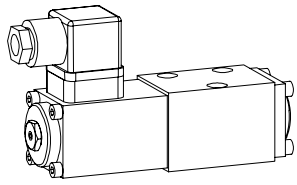
**Solenoid operated spool valve**
- **4/2-way impulse valve**
- **4/3-way with spring centred mid position**
- **4/2-way with spring reset**
- **$Q_{max}$ = 20 l/min, $p_{max}$ = 350 bar**

# NG4-Mini®



## DESCRIPTION

Spool valve in flange design NG4-Mini. Interface to Wandfluh standard with 4 ports. Solenoid to standard VDE 0580. Direct operated solenoid valve in 5 chamber design. Spool deteted or with spring reset. Wet pin type solenoid. Precise spool fit, low leakage, long life time. Threaded ports through additional base plate. Spool made from hardened steel, body from high quality cast steel. Wide range of standard and special voltages in 2 solenoid versions. The body made of high grade hydraulic casting for long service life is painted. The cover and the solenoid are zinc coated.

## FUNCTION

The solenoid shifts the spool into the corresponding position.
• 4/2-way detented spool valve:
2 solenoids and 2 detented positions. With the solenoids deenergised the spool remains in the last switched position.
• 4/2-way spool valve:
1 solenoid and 2 spool positions, spring offset. With the solenoid deenergised the spool returns to the offset position.
• 4/3-way spool valve:
2 solenoids and 3 spool positions, spring centered. With the solenoids deenergised the spool returns to the center position.

## APPLICATION

Solenoid operated spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. Direction of movement depends on the position of spool and its flow symbol. Please pay attention to the performance limits and leakage of the valves. Solenoid operated spool valves are suitable for machine tools and handling systems. Mini-4 valves are used where both, reduced dimensions and weight are important.

## CONTENT



## TYPE CODE

B ☐ 4 ☐ - ☐ # ☐

Interface

Economy-solenoid E
Medium-solenoid M

Number of control ports

Description of symbols acc. to table 1.2-31/2

Standard- nominal voltage $U_N$:
12 VDC G12
24 VDC G24
110 VAC R110
115 VAC R115
230 VAC R230

Design-Index (Subject to change)

## GENERAL SPECIFICATIONS

| | |
|---|---|
| Description | 4/2-, 4/3-spool valve |
| Nominal size | NG4-Mini to Wandfluh standard |
| Construction | Direct operated spool valve |
| Operation | Solenoid |
| Mounting | Flange<br>3 fixing holes for<br>socket head cap screws M5x40 |
| Connections | Threaded connection plates<br>Multi-flange subplates<br>Longitudinal stacking system |
| Ambient temperature | -20…+50°C |
| Mounting position | any, preferably horizontal |
| Fastening torque | $M_D$= 5,5 Nm (screw quality 8.8) |

| Weight | Economy | Medium |
|---|---|---|
| 4/2-way impulse | m = 1,2 kg | m = 1,4 kg |
| 4/3-way | m = 1,2 kg | m = 1,4 kg |
| 4/2-way (1 solenoid) | m = 0,83 kg | m = 0,93 kg |

## HYDRAULIC SPECIFICATIONS

| | |
|---|---|
| Fluid | Mineral oil, other fluid on request |
| Contamination efficiency | ISO 4406:1999, classe 20/18/14<br>(Required filtration grade ß 10…16≥75)<br>refer to data sheet 1.0-50/2 |
| Viscosity range | 12 mm²/s…320 mm²/s |
| Fluid temperature | -20…+70°C |
| Working pressure<br>in port P, A, B | Economy: $p_{T\,max}$ = 250 bar<br>Medium: $p_{max}$ = 350 bar ($p_T$ <20 bar)<br>$p_{max}$ = 315 bar ($p_T$ >20 bar) |
| Tank pressure<br>in port T | $p_{T\,max}$ = 100 bar |
| Max. volume flow | $Q_{max}$ = 20 l/min, see characteristics |
| Leakage volume flow | see characteristics |

## ELECTRICAL CONTROL

| | |
|---|---|
| Construction | Solenoid, wet pin push type, pressure tight |
| Standard-nominal voltage | $U_N$ = 12 VDC<br>$U_N$ = 24 VDC<br>$U_N$ = 110 VAC∗<br>$U_N$ = 115 VAC∗<br>$U_N$ = 230 VAC∗<br>AC = 50 to 60 Hz<br>∗ Rectifier integrated in the plug, other nominal voltages and nominal performances on request |
| Voltage tolerance | ±10% of nominal voltage |
| Protection class | IP 65 to EN 60 529 |
| Relative duty factor | 100% DF (see data sheet 1.1-430) |
| Switching cycles | 15'000/h |
| Operating life | $10^7$ (number of switching cycles, theoretically) |
| Connection/Power supply | Over device plug connection to EN175301-803 (DIN43650) ISO 4400, form A, (2P+E), other connections on request. |

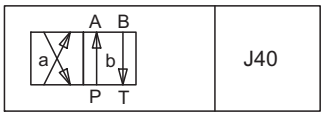
## SOLENOID DESCRIPTION

With respect to the selection of the solenoid, the following statements are important:

- The solenoid is the most expensive component of the solenoid spool valve.
- For this reason, it is not economical to use the same solenoid for all applications.
- Depending on the application, sales area, and customer, the requirements for solenoid spool valves and solenoids differ very considerably.
- In order to be able to offer the customer an optimum, we can supply our solenoid spool valves NG4 in 2 different versions:
  - Economy BEIIV (data sheet 1.1-100)
  - Medium SIN35V (data sheet 1.1-105)

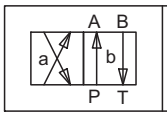
## TYPE LIST / DESIGNATION OF SYMBOLS

4/2-way valve impulse



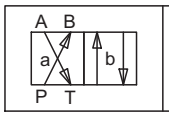

J40

4/2-way valve with spring reset operation A-side

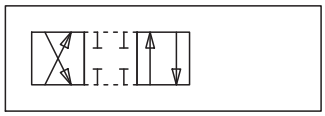



Z40a

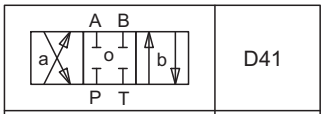
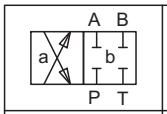
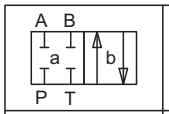
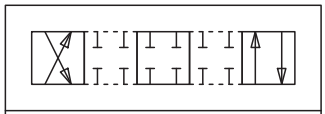
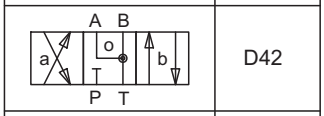
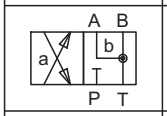
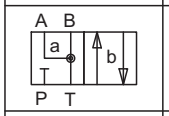
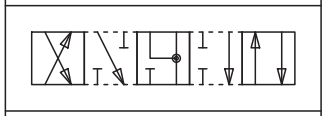
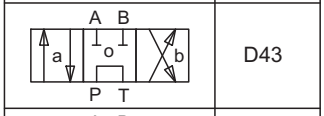
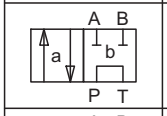
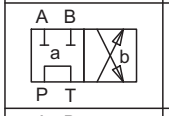
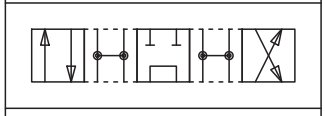
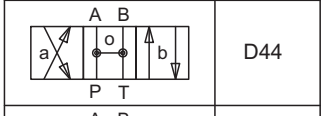
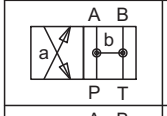
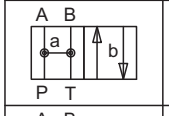
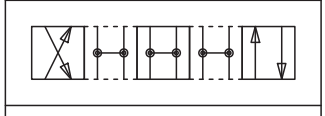
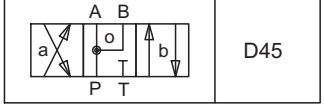
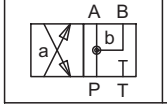
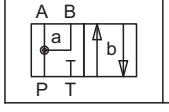
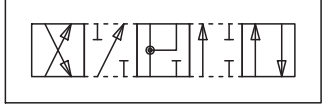
Transitional functions operation B-side




Z40b

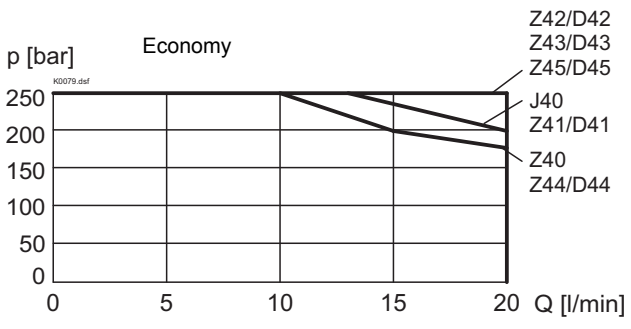


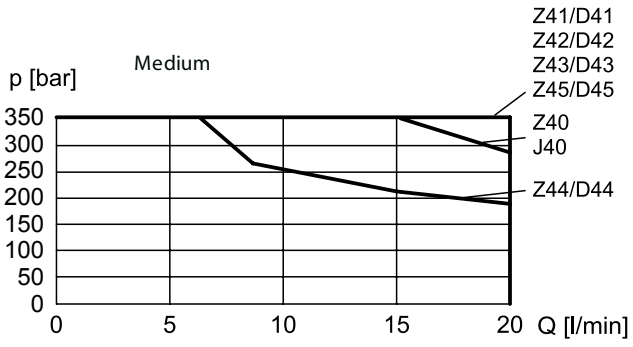
4/3-way valve spring centered

| | | | |
|---|---|---|---|
|  | D41 |  | Z41a |  | Z41b |  |
|  | D42 |  | Z42a |  | Z42b |  |
|  | D43 |  | Z43a |  | Z43b |  |
|  | D44 |  | Z44a |  | Z44b |  |
|  | D45 |  | Z45a |  | Z45b |  |

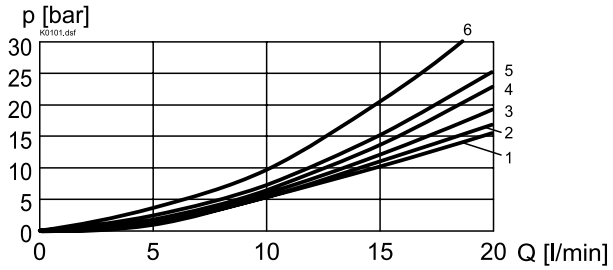
## CHARACTERSISTICS Oilviscosity υ = 30 mm²/s

p = f (Q) Performance limits with standard voltage -10%



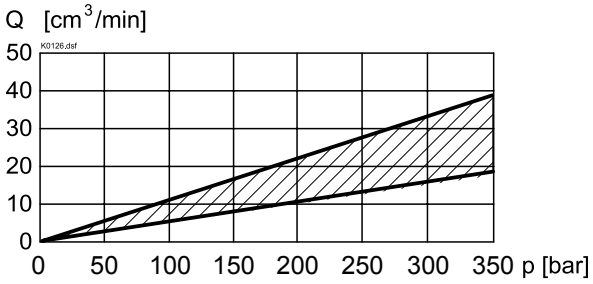



Δp = f (Q) Pressure drop volume flow characteristics




| Symbol \ Pressure drop Curve no. | Volume flow direction P - A | P - B | P - T | A - T | B - T |
|---|---|---|---|---|---|
| Z40/J40 | 5 | 5 | - | 2 | 2 |
| D41/Z41 | 5 | 5 | - | 2 | 2 |
| D42/Z42 | 5 | 5 | - | 1 | 1 |
| D43/Z43 | 4 | 4 | 6 | 2 | 2 |
| D44/Z44 | 4 | 4 | 3 | 2 | 2 |
| D45/Z45 | 4 | 4 | - | 2 | 2 |

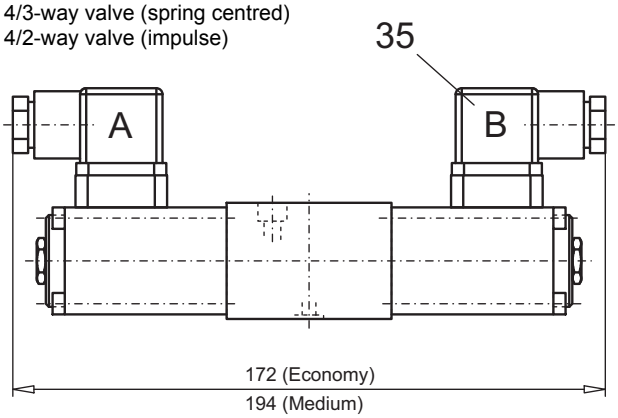
$Q_L$ = f (p) Leakage volume flow characteristics per control edge



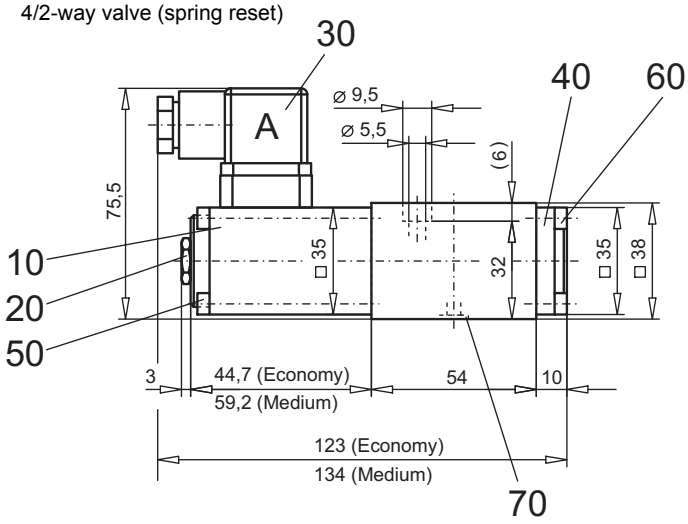

Leakage envelope J40/Z40/D41/D42/D44/D45

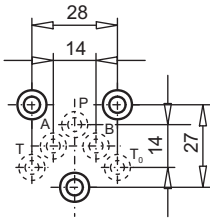
**DIMENSIONS**

4/3-way valve (spring centred)
4/2-way valve (impulse)




4/2-way valve (spring reset)




**PARTS LIST**

| Position | Article | Description |
|---|---|---|
| 10 | 260.1...<br>260.4... | Economy-solenoid BEIIV<br>Medium-solenoid SIN35V |
| 20 | 253.8000 | Plug with integrated manual override HB4,5 |
| 30 | 219.2001 | Electric plug A (grey) |
| 35 | 219.2002 | Electric plug B (black) |
| 40 | 057.4202 | Cover |
| 50 | 246.1146<br>246.1161 | Socket head cap screw M4x45 (BEIIV)<br>Socket head cap screw M4x60 (SIN35V) |
| 60 | 246.1113 | Socket head cap screw M4x12 DIN912 |
| 70 | 160.2052 | O-ring ID 5,28x1,78 |

**ACCESSORIES**

Threaded connecting plates, Multi-flange subplates and Longitudinal stacking system see Reg. 2.9

Technical explanation see data sheet 1.0-100E