

Pressure relief valve, direct operated

RE 25710/10.05
Replaces: 06.03

1/8

Type DBD..K

Size 4
Component series 1X
Maximum operating pressure 500 bar
Maximum flow 20 l/min



K4942-1

Table of contents

Contents	Page
Features	1
Ordering code	2
Standard types	2
Function, section, symbol	2
Technical data	3
Deviating technical data for type-tested safety valves	3
Characteristic curves	4
General notes	4
Unit dimensions	5
Mounting cavity	6
Type-tested safety valves of type DBD..K, component series 1X, according to Pressure Equipment Directive 97/23/EC (in the following, "PED" in short)	
Ordering code	7
Safety notes	7, 8

Features

- Cartridge valve
- 8 pressure stages
- 2 adjustment types, optional:
 - Grub screw with internal hexagon
 - Hand wheel

Information on available spare parts:
www.boschrexroth.com/spc

Ordering code

DBD

4

K

1X/

V

*

Pressure relief valve,
direct operated

= DBD

Type of adjustment

Grub screw with internal hexagon

= S

Hand wheel

= H

Size 4

= 4

Cartridge valve

= K

Component series 10 to 19
(10 to 19: unchanged installation and connection dimensions)

= 1X

Pressure stage

Pressure setting up to 25 bar

= 25

Pressure setting up to 50 bar

= 50

Pressure setting up to 100 bar

= 100

Pressure setting up to 200 bar

= 200

Pressure setting up to 315 bar

= 315

Pressure setting up to 350 bar

= 350

Pressure setting up to 420 bar

= 420

Pressure setting up to 500 bar

= 500

Further details in clear text

Type-testing

No code =

Without type-testing

E =

Type-tested safety valve according
to PED 97/23/EC

Seal material

V =

FKM seals
(other seals on enquiry)

⚠ Caution!

Observe compatibility of seals with
hydraulic fluid used!

Standard types

Type	Material number	Type	Material number
DBDS 4 K1X/25V	R900377429	DBDS 4 K1X/315V	R900528882
DBDS 4 K1X/50V	R900400423	DBDS 4 K1X/420V	R900965798
DBDS 4 K1X/100V	R900529359	DBDS 4 K1X/500V	R900969131
DBDS 4 K1X/200V	R900393389		

Further standard types and components can be found in the EPS (standard price list).

Function, section, symbol

Pressure control valves of type DBD.. K.. are direct operated pressure relief valve for installation in manifolds. They are used to limit a system pressure. The system pressure is adjusted by means of adjustment element (5).

In the initial position, the valve is closed. The pressure in service port acts via pilot line (1) and poppet (2) onto spring plate (3). When the pressure in service port 1 rises to a value above that set on compression spring (4), poppet (2) opens and the hydraulic fluid flows into service port 2.

① = Service port 1 (P)

② = Service port 2 (T)

Type DBDS 4 K1X/V

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

Weight	kg	approx. 0.3
Installation orientation		Optional
Ambient temperature range	°C	–20 to +80

Hydraulic

Maximum operating pressure	– Inlet	bar	500
	– Outlet	bar	315 (50 bar with set pressure of 500 bar)
Maximum set pressure		bar	25; 50; 100; 200; 315; 350; 420; 500
Maximum flow		l/min	20
Hydraulic fluid			Mineral oil (HL, HLP) to DIN 51524; fast bio-degradable hydraulic fluids to VDMA 24568 (see also RE 90221); HETG (rape seed oil); HEPG (polyglycols); HEES (synthetic esters); other hydraulic fluids on enquiry
Hydraulic fluid temperature range		°C	–20 to +80
Viscosity range		mm ² /s	10 to 800
Max. permissible degree of contamination of the hydraulic fluid - cleanliness class to ISO 4406 (c)			Class 20/18/15 ¹⁾

¹⁾ The cleanliness classes specified for components must be adhered to in hydraulic systems. Effective filtration prevents malfunction and, at the same time, prolongs the service life of components.

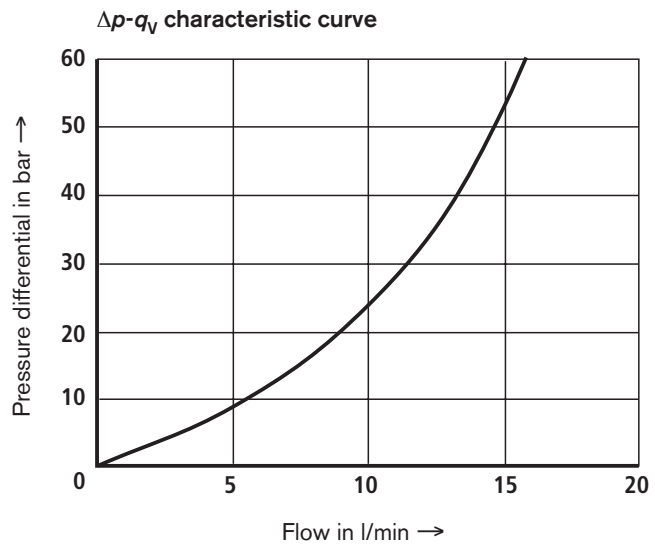
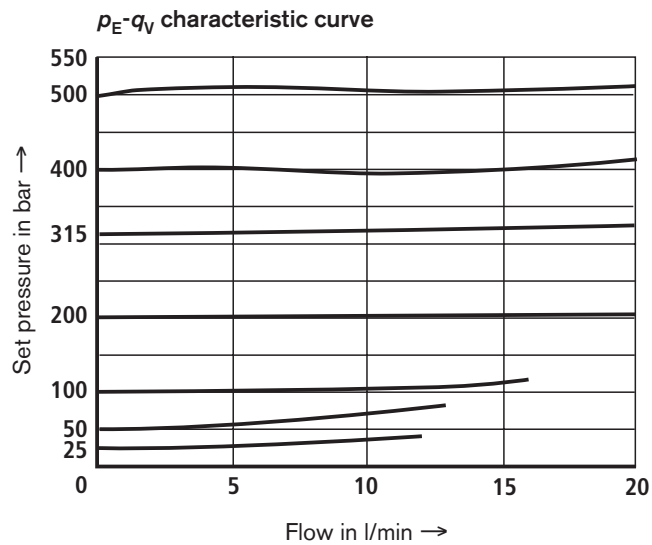
For the selection of filters, see data sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

Deviating technical data for type-tested safety valves ²⁾**Hydraulic**

Maximum flow		See characteristic curves on page 8
Hydraulic fluid		Mineral oil (HL, HLP) to DIN 51524 and DIN 51524-2
Hydraulic fluid temperature range	°C	–15 to +60
Viscosity range	mm ² /s	12 to 230

²⁾ for applications outside these parameters, please consult us!

Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)



⚠ Caution!

The characteristic curves are valid for an initial pressure = zero over the entire flow range and were measured without housing resistance!

General notes

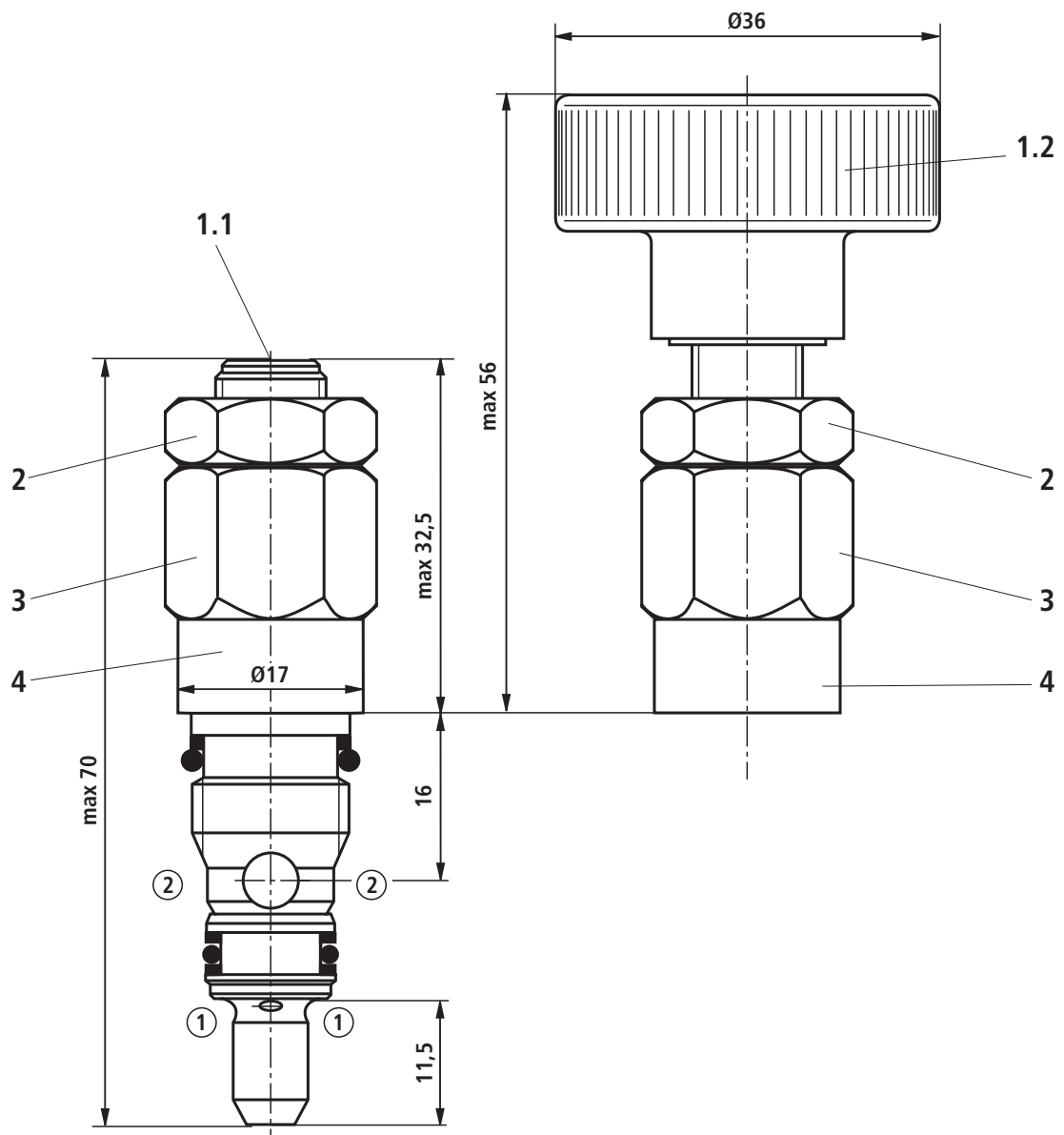
Hydraulic backpressures in service port 2 (T) fully add to the response pressure set on the adjustment element of the valve.

Example:

- Pressure setting of the valve by means of spring pre-tensioning
(item 4 on page 2) $p_{spring} = 200\text{ bar}$
- Hydraulic backpressure in service port 2 (T):
 $p_{hydraulic} = 50\text{ bar}$

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

Unit dimensions (nominal dimensions in mm)



1.1 Type of adjustment "S", internal hexagon A/F 6

1.2 Type of adjustment "H", Hand wheel

2 Locknut A/F 17

3 Hexagon A/F 17, tightening torque for screwing in, $M_T = 23^{\pm 2}$ Nm

4 Embossed type designation

① = Service port 1 (P)

② = Service port 2 (T)

Ordering code for type-tested safety valves type DBD..K../..E, series 1X

Type-testing according to Pressure Equipment Directive 97/23/EC

	Designation	Component identification	Max. permissible flow $q_{V \max}$ in l/min	Set response pressure p in bar
4	DBDS 4 K1X/ <input type="checkbox"/> E	TÜV.SV.- <input type="checkbox"/> -1038.4.F.G.p	10	60 to 315
	DBDH 4 K1X/ <input type="checkbox"/> E		17	320 to 500

☐ The customer must enter the pressure in the type designation! Pressure settings ≥ 60 bar and in 5-bar increments are possible.

☐ Data entered in the factory

Safety notes on type-tested safety valves (type DBD..K../..E) according to Pressure Equipment Directive 97/23/EC

- Before ordering a type-tested valve, make sure that at the desired **response pressure p** the max. permissible **flow $q_{V \max}$** of the safety valve is greater than the max. possible flow of the system / accumulator to be protected.
Observe relevant regulations!

- **According to PED 97/23/EC** the increase in the system pressure caused by the flow must not be greater than 10% of the set response pressure (see component identification).

The permissible maximum flow $q_{V \max}$ indicated in the component identification (= numerical value in the place of letter "G" in the component identification, see above) must not be exceeded.

Discharge lines of safety valves must provide a safe outlet. **No** fluid is allowed to collect in the discharge system (see AD2000 - sheet A2).

Strictly observe the application notes!

- The permissible maximum flow indicated in the component identification is valid for applications without backpressure in the discharge line (port "T").
- When the seal on the safety valve is removed, the approval according to the PED becomes invalid!
- Generally observe the requirements laid down in the Pressure Equipment Directive and AD2000 sheet A2!
- It is recommended that type-tested cartridge valves are secured against unauthorised removal from the screw-in housing/block by wiring and sealing with the housing/block.

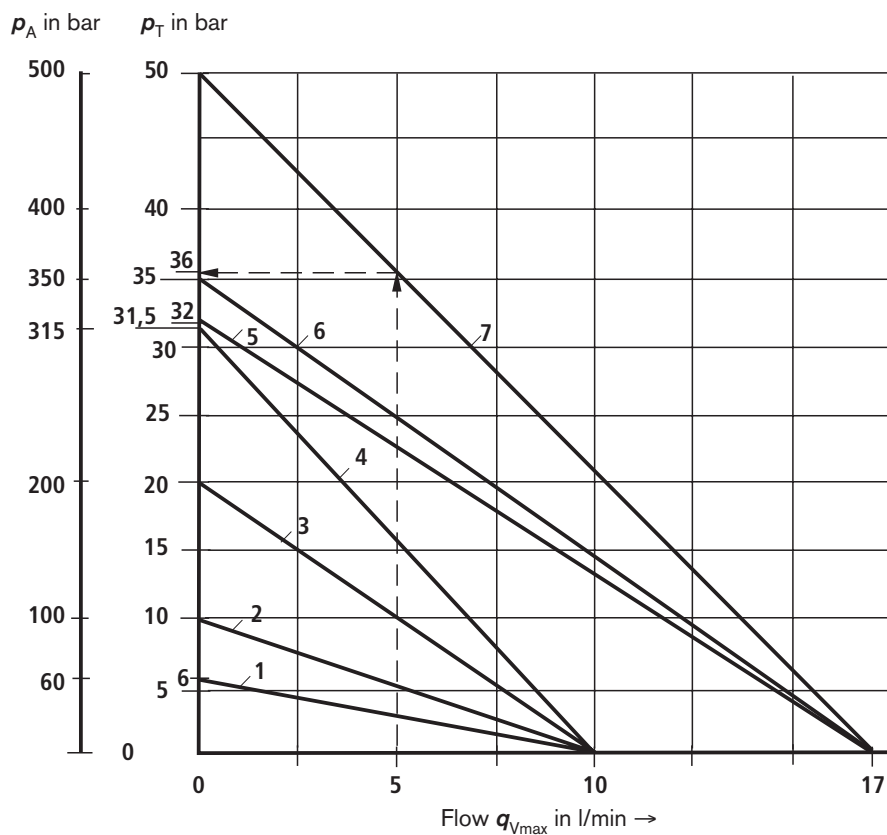
Caution!

The system pressure rises by the backpressure in the discharge line (port "T") as the flow increases.
(Observe AD2000 - sheet A2, paragraph 6.3!)

To ensure that the increase in the system pressure caused by the flow does not exceed 10% of the set response pressure, the permissible flow must be reduced in dependence upon the backpressure in the discharge line (port T) (see characteristic curves on page 8).

Safety notes on type-tested safety valves (type DBD..K../..E) according to the Pressure Equipment Directive 97/23/EC

Permissible maximum flow q_{Vmax} in dependence upon the backpressure p_T in the return line



Char. curves	Response pressure p_R in bar
1	60
2	100
3	200
4	315
5	320
6	350
7	500

Characteristic curves for intermediate values can be obtained by way of interpolation. For further explanations, see below.

p_A = Response pressure in bar

p_T = Permissible maximum backpressure in bar (sum of all possible backpressures; see also AD2000 - sheet A2)

q_{Vmax} = Permissible maximum flow in l/min

$p_{Tmax} = 10\% \times p_A$ (at $q_V = 0$) according to PED 97/23/EC

Explanation of diagram:

Given: – Flow of the system/accumulator to be safeguarded $q_{Vmax} = 5$ l/min
– Set response pressure of the safety valve $p_R = 500$ bar

Required: p_T

Solution: See arrows in the diagrams above; $p_T \sim 36$ bar (5 l/min; 500 bar)