RE 29 164/01.03

Replaces: 01.99

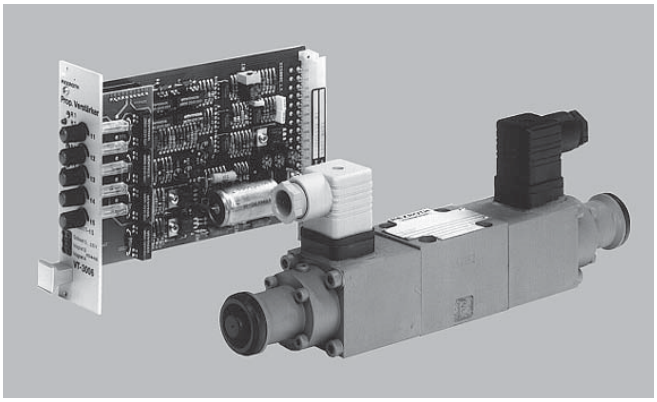
Proportional pressure relief valve Type DBEP

Nominal size 6

Series 1X

Maximum operating pressure 100 bar

Maximum flow 8 L/min



K4239-12

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

Overview of contents

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

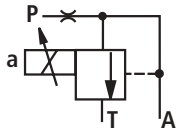
Ordering details

DBEP	6		06	–	1X	/		A	G24			K4		*

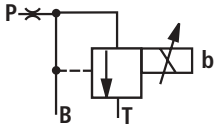
Nominal size 6 = **6**

Symbols

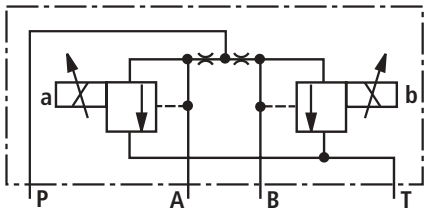
Version "A" = **A**



Version "B" = **B**



Version "C" = **C**



Orifice in port A and/or port B
Orifice dia. 1.0 mm = **06**
(other orifice dia. on request)

Series 10 to 19 = **1X**
(10 to 19: unchanged installation and connection dimensions)

Further details in clear text

M = NBR seals suitable for mineral oil (HL, HLP to DIN 51 524)

V = FKM seals suitable for phosphate ester

Electrical connections

K4 = **Without** plug-in connector, with component plug to DIN EN 175 301-803
Plug-in connector – separate order, see page 5

No code = Without special protection

J = Sea water resistant

Special protection version on request!

No code = Without hand override

N = [1] With hand override

Control electronics supply voltage

G24 = 24 V DC

25 = Pressure stage 25 bar

45 = Pressure stage 45 bar

[1] ⚠ **Attention!**

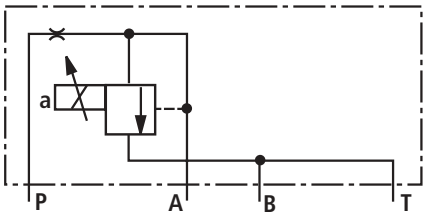
The operation or accidental activation of the hand override can lead to uncontrolled machine movements.

Preferred types

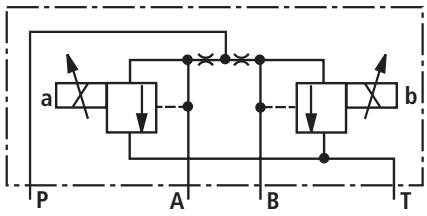
Material No.	Type
R900955079	DBEP 6 A06-1X/45AG24K4M
R900955080	DBEP 6 B06-1X/45AG24K4M
R900955082	DBEP 6 C06-1X/45AG24K4M

Symbols (detailed)

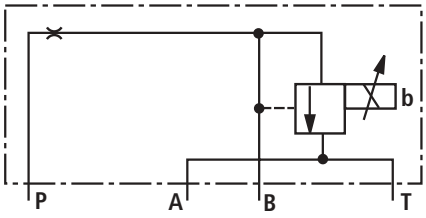
Type DBEP 6 A06-1X/..AG24K4..



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.

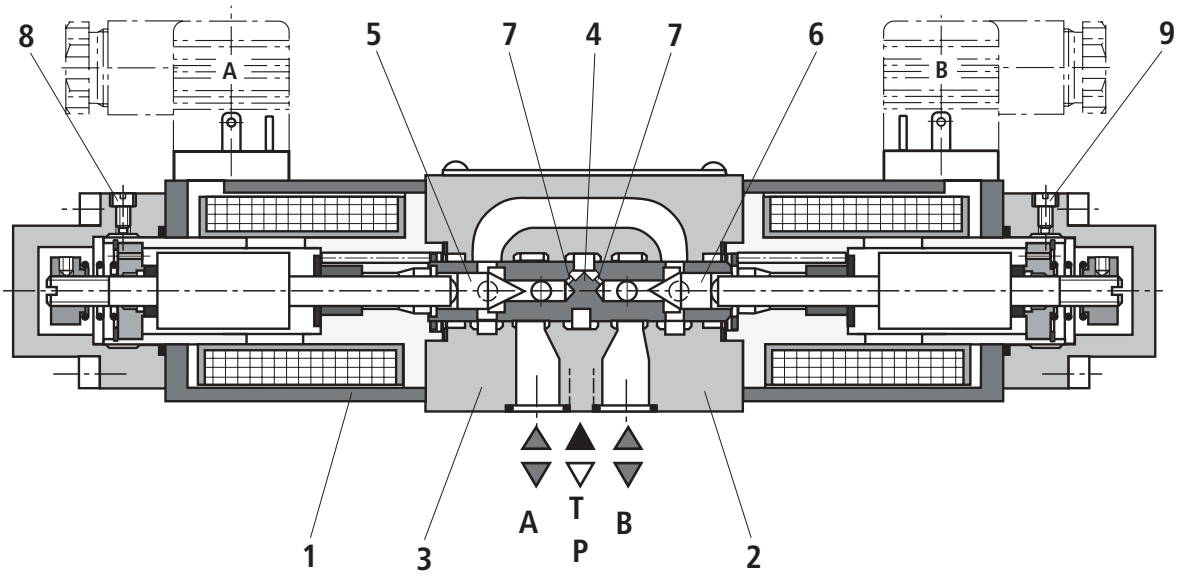
The orifices (7) in spool (4) limit the flow from P to A or B.

⚠ 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 (Δp = 50 bar)	Version "C"	L/min	8
(with orifice "06")	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^2/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 [1]
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 [2]
Valve protection to DIN 40 050				IP 65 with mounted and fixed plug-in connector
Control electronics				
• Amplifier in Eurocard format		Analogue	VT-VSPA1-1 to catalogue sheet RE 30 11[	Only for versions
(separate Bestellung)		Analogue	VT 2000 to catalogue sheet RE 29 904	A or B
	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	

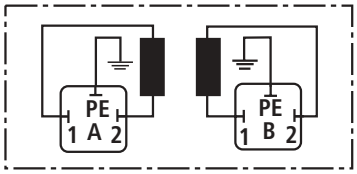
[1] The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

[2] Separate order, see page 5

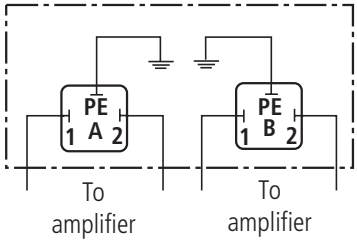
Note: For details regarding the **environmental simulation test** covering EMC (electro-magnetic compatibility), climate and mechanical loading see RE 29 164-U (declaration regarding environmental compatibility).

Electrical connections, plug-in connector

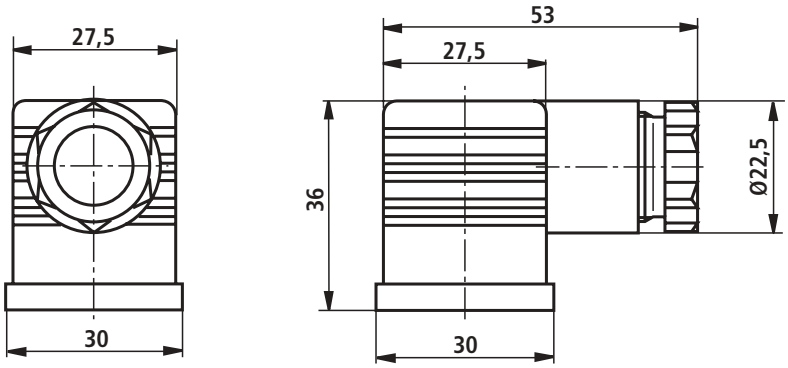
Coil connections



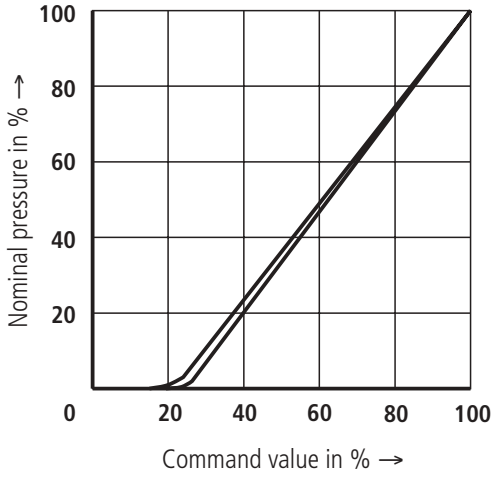
Connections at plug-in connector

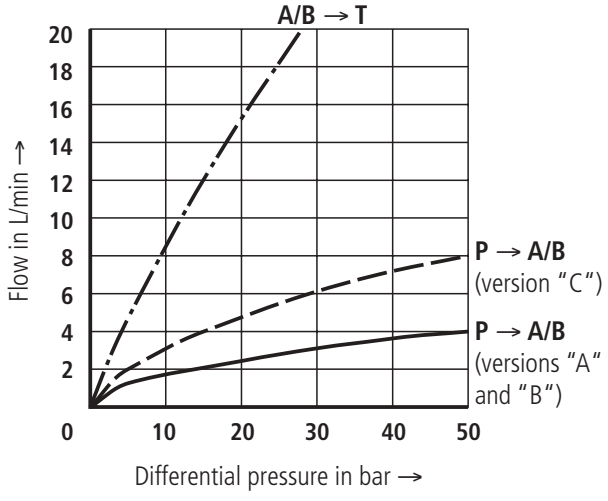


Plug-in connector to DIN EN 175 301-803
Separate order under Material No. **R900074684**

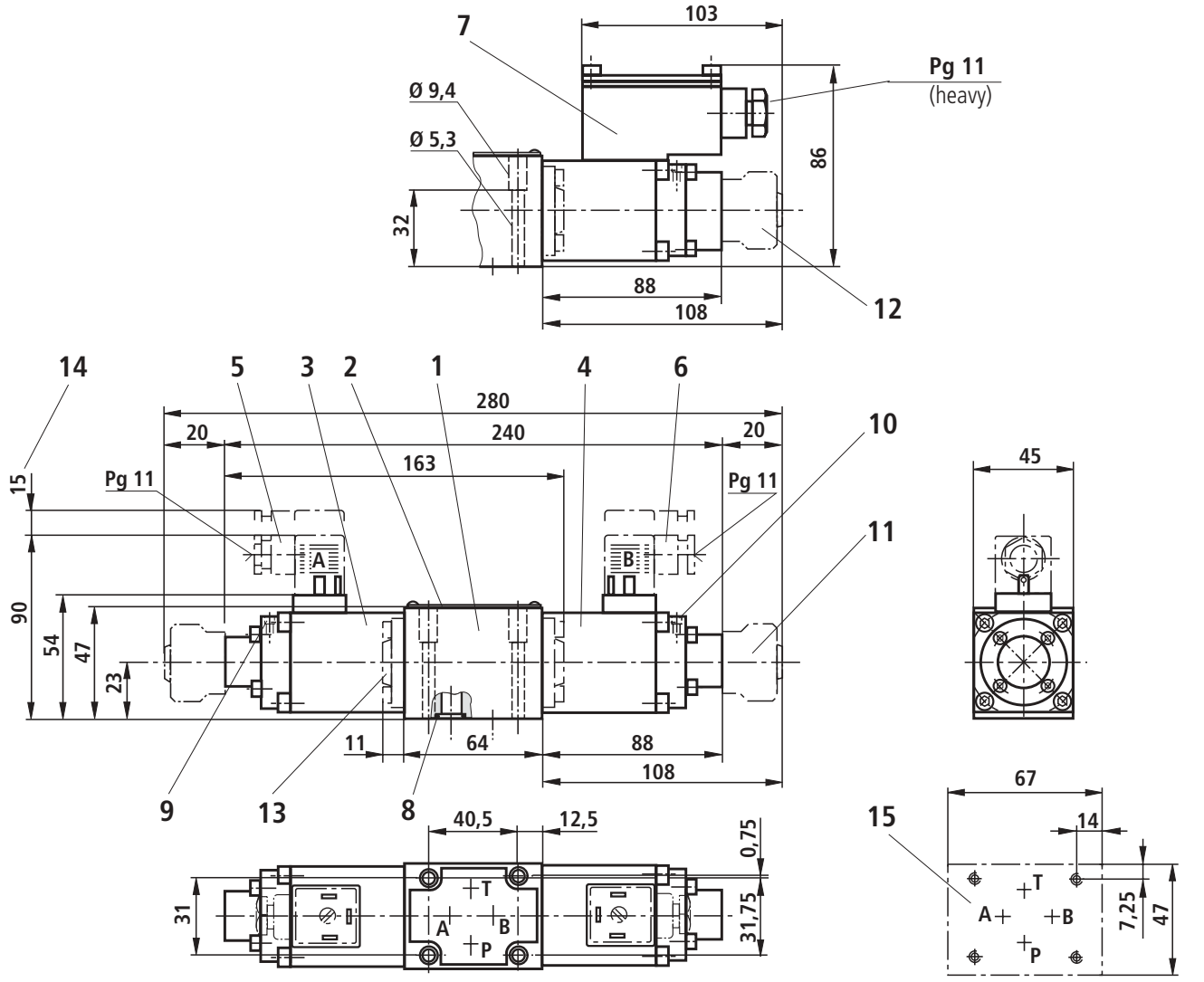


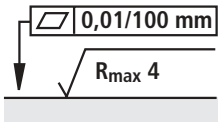
Characteristic curves (measured with HLP 46; ϑ_{oil} = 40 °C ± 5 °C and p = 100 bar)





Unit dimensions (dimensions in mm)





Required surface finish of the mating piece

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

[1)] ⚠ **Attention!**

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

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 Nm

Bosch Rexroth AG
Industrial Hydraulics
D-97813 Lohr am Main
Zum Eisengießer 1 • D-97816 Lohr am Main
Telefon 0 93 52 / 18-0
Telefax 0 93 52 / 18-23 58 • Telex 6 89 418-0
eMail documentation@boschrexroth.de
Internet www.boschrexroth.de

Bosch Rexroth Limited
Cromwell Road, St Neots,
Cambs, PE19 2ES
Tel: 0 14 80/22 32 56
Fax: 0 14 80/21 90 52
E-mail: info@boschrexroth.co.uk