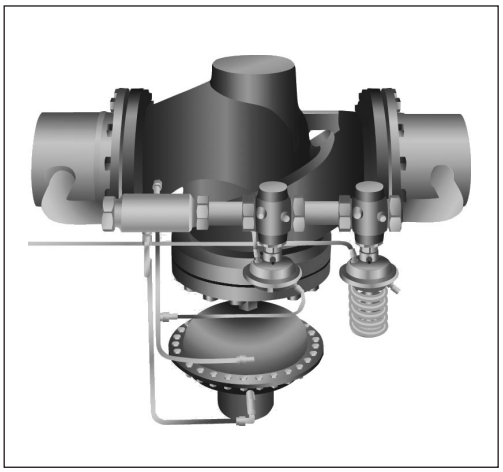
Data sheet

Pilot-controlled valves (PN 16, 25, 40)

PCV - flow and return mounting, adjustable setting

Description



PCV is a self-acting differential pressure controller primarily for use in district heating, district cooling or in industrial systems as well.

The controller consist of main controller, installed in main pipe, and of pilot controller and a throttling element both installed in bypass.

The control function of the PCV controller is defined by the control function of the pilot controller. Setting is done on pilot controler.

Controller types
Water application:

Steam application:

Throttle valve data can be found on page 20.

Main data[1] :

- DN 100-250 [2]
- k_{VS} 125-630 m^3/h
- PN 16, 25, 40
- Temperature:
  - Circulation water/glycolic water up to 30 %:
    2 … 150 °C (PN 16),
    2 … 200 °C (PN 25,40)
  - Steam: 2 … 300 °C
- Connections:
  - Pilot controller:
    ext. thread (weld-on tailpieces) or flange
  - Main valve: flange

[1] *for details see Technical data and Ordering sections*
[2] *smaller DN on request*

Features:

- Wide range of control possibilities as a result of pilot controller combinations
- High flexibility – changing/adding control functions by changing/adding pilot controllers
- Extremely high control ratio (see Tab.1) as a result of low pilot controller min. flow rate (k_{VS} value) and high flow rate (k_{VS}) of the main valve
- Small Proportional Band (Xp) – the stroke of pilot controller valve is significantly smaller then the stroke of the main valve
- Relatively small overall dimensions comparing to standard design (especially height of a pressure actuator with setting spring)
- Higher valve capacities for DN 150-250 comparing to standard design
- High control stability
- Smooth operation
- Safety applications
- Water and steam (on request) applications

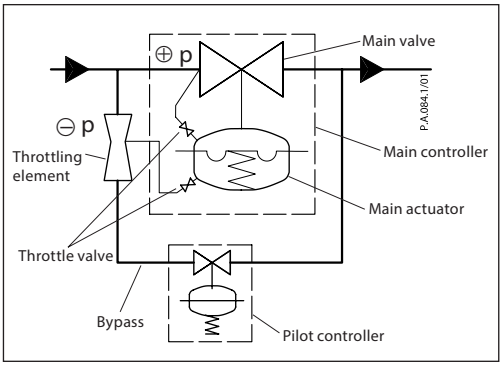
Tab. 1

DN	Min. control ratio
100	300 : 1
125	400 : 1
150	400 : 1
200	550 : 1
250	750 : 1

Function

Pressure changes from inlet pipe (+p) and from throttling element (-p) are being transferred through the impulse tubes to the main actuator chambers and act on control diaphragm

In case of small flow rates the main controller is closed and control is taken by the pilot controller only. With increasing the flow rate, a negative pressure is built in the throttling element. This partial vacuum acts on the main actuator diaphragm and causes the main controller to open.



Technical Data

For pilot controllers technical data please see relevant Data Sheet

Main valve

Nominal diameter		**DN**	**100**	**125**	**150**	**200**	**250**
k_{VS} value		m^3/h	125 (100) [1]	160 (125) [1]	320 (230) [1]	450 (320) [1]	630 (420) [1]
Cavitation factor z			0,4	0,35	0,3	0,2	0,2
Leakage acc. to standard IEC 534			≤ 0,05 % of k_{VS}				
Nominal pressure		PN	16, 25, 40				
Max. differential pressure		bar	15	15	12	10	10
Min. differential pressure			0,5				
Min. static pressure			1,5				
Medium	VFG 2(1), VFQ 2(1)		Circulation water/glycolic water up to 30%				
	VFGS 2		Steam				
Medium pH			Min. 7, max. 10				
Medium temperature	VFG 21, VFQ 21 PN 16, 25, 40		2 … 150 °C		2 … 140 °C		
	VFG 2, VFQ 2 PN 16, 25, 40		150 °C (PN 16), 2 … 200 °C (PN 25,40) [2]				
	VFGS 2 PN 25, 40		2 … 300 °C [2]				
Connections	Main controller		Flange				
	Pilot controller		Ext. thread (weld-on tailpieces) and flange		Flange		
Weight	PN 16	kg	61	71	120	193	337
	PN 25 / PN 40		63	72	147	264	347
Materials							
Valve body		PN 16	Grey cast iron EN-GJL-250 (GG-25)				
		PN 25	Ductile cast iron EN-GJS-400-18-LT (GGG-40,3)		Cast steel EN-GP-240-GH (GS-C 25)		
		PN 40	Cast steel EN-GP-240-GH (GS-C 25) 2)				
Valve seat			Stainless steel M. No. 1.4021		Stainless steel M. No. 1.4313		
Valve cone	VFG 2(1), VFQ 2(1)		Stainless steel M. No. 1.4404		Stainless steel M. No. 1.4021		
	VFGS 2		Stainless steel M. No. 1.4021				
Sealing	VFG 21, VFQ 21		EPDM				
	VFG 2, VFGS 2		Metal				
Pressure relieve system			Bellows [3]		Diaphragm [4] (T_{max} 140 °C) Bellows [3] (T_{max} 300 °C)		

[1] Valves with built in flow divider for noise reduction
[2] On request
[3] Stainless steel M. No. 1.4571
[4] EPDM

Technical Data

For pilot controllers technical data please see relevant Data Sheet

Main actuator

For main valve	DN	100	125	150	200	250
Actuator size	cm^2	250		630		
Max. operational pressure	bar	25		16, 25		
Flow restrictor differential pressure Δp_b [1]		0,2/0,5				
Diff. pressure setting ranges [1]		0,2-1,0 / 0,3-2,0 / 1-5 / 3-12				
Weight	kg	11		24		
Materials						
Housing		Stainless steel M. No. 1.0338				
Control diaphragm		EPDM				
Impulse tube		Stainless steel tube Ø10 × 0,8 mm				
Number of throttle valves (mounted on impulse tubes)		1		2		

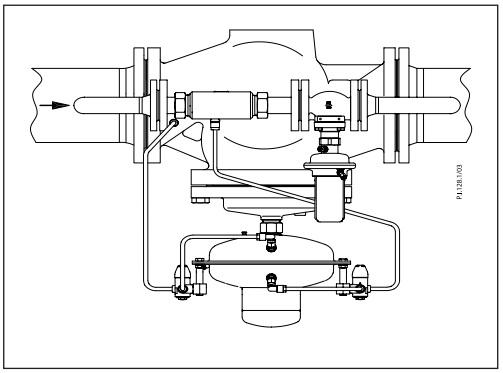
[1] *Defined by pilot controller*

Trottling element

For main valve		DN	100	125	150	200	250
Size of throttling element		DN	25		40		
Connections	at VFG 2(1), VFQ 2(1)		Welded end		Flange		
	at VFGS 2		Flange				
Max. operational pressure	at VFG 2(1), VFQ 2(1)		25				
	at VFGS 2		40				
Weight	water	kg	3,2		6,6		
	steam		7,0		7,1		
Materials							
Body material	at VFG 2(1), VFQ 2(1)		Red bronze, M. No. 2,1090				
	at VFGS 2		Steel, M. No. 1.0305				
Impulse tube			Stainless steel tube Ø10 × 0,8 mm				

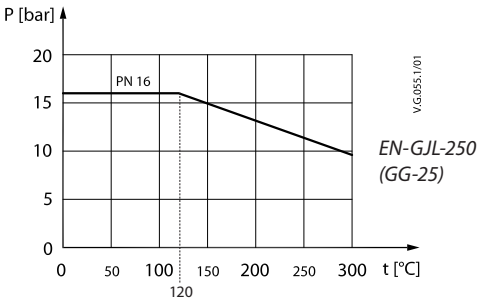
Installation positions

Both main and pilot controllers have to be installed in horizontal pipes only, with a pressure actuator oriented downwards.



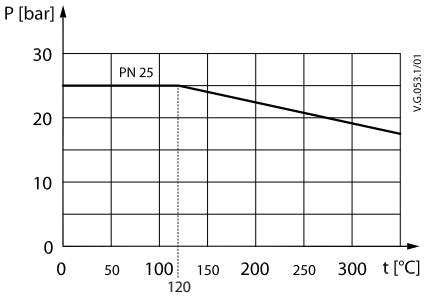
Pressure temperature diagram

Working area is below P-T line and it ends at Tmax for each valve



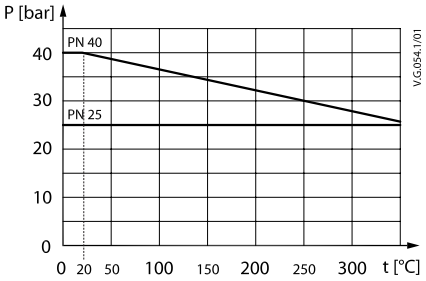
EN-GJL-250 (GG-25)

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



EN-GJS-400-18-LT (GGG-40,3 LT)

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

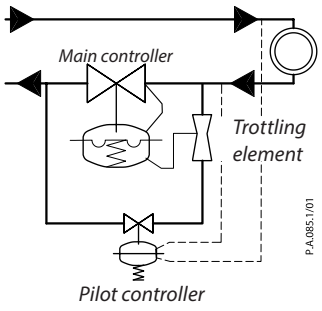


GP240GH (GS-C25)

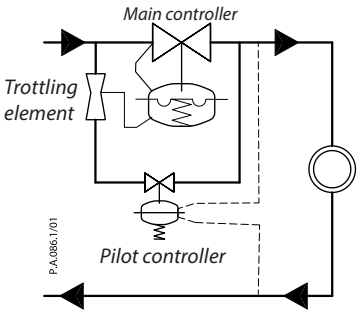
Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-1)

PCVP
Pilot-controlled differential pressure controller

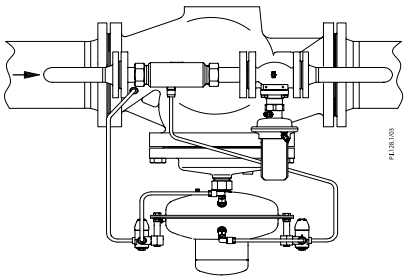
Installation in the return pipe



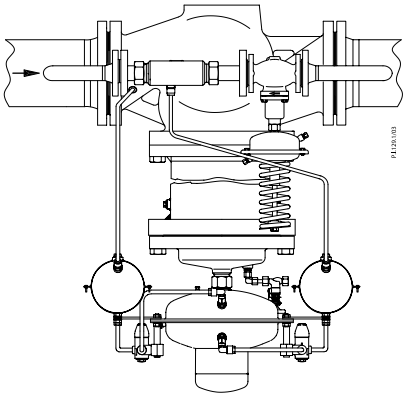
Installation in the supply pipe



T_{max} = 150 °C / 140 °C



T_{max} = 200 °C



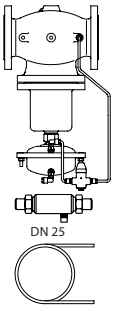
Ordering

Example 1:
Pilot-controlled differential pressure controller; DN 100; k_{VS} 125; PN 16; setting range 0,2-1,0 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 100 Code No.:* ***003G1573***
- *1× Pilot controller AVP DN 25 Code No.:* ***003H6319***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for Impulse tube Code No.:* ***003G1599***

DN 100-125

Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
100	125	150	16	Flange EN 1092-2	15	**003G1573**
125	160					**003G1574**
100	125		25			**003G1523**
125	160					**003G1524**
100	125		40			on request [1]
125	160					
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

[1] *Pilot controller has to be specified PN 40 as well*

Pilot controller **AVP** [1]

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	0,2-1,0	20	**003H6319**
						0,3-2,0		**003H6329**
						1-5		on request
						3-12		
	Weld-on tailpieces DN 25							**003H6910**
	Mounting set for impulse tube [2]							**003G1599**

[1] *For PN 40 pilot controller instead of AVP controller use AFP VFG 2 PN 40 DN 25*
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

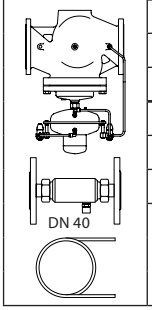
Ordering

Example 2:
Pilot-controlled differential pressure controller; DN 150; k_{VS} 320; PN 16; setting range 0,2-1,0 bar; T_{max} 140 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 150 Code No.:* ***003G1505***
- *1× Pilot controller AVP DN 40 Code No.:* ***003H6373***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 150-250

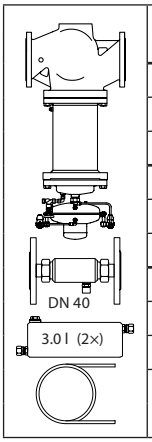
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valves, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	12	**003G1505**
200	450				10	**003G1506**
250	630					**003G1507**
150	320		25		12	**003G1525**
200	450				10	**003G1526**
250	630					**003G1527**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

DN 150-250

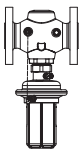
Assembly kit PCV-VFG 2 - Main controller, throttling element, thotlle valves, seal pots, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	150	16	Flange EN 1092-2	12	on request
200	450				10	
250	630					
150	320	200	25		12	on request
200	450				10	
250	630					
150	320		40		12	on request [1]
200	450				10	
250	630					
Impulse tube		Copper		Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

[1] *Pilot controller with seal pots for it has to be specified PN 40 as well*

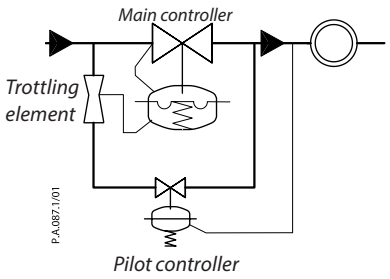
Pilot controller **AVP** [1] [2]



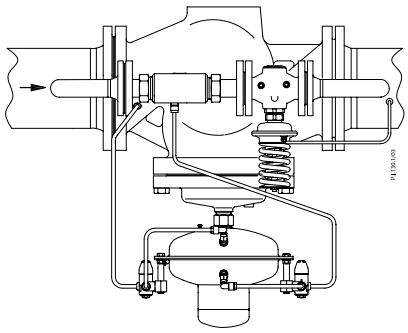
DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	0,2-1,0	16	**003H6373**
					0,3-2,0		**003H6379**
					1-5		on request
					3-12		
	Mounting set for Impulse tube [3]						**003G1599**

[1] *For PN 40 pilot controller instead of AVP controller use AFP VFG 2 PN 40 DN 40*
[2] *For temperatures Tmax = 140 … 200 °C instead of AVP controller use AFP VFG 2 PN 16/25/40 DN 40 , stem extension ZF4 or ZF5 and two seal pots V3*
[3] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

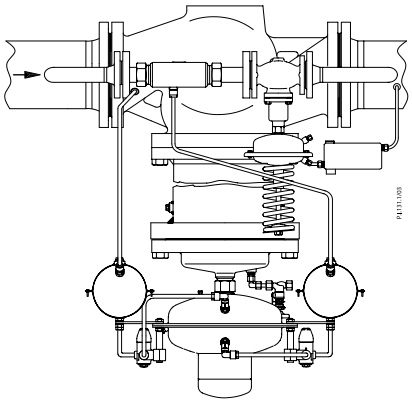
PCVD
Pilot-controlled pressure reduction controller



T_{max} = 150 °C / 140 °C



T_{max} = 200 °C

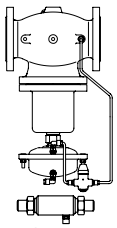


Ordering

Example 1:
Pilot-controlled pressure reduction controller; DN 100; k_{VS} 125; PN 16; setting range 1-5 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 100 Code No.:* ***003G1573***
- *1× Pilot controller AVD DN 25 Code No.:* ***003H6646***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 100-125
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
100	125	150	16	Flange EN 1092-2	15	**003G1573**
125	160					**003G1574**
100	125		25			**003G1523**
125	160					**003G1524**
100	125		40			on request[1]
125	160					
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
		Copper		Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

[1] *Pilot controller has to be specified PN 40 as well*

Pilot controller **AVD** [1]

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8,0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	1-5	20	**003H6646**
						3-12		**003H6652**
Weld-on tailpieces DN 25								**003H6910**
Mounting set for Impulse tube[2]								**003G1599**

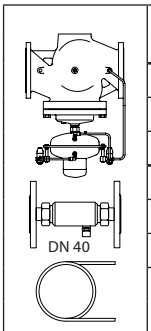
[1] *For PN 40 pilot controller instead of AVD controller use AFD VFG 2 PN 40 DN 25*
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

Ordering

Example 2:
Pilot-controlled pressure reduction controller; DN 150; k_{VS} 320; PN 16; setting range 1-5 bar; T_{max} 140 °C; flange;

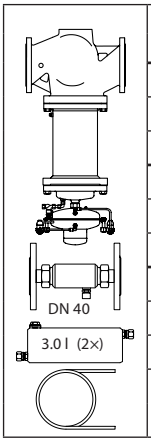
- *1× Assembly kit PCV-VFG 21 DN 150 Code No.:* ***003G1505***
- *1× Pilot controller AVD DN 40 Code No.:* ***003H6660***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 150-250
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valves, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	12	**003G1505**
200	450				10	**003G1506**
250	630					**003G1507**
150	320		25		12	**003G1525**
200	450				10	**003G1526**
250	630					**003G1527**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

DN 150-250
Assembly kit PCV-VFG 2 - Main controller, throttling element, throttle valves, seal pots, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	150	16	Flange EN 1092-2	12	on request
200	450				10	
250	630					
150	320	200	25		12	on request
200	450				10	
250	630					
150	320		40		12	on request [1]
200	450				10	
250	630					
Impulse tube		Copper		Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

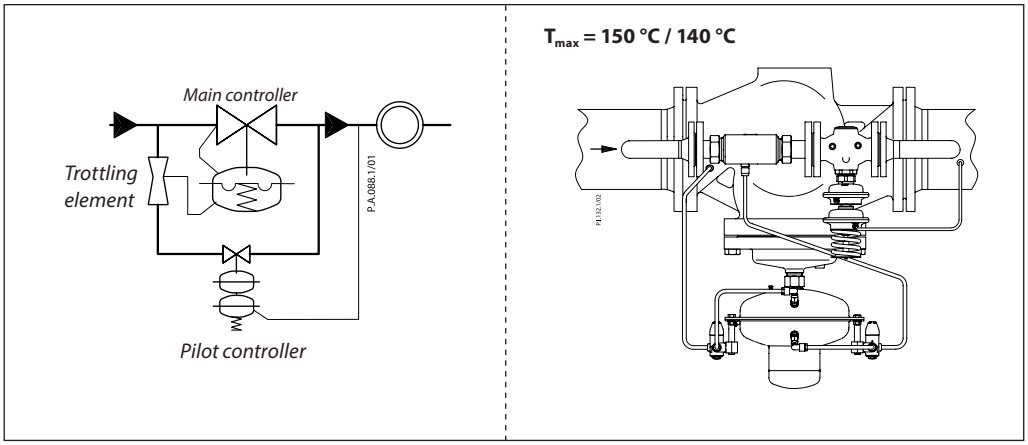
[1] *Pilot controller with seal pot for it has to be specified PN 40 as well*

Pilot controller **AVD** [1)2)]

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	1-5	16	**003H6660**
					3-12		**003H6663**
	Mounting set for impulse tube [3]						**003G1599**

[1] *For PN 40 pilot controller instead of AVD controller use AFD VFG 2 PN 40 DN 40 and one seal pots V3*
[2] *For temperatures Tmax = 140 … 200 °C instead of AVD controller use AFD VFG 2 PN 16/25/40 DN 40 , stem extension ZF4 or ZF5 and one seal pot V3*
[3] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

PCVSD
Pilot-controlled safety pressure reduction controller (PN 16, 25)

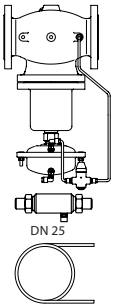


Ordering

Example 1:
Pilot-controlled safety pressure reduction controller; DN 100; k_{VS} 125; PN 16; setting range 1-5 bar; T_{max} 150°C; flange;

- *1× Assembly kit PCV-VFG 21 DN 100 Code No.:* ***003G1573***
- *1× Pilot controller SAVD DN 25 Code No.:* ***003H6695***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 100-125
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
100	125	150	16	Flange EN 1092-2	15	**003G1573**
125	160					**003G1574**
100	125		25			**003G1523**
125	160					**003G1524**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

Pilot controller **SAVD**

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	1-5	20	**003H6695**
						3-12		**003H6701**

Weld-on tailpieces DN 25		**003H6910**
Mounting set for impulse tube[1)]		**003G1599**

[1)] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

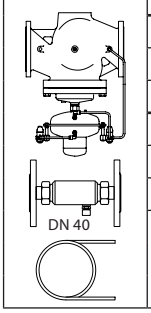
Ordering

Example 2:
Pilot-controlled safety pressure reduction controller; DN 150;
k_{VS} 320; PN 16; setting range 1-5 bar;
T_{max} 140 °C; flange;

- *1× Assembly kit*
  PCV-VFG 21 DN 150
  Code No.: ***003G1505***
- *1× Pilot controller SAVD DN 40*
  Code No.: ***003H6706***
- *1× Mounting set for impulse tube*
  Code No.: ***003G1599***

DN 150-250

Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valves, impulse tubes



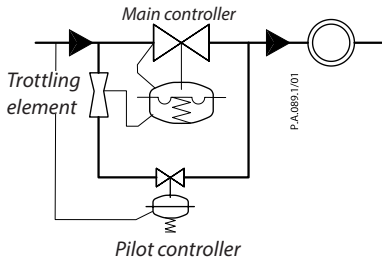
DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	12	**003G1505**
200	450				10	**003G1506**
250	630					**003G1507**
150	320		25		12	**003G1525**
200	450				10	**003G1526**
250	630					**003G1527**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

Pilot controller **SAVD**

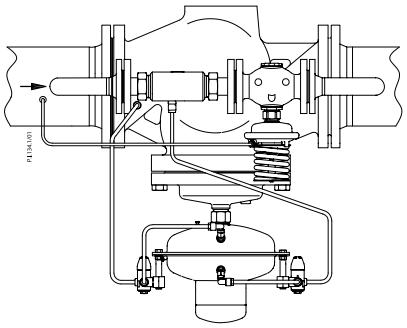
DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	1-5	16	**003H6706**
					3-12		**003H6709**
	Mounting set for impulse tube[1)]						**003G1599**

[1)] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

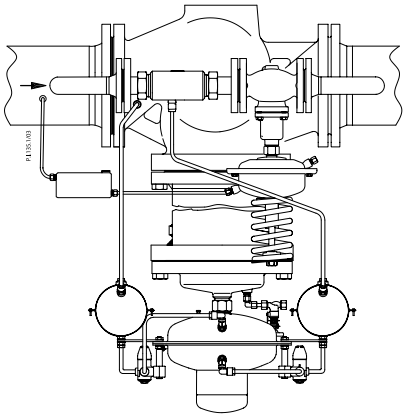
PCVA
Pilot-controlled pressure relief controller



T_{max} = 150 °C / 140 °C



T_{max} = 200 °C

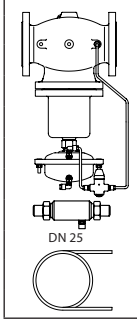


Ordering

Example 1:
Pilot-controlled pressure relief controller; DN 100; k_{VS} 125; PN 16; setting range 1-4,5 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 100 Code No.:* ***003G1573***
- *1× Pilot controller AVA DN 25 Code No.:* ***003H6616***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

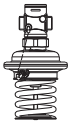
DN 100-125
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
100	125	150	16	Flange EN 1092-2	15	**003G1573**
125	160					**003G1574**
100	125		25			**003G1523**
125	160					**003G1524**
100	125		40			on request [1]
125	160					
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

[1] *Pilot controller has to be specified PN 40 as well*

Pilot controller **AVA** [1]



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	1-4,5	20	**003H6616**
						3-12		**003H6622**
Weld-on tailpieces DN 25								**003H6910**
Mounting set for impulse tube [2]								**003G1599**

[1] *For PN 40 pilot controller instead of AVA controller use AFA VFG 2 PN 40 DN 25*
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

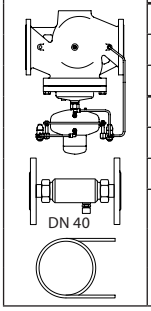
Ordering

Example 2:
Pilot-controlled pressure relief controller; DN 150; k_{VS} 320; PN 16; setting range 1-4,5 bar; T_{max} 140 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 150 Code No.:* ***003G1505***
- *1× Pilot controller AVA DN 40 Code No.:* ***003H6627***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 150-250

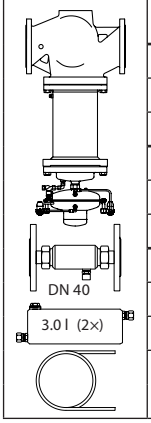
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valves, impulse tubes



DN (mm)	k_{VS} (m³/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	12	**003G1505**
200	450				10	**003G1506**
250	630					**003G1507**
150	320		25		12	**003G1525**
200	450				10	**003G1526**
250	630					**003G1527**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

DN 150-250

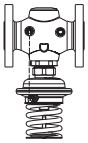
Assembly kit PCV-VFG 2 - Main controller, throttling element, throttle valves, seal pots, impulse tubes



DN (mm)	k_{VS} (m³/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	150	16	Flange EN 1092-2	12	on request
200	450				10	
250	630					
150	320	200	25		12	on request
200	450				10	
250	630					
150	320		40		12	on request [1]
200	450				10	
250	630					
Impulse tube		Copper		Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

[1] *Pilot controller with seal pot for it has to be specified PN 40 as well*

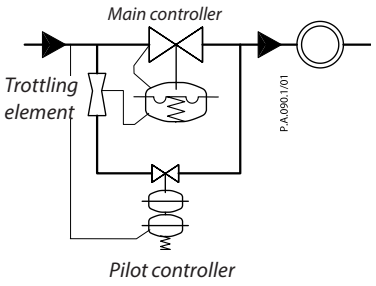
Pilot controller **AVA** [1)2)]



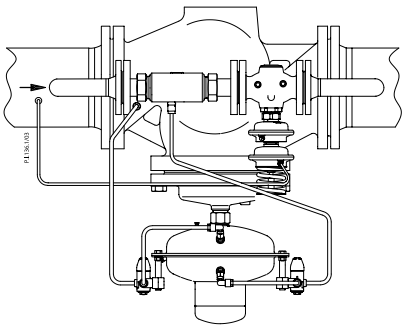
DN (mm)	k_{VS} (m³/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	1-4,5	16	**003H6627**
					3-12		**003H6630**
	Mounting set for impulse tube [2)]						**003G1599**

[1] *For PN 40 pilot controller instead of AVA controller use AFA VFG 2 PN 40 DN 40 and one seal pots V3*
[2] *For temperatures Tmax = 140 … 200 °C instead of AVA controller use AFA VFG 2 PN 16/25/40 DN 40 , stem extension ZF4 or ZF5 and one seal pot V3*
[3] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

PCVSA
Pilot-controlled safety pressure relief controller (PN 16, 25)



T_{max} = 150 °C / 140 °C

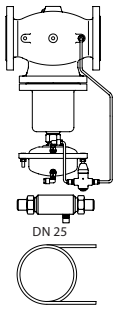


Ordering

Example 1:
Pilot-controlled safety pressure relief controller; DN 100; k_{VS} 125; PN 16; setting range 1-4,5 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 100 Code No.:* ***003G1573***
- *1× Pilot controller SAVA DN 25 Code No.:* ***003H6677***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 100-125
Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
100	125	150	16	Flange EN 1092-2	15	**003G1573**
125	160					**003G1574**
100	125		25			**003G1523**
125	160					**003G1524**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

Pilot controller **SAVA**

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	1-4,5	20	**003H6677**
						3-12		**003H6683**
Weld-on tailpieces DN 25								**003H6910**
Mounting set for impulse tube[1)]								**003G1599**

[1)] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

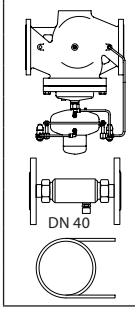
Ordering

Example 2:
Pilot-controlled safety pressure relief controller; DN 150; k_{VS} 320; PN 16; setting range 1-4,5 bar; T_{max} 140 °C; flange;

- *1× Assembly kit PCV-VFG 21 DN 150 Code No.:* ***003G1505***
- *1× Pilot controller SAVA DN 40 Code No.:* ***003H6688***
- *1× Mounting set for impulse tube Code No.:* ***003G1599***

DN 150-250

Assembly kit PCV-VFG 21 - Main controller, throttling element, throttle valves, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	12	**003G1505**
200	450				10	**003G1506**
250	630					**003G1507**
150	320		25		12	**003G1525**
200	450				10	**003G1526**
250	630					**003G1527**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm		
				Ø 10 × 1 × 1500 mm		
		Stainless steel		Ø 10 × 0,8 × 1500 mm		

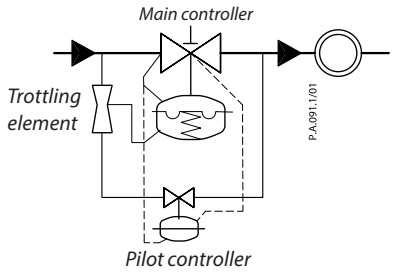
Pilot controller **SAVA**

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	1-4,5	16	**003H6688**
					3-12		**003H6691**
	Mounting set for Impulse tube[1)]						**003G1599**

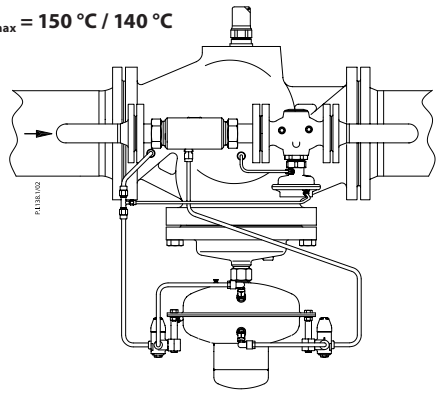
[1)] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

PCVQ
Pilot-controlled flow controller

Installation in the supply or return pipe



T_{max} = 150 °C / 140 °C

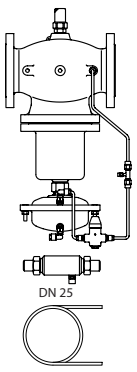


Ordering

Example 1:
Pilot-controlled flow controller;
DN 100; k_{VS} 125; PN 16; flow restrictor
Δp_b 0,2 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFQ 21 DN 100 Code No.:* ***003G1533***
- *1× Pilot controller AVP-F DN 25 Code No.:* ***003H6335***
- *1× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *1× Mounting set for Impulse tube Code No.:* ***003G1599***

DN 100-125
Assembly Kit PCV-VFQ 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Flow range (m^3/h) Δp_b 0,2 bar	Flow range (m^3/h) Δp_b 0,5 bar	Code No.
100	125	150	16	Flange EN 1092-2	15	6-63	9-90	**003G1533**
125	160					8-80	12-120	**003G1534**
100	125		25			6-63	9-90	**003G1543**
125	160					8-80	12-120	**003G1544**
100	125		40			6-63	9-90	On request[1]
125	160					8-80	12-120	
Impulse tube		Copper		Ø 6 × 1 × 3000 mm				
				Ø 10 × 1 × 1500 mm				
		Stainless steel		Ø 10 × 0,8 × 1500 mm				

[1] *Pilot controller has to be specified PN 40 as well*

Pilot controller **AVP-F** [1]

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp_b (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to DIN ISO 228/1	G 1¼ A	0,2	20	**003H6335**
						0,5		**003H6341**
Weld-on tailpieces DN 25								**003H6910**
Mounting set for impulse tube [2]								**003G1599**

[1] *For PN 40 pilot controller instead of AVP-F controller use AFP-F VFG 2 PN 40 DN 25*
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

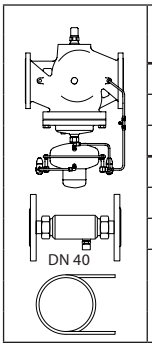
Ordering

Example 2:
Pilot-controlled flow controller;
DN 150; k_{VS} 320; PN 16; flow restrictor
Δp_b 0,2 bar; T_{max} 140 °C; flange;

- *1× Assembly kit*
  PCV-VFQ 21 DN 150
  *Code No.: **003G1535***
- *1× Pilot controller AVP-F DN 40*
  *Code No.: **003H6385***
- *1× Mounting set for Impulse tube*
  *Code No.: **003G1599***

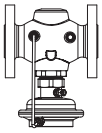
DN 150-250

Assembly kit PCV-VFQ 21 - Main controller, throttling element, throttle valves, impulse tubes



DN (mm)	k_{VS} (m³/h)	T_{max} (°C)	PN	Connection	Flow range (m³/h) Δp_b 0,2 bar	Flow range (m³/h) Δp_b 0,5 bar	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	15-145	25-220	12	**003G1535**
200	450				20-180	30-280	10	**003G1536**
250	630				25-250	40-380		**003G1537**
150	320		25		15-145	25-220	12	**003G1545**
200	450				20-180	30-280	10	**003G1546**
250	630				25-250	40-380		**003G1547**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm				
				Ø 10 × 1 × 1500 mm				
		Stainless steel		Ø 10 × 0,8 × 1500 mm				

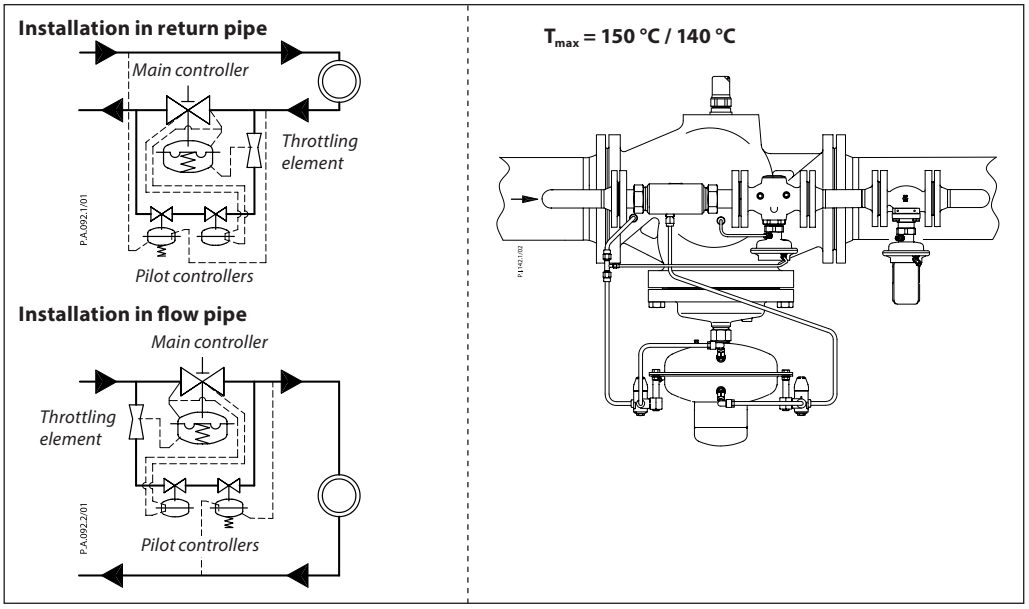
Pilot controller **AVP-F**



DN (mm)	k_{VS} (m³/h)	T_{max} (°C)	PN	Connection	Δp_b (bar)	Δp_{max} (bar)	Code No.
40	16	150	25	Flange EN 1092-2	0,2	16	**003H6385**
					0,5		**003H6391**
Mounting set for impulse tube[1)]							**003G1599**

[1)] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

PCVPQ
Pilot-controlled differential pressure and flow controller

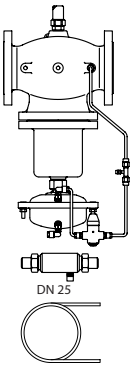


Ordering

Example 1:
Pilot-controlled differential pressure and flow controller; DN 100; k_{VS} 125; PN 16; setting range 0,2-1,0 bar; flow restrictor Δp_b 0,2 bar; T_{max} 150 °C; flange;

- *1× Assembly kit PCV-VFQ 21 DN 100 Code No.:* ***003G1533***
- *1× Pilot controller AVP DN 25 Code No.:* ***003H6319***
- *1× Pilot controller AVP-F DN 25 Code No.:* ***003H6335***
- *2× Weld-on tailpieces DN 25 Code No.:* ***003H6910***
- *2× Mounting set for Impulse tube Code No.:* ***003G1599***

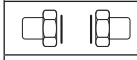
DN 100-125
Assembly Kit PCV-VFQ 21 - Main controller, throttling element, throttle valve, impulse tubes



DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_{max} (bar)	Flow range (m^3/h) Δp_b 0,2 bar	Flow range (m^3/h) Δp_b 0,5 bar	Code No.
100	125	150	16	Flange EN 1092-2	15	6-63	9-90	**003G1533**
125	160					8-80	12-120	**003G1534**
100	125		25			6-63	9-90	**003G1543**
125	160					8-80	12-120	**003G1544**
100	125		40			6-63	9-90	On request[1]
125	160					8-80	12-120	
Impulse tube		Copper		Ø 6 × 1 × 3000 mm				
				Ø 10 × 1 × 1500 mm				
		Stainless steel		Ø 10 × 0,8 × 1500 mm				

[1] *Pilot controller has to be specified PN 40 as well*

Pilot controller **AVP** [1] - for differential pressure control

DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp setting range (bar)	Δp_{max} (bar)	Code No.
25	8.0	150	25	Cylindr. ext. thread acc. to ISO 228/1	G 1¼ A	0,2-1,0	20	**003H6319**
						0,3-2,0		**003H6329**
						1-5		on request
						3-12		
	Weld-on tailpieces DN 25							**003H6910**
	Mounting set for impulse tube [2]							**003G1599**

[1] *For PN 40 pilot controller instead of AVP controller use AFP VFG 2 PN 40 DN 25*
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

Ordering

Pilot controller **AVP-F** [1] - for flow control

	DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection		Δp_b (bar)	Δp_{max} (bar)	Code No.
	25	8.0	150	25	Cylindr. ext. thread acc. to ISO 228/1	G 1¼ A	0,2	20	**003H6335**
							0,5		**003H6341**
	Weld-on tailpieces DN 25								**003H6910**
	Mounting set for impulse tube [2]								**003G1599**

[1] *For PN 40 pilot controller instead of AVP-F controller use AFP-F VFG 2 PN 40 DN 25*

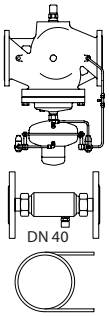
[2] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

Example 2:
Pilot-controlled differential pressure and flow controller; DN 150; k_{VS} 320; PN 16; setting range 0,2-1,0 bar; flow restrictor Δp_b 0,2 bar; T_{max} 140 °C; flange;

- *1× Assembly kit PCV-VFQ 21 DN 150 Code No.: **003G1535***
- *1× Pilot controller AVP DN 40 Code No.: **003H6373***
- *1× Pilot controller AVP-F DN 40 Code No.: **003H6385***
- *2× Mounting set for Impulse tube Code No.: **003G1599***

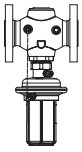
DN 150-250

Assembly kit PCV-VFQ 21 - Main controller, throttling element, throttle valves, impulse tubes



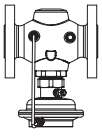
DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Flow range (m^3/h) Δp_b 0,2 bar	Flow range (m^3/h) Δp_b 0,5 bar	Δp_{max} (bar)	Code No.
150	320	140	16	Flange EN 1092-2	15-145	25-220	12	**003G1535**
200	450				20-180	30-280	10	**003G1536**
250	630				25-250	40-380		**003G1537**
150	320		25		15-145	25-220	12	**003G1545**
200	450				20-180	30-280	10	**003G1546**
250	630				25-250	40-380		**003G1547**
Impulse tube		Copper		Ø 6 × 1 × 3000 mm				
				Ø 10 × 1 × 1500 mm				
		Stainless steel		Ø 10 × 0,8 × 1500 mm				

Pilot controller **AVP** - for differential pressure control

	DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp setting range (bar)	Δp_{max} (bar)	Code No.
	40	16	150	25	Flange EN 1092-2	0,2-1,0	16	**003H6373**
						0,3-2,0		**003H6379**
						1-5		on request
						3-12		
	Mounting set for Impulse tube[1]							**003G1599**

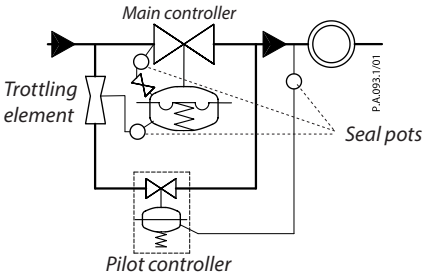
[1] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

Pilot controller **AVP-F** - for flow control

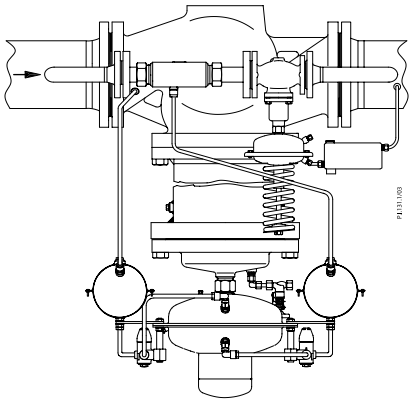
	DN (mm)	k_{VS} (m^3/h)	T_{max} (°C)	PN	Connection	Δp_b (bar)	Δp_{max} (bar)	Code No.
	40	16	150	25	Flange EN 1092-2	0,2	16	**003H6385**
						0,5		**003H6391**
	Mounting set for impulse tube[1]							**003G1599**

[1] *Contains accessories for remounting the impulse tube on the pilot controller from internal connection (factory delivered) to external connection.*

PCVDS
Pilot-controlled pressure reduction controller



T_{max} = 200 °C / 300 °C



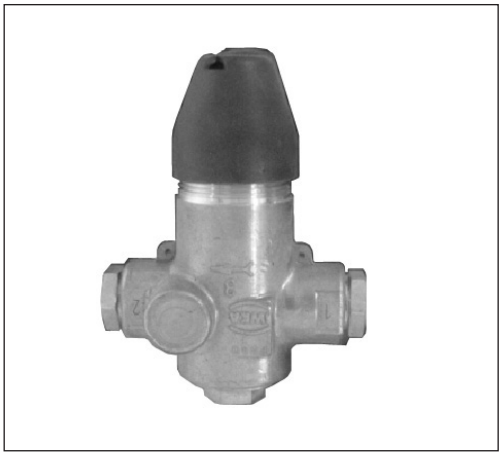
Ordering

These controllers are ordered on request. When ordering please specify following:
Medium, DN, k_{VS}, PN, setting range, Tmax, max differential pressure

				$T_{max.\ Medium}$ 200 °C		$T_{max.\ Medium}$ 300 °C	
DN	**k_{VS}** (m³/h)		**PN**	**Δp setting range** (bar)	**Max. press.diff. Δp_{max}** (bar)	**Δp setting range** (bar)	**Max. press.diff. Δp_{max}** (bar)
100	125	100 [1]	25/40	1-5 3-12	10	3-12 8-16	15
125	160	125 [1]					15
150	320	230 [1]		3-12 8-16			12
200	450	320 [1]					10
250	630	420 [1]					10

[1] *Version with flow divider built in for noise reduction*

Throttle valve



Throttle valve is regulating and shut-off device, which is / are installed on the impulse tubes connected to main PCV actuator. Number of used throttle valves can be seen in table for Main actuator in Technical Data section.

Function of throttle valve is to control flow speed through impulse tube and consequently influence on PCV's reaction time. Influence on reaction time is not completly defined and strongly depends on application conditions and could significantly vary from application to application.

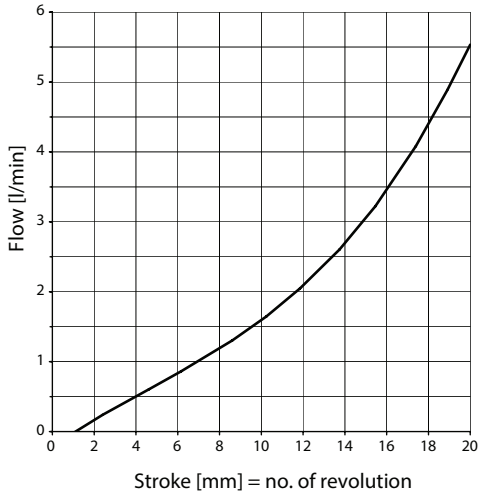
In general:
- by opening of the valve (clockwise) PCV's reaction time increases
- by valve closing (counterclockwise) PCV's reaction time decreases

In case valve is completly closed it has function as shut-off valve.

Throttle valve is delivered from factory in completly open position.

Main data:
- DN 4
- used for Ø10 mm impulse tube

Flow diagram



(1 revolution of spindle equals to 1 mm stroke)

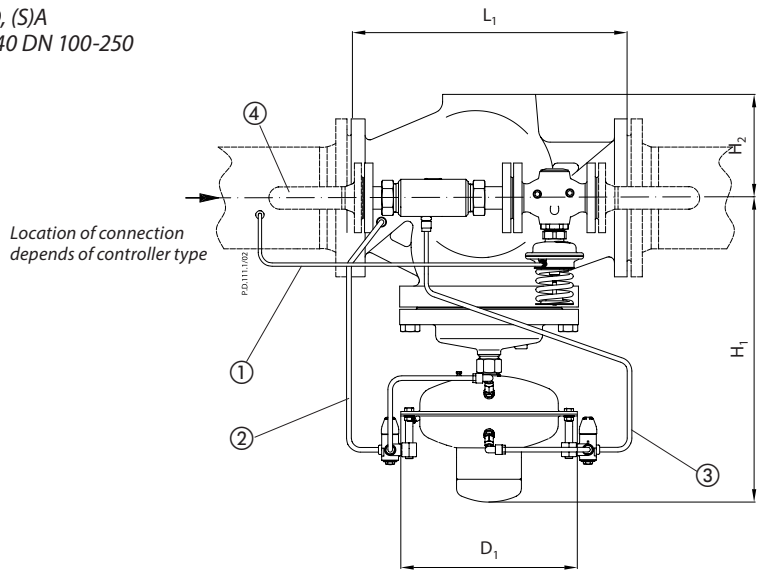
Dimensions

Both main and pilot controllers have to be installed in horizontal pipes only, with a pressure actuator oriented downwards.

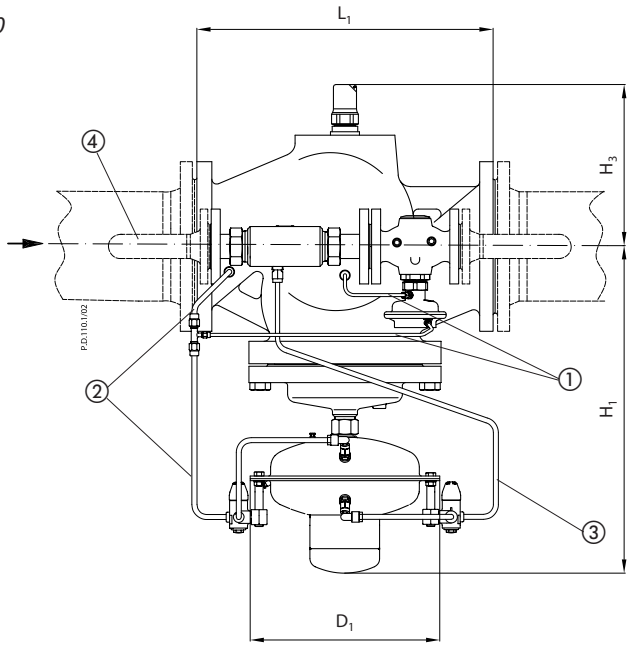
Impulse tubes (pos.1, 2, 3) are part of the delivery. Their shape depends on the controller type. In case of high temperatures (T_{max} > 150/140 °C) seal pots have to be installed. For details see relevant Instructions.

The components shown with dashed lines are NOT part of the delivery. The pipes (pos. 4) must be welded during mounting.

PCVP, (S)D, (S)A
T_{max} 150/140 DN 100-250



PCV(P)Q
T_{max} 150/140 DN 100-250

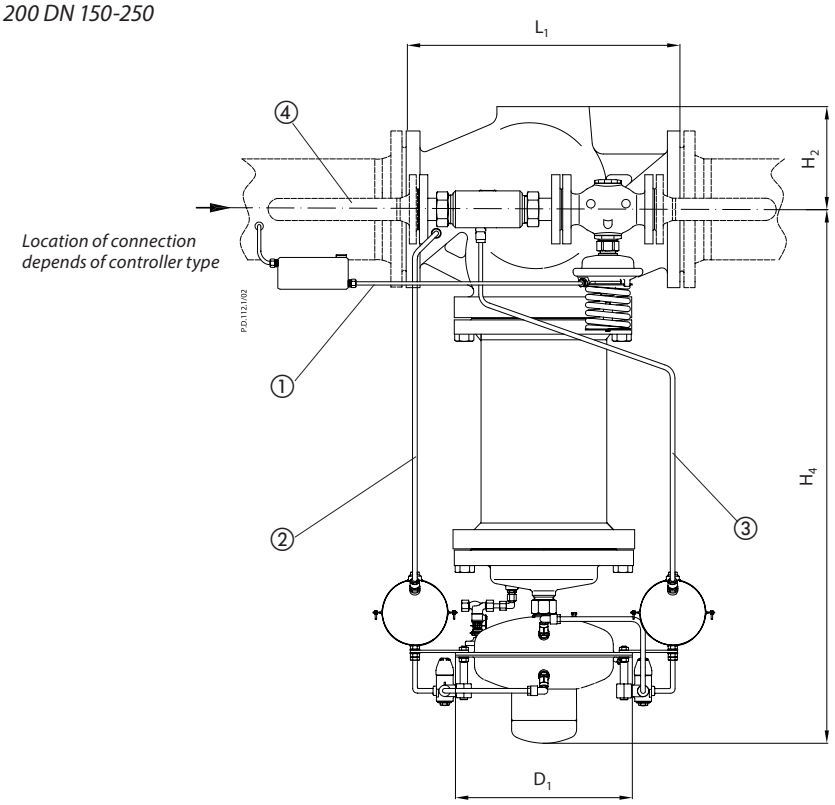


DN		100	125	150	200	250
L_1	mm	350	400	480	600	730
H_1		530	530	619	647	697
H_2		125	125	179	237	257
H_3		194	194	269	332	355
D_1		263	263	380	380	380

Impulse tubes	T_{max} 200 °C	T_{max} 300 °C
①	Cu Ø 6 × 1	SS Ø 10 × 0,8
②	SS Ø 10 × 0,8	
③	Cu Ø 10 × 1	

Dimensions

PCVP, D, A
T_{max} 200 DN 150-250

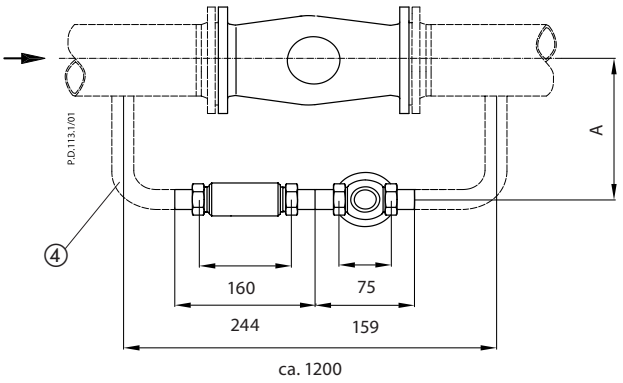


DN		150	200	250
L_1	mm	480	600	730
H_2		169	234	254
H_4		916	1162	1494
D_1		380	380	380

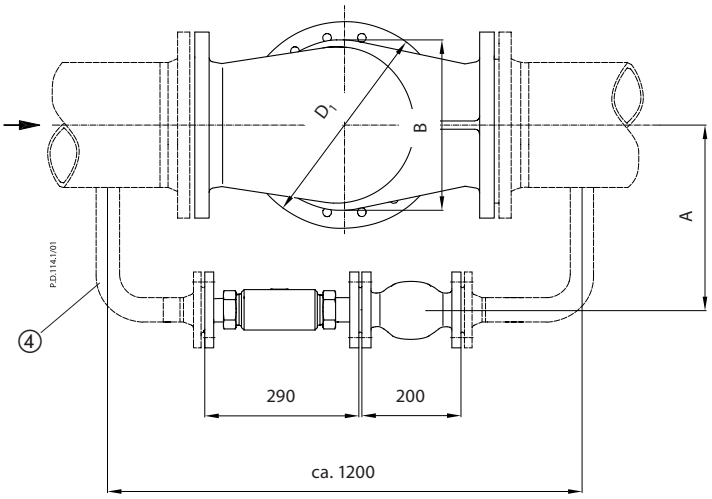
Impulse tubes	T_{max}	
	200 °C	300 °C
①	Cu Ø 6 × 1	SS Ø 10 × 0,8
②	SS Ø 10 × 0,8	
③	Cu Ø 10 × 1	

Dimensions

PCV
T_{max} 150/140 DN 100-125



PCV
T_{max} 150/140 DN 150-250



Pipes Pos. 4:
DN 25: Pipes Ø 33.7 × 2.6
DN 40: Pipes 48.3 × 3.2

DN		100	125	150	200	250
D_1	mm	250	250	320	385	500
A		290	290	320	350	410
B		200	210	310	336	412