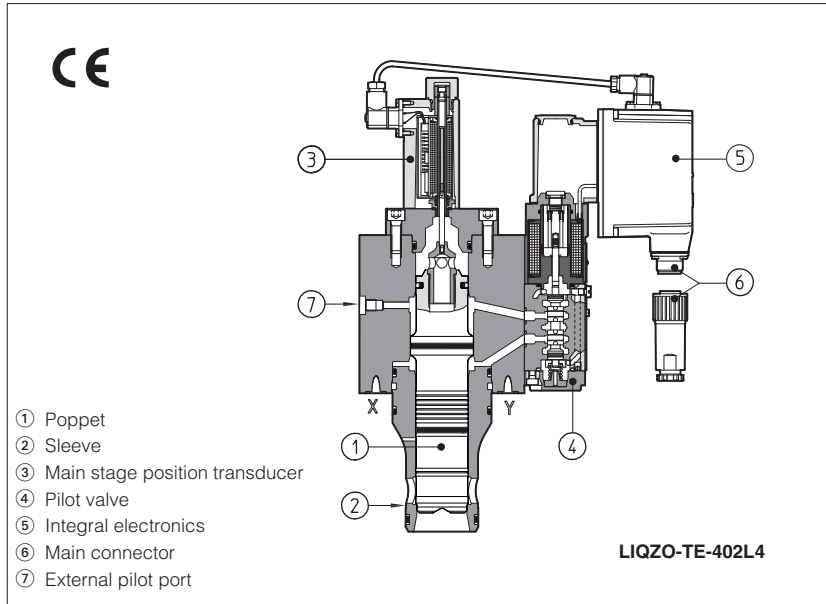


Proportional 2-way cartridges

analog, with position transducer, ISO 7368 sizes from 16 to 80



LIQZO-T*, LIQZP-T*

2-way proportional cartridge valves specifically designed for throttling functions and not compensated flow regulations in hydraulic systems.

The valve poppet is controlled in closed loop by means of a LVDT position transducer and a proportional pilot valve type DHZO, see table F160.

The cartridge execution for blocks installation grants high flow capabilities and minimized pressure drops.

The integral analog electronic driver (-TE execution) performs the valve's hydraulic regulation according to the reference signal and assures valve-to-valve interchangeability thanks to the factory presetting.

LIQZO: sizes from **16 to 40**

max flow: **600 to 2500 l/min**

max pressure: **350 bar**

LIQZP: sizes **50 to 80**

max flow: **4000 to 10.000 l/min**

max pressure: **420 bar**

1 MODEL CODE

*	LIQZO	-	TE	-	25	2	L4	/	*	**	/*
special code - omit for size 16 to 50 104119 for LIQZP size 63 131114 for LIQZP size 80											Seals material - = NBR PE = FKM
Flow control valve LIQZO = size 16 to 40 pmax 350 bar LIQZP = size 50 to 80 pmax 420 bar											Series number
T = with position transducer TE = as T plus integral analog electronics											Electronics options, for -TE execution see section 6: I = current reference input and monitor (4÷20 mA) F = fault signal Q = enable signal Z = enable, fault and monitor signals (12 pin connector)
Valve size, see section 3 16 25 32 40 50 63 80											
Valve configuration, see section 3 2 = 2 way											Spool type (regulating characteristics): L4 = linear

2 ELECTRONIC DRIVERS

Valve model	-T	-TE
Drivers model	E-ME-T	E-RI-TE
Data sheet	G140	G200

Note: For power supply and communication connector see section 12

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

Hydraulic symbols							
Model	LIQZO-T*				LIQZP-T*		
Size	16	25	32	40	50	63	80
Max regulated flow at $\Delta p = 5$ bar							
at $\Delta p = 10$ bar							
Max permissible flow							
Max pressure [bar]	Ports A, B = 350 X = 350 Y \leq 10				Ports A, B = 420 X = 350 Y \leq 10		
Nominal flow of pilot valve at $\Delta p = 70$ bar [l/min]	43	43	43	50	50	50	50
Leakage of pilot valve at P = 100 bar [l/min]	0,5	0,5	0,5	0,6	0,6	0,6	0,6
Response time 0 \div 100% step signal [ms]	25	30	35	35	50	75	90
Piloting volume [cm ³]	1,6	2,2	7,0	9,4	17,7	32,5	39,5
Hysteresis [% of the max regulation]	$\leq 0,5\%$						
Repeatability [% of the max regulation]	$\pm 0,5\%$						
Thermal drift	zero point displacement < 1% at $\Delta T = 40^\circ C$						

Notes:

- Above performance data refer to valves coupled with Atos electronic drivers, see section 2.
- Recommended piloting pressure is 140 \div 160 bar.
- In case of long time shutdown of the hydraulic supply to the pilot valve, the driver has to be switched off to avoid its overheating.

4 GENERAL NOTES

LIQZO-T* 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).

5 CONNECTIONS FOR -T EXECUTION

SOLENOID POWER SUPPLY CONNECTOR 666	
PIN	Signal description
1	SUPPLY
2	SUPPLY
3	GND

POSITION TRANSDUCER CONNECTOR 345	
SIZES 16 \div 40	
PIN	Signal description
1	OUTPUT SIGNAL
2	SUPPLY -15 V _{DC}
3	SUPPLY +15 V _{DC}
4	GND

POSITION TRANSDUCER CONNECTOR ZBE-08		
SIZES 50 \div 80		
PIN	Signal description	Technical specification
1	PROG	do not connect
2	VT+	Power supply reference +15 V _{DC}
3	AGND	Common GND for transducer power & signal
4	TR	Transducer output signal
5	VT-	Power supply reference -15 V _{DC}

6 ANALOG INTEGRAL DRIVERS -TE - OPTIONS

Standard driver execution provides on the 7 pin main connector:

Power supply - 24V_{DC} 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 μ F/40 V capacitance to single phase rectifiers or a 4700 μ F/40 V capacitance to three phase rectifiers.

Reference input signal - analog differential input with ± 10 V_{DC} nominal range (pin D, E), proportional to desired valve spool position.

Monitor output signal - analog output signal proportional to the actual valve's spool position with ± 10 V_{DC} nominal range.

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

6.1 Option /F

It provides a Fault output signal in place of the Monitor output signal, to indicate fault conditions of the driver (cable interruption of spool transducers or reference signal - for /I option): Fault presence corresponds to 0 V_{DC}, normal working corresponds to 24 V_{DC}.

6.2 Option /I

It provides the 4 \div 20 mA current reference and monitor signals instead of the standard ± 10 V_{DC}.

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.

6.3 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 24V_{DC} on the enable input signal.

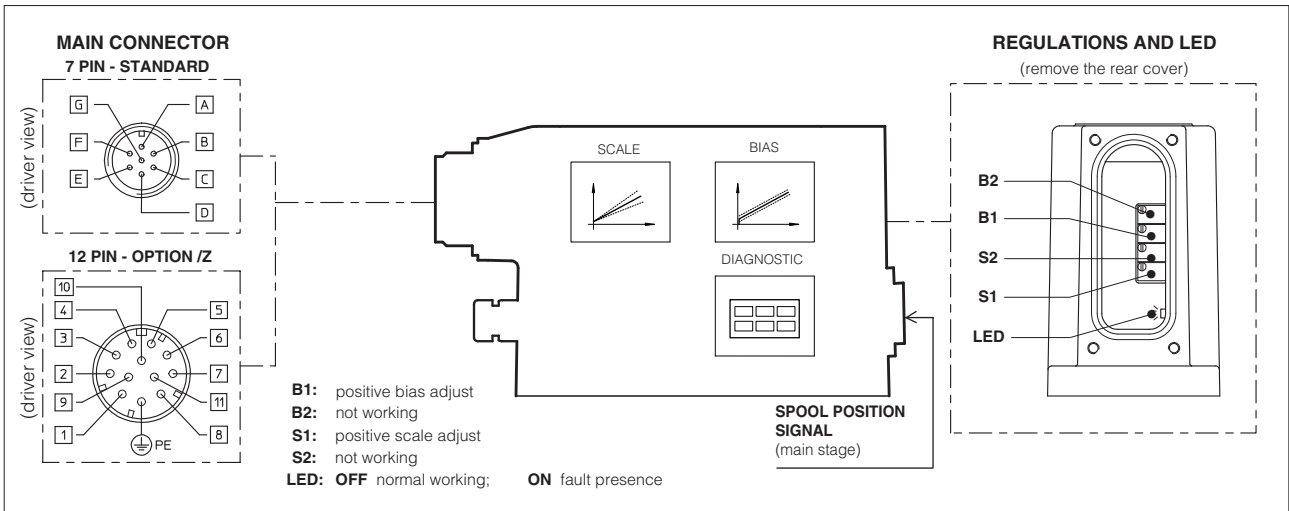
6.4 Option /Z

This option includes /F and /Q features, plus the Monitor output signal.

When the driver is disabled (0 V_{DC} on Enable signal) Fault output is forced to 0 V_{DC}.

6.5 Possible combined options: /FI and /IZ

7 ANALOG INTEGRAL DRIVERS -TE - MAIN FUNCTIONS AND ELECTRONIC CONNECTIONS



7.1 ELECTRONIC CONNECTIONS - 7 & 12 PIN MAIN CONNECTORS

Standard 7pin	/Z option 12pin	SIGNAL	TECHNICAL SPECIFICATIONS	NOTES
A	1	V+	Power supply 24 Vdc for solenoid power stage and driver logic	Input - power supply
B	2	V0	Power supply 0 Vdc for solenoid power stage and driver logic	Gnd - power supply
C (1)	7	AGND	Ground - signal zero for MONITOR signal (for standard, /Z option)	Gnd - analog signal
	3	ENABLE	Enable (24 Vdc) or disable (0 Vdc) the driver (for /Q and /Z options)	Input - on/off signal
D	4	INPUT+	Reference analog differential input: 0 ÷ +10 Vdc maximum range (4 ÷ 20 mA for /I option)	Input - analog signal
E	5	INPUT -		
F (2)	6	MONITOR	Monitor analog output: ±10 Vdc maximum range (4 ÷ 20 mA for /I option)	Output - analog signal
	11	FAULT	Fault (0V) or normal working (24V) (for /F and /Z options)	Output - on/off signal
-	8	R_ENABLE	Repeat Enable - output repetition of Enable input	Output - on/off signal
-	9	NC	do not connect	Output - on/off signal
-	10	NC	do not connect	Output - on/off signal
G	PE	EARTH	Internally connected to the driver housing	

Notes:

(1) with /Q option ENABLE signal replaces AGND on pin C; MONITOR signal is referred to pin B

(2) with /F option FAULT signal replaces MONITOR on pin F.

- A minimum time of 50ms to 100ms 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.

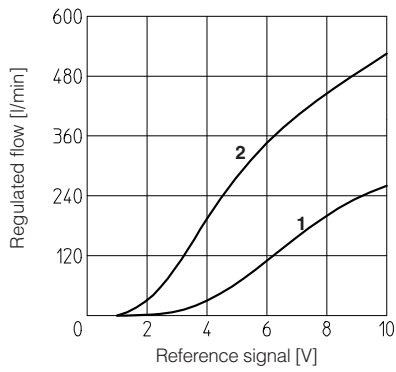
8 MAIN CHARACTERISTICS OF PROPORTIONAL THROTTLE CARTRIDGE VALVES

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 -T execution; -20°C ÷ +60°C for -TE
Fluid	Hydraulic oil as per DIN 51524 ... 535 for other fluids see section T
Recommended viscosity	15 ÷ 100 mm ² /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 (β ₁₀ ≥ 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
Max. solenoid current	2,6 A
Max. power	35 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 (CEI EN-60529)	IP65 for -T execution; IP67 for -TE
Duty factor	Continuous rating (ED=100%)

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

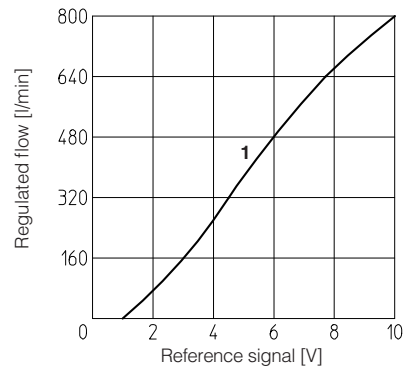
9.1 Regulation diagrams

- 1 = LIQZO-T*-162L4
- 2 = LIQZO-T*-252L4



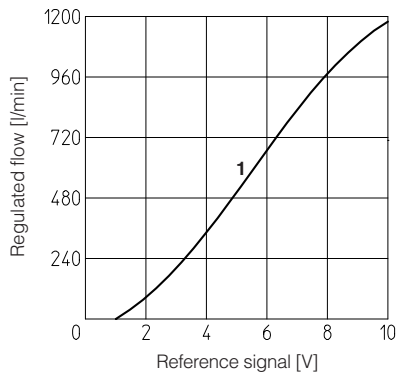
9.2 Regulation diagrams

- 1 = LIQZO-T*-322L4



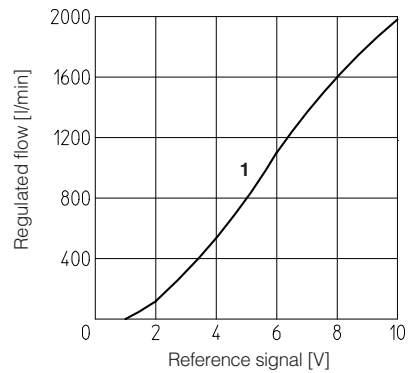
9.3 Regulation diagrams

- 1 = LIQZO-T*-402L4



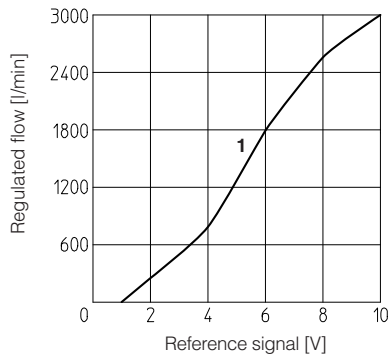
9.4 Regulation diagrams

- 1 = LIQZP-T*-502L4



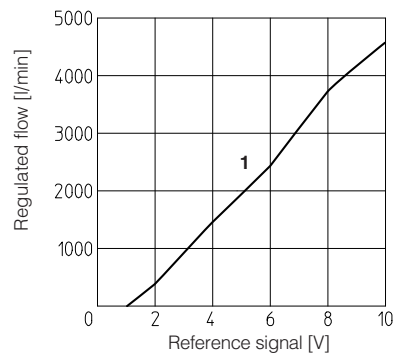
9.5 Regulation diagrams

- 1 = LIQZP-T*-632L4



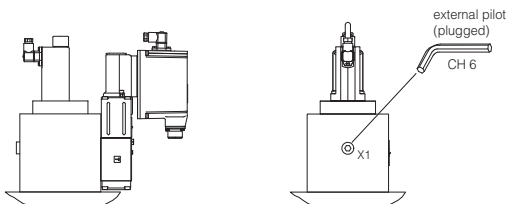
9.6 Regulation diagrams

- 1 = LIQZP-T*-802L4



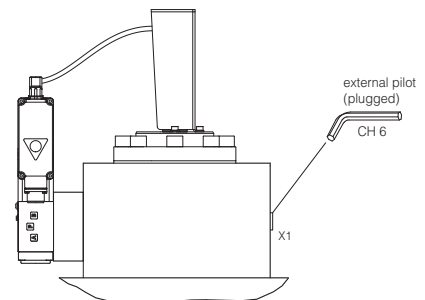
10 ADDITIONAL EXTERNAL PILOT PORT CONNECTION

Sizes 16 - 63

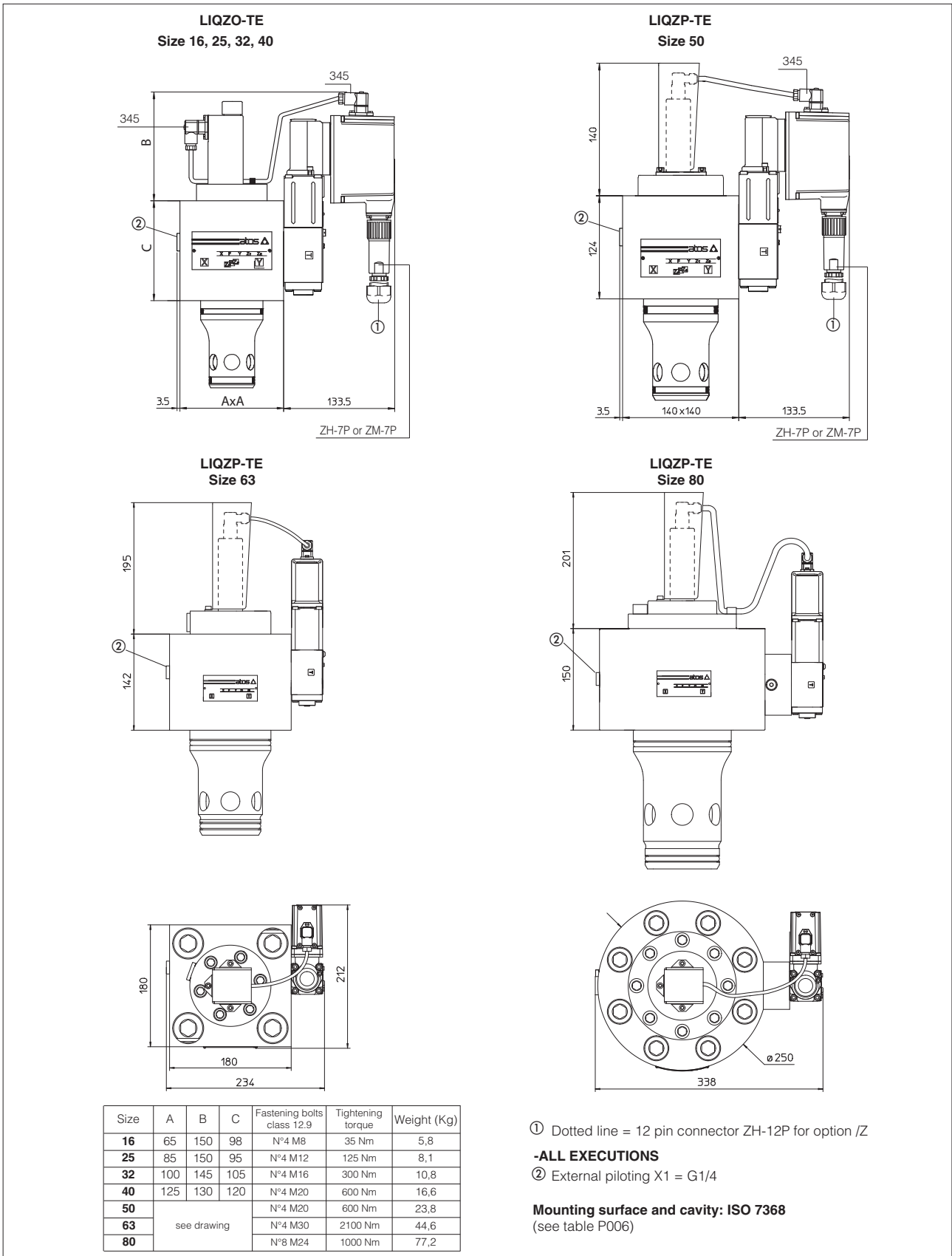


X1 = additional external pilot port connection G1/4"

Size 80



11 INSTALLATION DIMENSIONS [mm]



① Dotted line = 12 pin connector ZH-12P for option /Z

-ALL EXECUTIONS

② External piloting X1 = G1/4

Mounting surface and cavity: ISO 7368
(see table P006)

12 MODEL CODES OF POWER SUPPLY AND COMMUNICATION CONNECTORS (to be ordered separately)

VALVE VERSION	-T			-TE		-TE/Z
	Power supply	Transducer		ZH-7P	ZM-7P	ZH-12P
CONNECTOR CODE	666	345	ZBE 08			
PROTECTION DEGREE	IP65	IP65	IP67	IP67	IP67	IP67
DATA SHEET	K500			G200, G210, K500		

connectors supplied with the valve