

Relief Pressure Valve – Spring Loaded - Model S3

BASIC INFORMATION

Type	Top guided standard construction		
Operation	Pressure relief valve it's used to maintain the pressure upstream of the valve to an adjusted set point.		
Model	S3	Max. permissible	0.7043 and 1.0619 -10 to 250°C
Connections	Connection Flanged EN and ANSI On request: Threaded BSP or NPT, BW, SW,...	temperature	1.4408 -30 to 250°C
Ends	RF – RF, NPT, BSP	Setting pressure	0,5 – 20 barg
Ratings	PN25 - PN40	(150# - 300#)	
Sizes	DN15 to DN100 [mm]	(DN125 and DN150 consult)	
Suitable for	Liquids, compressed air, neutral gases and steam		



VALVE FEATURES

DN15 to DN100 (DN125 and DN150 consult)

DIN PN25 Nodular Iron GJS-400-18-LT (0.7043)

DIN PN25 Bronze RG-10 (EN-1982 CuSn10-CC480K)

DIN PN40 Carbon steel GP240GHN (1.0619)

DIN PN40 Stainless steel CF3M (1.4404)

Stainless steel AISI 316L trim

Top guided standard construction

Connection Flanged EN and ANSI

On request: Threaded BSP or NPT, BW, SW,...

Shut off capabilities:

- Class IV (metal to metal)

- Class VI (PTFE+GR seat)

On request, PEEK, NBR, EPDM seal, stellited faced seat,...

Full port as standard. Reduced port on request

Seal / Packing / Gaskets: VIRGIN PTFE UP TO 180°C
 PTFE+GRAPHITE UP TO 220°C

Special features

Handwheel regulation, specials gaskets, Super

Duplex construction, bronze construction, ...

Approvals

Quality system ISO 9001

Pressure equipment Directive according 2014/68/UE Atex Directive according 2014/34/UE (pending to include).

OPERATION

Pressure relief valve it's used to maintain the pressure upstream of the valve to an adjusted set point.

When upstream pressure rises above a set point, the valve opens proportionally pressure rising.

This series of regulators is suitable for steam, gases (group 1 and 2) and liquids.

A relief pressure valve is not a safety valve, and then if necessary, an overpressure protection must be installed.

The valve opens when inlet pressure rises.

The regulator must be carefully handled, transported and stored. Protect the regulator against adverse influences, such as dirt, moisture or frost before it is installed.

When regulators are too heavy to be lifted by hand, fasten the lifting sling at a suitable place on the valve body.

Do not attach any lifting equipment, slings or supports to mounting parts, such as the adjusting screw or control line.

How to adjust the setting pressure

To regulate the set pressure valve, unscrew the cap (item 15), remove the O-ring (item 16) and act on the regulating stem (item 13) by rotating in:

- Clockwise direction to increase the setting pressure
- Anti-clockwise direction to decrease the setting pressure

To finish, reassemble the O-ring ((item 16) and screw the cap back on (item 15).

Special ATEX instructions

- No limitation of use due to the ATEX substance.
- Limitations due to thermal class:

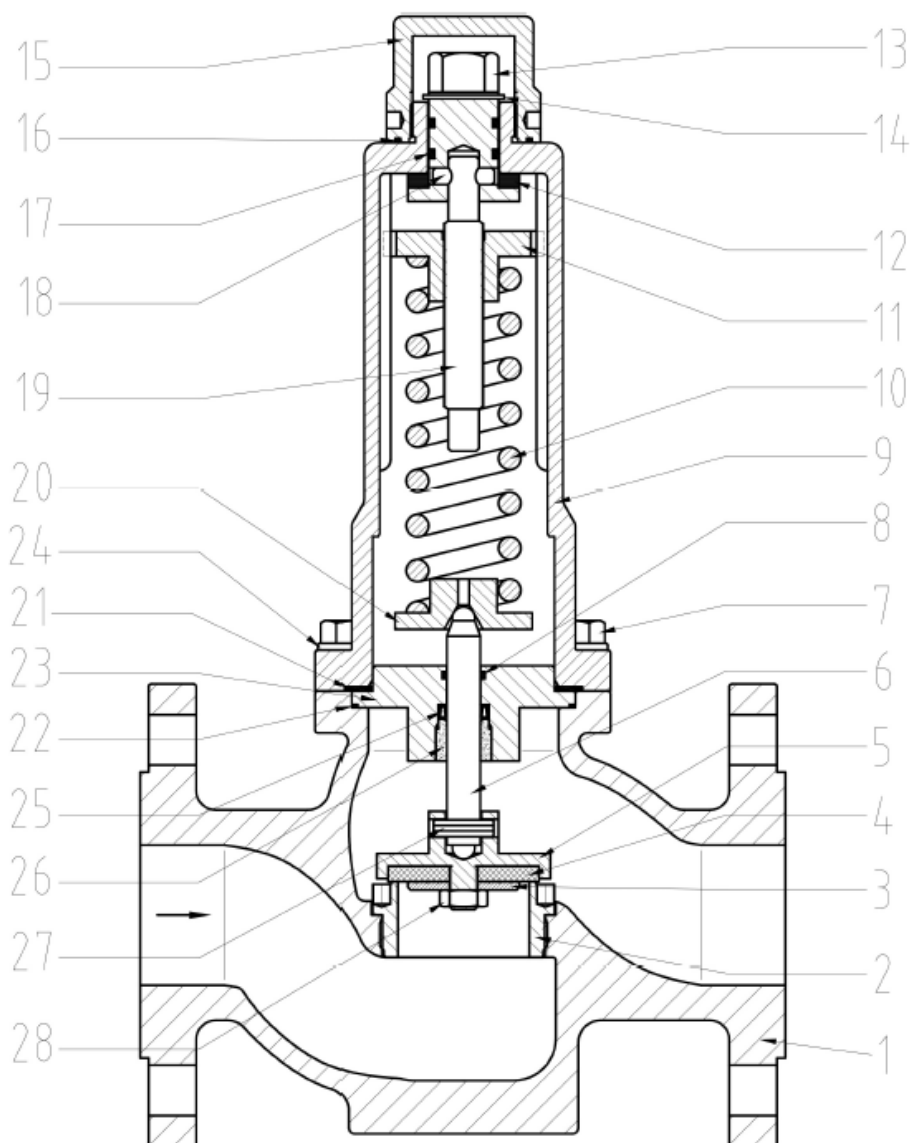
Class I (flammable liquids and gases)

TEMPERATURE CLASS	MAX. SURFACE TEMPERATURE	APPROPRIATE FOR SUBSTANCES WITH IGNITION TEMPERATURE
T1	450°C	Ti >450°C
T2	300°C	Ti >300°C
T3	200°C	Ti >200°C
T4	135°C	Ti >135°C
T5	100°C	Ti >100°C
T6	85°C	Ti >85°C

- Class II (combustible dust)

$$T(x) \leq 2/3 MIT_{cloud}$$

$$T(x) \leq 5 \text{ mm } MIT_{layer} - 75 \text{ K}$$

VALVE PARTS

This device must be installed by specialized personnel with knowledge and experience. They must know about the current regulations in order to judge the risks that may involve this work.

PRESSURE – TEMPERATURE RATINGS (according to EN12516-1 and EN 1092-2)											
Nominal Pressure	Body material	Services temp.	°C	-10	50	100	150	200	250	300	350
PN25 – Class 150	Nodular Iron (0.7043) EN-GJS-400-18	Working pressure	bar	25	25	25	24	23	21	20	17
PN40 – Class 300	Carbon steel GP240GH (1.0619)		bar	40	40	36	35	34	33	30	29
PN40 – Class 300	Stainless steel A351 CF3M (AISI 316L-1.4404)		bar	40	38	33	30	28	26	25	24

REF.	DESCRIPTION	MATERIAL
1	Body	Nodular Iron GGG40.3 (1) / Carbon steel WCB (1) /Stainless steel A351 CF3M (316L) (2)
2	Seat	Stainless steel AISI 316L
3	Guide	Stainless steel AISI 316L
4	Seal	PTFE+Graphite / SS AISI 316L / Or EPDM, NBR, FKM, PEEK, ...
5	Support Seal	Stainless steel AISI 316L
6	Stem	Stainless steel AISI 316L
7	Bolts	Zinc plated steel 8.8 (1) / Stainless steel A2-70 (2)
8	O-ring	FKM (or NBR, EPDM)
9	Spring cover	Stainless steel A351 CF3M (316L) (2)
10	Regulation Spring	Spring steel painted
11	Down support Spring	Zinc plated steel 1.1191
12	Bearing	PTFE+GR
13	Regulation stem A	Stainless steel AISI 316L
14	Washer	A2-70
15	Cover cap	Zinc plated steel 1.1191 (1) / Stainless steel AISI 316L (2)
16	O-ring	FKM (or NBR, EPDM, PTFE)
17	O-ring	FKM (or NBR, EPDM)
18	Block Pin	Steel
19	Regulation stem B	Stainless steel A2-70
20	Up support Spring	Zinc plated steel 1.1191
21	Flat gasket	PTFE
22	O-ring	FKM (or NBR, EPDM)
23	Bonnet	Stainless steel AISI 316L
24	Washer	Zinc plated steel 8.8 (1) / Stainless steel A2-70 (2)
25	Isolation gasket	PTFE+GR+SS302
26	Stem guide	Bronze / SS316L+Ni
27	Block Pin	A2-70
28	Nut	A2-70
110**	Handwheel	Steel painted
111**	Bolt	A2-70
112**	Washer	A2-70
113**	Regulation stem A	Stainless steel AISI 316L
114**	Washer	Zinc plated steel 1.1191 (1)
115**	Cover cap	Stainless steel AISI 316L
116**	Isolation gasket	PTFE+GR+SS302

Recommended spare parts

**handwheel components

ASSEMBLY

The pipe must be cleaned carefully before installing the valve, to prevent that any small element or impurity may affect the reducing valve work.

It is also very important to install a strainer in front of the valve in order to protect it.

Pressure relief valve must be installed in a horizontal pipe and the direction of the flow should be in the same direction that shows the valve body.

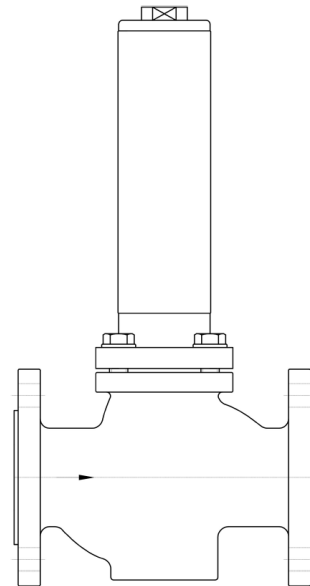
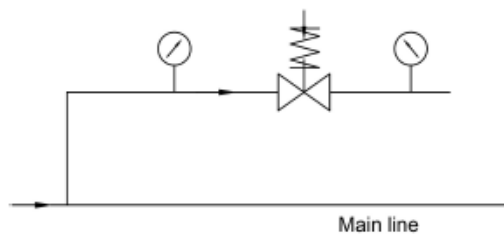
When the steam is condensed, the pipe should be inclined to help with the evacuation.

Assembly Position

The supports holding the valve will be done in the pipe and as close as possible to the flanges but never fixed in the valve or the actuator, to eliminate unnecessary tensions.

Installation

Typical installation, according to the scheme:



Start-up

Open the check valves slowly (to prevent water hammer).
First on the upstream pressure side.

Recommended installation position in horizontal pipeline.

Regulation of the valve

Sets the pressure value approximately at requested value.

To adjust the set pressure (upstream pressure):

- Valves with handwheel: turn the handwheel.
- Valves without handwheel: Unscrew cover cap (item 15) and turn the regulating nut (item 13) with a standard tube tool.

Compressing the spring (turn right) increases the set upstream pressure and decompressing the spring, decreases.

The pressure gauge located on the upstream pressure side allows the adjusted set point to be monitored.

ATEX requirements

- **IMPORTANT!** The respective national regulations as well as general engineering rules governing the installation and operation of equipment in explosive atmospheres must be observed.
- The valves are ATEX category "II 2 GD" according to 100a ATEX Directive (94/9/EC).
- **IMPORTANT!** The device can only be used in potentially explosive locations Class I (gases, vapors or liquids) Zones 1 and 2 and Class II (combustible dusts) areas 21 and 22, according to the specifications in the Directive 1999/92/EC , as well as the Electro technical Regulations.

Electrostatic discharges

Under certain conditions, electrostatic discharges that are capable of ignite explosive atmospheres, can be produced. The most important measure of protection is equipotential bonding of all conductive parts and earthing.

In order to avoid electrostatics discharges, the installation of devices and control elements must be earthing.

- **IMPORTANT!** Connecting the valves to process: it should be ensured electrical continuity of $<106\Omega$.
- **IMPORTANT!** National regulations on maintenance, service, inspection and repair of apparatus and equipment for explosive atmospheres, as well as general engineering rules must be observed.

COMMISSIONING

IMPORTANT! User is the only responsible for a safe use of the devices.

In use, parts that affect the explosion protection of the valves must be checked and act accordingly, f.e.:

- Fixing Elements -screws, nuts, shafts, etc.- see technical documentation of the product supplied. It must be ensure its tightening, proper operation and / or change when necessary. After 2.500h of working or 6 natural months (whichever comes first).
- The seals will be replaced by original spare parts: every 25,000 hours or when periodic inspections result said (the lower range).
- Any other action arising from inspection and maintenance plan, set by the user
- **IMPORTANT!** If repainting the valves and / or spare parts, ensure there is no paint on moving parts, mounting flange and closure sealing.

INSPECTIONS

- **IMPORTANT!** National Regulations must be observed. It is user's responsibility to establish an inspection and maintenance plan for these devices in order to ensure their proper use.
- Inspections must be performed by "qualified staff" because of the kind of equipment and / or installation.
- Purposes can be used to guide the requirements of the UNE-EN 60079-17, in order to establish the inspection plan.
- **IMPORTANT!** When inspections are "Detailed" or it is degree is "Close", the devices will be completely shut out.

MAINTENANCE

Spare parts are subject to normal wear. They must be inspected and replaced when necessary.

The frequency of the inspections and maintenance depends on the severity of the service conditions. This section provides instructions about replacement, packing, stem, plug and seat.

All maintenance operations can be performed with the valve body installed.

Before any maintenance, ensure the valve is depressurised and clear of media, and isolate it both upstream and downstream. Be sure the temperature isn't dangerous.

IMPORTANT! Use only genuine parts or recommended

POSSIBLE TROUBLESHOOTING

Trouble	Possible reasons	Recommended response
Pressure exceeds the adjusted set point	Re-adjust setting pressure	Re-adjust setting pressure
	Seat and plug worn down	Disassemble the regulator and replace damaged parts
Pressure drops below the adjusted set point	Valve installed against the flow; see arrow on body	Check direction of flow. Install valve correctly
	Valve or KVS coefficient too small	Check valve sizing. Install larger valve, if necessary
	Foreign particles blocking the plug	Disassemble the regulator and replace damaged parts
Control disorders	Particles between seat and plug	Remove foreign particles. Replace damaged parts
Upstream pressure fluctuates	Valve too large	Check valve sizing. Select smaller KVS coefficient, if necessary
Loud noises	High flow velocity, cavitation	Check sizing. Install flow divider with gases and steam

Technical data

Nominal pressure	PN16-PN25-PN40 or CLASS 150-CLASS 300			
Max. permissible temperature: body	Refer to technical sheet HT-101			
Max. permissible temperature: plug	NBR	EPDM, FPM	PTFE+GR	PEEK
	80°C	150°C	220°C	250°C
Max. permissible temperature: Packing	PTFE+GRAPHITE UP TO 220°C			

STANDARD CONFIGURATIONS

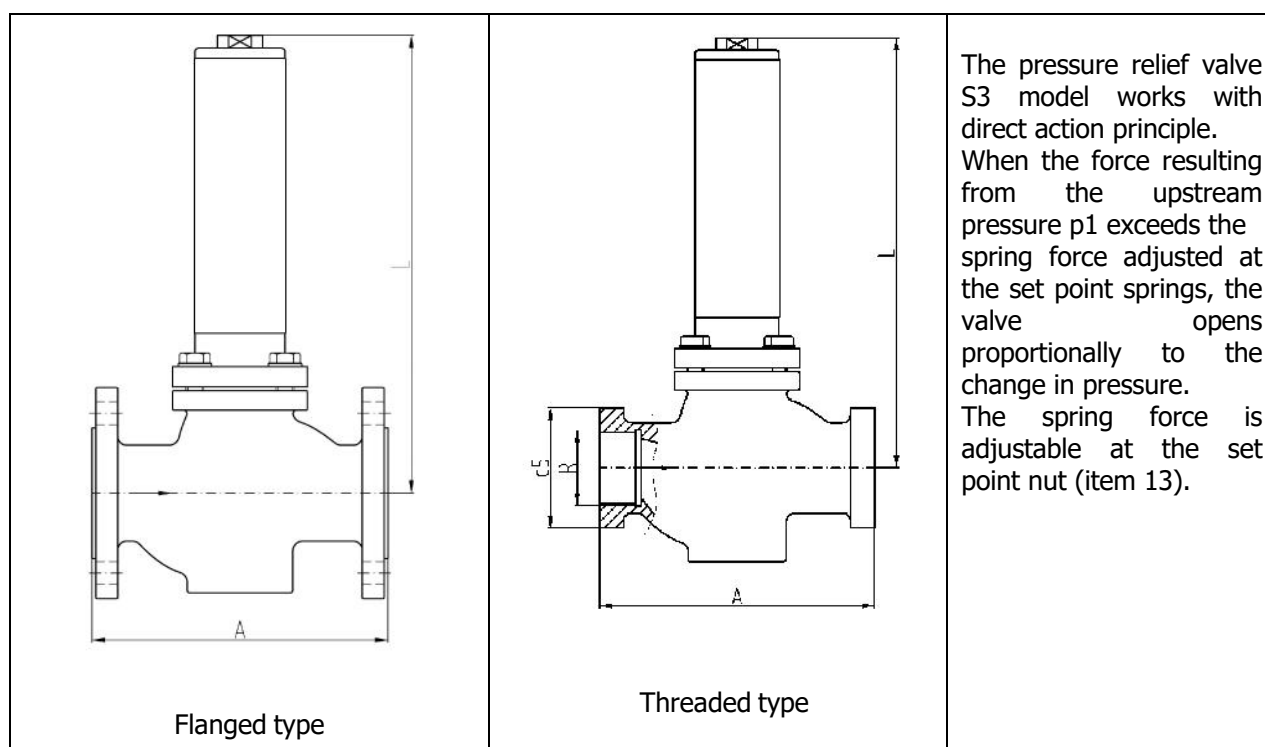
DN [mm]	15	20	25	32	40	50	65	80	100
Kv [m³/h]·[bar]	3,5	5	9	15	22	35	60	85	130

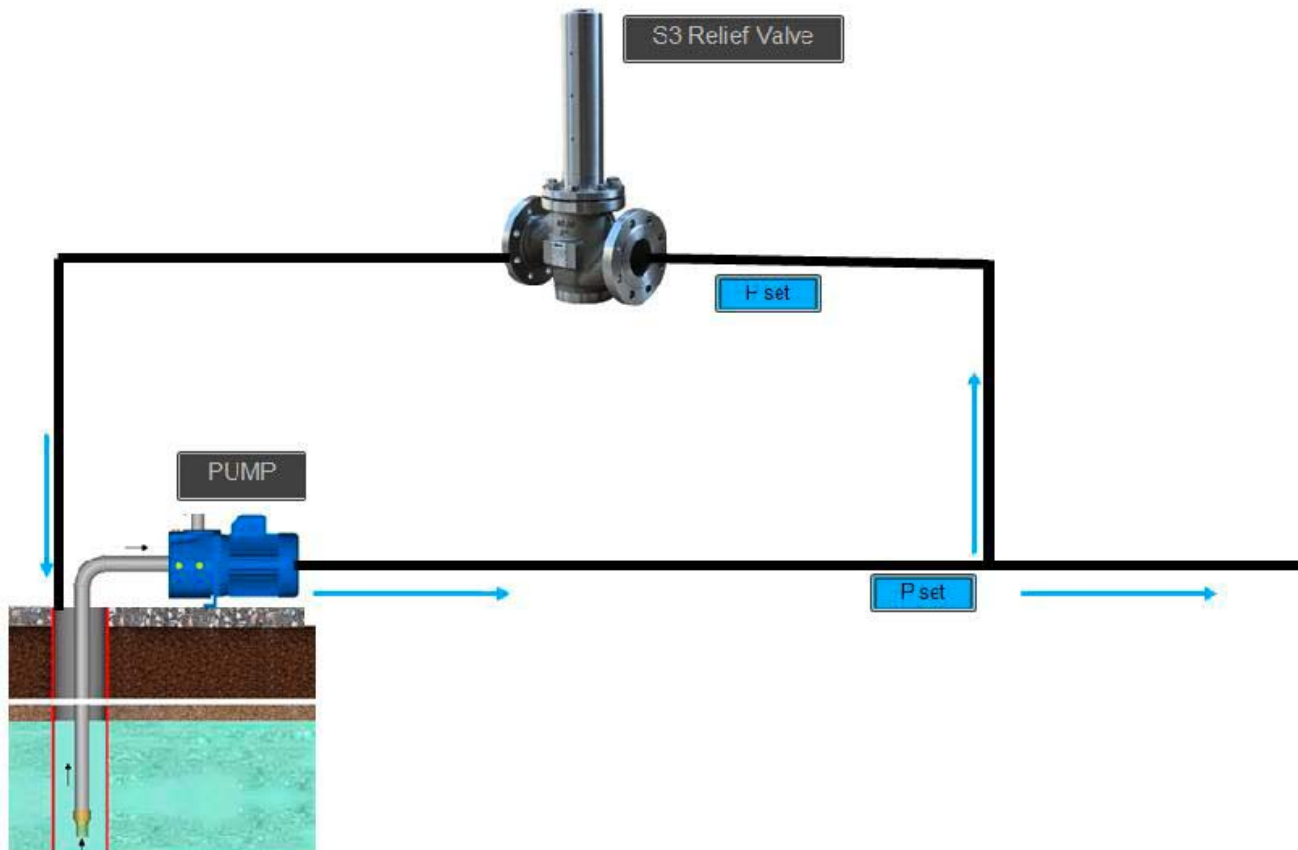
NPS [inch]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Cv [gpm]	4	5,8	10,4	17,5	25	41	70	100	152

A [mm] EN	130	150	160	180	200	230	290	310	350
A [mm] ANSI 150	o	o	184	-	222	254	276	298.5	352.5
A [inches] ANSI 150	o	o	7,25"	-	8,75"	10"	10,86"	11,75"	13,88"
A [mm] ANSI 300	o	o	197	-	235	267	292	317.5	368
A [inches] ANSI 300	o	o	7,76"	-	9,25"	10,51"	11,5"	12,5"	14,49"
L (Sealing cap) [mm]	260	260	267	267	321	321	450	450	520
Weight [Kg]	10	10	12	13	16	18	30	40	50

o available on request

IMPORTANT NOTE: Kv or CV reduced is available



TYPICAL INSTALLATION S3 RELIEF VALVE**RECEIPT ON SITE**

ATTENTION! Transport and storage of these devices should be in their original packaging.

RECEIPT ONSITE

When receiving the equipment on site, it should be unpacked to check that they agree with the request and delivery notes. At least, verification shall be performed:

- Visual,
- Mechanical

After these checks, if it will not be installed immediately, it will keep in dry and protected atmosphere.

Visual Inspection

Check that during transport, unloading and installation, the devices have not been damaged.

Mechanical Verification

Check all moving parts of the apparatus, as well as screws and other elements fulfill their mission.

IMPORTANT! If is observed abnormality during these guidelines reception, contact urgently to clarify responsibilities and put the devices in correct status.

The contents of that document are subject to change without notice.

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