



Cert. No. LRQ 0963008

ISO 9001

# spirax sarco

**TI-P183-02**  
 CH Issue 3


## STERI-TROL Clean Service 'S' series Two-port and Three-port Control Valves - DN15 (1/2") to DN100 (4")

### Description

STERI-TROL 'S' series are two-port and three-port control valves manufactured using 316L stainless steel. They are designed for mixing fluids (three-port only), and for on/off and modulating control of clean steam, pure steam and process fluids. The valve is operated by a pneumatic actuator and may be interfaced with a control system using any of the Spirax Sarco range of positioners.

### Available types

<b>SA</b>	Two-port angle pattern design
<b>SH</b>	Two-port horizontal pattern design
<b>SQ</b>	Three-port design

### Valve characteristics - options:

<b>SAE</b> <b>SHE</b>	<b>Equal percentage (E)</b> - Suitable for most modulating process control applications good control providing at low flowrates.
<b>SAL</b> <b>SHL</b> <b>SQL</b>	<b>Linear (L)</b> - Primarily for liquid flow control where the differential pressure across the valve is constant.

**Important note:** Throughout this document, reference has been made to the standard SAE control valve. With the exception of the trim type and porting arrangement, the SAE, SHE, SAL and SHL control valves are virtually identical.

### Approvals and certification

Compliant to ASME BPE 2002.  
 FDA, 3A and USP26 Class VI approved sealing materials.  
 Designed in accordance with 3A's and EHEDG.  
 EN 10204 type 3.1 certificates supplied as standard.  
 Surface finish certificate available on request.

### Valve seating - options:

<b>S</b>	<b>Metal-to-metal (as standard)</b> - Stainless steel
<b>V</b>	<b>Soft seal</b> - White Viton to provide a tight shut-off.

### Valve stem sealing - options:

<b>E</b>	<b>EPDM (as standard)</b> - 3A and FDA approved
<b>V</b>	<b>White Viton</b> - 3A, FDA and USP26 Class VI approved

### The STERI-TROL can be used with the following actuators and positioners:

<b>Electric</b>	EL3500 and EL5600 series
<b>Pneumatic</b>	PNS3000, PNS4000, PN9000E and PN9000R series
	PP5 (pneumatic) or EP5 (electropneumatic)
<b>Positioners</b>	ISP5 (intrinsically safe electropneumatic) SP200 (smart electropneumatic) SP300

Refer to the relevant actuator Technical Information sheet for further details.

### Sizes and end connections

Connections	Size range
Butt weld/tube weld, screwed, flanged and sanitary clamp	DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80 and DN100 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3" and 4"

- DN15, DN20 and DN32 is not available for certain end connections - see page 14.

**Notes:** - Other end connections are available as detailed on page 14.  
 - If you require a pipe end connection which has not been mentioned within this document, please contact Spirax Sarco sales office for further advice and information regarding availability.

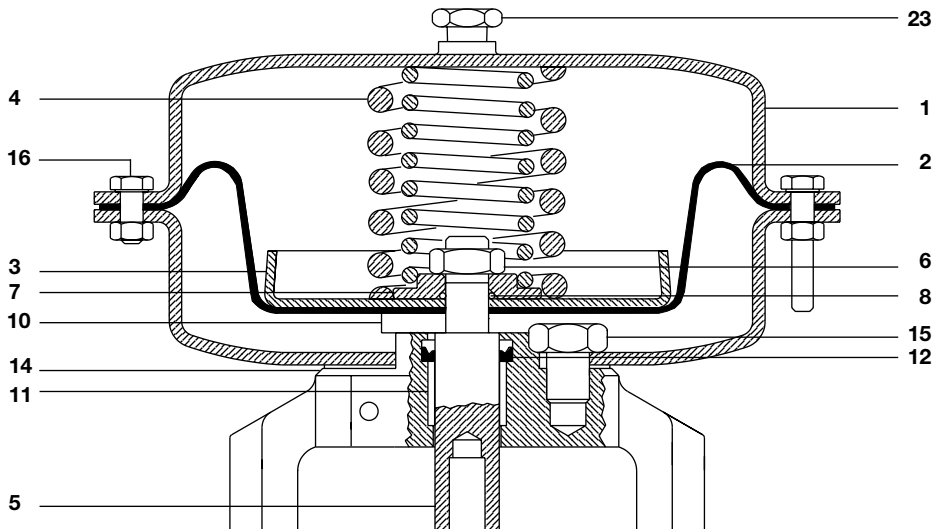


### Technical data

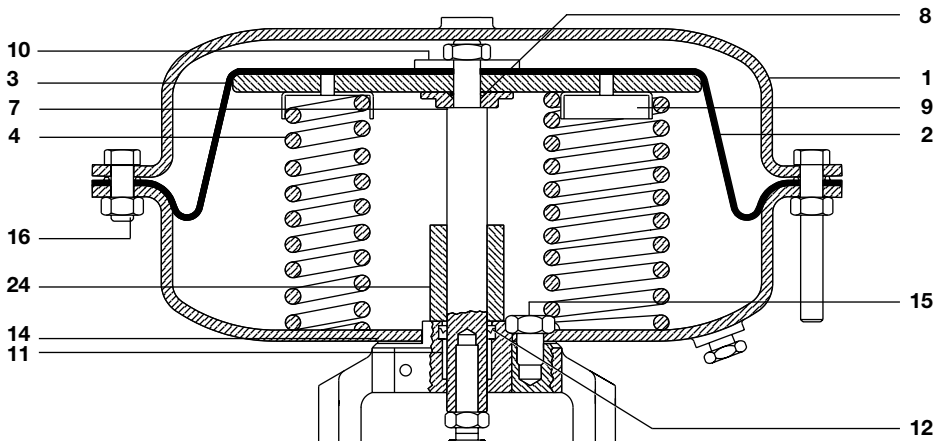
<b>Plug design</b>	DN15 to DN100	Parabolic
<b>Leakage</b>	Metal-to-metal	(0.01% of Kv)
	Soft seal	IEC 534-4 Class VI
<b>Rangeability</b>	Equal percentage	50:1
	Linear	30:1
<b>Travel</b>	DN15 to DN50 (1/2" to 2")	20 mm
	DN65 to DN100 (2 1/2" to 4")	30 mm
<b>Surface finish</b>	Internal (Mechanical or electro polished)	0.4 μ
	External	< 0.6 μ

**Materials**

**PNS3000 series**



**PNS4000 series**



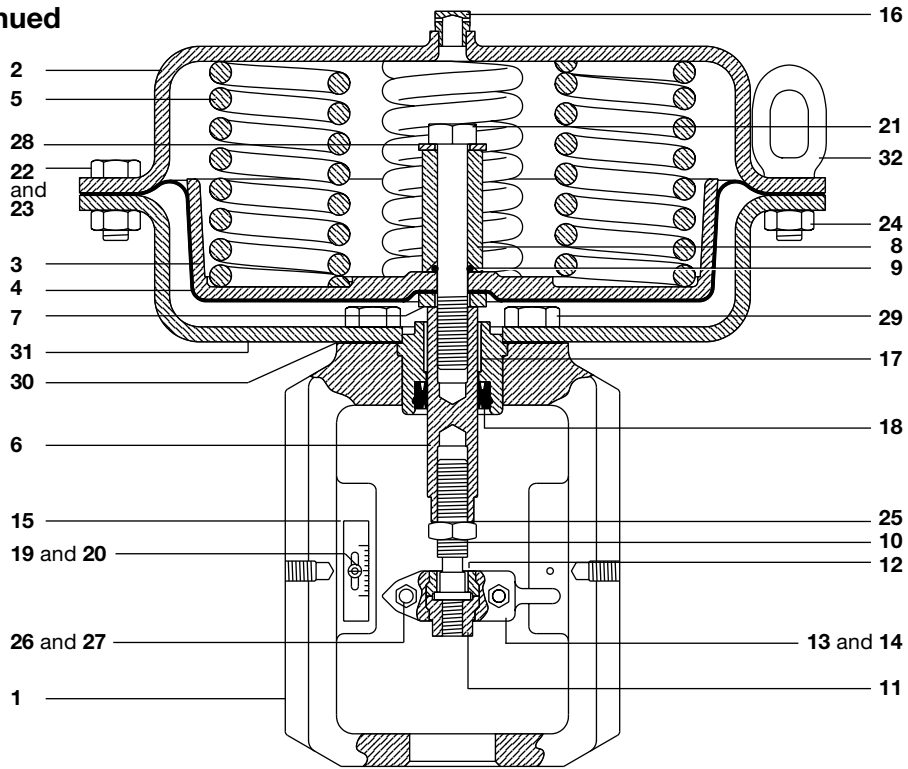
**PNS3000 and PNS4000 series actuators**

No.	Part	Material
1	Diaphragm housing	Stainless steel 304
2	Diaphragm	Reinforced nitrile rubber
3	Diaphragm plate	Pressed steel
4	Springs	Spring steel
5	Spindle	Stainless steel
6	Lock-nut	Stainless steel
7	Spacer	Zinc plated steel
8	'O' ring	Rubber
9	Spring guide	Zinc plated steel
10	Diaphragm clamp	Zinc plated steel
11	Bearing	Bronze
12	'V' ring	Rubber

No.	Part	Material
13	Yoke	Stainless steel 304
14	Gasket	Non asbestos fibre
15	Fixing screwed	Stainless steel
16	Housing bolts and nuts	Stainless steel
17	Top adaptor	Stainless steel
18	Lock-nut	Stainless steel
19	Bottom adaptor	Stainless steel
20	Connectors	Stainless steel
21	Connectors bolts and nuts	Stainless steel
22	Travel indicator	Aluminium
23	Cap (with vent hole)	Nickel plated brass
24	Spacer	Zinc plated steel

Materials continued

PN9000



PN 9000 series actuators

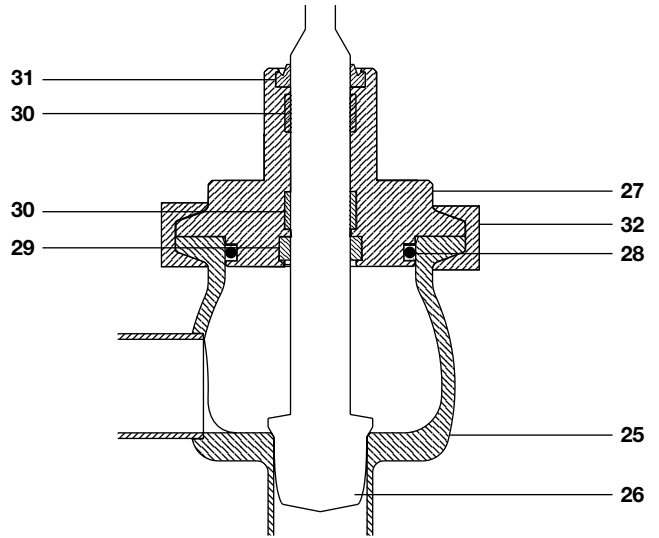
No.	Part	Material	
1	Yoke	SG iron	
2	Upper diaphragm housing	Carbon steel (plated)	
3	Diaphragm plate	Aluminium	
4	Diaphragm	Reinforced NBR	
5	Spring	Spring steel	
6	Spindle	Stainless steel	
7	Washer	Carbon steel (plated)	
8	Spacer	Carbon steel (plated)	
9	'O' ring	Viton	
10	Connector	Carbon steel (plated)	
11	Adaptor	Carbon steel (plated)	
12	Collar	Carbon steel (plated)	
13	Clamp front	Stainless steel	
14	Clamp rear	Stainless steel	
15	Scale	Stainless steel	
16	Vent plug	Brass	
17	Bearing	PTFE /steel composite	
18	Seal	Polyurethane	
19	Pan head screw	Carbon steel (plated)	
20	Nyloc nut	Carbon steel (plated)	
21	Bolt	Carbon steel (plated)	Gr. 8.8
22	Hex. head screw (short)	Carbon steel (plated)	Gr. 8.8
23	Hex. head screw (long)	Carbon steel (plated)	Gr. 8.8
24	Nut	Carbon steel (plated)	Gr. 8.8
25	Lock-nut	Carbon steel (plated)	
26	Socket head screw	Carbon steel (plated)	Gr. 8.8
27	Nut	Carbon steel (plated)	Gr. 8.8
28	Washer	Carbon steel (plated)	
29	Screw	Carbon steel (plated)	Gr. 8.8
30	Gasket	Reinforced graphite	
31	Lower diaphragm housing	Carbon steel (plated)	
32	Lifting eye	Cast steel	

**Materials continued**

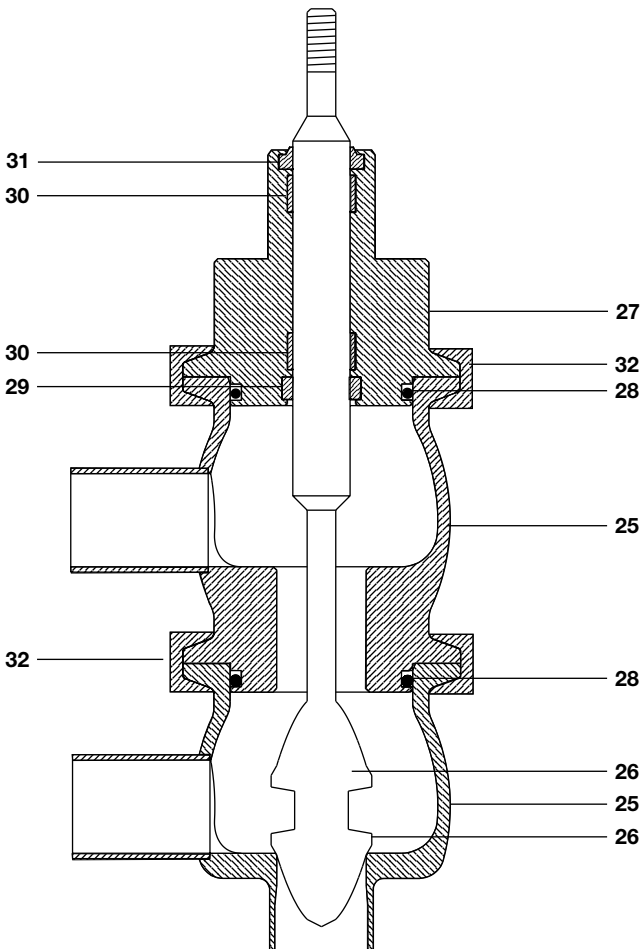
**SA, SH and SQ control valves**

No. Part	Material
25 Body	Stainless steel 316L
26 Valve plug, stem and soft seal	Stainless steel 316L Stainless steel 316L and white Viton or EPDM
27 Bonnet	Stainless steel 316L
28 Body seal	White Viton or EPDM
29 Stem seal	White Viton or EPDM
30 Stem bushes	PTFE-FC
31 Seal washer	White Viton or EPDM
32 Body clamp	Stainless steel 304

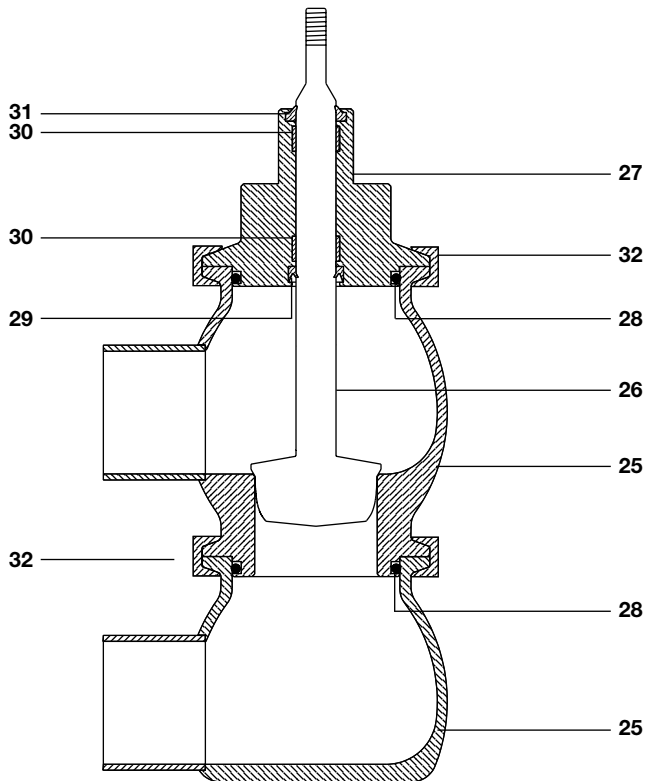
**SA 2-port control valve**



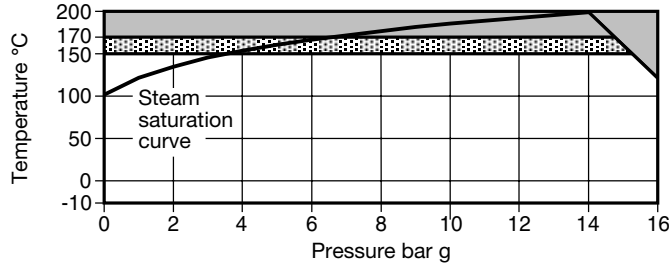
**SQ 3-port control valve**



**SH 2-port control valve**



**Pressure / temperature limits**



The product **must not** be used in this region.  
 Viton (V) stem seals **must be selected** for use in this region.  
**Note:** the EPDM (E) stem seals are limited to 150°C

<b>Body design conditions</b>	PN16
<b>Maximum design pressure</b>	16 bar g @ 120°C
<b>Maximum design temperature</b>	200°C @ 14 bar g
<b>Minimum design temperature</b>	-20°C
<b>Maximum operating temperature</b>	EPDM (E) 150°C Viton (V) 170°C
<b>Minimum operating temperature</b>	-10°C
<b>Note:</b> For lower operating temperatures consult Spirax Sarco.	
<b>Maximum differential pressure</b>	See pages 6 to 11
<b>Designed for a maximum cold hydraulic test pressure of:</b>	24 bar g

**Kv values (SA and SH models)**

Flow characteristic	Valve size	K <sub>vs</sub> by valve size and trim reduction								
		DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
	Travel	20 mm						30 mm		
Equal percentage and linear	Standard	4	6.3	10	16	25	36	63	100	160
	Reduction 1	-	4	6.3	10	16	25	36	63	100
	Reduction 2	-	-	4	6.3	10	16	25	36	63
	Reduction 3	-	-	-	4	6.3	10	16	25	36

**Kv values (SQ model)**

Flow characteristic	Valve size	K <sub>vs</sub> by valve size and trim reduction								
		DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
	Travel	20 mm						30 mm		
Linear	Standard	4	6.3	10	16	25	36	63	100	160

**Micro-flow trim for all valves <= DN25 (SA and SH only)**

Micro-flow trim	Travel	20 mm				
		Trim size	1/8"	3/16"	1/4"	1/4"
Linear characteristic	K <sub>vs</sub>	0.4	0.63	1.0	1.6	2.5

For conversion:  $K_v = C_v (US) \times 0.855$      $C_v (UK) = C_v (US) \times 0.833$

**Notes:**

1. Lower K<sub>v</sub> values are available to special order.
2. Micro-flow and Equal percentage trim are **not** available for the SQ 3-port control valve.

## Maximum differential pressures for Class IV shut-off SA and SH valves

### PNS3000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100									
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160									
Travel mm			20 mm						30 mm											
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)																	
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton		
PNS3220	0.2 - 1.0	Optional	8.3	4.1	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	0.4 - 1.2	Optional	16.0	14.0	7.1	4.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-	
PNS3320	0.2 - 1.0	Optional	16.0	16.0	16.0	4.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-	
	0.4 - 1.2	Optional	16.0	16.0	16.0	11.4	7.6	3.8	-	-	-	-	-	-	-	-	-	-	-	
PNS3326	1.0 - 3.0	Yes	16.0	16.0	12.8	16.0	16.0	12.7	-	-	-	-	-	-	-	-	-	-	-	
PNS3420	0.2 - 1.0	Optional	16.0	16.0	16.0	7.7	5.0	2.3	-	-	-	-	-	-	-	-	-	-	-	
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	12.8	6.8	-	-	-	-	-	-	-	-	-	-	-	
PNS3426	1.0 - 3.0	Yes	-	-	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	
PNS3430	0.4 - 1.2	Optional	-	-	-	-	-	-	3.4	2.0	1.2	-	-	-	-	-	-	-	-	
PNS3436	1.0 - 3.0	Yes	-	-	-	-	-	-	10.7	6.9	4.6	-	-	-	-	-	-	-	-	

### PN9000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100									
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160									
Travel mm			20 mm						30 mm											
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)																	
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton		
PN9120E	0.4 - 1.2	Optional	14.0	8.0	4.0	2.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-	
PN9126E	1.0 - 2.0	Yes	16.0	16.0	15.0	9.0	6.0	3.0	-	-	-	-	-	-	-	-	-	-	-	
PN9123E	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	15.0	8.0	-	-	-	-	-	-	-	-	-	-	-	
PN9220E	0.2 - 1.0	Optional	16.0	16.0	10.0	6.0	3.0	1.0	-	-	-	-	-	-	-	-	-	-	-	
	0.4 - 1.2	Optional	16.0	16.0	16.0	15.0	10.0	5.0	-	-	-	-	-	-	-	-	-	-	-	
PN9226E	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	
PN9223E	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	
PN9320E	0.2 - 1.0	Optional	16.0	16.0	16.0	14.0	10.0	5.0	-	-	-	-	-	-	-	-	-	-	-	
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	12.0	-	-	-	-	-	-	-	-	-	-	-	
PN9330E	0.4 - 1.2	Yes	-	-	-	-	-	-	6.0	4.0	3.0	-	-	-	-	-	-	-	-	
PN9336E	1.0 - 2.0	Yes	-	-	-	-	-	-	16.0	12.0	8.0	-	-	-	-	-	-	-	-	
PN9337E	2.5 - 3.5	Yes	-	-	-	-	-	-	16.0	16.0	16.0	-	-	-	-	-	-	-	-	

**Maximum differential pressures for Class IV shut-off SA and SH valves**

**PNS4000 spring-to-retract actuators**

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100										
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160										
Travel mm			20 mm						30 mm												
Actuator	Spring range	Positioner required	Minimum air pressure	Maximum differential pressure Class IV (bar)																	
				EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton
PNS4220	0.2 - 1.0	Optional	1.4	16.0	14.0	7.1	4.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	16.0	16.0	16.0	15.1	10.2	5.3	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	16.0	16.0	16.0	16.0	16.0	12.7	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	4.0	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
PNS4320	0.2 - 1.0	Optional	1.4	16.0	16.0	16.0	11.4	7.6	3.8	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	16.0	16.0	16.0	16.0	16.0	12.7	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
PNS4420	0.2 - 1.0	Optional	1.4	-	-	16.0	16.0	12.8	6.8	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	-	-	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	-	-	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
PNS4430	0.2 - 1.0	Optional	1.4	-	-	-	-	-	-	3.4	2.0	1.2	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	-	-	-	-	-	-	10.7	6.9	4.6	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	-	-	-	-	-	-	16.0	15.0	10.2	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	4.0	-	-	-	-	-	-	16.0	16.0	15.8	-	-	-	-	-	-	-	-	-

**PN9000 spring-to-retract actuators**

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100										
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160										
Travel mm			20 mm						30 mm												
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)																		
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	
PN9120R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9126R	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9123R	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9220R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9226R	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9223R	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9320R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9330R	0.4 - 1.2	Yes	-	-	-	-	-	-	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-
PN9336R	1.0 - 2.0	Yes	-	-	-	-	-	-	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-
PN9337R	2.5 - 3.5	Yes	-	-	-	-	-	-	8.0	5.0	3.0	-	-	-	-	-	-	-	-	-	-

## Maximum differential pressures for Class VI shut-off (soft seat seal only) SA and SH valves

### PNS3000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100									
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160									
Travel mm			20 mm						30 mm											
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (bar)																	
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton
PNS3220	0.4 - 1.2	Optional	12.1	8.4	3.0	2.3	1.3	-	-	-	-									
PNS3320	0.2 - 1.0	Optional	12.1	8.4	3.0	2.3	1.3	-	-	-	-									
	0.4 - 1.2	Optional	16.0	16.0	9.1	7.4	5.1	2.3	-	-	-									
PNS3326	1.0 - 3.0	Yes	16.0	16.0	16.0	16.0	16.0	8.4	-	-	-									
PNS3420	0.2 - 1.0	Optional	16.0	14.9	6.0	4.8	3.2	1.3	-	-	-									
	0.4 - 1.2	Optional	16.0	16.0	15.1	12.4	8.8	4.4	-	-	-									
PNS3426	1.0 - 3.0	Yes	-	-	16.0	16.0	16.0	13.5	-	-	-									
PNS3430	0.4 - 1.2	Optional	-	-	-	-	-	-	2.2	1.7	-									
PNS3436	1.0 - 3.0	Yes	-	-	-	-	-	-	7.4	5.9	3.7									

### PN9000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100									
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160									
Travel mm			20 mm						30 mm											
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (bar)																	
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton
PN9120E	0.4 - 1.2	Optional	7.0	4.0	1.0	1.0	-	-	-	-	-									
PN9126E	1.0 - 2.0	Yes	16.0	16.0	7.0	6.0	4.0	2.0	-	-	-									
PN9123E	2.0 - 4.0	Yes	16.0	16.0	16.0	15.0	10.0	5.0	-	-	-									
PN9220E	0.2 - 1.0	Optional	16.0	11.0	4.0	3.0	2.0	1.0	-	-	-									
	0.4 - 1.2	Optional	16.0	16.0	12.0	10.0	7.0	3.0	-	-	-									
PN9226E	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	11.0	-	-	-									
PN9223E	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-									
PN9320E	0.2 - 1.0	Optional	16.0	16.0	11.0	9.0	7.0	3.0	-	-	-									
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	15.0	8.0	-	-	-									
PN9330E	0.4 - 1.2	Yes	-	-	-	-	-	-	4.0	3.0	2.0									
PN9336E	1.0 - 2.0	Yes	-	-	-	-	-	-	13.0	10.0	6.0									
PN9337E	2.5 - 3.5	Yes	-	-	-	-	-	-	16.0	16.0	16.0									



**Maximum differential pressures for Class VI shut-off (soft seat seal only) SA and SH valves**

**PNS4000 spring-to-retract actuators**

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100										
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160										
Travel mm			20 mm						30 mm												
Actuator	Spring range	Positioner required	Minimum air pressure	Maximum differential pressure Class VI (bar)																	
				EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton
PNS4220	0.2 - 1.0	Optional	1.4	12.1	8.4	3.0	2.3	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	16.0	16.0	12.1	9.9	6.9	3.3	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	16.0	16.0	16.0	16.0	16.0	8.4	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	4.0	16.0	16.0	16.0	16.0	16.0	13.5	-	-	-	-	-	-	-	-	-	-	-	-
PNS4320	0.2 - 1.0	Optional	1.4	16.0	16.0	9.1	7.4	5.1	2.3	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	16.0	16.0	16.0	16.0	16.0	8.4	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
PNS4420	0.2 - 1.0	Optional	1.4	-	-	15.1	12.4	8.8	4.4	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	-	-	16.0	16.0	16.0	13.5	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	-	-	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-
PNS4430	0.2 - 1.0	Optional	1.4	-	-	-	-	-	-	2.2	1.7	-	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	2.0	-	-	-	-	-	-	7.4	5.9	3.7	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	3.0	-	-	-	-	-	-	16.0	13.1	8.4	-	-	-	-	-	-	-	-	-
	0.2 - 1.0	Yes	4.0	-	-	-	-	-	-	16.0	16.0	13.1	-	-	-	-	-	-	-	-	-

**PN9000 spring-to-retract actuators**

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100										
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160										
Travel mm			20 mm						30 mm												
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (bar)																		
			EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	EPDM	Viton	
PN9120R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9126R	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9123R	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9220R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9226R	1.0 - 2.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9223R	2.0 - 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9320R	0.2 - 1.0	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.4 - 1.2	Optional	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-
PN9330R	0.4 - 1.2	Yes	-	-	-	-	-	-	16.0	16.0	16.0	-	-	-	-	-	-	-	-	-	-
PN9336R	1.0 - 2.0	Yes	-	-	-	-	-	-	16.0	16.0	14.0	-	-	-	-	-	-	-	-	-	-
PN9337R	2.5 - 3.5	Yes	-	-	-	-	-	-	6.0	4.0	3.0	-	-	-	-	-	-	-	-	-	-

### Maximum differential pressures for Class IV Viton soft seal seated SQ valves

For pure control applications providing control across the full valve opening range but not guaranteeing shut-off to a greater level than the minimum flowrate based on the valves 30:1 turndown.

#### PNS3000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160	
Travel mm			20 mm						30 mm			
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)									
PNS3320	0.2 – 1.0	Optional	16.0	14.0	7.1	4.0	2.4	-	-	-	-	
	0.4 – 1.2	Optional	16.0	16.0	16.0	11.4	7.6	3.8	-	-	-	
PNS3326	1.0 – 3.0	Yes	16.0	16.0	16.0	16.0	16.0	12.7	-	-	-	
PNS3420	0.2 – 1.0	Optional	16.0	16.0	12.8	7.7	5.0	2.3	-	-	-	
	0.4 – 1.2	Optional	16.0	16.0	16.0	16.0	12.8	6.8	-	-	-	
PNS3426	1.0 – 3.0	Yes	-	-	16.0	16.0	16.0	16.0	-	-	-	
PNS3430	0.4 – 1.2	Optional	-	-	-	-	-	-	3.4	2.0	1.2	
PNS3436	1.0 – 3.0	Yes	-	-	-	-	-	-	10.7	6.9	4.6	

#### PN9000 spring-to-extend actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160	
Travel mm			20 mm						30 mm			
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)									
PN9120E	0.2 – 1.0	Optional	11.0	2.0	1.0	-	-	-	-	-	-	
	0.4 – 1.2	Optional	16.0	9.0	4.0	2.0	1.0	-	-	-	-	
PN9126E	1.0 – 2.0	Yes	16.0	16.0	16.0	10.0	7.0	3.0	-	-	-	
PN9123E	2.0 – 4.0	Yes	16.0	16.0	16.0	16.0	15.0	8.0	-	-	-	
PN9220E	0.2 – 1.0	Optional	16.0	16.0	16.0	6.0	4.0	2.0	-	-	-	
	0.4 – 1.2	Optional	16.0	16.0	16.0	15.0	10.0	6.0	-	-	-	
PN9226E	1.0 – 2.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	
PN9223E	2.0 – 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-	
PN9320E	0.2 – 1.0	Optional	16.0	16.0	16.0	16.0	10.0	5.0	-	-	-	
	0.4 – 1.2	Optional	16.0	16.0	16.0	16.0	16.0	13.0	-	-	-	
PN9330E	0.4 – 1.2	Yes	-	-	-	-	-	-	7.0	4.0	3.0	
PN9336E	1.0 – 2.0	Yes	-	-	-	-	-	-	16.0	12.0	8.0	
PN9337E	2.5 – 3.5	Yes	-	-	-	-	-	-	8.0	5.0	3.0	

### Maximum differential pressures for Class IV Viton soft seal seated SQ valves

For pure control applications providing control across the full valve opening range but not guaranteeing shut-off to a greater level than the minimum flowrate based on the valves 30:1 turndown.

#### PNS4000 spring-to-retract actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160
Travel mm			20 mm						30 mm		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)								
PNS4320	0.2 – 1.0	Optional	16.0	14.0	7.1	4.0	2.4	-	-	-	-
	0.4 – 1.2	Optional	16.0	16.0	16.0	11.4	7.6	3.8	-	-	-
PNS4326	1.0 – 3.0	Yes	16.0	16.0	16.0	16.0	16.0	12.7	-	-	-
PNS4420	0.2 – 1.0	Optional	16.0	16.0	12.8	7.7	5.0	2.3	-	-	-
	0.4 – 1.2	Optional	16.0	16.0	16.0	16.0	12.8	6.8	-	-	-
PNS4426	1.0 – 3.0	Yes	-	-	16.0	16.0	16.0	16.0	-	-	-
PNS4430	0.4 – 1.2	Optional	-	-	-	-	-	-	3.4	2.0	1.2
PNS4436	1.0 – 3.0	Yes	-	-	-	-	-	-	10.7	6.9	4.6
PNS4534	0.8 – 1.5	Yes	-	-	-	-	-	-	13.6	8.8	5.9
PNS4634	0.8 – 1.5	Yes	-	-	-	-	-	-	16.0	13.3	9.0

#### PN9000 spring-to-retract actuators

Valve size			DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
K <sub>v</sub>			4.0	6.3	10	16	25	36	63	100	160
Travel mm			20 mm						30 mm		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (bar)								
PN9120R	0.4 – 1.2	Optional	7.0	4.0	1.0	1.0	-	-	-	-	-
PN9126R	1.0 – 2.0	Yes	16.0	16.0	7.0	6.0	4.0	2.0	-	-	-
PN9123R	2.0 – 4.0	Yes	16.0	16.0	16.0	15.0	10.0	5.0	-	-	-
PN9220R	0.2 – 1.0	Optional	16.0	11.0	4.0	3.0	2.0	10.0	-	-	-
	0.4 – 1.2	Optional	16.0	16.0	12.0	10.0	7.0	3.0	-	-	-
PN9226R	1.0 – 2.0	Yes	16.0	16.0	16.0	16.0	16.0	11.0	-	-	-
PN9223R	2.0 – 4.0	Yes	16.0	16.0	16.0	16.0	16.0	16.0	-	-	-
PN9320R	0.2 – 1.0	Optional	16.0	16.0	11.0	9.0	7.0	3.0	-	-	-
	0.4 – 1.2	Optional	16.0	16.0	16.0	16.0	15.0	8.0	-	-	-
PN9330R	0.4 – 1.2	Yes	-	-	-	-	-	-	4.0	3.0	2.0
PN9336R	1.0 – 2.0	Yes	-	-	-	-	-	-	13.0	10.0	6.0
PN9337R	2.5 – 3.5	Yes	-	-	-	-	-	-	6.0	4.0	3.0

**Valve dimensions (approximate in mm)**

Valve Size	Connection and Dimensions								
	Tube end		Threaded	Sanitary clamp	Flanged	Dimensions common to all connections			
	A	B	A and B	A and B	A and B	B1	C	D	E
DN15	70	24	-	42.0	90	14	64	43	56
DN20	70	26	-	44.0	95	16	64	43	56
DN25	70	40	55	60.3	100	20	73	57	80
DN32	70	43	66	64.5	105	23	75	57	84
DN40	70	49	70	69.9	115	27	80	57	94
DN50	85	54	82	88.9	125	32	91	65	116
DN65	105	68	105	88.9	145	43	95	85	114
DN80	105	83	110	95.3	155	52	121	85	166
DN100	130	96	150	114.3	175	60	133	97	180

**Valve weights (kg)**

Valve size	Model SA				Model SH				Model SQ			
	Sanitary clamp and screwed	Tube end	Flanged PN6	Flanged PN10 PN16	Sanitary clamp and screwed	Tube End	Flanged PN6	Flanged PN10 PN16	Sanitary clamp and screwed	Tube end	Flanged PN6	Flanged PN10 PN16
DN15	1.5	1.0	2.0	2.5	2.0	1.5	2.5	3.0	-	-	-	-
DN20	1.5	1.0	2.5	3.5	2v	1.5	3.0	4.0	2.5	2.0	3.5	4.5
DN25	2.5	2.0	3.5	4.5	3.5	3.0	4.5	5.5	4.0	3.5	5.0	6.0
DN32	3.0	2.0	4.5	5.5	4.0	3.5	6.0	7.0	5.0	4.5	7.0	7.5
DN40	3.0	2.5	5.0	6.0	4.5	4.0	7.0	8.0	5.5	5.0	8.0	8.5
DN50	4.0	3.0	6.5	9.0	6.0	5.0	8.5	11.0	7.5	6.5	10.0	12.0
DN65	6.5	5.5	9.5	12.5	10.0	8.5	12.5	15.5	9.5	8.0	12.0	19.0
DN80	8.0	7.0	13.0	15.5	12.5	11.0	17.5	20.0	13.5	12.0	18.5	21.0
DN100	11.0	10.0	16.5	19.0	17.0	15.5	22.5	25.0	19.0	17.0	24.0	26.5

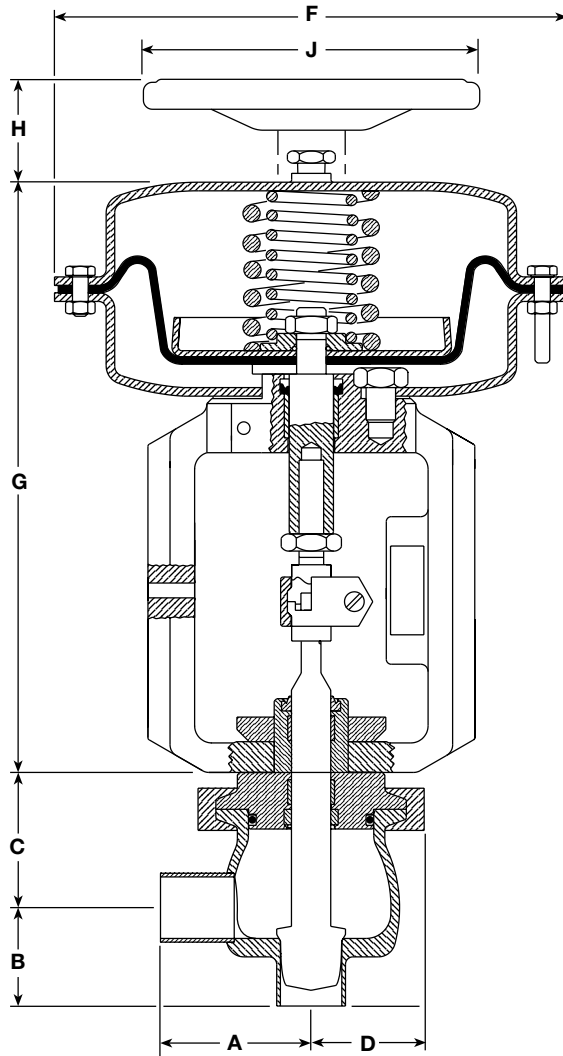
**Actuator dimensions and weights (approximate) in mm and kg**

Actuator type	F	G	H	Weight	Weight with handwheel
PNS3200 and PNS4200 series	209	240	N/A	7.2	9.5
PNS3300 and PNS4300 series	285	264	113	11.2	13.5
PNS3420 and PNS4420 series	336	263	113	20.0	22.3
PNS3430 and PNS4430 series	336	328	157	20.0	23.7
PNS3530 series	405	367	157	22.6	26.3
PNS3630 series	465	400	157	38.0	41.7

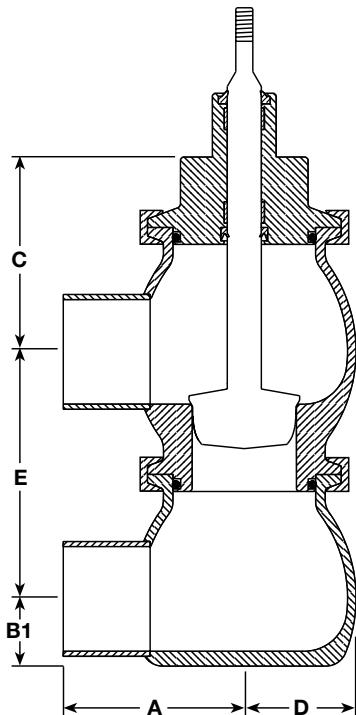
**Dimensions / weights (approximate) in mm and kg**

Actuator range	F	G	H	J	Weight	
					Actuator	With handwheel
PN9100E and variants	275	170	55	225	6	+5.86
PN9100R and variants	275	170	140	225	6	+2.50
PN9200E and variants	300	300	55	350	17	+7.20
PN9200R and variants	300	300	140	350	17	+7.20
PN9320E and variants	325	390	65	350	27	+7.20
PN9320R and variants	325	390	150	350	27	+3.77
PN9330E and variants	335	390	65	350	27	+7.20
PN9330R and variants	335	390	150	350	27	+3.77

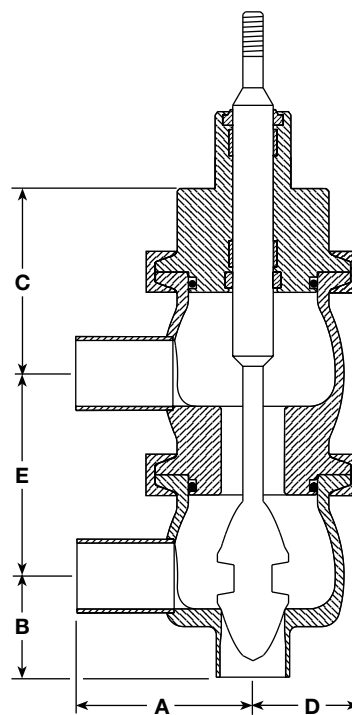
Actuator and SA valve



SH valve



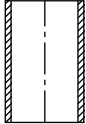
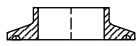
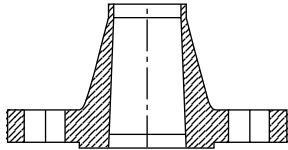
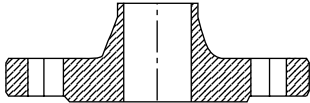
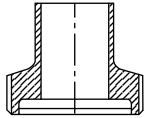
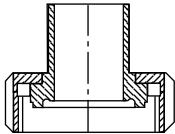

SQ valve



**Connection codes**

The codes specified below represent a small selection of pipe end connections that are available. If the connection required is not specified below please contact Spirax Sarco.

**Note:** All sizes are available for each connection / specification unless otherwise stated.

Connection		Specification	Code
Butt weld and Tube weld		DIN 11850 (Series 2)	OO
		ISO 2837 (Not available for the DN15 and DN20 sizes)	OA
		SMS 3008	
		EN ISO 1127	OB
		BS 4825 (Pt 1) (Not available for size DN32)	OC
		ASME BPE (Not available for size DN32)	OD
Sanitary clamp		ASME BPE (Tri-clamp®) (Not available for size DN32)	AO
		BS 4825 (Pt 3) (Not available for size DN32)	BO
		ISO 2852	CO
		DIN 32676	SO
ANSI 150		ANSI B 16.5 (Not available for size DN32)	FA
Flanged PN16		DIN 2633	FD
With smooth sealing face		EN 1092 PN6	FE
		EN 1092 PN10	FF
		EN 1092 PN16	FG
Aseptic-thread (fitted on pipe)		DIN 11864 T1 Form A	GS
		DIN 11864 T1 Form B	GT
		DIN 11887 (11851)	GU
		SMS 1146 (Not available for the DN15 and DN20 sizes)	GV
Aseptic-clamp and nut		DIN 11864 T1 Form A	BS
		DIN 11864 T1 Form B	BT
Screwed connection		DIN ISO 228	XG
		NPT ANSI-BI. 20.1-1983 (Not available for size DN32)	XN

## How to order

### Ordering a control valve

<b>Valve size</b>	DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80 and DN100 <b>Note:</b> DN15, DN20 and DN32 is not available for certain end connections - see page 14.	<b>DN15</b>
<b>Valve series</b>	SA = Two-port angle pattern design SH = Two-port horizontal design SQ = Three-port valve design	<b>SA</b>
<b>Valve characteristic</b>	E = Equal percentage (SA and SH models only) L = Linear	<b>E</b>
<b>Body material</b>	6 = 316L stainless steel	<b>6</b>
<b>Connection standard</b>	To be specified - See page 14	<b>SO</b>
<b>Seating option</b>	S = Stainless steel V = White Viton (FDA, 3A and USP26 Class VI approved)	<b>S</b>
<b>Stem and body sealing option</b>	E = EPDM (FDA and 3A approved) V = White Viton (FDA, 3A and USP26 Class VI approved)	<b>V</b>
<b>Centre face dimensions (A)</b>	0 = Standard 1 = Other please specify (mm)	<b>0</b>
<b>Centre face dimensions (B)</b>	0 = Standard 1 = Other please specify (mm)	<b>0</b>
<b>Internal surface finish</b>	0 = Standard 0.4 micron mechanically polished 1 = 0.4 micron electropolished 2 = Other please specify	<b>0</b>
<b>K<sub>vs</sub></b>	To be specified (non standard K <sub>vs</sub> to special order)	<b>4</b>

Ordering a:	PNS pneumatic actuator	PN or PNP pneumatic actuator	
<b>Type</b>	PNS = Pneumatic stainless steel	PN = Pneumatic epoxy coated PNP = Pneumatic electroless nickel plated (ENP)	<b>PNS</b>
<b>Series and action</b>	3 = 3000 multi-spring (spring-to-extend) 4 = 4000 multi-spring (spring-to-retract)	9 = 9000E multi-spring (spring-to-extend) 9 = 9000R multi-spring (spring-to-retract)	<b>3</b>
<b>Diaphragm size</b>	2 3 4	1 2 3	<b>3</b>
<b>Travel</b>	2 = 20mm 3 = 30mm	2 = 20mm 3 = 30mm	<b>2</b>
<b>Spring range</b>	0 = 0.2 to 1.0 bar (0.4 to 1.2 bar) 6 = 1.0 to 3.0 bar	0 = 0.2 to 1.0 bar (0.4 to 1.2 bar) 3 = 2.0 to 4.0 bar 6 = 1.0 to 2.0 bar 7 = 2.5 to 3.5 bar	<b>0</b>
<b>Option</b>	Blank = Standard H = Handwheel *	Blank = Standard H = Handwheel *	

\*Not available in stainless steel

### Ordering example:

1 off Spirax Sarco STERI-TROL type DN15 SAE6SOSV0004 and 1 pneumatic actuator type PNS3320. Having a spring range of 0.4 to 1.2 bar.

**Spare parts**

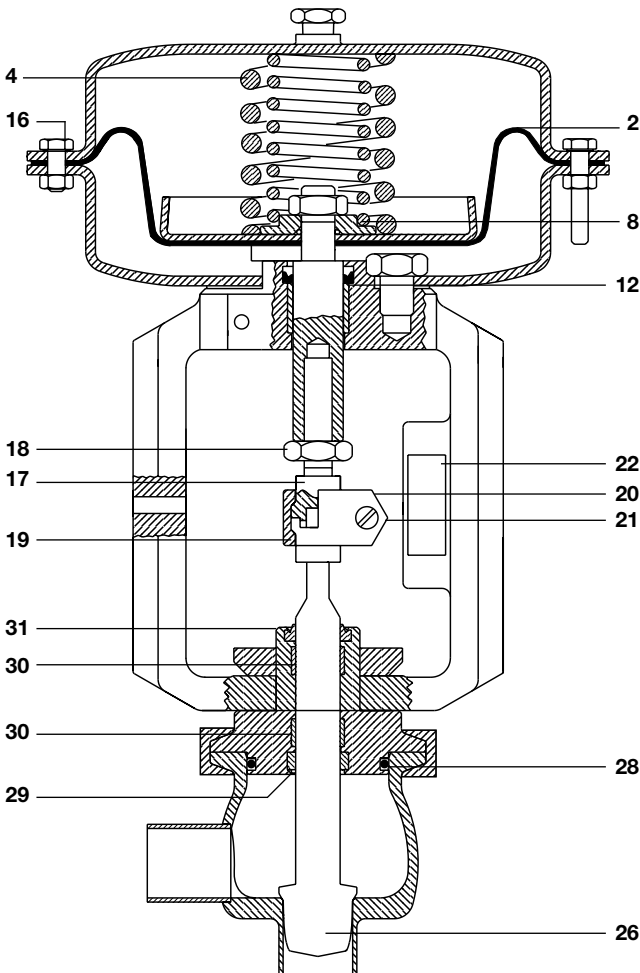
The available spares are identified by the part numbers listed below. When placing an order for spare parts, always specify the actuator or the valve model (shown on the data plate) and the name of the part as described below.

**Available spares for the SA, SH and SQ control valves and the PNS3000 and PNS4000 series actuators**

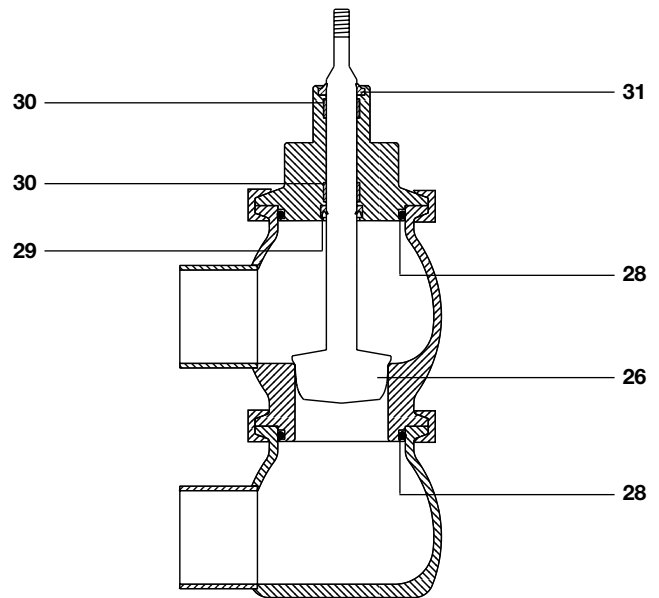
	Description	Part number	
<b>Actuator</b>	Stem seal kit ('O' ring and 'V' ring)	8 and 12	
	Diaphragm kit (diaphragm, 'O' ring and 'V' ring)	2, 8 and 12	
	Travel indicator	22	
	Spring kit (set of springs, included 3 off longer hex, head bolts and nut on some spring range)	4 and 16	
	Linkage kit (lock-nut, top adaptor connectors, bolts and nuts)	17, 18, 19, 20 and 21	
<b>Valve</b>	Valve stem seal set (excluding bonnet seal)	29, 30 and 31	
	SA, SH and SQ models	Bonnet seal EPDM (packet of 3)	28
		Viton (packet of 3)	28
		Plug and stem (Equal percentage or Linear)	26

**Spare parts ordering example:**

1 off Valve stem seal set for a STERI-TROL DN15 SAE6SOSV0004 two-port control valve.  
 1 off Stem seal kit for a type PNS3320 pneumatic actuator having a spring range 0.4 to 1.2 bar.



**Actuator and SA valve**



**SH valve**



**Available spares for the PN9000 series actuators**

	Description	Part number
Actuator	Stem seal kit 'O' ring and 'V' ring	17, 18 and 30
	Diaphragm kit Diaphragm 'O' ring and 'V' ring	4 and 9
	Travel indicator	15, 19 and 20
	Spring kit Set of springs, included 3 off longer hex, head bolts and nut on some spring range	5
	Linkage kit Lock-nut, top adaptor connectors, bolts and nuts	10, 13, 14, 26 and 27

