Cert. No. LRQ 0963008

ISO 9001

TI-P186-08
CH Issue 9

SRV66
Sanitary Pressure Reducing Valve

Description
The SRV66 is an angle pattern self-draining sanitary pressure regulating valve of all 316 type stainless steel construction suitable for use on steam, water and inert industrial gases. It is available with hygienic sanitary clamp compatible connections to ISO 2852, requires no external pressure sensing line and has clean in place (CIP) and sterilise in place (SIP) capability.
Typical applications include: Clean steam, gas and liquid supplies to bioreactors, centrifuges, freeze dryers, sterilisers, autoclaves, process tanks, humidifiers and culinary equipment.

Valve tightness
Valve tightness is in accordance with VDI/VDE guideline 2174 (leakage rate < 0.5% of K_Vs value).

Standard surface finish and cleaning
Internal wetted parts - Ra < 3.2 µm ultrasonically cleaned.

Available options, supplied on request at extra cost:

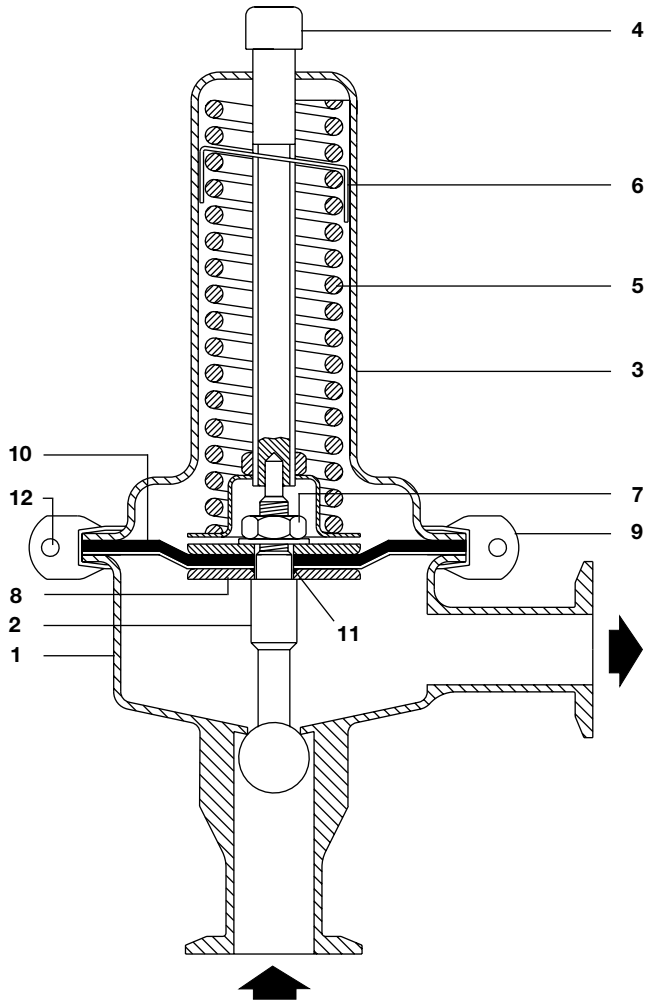
Internal surface finishes	Ra < 0.8 µm mechanically polished, bead blasted and ultrasonically cleaned with demineralised water
	Ra < 0.8 µm electropolished
	Ra < 0.4 µm electropolished
Oil and grease free	
FDA approved diaphragm material	

Sizes and end connections
DN15, DN20, DN25, DN32, DN40 and DN50
ISO 2852 sanitary clamp compatible.

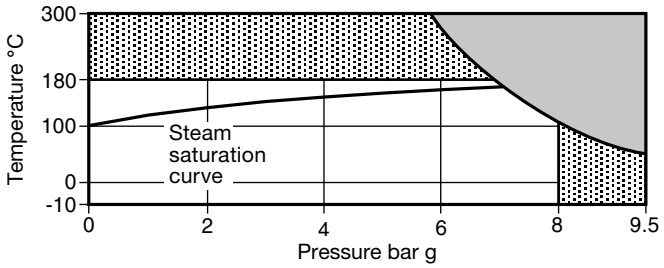
Pressure/temperature limits
See overleaf

Materials

No.	Part	Material	
1	Body (integral seat)	Stainless steel	1.4404 (316L)
2	Main valve	Stainless steel	1.4404 (316L)
3	Spring housing	Stainless steel	1.4404 (316L)
4	Adjustment screw	Stainless steel	BS 6105 A4 70
5	Spring	Stainless steel	1.4301 (304)
6	Spring clip	Stainless steel	1.4301 (304)
7	Diaphragm nut	Stainless steel	BS 6105 A4 70
8	Diaphragm plate	Stainless steel	1.4404 (316L)
9	'V' band clamp	Stainless steel	1.4404 (316L)
10	Diaphragm	FPM (Viton)/ PTFE	
11	'O' ring	PTFE	
12	'V' band clamp screw	Stainless steel	BS 6105 A4 70



Pressure / temperature limits



The product **must not** be used in this region.

The product should not be used in this region or beyond its operating range as damage to the internals may occur.

Body design conditions	Inlet	PN10
	Outlet see 'Pressure setting range' below	
Maximum design pressure		9.5 bar @ 50°C
Maximum design temperature		300°C @ 5.8 bar
Minimum design temperature		-10°C
Maximum operating temperature		180°C
Maximum operating pressure (inlet)		8 bar g
Minimum operating temperature		-10°C
Designed for a maximum cold hydraulic test pressure of 15.2 bar g		

Pressure setting range

Size	**DN15 - DN50**		
Inlet / outlet rating	PN10 / PN2.5	PN10 / PN6	PN10 / PN10
Spring range	0.3 - 1.1 bar g	0.8 - 2.5 bar g	1.0 - 5.0 bar g
Maximum permitted outlet pressure = 1.5 times set pressure			

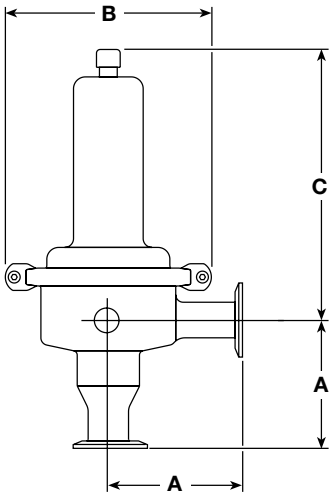
K_V values

To maximise the control accuracy (especially for large load variations) use the K_V values given at 20% offset. For safety valve sizing use the maximum K_V values.

Valve size	**DN15**	**DN20**	**DN25**	**DN32**	**DN40**	**DN50**
K_V at 20% offset	2.0	3.0	3.5	4.0	4.5	5.2
Maximum K_V	2.6	3.9	4.6	5.2	5.9	6.8

For conversion: C_V (UK) = K_V x 0.93 C_V (US) = K_V x 1.156

Dimensions / weights (approximate) in mm and kg



Pressure range	**Size**	**A**	**B**	**C**	**Weight**
1.0 to 5.0 bar and **0.8 to 2.5 bar**	DN15 - DN25	90	138	200	2.0
	DN32 - DN40	120	138	200	2.5
	DN50	120	138	200	3.0
0.3 to 1.1 bar	DN15 - DN25	120	200	200	3.0
	DN32 - DN40	120	200	200	3.5
	DN50	120	200	200	4.0

Sizing

The required K_V can be calculated from the following formulae:

where:

m_s = Steam mass flow (kg/h)
V = Liquid volume flow (m³/h)
V_g = Gas flow at standard conditions: 0°C @ 1.013 bar a (m³/h)
P_1 = Upstream pressure (bar absolute)
P_2 = Downstream pressure (bar absolute)
$\chi = \frac{P_1 - P_2}{P_1}$ (pressure drop factor)
S = Specific gravity
T = Absolute average gas temperature (Kelvin = °C + 273)

Steam

Critical pressure drop: $P_2 \leq 0.58\ P_1$

$$K_V = \frac{\dot{m}_s}{12\ P_1}$$

Non-critical pressure drop: $P_2 \geq 0.58\ P_1$

$$K_V = \frac{\dot{m}_s}{12\ P_1 \sqrt{1 - 5.67\ (0.42 - \chi)^2}}$$

Gas

$$K_V = \frac{\dot{V}_g}{287} \sqrt{\frac{ST}{(P_1 - P_2)(P_1 + P_2)}}$$

Liquid

$$K_V = \dot{V} \sqrt{\frac{S}{P_1 - P_2}}$$

Calculating the K_V and selecting a suitable valve
Using your maximum flowrate and smallest differential pressure ($P_1 - P_2$), calculate the required K_V from one of the above formulae. Select a valve K_V that is 30% greater than the calculated K_V. The optimum working range of the selected valve should ideally be within the range of 10 to 70% of its K_V.

Recommended fluid velocities

Steam	Saturated	10 to 40 m/s
	Superheated	15 to 60 m/s
Gas	up to 2 bar g	2 to 10 m/s
	above 2 bar g	5 to 40 m/s
Liquids		1 to 5 m/s

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P186-09) supplied with the product.

Installation note:
The SRV66 should always be fitted with the inlet vertical and the spring housing directly above the valve.

How to order example

1 off Spirax Sarco DN25 SRV66 direct acting sanitary pressure reducing valve having a pressure range of 1 – 5 bar g a PN10 / PN6 rating, FPM diaphragm and ISO 2852 sanitary clamp compatible connections.

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

Available spares

Main valve	**2**
Diaphragm and 'O' ring	**10**, **11**

How to order spares
Always order spares by using the description given in the column headed 'Available spares' and state the size, model and pressure range.

Example: 1 - Diaphragm and 'O' ring for a Spirax Sarco DN25 SRV66 direct acting pressure reducing valve having a pressure range of 1 - 5 bar, a PN10/PN6 rating and an FPM diaphragm.