

VR Series

VESSEL & REACTOR VALVES

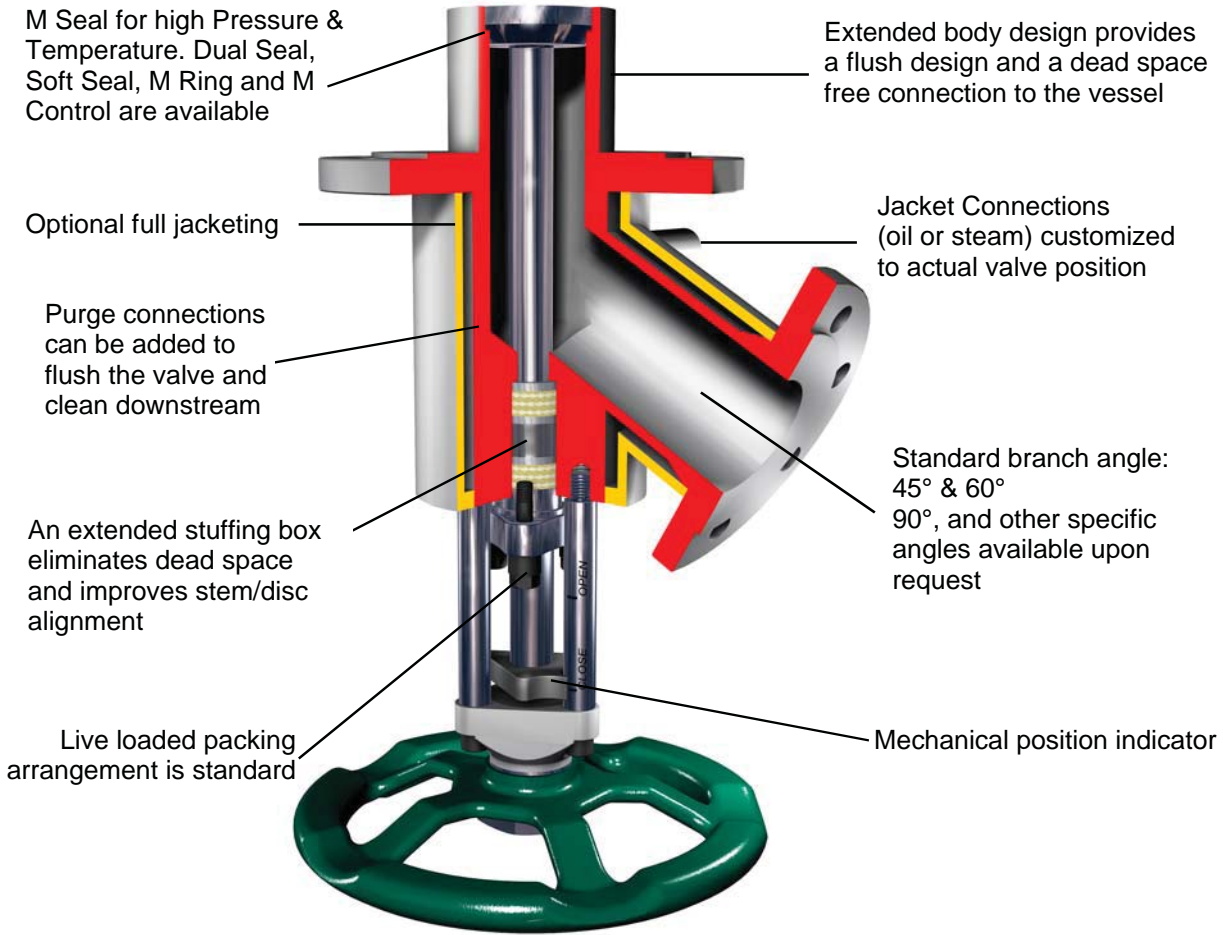
**RISING DISC**



# CRUST BREAKING BOTTOM OUTLET VALVES

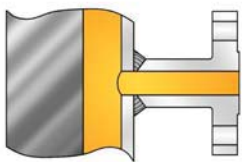
Code: **VR4M-VR6M**

## Rising Disc Valves

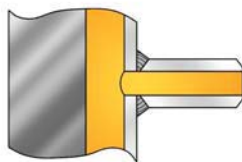


**Fig. 042D**

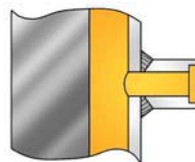
## JACKET CONNECTIONS



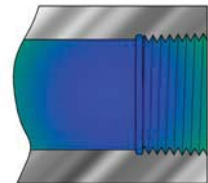
Flanges  
ANSI, DIN, JIS



Butt Weld



Socket Weld



Threaded connections  
NPT & BSP

United Process Valves Rising Disc design is a bottom outlet valve. When opening, the disc rises into the vessel or reactor to break through any crust or solidified material to facilitate draining.

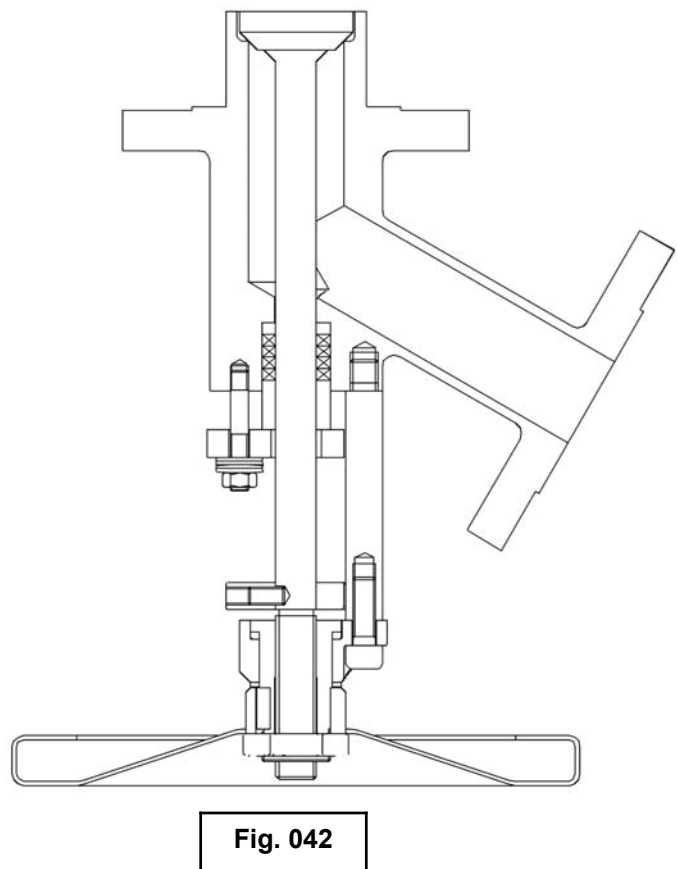
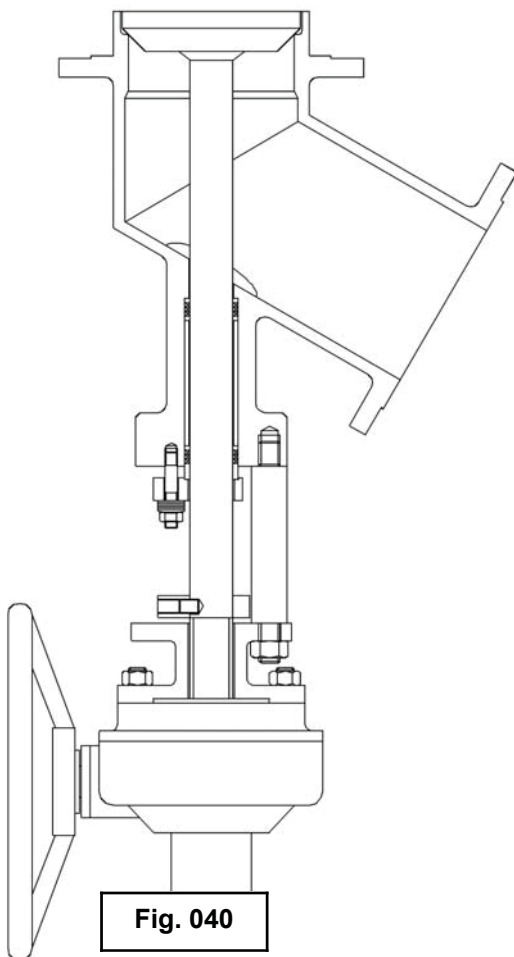
United Process Valves are available in a choice of options including material of construction, sealing systems, actuators and customized or standard connections to piping. Other specific features are full jacketing, valve tangentially positioned to process pipe or additive injection.

Typical applications: Draining of low viscosity products.

## BODY ARRANGEMENTS

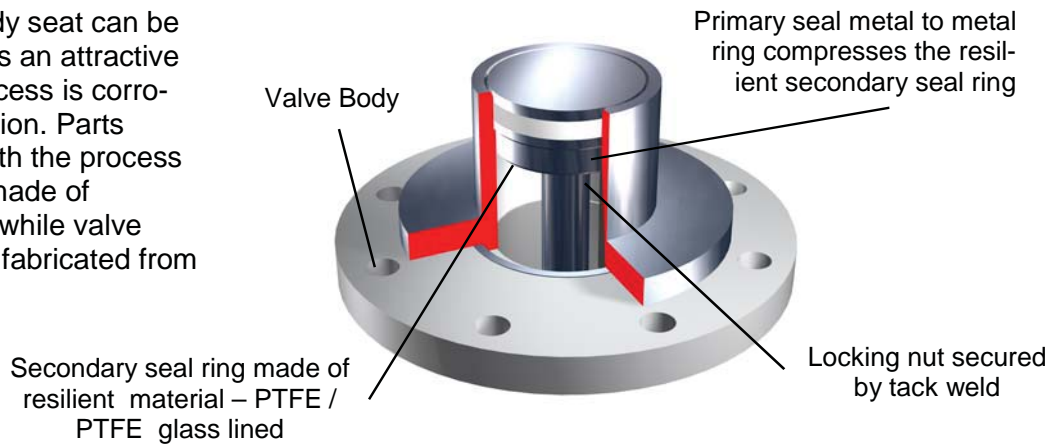
United Process Valves has two Rising Disc styles available:

- Figure **040** for large valves and low pressure applications. Uses a fabricated pipe or cast body design
- Figure **042** for small valves and high pressure applications. Uses a bar stock body design

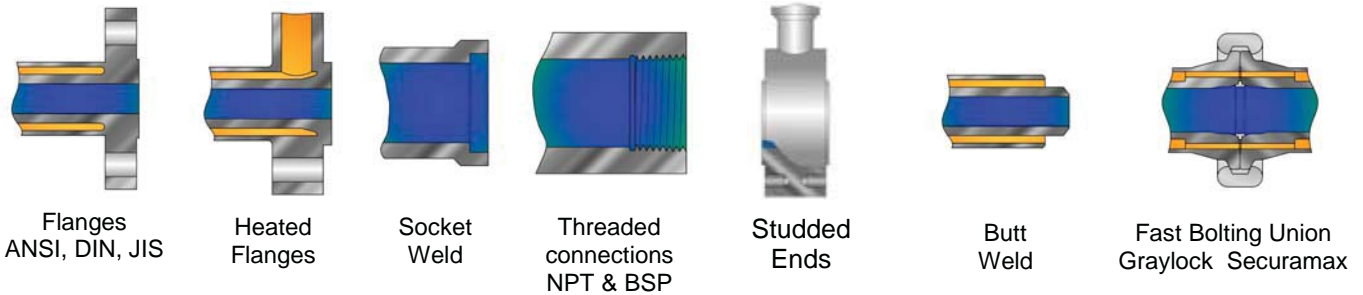


## DUAL SEAL DISC & DISMOUNTABLE SEAT

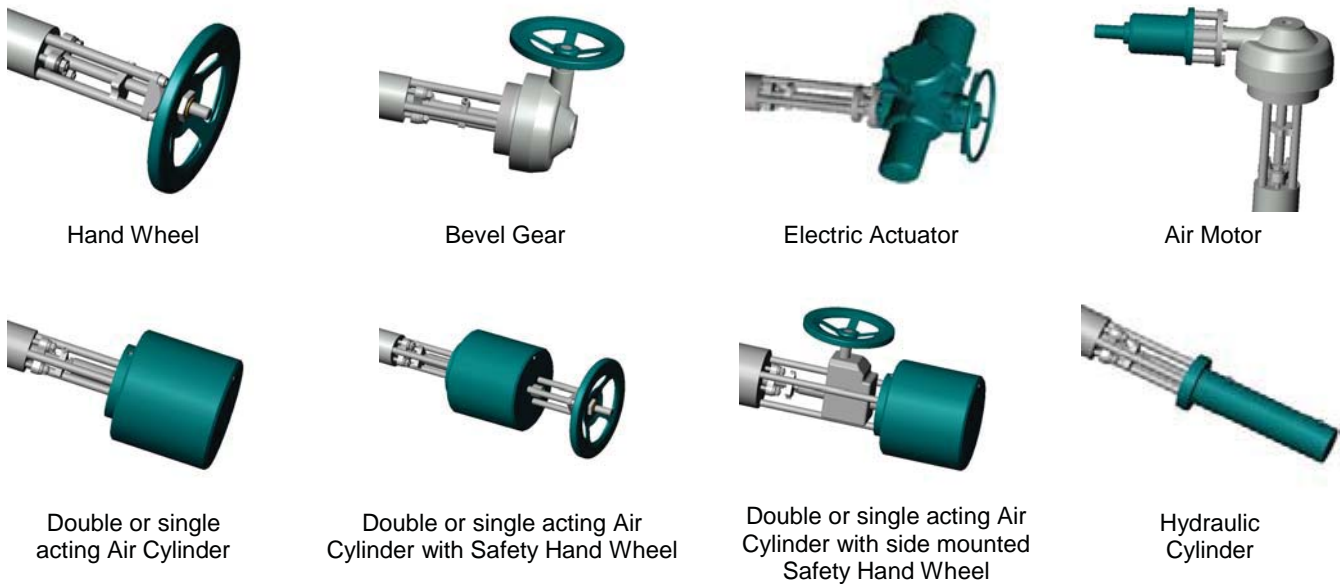
As an option the body seat can be dismountable. This is an attractive option when the process is corrosive during the reaction. Parts directly in contact with the process (seat and trim) are made of sophisticated alloys while valve body and piping are fabricated from regular materials



## LINE & BRANCH CONNECTIONS

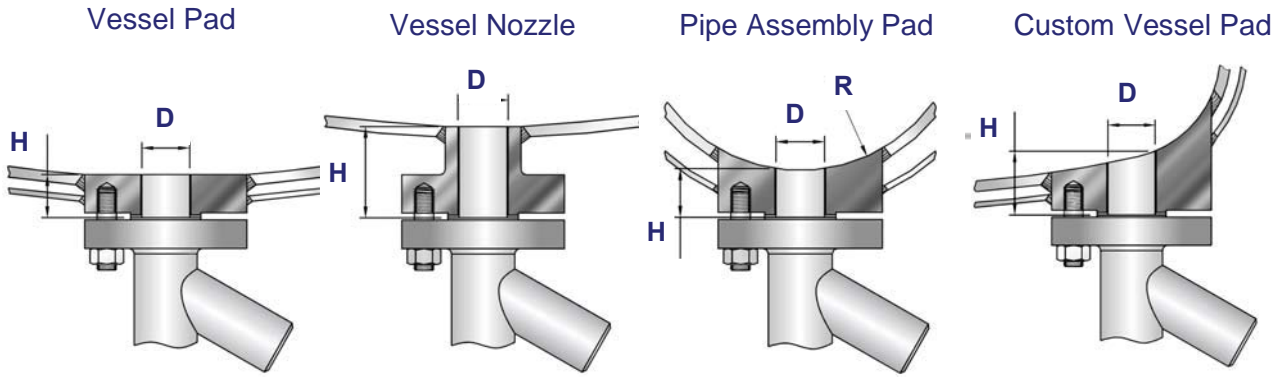


## ACTUATION OPTIONS



# 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.



## RANGE DEFINITION

VR	PN 10	PN 16	PN 20-150 lbs.	PN 25	PN 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													
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													

Fig. 042

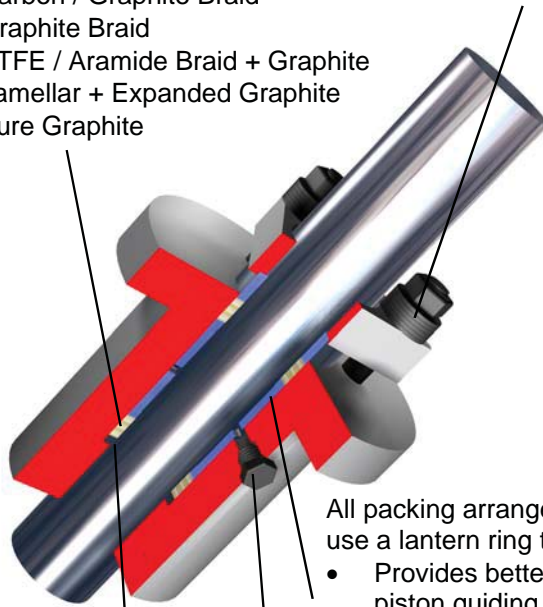
Fig. 040

## 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



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

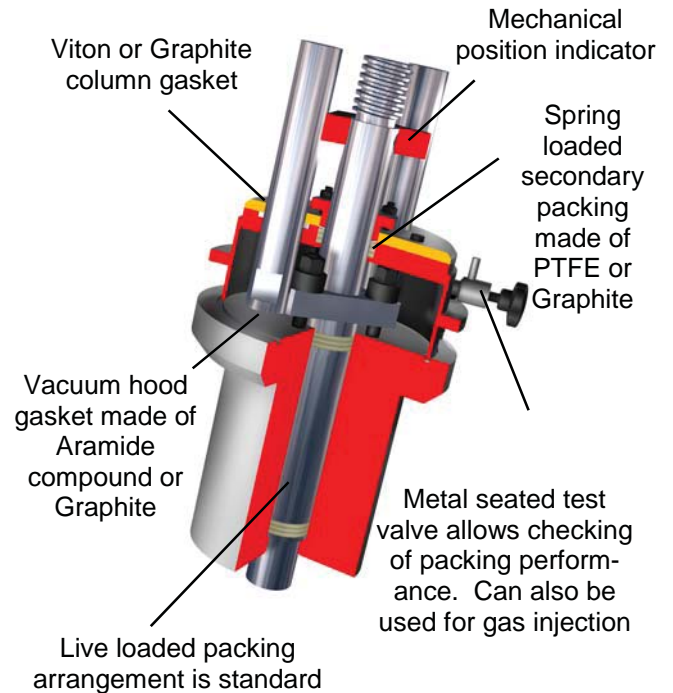
Optional 1/4 inch NPTF can be used for leak detection or inert gas injection to avoid leakage to atmosphere by creating an over pressure

## 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  
 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  
 Perfluoroelastomer (Kalrez) O Ring

## 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.

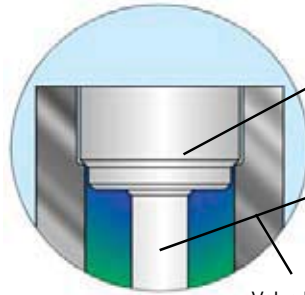


## Valve Coding System

	V	R	4	M	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						

## 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.



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

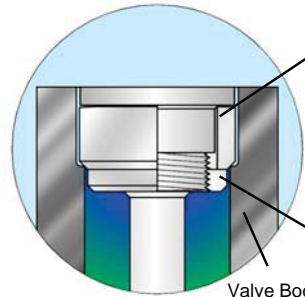
Temperature

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.



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

Temperature

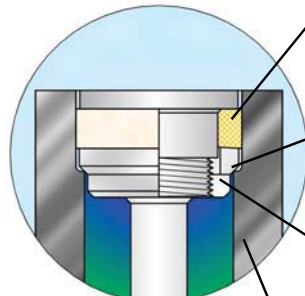
Min: -200° C / -330° F  
 Max: 450° C / 840° F

Pressure

Max: 250 bar / 3550 psig & full vacuum

Locking nut is secured by a tack weld

**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.



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

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

Temperature

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

Pressure

Max: 250 bar / 3550 psig & full vacuum

Locking nut is secured by a tack weld

## 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 finish of 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

The Strahman United Process Valves products include:

#### **PISTON TYPE SAMPLING VALVES**

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

#### **PISTON TYPE DRAIN VALVES**

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

#### **PISTON & DISC TYPE IN-LINE VALVES**

Strahman 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**

Strahman 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 service or with slurries, polymers, and high viscosity fluids that tend to solidify at room temperature.

#### **SINGLE & DOUBLE DISC SLAB GATE VALVES**

Strahman 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**

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

Please contact your local Strahman United Process Valves representative  
for further details or

visit our website : [www.strahman-unityprocessvalves.com](http://www.strahman-unityprocessvalves.com)



Established 1986

Strahman United Process Valves France  
136 rue Sommeiller, ZA Savoie Hexapole  
F-73420, Mery, France  
Tel: + 33 4 79 35 78 00  
E-Mail: [upvsales@upvalves.com](mailto:upvsales@upvalves.com)

Strahman United Process Valves German Office  
Allerheiligenstrasse 69  
D-77855 Achern, Germany  
Tel: +49 (0) 170 9766629

Strahman United Process Valves Shanghai, China Office  
Tel: +86 189 1751 7369

ISO 9001 Certified

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