

Pressure relief valve, direct operated, with DC motor actuation

Type DBGT

RE 29143

Edition: 2014-02



- ▶ Size 6
- ▶ Component series 2X
- ▶ Maximum operating pressure: 700 bar
- ▶ Maximum flow: 12 l/min

Features

- ▶ Operation via DC motor with speed reduction transmission
- ▶ For subplate mounting:
Porting pattern according to ISO 6264 with M6 tapped holes
- ▶ With actual value potentiometer
- ▶ Self-locking in the event of power failure
- ▶ Direct operated valve for system pressure limitation
- ▶ For high pressure applications with a system pressure of up to 700 bar
 - Suitable as pilot control valve for LCT / LFT high pressure logic valves

Contents

Features	1
Ordering code, symbol	2
Function, section	3
Technical data	4, 5
Electrical connection	5, 6
Characteristic curves	6
Dimensions, accessories	7

Ordering code

01	02	03	04	05	06	07
DBGT	-	2X	/	700	V	P2 *

01	Pressure relief valve, direct operated with DC motor actuation	DBGT
02	Component series 20 to 29 (20 to 29: Unchanged installation and connection dimensions)	2X

Pressure rating

03	Set pressure up to 700 bar	700
----	----------------------------	------------

Pilot oil flow

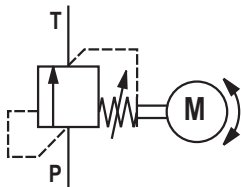
04	Pilot oil return, internal	no code
	Pilot oil return, external	Y

Seal material

05	FKM seals	V
06	Actual value potentiometer	P2
07	Further details in the plain text	

Symbol

Type DBGT-2X/...



Function, section

General information

Proportional pressure relief valves type DBGT can be controlled remotely and serve for variable setting and limitation of system pressures up to 700 bar.

The system pressure is set by means of a DC motor with self-locking speed reduction transmission. This way, the set pressure is maintained in the event of a voltage failure. Pressure relief valves of this series include a main valve (1) and electric motor (2) with transmission (3) as pressure adjustment element.

Functional description

The system pressure is set by means of a DC motor (2) with speed reduction transmission (3). The output shaft of the speed reduction transmission turns the cam (4) that adjusts the preload of the spring (6) via the spring plate (5) to cause a pressure change.

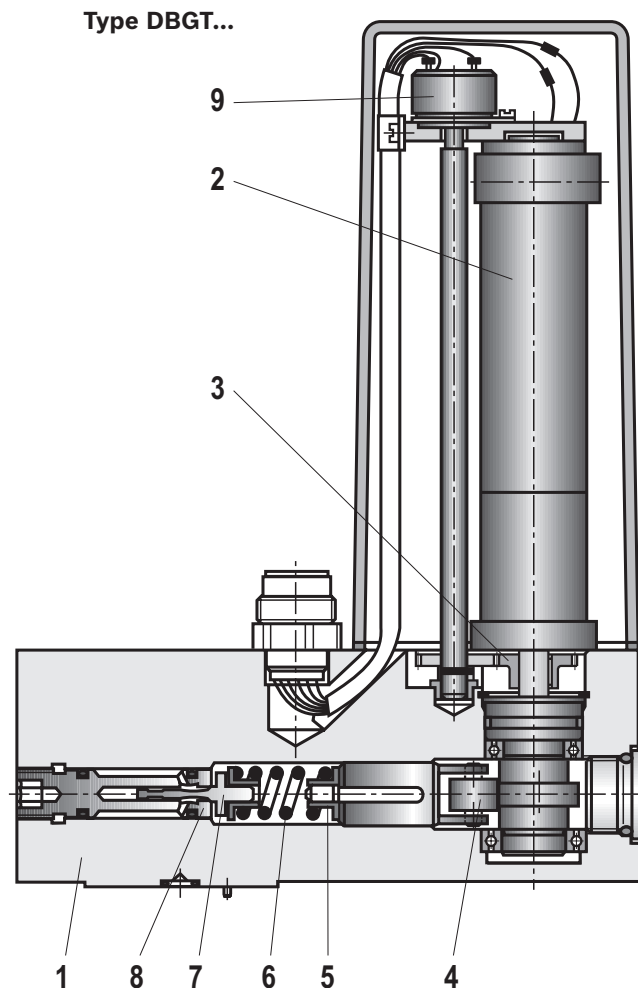
The pressure applied to channel P acts on the valve poppet (7).

If the hydraulic force on the valve poppet exceeds the spring force, the valve regulates the set pressure by lifting the valve poppet from the valve seat (8) to enable the flow of hydraulic fluid from connection P to T.

The cam position (4) and the spring preload are reported back by the actual value potentiometer (9).

The integrated amplifier type VT-VRM1-1 enables program control.

If the power supply is interrupted (cable break, fuse defect, short circuit, etc.), the pressure set at the valve remains unchanged.



Technical data

(For applications outside these parameters, please consult us!)

general	
Size	6
Weight	kg 7.2
Installation position	Any
Ambient temperature range	°C -20 to +50

hydraulic (measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)	
Maximum operating pressure	- Port P bar 700
	- Port T bar 10
Maximum set pressure	bar 700
Minimum set pressure	bar q_{Vnom} - conditional (see characteristic curves page 6)
Maximum admissible flow	l/min 12
Hydraulic fluid	See table below
Hydraulic fluid temperature range	°C -20 to +70
Viscosity range	mm ² /s 2.8 to 380
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20/18/15 ¹⁾
Hysteresis	% < 6 % of the maximum set pressure
Repetition accuracy	mm ² /s < 1 % of the maximum set pressure ²⁾

1) The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

For the selection of the filters see www.boschrexroth.com/filter.

2) Determined at Q = 3 l/min and a command value of 50 %

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils and related hydrocarbons	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable - insoluble in water	HEES	FKM	VDMA 24568
Flame-resistant - water-free	HFDU	FKM	ISO 12922
	HFC	NBR	ISO 12922

**Important information on hydraulic fluids!**

- ▶ For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

- ▶ **Flame-resistant – containing water:** The maximum pressure differential per control edge is 210 bar. Otherwise, there is increased cavitation erosion. Life cycle as compared to HLP 30 to 100 %. Fluid temperature maximum 60 °C.
- ▶ **Bio-degradable:** When using bio-degradable hydraulic fluids that are also zinc-solvent, zinc may accumulate in the fluid (700 mg zinc per pole tube).

Technical data

(For applications outside these parameters, please consult us!)

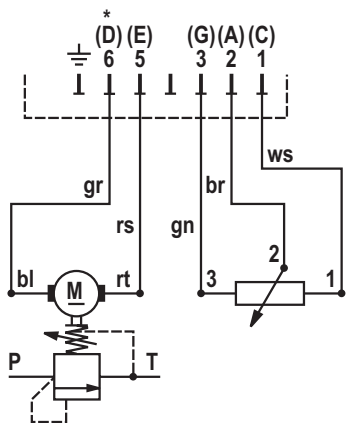
electric, drive motor		
Voltage type		Direct voltage
Supply voltage	VDC	24
Nominal power	W	24
Protection class of the valve according to EN 60529		IP 65 with mating connector mounted and locked

Adjustment with actual value potentiometer for cam position feedback: Ordering code "P2"		
Mechanical adjustment time, p_{\min} to p_{\max}	s	1.1
Potentiometer	- Resistance	k Ω 5
	- Power	W 1.75

recommended amplifier	
Electric amplifier	VT-VRM1-1, component series 1X (see data sheet 30405-D)

Electrical connection

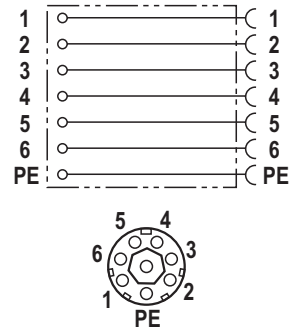
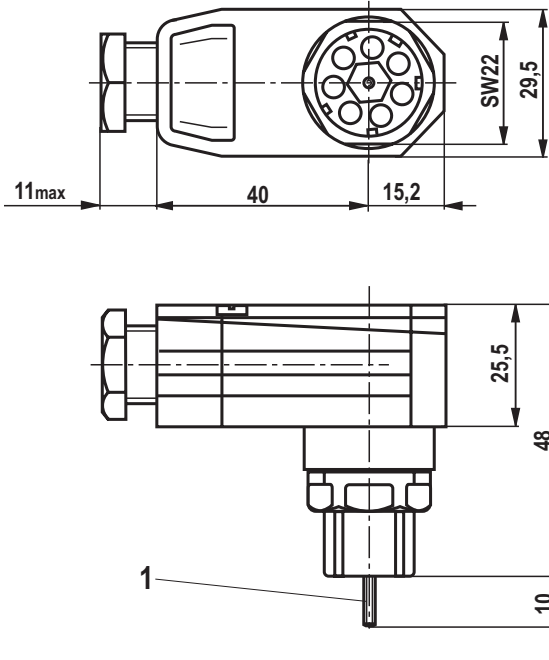
Connector connection at DBGT valve with actual value potentiometer



Observe the direction of rotation of the motor for connection no. 5 and 6.
* Pressure increasing no. 6 "+"

Electrical connection (dimensions in mm)

Mating connector (gray), material no. R900002803 (separate order)



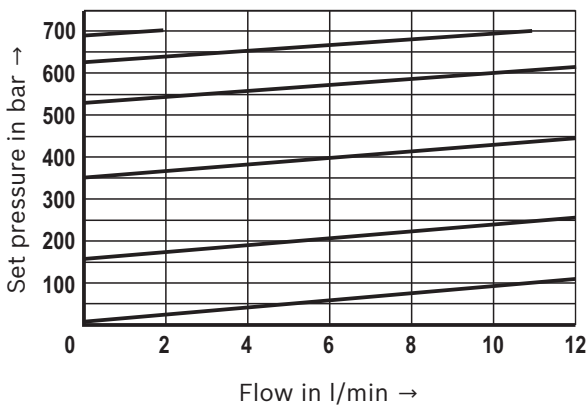
1 Mounting screw M3,
tightening torque $M_A = 0.5 \text{ Nm}$

Characteristic curves

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

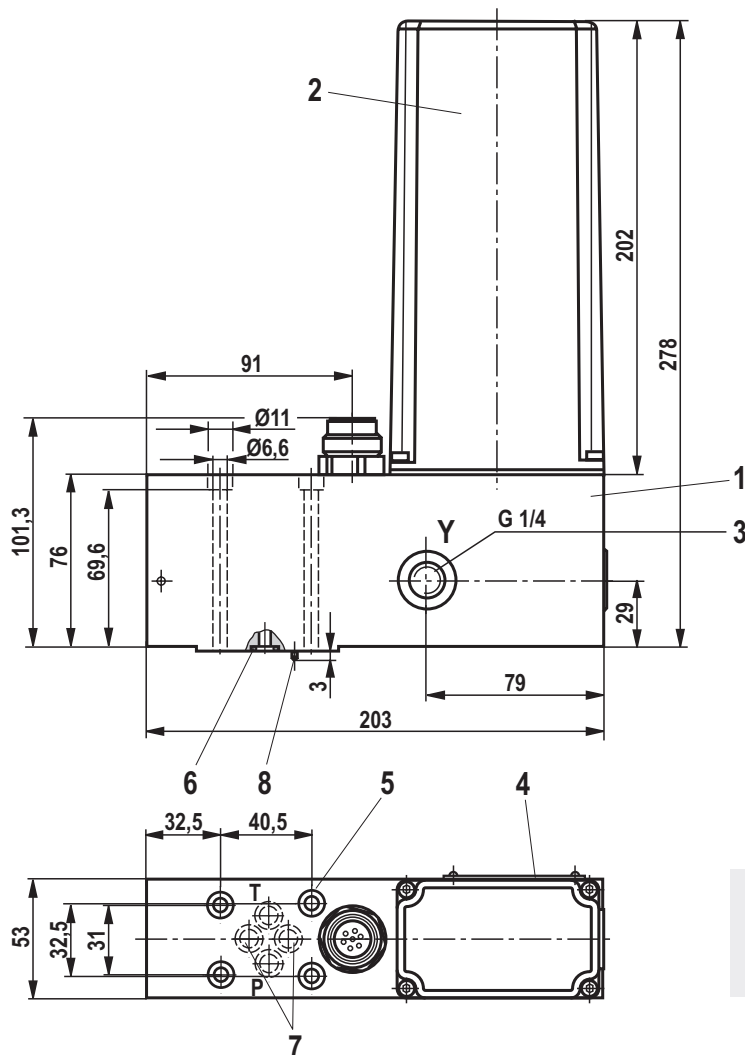
The characteristic curves were measured without counter pressure in port T. ($p_T = 0 \text{ bar}$)

DBGT-2X/700

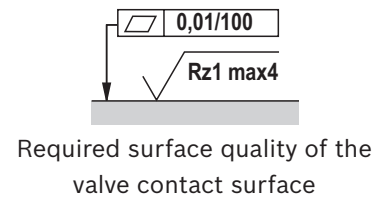


Dimensions

(dimensions in mm)



- 1 Valve housing
- 2 DC motor
- 3 "Y" port for "external" pilot oil return
- 4 Name plate
- 5 Valve mounting bores
- 6 Identical seal rings for ports P, T, A and B
- 7 Blind counterbores A and B
- 8 Locking pin ISO8752 - - 3x8 - St



Notice!

The dimensions are nominal dimensions which are subject to tolerances.

Accessories

(not included in the scope of delivery)

Hexagon socket head cap screws (separate order)		Material number
DBGT	4x ISO 4762 - M6 x 80 - 10.9-fIZn-240h-L Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0,14$ Tightening torque $M_A = 12.5 \text{ Nm} \pm 10 \%$	R913000512
Notice: For reasons of stability, exclusively these valve mounting screws may be used. The tightening torque of the hexagon socket head cap screws refers to maximum operating pressure!		
External control (separate order)	Data sheet	Material number
VT-VRM1-1-1X	30405-D	R913000512
Mating connector (separate order)	Data sheet	Material number
Mating connector 7P Z6 N6RFFK	08006	R900002803

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52/ 18-0
documentation@boschrexroth.de
www.boschrexroth.de

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.

The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.