COSPECT® STEAM PRESSURE REDUCING VALVE

MODEL COS-21

SELF-ACTUATED PRESSURE REDUCING VALVE WITH SHOCK-ABSORBING PISTON

Features

Technologically advanced pressure reducing valve combined with condensate separator and steam trap provides accurate control and steam conditioning to maximize process system performance.

1. Space-saving unit simplifies system layout, piping and maintenance.
2. Self-aligning shock-absorbing spherical piston and advanced pilot regulator designs maintain secondary steam pressure accuracy, even during adverse process conditions.
3. Built-in cyclone separator, with condensate separation efficiency as high as 98%, and self-modulating free float steam trap provide dry, high-quality steam supply.
4. Major internal components made of stainless steel for long service life.
5. Large surface area integral screens for pilot valve and main valve extend trouble-free service.
6. Internal secondary pressure-sensing channel makes external sensing line unnecessary.
7. Sizes 65 mm and larger have a silencer for noise reduction.

Specifications

Model		COS-21	
Connection		Screwed	Flanged
Size (mm)		15, 20, 25	15, 20, 25, 32, 40, 50, 65, 80, 100
Body Material		Ductile Cast Iron	
Max. Operating Pressure (MPaG)	PMO	2.1	
Max. Operating Temperature (°C)	TMO	220	
Primary Pressure Range (MPaG)		1.35 – 2.1	
Adjustable Pressure Range (all conditions must be met)		From 0.55 MPaG to 84% of primary pressure	
		Maximum differential pressure 0.85 MPa	
Minimum Adjustable Flow Rate		5% of rated flow rate (For 65 mm – 100 mm: 10% of rated flow rate)	

PRESSURE SHELL DESIGN CONDITIONS (**NOT** OPERATING CONDITIONS): 1 MPa = 10.197 kg/cm^2

Maximum Allowable Pressure (MPaG) PMA: 2.1

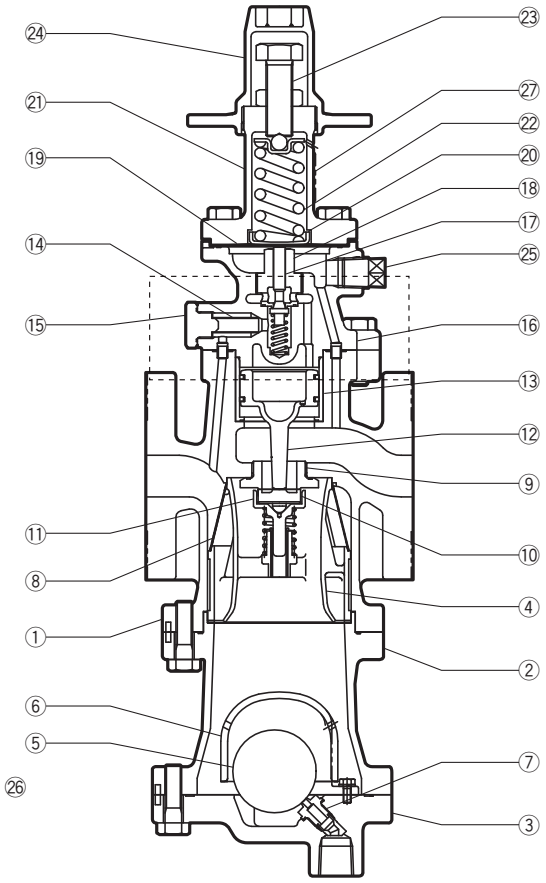
Maximum Allowable Temperature (°C) TMA: 220

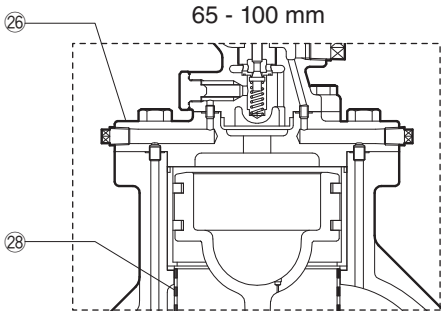
⚠ CAUTION To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

Configuration

No.	Description	Material	JIS*	ASTM/AISI*
①	Main Body	Ductile Cast Iron	FCD450	A536
②	Trap Body	Ductile Cast Iron	FCD450	A536
③	Trap Cover	Ductile Cast Iron	FCD450	A536
④	Separator	Stainless Steel	—	—
⑤	Float	Stainless Steel	—	—
⑥	Float Cover	Ductile Cast Iron	—	—
⑦	Trap Valve Seat	Stainless Steel	—	—
⑧	Separator Screen	Stainless Steel	—	—
⑨	Main Valve Seat	Stainless Steel	—	—
⑩	Main Valve	Stainless Steel	—	—
⑪	Main Valve Holder	Stainless Steel	—	—
⑫	Piston	Stainless Steel	—	—
⑬	Cylinder	Stainless Steel	—	—
⑭	Pilot Screen	Stainless Steel	—	—
⑮	Pilot Screen Holder	Carbon Steel	S25C	AISI1025
⑯	Pilot Body	Ductile Cast Iron	FCD450	A536
⑰	Pilot Valve	Stainless Steel	—	—
⑱	Pilot Valve Seat	Stainless Steel	—	—
⑲	Diaphragm	Stainless Steel	—	—
⑳	Diaphragm Support	Brass	—	—
㉑	Spring Housing	Ductile Cast Iron	FCD450	A536
㉒	Coil Spring	Carbon Steel	—	—
㉓	Adjustment Screw	Cr-Mo Steel	—	—
㉔	Spanner Cap	Die Cast Aluminium	—	—
㉕	Plug	Carbon Steel	SS400	A6
㉖	Pilot Cover	Ductile Cast Iron	FCD450	A536
㉗	Nameplate	Stainless Steel	—	—
㉘	Silencer	Stainless Steel	—	—

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





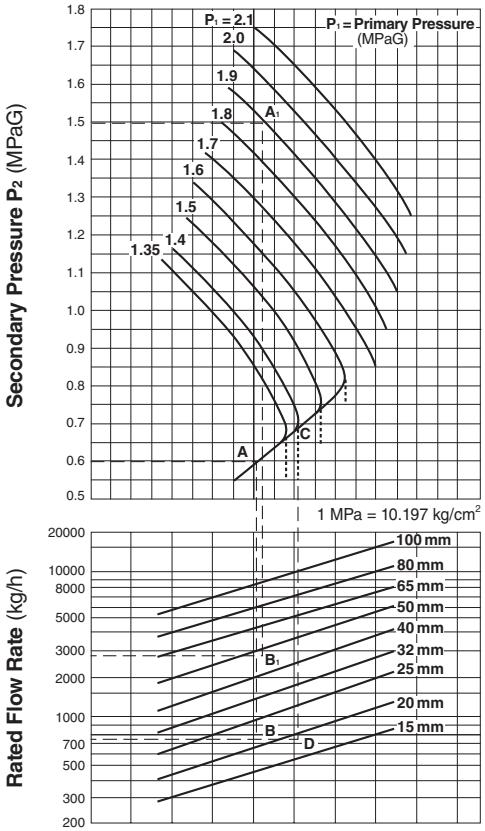
The parts configuration of sizes 65 – 100 mm differs slightly from that of sizes 15 – 50 mm.

Cv Values

	Nominal Valve Size (mm)								
	15	20	25	32	40	50	65	80	100
Cv (US)	3.8	6.9	11.1	15.5	24.0	37.2	59.3	85.0	128
Cv (UK)	3.2	5.7	9.2	12.9	20.0	31.0	49.4	70.8	107
Kvs (DIN)	3.3	5.9	9.5	13.3	20.6	31.9	50.8	72.9	110

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

Sizing Chart



Sizing Examples

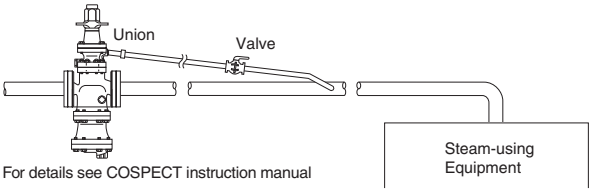
For P1 over 1.6 MPaG

For primary pressure of 1.9 MPaG, set pressure 1.5 MPaG, and saturated steam flow rate 2800 kg/h, select an appropriate size.

1. Locate intersecting point A1 of 1.9 MPaG primary pressure and 1.5 MPaG set pressure. Go to point A1 and down until 2800 kg/h, point B1 is reached.
2. Since point B1 is located between 40 mm and 50 mm, the larger size, 50 mm, should be chosen.

Special Instructions for P1 under 1.6 MPaG

The vertical dotted lines in the graph represent the increased capacity often achievable when the internal sensing features of COS-21 are enhanced by the installation of a 10 mm external secondary pressure-sensing line (condition: $P_2 < \frac{1}{2} P_1$).



For details see COSPECT instruction manual

For primary pressure of 1.4 MPaG, set pressure 0.6 MPaG, and saturated steam flow rate 750 kg/h, select an appropriate size.

With internal secondary pressure-sensing channel

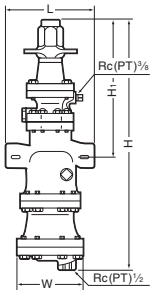
1. Locate intersecting point A of 1.4 MPaG primary pressure and 0.6 MPaG set pressure. Go to point A and down until 750 kg/h, point B, is reached.
2. Since point B is located between 20 mm and 25 mm, the larger size, 25 mm, should be chosen.

With external secondary pressure-sensing line

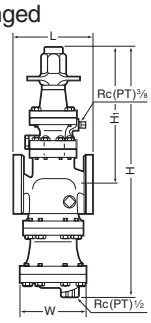
1. Obtain intersecting point C of 1.4 MPaG primary pressure. Go straight down from point C until 750 kg/h, point D, is reached.
2. Since point D is located between 15 mm and 20 mm, thelarger size, 20 mm, should be chosen.

Dimensions

Screwed



Flanged



COS-21 Screwed* (mm)

Size	L	H	H1	W	Weight (kg)
15	175	515	305	105	15
20					16
25	190	542	302	150	20

* Rc(PT), other standards available

COS-21 Flanged (mm)

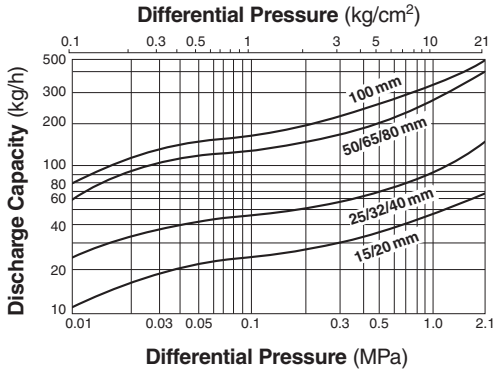
Size	L ASME class 150RF	L ASME class 300RF	H	H1	W	Weight* (kg)
(15)	161	167	515	305	105	16
(20)	172	178				17
25	181	187	542	302	150	22
32	212	219	592	322	165	27
40	215	222				28
50	254	260	655	335	195	46
65	371	377	892	422	280	70
80	374	384				74
100	434	450	1050	450	350	102

( ) No ASME standard for ductile cast iron; machined to fit steel flanges Other standards available, but length and weight may vary

* Weight is for Class 300 RF

Sizes 15 – 50 mm shown. Configuration of larger sizes differs slightly.

Trap Discharge Capacity



Note: 1. The discharge capacity is the maximum continuous condensate discharge 6 °C below saturated steam temperature.
2. The differential pressure is the difference between the COS-21 inlet and the trap outlet pressure.

CAUTION DO NOT use this product under conditions that exceed maximum differential pressure, as condensate backup will occur!

Memo:

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

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