



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 316L stainless steel, two-port and three-port control valves. They are designed for mixing/diverting 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

SA	Two-port angle pattern design
SH	Two-port horizontal pattern design
SQ	Three-port design

Valve characteristics - options:

SAE SHE	Equal percentage (E) - Suitable for most modulating process control applications good control providing at low flowrates.
SAL SHL SQL	Linear (L) - 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 USP 26 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:

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

Valve stem sealing - options:

E	EPDM (as standard) - 3A and FDA approved
V	White Viton - 3A, FDA and USP 26 Class VI approved

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

Electric	AEL5
Pneumatic	PNS3000, PNS4000, PN9000E and PN9000R series
	PP5 (pneumatic) or EP5 (electropneumatic)
Positioners	ISP5 (intrinsically safe electropneumatic) SP300 (digital communications)

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

Sizes and end connections

Connections*	Size range
Tube end / butt 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"

***Note:** Other end connections are available. 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.

Local regulation may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only. In the interests of development and improvement of the product, we reserve the right to change the specification.

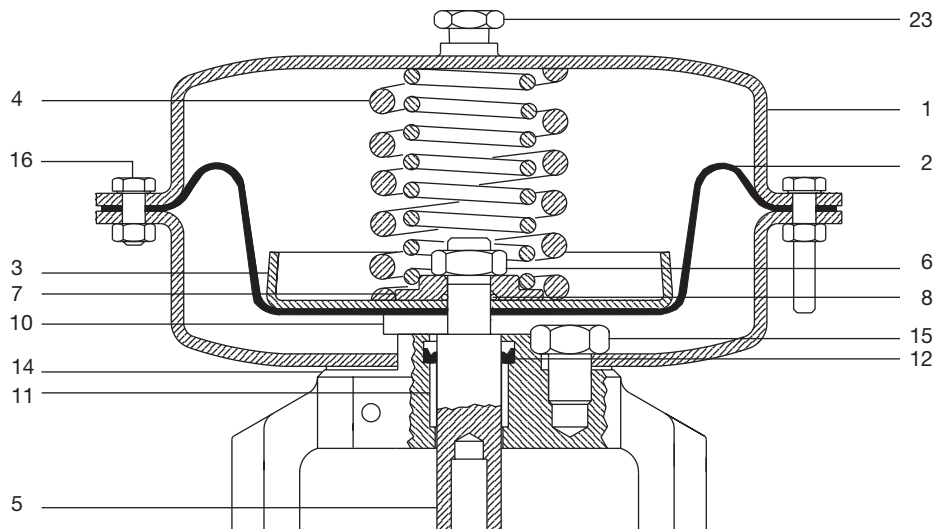


Technical data

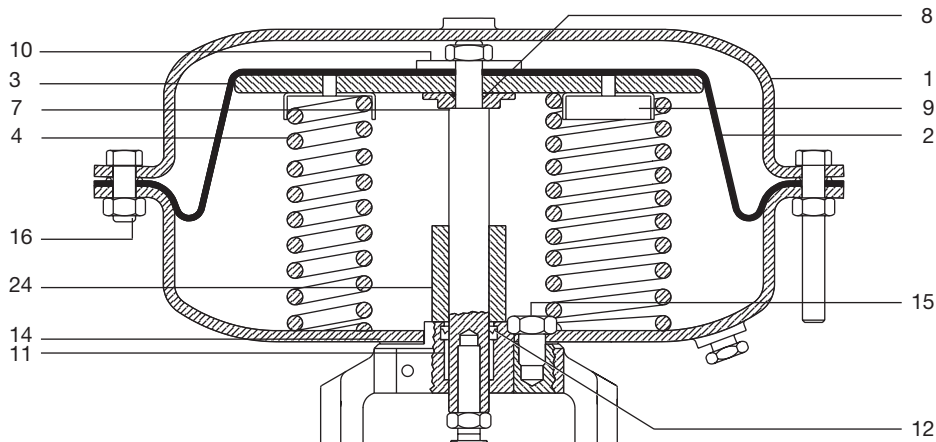
Plug design	DN15 to DN100	Parabolic
Leakage	Metal-to-metal	IEC 534-4 Class IV
	Soft seal	IEC 534-4 Class VI
Rangeability	Equal percentage	50:1
	Linear	30:1
Travel	DN15 to DN50 (1/2" to 2")	3/4"
	DN65 to DN100 (2 1/2" to 4")	1 3/16"
Surface finish	Internal (Mechanical or electro polished)	16 Ra
	External	< 24 Ra

Materials

PNS3000 series



PNS4000 series



PNS3000 and PNS4000 series actuators

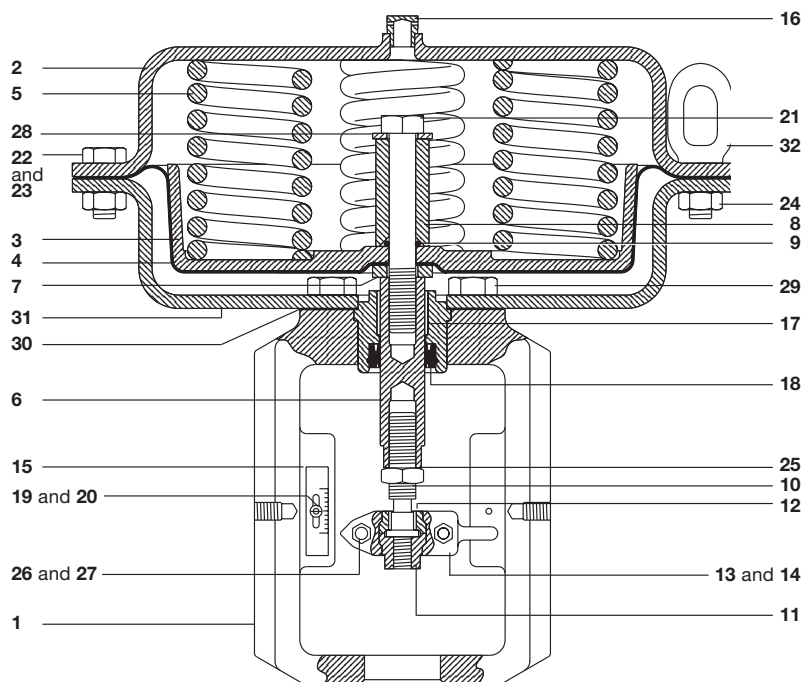
No. Part	Material
1 Diaphragm housing	Stainless steel 304
2 Diaphragm	Reinforced nitrile rubber
3 Diaphragm plate	Pressed steel
4 Springs	Spring steel
5 Spindle	Stainless steel
6 Lock-nut	Stainless steel
7 Spacer	Zinc plated steel
8 'O' ring	Rubber
9 Spring guide	Zinc plated steel
10 Diaphragm clamp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

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	

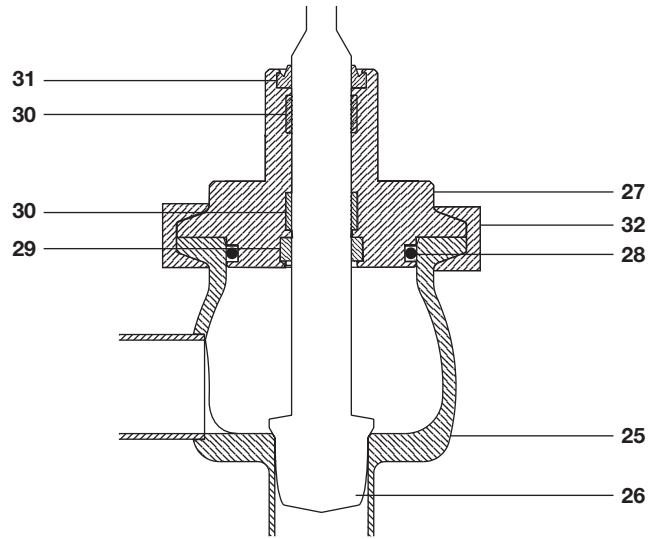
PN9000



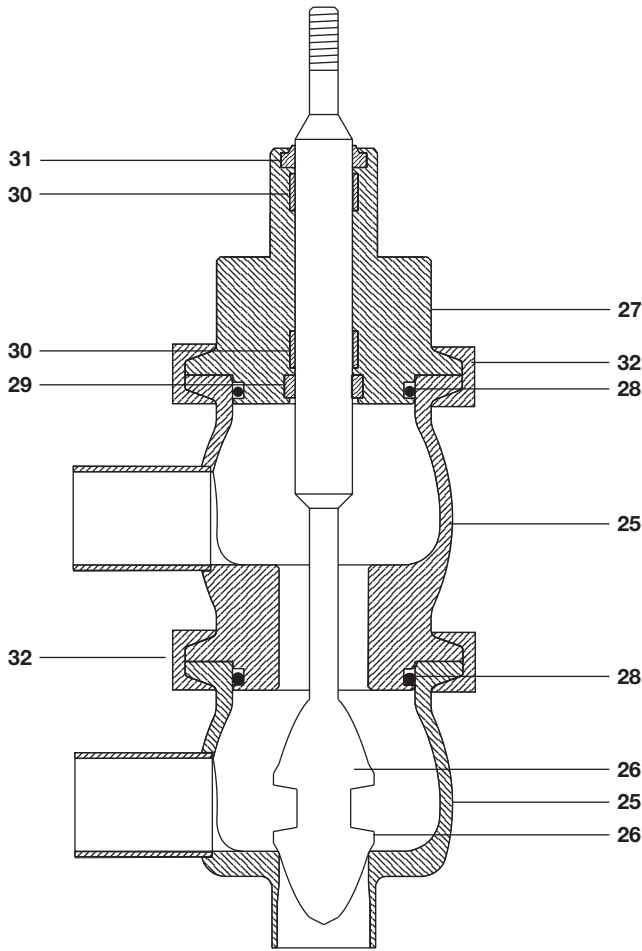
SA, SH and SQ control valves

No. Part	Material
25 Body	Stainless steel 316L
	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

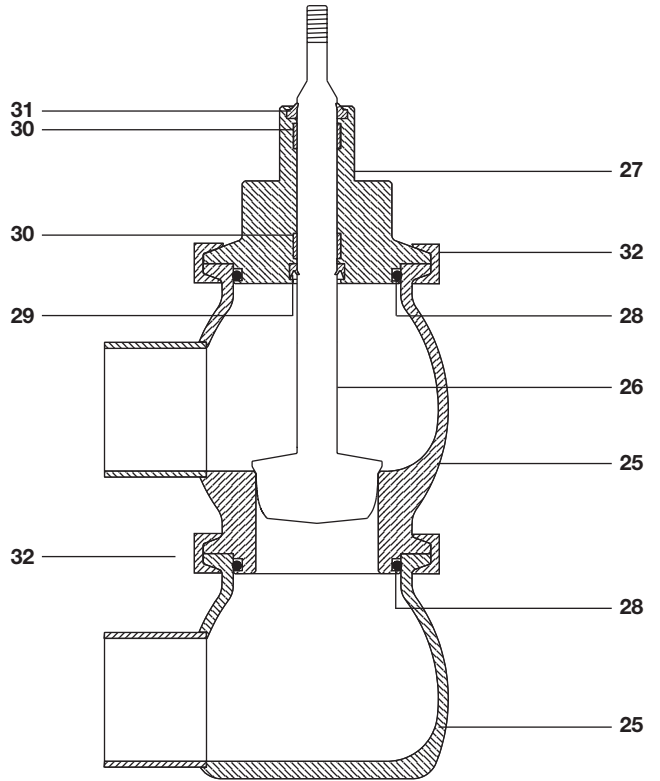
SA 2-port control valve



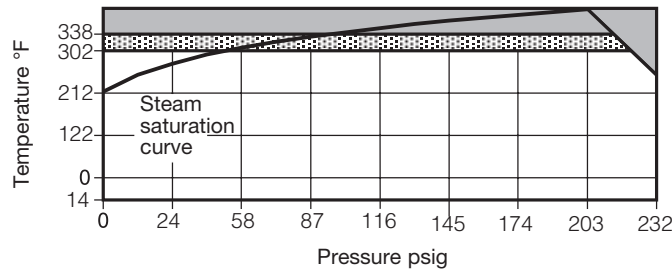
SQ 3-port control valve



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 302°F

Body design conditions	PN16				
Maximum design pressure	232 psig @ 248°F				
Maximum design temperature	662°F @ 145 psig				
Minimum design temperature	-4°F				
Maximum operating temperature	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">EPDM (E)</td> <td style="text-align: right;">302°F</td> </tr> <tr> <td>Viton (V)</td> <td style="text-align: right;">338°F</td> </tr> </table>	EPDM (E)	302°F	Viton (V)	338°F
EPDM (E)	302°F				
Viton (V)	338°F				
Minimum operating temperature	14°F				
Note: For lower operating temperatures consult Spirax Sarco.					
Maximum differential pressure	See following pages				
Designed for a maximum cold hydraulic test pressure of:	348 psig				

Cv (Kv) values (SA and SH models)

Flow characteristic	Valve size	Cv (Kvs) by valve size and trim reduction								
		1/2" (DN15)	3/4" (DN20)	1" (DN25)	1 1/4" (DN32)	1 1/2" (DN40)	2" (DN50)	2 1/2" (DN65)	3" (DN80)	4" (DN100)
		3/4" (20 mm)				1 3/16" (30 mm)				
Equal percentage and linear	Standard	4.7 (4)	7.4 (6.3)	12 (10)	19 (16)	29 (25)	42 (36)	74(63)	117 (100)	187 (160)
	Reduction 1	-	4.7 (4)	7.4 (6.3)	12 (10)	19 (16)	29 (25)	42 (36)	74 (63)	117 (100)
	Reduction 2	-	-	4.7 (4)	7.4 (6.3)	12 (10)	19 (16)	29 (25)	42 (36)	74 (63)
	Reduction 3	-	-	-	4.7 (4)	7.4 (6.3)	12 (10)	19 (16)	29 (25)	42 (36)

Cv (Kv) values (SQ model)

Flow characteristic	Valve size	Cv (Kvs) by valve size and trim reduction								
		1/2" (DN15)	3/4" (DN20)	1" (DN25)	1 1/4" (DN32)	1 1/2" (DN40)	2" (DN50)	2 1/2" (DN65)	3" (DN80)	4" (DN100)
		3/4" (20 mm)				1 3/16" (30 mm)				
Linear	Standard	4.7 (4)	7.4 (6.3)	12 (10)	19 (16)	29 (25)	42 (36)	74(63)	117 (100)	187 (160)

Micro-flow trim for all valves <= 1" (DN25) (SA and SH only)

Micro-flow trim	Travel	3/4" (20 mm)				
		Trim size	1/8"	3/16"	1/4"	3/8"
Linear characteristic	Cv (Kvs)	.47 (0.4)	.74 (0.63)	1.17 (1.0)	1.9 (1.6)	2.9 (2.5)

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

Notes:

1. Lower Cv (Kv) values are available to special order.
2. Micro-filter and Equal percentage trim 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			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PNS3220	3 - 15	Optional	120	59	20	-	-	-	-	-	-
	6 - 18	Optional	232	203	103	58	35	-	-	-	-
PNS3320	3 - 15	Optional	232	232	232	58	35	-	-	-	-
	6 - 18	Optional	232	232	232	165	110	55	-	-	-
PNS3326	15 - 45	Yes	232	232	186	232	232	184	-	-	-
PNS3420	3 - 15	Optional	232	232	232	112	73	33	-	-	-
	6 - 18	Optional	232	232	232	232	186	99	-	-	-
PNS3426	15 - 45	Yes	-	-	232	232	232	232	-	-	-
PNS3430	6 - 18	Optional	-	-	-	-	-	-	49	29	17
PNS3436	15 - 45	Yes	-	-	-	-	-	-	155	100	67

PN9000 spring-to-extend actuators

Valve size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PN9120E	6 - 18	Optional	203	116	58	29	15	-	-	-	-
PN9126E	15 - 30	Yes	232	232	218	131	87	44	-	-	-
PN9123E	30 - 60	Yes	232	232	232	232	218	116	-	-	-
PN9220E	3 - 15	Optional	232	232	145	87	44	15	-	-	-
	6 - 18	Optional	232	232	232	218	145	73	-	-	-
PN9226E	15 - 30	Yes	232	232	232	232	232	232	-	-	-
PN9223E	30 - 60	Yes	232	232	232	232	232	232	-	-	-
PN9320E	3 - 15	Optional	232	232	232	203	145	73	-	-	-
	6 - 18	Optional	232	232	232	232	232	174	-	-	-
PN9330E	6 - 18	Yes	-	-	-	-	-	-	87	58	44
PN9336E	15 - 30	Yes	-	-	-	-	-	-	232	174	116
PN9337E	36 - 50	Yes	-	-	-	-	-	-	232	232	232

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

PNS4000 spring-to-retract actuators

Valve size				1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
Kv				4	6	10	16	25	36	63	100	160	
Cv				4.7	7.4	12	19	29	42	74	117	187	
Travel (inches)				3/4"						1 3/16"			
Actuator	Spring range	Positioner required	Air pressure required	Maximum differential pressure Class IV (psi)									
PNS4220	3 - 15	Optional	20	232	203	103	58	35	-	-	-	-	
	3 - 15	Yes	30	232	232	232	219	148	77	-	-	-	
	3 - 15	Yes	45	232	232	232	232	232	184	-	-	-	
	3 - 15	Yes	60	232	232	232	232	232	232	-	-	-	
PNS4320	3 - 15	Optional	20	232	232	232	165	110	55	-	-	-	
	3 - 15	Yes	30	232	232	232	232	232	184	-	-	-	
	3 - 15	Yes	45	232	232	232	232	232	232	-	-	-	
PNS4420	3 - 15	Optional	20	-	-	232	232	186	99	-	-	-	
	3 - 15	Yes	30	-	-	232	232	232	232	-	-	-	
	3 - 15	Yes	45	-	-	232	232	232	232	-	-	-	
PNS4430	3 - 15	Optional	20	-	-	-	-	-	-	49	29	17	
	3 - 15	Yes	30	-	-	-	-	-	-	155	100	67	
	3 - 15	Yes	45	-	-	-	-	-	-	232	218	148	
	3 - 15	Yes	60	-	-	-	-	-	-	232	232	229	

PN9000 spring-to-retract actuators

Valve size				1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
Kv				4	6	10	16	25	36	63	100	160	
Cv				4.7	7.4	12	19	29	42	74	117	187	
Travel (inches)				3/4"						1 3/16"			
Actuator	Spring range	Positioner required		Maximum differential pressure Class IV (psi)									
PN9120R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	232	-	-	-	
PN9126R	15 - 30	Yes	232	232	232	232	232	232	232	-	-	-	
PN9123R	30 - 60	Yes	232	232	232	232	232	232	116	-	-	-	
PN9220R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	232	-	-	-	
PN9226R	15 - 30	Yes	232	232	232	232	232	232	232	-	-	-	
PN9223R	30 - 60	Yes	232	232	232	232	232	232	232	-	-	-	
PN9320R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	232	-	-	-	
PN9330R	6 - 18	Yes	-	-	-	-	-	-	-	232	232	232	
PN9336R	15 - 30	Yes	-	-	-	-	-	-	-	232	232	232	
PN9337R	36 - 50	Yes	-	-	-	-	-	-	-	116	73	44	

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

PNS3000 spring-to-extend actuators

Valve size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (psi)								
PNS3220	6 - 18	Optional	175	122	44	33	19	-	-	-	-
PNS3320	3 - 15	Optional	175	122	44	33	19	-	-	-	-
	6 - 18	Optional	232	232	132	107	74	33	-	-	-
PNS3326	15 - 45	Yes	232	232	232	232	232	122	-	-	-
PNS3420	3 - 15	Optional	232	216	87	70	46	19	-	-	-
	6 - 18	Optional	232	232	219	180	128	64	-	-	-
PNS3426	15 - 45	Yes	-	-	232	232	232	196	-	-	-
PNS3430	6 - 18	Optional	-	-	-	-	-	-	32	25	-
PNS3436	15 - 45	Yes	-	-	-	-	-	-	107	86	54

PN9000 spring-to-extend actuators

Valve size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (psi)								
PN9120E	6 - 18	Optional	102	58	15	15	-	-	-	-	-
PN9126E	15 - 30	Yes	232	232	102	87	58	29	-	-	-
PN9123E	30 - 60	Yes	232	232	232	218	145	73	-	-	-
PN9220E	3 - 15	Optional	232	160	58	44	29	15	-	-	-
	6 - 18	Optional	232	232	174	145	102	44	-	-	-
PN9226E	15 - 30	Yes	232	232	232	232	232	160	-	-	-
PN9223E	30 - 60	Yes	232	232	232	232	232	232	-	-	-
PN9320E	3 - 15	Optional	232	232	160	131	102	44	-	-	-
	6 - 18	Optional	232	232	232	232	218	116	-	-	-
PN9330E	6 - 18	Yes	-	-	-	-	-	-	58	44	29
PN9336E	15 - 30	Yes	-	-	-	-	-	-	189	145	87
PN9337E	36 - 50	Yes	-	-	-	-	-	-	232	232	232

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

PNS4000 spring-to-retract actuators

Valve size				1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
Kv				4	6	10	16	25	36	63	100	160	
Cv				4.7	7.4	12	19	29	42	74	117	187	
Travel (inches)				3/4"						1 3/16"			
Actuator	Spring range	Positioner required	Air pressure required	Maximum differential pressure Class VI (psi)									
PNS4220	3 - 15	Optional	20	175	122	44	33	19	-	-	-	-	
	3 - 15	Yes	30	232	232	175	144	100	48	-	-	-	
	3 - 15	Yes	45	232	232	232	232	232	122	-	-	-	
	3 - 15	Yes	60	232	232	232	232	232	196	-	-	-	
PNS4320	3 - 15	Optional	20	232	232	132	107	74	33	-	-	-	
	3 - 15	Yes	30	232	232	232	232	232	122	-	-	-	
	3 - 15	Yes	45	232	232	232	232	232	232	-	-	-	
PNS4420	3 - 15	Optional	20	-	-	219	180	128	64	-	-	-	
	3 - 15	Yes	30	-	-	232	232	232	196	-	-	-	
	3 - 15	Yes	45	-	-	232	232	232	232	-	-	-	
PNS4430	3 - 15	Optional	20	-	-	-	-	-	-	32	25	-	
	3 - 15	Yes	30	-	-	-	-	-	-	107	86	54	
	3 - 15	Yes	45	-	-	-	-	-	-	232	190	122	
	3 - 15	Yes	60	-	-	-	-	-	-	232	232	190	

PN9000 spring-to-retract actuators

Valve size				1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
Kv				4	6	10	16	25	36	63	100	160	
Cv				4.7	7.4	12	19	29	42	74	117	187	
Travel (inches)				3/4"						1 3/16"			
Actuator	Spring range	Positioner required	Maximum differential pressure Class VI (psi)										
PN9120R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	218	-	-	-	
PN9126R	15 - 30	Yes	232	232	232	232	232	232	174	-	-	-	
PN9123R	30 - 60	Yes	232	232	232	232	232	232	73	-	-	-	
PN9220R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	232	-	-	-	
PN9226R	15 - 30	Yes	232	232	232	232	232	232	232	-	-	-	
PN9223R	30 - 60	Yes	232	232	232	232	232	232	232	-	-	-	
PN9320R	3 - 15	Optional	232	232	232	232	232	232	232	-	-	-	
	6 - 18	Optional	232	232	232	232	232	232	232	-	-	-	
PN9330R	6 - 18	Yes	-	-	-	-	-	-	-	232	232	232	
PN9336R	15 - 30	Yes	-	-	-	-	-	-	-	232	232	203	
PN9337R	36 - 50	Yes	-	-	-	-	-	-	-	87	58	44	

Maximum differential pressures for Class IV metal 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			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PNS3320	3 - 15	Optional	232	203	103	58	35	-	-	-	-
	6 - 18	Optional	232	232	232	165	110	55	-	-	-
PNS3326	15 - 30	Yes	232	232	232	232	232	184	-	-	-
PNS3420	3 - 15	Optional	232	232	186	112	73	33	-	-	-
	6 - 18	Optional	232	232	232	232	186	99	-	-	-
PNS3426	15 - 45	Yes	-	-	232	232	232	232	-	-	-
PNS3430	6 - 18	Optional	-	-	-	-	-	-	49	29	17
PNS3436	15 - 45	Yes	-	-	-	-	-	-	155	100	67

PN9000 spring-to-extend actuators

Valve size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PN9120E	3 - 15	Optional	160	29	15	-	-	-	-	-	-
	6 - 18	Optional	232	131	58	29	15	-	-	-	-
PN9126E	15 - 30	Yes	232	232	232	145	102	44	-	-	-
PN9123E	30 - 60	Yes	232	232	232	232	218	116	-	-	-
PN9220E	3 - 15	Optional	232	232	232	87	58	29	-	-	-
	6 - 18	Optional	232	232	232	218	145	87	-	-	-
PN9226E	15 - 30	Yes	232	232	232	232	232	232	-	-	-
PN9223E	30 - 60	Yes	232	232	232	232	232	232	-	-	-
PN9320E	3 - 15	Optional	232	232	232	232	145	73	-	-	-
	6 - 18	Optional	232	232	232	232	232	189	-	-	-
PN9330E	6 - 18	Yes	-	-	-	-	-	-	102	58	44
PN9336E	15 - 30	Yes	-	-	-	-	-	-	232	174	116
PN9337E	36 - 50	Yes	-	-	-	-	-	-	116	73	44

Maximum differential pressures for Class IV metal 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			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PNS4320	0.2 – 1.0	Optional	232	203	103	58	35	-	-	-	-
	0.4 – 1.2	Optional	232	232	232	165	110	55	-	-	-
PNS4326	1.0 – 3.0	Yes	232	232	232	232	232	184	-	-	-
PNS4420	0.2 – 1.0	Optional	232	232	186	112	73	33	-	-	-
	0.4 – 1.2	Optional	232	232	232	232	186	99	-	-	-
PNS4426	1.0 – 3.0	Yes	-	-	232	232	232	232	-	-	-
PNS4430	0.4 – 1.2	Optional	-	-	-	-	-	-	49	29	17
PNS4436	1.0 – 3.0	Yes	-	-	-	-	-	-	155	100	67
PNS4534	0.8 – 1.5	Yes	-	-	-	-	-	-	197	128	86
PNS4634	0.8 – 1.5	Yes	-	-	-	-	-	-	232	193	131

PN9000 spring-to-retract actuators

Valve size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Kv			4	6	10	16	25	36	63	100	160
Cv			4.7	7.4	12	19	29	42	74	117	187
Travel (inches)			3/4"						1 3/16"		
Actuator	Spring range	Positioner required	Maximum differential pressure Class IV (psi)								
PN9120R	0.4 – 1.2	Optional	102	58	15	15	-	-	-	-	-
PN9126R	1.0 – 2.0	Yes	232	232	102	87	58	29	-	-	-
PN9123R	2.0 – 4.0	Yes	232	232	232	218	145	73	-	-	-
PN9220R	0.2 – 1.0	Optional	232	160	58	44	29	145	-	-	-
	0.4 – 1.2	Optional	232	232	174	145	102	44	-	-	-
PN9226R	1.0 – 2.0	Yes	232	232	232	232	232	160	-	-	-
PN9223R	2.0 – 4.0	Yes	232	232	232	232	232	232	-	-	-
PN9320R	0.2 – 1.0	Optional	232	232	160	131	102	44	-	-	-
	0.4 – 1.2	Optional	232	232	232	232	218	116	-	-	-
PN9330R	0.4 – 1.2	Yes	-	-	-	-	-	-	58	44	29
PN9336R	1.0 – 2.0	Yes	-	-	-	-	-	-	189	145	87
PN9337R	2.5 – 3.5	Yes	-	-	-	-	-	-	87	58	44

Valve dimensions (approximate in inches)

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
1/2"	2.86	0.98	-	1.71	3.67	0.57	2.61	1.76	2.29
3/4"	2.86	1.06	-	1.80	3.88	0.65	2.61	1.76	2.29
1"	2.86	1.63	2.24	2.46	4.08	0.82	2.98	2.33	3.27
1 1/4"	2.86	1.76	2.69	2.63	4.29	0.94	3.06	2.33	3.43
1 1/2"	2.86	2.00	2.86	2.85	4.69	1.10	3.27	2.33	3.84
2"	3.47	2.20	3.35	3.63	5.10	1.31	3.71	2.65	4.73
2 1/2"	4.29	2.78	4.29	3.63	5.92	1.76	3.88	3.47	4.65
3"	4.29	3.39	4.49	3.89	6.33	2.12	4.94	3.47	6.78
4"	5.31	3.92	6.12	4.67	7.14	2.45	5.43	3.96	7.35

Valve weights (lb)

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
1/2"	3.3	2.2	4.4	5.5	4.4	3.3	5.5	6.6	-	-	-	-
3/4"	3.3	2.2	5.5	7.7	4.4	3.3	6.6	8.8	5.5	4.4	7.7	9.9
1"	5.5	4.4	7.7	9.9	7.7	6.6	9.9	12.1	8.8	7.7	11.0	13.2
1 1/4"	6.6	4.4	9.9	12.1	8.8	7.7	13.2	15.4	11.0	9.9	15.4	16.5
1 1/2"	6.6	5.5	11.0	13.2	9.9	8.8	15.4	17.6	12.1	11.0	17.6	18.7
2"	8.8	6.6	14.3	19.8	13.2	11.0	18.7	24.2	16.5	14.3	22.0	26.4
2 1/2"	14.3	12.1	20.9	27.5	22.0	18.7	27.5	34.1	20.9	17.6	26.4	41.8
3"	17.6	15.4	28.6	34.1	27.5	24.2	38.5	44.0	29.7	26.4	40.7	46.2
4"	24.2	22.0	36.3	41.8	37.4	34.1	49.5	55.0	41.8	37.4	52.8	58.3

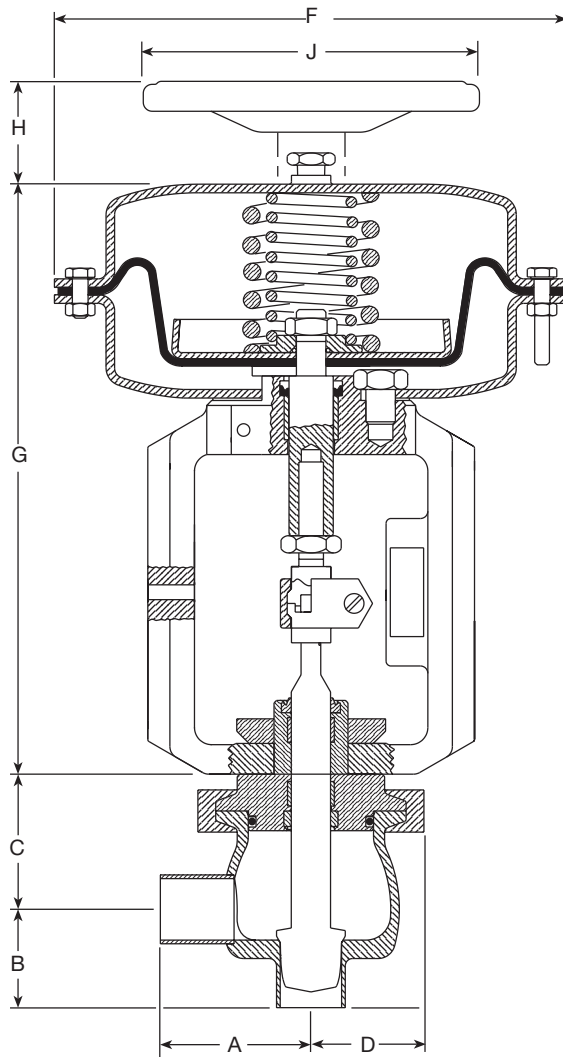
PNS3000/4000 actuator dimensions and weights (approximate) in inches and lb.

Actuator type	F	G	H	Weight	Weight with hand-wheel
PNS3200 and PNS4200 series	8.53	9.80	-	15.84	-
PNS3300 and PNS4300 series	11.63	10.78	4.61	24.64	29.70
PNS3420 and PNS4420 series	13.71	10.73	4.61	44.00	49.06
PNS3430 and PNS4430 series	13.71	13.39	6.41	44.00	52.14
PNS3530 series	16.53	14.98	6.41	49.72	57.86
PNS3630 series	18.98	16.33	6.41	83.60	91.74

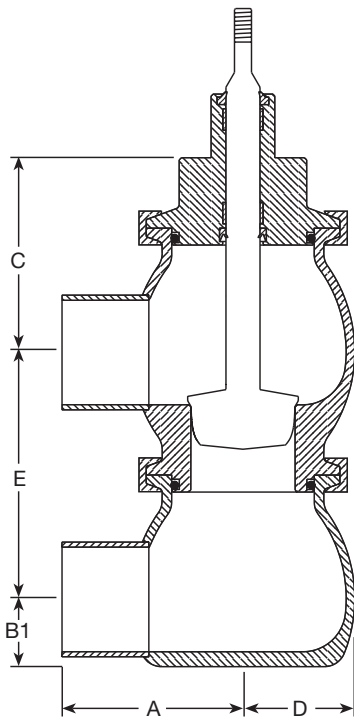
PN9000 actuator dimensions and weights (approximate) in inches and lb.

Actuator range	F	G	H	J	Weight	Weight with Hand-wheel
PN9100E and variants	11.22	6.94	2.24	9.18	13.20	26.09
PN9100R and variants	11.22	6.94	5.71	9.18	13.20	18.70
PN9200E and variants	12.24	12.24	2.24	14.29	37.40	53.24
PN9200R and variants	12.24	12.24	5.71	14.29	37.40	53.24
PN9320E and variants	13.27	15.92	2.65	14.29	59.40	75.24
PN9320R and variants	13.27	15.92	6.12	14.29	59.40	67.69
PN9330E and variants	13.67	15.92	2.65	14.29	59.40	75.24
PN9330R and variants	13.67	15.92	6.12	14.29	59.40	67.69

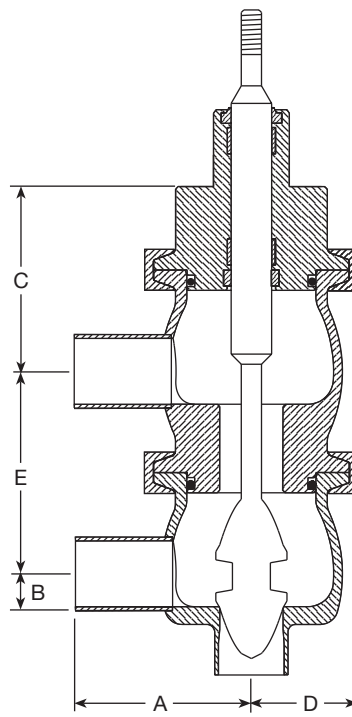
Actuator and SA valve



SH valve

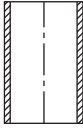

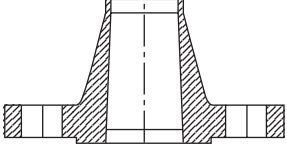
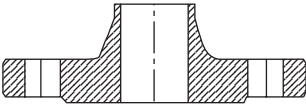
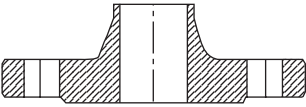
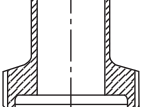
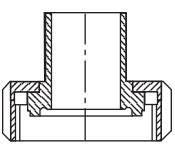



SQ valve



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.

Connection		Specification	Code	
Butt weld		DIN 11850 (Series 2)	OO	
		ISO 2037 / SMS 3008	OA	
		EN ISO 1127	OB	
		BS 4825 (Pt 1)	OC	
		ASME BPE	OD	
Sanitary clamp		ASME BPE (Tri-clamp®)	AO	
		BS 4825 (Pt 3)	BO	
		ISO 2852	CO	
		DIN 32676	SO	
ANSI 150		ANSI B 16.5	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 3008	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-B1. 20.1-1983	XN	

How to order

Ordering a control valve

Valve size	½", ¾", 1", 1¼", 1½", 2", 2½", 3" and 4"	<input type="text" value="½"/>
Valve series	SA = Two-port angle pattern design SH = Two-port horizontal design SQ = Three-port valve design	<input type="text" value="SA"/>
Valve characteristic	E = Equal percentage (SA and SH models only) L = Linear	<input type="text" value="E"/>
Body material	6 = 316L stainless steel	<input type="text" value="6"/>
Connection standard	See previous page	<input type="text" value="SO"/>
Seating option	S = Stainless steel V = White Viton (FDA, 3A and USP26 Class VI approved)	<input type="text" value="S"/>
Stem and body sealing option	E = EPDM (FDA and 3A approved) V = White Viton (FDA, 3A and USP26 Class VI approved)	<input type="text" value="V"/>
Centre face dimensions (A)	0 = Standard 1 = Other please specify (mm)	<input type="text" value="0"/>
Centre face dimensions (B)	0 = Standard 1 = Other please specify (mm)	<input type="text" value="0"/>
Internal surface finish	0 = Standard 16 Ra micron mechanically polished 1 = 16 Ra micron electropolished 2 = Other please specify	<input type="text" value="0"/>
C_v	To be specified (non standard C _v to special order)	<input type="text" value="4 • 7"/>

Ordering a:	PNS pneumatic actuator	PN or PNP pneumatic actuator	
Type	PNS = Pneumatic stainless steel	PN = Pneumatic epoxy coated PNP = Pneumatic electroless nickel plated (ENP)	<input type="text" value="PNS"/>
Series and action	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)	<input type="text" value="3"/>
Diaphragm size	2 3 4	1 2 3	<input type="text" value="3"/>
Travel	2 = ¾" 3 = 1³/₁₆"	2 = ¾" 3 = 1³/₁₆"	<input type="text" value="2"/>
Spring range	0 = 3-15 psig (6-18 psig) 6 = 15-45 psig	0 = 3-15 psig (6-18 psig) 3 = 30-60 psig 6 = 15-30 psig 7 = 36-50 psig	<input type="text" value="0"/>
Option	Blank = Standard H = Handwheel *	Blank = Standard H = Handwheel *	

*Not available in stainless steel

Ordering example:

1 off Spirax Sarco STERI-TROL type ½" SAE6SOSV0004 and 1 pneumatic actuator type PNS3320. Having a spring range of 6 to 18 psig.

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.

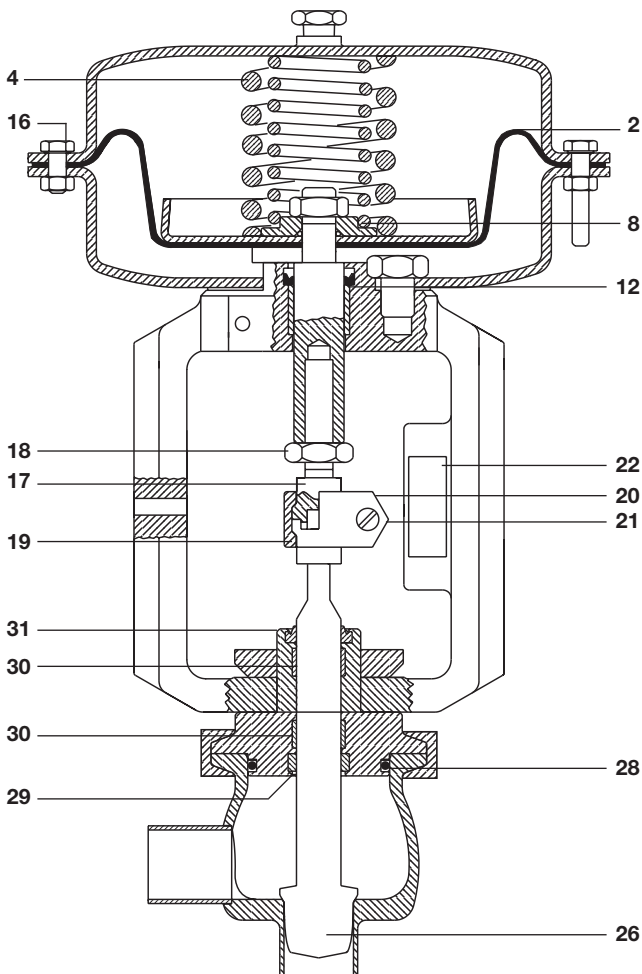
Available spares for the SA, SH and SQ control valves and the PNS3000 and PNS4000 series actuators

Description		Part number	
Actuator	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	
Valve	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

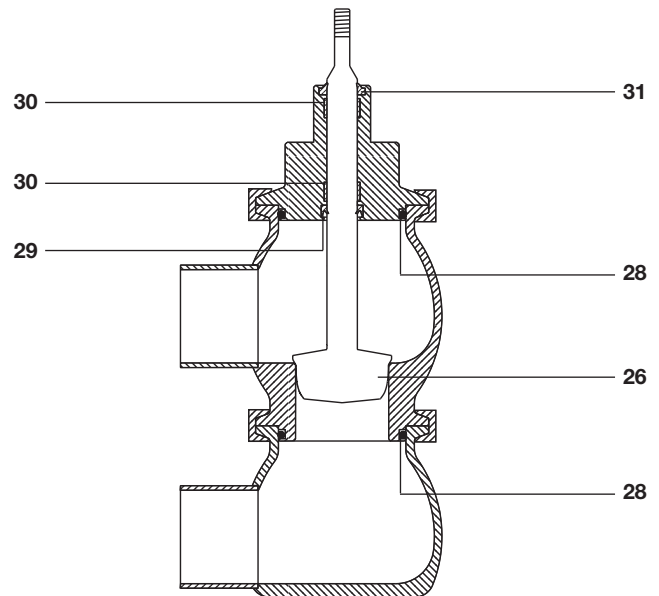
Spare parts ordering example:

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 6 to 18 psig.



Actuator and SA valve



SH valve

Available spares for the PN9000 series actuators

	Description	Part number
	Stem seal kit 'O' ring and 'V' ring	17, 18 and 30
	Diaphragm kit Diaphragm 'O' ring and 'V' ring	4 and 9
Actuator	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

