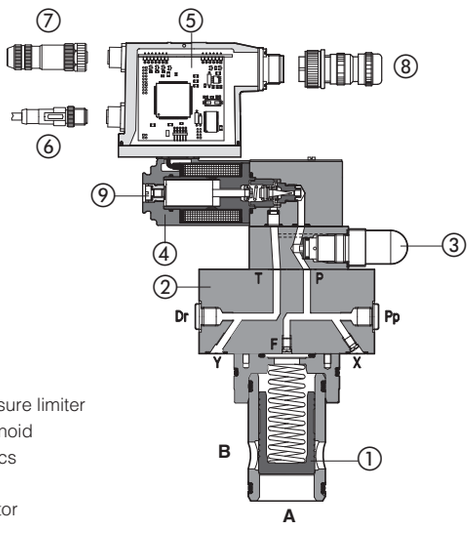
Proportional pressure control cartridges

digital, open loop - compensator, relief, reducing functions



① Poppet
② Cover
③ Mechanical pressure limiter
④ Proportional solenoid
⑤ Integral electronics
⑥ USB connector
⑦ Fieldbus connector
⑧ Main connector
⑨ Screw for air blending

LIMZO-AES-BC-4

LICZO, LIMZO and LIRZO

2-way digital proportional cartridge valves respectively performing: pressure compensator, relief and reducing open loop functions.

Executions:

- **A** without integral driver, to be coupled with separated driver, see section 3
- **AEB** with basic integral digital electronic driver, analog reference signals and USB port for software functional parameters setting
- **AES** with full integral digital electronic driver and fieldbus interface for functional parameters setting, reference signals and real-time diagnostics

The integral digital electronic driver performs the valve's hydraulic regulation according to the reference signal and assures valve-to-valve interchangeability thanks to the factory presetting

Size: **16 to 80**
Max flow: up to **4500 l/min**
Max pressure: **350 bar**

1 MODEL CODE FOR COVERS

LIMZO	-	A	EB	-	NP	-	3	/	315	/	*	/	*	**	/	*

LIMZO
Proportional cartridge valves
LICZO = pressure compensator
LIMZO = pressure relief
LIRZO = pressure reducing

A = open loop pressure control

- = omit for execution with separated driver see section 3
EB = basic integral driver
ES = full integral driver

Fieldbus interfaces USB port always present **(1)**
NP = Not present **BP** = PROFIBUS DP
BC = CANopen **EH** = EtherCAT

Valve size ISO 7368:
1 = 16; **2** = 25; **3** = 32; **4** = 40; **5** = 50 (not for LIRZO)
6 = 63; (only for LIMZO) **8** = 80; (only for LIMZO)

Max regulated pressure:
50 = 50 bar **210** = 210 bar
100 = 100 bar **315** = 315 bar **350** = 350 bar

Hydraulic options:
P =with integral mechanical pressure limiter (standard for size 1, 2 and 3)

Electronics options
only for **AEB** and **AES** - see section 12 :
I = current reference input and monitor 4÷20 mA (omit for standard voltage reference input 0÷10 V)
Q = enable signal
Z = double power supply, enable, fault and monitor signals - 12 pin connector

Coil voltage only for **A** - see sect. 11 :
- = standard coil for 24V$_{DC}$ Atos drivers
6 = optional coil for 12V$_{DC}$ Atos drivers
18 = optional coil for low current drivers

Series number

Seals material, see sect. 6, 7:
- = NBR
PE = FKM
BT = HNBR

(1) Omit for **A** execution; **AEB** available only in version **NP**; **AES** available only in version **BC**, **BP**, **EH**

2 MODEL CODE FOR CARTRIDGES

SC LI	-	32	31	2	**	/	*

SC LI
Cartridge according to ISO 7368

Size: **16**; **25**; **32**; **40**; **50**; **63**; **80**

Type of cartridge, see section 3 for functions
31 = for LIMZO and LICZO
36 = for LICZO
37 = for LIRZO

Spring cracking pressure:
2 = 1,5 bar for poppet 31
3 = 3 bar **6** = 6 bar for poppet 31 and 36
4 = 4 bar **7** = 7 bar for poppet 37

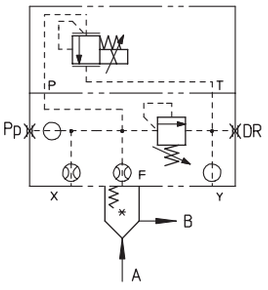
Series number

Seals material, see sect. 6, 7:
- = NBR
PE = FKM

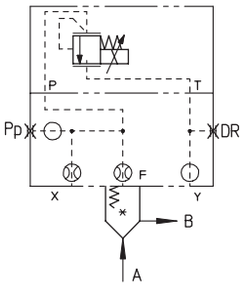
Hydraulic symbols

LICZO

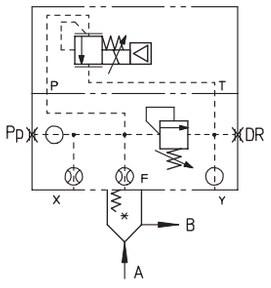
LICZO-A-1÷3
LICZO-A-4÷5 /P



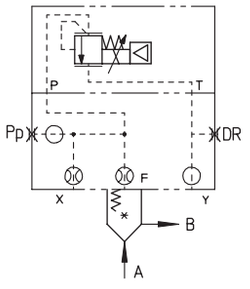
LICZO-A-4
LICZO-A-5



LICZO-AEB(AES)-1÷3
LICZO-AEB(AES)-4÷5 /P

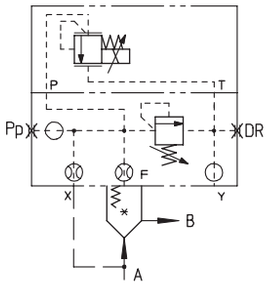


LICZO-AEB(AES)-4÷5

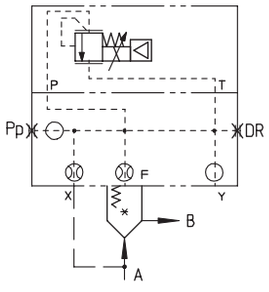


LIMZO

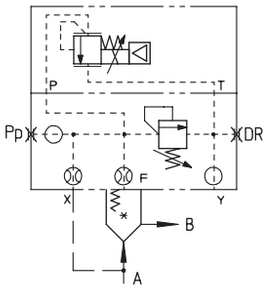
LIMZO-A-1÷3
LIMZO-A-4÷8 /P



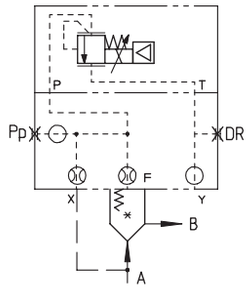
LIMZO-A-4÷8



LIMZO-AEB(AES)-1÷3
LIMZO-AEB(AES)-4÷8 /P

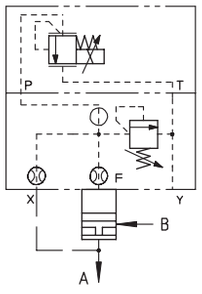


LIMZO-AEB(AES)-4÷8

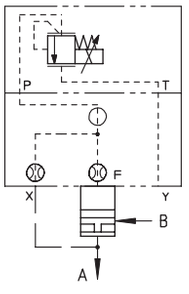


LIRZO

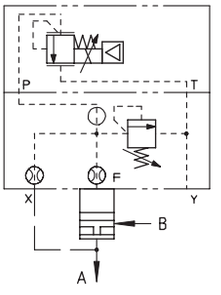
LIRZO-A-1÷3
LIRZO-A-4 /P



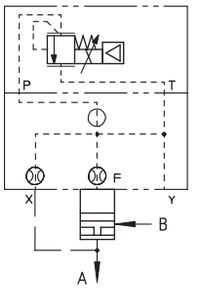
LIRZO-A-4



LIRZO-AEB(AES)-1÷3
LIRZO-AEB(AES)-4 /P



LIRZO-AEB(AES)-4



3 ELECTRONIC DRIVERS

Valve model	A							AEB	AES
Drivers model	E-MI-AC-01F	E-BM-AC-01F	E-ME-AC-01F	E-RP-AC-01F	E-MI-AS-IR	E-BM-AS-PS	E-BM-AES	E-RI-AEB	E-RI-AES
Type	Analog				Digital				
Format	plug-in to solenoid	DIN 43700 UNDECAL	EUROCARD	sealed and rugged box	plug-in to solenoid	DIN-rail panel		Integral to valve	
Data sheet	G010	G025	G035	G100	G020	G030	GS050	GS115	

Note: for main and communication connector see sections 15 , 16

4 GENERAL NOTES

LICZO-A*, LIMZO-A* and LIRZO-A* proportional valves are CE marked according to the applicable Directives (e.g. Immunity/Emission EMC Directive and Low Voltage Directive). Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in table F003 and in the installation notes supplied with relevant components.

5 FIELDBUS - only for **AES**

Fieldbus allows the direct communication of the proportional valve with machine control unit for digital reference signal, diagnostics and settings of functional parameters. Analog reference signal remain available on the main connector for quick commissioning and maintenance. For detailed information about fieldbus features and specification see tech table **GS510**.

6 MAIN CHARACTERISTICS - based on mineral oil ISO VG 46 at 50 °C

Assembly position	Any position			
Subplate surface finishing	Roughness index, Ra 0,4 flatness ratio 0,01/100 (ISO 1101)			
MTTFd valves according to EN ISO 13849	150 years, see technical table P007			
Ambient temperature range	**A**: **standard** = -20°C ÷ +70°C, **/BT** option = -40°C ÷ +60°C **AEB, AES**: **standard** = -20°C ÷ +60°C, **/BT** option = -40°C ÷ +60°C			
Storage temperature range	**A**: **standard** = -20°C ÷ +80°C, **/BT** option = -40°C ÷ +70°C **AEB, AES**: **standard** = -20°C ÷ +70°C, **/BT** option = -40°C ÷ +70°C			
Coil resistance R at 20°C	Standard = 3 ÷ 3,3 Ω	Option /6 = 2 ÷ 2,2 Ω	Option /18 = 13 ÷ 13,4 Ω	
Max. solenoid current	Standard = 2,6 A	Option /6 = 3,25 A	Option /18 = 1,5 A	
Max. power	**A** = 30 Watt	**AEB, AES** = 50 Watt		
Insulation class	H (180°) Due to the occuring surface temperatures of the solenoid coils, the European standards ISO 13732-1 and EN982 must be taken into account			
Protection degree to DIN EN60529	IP66/67 with mating connectors			
Tropicalization (only AEB, AES)	Tropical coating on electronics PCB			
Duty factor	Continuous rating (ED=100%)			
EMC, climate and mechanical load	See technical table G004			
Communication interface (only AEB, AES)	USB Atos ASCII coding	CANopen EN50325-4 + DS408	PROFIBUS DP EN50170-2/IEC61158	EtherCAT IEC 61158
Communication physical layer (only AEB, AES)	not insulated USB 2.0 + USB OTG	optical insulated CAN ISO11898	optical insulated RS485	Fast Ethernet, insulated 100 Base TX

Valve model		**LICZO**					**LIMZO**							**LIRZO**			
Valve size		**16**	**25**	**32**	**40**	**50**	**16**	**25**	**32**	**40**	**50**	**63**	**80**	**16**	**25**	**32**	**40**
Max flow	[l/min]	200	400	750	1000	2000	200	400	750	1000	2000	3000	4500	160	300	550	800
Min regulated pres. at port A	[bar]	9	8,5	8	13	15	7	7	7	10,5	12	12	**(2)**	7			
Min regulated pres. at port A for /350	[bar]	11	10	10	13	16	10	10	9	12	13	13	16	12			
Max regulated pres. at port A	[bar]	100; 210; 315; 350					100; 210; 315; 350							100; 210; 315; 350			
Response time 0-100% step signal **(1)** (depending on installation)	[ms]	100÷400					100÷450							100÷350			
Hysteresis	[% of regulated max pres.]	≤ 2					≤ 1,5							≤ 2			
Linearity	[% of regulated max pres.]	≤ 3					≤ 3							≤ 3			
Repeatibility	[% of regulated max pres.]	≤ 2					≤ 2							≤ 2			

Notes: above performance data refer to valves coupled with Atos electronic drivers, see section 3

(1) 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

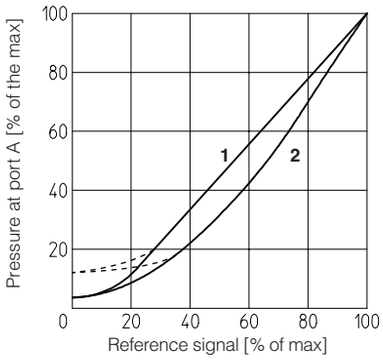
(2) consult our technical office

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

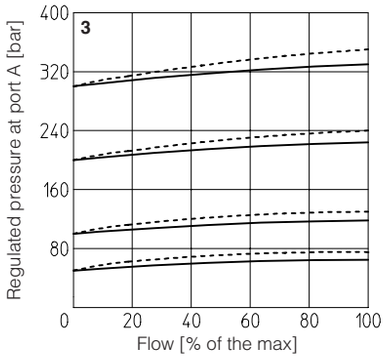
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	20÷100 mm²/s - max allowed range 15 ÷ 380 mm²/s		
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, achievable with in line filter - 10 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	

8 DIAGRAMS (based on mineral oil ISO VG 46 at 50 °C)

1 Regulation diagrams LIMZO
2 Regulation diagrams LICZO
- - - - dotted line = /350



3 Pressure/flow diagrams LICZO, LIMZO
- - - - dotted line = /350

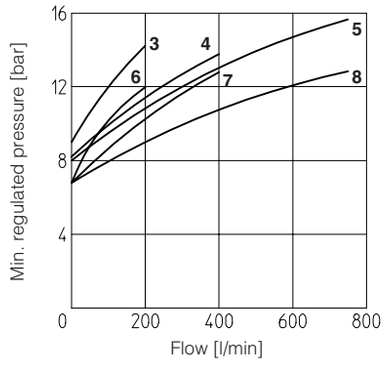


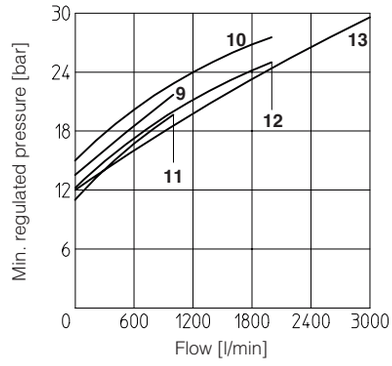
4-14 Min. pressure/flow diagrams
with zero reference signal

4 = LIMZO-*-1
5 = LIMZO-*-2
6 = LIMZO-*-3
12 = LIMZO-*-4
13 = LIMZO-*-5
14 = LIMZO-*-6

7 = LICZO-*-1
8 = LICZO-*-2
9 = LICZO-*-3
10 = LICZO-*-4
11 = LICZO-*-5

Note: for LIMZO-*-8 consult our technical office



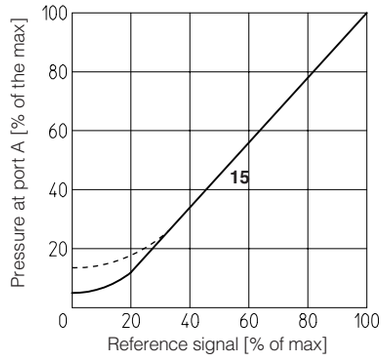


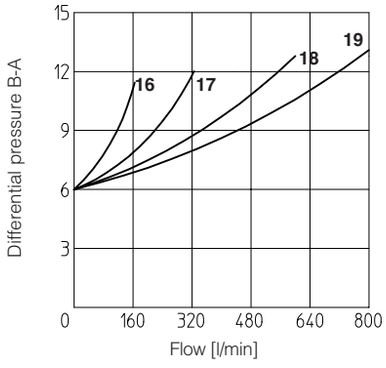
Regulation diagrams LIRZO

15 = LIRZO-A, LIRZO-AEB, LIRZO-AES

16-19 Min. pressure/flow diagrams
with reference signal “null”

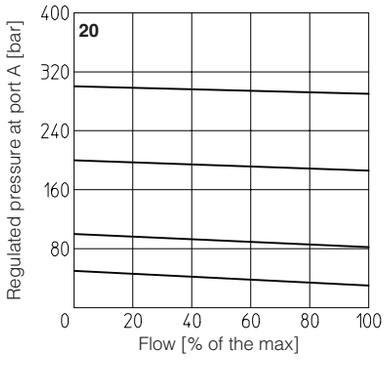
16 = LIRZO-*-1
17 = LIRZO-*-2
18 = LIRZO-*-3
19 = LIRZO-*-4
- - - - - dotted line = /350





Pressure/flow diagrams

20 = LIRZO-A, LIRZO-AE, LIRZO-AES

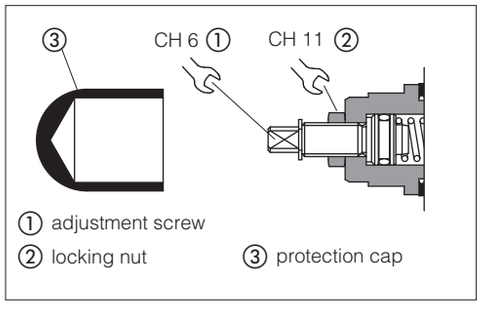


9 HYDRAULIC OPTIONS

9.1 Option /P - integral mechanical pressure limiter (standard for size 1, 2 and 3)

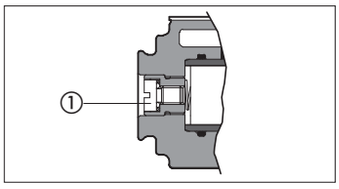
The LICZO-A*, LIMZO-A* and LIRZO-A* standard size 1, 2, 3 and option /P are provided with mechanical pressure limiter acting as protection against overpressure. For safety reasons the factory setting of the mechanical pressure limiter is fully unloaded (min pressure).
At the first commissioning it must be set at a value lightly higher than the max pressure regulated with the proportional control.
For the pressure setting of the mechanical pressure limiter, proceed according to following steps:

- apply the max reference input signal to the valve’s driver. The system pressure will not increase until the mechanical pressure limiter remains unloaded.
- turn clockwise the adjustment screw ① until the system pressure will increase up to a stable value corresponding to the pressure setpoint at max reference input signal.
- turn clockwise the adjustment screw ① of additional 1 or 2 turns to ensure that the mechanical pressure limiter remains closed during the proportional valve working.



10 AIR BLEEDING

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



11 OPTIONS for -A

8.1 Coil voltage

Option /6 optional coil to be used with Atos drivers with power supply 12 VDC
Option /18 optional coil to be used with electronic drivers not supplied by Atos

12 ELECTRONIC OPTIONS - for **AEB** and **AES**

Standard driver execution provides on the 7 pin main connector:

Power supply - 24VDC must be appropriately stabilized or rectified and filtered; a 2,5 A fuse time lag is required in series to each driver power supply. Apply at least a 10000 μF/40 V capacitance to single phase rectifiers or a 4700 μF/40 V capacitance to three phase rectifiers

Reference input signal - analog differential input with 0÷+10 VDC nominal range (pin D,E), proportional to desired valve pressure regulation

Monitor output signal - analog output signal proportional to the actual valve's coil current (1V monitor = 1A coil current)

Note: a minimum booting time of 500 ms has be considered from the driver energizing with the 24 VDC power supply before the valve has been ready to operate. During this time the current to the valve coils is switched to zero.

12.1 Option /I

It provides 4 ÷ 20 mA current reference signal, instead of the standard 0÷+10 VDC.

Input signal can be reconfigured via software selecting between voltage and current, within a maximum range of ±10 V or ±20 mA.

It is normally used in case of long distance between the machine control unit and the valve or where the reference signal can be affected by electrical noise; the valve functioning is disabled in case of reference signal cable breakage

12.2 Option /Q

To enable the driver, supply 24 VDC on pin C referred to pin B: Enable input signal allows to enable/disable the current supply to the solenoid, without removing the electrical power supply to the driver; it is used to maintain active the communication and the other driver functions when the valve has to be disabled. This condition does not comply with European Norms EN13849-1 (ex EN954-1).

12.3 Option /Z

It provides, on the 12 pin main connector, the following additional features:

Enable Input Signal

To enable the driver, supply 24 VDC on pin 3 referred to pin 2: Enable input signal allows to enable/disable the current supply to the solenoid, without removing the electrical power supply to the driver; it is used to maintain active the communication and the other driver functions when the valve has to be disabled. This condition does not comply with European Norms EN13849-1 (ex EN954-1).

Fault Output Signal

Fault output signal indicates fault conditions of the driver (solenoid short circuits/not connected, reference signal cable broken for 4÷20mA input, etc.). Fault presence corresponds to 0 VDC, normal working corresponds to 24 VDC (pin 11 referred to pin 2): Fault status is not affected by the Enable input signal

Power supply for driver's logics and communication

Separate power supply (pin 9,10) allow to cut solenoid power supply (pin 1,2) while maintaining active diagnostics, serial and fieldbus communication. A safety fuse is required in series to each driver power supply: 500 mA fast fuse.

12.4 Possible combined options: /IQ, /IZ

13 PROGRAMMING TOOLS - see tech table **GS500**

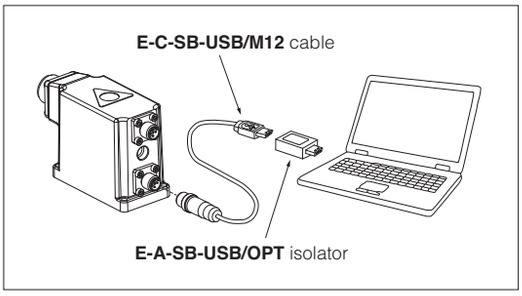
Valve's functional parameters and configurations, can be easily set and optimized using Atos E-SW programming software connected via USB port to the digital driver. For fieldbus versions, the software permits valve's parameterization through USB port also if the driver is connected to the central machine unit via fieldbus.

The software is available in different versions according to the driver's options:

E-SW-BASIC	support:	NP (USB)	PS (Serial)	IR (Infrared)
E-SW-FIELDBUS	support:	BC (CANopen)	BP (PROFIBUS DP)	EH (EtherCAT)
		EW (POWERLINK)		
E-SW-*/PQ	support:	valves with SP, SF, SL alternated control (e.g. E-SW-BASIC/PQ)		

WARNING: drivers USB port is not isolated!
The use of isolator adapter is highly recommended for PC protection (see table **GS500**)

USB connection



14 ELECTRONIC CONNECTIONS

14.1 Main connector signals - 7 pin - **standard** and **/Q** option - **LI*ZO-AEB** and **LI*ZO-AES** (A1)

PIN	Standard	/Q	TECHNICAL SPECIFICATIONS	NOTES
A	**V+**		Power supply 24 VDC Rectified and filtered: VRMS = 20 ÷ 32 VMAX (ripple max 10 % VPP)	Input - power supply
B	**V0**		Power supply 0 VDC	Gnd - power supply
C	**AGND**		Analog ground	Gnd - analog signal
		ENABLE	Enable (24 VDC) or disable (0 VDC) the driver, referred to V0	Input - on/off signal
D	**INPUT+**		Pressure reference input signal: ±10 VDC / ±20 mA maximum range Defaults are 0 ÷ 10 VDC for standard and 4 ÷ 20 mA for /I option	Input - analog signal **Software selectable**
E	**INPUT-**		Negative reference input signal for P_INPUT+	Input - analog signal
F	**MONITOR** referred to: AGND | V0		Pressure monitor output signal: ±5 VDC maximum range Default is 0 ÷ 5 VDC (1V = 1A)	Output - analog signal **Software selectable**
G	**EARTH**		Internally connected to driver housing	

14.2 Main connector signals - 12 pin - **/Z** option - **LI*ZO-AEB** and **LI*ZO-AES** (A2)

PIN	/Z	TECHNICAL SPECIFICATIONS	NOTES
1	**V+**	Power supply 24 VDC Rectified and filtered: VRMS = 20 ÷ 32 VMAX (ripple max 10 % VPP)	Input - power supply
2	**V0**	Power supply 0 VDC	Gnd - power supply
3	**ENABLE**	Enable (24 VDC) or disable (0 VDC) the driver, referred to V0	Input - on/off signal
4	**INPUT+**	Pressure reference input signal: ±10 VDC / ±20 mA maximum range Defaults are 0 ÷ 10 VDC for standard and 4 ÷ 20 mA for /I option	Input - analog signal **Software selectable**
5	**INPUT-**	Negative reference input signal for P_INPUT+	Input - analog signal
6	**MONITOR**	Pressure monitor output signal: ±5 VDC maximum range Defaults is 0 ÷ 5 VDC (1V = 1A)	Output - analog signal **Software selectable**
7	**NC**	Do not connect	
8	**NC**	Do not connect	
9	**VL+**	Power supply 24 VDC for driver's logic and communication	Input - power supply
10	**VL0**	Power supply 0 VDC for driver's logic and communication	Gnd - power supply
11	**FAULT**	Fault (0 VDC) or normal working (24 VDC), referred to V0	Output - on/off signal
PE	**EARTH**	Internally connected to driver housing	

14.3 Communication connectors - LI*ZO-AEB (B) and LI*ZO-AES (B) (C)

(B) **USB connector - M12 - 5 pin** always present

PIN	SIGNAL	TECHNICAL SPECIFICATION (1)
1	**+5V_USB**	Power supply
2	**ID**	Identification
3	**GND_USB**	Signal zero data line
4	**D-**	Data line -
5	**D+**	Data line +

(C1) **BC fieldbus execution, connector - M12 - 5 pin (2)**

PIN	SIGNAL	TECHNICAL SPECIFICATION (1)
1	**CAN_SHLD**	Shield
2	**NC**	do not connect
3	**CAN_GND**	Signal zero data line
4	**CAN_H**	Bus line (high)
5	**CAN_L**	Bus line (low)

(C2) **BP fieldbus execution, connector - M12 - 5 pin (2)**

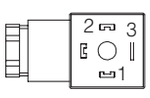
PIN	SIGNAL	TECHNICAL SPECIFICATION (1)
1	**+5V**	Termination supply signal
2	**LINE-A**	Bus line (high)
3	**DGND**	Data line and termination signal zero
4	**LINE-B**	Bus line (low)
5	**SHIELD**	

(C3) (C4) **EH fieldbus execution, connector - M12 - 4 pin (2)**

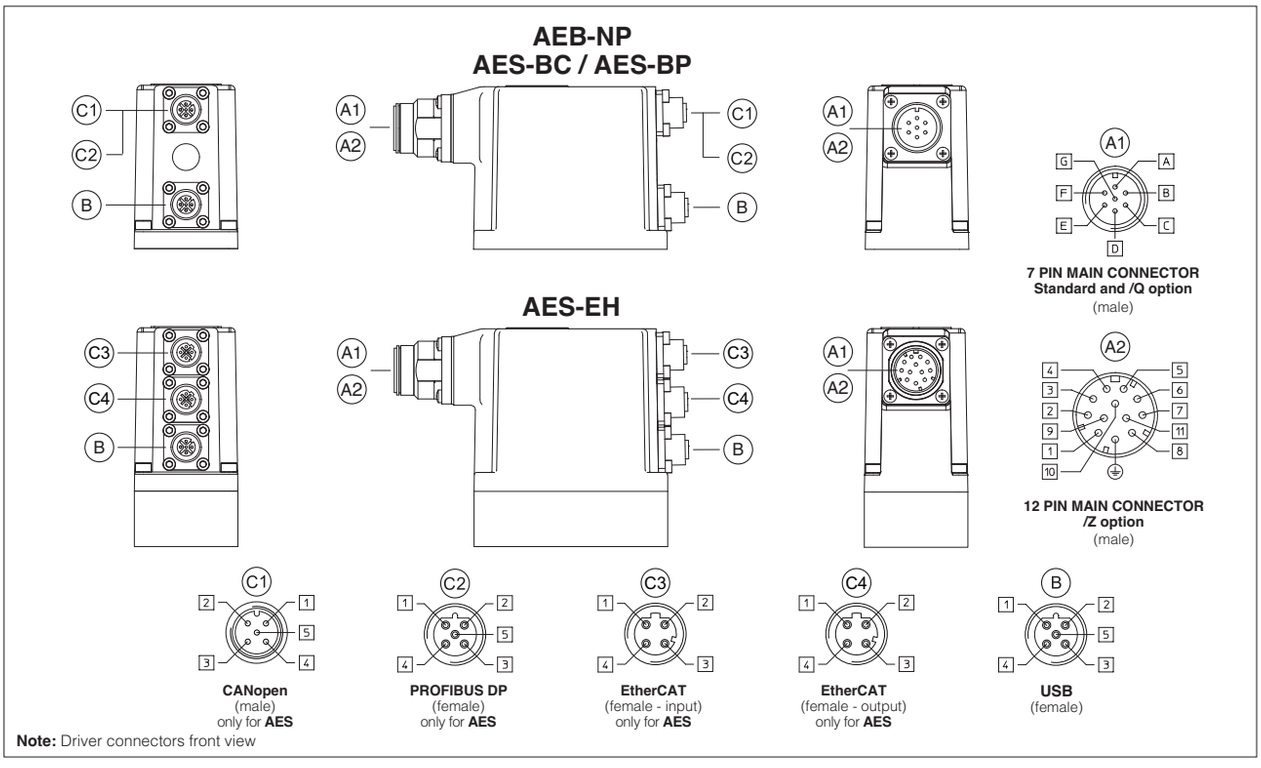
PIN	SIGNAL	TECHNICAL SPECIFICATION (1)
1	**TX+**	Transmitter
2	**RX+**	Receiver
3	**TX-**	Transmitter
4	**RX-**	Receiver
Housing	**SHIELD**	

Notes: (1) shield connection on connector's housing is recommended **(2)** only for **AES** execution

14.4 Solenoid connection - only for **LI*ZO-A**

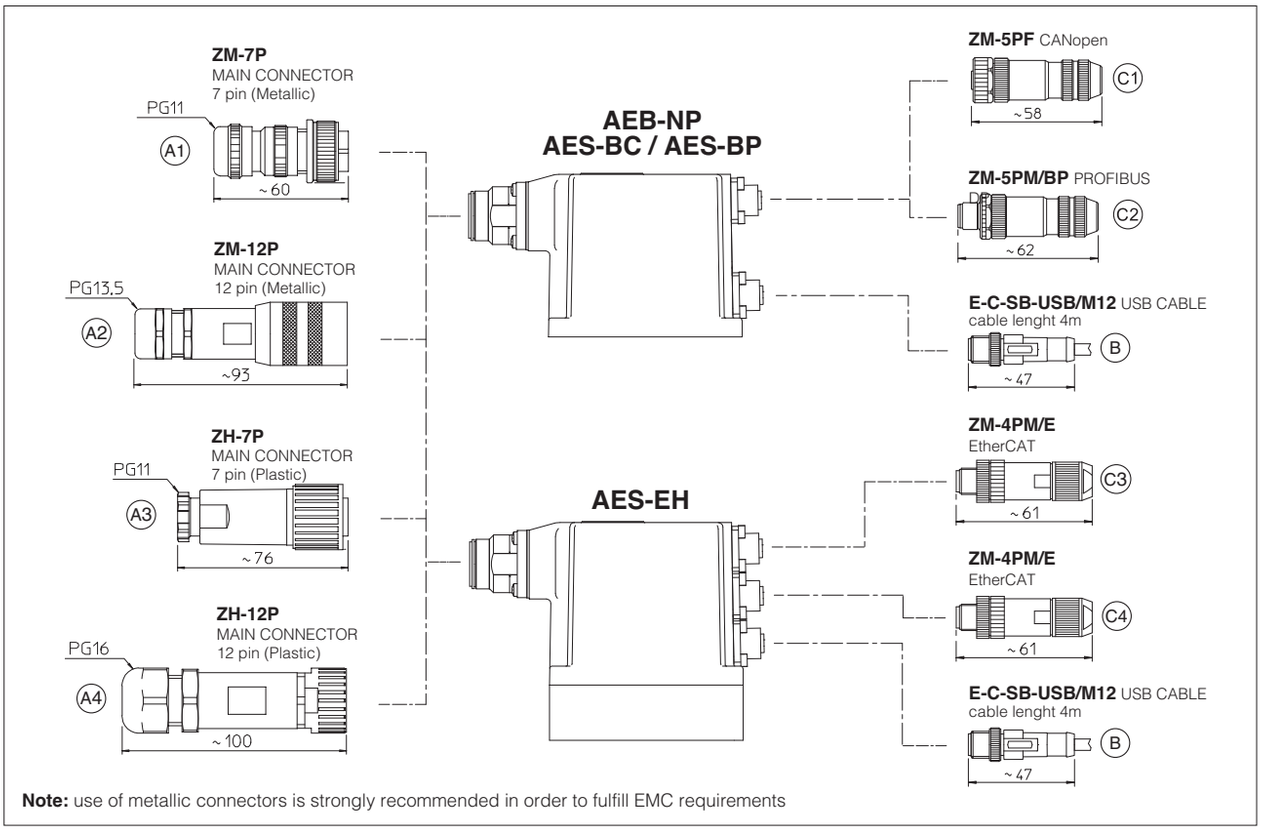
PIN	SIGNAL	TECHNICAL SPECIFICATION	Connector code 666
1	**COIL**	Power supply	
2	**COIL**	Power supply	
3	**GND**	Ground	

14.5 Connections layout - only for **AEB** and **AES**



Note: Driver connectors front view

15 CONNECTORS



Note: use of metallic connectors is strongly recommended in order to fulfill EMC requirements

16 MODEL CODES OF MAIN CONNECTORS AND COMMUNICATION CONNECTORS - to be ordered separately

VALVE VERSION	A (1) Power supply	AEB AES	AEB/Z AES/Z	BC - CANopen	BP - PROFIBUS DP	EH - EtherCAT
CONNECTOR CODE	666	ZM-7P (A1)	ZM-12P (A2)	ZM-5PF (C1)	ZM-5PM/BP (C2)	ZM-4PM/E (C3)
		ZH-7P (A3)	ZH-12P (A4)			ZM-4PM/E (C4)
PROTECTION DEGREE	IP67	IP67				
DATA SHEET	K500	GS115, K500				

(1) Connectors supplied with the valve

only for **AES**

17 COVERS INSTALLATION DIMENSIONS [mm]

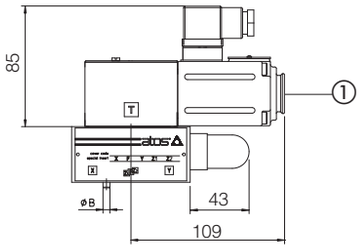
Version **-A** without integral driver

Mass (kg)

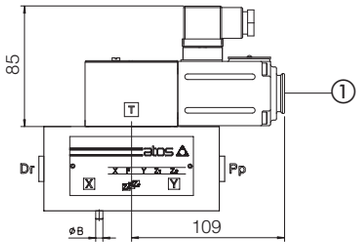
LICZO, LIMZO, LIRZO			Cartridge
Size	Standard	Option /P	SC LI
1	3,3	-	0,2
2	4,0	-	0,5
3	5,3	-	0,9
4	10,7	11,7	1,7
5	14,2	15,2	2,9
6	23,7	24,7	6,7
8	32,3	33,3	13,1

① = Screw for air bleeding: at the first valve commissioning the air eventually trapped inside the solenoid must be bled-off though the screw ①

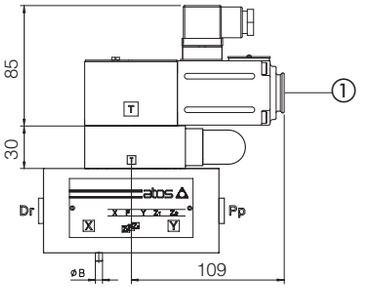
LICZO-A-1 LIMZO-A-1 LIRZO-A-1
LICZO-A-2 LIMZO-A-2 LIRZO-A-2
LICZO-A-3 LIMZO-A-3 LIRZO-A-3



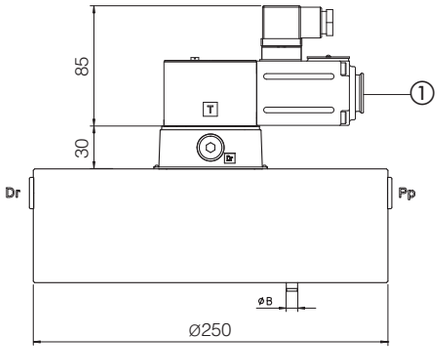
LICZO-A-4 LIMZO-A-4 LIRZO-A-4
LICZO-A-5 LIMZO-A-5
LIMZO-A-6



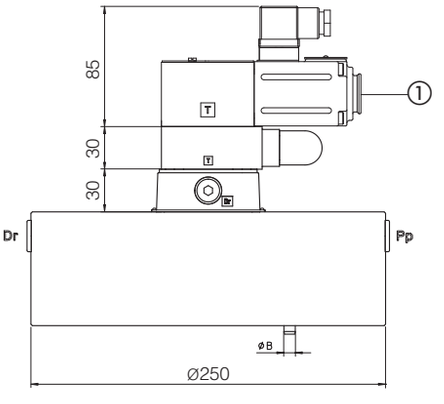
LICZO-A-4/P LIMZO-A-4/P LIRZO-A-4/P
LICZO-A-5/P LIMZO-A-5/P
LIMZO-A-6/P



LIMZO-A-8



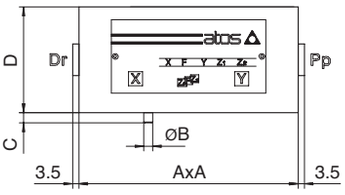
LIMZO-A-8/P



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

COVERS DIMENSIONS [mm]

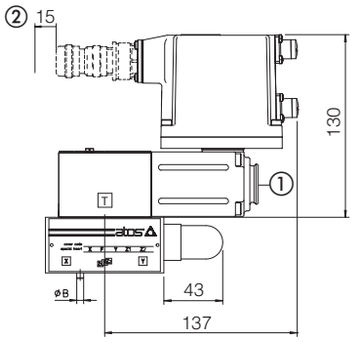
Size	A	Ø B	C	D	Port Pp-Dr	Seal	Fastening bolts class 12.9	Tightening torque Nm
1	65x80	3	4	40	-	n° 2 OR 108	n° 4 M8x45	35
2	85	5	6	40	-	n° 2 OR 108	n° 4 M12x45	125
3	100	5	6	50	-	n° 2 OR 2043	n° 4 M16x55	300
4	125	5	6	60	G 1/4"	n° 2 OR 2050	n° 4 M20x70	600
5	140	6	4	70	G 1/4"	n° 2 OR 2050	n° 4 M20x80	600
6	180	6	4	80	G 3/8"	n° 2 OR 2056	n° 4 M30x90	2100
8	ø250	8	6	80	G 3/8"	n° 2 OR 123	n° 4 M24x90	1000



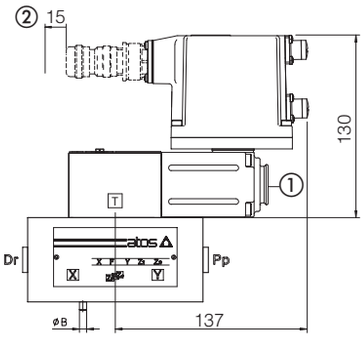
Note:
For size 1 cover is not squared, dimensions 65x80

Versions **-AEB** and **-AES**

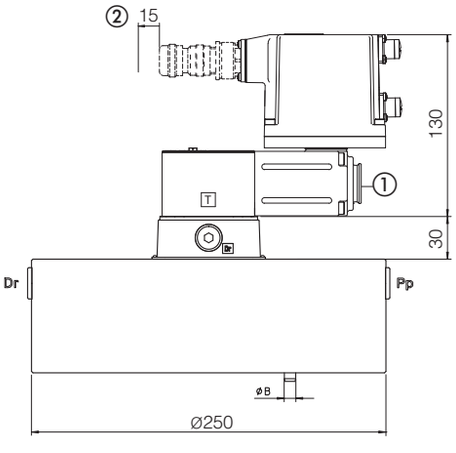
LICZO-AE*-1 LIMZO-AE*-1 LIRZO-AE*-1
LICZO-AE*-2 LIMZO-AE*-2 LIRZO-AE*-2
LICZO-AE*-3 LIMZO-AE*-3 LIRZO-AE*-3



LICZO-AE*-4 LIMZO-AE*-4 LIRZO-AE*-4
LICZO-AE*-5 LIMZO-AE*-5
LIMZO-AE*-6



LIMZO-AE*-8



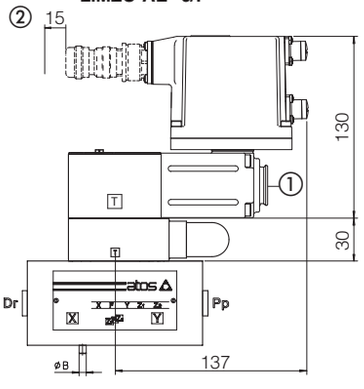
Mass (kg)

LICZO, LIMZO, LIRZO			Cartridge
Size	Standard	Option /P	SC LI
1	4	-	0,2
2	4,5	-	0,5
3	5,8	-	0,9
4	11,2	12,2	1,7
5	14,7	15,7	2,9
6	24,2	25,2	6,7
8	32,8	33,8	13,1

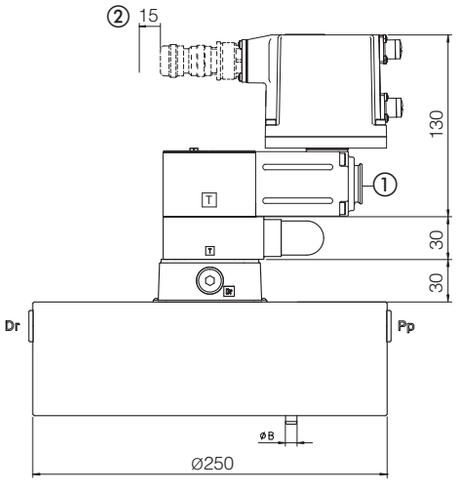
① = Screw for air bleeding: at the first valve commissioning the air eventually trapped inside the solenoid must be bled-off though the screw ①

② = Space to remove the 7 or 12 pin main connector. For main and communication connectors see section 15, 16

LICZO-AE*-4/P LIMZO-AE*-4/P LIRZO-AE*-4/P
LICZO-AE*-5/P LIMZO-AE*-5/P
LIMZO-AE*-6/P



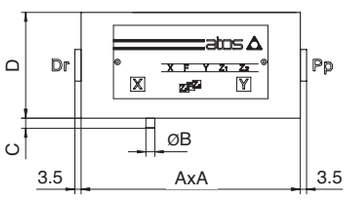
LIMZO-AE*-8/P



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

COVERS DIMENSIONS [mm]

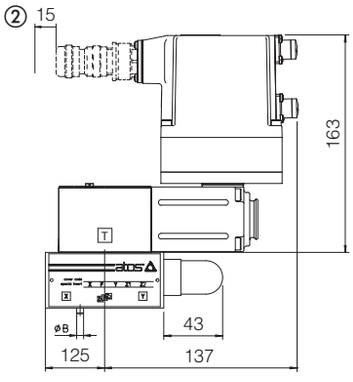
Size	A	Ø B	C	D	Port Pp-Dr	Seal	Fastening bolts class 12.9	Tightening torque Nm
1	65x80	3	4	40	-	n° 2 OR 108	n° 4 M8x45	35
2	85	5	6	40	-	n° 2 OR 108	n° 4 M12x45	125
3	100	5	6	50	-	n° 2 OR 2043	n° 4 M16x55	300
4	125	5	6	60	G 1/4"	n° 2 OR 2050	n° 4 M20x70	600
5	140	6	4	70	G 1/4"	n° 2 OR 2050	n° 4 M20x80	600
6	180	6	4	80	G 3/8"	n° 2 OR 2056	n° 4 M30x90	2100
8	ø250	8	6	80	G 3/8"	n° 2 OR 123	n° 4 M24x90	1000



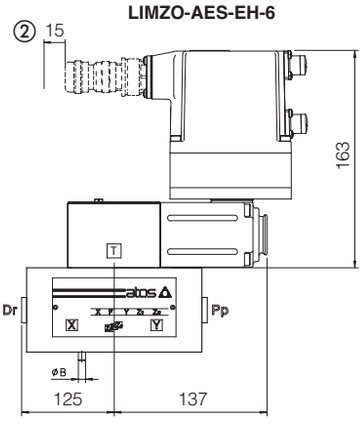
Note:
For size 1 cover is not squared, dimensions 65x80

Version **-AES-EH**

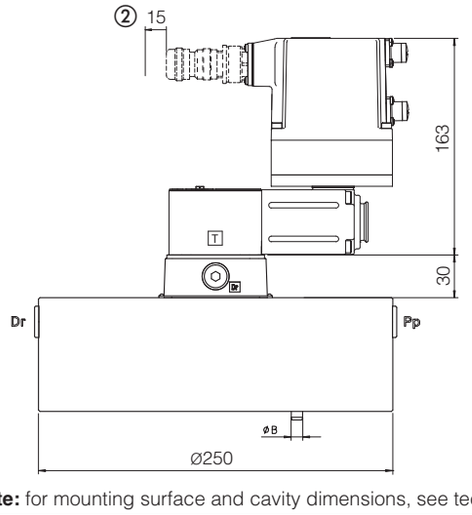
LICZO-AES-EH-1 LIMZO-AES-EH-1 LIRZO-AES-EH-1
LICZO-AES-EH-2 LIMZO-AES-EH-2 LIRZO-AES-EH-2
LICZO-AES-EH-3 LIMZO-AES-EH-3 LIRZO-AES-EH-3



LICZO-AES-EH-4 LIMZO-AES-EH-4 LIRZO-AES-EH-4
LICZO-AES-EH-5 LIMZO-AES-EH-5
LIMZO-AES-EH-6



LIMZO-AES-EH-8



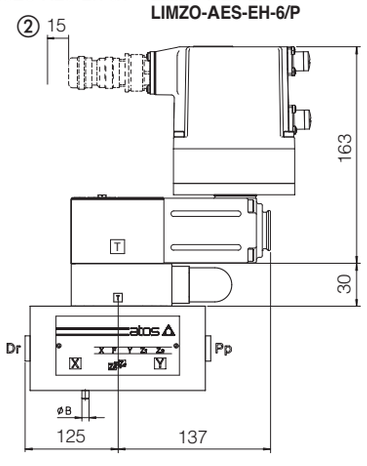
Mass (kg)

LICZO, LIMZO, LIRZO			Cartridge
Size	Standard	Option /P	SC LI
1	4,1	-	0,2
2	4,6	-	0,5
3	5,9	-	0,9
4	11,3	12,3	1,7
5	14,8	15,8	2,9
6	24,3	25,3	6,7
8	32,9	33,9	13,1

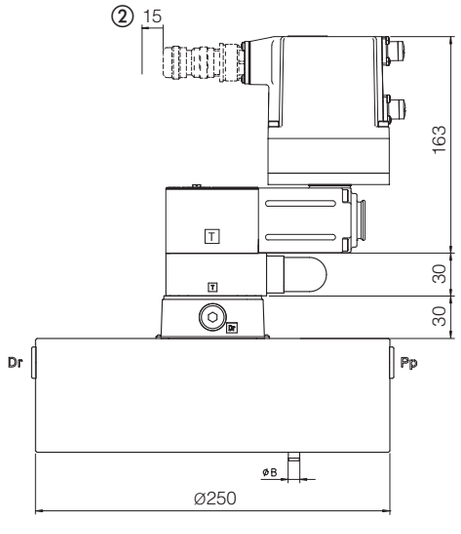
① = Screw for air bleeding: at the first valve commissioning the air eventually trapped inside the solenoid must be bled-off though the screw ①

② = Space to remove the 7 or 12 pin main connector. For main and communication connectors see section 15, 16

LICZO-AES-EH-4/P LIMZO-AES-EH-4/P LIRZO-AES-EH-4/P
LICZO-AES-EH-5/P LIMZO-AES-EH-5/P
LIMZO-AES-EH-6/P



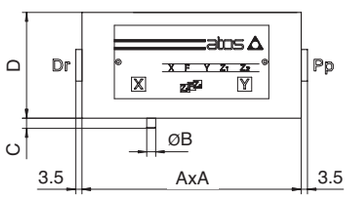
LIMZO-AES-EH-8/P



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

COVERS DIMENSIONS [mm]

Size	A	Ø B	C	D	Port Pp-Dr	Seal	Fastening bolts class 12.9	Tightening torque Nm
1	65x80	3	4	40	-	n° 2 OR 108	n° 4 M8x45	35
2	85	5	6	40	-	n° 2 OR 108	n° 4 M12x45	125
3	100	5	6	50	-	n° 2 OR 2043	n° 4 M16x55	300
4	125	5	6	60	G 1/4"	n° 2 OR 2050	n° 4 M20x70	600
5	140	6	4	70	G 1/4"	n° 2 OR 2050	n° 4 M20x80	600
6	180	6	4	80	G 3/8"	n° 2 OR 2056	n° 4 M30x90	2100
8	ø250	8	6	80	G 3/8"	n° 2 OR 123	n° 4 M24x90	1000



Note:
For size 1 cover is not squared, dimensions 65x80