

## Pressure relief valve, direct operated

### DBD .. K



- ▶ Size 2
- ▶ Component series 2X
- ▶ Maximum operating pressure 420 bar
- ▶ Maximum flow 2 l/min

#### Features

- ▶ Screw-in cartridge valve
- ▶ 6 pressure ratings
- ▶ 4 adjustment types, optionally:
  - Hexagon (partially with protective cap)
  - Rotary knob with scale
  - Lockable rotary knob with scale
  - Hand wheel
- ▶ Corrosion-protected design

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**Ordering code**

01	02	03	04	05	06	07	08	09	10
DBD		2	K	2X	/				*

01	Pressure relief valve, direct operated	<b>DBD</b>
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**Adjustment type**

02	Hexagon with protective cap	<b>S</b> <sup>1)</sup>
	Rotary knob with scale	<b>L</b>
	Lockable rotary knob with scale	<b>A</b>
	Hand wheel	<b>H</b>

03	Size 2	<b>2</b>
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04	Screw-in cartridge valve	<b>K</b>
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05	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	<b>2X</b>
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**Pressure rating**

06	Set pressure up to 25 bar	<b>25</b>
	Set pressure up to 50 bar	<b>50</b>
	Set pressure up to 100 bar	<b>100</b>
	Set pressure up to 200 bar	<b>200</b>
	Set pressure up to 315 bar	<b>315</b>
	Set pressure up to 420 bar	<b>420</b>

**Set pressure**

07	Without setting	<b>no code</b>
	Set, adjustable	<b>- ...</b> <sup>2)</sup>
	Set; sealed, not adjustable (only with adjustment type "S")	<b>P ...</b> <sup>2); 3)</sup>

**Corrosion resistance**

08	None	<b>no code</b>
	High corrosion protection (720 h salt spray test according to EN ISO 9227) (only with adjustment type "S")	<b>J5</b> <sup>1)</sup>

**Seal material** (observe compatibility of seals with hydraulic fluid used, see page 4)

09	NBR seals	<b>no code</b>
	FKM seals	<b>V</b>
	Low-temperature version (only with adjustment type "S")	<b>MT</b>

10	Further details in the plain text	<b>*</b>
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1) Protective cap for version "J5" not included in the scope of delivery.

Protective cap available as individual part (material no. **R900135501**)

2) Specify set pressure (smallest setting interval 10 bar)

Order example:

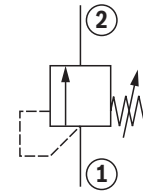
Set pressure 280 bar, adjustable → DBDS 2 K2X/315-**180**

Set pressure 140 bar, sealed → DBDS 2 K2X/200**P140**

3) Not with version "J5"

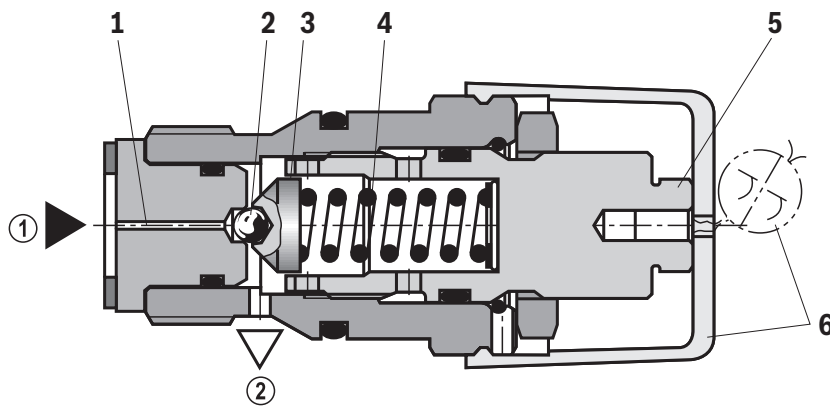
## Function, section, symbol

Pressure valve type DBD.. K refers to direct operated pressure relief valves to be installed in block designs. They are used to limit a system pressure. The system pressure can be set steplessly via the adjustment type (5). In the initial position the valve is closed. Via control line (1) and ball (2), the pressure in the main port ① acts on the spring plate (3). If the pressure in the main port ① rises above the value set at the compression spring (4), the ball (2) opens and the hydraulic fluid flows into the main port ②.



Version "P":

Pressure adjustment with lead seal and protective cap (6) for adjustment type "S".



- ① = Main port 1 (P)
- ② = Main port 2 (T)

Type DBDS 2 K2X/...(P)...

**Technical data**

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

General		
Weight	kg	approx. 0.3
Installation position		any
Ambient temperature range	°C	-30 ... +80 (NBR seals) -20 ... +80 (FKM seals) -45 ... +70 (low-temperature version)
MTTF <sub>D</sub> values according to EN ISO 13849	years	150 ... 1200 (for more information see data sheet 08012)

Hydraulic			
Maximum operating pressure	► Input	bar	420
	► Output	bar	315
Maximum set pressure		bar	25; 50; 100; 200; 315; 420
Maximum flow		l/min	2 (recommended 1.5)
Hydraulic fluid			see table below
Hydraulic fluid temperature range		°C	see "ambient temperature range"
Viscosity range		mm <sup>2</sup> /s	10 ... 800
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (c)			Class 20/18/15 <sup>1)</sup>

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	90220
Bio-degradable	► Insoluble in water	HETG	ISO 15380	90221
		HEES		
	► Soluble in water	HEPG	ISO 15380	
Flame-resistant	► Water-free	HFDD (glycol base)	ISO 12922	90222
		HFDD (ester base)		
		HFDR		
	► Containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	ISO 12922	90223

**Important information on hydraulic fluids:**

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.
- **Bio-degradable and flame-resistant – containing water:** If components with galvanic zinc coating (e.g. version "J3" or "J5") or parts containing zinc are used, small amounts of dissolved zinc may get into the hydraulic system and cause accelerated aging of the hydraulic fluid. Zinc soap may form as a chemical reaction product, which may clog filters, nozzles and solenoid valves – particularly in connection with local heat input.

**► Flame-resistant – containing water:**

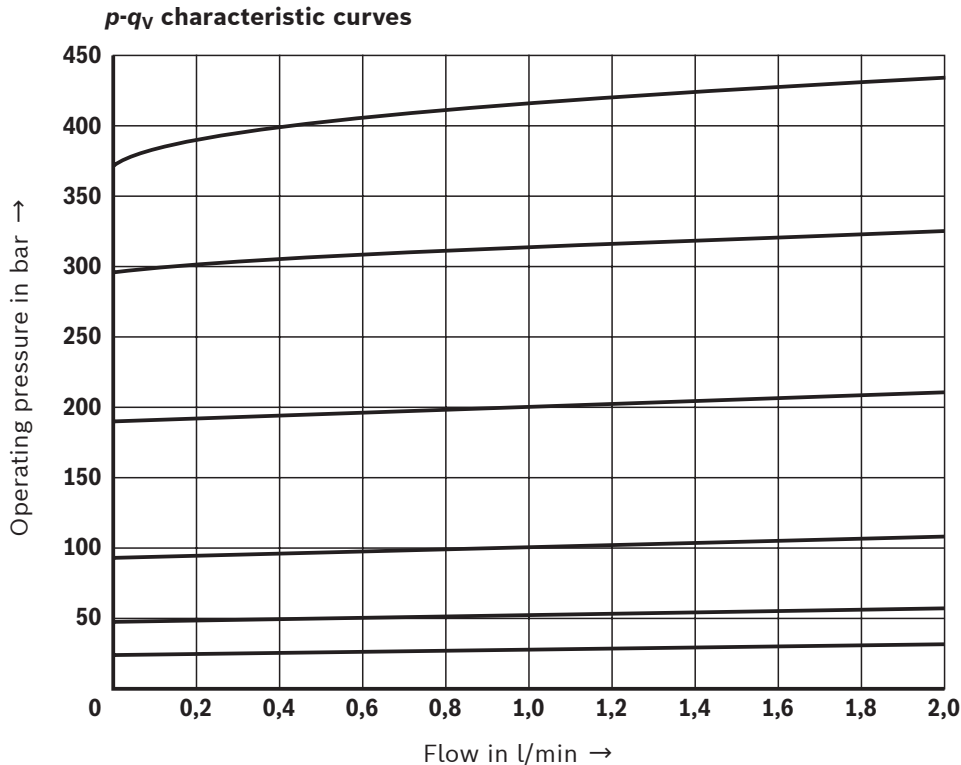
Due to the increased cavitation tendency with HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to the use with mineral oil HLP. In order to reduce the cavitation effect, it is recommended - if possible specific to the installation - to back up the return flow pressure in ports T to approx. 20% of the pressure differential at the component.

<sup>1)</sup> The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

For the selection of filters, see [www.boschrexroth.com/filter](http://www.boschrexroth.com/filter).

## Characteristic curves

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



### Notes:

► The characteristic curves apply for output pressure  $p_T = 0 \text{ bar}$  in the entire flow range and were measured without housing resistance.

► Hydraulic counter pressures in the main port 2 (T) add 1:1 to the response pressure of the valve set in the adjustment type.

#### Example:

– Pressure adjustment of the valve due to spring preload (item 4 on page 3)  $p_{spring} = 200 \text{ bar}$

– Hydraulic counter pressure in the main port 2 (T):

$p_{hydraulic} = 50 \text{ bar}$

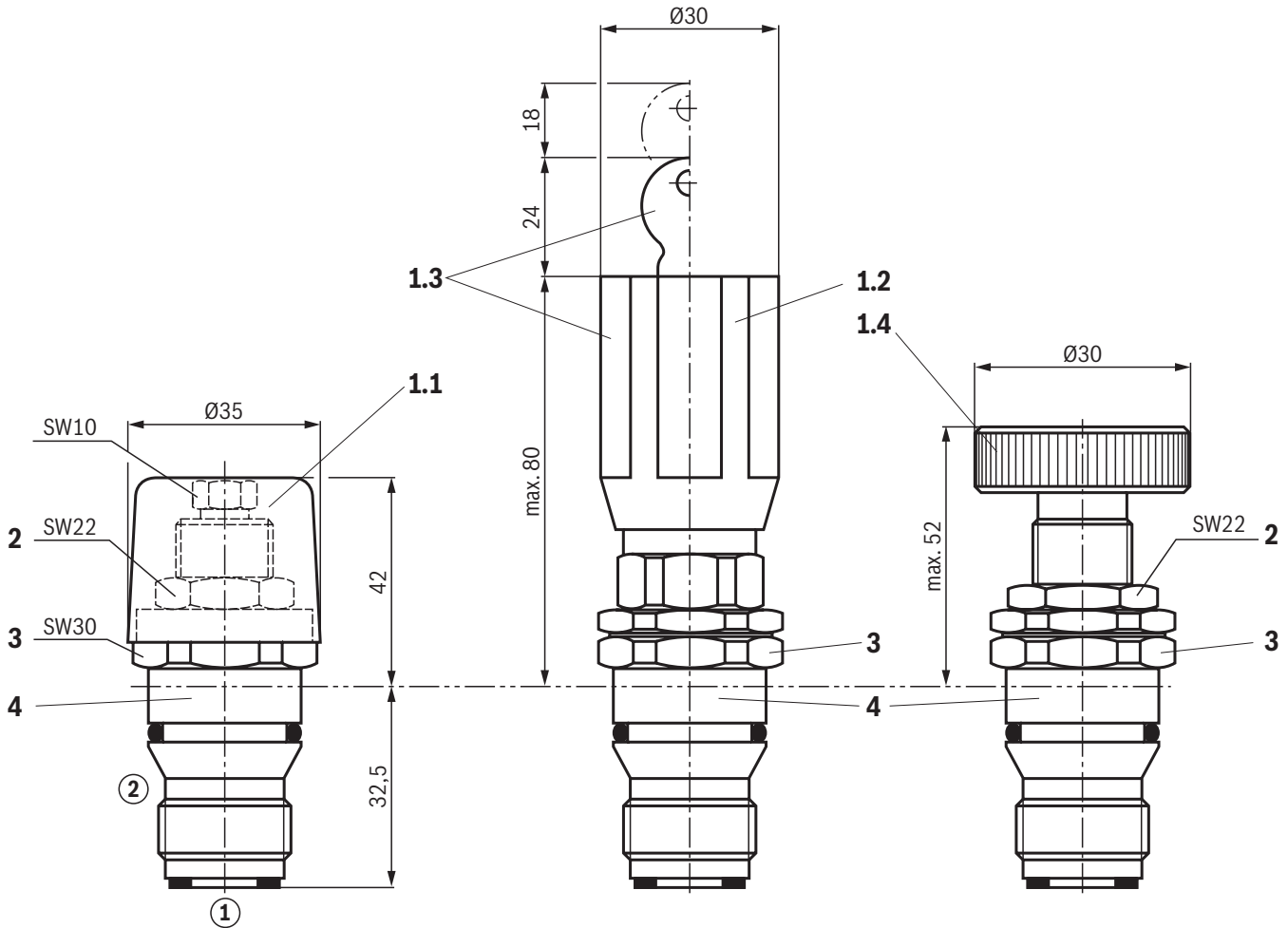
–  $\Rightarrow$  Response pressure =  $p_{spring} + p_{hydraulic} = 250 \text{ bar}$

► The characteristic curves shown are determined with the associated  $p_{max}$  version ("pressure rating").

► The characteristic curves apply for operation as individual assembly "DBDx 2". If used as pilot control valve, the cracking pressure of the overall assembly (e.g. 2/2 directional cartridge valve) is not necessarily identical to the one of a set pilot control cartridge.

► Pressure adjustments are made with a test stand quantity of  $Q = 1 \text{ l/min}$

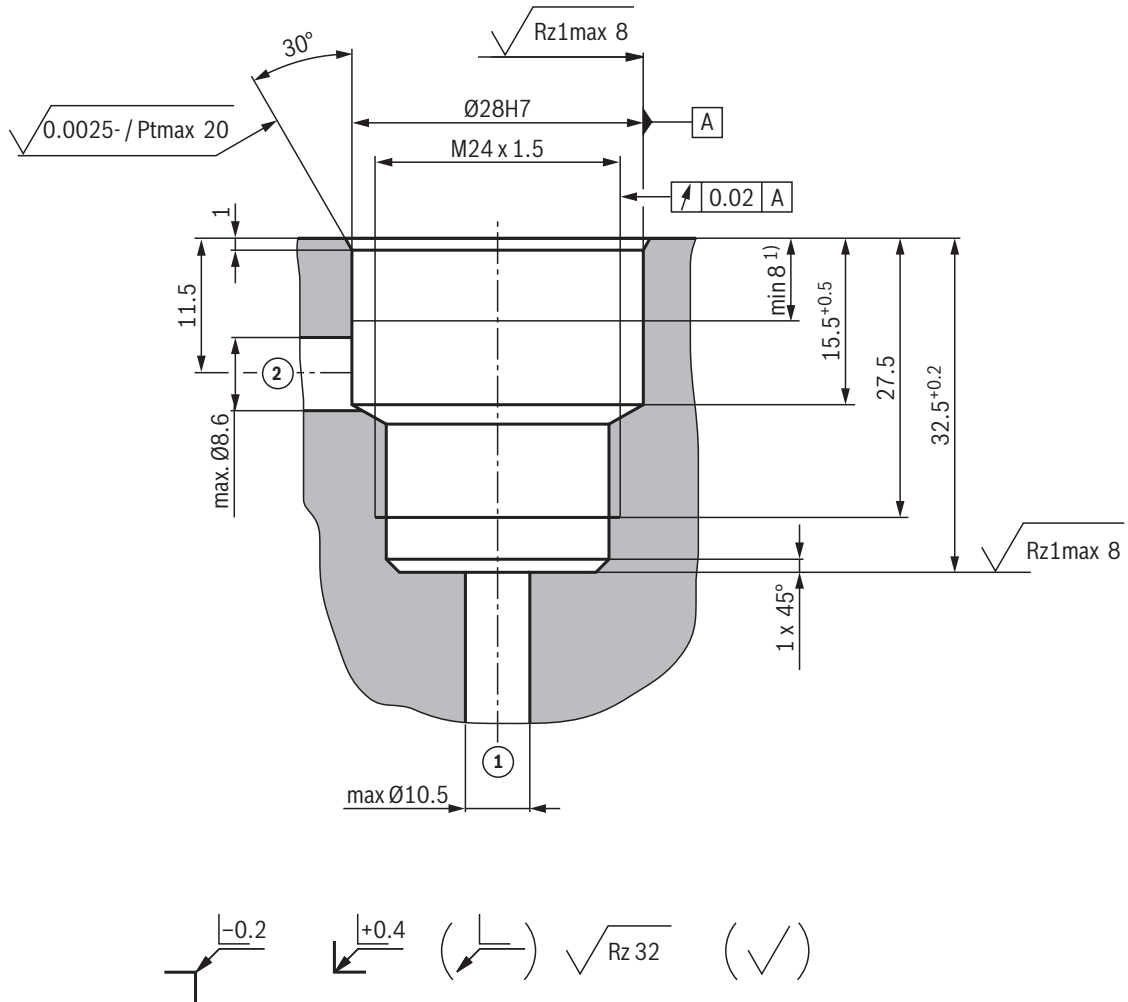
**Dimensions**  
(dimensions in mm)



- 1.1 Adjustment type "S", hexagon with protective cap
- 1.2 Adjustment type "L", rotary knob with scale
- 1.3 Adjustment type "A", lockable rotary knob with scale
- 1.4 Adjustment type "H", hand wheel
- 2 Lock nut
- 3 Hexagon SW30, tightening torque when screwing in  
 $M_A = 60^{+5}$  Nm
- 4 Embossed type designation

- ① = Main port 1 (P)
- ② = Main port 2 (T)

**Mounting cavity:** DBD. 2K; 2 main ports; thread M24 x 1.5  
(dimensions in mm)



- ① = Main port 1 (P)  
② = Main port 2 (T)

1) Depth of fit

## Accessories

### Cap element for use in the mounting cavity "DBD..2K"

	Sealing material	Material no.
Free passage "P to T"	NBR	<b>R900737632</b>
Connection "P to T" blocked	NBR	<b>R900765751</b>



#### Notice:

- ▶ FKM upon request

## Further information

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| ▶ Hydraulic fluids on mineral oil basis                                      | Data sheet 90220   |
| ▶ Environmentally compatible hydraulic fluids                                | Data sheet 90221   |
| ▶ Flame-resistant, water-free hydraulic fluids                               | Data sheet 90222   |
| ▶ Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC) | Data sheet 90223   |
| ▶ Hydraulic valves for industrial applications                               | Operating instructions 07600-B   |
| ▶ General product information on hydraulic products                          | Data sheet 07008   |
| ▶ Use of non-electrical hydraulic components in explosive atmospheres (ATEX) | Data sheet 07011   |
| ▶ Assembly, commissioning and maintenance of industrial valves               | Data sheet 07300   |
| ▶ Selection of filters   | <a href="http://www.boschrexroth.com/filter">www.boschrexroth.com/filter</a> |
| ▶ Information on available spare parts                                       | <a href="http://www.boschrexroth.com/spc">www.boschrexroth.com/spc</a>       |

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