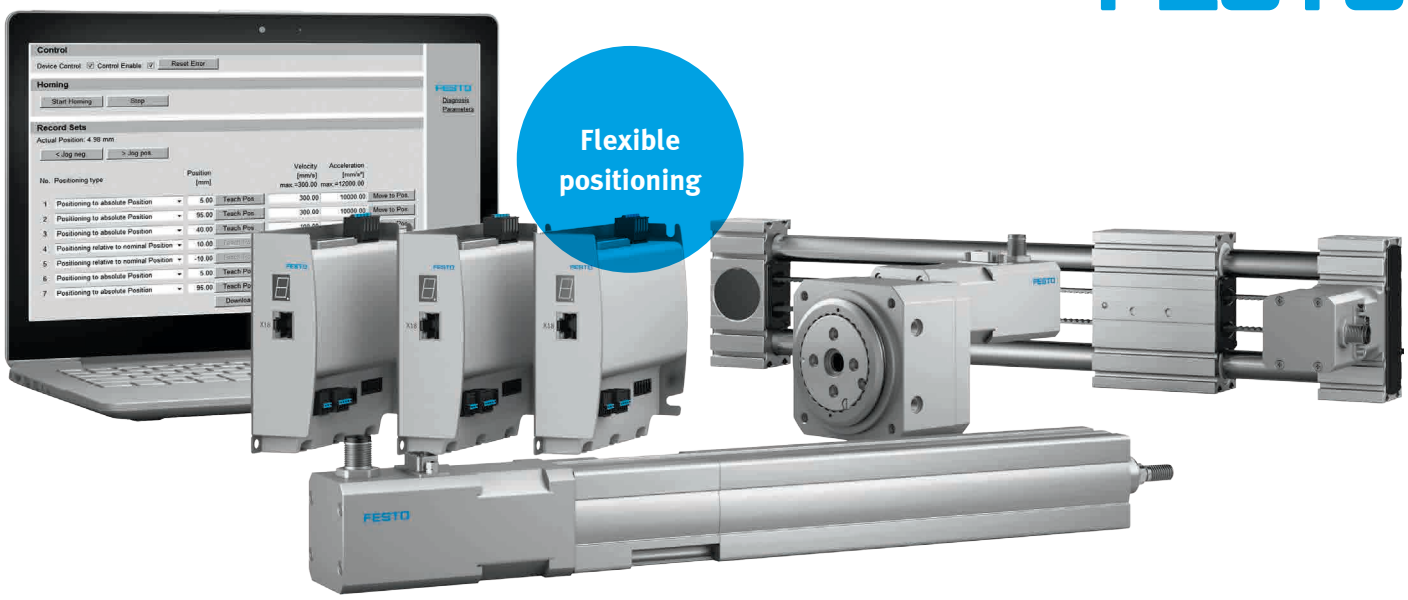
Optimised Motion Series



Easy for you!

Optimised Motion Series – a low-cost system with optimised performance. A package that makes moving and positioning easier than ever before. And significantly cheaper than conventional electrical solutions. It comprises a mechanical system with permanently mounted motor and drive system (motor controller) with integrated web browser technology and matching connecting cables. Another major plus: you can configure, order and commission using just 1 type code.

Highlights

Easy
- A single order code for product selection and configuration
- Optimised, fixed combination of drive and motor

Fast
- Configuration of motion and positioning via Web-Config

Low-cost
- Quick and easy operation and commissioning
- Best price/performance ratio

Flexible
- Freely selectable position, force and speed
- Freely definable motion profiles

Always complete
Easy configuration, reliable selection and ordering of the correct size and combination using the type code: mechanical system including perfectly matching motor, pre-assembled connecting cables suitable for use with energy chains and drive system (motor controller). Plus: quick commissioning via web browser concept. Easy selection with PositioningDrives.

Best performance
The components:
- Electric cylinder EPCO for easy positioning
- Toothed belt axis ELGR for automating simple movements
- Rotary drive ERMO for rotary and swivel motions
- Motor controller CMMO-ST with integrated web browser with broad connectivity such as IO-Link, Modbus TCP or I/O interface

Simply a complete system: Optimised Motion Series

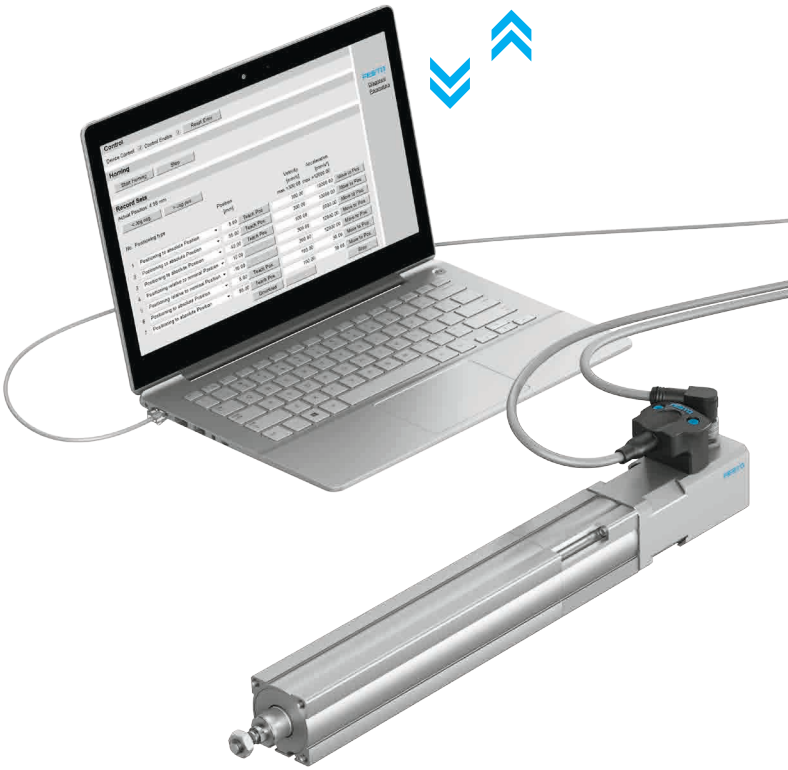
Optimised logistics: the complete positioning system in a modular system (1 system = 1 order code)

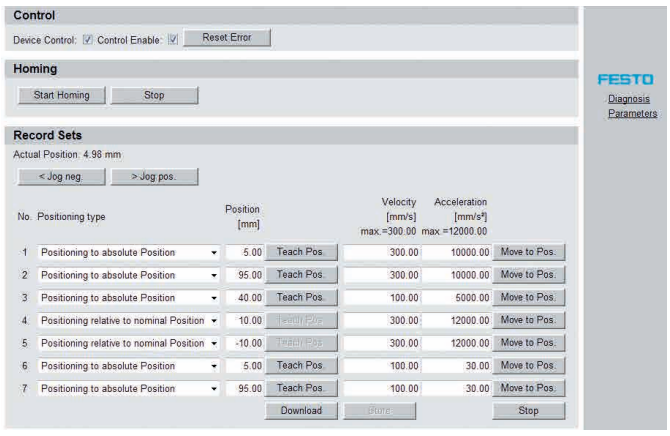
It doesn't get any more convenient than that: just enter the order code and you receive the complete drive package precisely where you want to install it. As a result, the workload in your purchasing department is reduced, warehousing and logistics are simplified and you save time, because the individual parts no longer have to be assembled. Incidentally, selection is very simple with PositioningDrives engineering software or the characteristic curves in the catalogue!

Simpler and easier than ever before: optimised commissioning with Web-Config
Quick and easy with configuration via the web server. Parameter sets for the predefined and tested combinations can be found on the Festo parameter cloud. The complete system is ready for operation quickly and easily.

Here's how it works:
- Connect the motor controller CMMO-ST to the laptop or PC
- Establish an Internet connection and enter the controller-specific IP address in the browser
- Download the parameters file for the specific product configuration from the parameter cloud to the computer
- Save the data record on the CMMO-ST
- Home the drive system, enter the position sets and save them directly in CMMO-ST
- And you're ready to go!

Data from the parameter cloud!
Download the drive-specific parameter sets from the Festo parameter cloud via the Internet and the server.



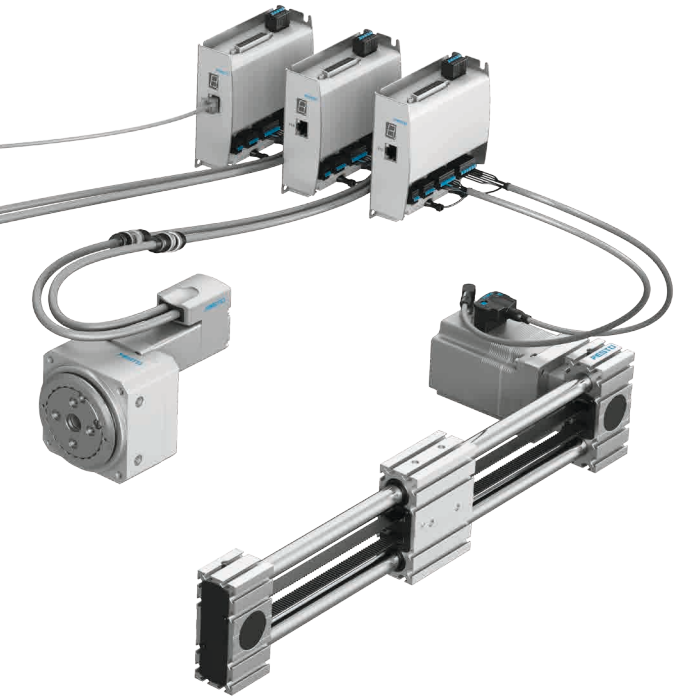


Do you have special requirements for the Optimised Motion Series?
The Festo Configuration Tool FCT – the Festo software platform for electric drive solutions – can be used directly from the PC, for example, for configuring up to 31 motion steps in the electric cylinder EPCO by entering acceleration values, speed, force or jerk limitation etc. directly – all without a PLC. Including extended diagnostic functions.

Specially for small and straightforward tasks: the compact controller CECC
The controllers CECC are modern, compact and versatile controllers and enable programming with CODESYS V3.

Optional: function libraries for motion control of up to three interpolating axes. Ethernet, CANopen Master, IO-Link Master and Device and serial interfaces round off the functionalities. All electric drive controllers from Festo and all valve terminals can be activated via CANopen.

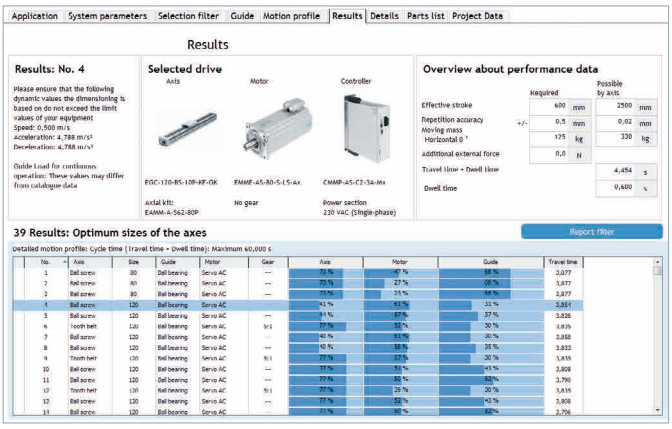
The CECC communicates with other controllers and operator units from Festo, such as the modern, new HMI device series CDPX and the camera SBOx-Q for image evaluation, via Ethernet.



Power supply unit CACN
24 V DC power supply for logic and load

Selection made easy!
PositioningDrives calculates the ideal combination from the widely coordinated range of electromechanical linear axes, motors, gear units and drive systems (motor controllers) after a few application data have been entered.

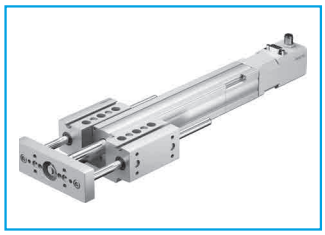
By specifying various project parameters, the tool can also calculate the characteristic load values for the selected drive quickly and reliably. PositioningDrives prevents incorrect designs and energy waste by helping you to select the right components.



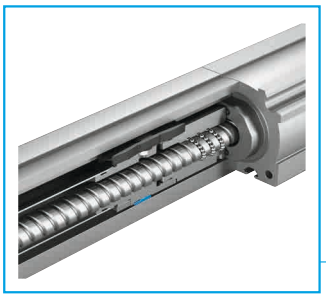
Simply a complete system: electric cylinder EPCO

Dynamic and easy positioning

The electric cylinder with ball screw and non-rotating piston rod in 3 sizes has a fixed, perfectly adjusted motor. The optional guide unit makes it even more powerful and versatile. Its features include easy cleaning thanks to its clean look and a long service life, with a running performance of 10,000 km.

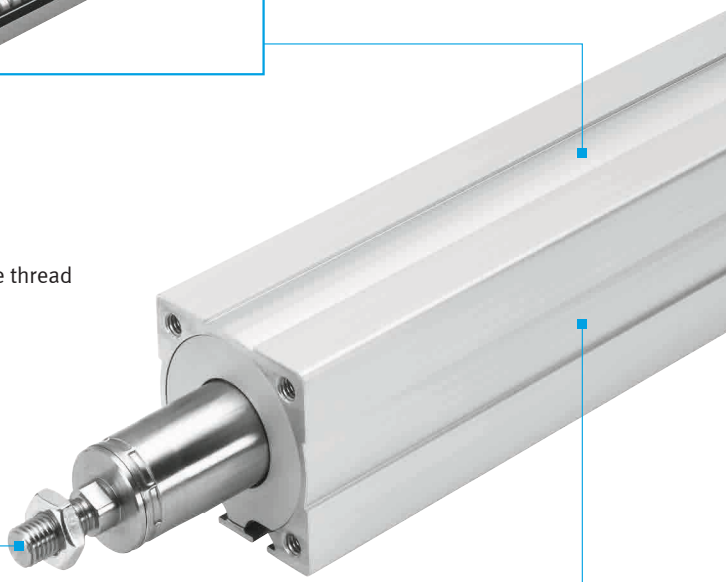


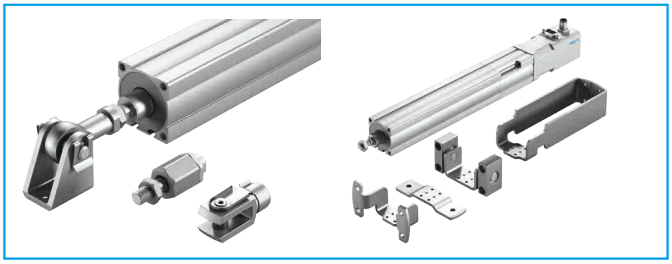
Guide unit (optional)
- Absorption of lateral forces
- To protect cylinders against torsion at high torque loads
- Recirculating ball bearing guide with high load bearing capacity
- Mounting interface for other drives, e.g.
  - Toothed belt axis ELGR
  - Rotary drive ERMO
  - Electric slide EGSL
  - Pneumatic slide DGSL
- Technical data (size 16/25/40)
  - Lateral forces Fy/z max. 187/335/398 N
  - Max. torque Mx 7/15/21 Nm
  - Max. torque My 4/10/15 Nm



Spindle drive
- Ball screw
- 2 pitches per size
- Non-rotating spindle
- Life-time lubrication

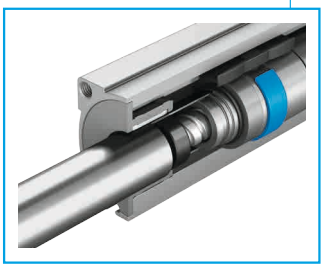
Piston rod
Optional:
- Piston rod with female thread
- Piston rod extension



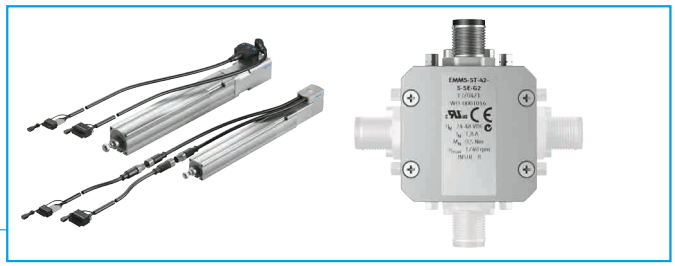


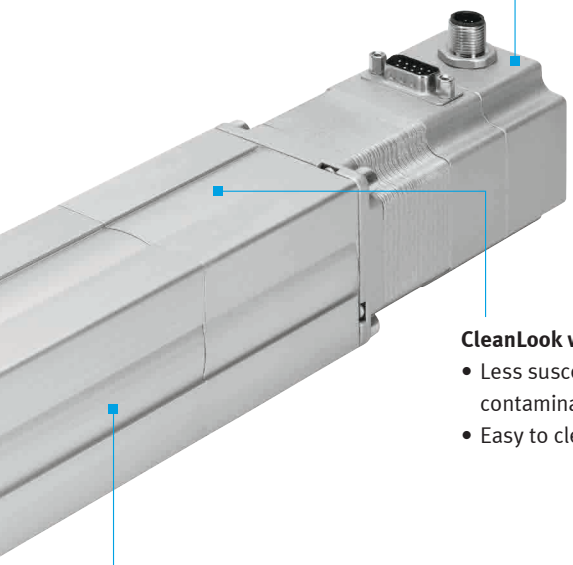
Diverse piston rod accessories, e.g.
- Rod eye
- Rod clevis
- Coupling

Diverse cylinder mounting options, e.g.
- Foot mounting
- Flange mounting
- Swivel mounting
- Adapter kit



End-position cushioning
- Absorbs impact energy in both end-positions
- Reduced load and noise





CleanLook with smooth surfaces
- Less susceptible to contamination
- Easy to clean

Cables for power supply (load) and encoder
- Pre-assembled, up to 10 m long
- Suitable for energy chains
- Connection technology and motor with IP54 protection

Motor connection
- Freely selectable outlet direction for the motor cables: 4 x 90°
- Standard outlet: up

Motor
- Optional holding brake
- Encoder optional:
  - With encoder: closed-loop operation
  - Without encoder: cost-optimised open-loop operation

Optional position sensing
- Specify the “position sensing” option when ordering
- Select your preferred sensor bracket:
  - Sensor rail (aluminium)
  - Mounting kit in clean design (polymer)
  - Select your preferred sensor/proximity sensor (SMT-8 or SME-8) depending on the application
- Bond the sensor bracket into place, mount the sensor and you're done!

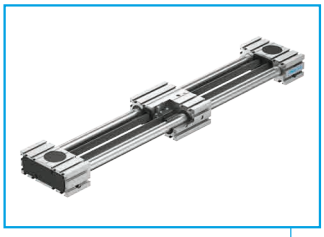
Technical data

Size	16		25		40	
Design	Electric cylinder with recirculating ball spindle and motor					
Working stroke [mm]	50 ... 200		50 ... 300		50 ... 400	
Spindle pitch [mm/rev]	3	8	3	10	5	12.7
Max. effective horizontal load [kg]	24	8	60	20	120	40
Max. effective vertical load [kg]	12	4	30	10	60	20
Max. feed force Fx [N]	125	50	350	105	650	250
Max. speed [mm/s]	125	300	150	500	180	460
Max. acceleration [m/s²]	10					
Max. angle of rotation at the piston rod [°]	≤ ±2		≤ ±1.5		≤ ±1	
Repetition accuracy [mm]	≤ ±0.02					

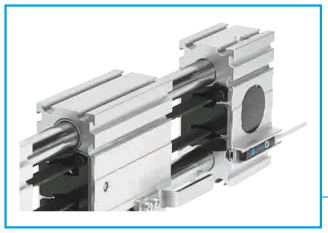
Simply a complete system: toothed belt axis ELGR

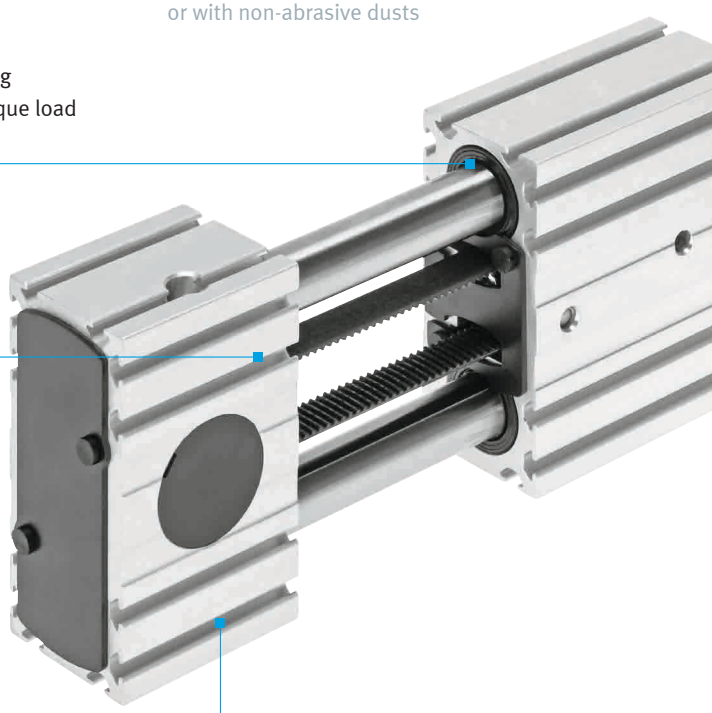
Fast and very cost-effective motion

The toothed belt axis ELGR in cost-optimised design is ideal for applications with comparatively low requirements in terms of mechanical load, dynamic response and precision. The flexibility of the ELGR and its diverse range of possible uses make it ideal for simpler applications requiring cost-effective solutions – with a long service life of 5000 km running.



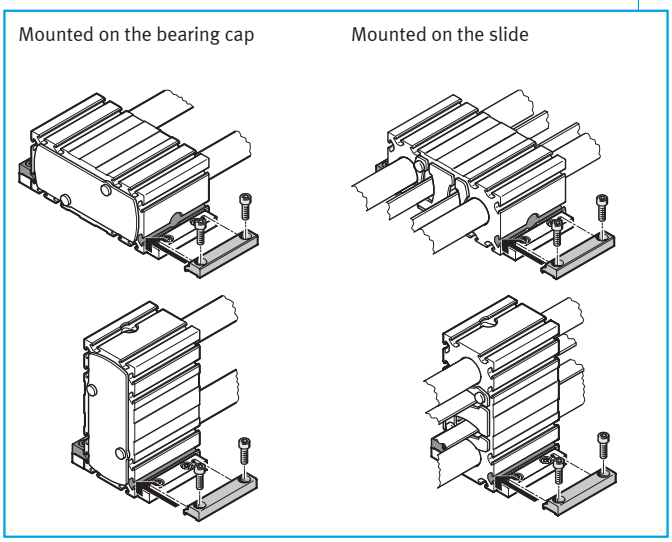
Guide variants
- Recirculating ball bearing guide
  - 4 backlash-free preloaded guides
  - For medium loads
  - Very good operating behaviour with torque load
- Plain-bearing guide (on request)
  - For small loads
  - Use in humid environments or with non-abrasive dusts



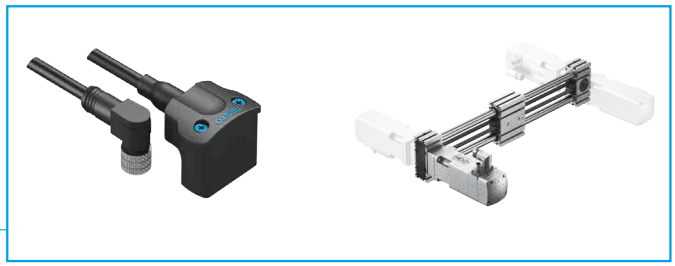


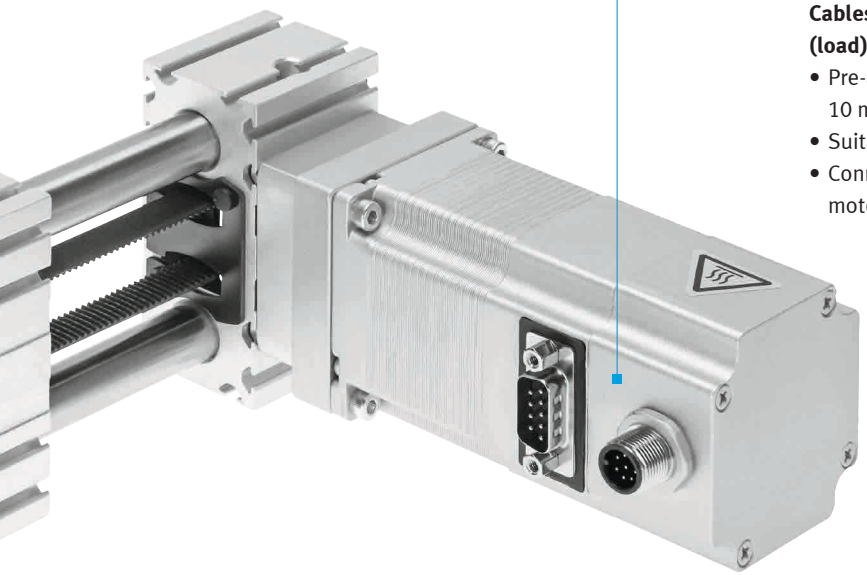
Reliability thanks to optional end-position sensing via inductive proximity switch SIES-8M
- Switching output PNP or NPN
- Switching distance 1.5 mm
- Repetition accuracy ±50 µm (radial)
- Output status display: 2 yellow LEDs for improved visibility – regardless of the direction from which it is approached
- Max. cable length 7.5 m
- Electrical connection: 3-wire cable or 3-pin M8x1

The proximity switch SIES-8M, together with the sensor bracket and switch lug, can be retrofitted onto the axis at any time.



Flexible profile mounting for mounting the axis
- On the bearing cap
- On the slide
- Either horizontal or vertical



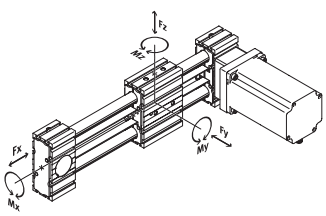


Cables for power supply (load) and encoder

- Pre-assembled, up to 10 m long
- Suitable for energy chains
- Connection technology and motor with IP54 protection

Motor positions

- Freely selectable positions at both ends of the axis
- Motor can be mounted turned by 4 x 90° at each position
- Can be changed at any time



Technical data

Size	35	45	55
Design	Electromechanical linear axis with toothed belt		
Guide	Recirculating ball bearing guide		
Standard stroke [mm]	50, 100, 150, ... , 750, 800	50, 100, 150, ..., 750, 800, 900, 1000	50, 100, 150, ..., 750, 800, 900, 1000, ..., 1500
Max. feed force Fx [N]	50	100	350
Max. speed [m/s]	1.1	1.1	0.35
Max. acceleration [m/s²]	15		
Repetition accuracy	±0.1		

Permissible forces and torques for a service life of 5000 km			
Fy max. Fz max. [N]	28	50	68
Mx max. [Nm]	2.5	5	15
My max. [Nm]	8	16	48
Mz max. [Nm]	8	16	48

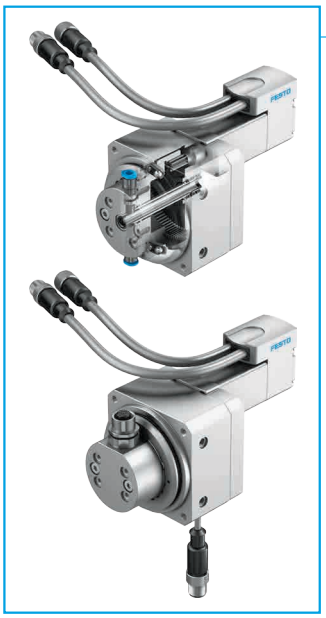
Simply a complete system: rotary drive ERMO

Powerful turning and swivelling under high load

The rotary drive ERMO is the ideal complete solution for turning and aligning parts and workpieces or for swivelling tasks subjected to heavy loads. The solution package is also suitable for simple rotary indexing table applications such as at manual workstations. The flexibility of the ERMO and its diverse range of possible uses make it ideal for simpler applications requiring cost-effective solutions – with a long service life of more than 5 million cycles.

Mechanical interfaces
- Flange and housing identical to the pneumatic swivel module DSM

Swivel angle limitation
- Adjustable swivel angle up to max. 270°
- External mounting kit

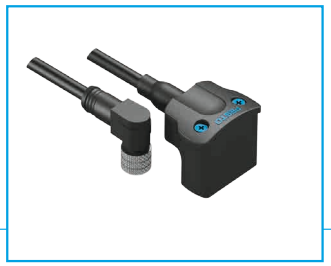


Through-feed
- Sealed hollow shaft
- For power or sensor cables
- For tubing

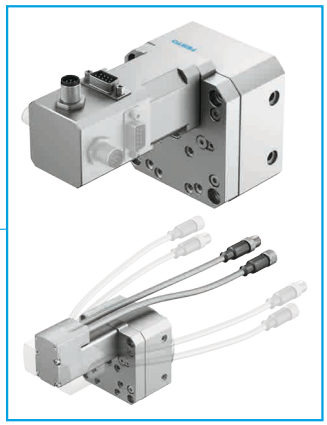
Optional energy through-feed for infinite rotation
- Pneumatic, e.g. grippers
- Electric, e.g. for sensors or the transmission of IO-Link signals

Robust and precise bearing
- Backlash-free ball bearing
- Absorption of high lateral forces

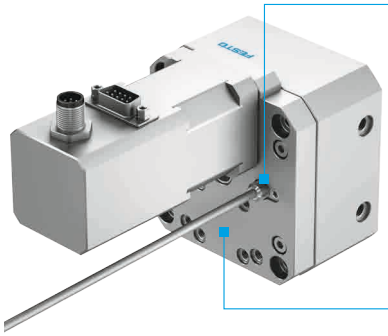
CleanLook with smooth surfaces
- Less susceptible to contamination



Cables for power supply (load) and encoder
- Pre-assembled, up to 10 m long
- Suitable for energy chains
- Connection technology and motor with IP54 protection



Motor positions
- Motor can be mounted and turned by 3 x 90° at each position
- Can be changed at any time



Reference sensor
- For multi-turn applications
- Integrated
- M8 connection

Mounting interface
For connecting to other drives, e.g.
- Electric cylinder EPCO, on the guide unit
- Electric slide EGSL

Technical data

Size	12	16	25	32
Flange size [mm]	58x58	68x68	83x83	105x105
Torque [Nm]	0.15	0.8	2.5	5
Max. mass moment of inertia [kg.cm²]	3	13	65	164
Speed [°/s]	600	600	400	300
Repetition accuracy [°]	±0.05	±0.05	±0.05	±0.1
Max. axial torque [N]	500	600	700	800
Max. radial torque [N]	500	750	1200	2000

Simply a complete system: motor controller CMMO-ST

Quick and easy configuration – controlled positioning

The motor controller CMMO-ST with integrated web browser for configuration and diagnostics offers a broad connectivity such as IO-Link, Modbus TCP or I/O interface.

CMMO-ST is a closed-loop servo controller for stepper motors, equipped with all the functions you might need. It also includes low heat development, monitored safe positions and smooth motor running. As a fully fledged closed-loop servo system, it uses the best possible motor characteristic curve for the highest degree of operational reliability and fast dynamic response.

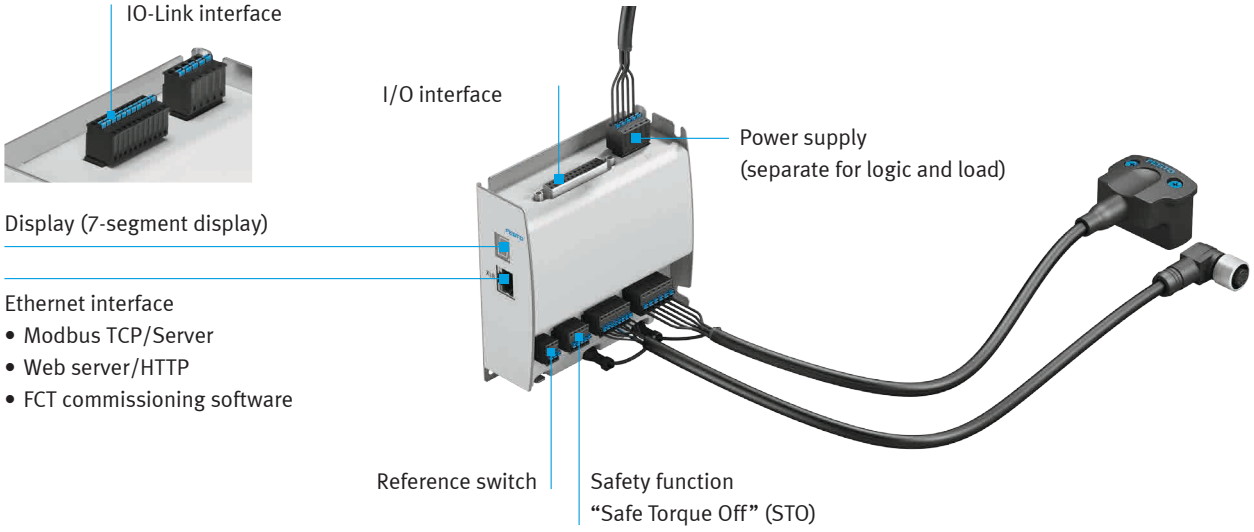
Functions
- Acceleration with jerk limitation
- Monitoring of freely defined positions and torque ranges
- Monitoring of different process variables such as torque, speed, position and time
- Positioning mode with optional torque limiter
- Force mode with optional stroke limit
- Speed mode with stroke and force limiter

Key technical data
- Logic voltage: 24 V DC (isolated from load)
- 24 V DC load voltage
- Maximum motor current: 5 A
- Switching logic: PNP or NPN
- Safety: STO/cat. 3, PLd
- Protection class: IP40

IO-Link and Modbus TCP
The data profile FHPP is transferred via both interfaces with identical function range.

I/O interface
7 freely definable positions via directly allocated I/Os

Overview of interfaces

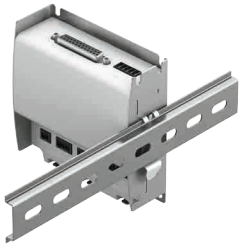


Mounting options for motor controller CMMO-ST (IP40 protection)

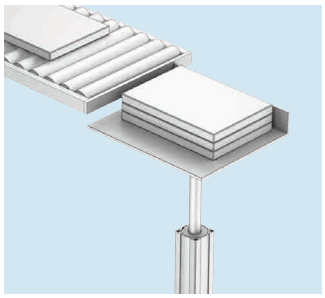
Flat back mounting

Book spine mounting

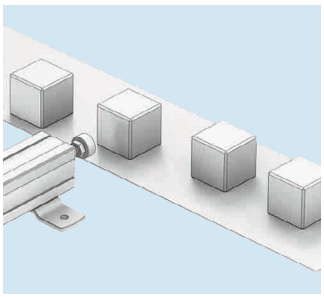
H-rail mounting



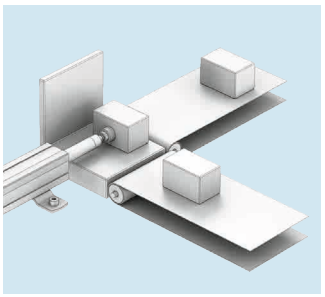
Versatile: the range of applications for the electric cylinder EPCO



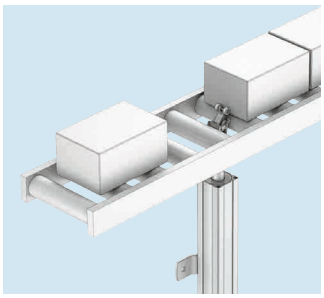
Lifting/stacking



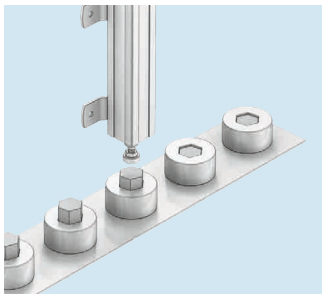
Positioning workpieces



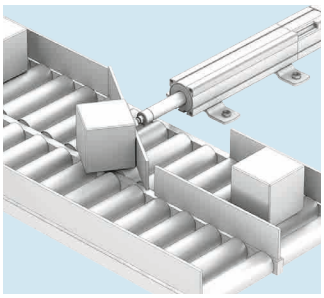
Transferring



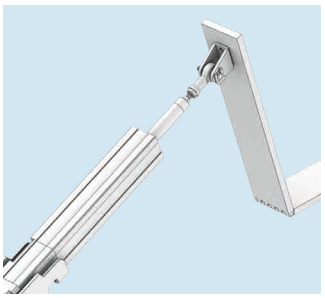
Stopping/separating



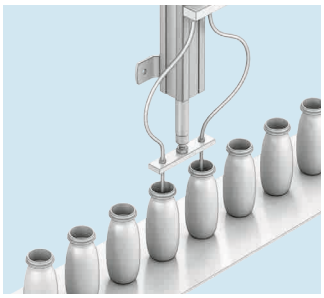
Press fitting



Setting deflectors

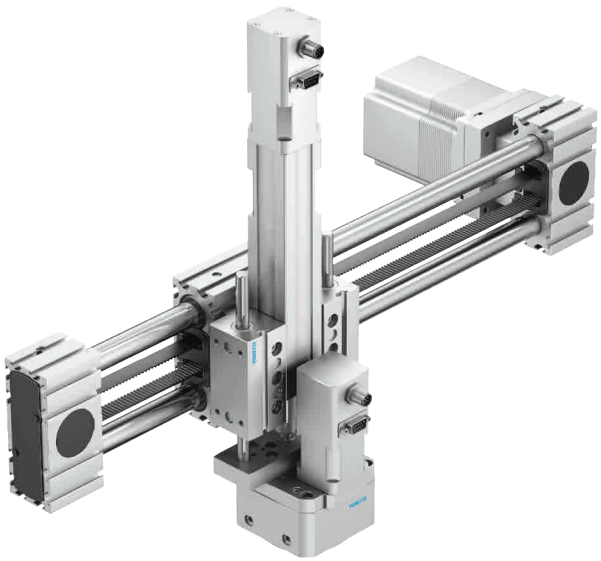


Tilting

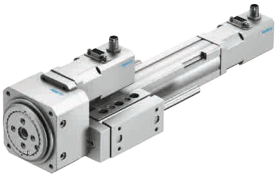


Filling fluids/taking samples

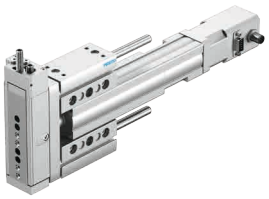
Sample combinations: Optimised Motion Series in the system



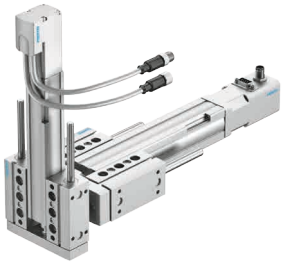
Complete solution: electric linear gantry (YZ) with rotary drive

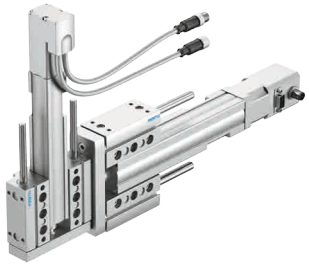


Cylinder/rotary drive combination from the modular system



Pick & place solution with pneumatic slide units DGSL





Possible alternative combinations of the electric cylinder EPCO for pick & place tasks

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