

Tech Note

Nessie® electronic proportional flow control valve type VOH 30 PE



Design and application

The flow control valve is used for the electronic proportional control of water flow, and thereby the control of actuator speed.

The built-in pressure compensator ensures that water flow through the valve remains constant and independent of the pressure in the system.

The required flow is adjusted proportionally with an electronic signal.

The valve is designed for ordinary water, i.e. water containing no additives. (EU Ordinary Water Directive, 80/778 EEC) and without abrasive elements.

Advantages

- Electronic proportionally controlled flow.
- Precise speed control, independent of load.
- Controllable by PC and PLC.
- Corrosion-resistant parts (stainless steel, AISI 316 L/W. nr. 1.4401).
- Adjustment of min. and max. actuator speed.
- Facility for ramp control, i.e. soft actuator stops and starts.

Filtration

The water supplied to the valve must be filtered: 10 µm absolute, β_{10} -value > 5000 filter is recommended.

For further information on filters, please contact the Danfoss sales department for water hydraulics.

Code numbers

VOH 30 PE	180H0254
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The flow control valve is supplied as standard with a proportional solenoid and a DIN 43650-A Pg 9 plug without electronics.

Technical data

General

Design	Spool valve with integrated pressure compensator
Control	Proportional solenoid without positional control
Connection	In-line connection.
Orientation	Any direction. The through holes can be used for securing the valve
Ambient temperature	3 - 50°C

Hydraulic

Pressure medium	Pure drinking water in accordance with EU Ordinary Water Directive 80/778. For other water qualities, contact Danfoss Sales Organisation
Temperature of pressure medium	3 - 50°C
Flow direction	Indicated by arrow on valve body
Filtration	The system must be fitted with a 10 µm abs.
	$\beta_{10} > 5000$ filter
Max. rated flow	30 l/min
Max. static pressure	140 bar
Min./max. working pressure	15 bar/140 bar

Static / dynamic

Hysteresis from min. to max. flow and from max. to min. flow	< 8 %
Reaction time from 0 % - 100 % signal change	< 150 ms
Reaction time from 100 % - 0 % signal change	< 150 ms

All accuracy data refer to scale values.

Proportional solenoid

Resistance R20	11.8 Ohm
Power effect	12 W
I_{max}	0.81 A
Enclosure	IP 65 to DIN 40 050 and IEC 14 434/5
Electrical connection	DIN 43650

Installation

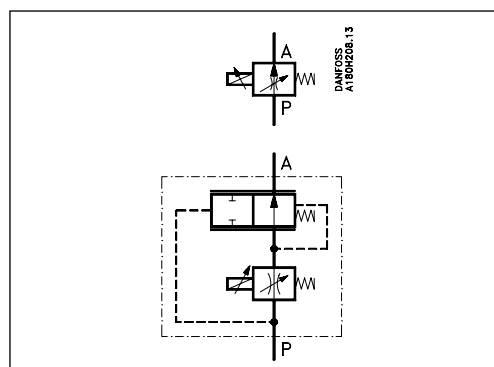
The valve must be installed in-line using the system piping, or secured using the two Ø6.5 mm holes in the valve.

Flow direction

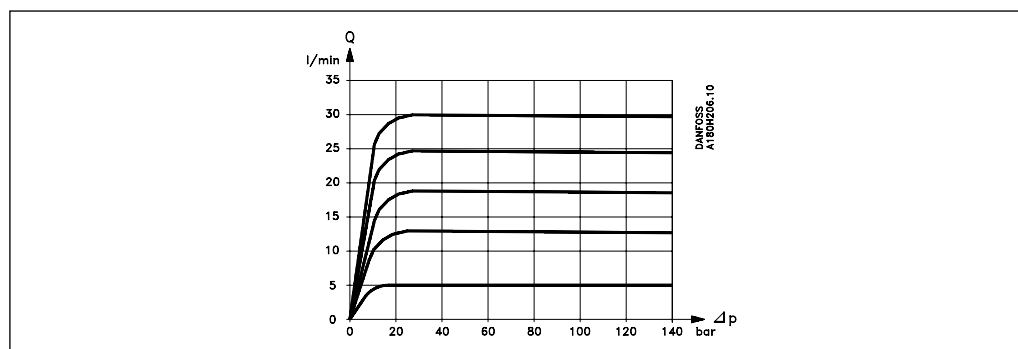
The proportional flow control valve with open basic position is a two-way flow control valve.

P: Supply flow

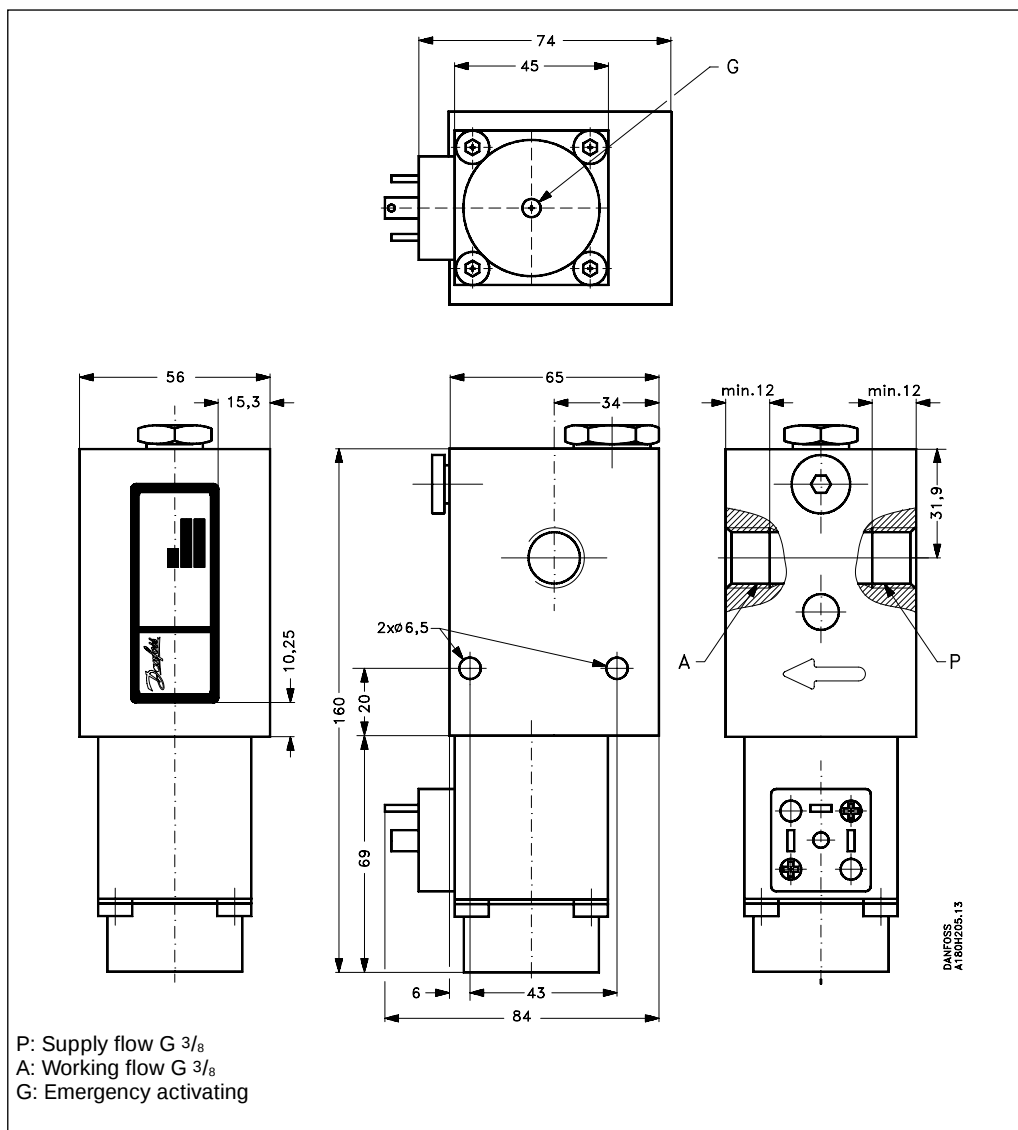
A: Working flow



P/Q characteristic



Dimensions



Option

The electronic plug must be ordered separately and is supplied with 3 m cable.

Electronic plug with 3 m cable	180H0250
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Electronics for VOH 30 PE

The optional electronic plug, S114AO2, with integrated dither and control functions can be used with the VOH 30 PE Nessie flow control valve.

The control functions are $\pm$ ramps, $I_{\max}$. and $I_{\min}$. The dither amplitude and frequency are factory set.

Ramp functions and $I_{\max}$ and $I_{\min}$ can be adjusted using four integrated potentiometers.

The plug uses standard voltage and current signals as regulating values.

The plug standard is to DIN 43650 and the grade of enclosure is IP 65 to DIN 40050.

Electrical data

Supply voltage	24 V d.c. $\pm$ 5%	
Max. current	1 A	
Control signal	0 - 10 V*	
Control signal	0 - 20 mA**	
Time Ramp+ and Ramp-	0 - 7 s	

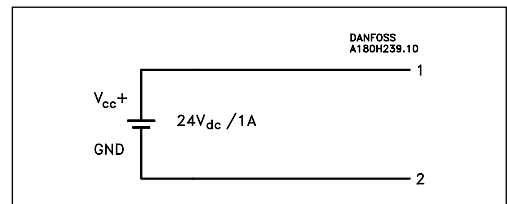
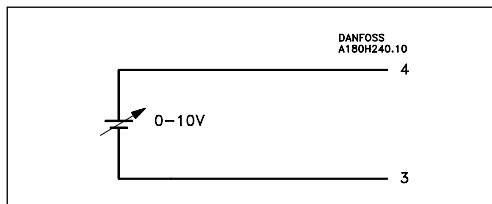
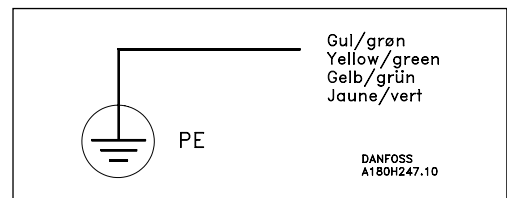
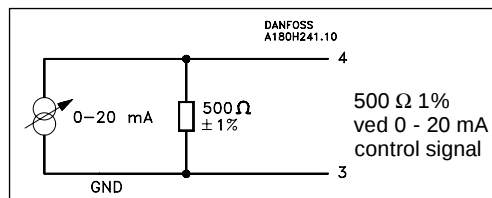
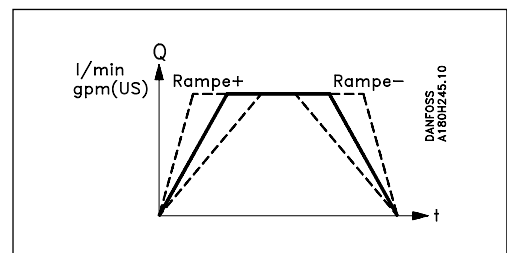
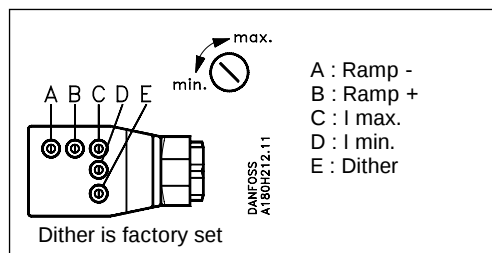
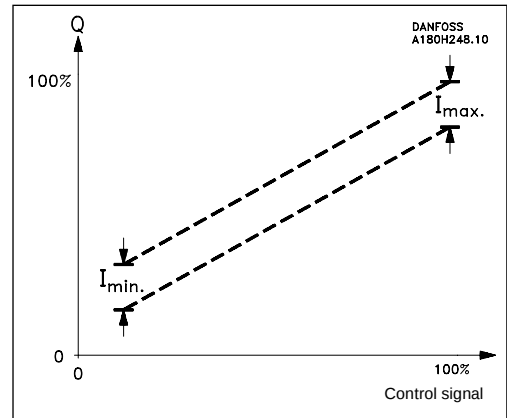
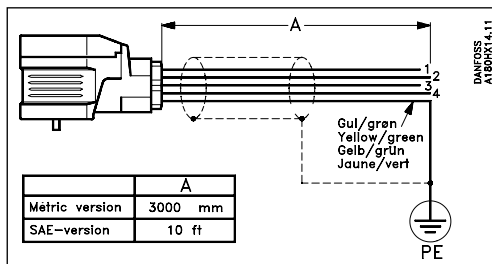
* Input impedance 110 k Ω

** A 500 Ω must be mounted between the wires 3 and 4.

Adjustment

Control options

The control signal can be either 0 - 10 V or 0 - 20 mA with the system configuration plug connection as shown below.



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