

United Process Valves

Tradition

Innovation

Commitment

VD Series

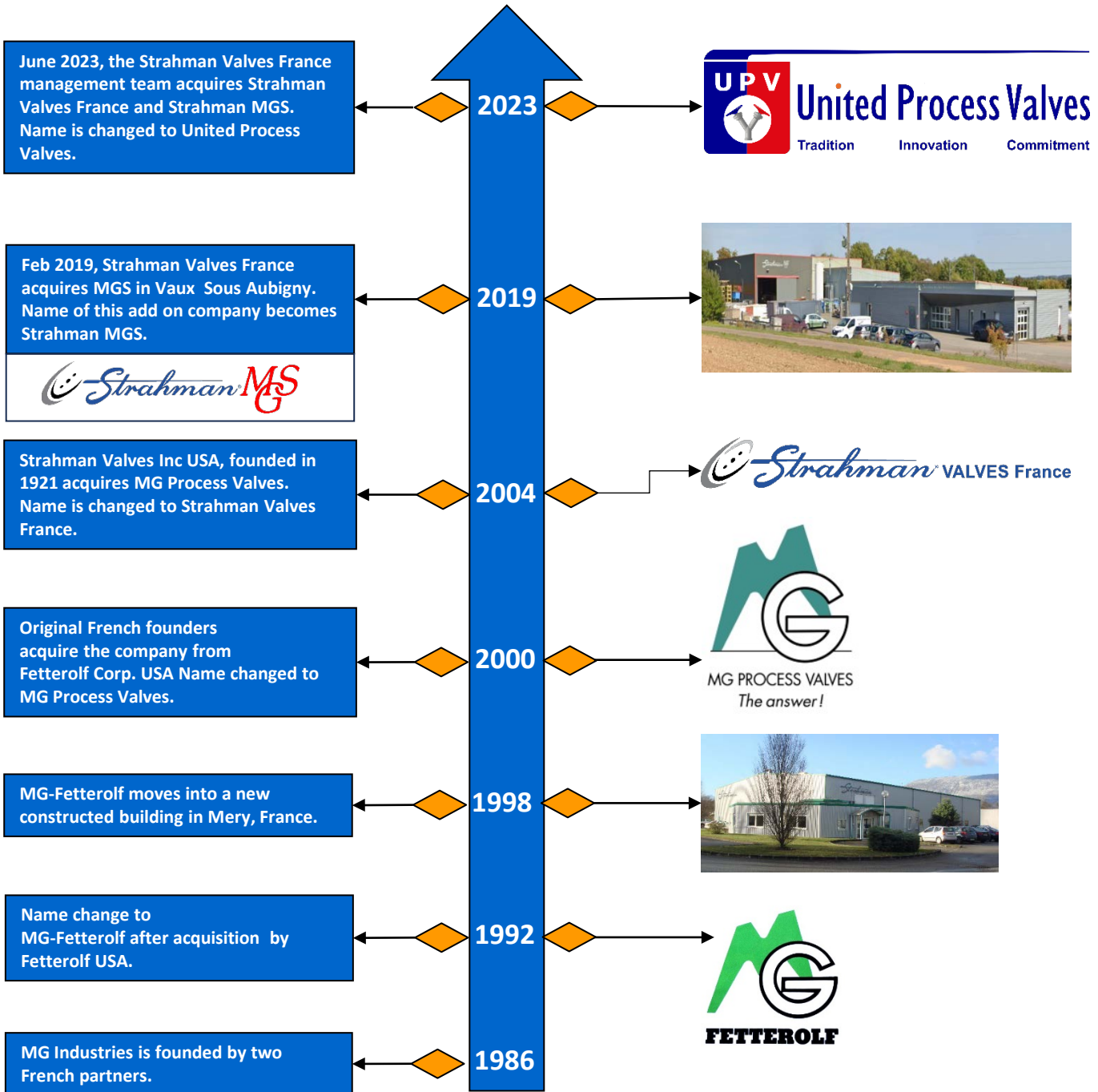
VESSEL & REACTOR VALVES

LOWERING DISC VALVES





HISTORY & MILESTONES





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FULL FLOW BOTTOM OUTLET VALVES

Code: **VD4R-VD6R**

Tank Bottom Disc Valve

M Ring for high temperature & vacuum. Other sealing systems are available

Extended body design provides a flush design and a dead space free connection to the vessel

Optional heat jacketing

Purge connections can be added to flush the valve and to clean downstream

Disc completely retracts into the valve body to allow full flow

Standard branch angle: 45°, 60° & 90° other specific angles available upon request

Jacket connections (oil or steam) can be customized to the actual valve position

Valve has a dead space free bonnet arrangement

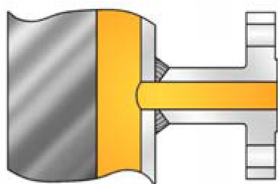
An extended stuffing box eliminates dead space and improves stem/disc alignment

Mechanical position indicator

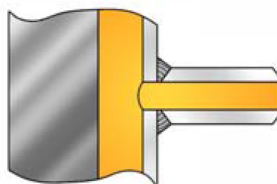
Large valves utilize a non-rising stem to minimize overall length

Fig. 047D

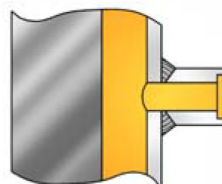
JACKET CONNECTIONS



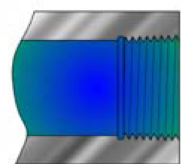
Flanges
ANSI, DIN, JIS



Butt Weld



Socket Weld & Threaded
(FNPT)



Threaded
Connections
(NPT & BSP)



United Process Valves Bottom Disc design is a vessel outlet valve. When opening, the disc retracts completely into the valve body. This provides an unrestricted full flow. In combination with our maximized port sizes this design offers maximum flow capacity.

United Process Valves are available in a choice of options including material of construction, seat arrangements, sealing systems to atmosphere, actuators and connection types to piping.

Other specific features are full jacketing, vacuum package and dead space free connections to vessels.

Typical applications include the draining of viscous products especially in combination with low pressure and/or vacuum processes.

BODY ARRANGEMENTS

United Process Valves has two Tank Bottom Disc Valve styles available:

- Figure **046** for small sizes or high pressure applications. Valves have a rising stem design.
- Figure **047** for large sizes or low pressure. Valves have non-rising stems to minimize overall dimensions.

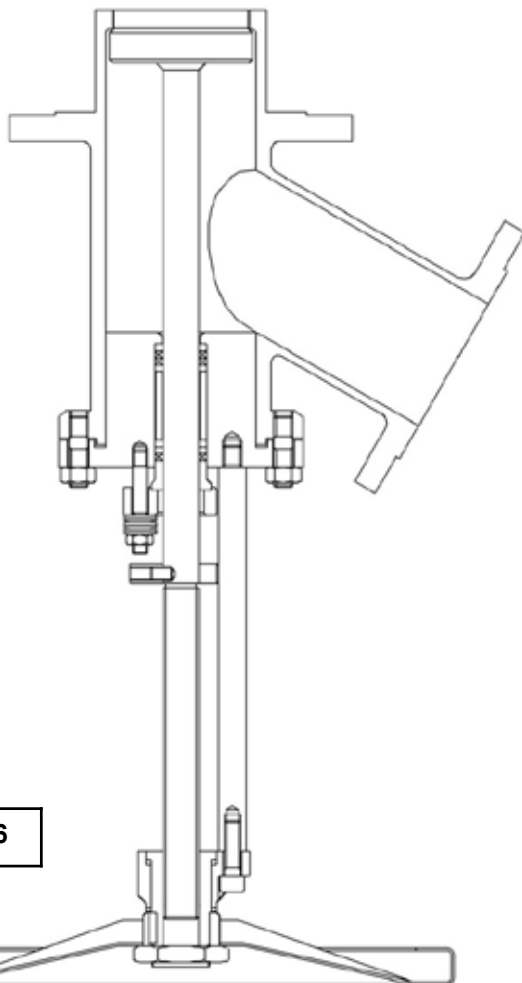


Fig. 046

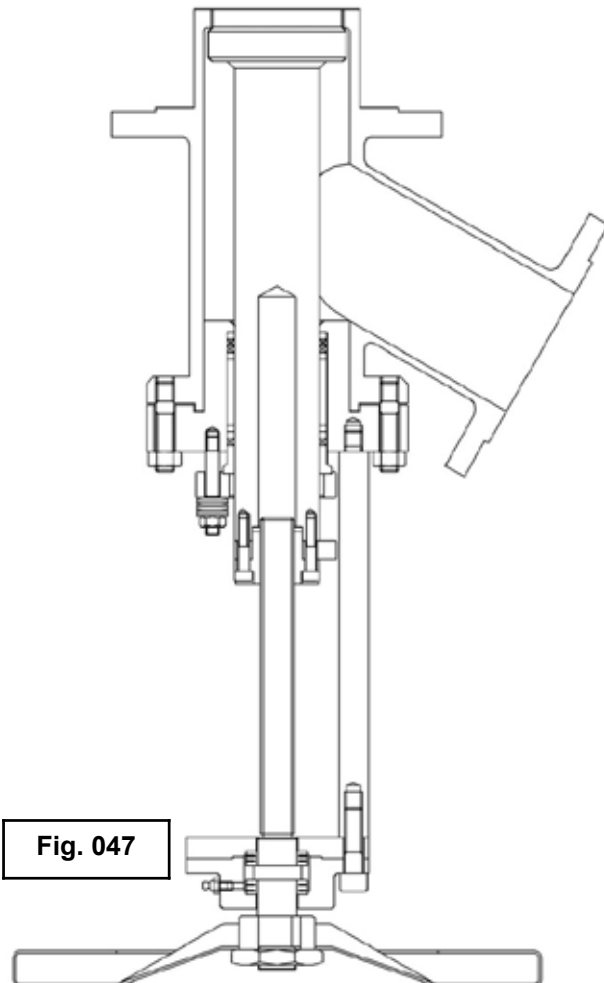


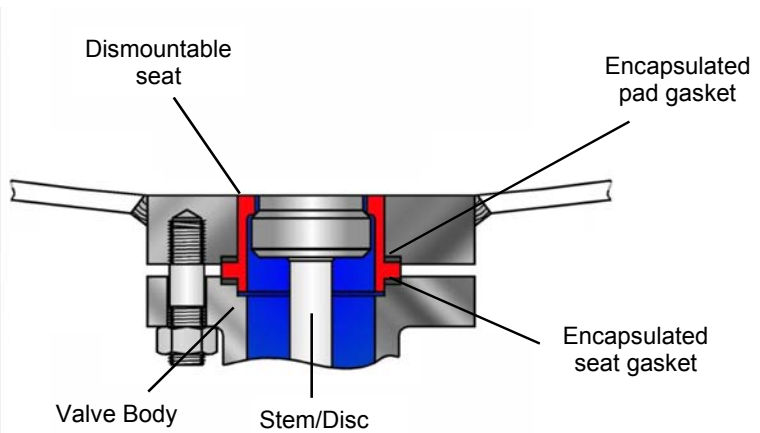
Fig. 047

DISMOUNTABLE SEAT

As an option the body seat can be dismantable. This is an attractive option when the process is corrosive during the reaction. Parts directly in contact with the process (seat and trim) are made of sophisticated alloys while valve body and piping are fabricated from regular materials

Note:

The closing effort is transferred to the pad bolting and the body flange. A stress calculation is required to check the correct sizing of the bolting section & the flange thickness. United Process Valves engineers will be pleased to make these calculations.



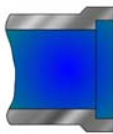
LINE & BRANCH CONNECTIONS



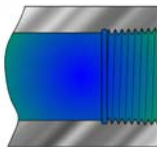
Flanges
ANSI, DIN, JIS



Heated
Flanges



Socket
Weld



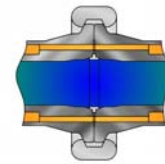
Threaded
connections
NPT & BSP



Studded
Ends



Butt
Weld



Fast Bolting Union
Graylock Securamax

ACTUATION OPTIONS



Hand Wheel



Bevel Gear



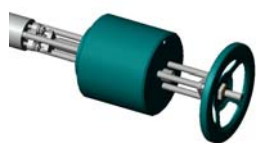
Electric Actuator



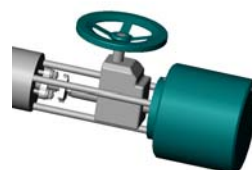
Air Motor



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

TECHNICAL & GENERAL INFORMATION

Design Code & 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 casings, and bar stock available

Surface Finish

- For polymer applications, United Process Valves recommends a surface facing of 300 (Ra 0.4) for all parts are in contact with the medium

Quality assurance & testing

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

RANGE DEFINITION

VD Manufacturing Range	PN 10	PN 16	PN 20–150 lbs.	PN 25	PN 40	PN 50 300 lbs.	PN64 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													
1/2"- DIN15													
3/4"- DIN20													
1"- DIN25													
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													
28" - DIN700													
32" - DN800													
36" - DN900													
40" - DN1000													
44" -DN1100													
48" - DN1200													

Fig. 046

Fig. 047

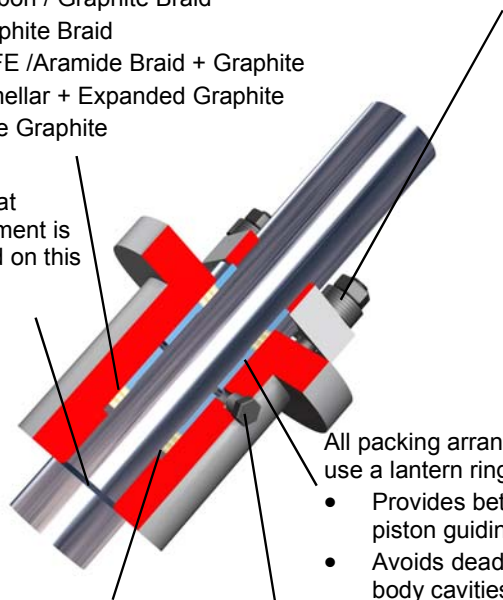
PACKING DEFINITION

Typical Packing Materials:

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

Live loaded packing arrangement minimizes maintenance

Back seat arrangement is standard on this valve



All packing arrangements use a lantern ring that:

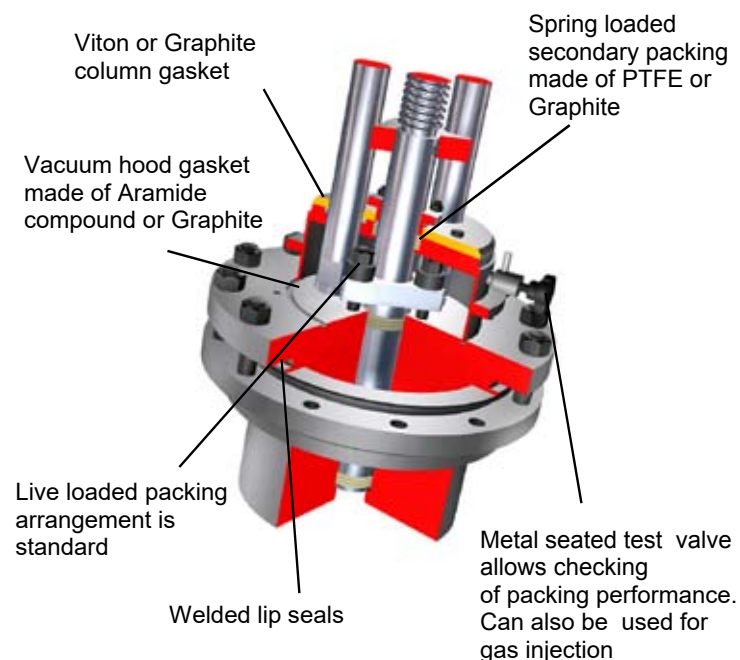
- Provides better stem piston guiding
- Avoids dead space in body cavities

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

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

VACUUM HOOD

For valves on full vacuum service United Process Valves offers a special **vacuum package** that maintains tightness to atmosphere. Valves with this package are usually equipped with an **M Ring Seal** design as process sealing. The system uses a replaceable aluminium or nickel seal ring and provides high vacuum performance. This special **vacuum package** provides zero leakage between atmosphere and process.



Viton or Graphite column gasket

Spring loaded secondary made of PTFE or Graphite

Vacuum hood gasket made of Aramide compound or Graphite

Live loaded packing arrangement is standard

Welded lip seals

Metal seated test valve allows checking of packing performance. Can also be used for gas injection

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
- 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

STANDARD BODY 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
- Welded Lips

Valve Coding System

	V	D	4	S	B	J
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 c D Dismountable Seat \$ Special						
J Jacketed - Non-Jacketed						



United Process Valves

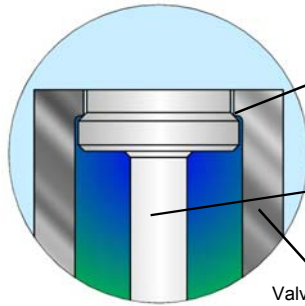
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SEALING SYSTEMS

M Seal- This sealing system offers a wide range of material combinations selected to create a differential hardness between body and plunger seat. The maintenance friendly design of the **M Seal** system provides long & reliable valve performance and is suitable for almost all process conditions.



Valve Body

Greater hardness on body seat assures that wear occurs on piston first
- Easy maintenance is key

Solid Disc/Stem design provides the geometrical arrangement that ensures long-term sealing performance

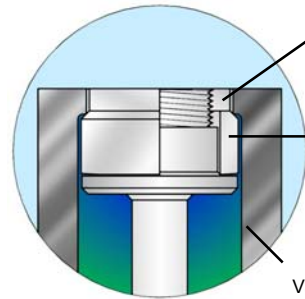
Temperature

Min: -200° C / -330° F
Max: 815° C / 1500° F

Pressure

Max: 630 bar / 9000 psig

M Ring Seal- The **M Ring Seal** is also based on a differential hardness between the body and the piston surface. The replaceable metallic seal ring made of aluminum, nickel or titanium provides excellent sealing performance especially in applications that combine full vacuum and temperatures above 200° C.



Valve Body

Locking nut is secured by a tack weld

Resilient metal ring seals between the body seat and disc and provides high performance sealing for vacuum and high temperature applications

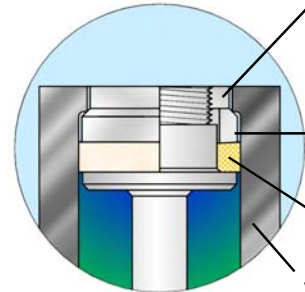
Temperature

Min: -200° C / -330° F
Max: 450° C / 840° F

Pressure

Max: 250 bar / 3550 psig & full vacuum

Dual Seal- The **Dual Seal** is a unique double sealing system that works like a piston operating within a cylindrical seat. Unlike other designs, the secondary resilient seal ring is mounted on the piston and will expand after metal to metal contact of the primary seat ring. The design provides a true metal to metal seal in case of resilient seat failure.



Valve Body

Locking nut is secured by a tack weld

The primary metal to metal seal ring compresses the secondary resilient seal ring

A secondary seal ring is made of resilient material like PTFE, PTFE glass filled

Temperature

Min: -50° C / -60° F
Max: 200° C / 450° F

Pressure

Max: 250 bar / 3550 psig & full vacuum

VESSEL CONNECTIONS

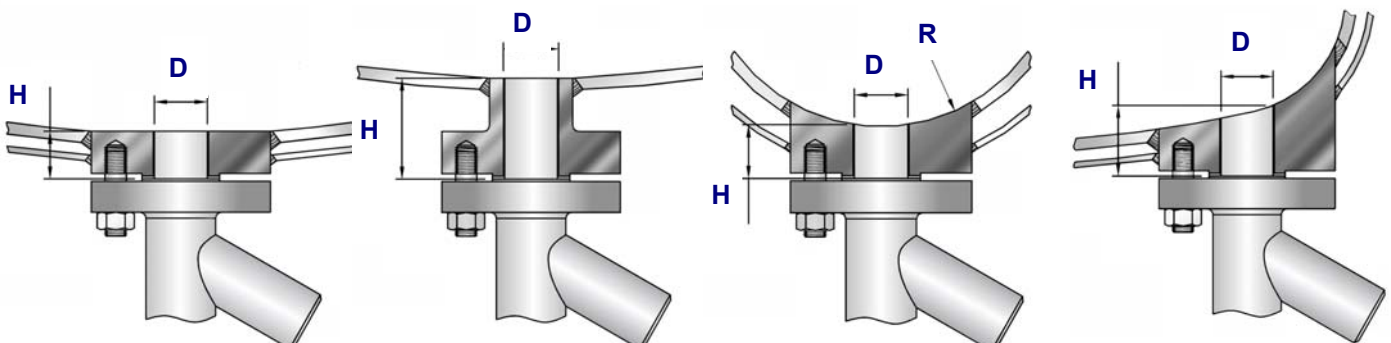
To connect valves to existing vessels or reactors, there are two possibilities: a nozzle or a pad connection. In both cases, the customer must specify the following vessel connection details: « **D** » (inside diameter), « **H** » (height), **DN** (nominal size), **PN** (pressure rating) and connection **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





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

United Process Valves, France

136 rue Sommeiller, ZA Savoie Hexapole

F-73420, Mery, France

Tel: + 33 (0) 4 79 35 78 00

E-mail: upvsales@upvalves.com

United Process Valves, German Office

Allerheiligenstrasse 69

D-77855 Achern, Germany

Tel: +49 (0) 170 9766629

Shanghai United Process Valves Co.,Ltd. (UPV China)

Add: Building 1, No. 665 Jinbi Road, Jinhui Town,

Fengxian District, 201404, Shanghai - CHINA

Tel: +86 (0) 21-5713 3539

ISO 9001:2015

BUREAU VERITAS
Certification

