



# SÜDMO™

## DSV COMPLETE

### DOUBLE SEAT

### VALVES



[FOODANDBEVERAGE.PENTAIR.COM](http://FOODANDBEVERAGE.PENTAIR.COM)

# DOUBLE SEAT VALVES SERIES DSV COMPLETE

Based on its many years of experience in valve construction, Südmö offers a comprehensive, refined double-seat valve for implementation and automation of widely varying production processes in the food and beverage industry.

Why use Südmö double seat valves?

As well as a wide range, the series is characterized by ease of handling and maintenance, and is therefore the ideal component for operating your processes with maximum efficiency and safety.

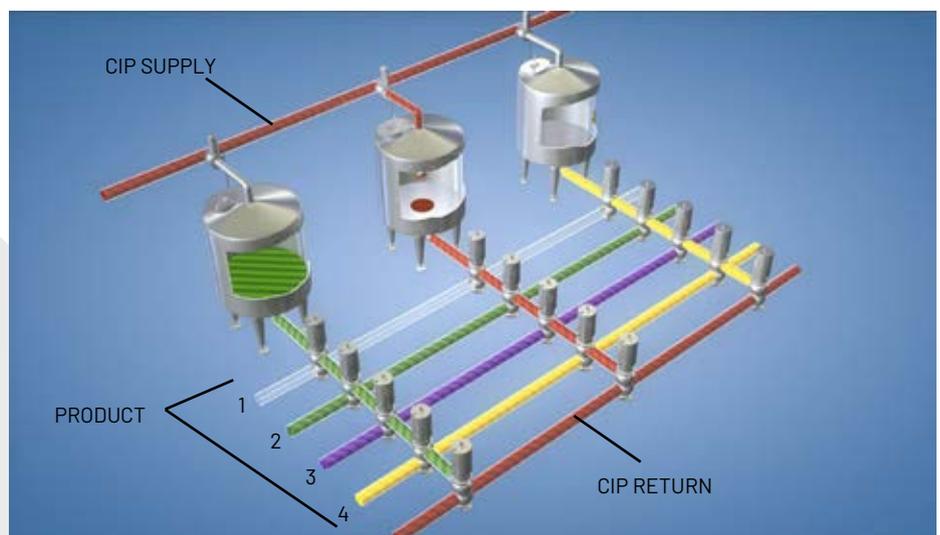


## GENERAL REQUIREMENTS FOR HYGIENIC DOUBLE SEAT VALVES

- Reliable separation of two media (e.g. product and cleaning liquid)
  - > Two sealing elements work separately
  - > Leakage chamber open to atmosphere
    - Avoids pressure build-up
    - Visual leak detection
- All surfaces in contact with product can be cleaned

## FUNCTION

- The function of the double-seat valve is shown in the below tank farm application example.
- Simultaneous, programmed filling, emptying and cleaning of four production lines without risk of mixing. Reliable separation of upper and lower valve housing allows one or more lines or tanks (purple and red lines) to be cleaned during production (yellow and green lines).





# BENEFITS

## INNOVATIVE SEALING CONCEPT

### In seat area

- Step seat with conical seal O-ring
- Radial seat with RSC seal (Radial Seal Complete)

### In shaft area

- Sealing by form-fit profile seal

## HIGH OPERATING PRESSURES

- Open, close and seal up to 10 bar\*
- High pressure pulse resistance

\* Depending on type and nominal width

## SAFE CLEANING

- Cycle stroke with defined ring gap
- Leakage chamber flushing via external connection
- Sterile chamber for shaft flushing / sterilization
- Shaft flushing of lower valve disc

## OPTIMIZED DRIVE & CONTROL CONCEPT

- Durable pneumatic seals
- Main spring chambered
- All valve positions can be monitored IntelliTop 2.0 control unit

## TOP QUALITY

- Body machined from solid bar stock
- High surface quality
- Reduced-friction surfaces on moving parts
- Design optimized for cleaning

## MAINTENANCE & SERVICE

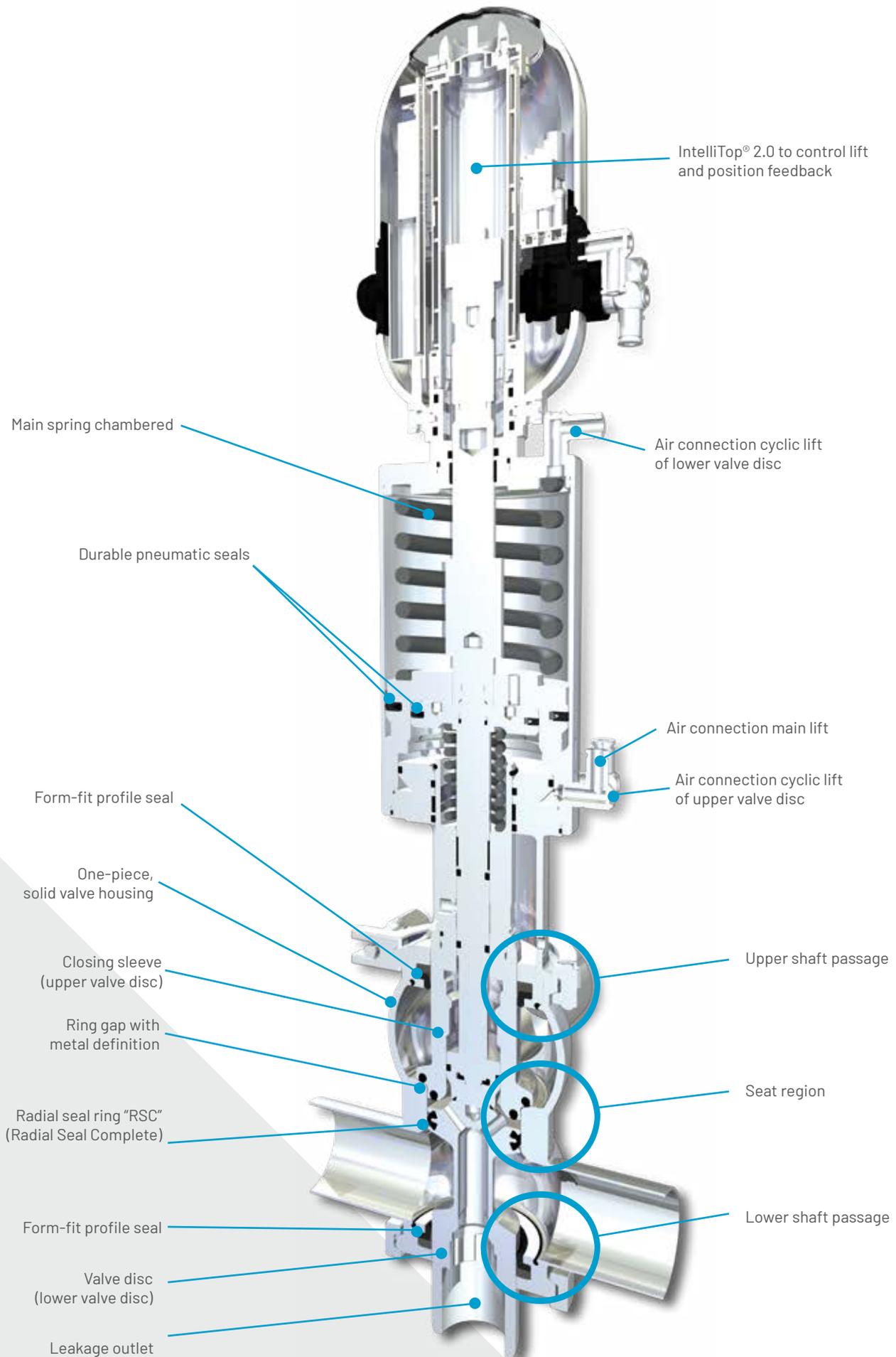
- Simple, rapid maintenance
- No special tools needed
- Easy handling thanks to compact construction
- Low maintenance costs (Opex)

# LICENCES & CERTIFICATES

- 3A
- PMO
- ATEX
- CRN
- Official licences for use in milk heaters
- All seals comply with FDA standards



# STRUCTURE OF DSV COMPLETE DOUBLE SEAT VALVES



## UPPER SHAFT PASSAGE



### **Support ring**

Ensures better guidance and optimized friction behavior

### **Profile seal**

Minimized contact areas to ensure long life and improved wear and friction behavior; special design prevents press-out (pressure pulses) or pull-out (sticky media).

### **O-ring**

Seal between valve housing and housing holder

## SEAT AREA (ON TYPE D 620)



### **Double O-ring seal**

In the upper valve disc, the upper O-ring ensures a product seal in closed valve position, and lower O-ring ensures a leakage chamber seal in open valve position

### **RSC radial seal**

Special shape ensures improved performance and doubling of swell compensation compared with conventional radial O-ring seals. Smaller contact area ensures longer life

## LOWER SHAFT PASSAGE



### **Profile seal**

Minimized contact areas to ensure long life and improved wear and friction behavior; special design prevents press-out (pressure pulses) or pull-out (sticky media).

### **Support ring**

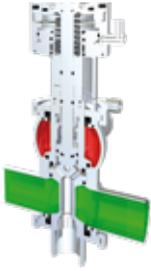
Ensures improved guidance and optimum friction behavior

### **O-ring**

Seal between valve housing and housing cover

# BASIC VALVE FUNCTION

## BASIC VALVE POSITIONS



Valve closed



Valve open

### Valve closed

- Media are separated, secure against mixing
- Any leaks escape to the environment without pressure

### Valve open

- Lower valve disc lifts and closes the leakage chamber
- Product in the leakage chamber is discharged to the outside

## VALVE CLEANING - CYCLIC FUNCTIONS



Cleaning via lower valve seat



Cleaning via upper valve seat

### Cleaning via lower valve seat

- Lower valve disc is raised while cleaning the lower line (cyclic lift via predefined ring gap)
- Lower valve seat, disc seal, leakage chamber and leakage drain are cleaned

### Cleaning via upper valve seat

- Upper valve disc is raised while cleaning the upper line (cyclic lift via predefined ring gap)
- Upper valve seat, disc seal, leakage chamber and leakage drain are cleaned

# EXTENDED VALVE FUNCTIONS

## LEAKAGE CLEANING VIA EXTERNAL FLUSHING CONNECTION



Cleaning of leakage chamber by external flushing connection

### Cleaning of leakage chamber via external flushing connection

- Leakage chamber and leakage drain are cleaned via an external connection

## STERILIZATION / FLUSHING UPPER AND LOWER SHAFT AREA

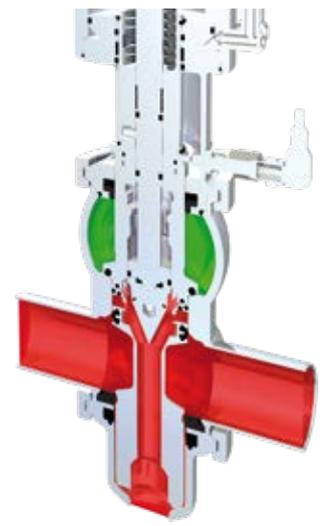


Valve sterilization

### Sterilization or flushing via external connections

- Sterilization or flushing of lower and upper shaft area

## SHAFT FLUSHING OF LOWER VALVE DISC

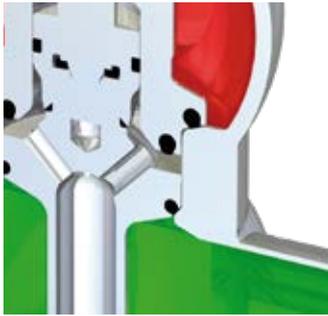


### Flushing of lower shaft area (Scallop design)

- Flushing of shaft area during activation of cyclic lift of lower valve plate

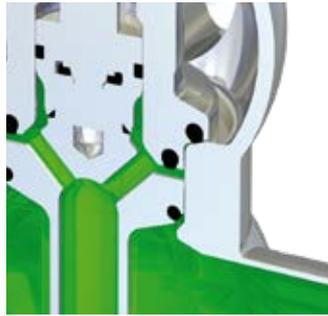
# DSV COMPLETE OPTIONS

## Low leakage



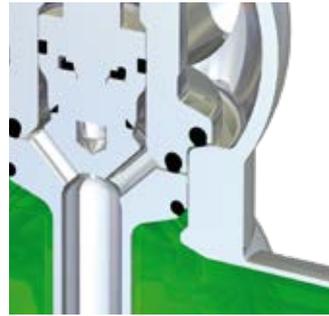
### Closed

Lower valve disc with conical seal



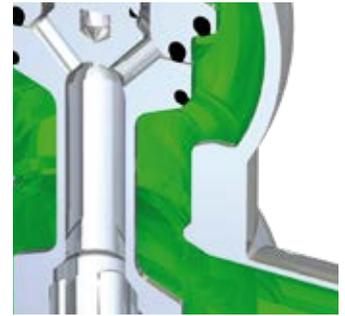
### Movement of lower disc

Lower line **OPEN**  
Leakage chamber open  
->Flushing effect / Product loss



### Movement of lower plate

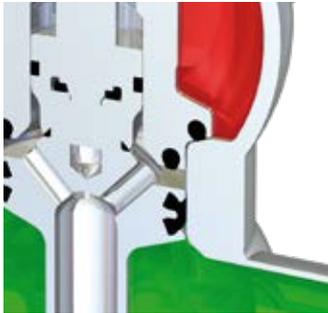
Lower line open  
Leakage chamber closed



### Open

Valve open  
Leakage chamber closed

## Leakage-free



### Closed

Lower valve disc radial seal  
(RSC seal)



### Movement of lower disc

Lower line **CLOSED**  
Leakage chamber open  
-> **No product loss**



### Movement of lower disc

Lower line closed  
Leakage chamber closed



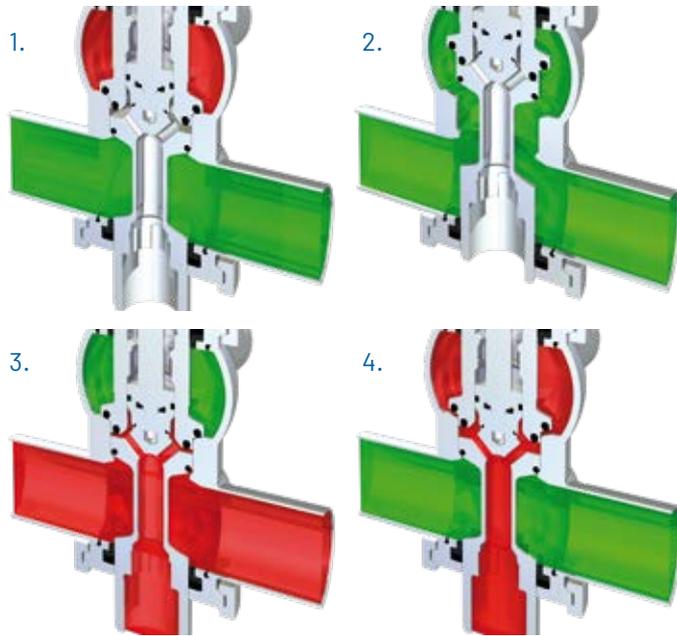
### Open

Valve open  
Leakage chamber closed

MODELS	D600	D610	D620	D630	D620 S-sp	D620U	D640	D650	D660	D365it PMO
Switching with minimal product loss (low-leakage)	•	•							•	
Switching with no product loss (leak-free)			•	•	•	•	•	•		•
Leakage space cleaned during cleaning by lifting stroke function	•		•		•	•	•	•		•
Lower shaft cleaned during cleaning by lifting stroke function										•
Leakage space cleaned via external rinsing port		•		•	•					
Sterile chambers (sterilizable + rinsable) in upper and lower shaft section					•					
Axial-conical sealing O-rings in upper and lower valve disc	•	•							•	
Axial-conical sealing O-rings in upper valve disc and radial sealing RSC seal in lower valve disc			•	•	•	•(2x)	•	•		•
Single-piece housing	•	•	•	•	•		•	•	•	•

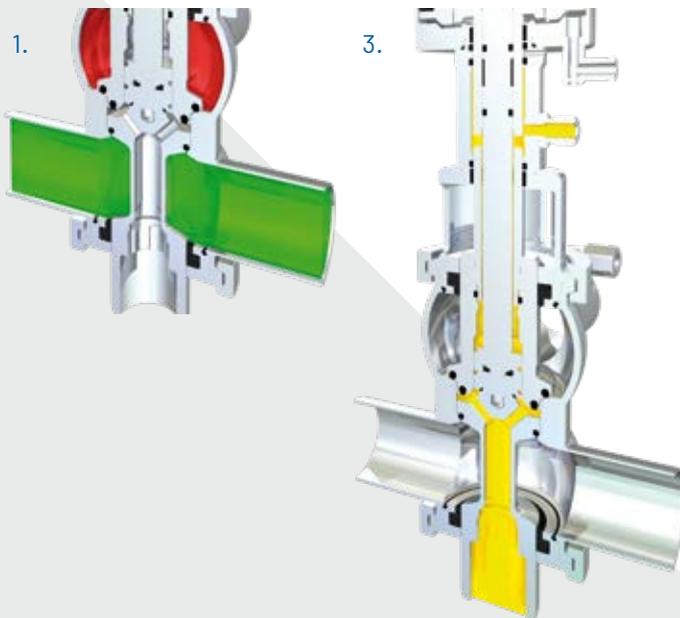
## DESIGN D 600

- Low product loss switching (low leakage)
  - Cycling of valve disc during cleaning allows cleaning of leakage chamber
  - Lower valve disc conical seal (O-ring)
1. Valve closed
  2. Valve open
  3. Cyclic lift of lower valve disc
  4. Cyclic lift of upper valve disc



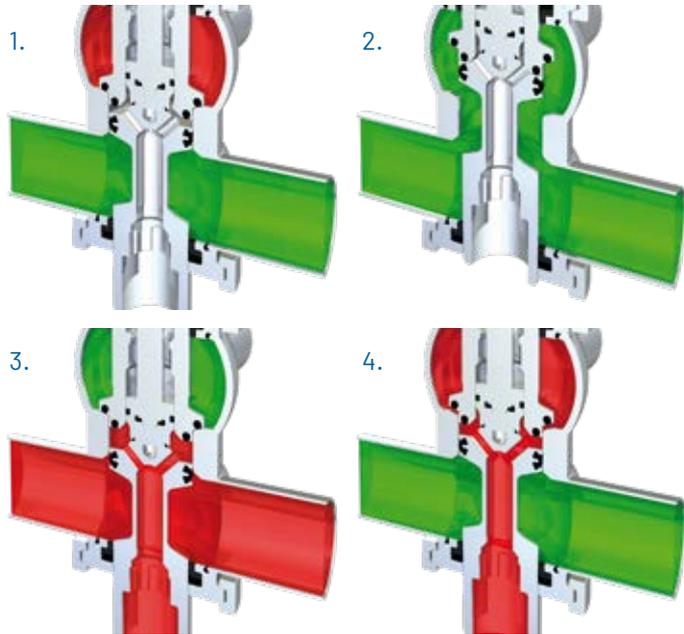
## DESIGN D 610

- Low product loss switching (low leakage)
  - No cyclic lift function
  - Cleaning via external flushing connection
  - Lower valve disc conical seal (O-ring)
1. Valve closed
  2. Valve open
  3. Cleaning via flushing connection



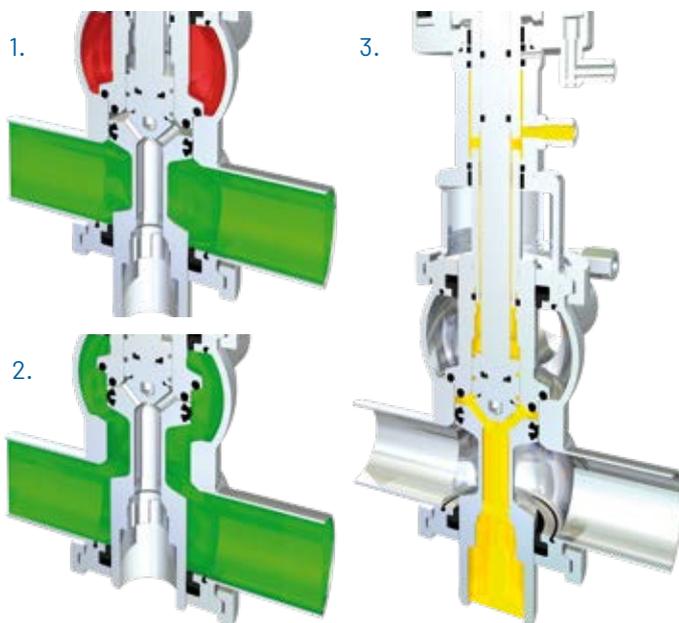
## DESIGN D 620

- Product loss free switching (leakage free)
  - Cycling of valve disc during cleaning allows cleaning of leakage chamber
  - Lower valve disc radial seal RSC (Radial Seal Complete)
1. Valve closed
  2. Valve open
  3. Cycling lower seat
  4. Cycling upper seat



## DESIGN D 630

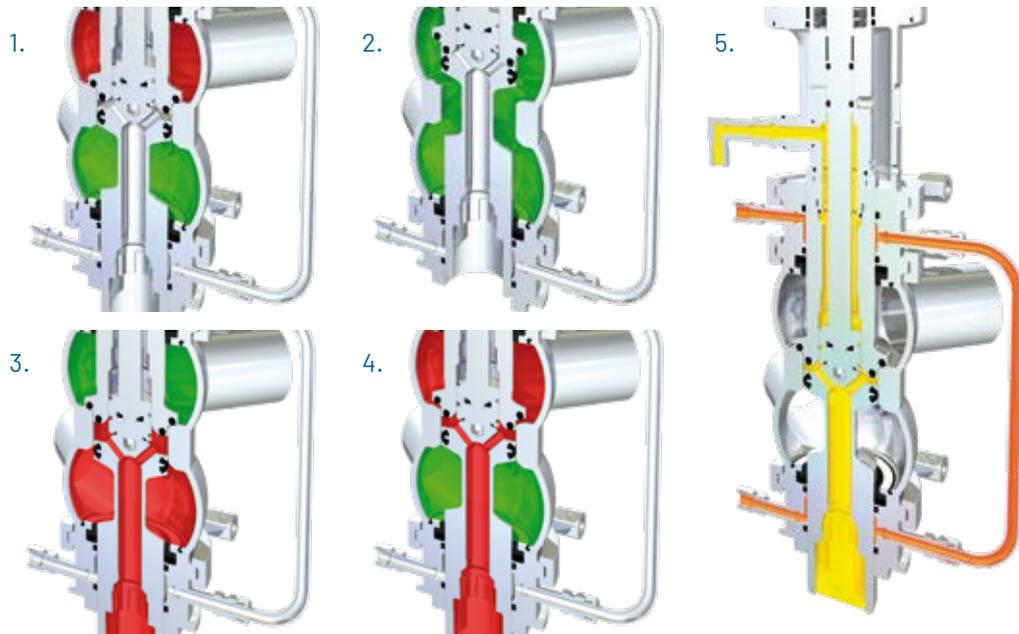
- Product loss free switching (leakage free)
  - No cyclic lift function
  - Cleaning via external flushing connection
  - Lower valve disc radial seal RSC (Radial Seal Complete)
1. Valve closed
  2. Valve open
  3. Cleaning via flushing connection



## DESIGN D 620 S-SP (suitable for sterilizing - flushing)

- Product loss free switching (leakage free)
- Cycling of valve disc during cleaning allows cleaning of leakage chamber
- Flushing chamber for flushing/sterilization of shaft areas
- Cleaning/sterilization via external flushing connection (Sp)
- Lower valve disc radial seal RSC (Radial Seal Complete)

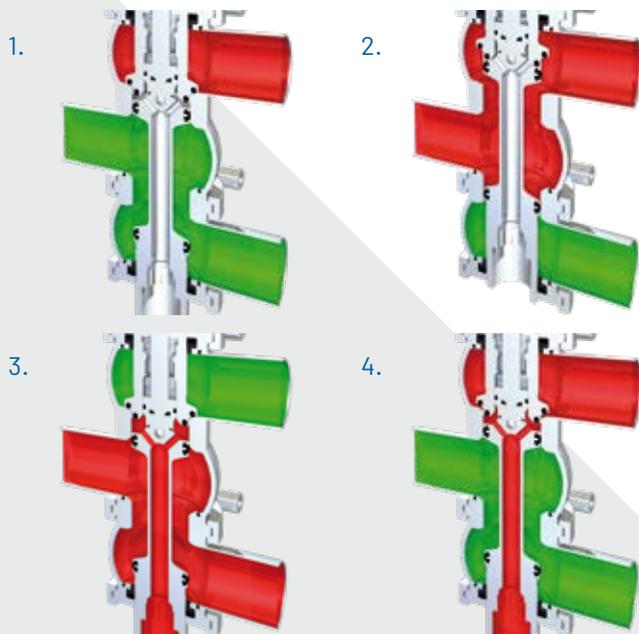
1. Valve closed
2. Valve open
3. Cyclic lift of lower valve disc
4. Cyclic lift of upper valve disc
5. Sterilization/flushing



## DESIGN D 620 U (change over valve)

- Product loss free switching (leakage-free)
- Cyclic lift functions for cleaning of leakage chamber
- Switch-over function
- Lower valve disc radial seal RSC (Radial Seal Complete)

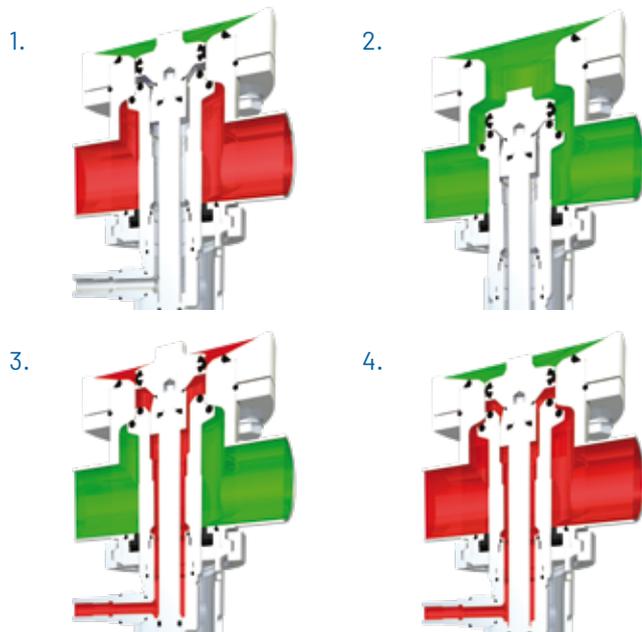
1. Valve closed
2. Valve open
3. Cyclic lift of lower valve disc
4. Cyclic lift of upper valve disc



## DESIGN D 640 (bottom seat valve / tank outlet valve)

- Product loss free switching (leakage free)
- Cyclic lift functions for cleaning of leakage chamber
- Lower valve disc radial seal RSC (Radial Seal Complete)

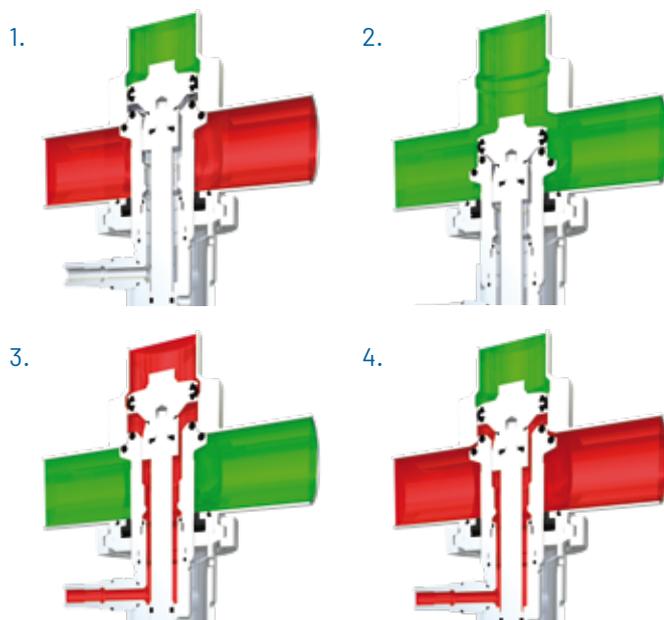
1. Valve closed
2. Valve open
3. Cyclic lift of lower valve disc chamber
4. Cyclic lift of upper valve disc



## DESIGN D 650 (for ring pipes)

- Product loss free switching (leakage free)
- Cyclic lift functions for cleaning of leakage chamber
- Lower valve disc radial seal RSC (Radial Seal Complete)

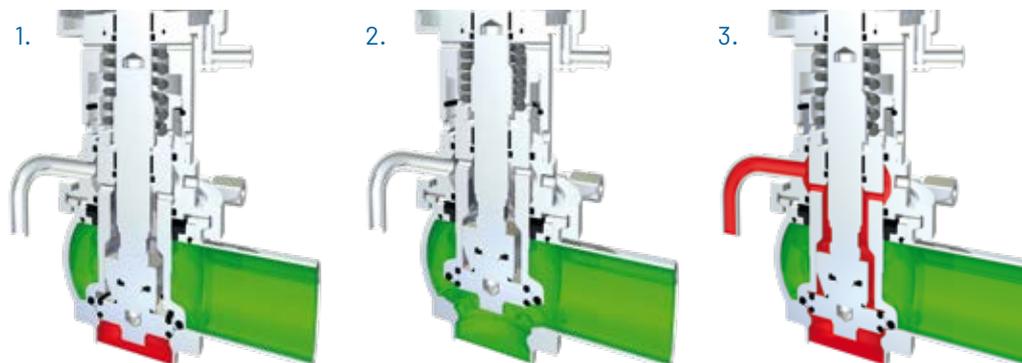
1. Valve closed
2. Valve open
3. Cyclic lift of lower valve disc chamber
4. Cyclic lift of upper valve disc



## DESIGN D 660 (for CIP-areas)

- Flushing of the leakage chamber during cyclic lift (opening/closing)
- Lower valve disc conical seal (O-ring)
- Vertical mounting position (other mounting positions on request)
- EPDM sealing

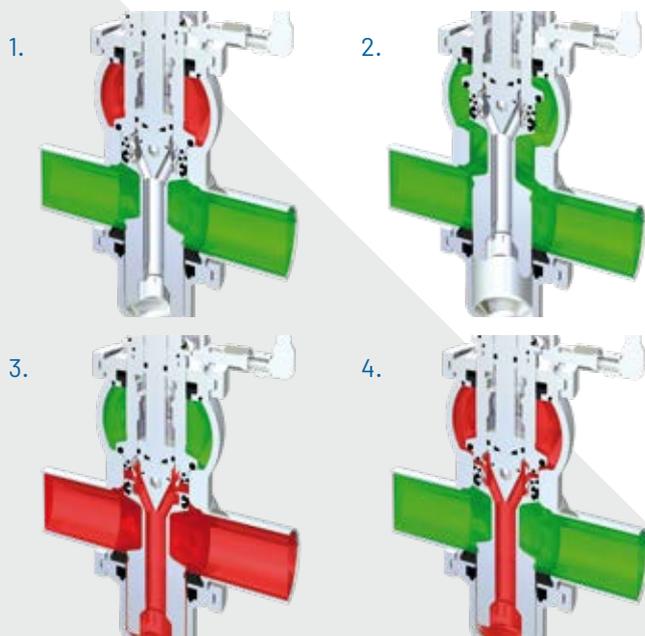
1. Valve closed
2. Valve open
3. Cyclic lift opening/closing of the valve  
-> short-time flushing effect of the leakage chamber/exit



## DESIGN D 365it PMO

- Product loss free switching (leakage free)
- Cyclic lift functions for cleaning of leakage chamber
- Lower valve disc radial seal RSC (Radial Seal Complete)
- Shaft flushing (for maximum security)
- Three-seat valve (deflector)
- Meets aligned requirements of PMO and 3A 85-02

1. Valve closed
2. Valve open
3. Cyclic lift of lower valve disc
4. Cyclic lift of upper valve disc



## VARIANTS

### D 365it to Bottom Seat Valve / Tank Outlet Valve

Special design for direct integration into the tank. The design with no dead zones allows optimum tank cleaning.

Type D 640



Type D 650



### D 365it Cheese curd design

The large open cross section of the 365it Complete Cheese Curd Outlet PMO Mix Proof Valve provides gentle handling of the curd, and allows particles of up to approximately 1.5 inches to pass unobstructed through the valve.



# GENERAL TECHNICAL DATA

## MATERIAL

**Area in contact with product**  
1.4404 (AISI 316L)

**Area not in contact with product**  
1.4301 (AISI 304) / 1.4307 (AISI 304 L)

**Optional**  
Higher quality materials

**Seals\***  
EPDM / HNBR / FKM

\*All seal qualities are FDA-compatible

## PRESSURES

**Control air pressure**  
Standard 6 bar (87 psi) – 8 bar (116 psi)

**Operating pressure**  
Standard 10 bar (145 psi)\*

Lower operating pressures apply to the following types:

D640 5 bar (72.5 psi)  
D650 5 bar (72.5 psi)  
D660 5 bar (72.5 psi)

\*Depending on type and nominal width

## SURFACES

**Product wetted** Ra ≤ 0,8 µm  
**Others** Ra 1,6 µm

**Optional**  
Higher-quality surfaces, e-polished

## CONNECTIONS

**Pipe dimensions 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

## EPDM

Standard



**Hot water**  
+95 °C (203 °F) continuous

**Steam**  
+130 °C (266 °F) continuous  
+150 °C (300 °F) brief sterilization  
(15-20 minutes)

**Cold water**  
+1 to +2 °C (33.8 – 35.6 °F) continuous

## HNBR

Optional



**Hot water**  
+95 °C (203 °F) continuous

**Steam**  
+121 °C (250 °F) continuous  
+140 °C (284 °F) brief sterilization  
(15-20 minutes)

**Cold water**  
+1 to +2 °C (33.8 – 35.6 °F) continuous

## FKM

Optional



**Hot water**  
+80 °C (176 °F) continuous

**Steam**  
+121 °C (250 °F) brief sterilization  
(15-20 minutes)

**Cold water**  
+1 to +2 °C (33.8 – 35.6 °F) continuous

# CONNECTION LAYOUT



D 621



D 622

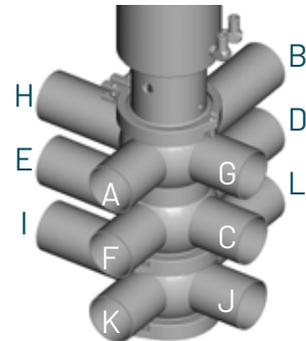


D 623



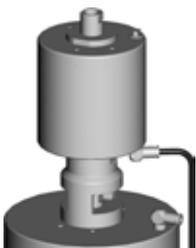
D 624

# CONNECTION MARKINGS



Different customer needs can be met thanks to the housing constructed of solid material. Discuss your needs with us at any time.

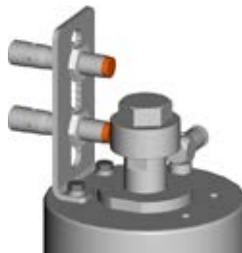
# OPTIONAL ACCESSORIES



## Air pressure amplifier / booster

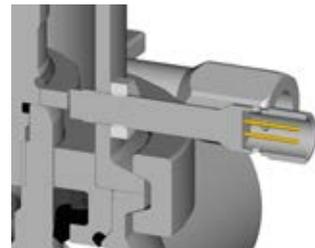
- Supports main lift function
- Used for low control air pressure\*

\*Control air pressure depending on type & nominal width



## Position feedback OPEN/CLOSED

- Proximity initiator M12



## Position feedback upper valve disc

- Feedback CLOSED
- Proximity initiator M8

# IDEAL FOR VALVE MANIFOLDS

## DSV COMPLETE

### OUR KNOW-HOW, YOUR SUCCESS

**A successful process begins with the design and assembly of the valves into larger function units. As well as the pure functionality of the system, many other points must be taken into account:**

- Selection of suitable components
- Correct installation position of all individual components
- Arrangement with no dead zones
- No sumps or domes
- Complete drainability
- Arrangement compatible with orbital welding
- Reduction in number of weld seams
- Compensation for heat expansion
- Adequate support and stabilization of components
- Capture and discharge of leakage
- Simple maintenance work

### PLANNING, DESIGN & PRODUCTION

#### 3D drawing of a valve manifold

Before production comes planning. Using modern 3D systems, the valve manifold is planned in every detail and the result presented to the customer. Then production of the valve manifold can begin.

#### Building the frame

A stainless steel tube frame holds the valve manifold. Each frame is made individually to meet the customer's needs.

#### Mounting the valves

The individual parts of the valves for mounting come together on the workbench. The valve housing is sent directly to the plant construction.

#### Housing preparation

Before combining the valve housings into a manifold, the housings are equipped with flanges, elbows and other components using welding machines.

#### Orbital welding

The valve housing is welded using orbital welders. Together with accurate weld seam preparation, this ensures reproducible weld seams of the highest quality.

#### Preparation

All weld seams of the valve manifold are externally prepared mechanically. The valve manifold is then cleaned.

#### Fitting valve upper parts

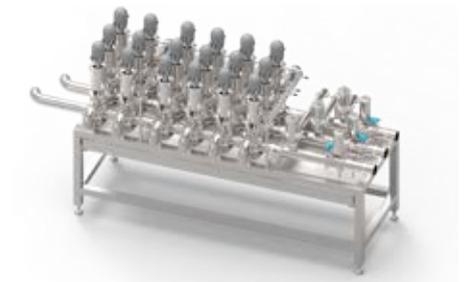
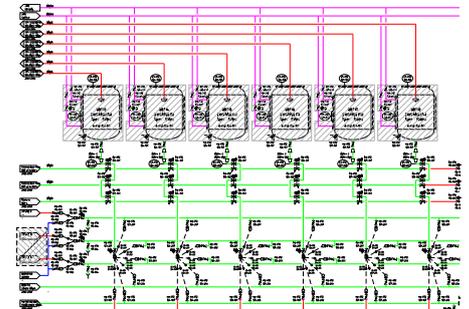
Finally, the valve manifold is fitted with the valve upper parts, the air hoses suitable to the customer's needs, and the electric wiring for the process control heads is prepared; the finished valve manifold is then subjected to a final test.

#### Finished valve manifolds

The finished valve manifolds can be installed in your plant directly after delivery and brought into operation.

### CUSTOMER BENEFITS

- Cost-efficient complete package
- Decades of experience in design and production
- Compact construction
- Simple and rapid installation
- Perfect integration in process control (e.g. IntelliTop 2.0 with 24VDC, AS interface, DeviceNet, or 110VAC)
- Countless possible variations in consultation with our experts
- Simple access for maintenance (e.g. with access platforms or steps)
- Excellent WIG weld seam qualities to DIN EN 287
- Valve manifold production observing Pressure Vessel Directive 97/23/EC



# INTELLIGENT CONTROL TECHNOLOGY INTELLITOP 2.0



The innovative control unit offers the customer countless possibilities for automation of process systems, and hence considerable potential for increasing efficiency.

The IntelliTop 2.0 was awarded the IF Product Design Award 2010 for its perfect combination of function and aesthetics.

The IntelliTop 2.0 control unit from Pentair Südmö combines system control and monitoring of process valves in one unit. The decentral arrangement of the control heads on the process valves allows a reduction in hose and cable lengths and leads to a clear system structure.

The heart of the IntelliTop 2.0 is the travel measurement system to detect up to three switch positions of the process valve. Great emphasis has been placed on simple programming by means of three Teach-In keys. This guarantees rapid and process-reliable commissioning. At the same time, the closed travel measurement system serves as a protective tube which prevents risk of injury when the control head is open, and protects the internal technology on installation of the head.

## TECHNICAL DATA

### Communication

24 V DC  
AS interface  
DeviceNet  
110 V AC

### Travel Measurement System

Lift range 85 mm  
Feedback 3 positions, adjustable, connection for external signal

### Magnetic valves

Number 0-3 pcs  
Flow 200 l/min  
Choke function Intake and extraction air separate

### Electrical connections

24 VDC Cable passage  
AS interface Cable with 4-pin M12x1 plug  
DeviceNet Cable with 5-pin M12x1 plug  
110 V AC Cable passage

### Pneumatic connections

Push-fit hose connection  $\varnothing$  6 mm (optional 5/16")  
Push-fit hose connection  $\varnothing$  8 mm (1/4")

### Other data

LED status display green, yellow, red  
Protection classes IP65 and IP 67 combined IP 69K  
Ex-zone Zone 2/22

## BENEFITS

- Process-reliable system monitoring, simple, intuitive and rapid implementation
- Process valve switch times can be set using integral supply and extraction air chokes
- All-round LED display for visual status monitoring (color allocation can be configured)
- Simplified valve maintenance thanks to maintenance function which can be activated externally
- Plant-specific adaptations via integrated micro-controller
- Integrated micro-controller supplies additional information
- Short air hose and cable routes, clear structure of process plant
- Simple, rapid fault analysis and repair, so reduction in plant downtimes
- Compact construction and optimum compatibility with Pentair Südmö process valves
- Scanning of all valve positions possible in double-seat valve





**PENTAIR SÜDMO GMBH**

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