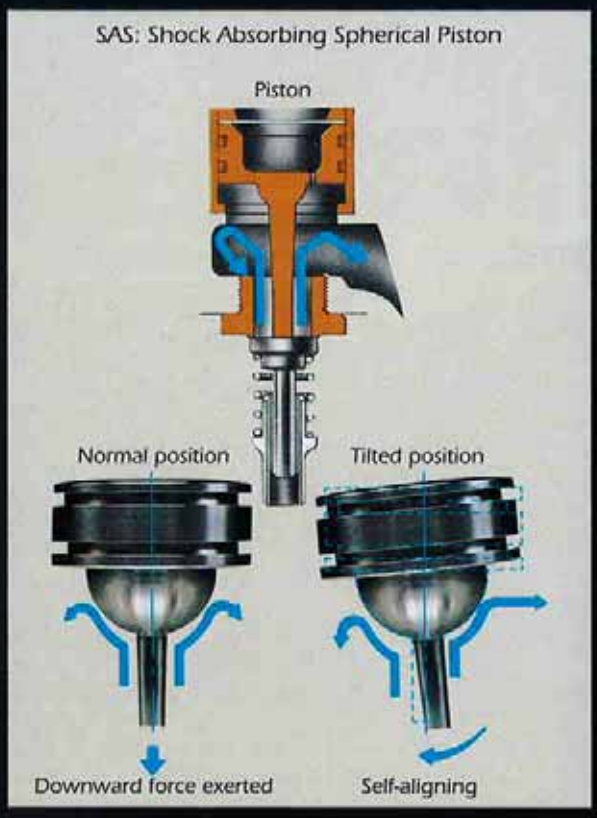
TLV®

STEAM PRESSURE REDUCING VALVES

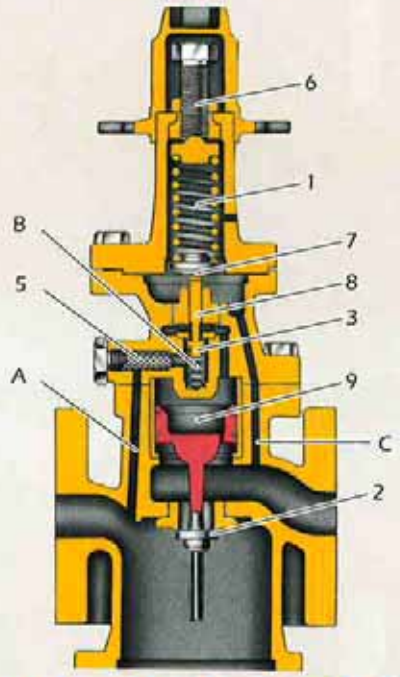
COSR-3
COSR-16
COSR-21



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

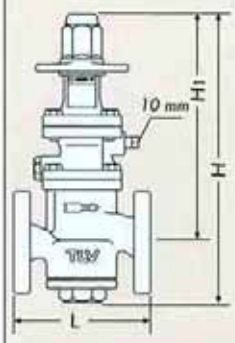
Model	COSR-3			COSR-16			COSR-21	
Body Material*	Cast Iron	Ductile Cast Iron		Cast Iron	Ductile Cast Iron		Ductile Cast Iron	
Connection	Screwed	Flanged		Screwed	Flanged		Flanged	
		ASME	DIN		ASME	DIN	ASME	DIN
Size (mm)	20, 25	20, 25, 32, 40, 50		15, 20, 25, 40, 50	15, 20, 25, 32, 40, 50, 65, 80, 100, 125**, 150		15, 20, 25, 32, 40, 50, 65, 80, 100	
Max. Operating Pressure (MPaG) PMO	0.3			1.57	1.6		2.1	
Max. Operating Temperature (°C) TMO	220			220			220	
Primary Pressure Range (MpaG)	0.1 – 0.3			0.2 – 1.57	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
1 MPa = 10.197 kg/cm² = 10 bar
** Not available with DIN *** See SDS (Specification Data Sheet) for rated flow rate

PRESSURE SHELL DESIGN CONDITIONS (**NOT** OPERATING CONDITIONS): Maximum Allowable Pressure (MPaG): PMA: 1.57 (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



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

COSR-3/COSR-16 Screwed, Flanged (mm)

Size (DN)	L: Screwed Rc(PT)	L: ASME Class 125FF	L: ASME Class 150RF	L: ASME Class 250RF	L: ASME Class 300RF	L: DIN2501 PN25/40	H	H1	Weight** (kg)
(15)	175	—	170	—	170	130	357	285	9.5[10]
(20)		—	182	—	182	150			11[11]
25	190	176	188	180	192	160		282	13[13]
32	220	206	220	220	220	180	385	295*	17[19]
40		209		222	224	200		302	19[20]
50	260	247	255	260	261	230	412	315	26[27]
65	—	362	372	377	378	290	554	411	55[57]
80	—	365	374	383	384	310			59[58]
100	—	434	434	450	450	350	633	448	95[87]
125	—			456	456	—			119[—]
150	—	600	600	622	622	480	810	530	205[204]

[ ] 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

COSR-21 Flanged (mm)

Size (DN)	L: ASME Class 150RF	L: ASME Class 300RF	L: DIN2501 PN25/40	H: ASME	H1: ASME	H: DIN	H1: DIN	Weight* (kg)
(15)	161	167	377	305	405	305	377	305	11[12]
(20)	172	178							13[13]
25	181	187		302	422	302		302	15[15]
32	212	219	405	322	457	322	405	322	19[21]
40	215	222							21[22]
50	254	260	432	335	490	335	432	335	36[29]
65	371	377	576	432	655	430	576	432	59[59]
80	374	384							62[60]
100	434	450	655	470	768	468	655	470	95[89]

[ ] 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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TLV CO.,LTD.
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is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001/ISO 14001