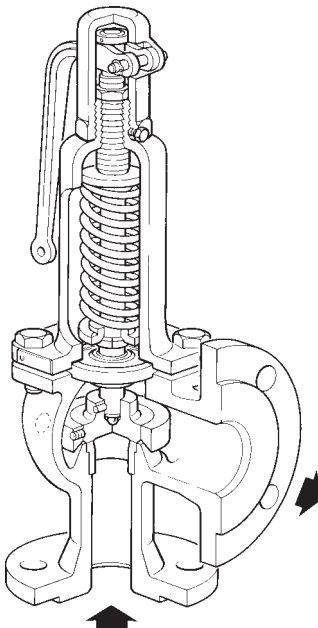

SV5 Safety Valve Installation and Maintenance Instructions



- 1. General specification*
- 2. Supply*
- 3. Before fitting the valve*
- 4. Installation*
- 5. Damage prevention*
- 6. Commissioning*
- 7. Testing during use*
- 8. Guidelines for setting*
- 9. Maintenance*

1. General specification

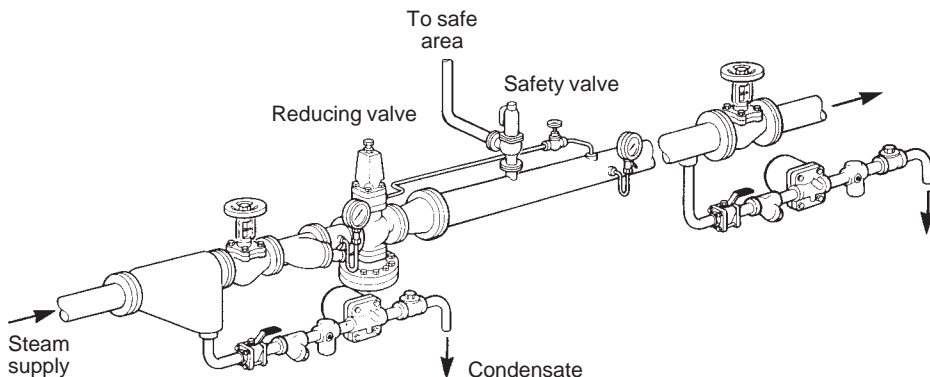


Fig. 1 Typical installation of safety valve, downstream of a steam pressure reducing valve station

Description

The SV5 is a range of full lift flanged safety valves suitable for use on steam, gas and liquid service.

Available types

Two main variations of the valve are available, the SV 57 and SV 54, in SG Iron and Carbon Steel body materials respectively. Inlet sizes range from DN20 to DN150, each with an option of easing lever, "O" ring soft seal and open and closed bonnets. DIN or ANSI flange options available.

Standards and approvals

Approved by SAFed - TAS (British Engine) to BS6759 parts 1 and 2 and the TUV to AD Merkblatt A2 TRD421
Seat tightness to API 527

Sizes and pipe connections

Inlet sizes include DN 20, 25, 32, 40, 50, 65, 80, 100, 125 & 150

Valve Type	Inlet connection	Outlet connection
SV 57	PN 25	PN 16
SV 54	PN 40	PN 16
SV 54	ANSI300	ANSI150

Limiting Conditions

Valve Inlet

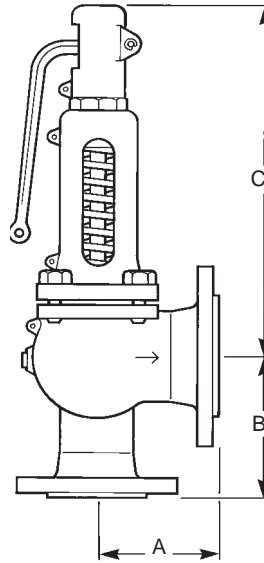
Type	flange connection	Pressure	Temperature
SV 57	PN 25	25 bar max.	-10°C to +300°C
SV 54	PN40/ ANSI 300	40 bar max.	-10°C to +400°C

"O" Ring Soft seal Material:

PTFE - 10°C to +205°C.
Viton - 10°C to +180°C.
Buna-N - 10°C to +90°C max.

Dimensions (All dimensions in mm)

Size DN	A	B	C	Weight kg
20	85	95	315	10
25	100	105	325	11.5
32	110	115	362	15
40	115	140	362	17
50	120	150	402	20
65	140	170	520	37.5
80	160	195	560	50
100	180	220	665	77
125	200	250	792	115
150	225	285	880	180



Installation and service

The Safety Valve should always be fitted with the centre line of the spring housing vertically above the valve. See full installation instructions on page 6.

Open bonnet valves are recommended where the media temperature exceeds 250°C.

A comprehensive valve refurbishment service is available upon request.

How to specify

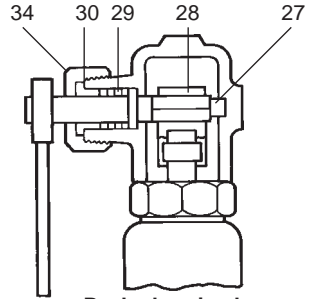
Body Material 4 = CS 7 = SGI	Valve Size 1 = 20x32 2 = 25x40 3 = 32x50 4 = 40x65 5 = 50x80 6 = 65x100 7 = 80x125 8 = 100x150 9 = 125x200 10 = 150x250	Flange 1 = PN 2 = ANSI*	Bonnet 1 = Open 2 = Closed	Configuration 1 = Gas tight cap 2 = Easing Lever 3 = Packed Easing lever	Seal Material 1 = St. Steel 2 = PTFE 3 = Viton 4 = Buna-N
SV5	—	1 — 1	2	2	1

Example: 1 - Spirax Sarco SV54-1-1221 safety valve set to 6 bar.

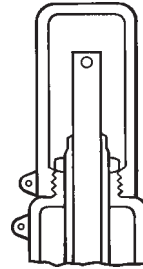
* SV54 - Steel valves only

Materials of construction

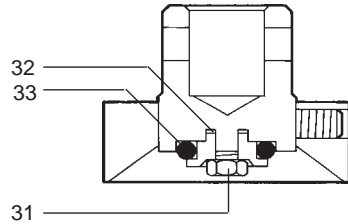
Item	Component	Material - SV 57 / SV54
1	Body	GGG-40.3/GSC-25
2	Seat	1.4057
3	Bonnet	GGG-40.3/GS-C25
4	Cap	GGG-40.3
5	Disc	Hardened 1.4021
6	Disc guide	GGG-40.3
7	Skirt	1.4031
8	Spindle	1.4034
9	Body Bolts	DIN-931 5.6 ZN/DIN-933 CK-35
10	Spring washers	CK 45
11	Retainer ring	1.4034
12	Guide sleeve	1.4031
13	Spring adjustment screw	1.4034
14	Lock nut	Carbon steel DIN 1651 9S Mn 36 Zp
15	Spring	Carbon Steel DIN 17225 50 crV4
16	Cap bolt	DIN-931 5.6 ZN
17	Collar	Carbon steel, Zinc plated
18	Lever	GGG 40.3
19	Pin	Carbon steel, Zinc plated
20	Circlip	DIN-471 Carbon steel
21	Pin	DIN-7343
22	Drain Hole	½" BSP
23	Spindle Ball	1.4034
24	Identification plate	Stainless steel
25	Locking screw	DIN-913 A2
26	Ring pin	DIN- 1481
27	Lever stem	1.4034
28	Cam	GGG-40.3
29	Packing	Graphite
30	Gland	1.4305
31	Nut	DIN-1471
32	O - Ring retainer	1.4031
33	O - Ring	According to service
34	Gland nut	Carbon steel
35	Gasket (relief only)	Asbestos free
36	Gasket (relief only)	Asbestos free



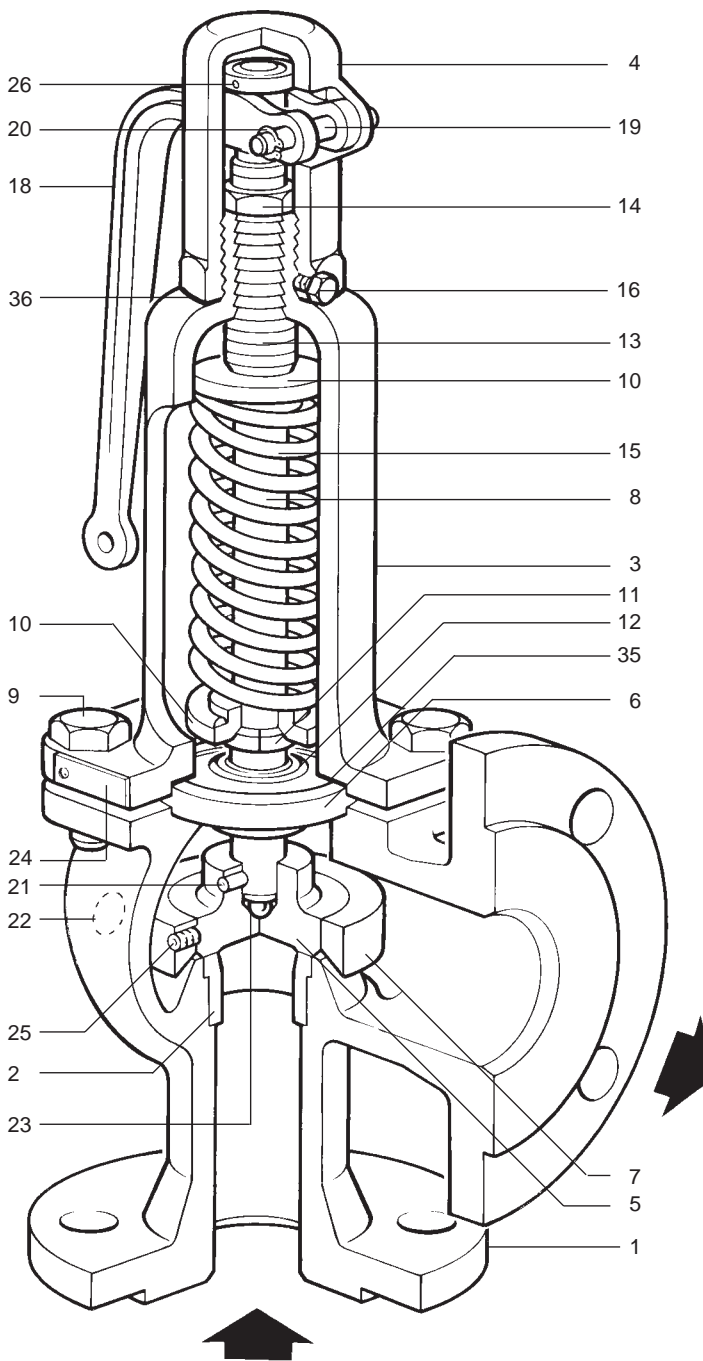
Packed easing lever



Gas tight cap



'O' - ring seal



2. Supply

Normally, the valve will be supplied set at the required pressure and sealed. BS 6759, DIN 3320 and local regulations requires that the setting of the valve should only be

carried out by an authorised/competent person. Spirax Sarco accepts no responsibility for valves which have been reset by unauthorised persons.

3. Before fitting the valve

- 3.1 Ensure that the installation is correct (Fig. 1), Page 2.
- 3.2 Blow through pipework to ensure that it is completely free of any foreign matter that may otherwise pass to the valve seat and
- 3.3 Ensure that valve is set to the correct pressure, see section 7.

4. Installation

- 4.1 The valve should always be mounted vertically upwards with its main axis vertical.
- 4.2 The valve should be fitted to the pipework or vessel by means of the shortest possible length of pipe or fitting.
- 4.3 There should be no intervening valve or fitting i.e. it should not be possible to isolate safety valve. (Fig. 2)
- 4.4 The inlet pipe connection should not be smaller than the valve. (See Fig. 5 and 6)
- 4.5 The outlet pipe size should be equal or larger than the valve outlet to keep back pressure below 12% of the set pressure.
- 4.6 Direct the outlet pipework to a safe point of discharge where there is no risk of injury to persons or damage to property in the event of the valve operating.
- 4.7 The outlet pipework should be adequately supported such that it does not place undue stress on the safety valve.
- 4.8 Where the outlet pipework is directed upwards a small bore drain should be provided at the lowest point. (Fig. 3) This drain should be taken to a place where any discharge will not create a hazard or inconvenience.
- 4.9 Each safety valve should have its own unrestricted discharge pipe.
- 4.10 Valves with open bonnets may release fluid under pressure when discharging. Ensure this can be done safely.
- 4.11 Safety valve should not be lagged.
- 4.12 Safety valves can operate very suddenly and will be too hot to touch without protection when installed on steam systems.

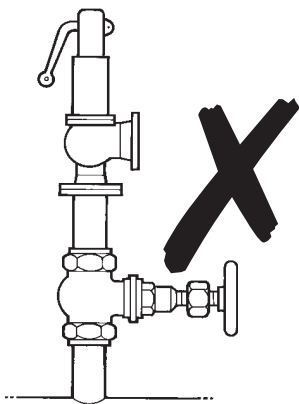


Fig 2

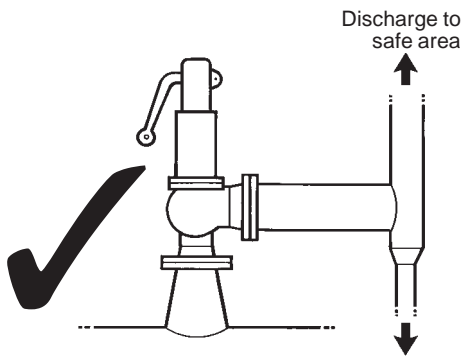


Fig 3

5. Damage prevention

Excessive pressure loss at the inlet of a safety valve when it operates will cause extremely rapid opening and closing of the valve, observed as chattering or hammering.

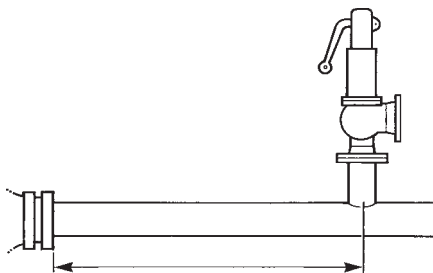
This may result in reduced capacity as well as damage to seating faces and the other parts of the valve.

When normal pressure is restored it is possible that the valve will leak.

Solution

BS 6759 makes the following recommendations to prevent these problems. Valve should be fitted 8-10 pipe diameters downstream of Converging or Diverging Fittings or Bends. (Fig. 4)

Inlet branches should be as Fig. 5 or Fig. 6.



8 - 10 Pipe diameters downstream of converging "Y" fittings or bends

Fig 4

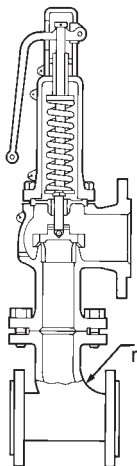


Fig 5

Radius "r" not less than inlet diameter

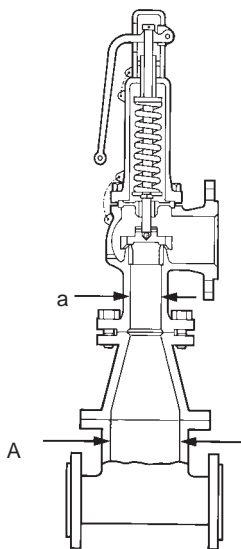


Fig 6

Inlet area "A" approx. twice that of inlet of area "a".

6. Commissioning

6.1 Once the valve has been fitted check that there are no leaks from either the inlet or the outlet connections.

6.2 Test the valve by raising the system pressure. Check that the valve operates at the correct set pressure and that the

overpressure is limited to 5% of the safety valve setting.

6.3 Reduce the system pressure to the normal operating pressure and check that the safety valve reseats.

7. Testing during use

It is recommended that the safety valve be tested for correct operation at least once every six months*, as outlined in Section 6, or by manual lifting when the operating pressure is no more than 85% of the safety valve set pressure.

*** Note:** Use suitable protection against excess heat and noise when testing safety valves, period between safety valve tests to be agreed by responsible person or insurance company. (Check local requirements for frequency of testing).

8. Guidelines for setting

(By Authorised Persons Only)

7.1 Choice of Set Pressure

A decision must be made regarding the pressure at which the safety valve should be set.

The maximum set pressure, in accordance with BS5500, is the safe working pressure of the plant it protects and the valve must achieve its rated capacity with an overpressure of no more than 10%.

The SV5 achieves its rated capacity at 5% over pressure. If the valve is set too close to the operating pressure of the system the valve may operate prematurely. It will also fail to close satisfactorily when normal operating

pressure is restored.

Fig. 7 outlines the way a safety valve operates. It can be seen that the safety valve does not re-seat when the pressure falls to the safety valve set pressure.

There must be adequate differential between the maximum system operating pressure and the safety valve set pressure if the valve is to re-seat.

The maximum system operating pressure is most likely to occur during no-load conditions. Fig. 8 shows the range within which the valve must be set.

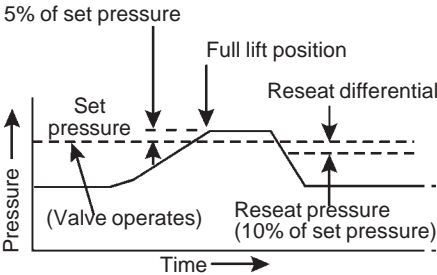


Fig 7

Note: The operating pressure of a system will vary and it is important that the safety valve is set high enough to accommodate such fluctuations.

7.2 Setting the Valve

British Standard 6759 and DIN 3320 requires that a safety valve should only be set by an Authorised Person.

Spirax Sarco cannot be held responsible for unauthorised alteration of the set pressure.

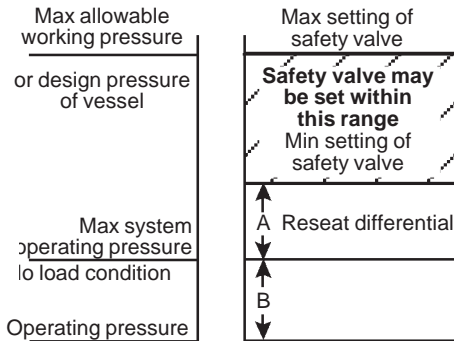


Fig 8

Flow rate = Max rating of pressure reducing valve

- A = 10% of Safety valve set pressure, 0.3 bar minimum
- B = Normal system pressure variation

9. *Maintenance*

All safety valves should receive planned maintenance.

It is recommended that the Spirax Sarco SV5 safety valves are returned to Spirax Sarco, or an approved Spirax Sarco agent, for a thorough overhaul periodically. The valve will be returned having been overhauled, tested re-set and sealed in accordance with BS6759.

