

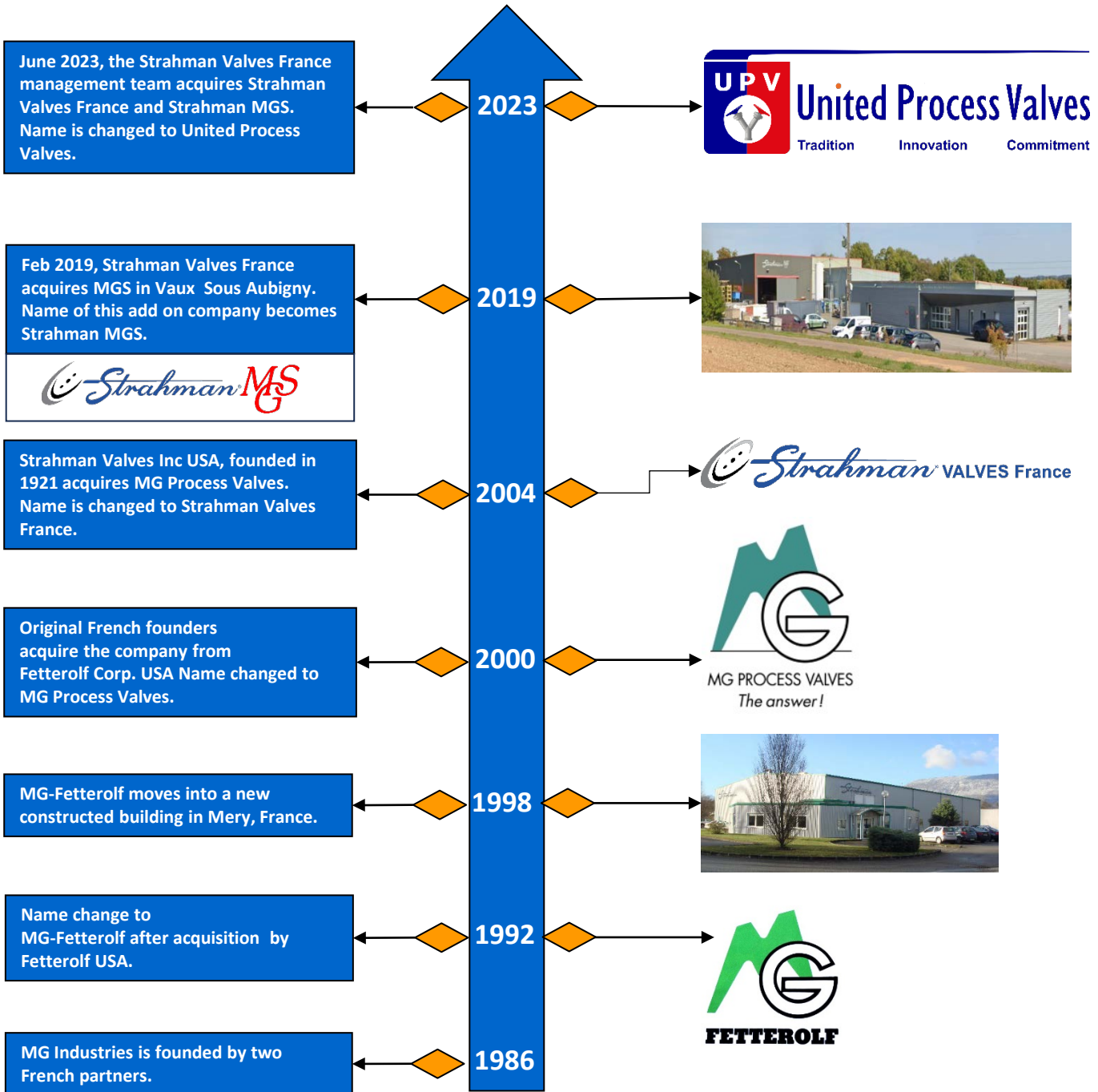
**LEPV Series**

**PIPING, VESSEL & REACTOR VALVES**  
**LOW EMISSION PISTON VALVES**





## HISTORY & MILESTONES



With the LEPV Series piston valves United Process Valves offers high quality environmentally friendly piston valves. The valves offer low emission packing designs, certified to ISO 15848 as a standard. They can be delivered in a wide variety of process sealings that each meet ANSI class VI sealing class. These valves for draining, injection and sampling applications combine the latest sealing techniques and standards with all the advantages of non-clogging and dead space free features of piston valves. The valves are fully customizable regarding materials and type of construction, selected end connections, type of jacketing, and safety features such as purge ports and safety covers. The LEPV Series piston valves replace traditional sampling, drain and injection valves with old fashioned single ring packing design. They are certified to the latest environmental standards, help clean-up production plants while being completely customizable for your specific application.

## Features of LEPV Piston Valves

### LEPV Series

Various high-performance sealing systems available

- Soft Seal (as shown here)
- M Seal
- Dual Seal
- M Ring Seal
- M Control
- All sealing systems meet ANSI Class VI class.

Fire Safe Design Certified to API 6FA

Special machined "drop-shaped" lantern that allows flow to be controlled a standard feature to ensure safe sampling.

Double packing certified and tested to ISO 15848, 1 & 2 is used as a standard.

- Extended stuffing Box to eliminate dead space.

Valves are SIL 2 Certified.

Packing is Live Loaded with spring washers.

Mechanical open / Close indication included.

In compliance with Nace MR0175 & MR0103 as a standard

Valves can be delivered with flush connection, Extended body or Extended Piston (as shown here).

Large type of end connection Available.

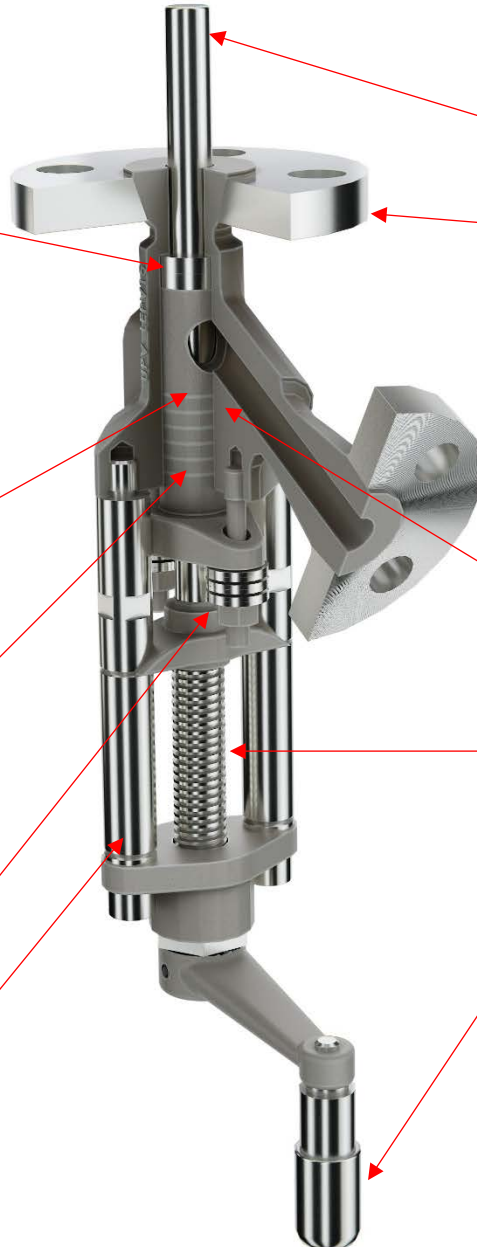
- Flanged (as shown here)
- Threaded NPT or BSP connections
- Sanitary flanges & Tri Clamp connection.
- Butt weld connection.

60° branch angle as a standard  
- 45°, 60° or special angles available upon request.

Valve Has a self-locking stem to ensure it does not open due to vibrations.

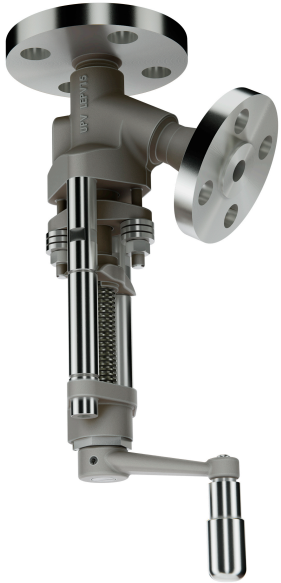
A wide range of actuation options Manual with rotating SSTL crank for safe actuation with gloves.

- Alternatives are:
- Hand Wheel
  - Air Actuation
  - Electric Actuation





## Possible Body Configurations



Cast Body  
Integral  
flanged.



Cast Body  
Flanged /  
Threaded.



Cast Body  
Threaded  
connections.



Bar stock  
made &  
Forged Body.

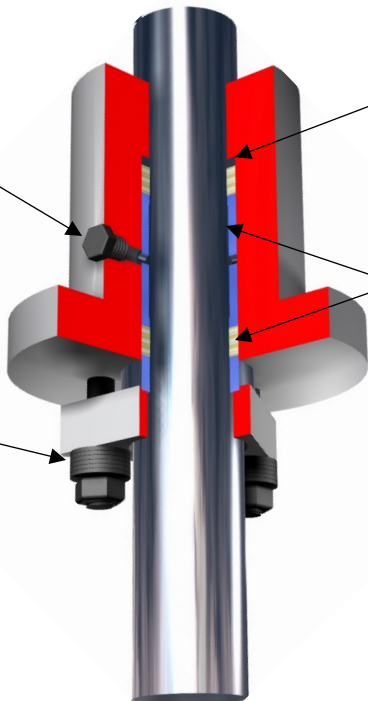


Jacketed  
Body.

## Packing Design for valves sizes 1" to 3"

Optional 1/4" NPTF  
purge port for leak  
detection or inert  
gas injection to avoid  
leakage to  
atmosphere by using  
an over pressure.

Live loaded packing  
with spring washers  
to reduce  
maintenance.



Bottom packing ring is selected with a  
differential hardness from the piston to act as  
scraper ring and prevent piston damage.

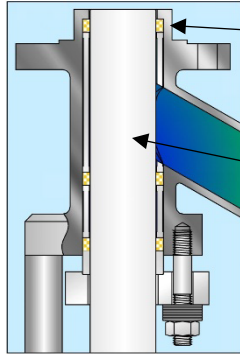
Valve has double packing with an extended  
stuffing box and lantern ring as a standard to  
avoid dead space and extend the lifetime of the  
packing.

Typical packing materials include PTFE, Graphite,  
Aramide braid, Graphite braid and many more.

To meet the latest requirements in low emission  
valve operation, All packing arrangements are  
ISO 15848-1 certified as a standard.

## Available Sealing systems

**Soft Seal**- The seat-less principle of the UPV Soft Seal system assures superior sealing performance. While closing, the plunger moves through the valve bore, effectively rodding remaining product out of the valve. The live-loaded packing arrangement avoids over compression of the upper seal ring while the valve is in the open position.



Rigid soft seated rings provide dimensional stability with temperature variations.

Greater piston hardness avoids scratches which is the most common cause of seal ring damage and leakage.

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

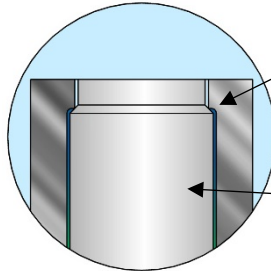
### Temperature

Min: -50 C / -60°F  
Max: 500°C / 932°F

### Pressure

Max: 250 bar / 3626 psi & full vacuum.

**M Seal** 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 sealing 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.

One-piece piston design provides the geometrical arrangement to ensure long-term performance.

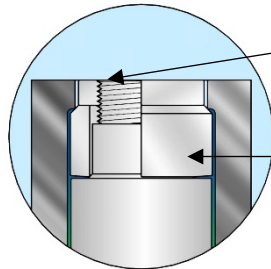
### Temperature

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

### Pressure

Max: 630 bar / 9137 psi & full vacuum.

**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.



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.

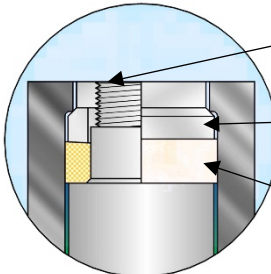
### Temperature

Min: -200 C / -330°F  
Max: 450°C / 842°F

### Pressure

Max: 250 bar / 3626 psi & full vacuum.

**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.



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

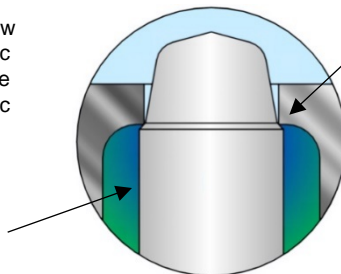
Min: -50 C / -60°F  
Max: 225°C / 437°F

### Pressure

Max: 250 bar / 3626 psi & full vacuum.

**M-Control** provides customized flow characteristics to regulate a specific laminar flow with high viscosity. The system uses a piston with a specific shape to control flow and/or pressure. M-Control uses the specific sealing features of the M seal system.

Body cavity is sized to keep full flow capacity through the valve



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

UPV's experience with high viscosity control valves combined with our calculation software provides a smooth and high performing control valve.

### Temperature

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

### Pressure

Max: 630 bar / 9137 psi & full vacuum.

## Optional double sealing feature for severe service application

UPV offers a unique double sealing design where our soft sealing and metal to metal M-sealing designs are combined in one valve offering long and reliable valve sealing performance for severe applications. In combination with a heating jacket this design works very well on asphalt, bitumen, resin and other high viscosity products.

**Double sealing system includes:**

- Soft Seal system with double packing design.

**Double packing certified and tested to ISO 15848, 1& 2 is used as a standard.**

- Extended stuffing Box to eliminate dead space.

**Packing is Live loaded with spring washers.**

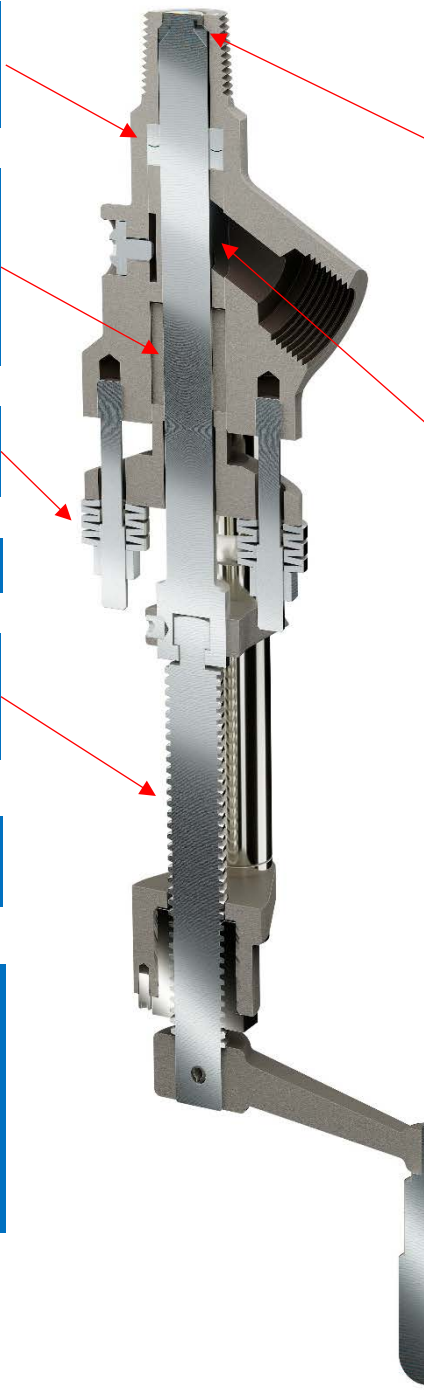
**Valves are SIL 2 Certified.**

**Valve has a self-locking stem to ensure it does not open due to vibrations.**

**Mechanical open / Close indication included.**

**Large type of end connections Available.**

- Flanged (as shown here).
- NPT, BSP or SW connections.
- Sanitary flanges & Tri Clamp connections.
- Butt weld connections.



**M Seal, metal to metal sealing with stellited body seat.**

- Systems meet ANSI Class VI.
- Double sealing design is fire safe certified to API 6FA. (Metal seat with graphite soft seal system)

**Special machined "drop-shaped" lantern that allows flow control is available and recommended to ensure safe sampling.**

**60° branch angle as a standard**

- 45°, 90° or special angles available upon request.

**A wide range of actuation options:**

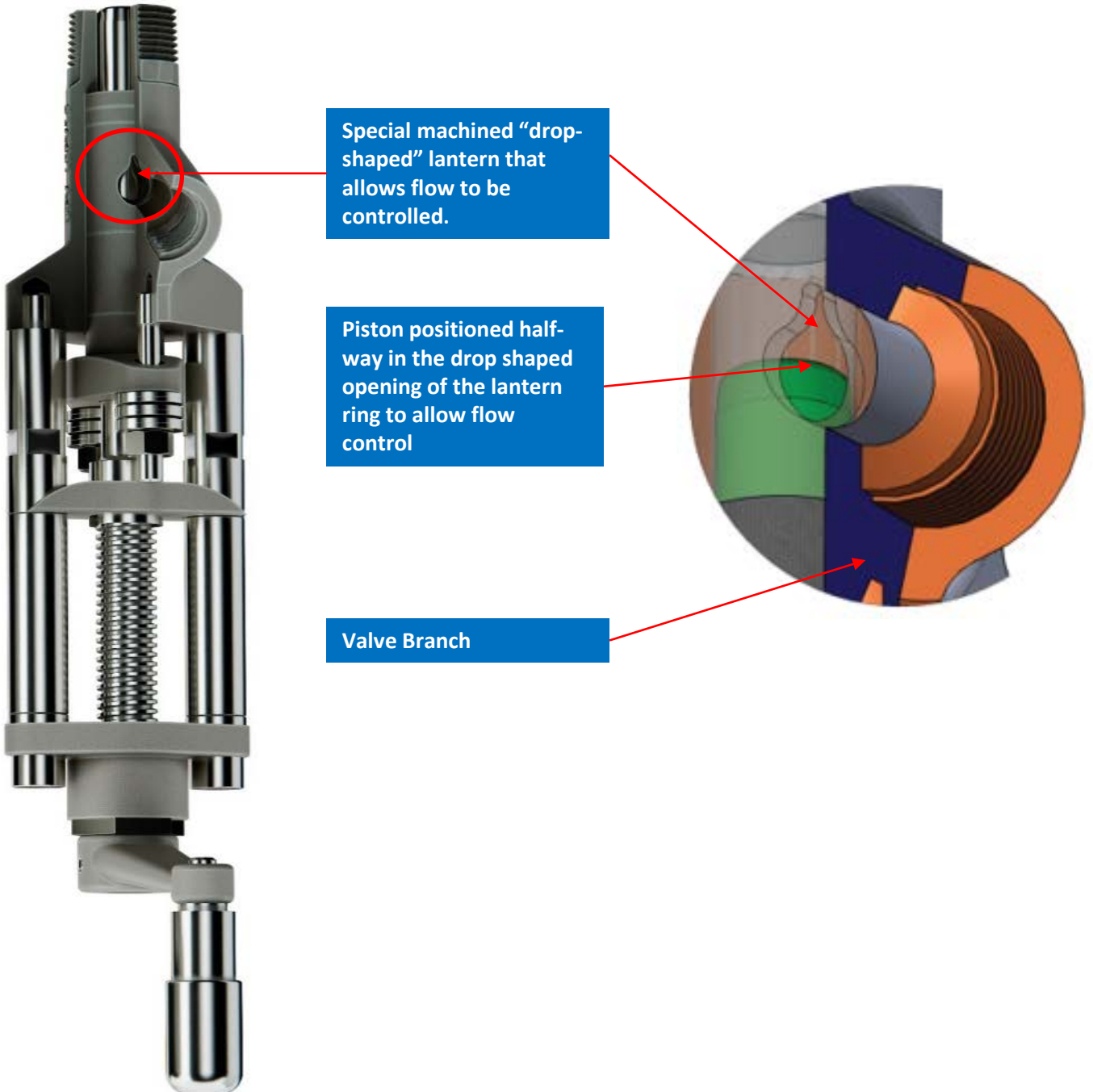
- Manual with rotating SSTL crank for safe actuation with gloves.

**Alternatives are:**

- Hand Wheel.
- Air actuation.
- Electric actuation.

## Standard flow control function

To help control the flow through the valve during sampling or injection our LEPV valves are equipped with a flow control function as a standard. The bore of the lantern ring is specially machined (drop shaped) to allow flow control while operating the valve. This provides operator safety. Large, sudden (hot or dangerous) flows that may hurt the operator are eliminated. In case of Injection the flow of the injected medium can be controlled.



## Available Jacket options

To keep to keep viscous products liquid and avoid clogging of the valve UPV offers several heating jacket designs. Heating media can be oil or steam. UPV recommends using integral welded jackets because they have the best heat transfer and are compact at the same time. Jacket connections can be selected by the customer.

**Integral LEPV Jacket with jacket connections Welded on body.**



**Integral LEPV Jacket on body before welding.**



**Integral LEPV Jacket.**



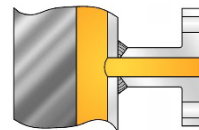
**Valve with Bolt-on Jacket**



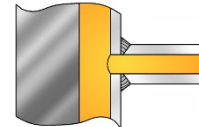
**Two-piece Bolt-on Jacket**



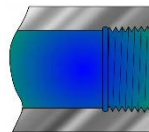
**Possible Jacket connections**



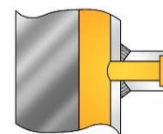
**Flanged ANSI, DIN, JIS**



**Butt Weld**



**Threaded to NPT or BSP**

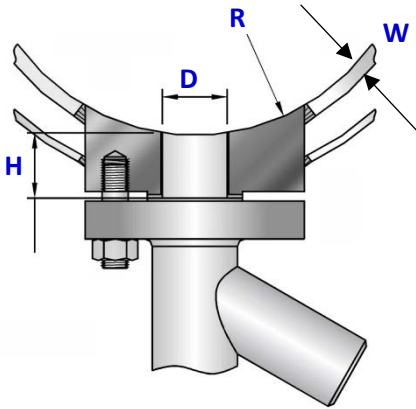


**Socket weld**

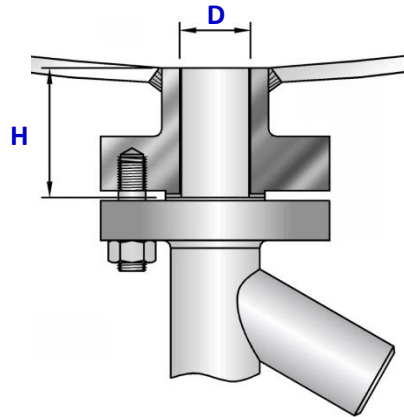
**Nozzles & Pads**

To connect valves to process piping, UPV can supply the valves with easy-to-fit standardized pads or nozzles for welding into the process pipe. In both cases, the customer must specify:

- Process pipe size & pipe wall thickness (pipe sch.) "W"
- Pad or nozzle length "H"
- Inside diameter "D" can be specified by the customer or UPV can determine the "D" size to match the valve.
- If contouring of the pad or Nozzle is required, UPV will contour to match radius "R" of the process pipe to eliminate retention areas



**Contoured Pad**

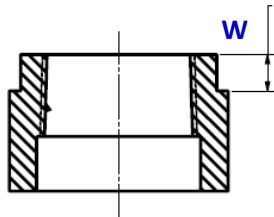
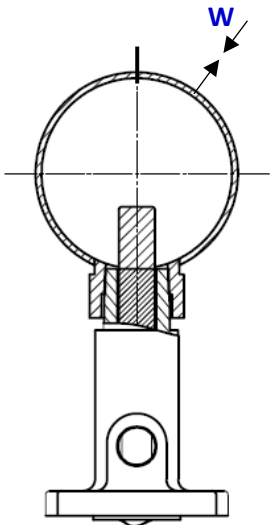


**Nozzle**

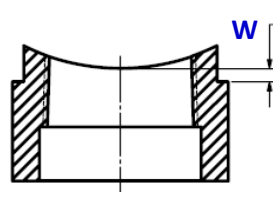
**Contoured & non-contoured half couplings**

For threaded (NPT) connections to process pipes UPV can supply contoured or non-contoured half couplings. Contoured couplings (shown below) are normally used for smaller pipe sizes up to 6". Contouring of the coupling allows it to match the inside of the pipe and not obstruct flow. The contour will match the inside diameter of the process pipe. Non-contoured couplings can be supplied for pipe sizes 8" and above. The larger pipe size do not require contouring to prevent dead space. To manufacture a half coupling UPV needs following information:

- Process pipe size & pipe wall thickness (pipe sch.) "W"



**Non-contoured half coupling**



**Contoured half coupling**

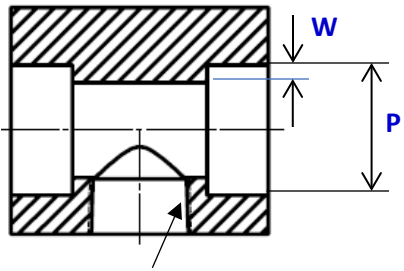


**Contoured half coupling**

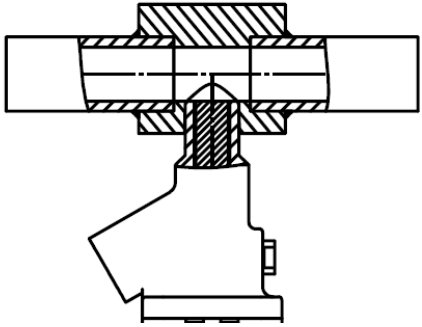
**Special Tee Adapters**

To connect valves LEPV valves with threaded connections to small diameter process pipes of 2" and smaller, UPV can supply the valves with easy-to-fit Tee adapters for installation into the process pipe. To manufacture a Tee adapter, UPV needs following information:

- Process pipe size ("P") & pipe wall thickness (pipe sch.) "W"



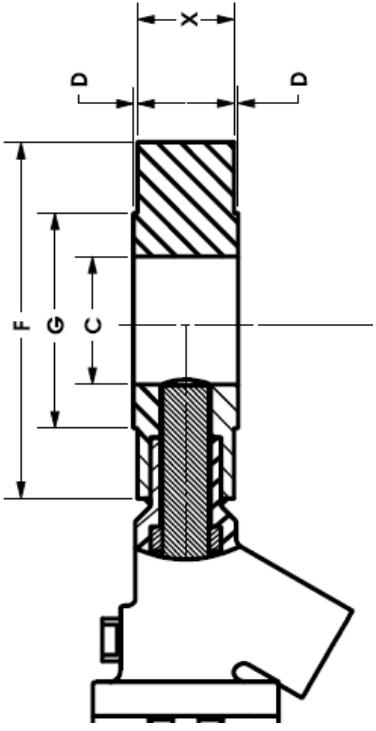
NPT-F thread



**Interflange adapters**

LEPV valves can be installed in between process flanges by using our inter-flange adapters. To manufacture an interflange adapter, UPV needs following information:

- Process pipe size, pipe wall thickness (pipe sch.) or inside diameter of the process pipe.
- Process flange size and pressure rating.
- With this information we can determine below mentioned dimensions C, D,F,G & X



Valve with Interflange & sampling adapter.

### Sampling Adapters & sampling boxes

Allowing operator to safely take a product sample without being in direct in contact with the product. Adapters are made from stainless steel with PTFE inserts that can be matched with customers specific sample bottle. Sampling bottles can also be delivered. Safety covers are made from Lexan or 316 SSTL. We also offer complete enclosed Sampling boxes



### Safety shield

To protect the valve piston and stem from the outside elements, dust etc. we can deliver option safety shields made from Stainless Steel



### Actuation options



Handle / Crank



Hand wheel



Bevel Gear



Double or Single acting Air Cylinder



Double or Single acting Air Cylinder & safety hand wheel



Electric Motor

### Valve Coding System

	L	P	4	S	P	J
L Low emission Piston Valve	Line 1					
P Piston A Accessories		Line 2				
4 45° Branch Angle 6 60° Branch Angle 9 90° Branch Angle \$ Special			Line 3			
S Soft Seated M M Seal C M Control D Dual Seal R M-Ring Seal				Line 4		
B Extended Body P Extended Plunger D Dismountable Seat \$ Special					Line 5	
J Jacketed - Non-Jacketed						Line 6



LEPV valves meet the low fugitive emission standards of ISO 15848 1 & 2 with PTFE Packing

## Fugitive emission test Report

B53/TS-CRM/2025-04



Add value.  
Inspire trust.

The tests performed on valve :

### Low Emission Piston valve

Valve size : *DN15 Class 600*  
Serial Number : *LEPV 15 PTFE*  
Identification Number : *021S1122*  
Stem sealing system : *PTFE Teflon (FA)*  
Stem diameter : *15 mm*

Manufactured by : **United Process Valves**  
**136 Rue Germain Sommeiller, 73420 Méry**

Tested at CRM Facility (Belgium), fulfils the requirements of **ISO 15848-1:2015/A1:2017** under the following test conditions :

Method : *sniffing method*  
Fluid : *Helium 5.0*  
Temperature : *20°C / 150°C*  
Pressure : *6 bar / 6 bar*  
Tightness class : *A*  
Endurance class : *C01 (205 cycles)*  
Number of thermal cycles : *2*  
Number of stem seal adjustments : *1*

In accordance with detailed test report N° CCD202500156, the Low Emission Piston valve that meets the ISO 15848-1 chapter 8 requirements (extension of qualification) may be marked as:

**ISO FE AH – C01 – SSA1 – t (RT, 150°C) – CL600 – ISO15848-1**

At Boortmeerbeek, 11th June 2025  
**Roland Peeters**  
Inspector - Expert



Managing Director:  
Dominique Kugler

TÜV SÜD Benelux  
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TUV®



LEPV valves meet the low fugitive emission standards of ISO 15848 1 & 2 with Graphite Packing

## Fugitive Emission Test Report

B53/TS-CRM/2025-03



Add value.  
Inspire trust.

The tests performed on valve :

### Low Emission Piston valve

Valve size : *DN15 Class 600*  
Serial Number : *LEPV 15 Graphite*  
Identification Number : *021S1105*  
Stem sealing system : *Graphite Braid (GR)*  
Stem diameter : *15 mm*

Manufactured by : **United Process Valves**  
**136 Rue Germain Sommeiller, 73420 Méry**

Tested at CRM Facility (Belgium), fulfils the requirements of  
ISO 15848-1:2015/A1:2017 under the following test conditions :

Method : *sniffing method*  
Fluid : *Helium 5.0*  
Temperature : *20°C / 300°C*  
Pressure : *6 bar / 6 bar*  
Tightness class : *A*  
Endurance class : *CO1 (205 cycles)*  
Number of thermal cycles : *2*  
Number of stem seal adjustments : *0*

In accordance with detailed test report N° CCD202400352-2, the Low Emission Piston valve that meets the ISO 15848-1 chapter 8 requirements (extension of qualification) may be marked as:

**ISO FE AH – CO1 – SSA0 – t (RT, 300°C) – CL600 – ISO15848-1**

At Boortmeerbeek, 14th April 2025  
Roland Peeters  
Inspector - Expert



Managing Director:  
Dominique Kugler

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TUV®



## 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)

### United Process Valves, France

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ISO 9001:2015

BUREAU VERITAS  
Certification

