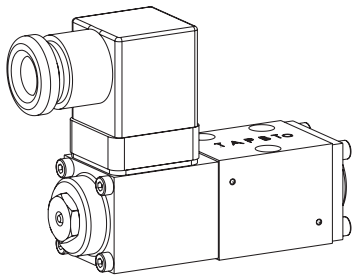
# Proportional spool valve

**Flange construction**

- $Q_{max}$ = 10 l/min
- 3 volume flow levels
- $Q_{N\,max}$ = 5 l/min
- $p_{max}$ = 350 bar

## NG3-Mini

**Wandfluh standard**



## DESCRIPTION

Direct operated proportional spool valve with 4 connections in 5-chamber system. Precise spool fit, low leakage, long service life time. The volume flow adjustment takes place by a Wandfluh proportional solenoid. Proportional to the solenoid current, the spool stroke, the spool opening and the valve volume flow increase. For the control, Wandfluh proportional amplifiers are available (see register 1.13).

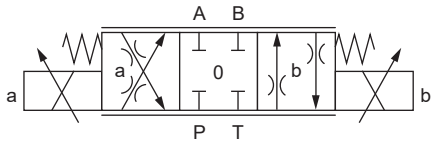
## APPLICATION

Proportional spool valves are perfectly suitable for demanding tasks due to the high resolution, large volume flow and low hysteresis. The applications are in the industry as well as in the mobile hydraulics for the smooth control of hydraulic actuators. Some examples: rotor blades control of wind generators, forestry and earth moving machines, machine tools and paper production machines with simple position control, robotics and fan control. Miniature values are used where both, reduced dimensions and weight are important.

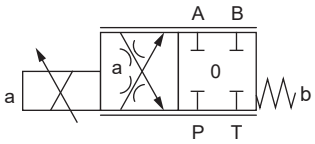
## SYMBOL

Symmetrical control

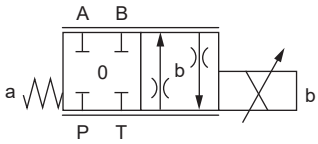
ACB-S




AC1-S

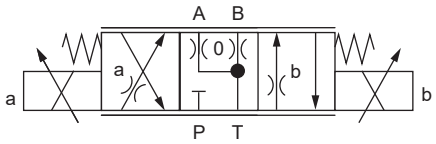



CB2-S

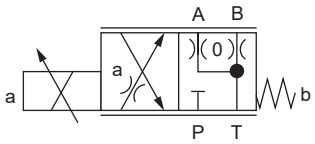



Meter-in control

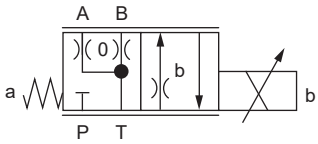
ADB-V




AD1-V




DB2-V




## TYPE CODE

WDP F A03 - ☐ - ☐ - ☐ - ☐ - ☐ # 2

Spool valve, directly operated, proportional

Flange construction

Mounting interface acc. to Wandfluh standard, NG3-Mini

Designation of symbols acc. to table

| | | |
|---|---|---|
| Nominal volume flow rate $Q_N$ | 1 l/min | 1 |
| | 2 l/min | 2 |
| | 5 l/min | 5 |
| Nominal voltage $U_N$ | 12 VDC | G12 |
| | 24 VDC | G24 |
| Sealing material | NBR | |
| | FKM (Viton) | D1 |

Design index (subject to change)

1.10-66

## GENERAL SPECIFICATIONS

| | |
|---|---|
| Designation | Proportional spool valve |
| Construction | Direct operated |
| Mounting | Flange construction |
| Nominal size | NG3-Mini according to Wandfluh standard |
| Actuation | Proportional solenoid |
| Ambient temperature | -25…+70 °C<br>if >50 °C, $I_G$ is only conditionally achievable |
| Weight | 0,5 kg (1 solenoid)<br>0,65 kg (2 solenoids) |
| MTTFd | 150 years |

## ACTUATION

| | |
|---|---|
| Actuation | Proportional solenoid, wet pin push type, pressure tight |
| Execution | P29V (Data sheet 1.1-90) |
| Connection | Connector socket EN 175301 – 803 |

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| Protection class | IP65 |
| Relative duty factor | 100 % DF |
| Standard nominal power | 12 VDC, 24 VDC |
| Limiting current at 50 °C | $I_G$ = 540 mA ($U_N$ = 24VDC)<br>$I_G$ = 1'080 mA ($U_N$ = 12VDC) |

## HYDRAULIC SPECIFICATIONS

| | |
|---|---|
| Working pressure | $p_{max}$ = 350 bar ($p_T$ < 20 bar)<br>$p_{max}$ = 315 bar ($p_T$ > 20 bar) |
| Tank pressure | $p_T$ max = 100 bar |
| Maximum volume flow | $Q_{max}$ = 10 l/min, see characteristics |
| Nominal volume flow | $Q_N$ = 1 l/min, 2 l/min, 5 l/min |
| Leakage oil | See characteristics |
| Hysteresis | ≤ 5 % at optimal dither signal |
| Fluid | Mineral oil, other fluid on request |
| Viscosity range | 12 mm²/s…320 mm²/s |
| Temperature range fluid | -25…+70 °C (NBR)<br>-20…+70 °C (FKM) |
| Contamination efficiency | Class 18 / 16 / 13 |
| Filtration | Required filtration grade ß 6…10 ≥ 75, see data sheet 1.0-50 |

## STANDARDS

| | |
|---|---|
| Mounting interface | Wandfluh standard |
| Solenoids | DIN VDE 0580 |
| Connection execution D | EN 175301 – 803 |
| Protection class | EN 60 529 |
| Contamination efficiency | ISO 4406 |

## SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

## SURFACE TREATMENT

- The valve body is painted with a two component paint
- The solenoid and the cover are re zinc-nickel coated
- The socket head screws are zinc coated

## INSTALLATION NOTES

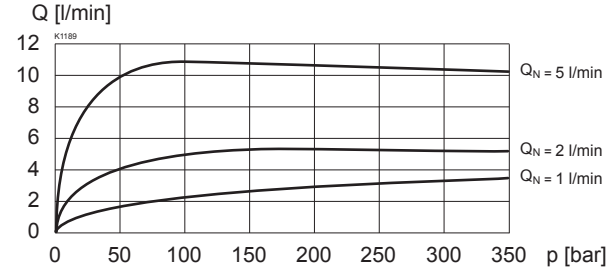
| | |
|---|---|
| Mounting type | Flange mounting<br>3 fixing holes for socket head screws M4 x 30 |
| Mounting position | Any, preferably horizontal |
| Tightening torque | $M_D$= 2,6 Nm (quality 8.8) Fixing screws |

**Note!** The length of the fixing screw depends on the base material of the connection element.

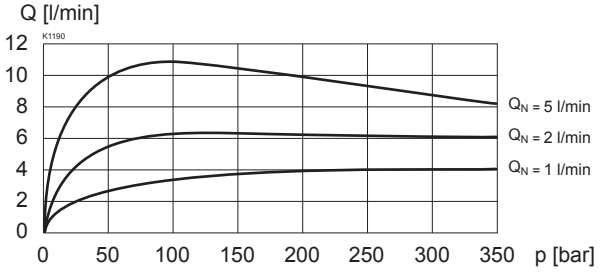
## PERFORMANCE SPECIFICATIONS

Oil viscosity $\upsilon$ = 30 mm²/s

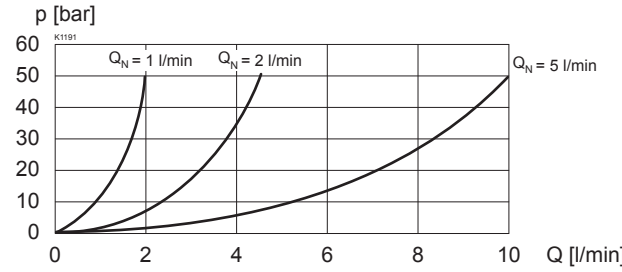
Q = f (p) **Volume flow pressure characteristics**
I = $I_G$
ACB-S, AC1-S, CB2-S



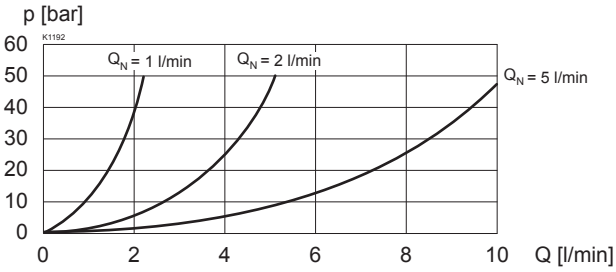

Q = f (p) **Volume flow pressure characteristics**
I = $I_G$
ADB-V, AD1-V, DB2-V



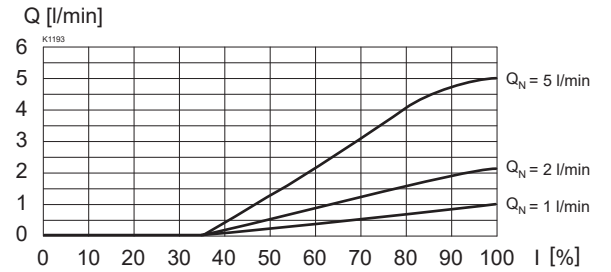

Δp = f (Q) **Volume flow pressure characteristics**
I = $I_G$
ACB-S, AC1-S, CB2-S



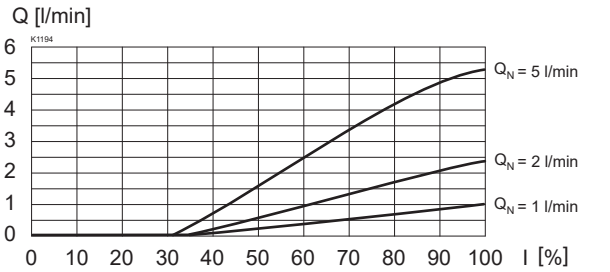

Δp = f (Q) **Volume flow pressure characteristics**
I = $I_G$
ADB-V, AD1-V, DB2-V



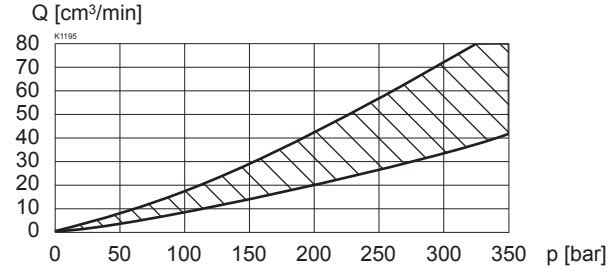

Q = f (I) **Volume flow adjustment characteristics**
Δp = 10 bar
ACB-S, AC1-S, CB2-S




Q = f (I) **Volume flow adjustment characteristics**
Δp = 10 bar
ADB-V, AD1-V, DB2-V

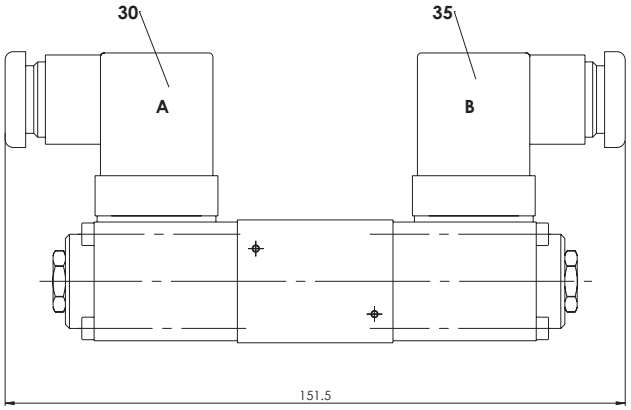



$Q_L$ = f (p) **Leakage volume flow characteristics**

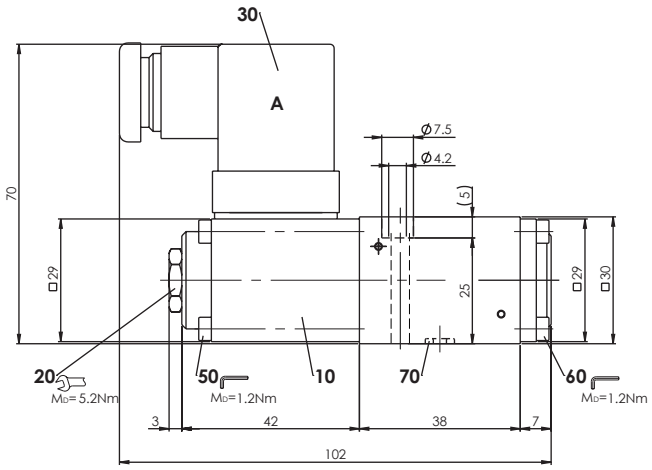


## DIMENSIONS

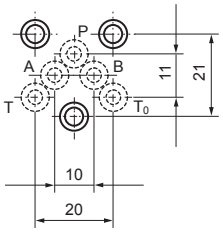
4/3-way spool valve (spring centred)




4/2-way spool valve




## HYDRAULIC CONNECTION




## MANUAL OVERRIDE

Screw plug with integrated manual override (HB4,5). Actuation by pressing the push button

## PARTS LIST

| Position | Article | Description |
|---|---|---|
| 10 | 256.2453<br>256.2418 | Proportional solenoid PI29V-G24<br>Proportional solenoid PI29V-G12 |
| 20 | 253.8000 | Screw plug with integrated manual override HB4.5 (Data sheet 1.1-300) |
| 30 | 219.2001 | Electric plug A (grey) |
| 35 | 219.2002 | Electric plug B (black) |
| 50 | 246.0141 | Socket head screw M3 x 40 DIN 912 |
| 60 | 246.0109 | Socket head screw M3 x 8 DIN 912 |
| 70 | 160.2045 | O-ring ID 4,50 x 1,50 (NBR) |

## ACCESSORIES

| | |
|---|---|
| Proportional amplifier | Register 1.13 |
| Threaded subplates | Data sheet 2.9-05 |
| Multi-station subplates | Data sheet 2.9-45 |
| Module type manifold blocks | Data sheet 2.9-85 |
| Technical explanations | Data sheet 1.0-100 |
| Filtration | Data sheet 1.0-50 |
| Relative duty factor | Data sheet 1.1-430 |