Parallel grippers HGPLE, sturdy with long stroke, electric

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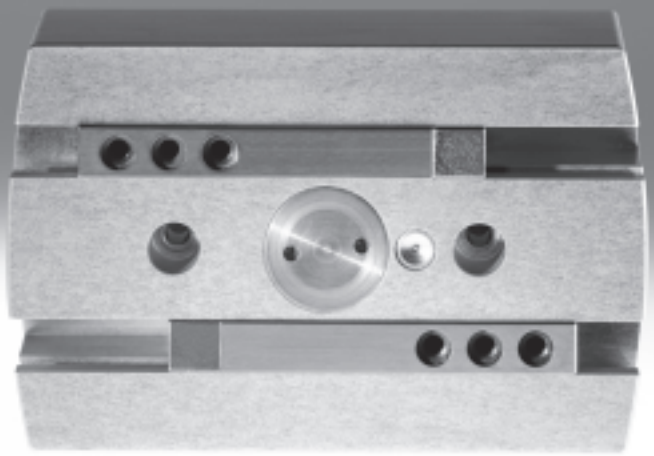

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Key features

At a glance

With free, speed-controlled selection of the gripping positions, flexible gripping is no longer a problem with the parallel gripper HGPLE. Its long stroke means it can be used with workpieces of different sizes. The option to adjust the gripping force makes the HGPLE ideal for soft or very delicate workpieces. It also grips large and heavy workpieces reliably.

Economical

- A "pre-holding position" enables the HGPLE to stop its gripper fingers just short of the workpiece, thus reducing gripping times to an absolute minimum. The HGPLE offers impressively short opening and closing times of 0.6 s, even with workpiece sizes that require the entire stroke.
- The installation complexity is minimal as only one cable is required (from the controller to the gripper).

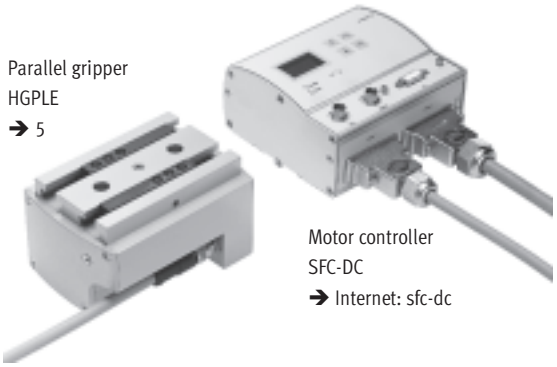
Flexible

As an integral component of the multi-axis modular system, the HGPLE offers identical interfaces to the pneumatic parallel gripper HGPL. It is actuated on-site using the proven motor controller SFC-DC.

Sturdy

The T-slot provides the HGPLE very high torque resistance as well as very high precision.

Everything from a single source



Parallel gripper HGPLE
➔ 5

Motor controller SFC-DC
➔ Internet: sfc-dc

The parallel gripper and motor controller SFC form one unit.

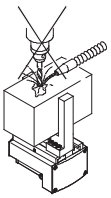
- Thanks to the protection class IP54, the SFC can be mounted close to the HGPLE, either:
  - via central supports or
  - on a H-rail
- The motor controller SFC is available with or without control panel
- Easy actuation via:
  - Profibus
  - CANopen
  - DeviceNet

Parameterisation possible via:

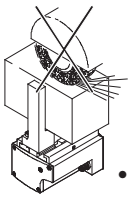
- Control panel:
  - Suitable for simple position sequences
- FCT (Festo Configuration Tool) configuration package:
  - Parameterisation via RS 232 interface
  - Windows-based PC user interface, Festo Configuration Tool
  - Tool is included in scope of delivery

Note

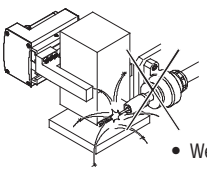
These grippers are not suitable for the following or similar application examples:



- Aggressive media
- Machining



- Grinding dust



- Welding splashes

PROFIBUS®, DeviceNet®, CANopen® is a registered trademark of its respective trademark holder in certain countries.

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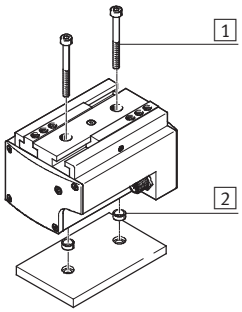
Key features and peripherals overview

Mounting options

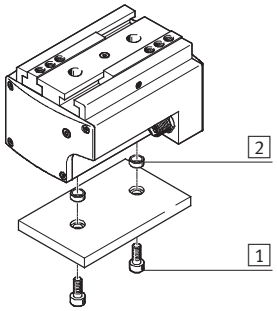
Direct mounting

from above



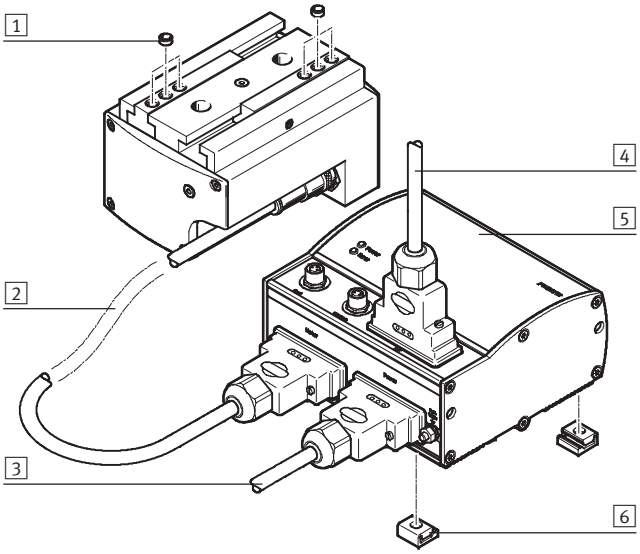
1 Mounting screws
2 Centring sleeves

from underneath

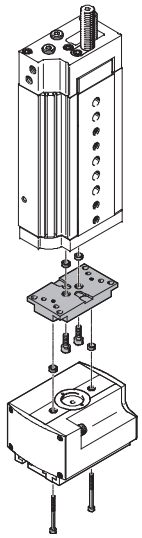


1 Mounting screws
2 Centring sleeves

Peripherals overview



System product for handling and assembly technology

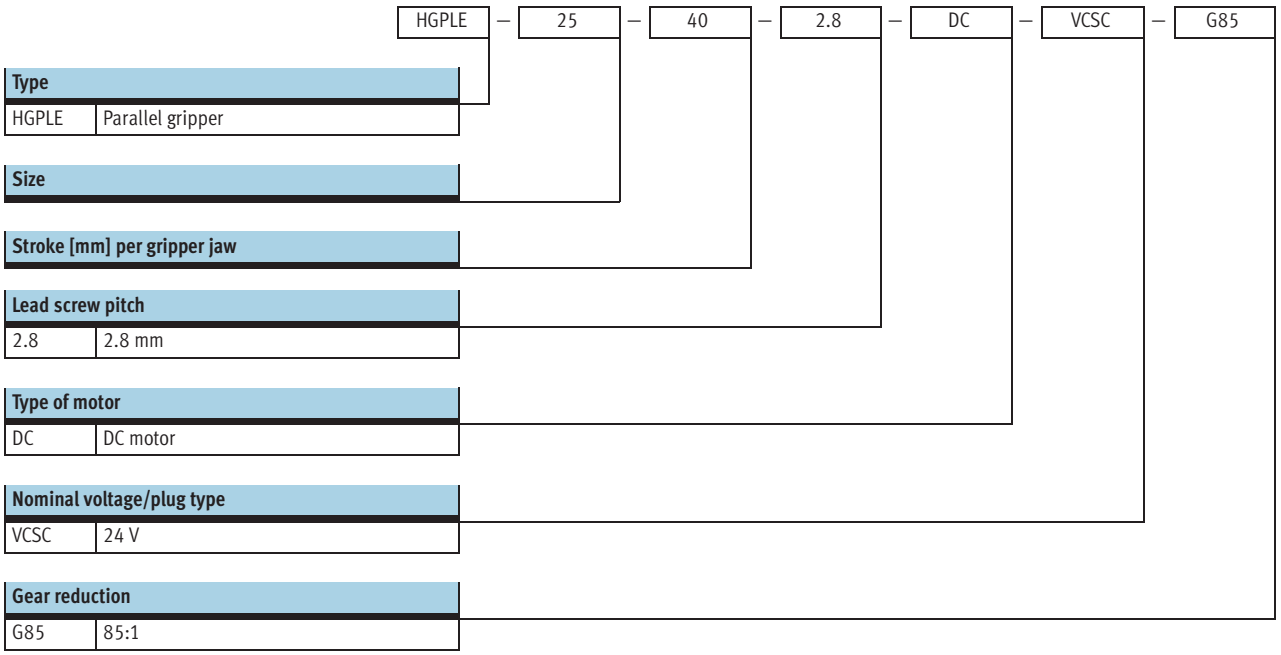


Accessories

	Type	Brief description	➔ Page/Internet
1	Centring sleeve ZBH	For centring attachments	10
2	Motor cable KMTR	Connecting cable between motor and motor controller	sfc-dc
3	Supply line KPWR	Power supply line; load and logic power supplies are isolated	sfc-dc
4	Plug FBS, FBA	For fieldbus interface	sfc-dc
5	Motor controller SFC	For parameterising and positioning the parallel gripper	sfc-dc
6	Central support MUP	– For mounting the motor controller – The motor controller can also be mounted on a H-rail	sfc-dc
–	Gripper jaw blank BUB-HGPL	Blank specially matched to the gripper jaws for custom building of gripper fingers	10

Parallel grippers HGPLE, sturdy with long stroke, electric

Type codes



Parallel grippers HGPLE, sturdy with long stroke, electric

Technical data

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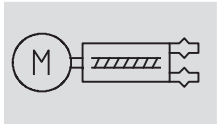
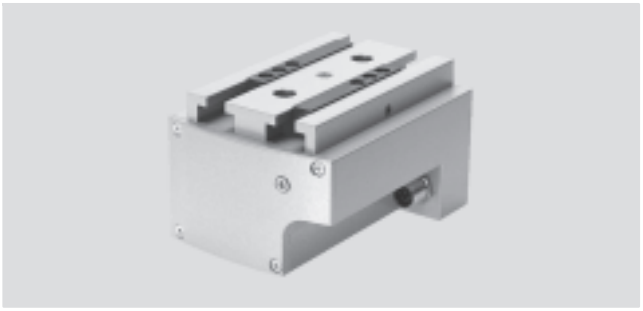
Function



- Size
  25 mm
- Stroke
  80 mm



General technical data		
Constructional design		Electrically driven gripper
		Synchronised gripper jaws
Mode of operation		Double-acting
Gripper function		Parallel
Guide		Plain-bearing guide with T-slot
Number of gripper jaws		2
Stroke per gripper jaw, adjustable	[mm]	0 ... 40
Electrical connection		12-pin
		M12x1
		Plug
Repetition accuracy[1]	[mm]	≤ 0.05
Max. interchangeability	[mm]	≤ 0.2
Reversing backlash[2]	[mm]	≤ 0.35
Rotational symmetry	[mm]	≤ 0.2
Homing		Negative fixed stop block
		Positive fixed stop block
Position sensing		Via integrated angular displacement encoder
Type of mounting		Via through-holes and centring sleeves
		Via female thread and centring sleeves
Mounting position		Any
Product weight	[g]	1,680

1) End-position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws
2) In new condition

Electrical data for motor		
Type of motor		DC servo motor
Nominal operating voltage	[V DC]	24

Operating and environmental conditions		
Ambient temperature	[°C]	10 ... 40
Protection class		IP54
Noise level	[dB A]	≤60
CE mark (see declaration of conformity)		To EU EMC Directive
Corrosion resistance class CRC[1]		2

1) Corrosion resistance class 2 as per Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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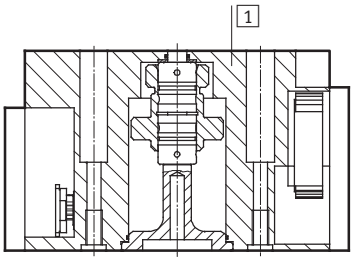
Technical data

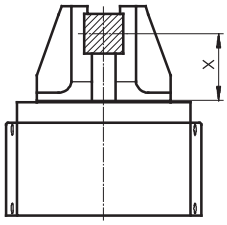
Materials

Sectional view



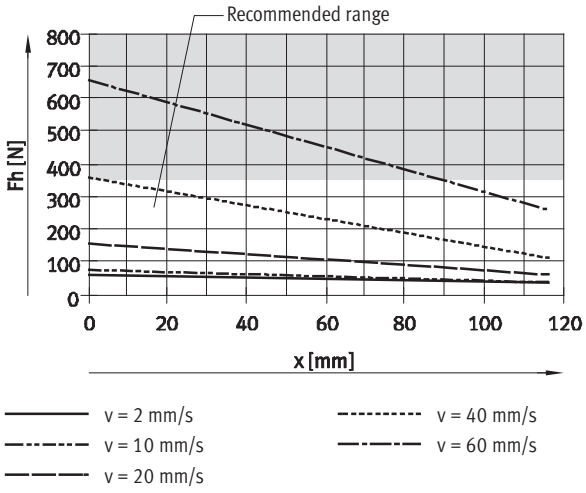
Parallel gripper		
1	Housing	Wrought aluminium alloy, coated with CompCote
–	Gripper jaw	Hardened steel
–	Note on materials	Free of copper, PTFE and silicone
		RoHS-compliant

Gripping force F as a function of travel speed v and lever arm x

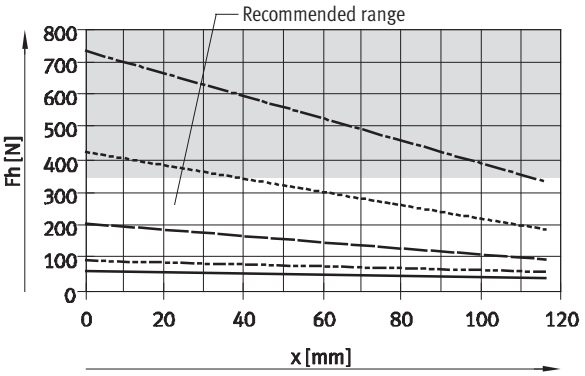


Gripping force Fh per gripper jaw

opening



closing

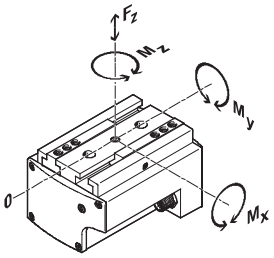


v = 2 mm/s
v = 10 mm/s
v = 20 mm/s
v = 40 mm/s
v = 60 mm/s

Total gripping force F with a lever arm x = 20 mm

Travel speed v	[mm/s]	2	5	10	20	40	60
opening	[N]	120	120	148	293	652	1,150
closing	[N]	121	120	176	376	771	1,300

Characteristic load values at the gripper jaws

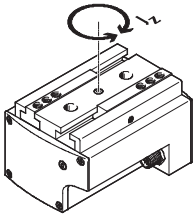


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement.

The zero coordinate line (guide groove of the gripper jaws) must be taken into consideration for the calculation of torques.

Size		25
Max. permissible force F_z	[N]	1,500
Max. permissible torque M_x	[Nm]	100
Max. permissible torque M_y	[Nm]	60
Max. permissible torque M_z	[Nm]	70

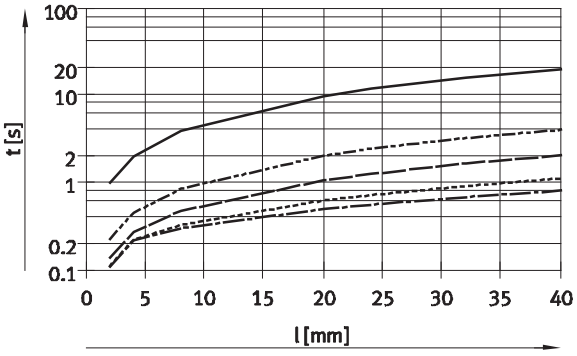
Mass moment of inertia [kgcm²]



Under the following conditions:
- The reference point is the central axis
- Without external gripper fingers
- In a load-free state

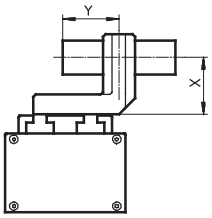
Size		25
Mass moment of inertia Jz	[kgcm²]	28.32

Positioning time t as a function of stroke per gripper jaw l and travel speed v



v = 2 mm/s
v = 10 mm/s
v = 20 mm/s
v = 40 mm/s
v = 65 mm/s

Gripping force F_{Grip} per gripper jaw as a function of lever arm x and eccentricity y



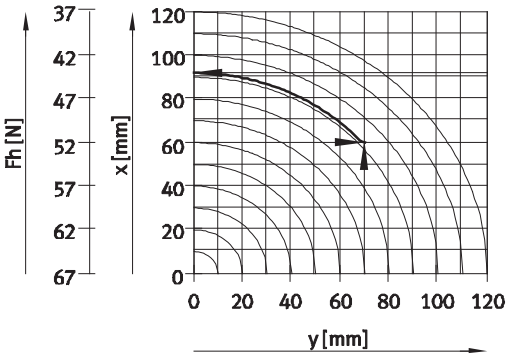
The gripping forces as a function of eccentric application of force and the maximum permissible off-centre point at which force is applied can be determined from the following graphs.

Calculation example

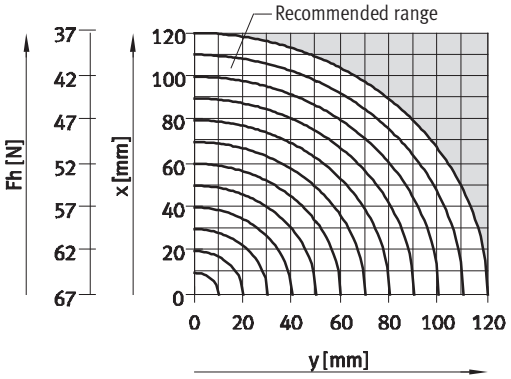
Given:
Lever arm x = 60 mm
Eccentricity y = 70 mm
To be calculated:
Gripping force at v < 1 mm/s

Procedure:
- Determine the intersection xy between the lever arm x and eccentricity y in the graph for HGPLE
- Draw an arc (with centre at origin) through the intersection xy
- Determine the intersection between the arc and X axis
- Read the gripping force

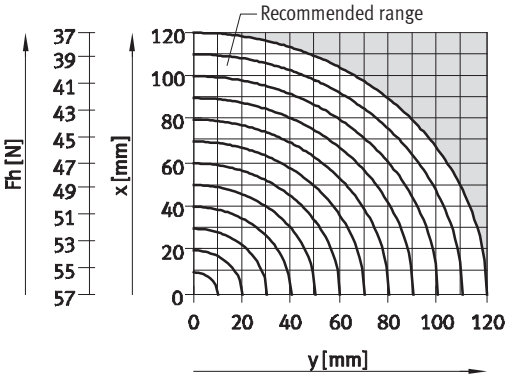
Result:
Gripping force = approx. 44 N



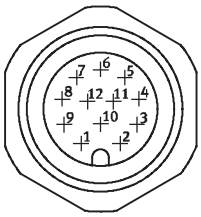
External gripping (closing)



Internal gripping (opening)



Pin allocation of connecting plug



Plug M12		
Pin	Connection	Function
1	Motor +	Motor conductor
2	Motor –	Motor conductor
3	A	Encoder signal RS 485
4	A/	Encoder signal RS 485
5	B	Encoder signal RS 485
6	B/	Encoder signal RS 485
7	I	Encoder signal RS 485
8	I/	Encoder signal RS 485
9	+5 V DC	Signal supply
10	0 V	Signal ground
11	–	Preassigned
12	–	Preassigned

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Technical data

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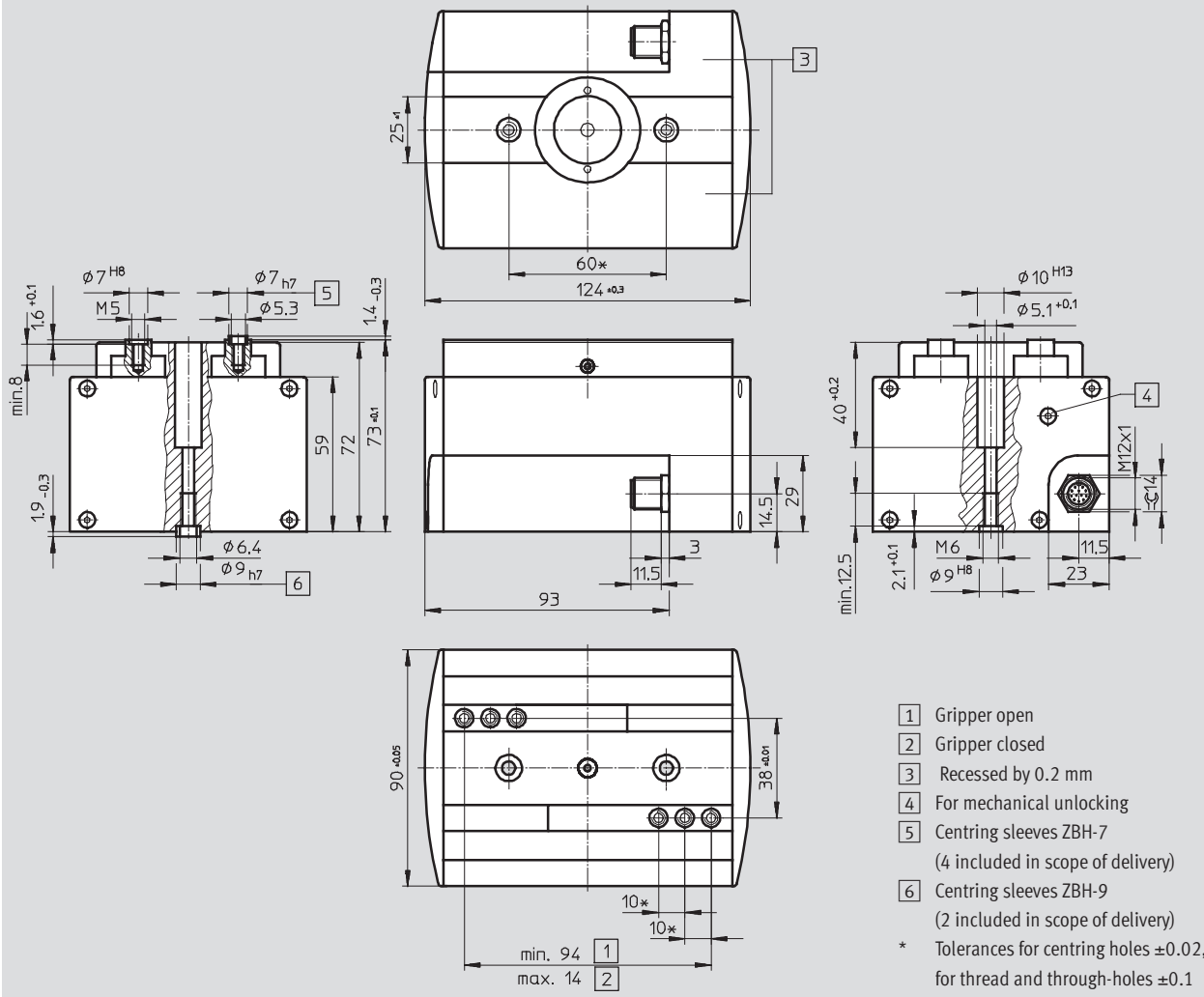
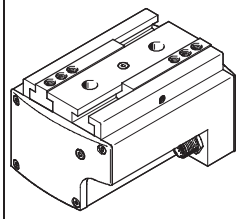
Dimensions

Download CAD data ➔ **www.festo.com**



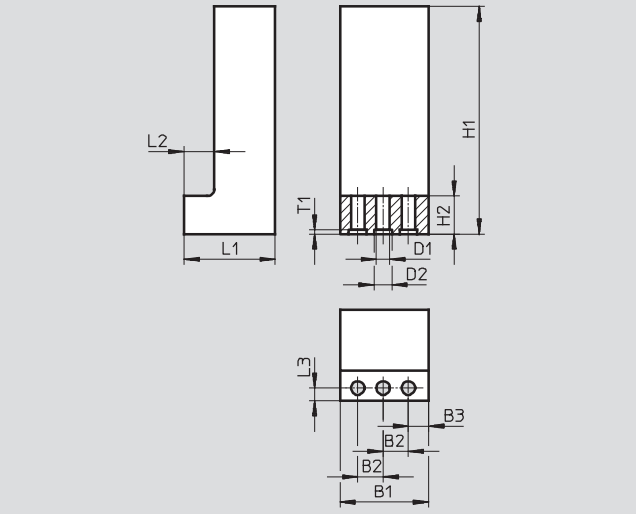
1 Gripper open
2 Gripper closed
3 Recessed by 0.2 mm
4 For mechanical unlocking
5 Centring sleeves ZBH-7
(4 included in scope of delivery)
6 Centring sleeves ZBH-9
(2 included in scope of delivery)
* Tolerances for centring holes ±0.02,
for thread and through-holes ±0.1

Ordering data

	Part No.	Type
	**555563**	**HGPLE-25-40-2,8-DC-VCSC-G85**

Gripper jaw blank BUB-HGPL
(scope of delivery: 2 pieces)

Material:
Aluminium
Free of copper, PTFE and silicone



Dimensions and ordering data

B1 ±0.1	B2 +0.02	B3	D1 ∅ +0.1	D2 ∅ H8	H1 ±0.1	H2
35	10	8	5.3	7	120	15

L1 ±0.1	L2 +0.1	L3 +0.1	T1 +0.1	Weight per blank [g]	Part No.	Type
36	12	5	1.6	295	**537317**	**BUB-HGPL-25**

Ordering data

	Weight [g]	Part No.	Type	PU[1)]
Centring sleeve for the gripper jaws ZBH			Technical data ➔ Internet: zbh	
	1	**186717**	**ZBH-7**	10
Centring sleeve for the gripper ZBH			Technical data ➔ Internet: zbh	
	1	**150927**	**ZBH-9**	10

1) Packaging unit quantity