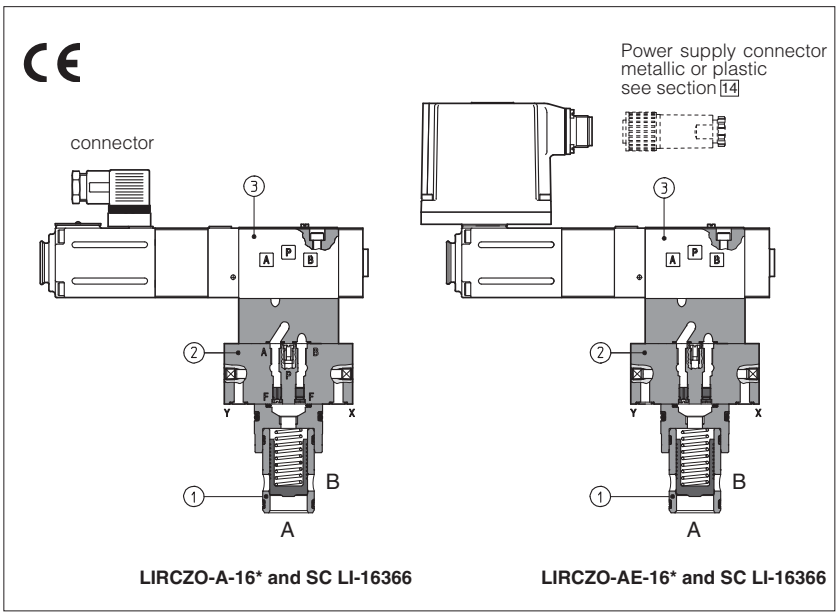
Proportional pressure reducing cartridges type LIRCZO

normally closed, ISO 7368 sizes from 16 to 40



LIRCZO-A-16* and SC LI-16366

LIRCZO-AE-16* and SC LI-16366

LIRCZO are normally closed proportional pressure reducing valves, realized in cartridge execution according to standard ISO 7368

The pressure regulation is proportional to the reference signal supplied to the electronic driver.

They provides high flow capability with low pressure drops and the normally closed execution permits to regulate very low values of the reduced pressure (close to zero or to tank pressure)

They are available in different executions:

- -A, without pressure transducer and with separated electronics
- -AE, as -A but with integral analogue electronics

They are made by a 2 way cartridge (1) housed in ISO/DIN standard recess, plus a closing cover (2) with pilot proportional pressure reducing valve (3) type RZGO-*-033 (see KT catalogue, tab. F070)

Applications

Clamps and auxiliary controls of plastic injection and blow moulding machines

Any other application where a very low value of the reduced pressure is required.

Standard **ISO 7368**, **size 16, 25, 32, 40**

Max flow: up to **1000 l/min**

Max pressure: **315 bar**

1 MODEL CODE FOR COVERS

LIRCZO	-	A	-	3	/	210	/	*	**	/	*

LIRCZO: Proportional pressure reducing cartridge valves

A = without pressure transducer
AE = as A plus integral electronics

Size:
1 = 16 **2** = 25 **3** = 32 **4** = 40

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

Options for -A execution:
- = standard coil for 24V$_{DC}$ Atos drivers
6 = optional coil for 12V$_{DC}$ Atos drivers
18 = optional coil for low current drivers
for -AE executions:
I = current reference (4÷20 mA)
Q = enable signal

******: Series number

*****: Seals material:
- = NBR
PE = FKM

2 MODEL CODE FOR CARTRIDGES

SC LI	-	32	36	6	**	/	*

SC LI: Cartridge according to ISO 7368

Size: **16**, **25**, **32**, **40** (the same of relative cover)

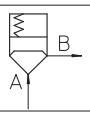
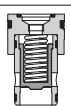
Type of cartridge, see section 3 for functions: **36**

Spring cracking pressure:
6 = 6 bar

******: Series number

*****: Seals material:
- = NBR
PE = FKM

3 TYPICAL FUNCTIONS OF CARTRIDGES

Type	Functional sketch (hydraulic symbol)	Typical section	Area ratio (1)
36			1:1

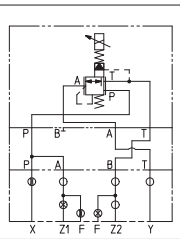
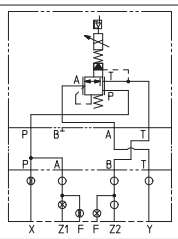
(1) It is the ratio of the area A to the area on which the pilot pressure is applied.

4 ELECTRONIC DRIVERS FOR RZMO

Valve model	-A						-AE
Drivers model	E-MI-AC-01F	E-MI-AS-IR	E-BM-AC-01F	E-BM-AS-PS	E-ME-AC-01F	E-RP-AC-01F	E-RI-AE
Data sheet	G010	G020	G025	G030	G035	G100	G110

Note: for power supply connector see section 14

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

Hydraulic symbols see application scheme, sect. 16	LIRCZO-A-25 		LIRCZO-AE-25 	
Valve model	LIRCZO			
Valve size	**16**	**25**	**32**	**40**
Max flow [l/min]	200	400	750	1000
Min regulated pressure at port B [bar]	1	1	1	1
Max regulated pressure at port B [bar]	50; 100; 210; 315			
Hysteresis [% of the regulated max pressure]	≤ 2			
Linearity [% of the regulated max pressure]	≤ 3			
Repeatibility [% of the regulated max pressure]	≤ 2			

Above performance data refer to valves coupled with Atos electronic drivers, see section 4.

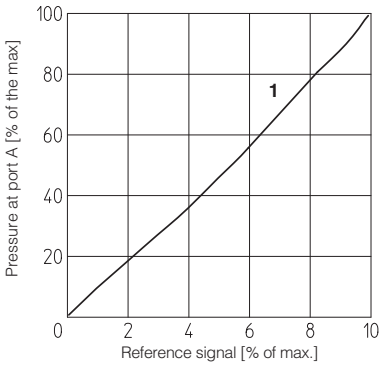
6 MAIN CHARACTERISTICS

Assembly position	Any position
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C ÷ +70°C for -A execution; -20°C ÷ +60°C for -AE and -AES executions
Fluid	Hydraulic oil as per DIN 51524 ... 535 for other fluids see section 1
Recommended viscosity	15 ÷100 mm²/s at 40°C (ISO VG 15÷100)
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm ($\beta_{10} \geq 75$ recommended)
Fluid temperature	-20°C +60°C (standard seals) -20°C +80°C (/PE seals)
Coil resistance R at 20°C	3 ÷ 3.3 Ω for standard 12 V_{DC} coil; 2 ÷ 2,2 Ω for 6 V_{DC} coil; 13 ÷ 13,4 Ω for 18 V_{DC} coil
Max solenoid current	2,6 A for standard 12 V_{DC} coil; 3,25 A for 6 V_{DC} coil; 1,5 A for 18 V_{DC} coil
Max power	40 Watt
Protection degree (CEI EN-60529)	IP65 for -A execution; IP67 for -AE and AES executions
Duty factor	Continuous rating (ED=100%)

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

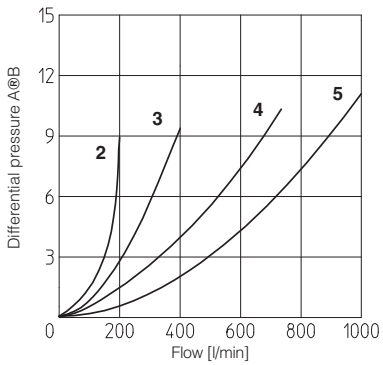
7.1 Regulation diagrams

1 = LIRCZO-A, LIRCZO-AE



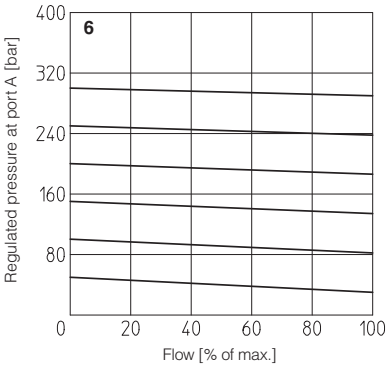
7.2 Min. pressure/flow diagrams
with reference signal "null"

2 = LIRCZO-*-1
3 = LIRCZO-*-2
4 = LIRCZO-*-3
5 = LIRCZO-*-4



7.3 Pressure/flow diagrams

6 = LIRCZO-A, LIRCZO-AE



8 GENERAL NOTES

RZMO 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.

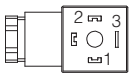
The electrical signals of the valve (e.g. monitor signals) must not be directly used to activate safety functions, like to switch-ON/OFF the machine's safety components, as prescribed by the European standards (Safety requirements of fluid technology systems and components-hydraulics, EN-982).

9 OPTIONS FOR -A EXECUTION

9.1 Option /6 6 VDC coil instead of standard 12 VDC, to be used in case of power supply 12 VDC

9.2 Option /18 18 VDC coil instead of standard 12 VDC, to be used with electronic drivers not supplied by Atos

10 CONNECTIONS FOR -A EXECUTION

SOLENOID POWER SUPPLY CONNECTOR		
PIN	Signal description	
1	SUPPLY	
2	SUPPLY	
3	GND	

11 ANALOG INTEGRAL DRIVERS -AE - OPTIONS

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 safety fuse is required in series to the 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÷+10VDC nominal range (pin D,E), proportional to desired coil current

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

Following options are available to adapt standard execution to special application requirements:

11.1 Option /I

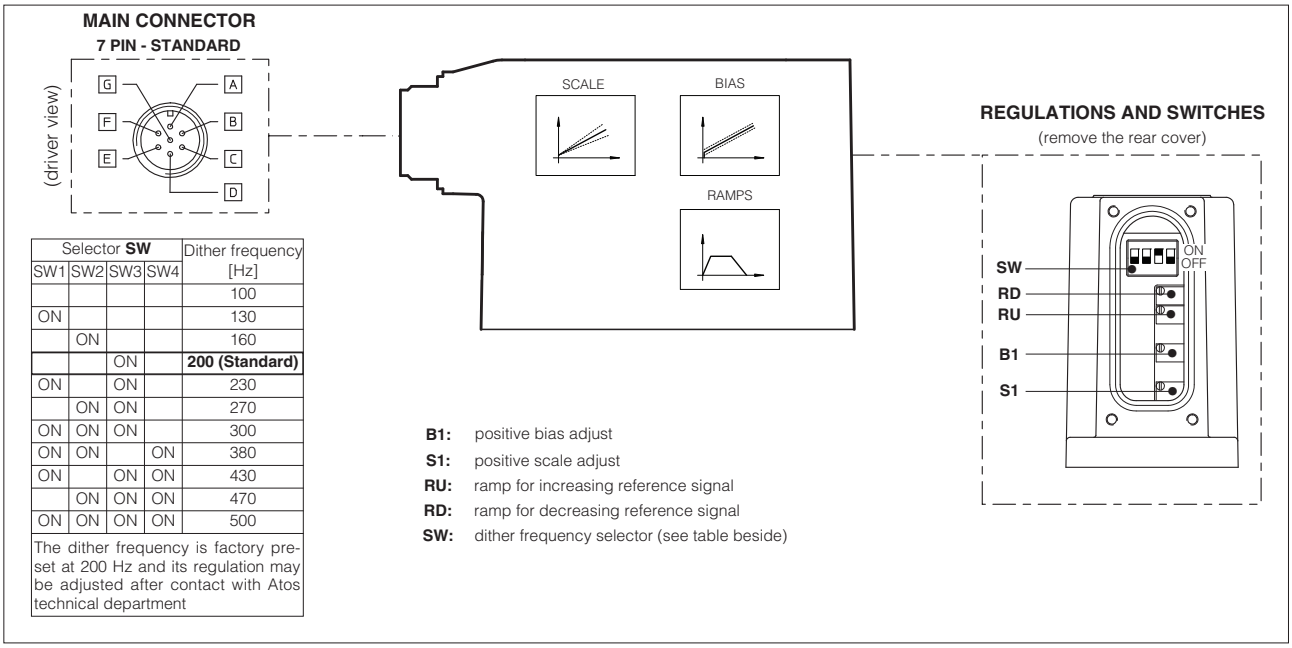
It provides the 4÷20 mA current reference signal instead of the standard 0÷+10 VDC. Monitor output signal is still the standard 0÷+10VDC.
It is normally used in case of long distance between the machine control unit and the valve or where the reference signal can be affected by electrical noise; the valve functioning is disabled in case of reference signal cable breakage.

11.2 Option /Q

It provides the possibility to enable or disable the valve functioning without cutting the power supply (the valve functioning is disabled but the driver current output stage is still active). To enable the driver supply a 24VDC on the enable input signal.

11.3 Possible combined option: /IQ

12 ANALOG INTEGRAL DRIVERS -AE - MAIN FUNCTIONS AND ELECTRONIC CONNECTIONS



Selector **SW**				Dither frequency
SW1	SW2	SW3	SW4	[Hz]
				100
ON				130
	ON			160
		ON		**200 (Standard)**
ON		ON		230
	ON	ON		270
ON	ON	ON		300
ON	ON		ON	380
ON		ON	ON	430
	ON	ON	ON	470
ON	ON	ON	ON	500

The dither frequency is factory preset at 200 Hz and its regulation may be adjusted after contact with Atos technical department

B1: positive bias adjust
S1: positive scale adjust
RU: ramp for increasing reference signal
RD: ramp for decreasing reference signal
SW: dither frequency selector (see table beside)

12.1 ELECTRONIC CONNECTIONS - 7 PIN MAIN CONNECTORS

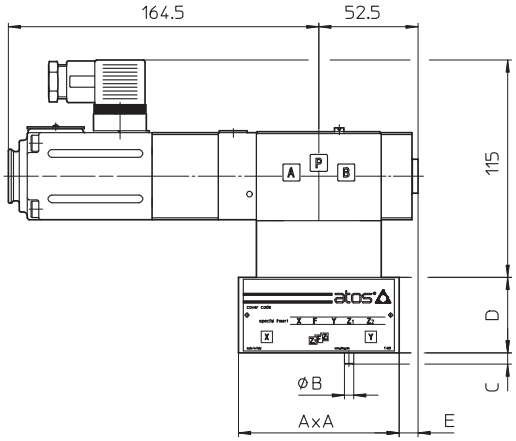
PIN	SIGNAL	TECHNICAL SPECIFICATIONS	NOTES
A	V+	Power supply 24 VDC for solenoid power stage and driver logic	Input - power supply
B	V0	Power supply 0 VDC for solenoid power stage and driver logic	Gnd - power supply
C (1)	AGND	Ground - signal zero for MONITOR signal	Gnd - analog signal
	ENABLE	Enable (24 VDC) or disable (0 VDC) the driver (for /Q option)	Input - on/off signal
D	INPUT+	Reference analog input: 0÷+10 VDC maximum range (4 ÷ 20 mA for /I option)	Input - analog signal
E	INPUT -	Normal working range 0÷+10 VDC (4 ÷ 20 mA for /I option)	
F	MONITOR	Monitor analog output: 0÷+5 VDC maximum range; 1 V = 1 A	Output - analog signal
G	EARTH	Internally connected to the driver housing	

Note: (1) with /Q option ENABLE signal replaces AGND on pin C; MONITOR signal is reffered to pin B.

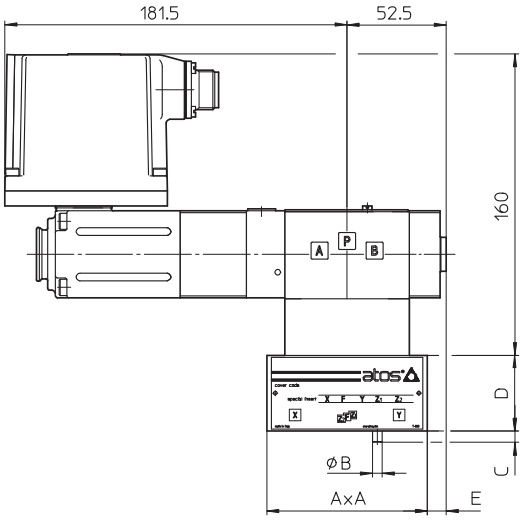
A minimum time of 60ms to 160ms have be considered between the driver energizing with the 24 VDC power supply and when the valve is ready to operate. During this time the current to the valve coils is switched to zero

13 COVER DIMENSIONS [mm]

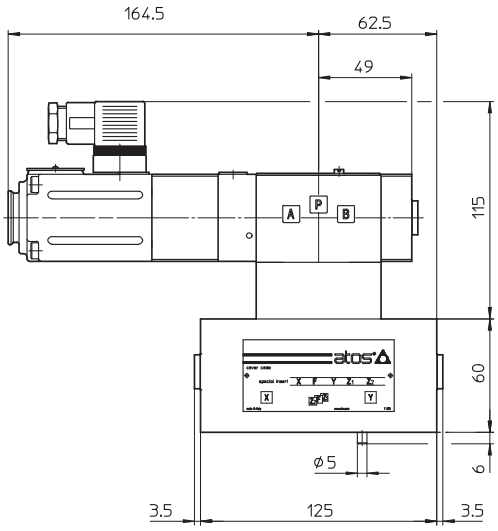
LIRCZO-1-A
LIRCZO-2-A
LIRCZO-3-A



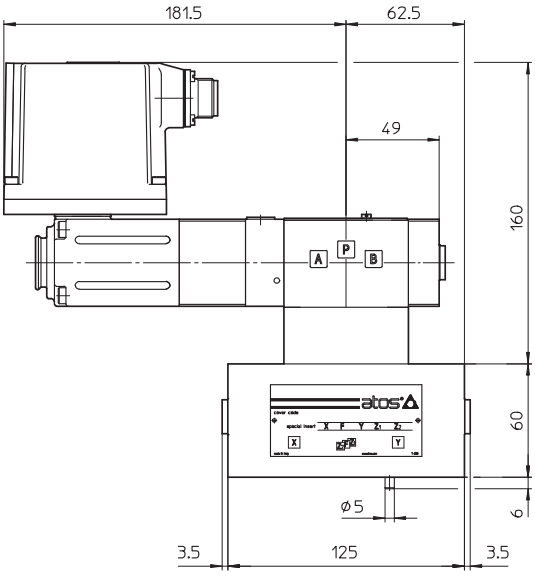
LIRCZO-1-AE
LIRCZO-2-AE
LIRCZO-3-AE



LIRCZO-4-A



LIRCZO-4-A



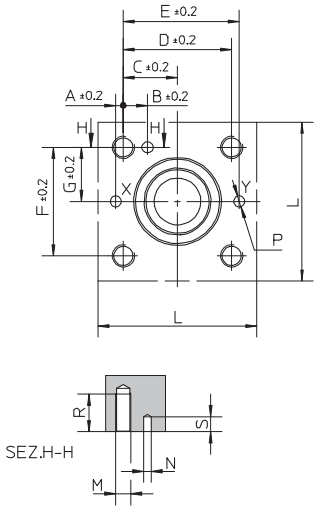
Sizes	A	B	C	D	E	Ports Pp-Dr	Seals	Fastening bolts	Tightening torque	Mass (Kg) -A	Mass (Kg) -AE
1	65x70	3	4	40	12	-	n°4 OR 108	n°4 M8x45	41.6	5,5	6,0
2	85	5	6	40	10	-	n°4 OR 108	n°4 M12x45	143	5,9	6,4
3	100	5	6	50	2.5	-	n°4 OR 2043	n°4 M16x55	346	6,5	7,0
4	125	5	6	60	-	G 1/4"	n°4 OR 2050	n°4 M20x70	674	9,4	9,9

14 MODEL CODES OF POWER SUPPLY CONNECTORS

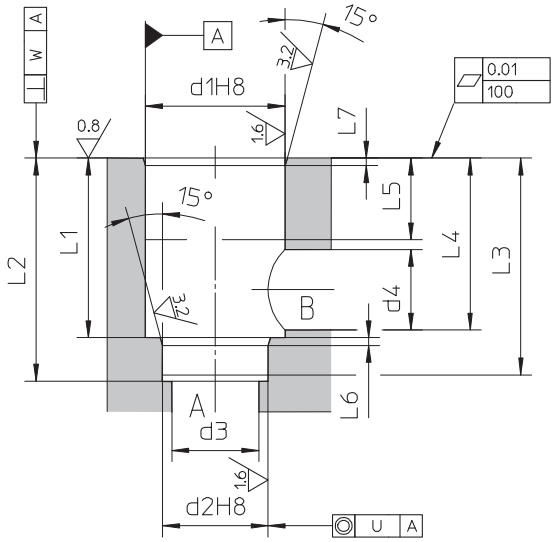
VALVE VERSION	-A	-AE	
CONNECTOR CODE	666	ZH-7P	ZM-7P
PROTECTION DEGREE	IP65	IP67	IP67
DATA SHEET	K500	G110, G115, K500	

connectors supplyed with the valve

15 COVER INTERFACE AND RECESS DIMENSIONS [mm]



Sizes	A	B	C	D	E	F	G	J min	K	L min	M	Ø N	P max	R	S max
16	2	12,5	23	46	48	46	23	-	-	65	M8	4	4	22	8
25	4	13	29	58	62	58	29	-	-	85	M12	6	6	30	8
32	6	18	35	70	76	70	35	-	-	102	M16	6	8	38	8
40	7,5	19,5	42,5	85	92,5	85	42,5	-	-	125	M20	6	10	46	8



Sizes	Ø d1	Ø d2	Ø d3 max	Ø d4 max	L1	L2	L3	L4 max	L5	L6	L7	U	W
16	32	25	16	22,5	43 $^{+0,1}_{0}$	56 $^{+0,1}_{0}$	54	42,5	20	2	2	0,03	0,05
25	45	34	25	27	58 $^{+0,1}_{0}$	72 $^{+0,1}_{0}$	70	57	30	2,5	2,5	0,03	0,05
32	60	45	32	38,5	70 $^{+0,1}_{0}$	85 $^{+0,1}_{0}$	83	68,5	30	2,5	2,5	0,03	0,1
40	75	55	40	54,5	87 $^{+0,1}_{0}$	105 $^{+0,1}_{0}$	102	84,5	30	3	3	0,05	0,1

16 APPLICATION SCHEME