

RE 29 166/02.99

Replaces: 03.93

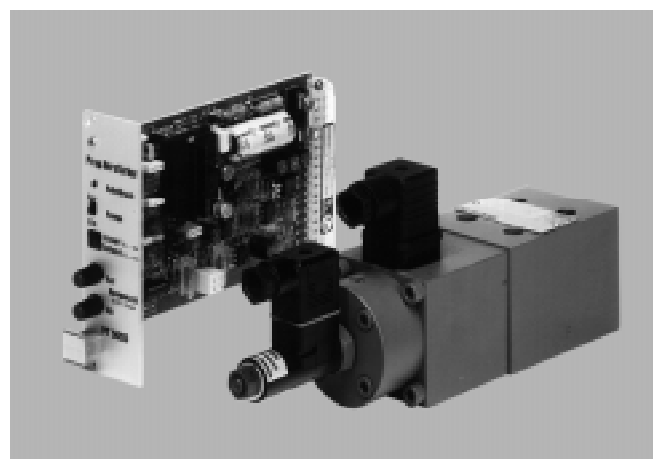
Proportional pressure relief valve Type DBETR

Nominal size 6

Series 1X

Maximum operating pressure 350 bar

Maximum flow 3 L/min



K 4248-14

Type DBETR-1X/...G24K4... with plug-in connector and associated control electronics (separate order)

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Features

- Valve for electrical remote control of pressure
- Direct operated proportional pressure relief valve, of poppet design
- Proportional solenoid actuation with inductive position transducer (pressure balanced)
- For subplate mounting:
 - Porting pattern to DIN 24 340, form A6,
 - Subplate to catalogue sheet RE 45 052 (separate order), see page 7
- Electrical closed loop position control of spring pre-tension, hence low hysteresis
- Good repeatability
- Valve and electronic control from one source
- Control electronics:
 - Analogue amplifier type VT 5003 in Eurocard format (separate order), see page 4
 - Digital amplifier VT-VRPD-1 in Eurocard format (separate order), see page 4
 - Analogue amplifier of modular design type VT 11025 (separate order), see page 4

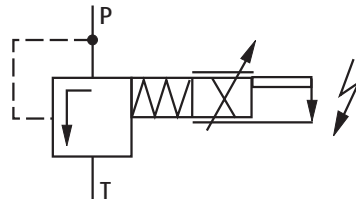
Ordering details

DBETR		1X	G24	K4	*
Series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	=	1X			Further details in clear text
Pressure stage: up to 30 bar	=	30			M = NBR seals, suitable for mineral oil (HL, HLP) to DIN 51 524
up to 80 bar	=	80			V = FKM seals
up to 180 bar	=	180			Electrical connections
up to 230 bar	=	230			K4 = With component plug to DIN 43 650-AM2 for proportional solenoid and GSA20 manufacturer Hirschmann for the position transducer
up to 315 bar	=	315			Without plug-in connector
up to 350 bar	=	350			Plug-in connector– separate order, see page 4
Control electronics supply voltage 24 V DC	=	G24			

Preferred types

Material no.	Type
00491698	DBETR-1X/180G24K4M
00370146	DBETR-1X/230G24K4M
00954438	DBETR-1X/30G24K4M
00485944	DBETR-1X/315G24K4M
00352424	DBETR-1X/350G24K4M
00334966	DBETR-1X/80G24K4M

Symbol



Function, section

Proportional pressure relief valve type DBETR is a remote control valve. In design terms it is a direct operated pressure relief valve of poppet design.

This valve regulates pressure in proportion to the electrical command value.

The valve consists basically of a housing (1), proportional solenoid (2) with inductive positional transducer (3), valve seat (4) and valve poppet (5).

Pressure is set by adjusting the command value potentiometer (0 to 9 V). Adjusting the command value causes tensioning of the compression spring (2) via the electronic controls and the proportional solenoid (6). Tensioning of the compression spring (6), i.e. the position of the spring plate (7), is determined by the inductive positional transducer (3). Any deviations from the command value are corrected by the closed loop positional control.

The use of this principle eliminates the effect of solenoid friction.

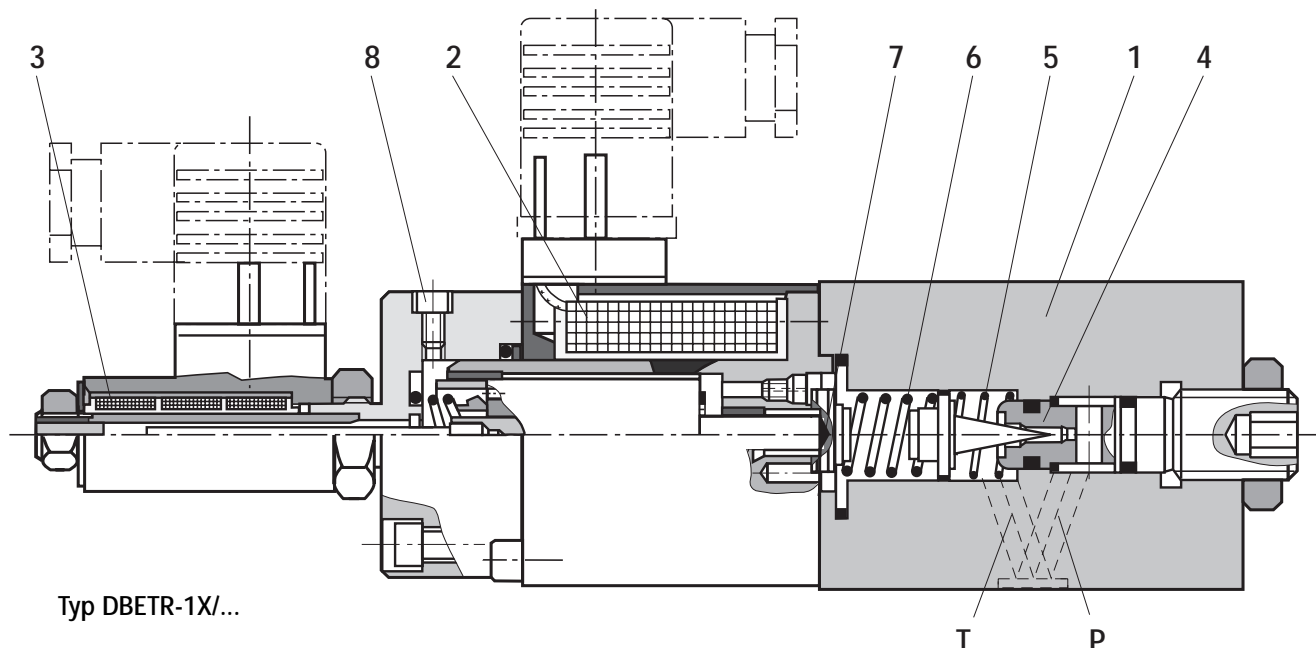
- Advantages:
- Low hysteresis
 - Good repeatability

If the command value is zero or in the event of a power failure to the proportional solenoid or cable breakage at the positional transducer the lowest possible setting pressure will be set.

Note!

To ensure optimum valve function bleeding must be carried out at the commissioning stage:

- Remove item 8,
- Pour pressure fluid into open screw hole at item 8,
- When no further bubbles appear screw in item 8.
- Emptying of the tank lines to be avoided. With the appropriate installation conditions, a back pressure valve is to be installed (back pressure approx. 2 bar).



Technical data (for applications outside these parameters, please consult us!)


General			
Installation			optional
Storage temperature range	°C		- 20 to + 80
Ambient temperature range	°C		- 20 to + 50
Weight	kg		4.0
Hydraulic (measured at $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ °C}$)			
Operating pressure	Port P	bar	up to 350
	Port T, with pressure control	bar	up to 2
	Without pressure control, T blocked	bar	up to 100
Max. settable pressure	Pressure stage 30	bar	30
	Pressure stage 80	bar	80
	Pressure stage 180	bar	180
	Pressure stage 230	bar	230
	Pressure stage 315	bar	315
	Pressure stage 350	bar	350
Min. settable pressure			(see $p_{\min} - q_v$ characteristic curves on pages 5 and 6)
Max. flow	Pressure stage 30	L/min	3
	Pressure stage 80	L/min	3
	Pressure stage 180	L/min	3
	Pressure stage 230	L/min	3
	Pressure stage 315	L/min	2
	Pressure stage 350	L/min	2
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524 other pressure fluids on request!
Pressure fluid temperature range	°C		- 20 to + 80
Viscosity range	mm^2/s		15 to 380
Degree of contamination			Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 Klasse 9 Filter with a minimum retention rate of $\beta_x \geq 75$ is recommended $x = 10$
Hysteresis	%		< 1 of max. settable pressure
Repeatability	%		< 0.5 of max. settable pressure
Linearity	%		< 1.5 of max. settable pressure
Typical variation	%		± 3 of max. settable pressure
Stepped response $T_u + T_g$ (0 to 100 %), installation dependent			$p_{\min} - p_{\max}$
	Pressure stage 30, 80, 180	ms	100
	Pressure stage 230, 315, 350	ms	150
			$p_{\max} - p_{\min}$
			50
			100
Electrical (solenoid)			
Supply voltage			24 V DC
Max. power consumption	VA		50
Coil resistance	Cold value at 20 °C	Ω	10
	Max. warm value	Ω	13.9
Duty	%		100
Electrical connections			with component plug to DIN 43 650-AM2
			plug-in connector to DIN 43 650-AF2/Pg11 ¹⁾
Protection to DIN 40 050			IP 65
Electrical (inductive position transducer)			
Coil resistance also see page 4)	Total resistance of the coils at 20 °C		1 and 2
		Ω	31.5
			2 and $\frac{1}{2}$
			45.5
			$\frac{1}{2}$ and 1
			31.5
Electrical connections			with component plug GSA manufacturer Hirschmann
			plug-in connector GM209N (Pg9) manufacturer Hirschmann ¹⁾
Inductivity	mH		6 to 8
Oscillator frequency	kHz		2.5
Protection to DIN 40 050			IP 65

¹⁾ separate order, see page 4

Technical data (for applications outside these parameters, please consult us!)

Control electronics (separate order)

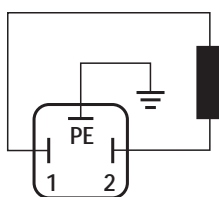
Amplifier in Eurocard format	analogue	Type VT 5003 to catalogue sheet RE 29 945
	digital	Type VT-VRPD-1 to catalogue sheet RE 30 125
Amplifier of modular design		Type VT 11025 to catalogue sheet RE 29 751

 **Note:** For details regarding the **environmental simulation test** covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29 166-U (declaration regarding environmental compatibility).

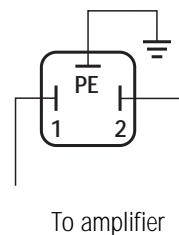
Electrical connections

Proportional solenoid

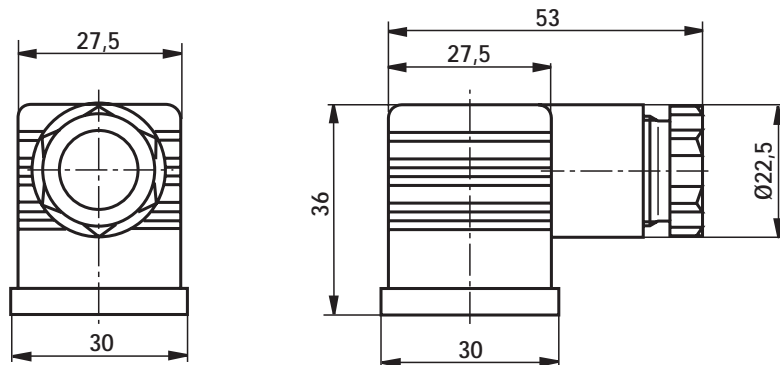
Connections at component plug



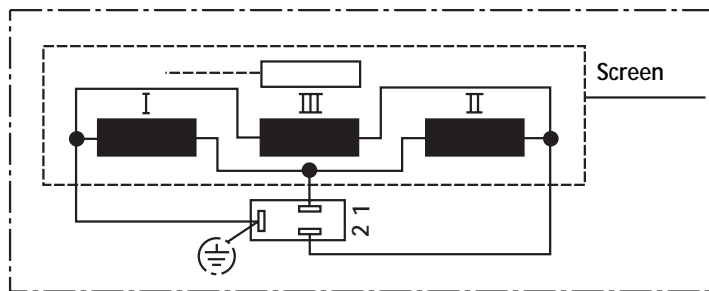
Connections at plug-in connector



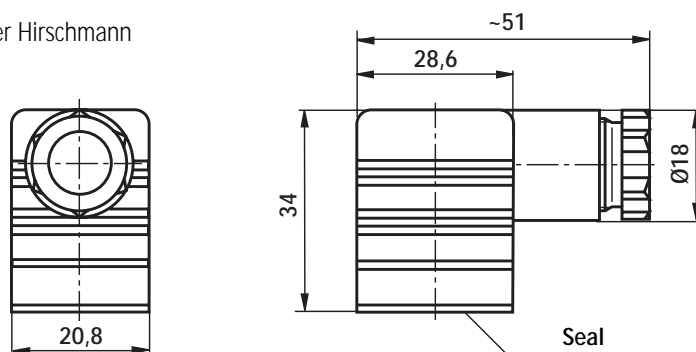
Plug-in connector to DIN 43 650-AF2/Pg11
 Separate order under material no. **00074684**
 (plastic version)



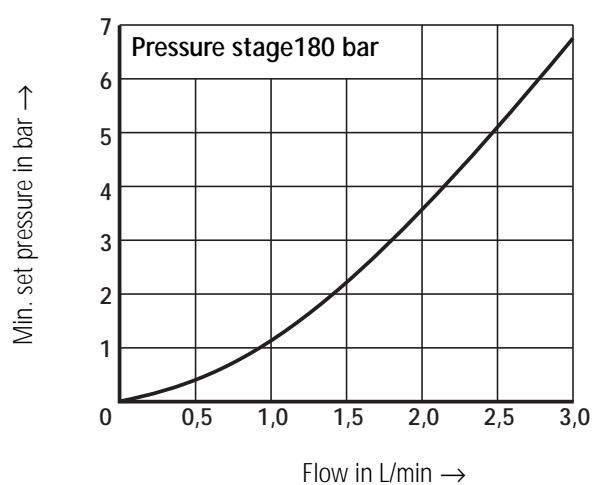
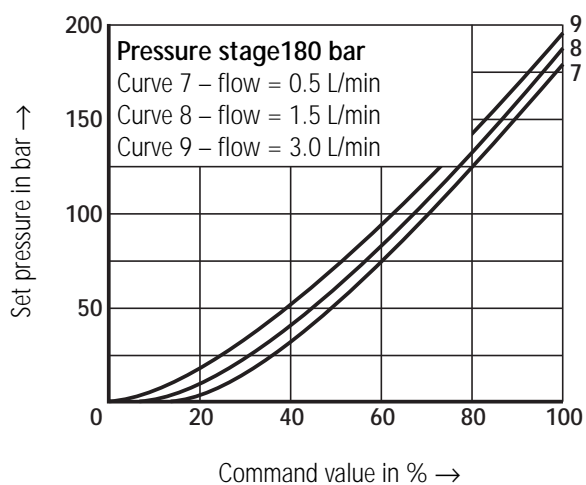
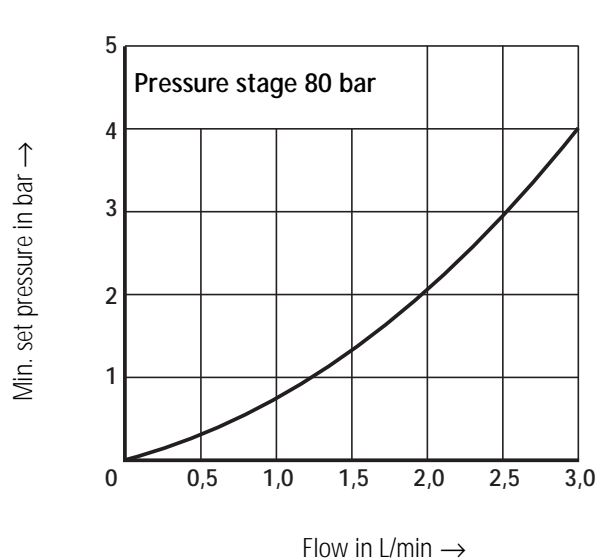
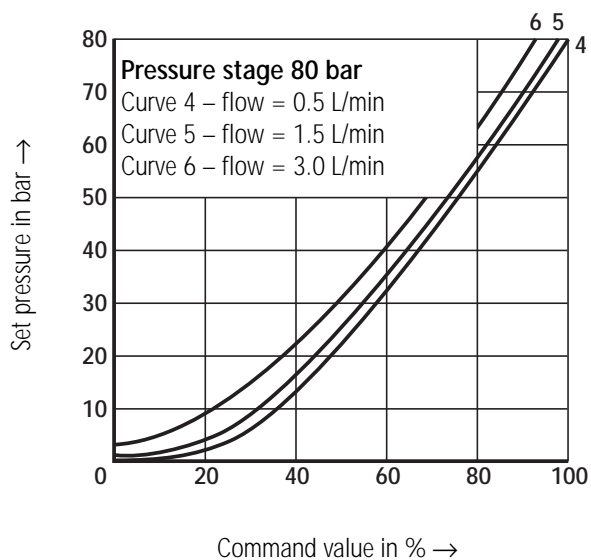
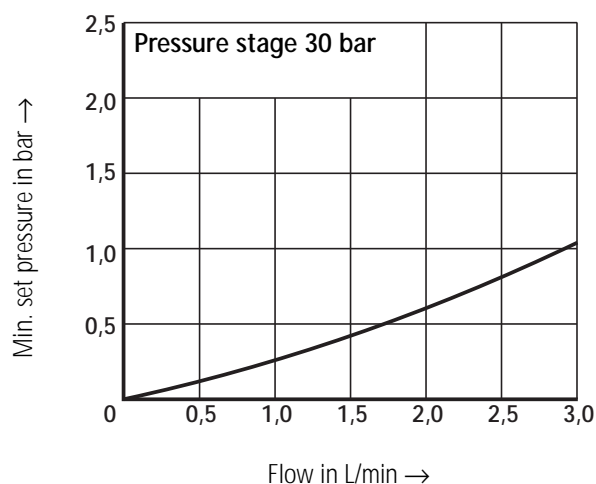
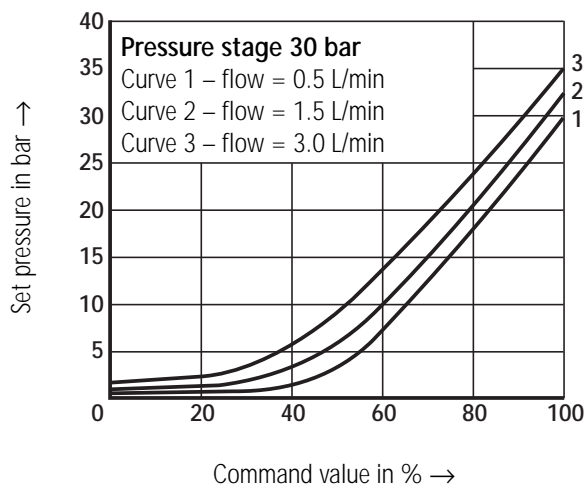
Inductive position transducer



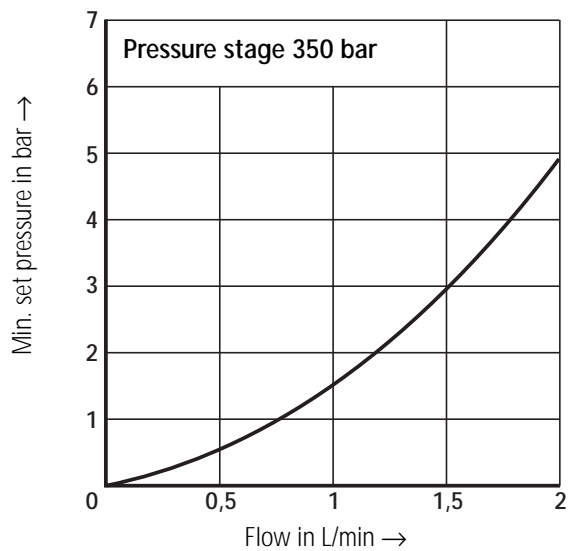
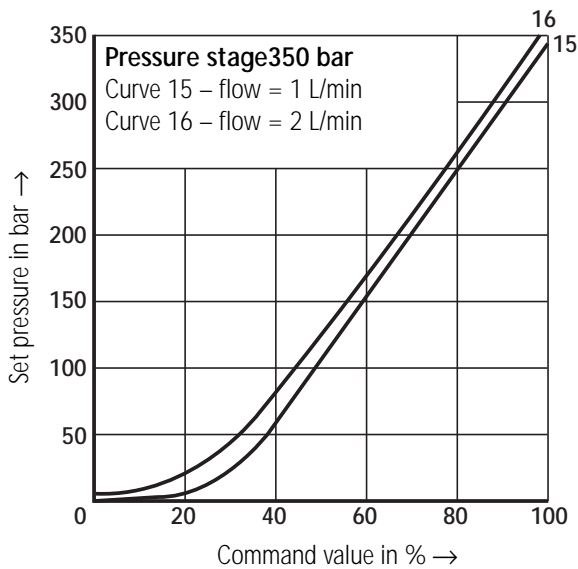
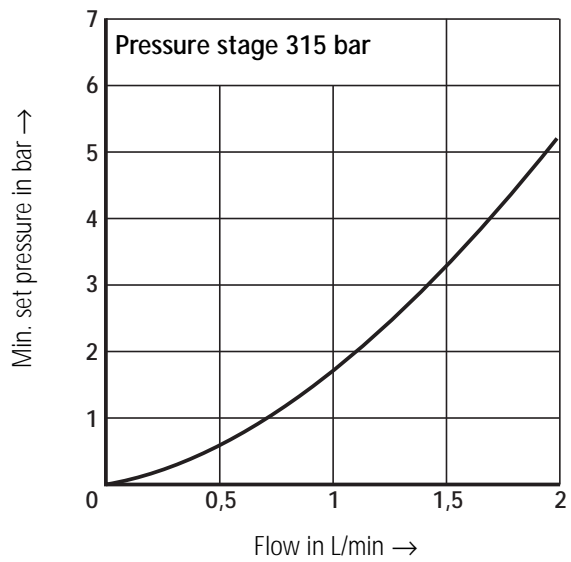
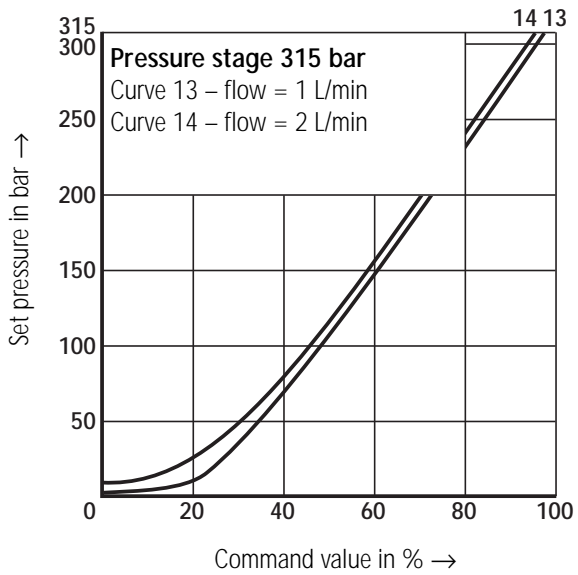
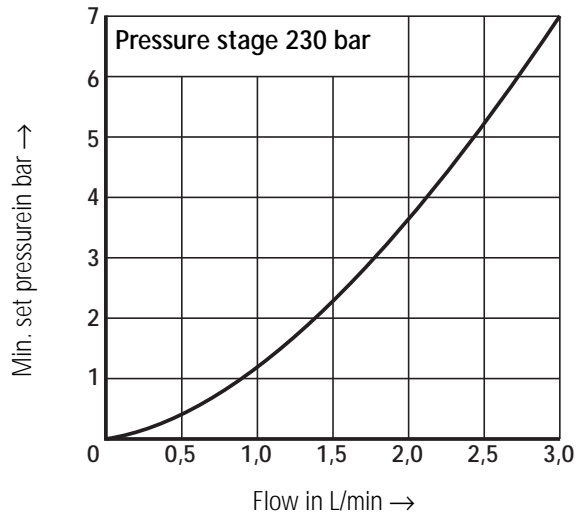
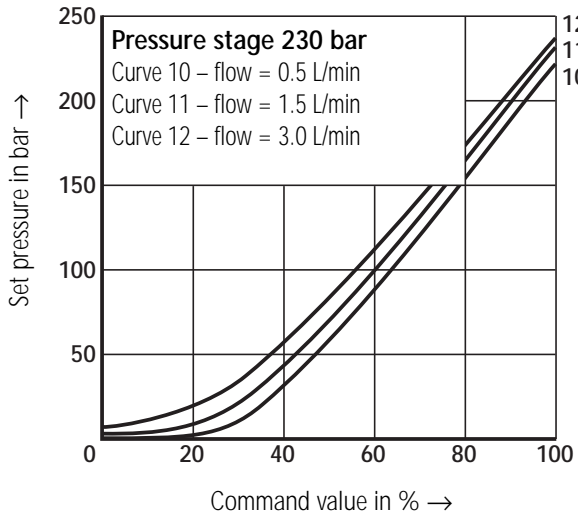
Plug-in connector GM209N (Pg9) manufacturer Hirschmann
 Separate order under material no. **00013674**
 (plastic version)



Characteristic curves (measured at $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$ and without back pressure at port T

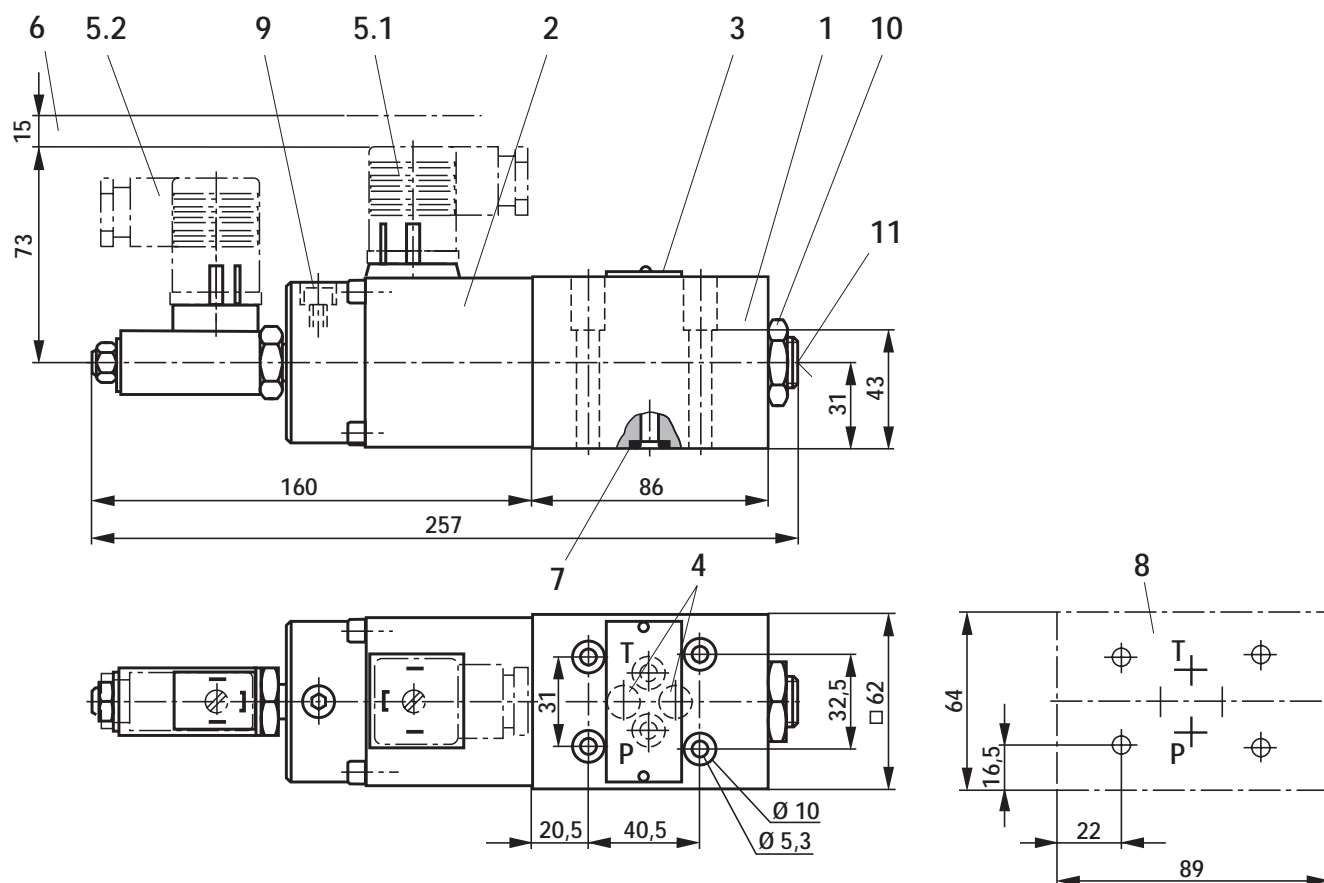


Characteristic curves (measured at $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$ and without back pressure at port T)



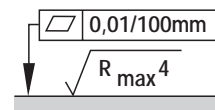
Unit dimensions

(Dimensions in mm)



- 1 Valve housing
- 2 Proportional solenoid with inductive position transducer
- 3 Name plate
- 4 Blind hole
- 5.1 Plug-in connector to DIN 43 650-AF2/Pg11, separate order, see page 4
- 5.2 Plug-in connector to GM209 (Pg9) manufacturer Hirschmann; separate order, see page 4
- 6 Space required to remove the plug-in connector
- 7 O-ring 9.25 x 1.78 (P, T and blind hole)
- 8 Machined valve mounting surface, location of the ports
- 9 Bleed screw
- 10 Lock nut A/F 27
- 11 Internal hexagon A/F 8

Required surface finish of mating piece



Subplates to catalogue sheet RE 45 052 and valve fixing screws must be ordered separately.

Subplates: G 341/01 (G 1/4)
G 342/01 (G 3/8)

Valve fixing screws:
4 off M5 x 50 DIN 912-10.9; $M_A = 8.9 \text{ Nm}$

Notes

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