Proportional directional valves, pilot operated, with electrical position feedback and integrated electronics (OBE)

Type 4WRKE

Size 10 to 35
Component series 3X
Maximum operating pressure 350 bar
Maximum flow 3,000 l/min

Table of contents

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>1</td>
</tr>
<tr>
<td>Ordering code</td>
<td>2</td>
</tr>
<tr>
<td>Symbols</td>
<td>3</td>
</tr>
<tr>
<td>Dimensions</td>
<td>4 ... 9</td>
</tr>
</tbody>
</table>

Features

- Pilot operated 2-stage proportional directional valve with electrical position feedback of the main control spool and integrated electronics (OBE)
- Control of flow direction and size of a flow
- Operation by means of proportional solenoids
- Subplate mounting:
  - Porting pattern according to ISO 4401
- Electrical position feedback
- Spring-centered main control spool
- Pilot control valve:
  - Single-stage proportional directional valve
- Main stage with position control
### Ordering code

**Electrically operated**

2-stage proportional directional valve in 4-way version with integrated electronics

<table>
<thead>
<tr>
<th>Size</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>= 10</td>
</tr>
<tr>
<td>16</td>
<td>= 16</td>
</tr>
<tr>
<td>25</td>
<td>= 25</td>
</tr>
<tr>
<td>27</td>
<td>= 27</td>
</tr>
<tr>
<td>32</td>
<td>= 32</td>
</tr>
<tr>
<td>35</td>
<td>= 35</td>
</tr>
</tbody>
</table>

**Symbols**

- **E**
- **E1-**
- **E3-**
- **W6-**
- **W8-**
- **R**
- **R3-**
- **EA**
- **EB**

With symbol E1- and W8-:

- P → A: \( q_v \)
- B → T: \( q_v^2 \)
- P → B: \( q_v^2 \)
- A → T: \( q_v \)

Notice:

In the zero position, spools W6- and R3- have a connection from A to T and B to T with approx. 2% of the relevant nominal cross-section.

---

1) **Examples:** Spool with spool position "a" (P → B) ordering code .EA. or W6A

Spool with spool position "b" (P → A) ordering code .EB. or W6B

2) Only E and W6- available with characteristic curve form L (linear)

---

### Further details

- **M =** NBR seals
- **V =** FKM seals

- **D3 =** With pressure reducing valve ZDR 6 DP0-4X/40YM-W80 (non-adjustable)

**Electronics interface**

- **C1 =** Command value/actual value ±10 mA
- **A1 =** Command value/actual value ±10 V
- **F1 =** Command value/actual value 4 to 20 mA

**Electrical connection**

- **K31 =** Without mating connector according to DIN EN 175201-804
- **Mating connector – separate order** see page 21

**Pilot oil supply and drain**

- **E =** Pilot oil supply external, pilot oil drain external
- **ET =** Pilot oil supply internal, pilot oil drain internal
- **T =** Pilot oil supply external, pilot oil drain internal

**Supply voltage**

- **6E =** Direct voltage 24 V

- **3X =** Proportional solenoid with detachable coil

**Characteristic curve form**

- **L =** Linear
- **P =** Linear with fine control range

**Rated flow**

<table>
<thead>
<tr>
<th>Flow</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Size 10</td>
</tr>
<tr>
<td>50</td>
<td>Size 16</td>
</tr>
<tr>
<td>100</td>
<td>Size 25</td>
</tr>
<tr>
<td>200</td>
<td>Size 27</td>
</tr>
<tr>
<td>350</td>
<td>Size 32</td>
</tr>
<tr>
<td>600</td>
<td>Size 35</td>
</tr>
</tbody>
</table>

3) Only E1- and W8- available with characteristic curve form L (linear)

4) When replacing the component series 2X with component series 3X the electronics interface is to be defined with A5 (enable signal at pin C)
Symbols

Simplified

Example:
Pilot oil supply external
Pilot oil drain external

Detailed

Example:
1 Pilot control valve type 4WRAP 6…
2 Main valve
3 Pressure reducing valve
type ZDR 6 DP0-4X/40YM-W80
4 Integrated electronics (OBE)
Dimensions: Size 10 (dimensions in mm)

1 Pilot control valve
2 Mating connector "A", color gray
3 Mating connector "B", color black
4 Space required for connection cable and to remove the mating connector
5 Wiring
6 Mating connector, separate order, see page 21
7 Pressure reducing valve
8 Name plate
9 Main valve
10 Integrated electronics (OBE)
11 Identical seal rings for connection A, B, P, T
12 Identical seal rings for connection X, Y
13 Processed valve contact surface, porting pattern according to ISO 4401-05-05-0-05 (connection X, Y, as required)
Dimensions: Size 16 (dimensions in mm)

1. Pilot control valve
2. Mating connector "A", color gray
3. Mating connector "B", color black
4. Space required for connection cable and to remove the mating connector
5. Wiring
6. Mating connector, separate order, see page 21
7. Pressure reducing valve
8. Name plate
9. Main valve
10. Integrated electronics (OBE)
11. Identical seal rings for connection A, B, P, T
12. Identical seal rings for connection X, Y
13. Processed valve contact surface, porting pattern according to ISO 4401-07-07-0-05 (connection X, Y as required) deviating from the standard:
   - Connection A, B, T and P Ø 20mm
14. Locking pin
Dimensions: Size 25 (dimensions in mm)

1. Pilot control valve
2. Mating connector "A", color gray
3. Mating connector "B", color black
4. Space required for connection cable and to remove the mating connector
5. Wiring
6. Mating connector, separate order, see page 21
7. Pressure reducing valve
8. Name plate
9. Main valve
10. Integrated electronics (OBE)
11. Identical seal rings for connection A, B, P, T
12. Identical seal rings for connection X, Y
13. Processed valve contact surface, porting pattern according to ISO 4401-08-08-0-05 (connection X, Y, as required)
14. Locking pin

Required surface quality of the valve contact surface

Dimensions:
- Size 25 (dimensions in mm)
- Main valve
- Pilot control valve
- Wiring
- Mating connector "A" and "B"
- Pressure reducing valve
- Name plate
- Locking pin

Technical specifications and measurements provided in the diagram.
**Dimensions:** Size 27 (dimensions in mm)

1. Pilot control valve
2. Mating connector "A", color gray
3. Mating connector "B", color black
4. Space required for connection cable and to remove the mating connector
5. Wiring
6. Mating connector, separate order, see page 21
7. Pressure reducing valve
8. Name plate
9. Main valve
10. Integrated electronics (OBE)
11. Identical seal rings for connection A, B, P, T
12. Identical seal rings for connection X, Y
13. Processed valve contact surface, porting pattern according to ISO 4401-08-08-0-05 (connection X, Y as required) deviating from the standard:
   - Connection A, B, T and P Ø 32 mm
14. Locking pin

Required surface quality of the valve contact surface
**Dimensions:** Size 32 (dimensions in mm)

1. Pilot control valve
2. Mating connector "A", color gray
3. Mating connector "B", color black
4. Space required for connection cable and to remove the mating connector
5. Wiring
6. Mating connector, separate order, see page 21
7. Pressure reducing valve
8. Name plate
9. Main valve
10. Integrated electronics (OBE)
11. Identical seal rings for connection A, B, P, T
12. Identical seal rings for connection X, Y
13. Processed valve contact surface, porting pattern according to ISO 4401-10-09-0-05 (connection X, Y as required) deviating from the standard:
   - Connection, B, T and P Ø 38 mm
14. Locking pin

Required surface quality of the valve contact surface

- Rzmax 4
Dimensions: Size 35 (dimensions in mm)

1 Pilot control valve
2 Mating connector "A", color gray
3 Mating connector "B", color black
4 Space required for connection cable and to remove the mating connector
5 Wiring
6 Mating connector, separate order, see page 21
7 Pressure reducing valve
8 Name plate
9 Main valve
10 Integrated electronics (OBE)
11 Identical seal rings for connection A, B, P, T
12 Identical seal rings for connection X, Y
13 Processed valve contact surface, porting pattern according to ISO 4401-10-09-0-05 (connection X, Y as required) deviating from the standard:
   - Connection A, B, T and P Ø 50 mm
14 Locating pins

Required surface quality of the valve contact surface