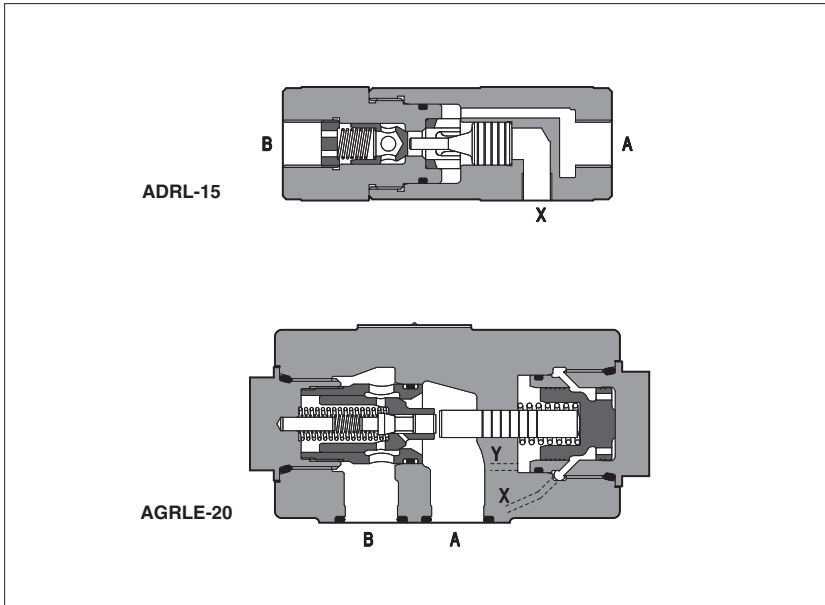


# Pilot operated check valves type ADRL, AGRL, AGRLE

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 mounting surface ISO 5781 size 10, 20 and 32.  
 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 valve 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

|  |          |   |           |   |   |   |                      |   |  |
|--|----------|---|-----------|---|---|---|----------------------|---|--|
| <b>AGRL</b>  | <b>E</b> | - | <b>10</b> | / | <b>*</b>  | / | <b>**</b>            | / | <b>*</b>   |
| <p><b>ADRL</b> = pilot operated check valve in-line mounting<br/> <b>AGRL</b> = pilot operated check valve subplate mounting</p> <p>Only for AGRL:<br/>                 - = without external drain<br/>                 E = with external drain</p> <p>Threaded connections for ADRL:<br/> <b>10</b> = G 3/8"<br/> <b>15</b> = G 1/2"<br/> <b>20</b> = G 3/4"<br/> <b>32</b> = G 1 1/4"</p> <p>Size for AGRL and AGRLE:<br/> <b>10</b>    <b>20</b>    <b>32</b></p> |          |   |           |   |   |   |                      |   | <p>Seals material, see section 4):<br/>                 - = NBR<br/>                 PE = FKM<br/>                 BT = HNBR</p> |
|  |          |   |           |   | <p>Cracking pressure<br/>                 for ADRL<br/>                 - = 0,5 bar<br/> <b>2</b> = 2 bar<br/> <b>4</b> = 4 bar<br/> <b>8</b> = 8 bar</p> |   | <p>Series number</p> |   |  |

## 2 HYDRAULIC CHARACTERISTICS

|                              |                |                |                |                |                |                |                |                 |                 |                 |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
| Hydraulic symbols            |                |                |                |                |                |                |                |                 |                 |                 |
| Model                        | <b>ADRL-10</b> | <b>ADRL-15</b> | <b>ADRL-20</b> | <b>ADRL-32</b> | <b>AGRL-10</b> | <b>AGRL-20</b> | <b>AGRL-32</b> | <b>AGRLE-10</b> | <b>AGRLE-20</b> | <b>AGRLE-32</b> |
| Piloting ratio (1)           | 2,8            | 2,7            | 2,5            | 2,3            | 13,6           | 14,0           | 14,4           | 13,6            | 14,0            | 14,4            |
| Max recommended flow [l/min] | 30             | 60             | 100            | 300            | 160            | 300            | 500            | 160             | 300             | 500             |
| Max pressure [bar]           | 400            | 350            |                |                | 315            |                |                |                 |                 |                 |

(1) Applying the pilot pressure through the pilot port X, the pilot spool opens the check valve, allowing free flow B→A.

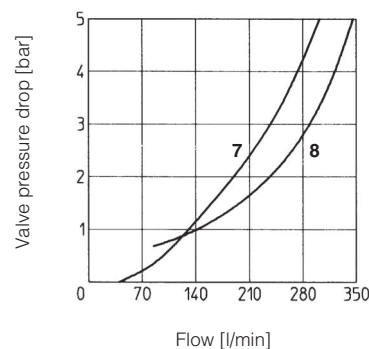
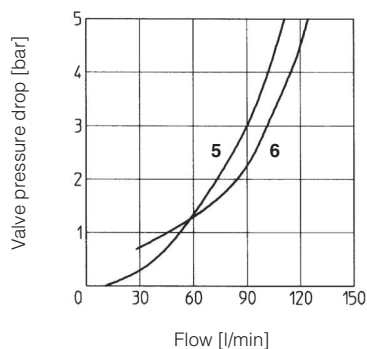
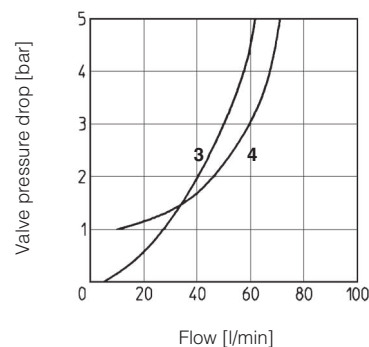
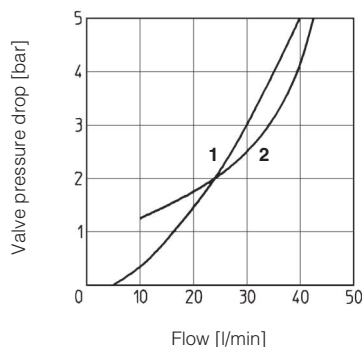
The minimum pilot pressure for correct operation depends on the pilot ratio indicated in the table and on the pressure closing the check. i.e.: the pilot pressure for ADRL-20 is the pressure on the check divided by 2,5. The valves AGRL-\* and AGRLE-\*, are equipped with a decompression system.

**3 MAIN CHARACTERISTICS, SEALS AND FLUIDS** - for other fluids not included in below table, consult our technical office

|                                      |   |                            |                      |
|--------------------------------------|---|----------------------------|----------------------|
| Assembly position                    | Any position. For AGRLE valves, the drain port Y has to be connected directly to the tank without counter pressure  |                            |                      |
| Compliance                           | RoHS Directive 2011/65/EU as last update by 2015/65/EU<br>REACH Regulation (EC) n°1907/2006   |                            |                      |
| Ambient temperature                  | Standard execution = -30°C ÷ +70°C<br>/PE option = -20°C ÷ +70°C<br>/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<br>FKM seals (/PE option) = -20°C ÷ +80°C<br>HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C |                            |                      |
| Recommended viscosity                | 15 ÷ 100 mm <sup>2</sup> /s - max allowed range 2,8 ÷ 500 mm <sup>2</sup> /s  |                            |                      |
| Max fluid contamination level        | ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at <a href="http://www.atos.com">www.atos.com</a> or KTF catalog  |                            |                      |
| Subplate surface finishing           | Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)   |                            |                      |
| <b>Hydraulic fluid</b>               | <b>Suitable seals type</b>  | <b>Classification</b>      | <b>Ref. Standard</b> |
| 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                        |                      |

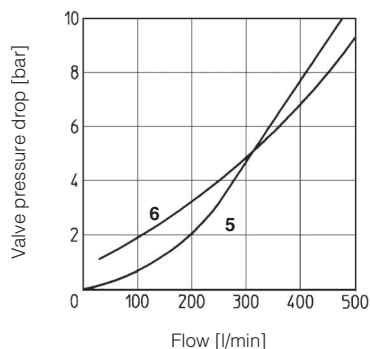
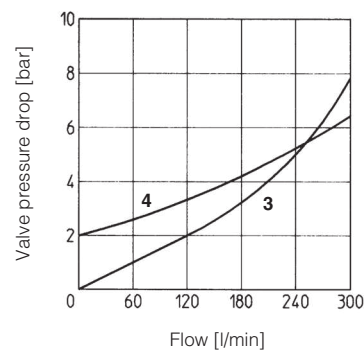
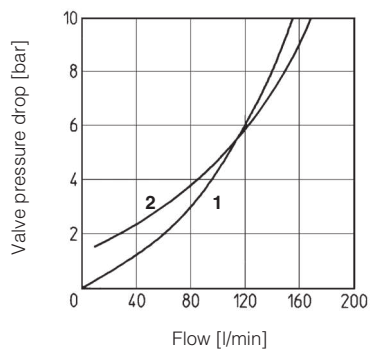
**4 FLOW VERSUS PRESSURE DROP DIAGRAMS FOR ADRL** based on mineral oil ISO VG 46 at 50°C

- 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

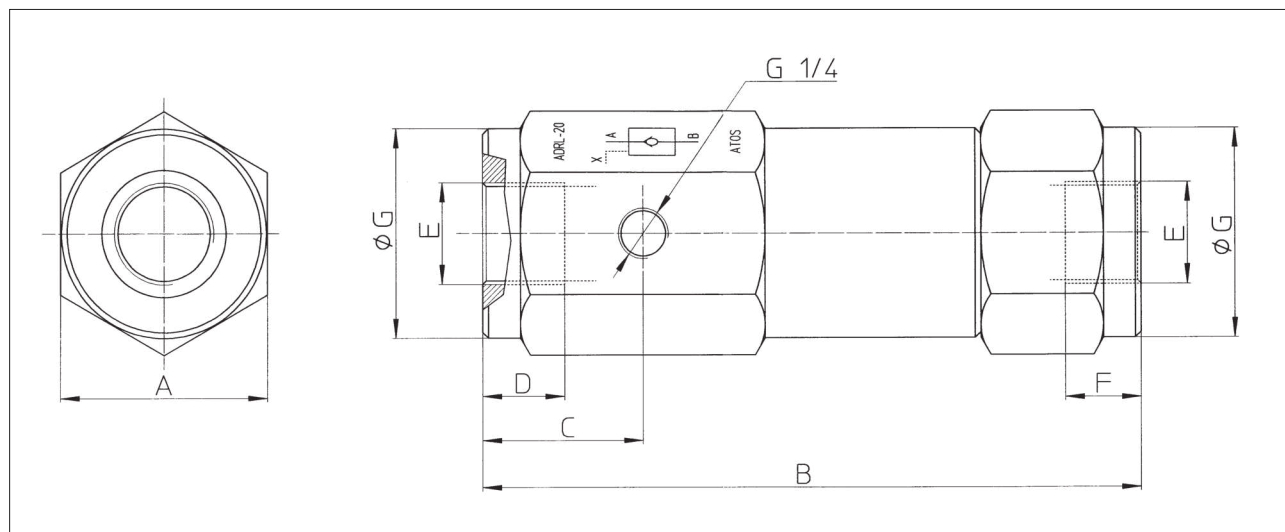


**5 FLOW VERSUS PRESSURE DROP DIAGRAMS FOR AGRL AND AGRLE** based on mineral oil ISO VG 46 at 50°C

- 1 = AGRL-10, AGRLE-10 B→A
- 2 = AGRL-10, AGRLE-10 A→B
- 3 = AGRL-20, AGRLE-20 B→A
- 4 = AGRL-20, AGRLE-20 A→B
- 5 = AGRL-32, AGRLE-32 B→A
- 6 = AGRL-32, AGRLE-32 A→B



**6 DIMENSIONS FOR ADRL VALVES [mm]**



| Model   | A  | B   | C    | D    | E        | F  | ØG   | Mass [Kg] |
|---------|----|-----|------|------|----------|----|------|-----------|
| ADRL-10 | 41 | 120 | 30   | 14   | G 3/8"   | 12 | 40   | 1         |
| ADRL-15 | 50 | 145 | 33   | 16   | G 1/2"   | 16 | 49   | 2         |
| ADRL-20 | 55 | 175 | 42,5 | 18,5 | G 3/4"   | 19 | 54,5 | 2,5       |
| ADRL-32 | 90 | 245 | 53   | 23,5 | G 1 1/4" | 25 | 87,5 | 7         |

**7 DIMENSIONS FOR AGRL AND AGRLE VALVES [mm]**

|   |   |                               |                      |
|---|---|-------------------------------|----------------------|
| <p><b>AGRL-10</b><br/><b>AGRLE-10</b></p> | <p><b>ISO 5781: 2000</b><br/><b>Mounting surface: 5781-06-07-0-00</b><br/>Fastening bolts: 4 socket head screws M10x45 class 12.9<br/>Tightening torque = 70 Nm<br/>Seals: 2 OR 3068; 2 OR 109/70<br/>Ports A, B: <math>\varnothing = 15</math> mm<br/>Ports X, Y: <math>\varnothing = 5</math> mm</p>  | <p>view from X</p> <p>↑ X</p> | <p>Mass: 4 Kg</p>    |
| <p><b>AGRL-20</b><br/><b>AGRLE-20</b></p> | <p><b>ISO 5781: 2000</b><br/><b>Mounting surface: 5781-08-10-0-00</b><br/>Fastening bolts: 4 socket head screws M10x45 class 12.9<br/>Tightening torque = 70 Nm<br/>Seals: 2 OR 4100; 2 OR 109/70<br/>Ports A, B: <math>\varnothing = 23</math> mm<br/>Ports X, Y: <math>\varnothing = 5</math> mm</p>  | <p>view from X</p> <p>↑ X</p> | <p>Mass: 7 Kg</p>    |
| <p><b>AGRL-32</b><br/><b>AGRLE-32</b></p> | <p><b>ISO 5781: 2000</b><br/><b>Mounting surface: 5781-10-13-0-00</b><br/>Fastening bolts: 6 socket head screws M10x100 class 12.9<br/>Tightening torque = 70 Nm<br/>Seals: 2 OR 4131; 2 OR 109/70<br/>Ports A, B: <math>\varnothing = 30</math> mm<br/>Ports X, Y: <math>\varnothing = 5</math> mm</p> | <p>view from X</p> <p>↑ X</p> | <p>Mass: 14,8 Kg</p> |

**8 MOUNTING SUBPLATES FOR AGRL AND AGRLE VALVES**

| Valve             | Subplate model | Port location                | GAS ports |        |      |      | Ø Counterbore [mm] |      |      |      | Mass [kg] |
|-------------------|----------------|------------------------------|-----------|--------|------|------|--------------------|------|------|------|-----------|
|                   |                |                              | A         | B      | X    | Y    | A                  | B    | X    | Y    |           |
| AGRL-10, AGRLE-10 | BA-305         | Ports A, B, X, Y underneath; | 1/2"      | 1/2"   | 1/4" | 1/4" | 30                 | 30   | 21,5 | 21,5 | 1         |
| AGRL-20, AGRLE-20 | BA-505         |                              | 1"        | 1"     | 1/4" | 1/4" | 46                 | 46   | 21,5 | 21,5 | 2         |
| AGRL-32, AGRLE-32 | BA-705 A       |                              | 1 1/2"    | 1 1/2" | 1/4" | 1/4" | 63,5               | 63,5 | 21,5 | 21,5 | 7,5       |

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