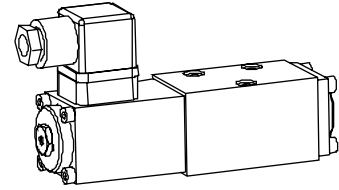


Proportional directional valve

- not pressure compensated
- $Q_{max} = 15 \text{ l/min}$
- $p_{max} = 315 \text{ bar}$

NG4-Mini[®]

Cetop RP 121 H-P02


DISCRIPTION

Directly controlled spool valve, actuated by a proportional solenoid, in five chamber design. Wet solenoid in oil. Spool with precisely machined control edges produce a progressive volume flow characteristic similar to proportional flow valves. 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. Proportional directional valves NG3-Mini are not load-compensated. Meter-in, meter-out and symmetrical flow control options available. The optimum spool shape and progressive characteristics curve allow fine motion control. Wandfluh power amplifiers are needed to activate the proportional directional valves (register 1.13).

APPLICATION

Because of the high resolution, high volume flow and low hysteresis, these valves are particularly suitable for demanding tasks. Because the valves are light and compact, Mini-3 proportional valves are particularly suitable for installations where space or weight is a problem. Applications: handling operations, robots, actuators, radar controlled vehicles, tool making and paper production machines, in other words anywhere where very small yet convenient and precise control systems are needed.

CONTENT

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ACCESSORIES	1.10-71/2

TYPE CODE

Interface	B	PW	<input type="checkbox"/>	4	<input type="checkbox"/>	-	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Proportional-control valve											
Control mode:											
Symmetrical	<input type="checkbox"/>										
Meter-in	<input type="checkbox"/>										
Meter-out	<input type="checkbox"/>										
Number of control ports											
Symbol type see chart on page 2											
Nominal flow at 10 bar pressure drop over 2 metering edges											
$Q_N = 4 \text{ l/min}$	<input type="checkbox"/>										
$Q_N = 8 \text{ l/min}$	<input type="checkbox"/>										
Supply voltage	12 VDC		<input type="checkbox"/>								
	24 VDC		<input type="checkbox"/>								
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Nominal size	NG4-Mini to Cetop RP 121 H-P02
Designation	4/2-, 4/3- Proportional-control valve
Construction	Direct operated spool valve
Mounting	Flange, 4 holes for socket cap screws M5x40
Fastening torque	$M_D = 5,5 \text{ Nm}$ (screw qual. 8.8)
Pipe connection flange	Connection plates, Multi-station subplate, Longitudinal stacking system
Mounting position	any
Ambient temperature	-20...+50°C
Weight: 4/2-way	$m = 1,0 \text{ kg}$
4/3-way	$m = 1,3 \text{ kg}$

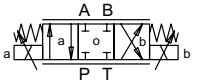
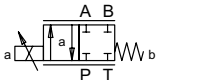
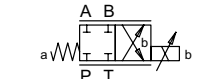
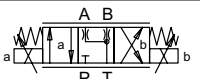
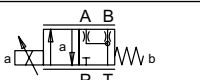

HYDRAULIC SPECIFICATIONS

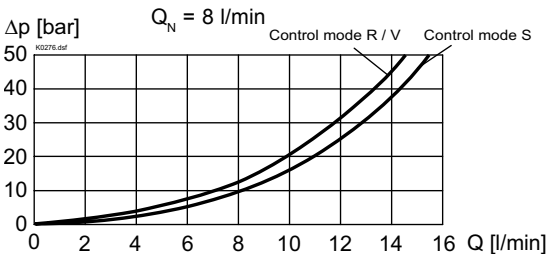
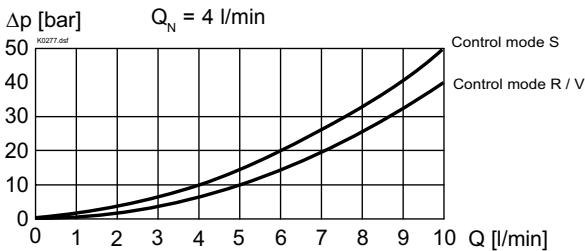
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO class 16/13 (Required filtration grade $\beta_{6...10} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70°C
Working pressure	$p_{max} = 315 \text{ bar}$ (Connection P, A, B)
Tank pressure	max tank pressure in T
Nominal volume flow	$p_{max} = 160 \text{ bar}$ $Q_N = 4 \text{ l/min}$ ($Q_{max} = 10 \text{ l/min}$) $Q_N = 8 \text{ l/min}$ ($Q_{max} = 15 \text{ l/min}$) at 10 bar pressure drop over 2 metering edges. For values which deviate from the nominal flow Q_N the valve pressure drop Δp can be calculated by following formula:
	$\Delta p = \Delta p_N \cdot \left(\frac{Q}{Q_N}\right)^2$
	$Q_N =$ Nominal volume flow
	$Q =$ Effective volume flow
	$\Delta p_N =$ Nominal pressure drop 10 bar
Min. volume flow	$Q_{min} = 0,020 \text{ l/min}$
Leakage volume flow	see characteristic
Resolution	1 mA*
Repeatability	$\leq 1 \text{ \%}$ *
Hysteresis	$\leq 2 \text{ \%}$ *
	* 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	$I_G = 1250 \text{ mA}$	$I_G = 680 \text{ mA}$
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 to DIN 40050	
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-115 (PI35V)	

TYPE CHARTS / DESIGNATIONS OF SYMBOLS

	S V R .D41
	S V R .Z41a
	S V R .Z41b
	v .D42
	v .Z42a
	v .Z42b

CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $\Delta p = f(Q)$ Pressure loss/flow-characteristics over 2 metering edges

PARTS LIST

Position	Article	Description
10	256.3453 256.3423	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	246.1160	Socket head cap screw M4x60 DIN 912
60	246.1110	Socket head cap screw M4x10 DIN 912
70	160.2052	O-ring ID 5,28x1,78

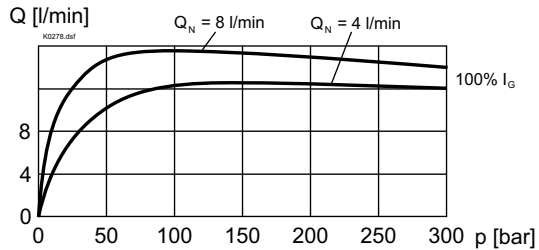
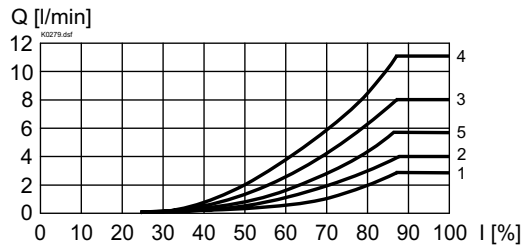
ACCESSORIES

 Sub-plates register 1.9
 Proportional-amplifier register 1.13

Technical explanation see data sheet 1.0-100E

CONTROL MODE

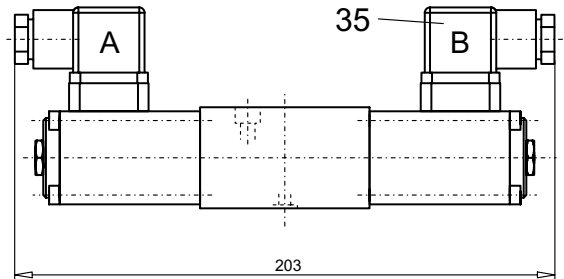
Symmetrical	S	
Meter-in	V	
Meter-out	R	

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

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


- $\Delta p = 5 \text{ bar}$ by $Q_N = 4 \text{ l/min}$
- $\Delta p = 10 \text{ bar}$ by $Q_N = 4 \text{ l/min}$
- $\Delta p = 10 \text{ bar}$ by $Q_N = 8 \text{ l/min}$
- $\Delta p = 20 \text{ bar}$ by $Q_N = 8 \text{ l/min}$
- $\Delta p = 5 \text{ bar}$ by $Q_N = 8 \text{ l/min}$
 $\Delta p = 20 \text{ bar}$ by $Q_N = 4 \text{ l/min}$

DIMENSIONS

4/3-way valve



4/2-way valve

