Pressure reducing valve, pilot-operated

Type Z3DR

RE 26871
Edition: 2019-03
Replaces: 2018-01

H8077

- Size 6
- Component series 1X
- Maximum operating pressure 350 bar
- Maximum flow 60 l/min

Features

- Sandwich plate valve
- Porting pattern according to ISO 4401-03-02-0-05
- 4 pressure ratings, optional
- 2 adjustment types, optionally:
  - Spindle with internal hexagon and protective cap
  - Lockable rotary knob with scale
- Corrosion-protected design

Contents

Ordering code

01	02	03	04	05	06	07		08		09	10	11	12	13
Z	**3**	**DR**	**6**	**V**	**P**		**–**	**1X**	**/**					

01	Sandwich plate valve	**Z**
02	3-way version	**3**
03	Pressure reducing valve	**DR**
04	Size 6	**6**
05	Pilot-operated	**V**

Pressure reduction

06	In channel P①	**P**

Adjustment type

07	Spindle with internal hexagon and protective cap ("J3" version without protective cap)	**2**
	Lockable rotary knob with scale [1)]	**3**
08	Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	**1X**

Pressure 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 315 bar	**315**

Pressure measuring port

10	**Without** pressure measuring port	**no code**
	With pressure measuring port (secondary pressure)	**MS**

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

12	NBR seals	**no code**
	FKM seals	**V**

Connection thread (pressure measuring port)

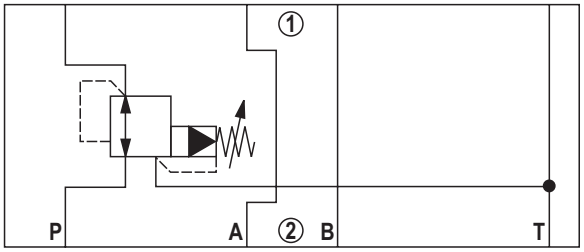
13	Pipe thread according to ISO 228-1	**no code**
	SAE thread	**/12**

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

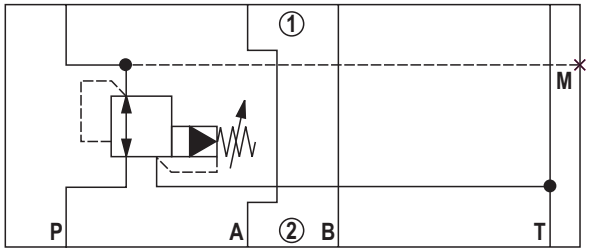
Notices:
- For valve types for use in potentially explosive areas, refer to data sheet 07011.
- Preferred types and standard units are specified in the EPS (standard price list).

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

Without pressure measuring port "no code"



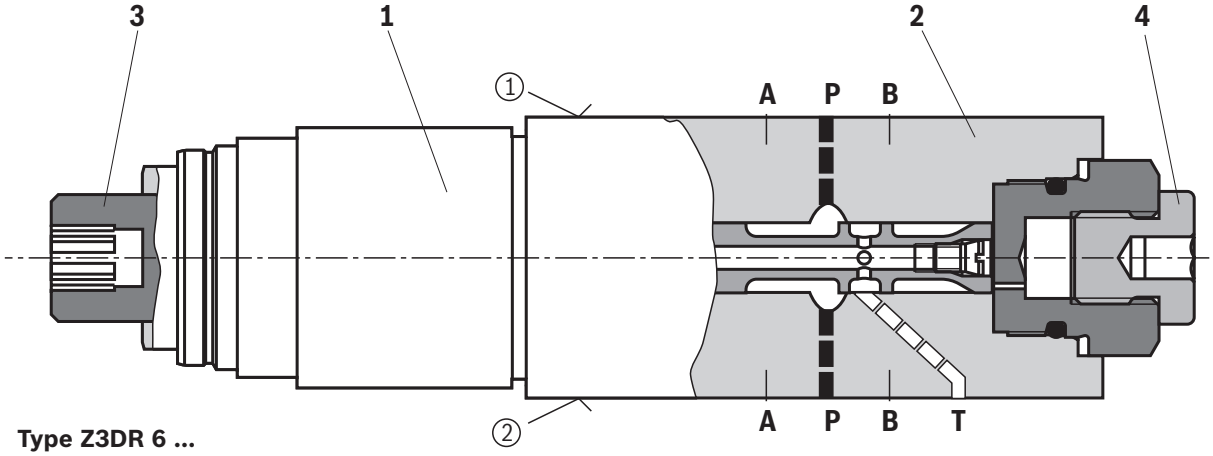
With pressure measuring port "MS"



Function, section

Valves of type Z3DR are pilot-operated 3-way pressure reducing valves in sandwich plate design with pressure limitation of the actuator. They serve for reduction and control of secondary pressure.
The valves basically consist of pilot control valve (1) and housing (2) including main stage. The secondary pressure is set via the adjustment type (3).
Rexroth pilot-operated pressure reducing valves feature flat discharge pressure curves, high stability and low hysteresis.

Version "MS" enables measurement and monitoring of the set secondary pressure via a pressure load cell at the measuring port (4) (refer to page 6).
If the secondary pressure at actuator port P① further exceeds the set value, the third line to tank port T is opened by the valve. This way, the actuator channel is protected against inadmissible pressure rise.



Type Z3DR 6 ...

① = component side
② = plate side

Technical data
(for applications outside these values, please consult us!)

General			
Weight	▶ Version "2"	kg	1.3
	▶ Version "3"	kg	1.4
Installation position			any
Ambient temperature range		°C	–15 ... +80
$MTTF_D$ values according to EN ISO 13849		Years	75 ... 600 (for more information see data sheet 08012)

Hydraulic			
Maximum operating pressure		bar	350
Maximum return flow pressure		bar	160 (ideally depressurized to the tank) [1]
Maximum Set pressure	▶ Version "50"	bar	50
	▶ Version "100"	bar	100
	▶ Version "200"	bar	200
	▶ Version "315"	bar	315
Maximum flow		l/min	60
Hydraulic fluid			see table below
Hydraulic fluid temperature range		°C	–15 ... +80
Viscosity range		mm^2/s	10 ... 500 (preferably 50 ... 120)
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 20/18/15 [2]

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	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 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.

[1] Counter pressure adds to the set pressure.

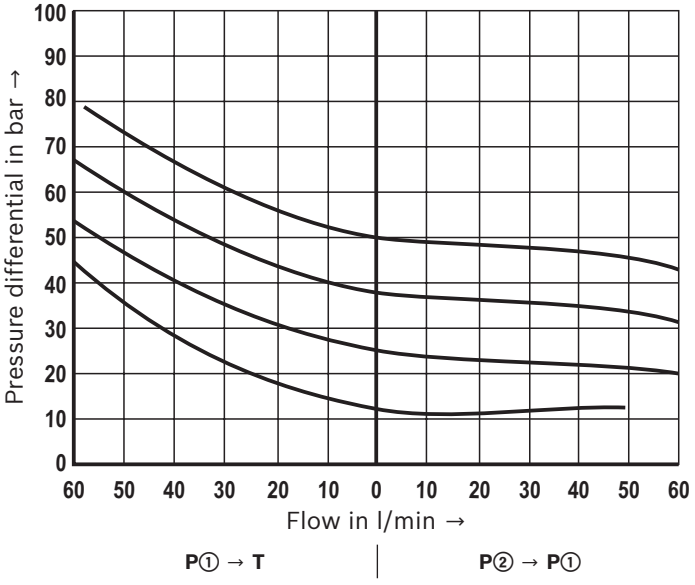
[2] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.
Available filters can be found at www.boschrexroth.com/filter.

Characteristic curves

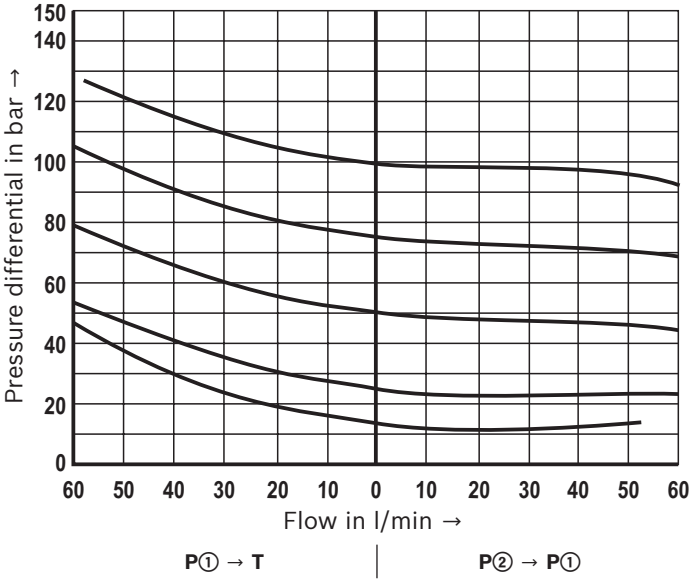
(measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Δp-q_V characteristic curves

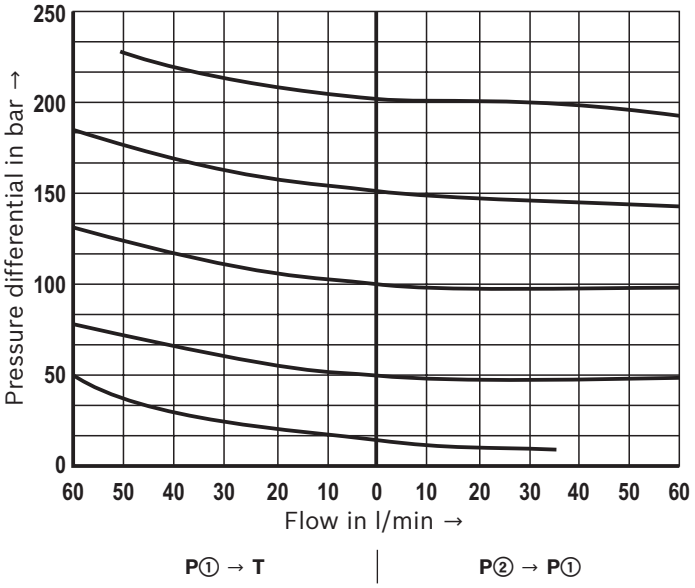
Pressure rating 50 bar



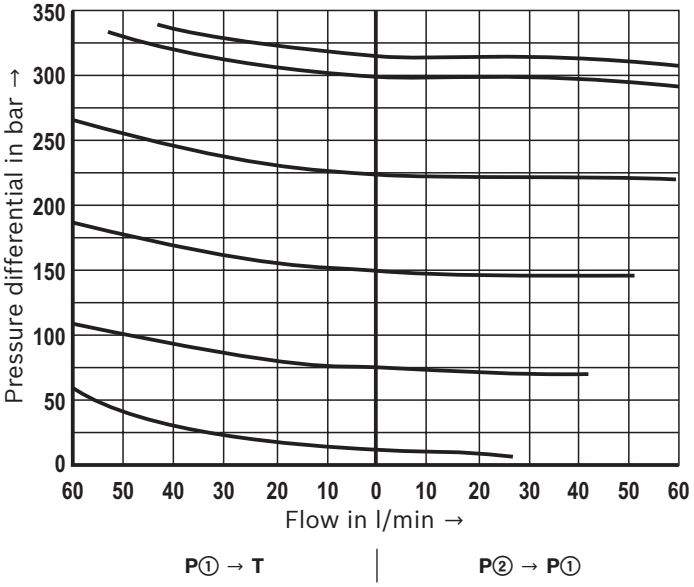
Pressure rating 100 bar



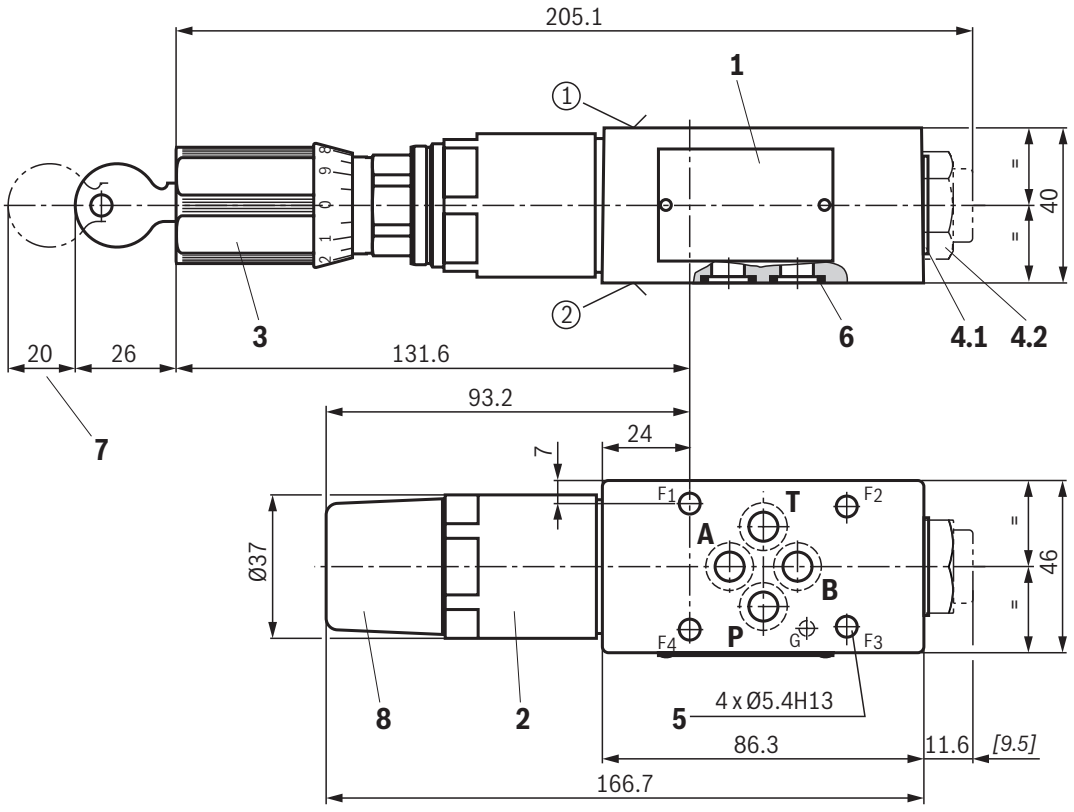
Pressure rating 200 bar

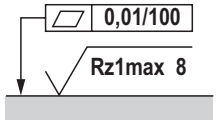


Pressure rating 315 bar



Dimensions
(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, material no. **R900005694**, separate order)

1 Name plate

2 Adjustment type "2" (spindle with SW8 internal hexagon and SW24 lock nut)

3 Adjustment type "3"

4.1 Without measuring port (standard)

4.2 Measuring port (version "MS"); when loosening the plug screw (internal hexagon SW6 [3/16"], tightening torque M_A = 20 Nm ±10%), hold the SW24 reducing piece in place. Dimensions specified in [] for version "/12"

5 Valve mounting bores

6 Identical seal rings for ports A, B, P, T (plate side)

7 Space required to remove the key

8 Protective cap (not included with version "J3")

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 under and over the sandwich plate valve.
- The dimensions are nominal dimensions which are subject to tolerances.

Accessories (separate order)

Denomination	Material no.
Protective cap	R900135501
Locking pin ISO 8752-3x8-St	R900005694

Further information

▶ Hydraulic valves for industrial applications	Operating instructions 07600-B
▶ 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
▶ Reliability characteristics according to EN ISO 13849	Data sheet 08012
▶ Use of non-electrical hydraulic components in an explosive environment (ATEX)	Data sheet 07011
▶ Selection of filters	
▶ Information on available spare parts	