

# United Process Valves

Tradition

Innovation

Commitment

Design Code & Construction

**VS** Series

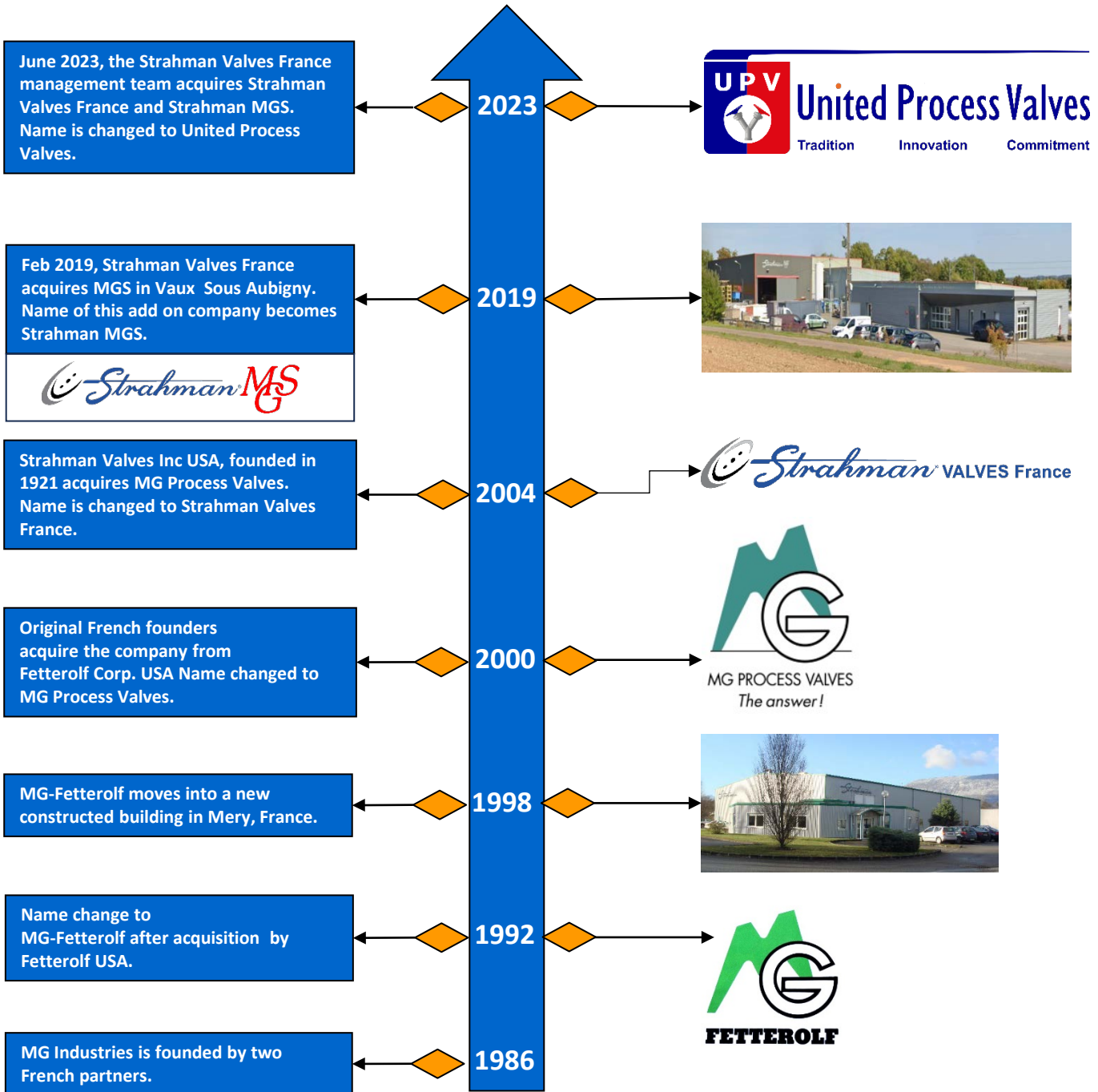
VESSEL & REACTOR VALVES

**SPRAY RINSE VALVES**





## HISTORY & MILESTONES





## CLEANING VESSELS OR REACTORS WITHOUT OPENING TO ATMOSPHERE

### Spray Rinse Valves

Code: **VRR-VRS**

Automatic models use an electric or air motor to stroke the valve, continuously rotate the spray tube and to re-close the valve

Flanged or NPT Inlet Port

Spray & Rinse valves have high flow capacities. United Process Valves' calculation software will help you properly size your valve

Dismountable body extension for quick maintenance and easy change of spray patterns

Interchangeable spray tube with customized slots and holes specifically calculated for each application

Oversized guide rings provide trouble-free use

Available sealing systems:  
**Dual Seal or M Ring Seal**

Except for non-rotating valves, United Process Valves have a special clutch system that allows automatic rotation when spray tube reaches full open position

A sophisticated combination of guide rings and live loaded packing provide trouble-free use

Slot arrangement for non-rotating valves  
The slots or hole arrangement in the spray tube is carefully designed to clean specific vessels areas.

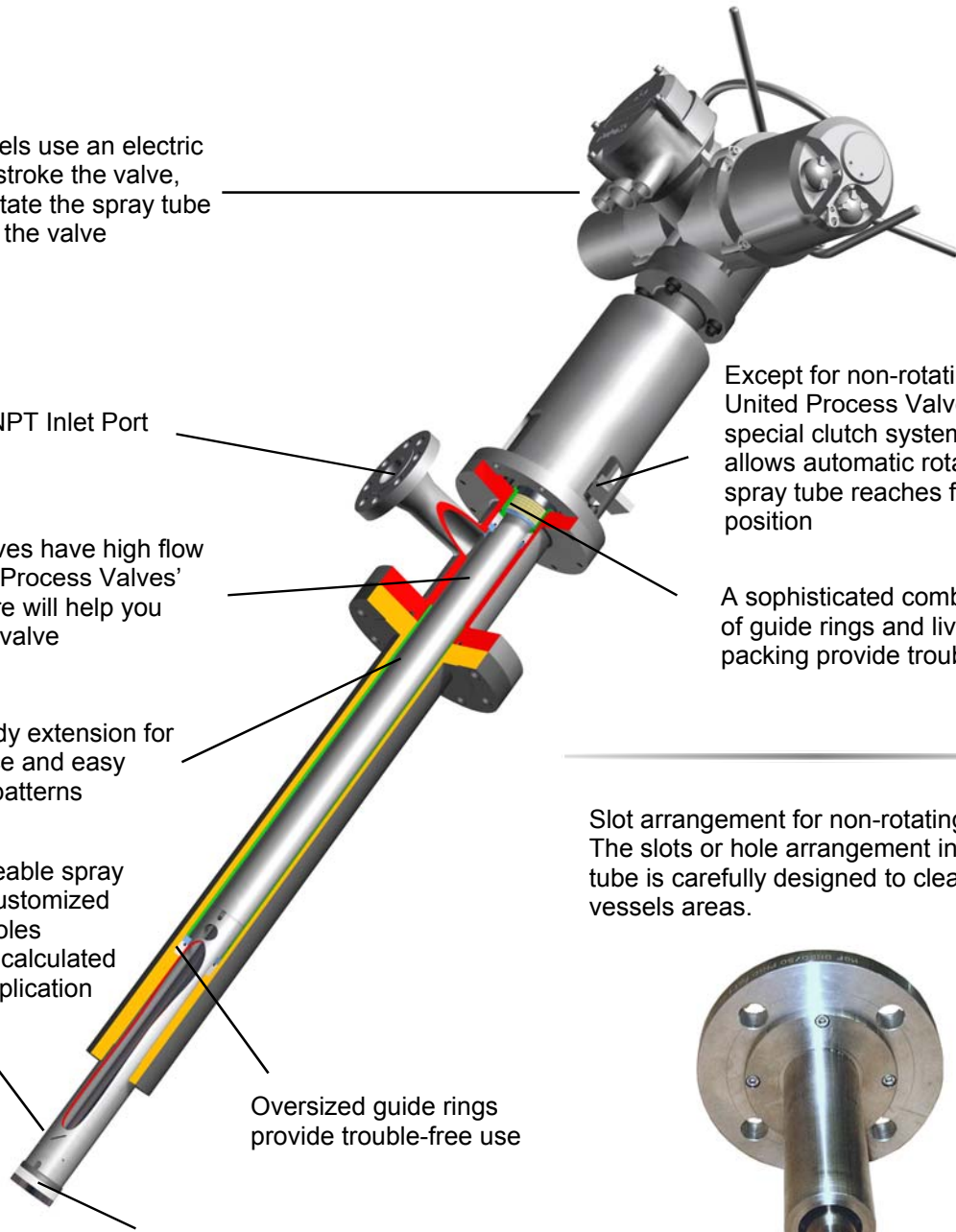


Fig. 800

Fig. 810

United Process Valves manufactures two types of Spray & Rinse designs: **Rotating valves and non-rotating valves.**

United Process Valves **Spray Rinse** valves are designed to clean vessels and reactors without the need to open them to atmosphere. The advantage of the closed cleaning technology is the protection of operators and the environment against hazardous products found in processes like VCM and PVC.

Rinse valves are used on batch processes to clean vessels between batches. With closed technology and clean reactors the plant is able to reduce the time between batches and increase production & plant efficiency. United Process Valves manufactures two types of Spray & Rinse designs: Rotating valves and non-rotating valves.

**Rotating Valves-** Depending upon the reactor size one rotating rinse valve is usually sufficient to clean a reactor.

**Non-rotating Valves-** These small capacity spray valves are generally used on very small reactors or as a supplementary “spot cleaner” to the **Rotating Spray Rinse valves.**

United Process Valves uses a unique in-house calculation software program to assist in proper sizing and location of the valves. The information required includes:

- Reactor height
- Reactor diameter
- Location and dimensions of baffles
- Dimensions and position of agitator
- Quantity, size and location of available nozzles
- Available flow rates and pressure of cleaning liquid
- Required impact forces

In the event the required impact force is not known, our engineers will assist you in selecting the appropriate value.

## BODY ARRANGEMENTS

United Process Valves has two Soft Seal Piston Valve styles available:

- Figure **800** is for large size **Rotating** valves with non-rising stem design.
- Figure **810** is for small size **Non-Rotating** valves with rising stem design.

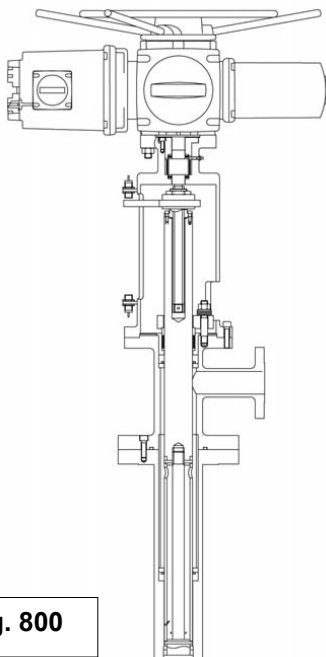


Fig. 800

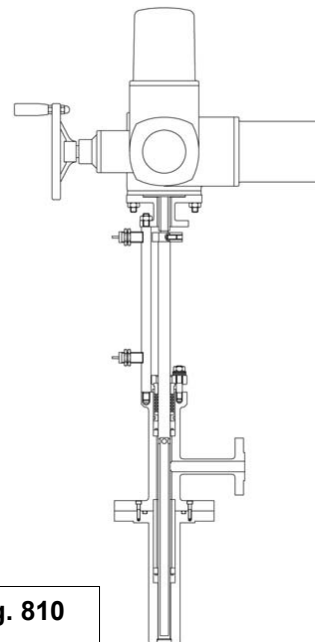
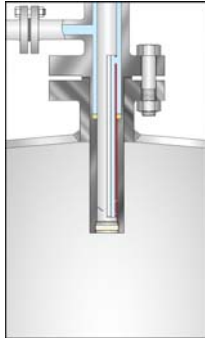
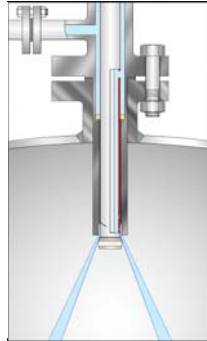


Fig. 810

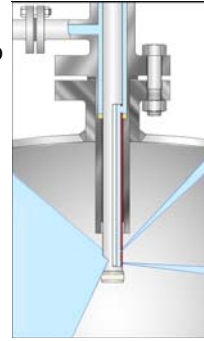
## MULTI-POSITION & BOTTOM VESSEL SAMPLING



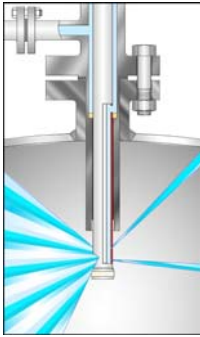
**Step 1**  
During the process reaction the valve is closed. The Dual Seal or M Ring provides a tight seal and protects the spray holes and slots from clogging.



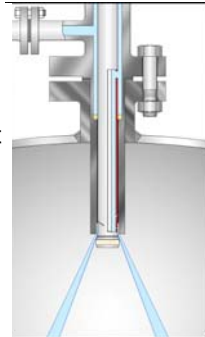
**Step 2**  
When valve starts to open the first spray tube openings are released and will begin cleaning the bottom of the reactor. During this step additional products can be injected.



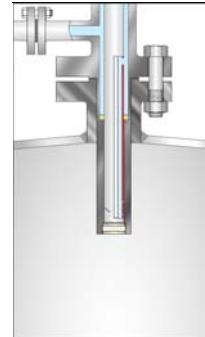
**Step 3**  
After the full 200 mm linear stroke, the spray holes & slots are released. The full spray pattern will begin cleaning the reactor.



**Step 4**  
When the valve reaches full stroke, the special clutch mechanism will start to rotate the spray tube for full cleaning of all reactor areas.

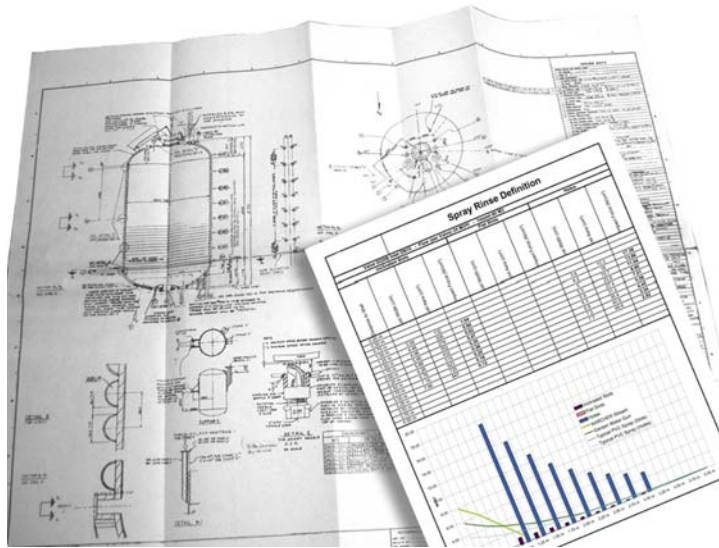


**Step 5**  
After cleaning the spray tube will be retracted. This automatically stops rotation of the tube. Water pressure is maintained during closing to clean the spray tube and prevent clogging.



**Step 6**  
The valve is completely closed and ready for a next cleaning session.

## IN-HOUSE SPRAY RINSE SELECTION SOFTWARE



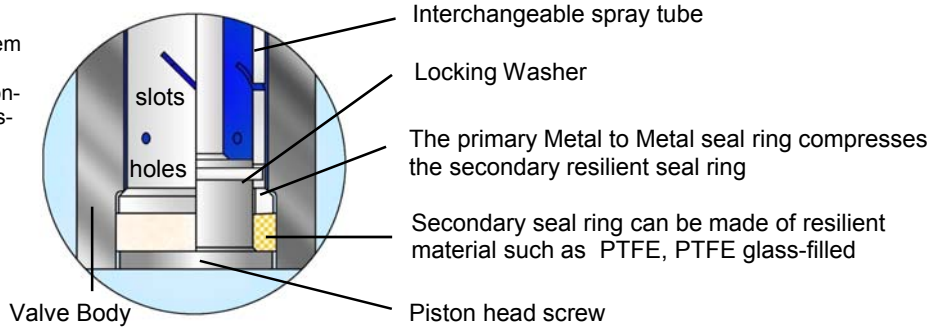
Size Code	0020B	0025B	004B	005B	0065B	0080B	0100B
Flow Capacity ( m <sup>3</sup> /h )	5	10	20	30	50	70	100
Code / Figure	VSS / 810	VSS / 810	VSR / 800	VSR / 800	VSR / 800	VSR / 800	VSR / 800
Inlet Connection	DN15 1/2"	DN20 3/4"	DN32 1-1/4"	DN40 1-1/2"	DN50 2"	DN65 2-1/2"	DN80 3"
Vessel Connection	DN50 2"	DN65 2-1/2"	DN80 3"	DN100 4"	DN125 5"	DN125 5"	DN150 6"
Maximum Rating	PN150 900 LBS.	PN150 900 LBS.	PN100 600 LBS.	PN100 600 LBS.	PN100 600 LBS.	PN50 300 LBS.	PN50 300 LBS.
Standard Stroke	200 MM 8"						

## SEALING SYSTEM

### Dual Seal

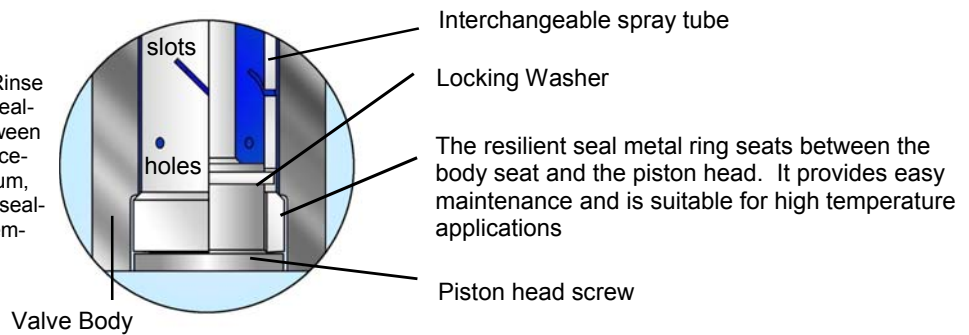
The **Dual Seal** is the standard sealing system for Spray Rinse valves. The piston head operates within a cylindrical seal. The secondary resilient seal ring is mounted on the piston head and expands after metal to metal contact of the primary seat ring.

<u>Temperature</u>
Min: -50° C / -60° F
Max: 200° C / 390° F
<u>Pressure</u>
Max: 150 bar / 3550 psig



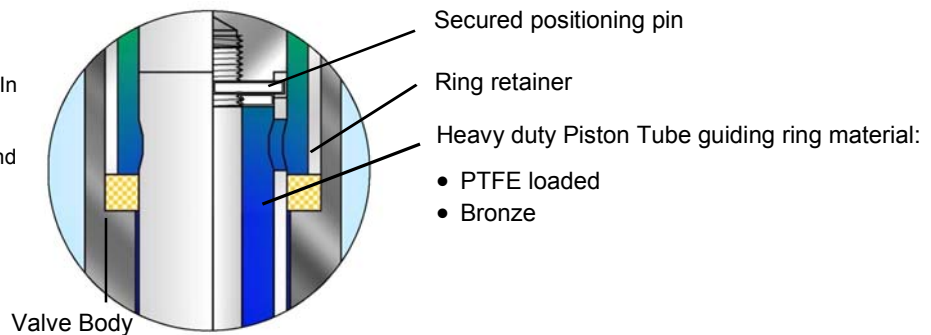
### M Ring Seal-

The **M Ring Seal** provides the Spray & Rinse valves with metal to metal sealing. The sealing system is based on a differential between the body & disc seat surface. The replaceable metallic seal ring is made of aluminum, nickel or titanium and provides excellent sealing performance especially in cases of temperatures above 200° C



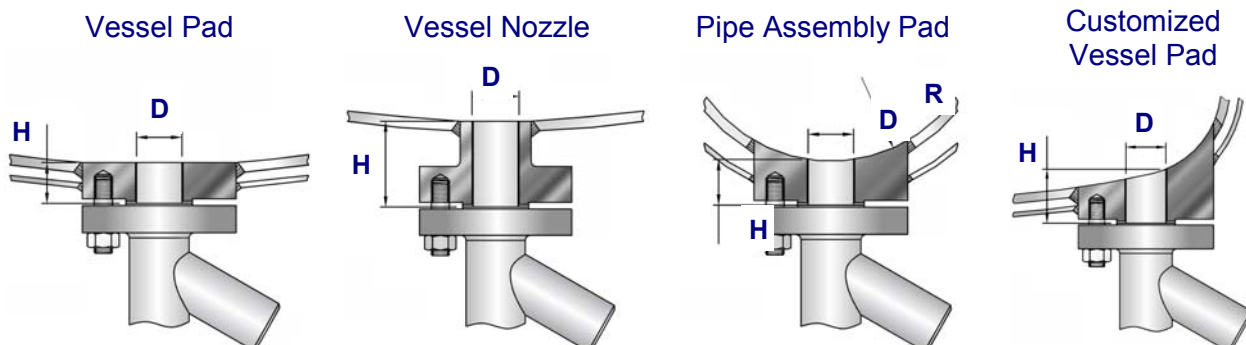
### Guiding Spray Rinse

**Spray & Rinse Valves** cycle frequently. In order to provide the reliability of the rotating components United Process Valves has developed a very resistant and easy to maintain guiding system.



## 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.



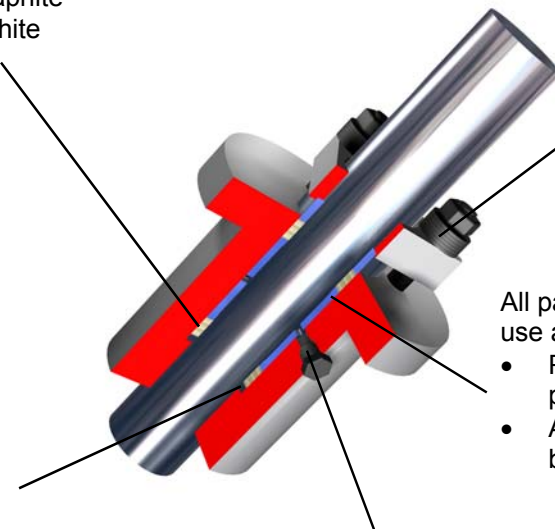


## PACKING DEFINITION

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 valve maintenance



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

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

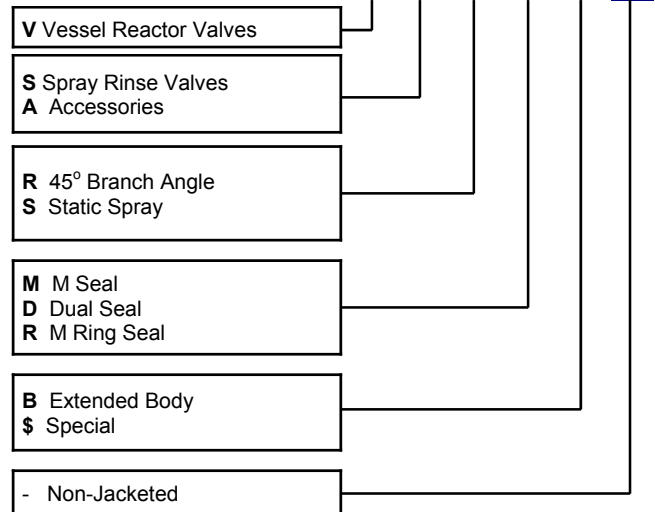
## STANDARD PAD GASKET RANGE

- 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

## AVAILABLE STANDARD GASKET RANGE

- PTFE
- Aramide / Nitrile
- Carbon / Aramide
- Laminated Graphite
- Laminated Graphite / 316
- Nitrile O Ring
- EPDM O Ring
- Silicone O Ring
- Fluorocarbon (Viton) O Ring
- Silicone FEP Jacketed O Ring
- Perfluoroelastomer (Kalrez) O Ring

## Valve Coding System



## 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, Strahman recommends a surface facing of 300 (Ra 0.4) for all parts are in contact with the medium

### Quality assurance & testing

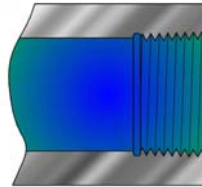
- ISO 9001 Certified
- PED / ATEX / CE marking
- ISO 15848 1 & 2, low emission testing and certification available
- Standard testing procedures

## LINE & 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



Electric Actuator



Double or single  
acting Air Cylinder



Air Motor



## 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

