

Frese PVS - dynamic pressure and flow regulation valve

Application

Frese PVS system can be installed in domestic and commercial heating and cooling systems.

Frese PVS system is a dynamic valve arrangement designed to regulate flow and differential pressure using the Frese S dynamic balancing valve positioned in the flow, and the Frese PV differential pressure control valve positioned in the return.

The PVS is supplied with capillary tube, isolation valves, drain valves, P/T plugs and unions as standard.

Frese PVS system ensures 100% flow and differential pressure regulation under all conditions, irrespective of any changes within the system, providing simple and trouble free commissioning.

The Frese PVS system operates by limiting the flow in the system and eliminating any noise caused by excess differential pressure.



Benefits

- Flow and differential pressure can be adjusted independently of each other.
- Setting the differential pressure can be easily adjusted after installation.
- Tamperproof presetting device fitted on the top of the valve.
- Simple presetting of flow and pressure.
- No additional commissioning required if the system design is changed.
- High levels of comfort and energy savings for the end user.

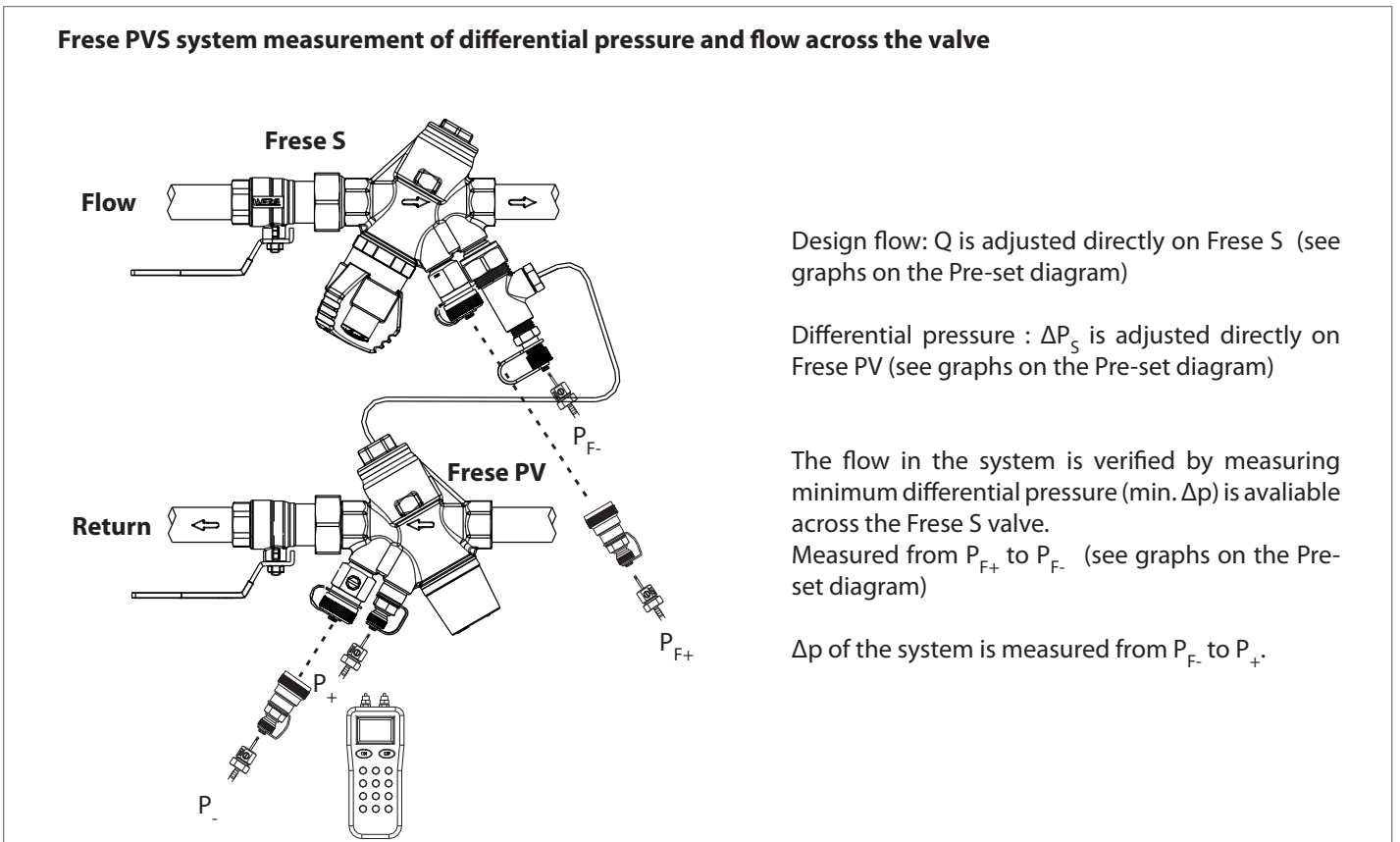
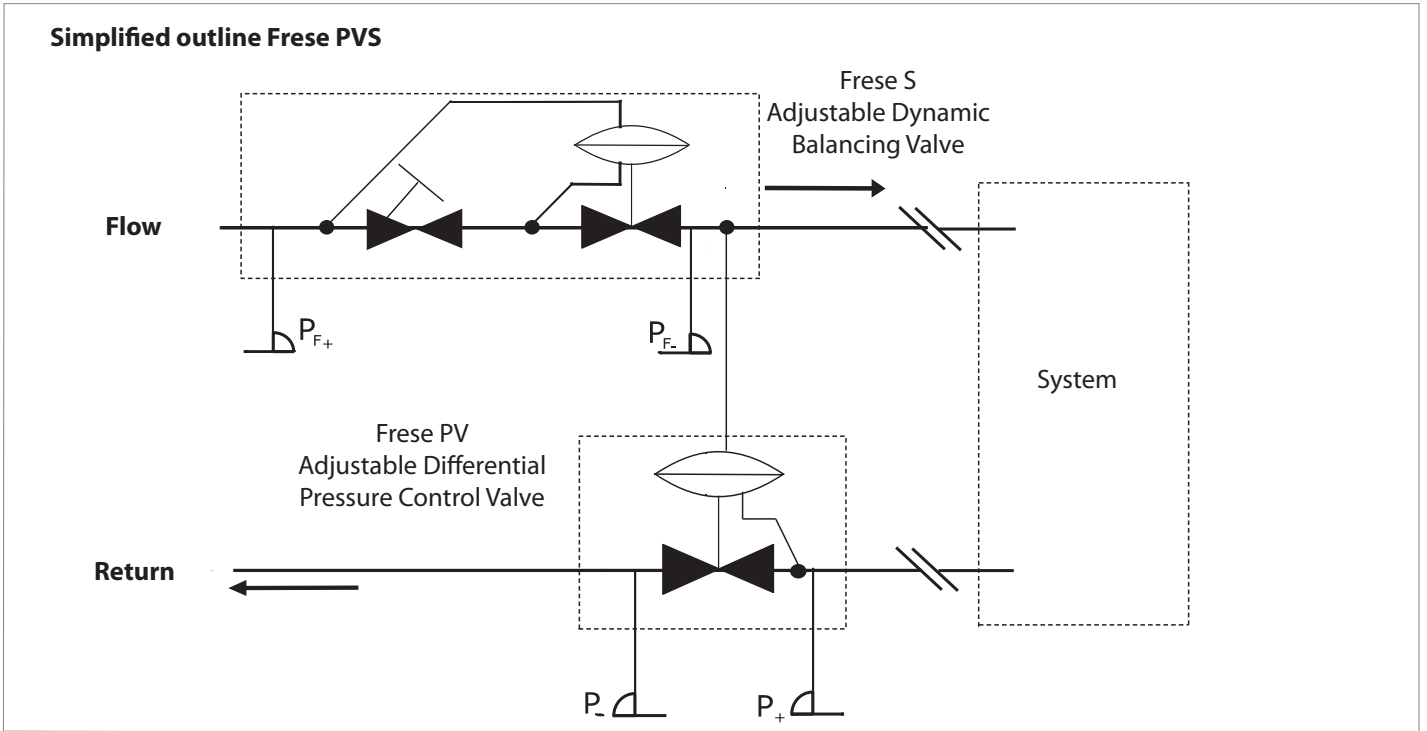
Features

- Size range: DN15 to DN50
- Maximum flow: 10.3m³/h
- Maximum differential pressure 250kPa/400kPa
- Setting range: 5kPa to 80kPa
- Differential pressure regulation, flow regulation, isolation, drain and PT plugs as standard

Frese PVS

- dynamic pressure and flow regulation valve

Design Frese PVS

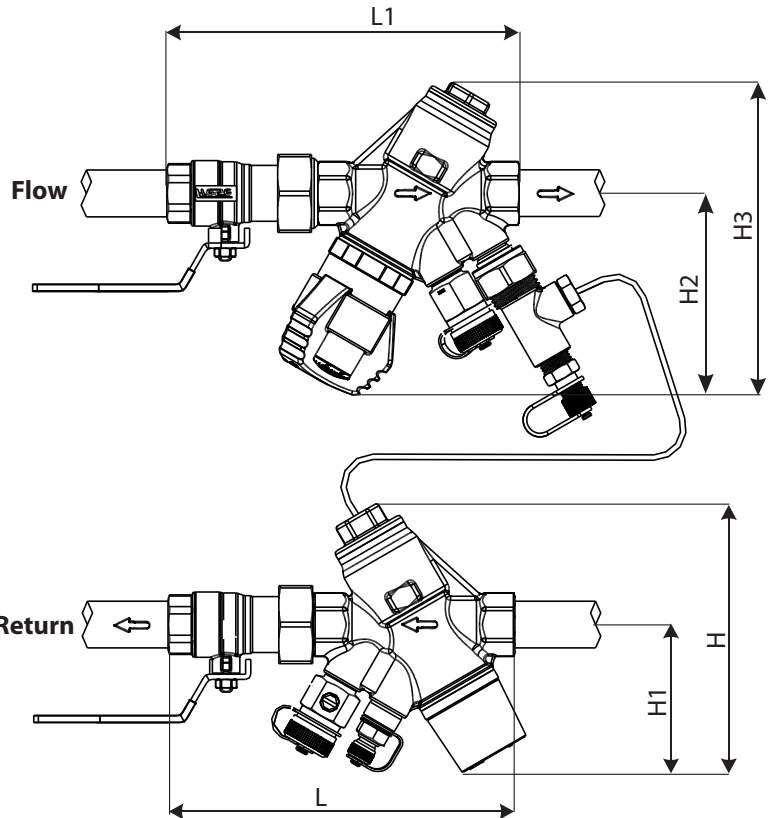


Frese PVS

- dynamic pressure and flow regulation valve

Technical data

Housing:	DZR, Brass CW602N
DP controller:	PPS 40% glass
Flow setting:	PPO
Spring:	Stainless steel
Diaphragm:	HNBR
O-rings:	EPDM
Pressure class:	PN16
Max. differential pressure:	LP = 250 kPa HP = 400 kPa
Temperature range:	-10°C to + 120°C
Capillary tube:	Ø3, L = 1000 mm

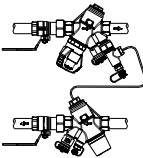


Type		Frese PVS								
Application		Two-pipe system								
Dimension		DN15		DN20		DN25		DN32	DN40	DN50
Version		LP	HP	LP	HP	LP	HP	HP	HP	HP
Control range	[kPa]	5-30	20-60	5-30	20-60	5-30	20-60	20-80	20-80	20-80
Pressure range	[kPa]	9-250	22-400	9-250	22-400	12-250	22-400	38-400	45-400	54-400
Flow rate [l/s]	PV	0,014-0,167	0,028-0,333	0,028-0,278	0,042-0,556	0,167-0,694	0,194-1,167	0,278-1,389	0,833-2,222	1,389-4,167
	S	0,007-0,223	0,011-0,306	0,011-0,351	0,018-0,512	0,017-0,462	0,025-0,653	0,060-1,328	0,049-2,067	0,122-2,868
	PVS	0,014-0,167	0,028-0,306	0,028-0,278	0,042-0,512	0,167-0,462	0,194-0,653	0,278-1,328	0,833-2,067	1,389-2,868
Dimension mm	L	167		173		232		235	257	286
	H	127		130		166		166	184	196
	H1	70		73		91		91	97	106
	L1	167		173		202		235	257	286
	H2	96		98		102		115	119	126
	H3	148		151		155		188	206	219

Frese PVS

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Product programme PVS

Dimension	DN15	DN20	DN25	DN32	DN40	DN50
Frese PVS with 2 isolation valves, 2 drain valves, P/T plugs, capillary tube and union connections. 	Frese PVS - LP 53-3040	Frese PVS - LP 53-3041	Frese PVS - LP 53-3042	Frese PVS HP 53-3023	Frese PVS HP 53-3024	Frese PVS HP 53-3025
	Frese PV, 5-30 kPa & Frese S, LP	Frese PV, 5-30 kPa & Frese S, LP	Frese PV, 5-30 kPa & Frese S, LP	Frese PV, 20-80 kPa & Frese S, HP	Frese PV, 20-80 kPa & Frese S, HP	Frese PV, 20-80 kPa & Frese S, HP
	Frese PVS - HP 53-3026	Frese PVS - HP 53-3027	Frese PVS - HP 53-3028			
	Frese PV, 20-60 kPa & Frese S, HP	Frese PV, 20-60 kPa & Frese S, HP	Frese PV, 20-60 kPa & Frese S, HP			

Accessories

Spindle extension



Frese no.

46-1072
46-1073
46-1074
46-1075

Dim./DN

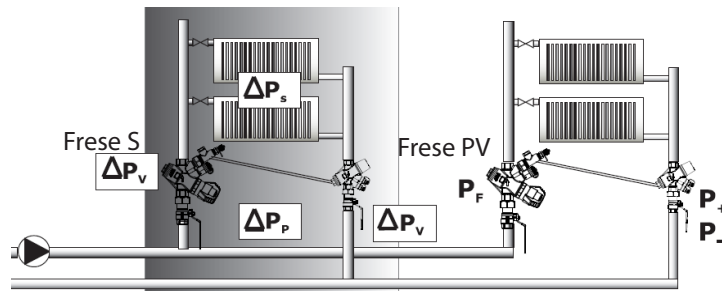
15/20
25
32/40
50

Example

Please note:

As the flow is reduced in the circuit in question the pressure increases in reverse ratio to the flow, which is due to the P-band of the adjustment spring. The valve still compensates for this.

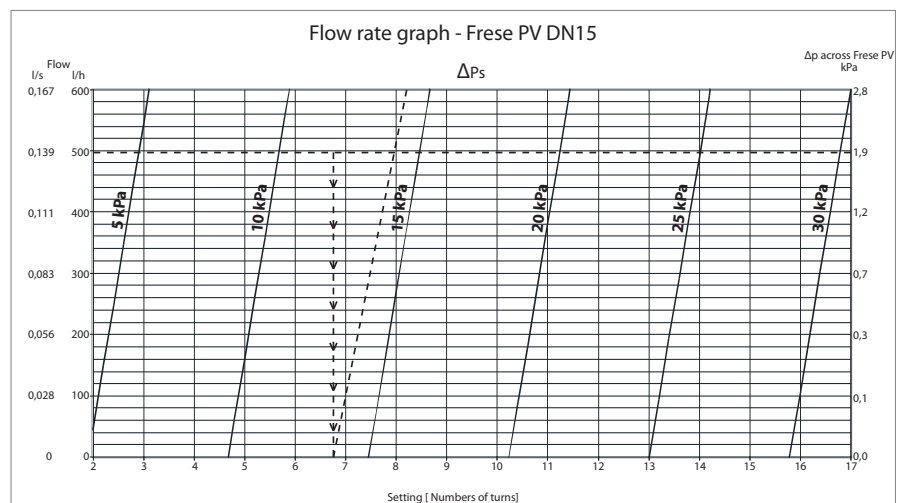
However, the pressure will nowhere in the circuit be as high as the pump pressure that would have been available if Frese PV had not been installed.



$$\Delta P_p = \Delta P_s + \Delta P_v$$

ΔPp = Pump pressure
ΔPs = Differential pressure
ΔPv = Pressure loss across valve

In this example the pressure increases to approx. 14 kPa as the graph is offset parallel to the course of flow. Furthermore, you can always read from the graph what the pressure in the circuit will be like at any flow rate below the rated 500 l/h.



Frese PVS

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Example

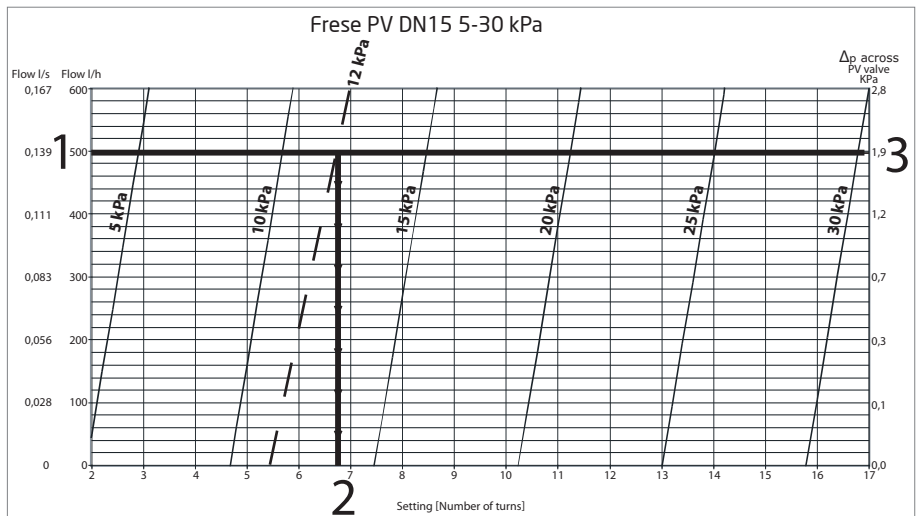
Frese PVS DN15 Low Pressure

Design differential pressure 12 kPa

Design flow 0,139 l/s

Differential pressure setting Frese PV

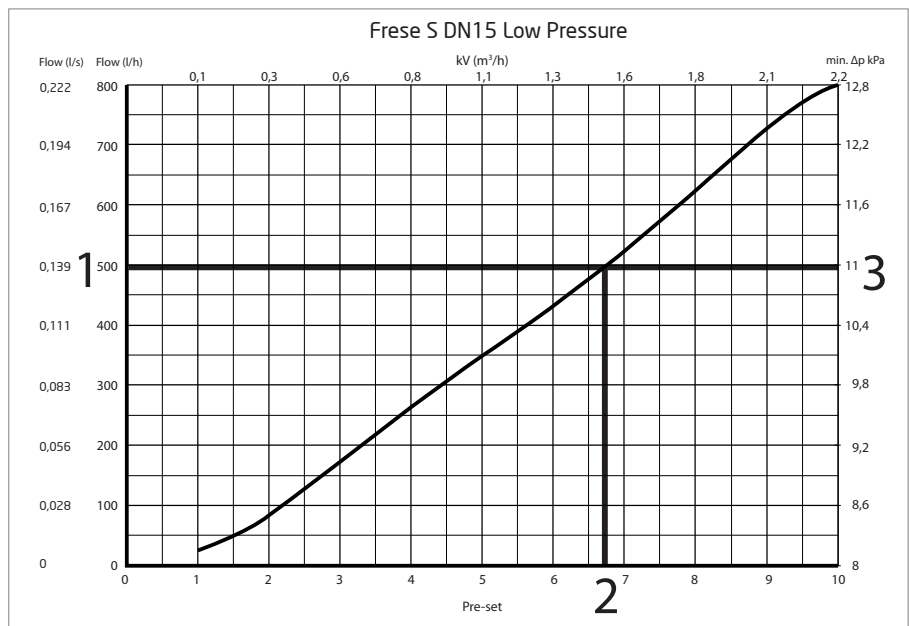
1. The design flow is used as the point of reference for the setting. (See the graph)
2. In order to make reading easier the graphs indicating the pressure in the circuit are arranged at intervals of 5 kPa. Still, the graphs can be offset according to the specified pressure of 12 kPa in our circuit. From the intersection of the 12 kPa graph and the horizontal line indicating 0,139 l/s a line perpendicular to the x-axis is made to read the pre-set value. Pre-set app. 7 turns on the scale.



3. The minimum pressure drop required will be 1.9 kPa across the valve. (ΔP_{V2})

Flow setting Frese S

1. The design flow is used as the point of reference for the setting. (See the graph)
2. The pre-setting for the valve is found by means of the flow rate graph. Setting = 6.7
3. The minimum pressure drop required will be 11 kPa across the valve. (ΔP_{V1})



Total pump pressure

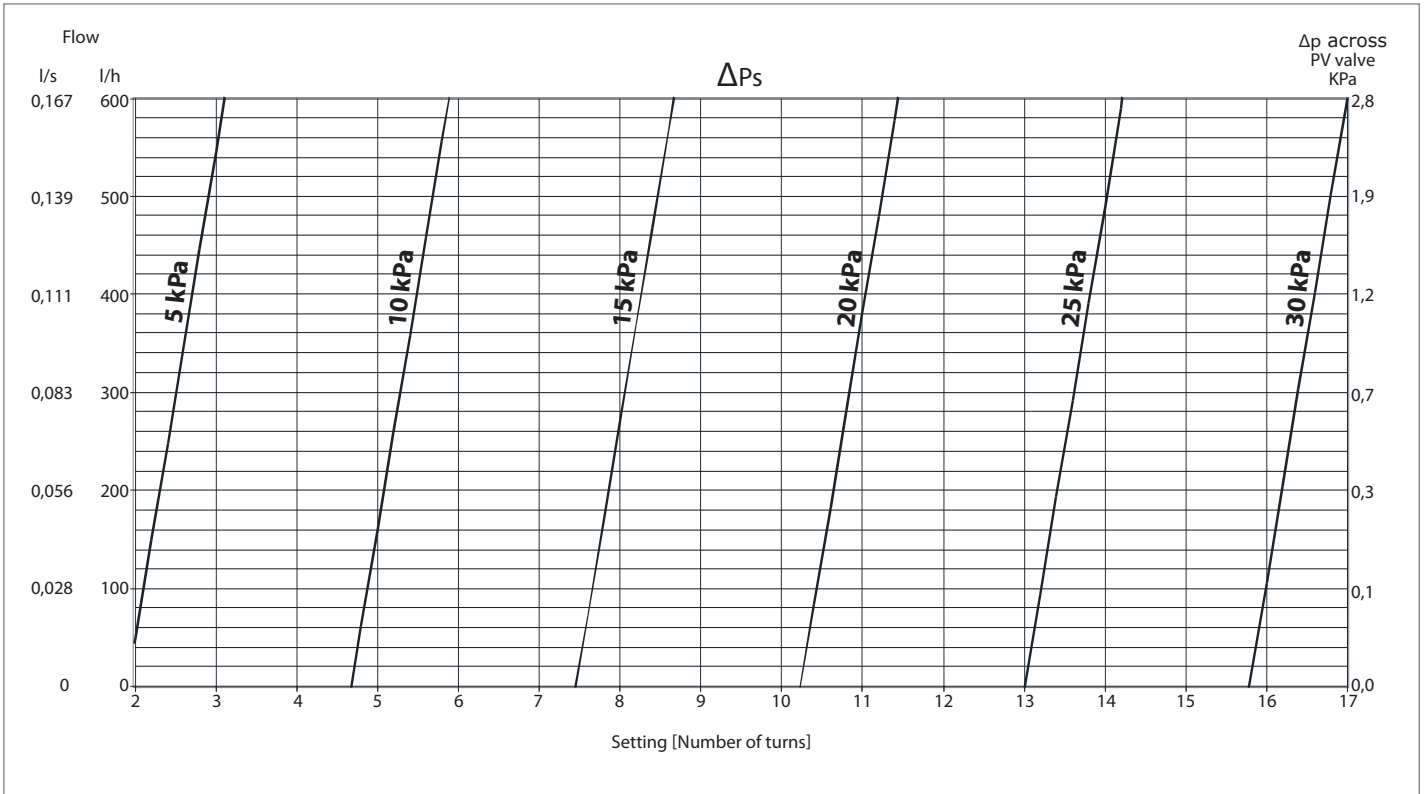
Calculation of the total pump pressure:

$$\Delta P_p = \Delta P_s + (\Delta P_{V1+V2})$$

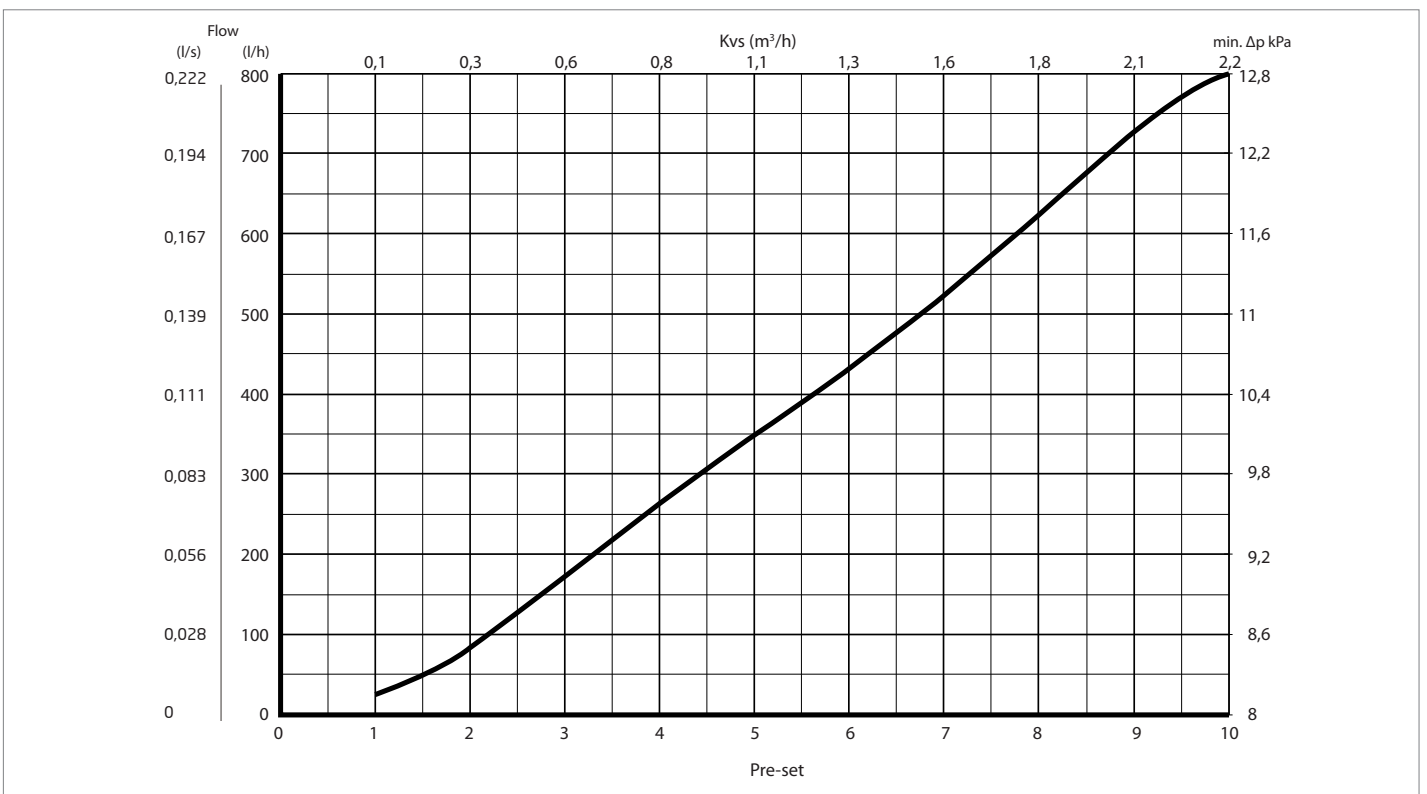
$$\Delta P_p = 12 \text{ kPa} + (11 \text{ kPa} + 1,9 \text{ kPa}) = 24,9 \text{ kPa}$$

Frese PVS DN15 LP - dynamic pressure and flow regulation valve

Frese PV DN15 5-30 kPa

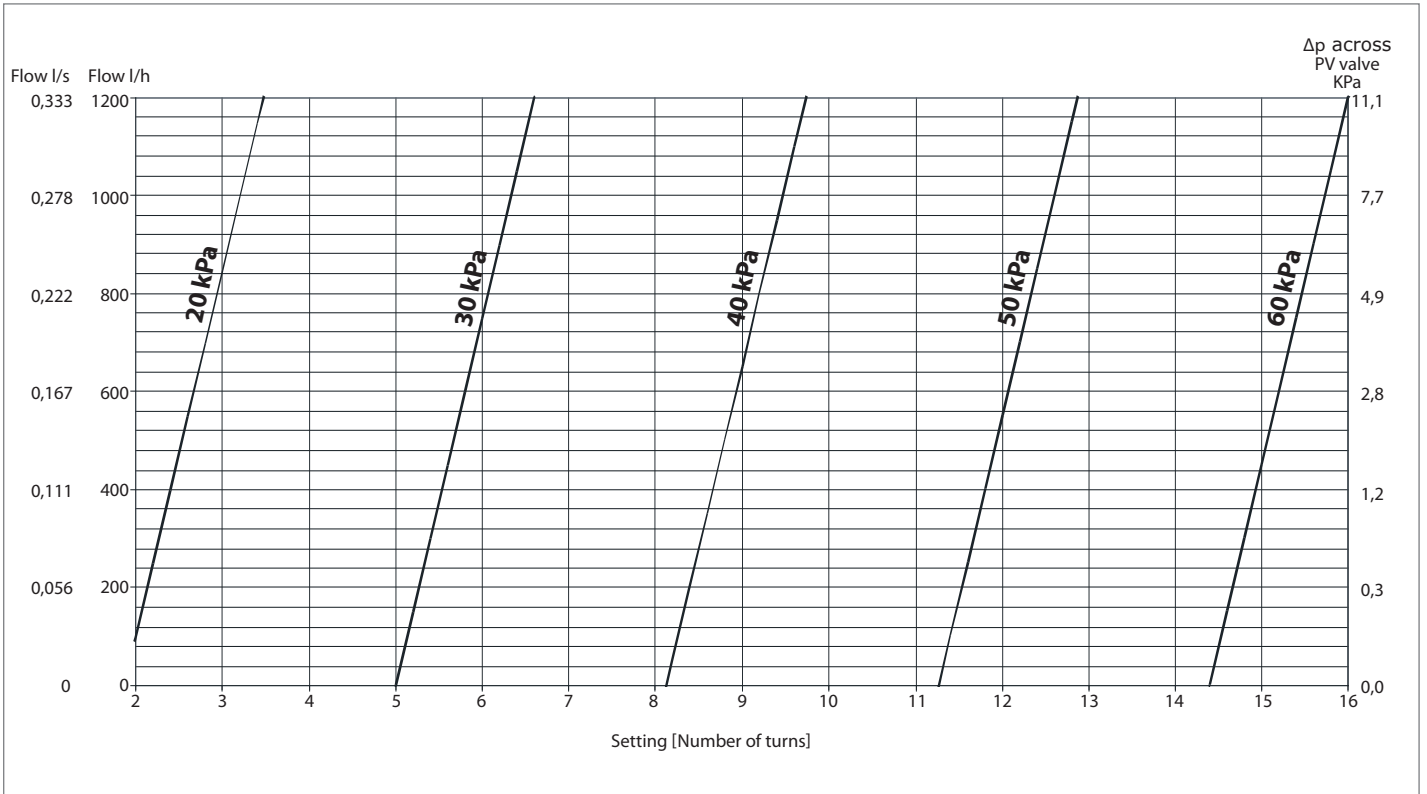


Frese S DN15 Low Pressure

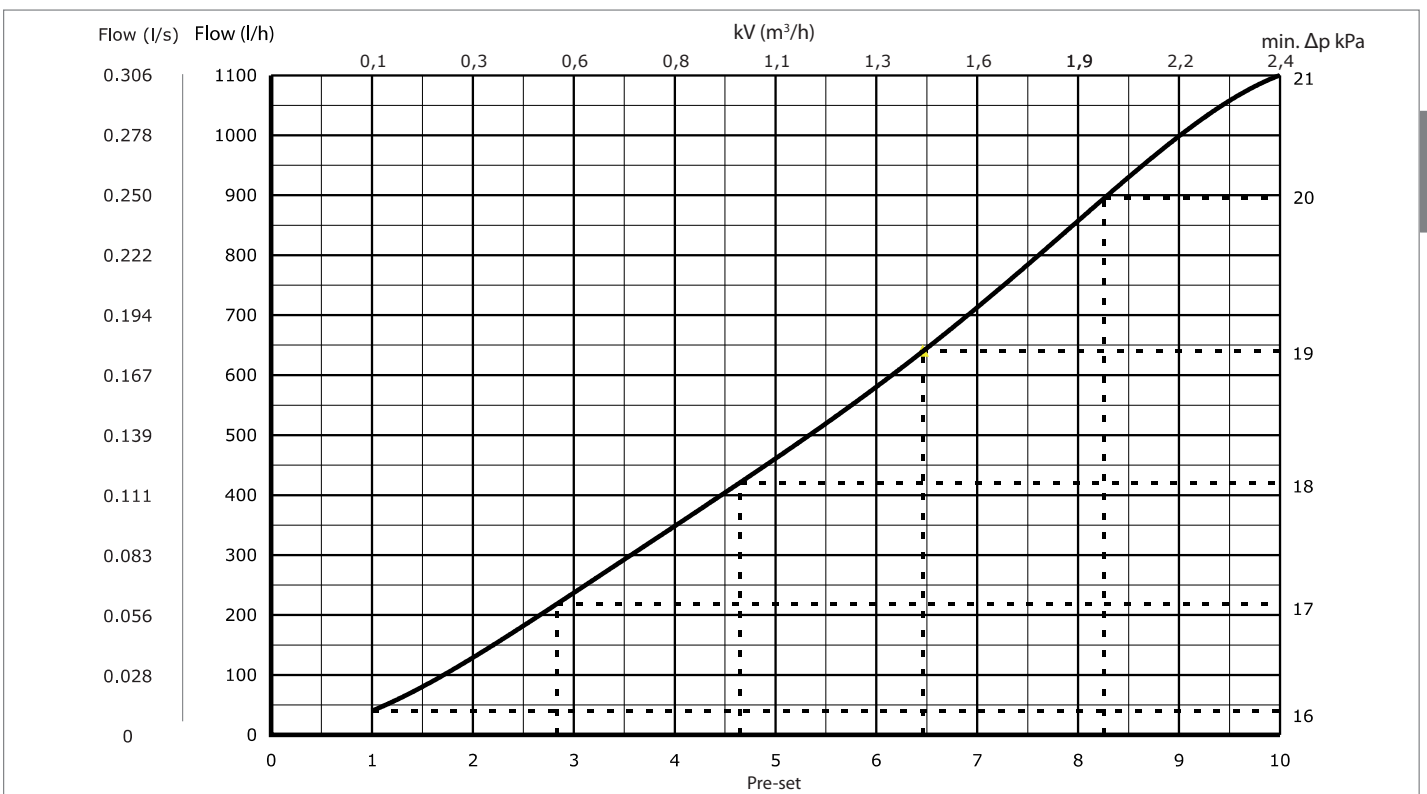


Frese PVS DN15 HP - dynamic pressure and flow regulation valve

Frese PV DN15 20-60 kPa

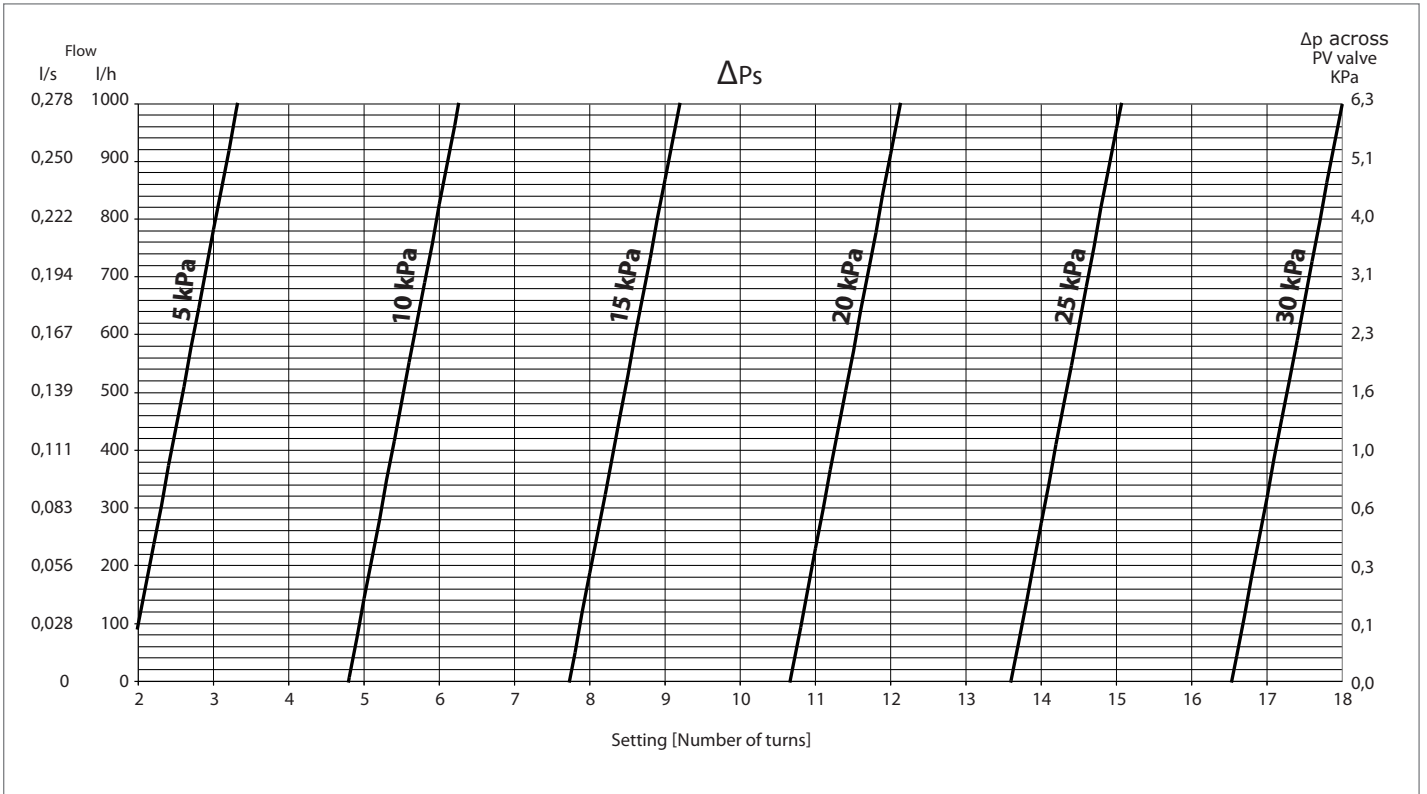


Frese S DN15 High Pressure

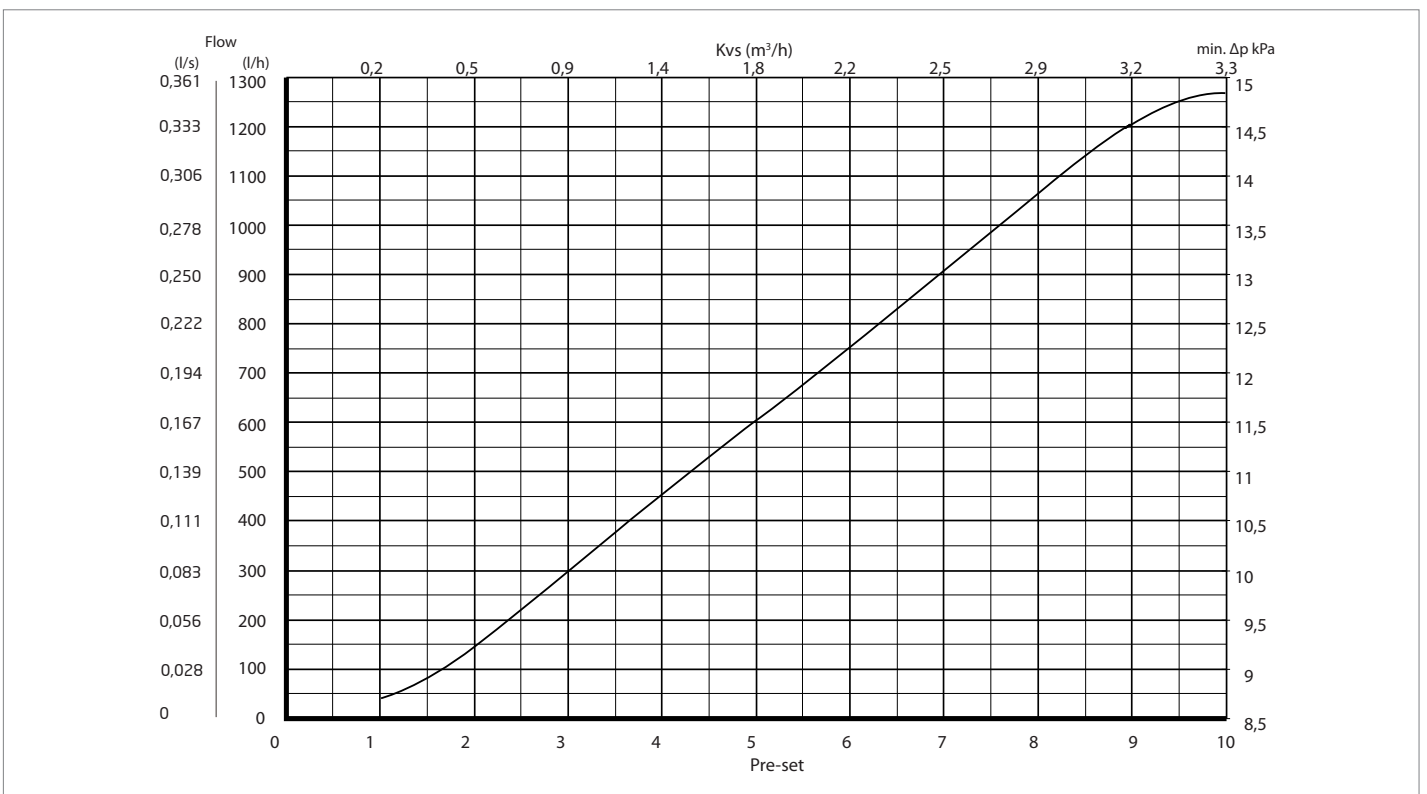


Frese PVS DN20 LP - dynamic pressure and flow regulation valve

Frese PV DN20 5-30 kPa

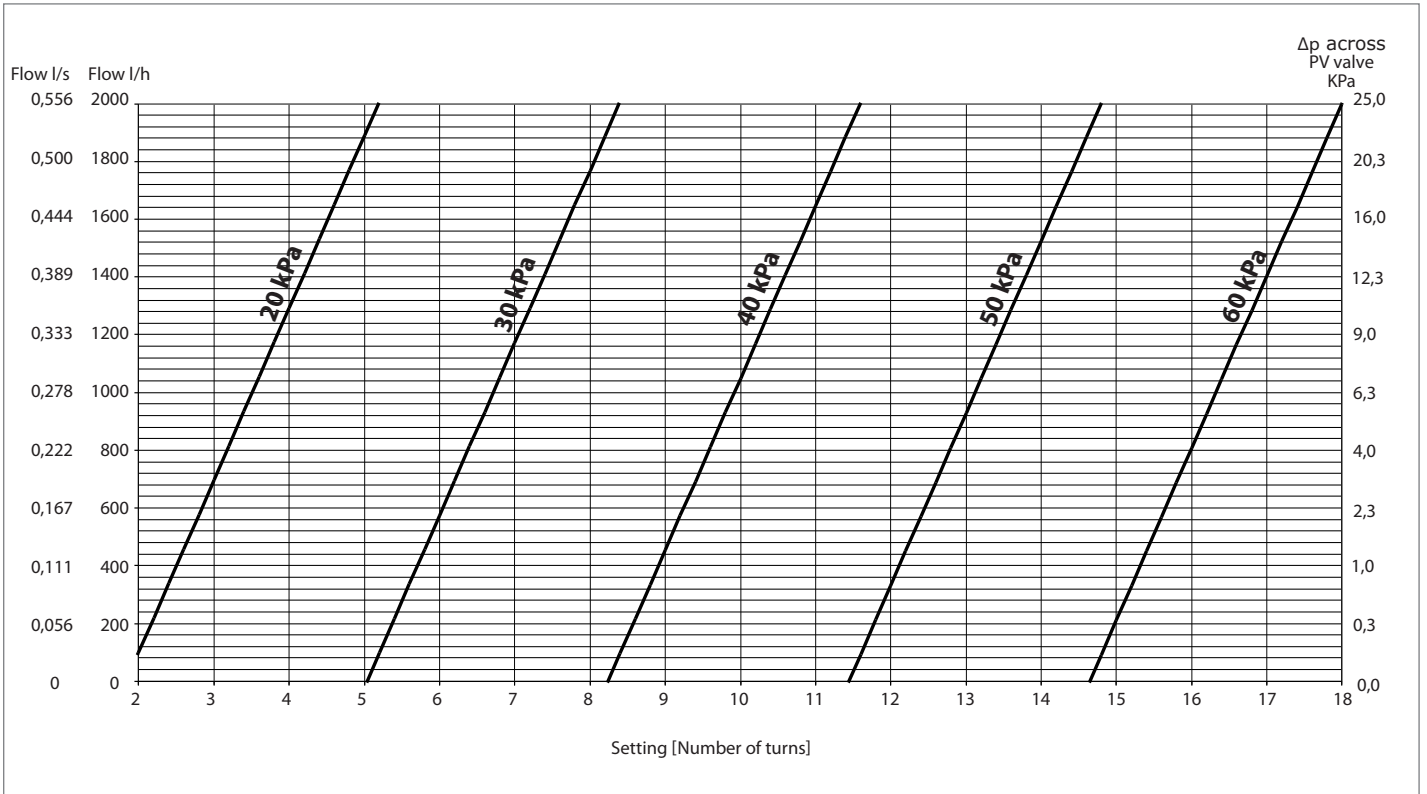


Frese S DN20 Low Pressure

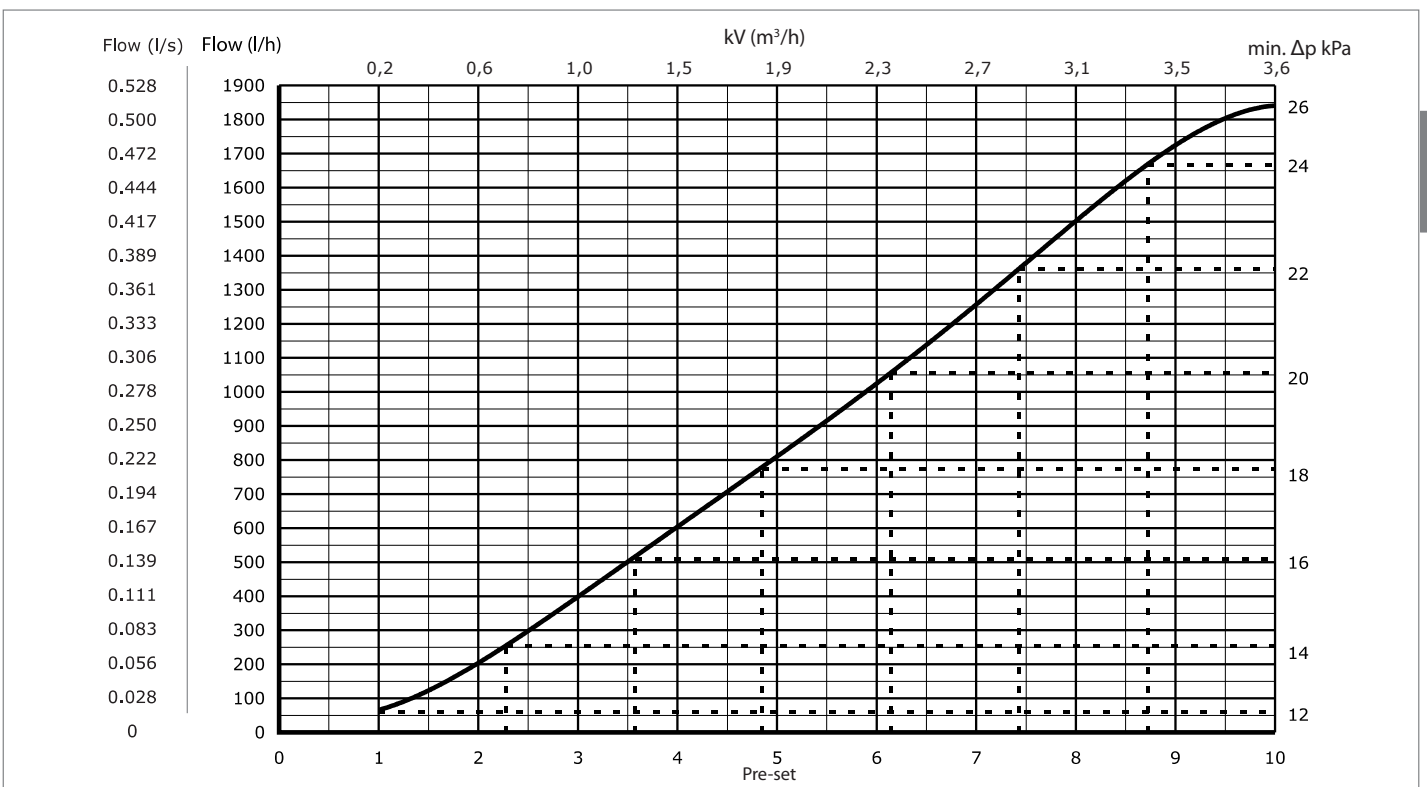


Frese PVS DN20 HP - dynamic pressure and flow regulation valve

Frese PV DN20 20-60 kPa

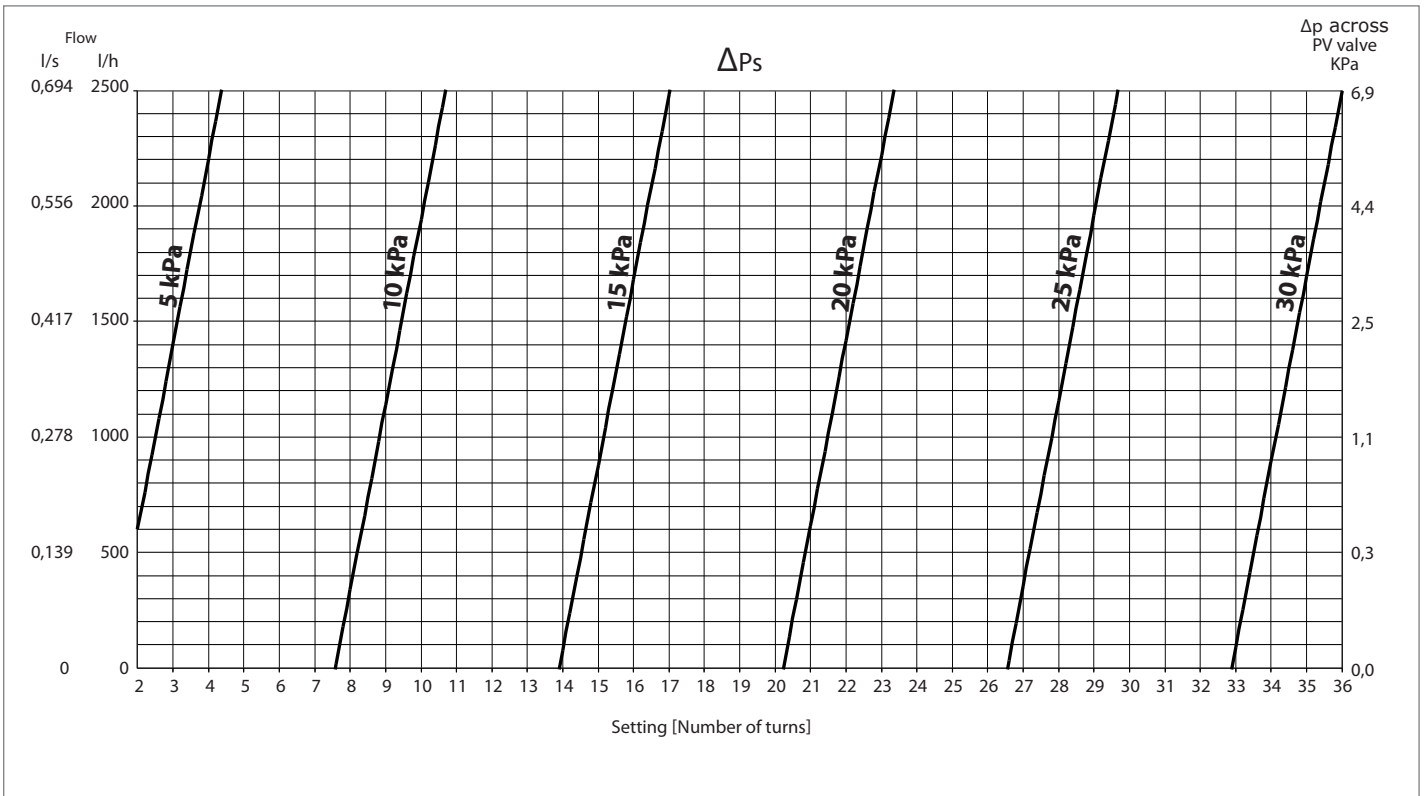


Frese S DN20 High Pressure

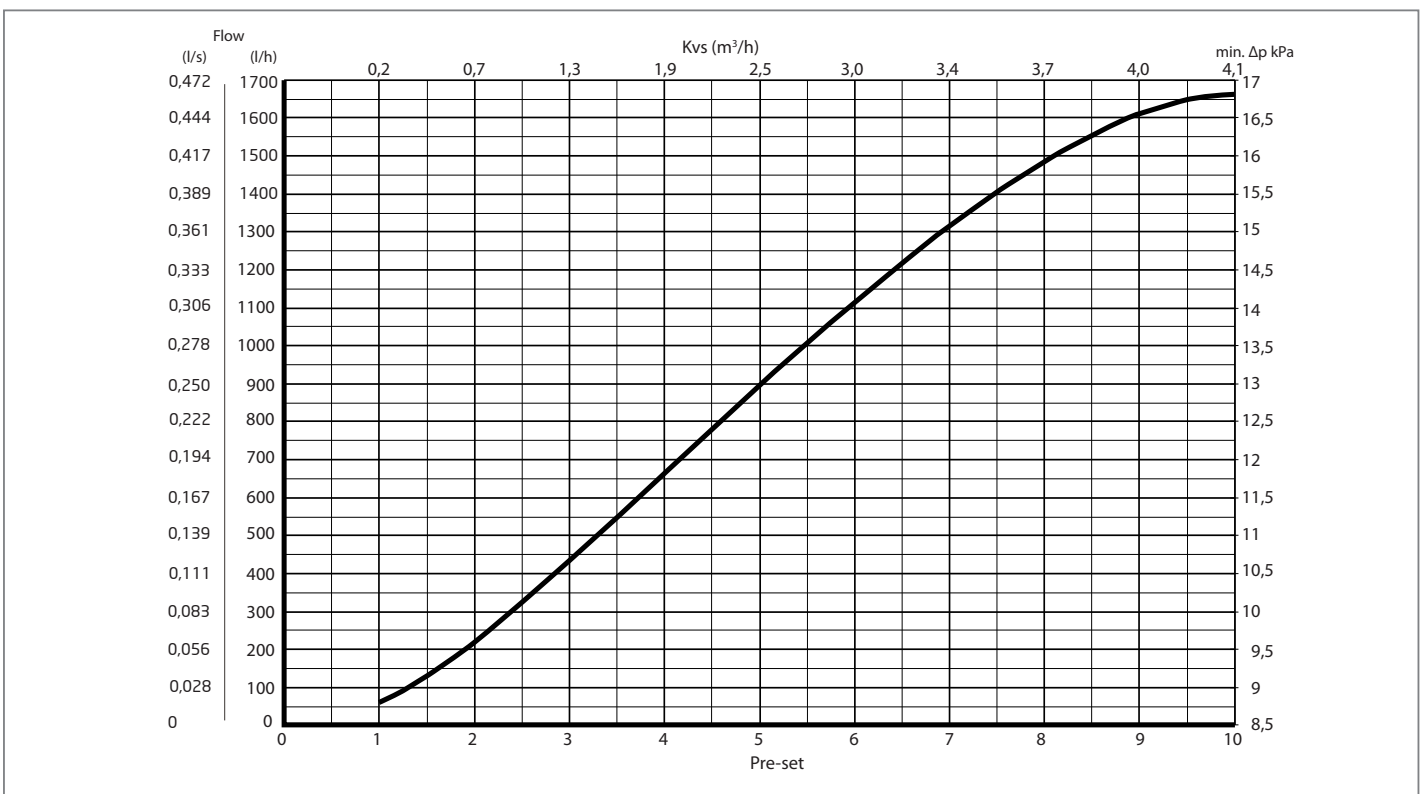


Frese PVS DN25 LP - dynamic pressure and flow regulation valve

Frese PV DN25 5-30 kPa

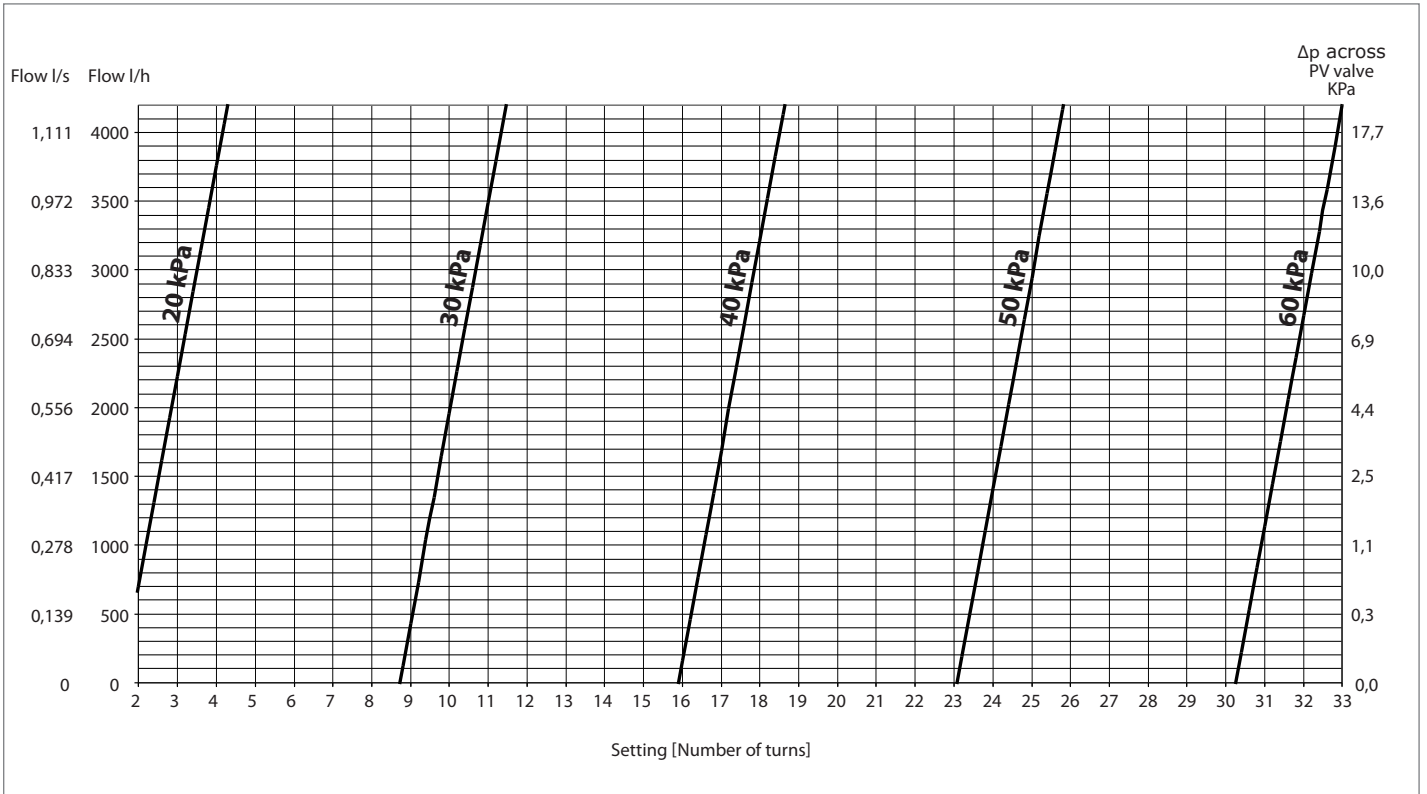


Frese S DN25 Low Pressure

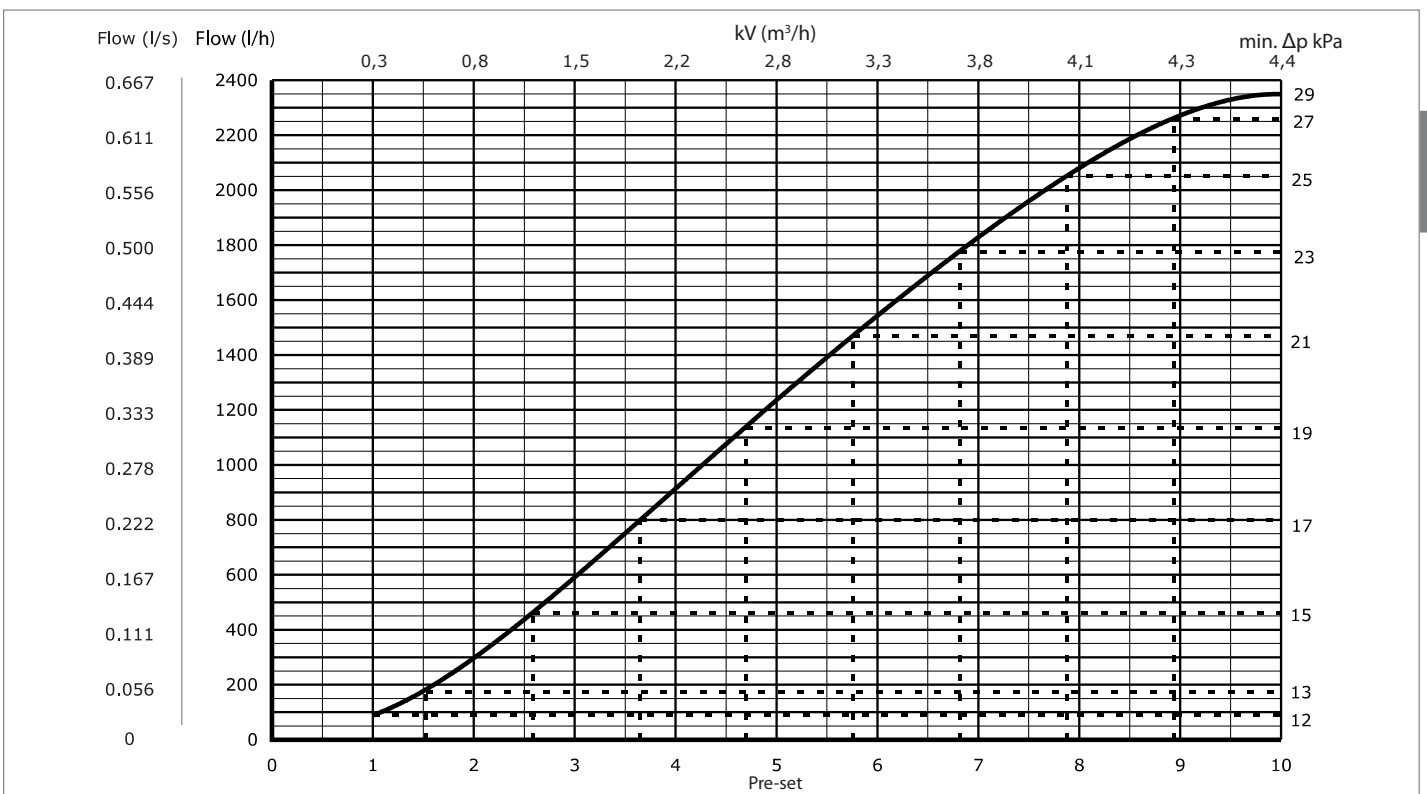


Frese PVS DN25 HP - dynamic pressure and flow regulation valve

Frese PV DN25 20-60 kPa

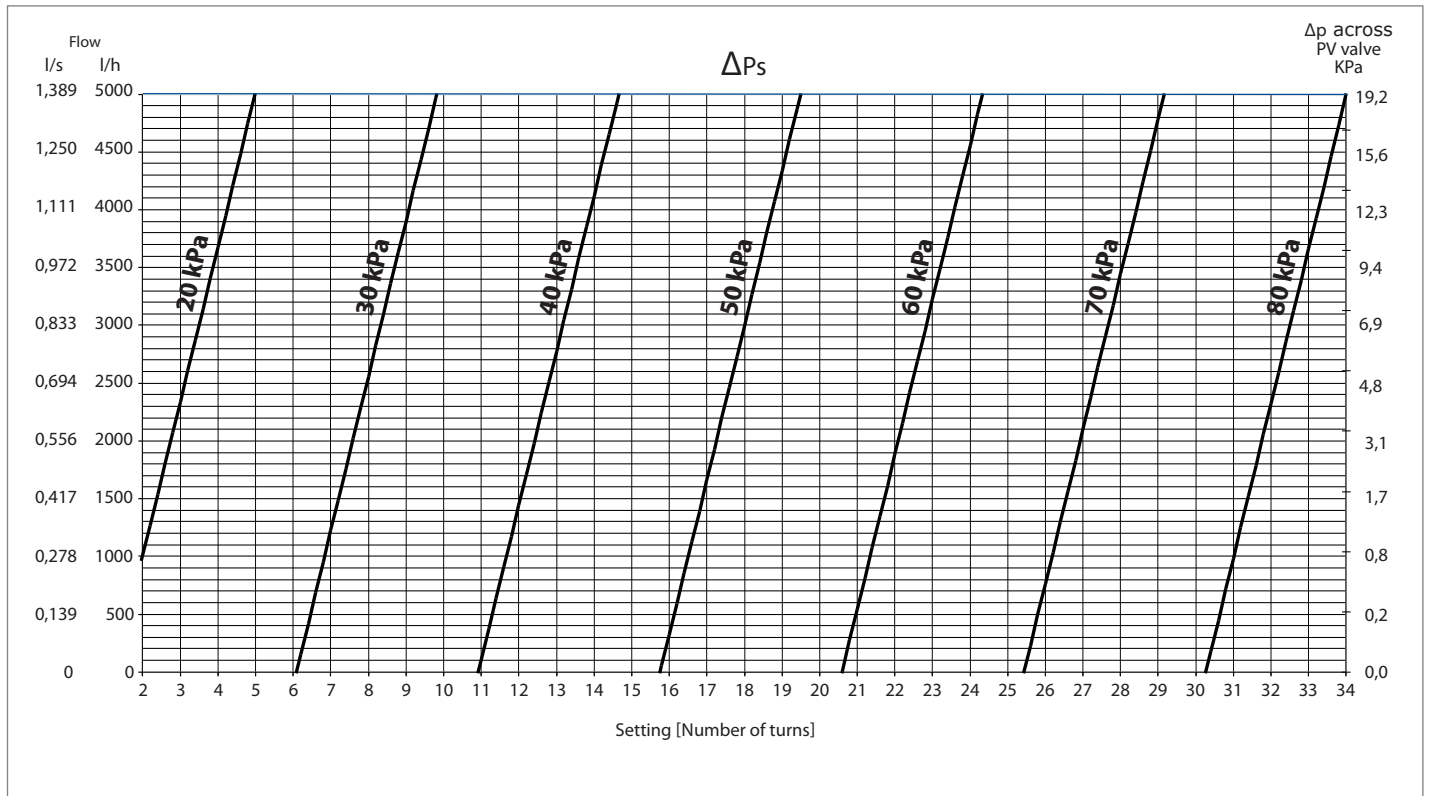


Frese S DN25 High Pressure

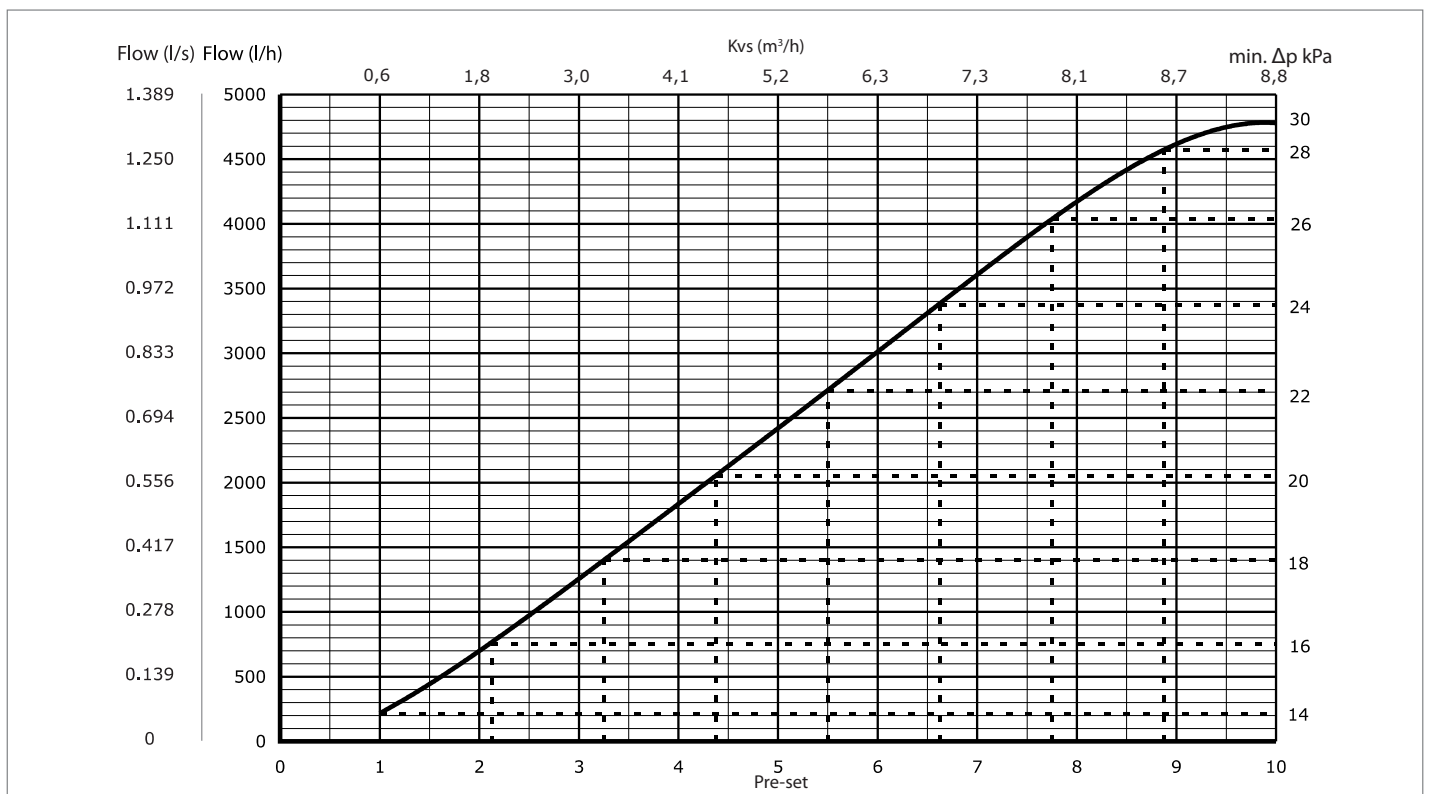


Frese PVS DN32 HP - dynamic pressure and flow regulation valve

Frese PV DN32 20-80 kPa

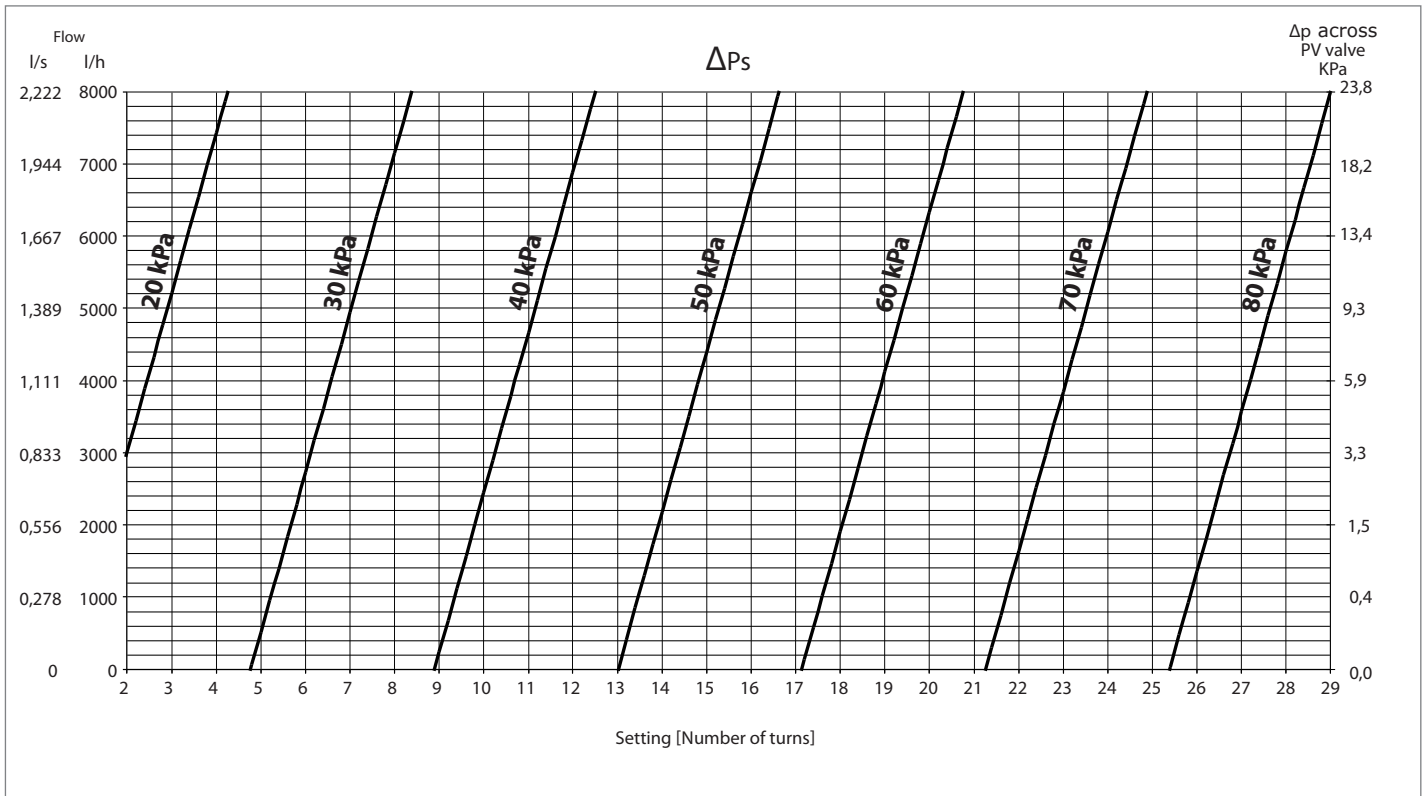


Frese S DN32 High Pressure

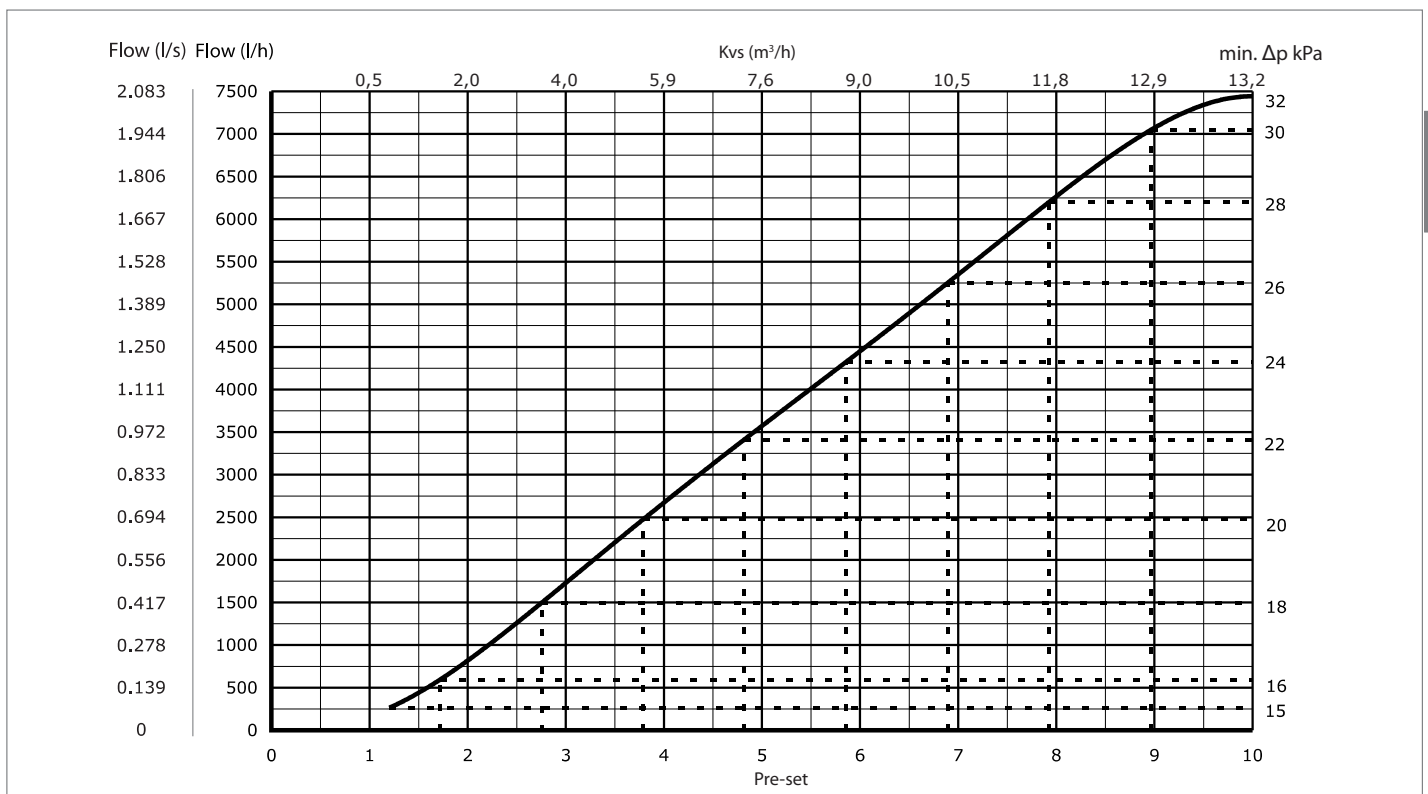


Frese PVS DN40 HP - dynamic pressure and flow regulation valve

Frese PV DN40 20-80 kPa

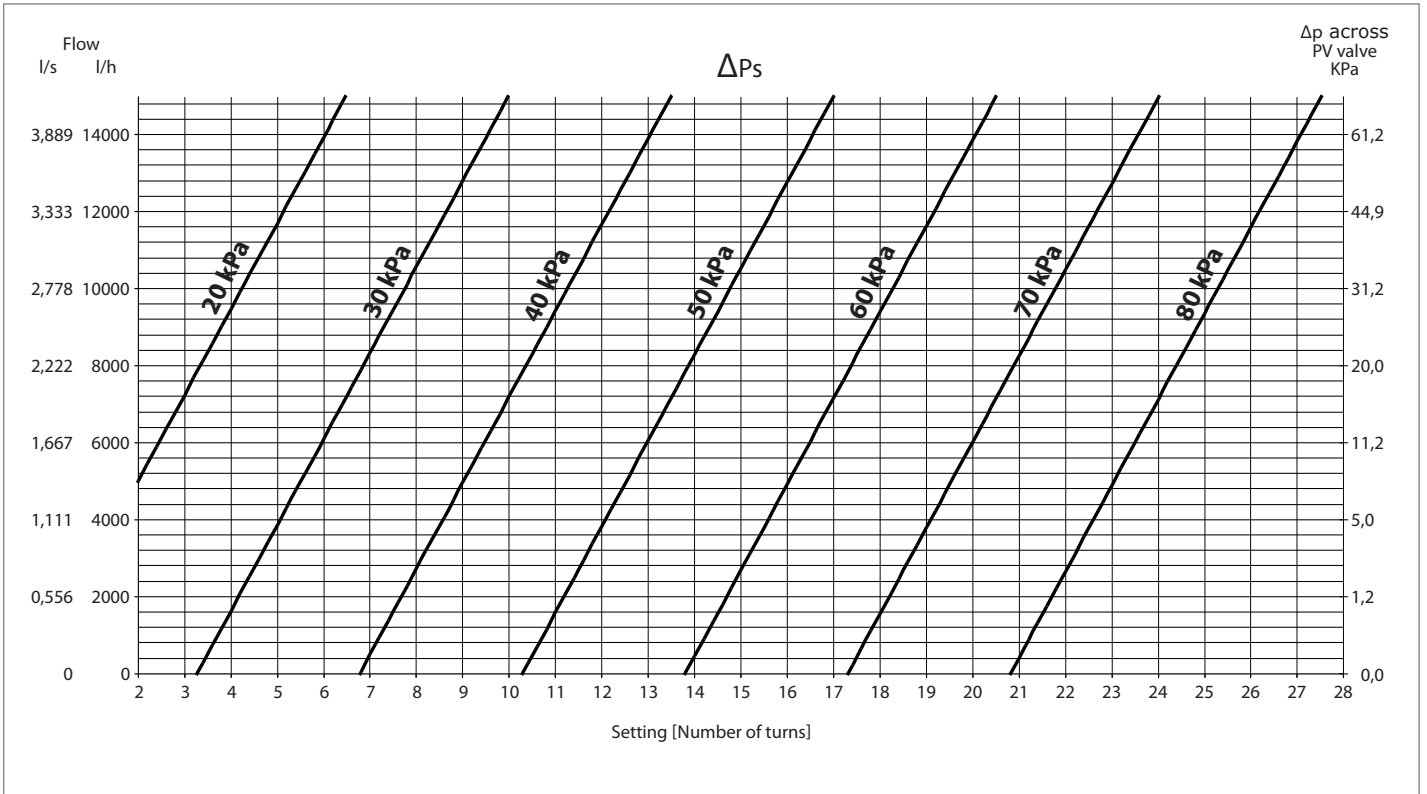


Frese S DN40 High Pressure

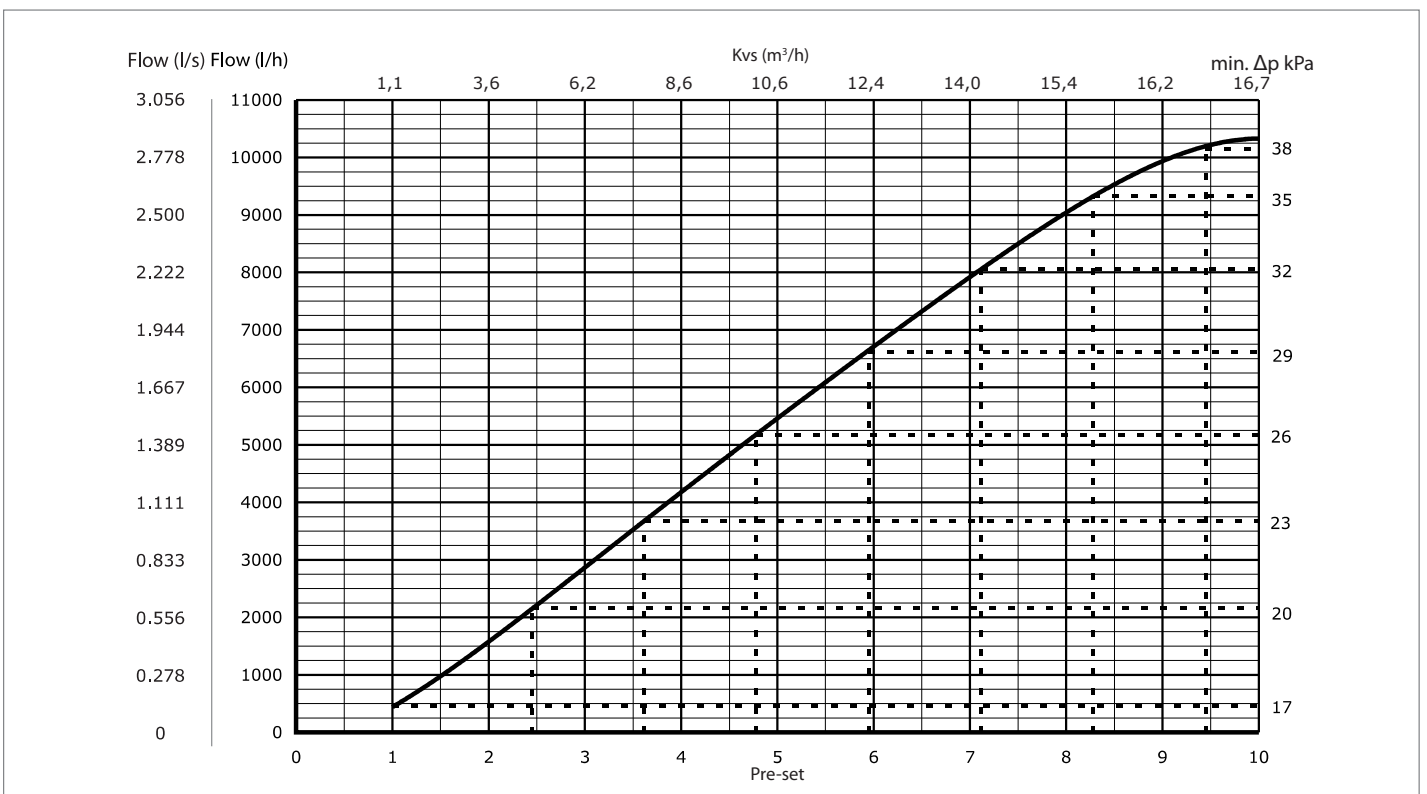


Frese PVS DN50 HP - dynamic pressure and flow regulation valve

Frese PV DN50 20-80 kPa



Frese S DN50 High Pressure



Frese PVS - dynamic pressure and flow regulation valve

Text for technical specifications

The valve should be a dynamic differential pressure and flow control valve with the option of setting the differential pressure and flow on site without suspension of operation.

The valve should limit the differential pressure in a circuit.

The valve should include optional P/T plugs for the verification of differential pressure in circuit and across the valve.

The differential pressure control valve scale should only be adjustable by means of a key.

The flow control valve should only be adjustable by means of a lockable handle.

The valve should be permanently marked with an indicator for flow direction.

Pressure rating PN16.

