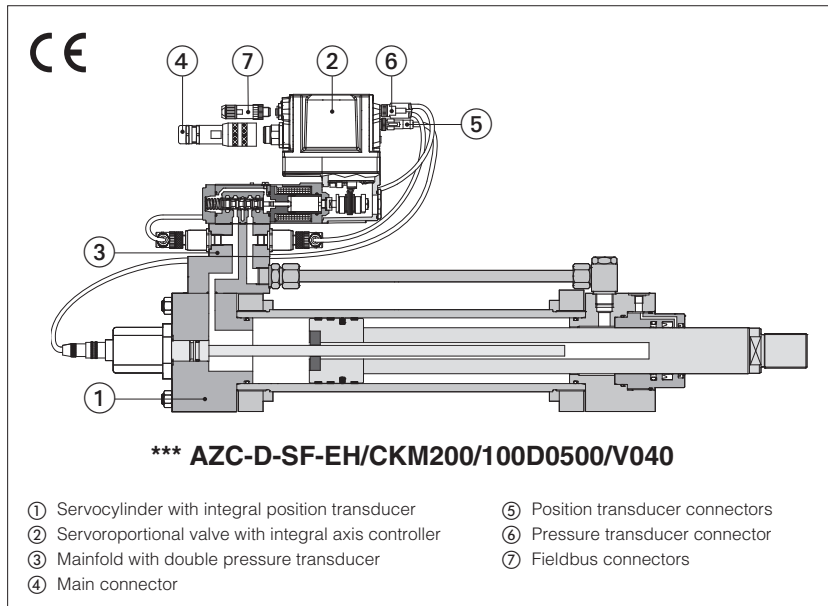


Digital electrohydraulic servoactuators

with integral axis controller, for closed loop position and force control



AZC

Digital electrohydraulic servoactuators are stand-alone units performing closed loop position controls.

The complete motion control cycle can be operated by external signals (from machine PLC) or programmed internally to the controller.

S options add alternate pressure / force control to the basic position one with pressure transducers or load cell factory pre-assembled and wired.

The servoactuators are composed by a servocylinder with position transducer, servoproportional valve with integral driver + axis controller, factory assembled and tested.

They can be provided with optional fieldbus interfaces for functional parameters setting, reference signals and real time diagnostics.

The USB interface is always present for connection to Atos PC software which allows to easily customize the AZC configuration to the specific application requirements.

1 MODEL CODE

***	AZC	M	-	D	-	SF	-	EH	/	CK	M	200	/	100	D	0500	/	V0	40	
Design number																			Servoproportional valve configuration, zero spool overlap: 40 = with fail safe, sleeve execution, direct (tech table FS180) 60 = without fail safe, sleeve execution, direct (tech table FS180) or piloted (tech table FS178) 70 = spring central position, direct (tech table FS168) or piloted (tech table FS178)	
Digital electrohydraulic servoactuator for linear axis position control Cycle Generation type: - = none I = injection M = mold P = parison S = synchronism X = positioning 9 = customized Position transducer type: A = analog D = digital																				
Optional alternated Position/Force control: SN = none SP = with integral single pressure transducer SF = with integral double pressure transducer SL = with integral load cell transducer XL = with remote load cell transducer																			Servoproportional valve size with axis controller, tech table FS230: V0 = direct, size 06 V1 = direct or piloted, size 10 V2 = piloted size 25 V4 = piloted size 25 or size 27	
Fieldbus interfaces, USB port always present: NP = Not present BC = CANopen BP = PROFIBUS DP EH = EtherCAT EW = POWERLINK EI = EtherNet/IP EP = PROFINET RT/IRT																			Stroke [mm] Rod S = single rod D = double rod	
Servocylinder Type, tech table B310: CN = ISO 6020-1, Pmax 250 bar - tech table B180 CK = ISO 6020-2, Pmax 250 bar - tech table B137 CH = ISO 6020-3, Pmax 250 bar - tech table B140, B160 CC = ISO 6022, Pmax 320bar - tech table B241																			Bore diameter [mm] Rod diameter [mm]	
Fieldbus interfaces, USB port always present: NP = Not present BC = CANopen BP = PROFIBUS DP EH = EtherCAT EW = POWERLINK EI = EtherNet/IP EP = PROFINET RT/IRT																			Cylinder position transducer type, see section 6 : Analog (only for AZC-A) P = potentiometer, max stroke 900mm F = analog magnetostrictive, max stroke 2500mm N = analog magnetostrictive, max stroke 4000mm T = LVDT, max stroke 16mm L = LVDT, max stroke 30mm V = inductive, max stroke 900mm Digital (only for AZC-D) M = SSI magnetostrictive, max stroke 900mm Analog or Digital 9 = special X = remoted	

2 MAIN CHARACTERISTICS

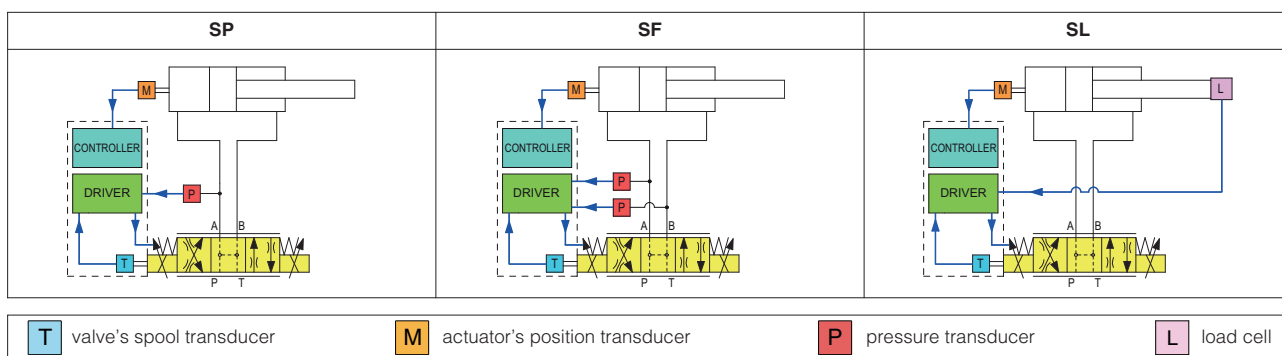
Assembly position	Any position	
Ambient temperature range	standard execution = -20°C ÷ +60°C	
Storage temperature range	Standard execution = -20°C ÷ +70°C	
Protection degree to EN60529	IP66 / IP67	
Duty factor	Continuous rating (ED=100%)	
Recommended fluid temperature	-20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C	
Recommended viscosity	20 ÷ 100 mm ² /s - max allowed range 15 ÷ 380 mm ² /s	
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 µm (β10 ≥75 recommended)	
Hydraulic fluid	Classification	Ref. Standard
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	HFDU, HFDR	ISO 12922
Flame resistant with water	HFC	

3 AXIS CONTROLLER

Digital servoproportionals direct or pilot operated include integral valve's driver + axis controller to perform the position closed loop of hydraulic actuator. Axis controllers are operated by an external or internally generated reference position signal. For detailed information about integral axis controller see tech table **FS230**.

4 ALTERNATED P/Q CONTROLS

5 options add the closed loop control of pressure (**SP**) or force (**SF** and **SL**) to the position control function. A dedicated algorithm alternates pressure (force) depending on the actual hydraulic system conditions. For detailed information about SP, SF, SL controls, see tech table **GS002**.



5 FIELDBUS

Fieldbus allows the direct communication of the servoactuator 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 ACTUATOR'S TRANSDUCER CHARACTERISTICS

6.1 Position transducers

The accuracy of the position control is strongly dependent to the selected position transducer. Four different transducer interfaces are available on the controllers, depending to the system requirements: potentiometer or analog signal (A execution), SSI or Encoder (D execution). Transducers with digital interface allow high resolution and accurate measures, that combined with fieldbus communication grants highest performances. Transducers with analog interface grant simple and cost effective solutions.

6.2 Pressure/force transducers

The accuracy of the pressure/force control is strongly dependent to the selected pressure/force transducer. Alternated pressure/force controls require to install pressure transducers or load cell to measure the actual pressure/force values.

Pressure transducers allow easy system integration and cost effective solution for both alternated position/pressure and position/force controls (see tech table **GS465** for pressure transducers details). Load cell transducers allow the user to get high accuracy and precise regulations for alternated position/force control.

The characteristics of the remote pressure/force transducers must be always selected to match the application requirements and to obtain the best performances: transducer nominal range should be at least 115%÷120% of the maximum regulated pressure/force.

6.3 Transducers characteristics & interfaces - following values are just for reference, for details please consult the transducer's datasheet

Execution	Position				Pressure/Force SP, SF, SL
	A		D		
Input type	Potentiometer	Analog	SSI (3)	Incremental Encoder	Analog
Power supply (1)	±10 Vdc	+24 Vdc	+5 Vdc / +24 Vdc	+5 Vdc / +24 Vdc	+24 Vdc
Controller Interface	±10V	0 ÷ 10V 4 ÷ 20 mA	Serial SSI binary/gray	TTL 5Vpp - 150 KHz	±10 Vdc 4 ÷ 20 mA
Max speed	0,5 m/s	1 m/s	2 m/s	2 m/s	-
Max Resolution	< 0.4 % FS	< 0.2 % FS	1 µm	1 µm (@ 0.15 m/s)	< 0.4 % FS
Linearity error (2)	± 0.1% FS	< ±0.03% FS	< ± 0.01 % FS	< ± 0.001 % FS	< ±0.25% FS
Repeatability (2)	± 0.05% FS	< ± 0.005% FS	< ± 0.001 % FS	< ± 0.001 % FS	< ±0.1% FS

(1) power supply provided by digital controller

(2) percentage of total stroke

(3) Balluff BTL7 with SSI interface is not supported