

Data sheet

Safety pressure relief controller SAVA (PN 25)

Description



SAVA is a self-acting safety pressure relief controller primarily for use in district heating systems.

The controller is normally closed and opens on rising pressure. It is used for pressure relief control and as a protection against excess pressure in front of the valve.

The controller has a control valve, an actuator with two control diaphragms and a spring(s) for pressure setting.

Design-tested according to DIN 4747-1 and AGFW - FW 506.

Main data:

- DN 15-50
- k_{vs} 4.0-25 m³/h
- PN 25
- Setting range: 1.0-4.5/2.0-7.5/3-11 bar
- Temperature:
 - Circulation water / glycolic water up to 30 %: 2 ... 150 °C
- Connections:
 - Ext. thread (weld-on, ext. thread and flange tailpieces)
 - Flange

Ordering

Example:
Safety pressure relief controller,
DN 15; k_{vs} 4.0; PN 25; setting range
1.0-4.5 bar; T_{max} 150 °C; ext. thread

- SAVA DN 15 controller
Code No: **003H6675**

Option:
- Weld-on tailpieces
Code No: **003H6908**

The controller will be delivered
completely assembled, inclusive
impulse tube between valve and
actuator.

SAVA Controller

Picture	DN (mm)	k_{vs} (m ³ /h)	Connection		Ap setting range (bar)	Code No.
	15	4.0	Cylindr. ext. thread acc. to ISO 228/1	G ¾ A	1.0-4.5	003H6675
	20	6.3		G 1 A		003H6676
	25	8.0		G 1¼ A		003H6677
	32	12.5		G 1¾ A		003H6678
	40	16		G 2 A		003H6679
	50	20		G 2½ A		003H6680
	15	4.0		G ¾ A	2-7.5	003H6960
	20	6.3		G 1 A		003H6961
	25	8.0		G 1¼ A		003H6962
	32	12.5		G 1¾ A		003H6963
	40	16		G 2 A		003H6964
	50	20		G 2½ A		003H6965
	15	4.0		G ¾ A	3-11	003H6681
	20	6.3		G 1 A		003H6682
	25	8.0		G 1¼ A		003H6683
	32	12.5		G 1¾ A		003H6684
	40	16		G 2 A		003H6685
	50	20		G 2½ A		003H6686
	32	12.5	Flanges PN 25, acc. to EN 1092-2	1.0-4.5	1.0-4.5	003H6687
	40	20				003H6688
	50	25				003H6689
	32	12.5		2-7.5	2-7.5	003H6966
	40	20				003H6967
	50	25				003H6968
	32	12.5		3-11	3-11	003H6690
	40	20				003H6691
	50	25				003H6692

Ordering (*continuous*)

Accessories

Picture	Type designation	DN	Connection	Code No.
	Weld-on tailpieces	15	-	003H6908
		20		003H6909
		25		003H6910
		32		003H6911
		40		003H6912
		50		003H6913
	External thread tailpieces	15	Conical ext. thread acc. to EN 10226-1	R ½ 003H6902
		20		R ¾ 003H6903
		25		R 1 003H6904
		32		R 1¼ 003H6905
		40		R 1½ 065B2004
		50		R 2 065B2005
	Flange tailpieces	15	Flanges PN 25, acc. to EN 1092-2	003H6915
		20		003H6916
		25		003H6917

Service kits

Picture	Type designation	Δp setting range (bar)	Code No.
	Actuator with setting spring	1.0-4.5	003H6846
		3-11	003H6847

Technical data
Valve

Nominal diameter		DN	15	20	25	32	40	50
k _{VS} value		m³/h	4.0	6.3	8.0	12.5	16/20 ¹⁾	20/25 ¹⁾
Cavitation factor z ²⁾			≥ 0.6					
Nominal pressure		PN	25					
Max. differential pressure		bar	20			16		
Medium			Circulation water / glycolic water up to 30 %					
Medium pH			Min. 7, max. 10					
Medium temperature		°C	2 ...150					
Connections	valve		Ext. thread			Ext. thread and flange		
	tailpieces		Weld-on and flange			Weld-on		
			External thread				-	
Materials								
Valve body	thread		Red bronze CuSn5ZnPb (Rg5)			Ductile iron EN-GJS-400-18-LT (GGG 40.3)		
	flange		-					
Valve seat			Stainless steel, mat. No. 1.4571					
Valve cone			Dezincing free brass CuZn36Pb2As					
Sealing			EPDM					

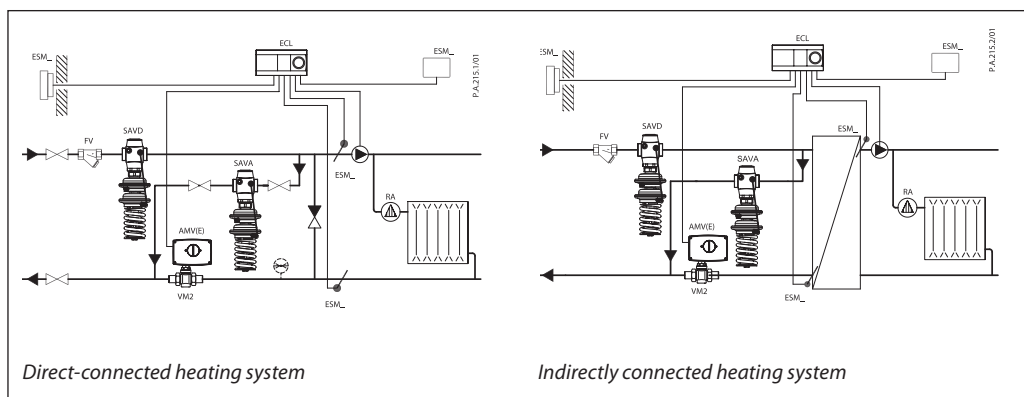
¹⁾ Flange valve body

²⁾ k_v/k_{VS} ≤ 0.5 at DN 25 and higher

Actuator

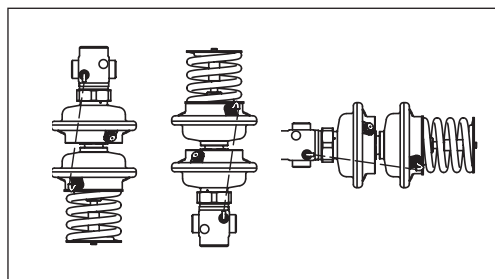
Actuator size	cm²	54		
Nominal pressure	PN	25		
Diff. pressure setting ranges and spring colours	bar	1.0-4.5	2-7.5	3-11
		blue	black	black, green
Materials				
Actuator housing	Upper casing of diaphragm	Stainless steel, mat. No.1.4301		
	Lower casing of diaphragm	Dezincing free brass CuZn36Pb2As		
Diaphragm		EPDM		
Impulse tube		Copper tube Ø6 × 1 mm		

Application principles

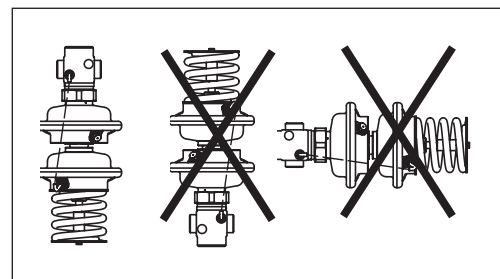


Installation positions

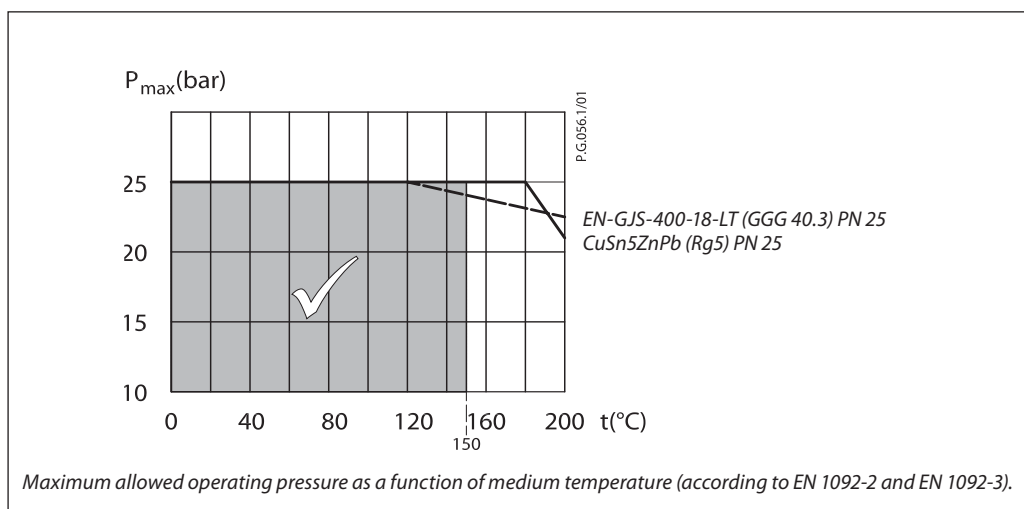
Up to medium temperature of 100 °C the controllers can be installed in any position.



For higher temperatures the controllers have to be installed in horizontal pipes only, with a pressure actuator oriented downwards.



Pressure temperature diagram



Sizing

Given data:

$$Q_{\max} = 2.2 \text{ m}^3/\text{h}$$

$$\Delta p_{\min} = 1.4 \text{ bar}$$

Nominal pressure PN 25

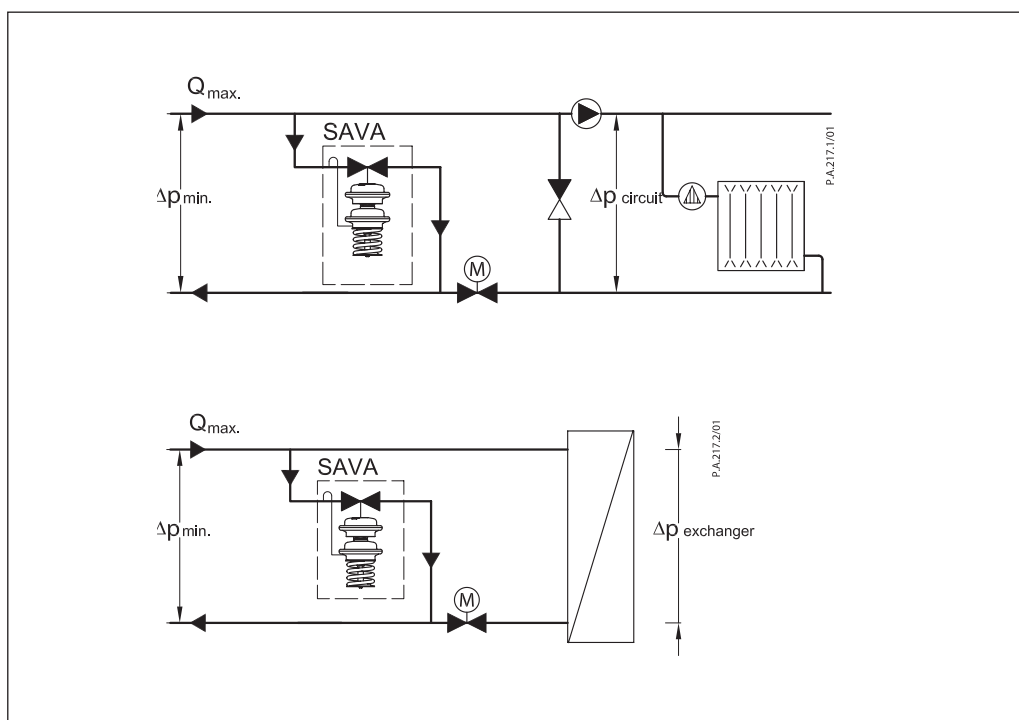
k_v value is calculated according to formula:

$$k_v = \frac{Q_{\max}}{\sqrt{\Delta p_{\min}}} = \frac{2,2}{\sqrt{1,4}}$$

$$k_v = 1.9 \text{ m}^3/\text{h}$$

Solution:

The example selects SAVA DN 15, k_{vS} value 4.0;
with pressure setting range 1.0-4.5 bar.

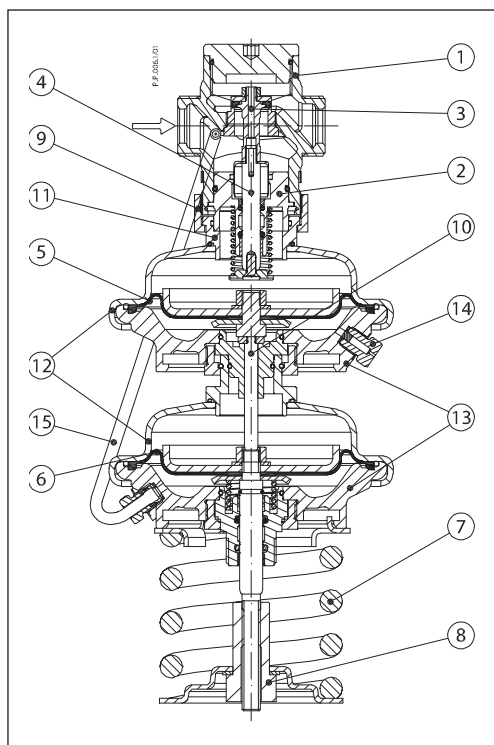


**Sizing of Safety Valve SV
or Safety Pressure Relief
Valve SÜV**

If pressure protection is performed by a safety pressure reduction controller (SAV) the downstream safety units (safety valve SV or safety pressure relief valve SÜV) must be designed for a flow rate of at least 1 % of the k_{vS} value of the safety pressure reduction controller (SAV). More details see in standard DIN 4747-1.

Design

1. Valve body
2. Valve insert
3. Pressure relieved valve cone
4. Valve stem
5. Safety diaphragm
6. Control diaphragm
7. Setting spring for pressure control
8. Adjuster for pressure setting, prepared for sealing
9. Union nut
10. Connection stem
11. Air space bore
12. Upper casing of diaphragm
13. Lower casing of diaphragm
14. Threaded joint with sintering filter
15. Impulse tube



Function

Mode of Operation

The safety pressure relief controller controls the pressure and protects the system against excess pressure in front of the valve. The valve cone is softsealed and pressure balanced.

Control function

The pressure in front of the control valve is being transferred through the impulse tube into the lower (+) chamber of the control diaphragm. The pressure generates a force on the control diaphragm which counteracts the force of the setting spring. This difference in forces acts through the connection stem and the valve stem upon the valve cone. The valve opens when the pressure in front of the valve rises and closes when the pressure decreases.

Safety function in case of diaphragm break

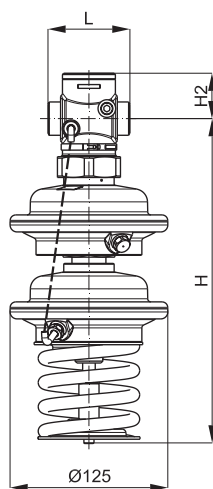
If the control diaphragm breaks, pressure gets in the two intermediate chambers. This pressure acts upon the safety diaphragm and causes the valve to open. The control function does not operate. A slight water leakage at the threaded joint on the safety diaphragm indicates a break of the control diaphragm.

Settings

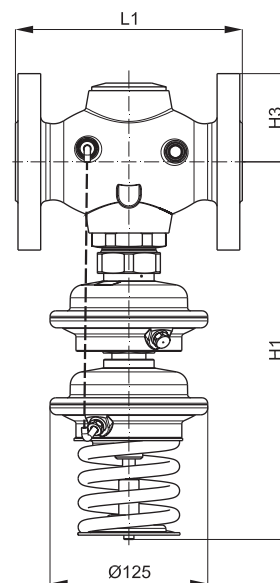
Pressure setting

Pressure setting is being done by the adjustment of the setting spring for pressure control. The adjustment can be performed on the basis of pressure adjustment diagram (see relevant instructions) and/or pressure indicator.

Dimensions



DN 15-50
 $\Delta p = 1.0-4.5 \text{ bar}$



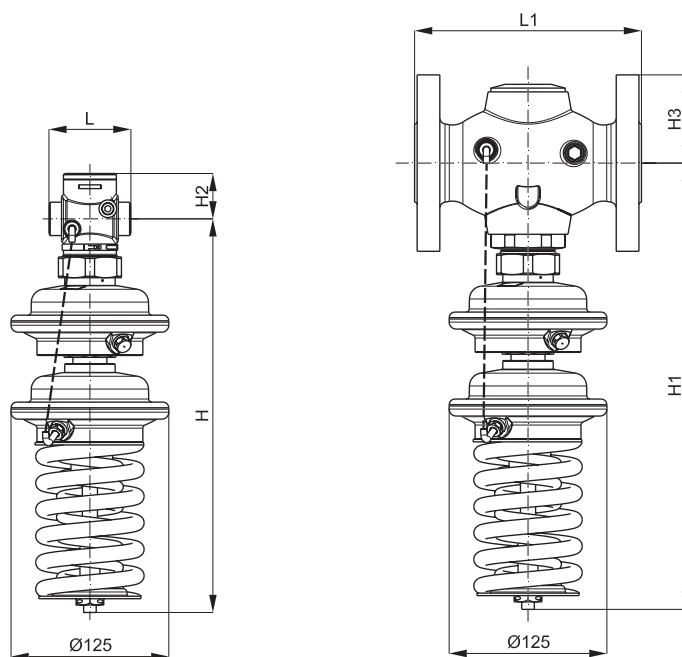
DN 32-50
 $\Delta p = 1.0-4.5 \text{ bar}$

SAVA ($\Delta p = 1.0-4.5 \text{ bar}$)

DN		15	20	25	32	40	50
L	mm	65	70	75	100	110	130
L ₁		-	-	-	180	200	230
H		285	285	285	320	320	320
H ₁		-	-	-	320	320	320
H ₂		34	34	37	62	62	62
H ₃	kg	-	-	-	70	75	82
Weight (thread)		5.3	5.3	5.5	7.5	7.7	8.4
Weight (flange)		-	-	-	12.2	13.7	15.6

Note: other flange dimensions - see table for tailpieces.

Dimensions (continuous)



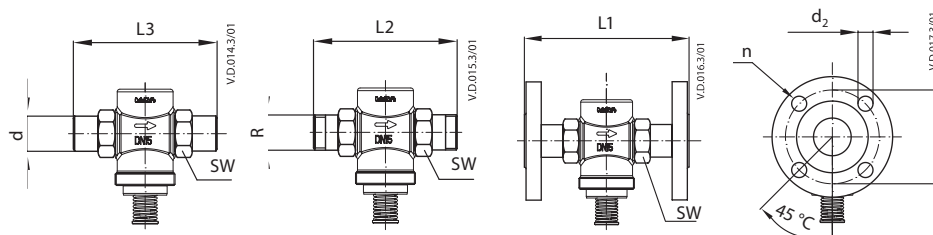
DN 15-50
 $\Delta p = 2-7.5 \text{ \& } 3-11 \text{ bar}$

DN 32-50
 $\Delta p = 2-7.5 \text{ \& } 3-11 \text{ bar}$

SAVA ($\Delta p = 2-7.5 \text{ \& } 3-11 \text{ bar}$)

DN		15	20	25	32	40	50
L	mm	65	70	75	100	110	130
L1		-	-	-	180	200	230
H		345	345	345	390	390	390
H1		-	-	-	390	390	390
H2		34	34	37	62	62	62
H3		-	-	-	70	75	82
Weight (thread)	kg	5.4	5.4	5.6	7.7	7.8	8.5
Weight (flange)		-	-	-	12.3	13.9	15.8

Note: other flange dimensions - see table for tailpieces.



DN		15	20	25	32	40	50
SW	mm	32 (G ¾A)	41 (G 1A)	50 (G 1¼A)	63 (G 1¾A)	70 (G 2A)	82 (G 2½A)
d		21	26	33	42	47	60
R ¹⁾		½	¾	1	1 ¼	1 ½	2
L1 ²⁾		130	150	160	-	-	-
L2		131	144	160	177	195	252
L3		139	154	159	184	204	234
k		65	75	85	100	110	125
d ₂		14	14	14	18	18	18
n		4	4	4	4	4	4

¹⁾ Conical ext. thread acc. to EN 10226-1

²⁾ Flanges PN 25, acc. to EN 1092-2



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