



STEAM PRESSURE REDUCING VALVE

MODEL COSR-21

SELF-ACTUATED PRESSURE REDUCING VALVE WITH UNIQUE PISTON DESIGN

Benefits

Technologically advanced pressure reducing valve for accurate control in process steam systems.

1. Unique Shock-Absorbing Spherical (SAS) piston delivers stable secondary pressure.
2. Valve maintains high accuracy during severe conditions of varying primary pressure and fluctuating flow rates.
3. Unique self-aligning piston design provides for maximum reliability.
4. Unique pilot valve and two-piece main valve designs assure seal tight shut-off in dead end service.
5. Internal screen for pilot valve extends troublefree service.
6. Designed with PTFE gaskets for inspection ease.
7. Capable of internal secondary pressure sensing for compact space installation.



Specifications

Model		COSR-21	
Connection		Screwed	Flange
Size (in)		½, ¾, 1	1, 1½, 2
Body Material		Ductile Cast Iron	
Maximum Operating Pressure (psig)	PMO	300	
Maximum Operating Temperature (°F)	TMO	428	
Maximum Allowable Pressure (psig)	PMA	300	
Maximum Allowable Temperature (°F)	TMA	428	
Primary Pressure Range (psig)		190 to 300	
Adjustable Differential Pressure (psig)		30 to 120	
Pressure Adjustment Range (psig)		80 to 252	
Maximum Adjustable Secondary Pressure (psig)		84% of Primary Pressure	
Minimum Adjustable Secondary Pressure (psig)		80 psig (or Primary Pressure minus 120 psi, whichever is higher)	
Minimum Adjustable Flow Rate		5% of Rated Flow Rate	
Accuracy of Regulation (psi)	AOR	± 1 (under steady flow conditions)	
Seat Leakage Rating		Less than 0.1% of Rated Flow Rate	

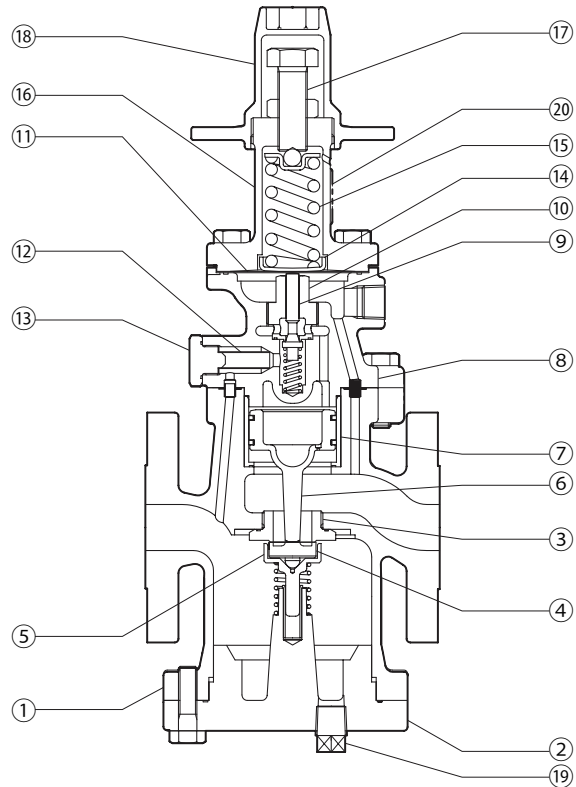
COSR-21 is a non-standard product; consult TLV for delivery time required.



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.

Configuration

No.	Description	Material
①	Main Body	Ductile Cast Iron
②	Cover	Ductile Cast Iron
③	Main Valve Seat	Stainless Steel
④	Main Valve	Stainless Steel
⑤	Main Valve Holder	Stainless Steel
⑥	Piston	Stainless Steel
⑦	Cylinder	Stainless Steel
⑧	Pilot Valve Body	Ductile Cast Iron
⑨	Pilot Valve	Stainless Steel
⑩	Pilot Valve Seat	Stainless Steel
⑪	Diaphragm	Stainless Steel
⑫	Pilot Screen	Stainless Steel
⑬	Pilot Screen Holder	Carbon Steel
⑭	Diaphragm Support	Brass
⑮	Coil Spring	Carbon Steel
⑯	Spring Housing	Ductile Cast Iron
⑰	Adjustment Screw	Cr-Mo Steel
⑱	Spanner Cap	Die Cast Aluminium
⑲	Plug – Cover	Carbon Steel
⑳	Nameplate	Stainless Steel



Contact TLV for available replacement parts. All gaskets are PTFE.

Cv Values

	Nominal Valve Size				
	½"	¾"	1"	1½"	2"
Cv (US)	3.8	6.9	11.1	24.0	37.2
Cv (UK)	3.2	5.7	9.2	20.0	31.0
Kvs (DIN)	3.3	5.9	9.5	20.6	31.9



The Cv & Kvs values shown are for the valve in the full fail open position. These values are not to be used for COSR sizing, and instead may be used as one of the factors in calculations for safety valve selection.

Capacity Table

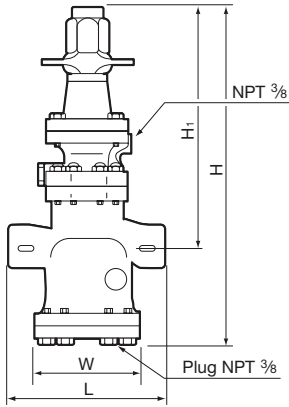
With external (factory standard) or internal (option) secondary pressure-sensing line or channel (lb/h)

Primary Steam Press. (psig)	Secondary (Set) Steam Pressure (psig)		Nominal Valve Size				
	External Line	Internal Channel (option)	½"	¾"	1"	1½"	2"
190	* 160	* 160	610	940	1360	1890	2600
	150	150	800	1120	1640	2380	3170
	125	125	940	1330	1880	2800	4080
	100	100	1100	1620	2220	3320	5080
	** 80 - 95	95	1100	1640	2250	3350	5120
		** 80	890	1310	1940	2890	3970
200	* 168	* 168	640	940	1370	1880	2770
	160	160	720	1060	1520	2130	3160
	150	150	880	1300	1830	2650	3970
	125	125	1040	1530	2240	3200	4740
	** 80 - 100	100	1300	1850	2870	3970	5730
		** 80	970	1370	1920	2760	3970
210	* 176	* 176	720	1030	1500	2040	3000
	175	175	730	1040	1520	2070	3060
	150	150	1050	1540	2190	3150	4750
	125	125	1190	1730	2530	3640	5360
	** 90 - 105	105	1310	1860	2830	4040	5760
		100	1270	1810	2760	3880	5580
		** 90	1130	1640	2430	3410	5020
225	* 189	* 189	740	1050	1530	2080	3030
	185	185	790	1130	1620	2260	3290
	175	175	900	1300	1820	2650	3860
	150	150	1260	1810	2760	3970	5660
	125	125	1420	2010	3030	4520	6270
** 105 - 113	113	1500	2080	3270	4710	6590	
		** 105	1390	1970	3010	4340	6160
240	* 202	* 202	820	1150	1650	2360	3250
	200	200	840	1180	1700	2480	3430
	175	175	1140	1650	2390	3880	5350
	150	150	1550	2290	3420	5090	7090
	125	125	1680	2480	3800	5400	7630
** 120	** 120	1700	2480	3870	5440	7760	
250	* 210	* 210	880	1260	1770	2620	3670
	200	200	990	1450	2030	3120	4480
	175	175	1290	1900	2780	4230	6080
	150	150	1720	2590	3960	5610	7880
	** 130	** 130	1810	2790	4340	6020	8540
260	* 218	* 218	970	1410	1960	2900	4210
	210	210	1040	1550	2120	3130	4720
	200	200	1160	1710	2440	3570	5350
	175	175	1520	2200	3340	4980	6840
	150	150	1950	3060	4790	6560	9490
** 140	** 140	2010	3170	5020	6780	9940	
275	* 231	* 231	990	1420	2000	2940	4160
	225	225	1060	1520	2170	3160	4600
	200	200	1390	1980	3020	4380	6300
	175	175	1740	2650	4100	5850	8100
	** 155	** 155	1990	3200	4970	6940	9860
290	* 244	* 244	980	1430	1950	2910	4140
	240	240	1050	1510	2130	3130	4480
	225	225	1280	1810	2750	3890	5670
	200	200	1660	2410	3770	5390	7560
	175	175	1930	3100	4940	6870	9380
** 170	** 170	1990	3280	5120	7220	9860	
300	* 252	* 252	920	1400	1780	2660	4140
	250	250	1040	1540	2090	3090	4630
	225	225	1460	2090	3300	4700	6540
	200	200	1850	2980	4410	6170	8600
	** 180	** 180	2060	3460	5380	7580	10400

* Maximum adjustable secondary pressure ** Minimum adjustable secondary pressure

Dimensions

• **COSR-21** Screwed*

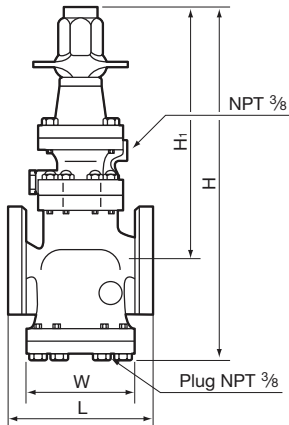


COSR-21 Screwed* (in)

Size	L	H	H ₁	W	Weight (lb)
1/2	6 ⁷ / ₈	16	12	4 ¹ / ₈	24
3/4					29
1	7 ¹ / ₂	16 ⁵ / ₈	11 ⁷ / ₈	4 ¹⁵ / ₁₆	31

* NPT, other standards available

• **COSR-21** Flanged



COSR-21 Flanged (in)

Size	L	H	H ₁	W	Weight (lb)
	Connects to ASME Class				
	300RF				
1	7 ³ / ₈	16 ⁵ / ₈	4 ⁷ / ₈	4 ¹⁵ / ₁₆	33
1 1/2	8 ³ / ₄	18	12 ¹¹ / ₁₆	5 ⁷ / ₈	46
2	10 ¹ / ₄	19 ⁵ / ₁₆	13 ³ / ₁₆	7 ¹¹ / ₁₆	79

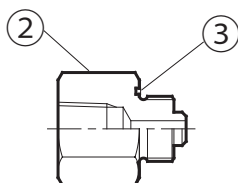
Other standards available, but length and weight may vary

Sizes 1" shown.
Configuration of larger sizes differs slightly.

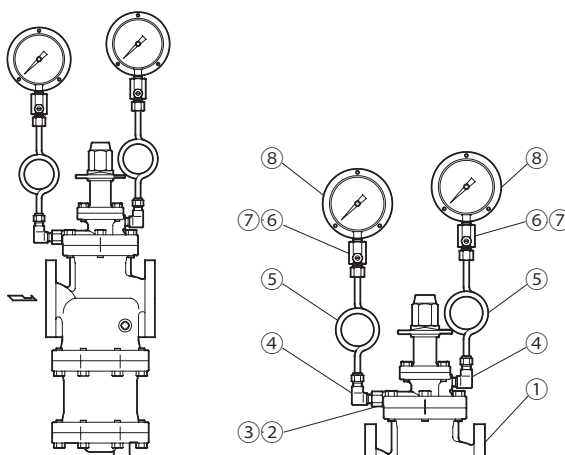
Option

Pressure Gauge Unit	Replaces the standard screen holder plug to enable installation of a pressure gauge of the user's choice. Primary side: M16 holder plug (male/female), BSP/Rc(PT)/NPT 3/8. An elbow is required for pressure gauge installation. Secondary side: Rc(PT) 3/8 mounting port for elbow and pressure gauge installation.
Elbows, pressure gauge and connecting parts must be purchased separately.	

● **Configuration**



● **Installation Example**



NOTE: For explanation purposes, a siphon tube style pressure gauge will be used. However, the instructions also apply to cooling tower-style pressure gauges.

No.	Part Name	No.	Part Name
1	Valve Body	5	Siphon Tube*
2	Holder Plug	6	Dampener*
3	Holder Plug Gasket	7	Dampener Gasket*
4	Elbow (male/female)*	8	Pressure Gauge*

* Purchase separately



CAUTION

DO NOT DISASSEMBLE OR REMOVE THIS PRODUCT WHILE IT IS UNDER PRESSURE. Allow internal pressure of this product to equal atmospheric pressure and its surface to cool to room temperature before disassembling or removing. Failure to do so could cause burns or other injury. READ INSTRUCTION MANUAL CAREFULLY.

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

ISO 9001
ISO 14001

