



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.



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 ASME | Flanged DIN | Flanged DIN |
| | DN 15, 20, 25, 40, 50, 65, 80, 100 | | DN 15, 20, 25, 40, 50 |
| Size | DN 15, 20, 25, 40, 50, 65, 80, 100 | | DN 15, 20, 25, 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.

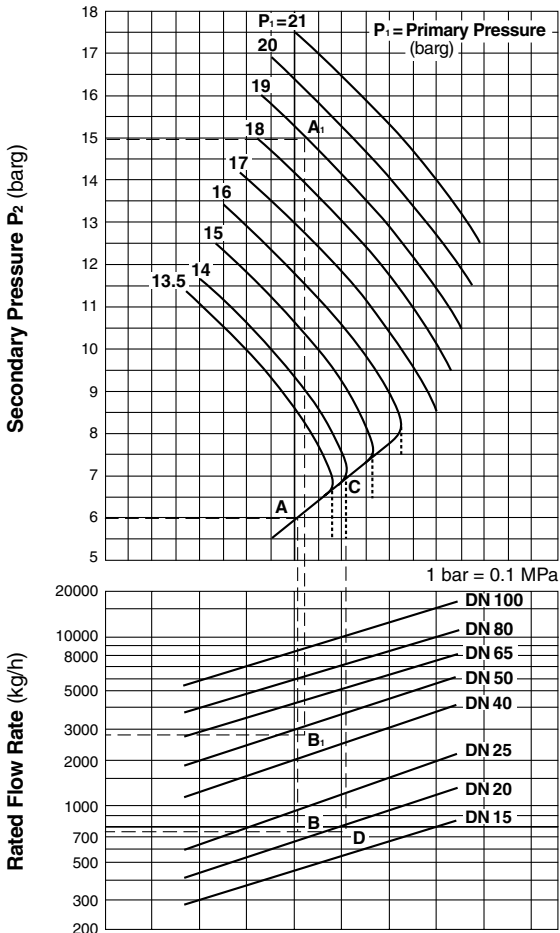
Cv & Kvs Values

| | Nominal Valve Size (mm) | | | | | | | |
|-----------|-------------------------|-----|------|------|------|------|------|-----|
| | 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 | 20.0 | 31.0 | 49.4 | 70.8 | 107 |
| Cv (US) | 3.8 | 6.9 | 11.1 | 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 COS sizing, and instead may be used as one of the factors in calculations for safety valve selection.

Sizing Chart



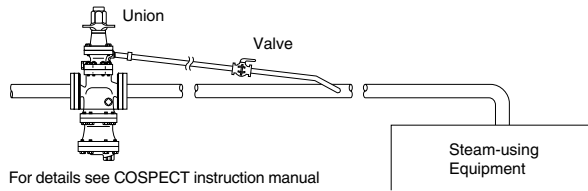
Sizing Examples

For P₁ over 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 A₁ of 19 barg primary pressure and 15 barg set pressure. Go to point A₁ and down until 2800 kg/h, point B₁ is reached.
 2. Since point B₁ is located between DN 40 and DN 50, the larger size, DN 50, should be chosen.

Special Instructions for P₁ 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: P₂ < 1/2 P₁).



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.

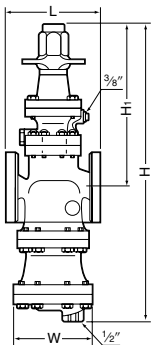
With external secondary pressure-sensing line

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

COS-21 Flanged* (mm)

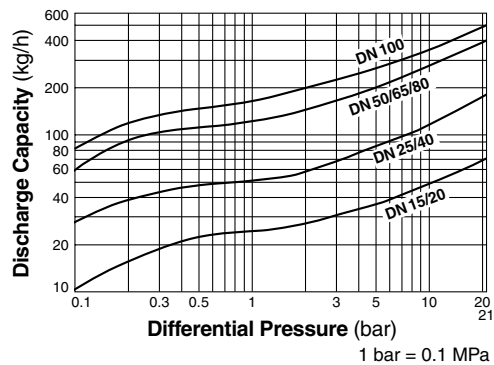
| DN | L | | H | H ₁ | W | Weight** (kg) |
|------|----------|-------------|------|----------------|-----|---------------|
| | DIN 2501 | ASME Class | | | | |
| | PN25/40 | 150RF 300RF | | | | |
| (15) | 150 | 161 167 | 515 | 305 | 105 | 16 |
| (20) | | 172 178 | | | | 17 |
| 25 | 160 | 181 187 | 542 | 302 | 150 | 22 |
| 40 | 200 | 215 222 | 592 | 322 | 165 | 28 |
| 50 | 230 | 254 260 | 655 | 335 | 195 | 43 |
| 65 | 370 | 371 377 | 890 | 430 | 280 | 65 |
| 80 | 374 | 374 384 | | | | 67 |
| 100 | 434 | 434 450 | 1048 | 468 | 350 | 92 |



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

() 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



- 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.



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

