

**RE 29 164/01.03**

Replaces: 01.99

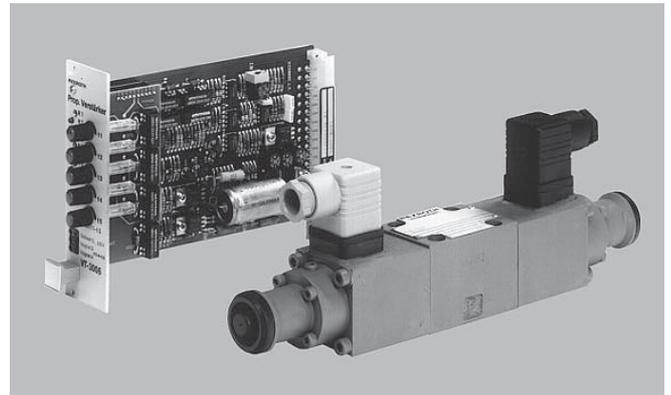
**Proportional pressure relief valve  
Type DBEP**

Nominal size 6

Series 1X

Maximum operating pressure 100 bar

Maximum flow 8 L/min



Type DBEP 6 C06-1X/..AG24K4.. with plug-in connectors and associated control electronics (separate order)

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**Features**

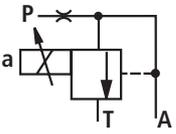
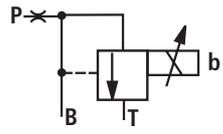
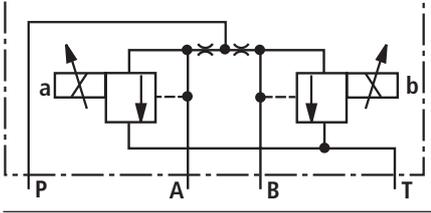
- Valve for limiting the system pressure
- Operated via proportional solenoids
- For subplate mounting:
  - Porting pattern to DIN 24 340 Form A 6
  - Subplates to catalogue sheet RE 45 052
  - Separate order, see page 6
- Valve and control electronics from one supplier
- Control electronics
  - Analogue amplifier type VT-VSPA1-1 in Eurocard format (1 solenoid)
    - VT 2000 (1 solenoid);
    - VT 3000 (1 ramp);
    - VT 3006 (5 ramps)
    - Separate order, see page 4
  - Digital amplifier VT-VSPD1-1 in Eurocard format
    - separate order, see page 4
- Optional special protection



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## Ordering details

<b>DBEP</b>	<b>6</b>	<b>06 - 1X /</b>	<b>A</b>	<b>G24</b>		<b>K4</b>	<b>*</b>	
Nominal size 6	= 6							Further details in clear text
<b>Symbols</b>								<b>M =</b> NBR seals suitable for mineral oil (HL, HLP to DIN 51 524)
Version "A"	= A							<b>V =</b> FKM seals suitable for phosphate ester
								<b>Electrical connections</b>
Version "B"	= B							<b>K4 =</b> Without plug-in connector, with component plug to DIN EN 175 301-803. Plug-in connector – separate order, see page 5
								<b>No code =</b> Without special protection
Version "C"	= C							<b>J =</b> Sea water resistant
								<b>Special protection version on request!</b>
Orifice in port A and/or port B Orifice dia. 1.0 mm (other orifice dia. on request)	= 06							<b>No code =</b> Without hand override
Series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	= 1X							<b>N = 1)</b> With hand override
								<b>Control electronics supply voltage</b>
								<b>G24 =</b> 24 V DC
								<b>25 =</b> Pressure stage 25 bar
								<b>45 =</b> Pressure stage 45 bar

### 1) ⚠ Attention!

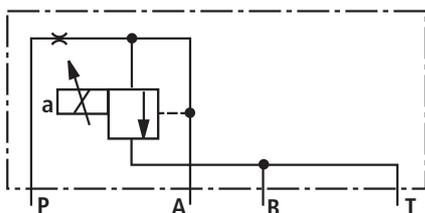
The operation or accidental activation of the hand override can lead to uncontrolled machine movements.

## Preferred types

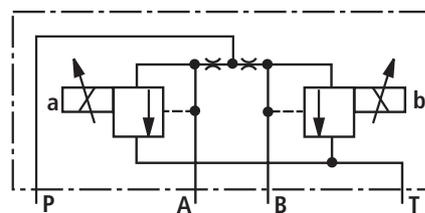
Material No.	Type
R900955079	DBEP 6 A06-1X/45AG24K4M
R900955080	DBEP 6 B06-1X/45AG24K4M
R900955082	DBEP 6 C06-1X/45AG24K4M

## Symbols (detailed)

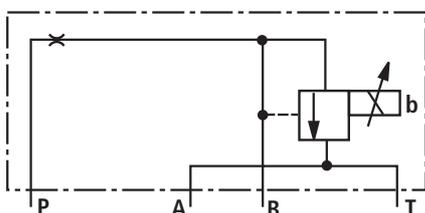
Type DBEP 6 A06-1X/..AG24K4..



Type DBEP 6 C06-1X/..AG24K4..



Type DBEP 6 B06-1X/..AG24K4..



## Function, section

Proportional pressure relief valves of type DBEP are directly operated by means of proportional solenoids. They are used for converting electrical input signals into a proportional pressure output signal. These valves are used for limiting the pressure in a system.

The proportional solenoids are controllable wet pin DC solenoids. They convert electrical currents proportionally into a mechanical force. An increase in the current results in a corresponding increase in the solenoid force. The set solenoid force remains constant over the entire control stroke.

Proportional pressure relief valves basically comprises on one (versions "A", "B") or two (version "C") proportional solenoids (1, 2), housing (3), spool (4) and one (versions "A", "B") or two (version "C") valve poppets (5, 6).

The force of the proportional solenoid(s) (1 or 2) acts on the valve poppet (5). The pressure building up in port A acts on the valve poppet (5) via the radial drilling in the spool (4). The resulting pressure force acts in opposition to the solenoid force.

If the pressure force is larger than the solenoid force, then the valve poppet (5) is pushed to the left. Hence the connection from port A to T is opened. Pilot oil is allowed to flow until both forces, pressure force and solenoid force are again balanced.

The relief pressure may be steplessly adjusted via the proportional solenoid (1).

In the rest position, i.e. proportional solenoid de-energised, ports A or B and P are open to T, i.e. the oil can flow to tank without restriction.

The orifices (7) in spool (4) limit the flow from P to A or B.

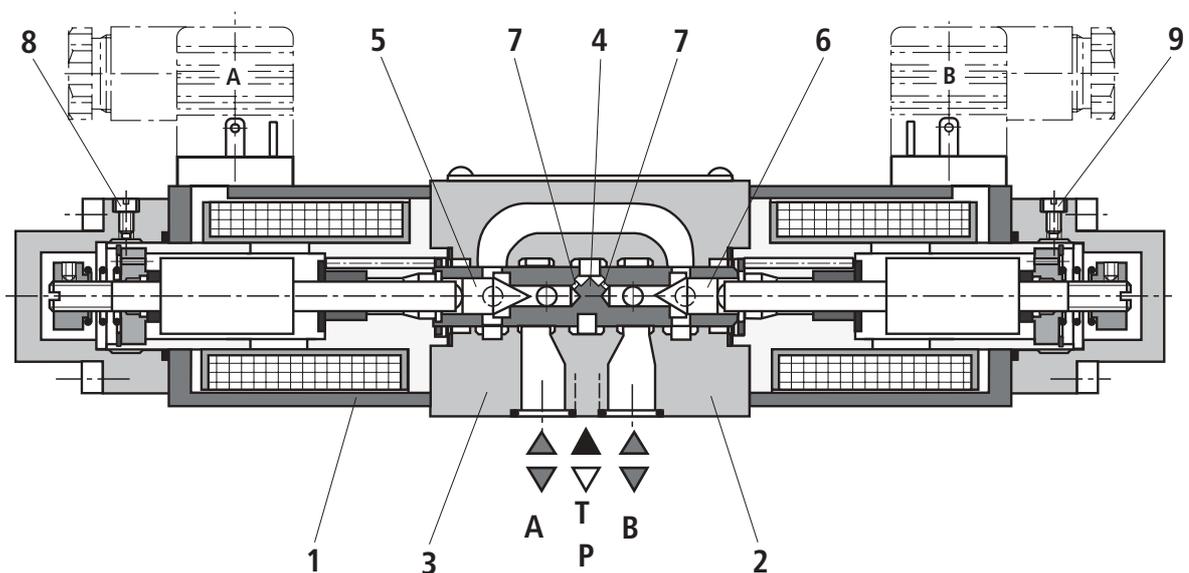
### ⚠ Attention!

**In order to optimise the function of the valve, they must be bled during commissioning:**

- Remove items 8 and 9,
- Fill hydraulic fluid into the open drillings of items 8 and 9,
- Refit items 8 and 9 when air bubbles no longer appear.

Draining of the tank lines must be avoided.

With appropriate installation conditions, a back pressure valve is to be installed (back pressure 2 bar).



Type DBEP 6 C06-1X/...AG24K4

## 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 +70
Weight	Version "C"	kg	2.6
	Versions "A" and "B"	kg	1.6

### Hydraulic

Operating pressure	Port P	bar	50 to 100
	Ports A, B	bar	0 to 50
	Port T	bar	30
Max. flow ( $\Delta p = 50$ bar) (with orifice "06")	Version "C"	L/min	8
	Versions "A" and "B"	L/min	4
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524; Phosphate ester (HFD-R)
Pressure fluid temperature range	°C		-20 to +80
Viscosity range	mm <sup>2</sup> /s		2.8 to 380
Cleanliness class to ISO code			Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (c) class 20/18/15 <sup>1)</sup>
Hysteresis	%		≤ 3
Repeatability	%		≤ 1
Response sensitivity	%		≤ 1
Reversal error	%		≤ 1

### Electrical

Supply voltage			24 V DC
Nominal current per solenoid	mA		700
Coil resistance	Cold value at 20° C	Ω	19.5
	Max. warm value	Ω	28.8
Coil temperature	°C		Up to 150
Duty	%		100
Electrical connections			With component plug to DIN EN 175 301-803
			Plug-in connector to DIN EN 175 301-803 <sup>2)</sup>
Valve protection to DIN 40 050			IP 65 with mounted and fixed plug-in connector

### Control electronics

• Amplifier in Eurocard format (separate Bestellung)	Analogue	VT-VSPA1-1 to catalogue sheet RE 30 11	} Only for versions A or B
	Analogue	VT 2000 to catalogue sheet RE 29 904	
	With 1 ramp time	Analogue	VT 3000 to catalogue sheet RE 29 935
	With 5 ramp times	Analogue	VT 3006 to catalogue sheet RE 29 926
		digital	VT-VSPD-1 to catalogue sheet RE 30 123

<sup>1)</sup> The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

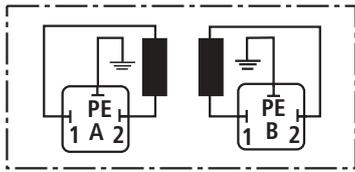
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

<sup>2)</sup> Separate order, see page 5

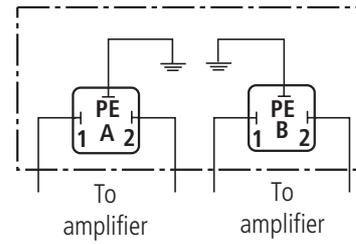
 **Note:** For details regarding the **environmental simulation test** covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29 164-U (declaration regarding environmental compatibility).

## Electrical connections, plug-in connector

Coil connections

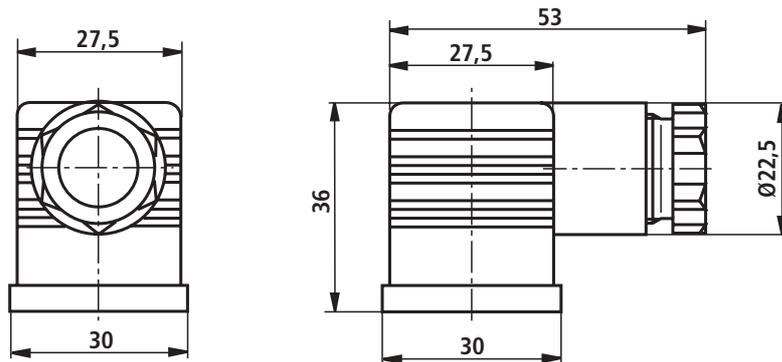


Connections at plug-in connector

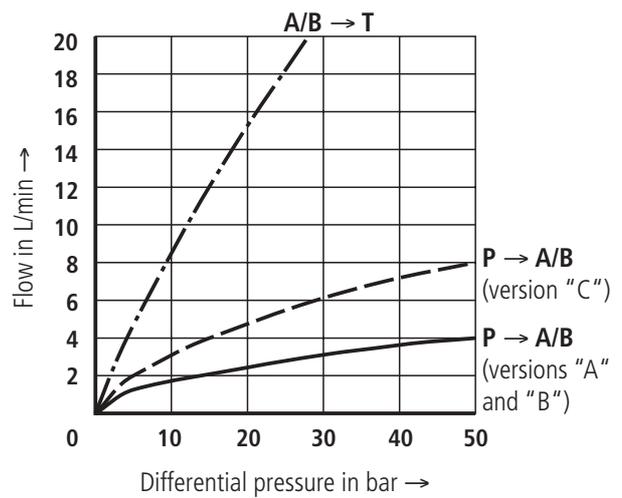
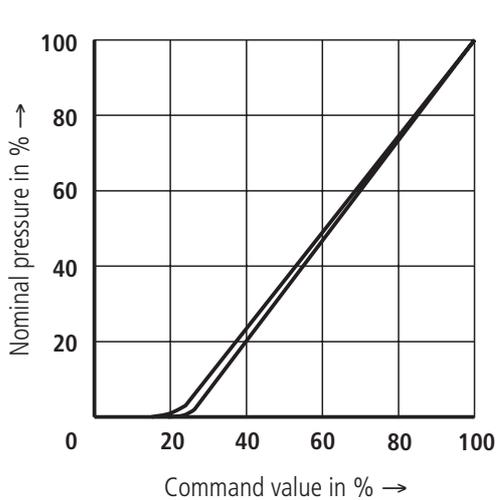


Plug-in connector to DIN EN 175 301-803

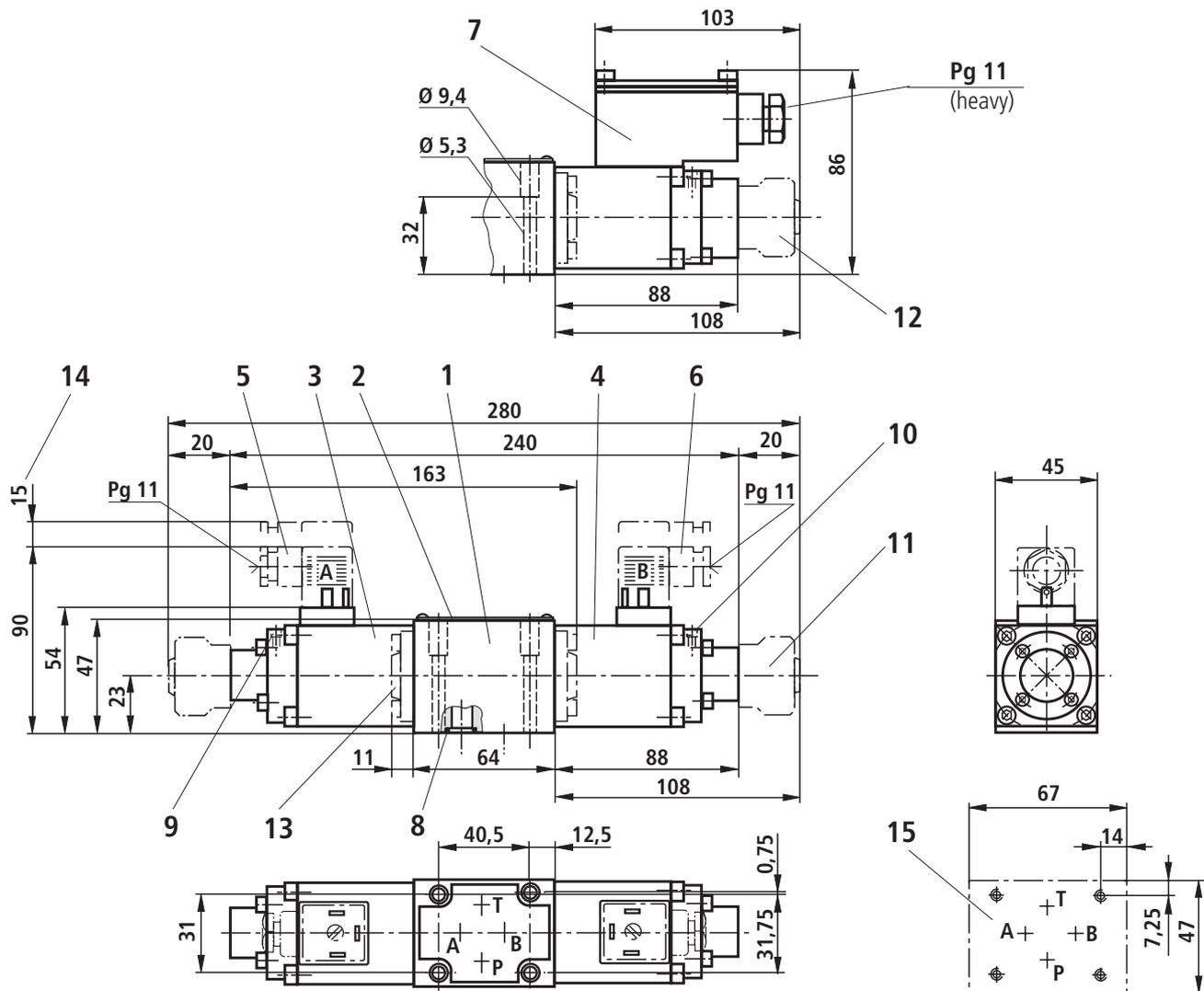
Separate order under Material No. **R900074684**



**Characteristic curves** (measured with HLP 46;  $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$  and  $p = 100\text{ bar}$ )



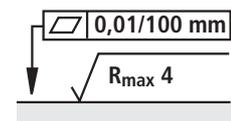
## Unit dimensions (dimensions in mm)



- |   |   |
|---|---|
| <p>1 Valve housing</p> <p>2 Name plate</p> <p>3 Proportional solenoid "a"</p> <p>4 Proportional solenoid "b"</p> <p>5 Plug-in connector "A", colour grey</p> <p>6 Plug-in connector "B", colour black</p> <p>7 Plug-in connector "B", sea water resistant version</p> <p>8 Identical seal rings for ports A, B, P and T</p> <p>9 Bleed screw, solenoid "a"</p> <p>10 Bled screw, solenoid "b"</p> <p>11 Hand override "N" <sup>1)</sup></p> | <p>12 Hand override "N" <sup>1)</sup>, for sea water resistant version</p> <p>13 Cover for valves with 1 solenoid (versions "A" or "B")</p> <p>14 Space required to remove the plug-in connector</p> <p>15 Machined valve mounting surface, position of connections</p> |
|---|---|

**1) Attention!**

The operation or accidental activation of the hand override can result in uncontrolled machine movements.



Required surface finish of the 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)
- G 502/01 (G1/2)

**Valve fixing screws:**

- M 5 x 40 DIN 912-10.9
- $M_A = 8.9 \text{ Nm}$

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