

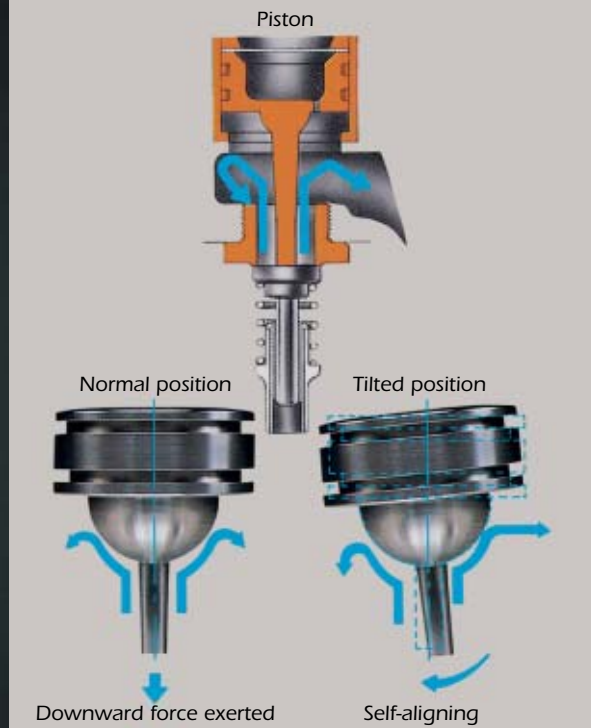
# TLV®

## STEAM PRESSURE REDUCING VALVES

### COSR-3 COSR-16 COSR-21



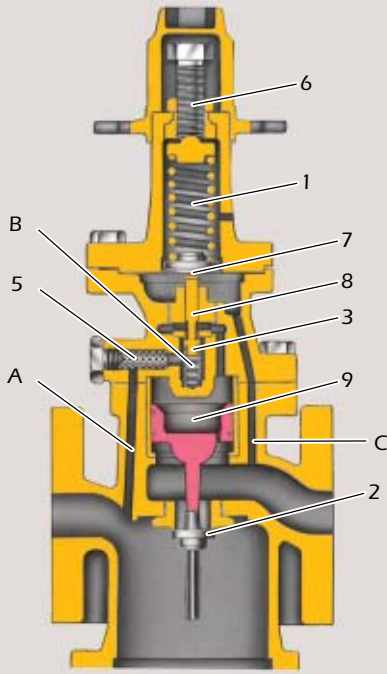
SAS: Shock Absorbing Spherical Piston



### Features

- The shock absorbing spherical (**SAS**) piston maintains the secondary pressure with high accuracy.
- Stable secondary pressure can be maintained, even with fluctuations in primary pressure or flow rate.
- Self-aligning feature allows the piston to move smoothly, resulting in accurate responsive control.
- Internal primary and secondary pressure sensing channels make external sensing line attachments to the valve unnecessary for most applications.
- All key internal parts are made of stainless steel.
- Motorized type (**M-COSR**) and computerized (**MC-COSR**) valves are also available.

# How It Works



Until upper coil spring (1) is compressed, main valve (2) and pilot valve (3) are closed. Steam enters through passage (A), passes through screen (5) and enters pilot chamber (B).

When secondary pressure is set by tightening adjusting screw (6), upper coil spring (1) is compressed and diaphragm (7) flexes, forcing pilot guide (8) to open pilot valve (3). Steam enters chamber above piston (9), forcing it down. Main valve (2) opens the orifice, providing steam to the secondary side.

Some steam, entering the outlet side, flows through outlet pressure passage (C) into a chamber below the diaphragm (7), and lifts it. The position of pilot valve (3) is then determined by the balance of the upward force on the diaphragm with the downward force of upper coil spring (1). Thus the preset secondary steam pressure itself adjusts the force applied to the piston (9) and the opening of the main valve (2). Secondary pressure remains stable at all times.

## Standard Specifications

Model	COSR-3		COSR-16		COSR-21	
	Cast Iron	Ductile Cast Iron	Cast Iron	Ductile Cast Iron	Ductile Cast Iron	
Body Material*	Cast Iron		Cast Iron		Ductile Cast Iron	
Connection	Screwed	Flanged		Screwed	Flanged	
		ASME	DIN		ASME	DIN
Size (mm)	20, 25	20, 25, 32, 40, 50	15, 20, 25, 40, 50	15, 20, 25, 32, 40, 50, 65, 80, 100, 125**, 150	15, 20, 25, 32, 40, 50, 65, 80, 100	
Max. Operating Pressure (MPaG) PMO	0.3		1.6		2.1	
Max. Operating Temperature (°C) TMO	220		220		220	
Primary Pressure Range (MPaG)	0.1 – 0.3		0.2 – 1.6		1.35 – 2.1	
Adjustable Pressure Range (all conditions must be met)	0.01 – 0.05 MPaG		Within 10 - 84% of primary pressure but with minimum pressure of 0.03 MPaG		From 0.55 MPaG to 84% of primary pressure	
	—		Differential pressure between 0.07 – 0.85 MPa		Maximum differential pressure 0.85 MPa	
Minimum Adjustable Flow Rate	5% of rated flow rate***		5% of rated flow rate*** (65 mm and larger: 10% of rated flow rate***)			

\* COSR-3 flanged: cast stainless steel sizes 20, 25, 40, 50 available on request  
 COSR-16 flanged: cast stainless steel sizes 15, 20, 25, 40, 50 (ASME and DIN) and cast steel sizes 65 & 80 (DIN) available on request  
 \*\* Not available with DIN \*\*\* See SDS (Specification Data Sheet) for rated flow rate

1 MPa = 10.197 kg/cm<sup>2</sup> = 10 bar

PRESSURE SHELL DESIGN CONDITIONS (NOT OPERATING CONDITIONS): Maximum Allowable Pressure (MPaG): PMA: 1.6 (Cast Iron), 2.1 (Ductile Cast Iron)  
 Maximum Allowable Temperature (°C) TMA: 220

**CAUTION** To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

## Dimensions

Size (DN)	COSR-3/COSR-16 Screwed, Flanged (mm)							COSR-21 Flanged (mm)										
	Screwed Rc(PT)	L				H	H <sub>i</sub>	Weight** (kg)	Size (DN)	L			H	H <sub>i</sub>	H	H <sub>i</sub>	Weight* (kg)	
		125FF (150RF)	150RF	250RF	300RF					PN25/40	ASME Class 150RF 300RF	DIN2501 PN25/40						ASME
(15)	175	—	170	—	170	130	357	285	9.5[10]	(15)	161	167	130	405	305	377	305	11[12]
(20)	—	—	182	—	182	150	—	282	11[11]	(20)	172	178	150	422	302	—	302	13[13]
25	190	176	188	180	192	160	385	295*	13[13]	25	181	187	160	457	322	405	322	15[15]
32	—	206	—	220	220	180	—	302	17[19]	32	212	219	180	490	335	432	335	19[21]
40	220	209	220	222	224	200	412	315	19[20]	40	215	222	200	490	335	432	335	21[22]
50	260	247	255	260	261	230	554	411	26[27]	50	254	260	230	655	430	576	432	26[29]
65	—	362	372	377	378	290	—	—	55[57]	65	371	377	290	768	468	655	470	59[59]
80	—	365	374	383	384	310	633	448	59[58]	80	374	384	310	—	—	—	—	62[60]
100	—	—	434	434	450	350	—	—	95[87]	100	434	450	350	—	—	—	—	95[89]
125	—	—	—	—	456	456	—	—	119[—]	—	—	—	—	—	—	—	—	—
150	—	600	600	622	622	480	810	530	204[180]	—	—	—	—	—	—	—	—	—

Sizes 15 – 25 mm shown. Configuration of larger sizes differs slightly.

( ) No ASME standard exists for cast iron; machined to fit steel flanges  
 Class 125 FF can connect to 150 RF, 250 RF can connect to 300 RF  
 Other standards available, but length and weight may vary  
 \* Screwed \*\* Weight is for Class 300 RF, [ ] DIN PN 25/40

( ) No ASME standard exists for ductile cast iron; machined to fit steel flanges  
 Other standards available, but length and weight may vary  
 \* Weight is for Class 300 RF, [ ] DIN PN 25/40

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 Kakogawa, Japan  
 is approved by LRQA Ltd. to ISO 9001/14001