



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

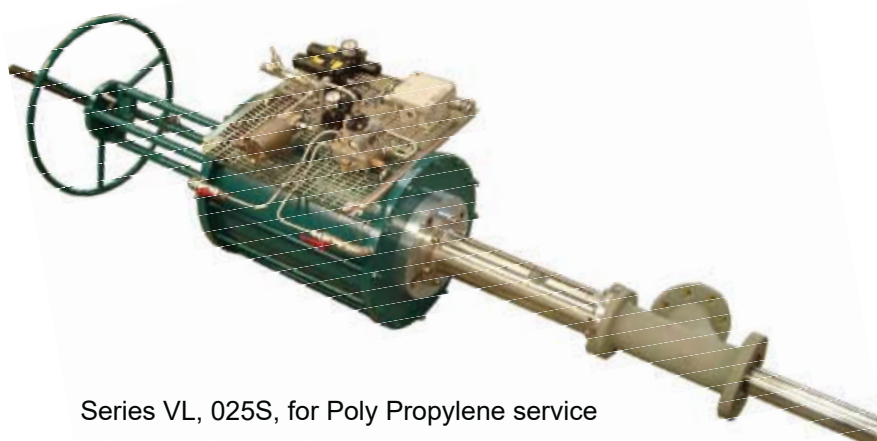
SURFACE FINISH

- 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.
3/8" - DIN10	Fig. 020									
1/2" - DIN15										
3/4" - DIN20										
1" - DIN25	Fig. 025									
1 1/4" - DIN32										
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

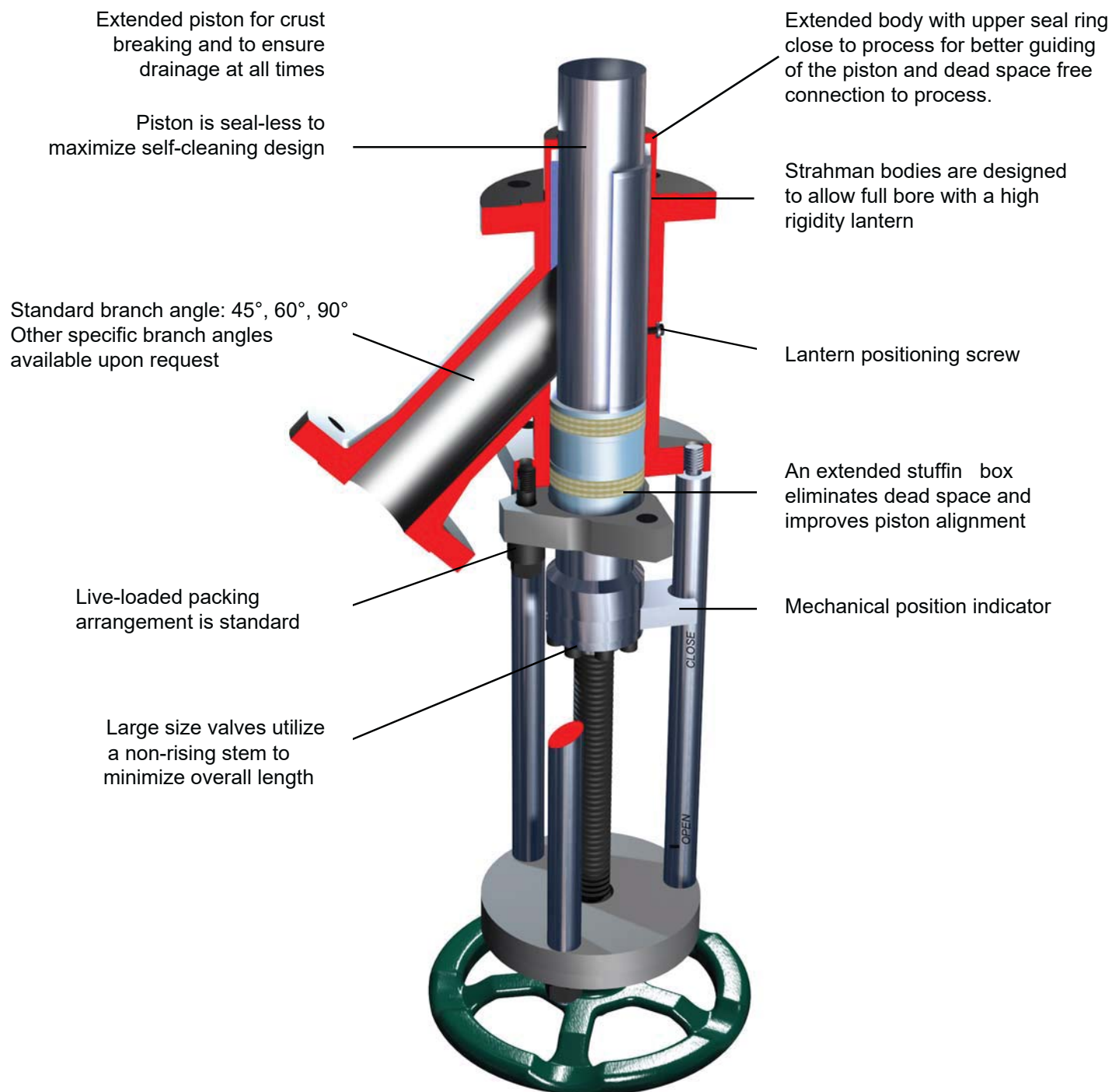
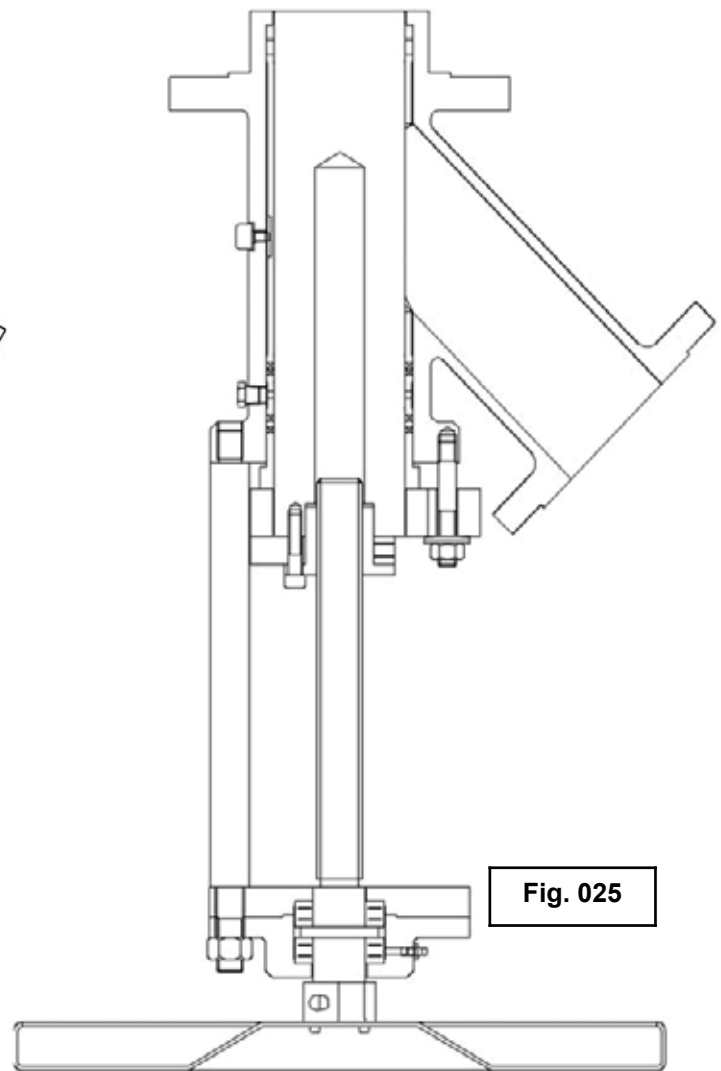
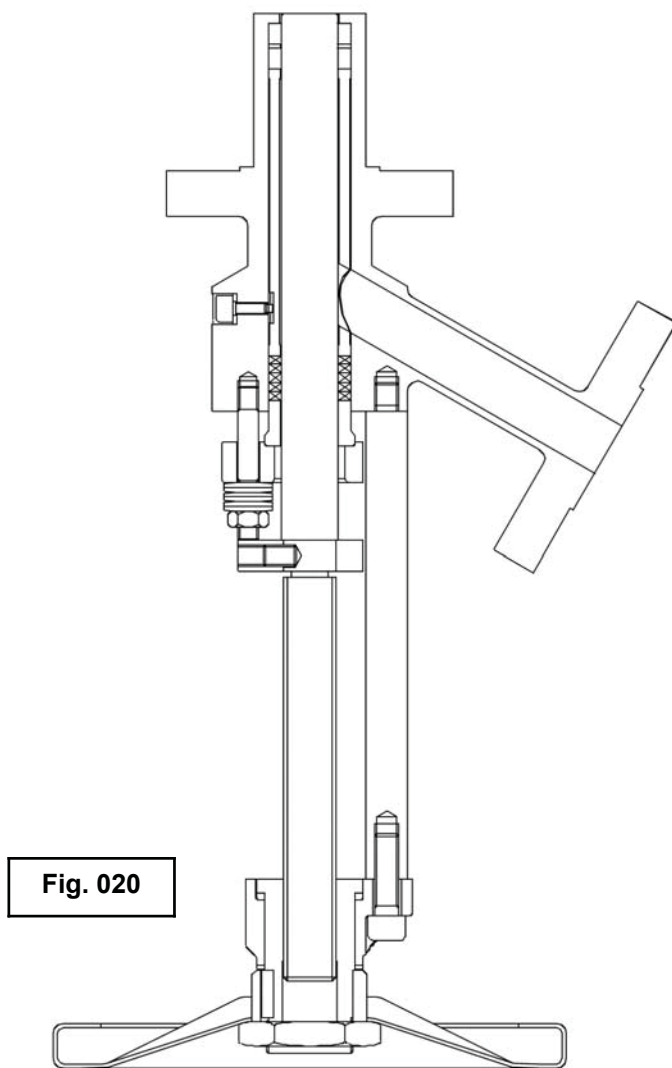


Fig. 025S

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

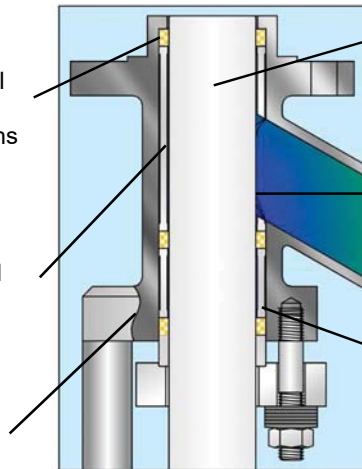
Pressure

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

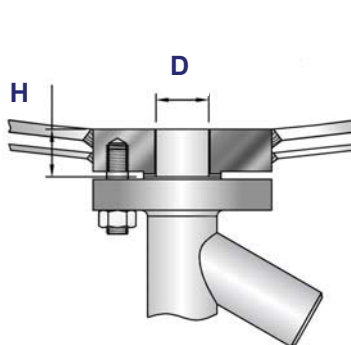
A second lantern gland packing arrangement improves piston guidance and minimizes retention areas

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

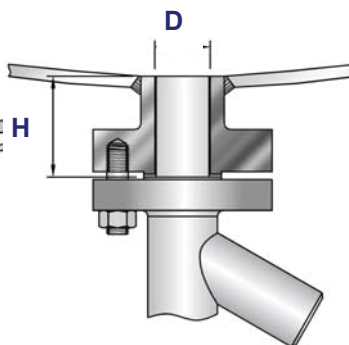
VESSEL CONNECTIONS

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.

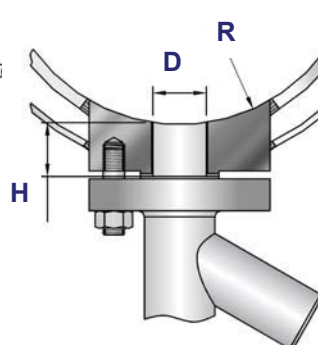
Vessel Pad



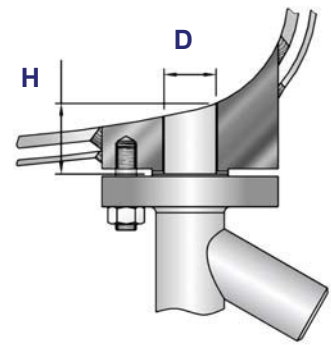
Vessel Nozzle



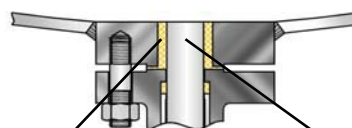
Pipe Assembly Pad



Custom Vessel Pad



Top Hat



PTFE Sleeve

Extended Piston

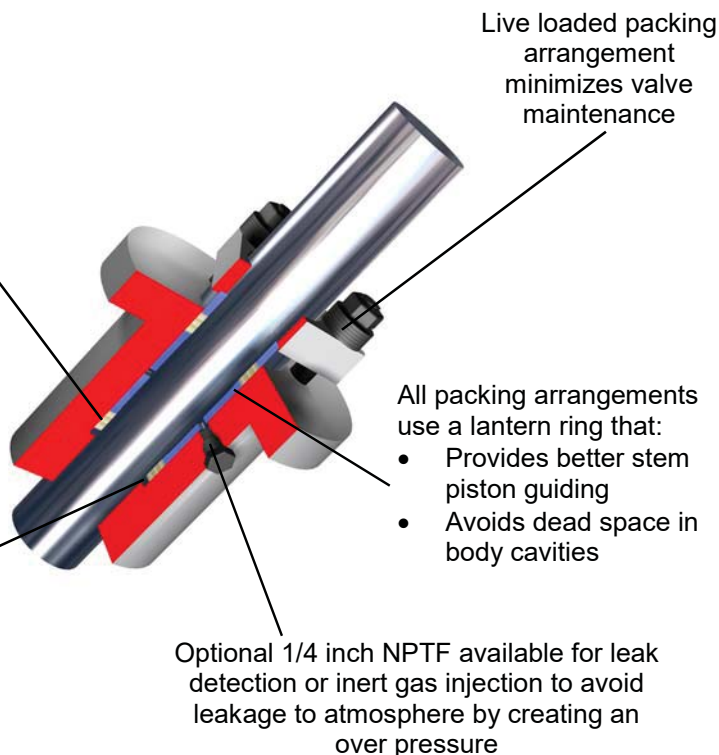
SERIES VL, CUSTOM MADE RANGE

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



- All packing arrangements use a lantern ring that:
- Provides better stem piston guiding
 - Avoids dead space in body cavities

STANDARD PAD GASKET RANGE

- | | |
|---|--|
| <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 |
|---|--|

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	

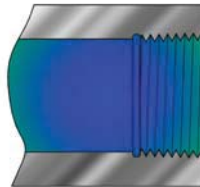
- | | |
|---|---|
| <ul style="list-style-type: none"> • PTFE • Aramide / Nitrile • Carbon / Aramide • Laminated Graphite • Laminated Graphite / 316 • Spiral Wound 316L / PTFE • Spiral Wound 316L / Graphite | <ul style="list-style-type: none"> • Spiral Wound 321 / Graphite • Spiral Wound Inconel / Graphite • Spiral Wound Titanium / Graphite • Welded Lips |
|---|---|

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



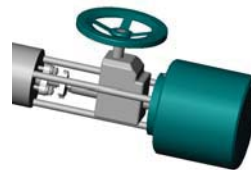
Air Motor



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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Surface Finish

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Quality assurance & testing

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

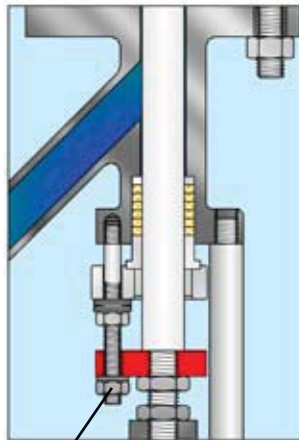
SERIES VL, CUSTOM MADE RANGE PISTON LOCKING DEVICE

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.

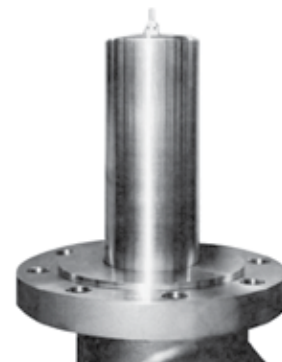
For temperature sensitive processes, United Process Valves offers piston-mounted single or dual Resistance Temperature Detectors (RTDs). The standard RTD unit has a platinum element and is available in materials to match the wetted parts of the drain valve.

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.



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

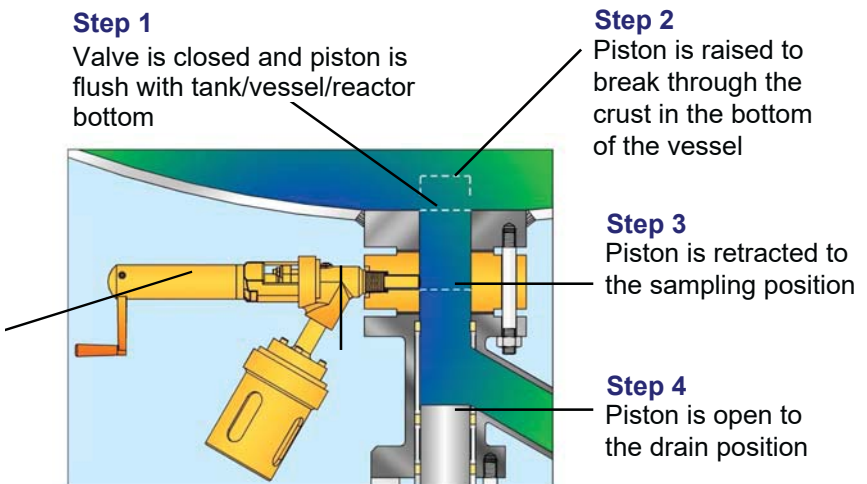


Fig. 1 - Drain Valve Fully Closed



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 Single- & Double-Disc Slab Gate Valves are specifically designed for use in transfer line and decoking valves for ethylene cracking units and isolation applications in FCCU (fluid catalytic cracking unit) and DCU (delayed Coker unit) plants. The safety and continuous production of process plants often depend on the reliability of these "key-equipment" valves.

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. Please contact your local United Process Valves representative for further details or visit our website:

www.unitedprocessvalves.com

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