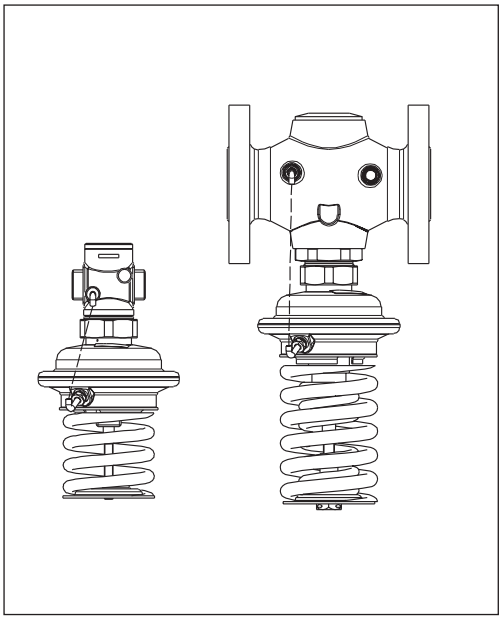
Data sheet

Pressure relief controller AVA (PN 25)

Description



The controller is a self-acting pressure relief controller primarily for use in district heating systems. The controller is normally closed and opens on rising pressure.

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

Main data:

- DN 15 - 50
- k_{vs} 4.0 - 25 m³/h
- PN 25
- Setting range:
  1.0 - 4.5 bar / 3.0 - 11 bar
- Temperature:
  - Circulation water / glycolic water up to 30%:
    2 … 150 °C
- Connections:
  - Ext. thread (weld-on, thread and flange tailpieces)
  - Flange

Ordering

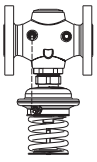
Example:
Pressure relief controller, DN 15, k_{vs} 4.0, PN 25, setting range 1.0 - 4.5 bar, t_{max} 150 °C, ext. thread

- *AVA DN 15 controller*
  Code No: ***003H6614***

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

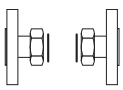
The controller will be delivered completely assembled, inclusive impulse tubes between valve and actuator.

AVA Controller

Picture	DN (mm)	k_{vs} (m³/h)	Connection		Δp setting range (bar)	Code No.	Δp setting range (bar)	Code No.
	15	4.0	Cylindr. ext. thread acc. to ISO 228/1	G ¾ A	1.0 - 4.5	**003H6614**	3 - 11	**003H6620**
	20	6.3		G 1 A		**003H6615**		**003H6621**
	25	8.0		G 1¼ A		**003H6616**		**003H6622**
	32	12.5	Flanges PN 25, acc. to EN 1092-2			**003H6626**		**003H6629**
	40	20				**003H6627**		**003H6630**
	50	25				**003H6628**		**003H6631**

Note: *other controllers available on request.*

Accessories

Picture	Type designation	DN	Connection		Code No.
	Weld-on tailpieces	15	-		**003H6908**
		20			**003H6909**
		25			**003H6910**
	External thread tailpieces	15	Conical ext. thread acc. to EN 10226-1	R ½"	**003H6902**
		20		R ¾"	**003H6903**
		25		R 1"	**003H6904**
	Flange tailpieces	15	Flanges PN 25, acc. to EN 1092-2		**003H6915**
		20			**003H6916**
		25			**003H6917**

Ordering *(continuous)*

Service kits

Picture	Type designation	Δp setting range (bar)	Code No.
	Actuator with setting spring	1.0 - 4.5	**003H6844**
		3 - 1 1	**003H6845**

Technical data

Valve

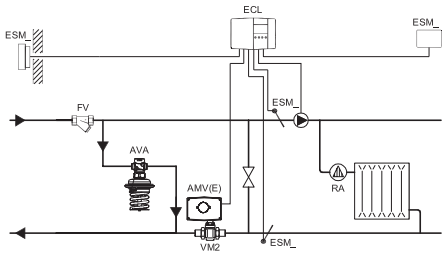
Nominal diameter		**DN**	**15**	**20**	**25**	**32**	**40**	**50**
k_{vs} value		m^3/h	4.0	6.3	8.0	12.5	20	25
Cavitation factor z *			≥ 0.6					
Nominal pressure		PN	25					
Max. differential pressure		bar	20			16		
Medium			Circulation water / glycolic water up to 30%					
Medium pH			Min. 7, max. 10					
Medium temperature			2 …150 °C					
Connections	valve		Thread			Flange		
	tailpieces		Weld-on, external thread and flange			-		
Materials								
Valve body	thread		Red bronze CuSn5ZnPb (Rg5)			-		
	flange		-			Ductile iron EN-GJS-400-18-LT (GGG 40.3)		
Valve seat			Stainless steel, mat. No. 1.4571					
Valve cone			Dezincing free brass CuZn36Pb2As					
Sealing			EPDM					

** $k_v/k_{vs} \leq 0.5$ at DN 25 and higher*

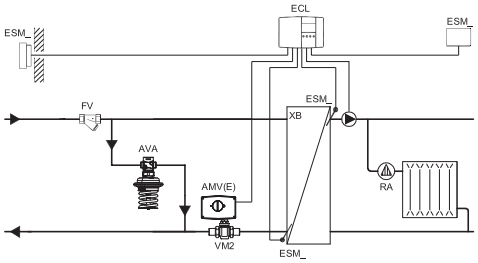
Actuator

Actuator size		cm^2	54	
Nominal pressure		PN	25	
Diff. pressure setting ranges and spring colours		bar	1.0 - 4.5	3 - 11
			blue	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	

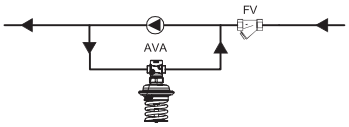
Application principles



Direct-connected heating system



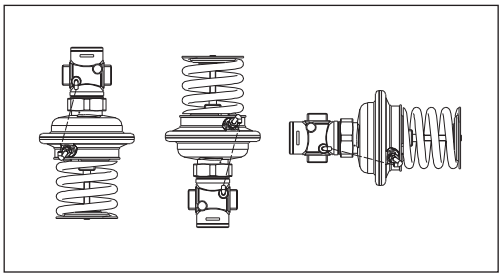
Indirectly connected heating system



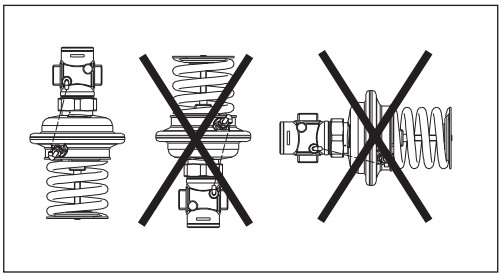
Pressure control for a pump in bypass

Installation positions

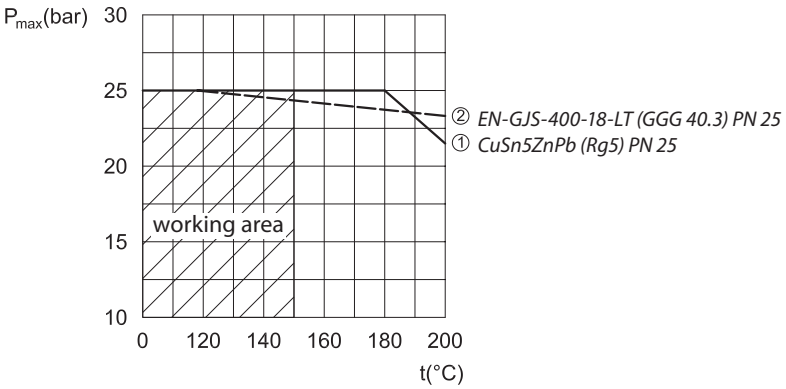
Up to medium temperature of 100 °C the controllers can be installed in any position.



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



Pressure temperature diagram



Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-2 and EN 1092-3).

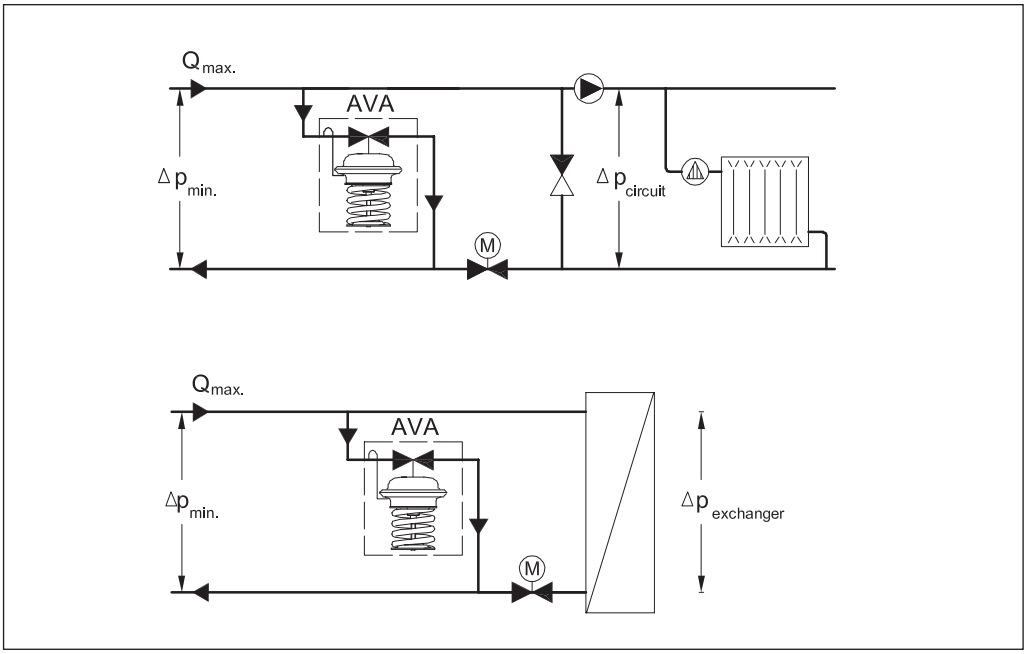
Sizing

Given data:
Q_{max} = 1.9 m³/h
Δp_{min} = 1.3 bar

Nominal pressure PN 25
k_v = 1.7 m³/h

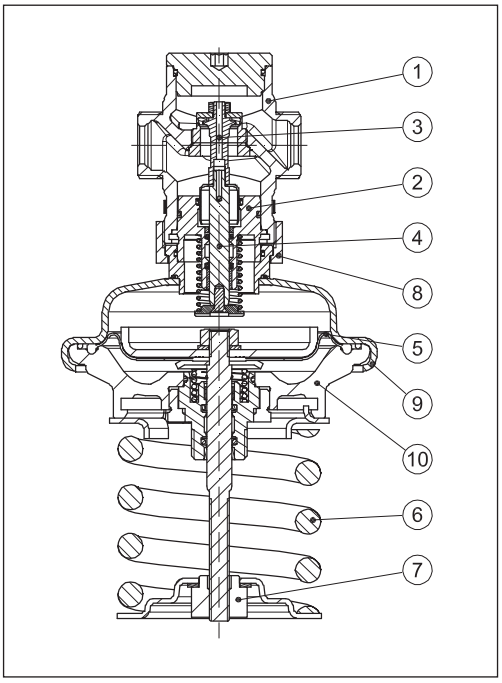
$$k_v = \frac{Q_{max}}{\sqrt{\Delta p_{min}}} = \frac{1.9}{\sqrt{1.3}}$$

Solution:
The example selects AVA DN 15, k_{vs} value 4.0, with pressure setting range 1.0 - 4.5 bar.



Design

1. Valve body
2. Valve insert
3. Pressure relieved valve cone
4. Valve stem
5. Control diaphragm
6. Setting spring for pressure control
7. Adjuster for pressure setting, prepared for sealing
8. Union nut
9. Upper casing of diaphragm
10. Lower casing of diaphragm



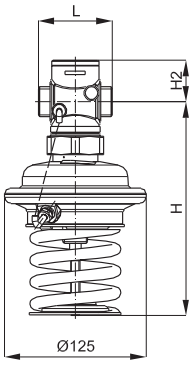
Function

The pressure in front of the control valve is being transferred through the impulse tube to the actuator chamber and act on control diaphragm. On the other side of the diaphragm atmospheric pressure is acting. Control valve is normally closed. It opens on rising pressure and closes on falling pressure to maintain constant pressure.

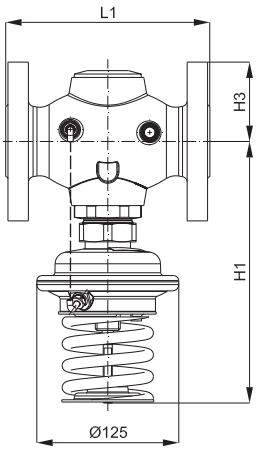
Settings

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.

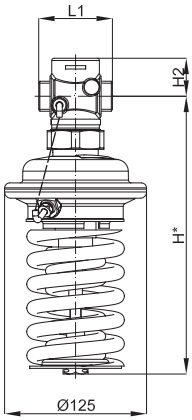
Dimensions



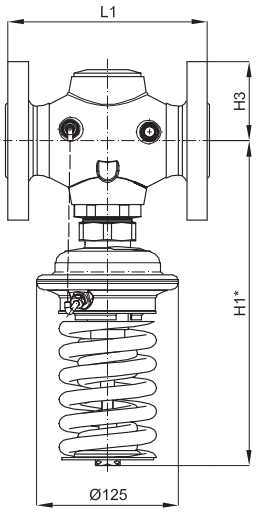
DN 15 - 25
Δp = 1.0 - 4.5 bar



DN 32 - 50
Δp = 1.0 - 4.5 bar



DN 15 - 25
Δp = 3.0 - 11 bar

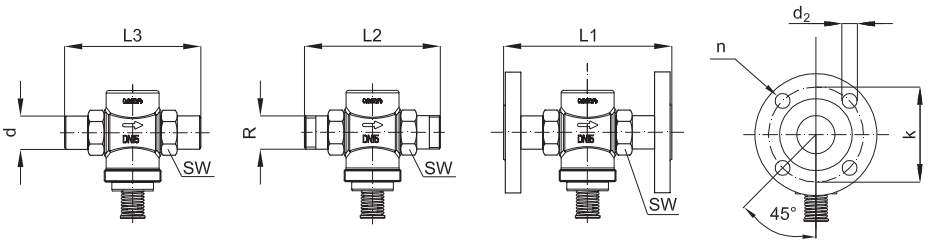


DN 32 - 50
Δp = 3.0 - 11 bar

DN		15	20	25	32	40	50
L	mm	65	70	75	-	-	-
L1		-	-	-	180	200	230
H		188	188	188	-	-	-
H*		243	243	243	-	-	-
H1		-	-	-	231	231	231
H1*		-	-	-	287	287	287
H2		34	34	37	-	-	-
H3		-	-	-	70	75	82
Weight (1.0 - 4.5 bar)	kg	3.5	3.5	3.7	10.4	12.0	13.9
Weight (3.0 - 11 bar)		3.7	3.7	3.9	10.5	12.1	14.0

Note: *Other flange dimensions - see table for tailpieces.*

Dimensions *(continuous)*



DN		15	20	25	32	40	50
SW		32 (G ¾A)	41 (G 1A)	50 (G 1¼A)			
d		21	26	33			
R 1)		½	¾	1			
L1 2)		130	150	160			
L2	mm	131	144	160			
L3		139	154	159			
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