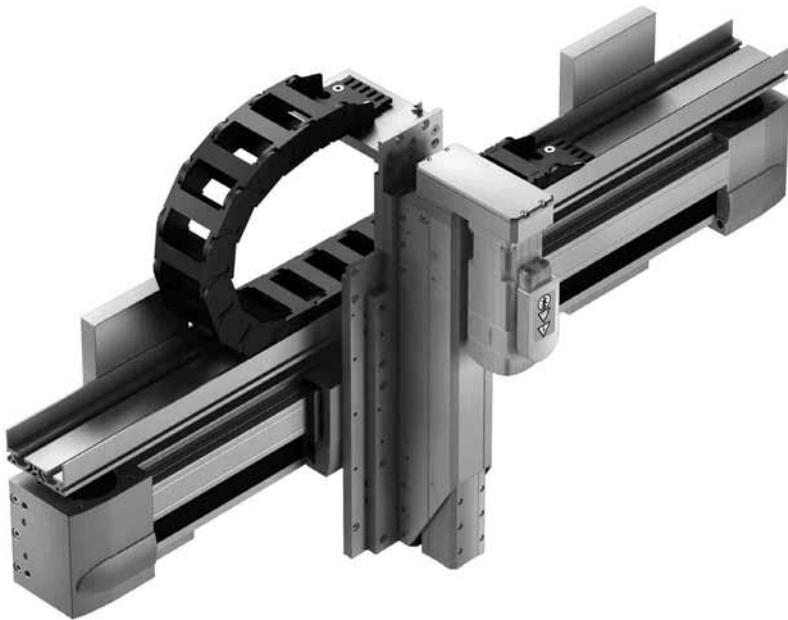




## Linear gantries



### Movements in 2D: a linear gantry consists of a gantry axis and a yoke drive.

- High mechanical rigidity and sturdy design
- Pneumatic and electrical components – freely combinable
- As electrical solution – variable positioning/any desired intermediate positions

### Range of application:

- Ideal for long gantry strokes
- Often used for feeding applications
- Workpiece masses up to 5 kg (effective load up to 10 kg)
- Long gantry strokes up to 3 m and heavy loads up to 10 kg
- High requirements on system resistance to torsion

### Example: construction materials industry

Handling, palletising and packing of ceramic tiles



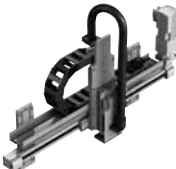



### Requirements

- High dynamic response
- Gentle acceleration and braking
- Jerk-free movement
- Good positioning flexibility

### Solution

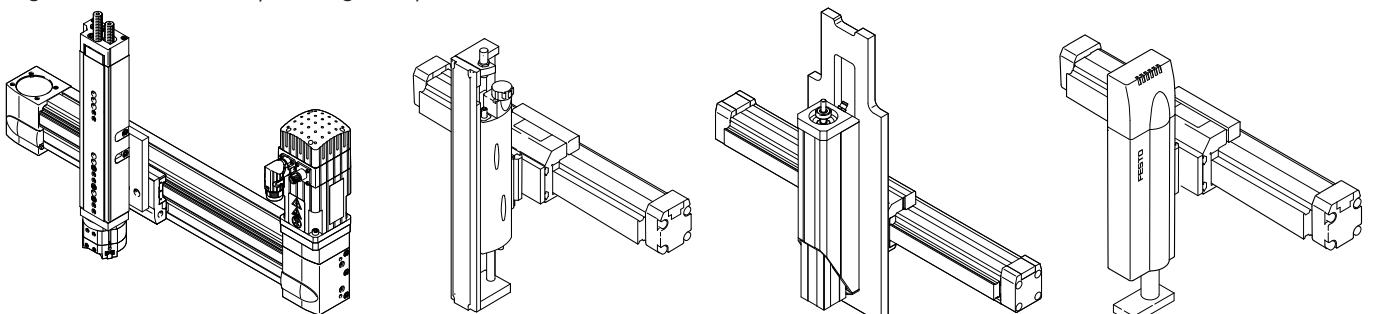
- Linear gantry with toothed belt axes and cantilever axis
- Complete solution, including vacuum gripper



Type	Important characteristics	Axis design	Effective load	Max. effective strokes	Components
 <ul style="list-style-type: none"> <li>• Linear gantry as mono axis</li> <li>• Free movement of the Z-axis in the vertical plane (2D)</li> </ul>	<ul style="list-style-type: none"> <li>• High process reliability thanks to installation integration</li> <li>• Pneumatic and electric drives (with freely programmable positions)</li> <li>• Repetition-accurate, centralised direct axis connections</li> <li>• Mini slide on the Z-axis for maximum precision</li> </ul>	Y: Gantry axes Z: <b>Slide Cantilever axis</b>	Mono: 0 to 6 kg	Y: Up to 5000 mm  Z: Up to 300 mm	Y: DGC/EGC  Z: DGSL EGSA
 <ul style="list-style-type: none"> <li>• See above</li> </ul>	<ul style="list-style-type: none"> <li>• See above, points 1–3</li> <li>• Pneumatic cantilever axis on the Z-axis with high repetition accuracy, high dynamic response and intermediate positions</li> </ul>	Y: Gantry axes Z: <b>Handling axis</b>	Mono: 0 to 5 kg	Y: Up to 5000 mm  Z: Up to 200 mm	Y: DGC/EGC  Z: HMPL
 <ul style="list-style-type: none"> <li>• See above</li> </ul>	<ul style="list-style-type: none"> <li>• See above, points 1–3</li> <li>• Pneumatic handling axis on the Z-axis with high rigidity and intermediate positions</li> </ul>	Y: Gantry axes Z: <b>Handling axis</b>	Mono: 0 to 10 kg*	Y: Up to 5000 mm  Z: Up to 400 mm	Y: DGC/EGC  Z: HMP
 <ul style="list-style-type: none"> <li>• Linear gantry as mono or duo axis</li> <li>• Free movement of the Z-axis in the vertical plane (2D)</li> </ul>	<ul style="list-style-type: none"> <li>• See above, points 1–3</li> <li>• Electric cantilever axis on the Z-axis for large strokes, high dynamic response and low moving dead weight</li> </ul>	Y: Gantry axes Z: <b>Cantilever axis</b>	Mono: 0 to 15 kg  Duo: 0 ... 25 kg	Y: Up to 5000 mm  Z: Up to 900 mm	Y: DGC/EGC  Z: DGEA

Higher effective loads of up to 50 kg on request

\* With the pneumatic drive DGC, can be used as duo axis



# Standard linear gantry LP 25

Effective load up to 25 kg

**Motor controller package on electric axes**  
 Servo motor: EMMS-AS  
 Controller: CMMS/P-AS (CMMD)



## Technical data

		Stroke/mm	Intermed. position	Repetition accuracy/mm	
Z-axis	↕		End position	Intermediate position	
ZR	DGEA-40	0 ... 1000	Any	± 0.05	± 0.05
SP	EGC-120-BS-KF	0 ... 1000 ***	Any	± 0.02	± 0.02
SP	DNCE-63 with FENG	0 ... 500	Any	± 0.02	± 0.02
P	DFM-50	0 ... 400	–	Max. 0.05	–
P	DNC-63 with FENG	0 ... 500	2	± 0.2	–
PS	DNCI-63 with FENG	0 ... 500	2/any **	≤± 0.5	≤± 0.5/± 2**
Y-axis	↔				
ZR	EGC-185-TB-KF ****	0 ... 8500	Any	± 0.08	± 0.08
SP	EGC-185-BS-KF ****	0 ... 3000	Any	± 0.02	± 0.02
ZR	2xEGC-120-TB-KF *****	0 ... 8500	Any	± 0.08	± 0.08
SP	2xEGC-120-BS-KF *****	0 ... 2500	Any	± 0.02	± 0.02
ZR	EGC-HD-220 ****	0 ... 5000	Any	± 0.08	± 0.08
SP	EGC-HD-220 ****	0 ... 3000	Any	± 0.02	± 0.02
P	DGC-63 + FA *****	0 ... 5000	1*	± 0.02	± 0.02/± 0.1
PS	DGCI-63 + FA *****	0 ... 2000	2/any**	Max. ± 0.4	Max. ± 0.4/± 2

\* More than 1 on request

\*\* 2 with SPC11/CMPX, any with SPC200/CMAX; ≤± 0.5 mm with SPC11/CMPX/± 2 mm with SPC200/CMAX

\*\*\* Limited to 700 mm in yoke operation

\*\*\*\* Max. Z-stroke 600 mm

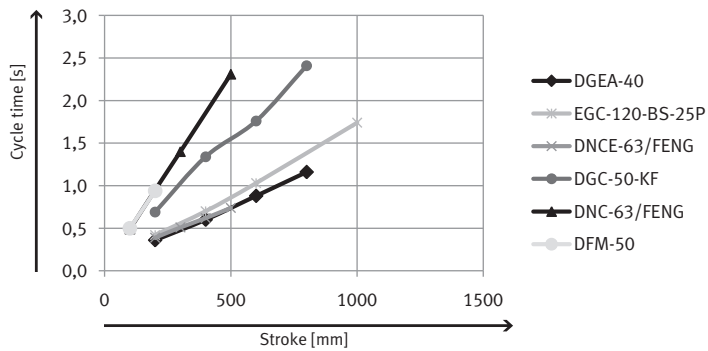
\*\*\*\*\* Max. Z-stroke 1000 mm

Grey shading: drive components in the illustration

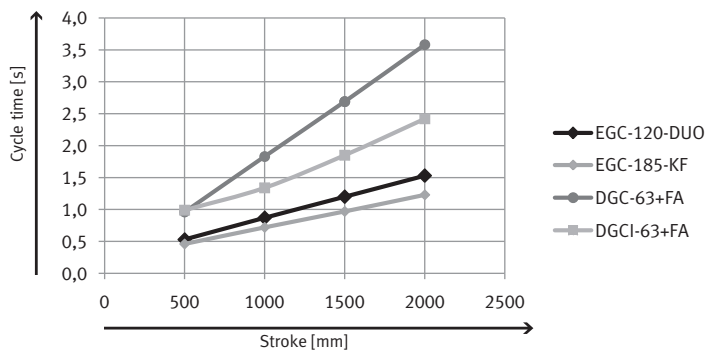
EGC-HD: available end of 2011

## Reference for cycle times

Z-axis



Y-axis



## Note

### Selection matrix

Types of handling units

→ Pages 6 to 9

### Handling components

→ Page 95

### Gripping/rotating

Adaptation options

→ Page 71

### Control cabinets

→ Page 92

### Frames

→ Page 78

### CAD drawings/

### CAD hotline

2D and 3D drawings

→

Tel. +49 (0)711 347-4667

### Individual project engineering and cycle time calculation

→

Tel. +49 (0)711 347-4381

### Fax enquiry


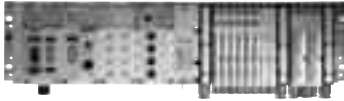
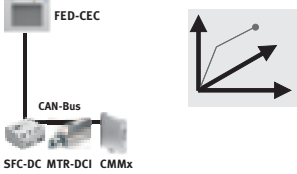
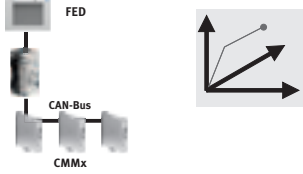
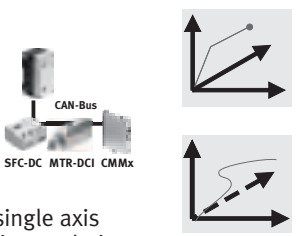
Form

→ Page 101

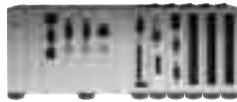
## Note

An operating pressure of 6 bar is assumed for all the pneumatic drives shown here.

# Overview of Festo control products

	 <b>FED-CEC</b>	 <b>CPX terminal</b>	
	Integrated controller FED-CEC	CoDeSys controller CPX-CEC-C1	Motion controller CPX-CEC-M1
	 Single axis (point-to-point asynchronous)	 C1: single axis M1: interpolation	 C1: single axis M1: interpolation
<b>Maximum number of possible axes</b>	Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications).	Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications).	Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications).
<b>Motion</b>	<ul style="list-style-type: none"> <li>• Point-to-point asynchronous</li> <li>• Every axis moves with its own pre-defined parameter</li> <li>• The axes do not reach their end positions at the same time and the path is not defined</li> </ul>		
			<ul style="list-style-type: none"> <li>• 2.5D interpolation</li> <li>• PLC Open</li> </ul>
<b>Special features</b>	Integrated controller in a display screen	Function integration on the CPX valve platform	
			<ul style="list-style-type: none"> <li>• CNC editor</li> <li>• DXF import</li> <li>• Cam disk editor</li> </ul>
<b>Application examples</b>	<ul style="list-style-type: none"> <li>• Handling systems</li> <li>• Pick &amp; place, palletising</li> </ul>	Path control, bonding, cutting, handling, flying saw, cam disk	
<b>Programming environment</b>	CoDeSys	CoDeSys	CoDeSys + Softmotion

**Modular control**



Modular control		CMXR robotic controller	
Modular controller CECX-C1	Motion controller CECX-M1	CMXR-C1 (Basic)	CMXR-C2 (Advanced)
<p>Single axis (point-to-point asynchronous)</p>	<p>Interpolation (2.5D)</p>	<p>Robotics (3D)</p>	<p>Robotics (3D)</p>
<p>Recommended: 8 axes Note: one axis is treated as a CANopen node. 128 nodes are possible (as defined by CANopen specifications).</p>		<p>Max. 6 interpolated axes, of which max. 3 basic axes and 1 orientation axis and max. 3 dependent auxiliary axes that are interpolated together with the kinematics system.</p>	
			<p>Additional single axes (not interpolated together with others) can be controlled via the integrated CoDeSys PLC. Recommended: 16 axes.</p>
		<p>3D contour interpolation with an orientation axis for kinematics systems with up to 4 degrees of freedom. E.g. 3D gantry with an axis of rotation on the front end.</p>	
	<ul style="list-style-type: none"> <li>• 2.5D interpolation</li> <li>• PLC Open</li> </ul>		<p>CoDeSys control: point-to-point asynchronous</p>
<ul style="list-style-type: none"> <li>• Powerful PLC</li> <li>• Encoder interface</li> <li>• Interrupt function</li> <li>• Fast clock pulse inputs</li> <li>• Profibus master</li> <li>• Two Canbus masters</li> <li>• RS 232/ RS 485-A/422-A</li> </ul>		<ul style="list-style-type: none"> <li>• Economical design and configuration with the Festo Configuration Tool (FCT)</li> <li>• Simple programming of motions with Festo Teach Language (FTL), no specialist expertise required</li> <li>• Optional teach pendant with 2-channel permission button</li> <li>• Reduced speed in manual override mode</li> <li>• Automatic repositioning when continuing interrupted motions</li> <li>• Simple teaching of positions</li> <li>• Definition of tools, allowing easy use of multiple grippers</li> <li>• Real orientation axes on the front end</li> <li>• Integrated kinematics models e.g. for Cartesian systems, tripod, H- and T-gantries</li> </ul>	
	<ul style="list-style-type: none"> <li>• CNC editor</li> <li>• DXF import</li> <li>• Cam disk editor</li> </ul>		<ul style="list-style-type: none"> <li>• Increased flexibility with the integrated CoDeSys PLC, e.g. for the integration of vision systems</li> <li>• Tracking function for applications involving selecting items from a conveyor belt</li> <li>• Speed-independent path switching points with time compensation, e.g. for bonding applications</li> <li>• Complete automation of a cell is possible</li> </ul>
<ul style="list-style-type: none"> <li>• Handling systems</li> <li>• Pick &amp; place, palletising</li> </ul>	<p>Path control, bonding, cutting, handling, flying saw, cam disk</p>	<p>Handling, palletising, bonding, metered dispensing, painting, cutting</p>	<p>Tracking applications such as processing of moving parts on a conveyor belt or synchronised kinematics movement with up to 6D</p>
CoDeSys	CoDeSys + Softmotion	Festo Teach Language (FTL)	FTL + CoDeSys