

# spirax sarco

## TN2000 Series

### Pneumatic Piston Actuators

### for DN125 to DN300 Spira-trol™ Series Control Valves

#### Description

The TN2000 series pneumatic piston actuators are designed for use with DN125 to DN300 Spira-trol™ control valves. There are three versions available: Single-acting, Double-acting (spring assist) and Double-acting (no springs) for matching the requirements of valves at various differential pressures and in a variety of applications.

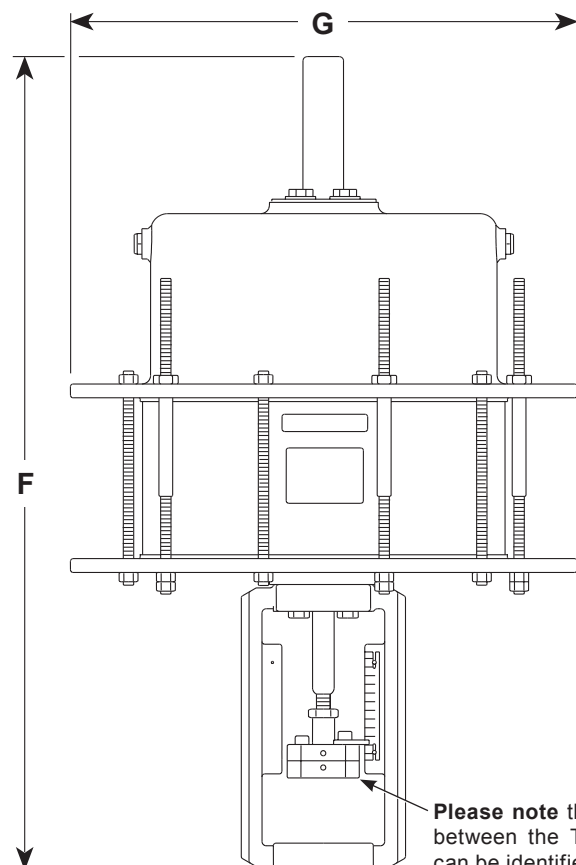
#### Available types

- SE** = Single-acting, springs extend
- SR** = Single-acting, springs retract
- DE** = Double-acting, springs assisted (extend)
- DR** = Double-acting, springs assisted (retract)
- DA** = Double-acting
- NDA** = Double-acting, no springs

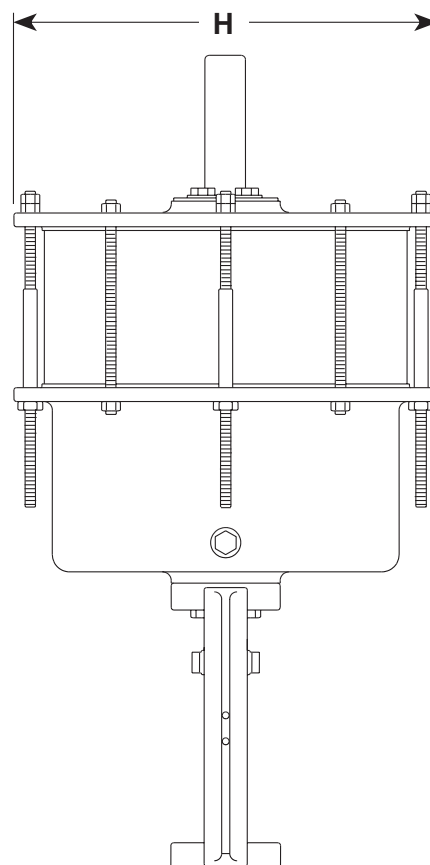
#### Technical data

<b>Temperature range</b>	5 °F to 230 °F -15 °C to +110 °C		
<b>Maximum operating inlet pressure</b>	<b>SE and SR</b>	116 psi g	8 bar g
	<b>DA</b>	116 psi g	8 bar g
	<b>DE and DR</b>	87 psi g	6 bar g
<b>Air supply connection</b>	½" screwed NPT		
<b>Actuator travel</b>	<b>TN2300</b>	100 mm	
	<b>TN2400</b>	150 mm	

Please see the 'TN2000 series selection guide' (page 3) to fully understand the product nomenclature quoted throughout this document.



**TN238\_SE and TN249\_SE**



**TN238\_SR and TN249\_SR**

Please note that the differences between the TN238 and TN249 can be identified on page 3.

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

Actuator range	F	G	H	Weight
<b>TN238__E and variants</b>	932	587	490	210 kg
<b>TN238__R and variants</b>	932	587	490	210 kg
<b>TN238N DA</b>	932	587	490	190 kg

Actuator range	F	G	H	Weight
<b>TN249__E and variants</b>	1282	750	660	390 kg
<b>TN249__R and variants</b>	1282	750	660	390 kg
<b>TN249N DA</b>	1282	750	660	273 kg

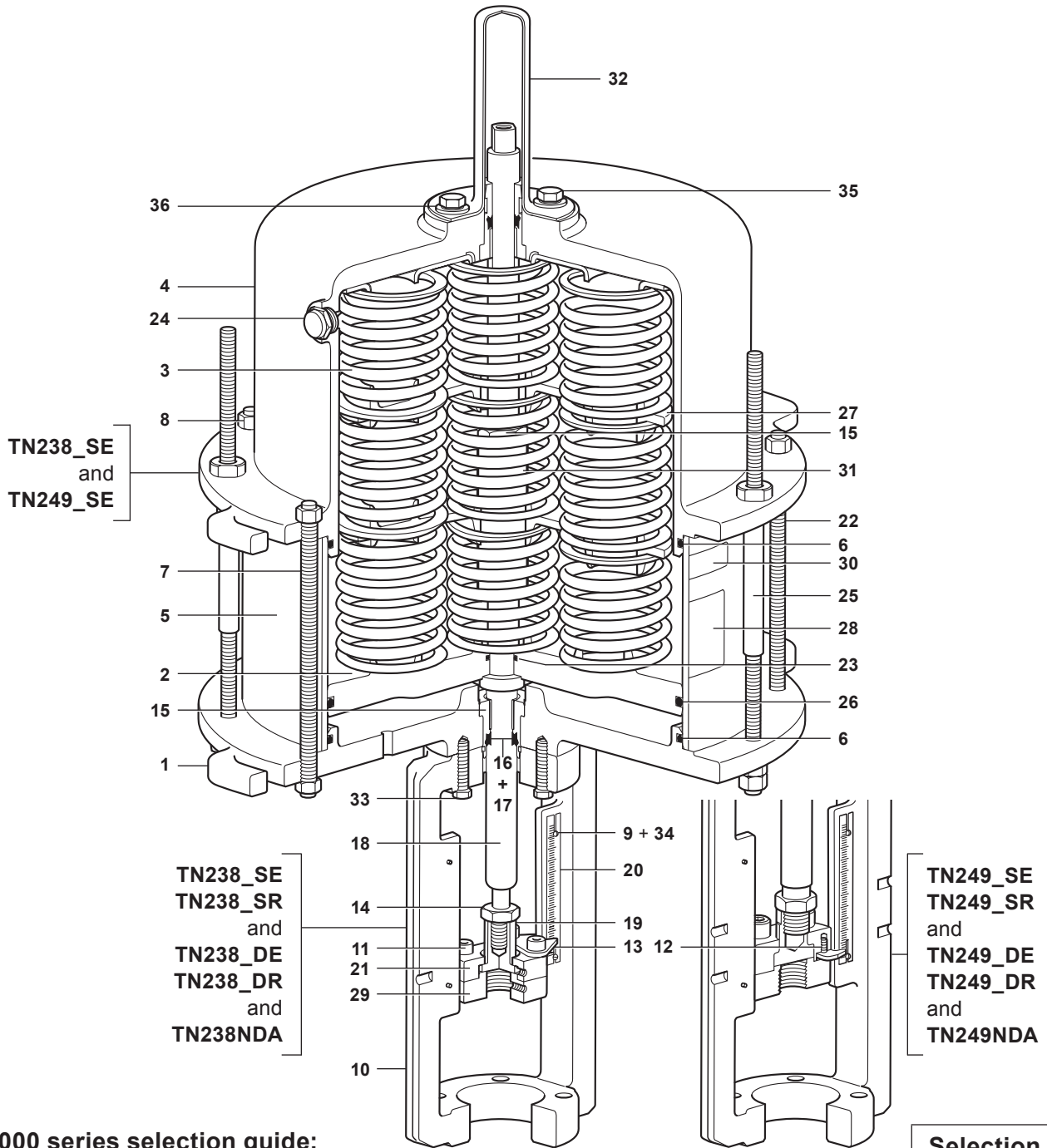
## Materials

No.	Part	TN2300	TN2400	Material	
1	Lower cylinder end cap			SG iron	EN 1563 EN-GJS-400-15 : 5.3106
2	Piston			SG iron	EN 1563 EN-GJS-400-15 : 5.3106
3	Spring			Chrome vanadium steel	
4	Upper cylinder end cap			SG iron	EN 1563 EN-GJS-400-15 : 5.3106
5	Cylinder			Composite tube	
6	'O' ring			Nitrile NBR 70 SH	
7	Threaded bar	M12	M16	Carbon steel (plated)	
8	Nut	M12	M16	Carbon steel (plated)	
9	Screw slotted pan head	M2.5 x 12	M2.5 x 12	Carbon steel (plated)	
10	Yoke			SG iron	EN 1563 EN-GJS-400-15 : 5.3106
11	Screw	M12	M16	Carbon steel (plated)	
12	Screw		M5	Carbon steel (plated)	
13	Indicator plate			Carbon steel (plated)	
14	Nut	M20	M24	Carbon steel (plated)	
15	Bearing and seal insert			Carbon steel (plated)	
16	Rod seal wiper	Ø25	Ø25	Polyurethane	
17	DU plain bearing	Ø25	Ø25	PTFE / steel composite	
18	Spindle			Stainless steel	BS 970 431 S29
19	Connector			Stainless steel	BS 970 431 S29
20	Scale			Stainless steel	BS 1449 304 S16
21	Collar			Carbon steel (plated)	
22	Threaded long bar	M12	M16	Carbon steel (plated)	
23	'O' ring	27 x 3	27 x 3	Nitrile NBR 70 SH	
24	Vent plug	½" NPT	½" NPT	Sintered bronze	
25	Long nut	M12	M16	Carbon steel (plated)	
26	'O' ring			Nitrile NBR 70 SH	
27	Spring guide plate			Carbon steel (plated)	
28	Label blank (Compressed spring warning)			Adhesive paper	
29	Adaptor			Carbon steel (plated)	
30	Label blank			Adhesive paper	
31	Sleeve			Carbon steel (plated)	
32	Cover spindle			Carbon steel (painted)	
33	Formed hex. screw	M12 x 45	M16 x 50	Carbon steel (plated)	
34	Nut	M2.5	M2.5	Carbon steel (plated)	
35	Formed hex screw	M12 x 16	M16 x 20	Carbon steel (plated)	
36	Washer	M12	M16	Carbon steel (plated)	

## Actuator data

Actuator range	Travel	Minimum thrust	Acting pressure						
			0 mm	30 mm	50 mm	70 mm	80 mm	100 mm	150 mm
TN2370 and variants	70 mm	14 KN	1.11 bar	1.36 bar	1.45 bar	1.54 bar			
TN2373 and variants		32 KN	2.49 bar	3.05 bar	3.25 bar	3.46 bar			
TN2380 and variants	100 mm	13 KN	1.00 bar	1.22 bar	1.32 bar	1.41 bar	1.45 bar	1.54 bar	
TN2383 and variants		30 KN	2.22 bar	2.74 bar	2.97 bar	3.17 bar	3.26 bar	3.46 bar	
TN2490 and variants	150 mm	27 KN	1.11 bar	1.37 bar	1.46 bar	1.58 bar	1.63 bar	1.73 bar	1.98 bar
TN2493 and variants		60 KN	2.45 bar	3.02 bar	3.30 bar	3.48 bar	3.58 bar	3.85 bar	4.35 bar

**Caution:** Those pressure ranges are estimated and directly related to the springs precision ( $\pm 10\%$ ). Furthermore, the working pressure with the valve coupled can be a little bit higher because of the friction inside of it.



**TN2000 series selection guide:**

Type	TN
Series	2 = 2000 series
Actuator size	3 = 1297 cm <sup>2</sup>
	4 = 2452 cm <sup>2</sup>
Valve travel	8 = 100 mm (only available for a size 3 actuator)
	9 = 150 mm (only available for a size 4 actuator)
Spring rating	0 = Soft springs for use with an IP converter or balanced
	3 = Standard springs
	N = No springs
Action	SE = Single-acting, springs extend
	SR = Single-acting, springs retract
	DE = Double-acting, springs assisted (extend)
	DR = Double-acting, springs assisted (retract)
	DA = Double-acting

Selection
TN
2
3
8
3
SE

**Selection example:**

TN	2	3	8	3	SE
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**How to order example:** 1 off Spirax Sarco TN2383SE pneumatic piston actuator.

## Spare parts

The spare parts available are common across the range of actuators detailed in this document. No other parts are available as spares.

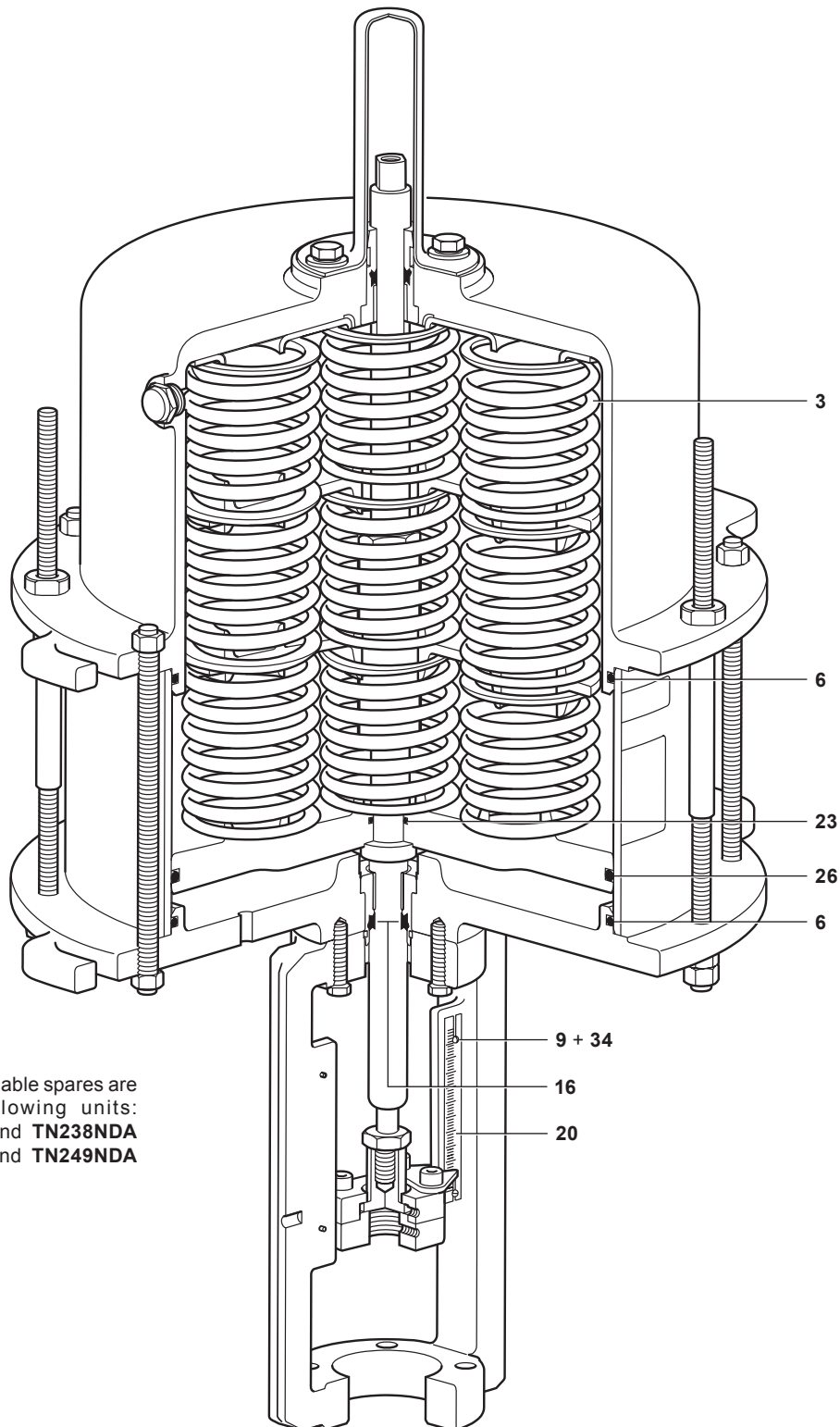
### Available spares

'O' ring kit	6, 16, 23 and 26
Travel indicator kit	9, 20 and 34
Spring kit	3

### How to order spares

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

**Example:** 1 - 'O' ring kit for a Spirax Sarco TN2380SE pneumatic piston actuator.



### TN238\_E shown

Please note that the available spares are the same for the following units:

- TN238\_E, TN238\_R and TN238NDA
- TN249\_E, TN249\_R and TN249NDA