

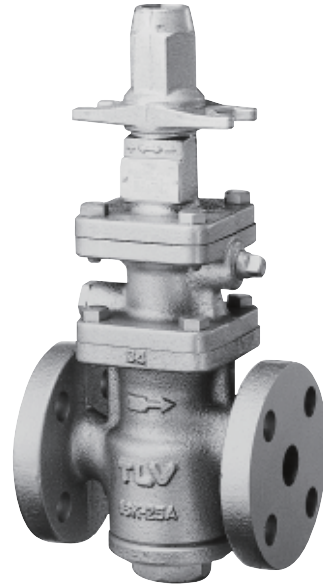


# COSR-21 Steam Pressure Reducing Valve

## Features

**Technologically advanced, pilot operated pressure reducing valve for accurate control in process steam systems.**

1. Self-aligning shock-absorbing spherical piston and advanced pilot regulator designs maintain secondary steam pressure accuracy, even during adverse process conditions.
2. Major internal components made of stainless steel for long service life.
3. Large surface area integral screen for pilot valve extends trouble-free service.
4. Internal secondary pressure-sensing channel makes external sensing line unnecessary.
5. 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		COSR-21		
Body Material		Ductile Cast Iron (JIS FCD450) (equivalent to GGG40)	Ductile Cast Iron (GGG40.3)	Cast Stainless Steel (A351 Gr.CF8) (equivalent to 1.4312)
Connection		Flanged		
		ASME Class 150RF, 300RF	DIN 2501 PN 25/40	
Size		DN 15, 20, 25, 32, 40, 50, 65, 80, 100		DN 15, 20, 25, 32, 40, 50
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):

Maximum Allowable Pressure (barg) PMA: 21

Maximum Allowable Temperature (°C) TMA: 220

1 bar = 0.1 MPa

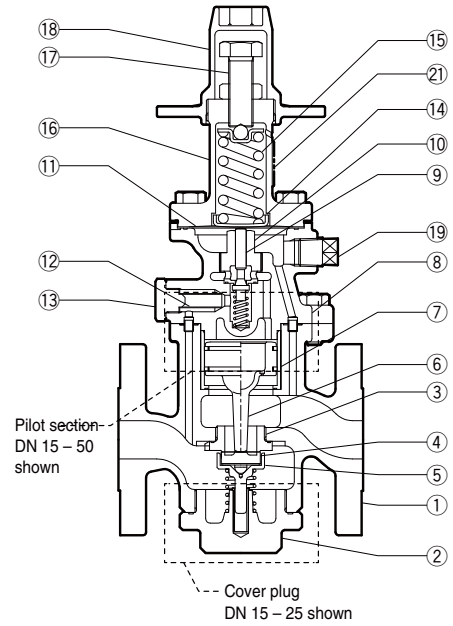


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

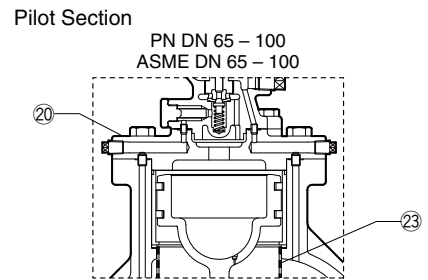
## Configuration

No.	Description	Material	DIN*	ASTM/AISI*
①	Main Body	Flanged PN DN 15 - 100	Ductile Cast Iron GGG40.3	0.7043 A395
		Flanged PN DN 15 - 50	Cast Stainless Steel A351 Gr.CF8	1.4312 —
		Flanged ASME	Ductile Cast Iron FCD450	0.7040 A536
②	Cover Plug Cover	Flanged PN DN 15 - 25	Same material as main body	
		Flanged PN DN 32 - 100 Flanged ASME DN 32 - 100		
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 Body	Same material as main body		
⑨	Pilot Valve	Stainless Steel	—	—
⑩	Pilot Valve Seat	Stainless Steel	—	—
⑪	Diaphragm	Stainless Steel	—	—
⑫	Pilot Screen	Stainless Steel	—	—
⑬	Pilot Screen Holder	Ductile Cast Iron Models	Carbon Steel S25C	1.1158 AISI1025
		Cast Stainless Steel Model	Stainless Steel SUS303	1.4305 AISI303
⑭	Diaphragm Support	Brass	—	—
⑮	Coil Spring	Carbon Steel	—	—
⑯	Spring Housing	Flanged ASME	Cast Iron FC250	0.6025 A126 Cl.B
		Flanged PN	Same material as main body	
⑰	Adjustment Screw	Cr-Mo Steel	—	—
⑱	Spanner Cap	Ductile Cast Iron Models	Die Cast Aluminium	—
		Cast Stainless Steel Model	Stainless Steel	—
⑲	Plug – Sensing Line Port	Ductile Cast Iron Models	Carbon Steel SS400	1.0037 A6
		Cast Stainless Steel Model	Stainless Steel SUS304	1.4301 AISI304
⑳	Pilot Cover	Same material as main body		
㉑	Nameplate	Stainless Steel	—	—
㉒	Plug – Blow Line Port	Carbon Steel SS400	1.0037	A6
㉓	Silencer	Stainless Steel	—	—

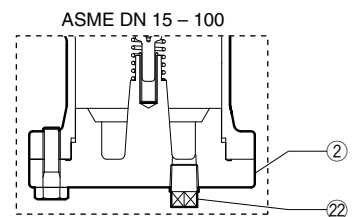
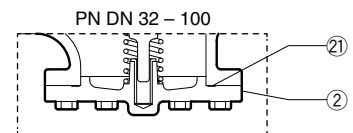
\* Equivalent materials  
Contact TLV for available replacement parts. All gaskets are PTFE.



Pilot section-  
DN 15 – 50  
shown



Cover



The parts configuration of sizes DN 65 – 150 differs slightly from that of sizes DN 15 – 50.

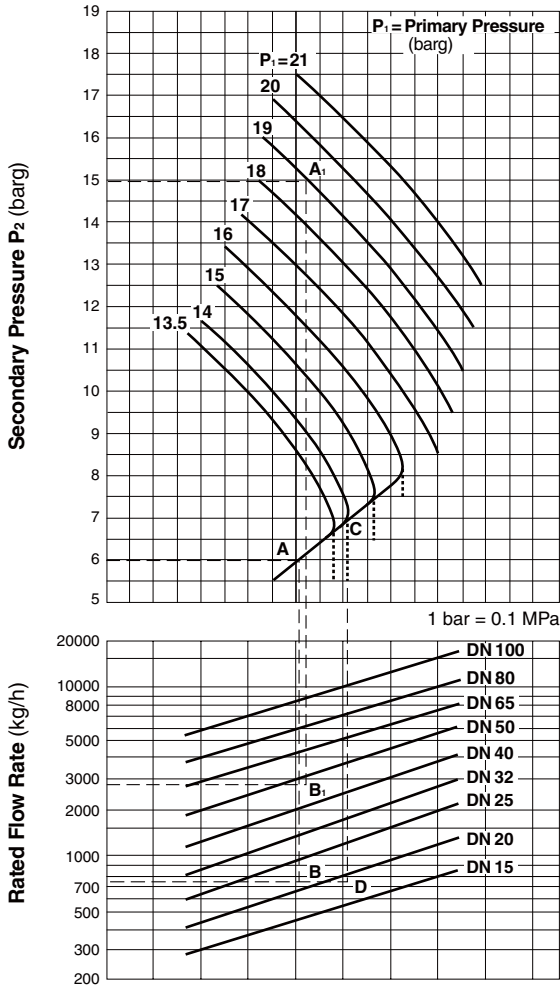
## Cv & Kvs Values

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



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.

## Sizing Chart



## Sizing Examples

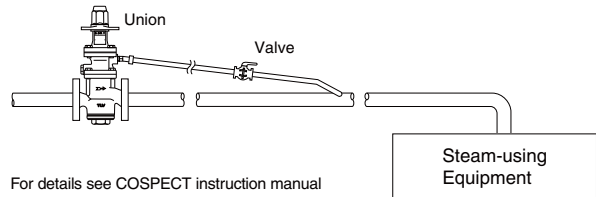
### For P<sub>1</sub> over 16 barg

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<sub>1</sub> of 19 barg primary pressure and 15 barg set pressure. Go to point A<sub>1</sub> and down until 2800 kg/h, point B<sub>1</sub> is reached.
2. Since point B<sub>1</sub> is located between DN 40 and DN 50, the larger size, DN 50, should be chosen.

### Special Instructions for P<sub>1</sub> under 16 barg

The vertical dotted lines in the graph represent the increased capacity often achievable when the internal sensing features of COSR-21 are enhanced by the installation of a 3/8 inch external secondary pressure-sensing line (condition: P<sub>2</sub> < 1/2 P<sub>1</sub>).



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.

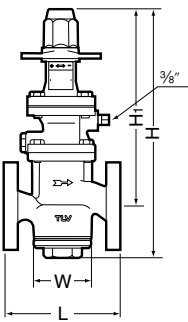
### With internal secondary pressure-sensing channel

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 to 6 barg set pressure, and continue 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.

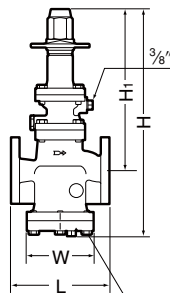
## Dimensions



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

### COSR-21 Flanged DIN (mm)

DN	L		H	H <sub>1</sub>	W	Weight (kg)
	DIN 2501	PN 25/40				
15	130					9
20	150		377	305	88	9.7
25	160			302	93	11
32	180		405	322	126	17
40	200					
50	230		432	335	157	24
65	290		576	433	220	51
80	310					52
100	350		655	470	265	81



3/8" (DN 15 - 50)  
1/2" (DN 65 - 100)

ASME Class 150RF/300RF, DN 15 - 50 shown. Configuration of larger sizes differs slightly.

### COSR-21 Flanged ASME (mm)

DN	L		H	H <sub>1</sub>	W	Weight* (kg)
	ASME Class					
	150RF	300RF				
(15)	161	167	405	305	105	11
(20)	172	178				13
25	181	187	422	302	125	15
32	212	219	457	322	150	19
40	215	222				21
50	254	260	490	355	195	36
65	371	377	655	430	280	59
80	374	384				62
100	434	450	768	468	350	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