



REDUCING VALVE FOR STEAM

MODEL COS-21

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. Patented self-aligning shock-absorbing spherical piston and advanced pilot regulator designs maintain secondary steam pressure accuracy, even during adverse process conditions.
3. Built-in patented 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.



Patented

Specifications

Model	COS-21	
Connection	Screwed	Flanged
Size (mm)	15, 20, 25	15, 20, 25, 32, 40, 50, 65, 80, 100
Body Material	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)	Within 10 – 84% of primary pressure but with a minimum pressure of 0.55 MPaG 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/cm²

Maximum Allowable Pressure (MPaG) PMA: 2.1, Maximum Allowable Temperature (°C) TMA: 220



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.

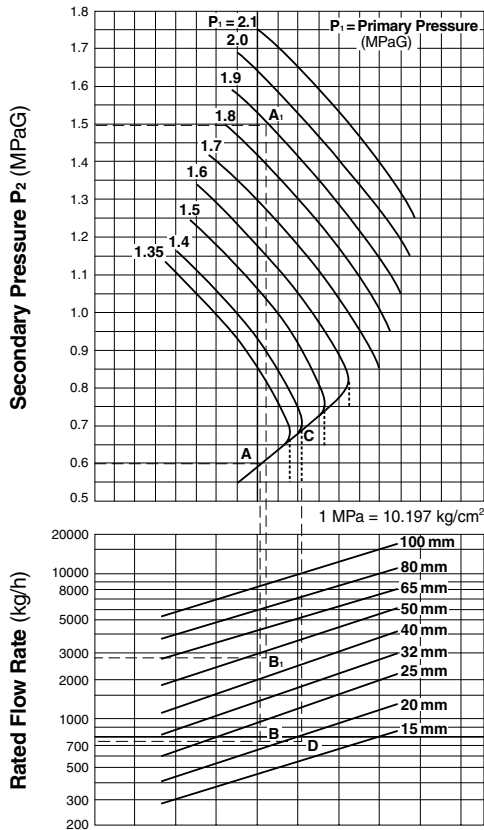
Cv Values

	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



The Cv & Kvs values shown are for the valve in the full fail open position. These values are not to be used for COS-21 sizing, and instead may be used as one of the factors in calculations for safety valve selection.

Sizing Chart



Sizing Examples

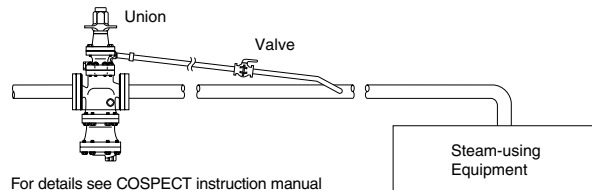
For P_1 over 1.6 MPaG

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 A_1 of 1.9 MPaG primary pressure and 1.5 MPaG set pressure. Go to point A_1 and down until 2800 kg/h, point B_1 is reached.
2. Since point B is located between 40 mm and 50 mm, the larger size, 50 mm, should be chosen.

Special Instructions for P_1 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 3/8 inch 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.

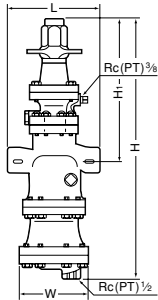
With external secondary pressure-sensing line

1. Obtain intersecting point C of 1.4 MPaG primary pressure. Go straight down from point C to 0.6 MPaG set pressure, and continue until 750 kg/h, point D, is reached.
2. Since point D is located between 15 mm and 20 mm, the larger size, 20 mm, should be chosen.

1 MPa = 10.197 kg/cm²

Dimensions

Screwed

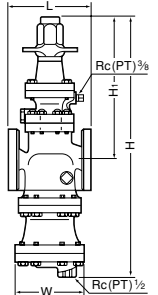


COS-21 Screwed* (mm)

Size	L	H	H ₁	W	Weight (kg)
15					15
20	175	515	305	105	16
25	190	542	302	150	20

* Rc(PT), other standards available

Flanged



COS-21 Flanged* (mm)

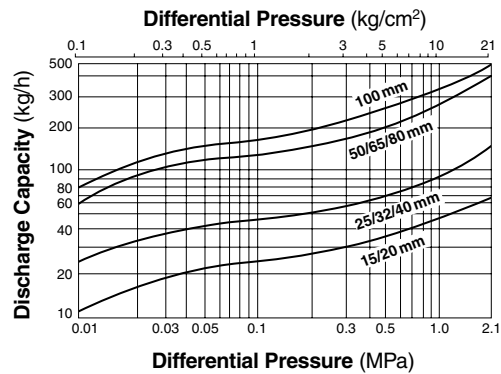
Size	L	H	H ₁	W/D**	Weight (kg)
15	166	515	305	105	16
20	178				17
25	184	542	302	150	22
32	216	592	322	165	27
40					28
50	251	655	335	195	45
65	366	892	422	280	67
80	370				70
100	434	1050	450	350	92

* JIS 20K, other standards available

** W applies to sizes 15 – 50; D applies to sizes 65 – 100.

Sizes 15 – 50 shown. Configuration of sizes 65 – 100 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.



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

Manufacturer

ISO 9001/ISO 14001

TLV® CO., LTD.
Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001/14001

