

IOM Ramén Ball Sector Valve type KS DN 25



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Safety instructions

WARNING!

Risk for serious injury when valve with actuator is bench tested. Avoid handling the valve with hands or fingers inside the valve! Be very careful when handling a valve which has been in abrasive service. Worn valve can have sharp edges on ball sector and seat.

Function

Ramén Ball Sector valve KS-25 is a small control valve that offers 9 different trims for versatile solutions. To enable high accuracy and rangeability with zero hysteresis the KS-25 trims are engineered with individual geometries, enabling an outstanding performance in low flow control of liquids and gases.

IMPORTANT!

Valves can be used for temperatures from -40°C to +200°C (+250°C). The exact temperature range is always depending on pressure, media and sealing material. Always contact your valve supplier if pressure, media and sealing material changes. See page 4 for tables with pressure and temperature limits.

Valve acceptance inspection

Make sure that the valve has not been damaged during transport and that it is complying to your order. Valve body is marked with type, pressure class PN, size DN, flow arrow, material code and serial number.

Identification of valve

Valve size and material combination can be identified by marking code on the valve body according to the following example:

PN 16	= Pressure class PN
→	= standard flow direction
KS	= Type
DN 25	= Valve size DN
1	= Material combination as per below table
EN 1.4409	= Material in body
A19xxxx	= Serial number (where 19 is year of production)

Storing

Valve shall be stored in a clean and dry area preventing corrosion and fouling. It shall be operated to fully open position. Protection plates shall not be removed until the valve shall be mounted.

Valve material and execution codes

The valve body has an execution code stamped in per following table.

Code number	1A	1B	1C	1E
Body (Item 1)	EN 1.4460	EN 1.4460	EN 1.4460	EN 1.4460
Flange (item 1A)	EN 1.4409	EN 1.4409	EN 1.4409	EN 1.4409
Ball Sector + Shafts (Item 3)	EN 1.4460 + Hard chrome	EN 1.4460 + Hard chrome	EN 1.4460 + Hard chrome	EN 1.4460 + Hard chrome
Seat holding ring (Item 2)	EN 1.4460	EN 1.4460	EN 1.4460 + Hard chrome	EN 1.4460 + Hard chrome
Seat ring (Item 10)	Carbon/graphite filled PTFE	Stellite	Stellite	Stellite deep execution
Shaft bearing (item 9)	Standard= modified TFE (LR) Special= SST/PTFE compound (MP)			
Shaft sealing type KS o-ring (Item 13+14) standard	Viton	Viton	Viton	Viton
Seat back-up o-ring (Item 15) standard	Viton	Viton	Viton	Viton
Sealing between inlet cover ring and body (Item 16) standard	Viton	Viton	Viton	Viton

Pressure and temperature limits

Temperature related max working pressure in bar for material EN 1.4460:

PN	-40°C	+20°C	+50°C	+75°C	+100°C	+150°C	+200°C	+250°C
PN10	10	10	9	8,5	8	7,5	7	7
PN16	16	16	14,5	13,5	13	12	11,5	11
PN25	25	25	23	21,5	20,5	19	18	17,5
PN40	40	40	37	35	33	31	29	28

Temperature limits for seat- and sealing material

Material	O-ring seals (Type KS)					Seat ring	
	Viton (standard)	Viton GLT (L)	EPDM Peroxi de (P)	Kalrez (K)	Vitoflon (T)	PTFE carbon/graphite	Stellite
Min temperature	-10°C	-40°C	-20°C	-10°C	-10°C	-40°C	-40°C
Max temperature	+170°C	+170°C	+120°C (+140°C)	+200°C (+250°C)*	+200°C	+170°C	+200°C (+250°C)*

*with shaft bearing material MP (option)

For other materials please contact Ramén Valves AB or your valve supplier.

Temperature limits for shaft bearing material

Material	Standard (type LR)	Option (type MP)
Min temperature	-40°C	-40°C
Max temperature	+200°C	+250°C

Attention!

The temperature limits for sealing material varies depending on which type of media and pressure it will be exposed to. Contact the manufacturer of sealing material or your valve supplier in all cases of hesitation.

Installation

Valve actuator

The valve is normally equipped with an actuator. Depending on the application it can be a hand lever or a remotely controlled pneumatic or electric actuator. The actuator may have limit switches (on-off application) or positioner (continuous control).

Installation

This product shall only be inspected, installed and used by a person who has relevant training or experience. If any questions or hesitation, contact your valve supplier or Ramén Valves AB.

If the valve shall be equipped with actuator this shall be done before installation in the pipe line. Separate instruction is supplied on request.

Before installation of the valve, check that the valve data is in conformity with actual type of service with reference to media, pressure and temperature.

If the valve shall be used as shut-off valve against atmosphere at the end of the pipe, where possible leakage can cause person injury or property damage, there are special limits for max working pressure and, if necessary, demands on blocking the actuator. Contact your valve supplier.

Piping shall be thoroughly cleaned. Check that the pipe flanges are parallel and that the piping system can not be subject to uncontrolled forces caused by pressure peaks, or pipe forces caused by variations in temperature.

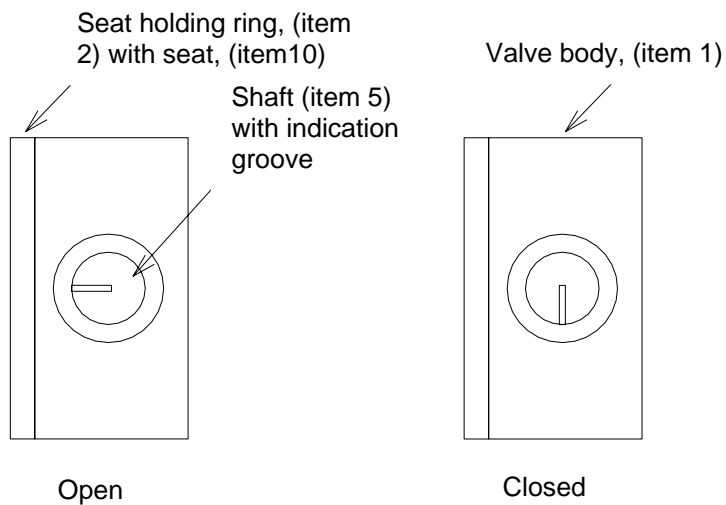
The valve shall be operated into fully open position after installation and the pipe system be properly flushed before put into service.

IMPORTANT!

Install the valve in such position that injury on person, or damage on property, is avoided in case of leakage from sealing or flange joints. Also, make sure that, in case of leakage, inflammable media do not come in contact with electrical components or hot surfaces which can cause fire or damage on property.

Valve position indication

The actual position of the ball sector can be defined on the lower shaft end, opposite to the actuator:



Flow direction

The valve's performance is equal regardless of flow direction. Although it is recommended that the valve is mounted according to the flow direction arrow.

Startup

The valve shall be operated and controlled that closing- and opening functions are correct before start-up. Check that the valve operates within its max- and min-positions. Limit-switches, positioner, feed-back signal and torque switches shall be checked for correct function.

Start-up shall be done gradually and under careful attention. If water hammer, leakage, cavitation or noise occurs in the system they have to be eliminated before they cause any harm.

Dismounting from pipeline

Before the valve is dismantled from the pipe, all wiring in form of power supply and control signals as well as supply air has to be disconnected. If the valve is equipped with spring closing/opening actuator thoroughly check that the valve has taken its fully closed or opened position.

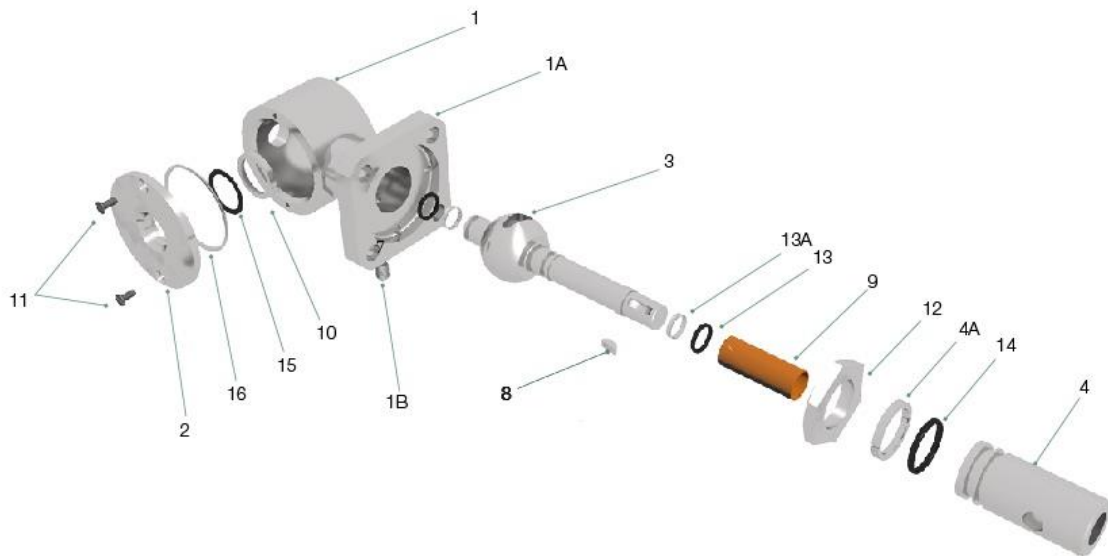
Attention!

Check that the pipe is depressurized and drained. Great caution must be taken when there is a risk for toxic or corrosive media is captured in the valve!

Maintenance

Ramén Ball Sector valve requires no lubrication and a minimum of maintenance. If any part of the valve should become damaged it can be replaced by a spare part. Spare parts are obtained from the valve distributor. Any spare parts order must indicate valve type (KS), size (DN), material combination and item number according to the spare parts list.

Disassembly



DN 25 (1")

- a) Loosen and remove screws (11) and inlet cover ring (2).
- b) Lift out seat ring (10) carefully from its groove using a pointed tool. and the O-rings (15 and 16).
- c) Loosen the nut (12) and pull out fastening flange (1A).
- d) Push bearing sleeve (4) into the valve and remove split ring (4A).
- e) Pull bearing sleeve (4) out from the valve body (1), and shaft with ball sector (3) out from the bearing sleeve (4).
- f) Remove Rulon bearing (9) from the shaft (3).
- g) Remove O-rings (13 and 14). Be careful not to damage sliding ring (13A). See "Reassembly"
- h) Remove the ball sector (3) from the valve body (1).

Reassembly

Proceed in reverse order. O-rings (13, 14 15 and 16) shall be lubricated with suitable grease before reassembling. Please note "Important when assembling" below. If the o-rings show sign of wear or other damage, check if the most appropriate o-ring material has been used. Check the sliding ring (13A) replace if necessary. The sliding ring is not necessary for the valve function but will increase the efficiency and life of the shaft seal. Proper mounting of the sliding ring may be done only with the appropriate tool as shown in fig 2.

DN25 (1")

- a) Check carefully that the groove for the o-rings (13 and 14) is clean and free from damage. Also check the conical entrance on the bearing sleeve and lower shaft hole on the body.
- b) Apply silicon grease generously on the O-rings before assembling. Mount the sliding rings (13A), and the ball sector (3) with tool shown in fig 2.
- c) Mount o-ring (13) on the **drive shaft** but **not** on the lower shaft. Insert the drive shaft into the big inlet hole in the body and then into the big shaft hole so that the ball sector now is in the body.
- d) Mount O-ring (14) on bearing sleeve (4) and roll up the bearing (9) on its place in the bearing sleeve. Carefully mount the bearing sleeve on the drive shaft taking notice that the bearing (9) and O-ring (13) not is damaged.
- e) Mount the split ring (4A) in its groove on the bearing sleeve(4) then push the bearing sleeve out from the body until the split ring meets the valve body. Hold the bearing sleeve in this position and push the lower shaft through its hole in the body as much as it needs to mount the O-ring (13) from the outside of the valve body. Apply lubricant generously.
- f) **With greatest care,** push the shaft and O-ring into its place in the valve body using a proper tool, f. ex. the sliding ring tool, see fig 2. Use the tool to push the O-ring, alternately pull the shaft, until the O-ring reaches its sealing position. This position is reached when the ball sector sphere are in the middle of the body.
- g) Mount O-ring (15) and seat (10) in the holding ring (2) and O-ring (16). Turn the ball sector clockwise into closed position.
- h) Mount the seat holding ring with screws (11). Check that the seat holding ring is in full contact with body. Eventually the holding ring can be pressed to the body with help of a jaw vice with soft grips.
- i) Turn the bearing sleeve so that the hole for the stop screw (1B) pointing in right direction, then push the flange (1A) into position. Mount stop screw (1B) carefully checking that it goes fully into the hole in the bearing sleeve.
- j) Mount the nut (12) slightly with fingers. Fasten the flange (1A) into a vice and tighten nut (12) hard with a box-spanner.
- k) Turn ball sector between open and closed a few times to ensure that the necessary torque is normal, approx 5 Nm, during the hole stroke.

After reassembly

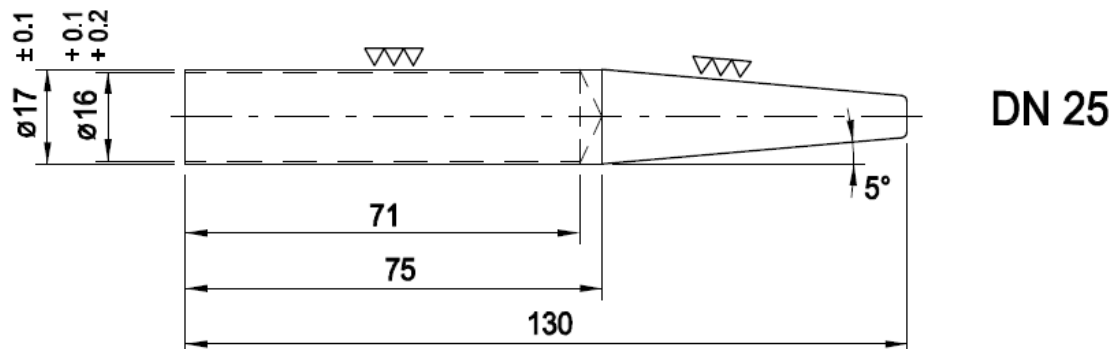
Pressure test the valve with air from the valves outlet side and with the valve closed. The valve immersed in water or with leakage spray shall be bubble tight over shaft seals and seat. I small bubbles can be detected around the shafts it can be enough to actuate the valve a few times allowing the O-rings to find its correct position. If the valve still leaks the o-ring has been damaged and must be changed. Valves with PTFE-seat shall be bubble tight in both directions. Valves with stellited seat will never be bubble tight. These valves can be tested with water. Max leakage for a new valve is 0,01% of the valves C_v / K_v s-value.

Mounting actuator on the valve

See separate document "Instruction and guidelines for mounting of pneumatic actuator on Ramén Ball Sector Vavles type KS (1907)". The document can be provided by your valve supplier.

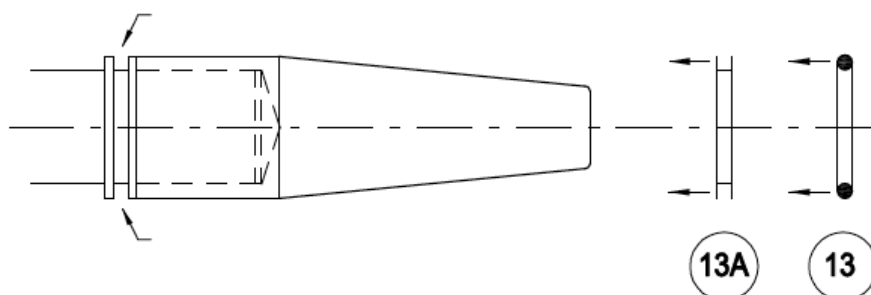
Assembly tools

Tools for assembly of O-ring and sliding ring. Dimensions specified in mm.



How to use the tool

- 13A= Sliding ring
- 13= O-ring



Tool for mounting shaft and drive shaft

