Diff. pressure relief controller (PN 10)
AVDA - internal thread

Description

AVDA is self-acting differential pressure relief controller used for constant flow control or bypass control. Controller opens on rising differential pressure.

The controller has a control valve, an actuator with one control diaphragm and handle for differential pressure setting.

For apartment block heating, district heating plant and central heating systems.

Main data:
- DN 15, 20, 25
- k_{vs} 1.9, 3.4, 5.5
- PN 10
- Setting range: 0.1 - 1.2 bar
- Temperature:
  - Circulation water / glycolic water up to 30%: -25 … 130 °C
- Connections: Int. thread

Ordering

Example:
Differential pressure relief controller, DN 15, k_{vs} 1.9, PN 10, setting range 0.1 - 1.2, t_{max} 130°C, int. thread

- 1x AVDA DN 15 controller
   Code No: **003N0038**

AVDA Controller

Picture	DN	k_{vs} (m³/h)	PN	Setting range (bar)	Connection-valve (Int. thread ISO 7/1)	Connection - Impulse tube flare	Code No.[1]
	15	1.9	10	0.1 - 1.2	Rp ½	7/16-20 UNF	**003N0038**
	20	3.4			Rp ¾		**003N0039**
	25	5.5			Rp 1		**003N0040**

[1] The code no. includes 2 impulse tubes (0.5 and 1.5 m) with compression fitting.

Service kits

Picture	Type designation	DN	Code No.
	Repair set Two diaphragms, two O-rings, one rubber cone, one tube of grease and eight valve cover screws	15	**003N4006**
		20	**003N4007**
		25	**003N4008**
	Valve body (int. thread)	15	**003N2030**
		20	**003N2040**
		25	**003N2050**
	Nipple for impulse tube connection to pipe		**631X4700**
	Valve stuffing box		**065F0006**
	Diaphragm housing		**003N0065**

Technical data

Nominal diameter	DN	**15**	**20**	**25**
k_{vs} value	m^3/h	1.9	3.4	5.5
Cavitation factor z			0.4	
Nominal pressure	PN		10	
Max. differential pressure	bar		7	
Medium			Circulation water / glycolic water up to 30%	
Medium pH			Min. 7, max. 10	
Medium temperature	^{0}C		-25 … +130 ºC	
Connections (valve)			Internal thread	
Materials				
Valve body			MS 58, hot-pressed, DIN 17660, W.No. 2.0402, CuZn40Pb2	
Valve seat			Cr Ni steel, DIN 17660, W.No. 1.4301	
Valve cone			NBR-rubber	
Spindle			Dezincing-free brass, BS 2874/CZ132	
Diaphragm housing			Zinc-cromated steel, DIN 1624, W.No. 1.0338	
Diaphragm			EPDM-rubber	

Application principles
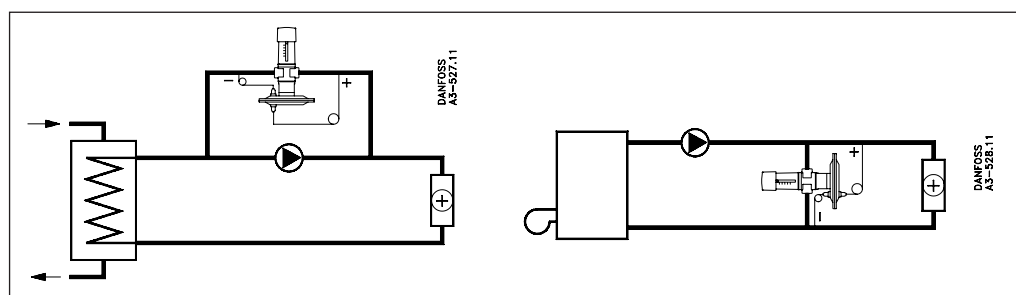
Installation positions

The valve body can be installed in any position. A Danfoss FV strainer is recommended.

Impulse tubes have to be installed vertically or horizontally onto the main pipe, never downwards.

Needle valve can be installed between main pipe and impulse tube, if necessary.

(+) impulse tube has to be connected to flow line, (-) impulse tube has to be connected to return line. Setting can be simplified by using pressure indicators (manometers) placed close to impulse tube connections.

By turning diaphragm housing downwards the letter "RA" on valve housing must be oriented upright.

Design

1. Handle for differential pressure setting
2. Spring housing
3. Setting spring
4. Spring guide
5. Diaphragm
6. Valve cone
7. Spindle
8. O-ring
9. O-ring gland
10. Diaphragm housing
11. Control diaphragm
12. Nipple for impulse tube
13. Lead seal

Data sheet **Differential pressure relief controller AVDA (PN 10)**

Sizing

Constant flow control
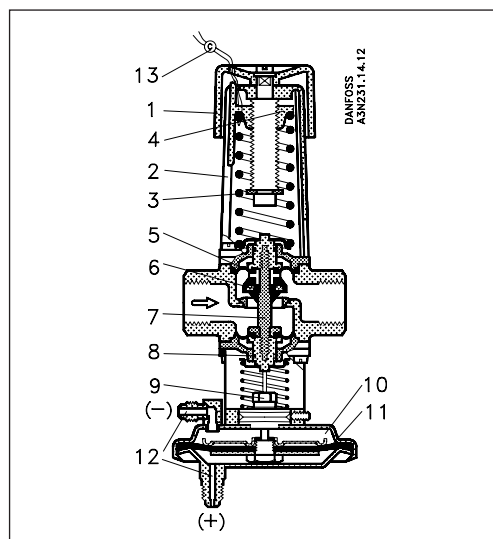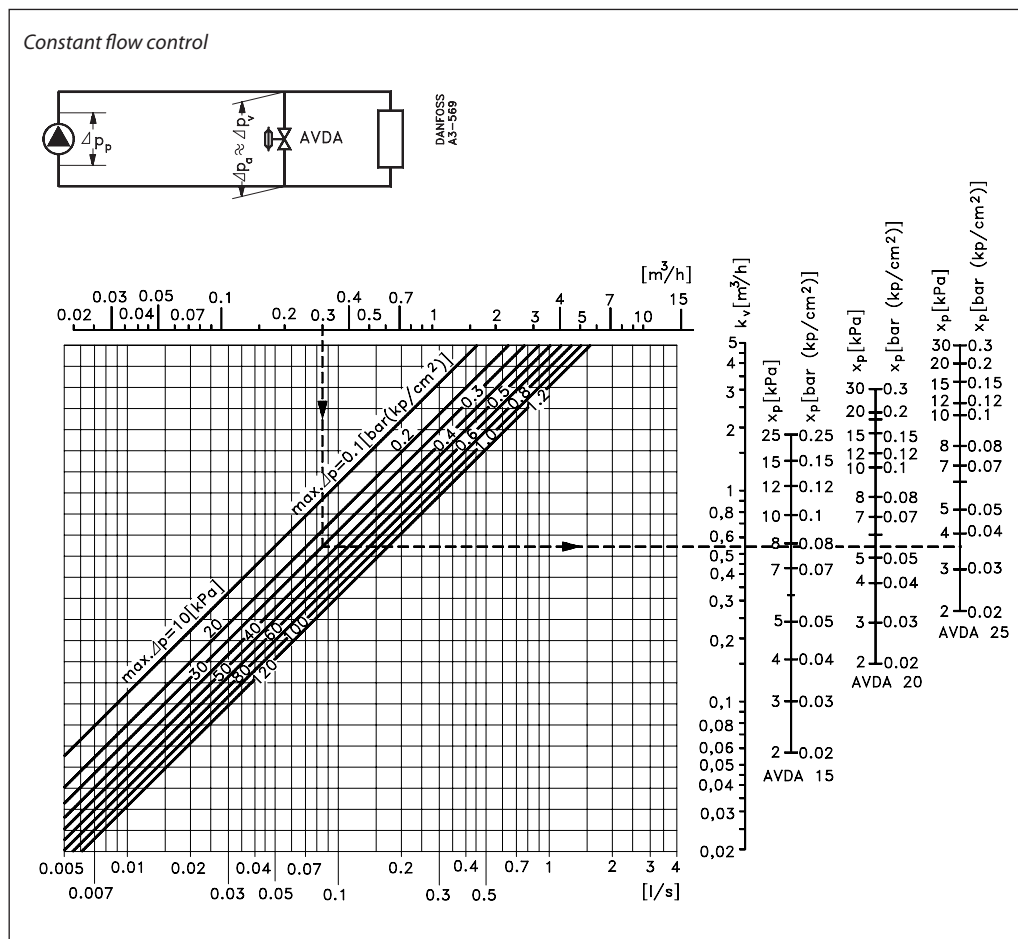
Example

Given
Assuming a pressure drop in the line from the pump to and from the valve connections of nil so that $\Delta p_p = \Delta p_a = \Delta p_v$, the plant differential pressure at max. load = 0.25 bar.

Condition
Maximum plant differential pressure with closed radiator valves limited to 0.3 bar. Pump water volume (Q) for this condition = 0.3 m³/h.

Required
A pressure relief control able to circulate a water volume of at least 0.3 m³/h at $\Delta p_a = 0.3$ bar and which will remain closed under max. plant load, $\Delta p_a = 0.25$ bar.

Method
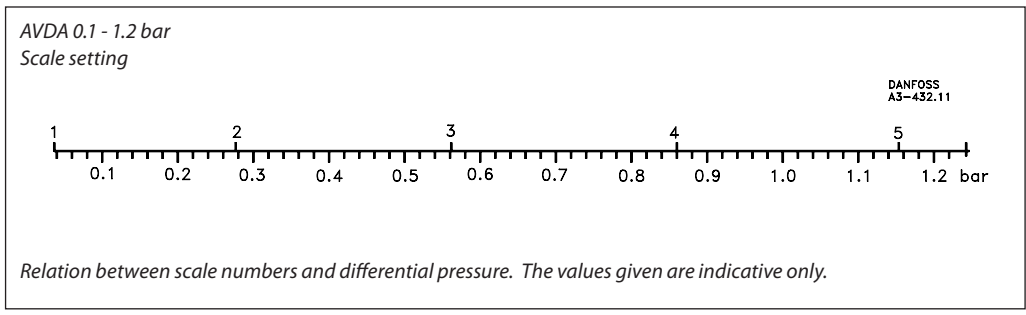Locate the necessary water volume, Q = 0.3 m³/h, on the horizontal axis in the nomogram.

From the 0.3 m³/h point, take a vertical line up to intersect the curve that gives the pressure at which the valve must be completely open (here, 0,3 bar). From the intesection, take a horizontal line to intersect the vertical axes on the right. These axes give the pressure rise X_p that is necessary across the valve before it can give the required capacity Q.

Since the pressure rise in this example is 0.3 - 0.25 = 0.05 bar, a valve where $X_p \leq 0.05$ bar could be used, i.e. an AVDA 25.
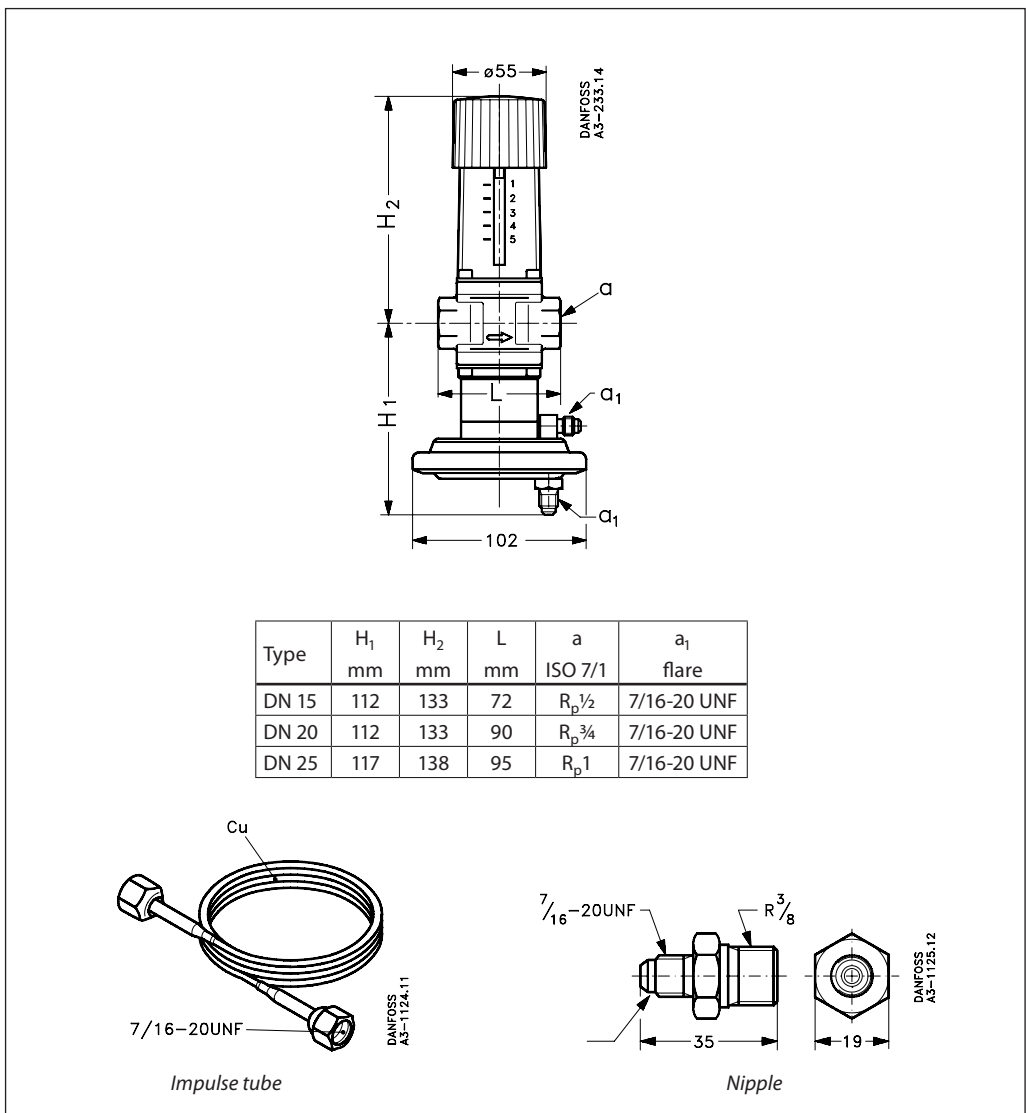
This setting is therefore 0.25 bar, i.e. the valve is closed when the differential pressure across it is 0.25 bar.

A pressure gauge can be used in making the setting, or an approximate setting can be made as shown in the associated installation example.

Data sheet   **Differential pressure relief controller AVDA (PN 10)**

Settings

AVDA 0.1 - 1.2 bar
Scale setting

DANFOSS
A3–432.11

| 1 | 2 | 3 | 4 | 5 |

0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 bar

Relation between scale numbers and differential pressure. The values given are indicative only.

Dimensions

ø55

DANFOSS
A3–233.14

H₂

a

L

a₁

H₁

102

a₁

Type	H₁ mm	H₂ mm	L mm	a ISO 7/1	a₁ flare
DN 15	112	133	72	$R_p\frac{1}{2}$	7/16-20 UNF
DN 20	112	133	90	$R_p\frac{3}{4}$	7/16-20 UNF
DN 25	117	138	95	R_p1	7/16-20 UNF

Cu

7/16–20UNF

DANFOSS
A3–1124.11

$\frac{7}{16}$–20UNF $R\frac{3}{8}$

35   19

DANFOSS
A3–1125.12

Impulse tube   *Nipple*