Pressure relief valve, pilot operated

Type ZDBK and Z2DBK

Nominal size 6
Series 1X
Maximum operating pressure 210 bar
Maximum flow 40 l/min

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Features

- Sandwich plate valve
- Porting pattern to ISO 4401-03-02-0-05 (with locating bore)
- 3 pressure stages, optional
- 5 effective directions, optional
- With 1 or 2 pressure valve cartridges
- Adjustment element:
  Sleeve with hexagon and protective cap

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

<table>
<thead>
<tr>
<th>Sandwich plate</th>
<th>= Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pressure valve cartridge</td>
<td>No code</td>
</tr>
<tr>
<td>(only with variant “VA”, “VB” and “VP”)</td>
<td></td>
</tr>
<tr>
<td>2 pressure valve cartridges</td>
<td>= 2</td>
</tr>
<tr>
<td>(only with variant “VC” and “VD”)</td>
<td></td>
</tr>
<tr>
<td>Pressure relief valve</td>
<td>= DBK</td>
</tr>
<tr>
<td>Size 6</td>
<td>= 6</td>
</tr>
<tr>
<td>Relief function from – to:</td>
<td></td>
</tr>
<tr>
<td>A – T</td>
<td>= VA</td>
</tr>
<tr>
<td>P – T</td>
<td>= VP</td>
</tr>
<tr>
<td>B – T</td>
<td>= VB</td>
</tr>
<tr>
<td>A – T and B – T</td>
<td>= VC</td>
</tr>
<tr>
<td>A – B and B – A</td>
<td>= VD</td>
</tr>
<tr>
<td>Adjustment element for pressure adjustment</td>
<td></td>
</tr>
<tr>
<td>Sleeve with hexagon and protective cap</td>
<td>= 2</td>
</tr>
</tbody>
</table>

Further details in clear text

Seal material

V = FKM seals (other seals on request)

Attention!
Observe compatibility of seals with hydraulic fluid used!

Pressure setting
50 = Pressure setting up to 50 bar
100 = Pressure setting up to 100 bar
210 = Pressure setting up to 210 bar
1X = Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)

Standard types

<table>
<thead>
<tr>
<th>Type ZDBK</th>
<th>Material number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDKB 6 VA2-1X/50V</td>
<td>R900564557</td>
</tr>
<tr>
<td>ZDKB 6 VA2-1X/100V</td>
<td>R900501402</td>
</tr>
<tr>
<td>ZDKB 6 VA2-1X/210V</td>
<td>R900564558</td>
</tr>
<tr>
<td>ZDKB 6 VB2-1X/50V</td>
<td>R900564559</td>
</tr>
<tr>
<td>ZDKB 6 VB2-1X/100V</td>
<td>R900564560</td>
</tr>
<tr>
<td>ZDKB 6 VB2-1X/210V</td>
<td>R900564561</td>
</tr>
<tr>
<td>ZDKB 6 VP2-1X/50V</td>
<td>R900564562</td>
</tr>
<tr>
<td>ZDKB 6 VP2-1X/100V</td>
<td>R900564563</td>
</tr>
<tr>
<td>ZDKB 6 VP2-1X/210V</td>
<td>R900564564</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type Z2DBK</th>
<th>Material number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z2DBK 6 VC2-1X/50V</td>
<td>R900565005</td>
</tr>
<tr>
<td>Z2DBK 6 VC2-1X/100V</td>
<td>R900565006</td>
</tr>
<tr>
<td>Z2DBK 6 VC2-1X/210V</td>
<td>R900565007</td>
</tr>
<tr>
<td>Z2DBK 6 VD2-1X/50V</td>
<td>R900565002</td>
</tr>
<tr>
<td>Z2DBK 6 VD2-1X/100V</td>
<td>R900565003</td>
</tr>
<tr>
<td>Z2DBK 6 VD2-1X/210V</td>
<td>R900564570</td>
</tr>
</tbody>
</table>
Symbols (① = valve side, ② = subplate side)

Type ZDBK 6 VA...

Type ZDBK 6 VB...

Type ZDBK 6 VP...

Type ZDBK 6 VP...

Type Z2DBK 6 VC...

Type Z2DBK 6 VC...

Type Z2DBK 6 VD...

Type Z2DBK 6 VD...

Function, section

ZDBK and Z2DBK pressure relief valves are pilot operated pressure relief valves of sandwich plate design. They are used to limit a system pressure.

The valves basically consist of a housing (7) and one or two pressure valve cartridges. The system pressure is set via the adjustment element (4).

At rest the valves are closed. The pressure in port A acts on the spool (1). At the same time the pressure is applied via the orifice (2), onto the spring loaded side of the spool (1) and via orifice (3) onto the pilot poppet (6). If the pressure in port A rises above the value set at the spring (5) then the pilot poppet (6) opens. Pressure fluid flows from the spring loaded side of the spool (1), orifice (3) and bore (8) into port T. The resulting pressure drop moves the spool (1) and thus opens the connection A to T while maintaining the pressure set at the spring (5). The pilot oil return from both spring chambers is externally via port T.
Technical data (for applications outside these parameters, please consult us!)

**General**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Type ZDBK</td>
<td>Approx. 0.6</td>
</tr>
<tr>
<td></td>
<td>Type Z2DBK 6 VC</td>
<td>Approx. 0.8</td>
</tr>
<tr>
<td></td>
<td>Type Z2DBK 6 VD</td>
<td>Approx. 1.4</td>
</tr>
</tbody>
</table>

Installation orientation: Optional

Ambient temperature range: °C
-20 to +80

**General**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operating pressure (bar)</td>
<td>210</td>
</tr>
<tr>
<td>Maximum pressure setting (bar)</td>
<td>50; 100; 210</td>
</tr>
<tr>
<td>Maximum counterpressure (port T) (bar)</td>
<td>&lt; 100</td>
</tr>
<tr>
<td>Maximum flow (l/min)</td>
<td>40</td>
</tr>
</tbody>
</table>

Hydraulic fluid: Minera 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 request

Press fluid temperature range: °C
-20 to +80

Viscosity range: mm²/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 class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

The characteristic curves are valid for output pressure = zero over the complete flow range!

**Characteristic curves** (measured with HLP46 and \( \theta_{oil} = 40 \, ^\circ C \pm 5 \, ^\circ C \))

![Characteristic curves diagram](image-url)

The characteristic curves are valid for output pressure = zero over the complete flow range!
**Dimensions:** Type ZDBK 6 VA and ZDBK 6 VP (dimensions in mm)

<table>
<thead>
<tr>
<th>Type</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZDBK 6 VA</td>
<td>88</td>
<td>148</td>
<td>34,5</td>
</tr>
<tr>
<td>ZDBK 6 VP</td>
<td>100</td>
<td>160</td>
<td>46,5</td>
</tr>
</tbody>
</table>

1. Nameplate
2. Adjustment element: Sleeve with hexagon and protective cap
3. Valve mounting bores
4. Locknut 24 A/F
5. Hexagon 10 A/F
6. Identical seal rings for ports A, B, P, T (plate side)
7. Plate side – porting pattern to ISO 4401-03-02-0-05 (with locating bore for locating pin ISO 8752-3x8-St, material no. R900005694, separate order)
8. Component side – porting pattern to ISO 4401-03-02-0-05 (with locating bore Ø4 x 4 mm deep)

**Valve fixing screws** (separate order)
- 4 hexagon socket head cap screws
  ISO 4762 - M5 - 10.9-flZn-240h-L
  Friction coefficient \( \mu_{\text{total}} \) = 0.09 to 0.14,
  tightening torque \( M_T = 7 \text{ Nm} \pm 10\% \),
  or
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9
  Friction coefficient \( \mu_{\text{total}} \) = 0.12 to 0.17,
  tightening torque \( M_T = 8.1 \text{ Nm} \pm 10\% \)

Required surface quality of the valve mounting face

\[ 0.01/100 \]
**Dimensions: Type ZDBK 6 VB (dimensions in mm)**

1. Nameplate
2. Adjustment element: Sleeve with hexagon and protective cap
3. Valve mounting bores
4. Locknut 24 A/F
5. Hexagon 10 A/F
6. Identical seal rings for ports A, B, P, T (plate side)
7. Plate side – porting pattern to ISO 4401-03-02-0-05 (with locating bore for locating pin ISO 8752-3x8-St, material no. R900005694, separate order)
8. Component side – porting pattern to ISO 4401-03-02-0-05 (with locating bore Ø4 x 4 mm deep)

**Valve fixing screws (separate order)**
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9-flZn-240h-L
  Friction coefficient $\mu_{\text{total}} = 0.09$ to $0.14$,
  tightening torque $M_f = 7$ Nm ± 10%,
  or
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9
  Friction coefficient $\mu_{\text{total}} = 0.12$ to $0.17$,
  tightening torque $M_f = 8.1$ Nm ± 10%

Required surface quality of the valve mounting face
Dimensions: Type Z2DBK 6 VC (dimensions in mm)

1 Nameplate
2 Adjustment element: Sleeve with hexagon and protective cap
3 Valve mounting bores
4 Locknut 24 A/F
5 Hexagon 10 A/F
6 Identical seal rings for ports A, B, P, T (plate side)
7 Plate side – porting pattern to ISO 4401-03-02-0-05 (with locating bore for locating pin ISO 8752-3x8-St, material no. R900005694, separate order)
8 Component side – porting pattern to ISO 4401-03-02-0-05 (with locating bore Ø4 x 4 mm deep)

Valve fixing screws (separate order)
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9-flZn-240h-L
  Friction coefficient $\mu_{\text{total}} = 0.09$ to $0.14$, tightening torque $M_f = 7 \text{ Nm} \pm 10\%$
  or
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9
  Friction coefficient $\mu_{\text{total}} = 0.12$ to $0.17$, tightening torque $M_f = 8.1 \text{ Nm} \pm 10\%$

Required surface quality of the valve mounting face

Rzmax 4

0,01/100
Dimensions: Type Z2DBK 6 VD (dimensions in mm)

1. Nameplate
2. Adjustment element: Sleeve with hexagon and protective cap
3. Valve mounting bores
4. Locknut 24 A/F
5. Hexagon 10 A/F
6. Identical seal rings for ports A, B, P, T (plate side)
7. Plate side – porting pattern to ISO 4401-03-02-0-05 (with locating bore for locating pin ISO 8752-3x8-St, material no. R900005694, separate order)
8. Component side – porting pattern to ISO 4401-03-02-0-05 (with locating bore Ø4 x 4 mm deep)

Valve fixing screws (separate order)
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9-flZn-240h-L
  Friction coefficient \( \mu_{\text{total}} = 0.09 \) to 0.14,
  tightening torque \( M_T = 7 \text{ Nm} \pm 10\% \),
  or
- 4 hexagon socket head cap screws ISO 4762 - M5 - 10.9
  Friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17,
  tightening torque \( M_T = 8.1 \text{ Nm} \pm 10\% \)

Required surface quality of the valve mounting face

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