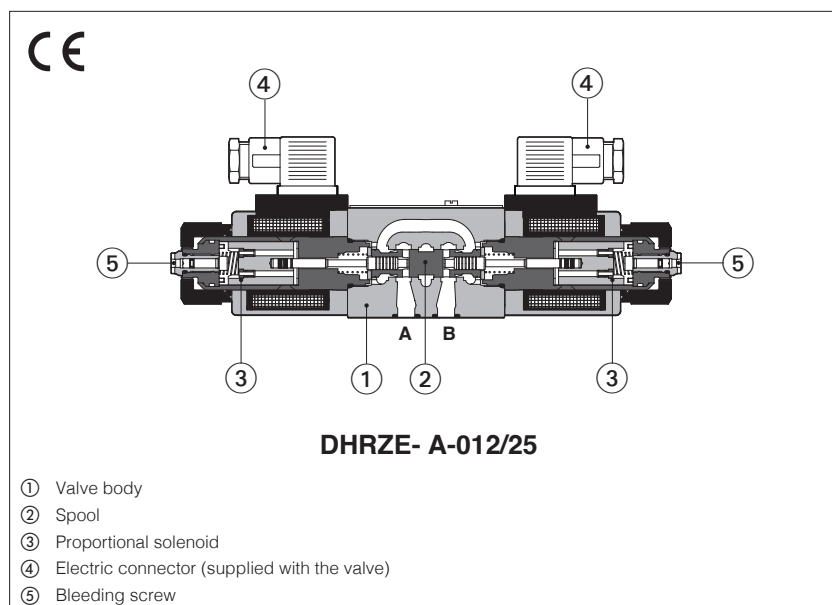


Proportional reducing valves

3-way, direct, without transducer



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**

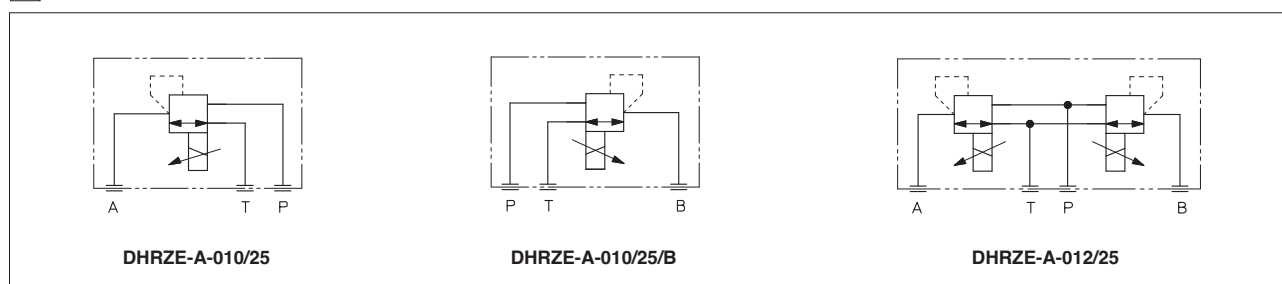
Max regulated pressure: **25 bar**

1 MODEL CODE

| | | | | | | | | | | | | | | |
|--|---|----------|---|------------|---|-----------|---|----------|---|----------|---|------------------|--|--|
| DHRZE | - | A | - | 010 | / | 25 | / | * | - | * | / | * | | * |
| Proportional pressure reducing valve, direct | | | | | | | | | | | | Series number | | Seals material, see section 8 : - = NBR PE = FKM BT = HNBR |
| 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) | | | | | | | | | | | | | | |
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(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)



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 relevant components.

5 GENERAL CHARACTERISTICS

| | |
|--|--|
| Assembly position | Any position |
| Subplate surface finishing to ISO 4401 | Acceptable roughness index: $R_a \leq 0,8$, recommended $R_a 0,4$ – Flatness ratio 0,01/100 |
| MTTFd valves according to EN ISO 13849 | 150 years, see technical table P007 |
| Ambient temperature range | Standard = $-20^{\circ}\text{C} \div +70^{\circ}\text{C}$ /PE option = $-20^{\circ}\text{C} \div +70^{\circ}\text{C}$ /BT option = $-40^{\circ}\text{C} \div +60^{\circ}\text{C}$ |
| Storage temperature range | Standard = $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$ /PE option = $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$ /BT option = $-40^{\circ}\text{C} \div +70^{\circ}\text{C}$ |
| 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) [ms] (depending on installation) | ≤ 45 |
| Hysteresis [% of the max pressure] | $\leq 1,5$ |
| Linearity [% of the max pressure] | $\leq 3,0$ |
| Repeatability [% of the max pressure] | $\leq 2,0$ |

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 : $V_{RMS} = 20 \div 32 V_{MAX}$ (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 occurring 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

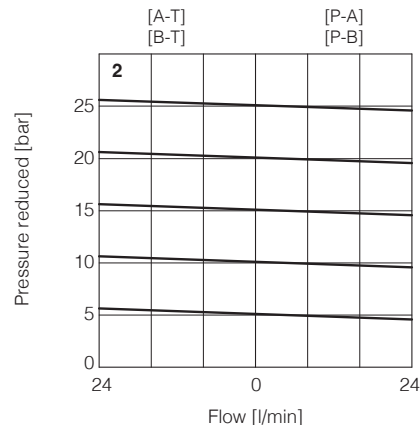
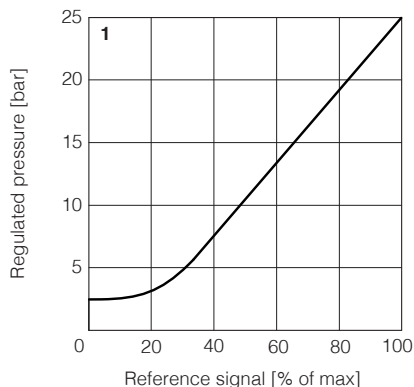
| Seals, recommended fluid temperature | NBR seals (standard) = $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$, with HFC hydraulic fluids = $-20^{\circ}\text{C} \div +50^{\circ}\text{C}$ FKM seals (/PE option) = $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$ HNBR seals (/BT option) = $-40^{\circ}\text{C} \div +60^{\circ}\text{C}$, with HFC hydraulic fluids = $-40^{\circ}\text{C} \div +50^{\circ}\text{C}$ | | |
|--------------------------------------|--|----------------------------|---------------|
| Recommended viscosity | 20 ÷ 100 mm ² /s - max allowed range 15 ÷ 380 mm ² /s | | |
| Fluid contamination class | ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 µm (β ₁₀ ≥ 75 recommended) | | |
| Hydraulic fluid | Suitable seals type | Classification | Ref. Standard |
| Mineral oils | NBR, FKM, HNBR | HL, HLP, HLPD, HVLP, HVLPD | ISO 12922 |
| Flame resistant without water | FKM | HFDU, HFDR | |
| 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



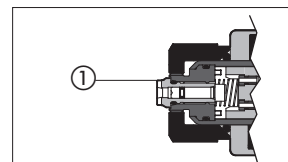
10 COIL VOLTAGE OPTIONS

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

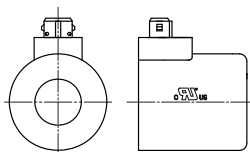
At the first valve commissioning the air eventually trapped inside the solenoid must be bled-off through the screw ① located at the rear side of the solenoid housing.
The presence of air may cause pressure instability and vibrations.



12 COILS WITH SPECIAL CONNECTORS

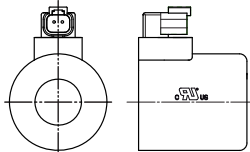
J option

Coil type COZEJ
AMP Junior Timer connector
Protection degree IP67



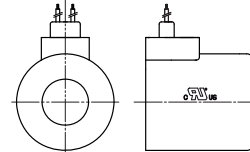
K option

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



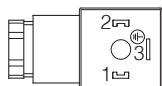
S option

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

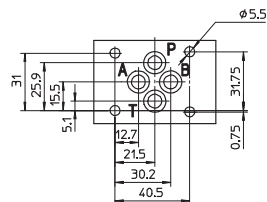
| | |
|---|---|
|  | <p>Fastening bolts: 4 socket head screws M5x30 class 12.9 Tightening torque = 8 Nm</p> |
|  | <p>Seals: 4 OR 108 Diameter of ports P, T, A: Ø 7,5 mm</p> |

15 INSTALLATION DIMENSIONS FOR DHRZE [mm]

ISO 4401: 2005

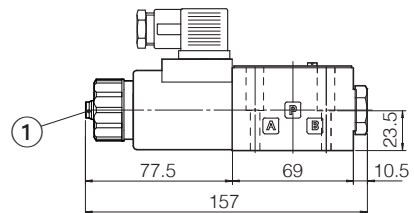
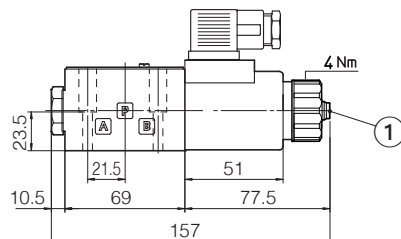
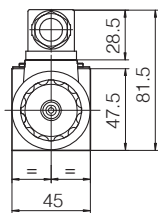
Mounting surface: 4401-03-02-0-05 (see table P005)

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

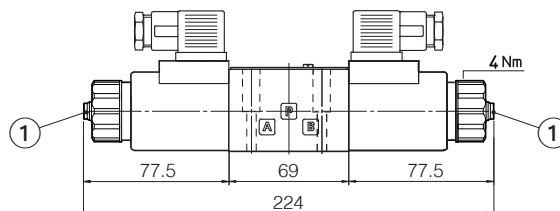


DHRZE-A-010

DHRZE-A-010/B



DHRZE-A-012



① = Air bleeding, see section 11 