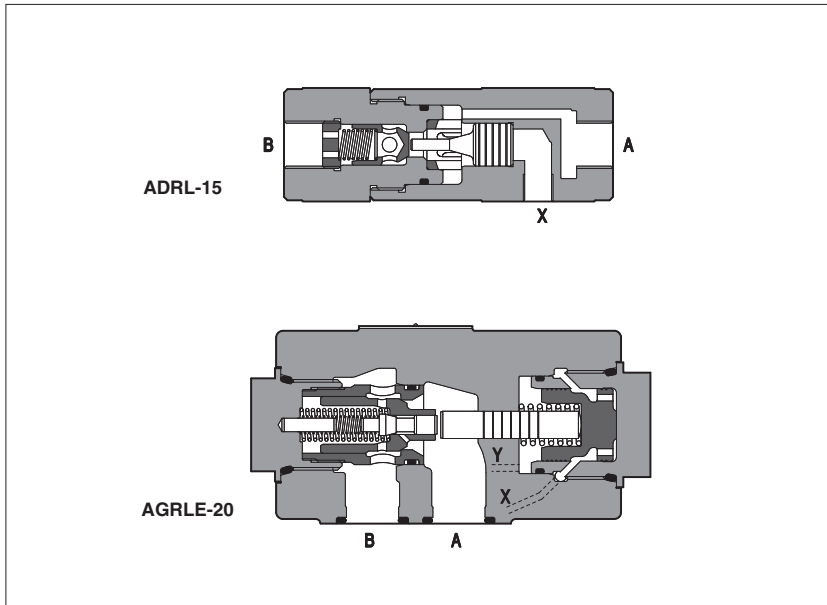


# Pilot operated check valves type ADRL, AGRL, AGRLE

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

### AGRL

E - 10 /

\*\*

/\*

**ADRL** = pilot operated check valve in-line mounting  
**AGRL** = pilot operated check valve subplate mounting

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

Seals material:  
 omit for NBR (mineral oil & water glycol)  
**PE** = FPM

Series number

Cracking pressure

for ADRL  
 - = 0,5 bar  
 /2 = 2 bar  
 /4 = 4 bar  
 /8 = 8 bar

for AGRL  
 - = 0,5 bar

## 2 HYDRAULIC CHARACTERISTICS

| Model                        | ADRL-10 | ADRL-15 | ADRL-20 | ADRL-32 | AGRL-10 | AGRL-20 | AGRL-32 | AGRLE-10 | AGRLE-20 | AGRLE-32 |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
| 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     |         |         | 315      |          |          |

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

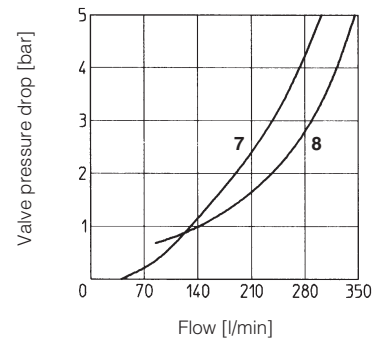
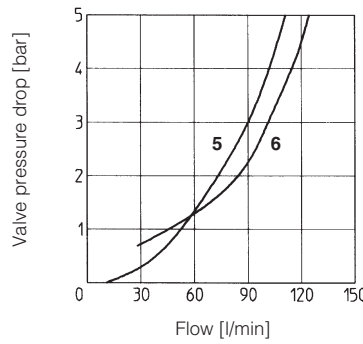
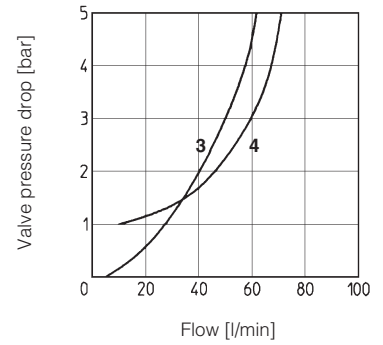
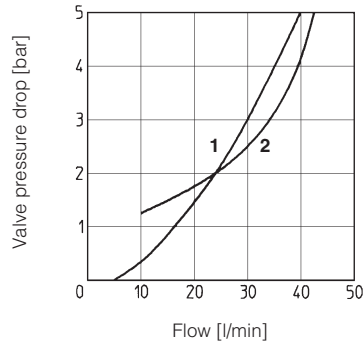
The minimum pilot pressure for correct operation depends on the pilot ratio indicated in the table and on the pressure closing the check. i.e.: the pilot pressure for ADRL-20 is the pressure on the check divided by 2,5. The valves AGRLE-\* and AGRLE-\*, are equipped with a decompression system.

**3 MAIN CHARACTERISTICS OF PILOT CHECK VALVES TYPE ADRL, AGRL, AGRLE**

|   |  |
|---|--|
| Installation position                           | Any position. For AGRLE valves, the drain port Y has to be connected directly to the tank without counter pressure |
| Subplate surface finishing (for AGRL and AGRLE) | Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)  |
| Ambient temperature                             | from -20°C to + 70°  |
| Fluid   | Hydraulic oil as per DIN 51524...535, for other fluids see section <b>I</b>  |
| Recommended viscosity                           | 15 ÷ 100 mm <sup>2</sup> /s at 40°C (ISO VG 15 ÷ 100)  |
| Fluid contamination class                       | ISO 4401 class 21/19/16 NAS 1638 class 10 (filters at 25 µm value with β <sub>25</sub> ≥ 75 recommended)           |
| Fluid temperature                               | -20°C +60°C (standard seals and water glycol) -20°C +80°C (/PE seals)  |

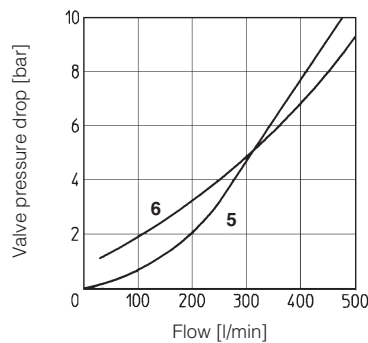
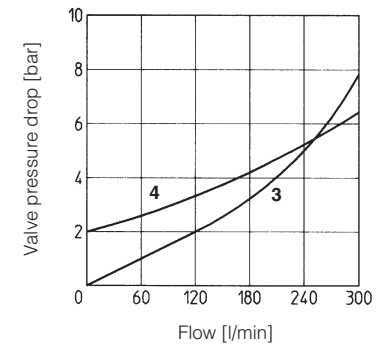
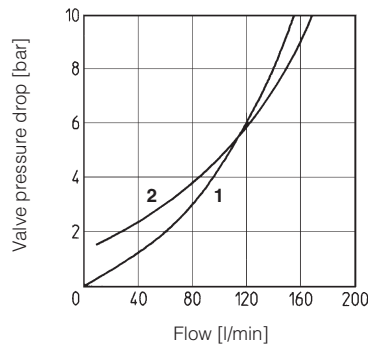
**4 FLOW VERSUS PRESSURE DROP DIAGRAMS FOR ADRL based on mineral oil ISO VG 46 at 50°C**

- 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

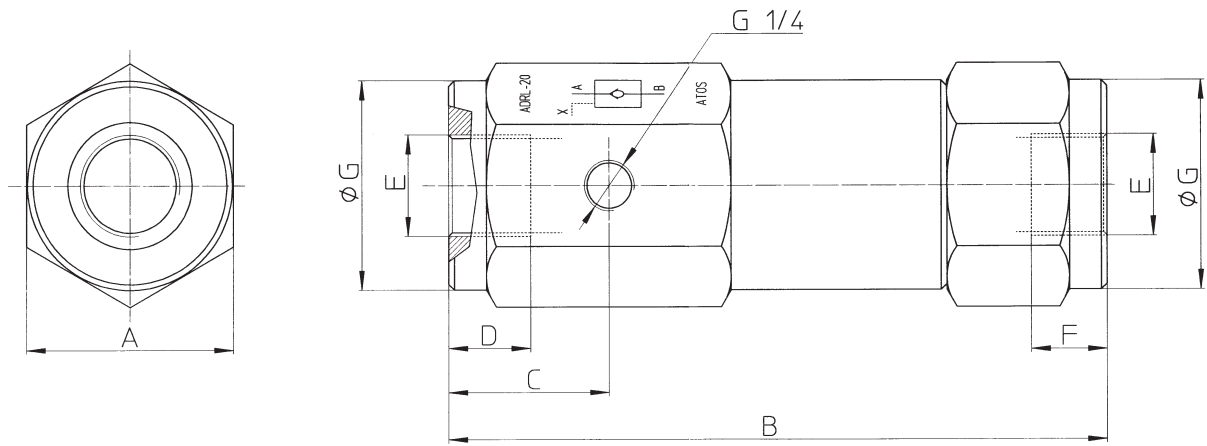


**5 FLOW VERSUS PRESSURE DROP DIAGRAMS FOR AGRL AND AGRLE based on mineral oil ISO VG 46 at 50°C**

- 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



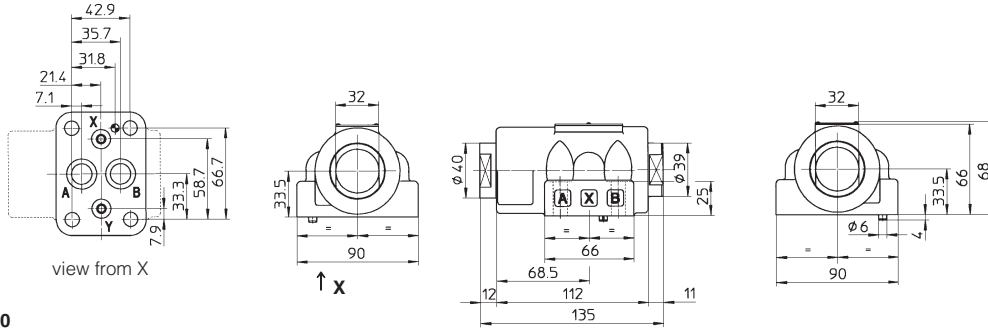
6 DIMENSIONS FOR ADRL VALVES [mm]



| 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]**

**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

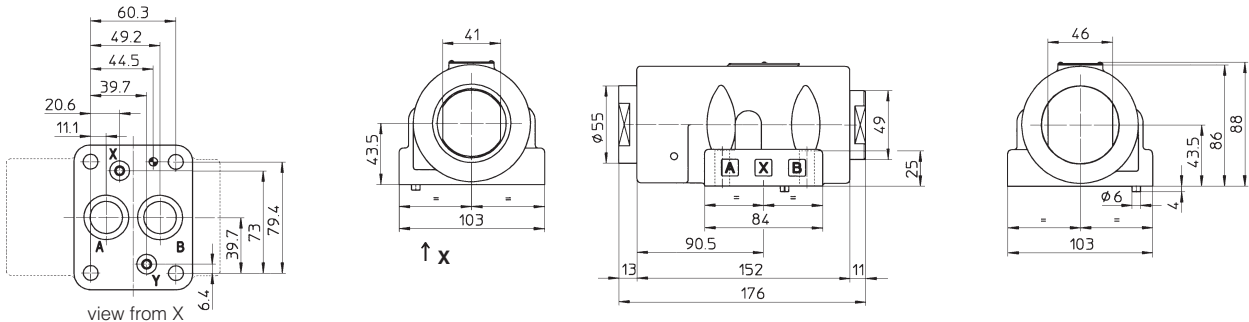
Seals: 2 OR 3068; 2 OR 109/70

Ports A, B:  $\varnothing = 15$  mm

Ports X, Y:  $\varnothing = 5$  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

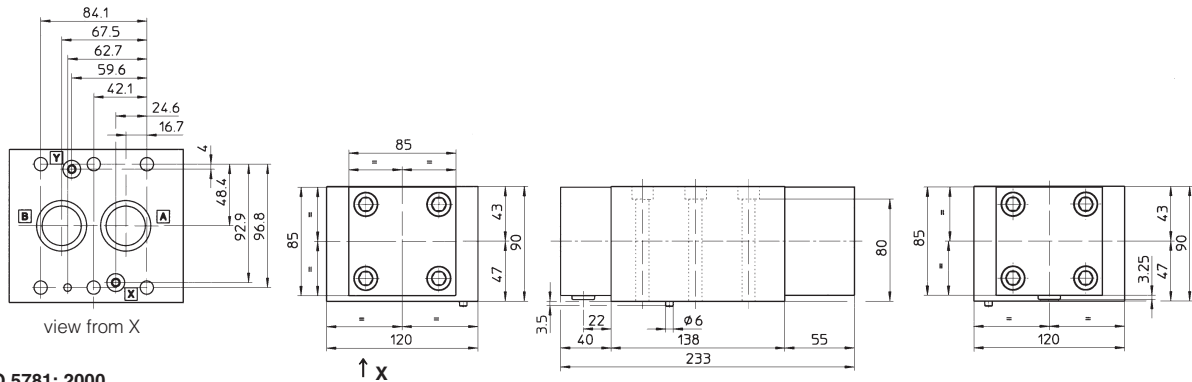
Seals: 2 OR 4100; 2 OR 109/70

Ports A, B:  $\varnothing = 23$  mm

Ports X, Y:  $\varnothing = 5$  mm

Mass: 7 Kg

**AGRL-32  
AGRLE-32**



**ISO 5781: 2000**

**Mounting surface: 5781-10-13-0-00**

Fastening bolts: 6 socket head screws M10x100 class 12.9

Tightening torque = 70 Nm

Seals: 2 OR 4131; 2 OR 109/70

Ports A, B:  $\varnothing = 30$  mm

Ports X, Y:  $\varnothing = 5$  mm

Mass: 14,8 Kg

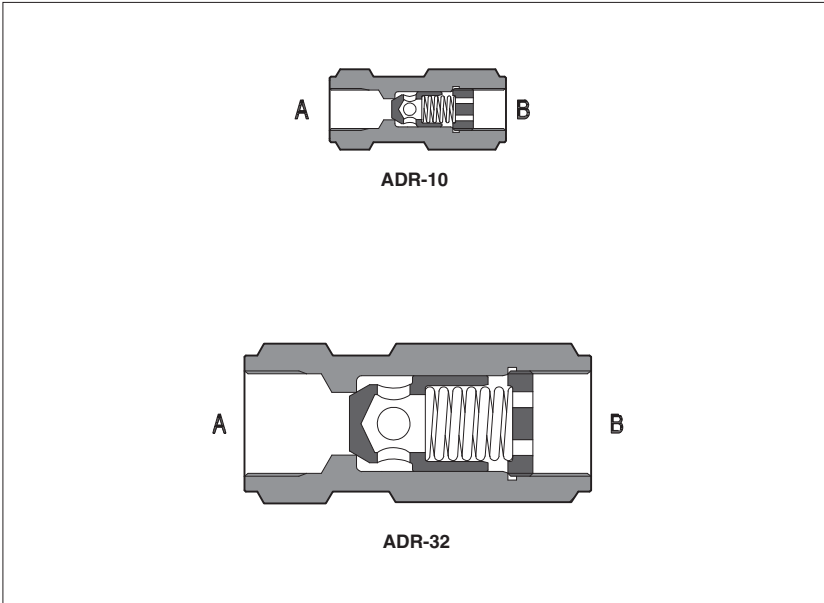
**8 MOUNTING SUBPLATES FOR AGRL AND AGRLE VALVES**

| 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.

# Check valves type ADR

in-line mounting - from G 1/4" to G 1 1/4" threaded ports




ADR are direct operated check valves for in-line mounting available with port size from 1/4" to 1 1/4" GAS.

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

Flow up to 500 l/min.  
Pressure up to 400 bar.

|          |                              |   |           |   |                    |
|----------|------------------------------|---|-----------|---|--------------------|
| <b>1</b> | <b>MODEL CODE</b>            |   |           |   |                    |
|          | <b>ADR</b>                   | - | <b>10</b> | / | <b>4</b> <b>**</b> |
|          | Check valve in-line mounting |   |           |   | Series number      |
|          | Size/threated connections:   |   |           |   | Cracking pressure: |
|          | <b>06</b> = G 1/4"           |   |           |   | - = 0,5 bar        |
|          | <b>10</b> = G 3/8"           |   |           |   | <b>/2</b> = 2 bar  |
|          | <b>15</b> = G 1/2"           |   |           |   | <b>/4</b> = 4 bar  |
|          | <b>20</b> = G 3/4"           |   |           |   | <b>/8</b> = 8 bar  |
|          | <b>25</b> = G 1"             |   |           |   |                    |
|          | <b>32</b> = G 1 1/4"         |   |           |   |                    |

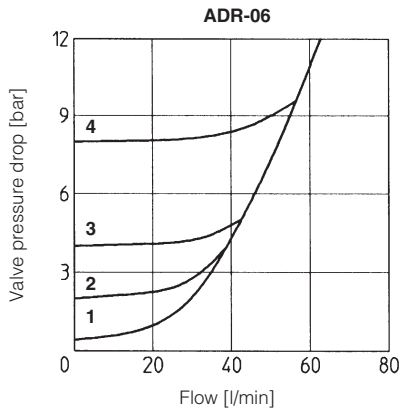
## 2 HYDRAULIC CHARACTERISTICS

|                              |  |               |               |               |               |               |
|------------------------------|--|---------------|---------------|---------------|---------------|---------------|
| Hydraulic symbol             |  |               |               |               |               |               |
| Valve model                  | <b>ADR-06</b>  | <b>ADR-10</b> | <b>ADR-15</b> | <b>ADR-20</b> | <b>ADR-25</b> | <b>ADR-32</b> |
| Max recommended flow [l/min] | 40   | 80            | 150           | 300           | 360           | 500           |
| Max pressure [bar]           | 400  |               |               | 350           |               |               |

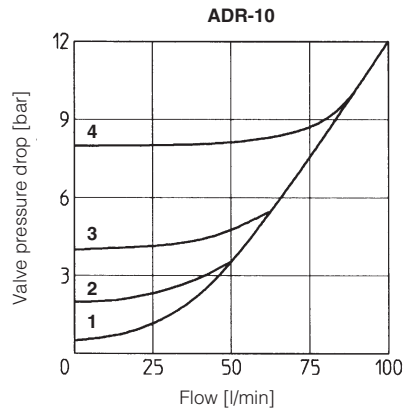
## 3 MAIN CHARACTERISTICS OF CHECK VALVES TYPE ADR

|                              |  |
|------------------------------|--|
| Assembly position / location | Any position   |
| Fluid                        | Hydraulic oil as per DIN 51524 ... 535;  |
| Recommended viscosity        | 15 ÷ 100 mm <sup>2</sup> /s at 40°C (ISO VG 15 ÷ 100)  |
| Fluid contamination class    | ISO 4401 class 21/19/16 NAS 1638 class 10 (filters at 25 µm value with β <sub>25</sub> ≥ 75 recommended) |
| Fluid temperature            | T ≤ 80°C   |
| Flow direction               | As shown in the symbol at section 2  |
| Rated flow                   | See diagrams Q/Δp at section 4   |

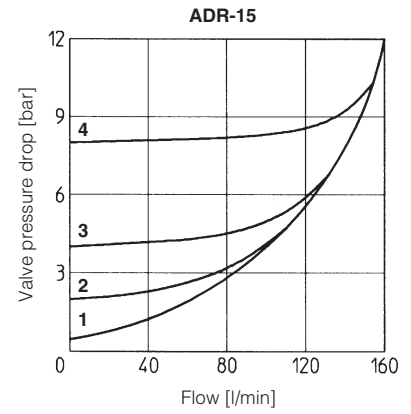
**4 FLOW VERSUS PRESSURE DROP DIAGRAMS** Based on based on mineral oil ISO VG 46 at 50°C



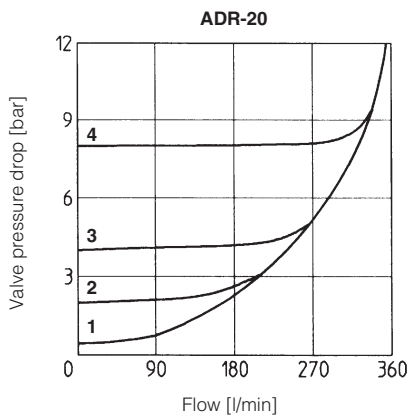
- 1 = ADR-06
- 2 = ADR-06/2
- 3 = ADR-06/4
- 4 = ADR-06/8



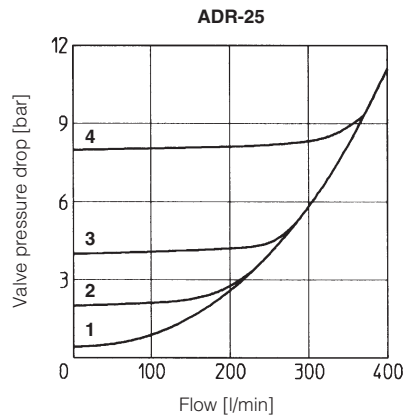
- 1 = ADR-10
- 2 = ADR-10/2
- 3 = ADR-10/4
- 4 = ADR-10/8



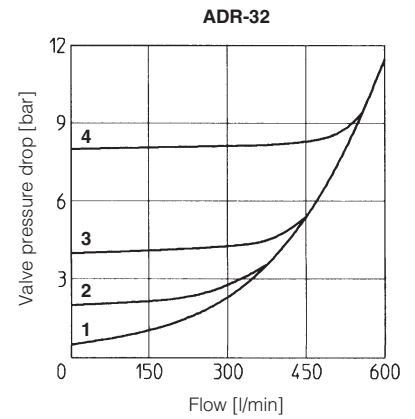
- 1 = ADR-15
- 2 = ADR-15/2
- 3 = ADR-15/4
- 4 = ADR-15/8



- 1 = ADR-20
- 2 = ADR-20/2
- 3 = ADR-20/4
- 4 = ADR-20/8

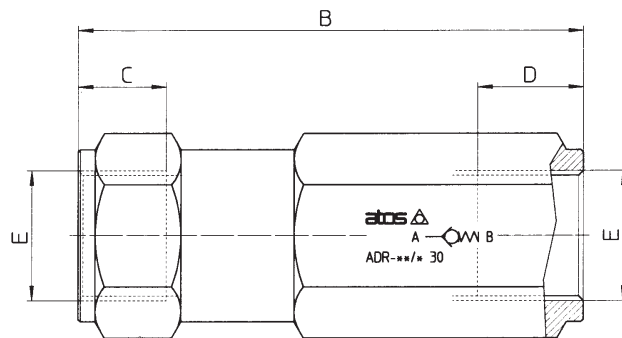
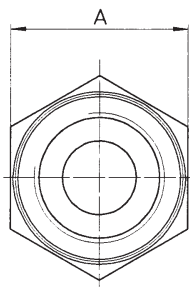


- 1 = ADR-25
- 2 = ADR-25/2
- 3 = ADR-25/4
- 4 = ADR-25/8



- 1 = ADR-32
- 2 = ADR-32/2
- 3 = ADR-32/4
- 4 = ADR-32/8

**5 DIMENSIONS [mm]**



| Model    | A  | B     | C  | D    | E        | Mass [kg] |
|----------|----|-------|----|------|----------|-----------|
| ADR - 06 | 22 | 67    | 12 | 13   | G 1/4"   | 0,2       |
| ADR - 10 | 27 | 70    | 12 | 13   | G 3/8"   | 0,4       |
| ADR - 15 | 32 | 82,5  | 14 | 17   | G 1/2"   | 0,6       |
| ADR - 20 | 36 | 102,5 | 16 | 21,5 | G 3/4"   | 0,9       |
| ADR - 25 | 46 | 120   | 18 | 24,5 | G 1"     | 2,1       |
| ADR - 32 | 55 | 137,5 | 20 | 23   | G 1 1/4" | 2,5       |