



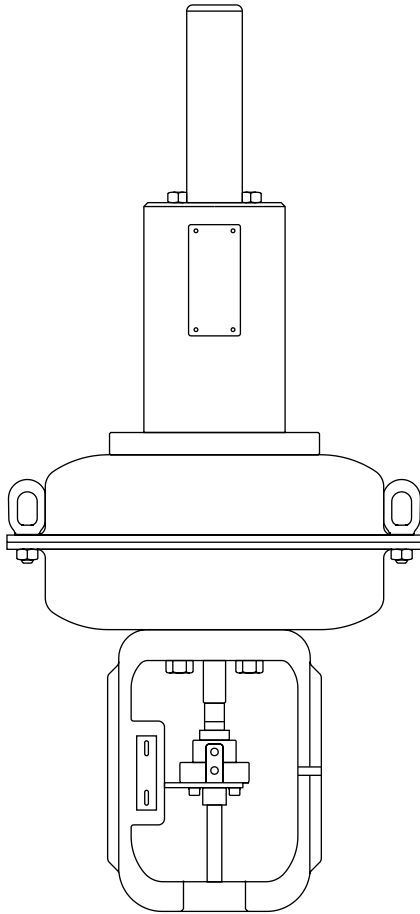
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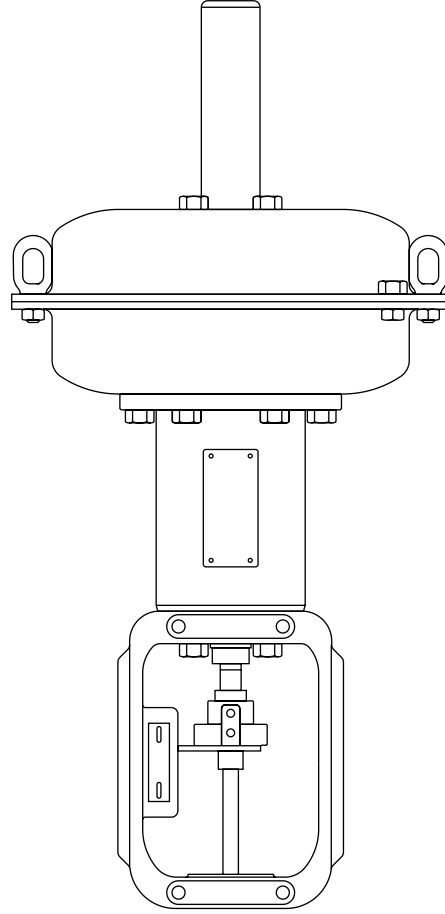
# spirax sarco

## PN1000 and PN2000 Series Pneumatic Actuators for C Series Control Valves

PN1000



PN2000



**Please note:** the external profile for the PN1700 and PN2700 is different to the illustrations shown above.

### Description

The range of PN1000 and PN2000 series pneumatic actuators are single spring linear actuators (with exception to the PN1700 and PN2700 series) having 5 diaphragm sizes for matching the requirements of different control valves at various differential pressures. Each actuator is fitted with a combined mechanical stroke indicator and anti-rotation guard. These actuators are designed to be used with the C series 2-port control valve.

### Available types:

PN1300, PN1400, PN1500, PN1600 and PN1700 series	Spring extend spindle actuators
PN2300, PN2400, PN2500, PN2600 and PN2700 series	Spring retract spindle actuators

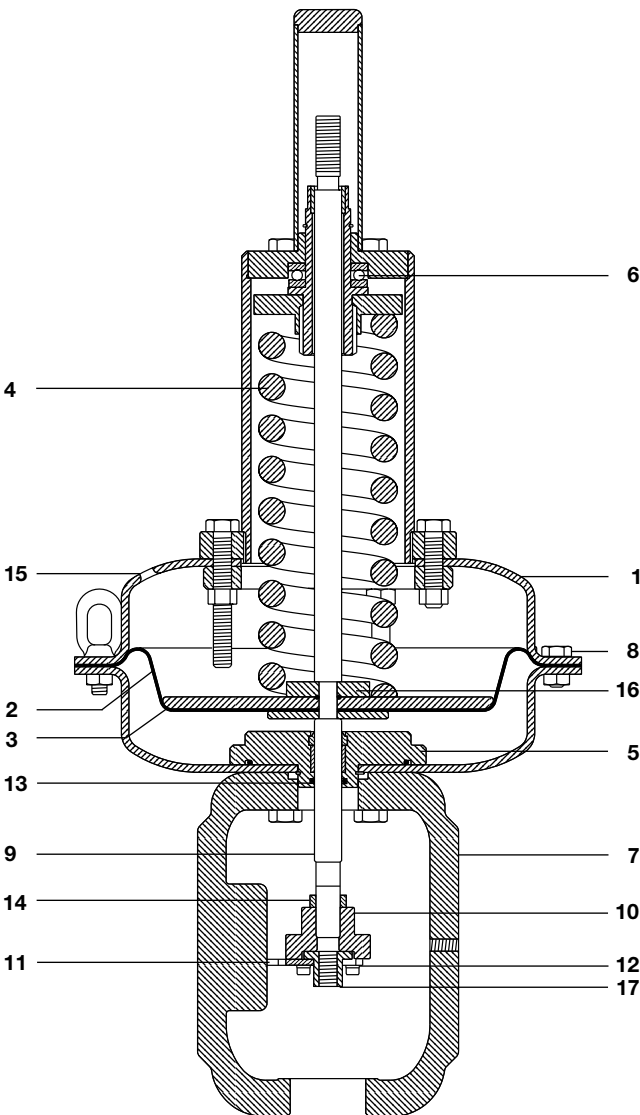
### Technical data

Temperature range	-4°F to +230°F (-20°C to +110°C)		
Maximum operating pressure	PN1000	80 psi	(5.5 bar)
	PN2000	44 psi	(3.0 bar)
Air supply connection	PN1300, PN1400, PN1500 and PN1600	¼" NPT	
	PN1700	½" NPT	
	PN2300, PN2400, PN2500 and PN2600	¼" NPT	
	PN2700	½" NPT	

PN1000 series

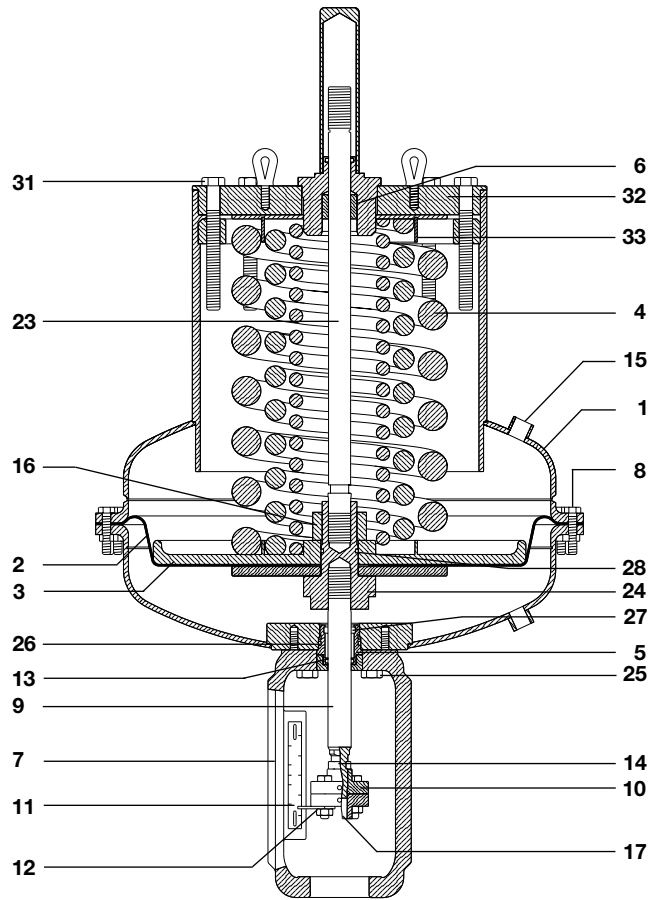
Materials - PN1300 to PN1600

No.	Part	Material
1	Diaphragm housing	Carbon steel
2	Diaphragm	Reinforced nitrile rubber
3	Diaphragm plate	Stainless steel
4	Spring	Spring steel
5	Spindle guide	Bronze
6	DU bearing	Hardened steel
7	Yoke	Cast steel
8	Housing securing nuts and bolts	Zinc plated steel
9	Spindle	Stainless steel
10	Connector	Zinc plated steel
11	Travel indicator	Stainless steel
12	Lock plate	Zinc plated steel
13	'O' ring	Nitrile rubber
14	Lock-nut	Zinc plated steel
15	Cap with vent hole	Nickel plated brass
16	Spring location washer	Zinc plated steel
17	Valve spindle adaptor	Stainless steel



PN1300, PN1400, PN1500 and PN1600 series spring-to-extend

Materials - PN1700



PN1700 series spring-to-extend

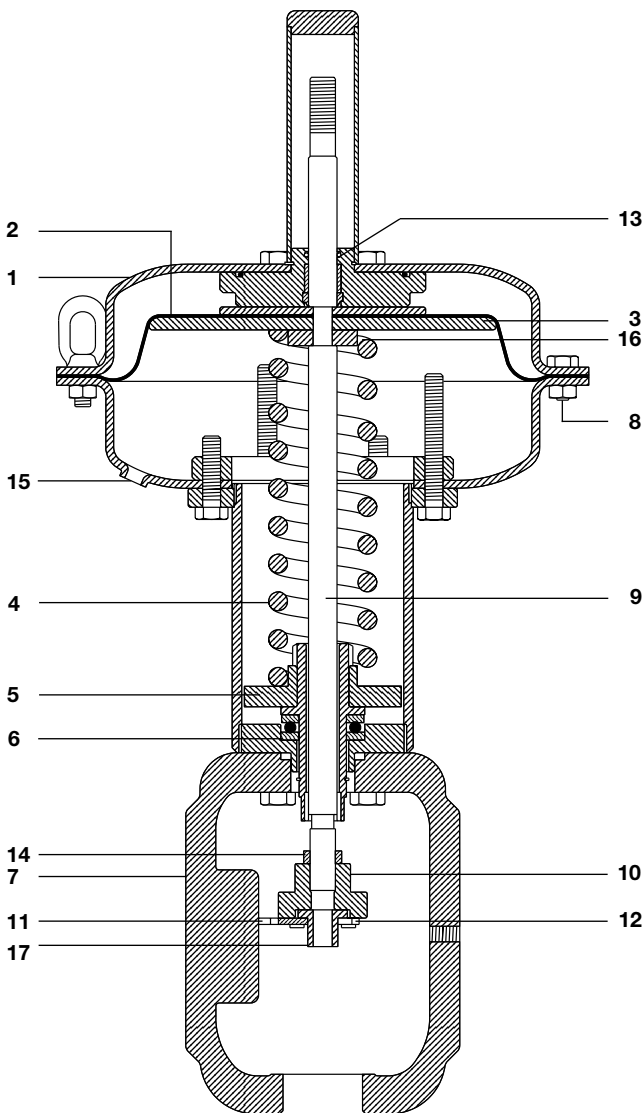
Materials - PN1700

No.	Part	Material
1	Diaphragm housing	Carbon steel
2	Diaphragm	Reinforced nitrile rubber
3	Diaphragm plate	Stainless steel
4	Spring	Spring steel
5	Main spindle guide	Bronze
6	Auxiliary spindle guide	Bronze
7	Yoke	Cast steel
8	Housing securing nuts and bolts	Zinc plated steel
9	Main spindle	Stainless steel
10	Connector	Zinc plated steel
11	Travel indicator	Stainless steel
12	Lock plate	Zinc plated steel
13	'O' ring	Nitrile rubber
14	Lock-nut	Zinc plated steel
15	Cap with vent hole	Nickel plated brass
16	Lock-nut	Zinc plated steel
17	Valve spindle adaptor	Zinc plated steel
23	Auxiliary spindle	Stainless steel
24	Spacer	Zinc plated steel
25	Hex. head screws	Zinc plated steel
26	'O' ring	Nitrile rubber
27	'V' ring	Nitrile rubber
28	'O' ring	Nitrile rubber
31	Housing cover screws	Zinc plated steel
32	Housing cover	Carbon steel
33	Spring guide	Zinc plated steel

PN2000 series

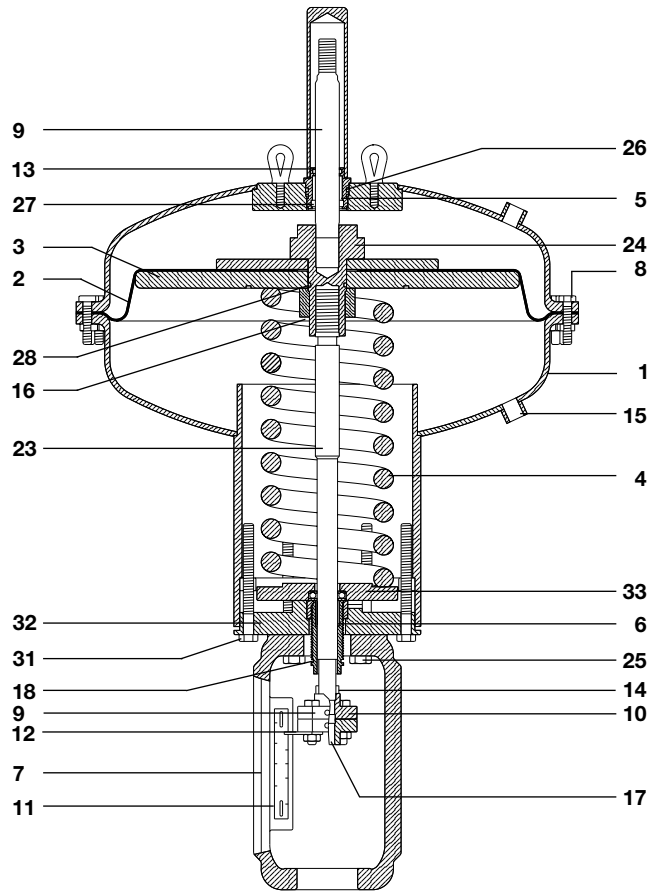
Materials - PN2300 to PN2600

No.	Part	Material
1	Diaphragm housing	Carbon steel
2	Diaphragm	Reinforced nitrile rubber
3	Diaphragm plate	Stainless steel
4	Spring	Spring steel
5	Spindle guide	Bronze
6	DU bearing	Hardened steel
7	Yoke	Cast steel
8	Housing securing nuts and bolts	Zinc plated steel
9	Spindle	Stainless steel
10	Connector	Zinc plated steel
11	Travel indicator	Stainless steel
12	Lock plate	Zinc plated steel
13	'O' ring	Nitrile rubber
14	Lock-nut	Zinc plated steel
15	Cap with vent hole	Nickel plated brass
16	Spring location washer	Zinc plated steel
17	Valve spindle adaptor	Stainless steel



PN2300, PN2400, PN2500 and PN2600 series spring-to-retract

Materials - PN2700



PN2700 series spring-to-retract

Materials - PN2700

No.	Part	Material
1	Diaphragm housing	Carbon steel
2	Diaphragm	Reinforced nitrile rubber
3	Diaphragm plate	Stainless steel
4	Spring	Spring steel
5	Main spindle guide	Bronze
6	Auxiliary spindle guide	Bronze
7	Yoke	Cast steel
8	Housing securing nuts and bolts	Zinc plated steel
9	Main spindle	Stainless steel
10	Connector	Zinc plated steel
11	Travel indicator	Stainless steel
12	Lock plate	Zinc plated steel
13	'O' ring	Nitrile rubber
14	Lock-nut	Zinc plated steel
15	Cap with vent hole	Nickel plated brass
16	Lock-nut	Zinc plated steel
17	Valve spindle adaptor	Zinc plated steel
23	Auxiliary spindle	Stainless steel
24	Spacer	Zinc plated steel
25	Hex. head screws	Zinc plated steel
26	'O' ring	Nitrile rubber
27	'V' ring	Nitrile rubber
28	'O' ring	Nitrile rubber
31	Housing cover screws	Zinc plated steel
32	Housing cover	Carbon steel
33	Spring guide	Zinc plated steel

**PN1000 and PN2000 pneumatic actuators  
closing pressures for 1" to 8" C series control valves**

**C series control valve**

Valve size	1" DN25	1½" DN40	2" DN50	2½" DN65	3" DN80	4" DN100	5" DN125	6" DN150	8" DN200
Standard travel in inches and (mm)	¾" (20)		1¾" (30)	1½" (38)		2" (50)	2½" (65)		3" (75)
Equal % Cv (US) and Kvs in brackets	18 (15)	36 (31)	60 (51)	99 (85)	136 (116)	223 (191)	293 (250)	386 (330)	560 (480)

**PN1000 and PN2000 series actuators  
Class IV and VI shut-off with:**

**Maximum differential pressures (bar) -  
UNBALANCED valves controlled by positioner**

PTFE chevron or graphite stem seal. For extended bonnets and bellows seal read 'PTFE' or 'graphite' depending on seal chosen.

Actuator	Spring range		Minimum air pressure bar g		Maximum differential pressure (bar) for standard valve trim with either graphite or PTFE stem seal																			
	Spring extend PN1000	Spring retract PN2000	Spring extend PN1000	Spring retract PN2000	PTFE		Graphite		PTFE		Graphite		PTFE		Graphite		PTFE		Graphite		PTFE		Graphite	
					PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite		
PN_300	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_500	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_600	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_700	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	19	18	10	9	3	3	-	-	-	-	4	4	3	2	-	-	-	
PN_300	1.0 - 2.0	0.2 - 1.0	2.2	2.0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	1.0 - 2.0	0.2 - 1.0	2.2	2.0	21	18	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_500	1.0 - 2.0	0.2 - 1.0	2.2	2.0	50	48	18	17	9	8	3	2	-	-	-	-	-	-	-	-	-	-	-	
PN_600	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	34	33	20	19	10	9	5	5	-	-	6	6	4	4	2	2	-	
PN_700	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	-	-	-	-	-	-	-	-	-	-	12	12	8	8	5	4	-	
PN_300	2.0 - 4.0	0.2 - 1.0	4.2	3.0	36	33	11	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	2.0 - 4.0	0.2 - 1.0	4.2	3.0	73	71	29	28	16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_500	2.0 - 4.0	0.2 - 1.0	4.2	3.0	103	103	57	56	35	34	19	19	12	11	-	-	-	-	-	-	-	-	-	
PN_600	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	91	90	58	57	34	33	22	22	12	11	14	14	10	9	5	5	-	
PN_700	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	-	-	-	-	-	-	-	-	27	26	18	18	10	10	-	

**PN1000 and PN2000 series actuators  
Class IV shut-off with:**

**Maximum differential pressures (bar) -  
BALANCED valves controlled by positioner**

PTFE chevron or graphite stem seal. For extended bonnets and bellows seal read 'PTFE' or 'graphite' depending on seal chosen.

Actuator	Spring range		Minimum air pressure bar g		Maximum differential pressure (bar) for standard valve trim with either graphite or PTFE stem seal																			
	Spring extend PN1000	Spring retract PN2000	Spring extend PN1000	Spring retract PN2000	PTFE		Graphite		PTFE		Graphite		PTFE		Graphite		PTFE		Graphite		PTFE		Graphite	
					PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite		
PN_300	0.4 - 1.2	0.2 - 1.0	1.4	1.4	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	0.4 - 1.2	0.2 - 1.0	1.4	1.4	57	29	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_500	0.4 - 1.2	0.2 - 1.0	1.4	1.4	103	91	70	40	49	27	36	-	22	-	-	-	-	-	-	-	-	-	-	
PN_600	0.4 - 1.2	0.2 - 1.0	1.4	1.4	103	103	103	98	92	70	77	53	56	33	41	-	20	-	-	-	-	-	-	
PN_700	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	83	59	58	36	28	9	-	
PN_300	1.0 - 2.0	0.2 - 1.0	2.2	2.0	103	97	74	50	51	51	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	1.0 - 2.0	0.2 - 1.0	2.2	2.0	103	103	103	103	103	88	95	70	71	47	-	-	-	-	-	-	-	-	-	
PN_500	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	103	103	103	103	103	103	103	103	98	-	-	-	-	-	-	-	-	
PN_600	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	-	-	-	-	-	-	-	103	103	103	103	103	103	81	59	40	-	
PN_700	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	-	-	-	-	-	-	-	-	-	-	103	103	103	103	103	103	-	
PN_300	2.0 - 4.0	0.2 - 1.0	4.2	3.0	103	103	103	103	103	103	-	-	-	-	-	-	-	-	-	-	-	-	-	
PN_400	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	103	103	103	103	103	103	-	-	-	-	-	-	-	-	-	
PN_500	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	-	-	-	-	-	-	-	103	103	103	103	103	103	85	-	
PN_600	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	
PN_700	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note: For reduced trims use the equivalent trim diameter.

**C series control valve**

Valve size	1" DN25	1½" DN40	2" DN50	2½" DN65	3" DN80	4" DN100	5" DN125	6" DN150	8" DN200
Standard travel in inches and (mm)	¾" (20)		1¾" (30)	1½" (38)		2" (50)	2½" (65)		3" (75)
Equal % Cv (US) and Kvs in brackets	18 (15)	36 (31)	60 (51)	99 (85)	136 (116)	223 (191)	293 (250)	386 (330)	560 (480)

**PN1000 and PN2000 series actuators  
Class V shut-off with:**

**Maximum differential pressures (bar) -  
UNBALANCED valves controlled by positioner**

PTFE chevron or graphite stem seal. For extended bonnets and bellows seal read 'PTFE' or 'graphite' depending on seal chosen.

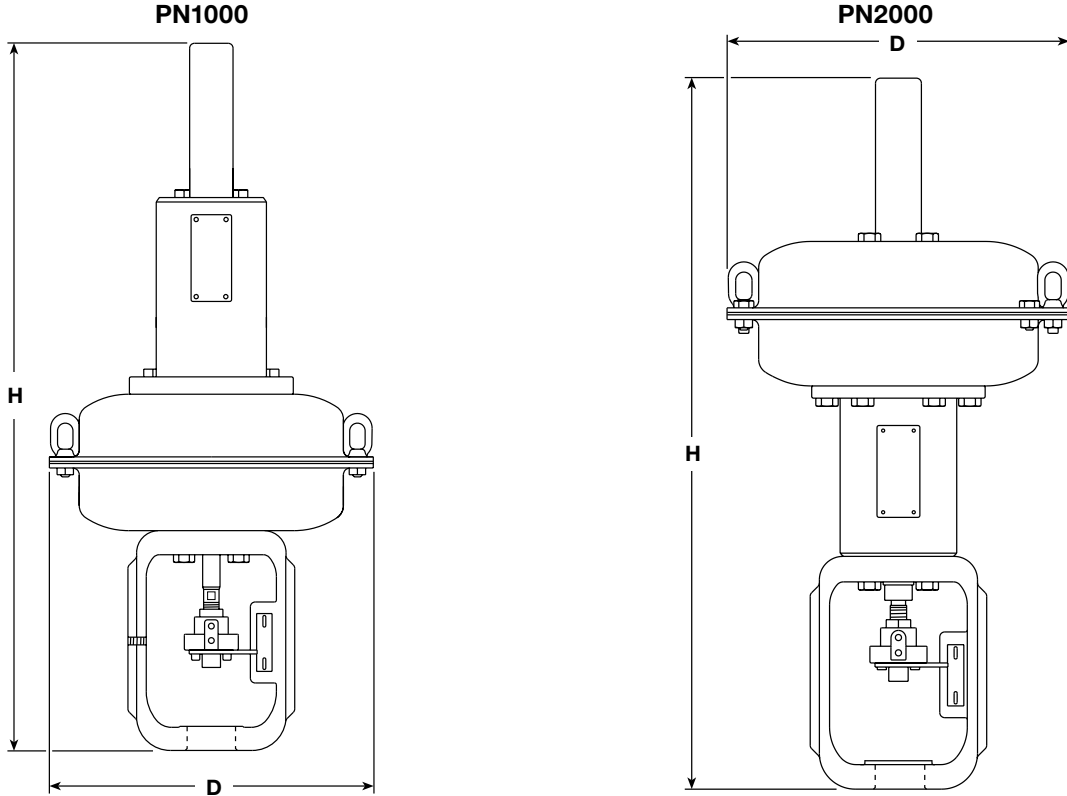
Actuator	Spring range		Minimum air pressure bar g		Maximum differential pressure (bar) for standard valve trim with either graphite or PTFE stem seal																	
	Spring extend PN1000	Spring retract PN2000	Spring extend PN1000	Spring retract PN2000	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite
					PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite	PTFE	Graphite
PN_300	0.4 - 1.2	0.2 - 1.0	1.4	1.4	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PN_400	0.4 - 1.2	0.2 - 1.0	1.4	1.4	13	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PN_500	0.4 - 1.2	0.2 - 1.0	1.4	1.4	25	23	10	10	6	6	3	3	-	-	-	-	-	-	-	-	-	-
PN_600	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	17	16	11	10	6	6	4	4	-	-	-	-	-	-	-	-
PN_700	0.4 - 1.2	0.2 - 1.0	1.4	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PN_300	1.0 - 2.0	0.2 - 1.0	2.2	2.0	26	24	11	10	7	6	-	-	-	-	-	-	-	-	-	-	-	-
PN_400	1.0 - 2.0	0.2 - 1.0	2.2	2.0	45	43	20	19	13	12	8	7	5	5	-	-	-	-	-	-	-	-
PN_500	1.0 - 2.0	0.2 - 1.0	2.2	2.0	74	72	35	33	23	22	14	13	9	9	5	5	-	-	-	-	-	-
PN_600	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	51	50	33	33	20	20	14	14	8	8	-	-	-	-	-	-
PN_700	1.0 - 2.0	0.2 - 1.0	2.2	2.0	-	-	-	-	-	-	-	-	-	-	-	-	6	6	3	3	-	-
PN_300	2.0 - 4.0	0.2 - 1.0	4.2	3.0	60	58	27	25	17	16	-	-	-	-	-	-	-	-	-	-	-	-
PN_400	2.0 - 4.0	0.2 - 1.0	4.2	3.0	98	95	46	45	30	29	18	18	13	12	-	-	-	-	-	-	-	-
PN_500	2.0 - 4.0	0.2 - 1.0	4.2	3.0	103	103	74	73	49	48	30	30	21	21	13	12	-	-	-	-	-	-
PN_600	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	103	103	72	71	45	44	31	31	19	19	-	-	-	-	-	-
PN_700	2.0 - 4.0	0.2 - 1.0	4.2	3.0	-	-	-	-	-	-	-	-	-	-	-	-	20	20	13	13	-	-

Note: For reduced trims use the equivalent trim diameter.

**Dimensions/ weights (approximately) in inches (mm) and pounds (kg)**

Actuator	D	H			Weight
		Yoke Type A	YokeType B	YokeType C	
PN1300 and PN2300	11¼" (285)	28" (716)	- -	- -	51 (23)
PN1400 and PN2400	13¼" (336)	30" (760)	30¾" (780)	- -	73 (33)
PN1500 and PN2500	16" (405)	31" (785)	31¾" (805)	33¾" (855)	121 (55)
PN1600 and PN2600	19" (465)	34" (860)	34¾" (880)	36¾" (930)	154 (70)
PN1700 and PN2700	23" (589)	- -	- -	37¾" (1070)	242 (110)

Please note: the external profile for the PN1700 and PN2700 is different to the illustrations shown below.



**Safety information, installation and maintenance**

For full details see the Installation and Maintenance Instructions supplied with the product.

**Installation note:** Actuators should be mounted on to the control valve with the stem in a vertical position.

**PN1000 and PN2000 series actuator selection table**

Actuators can be selected using the differential pressure charts (pages 4 and 5) in conjunction with the following part codes:

<b>Actuation</b>	PN = Pneumatic	<b>PN</b>
<b>Actuator action</b>	1 = Spring-to-extend 2 = Spring-to-retract	<b>1</b>
<b>Diaphragm size</b>	3 = 10" (250 mm) 4 = 12" (300 mm) 5 = 16" (400 mm) 6 = 20" (500 mm) 7 = 24" (600 mm)	<b>5</b>
<b>Actuator travel</b>	2 = ¾" (20 mm) 3 = 1⅜" (30 mm) 4 = 1½" (38 mm) 5 = 2" (50 mm) 7 = 3" (75 mm)	<b>2</b>
<b>Spring range</b>	0 = 6 to 18 psi (0.4 to 1.2 bar) 3 = 30 to 60 psi (2.0 to 4.0 bar) 6 = 15 to 30 psi (1.0 to 2.0 bar)	<b>0</b>
<b>Yoke type</b>	A = Type A for valve sizes: 1" to 2" (DN25 to DN50) B = Type B for valve sizes: 2½" to 4" (DN65 to DN100) C = Type C for valve sizes: 5" to 8" (DN125 to 200)	<b>A</b>

Selection example: **PN 1 5 2 0 A**

**How to order**

**Example:** 1 off Spirax Sarco PN1520A pneumatic actuator, set to 0.4 to 1.2 bar.

### Spare parts

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

#### Available spares

<b>Stem seal kit</b>	Spindle 'O' ring and 'V' ring and diaphragm plate 'O' ring	<b>B, C, D</b>
<b>Diaphragm kit</b>	Diaphragm	<b>A</b>
<b>Spring kit</b>	Set of spring(s)	<b>E</b>

#### How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the actuator type.

**Example for PN1000:** 1 Stem seal kit for a PN1520A pneumatic actuator.

**Example for PN2000:** 1 Stem seal kit for a PN2520A pneumatic actuator.

