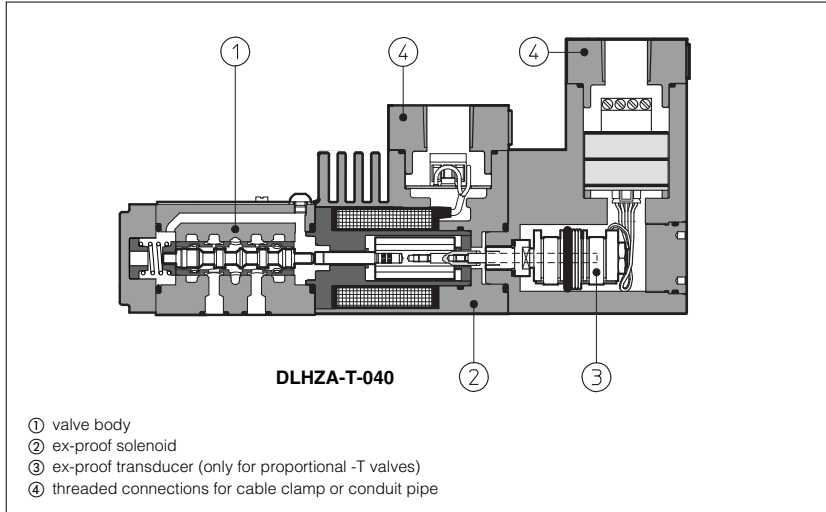


Explosion-proof solenoid valves

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



On/off and proportional valves equipped with explosion-proof solenoids certified according to ATEX 94/9/CE, protection mode:

- Ex II 2 G Ex d IIC T6/T4/T3 (solenoids group II for surface plants with gas or vapours environment, category 2, zone 1 and 2);
- Ex I M2 Ex d I (solenoids group I for surface, tunnels or mining plants).
- Rostechnadzor Russian Certification, available for Group II solenoids

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	
Group II, ATEX	OZA-A	OZA-T	OA
Solenoid code Group I, ATEX (mining)	OZAM-A	OZAM-T	OAM
Group II, Rostechnadzor	OZA/RU-A	OZA/RU-T	OA/RU
Voltage code	VDC	12 DC, 24 DC	12DC, 24DC, 28DC, 48DC, 110DC, 125DC, 220DC
	VAC 50/60 Hz	-	12AC, 24AC, 110AC, 230AC (1)
Power consumption	35W		8W
Coil insulation	Class H		
Protection degree	IP 66 According to IEC 144 when correctly coupled with the relevant cable gland SP-PA*, see section 27		
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 27 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 (with and without transducer)		ON/OFF	
	T4	T3 (option /7)	T6	T4 (option /7)
Method of protection	Ex d			
Temperature class (only for Group II)	T4	T3 (option /7)	T6	T4 (option /7)
Surface temperature	Group II, ATEX	≤ 135 °C	≤ 200 °C	≤ 85 °C
	Group I, ATEX (mining)	150 °C		
	Rostechnadzor	≤ 135 °C	≤ 200 °C	≤ 85 °C
Ambient temperature	Group II, ATEX	-40 ÷ +40 °C (2)	-40 ÷ +70 °C (2)	-40 ÷ +45 °C (2)
	Group I, ATEX (mining)	-20 ÷ +60		-20 ÷ +70
	Rostechnadzor	-40 ÷ +40 °C	-40 ÷ +70 °C	-40 ÷ +45 °C

(2) The group II solenoids are ATEX certified for minimum temperature -40°C. Select /BT in the valve code for application with minimum ambient temperature -40°C

3 CERTIFICATIONS

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



3.1 GROUP II, ATEX and Rostechnadzor

- Ex** = Equipment for explosive atmospheres
- II** = Group II for surfaces plants
- 2** = High protection (equipment category)
- G** = For gas and vapours
- d** = Flame proof housing
- IIC** = Gas group
- T6/T4/T3** = Temperature class of solenoid surface referred to +40°C ambient temperature
- Zone 1 (and 2)** = Possibility of explosive atmosphere during normal functioning (low probability of explosive atmosphere)

3.2 GROUP I (mining), ATEX

- Ex** = Equipment for explosive atmospheres
- I** = Group I for mines and surface plants
- M2** = High protection (equipment category)
- d** = Flame proof housing
- I** = Gas group (Methane)

3.3 EXAMPLE OF NAMEPLATE MARKING

MODEL N°	<input type="text"/>	
SERIAL N°	<input type="text"/>	
CE 0722  II 2G Exd IIC T <input type="text"/> IP68		
⊕ CESI 02 ATEX 014 Supply <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
Tamb. -40°+ <input type="text"/> °C <input type="text"/> W <input type="text"/> V <input type="text"/> Hz		
connect by cable suitable for temp. ≥ <input type="text"/> °C <small>T-68</small>		
Notified body and certificate number <input type="text"/>		
Marking according to ATEX directive <input type="text"/>		

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

DHA

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

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

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

Valve size (ISO 4401)

for DHA **0** = 06
 for DPHA **1** = 10 **2** = 16 **3** = 25

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 27

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

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
 Low temperature execution:
BT = low temperature -40°C (1)

Series number

Voltage code - see section 2

Options:

- 7** = for ambient temperature up to 70°C
- A** = solenoid at side of port B (for single solenoid valves)
- O** = horizontal cable entrance (1)
- WP** = prolonged manual override protected by metallic cap

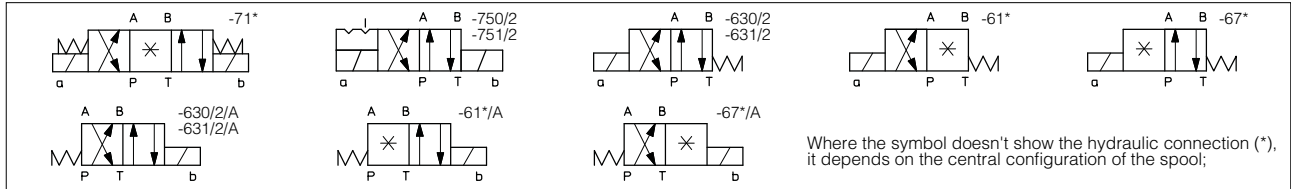
Only for DPHA:

- /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).
- /S** = Main spool stroke adjustment (only for DPHA-2, -3).

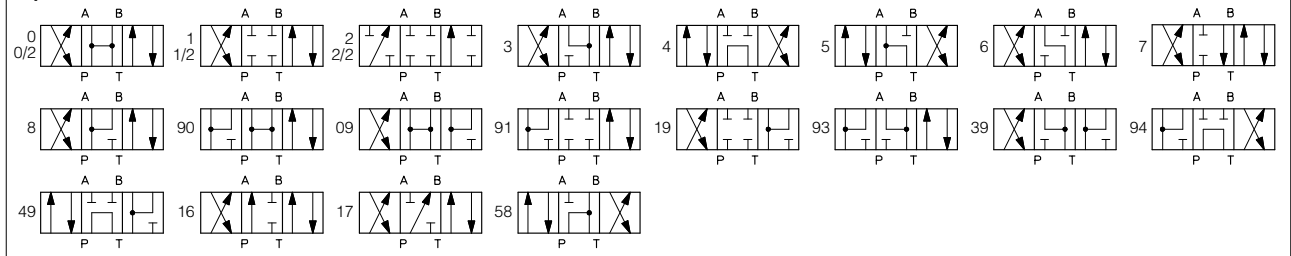
Solenoid threaded connection:

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

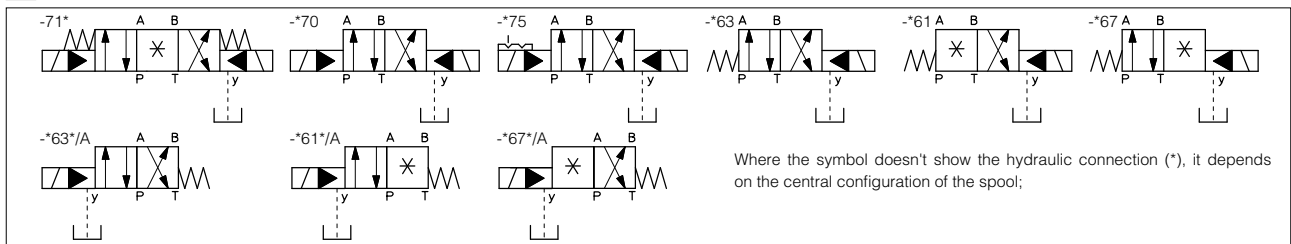
5 CONFIGURATION OF DHA VALVES



Spools for DHA valves

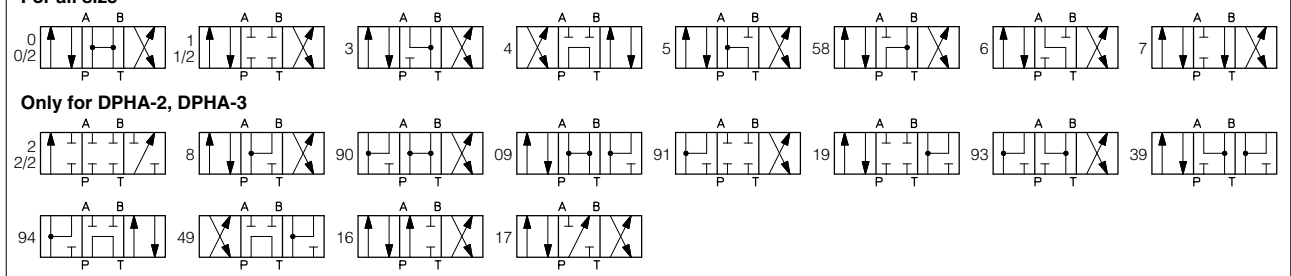


6 CONFIGURATION OF DPHA VALVES



Spools for DPHA valves

For all size



7 POPPET TYPE LEAK FREE DIRECTIONAL SOLENOID VALVES: MODEL CODE

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
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 27

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)

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
Low temperature execution:
BT = low temperature -40°C (1)

Series number

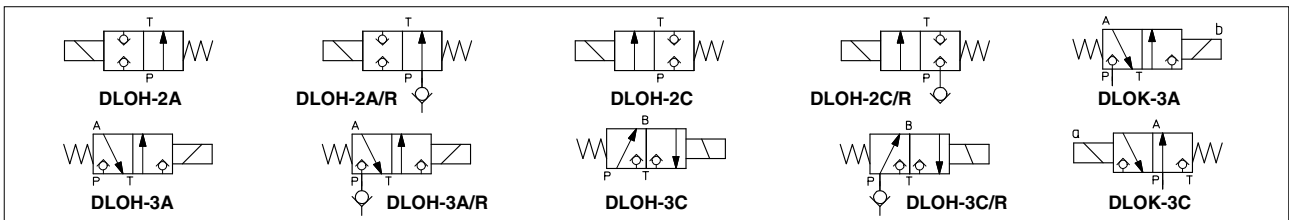
Voltage code - see section 2

Options:
7 = for ambient temperature up to 70°C
A = solenoid at side of port B
O = horizontal cable entrance (1)
R = with check valve on port P
WP = prolonged manual override protected by metallic cap

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

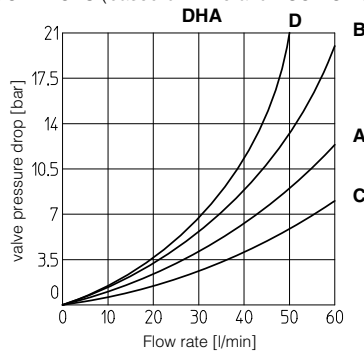
(1) Not for group I, Atex (mining)

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



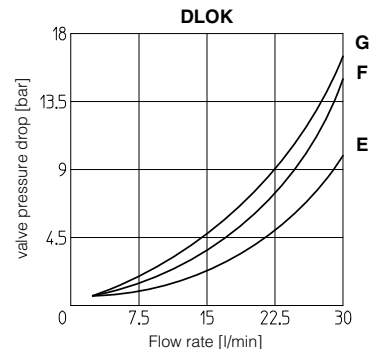
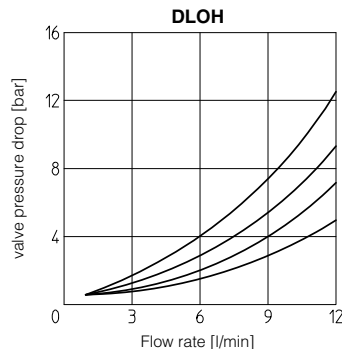
9 Q/Δp DIAGRAMS OF ON/OFF DIRECTIONAL CONTROLS (based on mineral oil ISO VG 46 at 50°C)

Flow direction	Spool type				
	P→A	P→B	A→T	B→T	P→T
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.

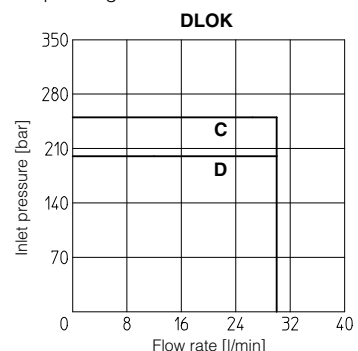
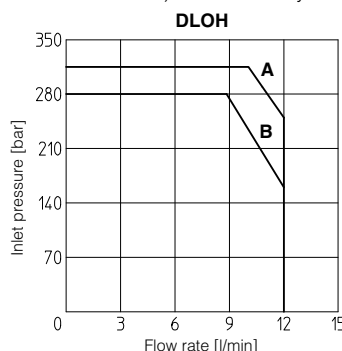
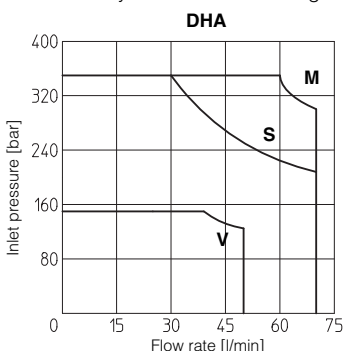
Flow direction	Valve type	
	P → A (1) (P → B)	A → T (B → T)
DLOH-2A	B	-
DLOH-2C	C	-
DLOH-3A	D	C
DLOH-3C	C	A
DLOK-3A	G	F
DLOK-3C	F	E



(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 Max pressure in port T = 210 bar

11 MODEL CODE OF PRESSURE RELIEF VALVES

AGAM - 20 / 2 0 /210/100/100 / PA - NPT - AO / O 24 DC ** /*

AGAM = pressure relief valve: subplate mounting, see tab. C066
ARAM = pressure relief valve: threaded connections, see tab. C045

Valve size for AGAM: **10** (ISO 6264) **20** = G 3/4" **32** (ISO 6264) for ARAM: **20** = G 3/4" **32** = G 1 1/4"

Number of the different setting pressure values:
1 = one setting pressure
2 = two setting pressure
3 = three setting pressure

Valve configuration
0 = venting with de-energized solenoid
1 = venting with energized solenoid
2 = without venting

Max regulated pressure of first (second / third) setting see section 12

Optional cable gland:
PA = with threaded cable clamp, see section 27

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

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
 Low temperature execution:
BT = low temperature -40°C (1)
 Series number

Voltage Code, see section 2

Options:
7 = for ambient temperature up to 70°C
E = external pilot
O = horizontal cable entrance (1)
V = regulating handwheel
WP = prolonged manual override protected by metallic cap (only for -A)
Y = external drain (not for DPZA)

Certification type:
AO = Group II, ATEX
AO/M = Group I, ATEX (mining)
AO/RU = Group II, Rostechznadzor (Russian)

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)

12 HYDRAULIC CHARACTERISTICS

Valve model	AGAM-10	AGAM-20	AGAM-32
Setting		50; 100; 210; 350	
Pressure range [bar]		4÷50; 6÷100; 7÷210; 8÷350	
Max flow [l/min]	200	400	600

13 MODEL CODE OF COVERS FOR CARTRIDGE VALVES

LIDEW - 1 / PA - GK - AO - O 24DC ** /*

Cover type:
LIDBH* = with solenoid valve and shuttle valve for pilot selection
LIDEW* = with solenoid valve for pilot selection
 * = valve configuration (see H030 section 2)

Size (ISO 7368)
1 = 16; **4** = 40; **8** = 80 (only for LIDEW);
2 = 25; **5** = 50;
3 = 32; **6** = 63;

Optional cable gland:
PA = with threaded cable gland, see section 27

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)

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

Optional different provision or setting of the calibrated plugs in the pilot channels see table H030 sect. 6

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
 Low temperature execution:
BT = low temperature -40°C (1)

Design number

Voltage code - see section 2

Options:
7 = for ambient temperature up to 70°C
B = cartridge piloted via port "B" of solenoid pilot valve
E = external attachments X (1/4" GAS) and underneath port X supplied plugged (only for sizes 40...80)
O = horizontal cable entrance (1)
WP = prolonged manual override protected by metallic cap

Note: for the code of the ISO cartridge to use with the above covers see tab. H003, section 2 and tab. H030, section 3.
 (1) Not for group I, ATEX (mining)

14 HYDRAULIC SYMBOLS

15 MODEL CODE OF PROPORTIONAL DIRECTIONAL VALVES

DHZA - / * - T - 0 7 1 - L 5 / PA - GK / 7 / ** / *

<p>DHZA = size 06 DKZA = size 10 DPZA = size 10 = size 16 = size 25</p> <p>Optional certifications (omit for Group II ATEX) M = Group I, ATEX (mining) RU = Group II, Rostechnadzor (Russian)</p> <p>A = without integral position transducer T = with integral position transducer (not for DPZA)</p> <p>Valve size (ISO 4401) DHZO DKZA and DPZA 0 = size 06 1 = size 10 2 = size 16 3 = size 25</p> <p>Configuration, DHZA and DKZA see section 16, DPZA see section 17 5 = external plus central position, spring centered 7 = 3 position, spring centered</p> <p>Spool overlapping in central position, DHZA and DKZA see section 16, DPZA see section 17 1 = P, A, B, T positive overlapping 3 = P positive overlapping; A, B, T, negative</p> <p>Spool type L = linear; S = progressive; D = as S, but with P-A = Q, P-B = Q/2</p>	<p>Synthetic fluids: WG = water-glycol PE = phosphate ester Low temperature execution: BT = low temperature -40°C (1)</p> <p>Series number</p> <p>Options: 7 = for ambient temperature up to 70°C B = solenoid at side of port A (only for single solenoid valves) C = position transducer with current feedback 4-20 mA - (only for -T) D = internal drain (only for DPZA) E = external pilot (only for DPZA) G = pressure reducing valve for piloting (only for DPZA) O = horizontal cable entrance (only for -A) (1) WP = prolonged manual override protected by metallic cap (only for -A) Y = external drain (only for DHZA and DKZA)</p> <p>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)</p> <p>Optional cable gland: PA = with threaded cable gland, see section 17</p> <p>Spool size: DHZA and DKZA see section 16, DPZA see section 17</p>
--	---

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

16 HYDRAULIC CHARACTERISTICS of DHZA and DKZA (based on mineral oil ISO VG 46 at 50 °C)

Hydraulic symbols	*71, *71/B	*73, *73/B	*51	*53	*51/B	*53/B
Valve model	DHZA				DKZAR	
Spool overlapping	1, 3		1, 3		1, 3	
Spool type and size	L14		L1		S3, L3	
Pressure limits [bar]	ports P, A, B = 350; T = 160 (250 with external drain /Y)				ports P, A, B = 315; T = 160 (250 with external drain /Y)	
Δp max P-T [bar]	70	70	50	50	40	40
Max flow [l/min]						
at Δp = 10 bar (P-T)	1	4,5	17	28	45	60
at Δp = 30 bar (P-T)	2	8	30	50	80	105
at Δp max (P-T)	3	12	45	60	100	110
Response time (1) [ms]	< 30 (-A) < 15 (-T)				< 40 (-A) < 20 (-T)	
Hysteresis [%]	≤ 5%(-A) ≤ 0,2% (-T)				≤ 5%(-A) ≤ 0,2% (-T)	
Repeatability	± 1% (-A) ± 0,1% (-T)				± 1% (-A) ± 0,1% (-T)	

(1) Response times at step signal (0%→100%) are measured from 10% to 90% of step value and are strictly referred to the valve regulation.

17 HYDRAULIC CHARACTERISTICS OF DPZA (based on mineral oil ISO VG 46 at 50 °C)

Hydraulic symbols	*71, *71/B	*73	*51	*53	*51/B	*53/B						
Valve model	DPZA-1			DPZA-2			DPZA-3					
Spool type and size	L5	S5	D5	S3	D3	L5	S5	D5	L5	S5	D5	
Pressure limits [bar]	Ports P, A, B, X = 350; T = 250; Y = 0											
Max flow [l/min]												
at Δp = 10 bar	100	100	100 : 60	130	130 : 80	200	180	180 : 130	390	360	360 : 220	
at Δp = 30 bar	160	160	160 : 100	225	225 : 135	340	310	310 : 225	680	620	620 : 380	
at Δp max = (...) bar	190 (350)	190 (350)	190 (350)	500 (150)	500 (150)	710 (130)	640 (130)	640 (130)	1350 (120)	1250 (120)	1250 (120)	
Response time (1) [ms]	< 80			< 100			< 120					
Hysteresis [%]	≤ 5%			≤ 5%			≤ 5%					
Repeatability	± 1%			± 1%			± 1%					

(1) Response times at step signal (0%→100%) are measured from 10% to 90% of step value and are strictly referred to the valve regulation.

ELECTRONIC DRIVERS TO BE USED WITH EX-PROOF PROPORTIONAL VALVES

- Atos driver for proportional valves type -A (without transducer): **E-ME-AC**, see tab. G035
- Atos driver for proportional valves type -T (with transducer): **E-ME-T**, see tab. G140

18 MODEL CODE OF SERVOPROPORTIONAL VALVES

DLHZA

/ * - T - 0 7 1 - L 5 3 / PA - GK / 7 / ** / *

DLHZA = size 06
DLKZAR = size 10

Optional certifications (omit for Group II ATEX)

M = Group I, ATEX (mining)
RU = Group II, Rostechznadzor (Russian)

T = with integral position transducer (not for DPZA)

Valve size (ISO 4401)

0 = size 06 (DHZA)
1 = size 10 (DLKZA)

Configuration, see section 19

4 = external plus central position, spring centered
6 = 3 position, spring centered

Spool overlapping in central position, see section 19

0 = P, A, B, T positive overlapping

Spool type

L = linear; **T** = not linear;

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

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
Low temperature execution:
BT = low temperature -40°C (1)

Series number

Options:

7 = for ambient temperature up to 70°C
B = solenoid at side of port A
C = position transducer with current feedback 4-20 mA - (only for -T)
Y = external drain

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)

Optional cable gland:

PA = with threaded cable gland, see section 27

Fail safe configuration:

1 = A, B, P, T blocked **3** = A, blocked; B, P, T tank connected

Spool size: see section 19

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

Hydraulic symbols									
Valve model	DLHZA-T*				DLKZAR-T*				
Pressure limits [bar]	ports P, A, B = 350; T = 160 (250 with external drain Y)				ports P, A, B = 315; T = 160 (250 with external drain Y)				
Spool	L1	L3	L5 T5	L7 T7	L3	L7	T7		
Δp max P-T [bar]	70	70	70	70	60		60		
Max flow at Δp = 30 bar [l/min]	4,5	9	18	27	40		60		
at Δp max bar	7	14	28	40	55		80		
Leakage [cm³/min] at P = 100 bar (1)	< 200	< 300	< 500	< 200	< 900	< 200	< 1000	< 1500	< 400
Response time (2) [ms]	≤ 10				≤ 15				
Hysteresis [%]	≤ 0,1%				≤ 0,1%				
Thermal drift	zero point displacement < 1% at ΔT = 40°C								

(1) Referred to spool in center position and 50°C oil temperature.

(2) Response times at step signal (0%→100%) are measured from 10% to 90% of step value and are strictly referred to valve regulation.

20 MODEL CODE OF PRESSURE COMPENSATED PROPORTIONAL FLOW CONTROL VALVES

QVHZA

/ * - T - 06 / 12 / PA - GK / * 24DC ** / *

Pressure compensated, flow control valve:

QVHZA = see tab. F410
QVKZA = see tab. F410

Optional certifications (omit for Group II ATEX)

M = Group I, ATEX (mining)
RU = Group II, Rostechznadzor (Russian)

A = without position transducer
T = with integral position transducer

Valve size (ISO 4401)

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

Max regulated flow:

QVHZA: **3** = 3,5 l/min; **12** = 12 l/min; **18** = 18 l/min;
36 = 36 l/min; **45** = 45 l/min;
QVKZA: **65** = 65 l/min; **90** = 90 l/min

Optional cable gland:

PA = with threaded cable clamp, see section 27

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

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
Low temperature execution:
BT = low temperature -40°C (1)

Series number

24 = with 24 Vdc coils instead of standard 12 Vdc coils

Options:

7 = for ambient temperature up to 70°C
C = current feedback signal 4-20 mA (only for -T versions)
D = quick venting (only for -A versions)
O = horizontal cable entrance (1)
WP = prolonged manual override protected by metallic cap (only for valves without transducer)

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)

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	QVHZO-A				QVHZO-T				QVKZA-A		QVKZA-T			
Valve size	06				06				10		10			
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	
Max flow on port A [l/min]	40				35	50				50				

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 / * - A - 010 / 250 / PA - GK /* 24DC ** /*

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

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 27

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
 Low temperature execution:
BT = low temperature -40°C(2)

Series number

24 = with 24 Vdc coils instead of standard 12 Vdc coils

Options:
7 = for ambient temperature up to 70° C
E = external pilot (only for AGMZA)
O = horizontal cable entrance (2)
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) 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	1	2	3	4	5			
Valve size	06			10	20	32	16	25	32	40	50	63	16	25	32	40	50			
Max regulated pressure [bar]				80;			180;			350										
Max pressure at port P, A, B, X [bar]										315										
Max pressure at port T, Y [bar]										210										
Max flow [l/min]	4	40	40	200	400	600	200	400	750	1000	2000	3000	200	400	750	1000	2000			

24 MODEL CODE OF PROPORTIONAL PRESSURE REDUCING VALVES

RZGA / * - A - 010 / 250 / PA - GK /* 24DC ** /*

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

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

A = without integral 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 27

Synthetic fluids:
WG = water-glycol
PE = phosphate ester
 Low temperature execution:
BT = low temperature -40°C (1)

Series number

24 = with 24 Vdc coils instead of standard 12 Vdc coils

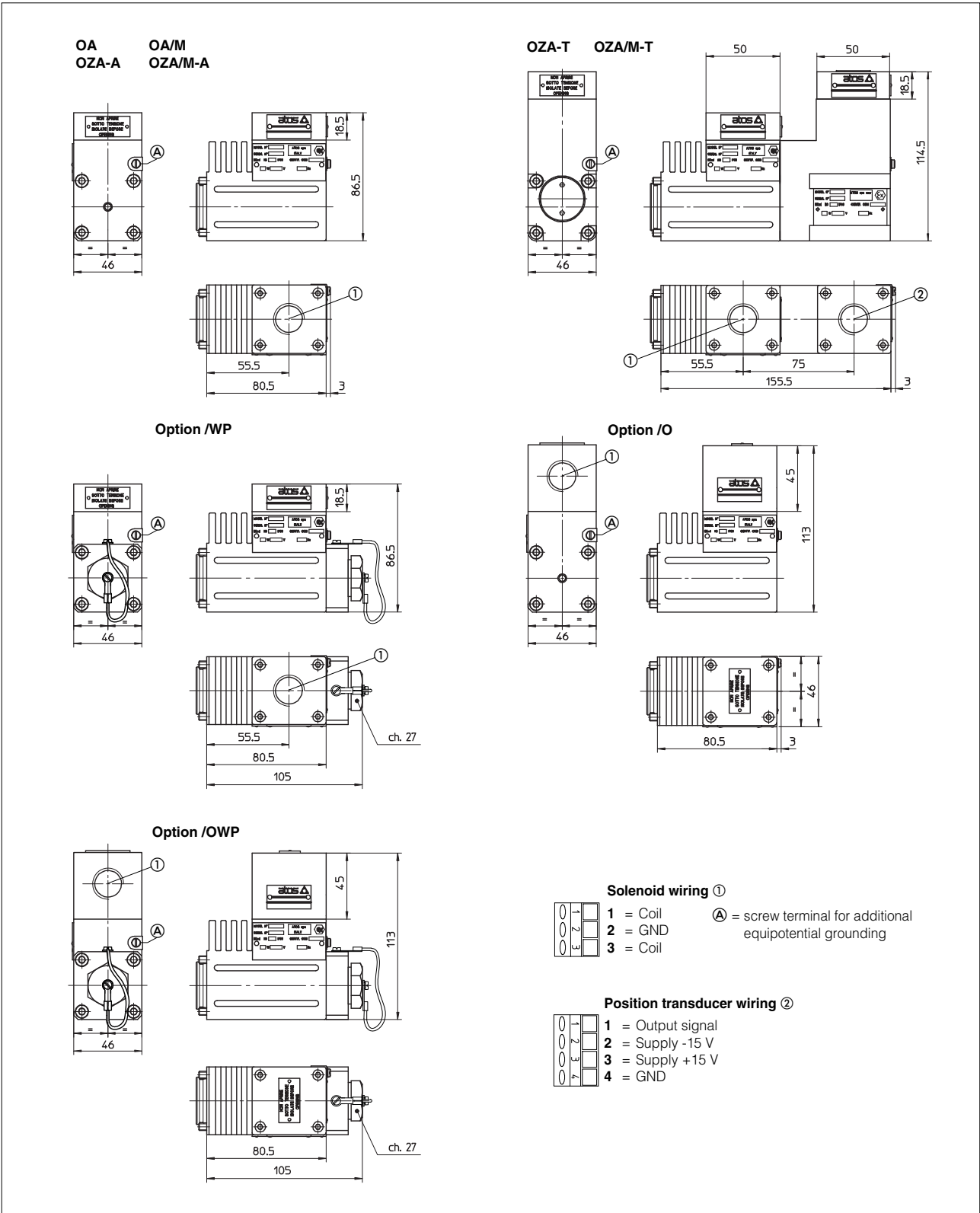
Options:
7 = for ambient temperature up to 70° C
E = external pilot (only for AGRCZA)
O = horizontal cable entrance (1)
P = with integral mechanical pressure limiter (only for AGRCZA and LIRZA)
R = with check valve (only for AGRCZA)

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) Not for group I, ATEX (mining)

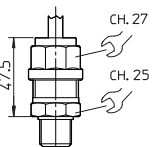
25 HYDRAULIC CHARACTERISTICS

Valve model	RZGA		HZGA	KZGA	AGRCZA			LIRZA		
Size code	010	033	031	031	10	20	1	2	3	
Valve size	06		10	10	20	16	25	32		
Max regulated pressure [bar]	32; 100; 210		80;		180;			250		
Min regulated pressure [bar]	0,8	1	1	1	1	1	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	320	600	



27 CABLE GLAND

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



The cable glands are available on request certified ATEX according to EN 60079-0 and EN 60079-1, see tab. K500.

Following codes have to be specified for spare cable glands:
SP-PA(M)19/GK = with threaded connection GK-1/2" ISO/UNI-6125 (tapered)
SP-PA(M)19/NPT = with threaded connection 1/2" NPT ANSI B2.1 (tapered)
SP-PA(M)19/M = with threaded connection M20x1,5 UNI-4535 (6H/6g).

This cable gland must be blocked with loctite or similar or with a lock nut.

Note: special cable clamps PA112 (PG12) available on request only as spare parts.

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)