

Linear Gantries

Linear gantries

Ideal for long gantry strokes – linear gantries. Often used for feeding applications.

Linear gantries

Insertion/removal and loading/unloading within a machine feeding process

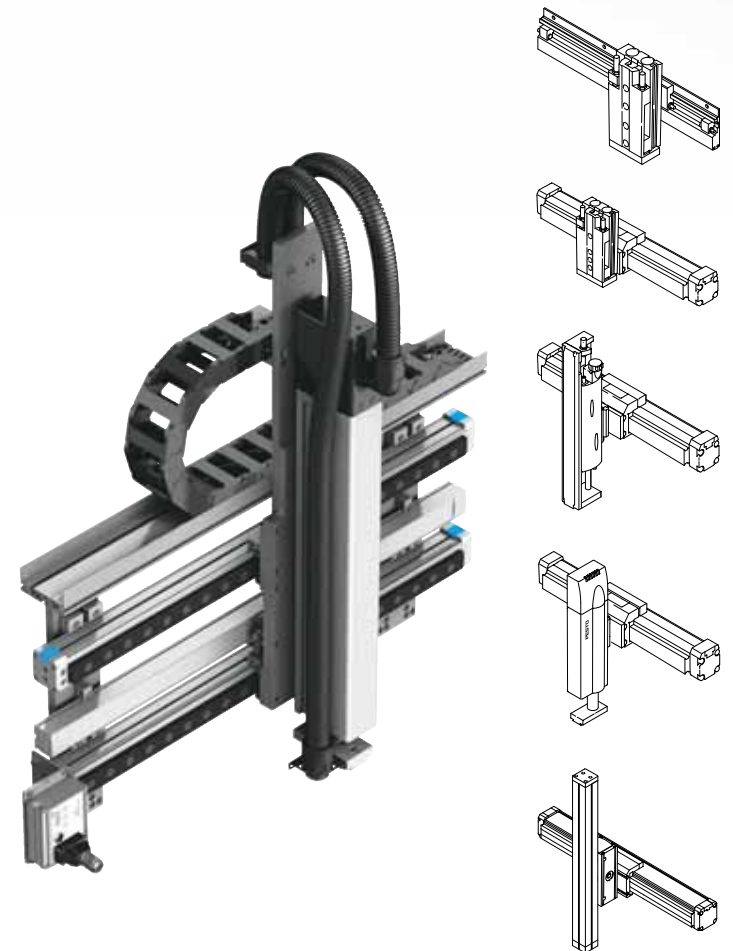
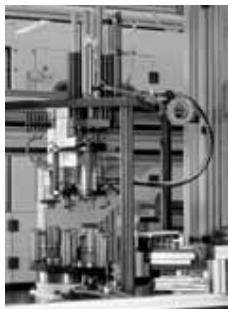
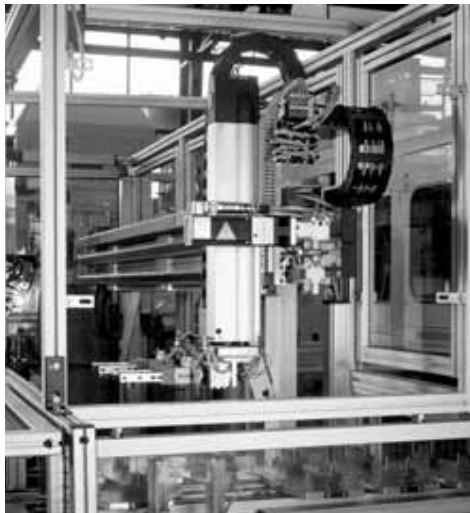
Precise and individual measurement devices in the manufacturing process.

The task:

Development of downstream process systems that include loading and unloading of gearwheels for automobile differentials on four processing machines. Requirement: four machines, each containing unmachined parts feed and finished-parts removal, machining of the unmachined gearwheels, measurement and inspection systems and workpiece transport. Each must be able to handle gearwheels of different sizes.

The solution:

An X-Z handling system for workpieces weighing up to 4 kg, comprising a 180° rotatable double-gripper unit adapted to the specific application. This convertible handling unit is highly flexible: it permits the handling of a wide range of workpiece sizes, weighing from a few hundred grams up to ten kilograms.



Linear gantries – System matrix

Two-dimensional systems

The system matrix provides you with condensed information regarding the most important parameters for quick selection of your system. Reference to the corresponding page, guides you to standard solutions and individual components.

A standard solution means:

- Complete bill of materials with exploded view
- Quick project planning
- Reliable data, accuracy, travel time

Workpiece load

With a standard front end (semi-rotary drive and gripper or gripper only), the workpiece load can serve as a basis for the approximate selection of a handling/positioning system.

Working load

The working load is a decisive factor in the precise selection of a standard handling system.

The working load of a handling/positioning system is the sum of the loads of the following parts:

- Function units (semi-rotary drives and grippers)
- Adapter plates
- Gripper fingers
- Workpiece

Linear gantries						
Drive system	P	SP	P ¹⁾	PS	SP	ZR
Moving loads						
Max. working load	0 ... 2 kg		0 ... 6 kg			
Workpiece load	0 ... 1 kg		0 ... 2 kg			
Stroke range [mm]						
Y-direction (horizontal)						
	0 ... 900		0 ... 3000	0 ... 1600	0 ... 1000 ²⁾	0 ... 2000 ²⁾
Z-direction (vertical)						
	0 ... 200	0 ... 150	0 ... 200		0 ... 150	
Intermediate positions						
Y	1 ... 4		–	any		
Z	–	any	–	any		
Repetition accuracy [mm]						
Y	0.02		0.02	0.4	±0.02	±0.1
Z	0.02		0.02			
Standard examples						
Type	SLG/SLT	SLG/SLTE	DGPL/SLT(E)	DGE/SLT(E)		
Page						

¹⁾ Also available with end position controller SPC11 (Soft Stop)
²⁾ Stroke of up to 4500 mm
³⁾ Stroke of up to 2000 mm with reduced dynamics

Linear gantries												
Drive system	P ¹⁾	PS	SP	ZR	P ¹⁾	PS	SP	ZR	P ¹⁾	PS	SP	ZR
Moving loads												
Max. working load	0 ... 4 kg				0 ... 10 kg				0 ... 10 kg			
Workpiece load	0 ... 3 kg				0 ... 5 kg				0 ... 5 kg			
Stroke range [mm]												
Y-direction (horizontal)												
	0 ... 3000	100 ... 1600	100 ... 1000 ²⁾	100 ... 2000 ²⁾	0 ... 3000	100 ... 1600	100 ... 1000 ²⁾	100 ... 2000 ²⁾	0 ... 3000	100 ... 1600	100 ... 1000 ²⁾	100 ... 2000 ²⁾
Z-direction (vertical)												
	0 ... 200				0 ... 400						0 ... 800	0 ... 800
Intermediate positions												
Y	–	any			–	any			–	any		
Z	1				1				–	any		
Repetition accuracy [mm]												
Y	0.02	0.4	±0.02	±0.1	0.02	0.4	±0.02	±0.1	0.02	0.4	±0.02	±0.1
Z	0.02				0.01				±0.05			
Standard examples												
Type	DGPL/HMPL	DGE/HMPL	DGPL/HMP	DGE/HMP	DGPL/DGEA	DGE/DGEA						
Page												

H Note

- P Pneumatic
- PS Servo-pneumatic
- SP Spindle axis, electrical
- ZR Toothed belt axis, electrical

Linear gantries

Linear gantry SLG/SLT, SLG/SLTE

For horizontal strokes up to 900 mm and working loads up to 2 kg: the combination of a flat, rodless drive SLG and a slide SLT or SLTE.

Z axis, pneumatic: SLT
Z axis, electrical: SLTE

Attributes of the handling system

- Very compact design thanks to the flat drive along the Y-axis and mini slide along the Z-axis
- Multiple intermediate positions possible along the Y-axis
- Any position along the Z axis with SLTE
- High precision in end and intermediate positions thanks to metallic stops

Sample application

Handling of small, lightweight workpieces using long Y strokes and short Z strokes, for example in the electronics industry

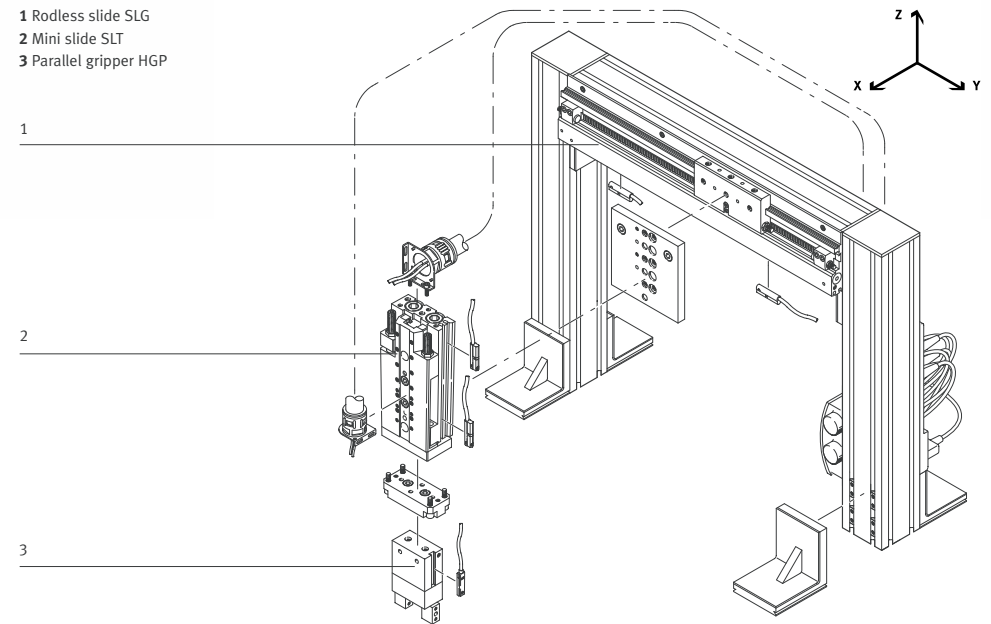


Other attributes of the system

- Reliability and precision through high mechanical rigidity
- Operational and process reliability through routing of tubing and cables in protective trunking
- Flexibility through the variety of solutions offered by the modular handling system
- User friendliness through easy assembly and installation, even during servicing

System type				
Working load		0.3 kg	1 kg	2 kg
Y-axis				
SLG	Size	8 (12)	12 (18)	18
	Max. stroke	500 (700)	700 (900)	900
	Drive system	pneumatic		
	Options	intermediate position, clamping cartridge		
Z-axis				
SLT, SLTE	Size	6	10	16
	Max. stroke	50	80	150
	Drive system	pneumatic	pneumatic, electric	
	Options	intermediate position, clamping cartridge, freely positionable (SLTE)		
Basic and installation components				

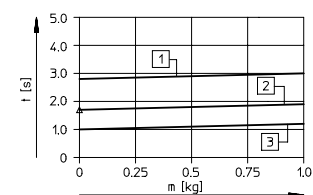
- 1 Rodless slide SLG
- 2 Mini slide SLT
- 3 Parallel gripper HGP



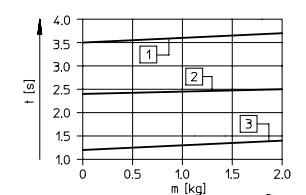
Working load m as a function of the cycle time t

Combination of Y/Z-axis

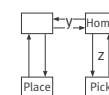
SLG-12/SLT-10



SLG-18/SLT-16



Cycle:



Stroke along Y-/Z-axis

- 1 600 mm/80 mm
- 2 400 mm/50 mm
- 3 200 mm/30 mm

Stroke along Y-/Z-axis

- 1 900 mm/150 mm
- 2 600 mm/100 mm
- 3 300 mm/50 mm

Linear gantries

Linear gantry DG.../SLT(E)

For horizontal strokes up to 3000 mm and working loads up to 6 kg: the combination of a drive DG... (pneumatic, servo-pneumatic or electrical) and a slide SLT/SLTE.

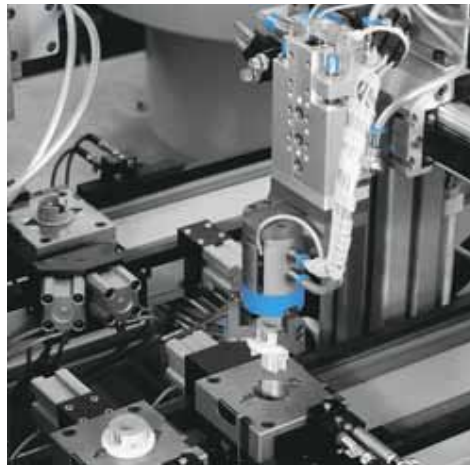
Vertical axis, pneumatic: SLT
Vertical axis, electrical: SLTE

Attributes of the handling system

- Choice of pneumatic or electrical (toothed belt or spindle) drive for horizontal axis
- Any number of intermediate positions along Y-axis with servo-pneumatic or electrical axis
- Very high dynamic response thanks to small moving load along Y-axis and twin piston slide along Z-axis

Sample application

Handling of workpieces using very long Y strokes and short Z strokes, for example feeding and palletising

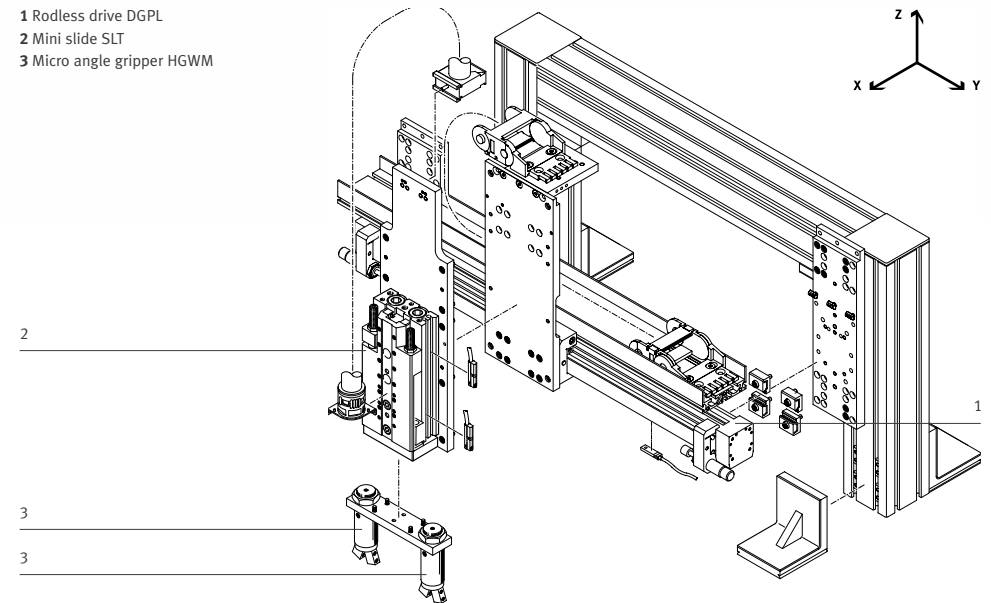


Other attributes of the system

- Reliability and precision through high mechanical rigidity
- DUO system structure for particularly high loads
- Operational and process reliability through routing of tubing and cables in protective trunking
- Flexibility through the variety of solutions offered by the modular handling system
- User friendliness through easy assembly and installation, even during servicing

System type		Mono		Duo
Working load		2 kg	4 kg	6 kg
Y-axis				
DGPL/DGC/DGE	Size	25	32	25
	Max. stroke	3000		
	Drive system	pneumatic, pneumatic with Soft Stop SPC11, electrical		
	Options	intermediate position, clamping cartridge		
Z-axis				
SLT, SLTE	Size	16	20	25
	Max. stroke	150	200	200
	Drive system	pneumatic, electric	pneumatic	
	Options	shock absorber, adjustable cushioning, fixed cushioning		
Basic and installation components				

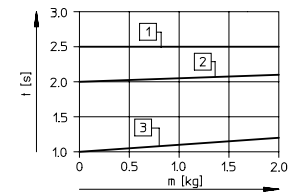
- 1 Rodless drive DGPL
- 2 Mini slide SLT
- 3 Micro angle gripper HGWM



Working load m as a function of the cycle time t

Combination of Y/Z-axis

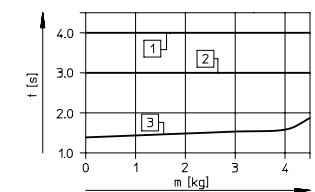
DG...-25/SLT-16



Stroke along Y-/Z- axis: 400 mm/50 mm

- 1 DGE-25-SP/SLT-16
- 2 DGPL-25/SLT-16
- 3 DGE...-ZR/SLT-16

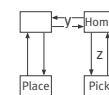
DG...-25/SLT-20



Stroke along Y-/Z-axis: 500 mm/80 mm

- 1 DGE-25-SP/SLT-20
- 2 DGPL-25/SLT-20
- 3 DGE-25-ZR/SLT-20

Cycle:



Linear gantries

Linear gantry DG.../HMPL

For optional additional functions with horizontal strokes up to 3000 mm and working loads up to 4 kg: the combination of a drive DG... (pneumatic, servo-pneumatic or electrical) and a lightweight linear module HMPL.

Attributes of the handling system

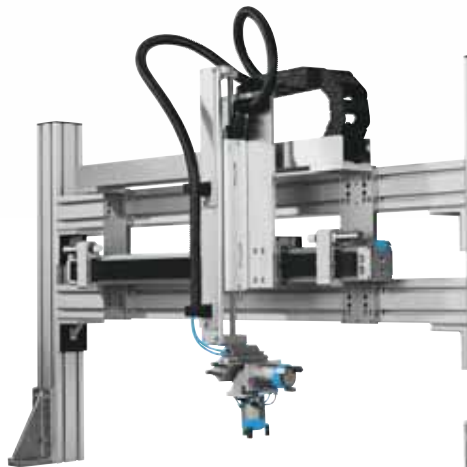
- Choice of pneumatic or electrical (toothed belt or spindle) drive for horizontal axis
- Any number of intermediate positions along Y-axis with servo-pneumatic or electrical axis
- Additional functions of intermediate position and clamping cartridge possible along the Z-axis

Sample application

Handling of workpieces using very long Y strokes and short Z strokes, for example feeding, palletising, joining

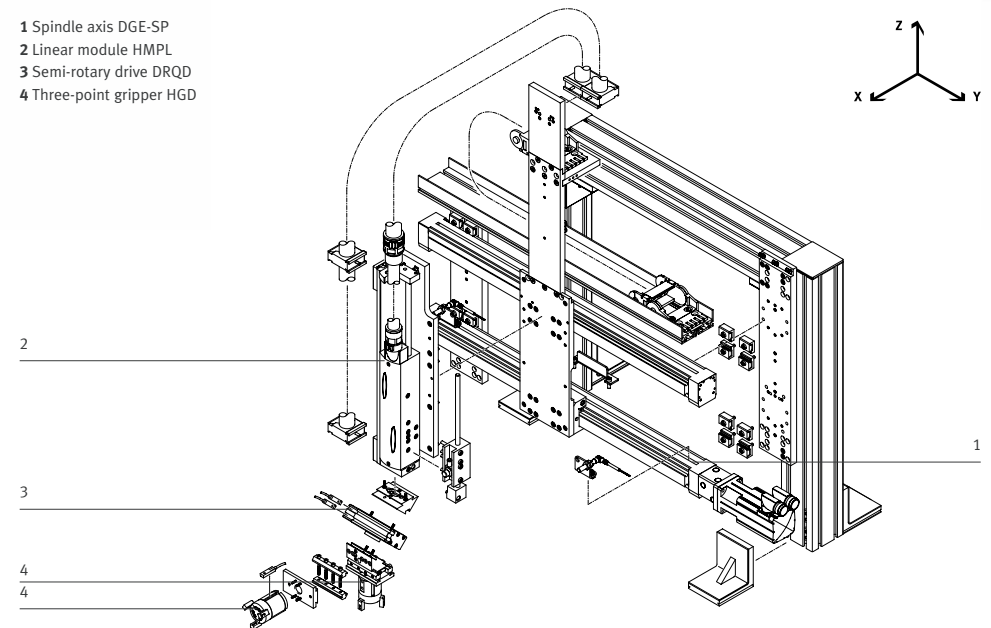
Other attributes of the system

- Reliability and precision through high mechanical rigidity
- DUO system structure for particularly high loads
- Operational and process reliability through routing of tubing and cables in protective trunking
- Flexibility through the variety of solutions offered by the modular handling system
- User friendliness through straightforward assembly and installation, even during servicing



System type		Mono		Duo	
Working load		2 kg	4 kg	4 kg	4 kg
Y-axis					
DGPL/DGC/DGE	Size	25	40	25	25
	Max. stroke	3000			
	Drive system	pneumatic, pneumatic with Soft Stop SPC11, electrical			
	Options	electrical: spindle drive or toothed belt drive			
Z-axis					
HMPL	Size	16	20	20	20
	Max. stroke	160	200	200	200
	Drive system	pneumatic			
	Options	intermediate position, clamping cartridge			
Basic and installation components					

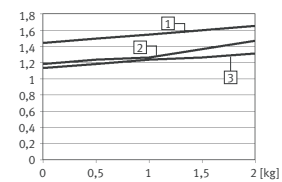
- 1 Spindle axis DGE-SP
- 2 Linear module HMPL
- 3 Semi-rotary drive DRQD
- 4 Three-point gripper HGD



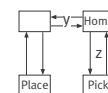
Working load m as a function of the cycle time t

Combination of Y/Z-axis

DG...-25/HMPL-16



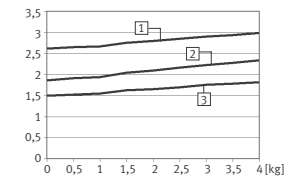
Cycle:



Stroke along Y-/Z-axis: 200 mm/50 mm

- 1 DGE-25-SP/HMPL-16
- 2 DGE-25/HMPL-16
- 3 DGPL-25-ZR/HMPL-16

DG...-25/HMPL-20



Stroke along Y-/Z-axis: 600 mm/100 mm

- 1 DGE-25-SP/HMPL-20
- 2 DGE-25/HMPL-20
- 3 DGPL-25-ZR/HMPL-20

Linear gantries

Linear gantry DG.../HMP

For horizontal strokes up to 3000 mm and working loads up to 10 kg with additional functions: the combination of a drive DG... (pneumatic, servo-pneumatic or electrical) and a sturdy linear module HMP.

Attributes of the handling system

- Choice of pneumatic or electrical (toothed belt or spindle) drive for horizontal axis
- Any number of intermediate positions along Y-axis with servo-pneumatic or electrical axis
- Extremely rigid Z-axis with additional functions such as intermediate position and clamping cartridge possible

Sample application

Handling of heavy workpieces using very long Y and Z strokes of up to 400 mm

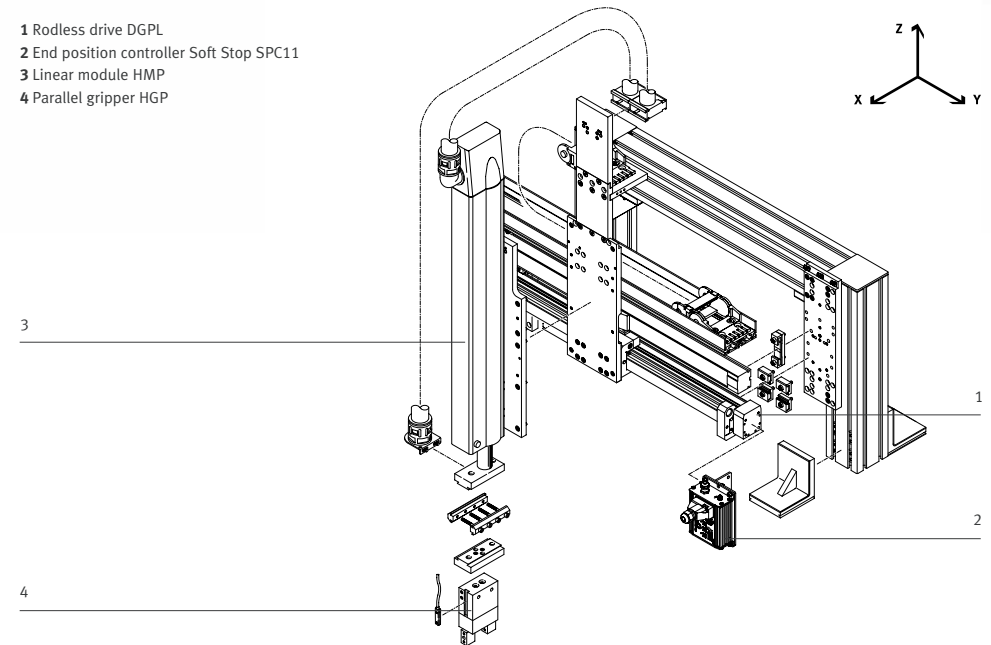
Other attributes of the system

- Reliability and precision through high mechanical rigidity
- DUO system structure for particularly high loads
- Operational and process reliability through routing of tubing and cables in protective trunking
- Flexibility through the variety of solutions offered by the modular handling system
- User friendliness through easy assembly and installation, even during servicing



System type		Mono		Duo	
Working load		4 kg	4 kg	6 kg	10 kg
Y-axis					
DGPL/DGC/DGE	Size	40	25	40	
	Max. stroke	3000			
	Drive system	pneumatic, pneumatic with Soft Stop SPC11, electrical			
	Options	electrical: spindle drive or toothed belt drive			
Z-axis					
HMP	Size	16	16	20	25
	Max. stroke	320		400	400
	Drive system	pneumatic			
	Options	intermediate position, clamping cartridge			
Basic and installation components					

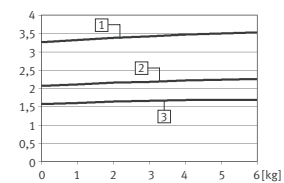
- 1 Rodless drive DGPL
- 2 End position controller Soft Stop SPC11
- 3 Linear module HMP
- 4 Parallel gripper HGP



Working load m as a function of the cycle time t

Combination of Y/Z-axis

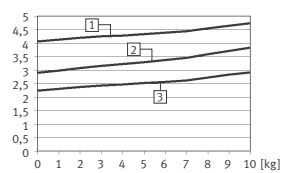
DG...-25/HMP-20



Stroke along Y-/Z-axis: 300 mm/100 mm

- 1 DGE-25-SP/HMP-20
- 2 DGPL-25-ZR/HMP-20
- 3 DGE-25-ZR/HMP-20

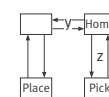
DG...-40/HMP-25



Stroke along Y-/Z-axis: 1500 mm/400 mm

- 1 DGE-40-SP/HMP-25
- 2 DGPL-40/HMP-25
- 3 DGE-40-ZR/HMP-25

Cycle:



Linear gantries

Linear gantry DG.../DGEA

For horizontal strokes up to 3000 mm, vertical strokes up to 800 mm and working loads up to 10 kg: the combination of a drive DG... (pneumatic, servo-pneumatic or electrical) and a boom axis DGEA.

Attributes of the handling system

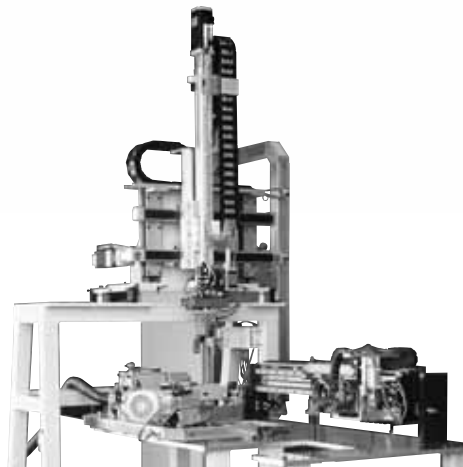
- Choice of pneumatic or electrical (toothed belt or spindle) drive for horizontal axis
- Any number of intermediate positions along Y- and Z-axes
- Highly dynamic response along the Z-axis due to the low moving load of the drive

Sample application

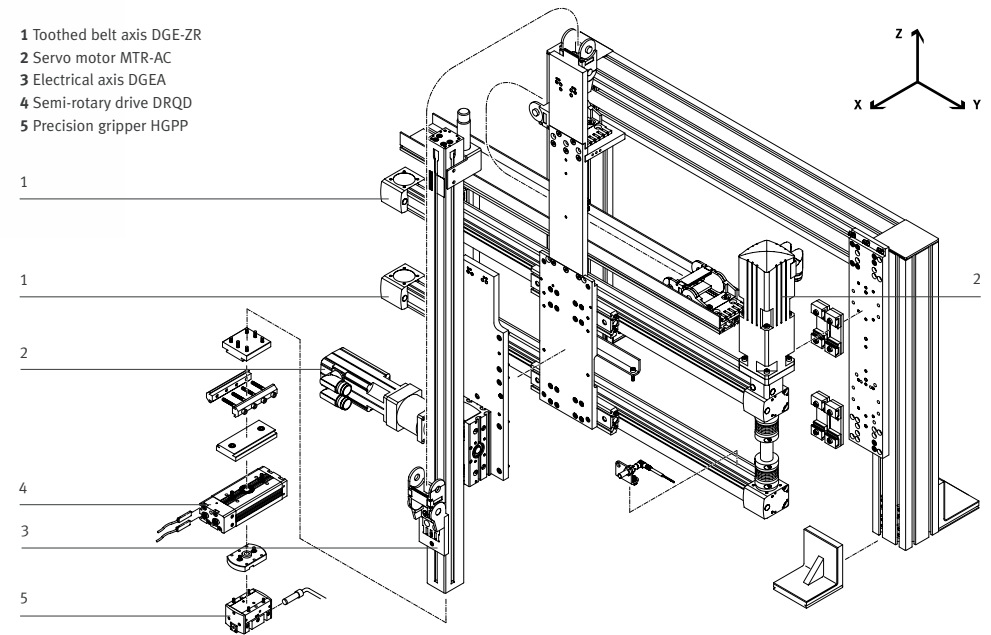
Handling of heavy workpieces using very long Y strokes and short Z strokes, for example feeding/removing, palletising

Other attributes of the system

- Reliability and precision through high mechanical rigidity
- DUO system structure for particularly high loads
- Operational and process reliability through routing of tubing and cables in protective trunking
- Flexibility through the variety of solutions offered by the modular handling system
- User friendliness through straightforward assembly and installation, even during servicing



- 1 Toothed belt axis DGE-ZR
- 2 Servo motor MTR-AC
- 3 Electrical axis DGEA
- 4 Semi-rotary drive DRQD
- 5 Precision gripper HGPP

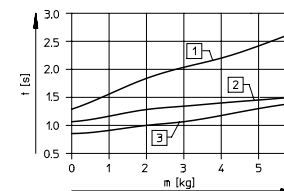


System type	Mono		Duo	
Working load	2 kg	4 kg	4 kg	10 kg
Y-axis				
DGPL/DGC/DGE	Size	25	40	25
	Max. stroke	3000		
	Drive system	pneumatic, servo-pneumatic, electrical		
	Options	electrical: spindle drive or toothed belt drive		
Z-axis				
DGEA	Size	18	18	25
	Max. stroke	800		900
	Drive system	electrical: toothed belt axis		
	Options	pneumatic or electrical: spindle axis		
Basic and installation components				

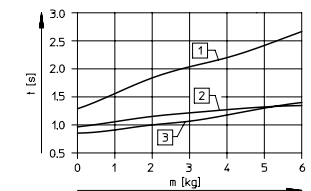
Working load m as a function of the cycle time t

Combination of Y/Z-axis

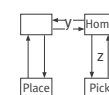
DG...-25/DGEA-25



DG...-40/DGEA-25



Cycle:



Stroke along Y-/Z-axis: 300 mm/100 mm

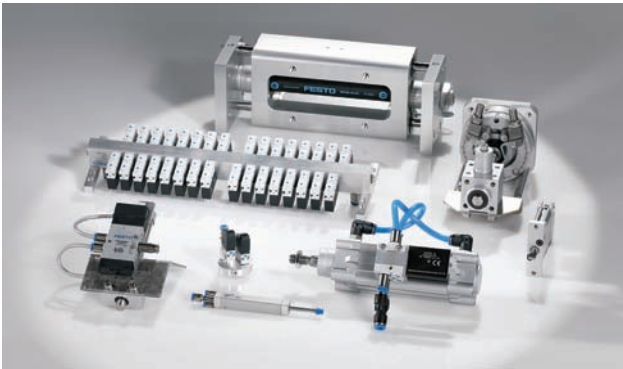
- 1 DGE-25-SP/DGEA-25
- 2 DGE-25-ZR/DGEA-25
- 3 DGPL-25/DGEA-25

Stroke along Y-/Z-axis: 300 mm/100 mm

- 1 DGE-40-SP/DGEA-25
- 2 DGE-40-ZR/DGEA-25
- 3 DGPL-40/DGEA-25

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