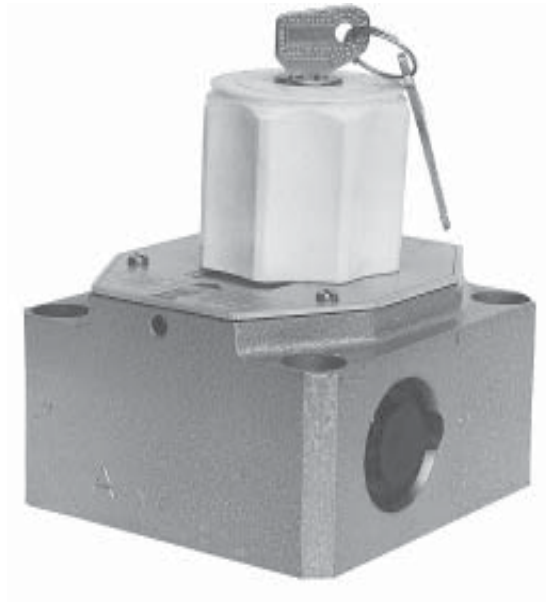
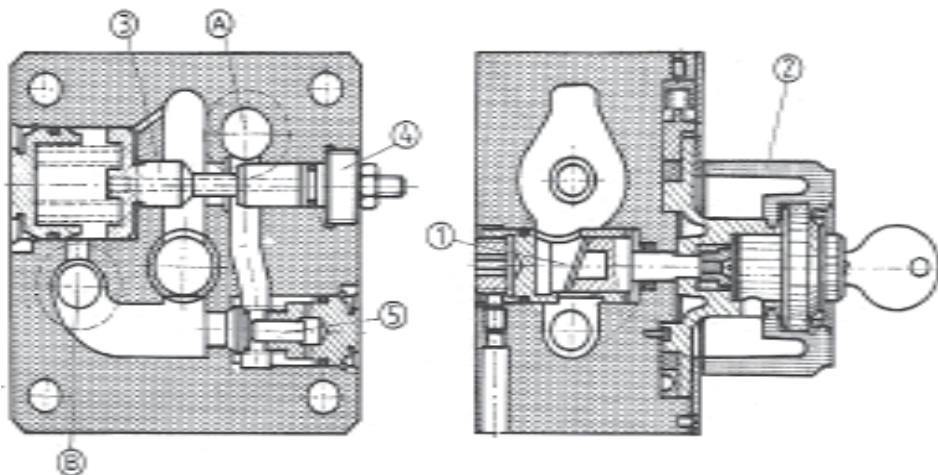


2 way flow control valves serve to set the fluid flow constant in one direction and allow free flow in the opposite direction independently of the pressure and temperature changes.

The valve is fixed to a subplate by 4 bolts (not included with the valve). O-rings are fitted between the valve and the subplate to assure the sealing of the mating surfaces. The flow control valves can be mounted in hydraulic systems in any position.



DESCRIPTION OF OPERATION



In order to fix a flow rate, the fluid has to be supplied under pressure to line A. The fluid is throttled at the orifice bush 1 with adjustable aperture. The aperture is set by turning the lockable handknob 2 in the range of 0 - 300° (that corresponds with 10 scale graduations).

The set flow is independent of the pressure due to the pressure compensator 3 fitted in the housing on the way to the orifice bush 1.

The independence of the fluid temperature variations is achieved by means the suitable shaped orifice.

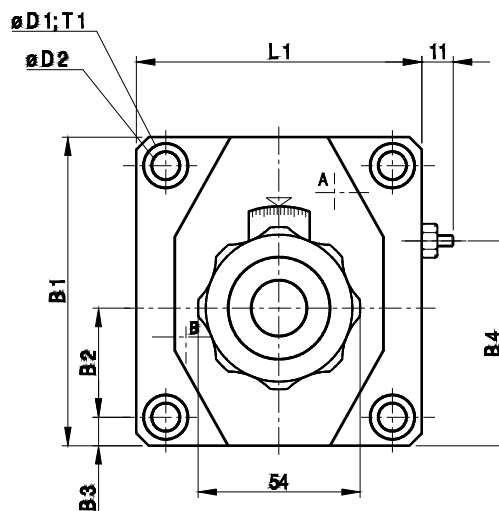
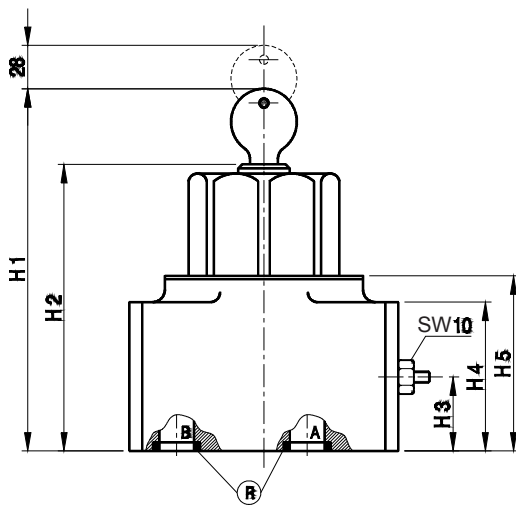
To avoid undesirable troubles at starting, pressure compensator stroke limiter 4 is available.

An additional check valve 5 is mounted to secure free flow from B to A.

TECHNICAL DATA

| | | |
|--|--|---------|
| Hydraulic fluid | Mineral oil or phosphate ester | |
| Nominal fluid viscosity | 37 mm ² /s at the temperature of 328 K | |
| Viscosity range | 2.8 to 380 mm ² /s | |
| Optimum working temperature (fluid in a tank) | 313 - 328 K | |
| Fluid temperature range | 253 - 343 K | |
| Filtration | up to 16 μm when Q < 5 dm ³ /min up to 10 μm when Q < 0.5 dm ³ /min | |
| Flow control tolerance for constant temp. and pressure | ± 2 % | |
| Min. pressure drop Q _{max} related | 0.3 - 0.7 MPa for size 10 0.5 - 1.5 MPa for size 16 | |
| Operating pressure in port A | up to 31.5 MPa | |
| Weight | Size 10 | Size 16 |
| | 5.6 kg | 11.3 kg |

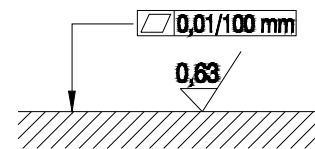
OVERALL DIMENSIONS



A - inlet

B - outlet

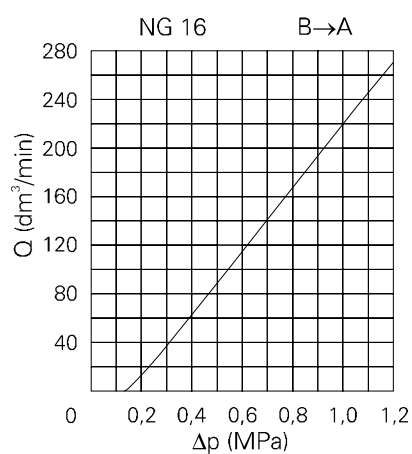
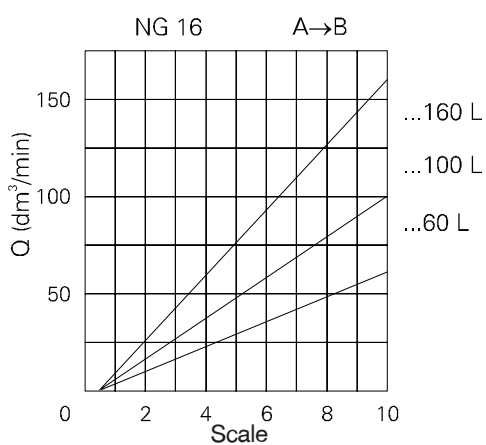
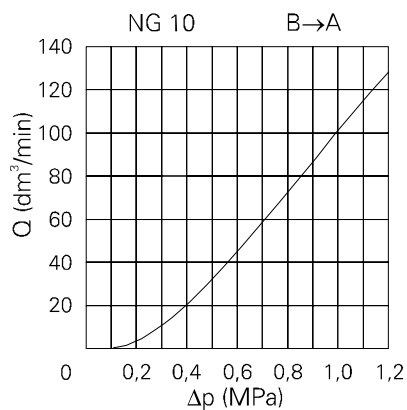
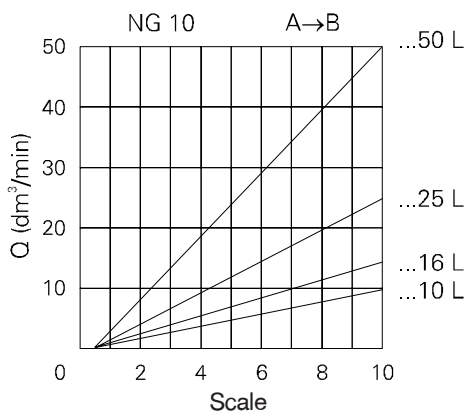
R - o-ring 18.7 × 3.5 - 2 pcs for size 10
26.6 × 3.5 - 2 pcs for size 16



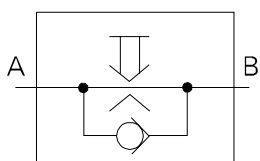
Available surface roughness and flatness deviation for a subplate face.

| Size | B1 | B2 | B3 | B4 | D1 | D2 | H1 | H2 | H3 | H4 | H5 | L1 | T1 | Weight |
|---------|-------|------|-----|------|----|-----|-------|-----|----|----|----|-------|----|---------|
| Size 10 | 101.5 | 35.5 | 9.5 | 68 | 15 | 9.0 | 125.5 | 107 | 26 | 51 | 60 | 95 | 13 | 5.6 kg |
| Size 16 | 123.5 | 41.5 | 11 | 81.5 | 18 | 11 | 147.5 | 129 | 34 | 72 | 82 | 123.5 | 12 | 11.3 kg |

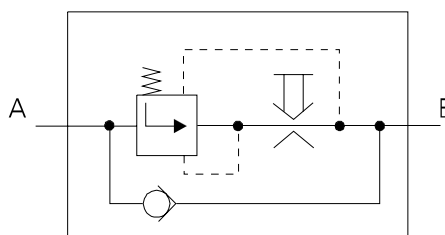
PERFORMANCE CURVES, measured at $\nu = 41 \text{ mm}^2/\text{s}$ and $T = 323 \text{ K}$



SCHEMES :



a) simplified



b) full

HOW TO ORDER

Orders coded in the way showed below should be forwarded to the manufacturer.



Nominal size
 Size 10 = 10
 Size 16 = 16

Series number
 22 = 22
 (20 - 29) - installation and connection dimensions remain unchanged

Further requirements in clear text
 (to be agreed upon with the manufacturer)

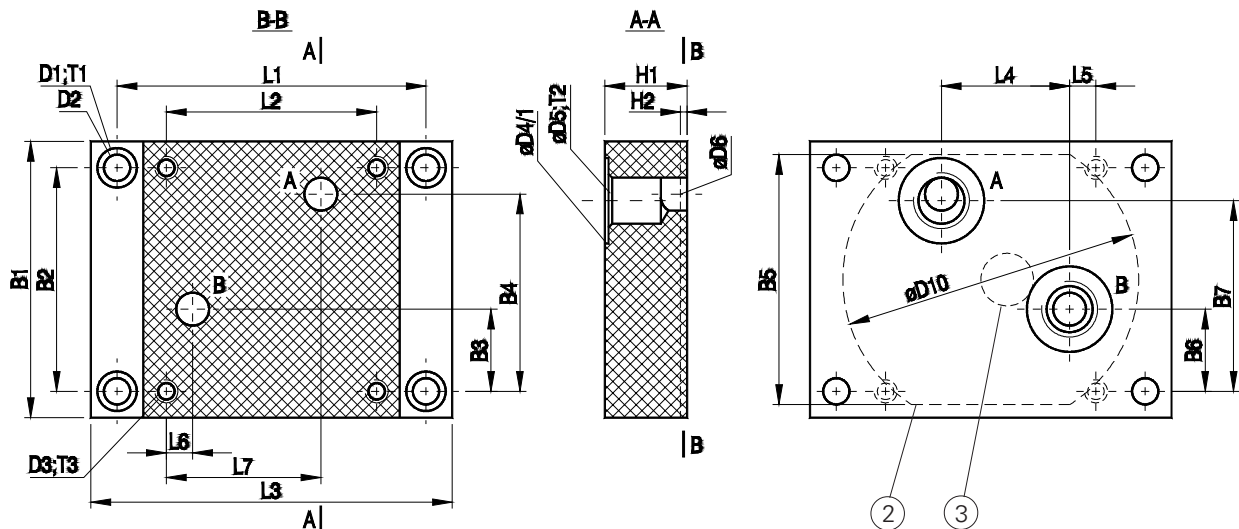
Sealing
 Fluids on mineral oil base = no code
 Fluids on phosphate ester base = V

| Flow range (A to B) | | |
|------------------------------|------------------------------|--------------------------------|
| Size 10 | | Size 16 |
| Linear | Non-linear | Linear |
| 2 dm ³ /min =2L | 1 dm ³ /min =1Q | 40 dm ³ /min =40L |
| 5 dm ³ /min =5L | 2 dm ³ /min =2Q | 60 dm ³ /min =60L |
| 10 dm ³ /min =10L | 10 dm ³ /min =10Q | 80 dm ³ /min =80L |
| 16 dm ³ /min =16L | 25 dm ³ /min =25Q | 100 dm ³ /min =100L |
| 25 dm ³ /min =25L | | 125 dm ³ /min =125L |
| 35 dm ³ /min =35L | | 160 dm ³ /min =160L |
| 50 dm ³ /min =50L | | |

Accessories
 Without pressure compensator = no code
 stroke limiter
 With pressure compensator = B
 stroke limiter

Coding example : 2FRM 10 - 22/10 L

CONNECTION DIMENSIONS FOR SUBPLATE



- 1 - Valve mounting surface
- 2 - Recess in subplate face
- 3 - Dia.20 - for orifice support for size 10
Dia. 30 - for orifice support for size 16

| Subplate | Type | B1 | B2 | B3 | B4 | B5 | B6 | B7 | D1 | D2 | D3 | D4 | D5 | D6 |
|----------|---------|-------|-------|------|------|-------|------|------|----|----|-----|----|------|----|
| Size 10 | G279/01 | 101.5 | 82.5 | 30.1 | 71.6 | 92+1 | 30.1 | 67.5 | 15 | 9 | M8 | 34 | G1/2 | 12 |
| | G280/01 | | | | | | | | | | | | | |
| Size 16 | G281/01 | 123.5 | 101.5 | 15 | 90.5 | 115+1 | 21 | 80.5 | 18 | 11 | M10 | 47 | G1 | 20 |
| | G282/01 | | | | | | | | | | | | | |

| Subplate | Type | D10 | H1 | L1 | L2 | L3 | L4 | L5 | L6 | L7 | T1 | T2 | T3 | H2 |
|----------|---------|-----|----|-------|------|-------|------|------|-----|-----|----|----|----|-----|
| Size 10 | G279/01 | 115 | 30 | 114.5 | 76 | 133.5 | 55.1 | 9.6 | 9.6 | 55. | 1 | 15 | 13 | 1.5 |
| | G280/01 | | | | | | | | | | | | | |
| Size 16 | G281/01 | 150 | 40 | 146 | 101. | 168 | 75 | 20.5 | 20. | 75 | 1 | 19 | 20 | 2 |
| | G282/01 | | | | | | | | | | | | | |

| Subplate | Type | Mounting bolts - 4 pcs | Torque | Weight |
|----------|---------|---|--------|----------|
| Size 10 | G279/01 | M8 x 50 - 10.9 PN - 74/M - 82302 (DIN 912 - 10.9) | 35 Nm | ~ 2.3 kg |
| | G280/01 | | | |
| Size 16 | G281/01 | M10 x 80 - 10.9 PN - 74/M - 82302 (DIN 912 - 10.9) | 70 Nm | ~ 4.0 kg |
| | G282/01 | | | |

Note : Subplate and mounting bolts must be ordered separately.

PONAR WADOWICE S.A.
ul. Wojska Polskiego 29
34-100 Wadowice
tel. 033/ 823 39 43, 823 30 41
fax 033/ 873 48 80
e-mail: ponar@ponar-wadowice.pl

