



4WRKE...type Electro-Hydraulic Proportional Directional Valve



4WRKE...3XJ type

Size 10, 16, 25, 32

Max. Working Pressure: 315 bar

Max. Flow: 1600 L/min

Contents

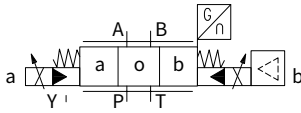
Function and configuration	02
Symbols	03
Ordering code	03
Technical data	04
Electrical connections	05
Characteristic curves	06-08
Unit dimensions	09-12

Features

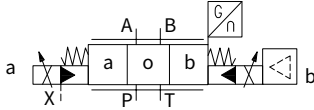
- Pilot operated 2-stage proportional directional valve
- Valve for the control of the size and direction of a flow
- For subplate mounting, porting pattern to DIN 24 340 form A
- Spring centred main spool
- Integrated control electronics

Symbols (simplified)

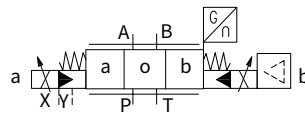
Type 4WRKE...-3XJ...E.



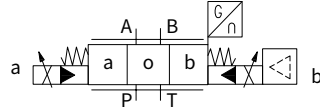
Type 4WRKE ...-3XJ ... T .



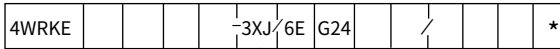
Type 4WRKE...-3XJ...



Type 4WRKE...-3XJ...ET



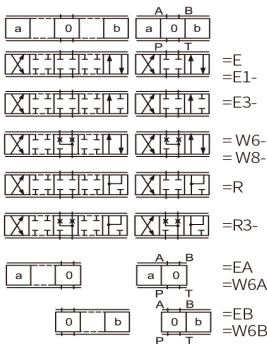
Ordering code



Electrically operated
2-stage proportional
directional valve of
4-way design with
integrated electronics

Nominal size 10 =10
Nominal size 16 =16
Nominal size 25 =25
Nominal size 32 =32

Spool symbols



Nominal flow in L/min at 10 bar
valve pressure differential

25= 50= 100= Nominal size 10
125= 200= Nominal size 16
220= 350= Nominal size 25
400= 600= Nominal size 32

Further information
in plain text

V = FKM Seals
No code = NBR Seals

D3=With pressure reducing valve
ZDR6DP0-L4X/40YM(fixed setting)

Interface:

A1= Command value input $\pm 10V$
F1= Command value input 4 to 20mA

Electrical connections

K31 = With component plug,
Without plug-in connector

Pilot oil supply and drain

No code =Pilot oil supply external,Pilot oil drain external
E = Pilot oil supply internal,Pilot oil drain external
ET = Pilot oil supply internal,Pilot oil drain internal
T = Pilot oil supply external,Pilot oil drain internal

Supply voltage

+ 24 V DC

G24=

6E= Proportional solenoid with removable coil

3XJ= 30J to 39J: unchanged installation and connection dimensions

Characteristic curve form

Linear

L=

Technical data

General					
Nominal size		10	16	25	32
Installation and commissioning guidelines		Optional, preferably horizontal			
Storage temperature range	°C	– 20 to + 80			
Ambient temperature range	°C	– 20 to + 50			
Weight	kg	8.7	11.2	16.8	31.5

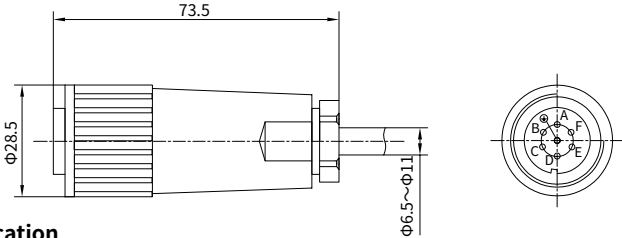
Hydraulic (measured at p=100bar,with HLP46 at θ _{oil} =-40°C ±5°C)							
Operating pressure	-Pilot control valve	Pilot oil supply	bar	25 to 315			
	-Main valve	Ports P, A, B	bar	Up to 315	Up to 350	Up to 350	Up to 350
Return pressure	Port T (Pilot oil drain)	Internal	bar	Static < 10			
		External	bar	Up to 315	Up to 250	Up to 250	Up to 250
	Port Y		bar	Static < 10			
Nominal flow q _{vnom} ±10% at Δp=10bar (Δp = valve pressure differential)			L/min	25	-	-	-
				50	125	220	440
				100	180	350	600
Flow of main valve (max. permissible)			L/min	170	460	870	1600
Pilot oil flow at port X or Y with a step form of input signal from 0 to 100 % (315 bar)			L/min	4.1	8.5	11.7	13
Pressure fluid			Mineral oil(HL,HLP)to DIN 51 524 Phosphate ester (HFD-R)				
Pressure fluid temperature range			°C	10 to 80, preferably 40 to 50			
Viscosity range			mm²/s	20 to 380, preferably 30 to 45			
Degree of contamination			Maximum permissible degree of contamination of the pressure fluid is to NAS 1638.		A filter with a minimum retention rate of β _x = 75 is recommended		
	Pilot control valve		Class 7		x = 5		
	Main valve		Class 9		x = 7		
Hysteresis			%	≤ 1			
Response sensitivity			%	≤ 0.5			

Electrical	
Voltage type	DC
Electrical connection	Plug-in connector to DIN EN175 201-804
Power, max.	W 72 (average = 24W)
Control electronics	Integrated into the valve

Electrical connections, plug-in connector

For pin allocation also see block circuit diagram.

Plug-in connector to DIN EN 175201-804



Component plug allocation

	Contact	Signal
Supply voltage	A	24 VDC (18 to 35 VDC); $I_{max} = 1, 5 \text{ A}$; impulse load $\leq 3 \text{ A}$
	B	0V
Ref. (actual value)	C	Ref. potential for actual value (contact F)
Differential amplifier input (command value)	D	$\pm 10\text{V}$ or $4 - 20\text{mA}$
	E	0V ref. potential
Measurement output (act. value)	F	$\pm 10\text{V}$ or $4 - 20 \text{ mA}$
	PE	Connected with cooling body and valve housing

Command value:

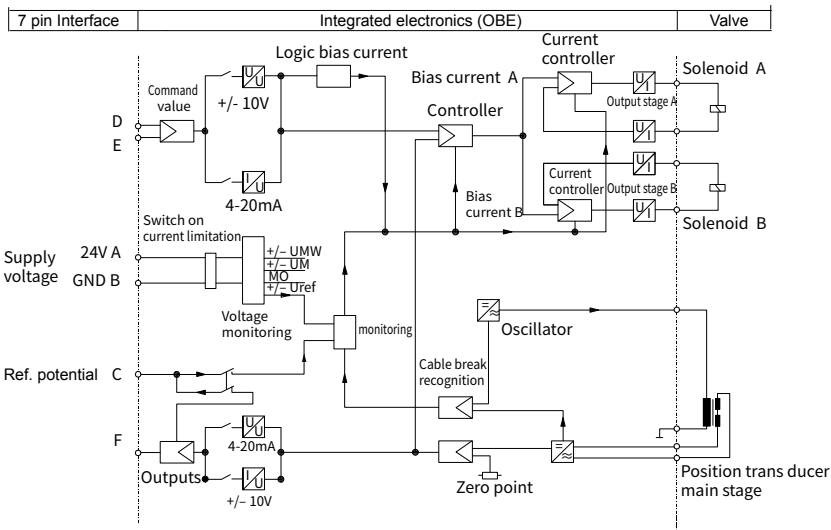
Reference potential at E and a positive command value at D results in a flow from P to A and B to T.
Reference potential at E and a negative command value at D results in a flow from P to B and A to T.

Connection cable:

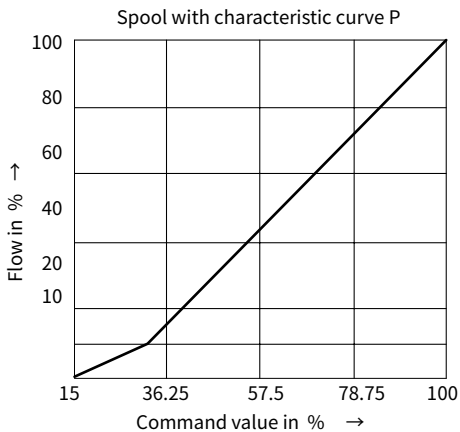
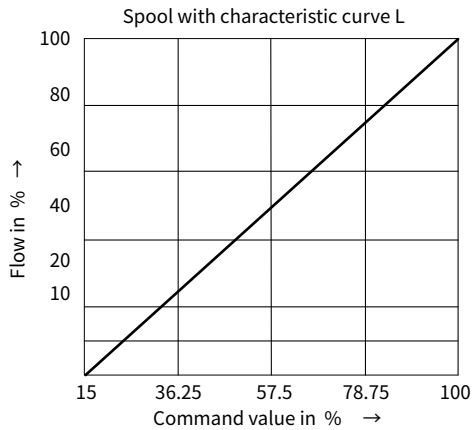
Recommendation: – Up to 25m cable length type LiYCY 7×0.75 mm²
– Up to 50m cable length type LiYCY 7×1.0 mm External diameter: – 6.5 to 11mm (plastic plug-in connection)
– 8 to 12mm (metal plug-in connector)
Connect screen to ⊥ only on supply side.

06

Block circuit diagram / connection allocation of the integrated control electronics for type 4WRKE



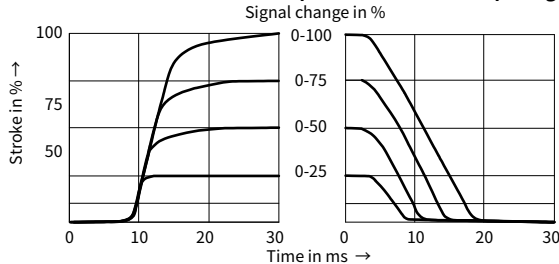
Flow - command value curve



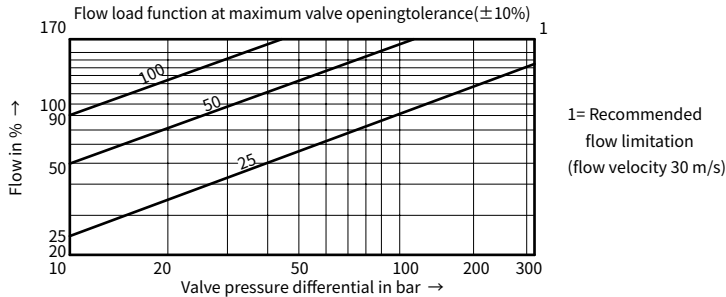
Characteristic curves (measured at p=100bar, with HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)

NG 10

Transient function with a step form of electrical input signal

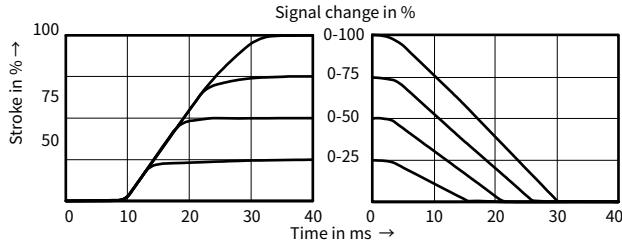


Flow-pressure differential curve

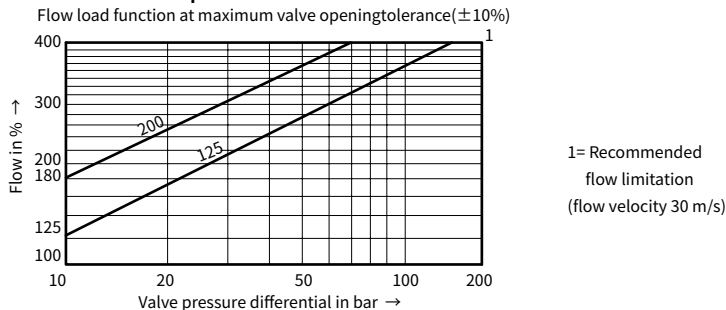


NG 16

Transient function with a step form of electrical input signal

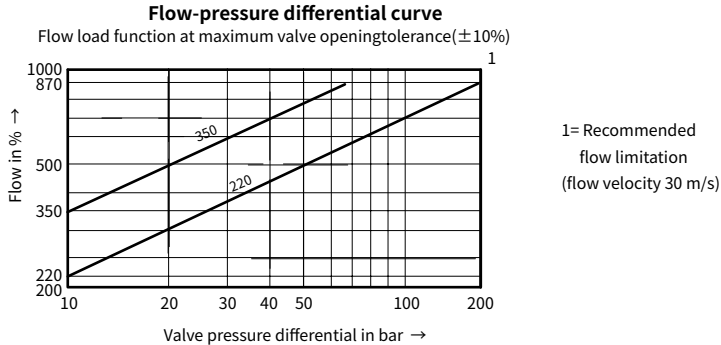
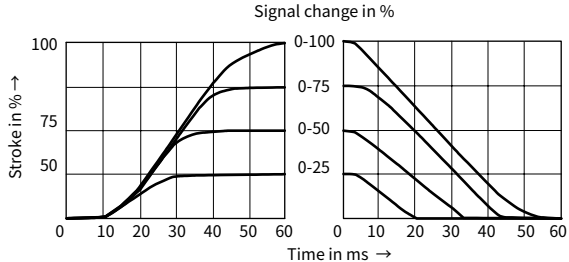


Flow-pressure differential curve

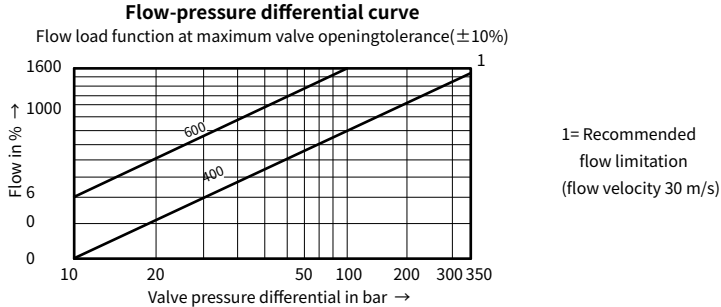
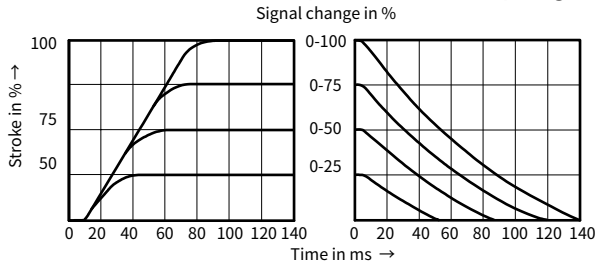


Characteristic curves (measured at p =100bar, with HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)

NG 25 **Transient function with a step form of electrical input signal**



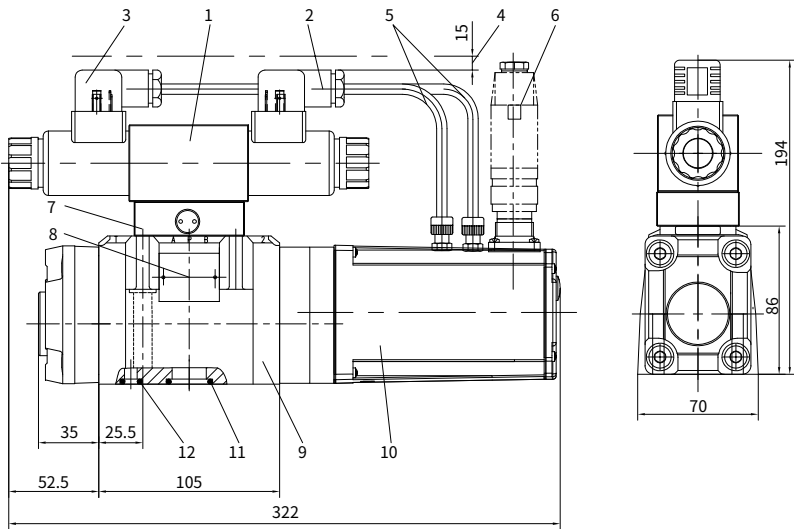
NG 32 **Transient function with a step form of electrical input signal**



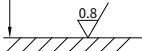
Unit dimensions

(Dimensions in mm)

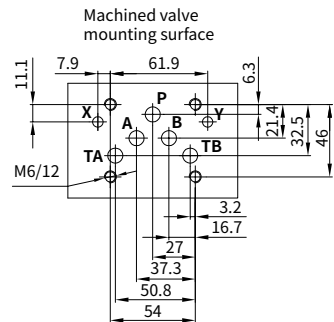
NG 10



0.01/100mm



Required surface finish of
mating piece

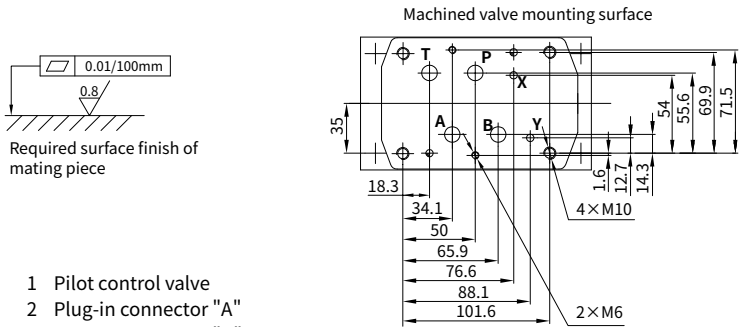
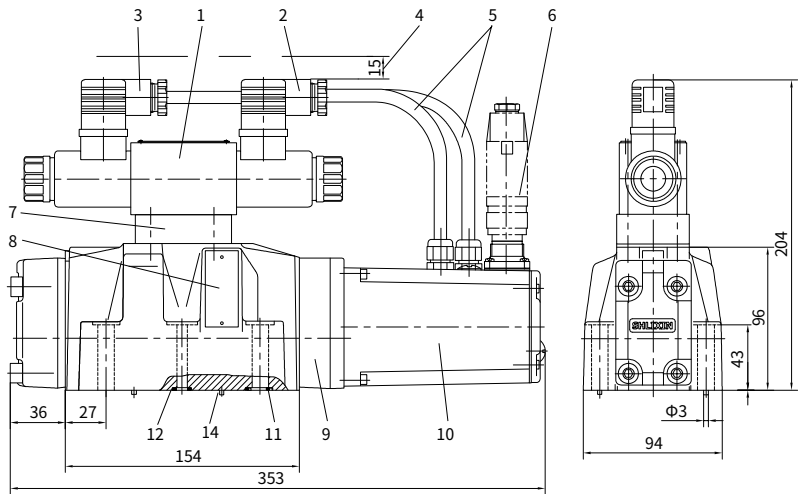


- 1 Pilot control valve
- 2 Plug-in connector "A"
- 3 Plug-in connector "B"
- 4 Space required to remove the plug-in connector
- 5 Cable
- 6 Plug-in connector
- 7 Pressure reducing valve
- 8 Name plate
- 9 Main valve
- 10 Integrated control electronics
- 11 R-ring 13×1.6×2, ports A, B, P, T
- 12 R-ring 11.18×1.6×1.78, ports X and Y

Unit dimensions

(Dimensions in mm)

NG 16

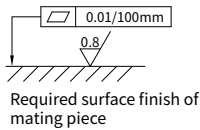
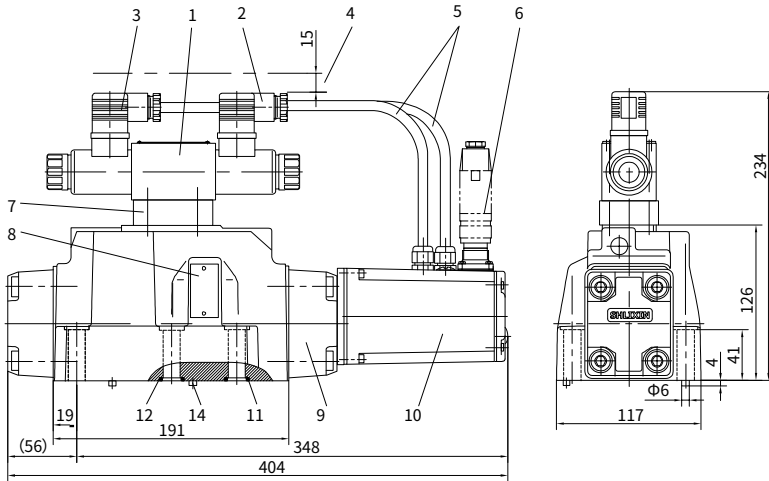


- 1 Pilot control valve
- 2 Plug-in connector "A"
- 3 Plug-in connector "B"
- 4 Space required to remove the plug-in connector
- 5 Cable
- 6 Plug-in connector
- 7 Pressure reducing valve
- 8 Name plate
- 9 Main valve
- 10 Integrated control electronics
- 11 R-ring 22.53×2.3×2.62, ports A, B, P, T
- 12 R-ring 10×2×2, ports X and Y
- 14 Locating pin

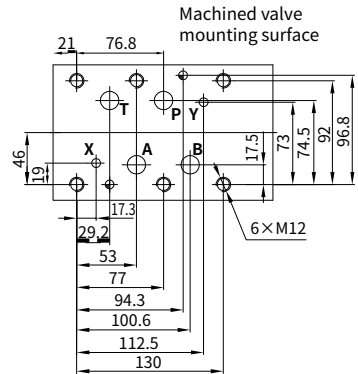
Unit dimensions

(Dimensions in mm)

NG 25



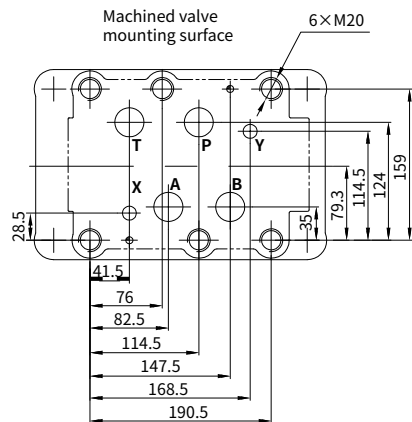
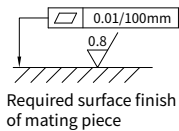
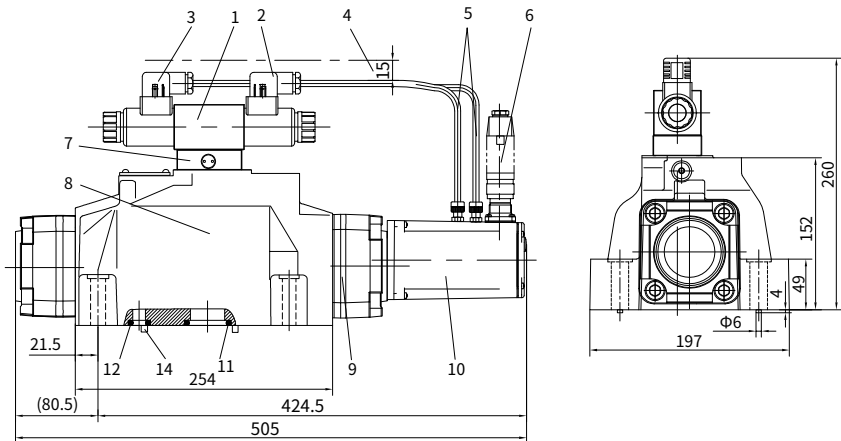
- 1 Pilot control valve
- 2 Plug-in connector "A"
- 3 Plug-in connector "B"
- 4 Space required to remove the plug-in connector
- 5 Cable
- 6 Plug-in connector
- 7 Pressure reducing valve
- 8 Name plate
- 9 Main valve
- 10 Integrated control electronics
- 11 R-ring 27.8×2.6×3, ports A, B, P, T
- 12 R-ring 19×3×3, ports X and Y
- 13 Locating pin



Unit dimensions

(Dimensions in mm)

NG 32



- 1 Pilot control valve
- 2 Plug-in connector "A"
- 3 Plug-in connector "B"
- 4 Space required to remove the plug-in connector
- 5 Cable
- 6 Plug-in connector
- 7 Pressure reducing valve
- 8 Name plate
- 9 Main valve
- 10 Integrated control electronics
- 11 R-ring 42.5×3×3, ports A, B, P, T
- 12 R-ring 19×3×3, ports X and Y
- 13 Locating pin