufacturing & Testing / ASME Welding & Hard Facing

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