COSPECT® STEAM PRESSURE REDUCING VALVE

MODEL COS-21 DUCTILE CAST IRON STAINLESS STEEL

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 DN 65 and larger have a silencer for noise reduction.

Pressure Equipment Directive (PED)

CE This product fully conforms to the requirements of the Pressure Equipment Directive (PED, 2014/68/EU) and features CE marking where applicable.

Specifications

Model		COS-21		
Body Material		Ductile Cast Iron (JIS FCD450) (equivalent to GGG-40)	Ductile Cast Iron (GGG 40.3)	Cast Stainless Steel (A351 Gr.CF8) (equivalent to 1.4312)
Connection		Flanged	Flanged	Flanged
		ASME	ASME	DIN
Size		DN 15, 20, 25, 40, 50, 65, 80, 100		DIN
Maximum Operating Pressure (barg)	PMO	21		
Maximum Operating Temperature (°C)	TMO	220		
Primary Pressure Range (barg)		13.5 – 21		
Adjustable Pressure Range (all conditions must be met)		From 5.5 barg to 84% of primary pressure		
		Maximum differential pressure 8.5 bar		
Minimum Adjustable Flow Rate		5% of rated flow rate (For DN 65 – DN 100: 10% of rated flow rate)		

PRESSURE SHELL DESIGN CONDITIONS (**NOT** OPERATING CONDITIONS): 1 bar = 0.1 MPa
Maximum Allowable Pressure (barg) PMA: 21
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.

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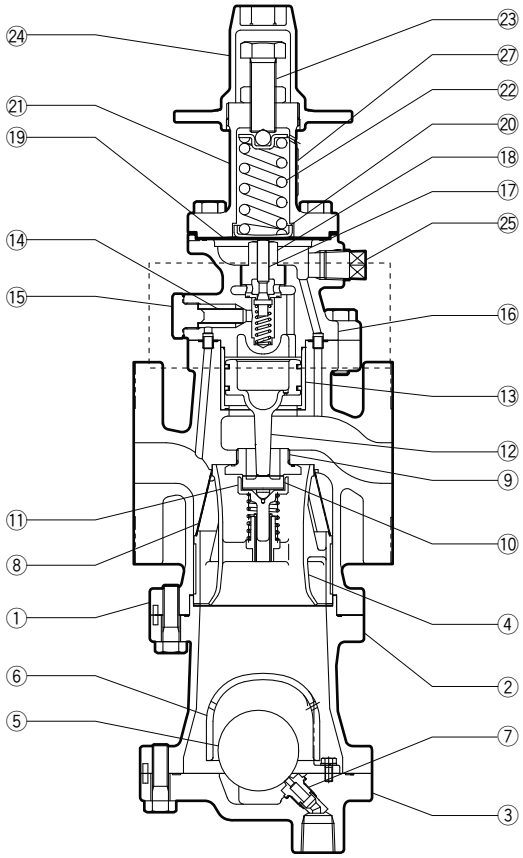
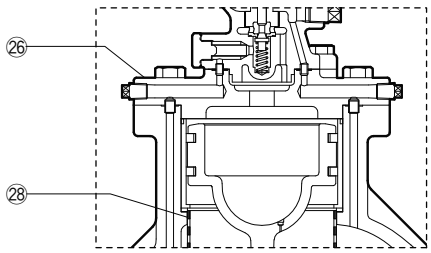
Configuration

No.	Description		Material	DIN*	ASTM/AISI*
①	Main Body		Ductile Cast Iron GGG40.3	0.7043	A395
			Cast Stainless Steel A351 Gr.CF8	1.4312	—
			Ductile Cast Iron FCD450	0.7040	A536
②	Trap Body		Same material as main body		
③	Trap Cover		Same material as main body		
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	Cast Iron and Ductile Cast Iron Models	Carbon Steel S25C	1.1158	AISI1025
		Cast Stainless Steel Models	Stainless Steel SUS304	1.4301	AISI304
⑯	Pilot Body		Same material as main body		
⑰	Pilot Valve		Stainless Steel	—	—
⑱	Pilot Valve Seat		Stainless Steel	—	—
⑲	Diaphragm		Stainless Steel	—	—
⑳	Diaphragm Support		Brass	—	—
㉑	Spring Housing		Same material as main body		
㉒	Coil Spring		Carbon Steel	—	—
㉓	Adjustment Screw		Cr-Mo Steel	—	—
㉔	Spanner Cap	Cast Iron and Ductile Cast Iron Models	Die Cast Aluminium	—	—
		Cast Stainless Steel Models	Stainless Steel	—	—
㉕	Plug – Sensing Line Port	Cast Iron and Ductile Cast Iron Models	Carbon Steel SS400	1.0037	A6
		Cast Stainless Steel Models	Stainless Steel SUS304	1.4301	AISI304
㉖	Pilot Cover		Ductile Cast Iron	0.7040	A536
㉗	Nameplate		Stainless Steel	—	—
㉘	Silencer		Stainless Steel	—	—

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



DN 65 - 100



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

Cv & Kvs Values

	Nominal Valve Size (DN)							
	15	20	25	40	50	65	80	100
Kvs (DIN)	3.3	5.9	9.5	20.6	31.9	50.8	72.9	110
Cv (UK)	3.2	5.7	9.2	20	31	49.4	70.8	107
Cv (US)	3.8	6.9	11.1	24	37.2	59.3	85	128

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.

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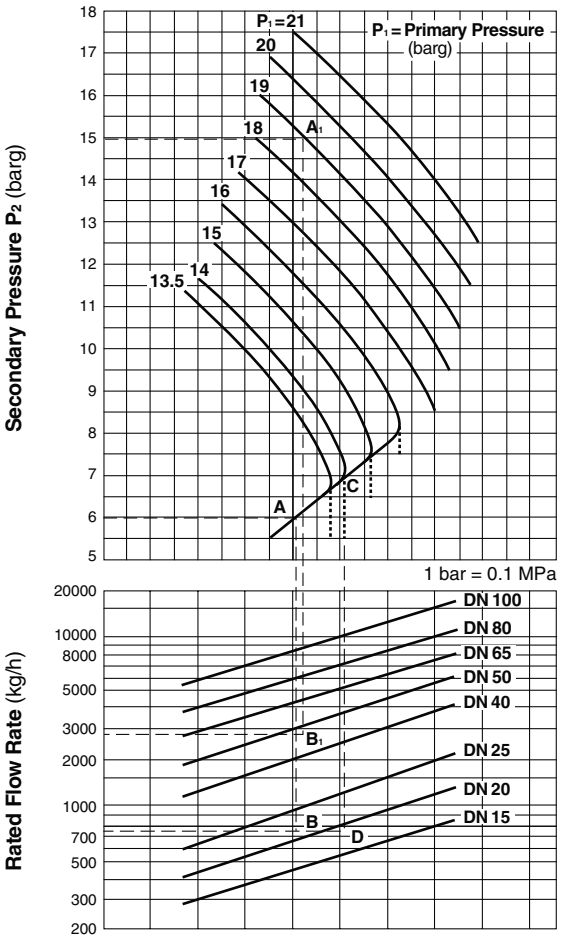
Sizing Chart



Sizing Examples

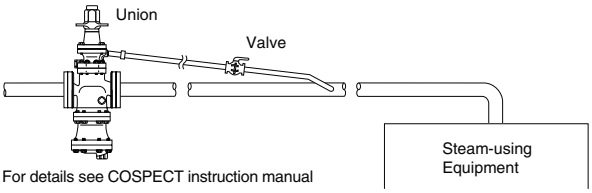
For P_1 over 16 barg

For primary pressure of 19 barg, set pressure 15 barg, and saturated steam flow rate 2800 kg/h, select an appropriate size.

1. Locate intersecting point A_1 of 19 barg primary pressure and 15 barg 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 DN 40 and DN 50, the larger size, DN 50, should be chosen.

Special Instructions for P_1 under 16 barg

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: $P_2 < {}^1/_2 P_1$).



For details see COSPECT instruction manual

For primary pressure of 14 barg, set pressure 6 barg, and saturated steam flow rate 750 kg/h, select an appropriate size.

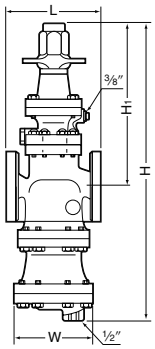
With internal secondary pressure-sensing channel

1. Locate intersecting point A of 14 barg primary pressure and 6 barg set pressure. Go to point A and down until 750 kg/h, point B, is reached.
2. Since point B is located between DN 20 and DN 25, the larger size, DN 25, should be chosen.

With external secondary pressure-sensing line

1. Obtain intersecting point C of 14 barg primary pressure. Go straight down from point C until 750 kg/h, point D, is reached.
2. Since point D is located between DN 15 and DN 20, the larger size, DN 20, should be chosen.

Dimensions



DN 15 - 50 shown.
Configuration of larger sizes differs slightly.

COS-21 Flanged* (mm)

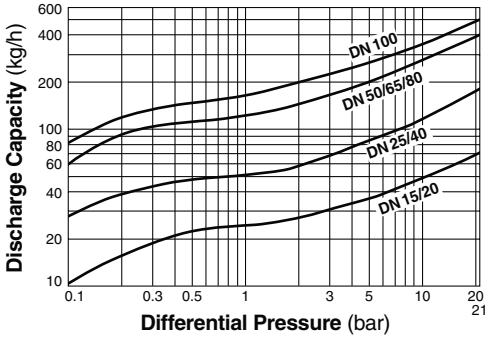
DN	L			H	H_1	W	Weight** (kg)
	DIN 2501	ASME Class					
	PN25/40	150RF	300RF				
(15)	150	161	167	515	305	105	15
(20)		172	178				
25	160	181	187	542	302	150	20
40	200	215	222	592	322	165	27
50	230	254	260	655	335	195	45
65	370	371	377	890	430	280	96
80	374	374	384				97
100	434	434	450	1048	468	350	159

( ) No ASME standard for ductile cast iron; machined to fit steel flanges

* Flange to flange dimension of DN 15 and DN 65-100 not according to DIN standard, due to size of separator and steam trap.

** Height and weight are for DIN PN 25/40
Other standards available, but length and weight may vary

Trap Discharge Capacity



1 bar = 0.1 MPa

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 its trap outlet pressure.

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

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Memo:

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

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SDS U0000-50 Rev. 12/2019

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