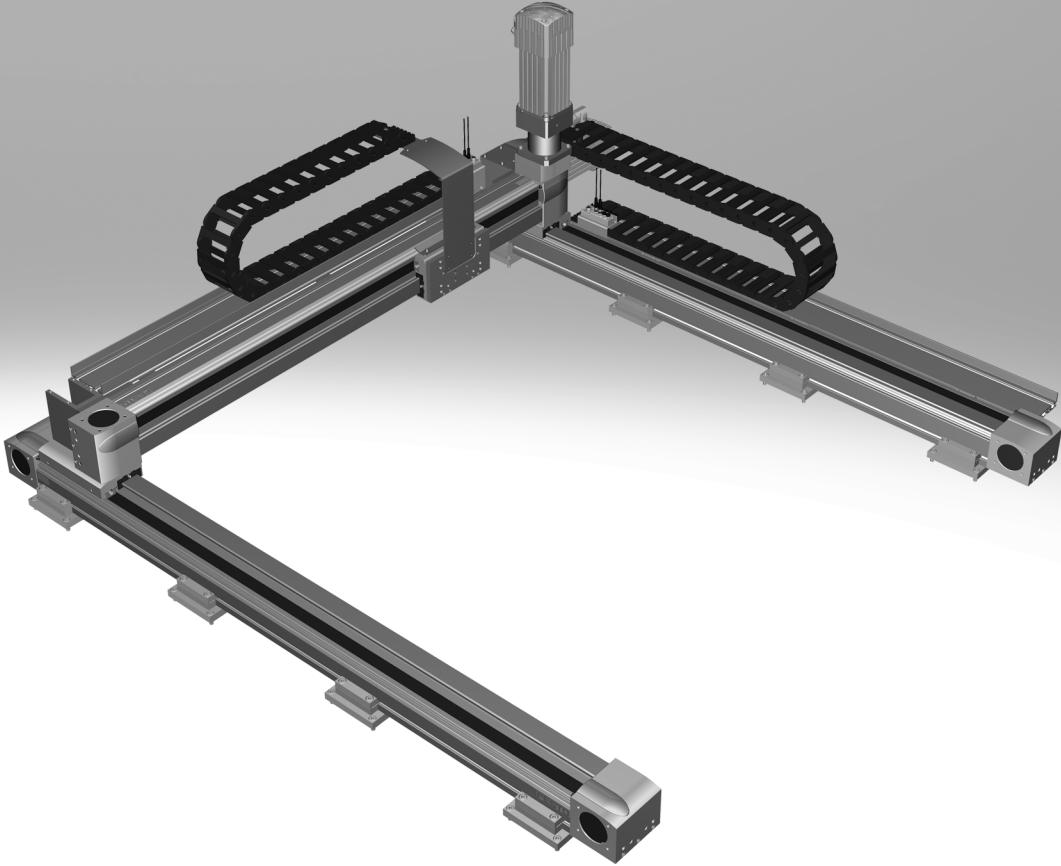


2D gantries



# 2D gantries

Key features

## At a glance

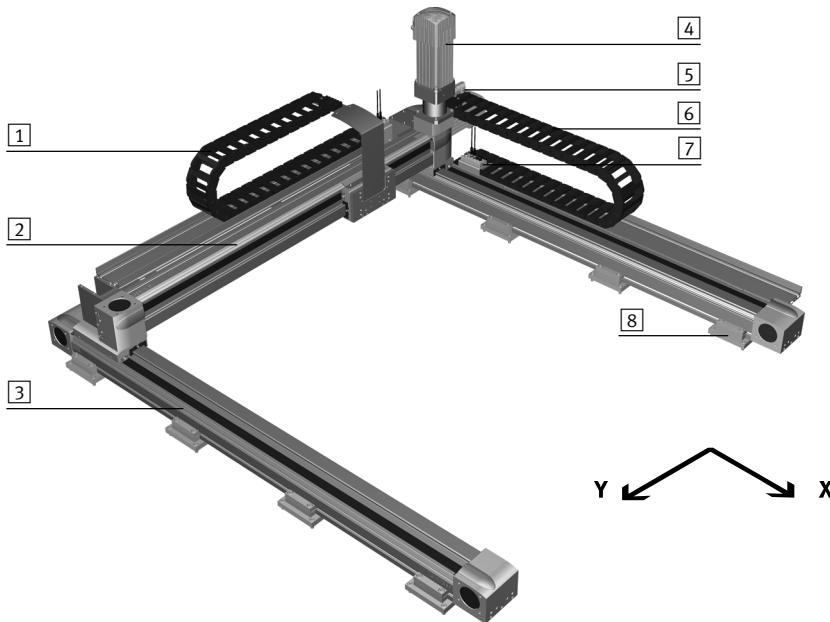
A 2D gantry (YXCF) is an assembly of several axis modules (EHM...) to produce a movement in 2D space.

- Can be used universally for handling light to very heavy workpieces or high payloads

- Especially suitable for very long strokes
- High mechanical rigidity and sturdy design
- Freely positionable/any intermediate positions

Range of application:

- For any movements in 2D space
- Very high requirements for precision and/or very heavy workpieces combined with long strokes



- 1 Energy chain of Y module
- 2 Y-axis
- 3 X-axis
- 4 Servo motor for Y module
- 5 Servo motor for X module
- 6 Energy chain of X module
- 7 Multi-pin plug distributor which collectively transfers electrical signals such as end-position sensing
- 8 Profile mounting/adjusting kit

## Description of the modules

### X module

Structure:

The X module EHMx comprises a parallel guide of 2 toothed belt axes which are connected to one another by a connecting shaft. They are powered by a servo motor.

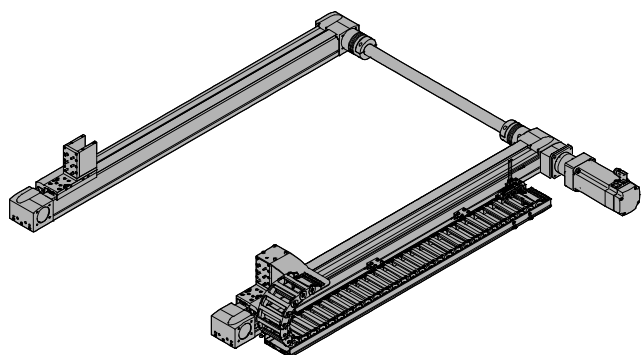
Adapters are installed on the slide of the X axes to connect the Y module.

The position of the motor and energy chain can be selected using the configurator.

The following elements are located on the motor side:

- Energy chain
- Multi-pin plug distributor for proximity sensor (if sensor package has been selected)

Sample representation:



# 2D gantries

Key features

## Description of the modules

### Y module

#### Structure:

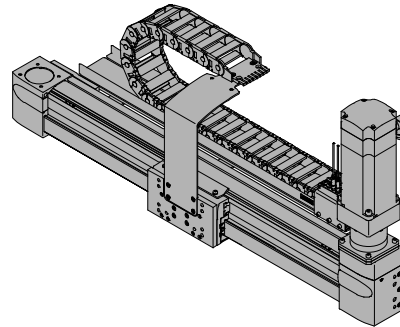
The Y module EHYM comprises a linear axis which is powered by a servo motor.

The position of the motor and energy chain is dependent on the position of the motor on the X module.

The following elements are located on the motor side:

- Energy chain
- Multi-pin plug distributor for proximity sensor (if sensor package has been selected)

#### Sample representation:



## Dispatch options

### Fully assembled:

The 2D gantry is fully assembled. All cables are installed and connected. The system is delivered set up, but

must be adapted to the particular mounting surface during installation. Note evenness → table below.

### Partially assembled:

The 2D gantry is delivered partially assembled. This means that both axis modules (X-/Y-axis) are assembled, each with optional motors. The partially assembled system must be completed by the customer. Help can

be found in the assembly instructions provided.

Optional accessories (→ 10) are enclosed.

Note evenness → table below.

System overview <sup>1)</sup>				
Size	YXCF-1	YXCF-2	YXCF-3	YXCF-4
Max. working stroke	X: 1900 mm Y: 1900 mm	X: 3000 mm Y: 2000 mm	X: 3000 mm Y: 2000 mm	X: 3000 mm Y: 2000 mm
Max. payload	Dependent on the selected dynamic response			
Required evenness of mounting surface	≤ 0.1 mm/m			
Mounting position	Horizontal			

1) Drive package depending on configuration selected.

# 2D gantries

Key features

## Configurator: Handling Guide Online (HGO)

Selecting a handling system

Planning complex handling systems takes a lot of time. You can use the "Handling Guide Online" (HGO) configurator to design a customised handling system for your application in just a few steps.

You can choose from the following systems:


- Single-axis system
- 2D linear gantry
- 2D gantry
- 3D gantry

### Benefits:


- Automatic selection of all relevant components
- Automatic design and calculation of workload
- Quote created automatically
- CAD model available immediately
- Fully automated processing
- You can order fully assembled or unassembled systems through the online shop
- Lots of possible options

### Single-axis system

**Single-axis system**




Single-axis movement.  
Single-axis module as a complete system.  
Easy to connect to your own front unit.


 Animation

### 2D linear gantry

**2D linear gantry**




Movements in 2D in the vertical working space:  
Linear gantries as complete systems.  
Combining electric and pneumatic axes is possible.


 Animation

### 2D gantry

**2D gantry**




Movements in 2D in the horizontal working space:  
Planar surface gantries as complete systems.  
Combining electric axes.  
Easy to connect to your own Z-unit.


 Animation

### 3D gantry

**3D gantry**



Movements in 3D:  
Three-dimensional gantries as complete systems.  
Combining electric and pneumatic axes is possible.

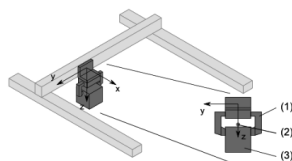
 Animation

## Entering the application data

- Payload
- Drive system of the axis
- Distance from the centre of the load
- Working stroke
- Reference cycle

### Payload

Find your handling solution in a few steps



Specify the characteristic values of the payload

Payload (front unit and workpiece)  kg

Distance from the centre of the load

X	<input type="text"/>	mm	i
Y	<input type="text"/>	mm	i
Z	<input type="text"/>	mm	i

Rotating or swivel motion at the front unit

No  Yes i

# 2D gantries

Key features

## Result of calculation

You will be offered a selection of calculated systems based on the application data you entered.

The following are available immediately:

- CAD model
- Technical data for the selected system
- Price information

## Result of calculation

Find your handling solution in a few steps

Select the appropriate system and continue with the configuration: ⌵

No.	System series	System workload	Repetition accuracy (+/-)
<input checked="" type="checkbox"/>	1 YXCF-2	10 %	0.18 mm
<input type="checkbox"/>	2 YXCF-2	8 %	0.18 mm
<input type="checkbox"/>	3 YXCF-3	8 %	0.18 mm
<input type="checkbox"/>	4 YXCF-3	9 %	0.18 mm
<input type="checkbox"/>	5 YXCF-4	7 %	0.22 mm

⌵ 1-5 of 5 ⌵

### 2D gantry YXCF-2: #1

Drive module	Gear units	Motor type	Motor position	Motor controller	Nominal voltage phases	Guide workload	Drive workload	Axis workload
X module: toothed belt axis EGC-80	3:1	Servo motor EMMS-AS	Left	CMMS-AS	1-phase	10 %	2 %	5 %
Y module: toothed belt axis EGC-80	3:1	Servo motor EMMS-AS	NULL	CMMS-AS	1-phase	10 %	2 %	4 %

**Please note:**  
The calculation is subject to the following requirements:

- Operating pressure 6 bar
- Motor and motor controller from Festo
- No turning or swivel motions at the front unit

## System overview

You will be given an overview of the whole system.

You will also have the following options:

- Request price
- Send request
- Add to basket

## Your handling solution

Find your handling solution in a few steps

Your selected system overview:

Characteristic	Value
Handling type	2D gantry
Payload	12 kg
Rotary/swivel motion	No
Drive system of the X-axis	Electric: several positions
Drive system of the Y-axis	Electric: several positions
Working stroke in X direction	200 mm
Working stroke in Y direction	200 mm
Motor position on the X-axis	Left
Motor position on the Y-axis	Left
Fieldbus interface	I/O operation or CANopen integrated
AC 1-phase	230 V
AC 3-phase	400 V
Travel, horizontal in X direction	200 mm
Travel, horizontal in Y direction	200 mm
Travel time	10 s

**Cad preview:**

**Your next step:**

[Send request](#)

**Your system**

**Your options**

# 2D gantries

Key features

## Standard components within the handling system

The handling system comprises a number of tried and tested standard components from Festo. Different components are used depending on the configuration. The single axes installed will be displayed in the HGO configurator on the “Result of calculation” page.

### Result of calculation

Find your handling solution in a few steps

Select the appropriate system and continue with the configuration: :

	No.	System series
<input checked="" type="checkbox"/>	1	YXCF-2
<input type="checkbox"/>	2	YXCF-2
<input type="checkbox"/>	3	YXCF-3
<input type="checkbox"/>	4	YXCF-3
<input type="checkbox"/>	5	YXCF-4

2D gantry YXCF-2: #1

Drive module	Gear units	Motor type
X module: toothed belt axis EGC-80	3:1	Servo motor EMMS-AS
Y module: toothed belt axis EGC-80	3:1	Servo motor EMMS-AS

## Drives/axes

X-axis

### Toothed belt axis EGC-TB-KF



- Electrical
- Rigid, closed profile
- Recirculating ball bearing guide for high loads and torques
- High dynamic response and minimum vibration

Y-axis

### Toothed belt axis EGC-TB-KF



- Electrical
- Rigid, closed profile
- Recirculating ball bearing guide for high loads and torques
- High dynamic response and minimum vibration

### Toothed belt axis EGC-HD-TB



- Electrical
- Flat drive unit with rigid, closed profile
- Duo guide rail
- For maximum loads and torques, high feed forces and speeds and long service life

## 2D gantries

Key features

FESTO

Possible axis combinations <sup>1)</sup>		
Size	X module	Y module
YXCF-1	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-50-TB-KF</li></ul>	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-50-TB-KF</li></ul>
YXCF-2	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-80-TB-KF</li></ul>	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-80-TB-KF</li><li>• Toothed belt axis with heavy-duty guide EGC-HD-125-TB</li></ul>
YXCF-3	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-120-TB-KF</li></ul>	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-120-TB-KF</li><li>• Toothed belt axis with heavy-duty guide EGC-HD-160-TB</li></ul>
YXCF-4	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-185-TB-KF</li></ul>	<ul style="list-style-type: none"><li>• Toothed belt axis EGC-185-TB-KF</li><li>• Toothed belt axis with heavy-duty guide EGC-HD-220-TB</li></ul>

1) Drive package depending on configuration selected.

# 2D gantries

Key features



## Standard components within the handling system

The handling system comprises a number of tried and tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the drive package in the HGO configurator on the “System configuration” page.

**System configuration**  
Find your handling solution in a few steps

Festo motor and motor controller package

Please note:  
The calculated performance data assume motors and motor controllers from Festo will be used.

Motor controller  
Safety function, motor controller  
Expansion of digital inputs and outputs  
Fieldbus interface  
Control cable for I/O interface to any controller  
Programming cable  
Encoder type on motor  
Motor brake

CMMS-AS  
Safe torque off (STO), Category 3, PL e  
None  
IO operation or CANopen integrated  
 Yes  No  
 Yes  No  
Absolute encoder, single-turn  
X  Yes  No  
Y  Yes  No

Festo sensor package

Switching output  
Switching element function

PNP  
NIC contact

## Motors and controllers

### Servo motors EMMS-AS



- Dynamic, brushless, permanently excited servo motor
  - Digital absolute displacement encoder in single-turn or multi-turn version
  - With optional brake
- Options:
- With or without brake
  - Encoder type: single-turn or multi-turn

### Gear unit EMGA



- Low-backlash planetary gear unit
- Gear ratio  
i = 3 and 5
- Life-time lubrication

### Motor controller CMMP-AS for servo motor



- Complete integration of all components for controller and power section, including USB interface
  - Integrated brake chopper
  - Integrated EMC filters
  - Automatic activation for a brake
- Options:
- Safety function: safe torque off (STO)/category 4, Performance Level e
  - Additional digital inputs and outputs

- Fieldbus interface
  - CANopen
  - DeviceNet
  - EtherCAT
  - EtherNet/IP
  - PROFIBUS DP
  - PROFINET

### Motor cable NEBM



- Cables specially coordinated for motor controller and motor
  - Degree of protection to IP65 (in assembled state)
- Options:
- Minimum cable length

### Encoder cable NEBM



- Cables specially coordinated for motor controller and motor
  - Degree of protection to IP65 (in assembled state)
- Options:
- Minimum cable length



# 2D gantries

Key features

### Module/motor combinations

We recommend that the 2D gantry is operated with the proposed motors from Festo. These precisely match the mechanical system.

When using third-party motors, it is essential that the technical limits are observed.

Module	Motor
<b>X module</b>	
EHMX-EGC-50-TB-KF	EMMS-AS-40-M-LS-...
EHMX-EGC-80-TB-KF	EMMS-AS-70-M-LS-...
EHMX-EGC-120-TB-KF	EMMS-AS-100-M-HS-...
EHMX-EGC-185-TB-KF	EMMS-AS-140-L-HS-...
<b>Y module</b>	
EHMY-...-EGC-50-TB-KF	EMMS-AS-40-M-LS-...
EHMY-...-EGC-80-TB-KF	EMMS-AS-70-S-LS-...
EHMY-...-EGC-120-TB-KF	EMMS-AS-100-S-HS-...
EHMY-...-EGC-125-TB-HD	EMMS-AS-70-S-LS-...
EHMY-...-EGC-160-TB-HD	EMMS-AS-100-S-HS-...
EHMY-...-EGC-185-TB-KF	EMMS-AS-100-S-HS-...
EHMY-...-EGC-220-TB-HD	EMMS-AS-140-S-HS-...

# 2D gantries

Key features

## Standard components within the handling system

The handling system comprises a number of tried and tested standard components from Festo. Different components are used depending on the configuration. You can alter the scope and design of the accessories in the HGO configurator on the “System configuration” page.

System configuration  
Find your handling solution in a few steps

<b>Mechanical system</b>	
Mounting	<input checked="" type="radio"/> Profile mounting <input type="radio"/> Adjusting kit
<b>Electrical system</b>	
Minimum cable length from energy chain output	5 m
<b>Pneumatics</b>	
Number of additional tubes	None
Outside diameter of additional tubes for front unit	Please select
Minimum tube length from energy chain output	2 m
<b>Assembly</b>	
Mounting method	<input checked="" type="radio"/> Complete assembly <input type="radio"/> Unmounted
Printed user documentation	English

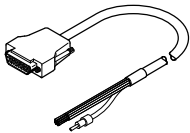
## Optional accessories

### Proximity sensor SIES-8M



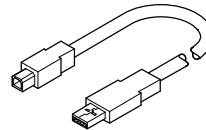
- For toothed belt axis EGC-TB, EGC-HD-TB
  - Inductive proximity sensor
  - For drives/axes with T-slot
  - For DC voltage
  - Flush installation
- Included if “Festo sensor package” is selected:
- 2 pieces

### Control cable NEBC



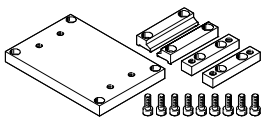
- For I/O interface to any controller
- Cable length: 2.5 m

### Programming cable NEBC



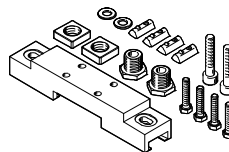
- High-speed USB 2.0 connecting cable
- Cable length: 1.8 m

### Profile mounting



- The profile mounting attachment is used to mount the handling system on the bearing surface. It is not height-adjustable.

### Adjusting kit



- The adjusting kit is used to mount the handling system on the bearing surface. This enables any unevenness in the bearing surface to be easily compensated.

## Possible cable lengths

Cables are selected so that the minimum length available from the energy chain output is the connection length specified when ordering.

Cables are only available in fixed lengths as stated in the table below. This can mean that the cable plug connectors of the different cables do not end at the same point.

Length	2 m	5 m	7 m	10 m
Motor cable	■	■	■	■
Encoder cable	■	■	■	■
Multi-pin plug connecting cable	■	■	■	■

# 2D gantries

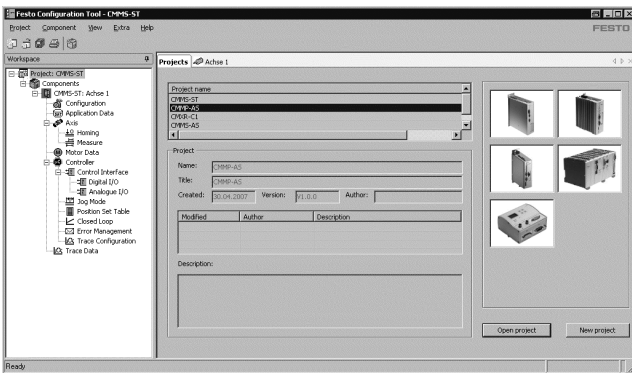
Programming aid

## Easy programming with

### FCT software – Festo Configuration Tool

Software platform for electric drives from Festo

- Once you have ordered the handling system, a basic project, which matches the configuration, is automatically prepared in FCT. This saves a lot of time and simplifies commissioning
- All drives in a system can be managed and saved in a common project
- Project and data management for all supported device types
- Easy to use thanks to graphically-supported parameter entry
- Universal mode of operation for all drives
- Work offline at your desk or online at the machine



- All drives in a system can be managed and saved in a common project
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