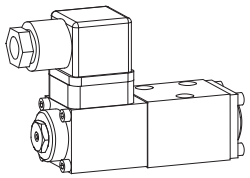
**Solenoid operated spool valve**
- **4/2-way impulse valve**
- **4/3-way with spring centred mid position**
- **4/2-way with spring reset**
- **$Q_{max}$ = 15 l/min, $p_{max}$ = 350 bar**

# NG3-Mini®



## DESCRIPTION

Spool valve in flange design NG3-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. 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-3 valves are used where both, reduced dimensions and weight are important.

## CONTENT



## TYPE CODE

B M 4 ☐ - ☐ # ☐

Interface

Medium-solenoid

Number of control ports

Description of symbols acc. to table 1.2-26/2

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 | NG3-Mini to Wandfluh standard |
| Construction | Direct operated spool valve |
| Operation | Solenoid |
| Mounting | Flange<br>3 fixing holes for<br>socket head cap screws M4x30 |
| Connections | Threaded connection plates<br>Multi-flange subplates<br>Longitudinal stacking system |
| Ambient temperature | -20…+50°C |
| Mounting position | any, preferably horizontal |
| Fastening torque | $M_D$= 2,8 Nm (screw quality 8.8) |
| Weight: 4/2-way impulse | m = 0,65 kg |
| 4/3-way | m = 0,65 kg |
| 4/2-way (1 solenoid) | m = 0,50 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 | $p_{max}$ = 350 bar ($p_T$ < 20 bar)<br>$p_{max}$ = 315 bar ($p_T$ > 20 bar) |
| Tank pressure<br>in port T | $p_{Tmax}$ = 100 bar |
| Max. volume flow | $Q_{max}$ = 15 l/min, see characteristics |
| Leakage volume flow | see characteristics |

## ELECTRICAL CONTROL

| | | | |
|---|---|---|---|
| Construction | Solenoid, wet pin push type, pressure tight | Voltage tolerance | ±10% of nominal voltage |
| Standard-nominal voltage | $U_N$ = 12 VDC | Protection class | IP 65 to EN 60529 |
| | $U_N$ = 24 VDC | Relative duty factor | 100% DF (see data sheet 1.1-430) |
| | $U_N$ = 110 VAC∗ | Switching cycles | 15'000/h |
| | $U_N$ = 115 VAC∗ | Operating life | $10^7$ (number of switching cycles, theoretically) |
| | $U_N$ = 230 VAC∗ | Connection/Power supply | Over device plug connection to EN175301-803 (DIN 43650) ISO4400, form A, (2P+E), other connections on request. |
| | AC = 50 bis 60 Hz | | |
| | ∗ Rectifier integrated in the plug, other nominal voltages and nominal performances on request | Solenoid connection: | SIN29V (data sheet 1.1-80) |

## TYPE LIST / DESIGNATION OF SYMBOLS

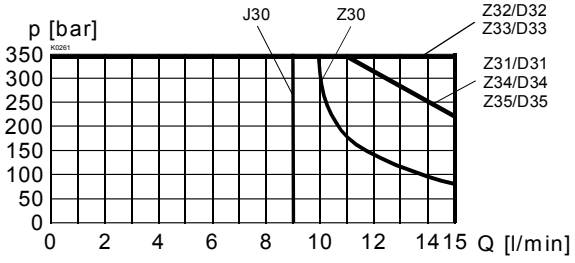
| 4/2-way valve impulse | 4/2-way valve with spring reset operation A-side | Transitional functions operation B-side | |
|---|---|---|---|
| J30 | Z30a | Z30b | |

4/3-way valve spring centered

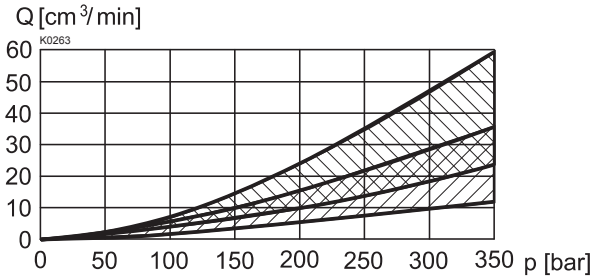
| | | | |
|---|---|---|---|
| D31 | Z31a | Z31b | |
| D32 | Z32a | Z32b | |
| D33 | Z33a | Z33b | |
| D34 | Z34a | Z34b | |
| D35 | Z35a | Z35b | |

**CHARACTERSISTICS** Oilviscosity $\upsilon$ = 30 mm²/s

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



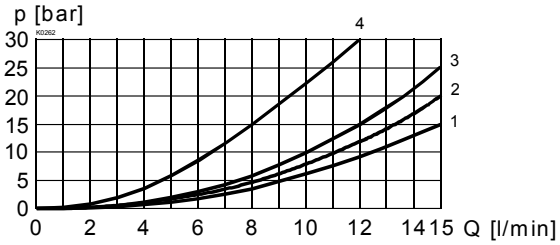

$Q_L$ = f (p) Leakage volume flow characteristics per control edge




Leakage envelope J30/Z30/D31/D32/D34/D35

Leakage envelope D33

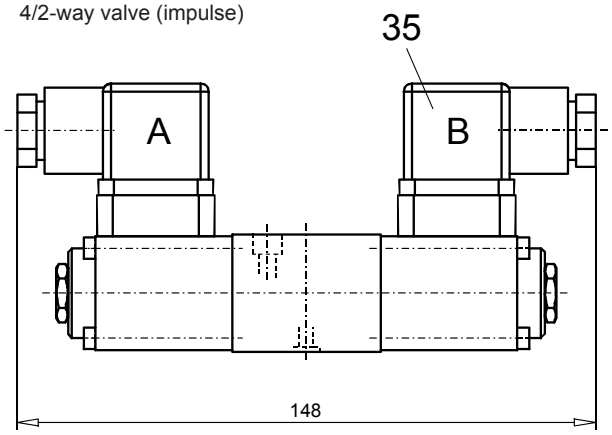
Δp = f (Q) Pressure drop volume flow characteristics



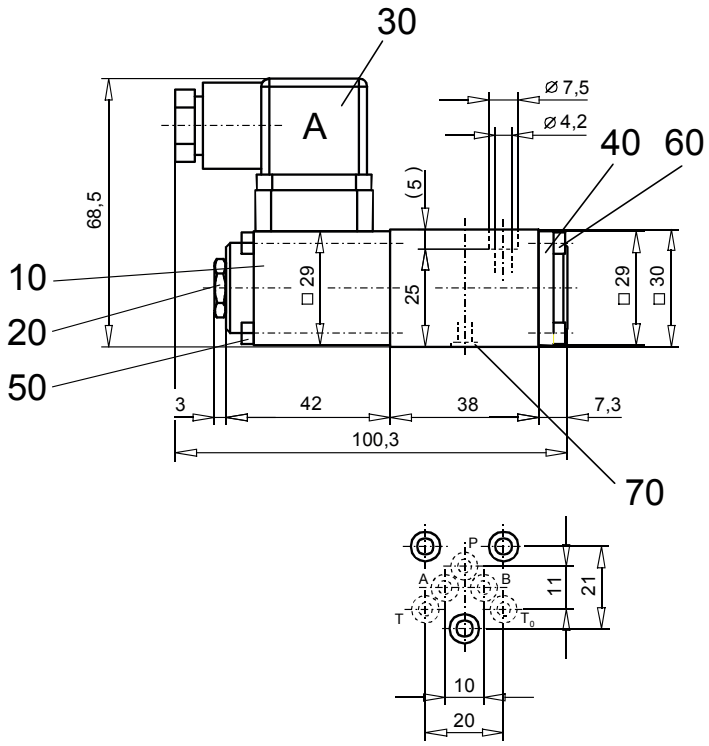

| Symbol \ Pressure drop Curve no. | Volume flow direction P - A | P - B | P - T | A - T | B - T |
|---|---|---|---|---|---|
| Z30/J30 | 3 | 3 | - | 2 | 2 |
| D31/Z31 | 3 | 3 | - | 2 | 2 |
| D32/Z32 | 3 | 3 | - | 1 | 1 |
| D33/Z33 | 4 | 4 | 3 | 4 | 4 |
| D34/Z34 | 4 | 4 | 3 | 1 | 1 |
| D35/Z35 | 2 | 2 | - | 2 | 2 |

## DIMENSIONS

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




4/2-way valve (spring reset)







## PARTS LIST

| Position | Article | Description |
|---|---|---|
| 10 | 260.2 ... | Solenoid SIN29V |
| 20 | 253.8000 | Plug with integr. manual override HB4,5 |
| 30 | 219.2001 | Electric plug A (grey) |
| 35 | 219.2002 | Electric plug B (black) |
| 40 | 56.4200 | Cover |
| 50 | 246.0141 | Socket head cap screw M3x40 DIN 912 |
| 60 | 246.0109 | Socket head cap screw M3x8 DIN 912 |
| 70 | 160.2045 | O-ring ID 4,50x1,50 |

## ACCESSORIES

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

Technical explanation see data sheet 1.0-100E