Directional spool valves, direct operated, with solenoid actuation

Type WE

Features

- 4/3, 4/2 or 3/2 directional design
- High-power solenoid
- Porting pattern according to DIN 24340 form A
- Porting pattern according to ISO 4401-03-02-0-05 and NFPA T3.5.1 R2-2002 D03
- Wet-pin DC or AC solenoids with detachable coil
- Solenoid coil can be rotated by 90°
- The coil can be changed without having to open the pressure-tight chamber
- Electrical connection as individual or central connection
- Manual override, optional
- Spool position monitoring, optional

Contents

- Size 6
- Component series 6X
- Maximum operating pressure 350 bar [5076 psi]
- Maximum flow: 80 l/min [21 US gpm] DC
  60 l/min [15.8 US gpm] AC

Features 1
Ordering code 2 ... 4
Mating connectors 4
Symbols 5
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### Ordering code

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<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
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</thead>
<tbody>
<tr>
<td>WE</td>
<td>6</td>
<td>$6X$</td>
<td>/</td>
<td>E</td>
<td></td>
<td></td>
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<td>*</td>
</tr>
</tbody>
</table>

#### Details

01  3 main ports  3
4 main ports  4

02  Directional valve  WE

03  Size 6  6

04  Symbols e.g. C, E, EA, EB, etc; for the possible version, see page 5

05  Component series 60 to 69 (60 to 69: Unchanged installation and connection dimensions)  6X

06  With spring return  no code

- Without spring return  O
- Without spring return with detent  OF

07  High-power wet-pin solenoid with detachable coil  E

08  Direct voltage 24 V  G24

- AC voltage 230 V 50/60 Hz  W230
- AC voltage 120 V or 110 V 50/60 Hz  W110
- Direct voltage 205 V  G205

- DC solenoid with rectifier for AC voltage (not frequency-related; only available with plug-in connection with cover, see page 17)  W110R

Connection to AC voltage mains via control with rectifier (see table below and page 4) ¹)
For further ordering codes for other voltages and frequencies, see page 8

09  Without manual override  no code

- With concealed manual override (standard)  N9 ²)
- With manual override  N ²)
- With lockable manual override "mushroom button" (small)  N4 ²)
- With lockable manual override "mushroom button" (big)  N5 ²; ³)
- With manual override "mushroom button" (big), not lockable  N6 ²)
- With lockable manual override "nut"  N7 ²)

#### Electrical connection

10  Individual connection

- Without mating connector, with connector according to DIN EN 175301-803  K4 ⁴)
- Without mating connector, with connector AMP Junior-Timer  C4 ⁴)
- Without mating connector, with connector DT 04-2PA (Deutsch plug)  K40 ⁴; ⁷)
- Without mating connector, 4-pole with connector M12x1 according to IEC 60947-5-2, integrated interference protection circuit and status LED  K72L ⁵)
- Without mating connector, 4-pole with connector M12x1 according to IEC 60947-5-2, integrated interference protection circuit and status LED (no connection pin 1 to pin 2)  K73L ⁵)

#### Central connection

- Cable entry at the cover, with indicator light  DL
- Central plug-in connection at the cover, with indicator light (without mating connector); connector according to DIN EN 175201-804  DK6L ⁶)

For further electrical connections, see data sheet 08010

<table>
<thead>
<tr>
<th>AC voltage mains (admissible voltage tolerance ±10%)</th>
<th>Nominal voltage of the DC solenoid in case of operation with alternating voltage</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 V · 50/60 Hz</td>
<td>96 V</td>
<td>G96</td>
</tr>
<tr>
<td>230 V · 50/60 Hz</td>
<td>205 V</td>
<td>G205</td>
</tr>
</tbody>
</table>
Ordering code

<table>
<thead>
<tr>
<th>01</th>
<th>02</th>
<th>03</th>
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<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE</td>
<td>6</td>
<td>6X</td>
<td>/</td>
<td>E</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>*</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Spool position monitoring**

**11 Without position switch**
- **Inductive position switch type QM**
  - Monitored spool position “a”
  - Monitored spool position “b”
  - Monitored rest position
- **Inductive position switch type QR**
  - Monitored rest position
  - Monitored spool position “a” and “b”
- **Inductive position switch type QL**
  - Monitored spool position “a”
  - Monitored spool position “b”
- **Inductive proximity sensor type QS**
  - Monitored spool position “a”
  - Monitored spool position “b”
  - Monitored spool position “0”
  - Monitored spool position “0” and “a”
  - Monitored spool position “0” and “b”
  - Monitored spool position “a” and “b”

For more information, see data sheet 24830

**12 Without throttle insert**

With throttle insert see table:

<table>
<thead>
<tr>
<th>Port</th>
<th>P</th>
<th>A</th>
<th>B</th>
<th>A and B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throttle Ø in mm [inch]</td>
<td>0.8 [0.031]</td>
<td>1.0 [0.039]</td>
<td>1.2 [0.047]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>B08</td>
<td>H08</td>
<td>R08</td>
<td>N08</td>
<td>X08</td>
</tr>
<tr>
<td>A</td>
<td>B10</td>
<td>H10</td>
<td>R10</td>
<td>N10</td>
<td>X10</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use with flows which exceed the performance limit of the valve (see page 6).

**Clamping length**

13 42 mm [1.65 inch] (standard)

22 mm [0.87 inch]

**Seal material**

14 NBR seals

FKM seals

Attention: Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)

15 Without locating hole

With locating hole

With locating hole and locking pin ISO 8752-3x8-St

**Explanation of the footnotes** see page 4.
Ordering code

1) Only for version "individual connection"
2) The manual override cannot be allocated a safety function. The manual override units may only be used up to a tank pressure of 50 bar.
3) With tank pressures above 50 bar, it cannot be guaranteed that the valve remains in the position switched by the manual override "N5".
4) Mating connectors, separate order, see below and data sheet 08006
5) Only version "G24", see data sheet 08010
6) Mating connector, separate order, material no. R900005538
7) Only possible in connection with the symbols G, J, D and E as well a reduced performance limit.
8) Locking pin ISO 8752-3x8-St, material no. R900005694 (separate order)

Mating connectors according to DIN EN 175301-803

<table>
<thead>
<tr>
<th>Port</th>
<th>Valve side</th>
<th>Color</th>
<th>Material number</th>
<th>Material number</th>
<th>Material number</th>
<th>Material number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without circuitry</td>
<td></td>
<td>With indicator light 12 ... 240 V</td>
<td>With indicator light and rectifier 12 ... 240 V</td>
<td>With rectifier 12 ... 240 V</td>
<td>With indicator light and Zener diode suppression circuit 24 V</td>
</tr>
<tr>
<td></td>
<td>M16 x 1.5</td>
<td>a</td>
<td>Gray</td>
<td>R901017010</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b</td>
<td>Black</td>
<td>R901017011</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a/b</td>
<td>Black</td>
<td>-</td>
<td>R901017022</td>
<td>R901017029</td>
</tr>
<tr>
<td></td>
<td>1/2&quot; NPT</td>
<td>a</td>
<td>Red/brown</td>
<td>R900004823</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Pg 16)</td>
<td>b</td>
<td>Black</td>
<td>R900011039</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a/b</td>
<td>Black</td>
<td>-</td>
<td>R900057453</td>
<td>R900057455</td>
</tr>
</tbody>
</table>

For details and more mating connectors, see data sheet 08006.
Symbols

1) Example:
Symbol E with spool position "a", ordering code ..EA..

2) Symbol E1-: P – A/B pre-opening,
Caution in conjunction with differential cylinders due to pressure intensification!

Notices!
Representation according to DIN ISO 1219-1. Hydraulic interim positions are shown by dashes.
Dimensions: Valve with DC solenoid – Individual connection  
(dimensions in mm [inch])

Required surface quality of the valve contact surface
**Dimensions**: Valve with DC solenoid – Central connection  
(dimensions in mm [inch])

**Terminal assignment with central connection:**

- **1 solenoid:**
  Always connect the solenoid to terminals 1 and 2, the protective earthing connector to terminal \( \Box \) PE

- **2 solenoids:**
  Always connect solenoid "a" to terminals 1 and 2, solenoid "b" to terminals 3 and 4, the protective earthing conductor to terminal \( \Box \) PE

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**Dimensions for manual overrides** see page 15.  
**Item explanations, valve mounting screws and subplates** see page 18.
**Dimensions:** Valve with DC solenoid – Manual overrides (dimensions in mm [inch])

Item explanations, valve mounting screws and subplates see page 18.

Required surface quality of the valve contact surface

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**Legend:**
- **0.01/100 [0.0004/4.0]**
- **Rzmax 4**
Dimensions: Valve with AC solenoid – Individual connection
(dimensions in mm [inch])

[Diagram of the valve with dimensions labeled]

Required surface quality of the valve contact surface: Rzmax 4
**Dimensions:** Valve with AC solenoid – **Central connection**  
(dimensions in mm [inch])

**Terminal assignment with central connection:**

▶ **1 solenoid:**
  Always connect the solenoid to terminals 1 and 2, the protective earthing connector to terminal ☐ PE

▶ **2 solenoids:**
  Always connect solenoid "a" to terminals 1 and 2, solenoid "b" to terminals 3 and 4, the protective earthing to terminal ☐ PE
Dimensions

1. Solenoid "a"
2. Solenoid "b"
3. Dimension for solenoid with concealed manual override "N9" (standard)
4. Dimension for solenoid with manual override "N"
5. Dimension for solenoid without manual override "N7"
6. Dimension for solenoid with manual override "N5" and "N6"
7. Mating connector without circuitry for connector "K4" (separate order, see page 4 and data sheet 08006)
8. Mating connector (AMP Junior Timer) with connector "C4" (separate order, see data sheet 08006)
9. Mating connector DT 04-2PA (Deutsch plug) with connector "K40" (separate order, see data sheet 08006)
10. Mating connector angled with M12x1 plug-in connection with status LED "K72L" (separate order, see data sheet 08006)
11. Mating connector with circuitry for connector "K4" (separate order, see page 4 and data sheet 08006)
12. Cable gland Pg 16 [1/2" NPT] "DL"
13. Central plug-in connection "DKL"
15. Name plate
16. Identical seal rings for ports A, B, P, T
17. Plug screw for valves with one solenoid
18. Space required to remove the mating connector/angled socket
19. Space required to remove the coil
20. Mounting nut, tightening torque \( M_a = 4 \pm 1 \text{ Nm} \) [2.95± 0.74 ft-lbs]
21. Porting pattern according to DIN 24340 form A (without locating hole), or ISO 4401-03-02-0-05 and NFPA T3.5.1 R2-2002 D03 (with locating hole for locking pin ISO 8752-3x8-St, material no. R900005694, separate order)
22. Alternative clamping length (): 22 mm [0.87 inch]
23. Cover

Subplates according to data sheet 45052 (separate order)

- (without locating hole) G 341/01 (G1/4) G 342/01 (G3/8) G 502/01 (G1/2)
- (with locating hole) G 341/60 (G1/4) G 342/60 (G3/8) G 502/60 (G1/2) G 341/12 (SAE-6) G 342/12 (SAE-8) G 502/12 (SAE-10)

Valve mounting screws (separate order)

- Clamping length 42 mm:
  - 4 metric hexagon socket head cap screws ISO 4762 - M5 x 50 - 10.9-flZn-240h-L
    (friction coefficient \( \mu_{\text{total}} = 0.09 \) to 0.14); tightening torque \( M_a = 7 \text{ Nm} \) [5.2 ft-lbs] ± 10%, material no. R913000064
  - 4 hexagon socket head cap screws UNC 10-24 UNC x 2" ASTM-A574
    (friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8.1 \text{ Nm} \) [6 ft-lbs] ± 15%

- Clamping length 22 mm:
  - 4 metric hexagon socket head cap screws ISO 4762 - M5 x 30 - 10.9-flZn-240h-L
    (friction coefficient \( \mu_{\text{total}} = 0.09 \) to 0.14); tightening torque \( M_a = 7 \text{ Nm} \) [5.2 ft-lbs] ± 10%, material no. R913000316
  - 4 hexagon socket head cap screws UNC 10-24 UNC x 1 1/4" ASTM-A574
    (friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8 \text{ Nm} \) [5.9 ft-lbs] ± 10%

Notice!
The valve may only be operated with properly mounted cover.

Material no. R900005538

Clamping length 42 mm:
4 metric hexagon socket head cap screws ISO 4762 - M5 x 50 - 10.9-flZn-240h-L
(friction coefficient \( \mu_{\text{total}} = 0.09 \) to 0.14); tightening torque \( M_a = 7 \text{ Nm} \) [5.2 ft-lbs] ± 10%, material no. R913000064
or
4 hexagon socket head cap screws ISO 4762 - M5 x 50 - 10.9
(friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8.1 \text{ Nm} \) [6 ft-lbs] ± 10%

4 hexagon socket head cap screws UNC 10-24 UNC x 2" ASTM-A574
(friction coefficient \( \mu_{\text{total}} = 0.19 \) bis 0.24); tightening torque \( M_a = 11 \text{ Nm} \) [8.2 ft-lbs] ± 15%,
(friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8 \text{ Nm} \) [5.9 ft-lbs] ± 10%
material no. R978800693

Material no. R913000316

Clamping length 22 mm:
4 metric hexagon socket head cap screws ISO 4762 - M5 x 30 - 10.9-flZn-240h-L
(friction coefficient \( \mu_{\text{total}} = 0.09 \) to 0.14); tightening torque \( M_a = 7 \text{ Nm} \) [5.2 ft-lbs] ± 10%, material no. R913000316
or
4 hexagon socket head cap screws ISO 4762 - M5 x 30 - 10.9
(friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8.1 \text{ Nm} \) [6 ft-lbs] ± 10%

4 hexagon socket head cap screws UNC 10-24 UNC x 1 1/4"
(friction coefficient \( \mu_{\text{total}} = 0.19 \) to 0.24); tightening torque \( M_a = 11 \text{ Nm} \) [8.2 ft-lbs] ± 15%,
(friction coefficient \( \mu_{\text{total}} = 0.12 \) to 0.17); tightening torque \( M_a = 8 \text{ Nm} \) [5.9 ft-lbs] ± 10%
material no. R978802879

Not included in the INOSOL delivery range