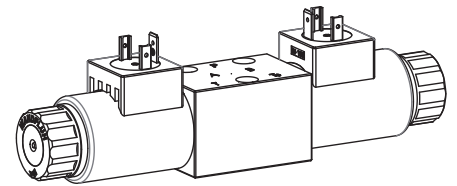


Proportional directional valve

- not pressure compensated
- $Q_{max} = 20 \text{ l/min}$
- $Q_{Nmax} = 12 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Direct operated proportional spool valve in flange design NG4-Mini Interface to Wandfluh standard with 4 ports. The spool valve is designed to the 5 chamber principle. The volume flow is adjusted by a slip-on coil acc. to VDE 0580. Low pressure drop due to the body design and spool profiling. The spool is made of hardend steel. The body made of high grade hydraulic casting for long service life is painted. The armature tube and the plug crew are zinc coated. The solenoid coil is zinc-/nickel-coated.

FUNCTION

Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG4-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. 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.

TYPE CODE

		W	D	P	F	A04	-		-		-		/		-		-		#	
Proportional directional valve																				
Flange construction																				
Mounting interface acc. to Wandfluh standard, NG4-Mini																				
Description of symbols acc. to table 1.10-73/2																				
Nominal volume flow Q_N	4 l/min					4														
	8 l/min					8														
	12 l/min					12														
Standard nominal voltage U_N	12 VDC					G12														
	24 VDC					G24														
	without solenoid coil					X5														
Slip-on coil	Metal housing round with one-sided collar									V										
	Metal housing square with one-sided collar									N*										
Electric connection	Connector socket EN 175301-803 / ISO 4400									D										
	Connector socket AMP Junior-Timer									J										
	Connector Deutsch DT04-2P									G										
Sealing material	NBR																			
	FKM (Viton)					D1														
Manual override	Integrated																			
	Push-button									HF1										
	Spindle									HS1										
Design-Index (Subject to change)																				

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-175)

GENERAL SPECIFICATIONS

Nominal size	NG4-Mini to Wandfluh standard	Ambient temperature	-20...+70 °C (slip-on coil «V») if > +50 °C, then $I_G - 10\%$
Designation	Direct operated proportional spool valve		
Construction	Direct operated spool valve	Mounting position	any, preferably horizontal
Betätigungsart	Proportional solenoid	Fastening torque	$M_D = 5,5 \text{ Nm}$ (screw quality 8.8) for fixing screws $M_D = 5 \text{ Nm}$ for knurled nut
Mounting	Flange, 3 fixing holes for socket head cap screws M5x40		
Connections	Connection plates Multi-station flange subplate Longitudinal stacking system		

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight	
Standard-Nominal voltage	$U_N = 12$ VDC	$U_N = 24$ VDC
	$I_G = 1200$ mA	$I_G = 630$ mA
Limiting current		
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class to EN 60529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69K	
Connection/Power supply	Over device plug connection	
Other electrical specifications see data sheet	1.1-168 (V)	1.1-175 (N)

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 in port P, A, B	$p_{Tmax} = 350$ bar ($p_T < 20$ bar) $p_{Tmax} = 315$ bar ($p_T > 20$ bar)
Tank pressure in port T	$p_{Tmax} = 160$ bar
Nominal volume flow	$Q_N = 4$ l/min, 8 l/min, 12 l/min
Max. volume flow	see characteristic
Leakage volume flow	on request
Hysteresis	$\leq 5\%$ * * at optimal dither signal

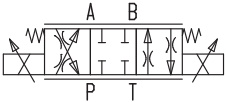
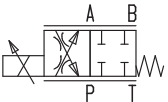
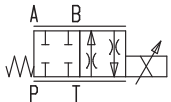
MANUAL OVERRIDE

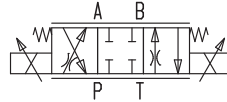
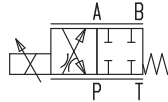
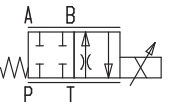
- Integrated (-) Actuation pin integrated in the armature tube.
- Push-button (HF1) integrated in the knurled nut. Actuation by pressing the pin
- Spindle (HS1) integrated in the knurled nut. Actuation by turning the spindle (infinitely variable valve actuation)

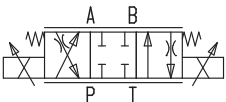
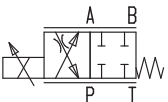
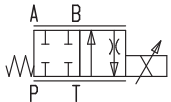
Weight

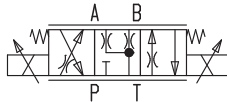
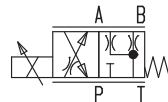
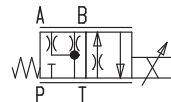
4/3-way	m = 1,25 kg
4/2-way (1 solenoid)	m = 0,9 kg

TYPE CHARTS / DESIGNATIONS OF SYMBOLS

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

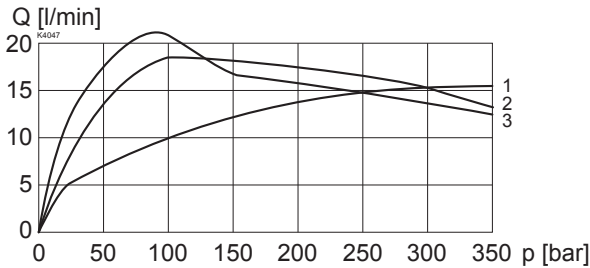
	ACB - V V = Meter-in control mode
	AC1 - V V = Meter-in control mode
	CB2 - V V = Meter-in control mode

	ACB - R R = Meter-out control mode
	AC1 - R R = Meter-out control mode
	CB2 - R R = Meter-out control mode

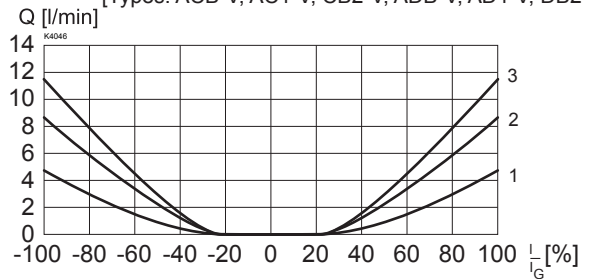
	ADB - V V = Meter-in control mode
	AD1 - V V = Meter-in control mode
	DB2 - V V = Meter-in control mode

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

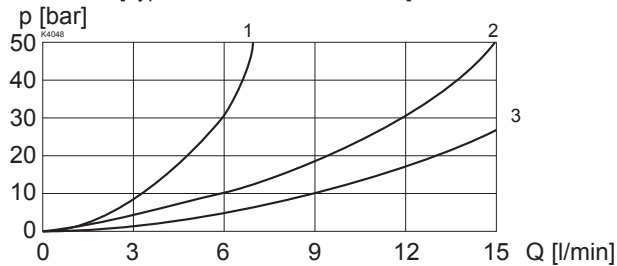
$Q = f(p)$ Volume flow pressure characteristics ($l = l_0$)
 [Types: ACB-S, AC1-S, CB2-S]



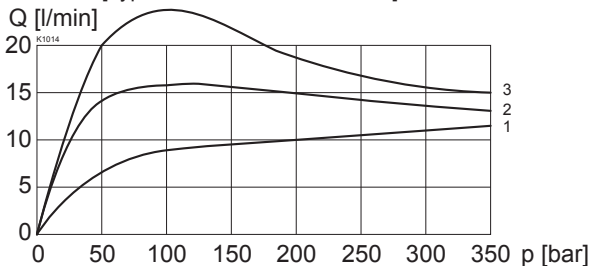
$Q = f(l)$ Volume flow adjustment characteristics ($\Delta p = 10 \text{ bar}$)
 [Types: ACB-V, AC1-V, CB2-V, ADB-V, AD1-V, DB2-V]



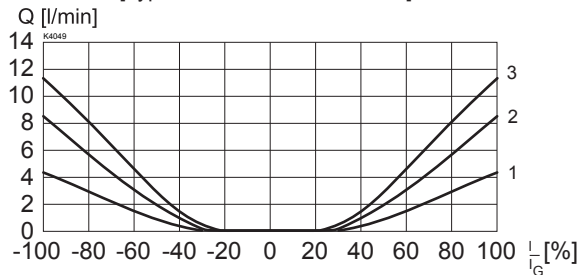
$\Delta p = f(Q)$ Pressure loss/flow characteristics ($l = l_0$)
 [Types: ACB-S, AC1-S, CB2-S]



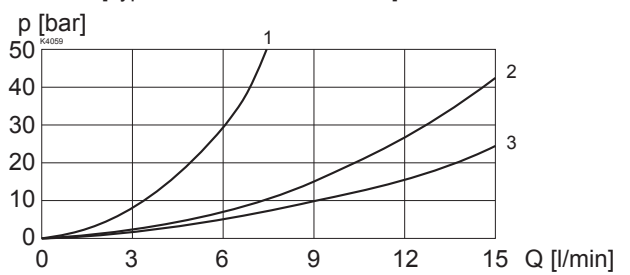
$Q = f(p)$ Volume flow pressure characteristics ($l = l_0$)
 [Types: ACB-R, AC1-R, CB2-R]



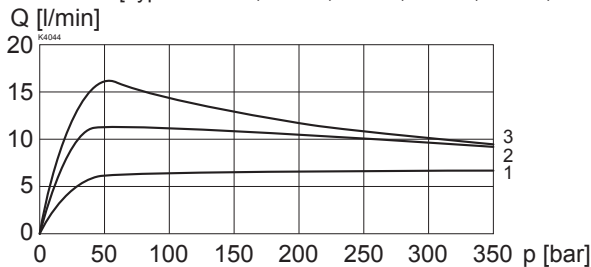
$Q = f(l)$ Volume flow adjustment characteristics ($\Delta p = 10 \text{ bar}$)
 [Types: ACB-S, AC1-S, CB2-S]



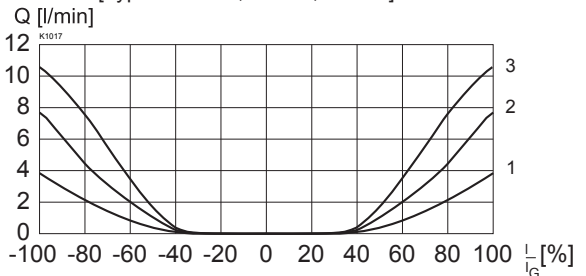
$\Delta p = f(Q)$ Pressure loss/flow characteristics ($l = l_0$)
 [Types: ACB-R, AC1-R, CB2-R]



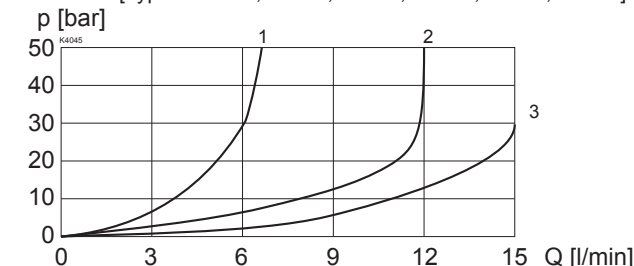
$Q = f(p)$ Volume flow pressure characteristics ($l = l_0$)
 [Types: ACB-V, AC1-V, CB2-V, ADB-V, AD1-V, DB2-V]



$Q = f(l)$ Volume flow adjustment characteristics ($\Delta p = 10 \text{ bar}$)
 [Types: ACB-R, AC1-R, CB2-R]



$\Delta p = f(Q)$ Pressure loss/flow characteristics ($l = l_0$)
 [Types: ACB-V, AC1-V, CB2-V, ADB-V, AD1-V, DB2-V]


Legend:

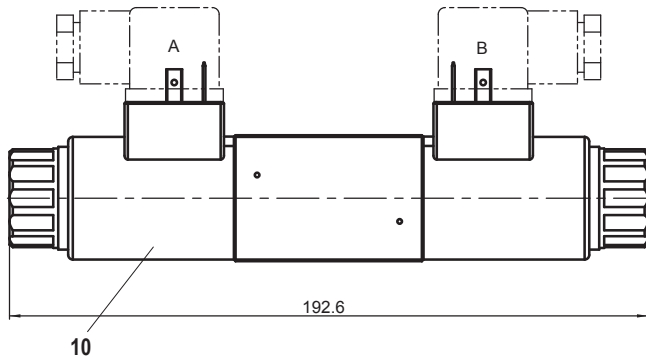
- 1: $Q_N = 4 \text{ l/min}$
- 2: $Q_N = 8 \text{ l/min}$
- 3: $Q_N = 12 \text{ l/min}$


NOTE!

All values measured over 2 metering edges, A and B ports linked.

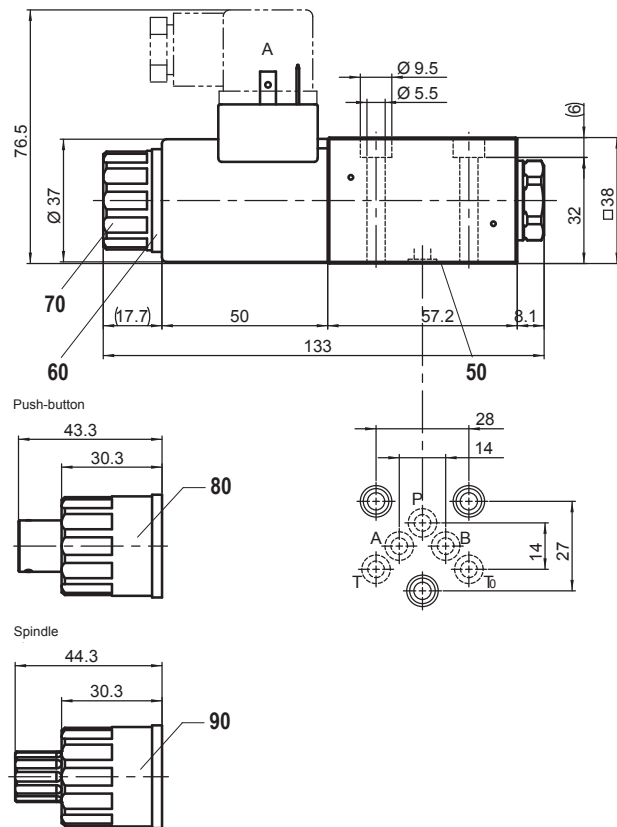
DIMENSIONS

4/3-way valve


PARTS LIST

Position	Article	Description
10	206.2...	V.E37/19x50
50	160.2052 160.6052	O-ring ID 5,28x1,78 (NBR) O-ring ID 5,28x1,78 (FKM)
60	160.2187 160.6187	O-ring ID 18,72x2,62 (NBR) O-ring ID 18,72x2,62 (FKM)
70	154.2700	Knurled nut
80	253.7001	Push-button HF1
90	253.7000	Spindle HS1

4/2-way valve


ACCESSORIES

Threaded connecting plates, Multi-flange subplates and Longitudinal stacking system see Reg. 2.9
 Proportional amplifier see Reg. 1.13
 Mating connector (A) EN175301-803 article no. 219.2001
 Mating connector (B) EN 175301-803 article no. 219.2002

Technical explanation see data sheet 1.0-100