WEBINAR

Control Valves – Ball Sector Valves in focus

AGENDA

- Common control valves in the industry and its functions
- Basics of ball sector valves
- When and why are ball sector valves used?
- The difference between ball sector valves and other control valves
- Models and applications
- Q&A

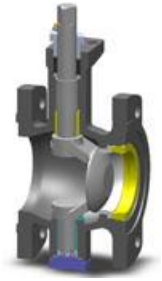
Ramén Valves

COMMON CONTROL VALVES & ITS ADVANTAGES & DISADVANTAGES

V-Port Ball Valves

- Not ideal for control applications
- Floating ball / high hysteresis
- Hidden cavities
- Does not work for abrasive media
- Low Fl (Pressure recovery) factor

+ Low cost
+ High flow capacity



Eccentric plug valves

- Moon-shaped opening with increases speeds at the critical areas
- The seat surfaces are unprotected
- Complete disassembly is required when some parts need to be replaced
- Linear control characteristics

+ High flow range capacity
+ Ability to handle abrasive fluids at some extent.
+ Eccentric plug valves valves can handle high pressures and temperatures
+ Segmented ball valves have a lower manufacturing cost

Segmented Ball Valves

Butterfly valves

- Moon-shaped opening with increases speeds at the critical areas
- The seat surfaces are unprotected
- Complete disassembly is required when some parts need to be replaced
- 30 - 50% control range, which is not suitable for control applications
- Disc is in the flow stream
- Low Fl (Pressure recovery) factor

+ Low cost
+ Short face to face

COMMON CONTROL VALVES & ITS ADVANTAGES & DISADVANTAGES

Globe Valves

- Cannot be used on abrasive media
- Long face to face
- Small flow range capacity
- High cost

+ High accuracy
+ High Fl factor
+ Suitable for microflows
+ Suitable for high pressure and low/high temperature

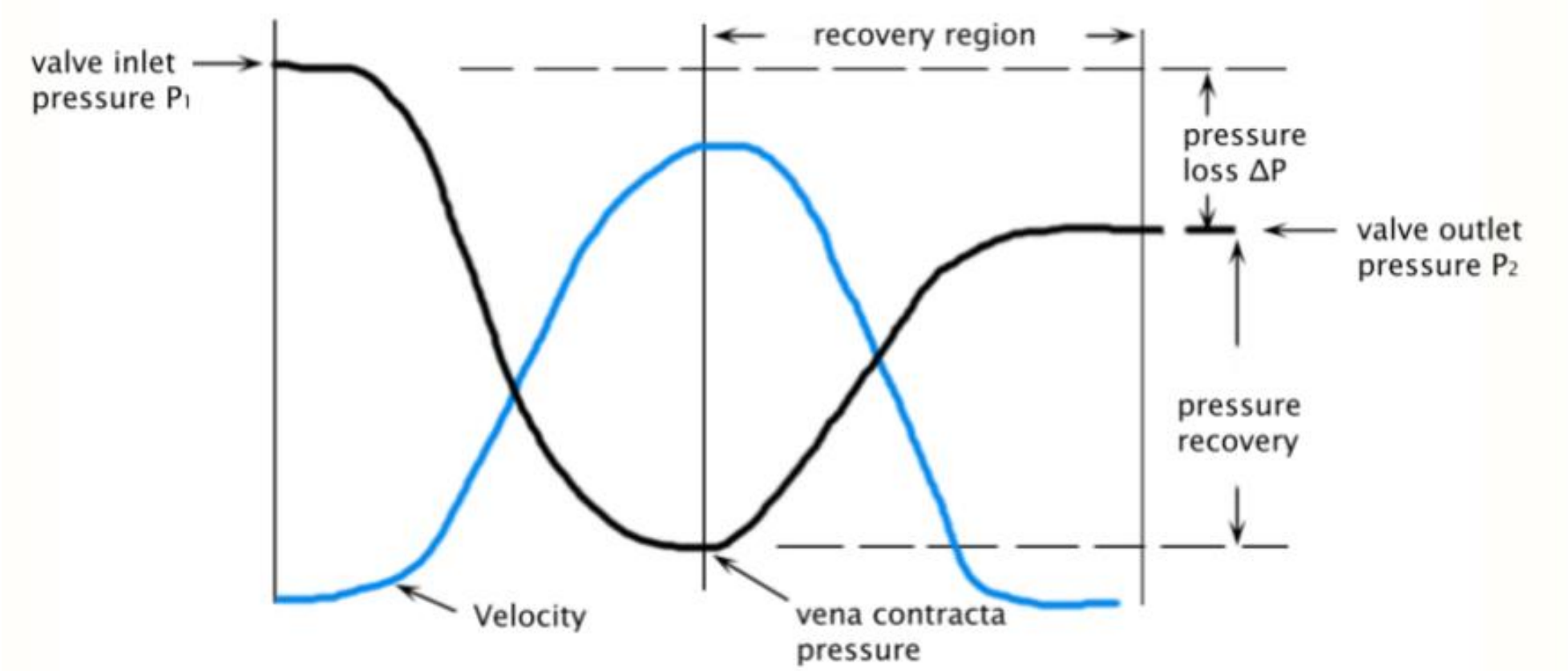
Pinch Valves

Diaphragm Valves

- Not ideal for control applications
- Suitable only for low pressure
- Suitable only for low temperature
- The sleeve is expensive and complicated to replace
- Requires large space with automation

+ Suitable for gravel, stones and other larger particles

DEFINITION OF PRESSURE RECOVERY FACTOR



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We know the flow

BASICS OF BALL SECTOR VALVES

- **Well proven design**. First installation in 1969
- **Self-draining design** ensures that media are not trapped in the valve. This also prevents dewatering and plug formation when regulating fiber suspensions and slurry.
- **Ball sector with elliptical to circular opening** provides equal percentage control properties with high capacity and high control precision.
- **Control range up to 300: 1.**
- **High flow capacity and high pressure recovery factor.**
- **Low torque** allows easy automation with small actuators that provide lower costs.
- **Simple and low maintenance needs**.
- **Excellent tightness** in accordance with EN60534-4, leakage class VI for soft seat and IV for metal seat.
- **Certified according to TA Luft and ISO 15848** for minimal emissions to the atmosphere.
- **Compact design and low weight** reduce costs and environmental impact.
- **Simple and standardized automation.** Compatible with ISO 5211 actuators.

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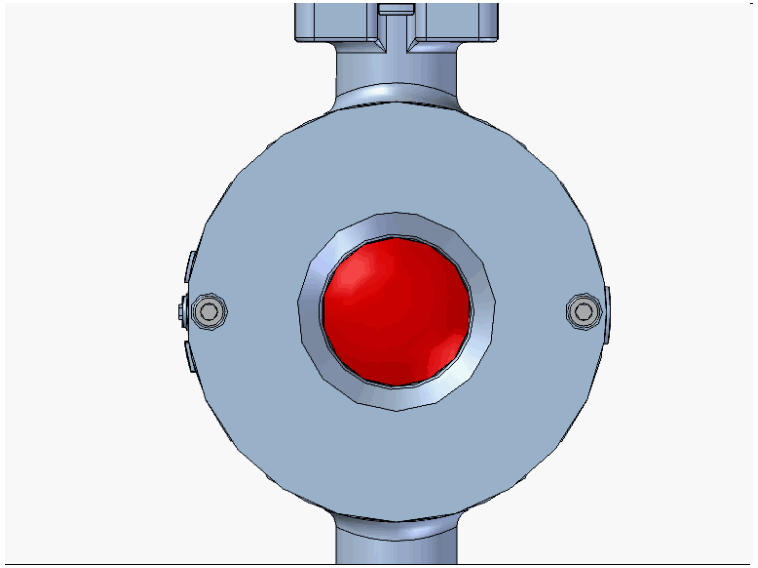
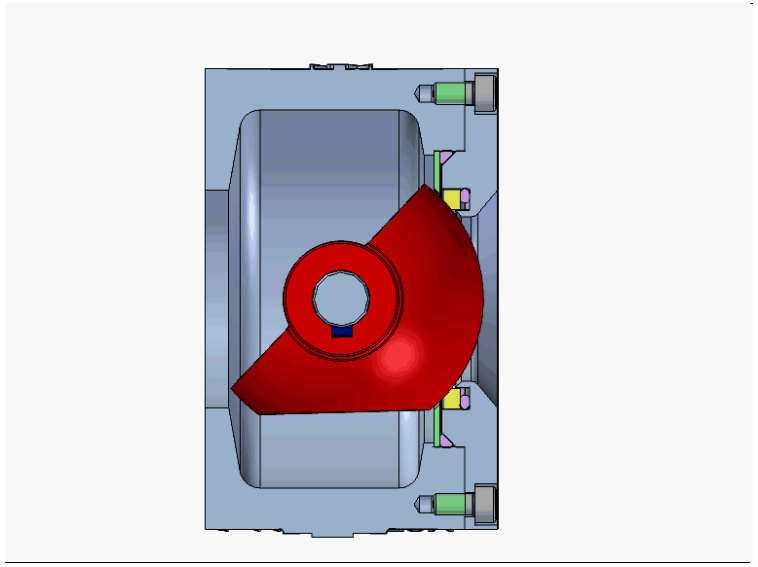
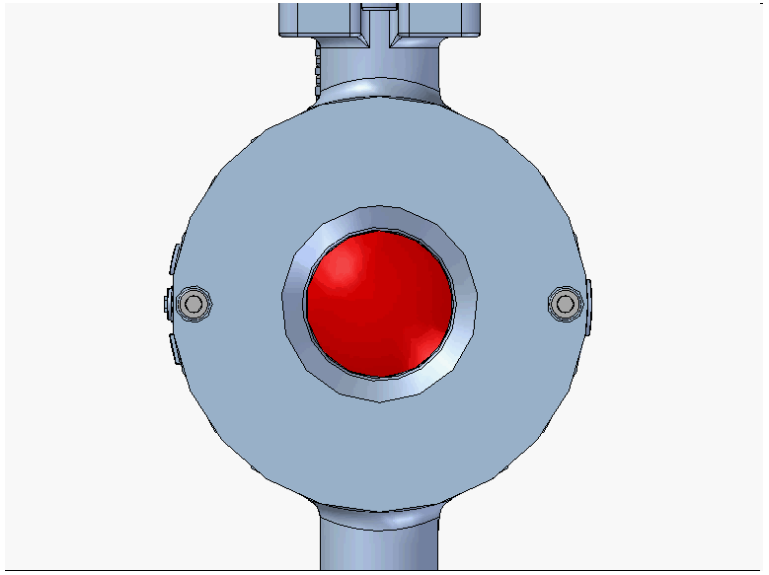
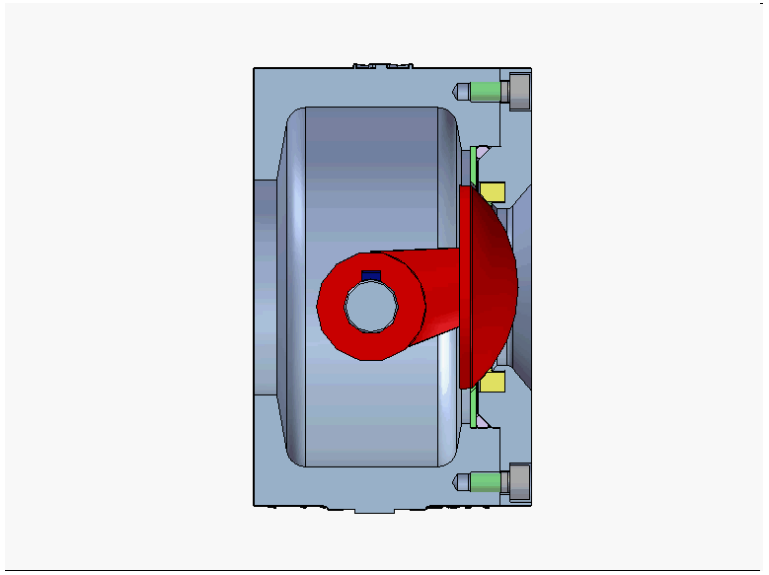
DIFFERENCE BETWEEN A BALL SECTOR VALVE AND A SEGMENTED BALL VALVE





Ball Sector Valve

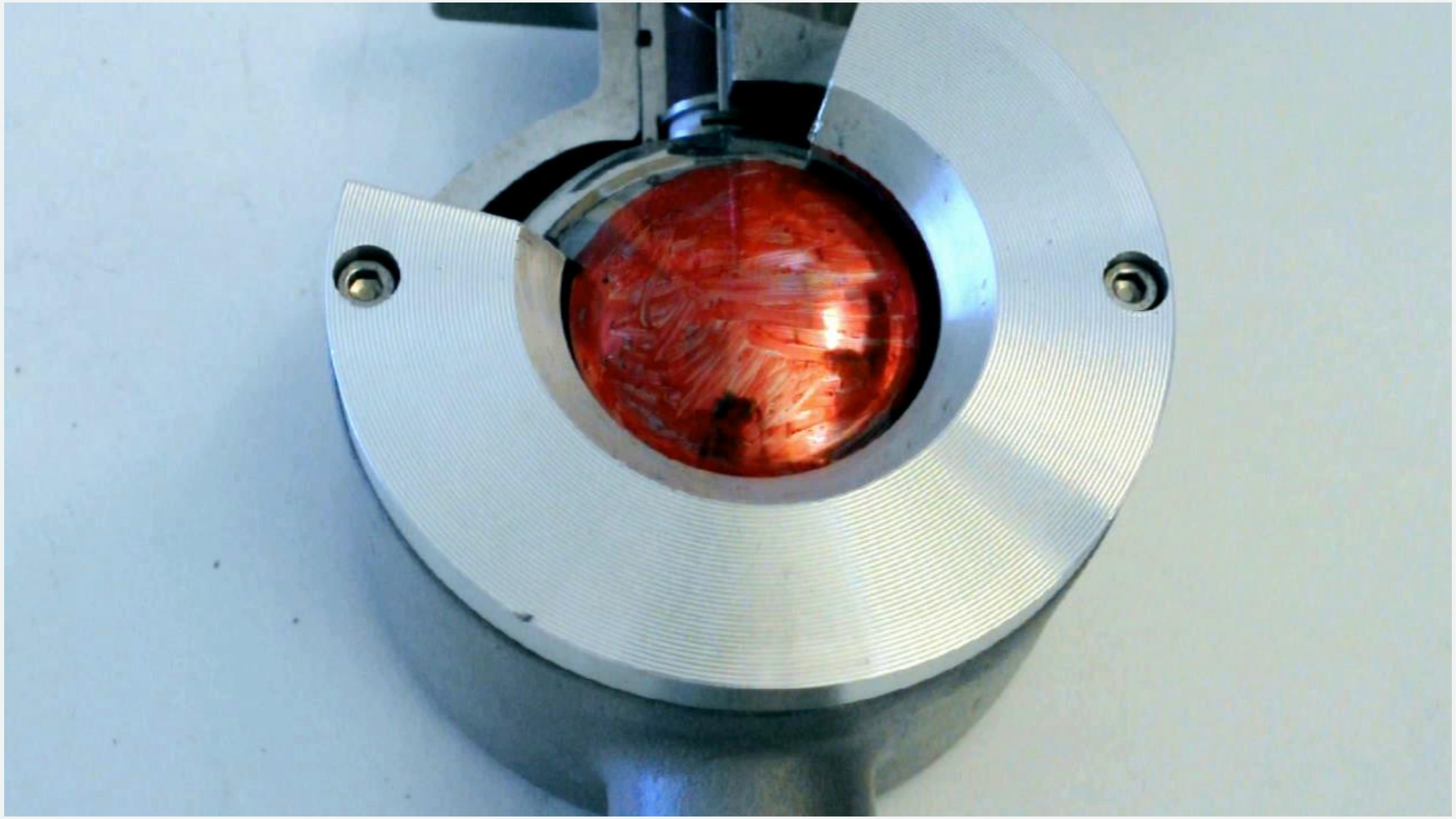




Segmented Ball Valve

BALL SECTOR VALVE VS OTHER TYPE OF VALVES

Better resistance to wear compared to other types



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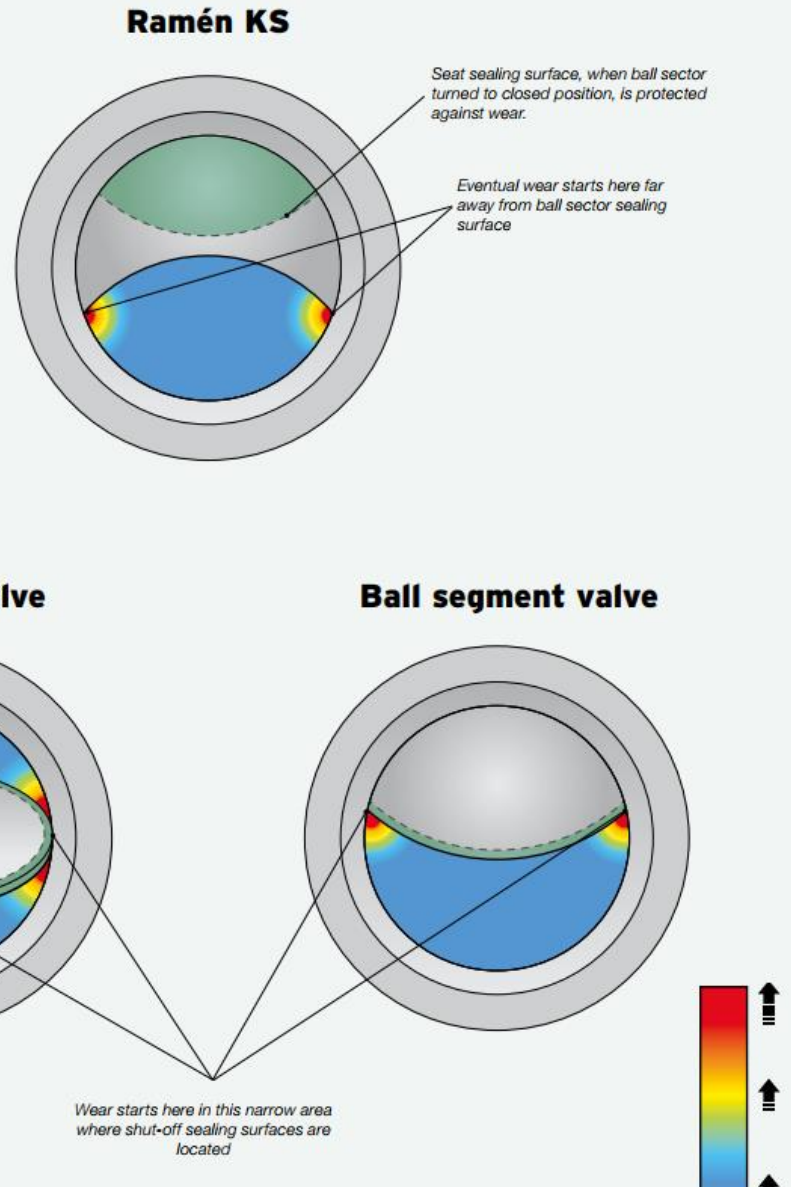

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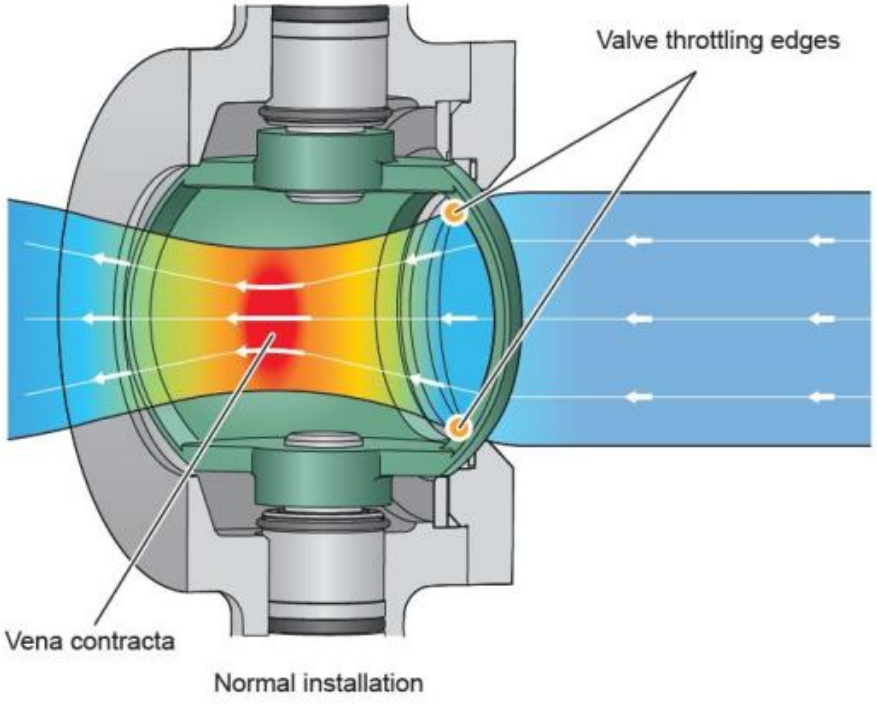
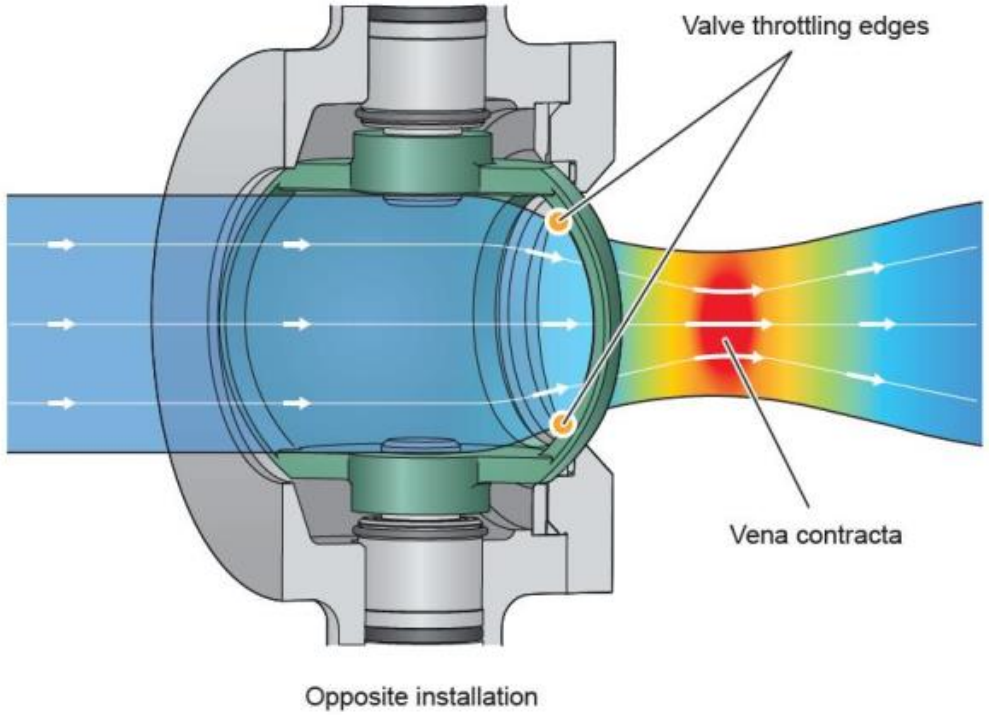
BALL SECTOR VALVE – BIDIRECTIONAL DESIGN

Ball sector valves are normally installed with the ball sector control opening on the inlet side of the valve. Thanks to the valve being tight in both directions, it is possible to mount the valve in the opposite direction, so with the control opening in the outlet. As a result, the speed is reduced in the valve body and thus the risk of wear in the valve body is reduced.

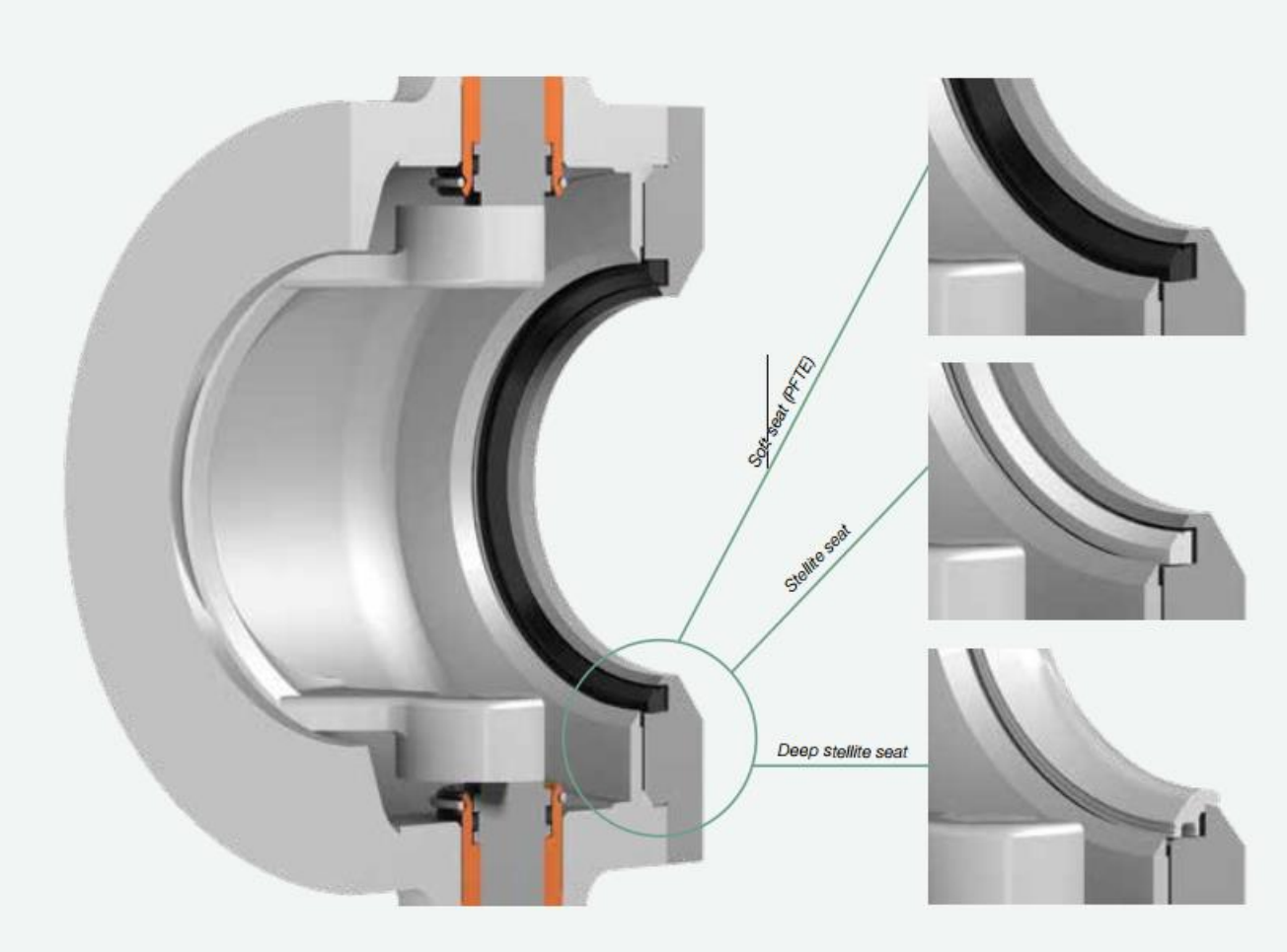


Forward Flow Direction



Reverse Flow Direction

Different Seat Executions



KS-1 (Soft seal seat in PTFE)
Valve body and ball sector in stainless steel and carbon-reinforced PTFE seat. Optimal for clean liquids and gases at moderate pressure ranges, pressure drops and temperatures.

KS-1 (Soft seal seat in PTFE)
Hard-chromed ball sector and a soft-seal PTFE seat that ensures Class VI shutdown. The model is optimal for slightly polluted media.

KS-1B (Seat in Stellite)
Hard-chromed ball sector and metal seat. The model is optimal for abrasive media that contain solid particles, as well as at higher speeds and temperatures.

KS-1C (Seat in Stellite)
Metal seat with hard-chromed ball sector and seat holding ring. Used for abrasive media and in applications with high speeds, high differential pressures and incipient cavitation..

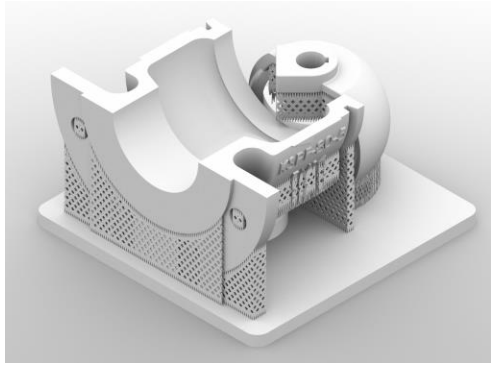
KS-1E (Deep stellite Seat)
Deep metal seat, which gives a long service life in applications with very abrasive media that contain particles, and where there is a risk of cavitation.

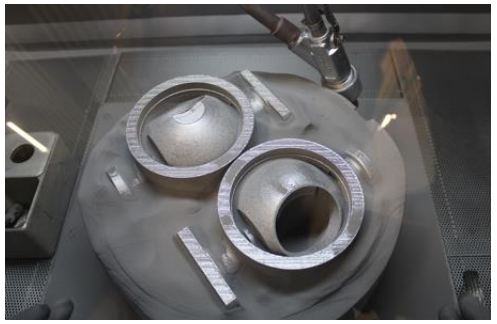
OTHER MODELS

KSG/KSGF

Rubber-lined design

- All wetted part lined with Polyurethane (PUR) and Natural Rubber(NR)
- Application in mining, municipal water, waste water, slurry applications
- DN80 (3’’)– DN200 (8’’)
- Max 5barg working pressure
- Max 60C operating temperature





3D KS

Ball Sector Valve in titan made from additive manufacturing

- For corrosive and hazardous media
- DN40 (1 ½’’) - DN200 (8’’)
- Up to PN40

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RAMÉN KSC – Complete solution

The Ramén KSC series is a brand-new innovative 2 in 1 valve solution that can be used for both control and ON/OFF applications

Capacity. High flow capacity and rangeability. Control from 0-100% opening with 300:1 rangeability.
This means 1 valve can be used even for applications having different flow requirements

Compact. Compact design & low installation weight. Because of the wafer design, the valve is a low weight solution with easy installation and limited stress on the piping.

Cost efficient. Exclude your automated ON/OFF valve. With KSC you only need one valve. Other than that, you will avoid any process loss and increase the efficiency of the process

Control. The valve has an inherent equal percentage characteristic, to manage any process, independently of the deltaP. Due to the trunnion mounting and the zero backlash coupling, the valve also has no hysteresis and offer an excellent repeatability.

COMMON APPLICATIONS

- Industrial Gases
- Pulp and paper
- Mining
- Steel
- Chemical / Fertilizer plants
- Water / Waste water
- Energy
- Food and Beverage
- Marine

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TO THINK ABOUT WHEN CHOOSING THE CONTROL VALVE

5 basic process data for sizing

- Media
- Flow rate: Min/Norm/Max
- Temperature at valve inlet
- Inlet (head) pressure
- Outlet (back) pressure or maximum allowable pressure drop over the valve

Other valuable data for optimal sizing

- Pressure drop at closed valve and at minimum and maximum flow
- Fluid parameters such as density, viscosity, concentration and presence of abrasive particles
- Pipe size and material
- Preference of valve material in media-wetted parts
- Type of actuator
- Type of positioner
- Accessories such as spring-return solenoid valves, limit switches, potentiometers, air filter regulators etc.

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SIZING

Kv/Cv
Valve size
Valve opening
Noise
Speed
Cavitation?
Chocked flow?
Automation Selection
Material selection

Thanks for your attention!
Questions?

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