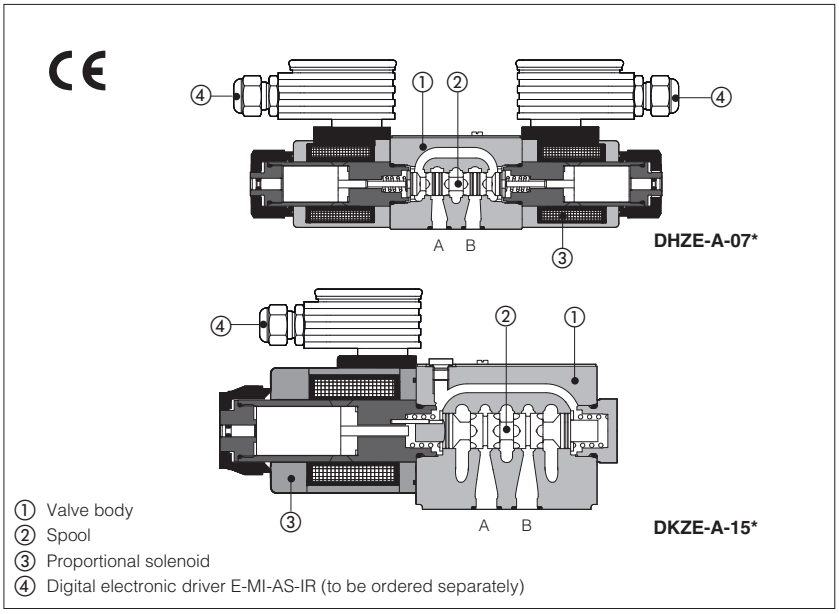
Proportional directional valves type DHZE-A and DKZE-A

direct operated, without position transducer, ISO 4401 size 06 and 10



DHZE-A and DKZE-A are open-loop direct operated proportional valves with threaded type proportional solenoids, providing both directional and non-compensated flow control.
They operate in association with electronic drivers, see section 2, which supply the proportional valves with proper current to align the valve regulation to the reference signal supplied to the electronic driver.
The spools are available with linear L, progressive S or differential D flow characteristics.
The valve body is 3 chambers type for DHZE and 5 chambers type for DKZE.
The solenoid coils are plastic encapsulated with insulation class H and they are available with different nominal resistances depending to the voltage supply (12 VDC or 24 VDC) and to the electronic driver type, see section 2 and 4.

Mounting surface:
ISO 4401 sizes 06 and 10.
Max flow with valve differential pressure Δp = 30 bar, see section 3
50 l/min for DHZE - 105 l/min for DKZE
Max pressure = 350 bar for DHZE
315 bar for DKZE

1 MODEL CODE

DHZE - A - 0 7 1 - S 5 / * / * ** / *

DHZE = size 06
DKZE = size 10

A = without position transducer

Valve size
0 = ISO 4401 size 06 (DHZE)
1 = ISO 4401 size 10 (DKZE)

Configuration, see section 3
5 = external plus central position, spring centered
7 = 3 position, spring centered

Spool overlapping in central position, see section 3
1 = P, A, B, T positive overlapping (15% of spool stroke)
3 = P positive overlapping; (15% of spool stroke)
A, B, T, negative overlapping

Spool type (regulating characteristics)
L = linear;
S = progressive;
D = differential-progressive (as **S**, but with P-A= Q, P-B= Q/2)

Spool size: **1, 3, 5** = see section 3

Hydraulic options, see section 3:
B = solenoid side of port A (only for valve configuration 5)

Coil option (only for -A execution) see section 2 and 4:
- = standard coil for 24VDC Atos drivers
6 = optional coil for 12VDC Atos drivers
18 = optional coil for 24VDC low current drivers

Series number

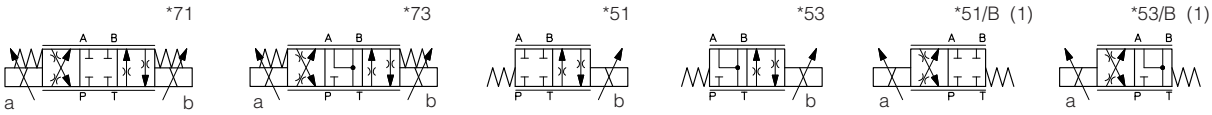
Seals material:
omit for NBR (mineral oil & water glycol)
PE = FPM

2 ELECTRONIC DRIVERS FOR DHZE-A*

Drivers model	E-MI-AC		E-MI-AS-IR		E-BM-AC		E-BM-AS-PS		E-ME-AC	E-RP-AC	
Type	analog		digital		analog		digital		analog	analog	
Voltage supply	12	24	12	24	12	24	12	24	24	12	24
Coil option	/6	std	/6	std	/6	std	/6	std	std	/6	std
Format	DIN 43650 plug-in to solenoid				DIN 43700 UNDECAL		DIN-rail panel		EUROCARD	Sealed and rugged box	
Data sheet	G010		G020		G025		G030		G035	G100	

3 HYDRAULIC CHARACTERISTICS (based on mineral oil ISO VG 46 at 50 °C)

Hydraulic symbols



Valve model	DHZE			DKZE	
Spool overlapping	**1**	**1, 3**	**1, 3**	**1, 3**	**1, 3**
Spool type and size (2)	**L1**	**S3, L3, D3**	**S5, L5, D5**	**S3, L3, D3**	**S5, L5, D5**
Pressure limits [bar]	ports P, A, B = 350; T = 210			ports P, A, B = 315; T = 210	
Max flow (3) [l/min]					
at Δp = 10 bar (P-T)	4,5	17	28	45	60
at Δp = 30 bar (P-T)	8	30	50	80	105
at Δp = 70 bar (P-T)	12	45	74	120	160
Response time (4) [ms]	< 30			< 40	
Hysteresis [%]	≤ 5%			≤ 5%	
Repeatability	± 1%			± 1%	

Notes:

- Above performance data refer to valves coupled with Atos electronic drivers, see section 2.
- The flow regulated by the directional proportional valves is not pressure compensated, thus it is affected by the load variations.To keep costant the regulated flow under different load conditions, modular pressure compensators are available (see tab. D150).

(1) **Option /B** Solenoid at side of port A, only for valve configuration 5.

(2) **L** = linear flow characteristics
S = progressive flow characteristcs
D = progressive flow characteristics with differential ratio P-A=Q; P-B = Q/2

(3) For different Δp, the max flow is in accordance to the diagrams in sections 7.3 and 8.3

(4) 0-100% step signal

4 MAIN CHARACTERISTICS

Assembly position	Any position					
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)					
Ambient temperature	-20°C ÷ +70°C					
Fluid	Hydraulic mineral oil HL, HLP as per DIN 51524					
Recommended viscosity	15 ÷100 mm²/s - max allowed range 2,8 ÷ 500 mm²/s					
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm ($\beta_{10} \geq 75$ recommended)					
Fluid temperature	-20°C +60°C (standard seals) -20°C +80°C (/PE seals)					
Coil code	DHZE-A*			DKZE-A*		
	standard	option /6 (1)	option /18 (2)	standard	option /6 (1)	option /18 (2)
Coil resistance R at 20°C	3 ÷ 3,3 Ω	2 ÷ 2,2 Ω	13 ÷ 13,4 Ω	3,8 ÷ 4,1 Ω	2,2 ÷ 2,4 Ω	12 ÷ 12,5 Ω
Max. solenoid current	2,2 A	2,75 A	1 A	2,6 A	3,25 A	1,2 A
Max. power	30 Watt			35 Watt		
Protection degree (CEI EN-60529)	IP65					
Duty factor	Continuous rating (ED=100%)					

Notes:

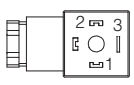
(1) **Option /6** optional coil for Atos drivers with power supply 12 VDC

(2) **Option /18** optional coil for electronic drivers not supplied by Atos, with power supply 24 VDC and max current limited to 1,2 A

5 GENERAL NOTES

DHZE and DKZE proportional valves are CE marked according to the applicable Directives (e.g. Immunity/Emission EMC Directive and Low Voltage Directive).
Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in table F003 and in the installation notes supplied with relevant components.
The electrical signals of the valve (e.g. monitor signals) must not be directly used to activate safety functions, like to switch-ON/OFF the machine's safety components, as prescribed by the European standards (Safety requirements of fluid technology systems and components-hydraulics, EN-982).

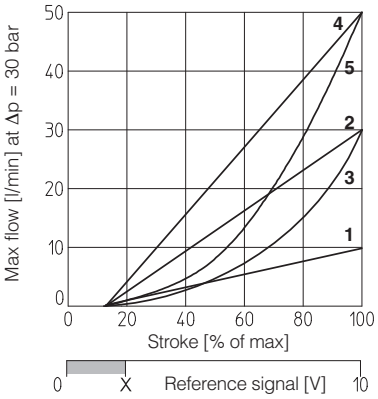
6 CONNECTIONS

SOLENOID POWER SUPPLY CONNECTOR		
PIN	Signal description	
1	SUPPLY	
2	SUPPLY	
3	GND	

7 DIAGRAMS FOR DHZE (based on mineral oil ISO VG 46 at 50 °C)

7.1 Regulation diagrams

1 = linear spool L1
2 = linear spool L3
3 = progressive spool S3, D3
4 = linear spool L5
5 = progressive spool S5, D5

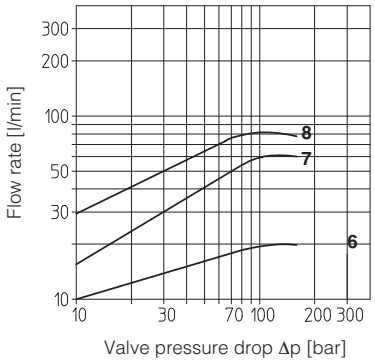


X = Threshold for bias activation depending to the valve type and amplifier type

7.2 Flow /Δp diagrams

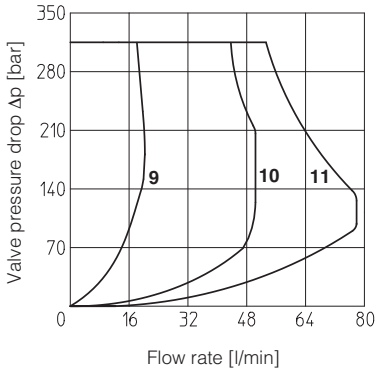
stated at 100% of valve stroke

6 = spool L1
7 = spool S3, L3, D3
8 = spool S5, L5, D5



7.3 Operating limits

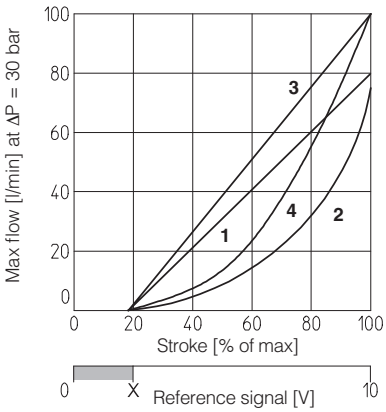
9 = spool L1
10 = spool L3, S3, D3
11 = spool L5, S5, D5



8 DIAGRAMS FOR DKZE (based on mineral oil ISO VG 46 at 50 °C)

8.1 Regulation diagrams

1 = linear spool L3
2 = progressive spool S3, D3
3 = linear spool L5
4 = progressive spool S5, D5

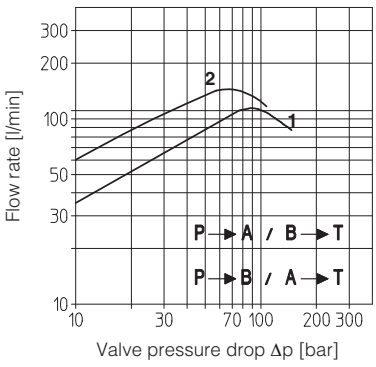


X = Threshold for bias activation depending to the valve type and amplifier type

8.2 Flow /Δp diagrams

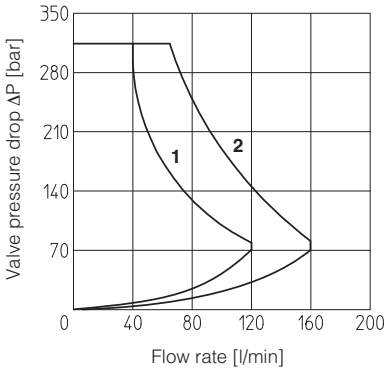
stated at 100% of valve stroke

1 = spool S3, L3, D3
2 = spool S5, L5, D5



8.3 Operating limits

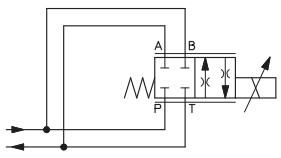
1 = spool L3, S3, D3
2 = spool L5, S5, D5



9 OPERATION AS THROTTLE VALVE

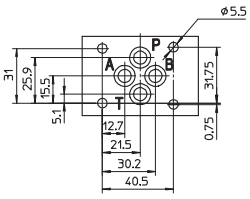
Single solenoid valves (DHZE-A-051 - DKZE-A-151) can be used as simple throttle valves:
Pmax = 210 bar

Max flow Δp= 30bar [l/min]	SPOOL TYPE				
	L1	**L3**	**S3**	**L5**	**S5**
DHZE	16	80		100	
DKZE	-	100		160	

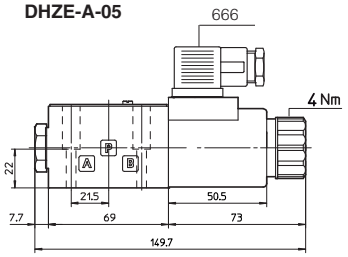


10 INSTALLATION DIMENSIONS FOR DHZE and DKZE [mm]

ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
Fastening bolts: 4 socket head screws M5x50 class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108
Diameter of ports A, B, P, T: Ø 7,5 mm (max)

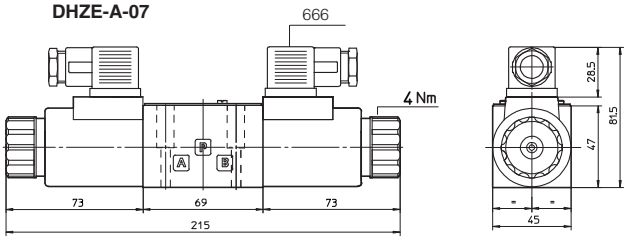


DHZE-A-05



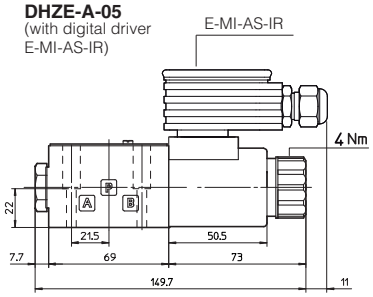
Mass: 1,5 kg

DHZE-A-07



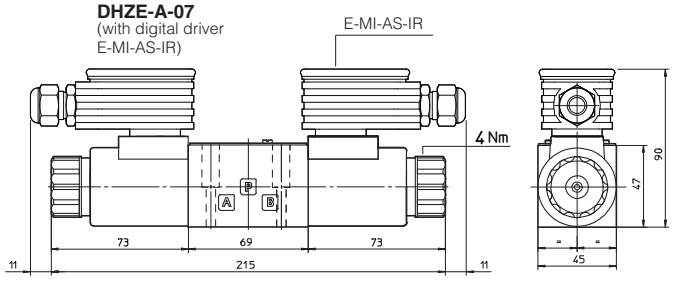
Mass: 2 kg

DHZE-A-05
(with digital driver
E-MI-AS-IR)



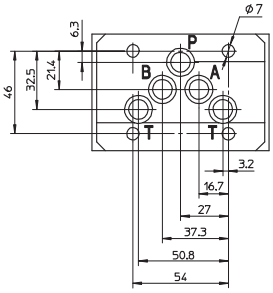
Mass: 1,95 kg

DHZE-A-07
(with digital driver
E-MI-AS-IR)

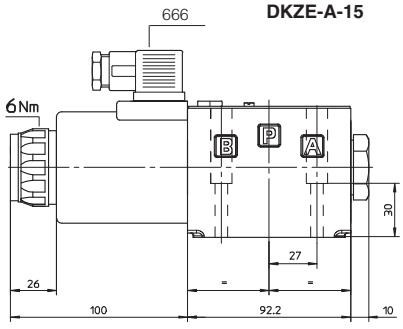


Mass: 3 kg

ISO 4401: 2005
Mounting surface: 4401-05-04-0-05 (see table P005)
Fastening bolts: 4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Seals: 5 OR 2050
Diameter of ports A, B, P, T: Ø 11,2 mm (max)

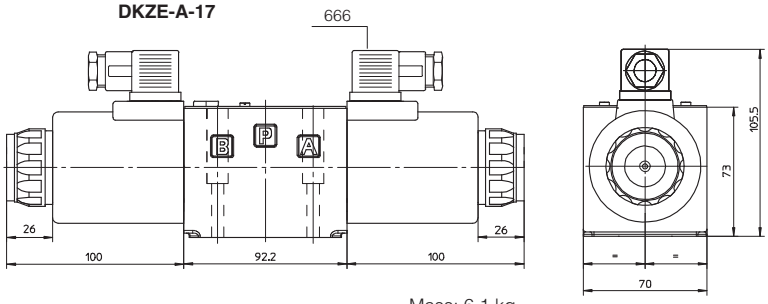


DKZE-A-15



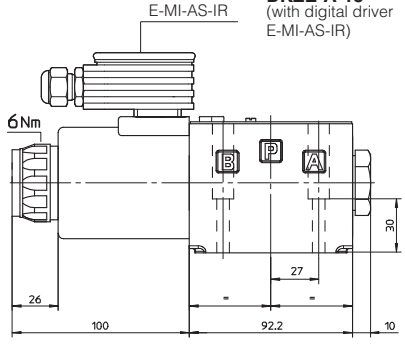
Mass: 4,5 kg

DKZE-A-17



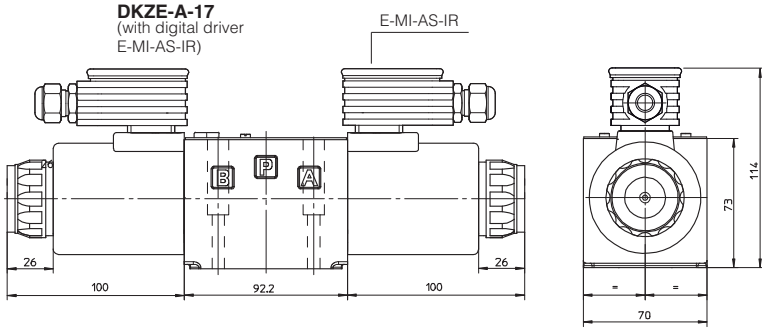
Mass: 6,1 kg

DKZE-A-15
(with digital driver
E-MI-AS-IR)



Mass: 4,95 kg

DKZE-A-17
(with digital driver
E-MI-AS-IR)



Mass: 7 kg

Note: for option /B the solenoid is at side of port A (only for DHZE-A-05 and DKZE-A-15)