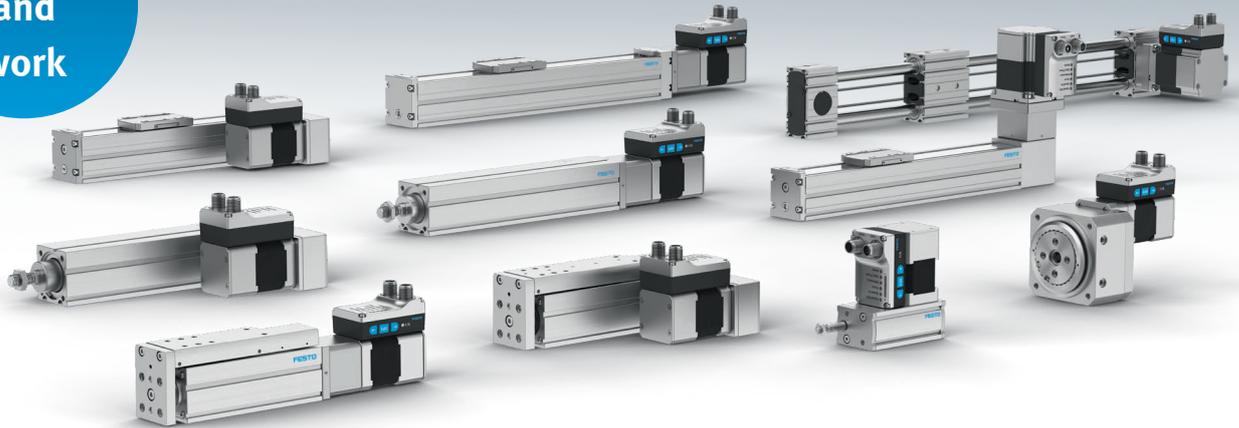


# Simplified Motion Series

FESTO

Plug  
and  
work



## Motion made easy

### Highlights

- Simplified functionality for simple movements between two end positions
- Use of intermediate positions (in IO-Link® mode)
- A variety of movements with different mechanical systems
- Integrated products eliminate the need for a control cabinet
- Quick and easy commissioning without software and special expertise
- Digital I/O and IO-Link® integrated as standard

The simplicity of pneumatics is now combined for the first time with the advantages of electric automation thanks to the Simplified Motion Series. These integrated drives are the perfect solution for all users who are looking for an electric alternative for very simple motion and positioning tasks, but don't want the commissioning process for traditional electric drive systems that can often be quite complex. There is no need for any software since operation is simply based on the plug and work principle. Digital I/O (DIO) and IO-Link® are always automatically included – a product with two types of control as standard.

### Integrated

The Simplified Motion Series doesn't need an external servo drive, since all necessary electronic components are combined in the integrated drive. The complete solution is optimised for simple movements between two mechanical end positions without having to sacrifice optimised motion characteristics like gently cushioned travel into the end position, simplified press-fitting and clamping functions or the use of intermediate positions.

### Simple

This electric alternative for very simple motion tasks doesn't require the usual commissioning process for traditional electric drive systems that can often be quite complex. It can be done quickly and easily without software, computers or other accessories. All parameters can be manually set directly on the drive. Added value functions such as the use of intermediate positions or a firmware update are available via IO-Link® during this process.

 IO-Link

## Overview of the Simplified Motion Series

The Simplified Motion Series consists of different linear and rotary electromechanical components together with a simple and application-optimised combination of motor and servo drive, the so-called integrated drive.

This solution doesn't require an external servo drive. Since the drives of the Simplified Motion Series are installed directly in the machine, they do not take up any space in the control cabinet. The electric alternative for very simple motion and positioning tasks

between two end positions and an intermediate position doesn't require the usual commissioning process for traditional electric drive systems that can often be quite complex. It also offers special motion characteristics such as gently cushioned travel into

the end position or simplified press-fitting and clamping functions. In addition, the end-position feedback is integrated as standard so that no external sensors are required.

### Electric cylinder EPCE

The EPCE is an electric cylinder for short strokes and cycle times, offering a minimal zero stroke and excellent value for money.

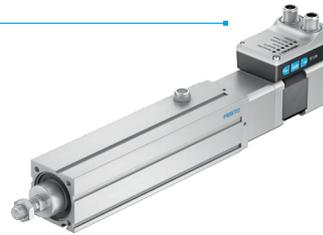
It is ideal for use in testing and inspection systems as well as for labelling, in simple centring tasks and for aligning workpieces.



### Electric cylinder EPCS

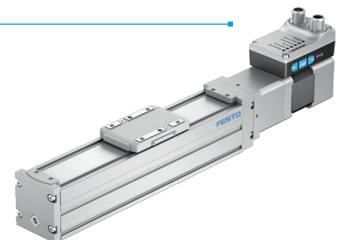
The EPCS with smooth-running ball screw is ideal for individual linear movements. As an extremely cost-effective complete solution, this electric

cylinder is perfect for applications such as clamping, distributing, sorting and ejecting, and as a simple Z-axis in handling systems.



### Spindle axis ELGS-BS

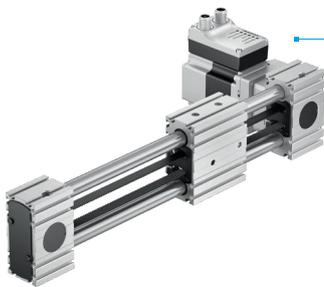
Extremely compact and cost-effective spindle axis with precise, resilient recirculating ball bearing guide for the slide and powerful ball screw.





**Toothed belt axis ELGS-TB**

Compact and extremely cost-effective toothed belt axis with precise, resilient recirculating ball bearing guide for the slide and durable toothed belt.



**Toothed belt axis ELGE**

This attractively priced toothed belt axis with recirculating ball bearing guide offers very good, smooth running performance. It is ideal as an economical solu-

tion for very simple tasks with comparatively low requirements for mechanical load, dynamic response and precision as well as for the environment.



**Mini slide EGSS**

The powerful and resilient EGSS with smooth-running spindle is the precise solution for guided individual linear movements or vertical Z-movements.



**Rotary drive ERMS**

The rotary drive for simple swivelling tasks or for increased mechanical loads has sturdy, precise and backlash-free ball

bearings for the rotary plate, thus absorbing transverse loads and torques.

**Note on using the Simplified Motion Series**

- All products have degree of protection IP40
- The Simplified Motion Series has been developed for end-to-end motion including an intermediate position and is not suitable for flexible positioning applications

## Electric cylinder EPCE



With the cylinder EPCE, Festo is extending the unique Simplified Motion Series to include a cost-effective electric cylinder unit for short strokes, very short cycle times as well as minimal zero stroke. The innovative toothed belt/cylinder concept makes the EPCE the perfect solution for all users looking for an electric short-stroke cylinder optimised for speed and space, and a real alternative to pneu-

matic solutions. The flexible overall concept of the EPCE offers a wide range of piston rod, mounting and cable outlet variants as well as options for control and communication, something that current pneumatic drives cannot offer in the same way.

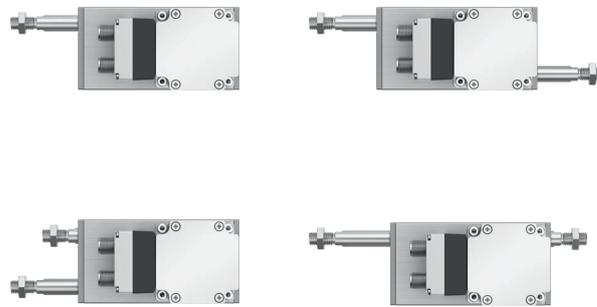
## Flexible mounting and a wide range of applications

### Integrated drive: mounting options



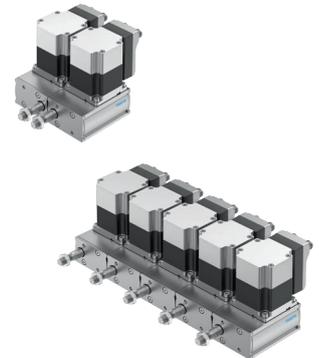
Freely selectable: motor alignment and cable outlet  
Flexibility: optimised cable routing in the machine

### Choice of piston rod options

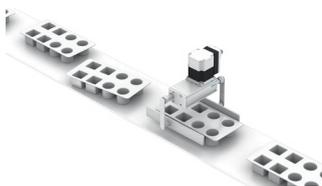


Variety: different variants with one or two piston rods  
Flexibility: free combination for different tasks in the machine

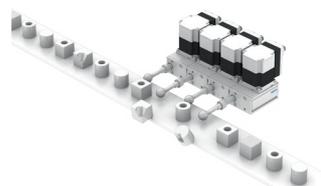
### Maximum component density with the EPCE



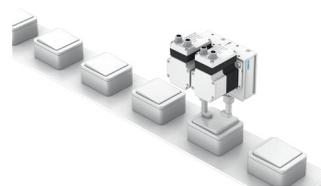
## Application examples EPCE



Aligning blister packaging with the electric cylinder EPCE



Sorting with the electric cylinder EPCE

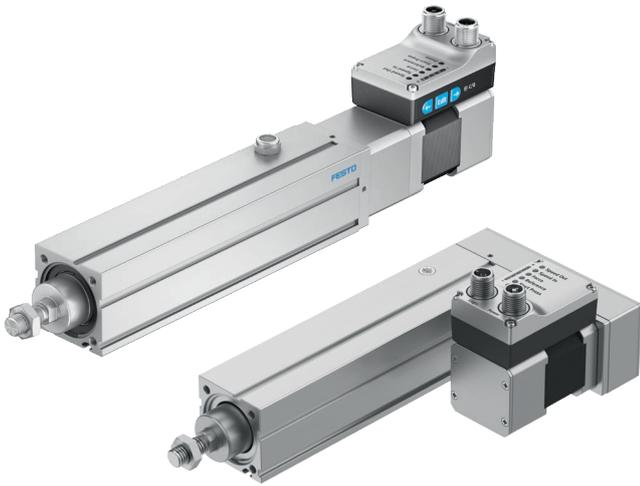


Testing with the electric cylinder EPCE



Vertical flow packaging with the electric cylinder EPCE

## Electric cylinder EPCS

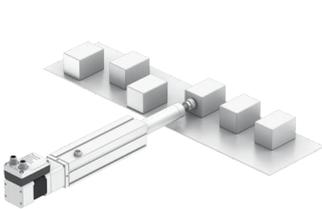


The EPCS is suitable for individual linear motions in every mounting position. Its smoothly running ball screw allows precise and rapid motion and easy positioning. As an extremely cost-effective complete solution, this electric cylinder is perfect for applications such as clamping, distributing, sorting or ejecting and as a simple Z-axis in handling systems.

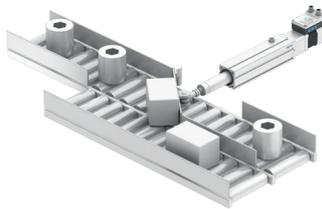
- Three sizes for a payload of up to 120 kg with a max. stroke of 500 mm
- Choice of axial or parallel motor mounting

- Simple and cost-effective position sensing via proximity switch
- Optional: ducted compressed air compensation prevents particles or moisture from entering and particles leaking into the environment
- Unique “one-size-down” assembly system for mounting with the spindle and toothed belt axes ELGS-BS/-TB
- Variety of cable outlet directions and motor positions – can be changed at any time

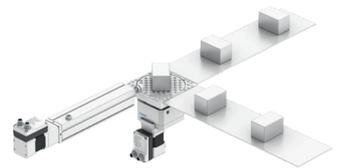
## Application examples EPCS



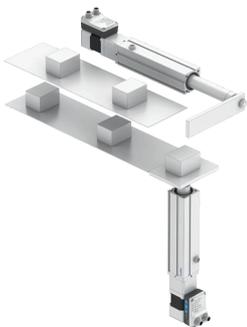
Positioning with the electric cylinder EPCS



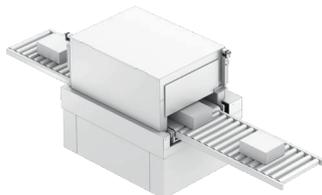
Sorting with the electric cylinder EPCS



Transferring with the electric cylinder EPCS and rotary drive ERMS



Lifting with short stroke using the electric cylinder EPCS



Vertical door opener with the electric cylinder EPCS

## Spindle axis ELGS-BS and toothed belt axis ELGS-TB



### Spindle axis ELGS-BS

Extremely compact and cost-effective spindle axis with precise, resilient recirculating ball bearing guide for the slide and powerful ball screw.

- Three sizes for a payload of up to 20 kg at a max. stroke of 800 mm
- Choice of axial or parallel motor mounting
- Variety of cable outlet directions and motor positions – can be changed at any time



### Toothed belt axis ELGS-TB

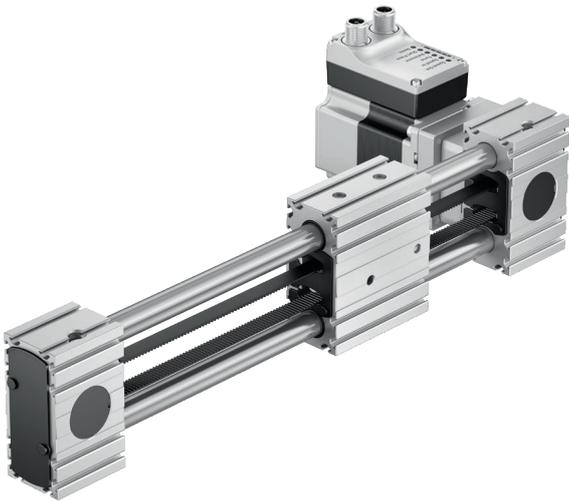
Compact and extremely cost-effective toothed belt axis with durable toothed belt and precise, resilient recirculating ball bearing guide for the slide.

- Two sizes for up to 1.3 m/s at a max. stroke of 2000 mm
- The motor can be rotated by 4 x 90° and its position can be modified at any time

### Common features

- Permanent stainless steel cover strip protects the internal guide and spindle or toothed belt
- Unique “one-size-down” assembly system for mounting with each other and with the mini slide EGSS
- Optional: ducted compressed air compensation prevents particles or moisture from entering and particles leaking into the environment

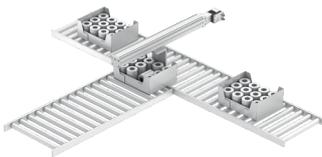
## Toothed belt axis ELGE



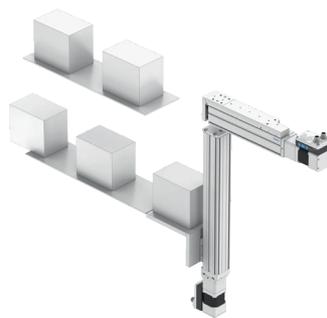
The toothed belt axis ELGE-TB is very smooth in operation thanks to its recirculating ball bearing guide. As an attractively priced complete solution with a cost-optimised design, it is ideal as an economical solution for very simple tasks with comparatively low requirements for mechanical load, dynamic response and precision as well as for the environment.

- High running performance of 5000 km
- Optional end-position sensing using proximity switches
- The motor can be fitted on both sides, above or below, rotated by  $4 \times 90^\circ$ , and its position can be changed at any time

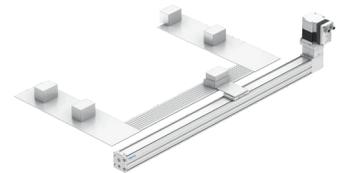
## Application examples ELGS-BS/-TB and ELGE



Sorting with the spindle axis ELGS-BS



Lifting with long strokes using the spindle axis ELGS-BS



Transferring horizontally with the toothed belt axis ELGS-TB

## Mini slide EGSS

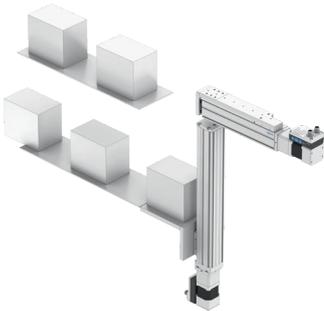


Cost-effective and resilient EGSS with smooth spindle operation for vertical Z-movements or guided individual linear movements in every mounting position. The internal linear guide absorbs lateral forces and provides very good resistance to torsion at high torques.

- Three sizes with a max. stroke of 200 mm
- Choice of axial or parallel motor mounting
- The electric rotary drive ERMS can be mounted directly without the need for adapters

- Optional: ducted compressed air compensation prevents particles or moisture from entering and particles leaking into the environment
- Unique “one-size-down” assembly system in conjunction with ELGS-BS/-TB
- Variety of cable outlet directions and motor positions – can be changed at any time

## Application examples EGSS



Lifting with long stroke using the spindle axis ELGS-BS and with the mini slide EGSS



Press-fitting/joining using the mini slide EGSS

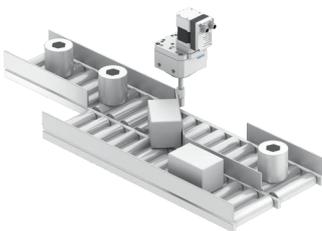
## Rotary drive ERMS



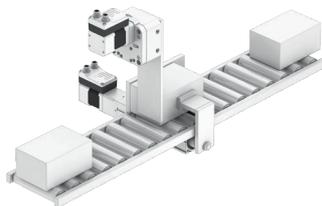
As a cost-effective solution package, the rotary drive ERMS is ideal for simple swivel tasks as well as for increased mechanical loads. The rotary plate has sturdy, precise and backlash-free ball bearings so it can absorb lateral loads and torques.

- Two sizes, each with a swivel angle of 90° and 180°
- Sealed hollow shaft for the integrated through-feed of cables or tubing
- The standardised mounting interface allows it to be connected directly to the electric mini slides EGSL, EGSC and EGSS.

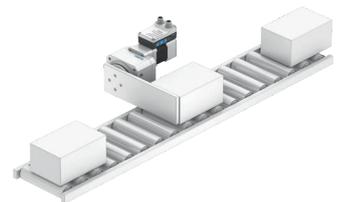
## Application examples ERMS



Sorting using deflectors with the rotary drive ERMS



Stopping and clamping with the rotary drive ERMS



Stopping with the rotary drive ERMS

## The integrated drive: connection, commissioning and firmware update

The Simplified Motion Series is directly connected to the controller and control is either via digital I/O (DIO) or IO-Link®. Both types of control are integrated as standard. Simple control via

digital I/O (DIO) takes place in the same way as controlling a pneumatic valve. The alternative connection via IO-Link® offers highly flexible control including additional functions.

End-position feedback is integrated as standard, with its functionality similar to that of a conventional proximity switch. Commissioning is quick and easy to carry out without the need for

any software, computers or other accessories, because all parameters can be manually set directly on the drive.

For commissioning, simply set all relevant parameters directly on the drive:

- Speed for “out” and “in” movement
- Force of the drive in the “out” position

- Setting the reference end position
- Setting the position “Start force-controlled movement”
- Manual start (similar to a manual override)



Simple electrical connection via M12 connector technology

- Power (4-pin): power supply for the motor
- Logic (8-pin): control signal, sensor signal and power for the integrated electronics



Expanded functions via IO-Link®: remote setting of the motion parameters, copy and backup functions for transferring parameters, read functions for essential process parameters.

Intermediate position: interrupt the motion at a defined position during the stroke using the intermediate position offered via IO-Link® – and then continue on to the end position. Can be used in both directions.

Firmware update via IO-Link®: download the latest firmware to the drive quickly and easily, including for all products already installed.

## Seamless connectivity to the cloud

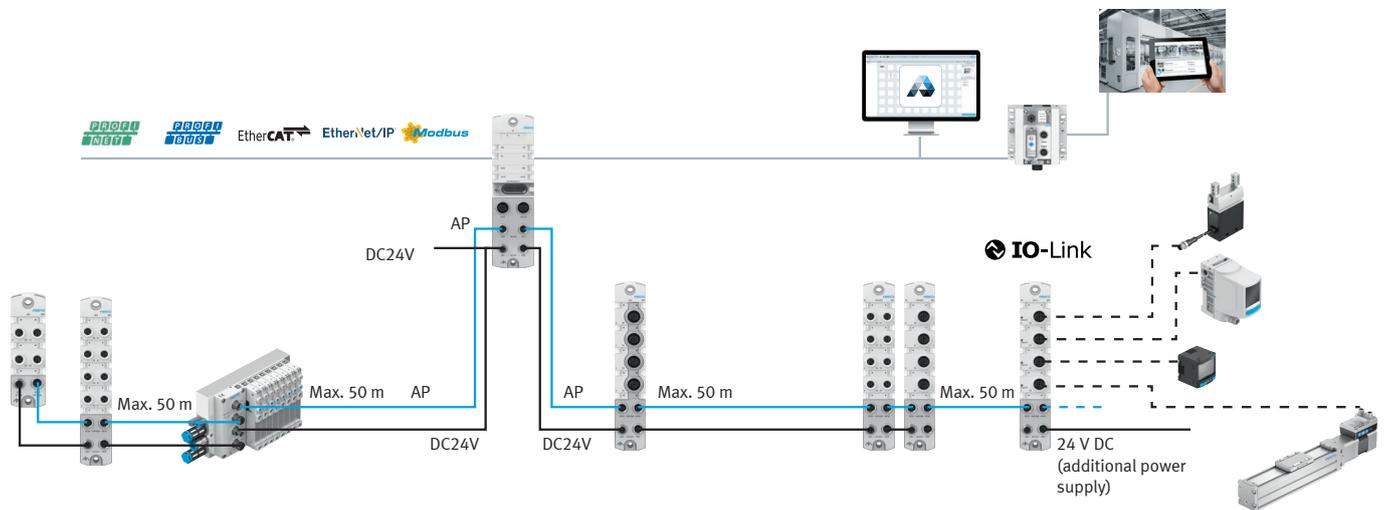
Seamless connectivity is electric automation without any compromise. It ranges from mechanical systems, integrated motion control solutions and subsystems to

modern cloud solutions for a variety of industries. Simplified Motion Series combines mechanical, electric and intelligent connectivity in one

product. All products in the series communicate flexibly and conveniently with the controller via IO-Link® and right up to the cloud via the IoT gateway. The

Simplified Motion Series can be integrated into the decentralised remote I/O system CPX-AP-I from Festo or any IO-Link® network on the market.

## Integrated network with CPX-AP-I combines electric and pneumatic components thanks to AP system communication and IO-Link®

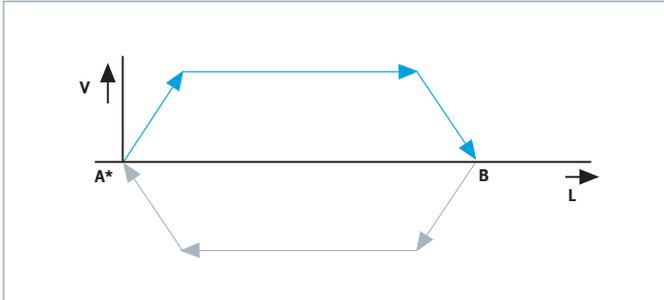


AP = AP system communication

- The remote I/O system enables electric and pneumatic components to be connected to form an integrated network
- To achieve this, the CPX-AP-I offers an impressive speed of 200 Mbaud/s, making it twice as fast as current Ethernet-based networks
- The products in the Simplified Motion Series are connected directly to the IO-Link® network via the IO-Link® master CPX-AP-I
- Other electric servo drives for stepper motors or electric grippers are integrated in the system via IO-Link®, just as the vacuum suction nozzles or sensors from Festo
- The pneumatic components in the form of valve terminals can either be integrated directly into the AP system communication or into the network via IO-Link®, and even right up to the cloud via the IoT gateway
- Integrating valve terminals into the system reduces complexity and integration costs, since this eliminates the need for expensive Ethernet-based valve terminal modules
- Another plus: quick and easy configuration of the entire network with the Festo Automation Suite
- As a powerful point-to-point connection, IO-Link® enables communication between the field and control level, regardless of whether sensors, actuators, valve terminals or servo drives are used.

## Simplified Motion Series – Overview of motion profiles

### Motion and simple positioning

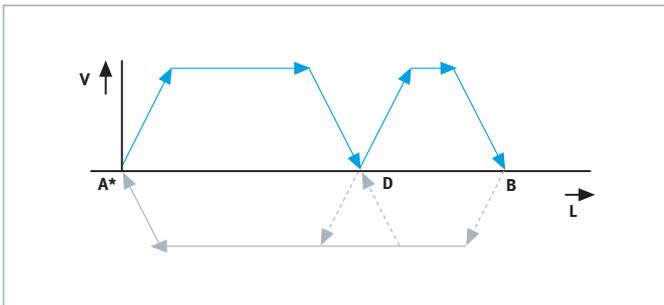


Basic profile for movement between two end positions: speed control without intermediate position

- End position B: freely adjustable
- Speed for “Out” and “In” movement: freely adjustable
- Position is maintained after end position B reached

- Optional: interrupt the motion at a defined intermediate position with IO-Link®

### Motion with intermediate position (with IO-Link®)



Basic profile for movement between two end positions: speed control with intermediate position

- End position B: freely adjustable
- Intermediate position D for “Out” motion: freely adjustable
- Intermediate position for “In” motion: can be used optionally and is freely adjustable
- Speed for “Out” and “In” motion: freely adjustable

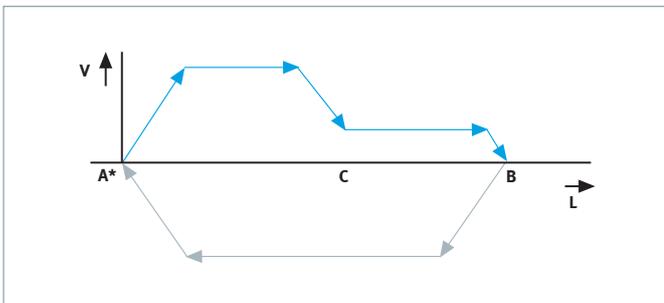
- Example: using the intermediate position as a pre-holding position
- Rest position, e.g. during machine standstill in position A
  - Same intermediate position D (pre-holding position) for “Out” and “In” motion
  - Working motion takes place between position D (pre-holding position) and B (operating position)

Note: Intermediate position D can only be used with IO-Link®

### Note on extended use:

The drive can also be used for very simple positioning tasks by changing the intermediate position (IO-Link) several times.

### Joining and press-fitting



Extended motion profile for simplified press-fitting and clamping functions: with speed and force control

- End position B and begin of “force-controlled motion” C: freely adjustable
- Force of movement from C to B: freely adjustable
- Speed for “Out” (until point C) and “In” movement: freely adjustable

- Optional: interrupt the motion at a defined intermediate position with IO-Link®

→ “Out” movement  
→ “In” movement

**A\*** Reference end position  
**B** Operating position  
**C** Start position “press”  
**D** Intermediate position