SÜDMO

SVP SELECT SINGLE SEAT VALVES
Pentair Südmo’s SVP Select single seat valve line provides solutions for the most stringent hygienic and aseptic processes requirements in the beverage, food, dairy and pharmaceutical industries.

Why choose Südmo SVP Select Single Seat Valves?

The valve series provides the best basis for efficient and safe production processes due to the wide variety of options provided by our modular system, ease of maintenance, cleanability, and the options for the valves to meet the latest hygiene and aseptic requirements.

<table>
<thead>
<tr>
<th>GENERAL REQUIREMENTS OF SINGLE SEAT VALVES</th>
<th>PROCESS FUNCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Implementation of various process functions within the hygienic and aseptic sectors</td>
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<tr>
<td>• Cleanability of all product wetted surfaces</td>
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<tr>
<td>• Shutting off pipelines (right angle and angular seat valves) on tanks (seat valves)</td>
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<tr>
<td>• Connecting pipelines (double right angle, cross and straight way valves)</td>
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<tr>
<td>• Removing from pipelines and ring circuits (sampling valves)</td>
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<tr>
<td>• Mixing and distributing (change over valves)</td>
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</tbody>
</table>
This double-seat mixproof valve is designed for steam sterilization.

INNOVATIVE SEALING SOLUTIONS

Seat area
- O-rings
- PEEK* as axial sealing element
- RSC** as radial sealing element

Spindle area
- Profile seal
- P³ diaphragm

INNOVATIVE SEALING SOLUTIONS

COMPREHENSIVE MODULAR SYSTEM

- Wide range of housings
- Hygienic and aseptic options
- Manual and pneumatic actuators
- Booster
- 3-position actuator
- Feedback systems

HIGHEST QUALITY

- Body machined from a solid piece of bar stock
- High quality surface finish
- Sump and dome clearance
- Designed for easy cleaning

SERVICE & OPERATION

- Easy to maintain
- No special tools required
- Simple to operate due to compact construction
- Low maintenance costs (OPEX)

OPTIMIZED ACTUATOR & CONTROL SOLUTIONS

- Durable actuator seals
- Chambered spring
- Monitoring of all valve positions; e.g. with the IntelliTop 2.0 control top

CERTIFICATIONS

- EHEDG
- 3-A
- ATEX
- CRN
- Seals conform to FDA requirements
- Optional USP Class VI

* Polyether ether ketone
** Radial seal complete
HYGIENIC SINGLE SEAT VALVE CONSTRUCTION

EXAMPLE: RIGHT ANGLE VALVE S370E

Pneumatic actuator with chambered spring
Durable actuator seal
Closing head support (lantern)
Air connection for main lift
Housing clamp
Profile seal (spindle seal)
Valve disk with O-ring
Housing

ASEPTIC SINGLE SEAT VALVE CONSTRUCTION

EXAMPLE: RIGHT ANGLE VALVE A370D-E

Leakage outlet
P³ diaphragm [aseptic barrier]
Valve disk with O-ring

PEEK disc version A370D-PEEK
PEEK ring version A370D-PR
Profile seal separates the product area and atmosphere

The P³ diaphragm provides an aseptic barrier between the product area and atmosphere

Elevator effect: When the valve is opening, product sticking onto the stem can be carried over behind the profile seal.

The aseptic barrier prevents the elevator effect

Elevator effect: When the valve is closing, product contamination due to carrying over cannot be ruled out.

The aseptic barrier prevents the shuttle effect
TYPICAL USES

**HYGIENIC VALVE TECHNOLOGY**

**Applications**
- Plant areas before pasteurization
- Hot filling
- CIP areas

**Products - Beverages**
- Beer
- Spirits
- Wine
- Soft drinks
- Ice tea
- Fruit juices
- Water

**Products - Basic Ingredients**
- Syrups for soft drinks
- Flavor compounds
- Concentrates

**Products - Dairy & Food**
- Cheese
- Yogurt
- Milk
- Whey products

**ASEPTIC VALVE TECHNOLOGY**

**Applications**
- Plant areas after pasteurization
- Cold aseptic filling (CAF)
- Pharmaceutical / biochemical plants

**Products - Abrasive**
- Lactose
- Instant coffee

**Products - Dairy & Food**
- Fruit purees
- Vegetable purees
- Tomato ketchup
- Mayonnaise
- Yoghurt with fruit
- Cream
- Desserts

**Products - Pharmaceutical**
- Water for Injection (WFI)
- Cough Syrup
- Gel for cachets

**WIDE RANGE OF APPLICATIONS**

(The decision to use either hygienic or aseptic valves is based on many factors and should be considered on a case-by-case basis)
Valves have a key function in process plants and are important components in satisfying the ever-increasing stringent market requirements. The following features should be considered when selecting valves for your process plant:

- **Provide optimal cleanability**
- **Designed with no dead space**
- **Can be completely emptied**
- **No influence/migration on end product**
- **Offer high durability**
- **Easy to maintain**
- **Fast, available spare parts supply**
- **Current authorizations and certifications**
The below drawing shows exemplary possible weaknesses that may be found in the design of valves. These could have a negative effect on product quality, valve performance and operating costs.

**WEAKNESSES IN VALVE DESIGN THAT NEED TO BE AVOIDED**

- **Seal gap**
  - Cannot be cleaned

- **Dome**
  - Air lock
  - Requires sterilization times
  - Difficult to clean

- **Shadow area**
  - Difficult to clean

- **Sump**
  - Cannot be fully emptied
  - Cannot be cleaned

- **Inside radii are too small**
  - Difficult to clean

- **Bellows folds**
  - Particles such as, e.g., nuts or fruit pieces could become jammed and then end up in other products

- **No observation window between product space and drive**
  - Product can get into the drive
  - Non-sterile air could get into the product space
  - No visual detection of leaks possible

- **No optimal compression of sealing element**
  - Risk of back migration and therefore contamination of the product

- **Problem in removing leaks**
  - If the seal is worn through or the plate is not properly assembled then the thread prevents the leakage from being readily drained

Pentair Sudmo’s advanced engineering team has ensured that the above potential problem areas are not part of our valves design.
Pentair Südmo Valves have been designed to meet the highest requirements.

Pentair Sudmo’s SVP Select Valves hold the 3-A Sanitary Standard 53-06 and meet EHEDG Type EL - Class 1.

Product safety
- Separation of the actuator and product space provides an inspectable clear leakage path from both the actuator and product sides
- Very easy to clean

Very easy to clean with:
- Front-flush seals prevent contamination behind the seal
- Sump and dome clearance
- Can be completely emptied (take note of installation position)
- No dead space
- Open construction prevents dead areas during cleaning
- Readily cleanable inner contours (radii)

It is critically important that valves, as well as other equipment, meet industry standards. Two well-known and very important of these are the 3-A Sanitary Standards (USA) and the EHEDG (European Hygienic Engineering & Design Group).
SVP SELECT MODULAR SYSTEM

FEEDBACK SYSTEMS

IntelliTop 2.0

Proximity switches

VALVE ACTUATORS

Pneumatic
air opened / spring closed

Pneumatic
spring opened / air closed

Pneumatic
air opened / air closed

Pneumatic
long stroke

VALVE INSERTS - STEM SEAL

Hygienic
profile seal

VALVE INSERTS - SEAT SEAL

SHUT-OFF VALVES

O-ring

PEEK ring

PEEK plate

VALVE HOUSINGS

Right-Angle

Double Right-Angle

Cross

Sampling

Straight-way

Angular Seat
ADDITIONAL ACTUATORS

- Booster
- 3-position actuator

- Pneumatic
  Adjustable spring force
- Manual actuator
  Standard
- Manual actuator
  Bevelled wheel drive

EXAMPLE

FOR CHANGE-OVER VALVES

- Mixer
  RSC / O-ring
- Distributor
  RSC / RSC

Bottom Seat
- 90° angle
- 30° angle

Change-over
- Mixer
- Distributor
INNOVATIVE SEALING SOLUTION - STEM AREA

Profile seal (hygienic design)
- Wiper effect
- Easy maintenance
- Various elastomers available (EPDM/HNBR/FKM)

P³ diaphragm (aseptic design)
- No elevator effect
- Easy to maintain
- P³ material with excellent properties
  - Very good chemical resistance
  - Temperature resistant up to 150°C
  - Dynamic pressure stability up to 10 bar

RSC* seal as radial seals
- Small contact area (optimized friction characteristics)
- High durability
- Very good source compensation
- Various elastomers available (EPDM/HNBR/FKM)
- Easy to maintain

O-ring as axial seals
- Flexible sealing material
- Various elastomers available (EPDM/HNBR/FKM)
- Easy to maintain

PEEK plate as axial seals
- Hard sealing material
- High-performance plastic PEEK**
- Very good chemical resistance
- Temperature-resistant up to 150°C
- Does not tend to attract residues
- Elastomer-free product space combined with P³ sleeve
- Easy to maintain

PEEK ring as axial seals
- Cost-effective alternative to PEEK plates
- Not recommended for products with solids (fibers/pieces) content

INNOVATIVE SEALING SOLUTION - SEAT AREA
*Radial seal complete
**Polyether ether ketone
SVP SELECT SINGLE SEAT VALVES

**PNEUMATIC ACTUATORS**

- Air to open
- Spring to close
- Air to open
- Air to close
- Long stroke
- Adjustable spring force *
- Manual actuator
- Bevelled wheel drive

* Adjustable holding pressure - for further information see the SVP Select Overflow Valves brochure

**REVERSIBLE PNEUMATIC ACTUATORS**

Converting the operating mode from air to open to spring to open (and vice-versa) is possible without additional parts

- Air to open
- Spring to close
- (air connection below)
- Dismantling attachments
- Turn the actuator cylinder 180°
- Attaching attachments
- Spring opened - air closed
- (air connection above)

**FEEDBACK SYSTEMS**

- Proximity Switch ON/OFF
  - Proximity sensor M12
  - Hand guard prevents injuries
- IntelliTop 2.0
  - Decentralized control unit
  - Valve actuation system
  - Position monitoring
  - Valve/PLC interface

**ADDITIONAL ACTUATORS**

- Booster
  - Support of main lift function
  - Use with lower control air pressure
- 3-position actuator
  - Implementation of a third position
  - Adjustable intermediate position
FLOW DIRECTIONS

FLOW DIRECTION DURING THE SWITCHING PROCEDURE FOR VARIOUS HOUSING TYPES

Key: ▶ Flow direction  ❌ Closing direction

Switching of the valve only permitted within the stated flow direction.
If this is not possible, the flow velocity $v$ has to be 0 m/s (ft/s).

Caution – Risk of pressure shocks when closing with the flow!

Attention:
If the media flow has to go against the allowed direction for process reasons, the flow velocity $v$ while switching has to be 0 m/s (ft/s)!

Pressure shock!!!
P > allowed operating pressure

Vacuum shock!!!

Key: ▶ Flow direction  ❌ Closing direction
**TECHNICAL INFORMATION**

**MATERIAL**
- **Product contact area** 1.4404 [AISI 316L]
- **Non-product contact area** 1.4301 [AISI 304] / 1.4307 [AISI 304 L]
- **Optional** High-quality materials
- **Sealing materials** *
  - Elastomers: EPDM/HNBR/FKM
  - Plastics: P³/PEEK
  - FDA compliant

**PRESSURES**
- **Control air pressure**
  - Standard 6 bar (87 psi) – 8 bar (116 psi)
- **Operating pressure**
  - 10 bar (145 psi) in case of nominal sizes: DN 10-20, OD tube 0.5”/0.75”, ISO 08-15
  - 6 bar (87 psi) in case of nominal sizes: DN 25-100, OD tube 1” -4”, ISO 20-80
  - 5 bar (72.5 psi) in case of nominal sizes: DN 125-150, OD tube 6”, ISO 100-125
  - Higher pressures on request

**SURFACES**
- **Product contact** Ra ≤ 0.8 μm
- **Non-product contact** Ra ≤ 1.6 μm
- **Optional** High-quality surface finish, electropolished

**CONNECTIONS**
- Pipe connections in accordance with
  - DIN 11850-2 [DIN 11866-A]
  - ASTM A270 [DIN 11866-C] (ASME BPE-2009)
  - DIN EN ISO 1127 [DIN 11866-B]

**OPERATING TEMPERATURES - ELASTOMERS**

<table>
<thead>
<tr>
<th>Elastomers</th>
<th>Hot water</th>
<th>Steam</th>
<th>Cold water</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM</td>
<td>95 °C (203 °F) continuous</td>
<td>130 °C (266 °F) continuous</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
</tr>
<tr>
<td>HNBR</td>
<td>95 °C (203 °F) continuous</td>
<td>121 °C (250 °F) continuous</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
</tr>
<tr>
<td>FKM</td>
<td>+80 °C (176 °F) continuous</td>
<td>121 °C (250 °F) brief sterilization (15-20 minutes)</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
</tr>
</tbody>
</table>

**OPERATING TEMPERATURES - PLASTICS**

<table>
<thead>
<tr>
<th>Plastic</th>
<th>Hot water</th>
<th>Steam</th>
<th>Cold water</th>
</tr>
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<tbody>
<tr>
<td>P³</td>
<td>95 °C (203 °F) continuous</td>
<td>150 °C (300 °F) continuous</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
</tr>
<tr>
<td>PEEK</td>
<td>95 °C (203 °F) continuous</td>
<td>150 °C (300 °F) continuous</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
</tr>
<tr>
<td>(in combination with P³ sleeve)</td>
<td>150 °C (300 °F) brief sterilization (15-20 minutes)</td>
<td>1 to 2 °C (33.8 – 35.6°F) continuous</td>
<td></td>
</tr>
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**ADDITIONAL BROCHURES**

Please take a look at our other marketing materials:
- SVP Select Overflow Valves
- SVP Select Control Valves
- IntelliTop 2.0
- P³ diaphragm

Further information regarding media and CIP tolerance can be found in the Südmo sealing guide.