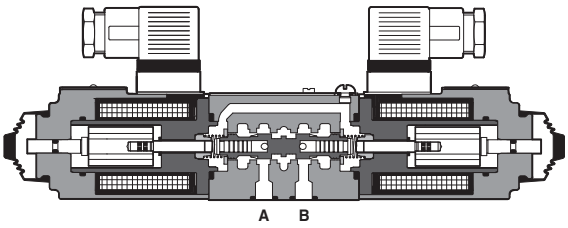
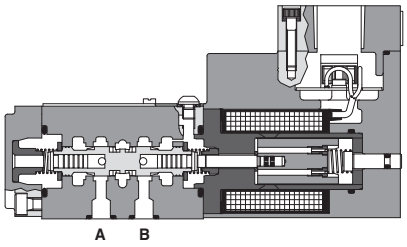
Proportional pressure reducing valves type DHRZO and DHRZA

standard and ex-proof version, direct operated, ISO 4401 size 06



DHRZO-A-012/25



DHRZA-A-010/25

DHRZ* are 3 way, proportional pressure reducing valves, direct operated, with standard ISO 4401 size 06 mounting surface

Technical characteristics

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 valves are available in different executions:

- **standard** proportional solenoids with separated (-A) or integral (-AE) electronics
- **ex-proof** solenoids certified according to:

Multicertifications for **solenoids group II** for surface plants with gas, vapours and dust environment

- ATEX 94/9/EC
  Ex II 2 GD Ex d IIC T6/T4
  Ex tD A21 IP67 - category 2, zone 1, 2, 21 & 22
- IECEx worldwide recognized safety certification, Ex d IIC T6/T4, Ex tD A21 IP67
- Rostechnadzor Russian Certification
  Ex d IIC T6/T4

Multicertifications for **solenoids group I** for surface, tunnels or mining plants

- ATEX 94/9/EC: Ex I M2 Ex d I Mb
- IECEx: EX d I Mb

cULus according to UL1002 and CSA 22.2 n°139-1982 Standard, Class I, Groups C&D (Groups IIA & IIB to NEC 505-7)

Typical applications

Pressure reduction in low flow systems
Pilot stage for proportional valves DPZO-A* and QVMZO-A*

1 MODEL CODE

DHRZA	-	A	-	010	/	25	/	PA	-	GK	/	O	/*	**	/PE

DHRZA

Proportional pressure reducing valve
DHRZO = standard version

Ex-proof, Multicertification ATEX, IECEx, Rost
DHRZA = Group II
DHRZA/M = Group I (Mining)

Ex-proof, cULus certification
DHZA/UL

A

A = without integral electronic
AE = with integral electronic (not for DHRZA*)
P* = pilot valve (consult our technical office)

010

010= reduced port A
012= reduced ports A and B

25

25 = reduced pressure range 3÷25 bar

PA

Optional cable gland (only for DHRZA*, not for /UL):
PA = with threated cable gland, see section 10

GK

Solenoid threated connection, only for DHRZA:
GK = GK-1/2" ISO/UNI-6125 (tapered) - not for /UL
NPT = 1/2" NPT ANSI/ASME B1.20.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g) - not for /UL

O

Options:
B = for reduced port B

only for DHRZO-AE:
I = current reference (4÷20 mA)
Q = enable signal

only for DHRZA*:
O = horizontal cable entrance (not for DHRZA/M)
WP = prolongued manual override protected by metallic cap

/*

Only for -A execution
- = standard coil for 24V$_{DC}$ Atos drivers
6 = optional coil for 12V$_{DC}$ Atos drivers
18 = optional coil for low current drivers
24 = with 24 V$_{DC}$ coils (only for DHRZA)

******

Series number

/PE

Seals material:
- = NBR
PE = FKM
BT = HNBR

(1) Only for DHRZA, not for Group I, Atex (mining)

2 CERTIFICATIONS FOR DHRZA

In the following are resumed the valves marking according to Multicertifications Group II and Group I (mining) or cULus

2.1 GROUP II, ATEX marking

II 2 G = Solenoid for surface plants with gas and vapors environment, category 2, suitable for zone 1 and zone 2
Ex d = Explosion-proof equipment
II C = Equipment of group IIC suitable for substances (gas) of group IIC
T6/T4 = Solenoid temperature class (maximum surface temperature)
Gb = Equipment protection level, high level protection for explosive Gas atmospheres
CE = Mark of conformity to the applicable European directives
II 2 D = Solenoid for surface plants with dust environment, category 2, suitable for zone 21 and zone 22
Ex d = Explosion-proof equipment
III C = Suitable for conductive dust (applicable also IIIB and/or IIIA)
IP66/67 = Protection degree
T85/T135 = Maximum surface temperature (Dust)
Db = Equipment protection level, high level protection for explosive Dust atmospheres
Ex = Mark of conformity to the 94/9/CE directive and to the technical norms

2.2 GROUP II, IECEx marking

Ex d = Explosion-proof equipment
IIC = Equipment of group IIC suitable for substances (gas) of group IIC
T6/T4 = Solenoid temperature classes (Gas)
Gb = Equipment protection level, high level protection for explosive Gas atmospheres
Ex tb = Equipment protection by enclosure"tb"
IIIC = Suitable for conductive dust (applicable also IIIB and/or IIIA)
T85°C/T135°C = Maximum surface temperature (Dust)
Db = Equipment protection level, high level protection for explosive Dust atmospheres
IP66/67 = Protection degree

2.3 ROSTECHNADZOR marking

Rostechnadzor certification acknowledges the whole ATEX Directive 94/9/EC.
This certification is available only for gas environment (not for dust).

II 2 G = Solenoid for surface plants with gas and vapors environment, category 2, suitable for zone 1 and zone 2
Ex d = Explosion-proof equipment
II C = Equipment of group IIC suitable for substances (gas) of group IIC
T6/T4 = Solenoid temperature class (maximum surface temperature)
Ex = Mark of conformity to the 94/9/CE directive and to the technical norms

2.4 GROUP I, ATEX (mining)

Ex = ATEX identification for explosive atmospheres equipments
I = Group I for mines and surface plants
M2 = High protection (equipment category)
Ex d = Explosion-proof equipment
I = Gas group (Methane)
Mb = Equipment protection level, high level protection for explosive atmospheres
IP66/67 = Protection degree

2.5 GROUP I, IECEx (mining)

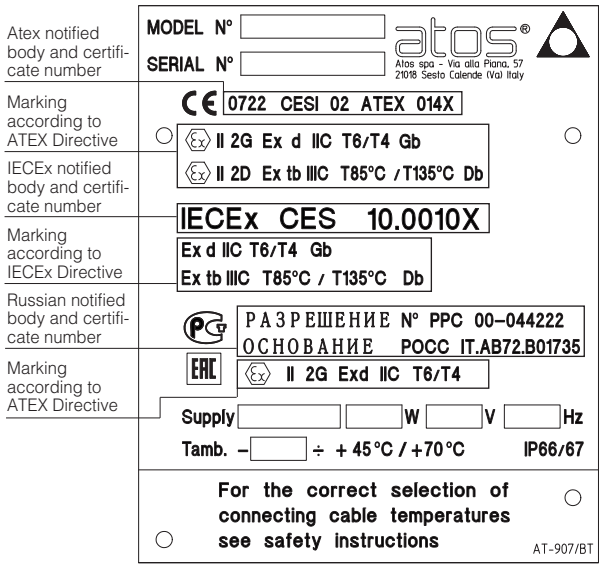
I = Group I for mines and surface plants
M2 = High protection (equipment category)
Ex d = Explosion-proof equipment
I = Gas group (Methane)
Mb = Equipment protection level, high level protection for explosive atmospheres
IP66/67 = Protection degree

2.6 cULus

Class I = Equipment for famable gas and vapours
Division 1 = Possibility of explosive atmosphere during normal functioning
Groups C&D = Gas group (according to UL 1002)
Groups IIA&IIB = Gas group (according to NEC 505-7)
T4 = Temperature class of solenoid surface referred to +70°C ambient temperature

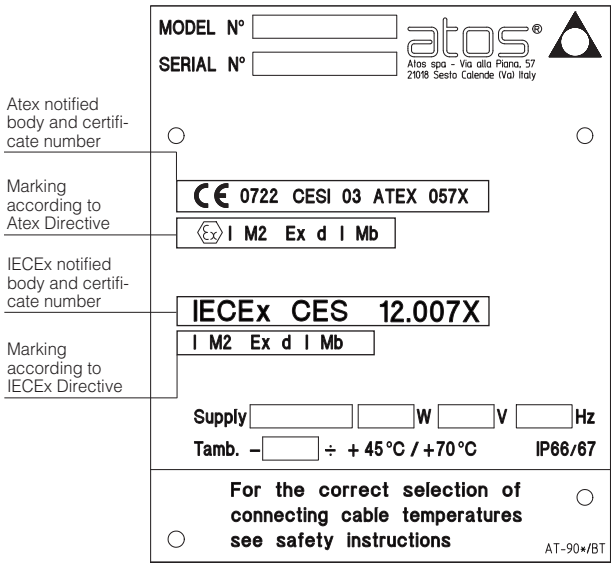
Note:
According to EN60079-0 the valves with Atex certification can be coated with a non-metallic material (for ex. paintened), observing the maximum thickness:
Group IIC = 0,2 mm max

EXAMPLE OF NAMEPLATE MARKING

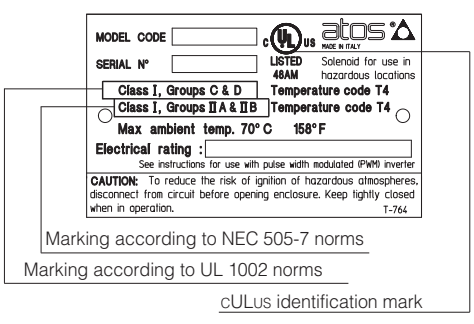


Note:
According to EN60079-0 the valves with Atex certification can be coated with a non-metallic material (for ex. paintened), observing the maximum thickness:
Group IIC = 0,2 mm max

EXAMPLE OF NAMEPLATE MARKING

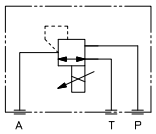
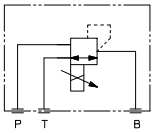
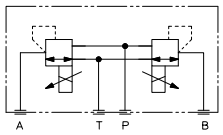


EXAMPLE OF NAMEPLATE MARKING



WARNING: service work provided on the valve by the end users or not qualified personnel invalidates the certification

3 HYDRAULIC CHARACTERISTICS

Hydraulic symbols		
 **DHRZO-A(E)-010/25* DHRZA-A-010/25***	 **DHRZO-A(E)-010/25/B* DHRZA-A-010/25/B***	 **DHRZO-A(E)-012/25* DHRZA-A-012/25***

Max regulated pressure (Q = 1 l/min) [bar]	25
Min. regulated pressure (Q = 1 l/min) [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 (depending on installation) [ms]	≤45
Hysteresis [% of the max pressure]	≤1,5
Linearity [% of the max pressure]	≤3
Repeatability [% of the max pressure]	≤2
Coil resistance R at 20°C	3÷3,3 Ω for standard 12 VDC coil; 2÷2,2 Ω for 6 VDC coil; 13÷13,4 Ω for 18 VDC coil;
Max solenoid current	2,6 A for standard 12 VDC coil; 3,5 A for 6 VDC coil; 1,5 A for standard 18 VDC coil;
Max power	40 Watt
Duty factor	Continuous rating (ED=100%)

Above performance data refer to valves coupled with Atos electronic drivers, see section 2

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

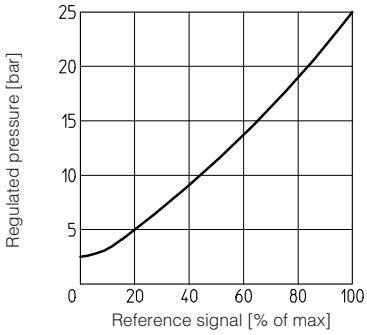
Assembly position / location	Any position for all valves		
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)		
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15÷100 mm²/s - max allowed range 2.8 ÷ 500 mm²/s		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 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	

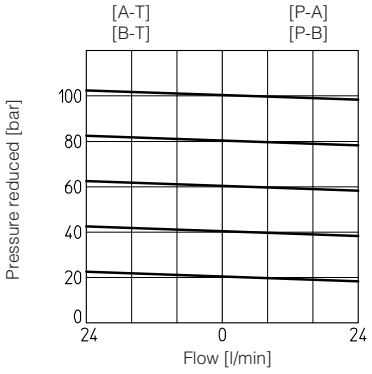
5 EXPLOSION PROOF SOLENOIDS FOR DHRZA: MAIN DATA

SOLENOID TYPE		PROPORTIONAL without transducer	
Solenoid code	Multicertification for Group II	OA	
	Multicertification for Group I (mining)	OAM	
Voltage code	VDC ±10%	**12DC, 24DC, 28DC, 48DC, 110DC, 125DC, 220DC**	
	VAC 50/60 Hz ±10%	**12AC, 24AC, 110-120AC, 230-240AC (1)**	
Power consumption		8W	
Coil insulation		Class H	
Protection degree		IP 66/67 According to IEC 144 when correctly coupled with the relevant cable gland PA*, see section 16	
Duty factor		100%	
Mechanical construction		Flame proof housing classified Ex d, according to EN 60079-0: 2006, EN 60079-1: 2007	
Cable entrance and electrical wiring		Internal terminal board for cable connection. Threaded connection for cable entrance, vertical (standard) or horizontal (option /O). See section 26 for cable gland	
Method of protection		Ex d	
Temperature class (only for Group II)		**T6**	**T4**
Surface temperature	Multicertification for Group II	≤ 85 °C	≤135 °C
	Multicertification for Group I (mining)	150 °C	
Ambient temperature	Multicertification for Group II	-40 ÷ +45 °C **(2)**	-40 ÷ +70 °C **(2)**
	Multicertification for Group I (mining)	-20 ÷ +70	
Temperature class (only for cULus)		**T4** (with +70°C ambient temperature)	
Surface temperature		≤135 °C	
Ambient temperature		-40 ÷ +70 °C	

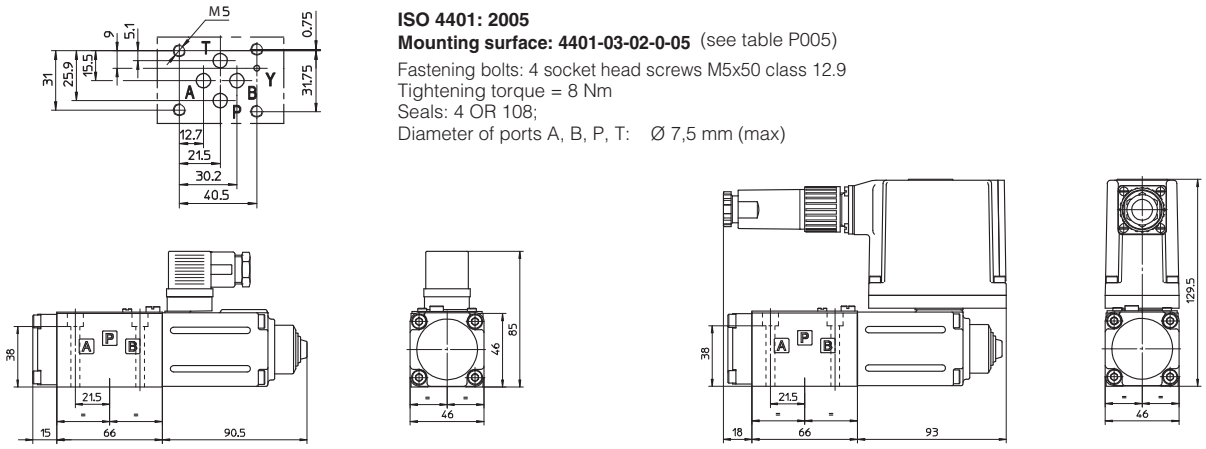
(1) The Group II solenoids are certified according to ATEX and IECEx for minimum ambient temperature -40°C. In case the complete valve must withstand with minimum ambient temperature of -40°C, select /BT in the model code

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





7 INSTALLATION DIMENSIONS FOR DHRZO [mm]



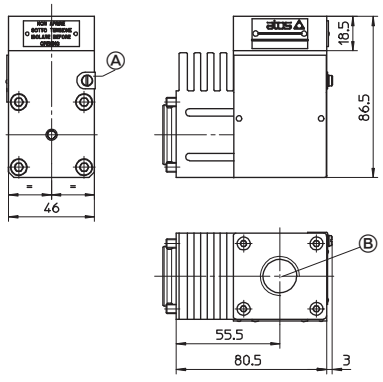
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
Fastening bolts: 4 socket head screws M5x50 class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108;
Diameter of ports A, B, P, T: Ø 7,5 mm (max)

DHRZO-A-010/25*

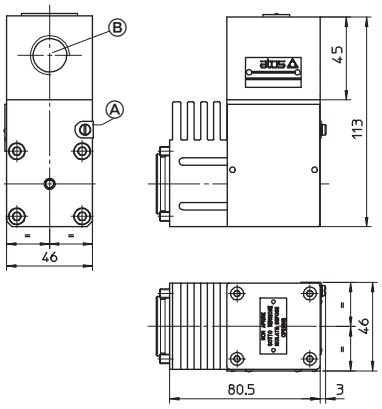
DHRZO-AE-010/25*

8 DHRZA SOLENOIDS DIMENSIONS [mm] AND WIRING FOR MULTICERTIFICATION

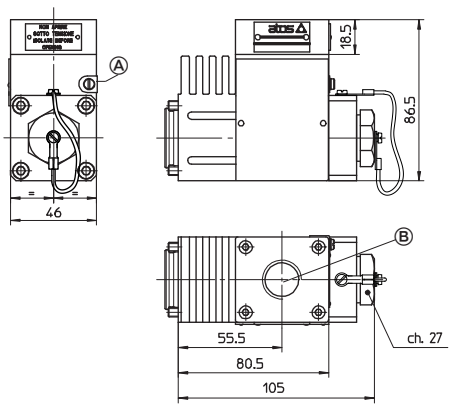
OZA-A



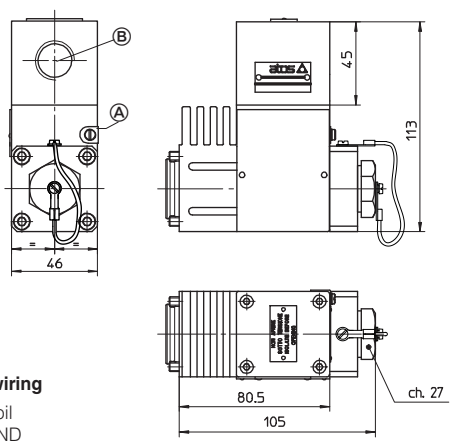
Option /O



Option /WP



Option /OWP



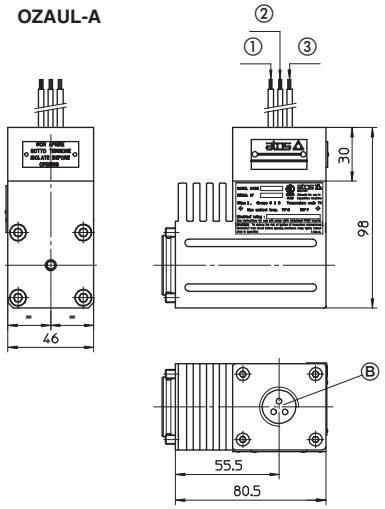
Ⓐ = screw terminal for additional equipotential grounding

Ⓑ = **Solenoid wiring**

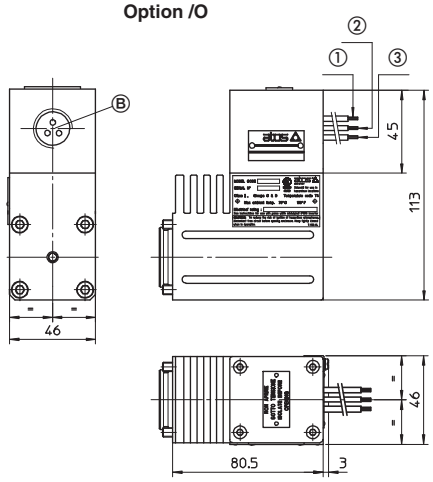
1 = Coil
2 = GND
3 = Coil

9 DHRZA SOLENOIDS DIMENSIONS [mm] AND WIRING FOR UL

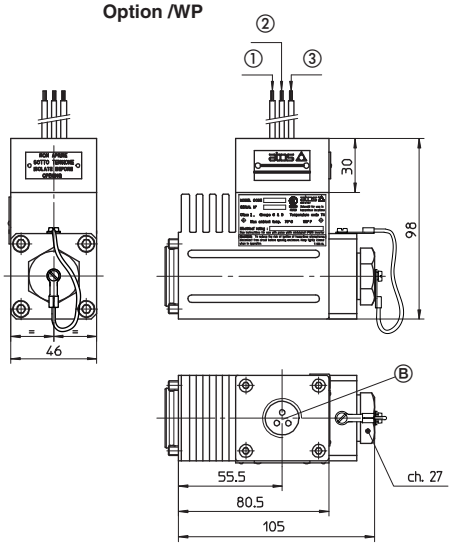
OZAUL-A



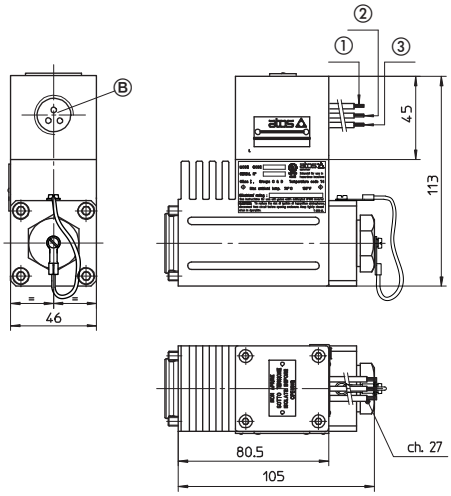
Option /O



Option /WP



Option /OWP



Ⓐ **Screw terminal for additional equipotential grounding**

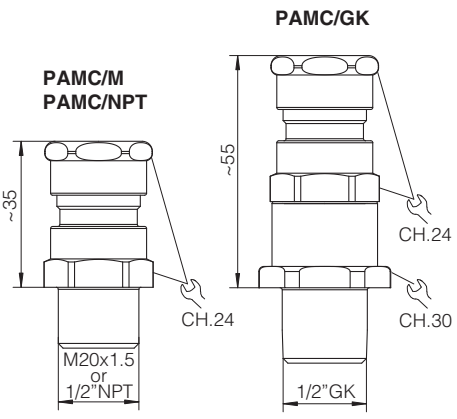
Ⓑ **Solenoid wiring**

① red = Coil
② green = GND
③ black = Coil

The valves are supplied with 1,07m (42 inches) cable lenght, factory wired

10 CABLE GLAND FOR DHRZA

Cable gland PAMC/* (IP66/67) for valves with multicertification Group II



Cable size 6,5 to 11,9 mm

The cable glands PAMC, are Multicertified according to:
ATEX: EN 60079-0, EN 60079-1, EN 60079-7 and EN 60079-31
IECEx: IEC 60079-0, IEC 60079-1, IEC 60079-7 and IEC 60079-31
Rost: EN60079-0 and EN60079-1

Following codes have to be specified for spare cable glands:
PAMC/GK = with threated connection GK-1/2" ISO/UNI-6125 (tapered)
PAMC/NPT = with threated connection 1/2" NPT ANSI B2.1 (tapered)
PAMC/M = with threated connection M20x1,5 UNI-4535 (6H/6g).

The cable must be suitable for the working temperature as specified in the "safety instructions" delivered with the first supply of the products.
Additional equipotential grounding can be also performed by the user on the external facility provided on the solenoid case.
Minimum section of external ground wire = 4 mm^2.
Minimum section of internal ground wire = the same of supply wire.

The cable glands must be blocked with loctite or similar or with a lock nut.
The valves must be connected to the power supply using the terminal board inside the solenoid.