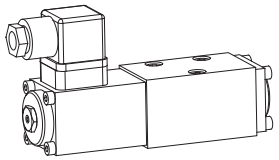
Proportional directional valve
- **pressure compensated**
- **Q_{max} = 8 l/min**
- **p_{max} = 250 bar**

NG4-Mini®



DISCRIPTION
Directly controlled spool valve, actuated by a Wandfluh proportional solenoid (VDE standard 0580), in five chamber design. Wet solenoid in oil. Spools with precision machined oil passages control the oil volume wich is proportional to the solenoid current. Reduced pressure drop achieved by optimised flow channels. Precise spool fit, long life. Spool made of hardened steel, valve body made of high quality cast iron suitable for hydraulic valves. Flange type, threaded connection by means of a connecting plate.

FUNCTION
Spool stroke, aperture and volume flow increase proportionally to the increase in the electric current at the proportional solenoid. This special design senses and compensales load induced flow changes. Flow remains constant with varying pressure. The optimised shape of the spool results in a good resolution of flowimportant for sensitive motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION
Because of the high resolution and low hysteresis, these valves are particularly suitable for demanding tasks. Applications: handling operations, robots, actuators, radar controlled vehicles, tool making and paper production machines, in other words anywhere where precise control systems are needed.

TYPE CODE

VWS 4 [ ] - [ ] - TF - [ ] # [ ]

Control valve, proportional

Number of control ports

Description of symbols acc. to table

Nominal volume flow

2 l/min	02	6 l/min	06
4 l/min	04	8 l/min	08

Normally closed

Nominal voltage U_N 12 VDC G12 [ ]
24 VDC G24

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Nominal size	NG4-Mini acc. to Wandfluh-standard
Designation	4/2-, 4/3- Proportional control valve
Construction	Direct operated spool valve
Mounting	Flange, 4 holes for socket cap screws M5 x 40
Fastening torque	M_D = 5,5 Nm (screw quality 8.8)
Pipe connection	Connection plates, Multi-station flange subplate, Longitudinal stacking system
Mounting position	any
Ambient temperature	-20…+50 °C
Weight:	4/2-way m = 1,1 kg 4/3-way m = 1,4 kg

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	I_G = 1250 mA	I_G = 680 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 to EN 60 529	
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43650 (2P+E)	

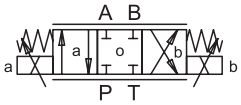
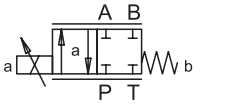
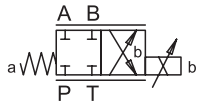
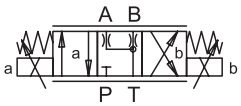
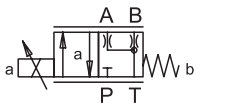
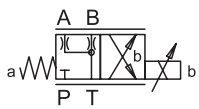
Other electrical specifications see data sheet 1.1-115 (PI35V)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß6…10≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 250 bar (ports P, A, B)
Tank pressure	max tank pressure in T p_{max} = 160 bar
Nominal volume flows	Q_N = 2 l/min Q_N = 6 l/min Q_N = 4 l/min Q_N = 8 l/min
Min. volume flow	Q_{min} = 0,020 l/min
Leakage volume flow	on request
Resolution	1 mA *
Repeatability	≤ 1 % *
Hysteresis	≤ 2 % *

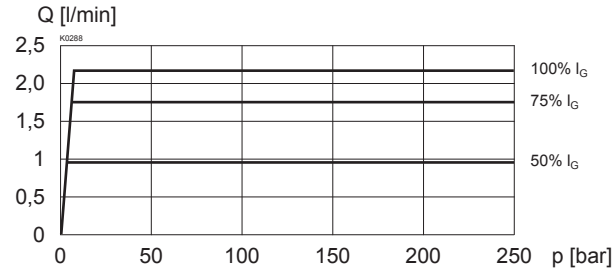
* by optimal dithersignal

TYPE CHARTS / DESIGNATIONS OF SYMBOLS

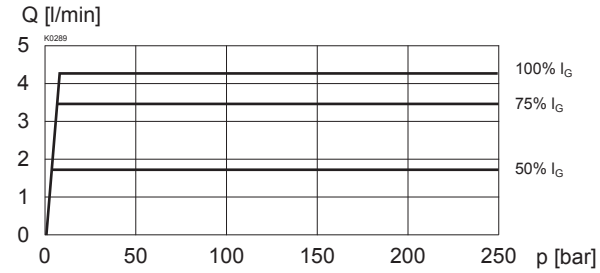
	D41
	Z41a
	Z41b
	D42
	Z42a
	Z42b

CHARACTERISTICS oil viscosity υ = 30 mm²/s

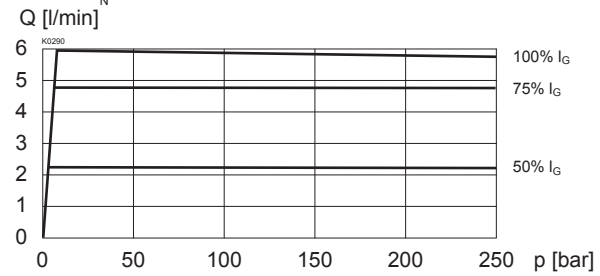
Q = f (p) Volume flow-pressure-characteristics
Q_N = 2 l/min



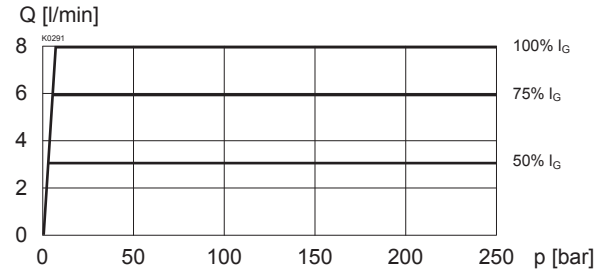
Q = f (p) Volume flow-pressure-characteristics
Q_N = 4 l/min



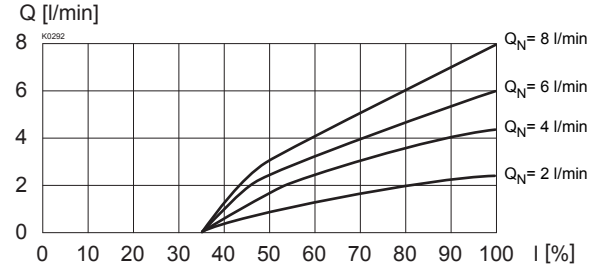
Q = f (p) Volume flow-pressure-characteristics
Q_N = 6 l/min



Q = f (p) Volume flow-pressure-characteristics
Q_N = 8 l/min

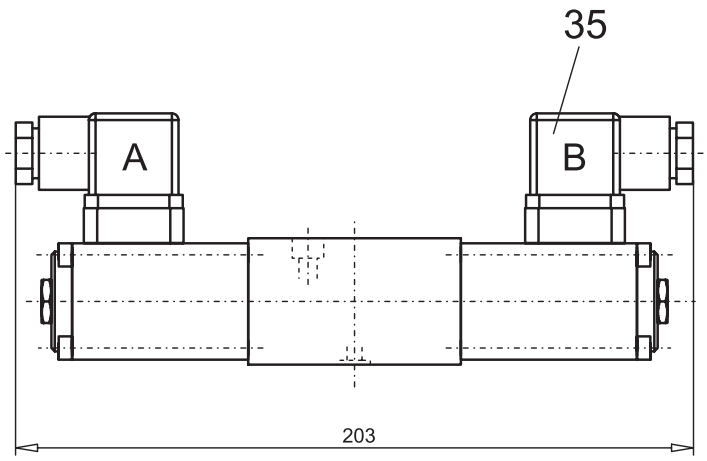


Q = f (I) Volume flow-signal-characteristics

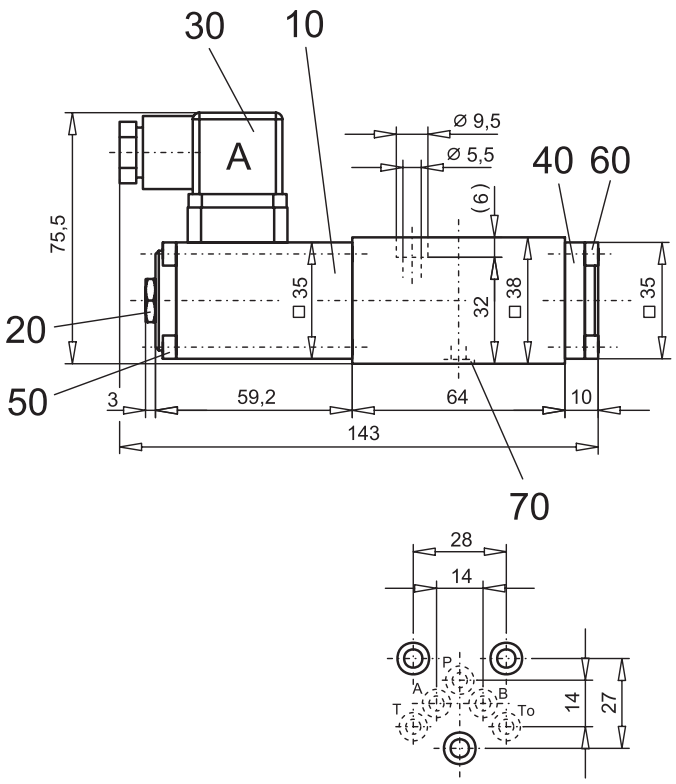


DIMENSIONS

4/3-way valve



4/2-way valve



PARTS LIST

Position	Article	Description
10	256.3454 256.3426	Proportional solenoid PI35V-G24 Proportional solenoid PI35V-G12
20	253.8000	Plug with integrated manual override HB4,5
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4208	Cover
50	246.1161	Socket head cap screw M4 x 60 DIN 912
60	246.1111	Socket head cap screw M4 x 10 DIN 912
70	160.2052	O-ring ID 5,28 x 1,78

ACCESSORIES

Sub-plates	register 2.9
Proportional-amplifier	register 1.13

Technical explanation see data sheet 1.0-100