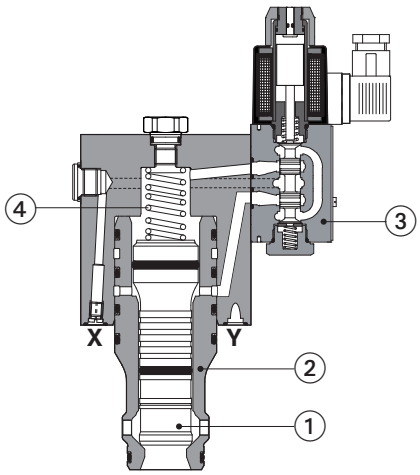
On-off active cartridges type LIDAS, 2-way

directional control



① = main poppet
② = cartridge sleeve
③ = solenoid pilot valve (LIDASH-*)
④ = spring

LIDASH-3231-EX

LIDAS are 2-way ISO cartridge valves with active pilot control, normally used to shut-off the hydraulic line.
The particular poppet sealing grants leak-free characteristics.

The poppet ① is hydraulically operated in both directions, ensuring in this way higher reliability and faster response time respect to the conventional spring operated cartridge valves.
The spring ④ ensures the valve closing in absence of pressure in the system.
They are available in different executions:
LIDAS: without pilot solenoid valve
LIDASH: with on-off pilot solenoid valve

Sizes:**16 to 50** ISO 7368
Max flow up to **2100 l/min** with Δp = 5 bar
Max pressure: up to **420 bar**

1 MODEL CODE

LIDAS	H	-	40	43	3	-	E	X	24DC	**	*

On-off active cartridges, according to ISO 7368

Pilot solenoid valve
- = without pilot solenoid valve
H = with pilot solenoid valve

Size: **16** **25** **32** **40** **50**

Poppet type: see section 2
31, **33**
43 (with damping nose)

3 = spring cracking pressure 3 bar

Only for LIDASH
Voltage code, see section 6

Series number

Seals material:
- = NBR
PE = FKM
BT = HNBR **(1)**

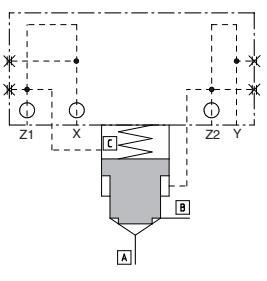
Only for LIDASH
X = without connector
See section 4 for available connectors, to be ordered separately
-00-AC = AC solenoid valve without coils
-00-DC = DC solenoid valve without coils

Only for LIDASH - Pilot solenoid valve:
E = DHE, **Pmax 350 bar**
EP = DHEP, **Pmax 420 bar**
L = DHL, **Pmax 350 bar**

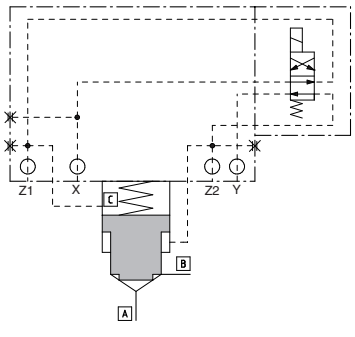
Note: for certified safety version conforming to 2006/42/EC, with inductive position switch (option /FV) see table EY120
(1) Not available for LIMH*-**L**

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

Hydraulic symbols



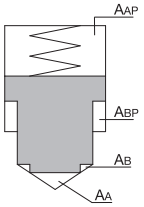
LIDAS



LIDASH

Cartridge areas

AA = main flow (side A)
AB = main flow (side B)
AAP = piloting area (close)
ABP = piloting area (open)



Thanks to the areas ratio AAP/(AA+AB), the valve closing is always ensured with a piloting pressure (X port) equal to the line pressure (A or B line).

3 MAIN CHARACTERISTICS, SEALS AND HYDRAULIC FLUIDS

Assembly position / location			Any position								
Subplate surface finishing			Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)								
MTTFd valves according to EN ISO 13849			LIDAS = 150 years LIDASH = 75 years								
Compliance			CE to Low Voltage Directive 2014/35/EU RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006								
Flow direction			B → A (preferred) or A → B								
Piloting		**LIDAS**	Pressure to **X** = **close** Pressure to **Y** = **open**								
		LIDASH	De-energized = **close** Energized = **open**								
Operating pressure	LIDAS		Ports A, B, X, Z_1, Z_2, Y: **420** bar								
	LIDASH	Pilot valve **E, L**	Ports A, B, X, Z_1, Z_2: **350** bar Port Y: **210** bar for DC version; **160** bar for AC version								
		Pilot valve **EP**	Ports A, B, X, Z_1, Z_2: **420** bar Port Y: **210** bar for DC version; **160** bar for AC version								
Size			**16**		**25**		**32**		**40**		**50**	
Maximum flow at Δp = 5 bar [l/min]		Poppet **31**	240		450		700		1400		2100	
		Poppet **33**	220		400		600		1300		2000	
		Poppet **43**	200		360		550		1100		1800	
Poppet characteristics		Poppet type	**31**	**33, 43**	**31**	**33, 43**	**31**	**33, 43**	**31**	**33, 43**	**31**	**33, 43**
A_A [cm²]			2,27	1,43	4,91	3,46	8,04	5,30	12,56	8,04	19,63	13,85
A_B (% of A_A)			0	58,6	0	41,7	0	51,5	0	56,3	0	41,7
A_{BP} (% of A_A)			67,5	107,0	63,8	90,5	56,3	85,2	56,3	87,9	69	97,8
A_{AP} (% of A_A)			167,5	265,6	163,8	232,2	156,3	236,7	156,3	244,1	169	239,2
A_A / (A_A + A_B) poppet ratio			1 for poppet **31** 0,6 for poppet **33, 43**									
A_{AP} / (A_A + A_B) piloting ratio			1,6 for poppet **31** 1,6 for poppet **33, 43**									

3.1 Coils characteristics (only for LIDASH)

Insulation class	**H** (180°C) for DC coils **F** (155°C) for AC coils Due to the occuring surface temperatures of the solenoid coils, the European standards EN ISO 13732-1 and EN ISO 4413 must be taken into account
Protection degree to DIN EN 60529	**IP 65** (with connectors 666, 667, 669 correctly assembled)
Relative duty factor	100%
Supply voltage and frequency	See electric feature 6
Supply voltage tolerance	± 10%
Certification	**cURus** North American Standard (not for **-L**)

4 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	15÷100 mm²/s - max allowed range 2,8 ÷ 500 mm²/s		
Max fluid contamination level	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog		
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 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 - the connectors must be ordered separately

Code of connector	Function
666	Connector IP-65, suitable for direct connection to electric supply source
667	As 666 connector IP-65 but with built-in signal led, suitable for direct connection to electric supply source.
669	With built-in rectifier bridge for supplying DC coils by alternating current (AC 110V and 230V - Imax 1A).

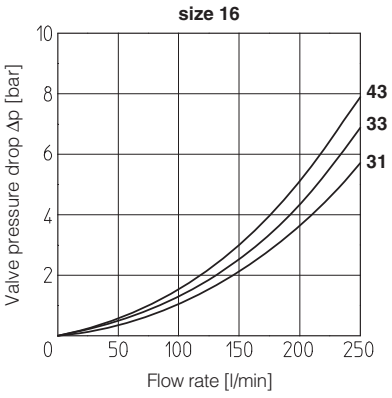
For other available connectors, see tab. K800

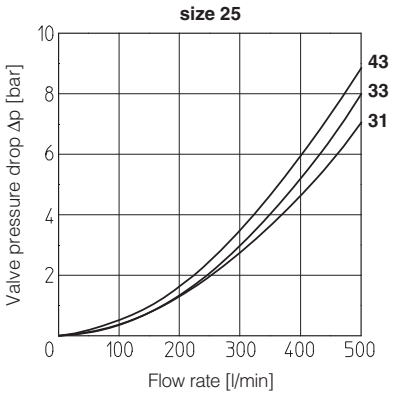
6 ELECTRIC FEATURES

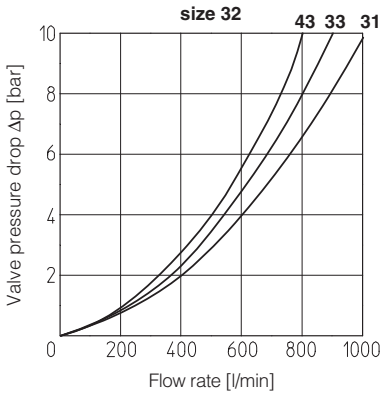
Solenoid valve type	External supply nominal voltage ± 10% (1)		**Voltage code**	Type of connector	Power consumption (3)	Code of spare coil DHE, DHEP	Code of spare coil DHL
DHE DHEP DHL	DC	12 DC 24 DC 110 DC 220 DC	**12 DC** **24 DC** **110 DC** **220 DC**	666 or 667	29 W (DHL) 30 W (DHE, DHEP)	COE-12DC COE-24DC COE-110DC COE-220DC	COL-12DC COL-24DC COL-110DC COL-220DC
	AC	110/50 AC (2) 115/60 AC 120/60 AC 230/50 AC (2) 230/60 AC	**110/50/60 AC** **115/60 AC** **120/60 AC** **230/50/60 AC** **230/60 AC**	666 or 667	58 VA (4)	COE-110/50/60AC COE-115/60AC COE-230/50/60AC COE-230/60AC	COL-110/50/60AC COL-115/60AC COL-230/50/60AC COL-230/60AC

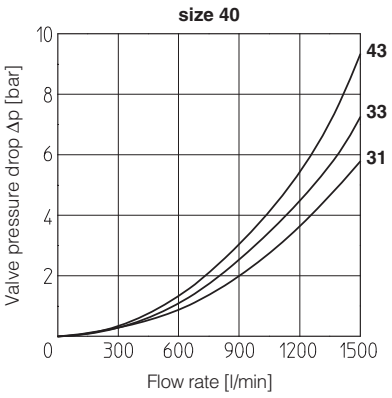
(1) For other supply voltages available on request see technical tables E015, E030, E018.
(2) Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 10÷15% and the power consumption is 55 VA for DHL and 52VA for DHE and DHEP
(3) Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.
(4) When solenoid is energized, the inrush current is approx 3 times the holding current. Inrush current values correspond to a power consumption of about 150 VA.

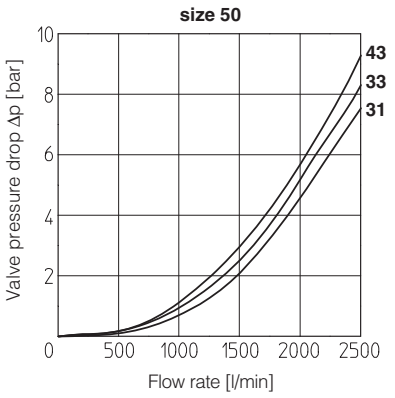
7 Q/Δp DIAGRAMS based on mineral oil ISO VG 46 at 50 °C





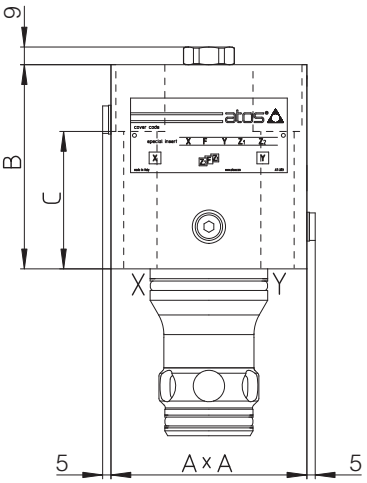




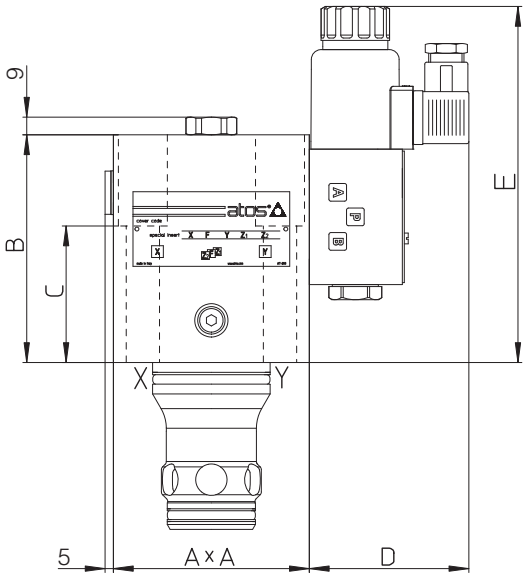


31 = poppet type 31
33 = poppet type 33
43 = poppet type 43

8 INSTALLATION DIMENSIONS [mm]



LIDAS						
Size	A	B	C	Fastening bolts class 12.9	connection port X, Y, Z1, Z2	Weight (Kg)
16	65	85	64	N°4 M8x80 35 Nm	G1/8"	2,8
25	85	102	75	N°4 M12x95 125 Nm	G1/8"	5,7
32	100	104	70	N°4 M16x90 300 Nm	G3/8"	7,3
40	125	111	39	N°4 M20x70 600 Nm	G3/8"	14,5
50	140	135	49	N°4 M20x80 600 Nm	G3/8"	19,5



LIDASH									
Size	A	B	C	D max	E max	Fastening bolts class 12.9	connection port X	connection port Z1, Z2	Weight (Kg)
16	72x65	95	64	86	167	N°4 M8x80 35 Nm	G1/8"	G1/8"	4,4
25	85	115	77	86	181	N°4 M12x95 125 Nm	G1/8"	G1/8"	7,3
32	100	116	70	86	192	N°4 M16x90 300 Nm	G3/8"	G1/8"	8,9
40	125	125	39	86	196	N°4 M20x70 600 Nm	G3/8"	G1/8"	15,6
50	140	135	49	86	202	N°4 M20x80 600 Nm	G3/8"	G1/8"	20,6

Note: for mounting interface and cavity dimensions, see tech. table P006