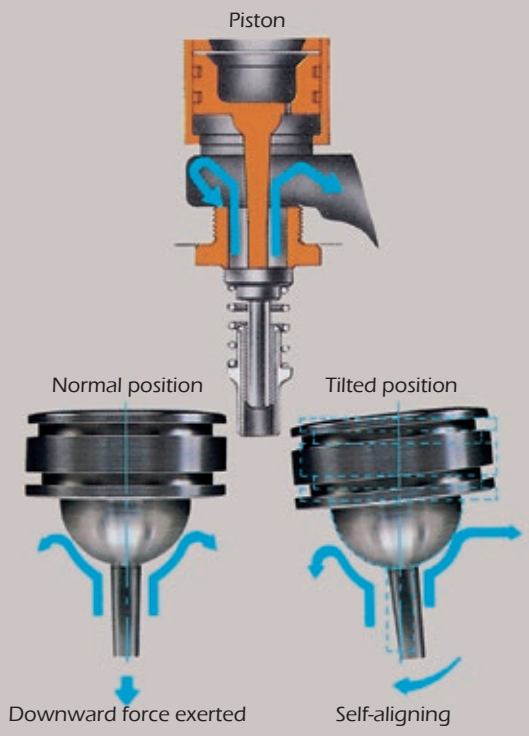
TLV®

STEAM PRESSURE REDUCING VALVES

COSR-3
COSR-16
COSR-16HT
COSR-21

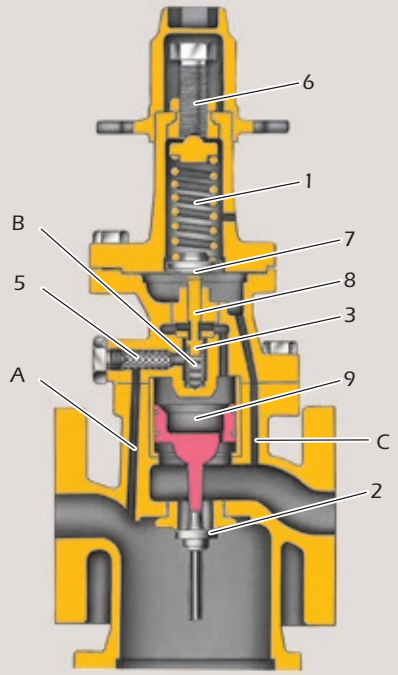
SAS: Shock Absorbing Spherical Piston



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.
- High-temperature model suitable for superheated steam applications. **(COSR-16HT)**
- 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-16HT	COSR-21
Body Material	Cast Iron		Cast Iron		Cast Steel	Ductile Cast Iron
Connection	Screwed	Flanged	Screwed	Flanged	Flanged	Flanged
Size (mm)	20, 25	20, 25, 32, 40, 50	15, 20, 25, 32, 40, 50	15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150	65, 80, 100	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		300	220
Primary Pressure Range (MPaG)	0.1 to 0.3		0.2 to 1.6			1.35 to 2.1
Adjustable Pressure Range (all conditions must be met)	0.01 to 0.05 MPaG		Within 10 to 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 to 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*)			

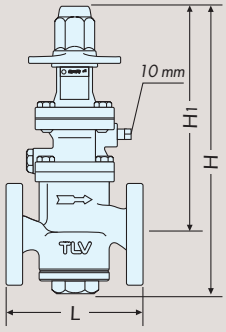
* See SDS (Specification Data Sheet) for rated flow rate

1 MPa = 10.197 kg/cm² = 10 bar

PRESSURE SHELL DESIGN CONDITIONS (**NOT** OPERATING CONDITIONS): Maximum Allowable Pressure (MPaG) PMA: 1.6 (Cast Iron/Cast Steel), 2.1 (Ductile Cast Iron)
Maximum Allowable Temperature (°C) TMA: 220 (Cast Iron/Ductile Cast Iron), 330 (Cast Steel)

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 to 25 mm shown. Configuration of larger sizes differs slightly.

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

Size	L Screwed Rc(PT)	L ASME Class 125FF	L ASME Class (150RF)	L ASME Class 250RF	L ASME Class (300RF)	H	H1	Weight** (kg)
(15)	175	—	170	—	170	357	285	9.5
(20)		—	182	—	182			11
25	190	176	188	180	192		282	13
32	220	206	220	220	220	385	295*	17
40		209		222	224		302	19
50	260	247	255	260	261	412	315	26
65	—	362	372[372]	377	378[378]	554[560]	411[415]	55[60]
80	—	365	374[374]	383	384[384]			59[65]
100	—	434	434[434]	450	450[450]	633[635]	448[450]	95[105]
125	—		434	456	456	633	448	119
150	—	600	600	622	622	810	530	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, [ ] COSR-16HT

COSR-21 Flanged (mm)

Size	L ASME Class 150RF	L ASME Class 300RF	H ASME	H1 ASME	Weight* (kg)
(15)	161	167	405	305	11
(20)	172	178			13
25	181	187	422	302	15
32	212	219	457	322	19
40	215	222			21
50	254	260	490	335	36
65	371	377	655	430	59
80	374	384			62
100	434	450	768	468	95

( ) 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

TLV INTERNATIONAL, INC.
881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511, JAPAN
Tel: [81]-(0)79-427-1818 Fax: [81]-(0)79-425-1167
E-mail: tlv-japan@tlv.co.jp **https://www.tlv.com**

Manufacturer
TLV CO., LTD.
Kakogawa, Japan
is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001
ISO14001
LRQA CERTIFIED

Pamphlet M0000-1 Rev. 11/2024
Specifications subject to change without notice.