

The Drive & Control Company

Rexroth Bosch Group

Pressure relief valve, direct operated

Type ZDBD and Z2DBD





- ▶ Size 6
- ► Component series 2X
- ▶ Maximum operating pressure 350 bar
- ► Maximum flow 60 I/min

Features

- ► Sandwich plate valve
- ▶ Porting pattern according to ISO 4401-03-02-0-05
- ▶ 4 pressure ratings, optional
- ▶ 3 adjustment types, optional:
 - Spindle with hexagon
 - Rotary knob
 - Lockable rotary knob with scale
- ▶ 5 directions of action, optional
- ► Corrosion-protected design

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Ordering code

01	02	03	04	05	06	07		80		09	10	11	12
Z		DB	6	D			-	2X	/				

01	Sandwich plate valve	Z
02	1 pressure valve cartridge (only with version "A", "B" and "P")	no code
	2 pressure valve cartridges (only with version "C" and "D")	2
03	Pressure relief valve	DB
04	Size 6	6
05	Direct operated	D

06	P-T	P
	A – T	Α
	B – T	В
	A – T and B – T	С
	A – B and B – A (for possible adjustment types/pressure ratings, see table below)	D

Adjustment type

07	Rotary knob	1
	Spindle with hexagon	2
	Lockable rotary knob with scale 1)	3
		_
08	Component series 20 29 (20 29: unchanged installation and connection dimensions)	2X

Pressure rating

FIES	sure rating	
09	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 350 bar	350

Pressure measuring port G1/4

	1 633	sure measuring port 0.1/4	
ĺ	10	Without pressure measuring port	no code
		With pressure measuring port in port P (version "P" only)	MP
		With pressure measuring port in port A (version "A" only)	MA
		With pressure measuring port in port B (version "B" only)	МВ

Corrosion resistance

11	None	no code
	Improved corrosion protection (240 h salt spray test according to EN ISO 9227); (only version "2")	J3

Seal material

12	NBR seals	no code
	FKM seals	V
	Observe compatibility of seals with hydraulic fluid used! (other seals upon request)	

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

Version "DD"

		Pressure rating				
Adjustment type	"50"	"100"	"200"	"350"		
"1" and "2"	1	1	✓	_		
"3"	1	1	_	_		

Motices:

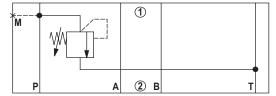
- ► For valve types for use in explosive areas, refer to data sheet 07011.
- ► Preferred types and standard units are contained in the EPS (standard price list).



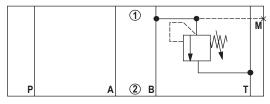
Pressure relief valve | **ZDBD; Z2DBD** 3/12

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

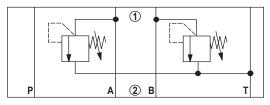
Version "P" (example with "MP")



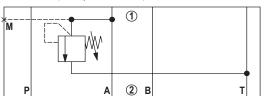
Version "B" (example with "MB")



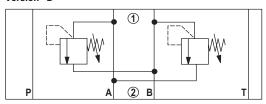
Version "C"



Version "A" (example with "MA")



Version "D"





Function, section

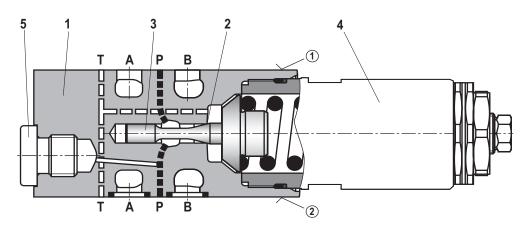
Pressure valves of type ZDB6D and Z2DB6D are direct operated pressure relief valves in sandwich plate design. The valves basically consist of housing (1) with seat (2) and control spool (3). The system pressure is set via the adjustment type (4).

The valves are closed in their rest position and protect a hydraulic system and its components against excessive pressures

These valves respond quickly, noiselessly and in a virtually leakage-free manner. Thanks to the seat design, they are resistant against oil contamination. The integrated damping of the control spool (3) ensures extremely stable behavior and a low pressure increase with increasing flow.

In the state as delivered, the valves are set to the minimum possible pressure. The system pressure applied to channel P acts on the control spool (3). If the system pressure increases above the set value, the control spool (3) opens and the hydraulic fluid flows from channel P in channel T. This limits the system pressure to the set value.

For versions "MP", "MA" and "MB", the set system pressure can be recorded and monitored using a pressure load cell at the measuring port (5) (refer to page 8 and 9)



Type ZDB 6 DP2 ...MP...

- 1 = component side
- ② = plate side



Pressure relief valve | **ZDBD**; **Z2DBD** 5/12

Technical data

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

general			
Weight	► Type ZDBD		
	Version "1" and "2"	kg	1.3
	- Version "3"	kg	1.4
	► Type Z2DBD		
	Version "1" and "2"	kg	2.3
	- Version "3"	kg	2.4
Installation posit	ion		Any
Ambient tempera	ature range	°C	−15 +80
MTTF _d values acc	cording to EN ISO 13849	Years	75 (for further details see data sheet 08012)

hydraulic								
Maximum	▶ Version "P", "A", "B", "C"							
operating pressure	- Port A, B, P	bar	350					
	– Port T	bar	ar 200 (version "1" and "2"); 100 (version "3")					
	▶ Version "D"		r 200 (version "1" and "2"); 100 (version "3")					
	- Port A and B	bar						
	- Port P and T	bar	ur 350					
Return flow pressure			Ideally depressu	rized to the tank ¹	.)			
Maximum	▶ Version "50"	bar	50					
set pressure	▶ Version "100"	bar	100					
	▶ Version "200"	bar	r 200					
	▶ Version "350"	bar	350					
Pressure rating		bar	50	100	200	350		
Pressure differential	per rotation ²⁾	bar	7	14	27	46		
Maximum flow		I/min	60					
Hydraulic fluid			See table page 6	;				
Hydraulic fluid temperature range °C		C -15 +80 /s 10 500 (preferably 50 120)						
Viscosity range mm²/s								
	e degree of contamination of the cording to ISO 4406 (c)	hydraulic fluid	Class 20/18/15 3	3)				

¹⁾ Counter pressure adds to the set pressure.

Available filters can be found at www.boschrexroth.com/filter.

²⁾ The information refers to calculated guidelines and is subject to tolerances. Completely unloaded valves may have an idle stroke of up to 2 rotations.

³⁾ 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.



Technical data

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

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	NBR, FKM	DIN 51524	90220
Bio-degradable ³⁾	► Insoluble in water	HETG	FKM	100 15000	90221
		HEES	FKM	ISO 15380	
	► Soluble in water	HEPG	FKM	ISO 15380	
Flame-resistant	► Water-free	HFDU (glycol base)	FKM	ISO 12922	90222
		HFDU (ester base) 3)	FKM	150 12922	
	► Containing water ³⁾	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	NBR	ISO 12922	90223

Important information on hydraulic fluids:

- ► For more 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 solenoid surface temperature.
- ► Flame-resistant containing water:
 - Maximum operating pressure 210 bar, otherwise increased cavitation erosion
 - Life cycle as compared to operation with mineral oil HL, HLP 30 ... 100 %
 - Maximum hydraulic fluid temperature 60 °C
- ▶ Bio-degradable and flame-resistant: If this hydraulic fluid is used, small amounts of dissolved zinc may get into the hydraulic system.

Not recommended for corrosion-protected version "J3" (contains zinc)

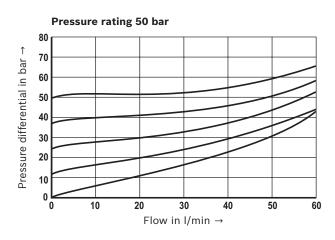


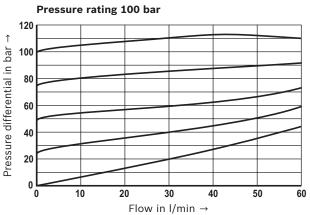
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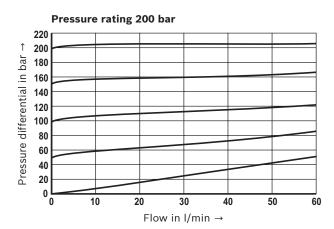
Characteristic curves

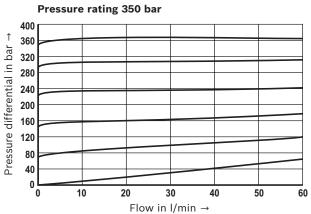
(measured with HLP46, ϑ_{Oil} = 40 ± 5 °C)

Δp-q_V characteristic curves



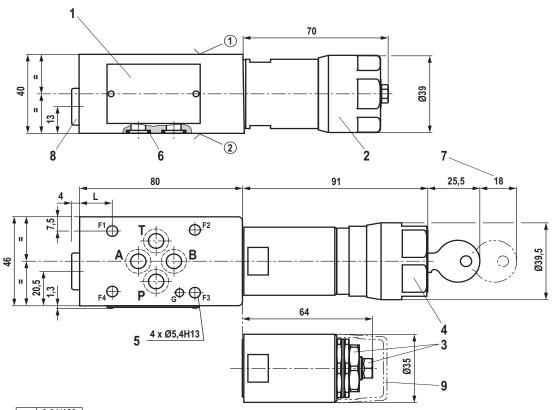








Dimensions: Version "P" and "B" (dimensions in mm)





Required surface quality of the valve contact surface

Version	L	
"P"	16	
"B"	13	

- ① component side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø4 x 4 mm deep)
- ② plate side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø3 x 5 mm deep for locking pin ISO 8752-3x8-St, separate order, see page 11)
- 1 Name plate
- 2 Adjustment type "1"
- **3** Adjustment type "2" (spindle with external hexagon, wrench size 10, and lock nut, wrench size 24)
- 4 Adjustment type "3"
- 5 Valve mounting bores
- 6 Identical seal rings for ports A, B, P, T (plate side)
- 7 Space required to remove the key
- 8 Measuring port G1/4 (internal hexagon, wrench size 6, tightening torque $\textit{M}_{\rm A}$ = 30 Nm \pm 10 %)
- 9 Protective cap (separate order, see page 11)

Bosch Rexroth AG, RE 25771, edition: 2016-03

Valve mounting screws (separate order)
4 hexagon socket head cap screws ISO 4762 - M5 - 10.9

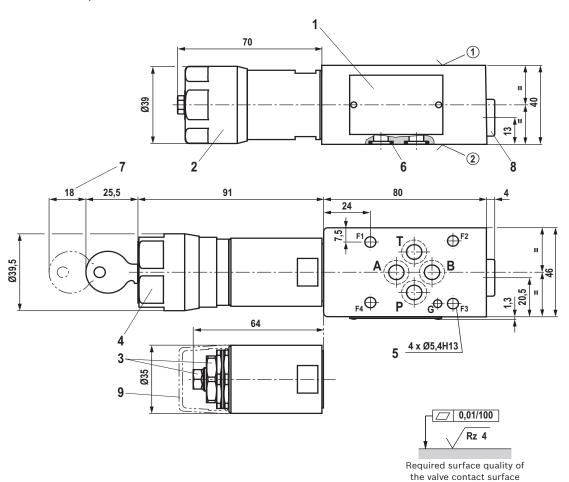
Notices:

- ► Length and tightening torque of the valve mounting screws must be calculated according to the components mounted below and above the sandwich plate valve.
- ► The dimensions are nominal dimensions which are subject to tolerances.



Pressure relief valve | **ZDBD**; **Z2DBD** 9/12

Dimensions: Version "A" (dimensions in mm)



- ① component side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø4 x 4 mm deep)
- ② plate side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø3 x 5 mm deep for locking pin ISO 8752-3x8-St, separate order, see page 11)
- 1 Name plate
- 2 Adjustment type "1"
- **3** Adjustment type "2" (spindle with external hexagon, wrench size 10, and lock nut, wrench size 24)
- 4 Adjustment type "3"
- 5 Valve mounting bores
- 6 Identical seal rings for ports A, B, P, T (plate side)
- 7 Space required to remove the key
- $8 \quad \text{Measuring port G1/4 (internal hexagon, wrench size 6, tightening torque $\textit{M}_{\rm A}$ = 30 Nm <math display="inline">\pm~10~\%) }$
- 9 Protective cap (separate order, see page 11)

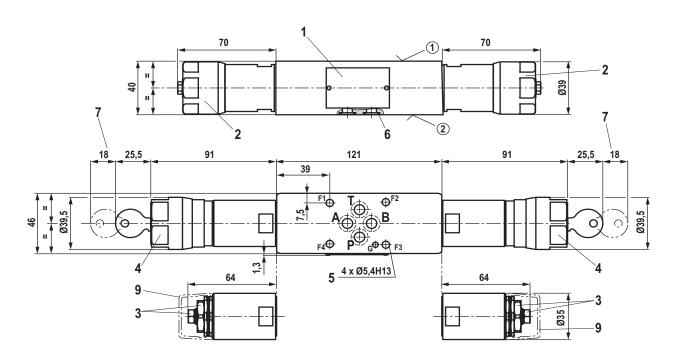
Valve mounting screws (separate order)
4 hexagon socket head cap screws ISO 4762 - M5 - 10.9

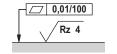
Notices:

- ► Length and tightening torque of the valve mounting screws must be calculated according to the components mounted below and above the sandwich plate valve.
- ▶ The dimensions are nominal dimensions which are subject to tolerances.



Dimensions: Version "C" and "D" (dimensions in mm)





Required surface quality of the valve contact surface

- ① component side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø4 x 4 mm deep)
- ② plate side Porting pattern according to ISO 4401-03-02-0-05 (with locating hole Ø3 x 5 mm deep for locking pin ISO 8752-3x8-St, separate order, see page 11)
- 1 Name plate
- 2 Adjustment type "1"
- **3** Adjustment type "2" (spindle with external hexagon, wrench size 10, and lock nut, wrench size 24)
- 4 Adjustment type "3"
- 5 Valve mounting bores
- 6 Identical seal rings for ports A, B, P, T (plate side)
- 7 Space required to remove the key
- 9 Protective cap (separate order, see page 11)

Valve mounting screws (separate order)
4 hexagon socket head cap screws ISO 4762 - M5 - 10.9

Motices:

- Length and tightening torque of the valve mounting screws must be calculated according to the components mounted below and above the sandwich plate valve.
- ► The dimensions are nominal dimensions which are subject to tolerances.



Pressure relief valve | **ZDBD; Z2DBD** 11/12

Accessories (separate order)

Denomination	Material no.
Protective cap	R900131744
Locking pin ISO 8752-3x8-St	R900005694

Further information

	Subplates	Data sheet 45100
•	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

▶ Assembly, commissioning and maintenance of industrial valves
 ▶ Use of non-electrical hydraulic components in explosive atmospheres (ATEX)
 ▶ Pressure transducers for hydraulic applications
 Data sheet 07011
 Data sheet 30272

► Selection of the filters

► Information on available spare parts