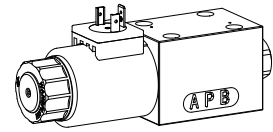


Proportional directional valve

- not pressure compensated
- $Q_{max} = 42 \text{ l/min}$
- $Q_{Nmax} = 32 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03

DESCRIPTION

Direct operated proportional spool valve in flange design NG6 acc. to ISO 4401-03/7790 with 4 ports. The spool valve is designed to the 5 chamber principle. The volume flow is adjusted by a Wandfluh proportional solenoid (VDE standard 0580). Low pressure drop due to the body design and spool profiling. The spool is made of hardened steel. The body made of high grade hydraulic casting for long service life is painted. The armature tube and the plug crew are zinc coated. The solenoid coil is zinc-/nickel-coated.

FUNCTION

Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG6 are not load-compensated. The optimum spool shape and progressive characteristics curve allow fine motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

Proportional directional spool valves are well suited for demanding applications where high resolution, high volume flow and low hysteresis are requested. They are implemented in industrial hydraulics as well as in mobile hydraulics for the smooth control of hydraulic actuators. Application examples: pitch control of wind generators, forest and earth moving machines, machine tools and paper production machines with simple position controls, robotics and fan control.

TYPE CODE

| | | W | D | P | F | A06 | - | | - | | - | | / | | | - | | # | |
|---|---|---|---|---|---|-----|---|--|---|-----|---|--|---|--|--|---|--|---|-----|
| Spool valve | | | | | | | | | | | | | | | | | | | |
| Direct operated | | | | | | | | | | | | | | | | | | | |
| Proportional | | | | | | | | | | | | | | | | | | | |
| Flange construction | | | | | | | | | | | | | | | | | | | |
| International standard interface ISO, NG6 | | | | | | | | | | | | | | | | | | | |
| Description of symbols acc. to table | | | | | | | | | | | | | | | | | | | |
| Nominal volume flow Q_N | 5 l/min | | | | | 5 | | | | | | | | | | | | | |
| | 10 l/min | | | | | 10 | | | | | | | | | | | | | |
| | 16 l/min | | | | | 16 | | | | | | | | | | | | | |
| | 32 l/min | | | | | 32 | | | | | | | | | | | | | |
| Nominal voltage U_N | 12 VDC | | | | | | | | | G12 | | | | | | | | | |
| | 24 VDC | | | | | | | | | G24 | | | | | | | | | |
| | without solenoid coil | | | | | | | | | X5 | | | | | | | | | |
| Slip-on coil | Metal housing, round | | | | | | | | | W | | | | | | | | | |
| | Metal housing, square | | | | | | | | | M* | | | | | | | | | |
| Electric connection | Connector socket EN 175301-803 / ISO 4400 | | | | | | | | | | | | | | | | | | D |
| | Connector socket AMP Junior-Timer | | | | | | | | | | | | | | | | | | J |
| | Connector Deutsch DT04-2P | | | | | | | | | | | | | | | | | | G |
| Sealing material | NBR | | | | | | | | | | | | | | | | | | |
| | FKM (Viton) | | | | | | | | | | | | | | | | | | D1 |
| Manual override | Integrated | | | | | | | | | | | | | | | | | | |
| | Push-button | | | | | | | | | | | | | | | | | | HF1 |
| | Spindle | | | | | | | | | | | | | | | | | | HS1 |
| Design-Index (Subject to change) | | | | | | | | | | | | | | | | | | | |

* Only available in conjunction with other nominal voltages and connection versions (see data sheet 1.1-181)

GENERAL SPECIFICATIONS

| | | | |
|--------------|--|---------------------|---|
| Nominal size | NG6 acc. to ISO 4401-03 / 7790 | Ambient temperature | -20...+70 °C (slip-on coil «W») if > +50 °C, then $I_G - 10\%$ |
| Designation | Direct operated proportional spool valve | | |
| Construction | Direct operated spool valve | Mounting position | -20...+70 °C (slip-on coil «*M») any, preferably horizontal |
| Operation | Proportional solenoid | Fastening torque | $M_0 = 5,5 \text{ Nm}$ (screw quality 8.8) for fixing screws $M_0 = 7 \text{ Nm}$ for knurled nut |
| Mounting | Flange, 4 fixing holes for socket head cap screws M5x50 | | |
| Connections | Connection plates Multi-station flange subplate Longitudinal stacking system | | |

| Weight | |
|----------------------|------------|
| 4/3-way | m = 2,0 kg |
| 4/2-way (1 solenoid) | m = 1,5 kg |

ELECTRICAL SPECIFICATIONS

| | | |
|---------------------------------|--|------------------------|
| Construction | Proportional solenoid, wet pin push type, pressure tight | |
| Standard-Nominal voltage | $U_N = 12 \text{ VDC}$ | $U_N = 24 \text{ VDC}$ |
| Limiting current | on request | $I_G = 930 \text{ mA}$ |
| Relative duty factor | 100% DF (see data sheet 1.1-430) | |
| Protection class to EN 60529 | Connection version D: IP 65 J: IP 66 G: IP 67 and 69K | |
| Connection/Power supply | Over device plug connection | |
| Coil versions | W.E45/23 x 50 (data sheet 1.1-182) | |
| Other electrical specifications | see data sheet 1.1-182 (W) 1.1-181 (M) | |

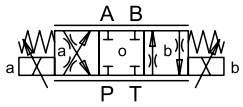
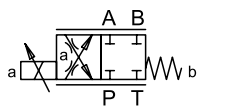
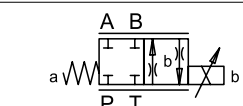
HYDRAULIC SPECIFICATIONS

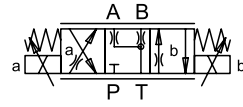
| | |
|----------------------------------|--|
| Fluid | Mineral oil, other fluid on request |
| Contamination efficiency | ISO 4406:1999, class 18/16/13 (Required filtration grade $\beta_{6...10} \geq 75$) refer to data sheet 1.0-50/2 |
| Viscosity range | 12 mm ² /s...320 mm ² /s |
| Fluid temperature | -20...+70 °C |
| Working pressure in port P, A, B | $p_{\max} = 350 \text{ bar}$ |
| Tank pressure in port T | $p_{T \max} = 250 \text{ bar}$ |
| Nominal volume flow | $Q_N = 5 \text{ l/min}, 10 \text{ l/min}, 16 \text{ l/min}, 32 \text{ l/min}$ |
| Max. volume flow | see characteristic |
| Leakage volume flow | on request |
| Hysteresis | $\leq 5\% *$ * at optimal dither signal |

MANUAL OVERRIDE

- Integrated (-) Actuation pin integrated in the armature tube.
- Push-button (HF1) integrated in the knurled nut.
Actuation by pressing the pin
- Spindle (HS1) integrated in the knurled nut.
Actuation by turning the spindle (infinitely variable valve actuation)

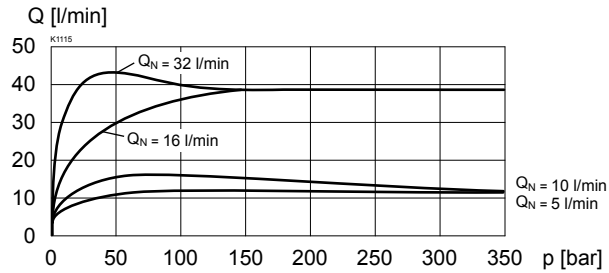
TYPE CHARTS / DESIGNATIONS OF SYMBOLS

| | |
|---|--|
|  | ACB - S S = Symmetrical control mode |
|  | AC1 - S S = Symmetrical control mode |
|  | CB2 - S S = Symmetrical control mode |

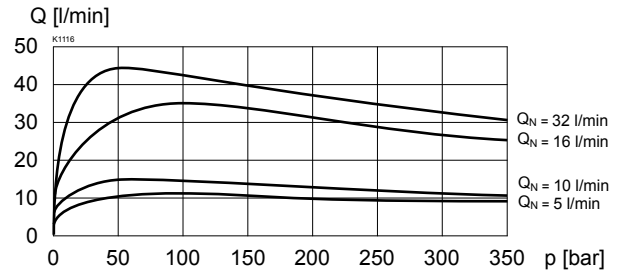
| | |
|--|---|
|  | ADB - V V = Meter-in control mode |
|--|---|

CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

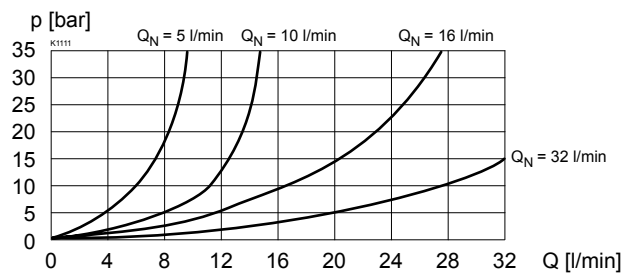
$Q = f(p)$ Volume flow pressure characteristics ($l = l_0$)
 [Types: ACB-S, AC1-S, CB2-S]



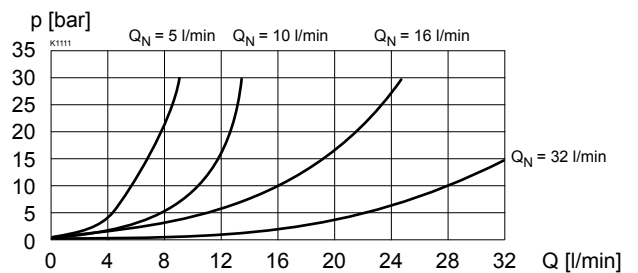
$Q = f(p)$ Volume flow pressure characteristics ($l = l_0$)
 [Type: ADB-V]



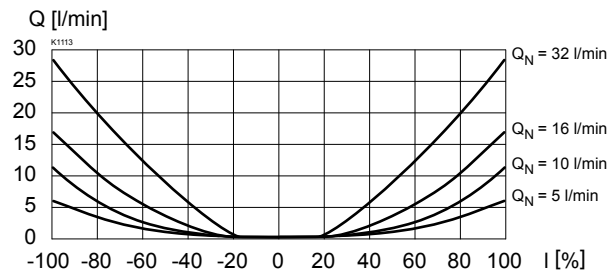
$\Delta p = f(Q)$ Pressure loss/flow characteristics ($l = l_0$)
 [Types: ACB-S, AC1-S, CB2-S]



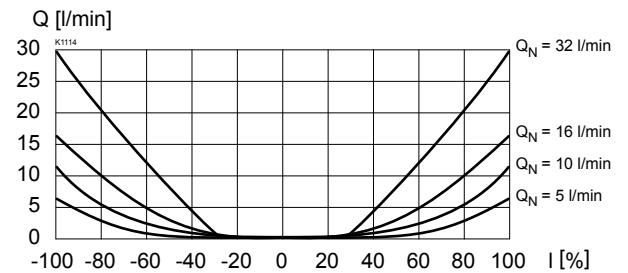
$\Delta p = f(Q)$ Pressure loss/flow characteristics ($l = l_0$)
 [Type: ADB-V]



$Q = f(l)$ Volume flow adjustment characteristics ($\Delta p = 10 \text{ bar}$)
 [Types: ACB-S, AC1-S, CB2-S]



$Q = f(l)$ Volume flow adjustment characteristics ($\Delta p = 10 \text{ bar}$)
 [Type: ADB-V]


Legend:

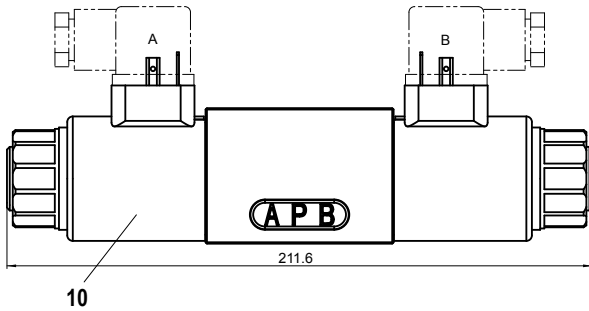
- 1: $Q_N = 5 \text{ l/min}$ 3: $Q_N = 16 \text{ l/min}$
 2: $Q_N = 10 \text{ l/min}$ 4: $Q_N = 32 \text{ l/min}$


NOTE!

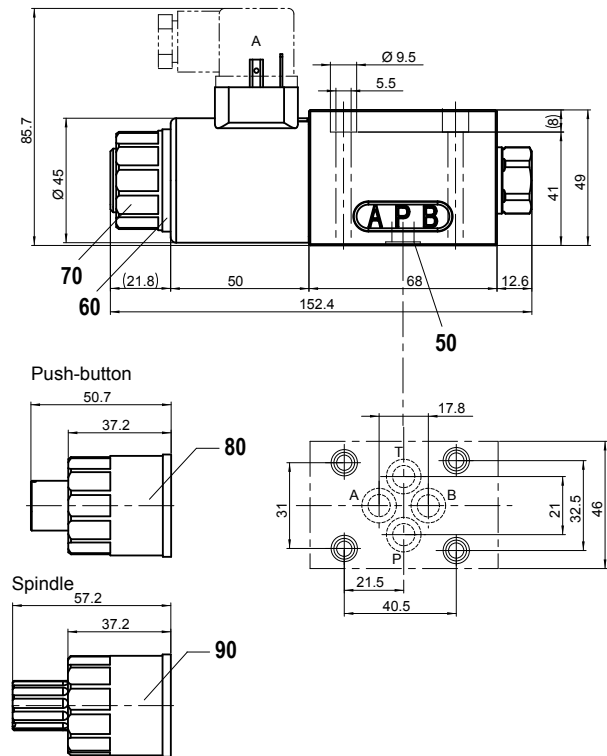
All values measured over 2 metering edges, A and B ports linked

DIMENSIONS

4/3-way valve



4/2-way valve


PARTS LIST

| Position | Article | Description |
|----------|----------------------|--|
| 10 | 206.1... | W.E45/23x50 |
| 50 | 160.2093 160.6092 | O-ring ID 9,25x1,78 (NBR) O-ring ID 9,25x1,78 (FKM) |
| 60 | 160.2222 160.6222 | O-ring ID 22,22x2,62 (NBR) O-ring ID 22,22x2,62 (FKM) |
| 70 | 154.2701 | Knurled nut |
| 80 | 253.7004 | Push-button |
| 90 | 253.7002 | Spindle |

ACCESSORIES

Threaded connecting plates, Multi-flange subplates and Longitudinal stacking system see Reg. 2.9
 Proportional amplifier see Reg. 1.13
 Mating connector (A) EN175301-803 article no. 219.2001
 Mating connector (B) EN 175301-803 article no. 219.2002

Technical explanation see data sheet 1.0-100