4/3 and 4/2 Proportional directional valve elements with LS

General specifications
The inlet section can be configured for either a fixed displacement pump or load-sense variable displacement pump. When simultaneous machine functions are actuated, the pre-compensators will automatically adjust to the highest load pressure via a shuttle arrangement, making the system circuit independent of variations in loads and pump pressures.

Main Field of Application
- Truck mounted applications
- Forestry machinery
- Forklifts and Telehandler
- Municipal vehicles
- Cranes
- Construction machines
- Aerial working platforms
- Heavy duty vehicles
- Agricultural machines

Size 6
Series 00
Maximum operating pressure:
350 bar (5000 psi) on pump side
350 bar (5000 psi) on consumer side
Maximum flow at 6 bar (87 psi) 40 l/min (10.6 gpm)
Ports connections G 3/8 - G 1/2 - SAE6

NEW spool position sensor available for this valve.
See RE18300-30

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Ordering details

EDG-D-P... | 4/3 and 4/2 Proportional directional valve elements

Ordering details

EDG - D P _ _ _ _ _ _ _ _ _ _ _ _ 0 0 - _ _

Family
00 Directional Valve elements EDG Size 6 proportional

Type
01 Direct Acting

Configuration
02 Proportional

Ports & Connections
03 G 3/8 DIN 3852
G 1/2 DIN 3852
9/16-18 UNF 2-B (SAE6)
Schafer DN8-10

Local compensator bias spring
04 4 bar (58 psi)
6 bar (87 psi)

LS shuttle valve and flange options*
05 With crossing P-TA-TB-LS lines; with Shuttle valve (ball)
With crossing P-TA-TB-LS lines; without Shuttle valve (ball)

Hydraulic connections in neutral
06 P, A, B closed LS to T
P closed A, B, LS to T

Spool variants
07 4/3 operated both sides a and b
4/2 operated on side a only
4/2 operated on side b only

Flow rates over valve connection (from 0 to 9 according table 1)
08 Flow rate P>A
09 Flow rate P>B
10 Nominal flow rate (A>T)
11 Nominal flow rate (B>T)

Voltage supply
12 Without coil
12V DC
24V DC

Override options
17 Push pin type override
Push button override on both sides A and B
Screw type override on both sides A and B

Table 1
Notches dimension selection
\[\text{Flow Rate} \quad \text{Local compensator bias spring}\]
\[
\begin{array}{cc}
2 & 8 \text{l/min} \quad 10 \text{l/min} \\
3 & 12 \text{l/min} \quad 14 \text{l/min} \\
4 & 16 \text{l/min} \quad 18 \text{l/min} \\
6 & 24 \text{l/min} \quad 30 \text{l/min} \\
9 & 32 \text{l/min} \quad 40 \text{l/min} \\
\end{array}
\]

Table 2
Without valve cavity
With valve cavity plugged (Normally closed plug)
With anti-cavitation valve

Secondary valve types
00 Double or single relief valve with anticavitation or anticavitation only

Secondary valve setting code (according to table 2)
15 A-Ta setting @5lpm for Relief or Anticavitation Valve option
16 B-Ta setting @5lpm for Relief or Anticavitation Valve option

Bosch Rexroth AG, RE 18301-19/10.2019
Spool variant and Flow pattern

General hydraulic layout

05 - LS Shuttle valve options
= 0 (with)
= A (without)

06 - Hydraulic connection in neutral

= B (all port closed)
= E (A/B to T)

07 - Spool Variants
= 2 (3 positions)
= 3 (2 pos. Aside)
= 4 (2 pos. Bside)

14 - Secondary valve types
= 00 (No secondary valves)
= M0 (Relief valve with anticavitation option)
= M0 (Anticavitation valve option)
The EDG direct acting proportional solenoid sectional valves with pressure compensation control the oil flow to actuators. These elements consist of a stackable housing (1) with a control spool (2), two solenoids (4), two return springs (3). Each solenoid (4), energized by PWM regulator, displaces the control spool from its neutral-central position “0” proportionally to the current received. When the spool is shifted and the metering notch is open, flow delivery starts and is controlled by a 2 way pressure compensator (7) (P > A; P > B).

When the solenoid is de-energized, the return spring pushes the spool back in its neutral-central position. Each coil (4) is fastened to the solenoid tube by the ring nut (5). A push-pin manual override is included to actuate the valve without electrical power as needed.

**Load pressure compensation**

The pressure compensator (7) keeps the pressure differential on the main spool (2). The flow to the consumers remains constant, despite varying loads. The highest load pressure on the pump is signaled via the LS line and the integrated shuttle valve (6).

Port relief valves with anti-cavitation function on A and B (9) protect the system against pressure peaks and cavitation.
### Technical data

#### General

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve element with 2 solenoids</td>
<td>kg (lbs)</td>
<td>2.2 (4.85)</td>
</tr>
<tr>
<td>Valve element with 1 solenoid</td>
<td>kg (lbs)</td>
<td>1.7 (3.75)</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>°C (°F)</td>
<td>-30...+50 (-22...+122)*</td>
</tr>
</tbody>
</table>

#### Hydraulic

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure at P, A and B ports</td>
<td>bar (psi)</td>
<td>350 (5000)</td>
</tr>
<tr>
<td>Maximum static pressure at T</td>
<td>bar (psi)</td>
<td>210 (3050)**</td>
</tr>
<tr>
<td>Max. regulated flow at 6 bar (87 psi)</td>
<td>l/min (gpm)</td>
<td>40 (10.6)</td>
</tr>
</tbody>
</table>

E-schemes flow pattern symmetrical closed pass in the neutral position (connection from A to T and B to T) Approx. 2% of the nominal cross-section

Hydraulic fluid

- General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems.
- Mineral oil based hydraulic fluids HL (DIN 51524 part 1).
- Mineral oil based hydraulic fluids HLP (DIN 51524 part 2).
- For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.

<table>
<thead>
<tr>
<th>Fluid Temperature</th>
<th>°C (°F)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-30...+100 (-22...+212) (NBR seals)</td>
</tr>
</tbody>
</table>

Permissible degree of fluid contamination

- ISO 4572: \( \beta \times 75 \times \text{X}=12...15 \)
- ISO 4406: class 20/18/15
- NAS 1638: class 9

Viscosity range

<table>
<thead>
<tr>
<th>Viscosity range</th>
<th>mm²/s</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20....380 (optimal 30....46)</td>
</tr>
</tbody>
</table>

#### Electrical

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage type</td>
<td>PWM 120 Hz</td>
</tr>
<tr>
<td>Voltage tolerance (nominal voltage)</td>
<td>% -10 .... +10</td>
</tr>
<tr>
<td>Duty</td>
<td>Continuous, with ambient temperature ≤ 50°C (122°F)</td>
</tr>
<tr>
<td>Insulation class</td>
<td>H</td>
</tr>
<tr>
<td>Voltage (nominal at 20°C (68°F))</td>
<td></td>
</tr>
<tr>
<td>Nominal 100% current</td>
<td>A 1.76  0.94</td>
</tr>
<tr>
<td>Coil resistance</td>
<td></td>
</tr>
<tr>
<td>(nominal at 20°C (68°F))</td>
<td></td>
</tr>
<tr>
<td>- Cold value</td>
<td>Ω 3.71  13</td>
</tr>
<tr>
<td>- Max hot value</td>
<td>Ω 6.1   22.9</td>
</tr>
</tbody>
</table>

#### Note

For applications with different specifications consult us.

*For higher values of Ambient Temperature working conditions, please contact factory.

**In addition to relief valve pressure setting value.

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### Code Overview

<table>
<thead>
<tr>
<th>Code</th>
<th>Voltage [V]</th>
<th>Connector type</th>
<th>Coil description</th>
<th>Marking</th>
<th>Coil Mat no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB 01</td>
<td>12 DC</td>
<td>EN 175301-803 (Ex. DIN 43650)</td>
<td>P45 01</td>
<td>12 DC</td>
<td>R933000088</td>
</tr>
<tr>
<td>OB 03</td>
<td>12 DC</td>
<td>AMP JUNIOR</td>
<td>P45 03</td>
<td>12 DC</td>
<td>R933000089</td>
</tr>
<tr>
<td>OB 07</td>
<td>12 DC</td>
<td>DEUTSCH DT 04-2P</td>
<td>P45 07</td>
<td>12 DC</td>
<td>R930055149</td>
</tr>
<tr>
<td>OC 01</td>
<td>24 DC</td>
<td>EN 175301-803 (Ex. DIN 43650)</td>
<td>P45 01</td>
<td>24 DC</td>
<td>R933000090</td>
</tr>
<tr>
<td>OC 03</td>
<td>24 DC</td>
<td>AMP JUNIOR</td>
<td>P45 03</td>
<td>24 DC</td>
<td>R933000091</td>
</tr>
<tr>
<td>OC 07</td>
<td>24 DC</td>
<td>DEUTSCH DT 04-2P</td>
<td>P45 07</td>
<td>24 DC</td>
<td>R930055150</td>
</tr>
</tbody>
</table>
Characteristic curves

Characteristic curves $Q=Q(I)$

Measured with hydraulic fluid ISO-VG32 at 45° ±5 °C (113° ±9 °F); ambient temperature 20 °C (68 °F).
External dimensions and fittings

1 Solenoid tube Ø 19 mm (0.75 inch).
2 Ring nut for coil locking (Ø 30.3 mm). Torque 6 – 7 Nm (4.4 – 5.2 ft-lb).
3 Flange specifications. For tie rod and tightening torque information see data sheet RE 18301-90.
4 A and B ports.
5 Identification label.

*) In case of selection of Schafer port this dimension will be 81 (3.22).
Electric connection

00 | without coil

01 | Protection class: IP 65 when connector with seal is properly screwed down.

03 | Protection class: IP 65 with female connector properly fitted (see drawing).

07 | Protection class: IP 69K with female connector properly fitted (see drawing).