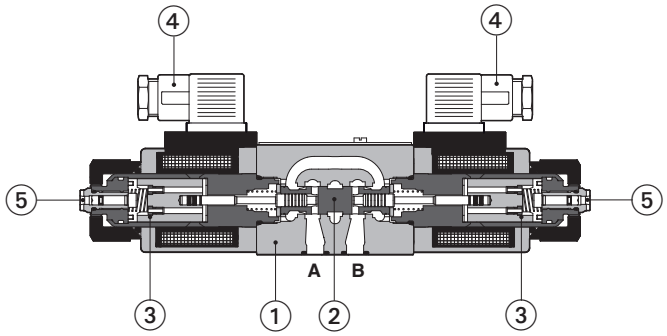
Proportional reducing valves

3-way, direct, without transducer



DHRZE- A-012/25

① Valve body
② Spool
③ Proportional solenoid
④ Electric connector (supplied with the valve)
⑤ Bleeding screw

DHRZE-A

3 way, direct, pressure reducing valves for open loop pressure controls.

They operate in association with off-board driver, which supply the proportional valves with proper current to align the valve regulation to the reference signal supplied to the driver.

They provide the pressure reduction on ports A, or B or A and B, depending on the valve model.

The direct execution performs low internal leakages, fast response and low hysteresis.

The solenoids are certified according to North American standard **cURus.**

Typical applications:
- Pressure reduction in low flow systems
- Pilot stage of pilot operated valves

Size: **06** - ISO 4401
Max flow: **24 l/min**
Max pressure: **315 bar**
Max regulated pressure: **25 bar**

1 MODEL CODE

DHRZE	-	A	-	010	/	25	/	*	-	*	/	*	*	/	*

DHRZE: Proportional pressure reducing valve, direct

A = off-board driver, see section 3

Configuration:
010 = reduced pressure on port A (port B for option /B)
012 = reduced pressure on port A and B

Regulated pressure:
25 = reduced pressure range 3÷25 bar

Hydraulic option:
B = reduced pressure on port B, solenoid side of port A (only for valve configuration 010)

Coil with special connectors, see section 12 :
- = omit for standard DIN connector
J = AMP Junior Timer connector
K = Deutsch connector
S = Lead Wire connection

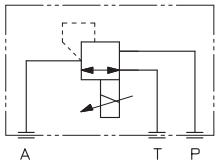
Coil voltage, see section 10 :
- = standard coil for 24VDC Atos drivers
6 = optional coil for 12VDC Atos drivers
18 = optional coil for 24VDC low current drivers **(1)**

Series number

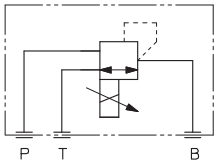
Seals material, see section 8 :
- = NBR
PE = FKM
BT = HNBR

(1) Select valve's coil voltage **/18** in case of electronic drivers not supplied by Atos, with power supply 24 VDC and with max current limited to 1A

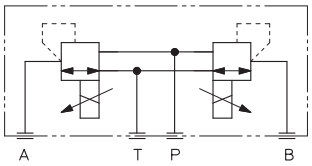
2 HYDRAULIC SYMBOL (representation according to ISO 1219-1)



DHRZE-A-010/25



DHRZE-A-010/25/B



DHRZE-A-012/25

3 OFF-BOARD ELECTRONIC DRIVERS

Please include in the driver order also the complete code of the connected proportional valve.

Drivers model	E-MI-AC-01F		E-MI-AS-IR		E-BM-AS-PS		E-BM-AES
Type	Analog		Digital				
Voltage supply (VDC)	12	24	12	24	12	24	24
Valve coil option	/6	std	/6	std	/6	std	std
Format	plug-in to solenoid				DIN-rail panel		
Tech table	G010		G020		G030		GS050

4 GENERAL NOTES

Atos digital proportionals valves are CE marked according to the applicable directives (e.g. Immunity and Emission EMC Directive).
Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in tech table **FS900** and in the installation notes supply with relevent components.

5 GENERAL CHARACTERISTICS

Assembly position	Any position
Subplate surface finishing to ISO 4401	Acceptable roughness index: Ra ≤ 0,8, recommended Ra 0,4 – Flatness ratio 0,01/100
MTTFd valves according to EN ISO 13849	150 years, see technical table P007
Ambient temperature range	**Standard** = -20°C ÷ +70°C **/PE** option = -20°C ÷ +70°C **/BT** option = -40°C ÷ +60°C
Storage temperature range	**Standard** = -20°C ÷ +80°C **/PE** option = -20°C ÷ +80°C **/BT** option = -40°C ÷ +70°C
Surface protection	Zinc coating with black passivation
Corrosion resistance	Salt spray test (EN ISO 9227) > 200 h
Conformity	CE according to EMC directive 2014/30/EU (Immunity: EN 61000-6-2; Emission: EN 61000-6-3) RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006

6 HYDRAULIC CHARACTERISTICS

Valve model	**DHRZE**
Max regulated pressure (Q=1 l/min) [bar]	25
Min. regulated pressure (Q=1 l/min) **(1)** [bar]	3
Max. pressure at port P [bar]	315
Max. pressure at port T [bar]	210
Max. flow [l/min]	24
Response time 0-100% step signal **(2)** (depending on installation) [ms]	≤ 45
Hysteresis [% of the max pressure]	≤ 1,5
Linearity [% of the max pressure]	≤ 3,0
Repeatability [% of the max pressure]	≤ 2,0

Notes: above performance data refer to valves coupled with Atos electronic drivers, see section 3

(1) Min pressure value to be increased of T line pressure
(2) Average response time value; the pressure variation in consequence of a modification of the reference input signal to the valve is affected by the stiffness of the hydraulic circuit: greater is the stiffness of the circuit, faster is the dynamic response

7 ELECTRICAL CHARACTERISTICS

Power supplies	Nominal : +24 VDC Rectified and filtered : VRMS = 20 ÷ 32 VMAX (ripple max 10 % VPP)		
Coil voltage code	standard	option /6	option /18
Max. solenoid current	2,5 A	3 A	1,2 A
Coil resistance R at 20°C	3,1 Ω	2,1 Ω	13,1 Ω
Insulation class	H (180°) Due to the occuring surface temperatures of the solenoid coils, the European standards ISO 13732-1 and EN982 must be taken into account		
Protection degree to DIN EN60529	IP65 with mating connectors		
Duty factor	Continuous rating (ED=100%)		
Certification	**cURus** North American Standard		

8 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

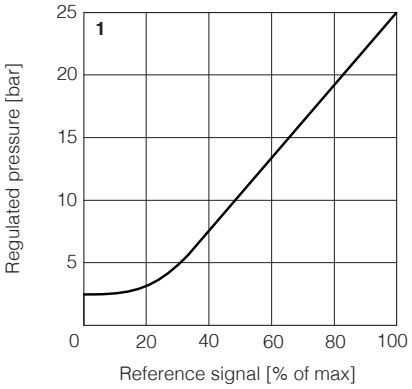
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	20÷100 mm²/s - max allowed range 15 ÷ 380 mm²/s		
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm (β10 ≥75 recommended)		
Hydraulic fluid	**Suitable seals type**	**Classification**	**Ref. Standard**
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

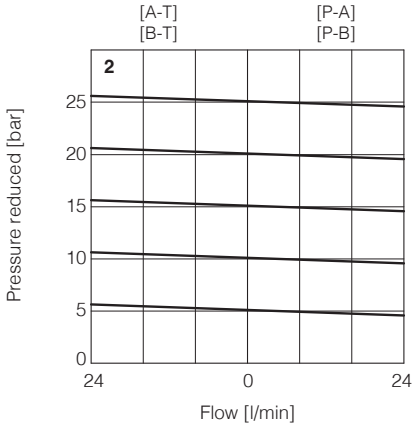
9 DIAGRAMS based on mineral oil ISO VG 46 at 50°C

1 = Regulation diagrams
with flow rate Q = 1 l/min

Note: the presence of counter pressure at port T can affect the effective pressure regulation

2 = Pressure/flow diagrams
reference signal set at Q = 1 l/min





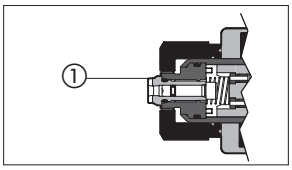
10 COIL VOLTAGE OPTIONS

6 = Optional coil to be used with Atos drivers with power supply 12 VDC.

18 = Optional coil to be used with electronic drivers not supplied by Atos, with power supply 24 VDC and with max current limited to 1A.

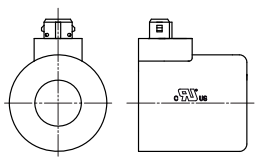
11 AIR BLEEDING

At the first valve commissioning the air eventually trapped inside the solenoid must be bled-off though the screw ① located at the rear side of the solenoid housing.
The presence of air may cause pressure instability and vibrations.

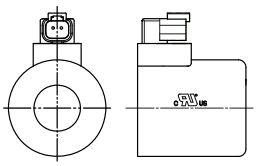


12 COILS WITH SPECIAL CONNECTORS

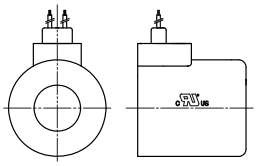
J option
Coil type COZEJ
AMP Junior Timer connector
Protection degree IP67



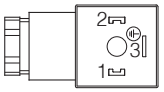
K option
Coil type COZEK
Deutsch connector, DT-04-2P male
Protection degree IP67



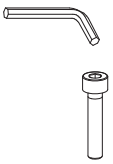
S option
Coil type COZES
Lead Wire connection
Cable lenght = 180 mm



13 SOLENOID CONNECTION

PIN	SIGNAL	TECHNICAL SPECIFICATION	Connector code 666
1	**COIL**	Power supply	
2	**COIL**	Power supply	
3	**GND**	Ground	

14 FASTENING BOLTS AND SEALS FOR DHRZE



Fastening bolts:

4 socket head screws M5x30 class 12.9

Tightening torque = 8 Nm

Seals:

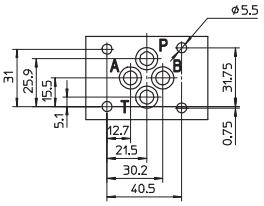
4 OR 108

Diameter of ports P, T, A: Ø 7,5 mm

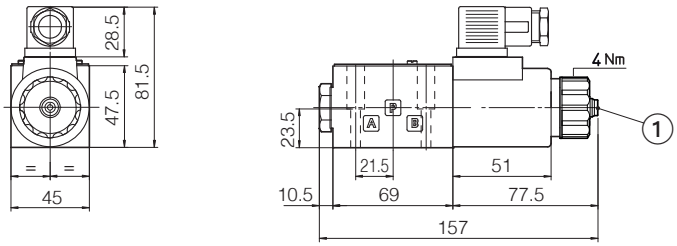
15 INSTALLATION DIMENSIONS FOR DHRZE [mm]

ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)

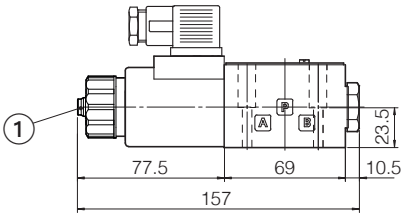
Mass [kg]	
DHRZE-A-010	1,9
DHRZE-A-012	2,6



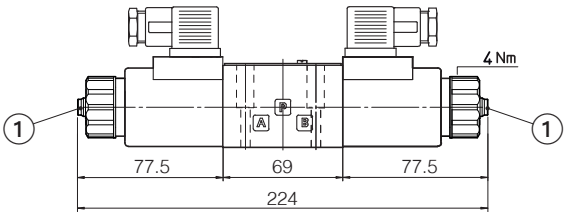
DHRZE-A-010



DHRZE-A-010/B



DHRZE-A-012



(1) = Air bleeding, see section 11 

16 RELATED DOCUMENTATION

FS001	Basics for digital electrohydraulics
FS900	Operating and maintenance information for proportional valves
G010	E-MI-AC analog driver
G020	E-MI-AS-IR digital driver
G030	E-BM-AS digital driver
GS050	E-BM-AES digital driver
GS500	Programming tools
K800	Electric and electronic connectors
P005	Mounting surfaces for electrohydraulic valves