

## SRV461 and SRV463 Stainless Steel Direct Acting Pressure Reducing Valves

### Description

Types SRV461 and SRV463 are direct acting pressure reducing valves with all wetted parts in AISI 316L/1.4404, 1.4408 and 1.4462 stainless steel. For steam, liquid or gas applications. The standard valve has a soft seal in Flouraz and the 'S' version has an FPM seal for hydrocarbon applications.

Typical applications include: Clean steam, gas and liquid supplies to centrifuges, freeze dryers, sterilisers, autoclaves, process tanks, humidifiers and culinary equipment.

### Sizes and pipe connections

SRV461	1/2", 3/4", 1", 1 1/4", 1 1/2" and 2" Screwed NPT, BSP
SRV463	DN15, 20, 25, 32, 40 and 50 Flanged ANSI 150, DIN PN16, BS 4504

### Pressure ranges

	0.02 - 0.12 bar g
	0.10 - 0.50 bar g
	0.30 - 1.10 bar g
	0.80 - 2.50 bar g
	2.00 - 5.00 bar g
	4.00 - 8.00 bar g
	6.00 - 12.00 bar g

The SRV461 and SRV463 are available for use within the downstream pressure ranges shown.

**Note:** The pressure range required needs to be specified at the time of order placement:-

### Limiting conditions

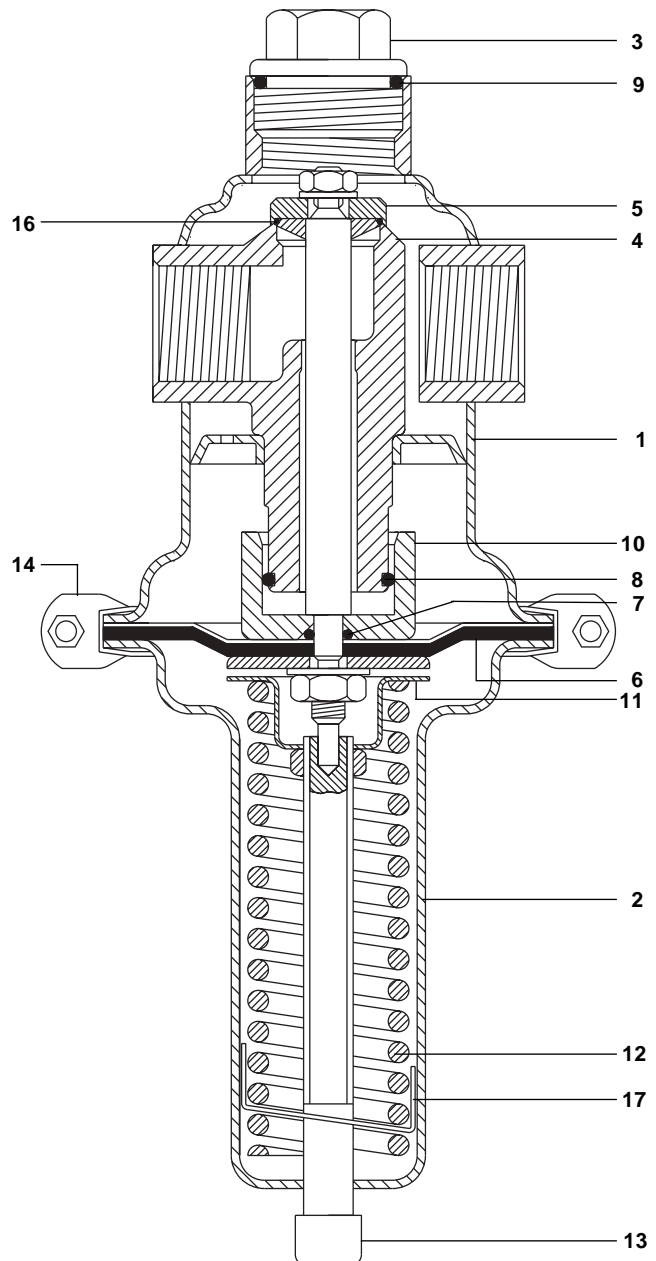
Body design conditions	PN16
Maximum inlet pressure	16 bar g
Maximum operating temperature	Steam 190°C Liquids and gases 130°C

### Materials

No.	Part	Material	Werkstoff No.	AISI Equivalent
1	Body	Stainless steel	1.4404	316L
2	Spring housing	Stainless steel	1.4404	316L
3	Cap	Stainless steel	1.4571	316Ti
4	Valve seat	Stainless steel	1.4404	316L
5	Valve	Stainless steel	1.4404	316L
6	Diaphragm	EPDM/PTFE		
7	'O' ring	EPDM		
8	'O' ring	EPDM		
9	'O' ring	EPDM		
10	Piston	Stainless steel	1.4571	316Ti
11	Top spring plate	Stainless steel	1.4571	316Ti
12	Spring	Stainless steel	1.4310	301*
13	Adjustment screw	Stainless steel	1.4404	316L
14	V band clamp	Stainless steel	AISI 300 series	
15	Flange (not shown)	Stainless steel	1.4404	316L
16	Soft seal	Flouraz†		
17	Spring clip	Stainless steel	1.4301	304

\* Not a direct equivalent, nearest AISI specification is given.

† For hydrocarbon applications a soft valve head seal is available in FPM. This is designated by the letter 'S' i.e. SRV461S (see 'How to order').



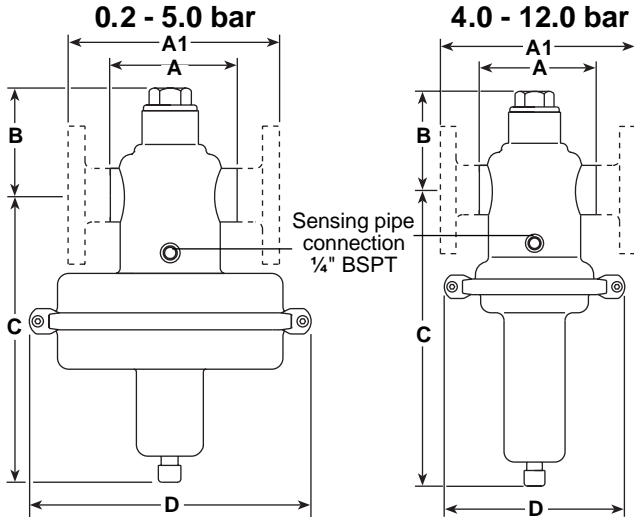
### K<sub>v</sub> values

Valve size	1/2" DN15	3/4" DN20	1" DN25	1 1/4" DN32	1 1/2" DN40	2" DN50
<b>K<sub>v</sub> at 20% offset</b>	3.2	4.0	4.8	9.6	12.8	14.4
<b>Maximum K<sub>v</sub></b>	4.0	5.0	6.0	12.0	16.0	18.0

To maximise the control accuracy (especially for large load variations) use the K<sub>v</sub> values given at 20% offset. For safety valve sizing use the maximum K<sub>v</sub> values.

## Dimensions (approximate) in millimetres

Size	All pressure ranges			Pressure rating (bar)									
	A	A1	B	0.02 - 0.12		0.1 - 0.5		0.3 - 1.1		0.8 - 5.0		4.0 - 12.0	
				C	ØD	C	ØD	C	ØD	C	ØD	C	ØD
DN15 ½"	85	130	76	300	360	300	264	300	175	235	138	235	138
DN20 ¾"	91	150	76	300	360	300	264	300	175	235	138	235	138
DN25 1"	85	160	76	300	360	300	264	300	175	235	138	235	138
DN32 1½"	130	180	90	300	360	300	264	300	175	235	138	235	138
DN40 1½"	145	200	90	300	360	300	264	300	175	235	138	235	138
DN50 2"	185	230	90	300	360	300	264	300	175	235	138	235	138



## Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P186-02) supplied with the product.

### Installation note:

Note that for use on steam, the spring housing must be below the pipework. A downstream pressure sensing pipe is also required.

### How to order

**Example:** 1 off Spirax Sarco ½" NPT SRV461 direct acting pressure reducing valve having a pressure range of 0.8 to 2.5 bar.

**Note:** If the application requires that an FPM valve seal needs to be used the product nomenclature changes to SRV461S.

### Spare parts

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

#### Available spares

Diaphragm and 'O' ring kit	<b>6, 7, 8, 9, 16</b>
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#### 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 kit for a Spirax Sarco DN15 SRV463 direct acting pressure reducing valve having a pressure range of 0.8 to 2.5 bar.

## Weights (approximate) in kg

Size	Pressure rating (bar)	Pressure rating (bar)			
		0.02 - 0.12	0.1 - 0.5	0.3 - 1.1	0.8 - 12.0
½" - 1"	Screwed	13.5	7.1	6.1	3.1
	Flanged	15.3	8.9	7.9	4.9
1¼" - 2"	Screwed	14.4	8.0	7.0	4.0
	Flanged	18.4	12.0	11.0	8.0

## Sizing

The required  $K_V$  can be calculated from the following formulae,

where:

$m_s$  = Steam mass flow (kg/h)

$V$  = Liquid volume flow (m<sup>3</sup>/h)

$V_g$  = Gas flow at standard conditions: 0°C @ 1.013 bar a (m<sup>3</sup>/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:**  $P_2 \leq 0.58 P_1$

$$K_V = \frac{m_s}{12 P_1}$$

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

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

## Gas

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

## Liquid

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

