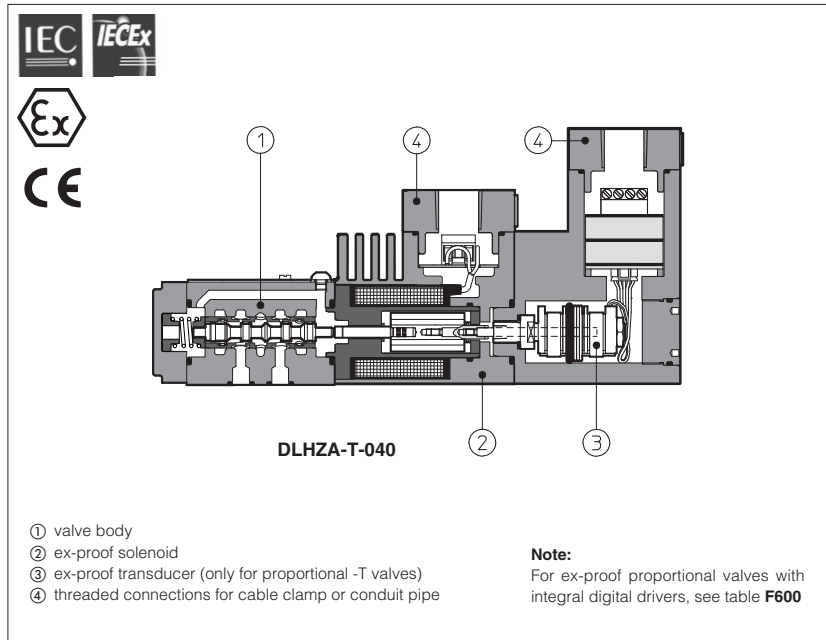


Explosion-proof solenoid valves

on/off and proportional controls - ATEX, IECEx or Rostechnadzor Russian certification



On/off and proportional valves equipped with explosion-proof solenoids available with following certifications and protection modes:

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/T3,
Ex tD A21 IP67 - category 2, zone 1, 2, 21 & 22
- IECEx worldwide recognized safety certification, Ex d IIC T6/T4/T3, Ex tD A21 IP67
- Rostechnadzor Russian Certification
Ex d IIC T6/T4/T3

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

The solenoid case is designed to contain the possible explosion which could be caused by the presence of the gas mixture inside the housing, thus avoiding dangerous propagation in the external environment. They are also designed to limit the external temperature according to the certified class to avoid the self ignition of the explosive mixture present in the environment. DHA and DLOH valves conform to **SIL 3** safety level (TÜV approved). These solenoids are applied to hydraulic valves for application in explosion-hazardous environments.

1 EXPLOSION PROOF SOLENOIDS: MAIN DATA

SOLENOID TYPE	PROPORTIONAL		ON-OFF
	without transducer	with transducer	
Solenoid code			
Group II, ATEX	OZA-A	OZA-T	OA
Group II, IECEx	OZAI-A	OZAI-T	OAI
Group I, ATEX (mining)	OZAM-A	OZAM-T	OAM
Group II, Rostechnadzor	OZA/RU-A	OZA/RU-T	OA/RU
Voltage code	VDC ±10%	12 DC, 24 DC	12DC, 24DC, 28DC, 48DC, 110DC, 125DC, 220DC
	VAC 50/60 Hz ±10%	–	12AC, 24AC, 110AC, 230AC (1)
Power consumption	35W		8W
Coil insulation	Class H		
Protection degree	IP 67 According to IEC 144 when correctly coupled with the relevant cable gland SP-PA*, see section 26		
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		

(1) For alternating current supply a rectifier bridge is provided built-in the solenoid

2 EXPLOSION PROOF SOLENOIDS: TEMPERATURE DATA


SOLENOID TYPE	PROPORTIONAL		ON/OFF	
	(with and without transducer)		Ex d	
Method of protection	Ex d			
Temperature class (only for Group II)	T4	T3 (option /7)	T6	T4 (option /7)
Surface temperature	≤135 °C	≤200 °C	≤85 °C	≤135 °C
Group II, ATEX and IECEx	150 °C			
Group I, ATEX (mining)	≤135 °C	≤200 °C	≤85 °C	≤135 °C
Rostechnadzor	150 °C			
Ambient temperature	-40 ÷ +40 °C (2)	-40 ÷ +70 °C (2)	-40 ÷ +45 °C (2)	-40 ÷ +70 °C (2)
Group II, ATEX and IECEx	-20 ÷ +60			
Group I, ATEX (mining)	-20 ÷ +70			
Rostechnadzor	-40 ÷ +40 °C	-40 ÷ +70 °C	-40 ÷ +45 °C	-40 ÷ +70 °C

(2) 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

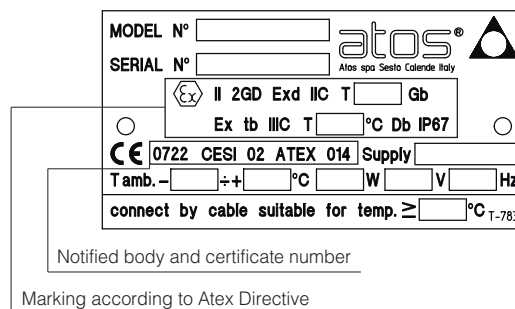
3 CERTIFICATIONS

In the following are resumed the valves marking according to ATEX Group I, ATEX and IECEx Group II, Rostechnadzor certifications.

3.1 GROUP II, ATEX

-  = ATEX identification for explosive atmospheres equipments
- II** = Group II for surfaces plants
- 2** = High protection (equipment category)
- GD** = For gas, vapours and dust
- Ex d** = Flame proof housing
- IIC** = Gas group
- T6/T4/T3** = Temperature class of solenoid surface
- 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)
- Db** = Equipment protection level, high level protection for explosive Dust atmospheres
- IP67** = Protection degree
- Zone 1 (gas) and 21 (dust)** = Possibility of explosive atmosphere during normal functioning
- Zone 2 (gas) and 22 (dust)** = Low probability of explosive atmosphere

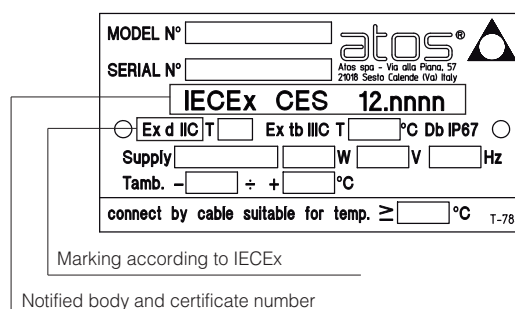
EXAMPLE OF NAMEPLATE MARKING




3.2 GROUP II, IECEx

- Ex d** = Equipment for explosive atmospheres, flame proof housing
- IIC** = Gas group
- T6/T4/T3** = Temperature class of solenoid surface
- tb** = Dust ignition protection
- IIIC** = Suitable for conductive dust (applicable also IIIB and/or IIIA)
- Db** = Equipment protection level, high level protection for explosive Dust atmospheres
- IP67** = Protection degree

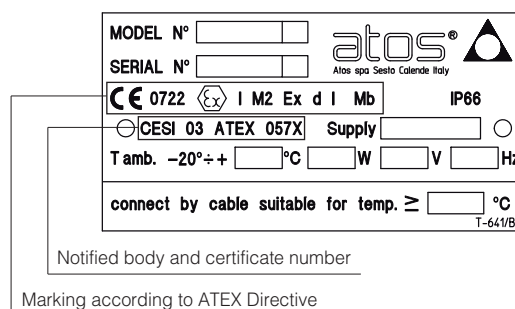
EXAMPLE OF NAMEPLATE MARKING



3.3 GROUP I, ATEX (mining)


-  = ATEX identification for explosive atmospheres equipments
- I** = Group I for mines and surface plants
- M2** = High protection (equipment category)
- d** = Flame proof housing
- I** = Gas group (Methane)
- Mb** = Equipment protection level, high level protection for explosive atmospheres

EXAMPLE OF NAMEPLATE MARKING

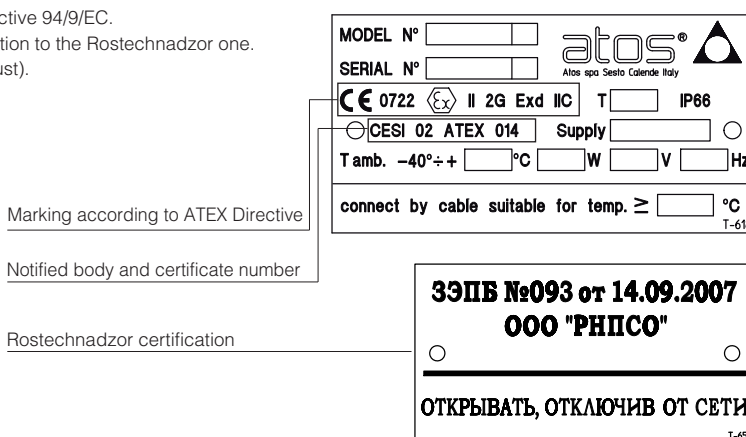


3.4 ROSTECHNADZOR

Rostechnadzor certification acknowledges the whole ATEX Directive 94/9/EC. For this reason the solenoids report the ATEX nameplate in addition to the Rostechnadzor one. This certification is available only for gas environment (not for dust).

-  = ATEX identification for explosive atmospheres equipments
- d** = Flame proof housing
- IIC** = Gas group
- T6/T4/T3** = Temperature class of solenoid surface

EXAMPLE OF NAMEPLATE MARKING



Note:

According to EN60079-0 the valves with Atex certification can be coated with a non-metallic material (for ex. painted), observing the maximum thickness:

Group IIC = 0,2 mm max



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

4 MODEL CODE OF SPOOL TYPE ON-OFF DIRECTIONAL SOLENOID VALVES

DHA / **IE** - **0** **63** **1/2** / **PA** - **GK** / **7** **24DC** ****** / *****

DHA = spool type - direct
DPHA = spool type - piloted

Optional certifications (omit for Group II ATEX)

IE = IECEX, Group II
IEM = IECEX, Group I (mining)
M = ATEX, Group I (mining)
RU = Rostechnadzor (Russian), Group II

Valve size (ISO 4401)

for DHA **0** = 06
 for DPHA **1** = 10 **2** = 16 **4** = 25 **6** = 32

Valve configuration, DHA see section 5 and DPHA see section 6

Spool type, DHA see section 5 and DPHA see section 6

Optional cable gland:

PA = with threaded cable gland, see section 26

Solenoid threaded connection:

GK = GK-1/2" ISO/UNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

(1) Not for group I, ATEX (mining)

(2) Available only for DHA, configuration 61, 63, 71 and spool type 0, 0/2, 1, 1P, 1/2, 1/2P, 3, 3P, 4, 7

Seals material:
 omit for NBR (mineral oil & water glycol)
PE = FPM
 Low temperature execution:
BT = low temperature -40°C (1)

Series number

Voltage code - see section 11

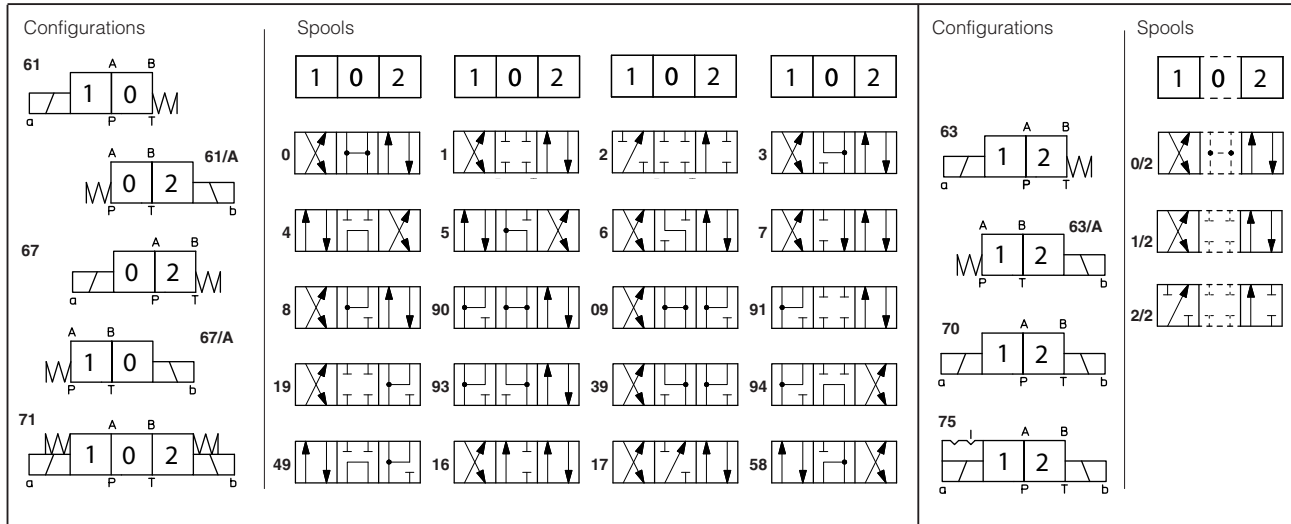
Options:

7 = for ambient temperature up to 70°C (not for Group I)
A = solenoid at side of port B (for single solenoid valves)
MV = vertical hand lever (only for DHA) (2)
O = horizontal cable entrance (1)
WP = prolonged manual override protected by metallic cap

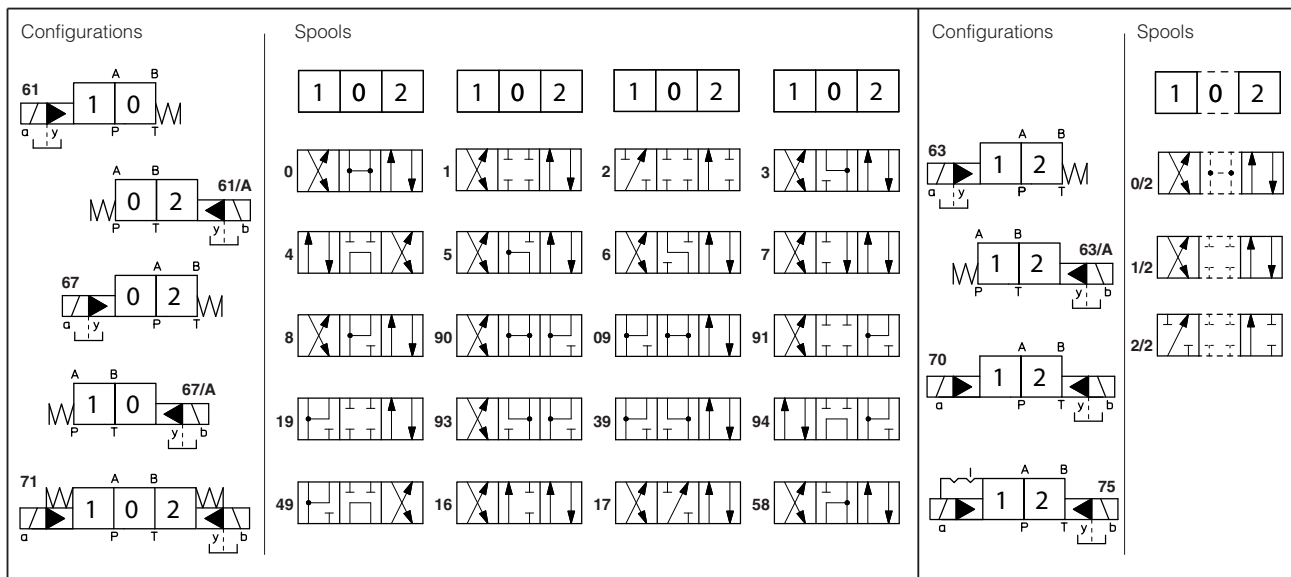
Only for DPHA:

/D = Internal drain.
/E = External pilot pressure.
/H = Adjustable chokes (meter-out to the pilot chambers of the main valve).
/H9 = Adjustable chokes (meter-in to the pilot chambers of the main valve).
/R = Pilot pressure generator (4 bar on port P)
/S = Main spool stroke adjustment (not for DPHA-1).

5 CONFIGURATIONS and SPOOLS for DHA valves



6 CONFIGURATIONS and SPOOLS for DPHA valves



NOTES:

- For **DP*-1** are available only spools: **0, 0/2, 1, 1/2, 3, 4, 5, 58, 6, 7**
- For **DP*-6** are available only spools: **0, 1, 2, 3, 4, 5, 58, 6, 7, 8, 19, 91**

7 MODEL CODE OF POPPET TYPE LEAK FREE DIRECTIONAL SOLENOID VALVES

DLO H - 2 A / PA - GK - AO / 7 24DC ** /*

Directional control valve poppet type, size 06

H = max flow 12 l/min
K = max flow 30 l/min

2 = two way (only for DLOH)
3 = three way

Valve configuration, see section 8
A = open in rest position
C = closed in rest position

Optional cable gland:
PA = with threaded cable gland, see section 26

Solenoid threaded connection:
GK = GK-1/2" ISO/UNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

Seals material (1):
omit for NBR (mineral oil & water glycol)
PE = FPM

Series number

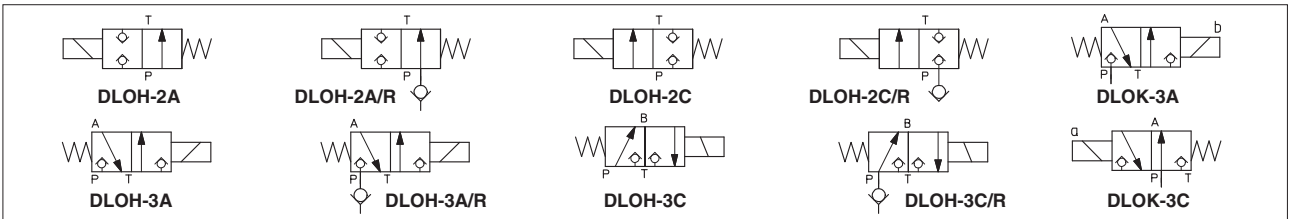
Voltage code - see section 11

Options:
7 = for ambient temperature up to 70°C (not for Group I)
O = horizontal cable entrance (not for group I Atex)
R = with check valve on port P (only for DLOH)
WP = prolonged manual override protected by metallic cap

Certification type
AO = ATEX, Group II
AO/IE = IECEx, Group II
AO/IE/M = IECEx, Group I (mining)
AO/M = ATEX, Group I (mining)
AO/RU = Rostechnadzor (Russian), Group II

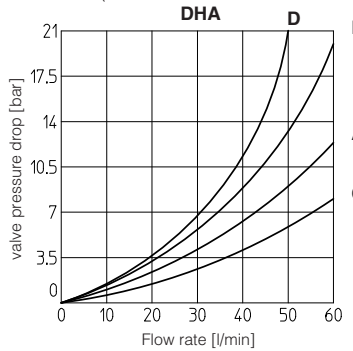
(1) Option **/BT** = low temperature -40°C also available on request (not for group I Atex -mining-)

8 CONFIGURATION OF DLOH/AO/* AND DLOK/AO/*



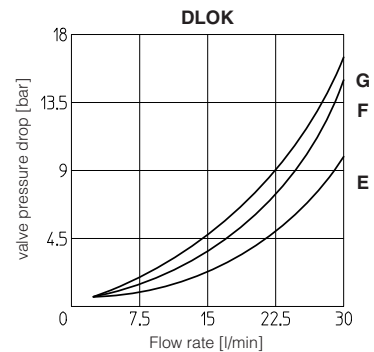
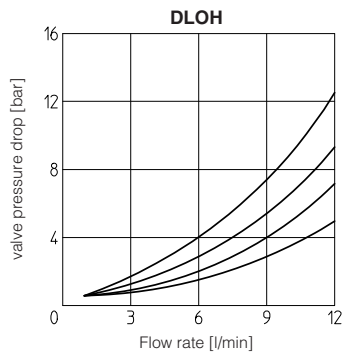
9 Q/Δp DIAGRAMS OF ON/OFF DIRECTIONAL CONTROLS (based on mineral oil ISO VG 46 at 50°C)

Flow direction	Flow direction					
	P→A	P→B	A→T	B→T	P→T	
Spool type						
0	C	C	C	C		
0/2, 1, 1/2	A	A	A	A		
3	A	A	C	C		
4, 5	D	D	D	D	A	
6	A	A	C	A		
7	A	A	A	C		
8	C	C	B	B		



INTERNAL LEAKAGE of DLOH and DLOK less than 5 drops/min (0,36 cm³/min) at max pressure.

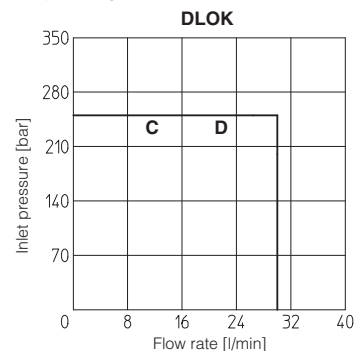
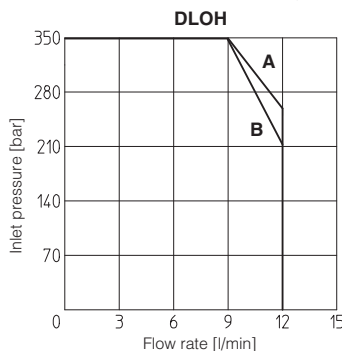
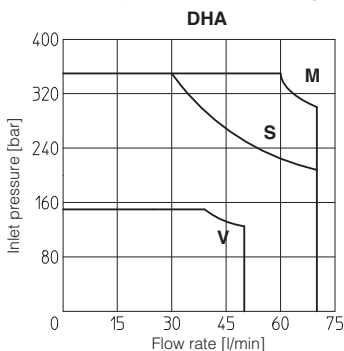
Valve type	Flow direction	
	P → A (1) (P → B)	A → T (B → T)
DLOH-2A	B	-
DLOH-2C	C	-
DLOH-3A	D	C
DLOH-3C	C	A
DLOK-3A	G	F
DLOK-3C	F	E



(1) For two-way valves pressure drop refers to P→T

10 OPERATING LIMITS OF ON/OFF DIRECTIONAL CONTROLS (based on mineral oil ISO VG 46 at 50°C)

The diagram have been obtained with warm solenoids and power supply at lowest value (V_{nom}-10%). For DHA valves the curves refer to application with symmetrical flow through the valve (i.e. P → A and B → T). In case of asymmetric flow the operating limits must be reduced.



M = Spools 0, 1, 8; **V** = Spools 4, 5.
S = Spools 0/2, 1/2, 3, 6, 7;

A = DLOH-3A;
B = DLOH-2A, DLOH-3C.

C = DLOK-3A;
D = DLOK-3C.

10.1 Pressure limits: P, A, B = 350 bar; T = 210 bar

18 MODEL CODE OF SERVOPROPORTIONAL VALVES

DLHZA / IE - T - 0 4 0 - L 7 3 / PA - GK / 7 ** / *

DLHZA = size 06
DLKZA = size 10

Optional certifications (omit for Group II ATEX)
IE = IECEX, Group II
IEM = IECEX, Group I (mining)
M = ATEX, Group I (mining)
RU = Rostechnadzor (Russian), Group II

T = with integral position transducer

Valve size (ISO 4401)
0 = size 06 (DLHZA) **1** = size 10 (DLKZA)

Configuration, see section 19
4 = spring offset with fail safe
6 = spring offset

Spool overlapping in central position, see section 19
0 = P, A, B, T positive overlapping

Spool type
L = linear; **T** = not linear (1); **D** = different-linear (1);
V = progressive; **DT** = as D but with non-linear regulation (1);

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

Series number

Options:
7 = for ambient temperature up to 70°C (not for Group I)
B = solenoid at side of port A
C = position transducer with current feedback 4÷20 mA
Y = external drain

Solenoid threaded connection:
GK = GK-1/2" ISO/JUNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

Optional cable gland:
PA = with threaded cable gland, see section 26

Fail safe configuration:
1 = A, B, P, T with positive overlapping
3 = P positive overlapping; A, B, T negative

Spool size: see section 19

(1) Spool type D, DT and T are available only for valve with fail safe position DLHZA*-040 and DLKZA*-040

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

Hydraulic symbols

Valve model	DLHZA-T*											DLKZA-T*							
	ports P, A, B = 350; T = 210 (250 with external drain Y)																		
Pressure limits [bar]	ports P, A, B = 315; T = 210 (250 with external drain Y)																		
Spool	L0	L1	V1	L3	V3	L5	T5	L7	T7	V7	D7	DT7	L3	L7	T7	V7	D7	DT7	
Max flow (1) [l/min]	2,5	4,5	5	9	13	18	26	26	26	26	26	26	40	60	60	60	60	60	
at Δp = 30 bar	4	7	8	14	20	28	40	40	40	40	40	40	60	100	100	100	100	100	
at Δp = 70 bar	10	18	18	32	40	50	70	70	70	70	70	70	90	160	160	160	160	160	
max permissible flow																			
Leakage [cm³/min] at P = 100 bar (2)	<100	<200	<100	<300	<150	<500	<200	<900	<200	<200	<700	<200	<1000	<1500	<400	<400	<1200	<400	
Fail safe connections	P → A			P → B				A → T				B → T							
Leakage [cm³/min] at P = 100 bar (3)	Fail safe 1			50				70				70				50			
	Fail safe 3			50				70				70				50			
Flow [l/min] (4)	DLHZA			-				-				15÷30				10÷20			
	DLKZA			-				-				40÷60				25÷40			
Response time [ms]	≤ 10											≤ 15							
Hysteresis [%]	≤ 0,1%											≤ 0,1%							
Thermal drift	zero point displacement < 1% at ΔT = 40°C																		

Notes:

- Above performance data refer to valves coupled with Atos electronic drivers, see table G140.
- The flow regulated by the directional proportional valves is not pressure compensated, thus it is affected by the load variations. To keep constant the regulated flow under different load conditions, modular pressure compensators are available (see tab. D150).

- For different Δp, the max flow is in accordance to the diagrams in section 13.2
- Referred to spool in neutral position and 50°C oil temperature.
- Referred to spool in fail safe position and 50°C oil temperature.
- Referred to spool in fail safe position at Δp = 35 bar per edge and 50°C oil temperature.

20 MODEL CODE OF PRESSURE COMPENSATED PROPORTIONAL FLOW CONTROL VALVES

QVHZA / IE - T - 06 / 12 / PA - GK / * / * ** / *

QVHZA = size 06
QVKZA = size 10

Optional certifications (omit for Group II ATEX)

IE = IECEX, Group II
IEM = IECEX, Group I (mining)
M = ATEX, Group I (mining)
RU = Rostechnadzor (Russian), Group II

A = without position transducer
T = with integral position transducer

Valve size (ISO 4401)

QVHZA: **06** QVKZA: **10**

Max regulated flow:

	QVHZA	QVKZA
3	= 3,5 l/min;	65 = 65 l/min
12	= 12 l/min;	45 = 45 l/min;
18	= 18 l/min;	90 = 90 l/min

Optional cable gland:

PA = with threaded cable clamp, see section 26

Seals material (1):
omit for NBR (mineral oil & water glycol)
PE = FPM

Series number

Omit for standard coil 12 V_{DC}:

24 = with 24 VDC coils (only A version)

Options:

7 = for ambient temperature up to 70° C (not for Group I)
C = current feedback signal 4-20 mA (only for -T versions)
D = quick venting (only for -A versions)
O = horizontal cable entrance (only for -A versions, not for group I ATEX)
WP = prolonged manual override protected by metallic cap (only for -A versions)

Solenoid threaded connection:

GK = GK-1/2" ISO/UNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

(1) Option **/BT** = low temperature -40°C also available on request only for valves -A without integral position transducer (not for group I ATEX -mining-)

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

Hydraulic symbols														
Note: In three-way versions port P is open. In two-way versions port P must be plugged. Port T must always be plugged.	QVHZA-A QVKZA-A		QVHZA-T QVKZA-T											
Valve model	QVHZA-A		QVHZA-T		QVKZA-A	QVKZA-T								
Valve size	06		06		10	10								
Max pressure ports P, A, B [bar]	210													
Max regulated flow [l/min]	3,5	12	18	36	45	3,5	12	18	35	45	65	90	65	90
Min regulated flow (1) [cm³/min]	15	20	30	50	60	15	20	30	50	60	85	100	85	100
Regulating Δp [bar]	4 - 6		10 - 12		15	4 - 6		10 - 12		15	6 - 8	10 - 12	6 - 8	10 - 12
Max flow on port A [l/min]	40		35		50	50		60		70	100	70	100	

Above performance data refer to valves coupled with Atos electronic drivers.

(1) Values are referred to 3-way configuration. In the 2-way configuration, the values of min regulated flow are higher.

22 MODEL CODE OF PROPORTIONAL PRESSURE RELIEF AND COMPENSATOR VALVES

RZMA / IE - A - 010 / 250 / PA - GK / * / * ** / *

Pressure relief:

RZMA = subplate size 06
HZMA = modular size 06
AGMZA = subplate size 10, 20, 32
LIMZA = cartridge (1)

Pressure compensator:

LICZA = cartridge (1)

Optional certifications (omit for Group II ATEX)

IE = IECEX, Group II
IEM = IECEX, Group I (mining)
M = ATEX, Group I (mining)
RU = Rostechnadzor (Russian), Group II

A = without integral pressure transducer

Valve size: see section 23 for size code

Max regulated pressure: see section 23

Optional cable gland

PA = with threaded cable clamp, see section 26

Seals material (1):
omit for NBR (mineral oil & water glycol)
PE = FPM

Series number

Omit for standard coil 12 V_{DC}:

24 = with 24 VDC coils

Options:

7 = for ambient temperature up to 70° C (not for Group I)
E = external pilot (only for AGMZA)
O = horizontal cable entrance (not for group I ATEX)
P = with integral mechanical pressure limiter (only for LI*ZA)
Y = external drain (only for AGMZA)

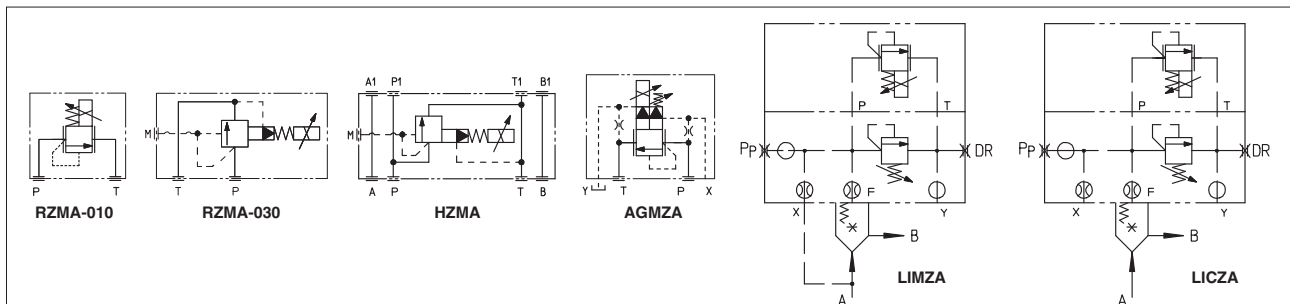
Solenoid threaded connection:

GK = GK-1/2" ISO/UNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

(1) For the code of the ISO cartridge to use with LIMZA and LICZA, see tab. F300 section 2.

(2) Option **/BT** = low temperature -40°C also available on request (not for group I ATEX -mining-)

23 HYDRAULIC CHARACTERISTICS



Valve model	RZMA	HZMA	AGMZA			LIMZA						LICZA						
Size code	010	030	030	10	20	32	1	2	3	4	5	6	8	1	2	3	4	5
Valve size	06			10	20	32	16	25	32	40	50	63	80	16	25	32	40	50
Max regulated pressure [bar]	80;						180;			250								
Max pressure at port P, A, B, X [bar]	315						210											
Max pressure at port T, Y [bar]	210																	
Max flow [l/min]	4	40	40	200	400	600	200	400	750	1000	2000	3000	4500	200	400	750	1000	2000

24 MODEL CODE OF PROPORTIONAL PRESSURE REDUCING VALVES

RZGA / * - A - 010 / 210 / PA - GK /* /* ** /*

Pressure reducing:
RZGA = subplate size 06
HZGA = modular size 06
KZGA = modular size 10
AGRCZA = subplate size 10, 20
LIRZA = cartridge

Optional certifications (omit for Group II ATEX)
IE = IECEx, Group II
IEM = IECEx, Group I (mining)
M = ATEX, Group I (mining)
RU = Rostechnadzor (Russian), Group II

A = without integral transducer

Valve size:
 see section 25 for size code

Max regulated pressure:
 see section 25

Optional cable gland
PA = with threaded cable clamp, see section 26

Seals material (1):
 omit for NBR (mineral oil & water glycol)
PE = FPM

Series number

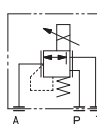
Omit for standard coil 12 Vdc:
24 = with 24 VDC coils

Options:
7 = for ambient temperature up to 70° C (not for Group I)
O = horizontal cable entrance (not for group I ATEX)
P = with integral mechanical pressure limiter (only for AGRCZA and LIRZA)
R = with check valve (only for AGRCZA)

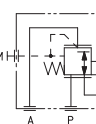
Solenoid threaded connection:
GK = GK-1/2" ISO/UNI-6125 (tapered)
NPT = 1/2" NPT ANSI B2.1 (tapered)
M = M20x1,5 UNI-4535 (6H/6g)

Note: for the code of the ISO cartridge to use with LIRZA, see tab. F300 section 2.
 (1) Option **/BT** = low temperature -40°C also available on request (not for group I ATEX -mining-)

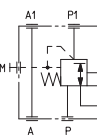
25 HYDRAULIC CHARACTERISTICS



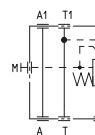
RZGA-A-010



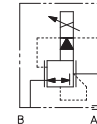
RZGA-A-033



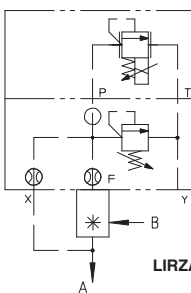
HZGA-A-031



KZGA-A-031



AGRCZA-A

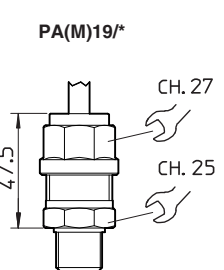


LIRZA-A

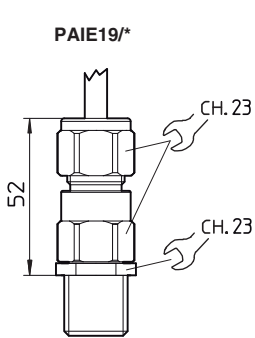
Valve model	RZGA		HZGA	KZGA	AGRCZA		LIRZA			
Size code	010	033	031	031	10	20	1	2	3	4
Valve size	06			10	10	20	16	25	32	40
Max regulated pressure [bar]	32; 100; 210				80;	180;	250			
Min regulated pressure [bar]	0,8	1	1	1	1	1	7	7	7	7
Max pressure at port P [bar]	315									
Max pressure at port T [bar]	210									
Max flow [l/min]	12	40	40	100	160	300	160	300	550	800

26 CABLE GLAND

CABLE GLAND PA19/* (PG9 - IP67)
CABLE GLAND PAM19/* - for valves with mining certification (PG9 - IP67)
CABLE GLAND PAIE19/* - for valves with IECEx certification (PG9 - IP66)



PA(M)19/*



PAIE19/*

The cable glands PA and PAM, are available on request certified ATEX according to EN 60079-0 and EN 60079-1.
 The cable gland PAIE, is certified IECEx according to the following standards:
 IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC 61241-0, IEC 61241-1

PA19 cable size 7÷9,5 mm
 PA112 cable size 9÷12 mm

Following codes have to be specified for spare cable glands:
PA(M)19/GK = with threaded connection GK-1/2" ISO/UNI-6125 (tapered)
PA(M)19/NPT = with threaded connection 1/2" NPT ANSI B2.1 (tapered)
PA(M)19/M = with threaded connection M20x1,5 UNI-4535 (6H/6g).
PAIE19/GK = with threaded connection GK-1/2" ISO/UNI-6125 (tapered)
PAIE19/NPT = with threaded connection 1/2" NPT ANSI B2.1 (tapered)
PAIE19/M = with threaded connection M20x1,5 UNI-4535 (6H/6g).
 The cable gland PA*/M must be blocked with loctite or similar or with a locking nut.

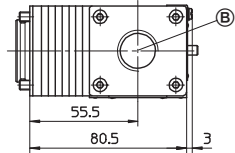
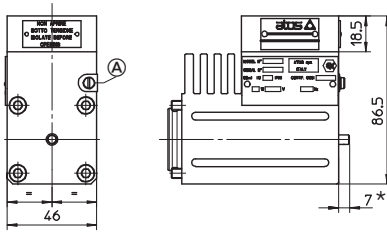
Note: special cable clamps PG12, PA(M)112/* are available on request and they have to be ordered separately

The valves must be connected to the power supply using the terminal board inside the solenoid.
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 mm².
 Minimum section of internal ground wire = the same of supply wire.
 In order to reach the terminal board inside the solenoid, the top plate of the solenoid must be removed.
 Solenoids are provided with threaded connection for cable entrance:
 GK-1/2" GAS (ISO/UNI 6125) or M20x1,5 (UNI-4535) or 1/2"NPT (ANSI B2.1)

OA
OZA-A

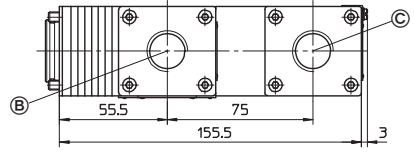
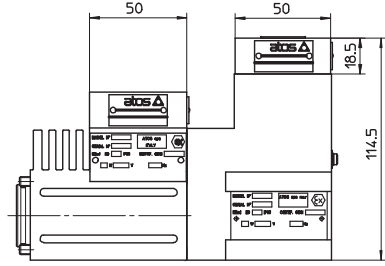
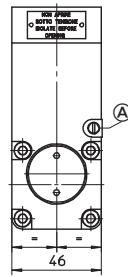
OAI
OZAI-A

OA/M
OZA/M-A

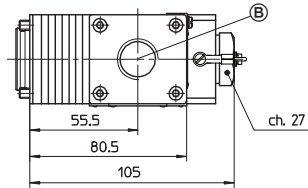
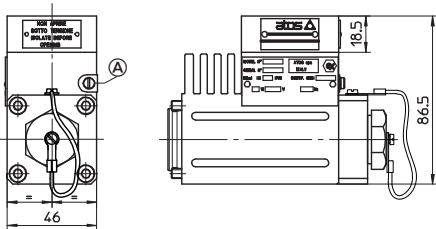


* only for OA and OZA/M

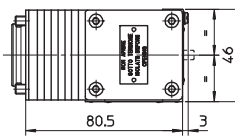
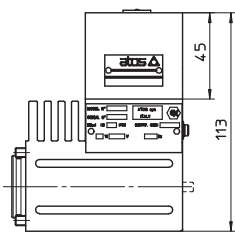
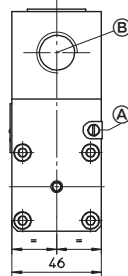
OZA-T OZAI-T OZA/M-T



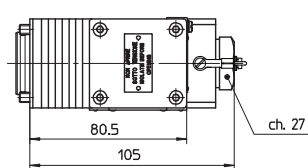
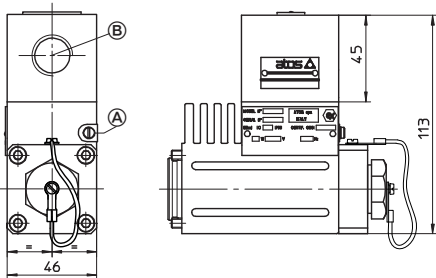
Option /WP



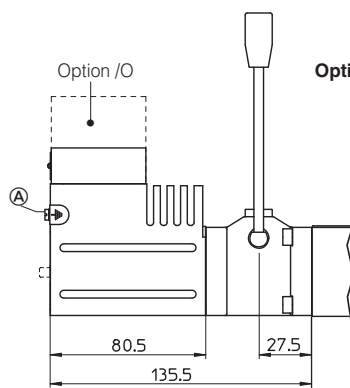
Option /O



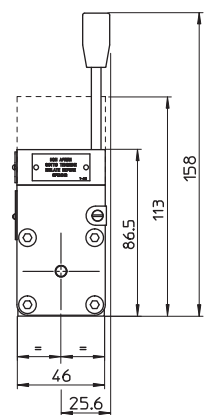
Option /OWP



Option /O



Option /MV



(A) = screw terminal for additional equipotential grounding

(B) = Solenoid wiring

(C) = Position transducer wiring

