Pilot operated check valves type ADRL, AGRL, AGRLE

in-line mounting, port size from G 3/8" to G 1 1/4"
subplate mounting, ISO 5781 size 10, 20 and 32

ADRL are pilot operated (port X) check valves for in-line mounting available with port size from 3/8" GAS to 1 1/4" GAS.
Flow up to 300 l/min.
Pressure up to 400 bar.

AGRL and AGRLE are pilot operated (port X) check valves for subplate mounting available with port size from G 3/8" to G 1 1/4".
Flow up to 500 l/min.
Max pressure: 315 bar.

AGRLE versions have an external drain (port Y) of the pilot chamber to permit a correct use of pilot operated check valves in systems where valve must open in presence of pressure at port A: in fact pressure at port A, on regular pilot operated check valves, may affect the check opening by acting against the pilot device.

Valves designed to operate in hydraulic systems with hydraulic mineral oil or synthetic fluid having similar lubricating characteristics.

1 MODEL CODE

| ADRL= | E | - | 10 | / | * | ** | / | *
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRL-10</td>
<td>AGRL-15</td>
<td>AGRL-20</td>
<td>AGRL-32</td>
<td>AGRL-10</td>
<td>AGRL-20</td>
<td>AGRL-32</td>
<td>AGRL-10</td>
<td>AGRL-20</td>
</tr>
<tr>
<td>AGRL</td>
<td>E</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>E</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>

Only for AGRL:
- = without external drain
E = with external drain

Threaded connections for ADRL:
10 = G 3/8"
15 = G 1/2"
20 = G 3/4"
32 = G 1 1/4"

Size for AGRL and AGRLE:
10 20 32

2 HYDRAULIC CHARACTERISTICS

Hydraulic symbols

Model
<table>
<thead>
<tr>
<th>ADRL-10</th>
<th>ADRL-15</th>
<th>ADRL-20</th>
<th>ADRL-32</th>
<th>AGRL-10</th>
<th>AGRL-20</th>
<th>AGRL-32</th>
<th>AGRL-10</th>
<th>AGRL-20</th>
<th>AGRL-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piloting ratio (1)</td>
<td>2.8 2.7 2.5 2.3</td>
<td>13.6 14.0 14.4</td>
<td>13.6 14.0 14.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max recommended flow [l/min]</td>
<td>30 60 100 300</td>
<td>160 300 500</td>
<td>160 300 500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max pressure [bar]</td>
<td>400 350</td>
<td>315</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Applying the pilot pressure through the pilot port X, the pilot spool opens the check valve, allowing free flow B → A.
The minimum pilot pressure for correct operation depends on the pilot ratio indicated in the table and on the pressure closing the check. i.e.: the pilot pressure for ADRL-20 is the pressure on the check divided by 2.5. The valves AGRL-* and AGRLE-* are equipped with a decompression system.
### MAIN CHARACTERISTICS, SEALS AND FLUIDS

- for other fluids not included in below table, consult our technical office

#### Assembly position

<table>
<thead>
<tr>
<th>Assembly position</th>
<th>Any position. For AGRLE valves, the drain port Y has to be connected directly to the tank without counter pressure</th>
</tr>
</thead>
</table>

#### Ambient temperature

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>Standard execution</th>
<th>PE option</th>
<th>BT option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-30°C + 70°C</td>
<td>-20°C + 70°C</td>
<td>-40°C + 70°C</td>
</tr>
</tbody>
</table>

#### Seals, recommended fluid temperature

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

#### Recommended viscosity

<table>
<thead>
<tr>
<th>Fluid contamination class</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–100 mm³/s - max allowed range 2.5 ÷ 500 mm³/s</td>
</tr>
</tbody>
</table>

#### Subplate surface finishing

- Roughness index Ra 0.4 - flatness ratio 0.01/100 (ISO 1101)
- Suitable seals type
  - NBR, FKM, HNBR
  - HNBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C
  - FKM seals (PE option) = -20°C ÷ +80°C
  - HNBR seals (BT option) = -40°C ÷ +80°C, with HFC hydraulic fluids = -40°C ÷ +50°C
- Classification
  - DIN 51524
  - ISO 12922
- Ref. Standard
  - Suitable seals type
  - Classification
  - Ref. Standard

#### Hydraulic fluid

<table>
<thead>
<tr>
<th>Hydraulic fluid</th>
<th>Suitable seals type</th>
<th>Classification</th>
<th>Ref. Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oils</td>
<td>NBR, FKM, HNBR</td>
<td>HL, HLP, HLPD, HVLP, HVLPD</td>
<td>DIN 51524</td>
</tr>
<tr>
<td>Flame resistant without water</td>
<td>FKM</td>
<td>HFDU, HFDR</td>
<td>ISO 12922</td>
</tr>
<tr>
<td>Flame resistant with water</td>
<td>NBR, HNBR</td>
<td>HFC</td>
<td></td>
</tr>
</tbody>
</table>

#### FLOW VERSUS PRESSURE DROP DIAGRAMS FOR ADRL based on mineral oil ISO VG 46 at 50°C

1. ADRL-10 B→A
2. ADRL-10 A→B
3. ADRL-15 B→A
4. ADRL-15 A→B
5. ADRL-20 B→A
6. ADRL-20 A→B
7. ADRL-32 B→A
8. ADRL-32 A→B

#### FLOW VERSUS PRESSURE DROP DIAGRAMS FOR AGRLE and AGRLE based on mineral oil ISO VG 46 at 50°C

1. AGRLE-10, AGRLE-10 B→A
2. AGRLE-10, AGRLE-10 A→B
3. AGRLE-20, AGRLE-20 B→A
4. AGRLE-20, AGRLE-20 A→B
5. AGRLE-32, AGRLE-32 B→A
6. AGRLE-32, AGRLE-32 A→B
### Dimensions for ADRL Valves [mm]

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Ø G</th>
<th>Mass [Kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADRL-10</td>
<td>41</td>
<td>120</td>
<td>30</td>
<td>14</td>
<td>G 3/8&quot;</td>
<td>12</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>ADRL-15</td>
<td>50</td>
<td>145</td>
<td>33</td>
<td>16</td>
<td>G 1/2&quot;</td>
<td>16</td>
<td>49</td>
<td>2</td>
</tr>
<tr>
<td>ADRL-20</td>
<td>55</td>
<td>175</td>
<td>42.5</td>
<td>18.5</td>
<td>G 3/4&quot;</td>
<td>19</td>
<td>54.5</td>
<td>2.5</td>
</tr>
<tr>
<td>ADRL-32</td>
<td>90</td>
<td>245</td>
<td>53</td>
<td>23.5</td>
<td>G 1 1/4&quot;</td>
<td>25</td>
<td>87.5</td>
<td>7</td>
</tr>
</tbody>
</table>

### Dimensions for AGR and AGRLE Valves [mm]

**AGRL-10**
**AGRLE-10**

ISO 5781: 2000
Mounting surface: 5781-06-07-0-00
Fastening bolts: 4 socket head screws M10x45 class 12.9
Tightening torque = 70 Nm
Seals: 2 OR 3068; 2 OR 109/70
Ports A, B: Ø = 15 mm
Ports X, Y: Ø = 5 mm

Mass: 4 Kg

**AGRL-20**
**AGRLE-20**

ISO 5781: 2000
Mounting surface: 5781-08-10-0-00
Fastening bolts: 4 socket head screws M10x45 class 12.9
Tightening torque = 70 Nm
Seals: 2 OR 4100; 2 OR 109/70
Ports A, B: Ø = 23 mm
Ports X, Y: Ø = 5 mm

Mass: 7 Kg
DIMENSIONS FOR AGRL AND AGRLE VALVES [mm]

AGRL-32

<table>
<thead>
<tr>
<th>AGRL-32</th>
<th>A</th>
<th>B</th>
<th>X</th>
<th>Y</th>
<th>Ø Counterbore [mm]</th>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>30</td>
<td>30</td>
<td>21.5</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>46</td>
<td>46</td>
<td>21.5</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>63.5</td>
<td>63.5</td>
<td>21.5</td>
</tr>
</tbody>
</table>

The subplates are supplied with fastening bolts. For further details see table K280.