



Directional valve size NG 16 WL 4.16

Installation dimensions ISO 4401 / DIN 24340 A16 electro-hydraulically pilot operated



Description

A pilot valve operates the main control valve electrohydraulically. For operating the pilot valve, pressure-tight direct and alternating current magnets can be fitted switching in oil.

The control piston for the main control valve is operated by the flanged pilot valve directly subject to actuating pressure and switched to indexing position a or b.

The buncher space or spring chamber is formed by two flanged covers that can also be fitted with a stroke limiter. The control oil in- and outlet can be individually switched to internal or external. The main control valve is available in the following control piston feedback models:

Pilot valve

Hydraulic statistics

- 1. Spring-centred central position Spring-centred central position
- 2. Spring-centred final position
- 3. Without spring feedback
- 4. With locking final position Wit
- Without spring returnWithout spring return

Main control valve

Without spring return

Hydraulic oils according to DIN 51524/25 Highly flammable

liquids on request

Actuating pressure is required with model 4 for fixing the final position of the main control valve.

Statistics

General statistics

Description	$\frac{4}{3}$, $\frac{4}{2}$, $\frac{3}{3}$, $\frac{3}{2}$ and $\frac{2}{2}$ directional valves	Operating pressure			
		Connector P, A, B, T	$p_{max.}$ = 315 bar page 8		
Design	Slide damper	Connector X Connector Y	$p_{max.} = 315 \text{ bar}$		
Method of fixing	Flange		$p_{max.} = 100 \text{ bar}$		
Line connector	Connection panel R¾", R1"	of pressurizing			
Dimensions	Page 9	medium	$\vartheta_{\text{m min.}} = -20 ^{\circ}\text{C}$		
Weight	Page 9		$0_{m max.} = +00 \ 0$		
Fitting position	Optional, preferably	VISCOSITY	$v_{min.} = 13 \text{ mm}^2/\text{s} (\text{cSt})$ $v_{max.} = 380 \text{ mm}^2/\text{s} (\text{cSt})$		
		Functions	Pages 4 and 5		
Direction of flow	See symbols	Δp -Q-characteristic			
Environmental temperature $artheta_{ ext{U max}}$ = + 50 °C		curve	Pages 7 and 8		

Operating mode

Hydraulically		Stroke limit
Electrohydraulically	Statistics on pages 6 and 8 WL 4.06 pilot valve	Counterbala Check valve

Accessories

Hydraulic fluids

Stroke limiter	Page 6
Counterbalance valve	Page 7
Check valve	Page 7
Connection panels	Page 10

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1. Function 2. Pilot valve 3. Stroke limiter (spring-centred) 4. Control oil Inlet Outlet D Х γ with HO without F internal external Ρ without only on side A H2 V works in indexing position b internal external with counterbalance valve only on side B В internal internal H3 works in indexing position a w internal with counterbalance valve internal H4 both sides G external external C external internal See explanation on page 7 5. Spring return WL 4.16 XD2.. Pilot valve NG 06 + 3 with 6 without WL 4.16 XP2.M. Page 6 Spring return Spring return Function Function Symbol Pilot valve Symbol Pilot valve ΑB SEZ 0** a 🖊 🔪 6 3 ∮ݙݷݸݤݸݴݞݛݐݡ 6 a / (..R)* ENZ ΑB ΑB (..R)* b Mv.P 6 0 6 6 a 🖊 a 🖊 🖿 ΑB ΑB ₽ Nara a 🖊 🕨 6 6 0 6 b ΑB ΑB HEZ FZ b b 3 3 6 0 **▲**∖b (..R)* a / (..R)* P 1 Ρ ΑB ΑB b a b 6 3 31 1 ۹ / p a٨٨ ΡŤ ΑE ΑB I Marina P b M p 0 * * 3 6 6 a 🖊 🕨 a / P ΑB b 6 6 6 0 , Ip a 🖊 ۸∧b a / SEZ (..R)* AF FDZ 3 6 0 3 a 🖊 🕨 (..R)* ΑB 3 3 31 3 **√**b ė used indexing position skok ь 🗱 unused indexing position without check valve Key to symbols: b e.g. ENZ vertical cover (positive) vertical cover with check valve throttled (positive) b φ b а а e.g. ENR

Main control valve – the blanks marked with spaces are to be completed with the following codes:

vertical cover (negative)

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1. Function 2. Pilot valve 3. Stroke limiter (spring-centred) 4. Control oil Inlet Outlet D Х γ with HO without F internal external Ρ without only on side A H2 V works in indexing position b internal external with counterbalance valve only on side B В internal internal H3 works in indexing position a w internal with counterbalance valve internal H4 both sides G external external C external internal See explanation on page 7 5. Spring return WL 4.16 XD2.. Pilot valve NG 06 + 3 without 6 with WL 4.16 XP2.M. Page 6 Spring return Spring return Pilot valve Pilot valve Function Symbol Function Symbol ΑB (b 3 31 6 6 a a a **▲**∖b ₫∖₽ a 🖊 EVZ FDZ (..R)* AB (..R)* 0 * * 3 6 1 ΔΛΛ b . م ۲ ا ΑB 6 6 6 6 ΑE ΑB AFZ <u>م ل</u> 6 0 6 1 ۵ 📣 ۵ L ک (..R)* FVZ (...R)* ΑB 6 1 3 0** a 🖊 Īb-ΑB 1** 6 3 6 a / SFZ ΑB (..R)* ANZ b 6 0 6 1 **▲**∖b a 7 (..R)* ΡT ΑB 6 6 a 🖊 SFDZ ΑE (...R)*

Main control valve - the blanks marked with spaces are to be completed with the following codes:

** With spring return 0: WL4 AP 06 P1 pilot valve.. With spring return 1: WL4 BP 06 P1 pilot valve..

a 7

<u>)(b)(</u>

۸۸h

Ordering example | WL 4 ENZ 16 XD2 HOV6 + WL 4 SF06 P1 EG6 Z 23050 + MWL4 16 R2 A0

0

main control valve

6

pilot valve

single connection panel

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Ordering code

Pilot valve - the points marked with spaces are to be completed with the following codes:



Stroke limiter



6

Without stroke limiter

One-sided stroke limiter on side A Works in indexing position b

One-sided stroke limiter on side B Works in indexing position a

Two-sided stroke limiter

The stroke limiter is described as an adjustable stop in the valve's vertical cover for adjusting the control piston stroke. Stroke reduction means area reduction, i.e., throttle effect or flow regulation. An indexing position may also become completely blocked.

Other stroke limiters on request.

Control oil in- and outlet

Code	Control oil	Simplified symbol	Detailed symbol	Diagram	Note
F X internal (V) Y external				Not possible with functions F ENZ, SEZ, HEZ, EVZ; Function ANZ at $Q \le 60 \text{ I/min}$	
		بن ¹ 1. ط			V Possible
B (W)	X internal Y internal				Not possible with functions B ENZ, SEZ, HEZ, EVZ; Function ANZ at $Q \le 60 I/min$
		P 1			W Possible
G	X external Y external			×	Possible
C	X external Y internal			x Or	Possible
М	Remote controlled		Remote controlled		Possible
Note: With internal control oil in- and outlet, the connectors X and Y in the connection panel must be closed.				 with set screw M6 x 8 DIN 913 closed (SW 4) Throttle screw according to drawing 4302803/4 screwed in (SW 4) Note: For control oil adjustment X and Y, first remove the screw plug M10 x 1 keg DIN 906 (SW 5) 	
How resistance ∆p in bar	so too too	The flow resistanc added to the flow P-A; P-B; P-T (Δp-Q-characteris page 8).	tic curve	n n n n n n n n n n n n n n n n n n n	The flow resistance is to be added to the flow value P-A; P-B; P-T (Δ p-Q-characteristic curve page 8).



A check- or counterbalance valve can also be installed. Conversion is not possible.

Check valve in connector P

A check valve can be built into connector P in order to prevent volume displacement from the client to connector P when activating statically loaded clients. Ordering code: 3301122/4 Counterbalance valve in connector P Counterbalance valves are used for valves with pressure-free circulation and internal withdrawal of control oil. The counterbalance valve also functions as a check valve in connector P. Ordering code: 3301121/4

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Operating pressure / flow rate

The breaking capacities stated refer to simultaneous valve flow, e.g., P-B and A-T.

Q (Q _{max.}) [I/min] at					
Function	p = 150 bar	p = 210 bar	p = 315 bar		
FZ, FDZ, SFZ, SFDZ AFZ, FVZ ①	250 (300)	250 (300)	250 (300)		
ENZ, SEZ, ANZ, HEZ, EVZ 2	200 (230)	180	140		

Δp -Q-characteristic curve





For all functions except SEZ, FZ, ENZ, EVZ





In the case of pressure flow rate values above the values stated and the flow resistance of subordinate importance (see Δp-Q-characteristic curve), the pressure-centred recirculation is to be used (on request).



For functions ENZ, EVZ

Control characteristics

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Pilot pressure: main control valve			Turn on times				
with spring return	pring return p _{st} = 8,5 ;		(Pilot valve and main control valve)				
with spring return for functions			(Alternating current)	with pilot valve NG 06			
ENZ, EVZ	p _{st} = 10,0 315 bar		Main control valve	p _{st} [bar]	50	100	200
without spring return	$p_{st} = 5,0$ bar		With spring return				
with servo cartridge for functions			Indexing position o in a; o in b	t _{an} [ms]	130	120	100
ENZ, SEZ, HEZ, EVZ, SEVZ	$p_{st} = \Delta p$ -Q-Characteristic curve (see above) + flow resistance P-T		Without spring return Indexing position a in b	t _{an} [ms]	250	220	180
			Turn on times are increased by				
Pilot volume: main control valve							
with spring load indexing positions o in at o in b $y = 4.2$ cr			Turn off times				
indexing position o in a; o in b for functions ENZ, EVZ without spring return indexing position a in b indexing position a in b for functions ENZ, EVZ		$v_{st} = 4,2 \text{ cm}^3$ $v_{st} = 4,9 \text{ cm}^3$ $v_{st} = 8,4 \text{ cm}^3$ $v_{st} = 9.8 \text{ cm}^3$	With spring return	t _{ab} [ms]	100		

Directional valve size WL 4.16

Dimensions (in mm)

Deflector plate for valve WL 4.16 XP2.M. included in delivery

Pilot valve WL 4..06 P1.. installation dimensions ISO 4401 / DIN 24340 A6

Fitted with 2 magnets



- **1** Actuating magnet a
- 2 Actuating magnet b3 Emergency manual

B Emergency manua override

- 4 Name plate
- **5** Rectangular ring 9,25 x 1,68 x 1,68 mm included in delivery



Weight 0,4 kg

- 6 4 Valve fixing hole
- 7 DIN 43650 connector plug
- 8 Measurement A for removing the plug

Fitted with 1 magnet

Weight 1,6 kg



Main control valve WL 4.16 Installation dimensions ISO 4401 / DIN 24340 A16



Type code



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Overview of our complete program

Transfer pumps

Transfer pumps for lubricating oil supply equipment, low pressure filling and feed systems, dosing and mixing systems. Flow measurement

Gear and turbine flow meters and electronics for volume und flow metering technology in hydraulics, processing and laquering technology. Single and multistage high pressure gear pumps, hydraulic motors and valves for construction machinery, vehicle-mounted machines.

Mobile hydraulics

Industrial hydraulics

Cetop directional control and proportional valves, hydraulic cylinders, pressure, quantity and stop valves for pipe and slab construction, hydraulic accessories for industrial hydraulics (mobile and stationary use).

With our decades of experience, we are at your side, world-wide, for the professional mastery of specific applications and complete solutions in hydraulics and process technology.



WL4.16/e/08.05