

WE APPRECIATE WHAT THE FOREST PROVIDES

Control valve solutions for the pulp and paper industry



Ramén Valves

Control Made in Sweden

About Ramén valves

Ramén Ball Sector Valve Type KS, designed and manufactured in Sweden was introduced in 1967 and since then thousands of valves have been installed in multiple industries such as pulp and paper, mining, chemical, gas, marine and offshore, water and wastewater treatment. The design and construction technique of Ramén KS series are based on long and diversified practice in harsh applications and environments. Ramén KS has proved to be advantageous for tight shut off and for throttling control of gases, liquids and slurries at moderate pressure and temperature conditions.



Control valves for the pulp and paper industry

Ramén has solid experience in delivering valves to the pulp and paper industry with challenging operations due to erosive, corrosive and high cycle services. In fact our valves was first developed for use in the Swedish pulp and paper industry in the 1960's to accurately control fibre suspensions. Some of the most demanding applications include medias such as calcium carbonate, lime, slurries and white, green and black liquor. These circumstances require a careful valve selection with consideration to design features, abrasion resistance and wetted trim requirements.

Features & benefits

- Compact and robust design with minimum maintenance
- Handling all fibre suspensions even with highest consistency
- Centric operating meaning no fibres or particles get stuck between the seat and the ball sector
- Self-cleaning, improving productivity and reducing maintenance downtime
- Preventing pulp dehydration due to elliptic opening of the valve especially at small openings
- Easy automation with small actuators due to low torque operation
- No contact between the bearing and the fluid
- Easy to maintain and replace the seat without disassembling the valve and the actuator

We handle

Bleached Pulp

Bleached fibre suspensions

Recycled Pulp

Recycled fibre dissolved in water

ClO₂ - Chlorine dioxide

Bleaching process

Basis weight

Throttling of pulp with high accuracy and speed

Liquor

Black, green and white liquor flow

Steam

Temperature control

Controlability simpler, wider and less cost

Quarter turn movement gives simpler and less expensive control possibilities. The trunnion design with the significant elliptical to circular opening enables 300:1 rangeability and gives a chance for process designers to avoid higher required quantities of valves, providing an accurate wide range and affordable control.

Reliability solid design for minimum operating cost

Compact design with protected stem gives an excellent maintenance free choice for users in heavy industries. Rigid designed valve made of high quality materials guarantees a long life time, high performance valve with optimized life cycle cost. The unique Ball Sector design enables a constant seat support and seat protection in open position. With tight shut off and self draining construction it creates a safe operation for all types of isolating and control applications.

Flexibility simply fit

Ramén Ball Sector valves can easily be fitted with an electrical, pneumatic, hydraulic or hybrid actuator. Valves can be simply ordered in wide range of materials like rubber lined cast iron, stainless steel, Duplex, super Duplex, SMO, Hastelloy and titanium. The Ball Sector Valves can be delivered in wafer and flanged design according to ANSI, DIN/EN, ISO, API, JIS or other standards. Standard connection for Ramén KS 25-250 is wafer type which makes it an easy fit on new and existing plants, saving extra material and cost. The KS 300 comes with flanges.

Ramén Ball Sector valves are made of high quality and certified materials based on the client requirements like EN, ISO material certifications. Ball Sector valves can be fitted with noise reduction trims, to comply with customers' noise limit criteria. Ramén KS valves have been granted Pressure Equipment Directive (PED) category II module D1 certification and can also be certified by different third party/classification societies if required.

Sustainability intelligent design, environmentally friendly

Ramén KS valves presents a creative design to minimize the required material of construction, reducing the environmental impact. Low maintenance valve with minimum requirement for spare parts leaves an environmentally friendly solution through the plant life cycle. Ball sector valves provide higher C_v (K_{vs}) value and rangeability compared to other valve types which can substantially reduce the size and number of valves, saving cost and material at the same time.



Construction principle

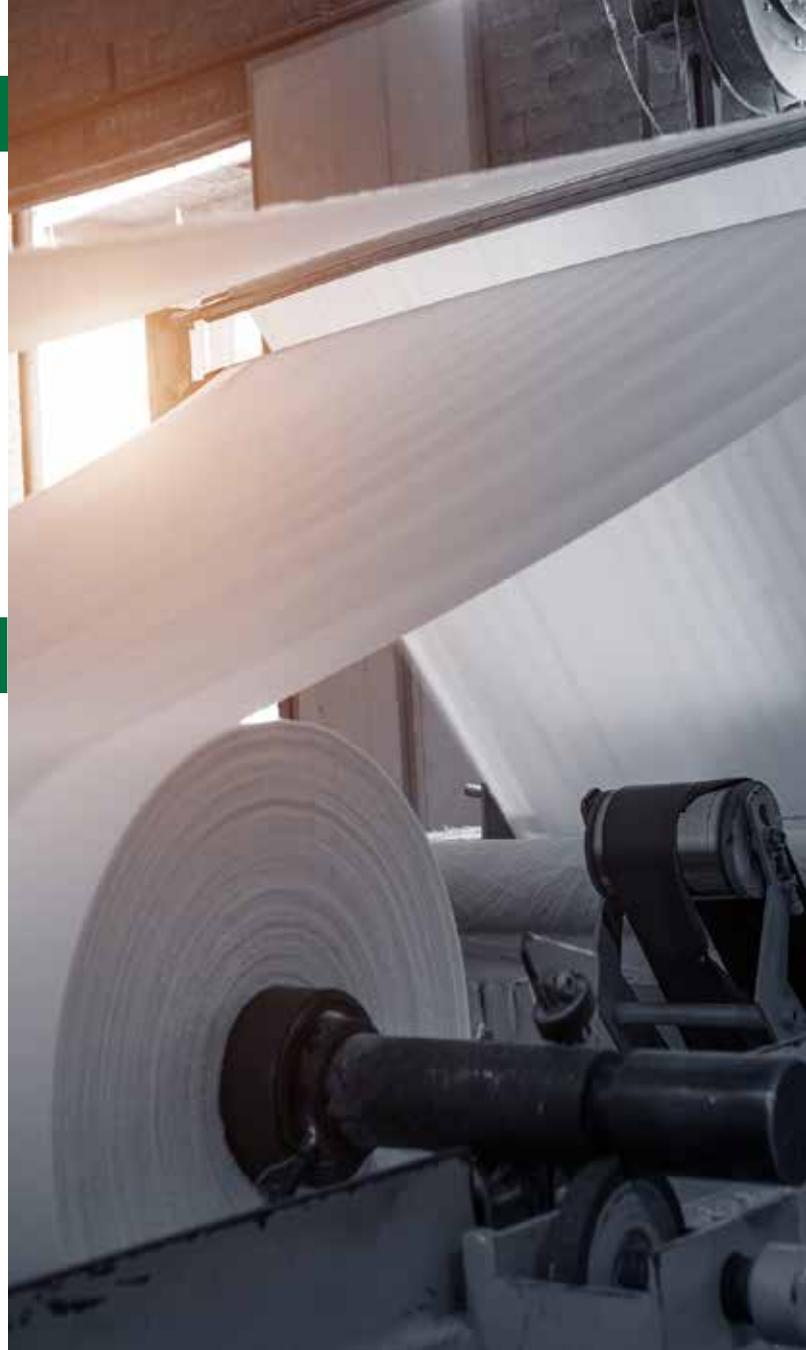
Ramén Ball Sector Valve is made from a ball sector which via two shafts is journal led in the valve body. One part of the ball sector sphere is used for shut-off. The other part of the sphere has a hole with a diameter, which is about 80% of the nominal valve size.

The ball sector is turned through 90° on operation from open to fully closed. The shape of the valve opening (flow area) is thereby changing from fully circular to elliptical. The circular opening reduces the risk of plugging and is less subject to wear in throttling position than the more slot-like flow in certain other types of control valves.

Throttling control characteristics

It is important to observe the difference between inherent valve flow characteristic at constant pressure drop and installed valve flow characteristic at varying pressure drop. The left hand diagram below (Fig. 1) presents the inherent flow characteristic of Ramén KS for air and water when pressure drop is constant. It is near to equal percentage. Shown also for comparison is the characteristic of a linear valve.

The right hand diagram (Fig. 2) presents the installed characteristic for the same valves when installed in a control loop where the valve pressure drop increases when the valve is closing. An equal percentage characteristic becomes more like linear. A linear characteristic becomes more like quick opening. The more the pressure drop is changing for a certain change of flow, the more the installed characteristic is altered. The comparison shows that the installed flow characteristic of Ramén KS is very suitable for the majority of all control valve installations with its equal percentage characteristics.



— Ramén KS DN 100, water
— Ramén KS DN 100, air
— Other valve - linear

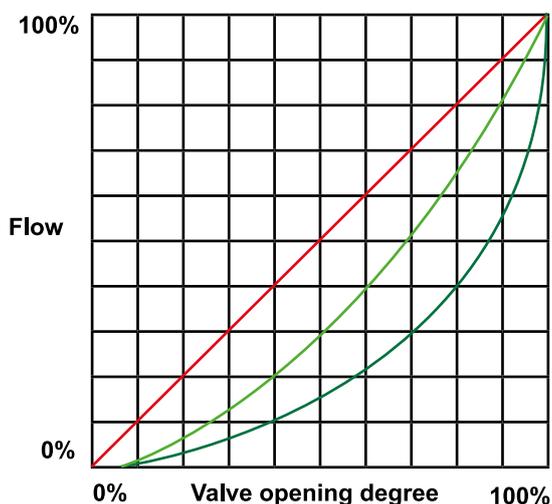


Fig. 1 Inherent flow characteristic at constant pressure drop

— Ramén KS DN 100, water
— Ramén KS DN 100, air
— Other valve - linear

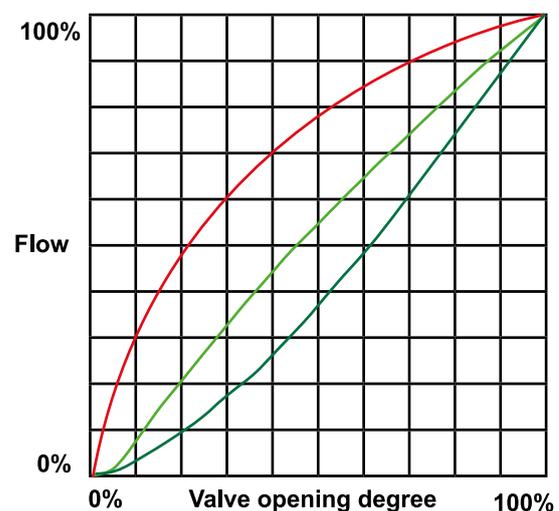


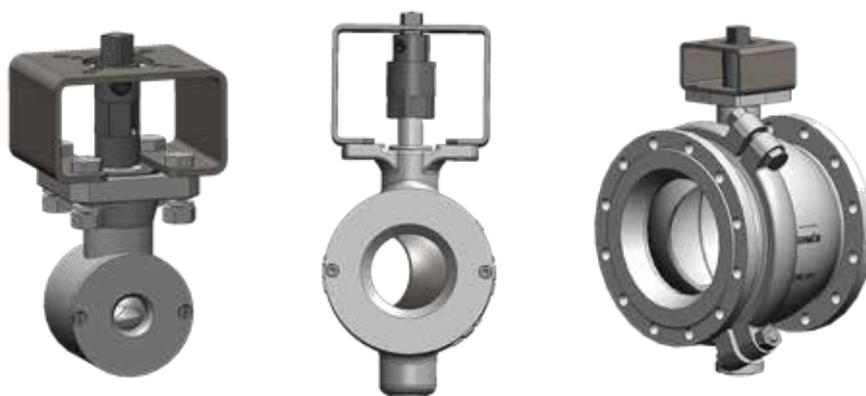
Fig. 2 Example of installed flow characteristic with increasing pressure drop on closing valve

DN	25	40	50	80	100	150	200	250	300	
K_{vs} [m ³ /h]	0,025-21	34-64	94	255	390	810	1365	2220	3840	
C_v [gpm]	0,03-25	40-75	110	300	460	950	1600	2600	4500	
Actuator torque [Nm]	Recommended	20-50	30-90	30-90	80-200	80-200	160-400	160-400	250-600	700-1200
	Max.	100	100	100	200	200	400	400	700	2000

Technical specifications

Design	Flangeless, wafertype (size DN 300 flanged)	
Nominal sizes	DN 25 - DN 300	1"-12"
Material	Body	EN 1.4409 AISI 316L
	Shafts	EN 1.4460 AISI 329
	Ball Sector	EN 1.4409+Cr* AISI 316L+Cr*
	O-rings	Viton®
	Bearing	Rulon®
Nominal pressure	DN 25 - DN 50	PN 40 (for flange PN 10/40 and ANSI 150/300/600)
	DN 80 - DN 100	PN 25 (for flange PN 10/25 and ANSI 150/300)
	DN 150 - DN 250	PN 16 (for flange PN 10/16 and ANSI 150)
	DN 300	PN 16 (Flanged PN 16 or ANSI 150)
Operating temperature	- 40° C to +250° C	- 40° F to +482° F
Leakage class according to EN60534-4	Soft seat: VI Metal seat: IV	
Characteristic	Equal percentage	
Rangeability	300:1	
Seat	Soft seat: PTFE (Carbon/graphite reinforced) Metal seat: Stellite	
Options	O-rings	EPDM, Nitril, Kalrez®, Viton GLT, EPDM 90
	Alloy steels	254 SMO, Hastelloy, Duplex, Super Duplex, Titanium grade 5
	Seat	White PTFE, PEEK, FDA Approved

* Hard chromed ball sector



Ramén KS DN 25/80/300, 3D animations

Industrial automation requires accurate and repetitive control with highest turn down ratio. Ramén supplies different types of automation to meet these criteria's from well-known global brands. All automation solutions supplied by Ramén are thoroughly tested with our valve technology to meet the most demanding requirements.

Automation options

- Pneumatic actuator DA (Double Acting) or SR (Spring Return)
- Digital/Electro pneumatic/Pneumatic positioner
- Electrical actuator
- Hydraulic actuator



Pneumatic actuators, double acting or fail safe spring return with digital or pneumatic positioner for robust easy operations. Positioners offer options for feedback signal, HART, ATEX, Industrial bus systems like Profibus, FF etc.

Electrical actuators with integrated positioner for simple installation in any power system. Can be supplied with different options feedback signal, HART, ATEX, Industrial bus systems like Profibus, FF etc.



Electrical actuators with stepper motor for high end solutions to solve the most demanding applications where accuracy, repeatability and rangeability is essential.



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