Hydraulic operated directional valves
ISO 4401 size 06, 10, 16, 25 and 32

Hydraulic operated directional valves are spool type, three or four way, two or three position, designed to operate in oil hydraulic systems. Available with single or double hydraulic actuator.

Valve sizes and max flow:
- **DH-0** = size 06, flow up to 50 l/min
- **DK-1** = size 10, flow up to 160 l/min
- **DP-1** = size 10, flow up to 160 l/min
- **DP-2** = size 16, flow up to 300 l/min
- **DP-4** = size 25, flow up to 700 l/min
- **DP-6** = size 32, flow up to 1000 l/min

Max pressure:
- **350 bar** for DH-0, DP-1, DP-2, DP-4, DP-6
- **315 bar** for DK-1

Max pressure on port T (also X, Y for DP) see note (1):
- **350 bar** for DH-0
- **315 bar** for DK-1

Seals material, see section 3:
- **NBR**
- **FKM**
- **HNBR** (only for DP)

<table>
<thead>
<tr>
<th>Series number</th>
<th>Spool</th>
<th>Manual override</th>
<th>Hydraulic actuator</th>
<th>Adjustable chokes (option /H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L54706</td>
<td></td>
<td></td>
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<tr>
<td>L54707</td>
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<td>L54708</td>
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<td>L54709</td>
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<tr>
<td>L54710</td>
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</tr>
</tbody>
</table>

DH-0511

DP-4411/H

1 MODEL CODE

Directional control valve, size:
- **DH-0** = 06
- **DK-1** = 10
- **DP-1** = 10
- **DP-2** = 16
- **DP-4** = 25
- **DP-6** = 32

Type of actuator:
- **4** = single actuator
- **5** = double actuator

Valve configuration, see section 5:
- **0** = free, without springs
- **1** = spring centered, without detent
- **3** = spring offset external position
- **5** = 2 external positions with detent (only for DH and DK)
- **7** = center and external positions

2 HYDRAULIC CHARACTERISTICS

<table>
<thead>
<tr>
<th>Valve model</th>
<th>DH-0</th>
<th>DK-1</th>
<th>DP-1</th>
<th>DP-2</th>
<th>DP-4</th>
<th>DP-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max recomended flow [l/min]</td>
<td>50</td>
<td>160</td>
<td>300</td>
<td>700</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Max pressure on port P, A, B [bar]</td>
<td>350</td>
<td>315</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max pressure on port T (also X, Y for DP) [bar]</td>
<td>see note (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum pilot pressure [bar]</td>
<td>3 (min) 5 (suggested)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max recommended pressure on piloting line [bar]</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250</td>
</tr>
</tbody>
</table>

(1) The max pressure on port T has to be not over 50% of pilot pressure
3 MAIN CHARACTERISTICS, SEALS AND FLUIDS - for other fluids not included in below table, consult our technical office

Assembly position / location
any position except for valves type DH-050, DK-150, DP-150 (without springs) that must be installed with their longitudinal axis horizontal

Subplate surface finishing
roughness index Ra 0.4 - flatness ratio 0.01/100 (ISO 1101)

MTTFd values according to EN ISO 13849
150 years, for further details see technical table P007

Compliance
RoHS Directive 2011/65/EU as last update by 2015/65/EU
REACH Regulation (EC) n°1907/2006

Ambient temperature range
standard execution = -30°C ÷ +70°C; /PE option = -20°C ÷ +70°C; /BT option = -40°C ÷ +70°C

Seals, recommended fluid temperature
NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C
FKM seals (/PE option) = -20°C ÷ +80°C
HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C

Recommended viscosity
15 ÷ 100 mm²/s - max allowed range 2.8 ÷ 500 mm²/s

Max fluid contamination level
ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog

Hydraulic fluid Suitable seals type Classification Ref. Standard
Mineral oils NBR, FKM, HNBR HL, HLP, HLPD, HVLP, HVLPD DIN 51524
Flame resistant without water FKM HFDU, HFDR ISO 12922
Flame resistant with water NBR, HNBR HFC

4 CONFIGURATIONS and SPOOLS valves type DH-*, DK-*

NOTES
- spools type 0 and 3 are also available as 0/1 and 3/1 with restricted oil passages in central position, from user ports to tank.
- spools type 1, 4 and 5 are also available as 1/1, 4/8 (only for DH), and 5/1. They are properly shaped to reduce water-hammer shocks during the switching.
- spools type 1, 1/2, 3, 8 are available as 1P, 1/2P, 3P, 8P (only for DH-0) to limit valve internal leakages.

5 CONFIGURATIONS and SPOOLS valves type DP-*

NOTES
- For DP*-1 are available only spools: 0, 0/2, 1, 1/2, 3, 4, 5, 6, 7.
- For DP*-6 are available only spools: 0, 1, 1/2, 2, 3, 4, 5, 6, 7, 8.

Special shaped spools
- spools type 0 and 3 are also available as 0/1 and 3/1 with restricted oil passages in central position, from user ports to tank.
- spools type 1, 4 and 5 are also available as 1/1, 4/8 and 5/1 are properly shaped to reduce water-hammer shocks during the switching.
7 DIMENSIONS OF HYDRAULIC OPERATED VALVES ISO 4401 size 06 and 10 [mm]

ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
Fastening bolts: 4 socket head screws M5x50 class 12.9
Tightening torque = 8 Nm
Diameter of ports A, B, P, T: Ø = 7.5 mm (max)
Seals: 4 OR 108

Mounting subplates: see tab. E010

ISO 4401: 2005
Mounting surface: 4401-05-05-0-05 (see table P005)
(without X port)
Fastening bolts: 4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T: Ø = 11.2 mm (max)
Diameter of port Y: Ø = 5 mm
Seals: 5 OR 2050, 1 OR 108

Mounting subplates: see tab. E025 (only version /Y)

Note: Line Y must be always present and no counter pressure are allowed on this line.
DP-1
ISO 4401: 2005
Mounting surface: 4401-05-05-0-05  
(see table K005)
Fastening bolts:
4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T: Ø = 11
Diameter of ports X, Y: Ø = 5 mm
Seals: 5 OR 2050, 2 OR 108

DP-2
ISO 4401: 2005
Mounting surface: 4401-07-07-0-05
Fastening bolts:
4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T: Ø = 11
Diameter of ports X, Y: Ø = 5 mm
Seals: 5 OR 2050, 2 OR 108

DP-4
ISO 4401: 2005
Mounting surface: 4401-08-08-0-05
Fastening bolts:
6 socket head screws M12x60 class 12.9
Tightening torque = 125 Nm
Diameter of ports A, B, P, T: Ø = 24
Diameter of port L: Ø = 5 mm
Seals: 4 OR 4112, 2 OR 3056

DP-6
ISO 4401: 2005
Mounting surface: 4401-10-09-0-05  
(port L optional)
Fastening bolts:
6 socket head screws M20x80 class 12.9
Tightening torque = 600 Nm
Diameter of ports A, B, P, T: Ø = 34 mm
Diameter of port L: Ø = 5 mm
Seals: 4 OR 144, 2 OR 3056

Mounting subplates: see tab. K280