

Bosch Rexroth ZDB10VP1-4X/100V sandwich pressure-relief valve

Manufacturer: Bosch Rexroth
Manufacturer part number / published order designation: R900596905
Published model: ZDB10VP1-4X/100V

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

The adjustment endpoint does not establish the supplied preset or minimum setting.

Assembly screw length and tightening requirements depend on stack configuration.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Bosch Rexroth Zdb10 Re25761

Original pages	Compiled pages	Relevant content
1-8	2-9	Series scope and technical-document identity; Literal execution type-key options and applicable pressure stages; Hydraulic symbols and execution-specific functional scope; Hydraulic function and pilot/drain paths; Operating pressure, flow and fluid limits; Fluid conditions and pressure/flow test qualifications; Applicable pressure/flow curves and flow-dependent minimum setting; Execution-specific dimensions: ZDB10 VA/VP; select the actual pressure adjustment option shown in the legend.
11	10	Mounting screws, accessory conditions and dimension legend

Pressure relief valve, pilot-operated

Type ZDB and Z2DB



- ▶ Size 10
- ▶ Component series 4X
- ▶ Maximum operating pressure 350 bar
- ▶ Maximum flow 160 l/min

Features

- ▶ Sandwich plate valve
- ▶ Porting pattern according to ISO 4401-05-04-0-05
- ▶ 5 pressure ratings
- ▶ 5 directions of action, optional
- ▶ 1 or 2 screw-in cartridge valves
- ▶ 4 adjustment types for pressure adjustment, optional
 - Rotary knob
 - Bushing with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- ▶ Improved corrosion protection

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Ordering code

01	02	03	04	05	06	07	08	09	10
Z		DB	10			-	4X	/	

01	Sandwich plate valve	Z	
02	1 screw-in cartridge valve (version "VA", "VB" and "VP")	no code	◇
	2 screw-in cartridge valves (version "VC" and "VD")	2	◇
03	Pressure relief valve	DB	
04	Size 10	10	

Relief function from→to:

05	A→TA	VA	
	P→TA	VP	◇
	B→TB	VB	◇
	A→TA and B→TB	VC	
	A→B and B→A	VD	

Adjustment type for pressure adjustment

06	Rotary knob	1	
	Bushing with hexagon and protective cap	2	◇
	Lockable rotary knob with scale	3¹⁾	
	Rotary knob with scale	7	
07	Component series 40 ... 49 (40 ... 49: Unchanged installation and mounting dimensions)	4X	

Pressure rating

08	Set pressure up to 50 bar	50	
	Set pressure up to 100 bar	100	◇
	Set pressure up to 200 bar	200	◇
	Set pressure up to 315 bar	315	◇
	Set pressure up to 350 bar (not version "VD")	350	◇

Corrosion resistance

09	None	no code	◇
	Improved corrosion protection (240 h salt spray test according to EN ISO 9227)	J3²⁾	

Seal material (observe compatibility of seals with hydraulic fluid used, see page 6)

10	NBR seals	M	◇
	FKM seals	V	

¹⁾ H-key with material no. **R900008158** is included in the scope of delivery.

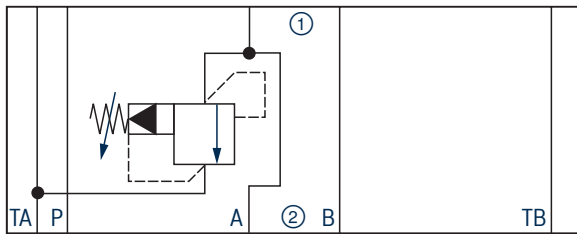
²⁾ Only with adjustment type "2," however, without protective cap



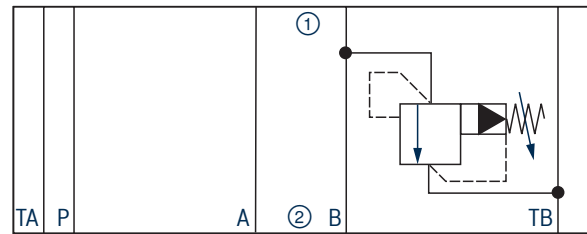
Note: ◇ = Preferred type

Symbols (① = component side, ② = plate side)

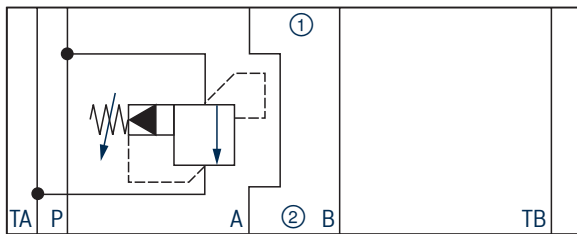
Version "VA"



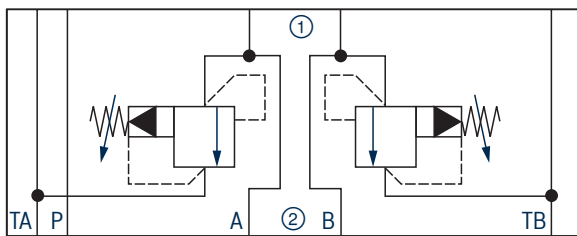
Version "VB"



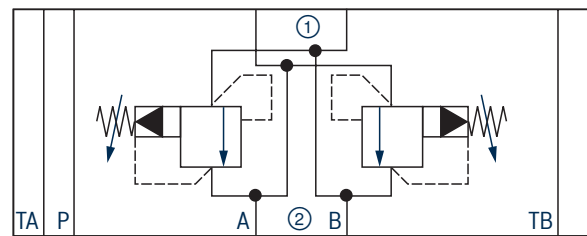
Version "VP"



Version "VC"



Version "VD"



Notice:

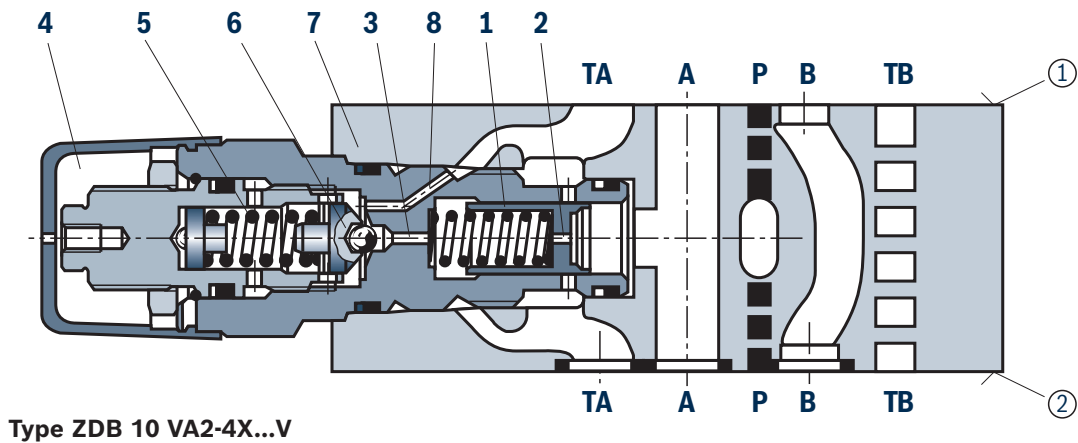
Deviating from ISO 4401, port T is called TA and port T1 is called TB in this data sheet.

Function, section

Pressure valves of type ZDB and Z2DB are pilot-operated pressure relief valves in sandwich plate design. They are used for limiting a system pressure.

The valves basically consist of the housing (7) and one or two screw-in cartridge valves. The system pressure can be set via the adjustment type (4).

In the initial position the valves are closed. The pressure in channel A acts on the spool (1). At the same time, pressure is applied to the spring-loaded side of the spool (1) via nozzle (2) and to the pilot poppet (6) via nozzle (3). If the pressure in channel A exceeds the value set at the spring (5), the pilot poppet (6) opens. Hydraulic fluid flows from the spring-loaded side of the spool (1), nozzle (3) and channel (8) into channel T (TA). The resulting pressure drop moves the spool (1) and opens the connection from A to T (TA). Channel A is pressurized to the pressure set at the spring (5).



Type ZDB 10 VA2-4X...V

- ① = component side
- ② = plate side

Technical data

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

General			
Type of connection	Sandwich plate valve		
Porting pattern	ISO 4401-05-04-0-05		
Weight	► Type ZDB	kg	2.4
	► Type Z2DB	kg	2.6
Installation position	Any		
Ambient temperature range	°C	-20 ... +80 (NBR seals) -15 ... +80 (FKM seals)	
Storage temperature range	°C	+5 ... +40	

Hydraulic			
Maximum operating pressure	▶ "VA", "VB", "VC"	bar	350
	▶ "VD"	bar	315 ¹⁾
	▶ Port T	bar	40 (observe the maximum operating pressure in port T of the subplate-mounted valve/directional valve)
Hydraulic fluid			See table on page 6
Hydraulic fluid temperature range (at the valve working ports)		°C	-20 ... +80 (NBR seals) -15 ... +80 (FKM seals)
Viscosity range		mm²/s	10 ... 800
Maximum admissible degree of contamination of the hydraulic fluid; cleanliness class according to ISO 4406 (c)			Class 20/18/15 ²⁾
Maximum flow		l/min	160
Maximum set pressure		bar	50; 100; 200; 315; 350

¹⁾ Maximum 1 million load cycles

²⁾ 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.

Technical data

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

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	FKM	ISO 15380	90221
		HEES	FKM		
	► Soluble in water	HEPG	FKM	ISO 15380	
Flame-resistant	► Water-free	HFDU (glycol base)	FKM	ISO 12922	90222
		HFDU (ester base)	FKM		
		HFDR	FKM		
	► Containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922	90223

**Important information on hydraulic fluids:**

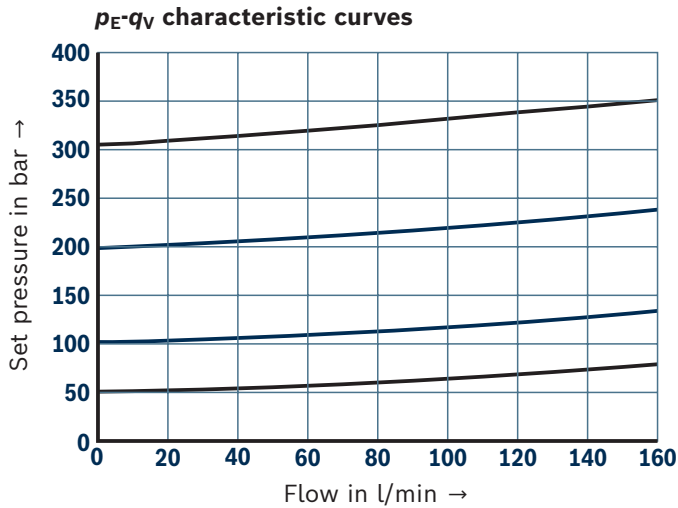
- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- The ignition temperature of the hydraulic 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 an increased cavitation tendency with the use of HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to use with HLP mineral oil. 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.

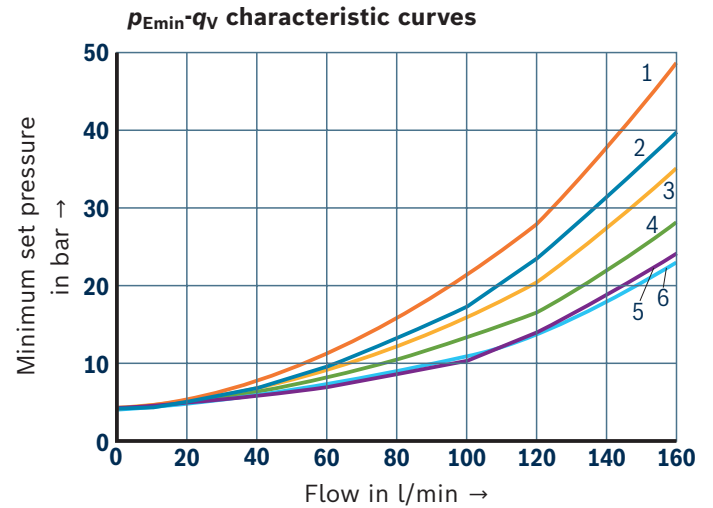
Characteristic curves

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



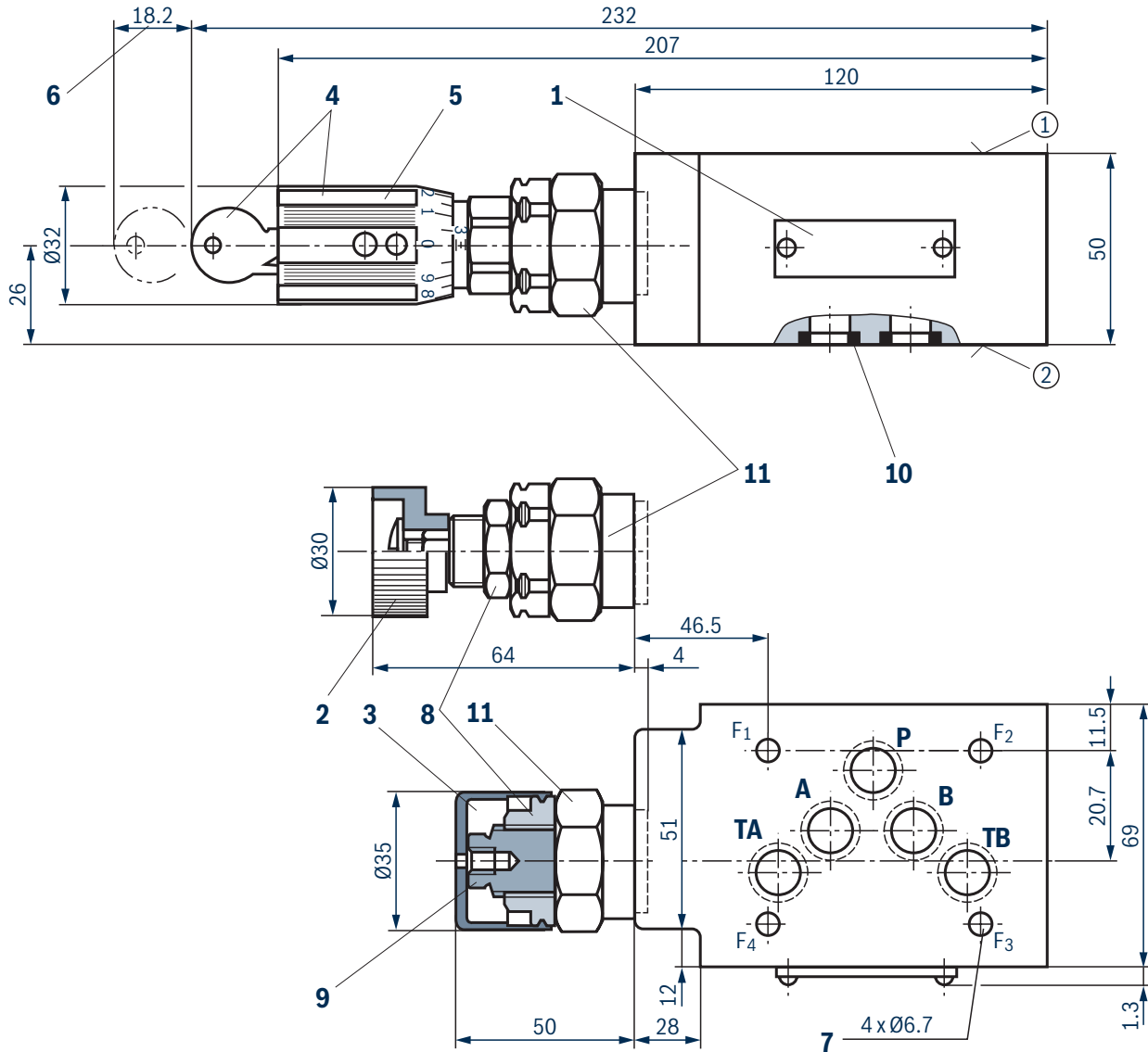
Information:

- The characteristic curves apply to the pressure at the valve output $p_T = 0 \text{ bar}$ across the entire flow range.
- Typical characteristic curves which are subject to tolerance variations.



- 1 "VB"
- 2 "VD" (B①→A②)
- 3 "VA"
- 4 "VP"
- 5 "VD" (A①→B②)
- 6 "VC"

Dimensions: Type ZDB 10 **VA...** and type ZDB 10 **VP...**
(Dimensions in mm)



Item explanations and valve mounting screws
see page 11.



Notice:

- Deviating from ISO 4401, port T is called TA and port T1 is called TB in this data sheet.
- The dimensions are nominal dimensions which are subject to tolerances.

0.01/100

Rz1max 8

Required surface quality of the valve contact surface

Dimensions

- | | |
|--|--|
| <ol style="list-style-type: none"> 1 Name plate 2 Adjustment type "1" 3 Adjustment type "2" (with version "J3" and "J5" without protective cap) 4 Adjustment type "3" 5 Adjustment type "7" 6 Dimension required to remove the key 7 Valve mounting bores 8 Lock nut SW24, tightening torque $M_A = 10^{+5}$ Nm 9 Hexagon, SW10 10 Identical seal rings for ports A, B, P, TA, TB (plate side) 11 Hexagon SW30, tightening torque $M_A = 50$ Nm | <ol style="list-style-type: none"> ① component side – Porting pattern according to ISO 4401-05-04-0-05 ② plate side – Porting pattern according to ISO 4401-05-04-0-05 |
|--|--|

Valve mounting screws (separate order)

Version	Quantity	Hexagon socket head cap screws	Material number
"J3"	4	ISO 4762 - M6 - 10.9-CM-Fe-ZnNi-5-Cn-T0-H-B Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$	Not included in the Rexroth delivery range
Without corrosion protection	4	► ISO 4762 - M6 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.12 \dots 0.17$	Not included in the Rexroth delivery range

Notice:

Length and tightening torque of the valve mounting screws must be calculated in connection with the components mounted underneath and above the sandwich plate valve.

Accessories (separate order)

Denomination	Material no.
Protective cap	R900135501