



# United Process Valves

Tradition

Innovation

Commitment

**VL SERIES**

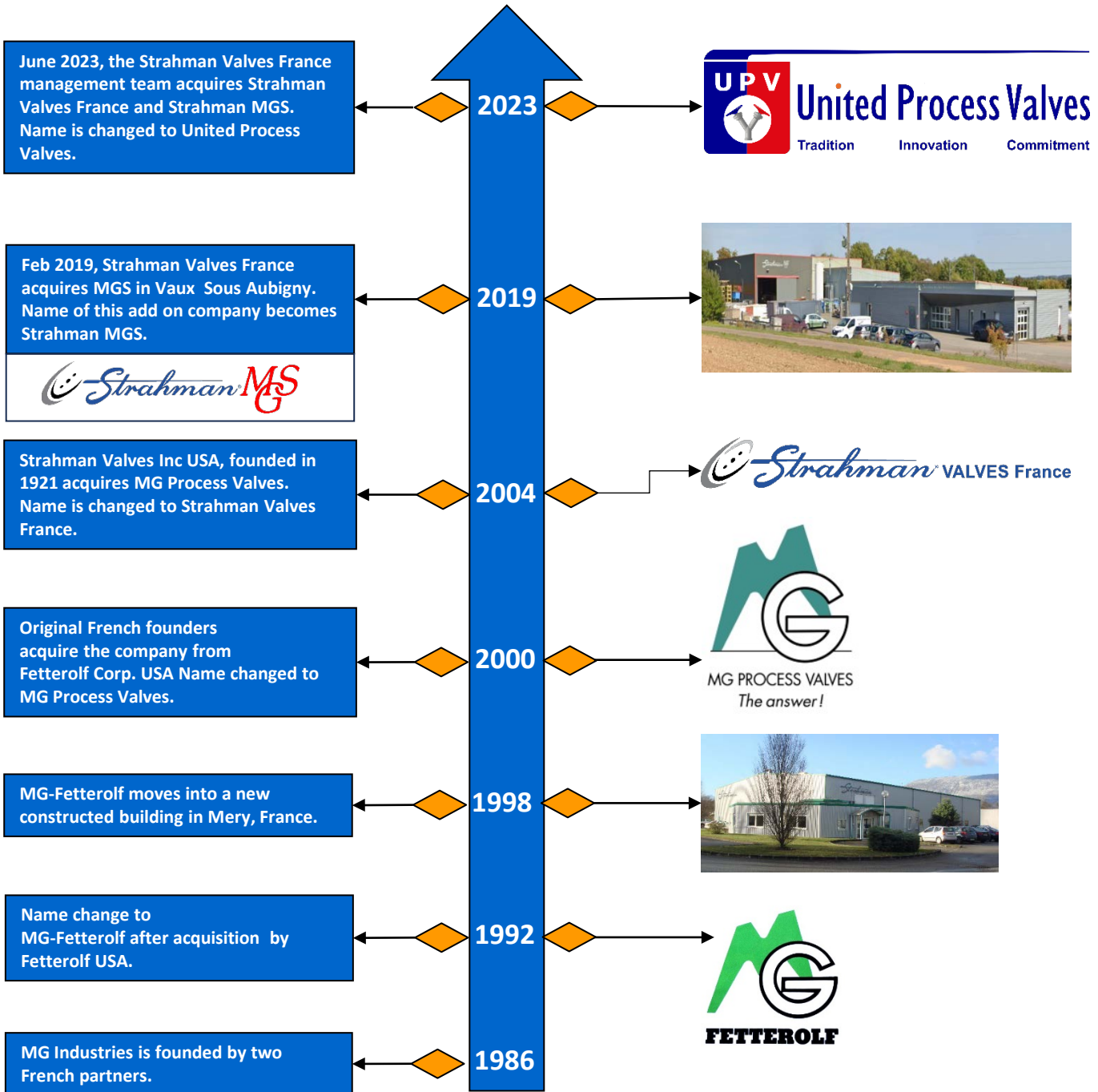
**VESSEL & REACTOR VALVES**

SOFT SEAL PISTON VALVES





## HISTORY & MILESTONES



# SERIES VL, CUSTOM MADE RANGE

## TECHNICAL AND GENERAL INFORMATION

### FEATURES

- Extended body for flush connection to the process
- Combinations of extended body and extended piston
- Outlet angles to customer requirements
- Integral welded jackets
- Extended stuffing box with live loaded packing
- Inlet or outlet flange in different sizes
- Connection flange to any standard or custom design
- Custom made port sizes to optimize flo
- Wide range of metallurgy available

### DESIGN CODE AND CONSTRUCTION

- Design standard compliant with ASME B16.34
- International standards include ANSI, DIN, JIS, API etc.
- Wide range of material selections including carbon steel / stainless steel / Titanium / Hastelloy / Duplex / Monel / Tantalum / Zirconium
- Fabricated, cast, forged and bar stock designs
- Combinations of fabricated, sand and investment castings, and bar stock available

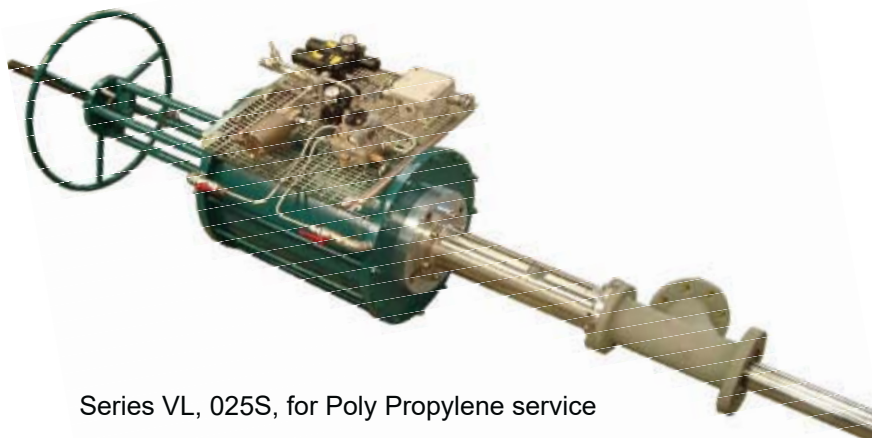
### SURFACE FINISH

- For polymer applications, UPV recommends a surface finish of Ra 0.4 for all parts are in contact with the medium

### QUALITY ASSURANCE AND TESTING

- ISO 9001 compliant
- PED / ATEX / CE marking
- TUV / HPO / ISO 15848 1 & 2, low emission certification available
- Standard testing procedures

RANGE DEFINITION															
VL Manufacturing Range	PN 10	PN 16	IPN 20-150 lbs.	IPN 25	IPN 40	PN 50 300 lbs.	PN 64 400 lbs.	PN 100 600 lbs.	PN 150/160-900 lbs.	PN 250 - 1500 lbs.	PN 320	PN 420 - 2500 lbs.	PN 630 - 4500 lbs.		
3/8" - DIN10	Fig. 020														
1/2" - DIN15															
3/4" - DIN20															
1" - DIN25															
1 1/4" - DIN32	Fig. 025														
1 1/2" - DIN40															
2" - DIN50															
2 1/2" - DIN65															
3" - DIN80															
4" - DIN100															
5" - DIN125															
6" - DIN150															
8" - DIN200															
10" - DIN250															
12" - DIN300															
14" - DIN350															
16" - DIN400															
18" - DIN450															
20" - DIN500															
24" - DIN600															



Series VL, 025S, for Poly Propylene service



Series VL, 025D with integral Welded Jacket

## SERIES VL, CUSTOM MADE RANGE

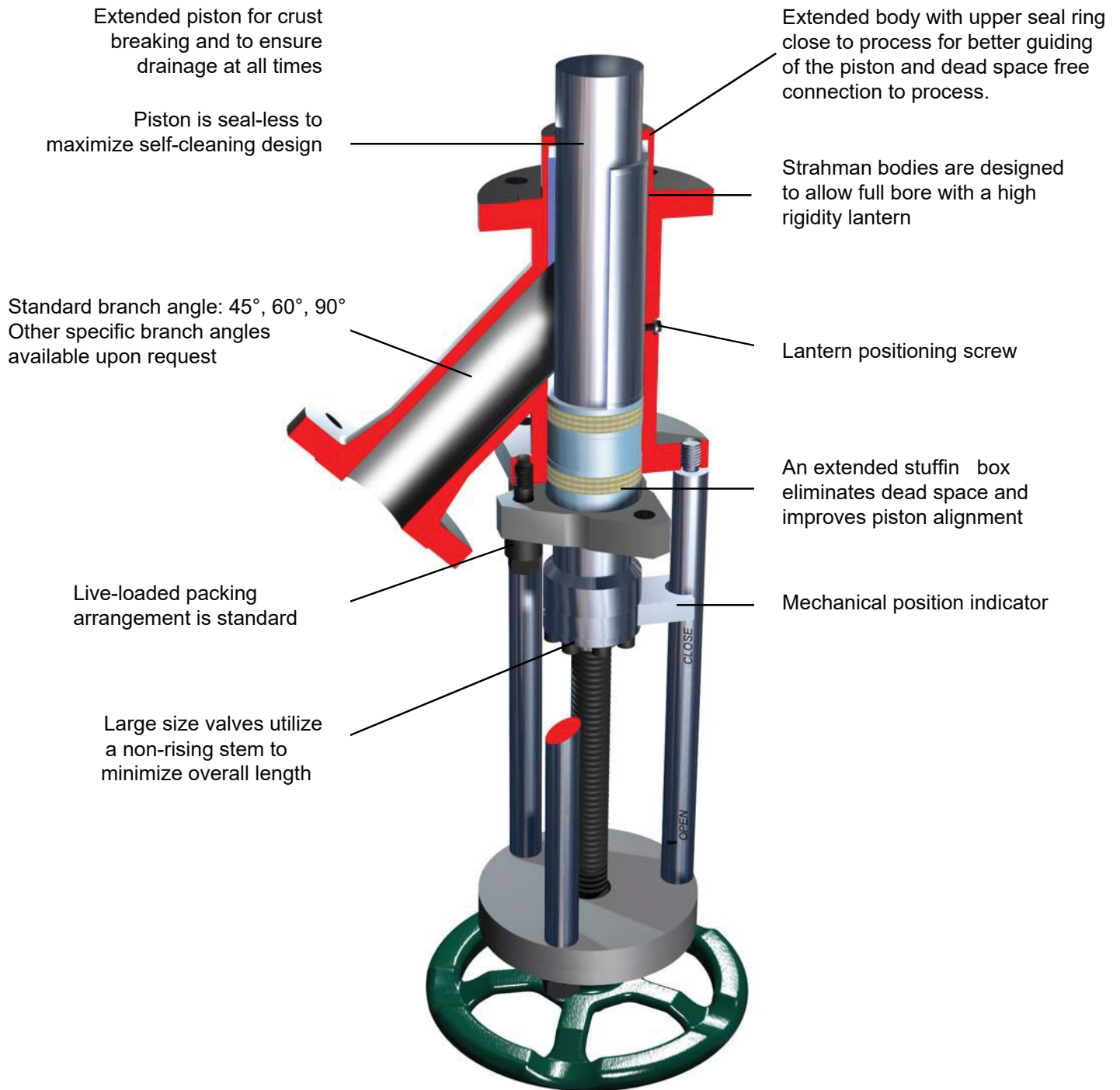
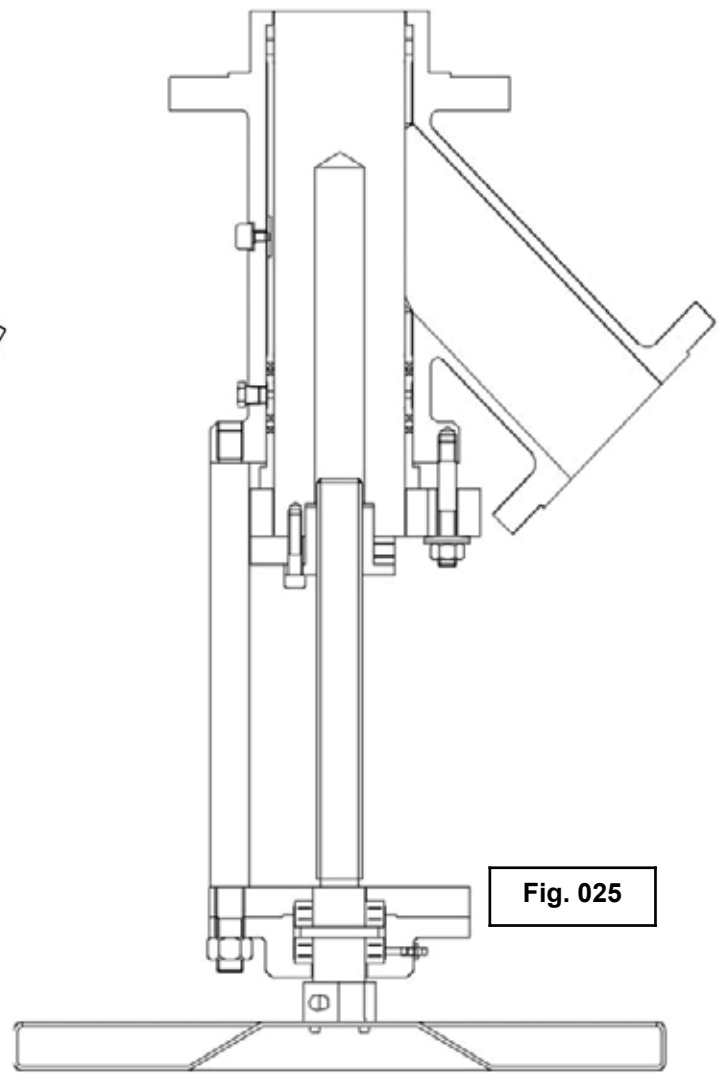
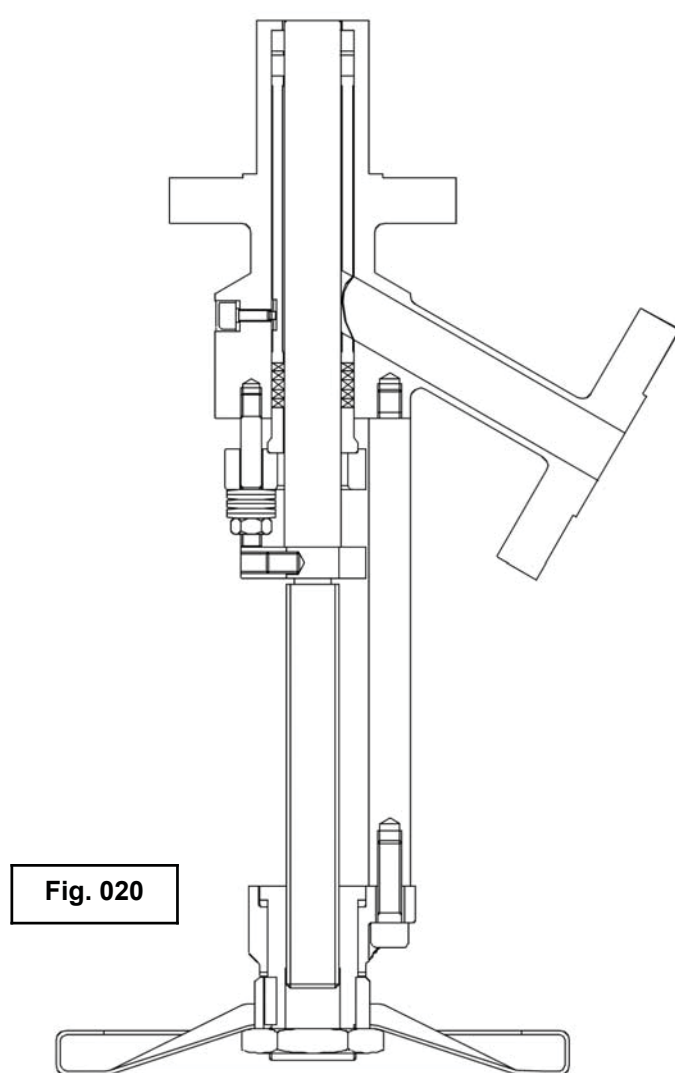


Fig. 025S

## SERIES VL, CUSTOM MADE RANGE BODY ARRANGEMENTS

The United Process Valves VL series uses the following two stem designs:

- Figure 020 for small piston sizes to approximately 25 mm (1") uses a rising stem design
- Figure 025 for piston sizes 32 mm and larger uses a non-rising stem design



## SERIES VL, CUSTOM MADE RANGE

### SEALING SYSTEM

**Soft Seal-** The **Soft Seal** is a seat-less sealing system that assures superior performance. While closing, the plunger moves through the valve bore and effectively rods any remaining product out of the valve.

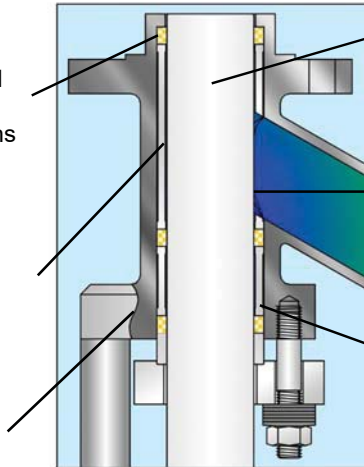
**Temperature**  
Min: -50° C / -60° F  
Max: 200° C / 1000° F

**Pressure**  
Max: 100 bar / 1450 psig

Rigid soft seat ring provides dimensional stability with temperature variations

High rigidity lantern is designed to avoid distortion or contact with the piston

Valve Body



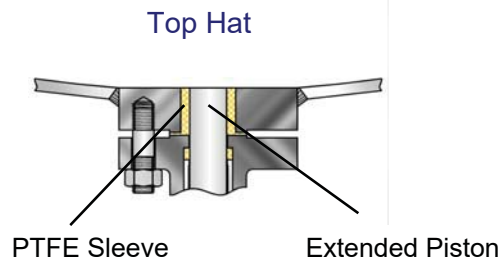
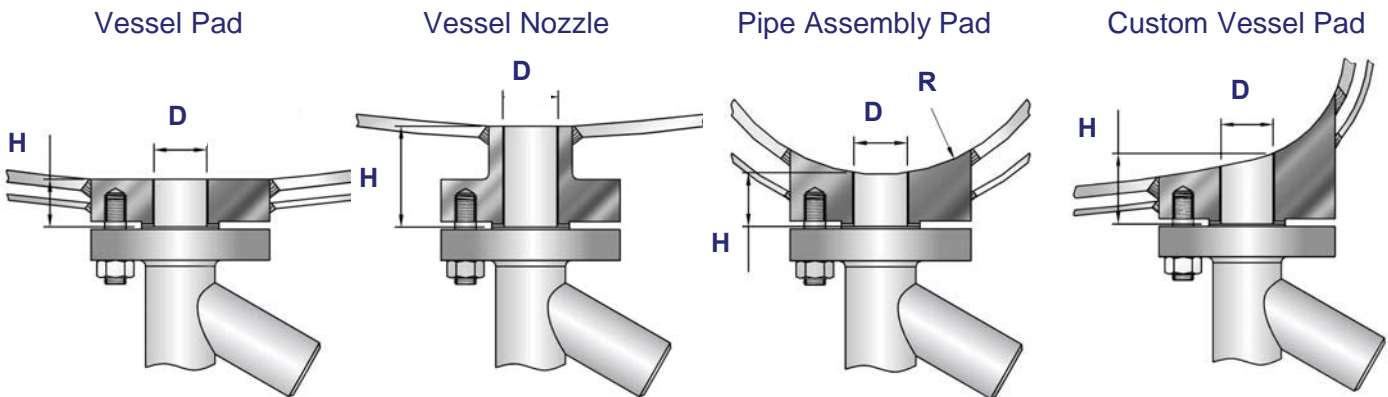
Greater piston hardness resists scratches that are the primary cause of damage to the seal and resulting in leakage

A second lantern gland packing arrangement improves piston guidance and minimizes retention areas

The standard live loaded packing arrangement avoids over-compression of the upper seal ring while the valve is in the open position

### VESSEL CONNECTIONS

To connect valves to existing vessels or reactors, there are two possibilities: a nozzle or a pad connection. In both cases, the customer must specify the following vessel connection details: « **D** » (inside diameter), « **H** » (height), **DN** (nominal size), **PN** (pressure rating) and connection **standard** (ISO, ANSI, DIN, etc.). To eliminate retention areas radius « **R** » can be specified for optional contouring. For new projects United Process Valves can supply valves with easy-to-fit standardized pads that are ready to be installed.

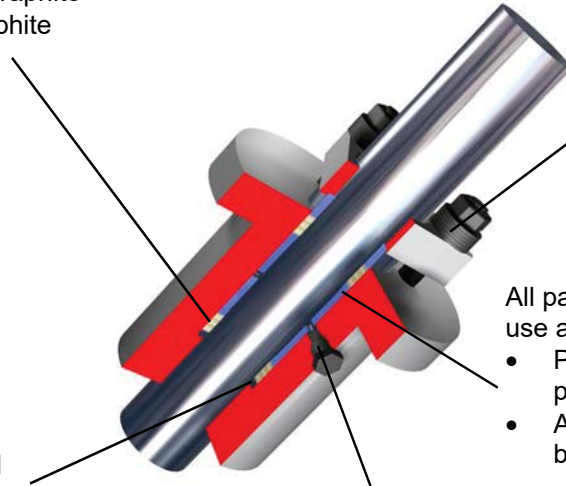


## SERIES VL, CUSTOM MADE RANGE PACKING DEFINITION

Typical Packing Materials:

- PTFE
- PTFE / Aramide Braid
- Carbon / Graphite Braid
- Graphite Braid
- PTFE / Aramide Braid + Graphite
- Lamellar + Expanded Graphite
- Pure Graphite

Bottom ring material is selected with a differential hardness from the piston to prevent piston damage



Live loaded packing arrangement minimizes valve maintenance

All packing arrangements use a lantern ring that:

- Provides better stem piston guiding
- Avoids dead space in body cavities

Optional 1/4 inch NPTF available for leak detection or inert gas injection to avoid leakage to atmosphere by creating an over pressure

## STANDARD PAD GASKET RANGE

- PTFE
- Aramide / Nitrile
- Carbon / Aramide
- Laminated Graphite
- Laminated Graphite / 316
- Spiral Wound 316L / PTFE
- Spiral Wound 316L / Graphite
- Spiral Wound 321 / Graphite
- Spiral Wound Inconel / Graphite
- Spiral Wound Titanium / Graphite
- Perfluoroelastomer (Kalrez) O Ring
- Welded Lips
- Metallic O Ring Helicoflex Gasket Aluminium/316
- Metallic O Ring Helicoflex Gasket Nickel/Nimonic 90
- 316L RTJ
- Nitrile O Ring
- EPDM O Ring
- Silicone O Ring
- Fluorocarbon (Viton) O Ring
- Silicone FEP Jacketed O Ring

- PTFE
- Aramide / Nitrile
- Carbon / Aramide
- Laminated Graphite
- Laminated Graphite / 316
- Spiral Wound 316L / PTFE
- Spiral Wound 316L / Graphite
- Spiral Wound 321 / Graphite
- Spiral Wound Inconel / Graphite
- Spiral Wound Titanium / Graphite
- Welded Lips

### Valve Coding System

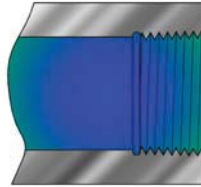
	V	P	4	S	B	-
V Vessel Reactor Valves						
P Piston D Disc R Rising Disc A Accessories						
4 45° Branch Angle 6 60° Branch Angle 9 90° Branch Angle S Straight \$ Special						
S Soft Seated M M Seal C M Control D Dual Seal R M Ring Seal						
B Extended Body P Extended Plunger D Dismountable Seat \$ Special						
J Jacketed - Non-Jacketed						

## SERIES VL, CUSTOM MADE RANGE LINE AND BRANCH CONNECTIONS

Soft Seal Valves can be equipped with the following end connections:



Flanges ANSI,  
DIN, JIS



Threaded  
connections  
NPT & BSP

## ACTUATION OPTIONS



Hand Wheel



Bevel Gear



Electric Actuator



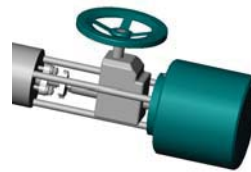
Air Motor



Double or single  
acting Air Cylinder



Double or single acting Air  
Cylinder with Safety Hand Wheel



Double or single acting Air  
Cylinder with side mounted  
Safety Hand Wheel



Hydraulic  
Cylinder

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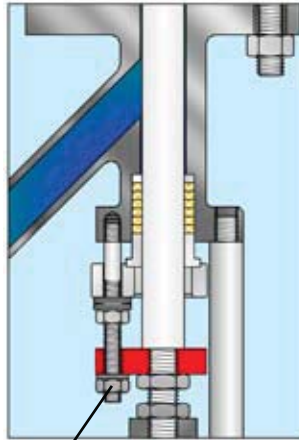
## SERIES VL, CUSTOM MADE RANGE PISTON LOCKING DEVICE

Many times safety regulations require an additional locking device to keep a valve closed  
United Process Valves offers the following solutions:



### Arrangement A

Special half pipe blocks the stem within top works and prevents valve from stroking



### Arrangement B

Extended stuffing box bolts provide locking with special position indicator.



### Arrangement C

Lockable handwheel cover.

## TEMPERATURE PROBE IN THE PISTON RTD SENSORS

A bottom valve is located right in the middle of your process. For this reason, an optional temperature probe installed in the piston will provide you with temperature information without the need of any extra nozzle or reactor modification

For temperature sensitive processes, United Process Valves offers piston-mounted single or dual Resistance Temperature Detectors (RTDs). The standard RTD unit has a platinum element and is available in materials to match the wetted parts of the drain valve.

Drain valves with RTDs provide several advantages over traditional thermocouples. Temperature sampling and vessel draining can be done from the same vessel nozzle. Since the drain valve is typically mounted to the bottom of the vessel, the location of the RTD at the end of the drain valve piston allows for a better temperature reading than a thermocouple mounted above the vessel agitator. RTDs provide a more stable and repeatable operation than thermocouples.

Each RTD equipped drain valve is complete with a bonnet-mounted junction box. The signal output of a RTD can be connected to a computer or data collector. An optional valve mounted temperature transmitter is also available.



Single or Double PT100  
Temperature Probe.  
Ex-proof or standard.  
Temperature range:  
-50°C / 400°C  
-60°F / 750°F

Piston Mounted  
RTD Sensor





## SERIES VL, CUSTOM MADE RANGE MULTI POSITION AND BOTTOM VESSEL SAMPLING OPTIONAL CRUST BRACKING AND SAMPLING POSITION

An option exclusive to soft seal piston valves is the multiple piston position. This particular arrangement allows to move the piston while still sealing between process and outlet. This way a Tank Bottom valve becomes a multi-purpose tool.

1. The ram can extend into the tank (Fig. 1). This breaks through any crust or build-up that may form on the tank bottom. The normal piston position is flush with the tank bottom.
2. The piston completely fills the valve bore so the valve cannot clog.
3. As the valve opens, the piston retracts (Fig. 2). Before the drain valve opens, the piston clears the insert ring/flange and a sample can be taken.
4. After taking the sample and closing the sampling valve, the piston continues to retract until the drain valve opens and drains the tank. (Fig. 3)

be closed. The piston extends tank removing all material.

### Bottom Vessel Sampling

A sampling valve combined with a sampling assembly can be used to sample product prior to tank draining

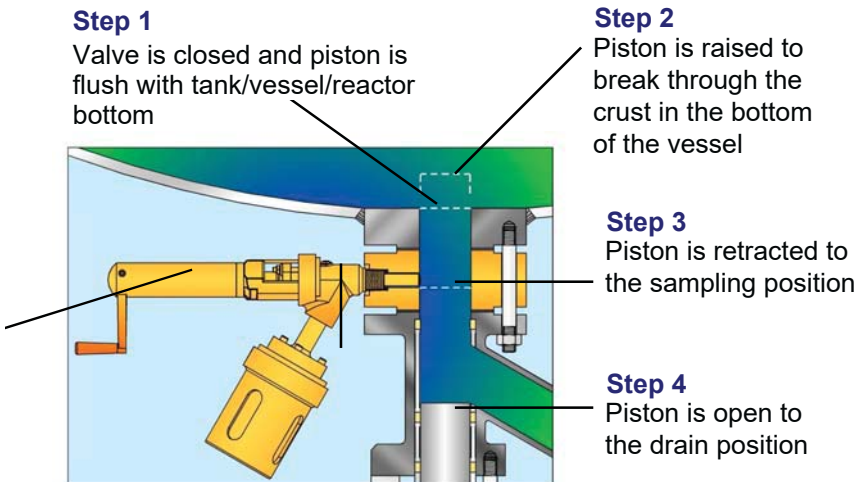


Fig. 1 - Drain Valve Fully Closed



Fig. 2 - Drain Valve Open for Sample



Fig. 3 - Drain Valve Fully Open

\*Shown: United Process Valves Insert and Sampling Valve in conjunction with the Ram-Type Drain Valve



## United Process Valves products include:

### PISTON TYPE SAMPLING VALVES

United Process Valves has a full line of sampling valves that produce live samples without exception. Our sampling valves unique design prevents failure caused by sediment or clogging.

### PISTON TYPE DRAIN VALVES

United Process Valves Drain Valves are designed to prevent clogging. They are ideal for use in liquid and gas services or with slurries, polymers, and high viscosity fluids that tend to solidify at room temperature.

### PISTON & DISC TYPE IN-LINE VALVES

United Process Valves Piston and Disc Type In-Line Valves alternative to a failing ball, plug or gate valve. With a wide range of positive sealing systems like M Seal, M Ring Seal and M Control, these valves provide superior in-line tightness. When opening the piston or disc it retracts completely into the valve body providing an unrestricted full flow

### PISTON & DISC TYPE DIVERTER VALVES

United Process Valves Diverter Valves are designed to divert process flows with high and low viscosity. They are dead space free to prevent clogging. They are ideal for use in liquid and gas services or with slurries, polymers, and high viscosity fluids that tend to solidify at room temperature.

### SINGLE- & DOUBLE DISC SLAB GATE VALVES

United Process Valves Diverter Valves are designed to divert process flows with high and low viscosity. They are dead space free to prevent clogging. They are ideal for use in liquid and gas services or with slurries, polymers, and high viscosity fluids that tend to solidify at room temperature.

### LINE BLINDS

United Process Valves Line Blinds provide zero leakage downstream and total isolation on process pipelines, vessels, and maritime applications. No pipeline movement is required when blind position is changed.

[www.unitedprocessvalves.com](http://www.unitedprocessvalves.com)

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ISO 9001:2015

BUREAU VERITAS  
Certification

