

EWIKON electric drive valve gate technology

Full process control with high precision

*motion **CONTROL** SD*



EWIKON
PREMIUM
TECHNOLOGY

The benchmark for electric valve gate technology

With high-precision servo motors, EWIKON electric valve gate technology sets standards in process control and precision. All relevant process parameters can be set individually and also fine-adjusted during ongoing production. This gives the injection moulder full control over the valve pin movement. The powerful control technology also enables sequential valve pin control and the approach of several valve pin positions within one moulding cycle. This makes this technology an ideal solution for demanding injection moulding applications in the field of technical parts. Furthermore, the drive concept is emission-free and thus suitable without restriction for clean room applications in medical technology.

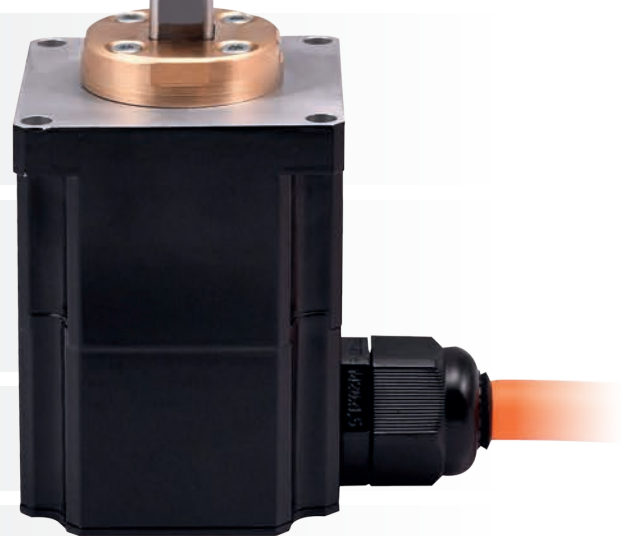
Optimum process control with modern servo technology

The compact linear servo motors used feature a permanent, high-precision position control as well as integrated temperature monitoring. Compared to stepper motor concepts, a higher valve pin speed can be achieved and thus the cycle time can be shortened. The power consumption of the motor is regulated depending on the required force at a constant speed. Therefore, the servo drive is also particularly energy-efficient. Since high closing forces can be generated without any problems, even rapidly freezing materials like polycarbonate can be processed reliably.

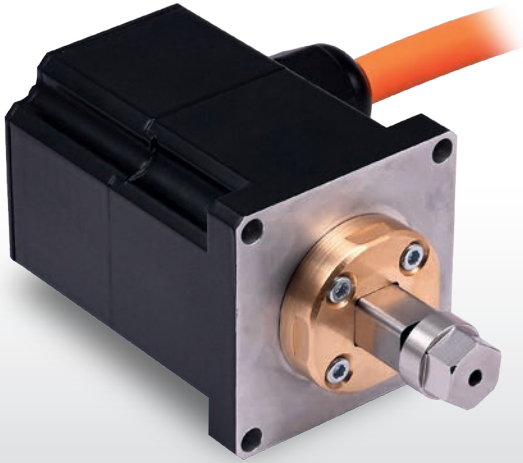


Your advantages

- + Full control of the valve pin movement**
Individual setting of process parameters such as valve pin stroke, valve pin speed, opening and closing time and closing position (optimisation of gating point quality).
- + Linear servo motors for valve pin positioning with high precision**
Valve pin positioning with high precision, increment: 0.01 mm. Individual adjustment for each valve pin as well as shutdown of selected valve pins possible when using single drives.
- + Full cleanroom compatibility**
Emission-free drive concept, ideally suitable for medical applications.
- + Permanent monitoring of valve pin position**
Enhanced process reliability by automatic servo-based valve pin position control.
- + Complex movement profiles of the valve pin for special applications can be easily realised**
- + OPC UA-capable control technology enables easy integration into networked injection moulding production cells**
- + Advanced process control**
Torque and current consumption of the drives allow conclusions to be drawn about the system condition.



Drive unit types



Linear servo motor as single drive unit for standard systems

- Available in 3 versions for different valve pin diameters
- Linear force of drive units: max. 800 N / 1600 N / 2000 N
- Valve pin speed: 1 - 30 mm/s
- Valve pin stroke: up to 16 mm
- Permanent control of valve pin position
- Fine adjustment of the valve pin position in the gate area



Linear servo motor as drive unit for systems with pull rail actuated synchronous plate

- Available in 3 versions
- Linear force of drive units: max. 8000 N / 16000 N / 30000 N
- Valve pin speed: 1 - 30 mm/s
- Valve pin stroke: up to 10 mm
- Permanent control of valve pin positions
- Fine adjustment of the valve pin position in the gate area

motion CONTROL SD

Precise and comfortable control

The external *motion CONTROL SD* touch-screen controller can manage up to 16 individual drive units and enables convenient and clear operation of the system. It contains a powerful servo control system with extensive functions and is available in two versions for controlling systems with single drives or synchronous plate systems. Adaptation to different injection moulding machine control systems is achieved using simple digital signals (+24 V DC). If required, the process data can be transmitted to higher-level assistance and monitoring systems via OPC UA. This allows easy integration of the system into the networked injection moulding production.



smart CONTROL

Compatible with smart CONTROL assistance system



motion CONTROL SD

Controller for linear servo motor as single drive unit

- Control of up to 16 linear servo motors

- Automatic mode or manual operation (test mode)

- Comfortable operation via touch screen display, visualisation of valve pin positions and operating modes

- Individual setting of process parameters such as stroke length, valve pin speed, opening and closing time and closing position (optimisation of gating point quality)

- Different valve pin operation modes: normal operation (OPEN/CLOSE), function for sequential gating (delayed opening), function to approach several valve pin positions within one moulding cycle (e.g. demoulding aid)

- Actuation optionally time-dependent, path-dependent via the screw position of the injection moulding machine or via other input signals, e.g. cavity pressure. Combination of signal types possible

- Storage function to save data and settings on the integrated 2 GB flash memory and a USB stick

- Permanent monitoring of the valve pin position by high-resolution position measuring system

- Connection to the injection moulding machine control via digital signals (+24 V DC) or optionally analogue signals (0 - 10 V DC)



Demanding applications made easy

The extensive valve pin control options enable new approaches to solutions for injection moulding applications and contribute to the increasing tendency to integrate additional functions into the mould.

Function	Field of application
Several valve pin positions are approached within one moulding cycle	Multi-component applications where both components can be gated without the need to move the part to another cavity
	Ejector function; the valve pin acts as demoulding aid after the filling process
	During injection the valve pin fixes an insert part or a core
	Before injection the valve pin punctures an insert part which is then back-injected
Delayed opening and closing of the valve pins	Sequential injection moulding, cascade injection moulding without flow lines
	Multi-gating of parts: Shifting of weld lines into uncritical areas of the structure
	Family moulds: Precise filling of parts with different shot weights

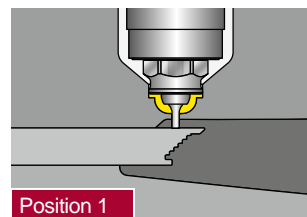
Example for multi-component application

When manufacturing a tripod leg made of PA with an anti-slip TPE foot using two-component injection moulding, both components can be injected in one moulding cycle. In the process, several valve pin positions are approached. The valve pin does not only seal the gate, but also performs an additional function as a movable mould core.

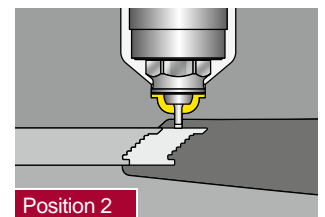


Gating point
PA component

Gating point
TPE component

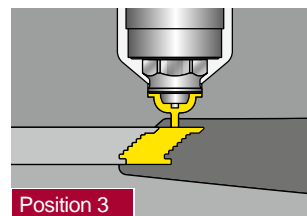


Position 1

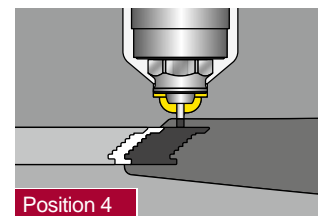


Position 2

The valve pin enters the cavity and touches the contoured slider with defined pressure (1). The PA component is injected. The valve pin keeps a melt channel open and is then retracted from the slider (2). The slider retracts and opens the cavity for the TPE soft component.



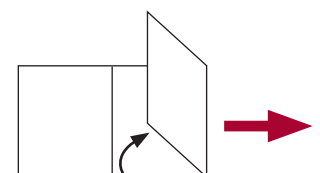
Position 3



Position 4

The valve pin opens and the TPE component is injected through the melt channel that is kept free.

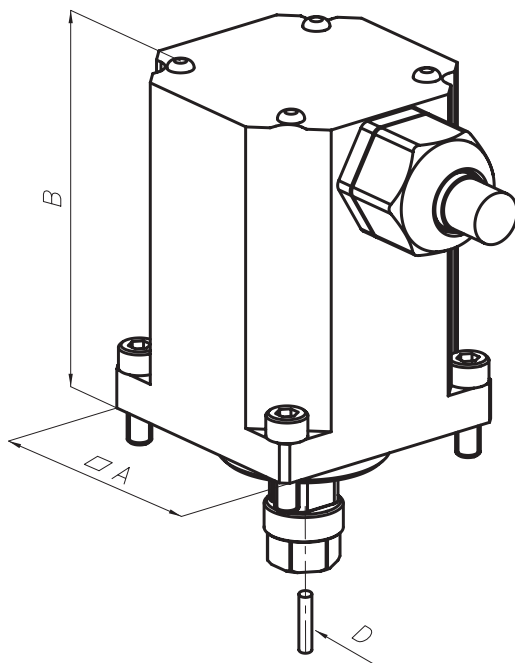
The valve pin moves back to the outer edge of the article into the closing position. The slider moves to the demoulding position. The finished part is demoulded.



Please fold out for technical data

Linear servo motor as single drive unit

Drive versions



z285-04

	Linear servo motor 22900		
	Version 22902	Version 22903	Version 22904
for nozzles with valve pin Ø (dim. D)	2 mm	3 mm	4 mm
Valve pin speed	1 - 30 mm/s		
Maximum valve pin stroke	11 mm	11 mm	16 mm
Maximum valve pin closing force	800 N	1600 N	2000 N
Maximum permissible environmental temperature for drives	70 °C / 158 °F		
Resolution	< 0,01 mm		
Dimension A	55 mm		
Dimension B	75,7 mm		

motion CONTROL SD controllers with accessories

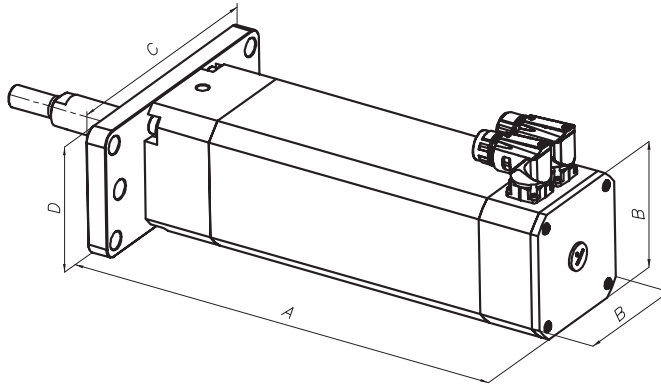
	<p align="center">2-zone controller</p> <p align="center">68152.202</p>	<p align="center">4-zone controller</p> <p align="center">68152.204</p>
<p>Signal cable M23, 17-pin, Pin, 6 m</p>	<p align="center">1 piece 60070.050-V06</p>	<p align="center">1 piece 60070.050-V06</p>
<p>Hybrid motor cable SpeedTec 4G0,75 mm², 3 m (6 m)</p>	<p align="center">1 piece per drive unit 63050.130(-V06)</p>	<p align="center">1 piece per drive unit 63050.130(-V06)</p>
	<p align="center">8-zone controller</p> <p align="center">68152.208</p>	<p align="center">8-zone controller (Extension, without screen)</p> <p align="center">68152.218</p>
<p>Signal cable M23, 17-pin, Pin, 6 m</p>	<p align="center">1 piece 60070.050-V06</p>	
<p>Hybrid motor cable SpeedTec 4G0,75 mm², 3 m (6 m)</p>	<p align="center">1 piece per drive unit 63050.130(-V06)</p>	<p align="center">1 piece per drive unit 63050.130(-V06)</p>

Available options

motion CONTROL SD - AI	2 analogue inputs, e.g. for sequential injection moulding (standard: without analogue inputs)
motion CONTROL SD - RY	Digital outputs potential-free (relay contacts)
motion CONTROL SD - SA	Customer-specific special version

Linear servo motor for synchronous plate systems

Drive versions




z285-03

	Linear servo motor 18255	Linear servo motor 18253	Linear servo motor 18266
Maximum valve pin stroke	10 mm	10 mm	10 mm
Valve pin speed	1 - 30 mm/s	1 - 30 mm/s	1 - 30 mm/s
Maximum closing force of synchronous plate *	8000 N	16000 N	30000 N
Resolution	< 0,01 mm	< 0,01 mm	< 0,01 mm
Dimension A	260 mm	340 mm	283 mm
Dimension B	74 mm	97 mm	127 mm
Dimension C	150 mm	195 mm	149 mm
Dimension D	78 mm	98 mm	112 mm

* System design by EWIKON according to the specific application requirements

motion CONTROL SD controllers with accessories

	1-zone controller 68152.301	2-zone controller 68152.302
		
Signal cable M23, 17-pin, Pin, 6 m	1 piece 60070.050-V06	1 piece 60070.050-V06
Motor connection cable M23 servo drive unit 3/6 m	1 piece per drive unit 63050.110-V03/V06	1 piece per drive unit 63050.110-V03/V06
Resolver cable M23 servo drive unit 3/6 m	1 piece per drive unit 63050.120-V03/V06	1 piece per drive unit 63050.120-V03/V06

Available options: see page 9

EWIKON Heißkanalsysteme GmbH
Siegener Straße 35 • 35066 Frankenberg / Germany
Tel: +49 6451 501-0 • E-Mail: info@ewikon.com
www.ewikon.com

Technical information subject to alteration | EWIKON 03/2022 EN

