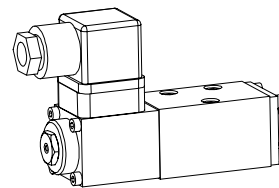


Proportional directional valve

- not pressure compensated
- $Q_{\max} = 8 \text{ l/min}$
- $p_{\max} = 315 \text{ bar}$

NG3-Mini®



DESCRIPTION

Direct operated proportional spool valve in flange design NG3-Mini according to Wandfluh standard 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 cover is phosphated and the solenoid is zinc coated.

FUNCTION

Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG3-Mini 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. Mini-3 valves are used where both, reduced dimensions and weight are important. 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.

CONTENT

GENERAL SPECIFICATIONS	1
HYDRAULIC SPECIFICATIONS	1
ELECTRICAL SPECIFICATIONS	1
TYPE CHARTS/ DESIGNATIONS OF SYMBOLS	2
CONTROL MODE	2
CHARACTERISTICS	2
DIMENSIONS	2
PARTS LIST	2
ACCESSORIES	2

TYPE CODE

WDP	F	A03	-		-		-	5	-		#	
Proportional directional valve												
Flange construction												
Interface nominal size 3-Mini												
Description of symbols acc. to table 1.10-65/2												
Nominal flow at 10 bar pressure drop over 2 metering edges = 5 l/min												
Standard nominal voltage U_N : 12 VDC G12 24 VDC G24												
Design-Index (Subject to change)												

GENERAL SPECIFICATIONS

Nominal size	NG3-Mini acc. to Wandfluh standard
Designation	4/2-, 4/3-way prop. directional valve
Construction	Direct operated spool valve
Mounting	Flange, 3 fastening holes for socket head cap screws M4x30
Fastening torque	2,8 Nm (qual. 8.8)
Pipe connection	Connection plates Multi-station flange subplate Longitudinal stacking system
Mounting position	any, preferably horizontal
Ambient temperature	-20...+50°C
Weight: 1 solenoid-version	m = 0,5 kg
2 solenoid-version	m = 0,6 kg

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	$p_{\max} = 315 \text{ bar}$ (connection P, A, B)
Tank pressure	$p_{\max} = 160 \text{ bar}$ (connection T)
Nominal volume flow	$Q_N = 5 \text{ l/min}$ at 10 bar pressure drop over 2 metering edges
Max. volume flow	$Q_{\max} = 8 \text{ l/min}$
Leakage volume flow	see characteristic
Hysteresis	≤ 5 % * * by optimal dithersignal

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	$I_G = 1080 \text{ mA}$	$I_G = 540 \text{ mA}$
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60 529	
Connection/Power supply	Over device plug connection acc. to ISO 4400/DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-90 (PI29V)	

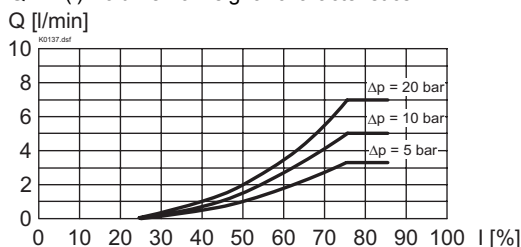
TYPE CHARTS / DESIGNATIONS OF SYMBOLS

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

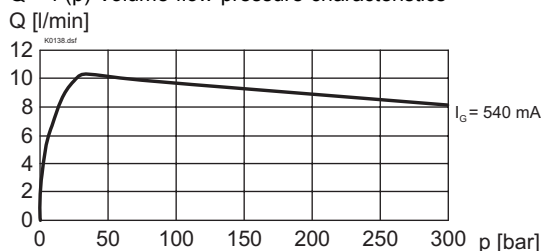
	ADB - V V = Meter-in control mode
--	---

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

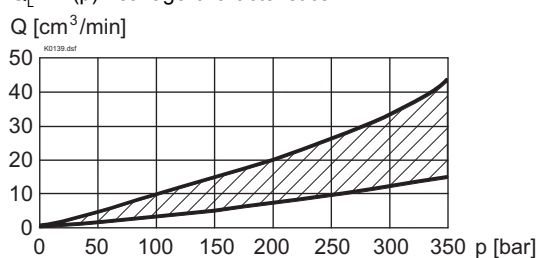
$Q = f(I)$ Volume flow-signal-characteristics



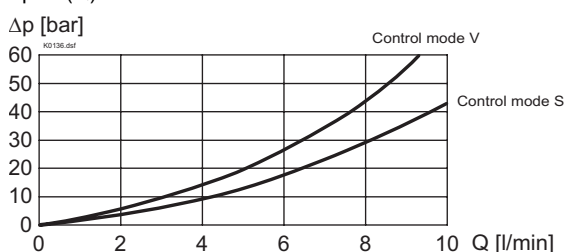
$Q = f(p)$ Volume flow-pressure-characteristics



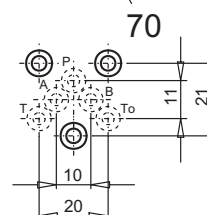
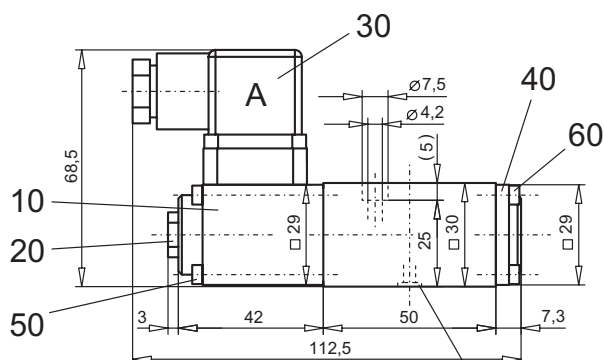
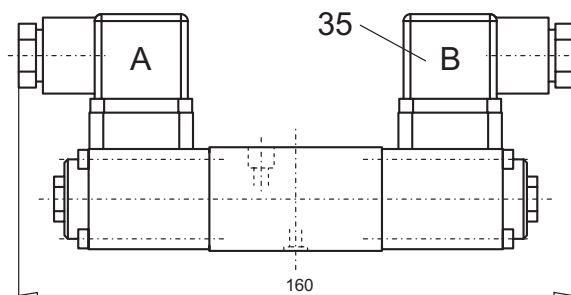
$Q_L = f(p)$ Leakage-characteristics



$\Delta p = f(Q)$ Pressure loss/flow-characteristics over 2 metering edges



DIMENSIONS



PARTS LIST

Position	Article	Description
10	256.2452 256.2416	Proportional solenoid PI29V-G24 Proportional solenoid PI29V-G12
20	253.8000	Plug with integrated manual override HB4,5
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	056.4100	Cover
50	246.0141	Socket head cap screw M3x40 DIN 912
60	246.0108	Socket head cap screw M3x8 DIN 912
70	160.2045	O-ring ID 4,50x1,5

ACCESSORIES

Sub-plates
Proportional-amplifier

Register 1.9
Register 1.13

Technical explanation see data sheet 1.0-100E