

SV615
Safety Valve Replacement Parts
Fitting Instructions**Warning**

Resetting or refurbishment of Spirax Sarco safety valves must only be carried out by authorised, competent persons.

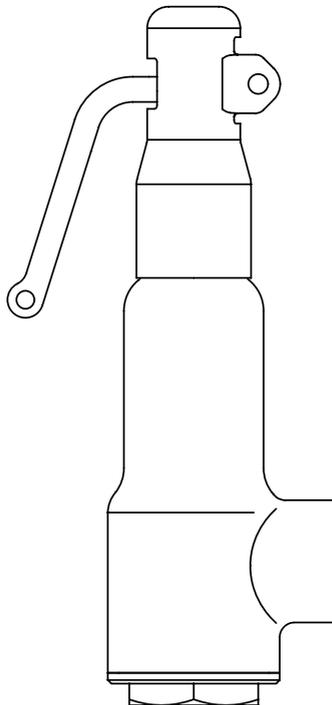
Safety Warning

Do not attempt to dismantle the valve without first releasing the compression on the spring.

For valves containing a Viton/FPM elastomer seal

If the valve has been subjected to a temperature approaching 315°C the Viton/FPM may have decomposed and formed hydrofluoric acid.

Avoid skin contact and inhalation of fumes as this acid causes deep burns and damage to the respiratory system.



1. To replace the nozzle

- Remove the sealing wire, withdraw the pivot pin (11) and remove the lever (10).
- Remove the lever housing (4). **Note:** In the case of the gas tight cap (15) design, the cap is secured with a grub screw (18) which should be removed for disc/nozzle assembly.
- Undo the spring adjuster lock-nut (13) and unscrew the spring adjuster (9) to release any compression on the spring (5).
- Hold the valve upside down, unscrew and remove the nozzle.

Reassemble in reverse sequence using the torques listed below in Tables 1 and 2.

2. To replace the disc (metal or soft seal)

- Remove nozzle as detailed in Section 1.
- With the valve inverted the disc assembly (3 + 17) or soft seal disc (14) can then simply be lifted from it's location on the end of the valve stem.

Note 1: For metal seated valves the disc assembly is a non serviceable item.

Note 2: Apply a thin layer of grease to the seating surface of the new soft seal disc.

3. To change the spring or stem

Refer to the 'Spring identification chart' Section 5, pages 4 - 5, for verification of spring data.

- Remove the disc as detailed in Section 2.
- With the valve still inverted undo and remove the stem guide plate (6). An SV615 stem guide removal tool is available from Spirax Sarco for this operation.
- The stem (8) complete with circlip (12) can then be lifted out followed by the spring end plate (7) and spring (5).

Replacement is simply a reversal of the removal procedure.

4. To renew the 'O' ring seal on closed cap assemblies

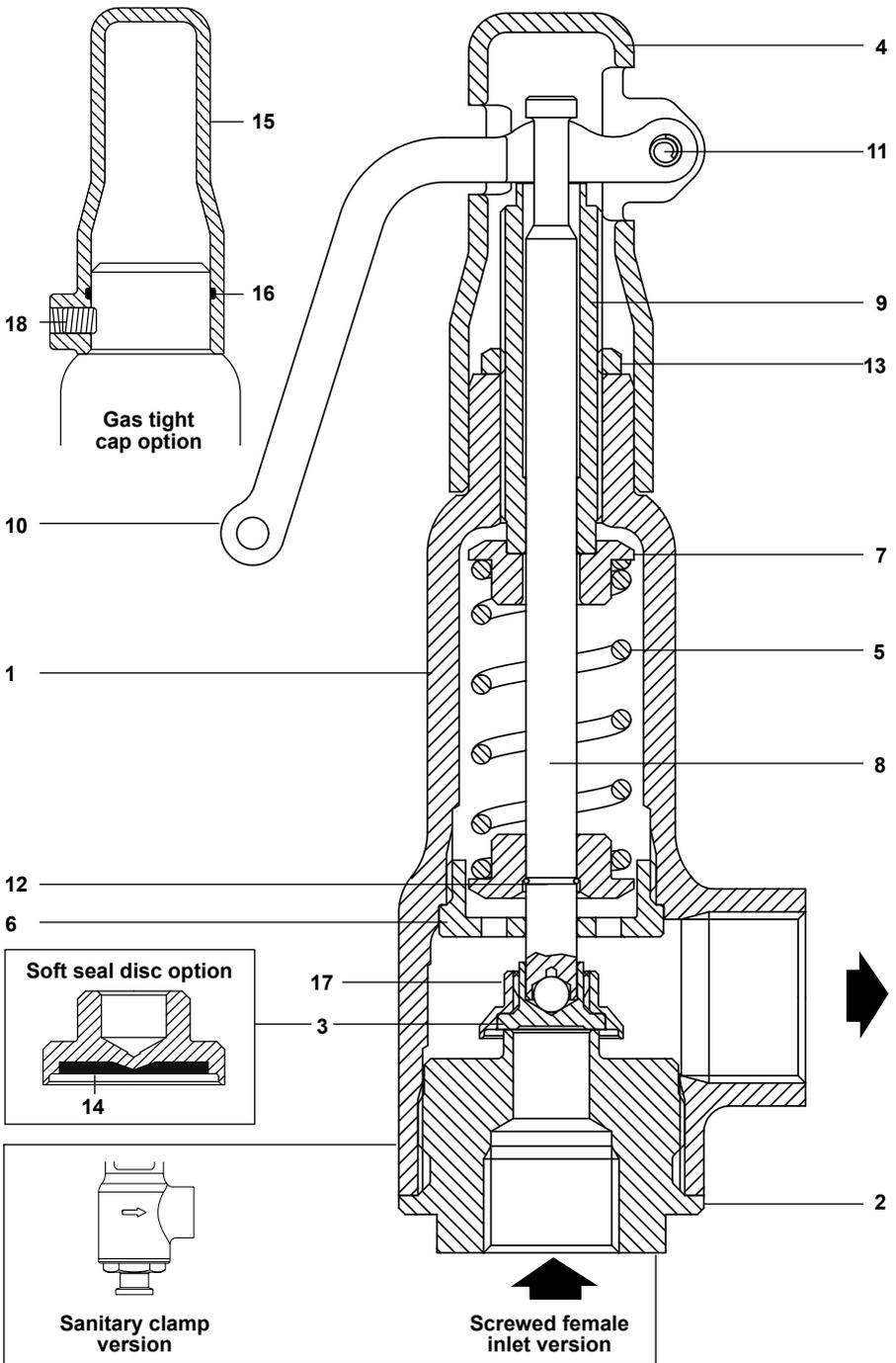
- Remove the closed cap by undoing the socket set screw (18) and lifting the cap from the body.
- The 'O' ring is located inside the cap in an internal groove. Carefully prise the 'O' ring from the groove, ensure cap is clean and replace, locating the new 'O' ring in the groove.
- Replace the cap, taking care not to damage the 'O' ring.

Table 1 Recommended tightening torques

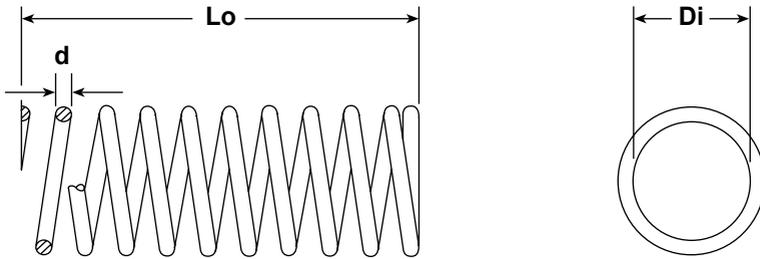
Valve size	Nozzle (Item 2)			Adjuster lock-nut (Item 13)		Stem guide (Item 6)	
	A/F (mm) Screwed	Sanitary clamp	Torque (N m)	A/F (mm)	Torque (N m)	Drive pin pitch and diameter (mm)	Torque (N m)
DN15	36	36	35 ±1.7	19	15 ±0.7	18 x Ø4	25 ±1.2
DN20	50	52	45 ±2.2	19	15 ±0.7	24 x Ø4	30 ±1.5
DN25	41	52	50 ±2.5	19	15 ±0.7	24 x Ø4	35 ±1.7
DN32	50	-	70 ±3.5	19	15 ±0.7	30 x Ø6	40 ±2.0
DN40	60	-	90 ±4.5	33	25 ±1.2	44 x Ø10	65 ±3.2
DN50	70	-	140 ±7.0	33	25 ±1.2	44 x Ø10	80 ±4.0

Table 2 Recommended set screw tightening torques

Valve size	Cap housing set screw (item 18) - gas tight cap construction only.	
	A/F (mm)	Torque (N m)
DN15	3	5 ±0.2
DN20	3	5 ±0.2
DN25	3	5 ±0.2
DN32	3	5 ±0.2
DN40	4	10 ±0.5
DN50	4	10 ±0.5



5. SV615 spring identification chart



Valve size	Spring identification colour	Set pressure range, bar g from to	Inside Ø Di (mm)	Wire Ø d (mm)	Free length Lo (mm)	Total No. of coils
DN15	Bronze	0.3 0.7	19.30	1.42	50.50	7.16
	Light grey	0.7 1.2		2.03		8.44
	Green	1.2 1.7		2.18		7.95
	Orange	1.7 2.1		2.34		7.67
	White	2.1 2.6		2.34		7.37
	Brown	2.6 4.0		2.64		8.51
	Blue	4.0 6.5		2.77		8.29
	Red	6.5 9.0		2.95		8.32
	Black	9.0 12.0		3.04		7.82
	Yellow	12.0 15.0		3.25		7.57
	Purple	15.0 18.0		3.25		6.86
DN20	Bronze	0.3 0.7	25.40	2.03	70.00	7.77
	Light grey	0.7 1.1		2.64		8.55
	Green	1.1 1.5		2.77		7.87
	Orange	1.5 2.0		3.40		8.43
	White	2.0 2.6		3.66		8.75
	Brown	2.6 3.3		3.96		8.14
	Blue	3.3 4.7		4.27		9.39
	Red	4.7 7.0		4.47		8.92
	Black	7.0 9.5		4.75		8.58
	Yellow	9.5 11.5		5.00		8.39
	Purple	11.5 15.5		5.16		8.14
	Dark grey	15.5 18.0		5.59		7.75
DN25	Bronze	0.3 0.7	29.30	2.34	83.00	7.64
	Light grey	0.7 1.3		3.10		8.10
	Green	1.3 1.9		3.86		8.90
	Orange	1.9 2.4		3.96		8.00
	White	2.4 2.9		4.27		8.08
	Brown	2.9 4.0		4.75		9.02
	Blue	4.0 5.9		5.00		8.36
	Red	5.9 7.5		5.38		8.50
	Black	7.5 10.0		5.64		8.10
	Yellow	10.0 12.0		5.74		8.06
	Purple	12.0 13.5		5.89		8.23
	Dark grey	13.5 16.5		5.99		8.25
	Pink	16.5 18.0		6.15		8.11

Valve size	Spring identification colour	Set pressure range, bar g from to		Inside Ø Di (mm)	Wire Ø d (mm)	Free length Lo (mm)	Total No. of coils
DN32	Bronze	0.3	0.7	34.00	3.05	96.00	8.25
	Light grey	0.7	1.3		3.66		8.16
	Green	1.3	2.0		4.47		8.45
	Orange	2.0	2.8		5.00		8.46
	White	2.8	3.5		5.38		8.30
	Brown	3.5	4.3		5.89		9.50
	Blue	4.3	5.5		5.89		8.46
	Red	5.5	7.0		6.35		8.51
	Black	7.0	8.6		6.71		8.95
	Yellow	8.6	10.5		6.69		8.35
	Purple	10.5	12.5		7.00		8.41
	Dark grey	12.5	15.0		7.31		8.19
Pink	15.0	18.0	7.62	7.76			
DN40	Bronze	0.3	0.9	40.50	3.66	110.00	7.40
	Light grey	0.9	1.4		5.00		8.08
	Green	1.4	2.0		5.59		8.08
	Orange	2.0	2.7		6.35		8.62
	White	2.7	3.3		6.71		7.87
	Brown	3.3	4.2		7.01		8.06
	Blue	4.2	5.2		7.62		8.17
	Red	5.2	6.8		7.92		8.11
	Black	6.8	8.5		8.23		8.05
	Yellow	8.5	10.5		8.71		7.64
	Purple	10.5	12.0		9.00		7.74
	Dark grey	12.0	14.0		9.52		7.88
DN50	Bronze	0.3	0.6	47.00	4.27	145.00	8.49
	Light grey	0.6	1.2		6.35		10.06
	Green	1.2	1.7		7.01		9.50
	Orange	1.7	2.3		7.62		9.24
	White	2.3	2.9		8.23		9.94
	Brown	2.9	3.6		8.50		9.30
	Blue	3.6	4.5		9.00		9.73
	Red	4.5	5.2		9.52		9.95
	Black	5.2	6.1		9.52		9.02
	Yellow	6.1	7.5		9.80		9.13
	Purple	7.5	8.5		10.31		8.92
	Dark grey	8.5	12.0		11.10		9.06
Pink	12.0	14.0	11.56	8.73			

6. To reset the safety valve

Safety note: It is essential to ensure that the desired set pressure is within the range of the spring fitted, see the spring table in Section 5.

- a) With the cap/lever components removed and the adjuster screw exposed the safety valve should be fitted to a suitable inert gas supply pressure source, such as compressed air. The pressure should be adjustable and measured using a gauge with an accuracy of within 0.5% of scale and subject to a regular calibration operation.
- b) Hold the valve spindle so that it cannot turn to prevent damage to the seating faces and turn the safety valve adjustment screw clockwise to compress the spring to an approximate set point (if the desired set point is near the higher end of the spring range then more compression is required and correspondingly less compression if near the lower end of the spring range).
- c) Slowly raise the pressure at a rate of approximately no more than 1 psi (0.07 bar) per second until the valve reaches the set point, the point at which the disc starts to leave the seat. This point can usually be judged audibly as a hissing noise.
- d) If the valve is set too high then reduce the pressure by about 30% and turn the adjuster screw anticlockwise. If the valve is set too low then turn the adjuster screw clockwise. It is essential to remember to hold the valve spindle to prevent it turning. Repeat these operations until desired set point is achieved and tighten the adjuster lock-nut at the recommended torque (see Table 1).
- e) Reduce the pressure and then once again gently raise the pressure to recheck the valve set point is correct.
- f) Replace the cap/lever assembly as described in previous text, fit the sealing wire and secure with lead seal to make the valve tamper-proof.
- g) If the set pressure has been changed from the original pressure ensure the new set pressure value is either indelibly marked or stamped on the valve or a separate stamped or engraved tag is permanently wired to the valve. The exact procedure for marking or stamping of the set pressure must comply with the latest codes and standards in force locally.

CAUTION !

Take care if using liquid jointing compounds (particularly thread sealants such as 'Loctite' or 'Stag') that these don't contaminate internal seating faces. In extreme cases, this type of contamination may cause these faces to stick together, causing a potentially dangerous overpressure situation.

