

Adaptive gripper fingers DHAS

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Features

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At a glance

Adaptive gripper fingers for smooth and flexible gripping, with the Fin Ray Effect® derived from the movement of a fish's tail fin.

Two flexible bands, which meet at the top like a triangle, form the basis of

the Fin Ray Structure®. The bands are connected by ribs, spaced at regular intervals, using flex hinges. This flexible but sturdy connection of the joints allows the gripper fingers to adapt to the contours of a workpiece.

Areas of application:

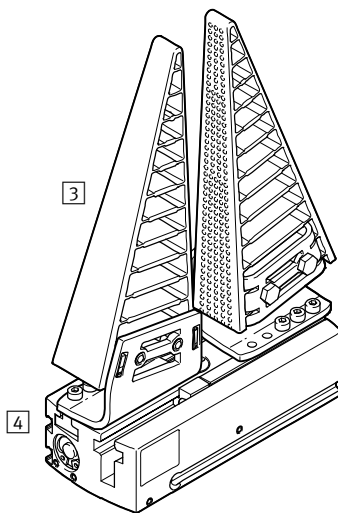
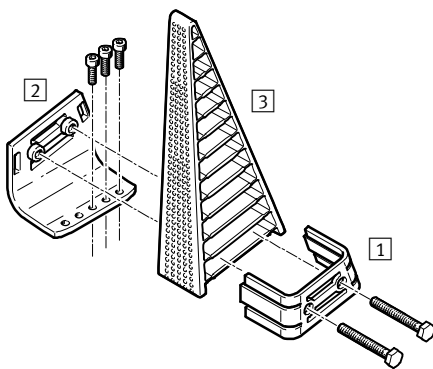
- Mechanical engineering
- Agriculture
- Man-machine cooperation

Adaptation options with the mounting kit DHAS-ME / mounting bracket DHAS-MA

The gripper fingers' interface is designed so that both parts can be easily slid together to form a positively-engaged and friction-based adapter while the fingers can flex.

The gripper finger can be mounted on an interface using the mounting kit DHAS-ME and a suitable adapter.

The gripper finger can be mounted on the parallel gripper HGPL-14 with the mounting kit DHAS-ME and the mounting bracket DHAS-MA.



- 1 Mounting kit DHAS-ME
- 2 Mounting bracket DHAS-MA
- 3 Adaptive gripper finger DHAS
- 4 Parallel gripper HGPL-14

Note

The following gripper types are particularly well-suited to using the adaptive gripper fingers:

- Long-stroke grippers
- Radial grippers
- Angle grippers

- The gripper finger is suitable for gripping rounded shapes
- The stroke per gripper jaw should be at least 10 mm

The gripper finger may become slightly deformed over the course of its service life. This does not have any influence on the gripper finger's functionality, however.

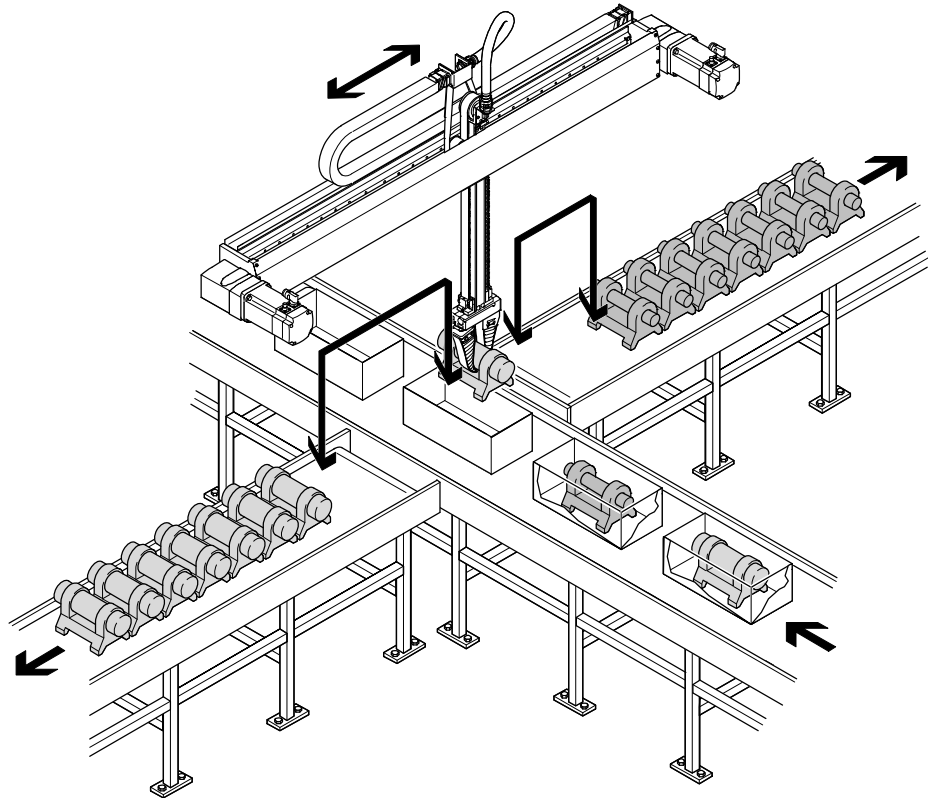
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Features

Sample applications

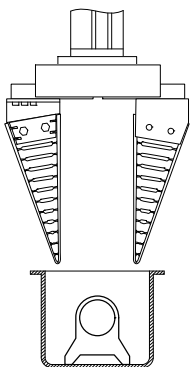
Transferring parts from tight packaging

- Different part diameters can be gripped in a form-fitting way with one gripper
- Gripping parts that are tightly packed with standard gripper jaws is difficult
- Thanks to the gripper fingers' pointed shape, they can be slid between the wall and the workpiece, even if the workpiece is off-centre



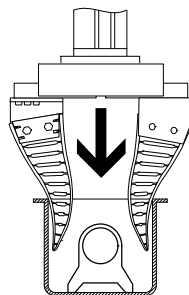
Step 1

Position the gripper fingers above the packaging



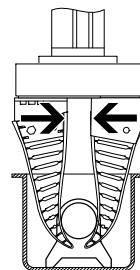
Step 2

Slide the gripper fingers into the packaging



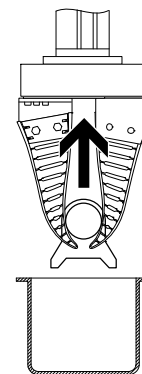
Step 3

Wrap the fingers around the workpiece in a form-fitting way



Step 4

Lift the workpiece



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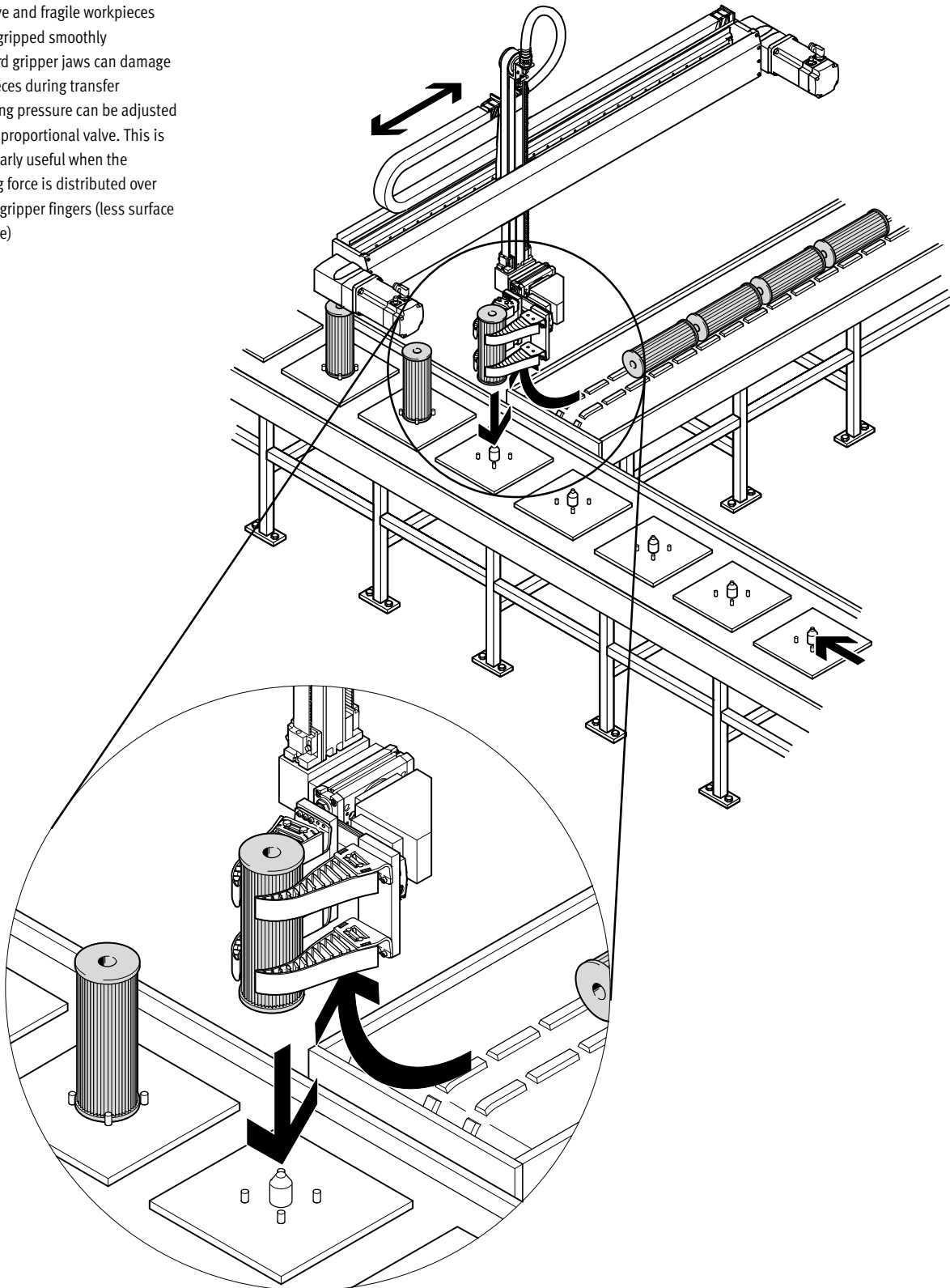
Features

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Sample applications

Transferring sensitive parts such as filter cartridges

- Sensitive and fragile workpieces can be gripped smoothly
- Standard gripper jaws can damage workpieces during transfer
- Operating pressure can be adjusted using a proportional valve. This is particularly useful when the gripping force is distributed over several gripper fingers (less surface pressure)



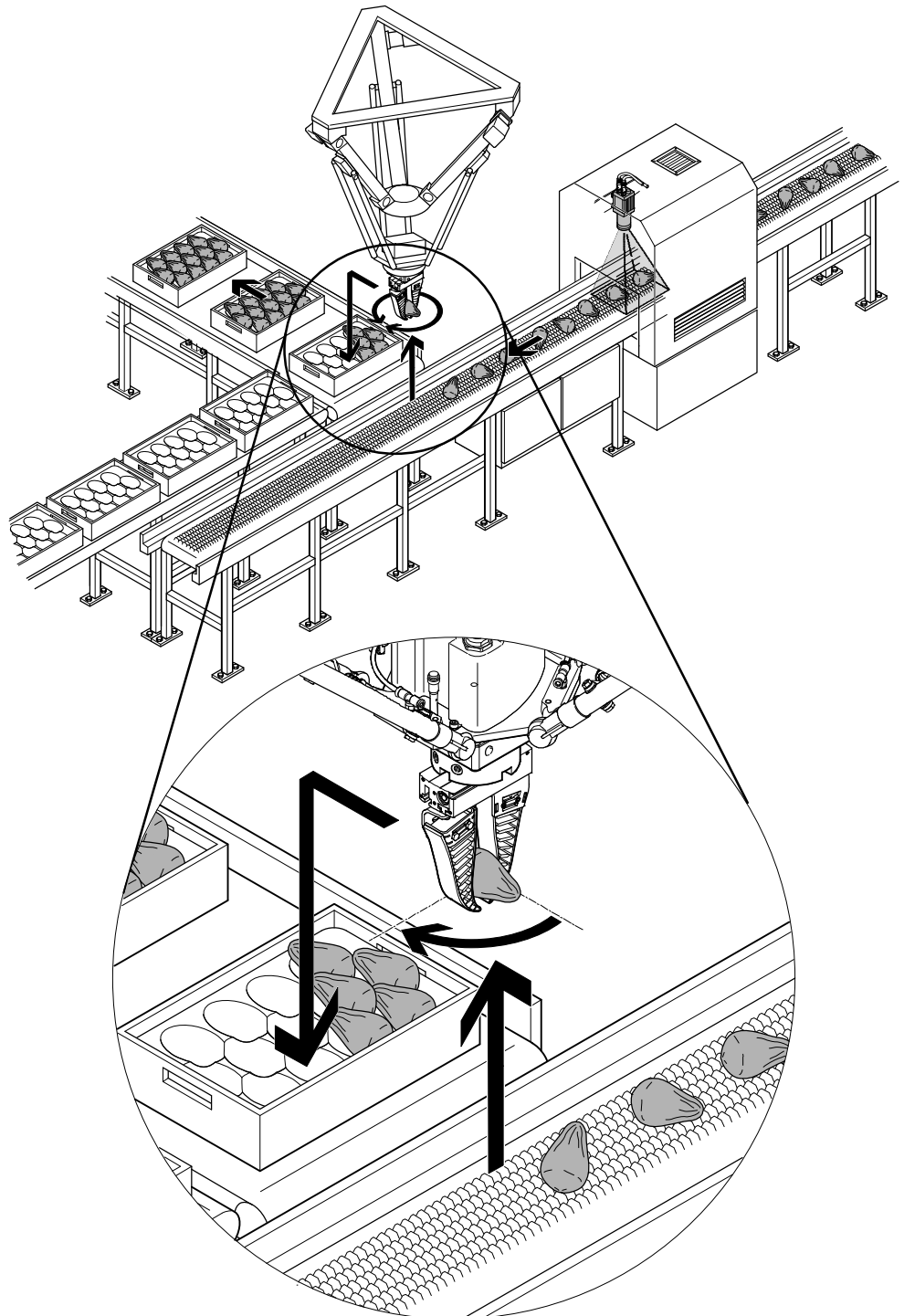
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Features

Sample applications

Transferring unevenly shaped parts such as avocados

- Differently shaped parts can be gripped in an adaptive and smooth way without any need to change the gripper
- The option of having an internal block to reduce the stroke is particularly suitable if the workpiece forms vary significantly
- By varying the distance between the grippers, both the gripping force and the flex distance (the distance by which the fingers flex if pressed) can be adapted



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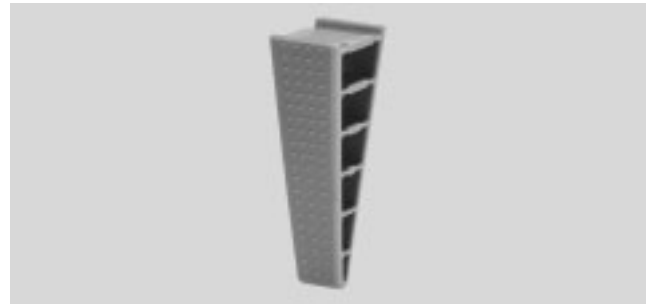
Type codes

FESTO

| | | | | | | | | | | |
|-----------------|-----------------|------|---|----|---|----|---|---|---|----|
| | | DHAS | – | GF | – | 80 | – | U | – | BU |
| Series | | | | | | | | | | |
| DHAS | Gripper fingers | | | | | | | | | |
| Type | | | | | | | | | | |
| GF | Fin jaw | | | | | | | | | |
| Size | | | | | | | | | | |
| 60 | 60 | | | | | | | | | |
| 80 | 80 | | | | | | | | | |
| 120 | 120 | | | | | | | | | |
| Material | | | | | | | | | | |
| U | Polyurethane | | | | | | | | | |
| Colour | | | | | | | | | | |
| BU | Blue | | | | | | | | | |

Adaptive gripper fingers DHAS


Technical data

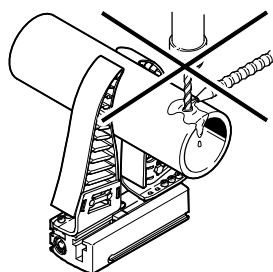


| General technical data | | | | |
|------------------------|-----|-------------------------|----|-----|
| Size | | 60 | 80 | 120 |
| Assembly position | | Any | | |
| Weights | | | | |
| Gripper fingers | [g] | 6.5 | 13 | 29 |
| Angle bracket | [g] | 23 | 38 | 59 |
| Retainer | [g] | 7 | 13 | 23 |
| Screws | [g] | 2.5 | 6 | 7 |
| Clamping jaw materials | | TPE-U (PU) | | |
| Note on materials | | Free of copper and PTFE | | |
| | | RoHS compliant | | |

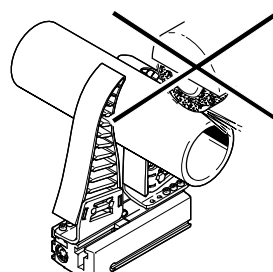
| Operating and environmental conditions | | | | |
|--|------|---------------------------------|----|-----|
| Size | | 60 | 80 | 120 |
| Ambient temperature | [°C] | 10 ... 50 | | |
| Corrosion resistance class CRC ¹⁾ | | 2 | | |
| Food suitability ²⁾ | | → Advanced material information | | |

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information www.festo.com/sp → Certificates.

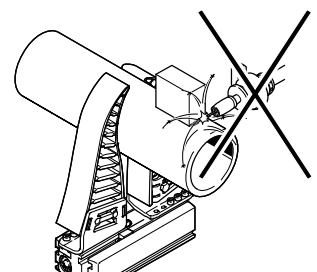
 **Note**
These gripper fingers are not designed for the following or similar examples of use:



- Machining
- Aggressive media



- Grinding dust



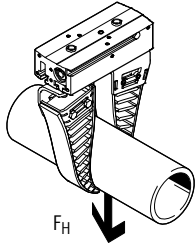
- Welding spatter

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Technical data

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Max. retention force F_H as a function of gripping force F_G (of two gripper fingers) and workpiece diameter at 23°C



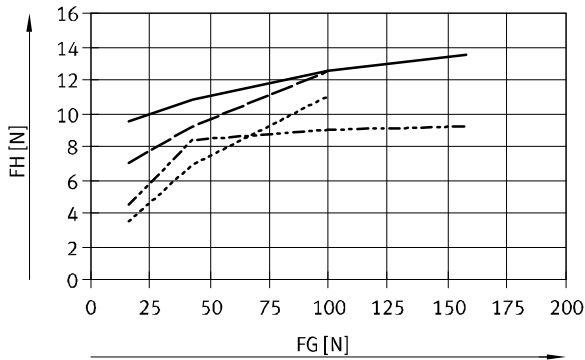
The retention force F_H is the maximum force that may be applied so that the gripper fingers can still hold the workpiece.

The values were determined under the following conditions:

- With parallel grippers HGPL-14
- Cylindrical workpiece

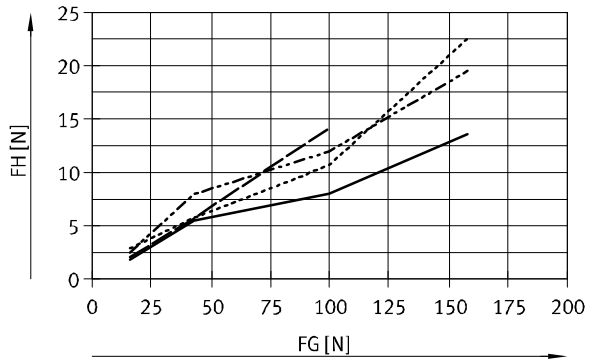
The values may differ under other ambient conditions (additional information on request).

Size 60



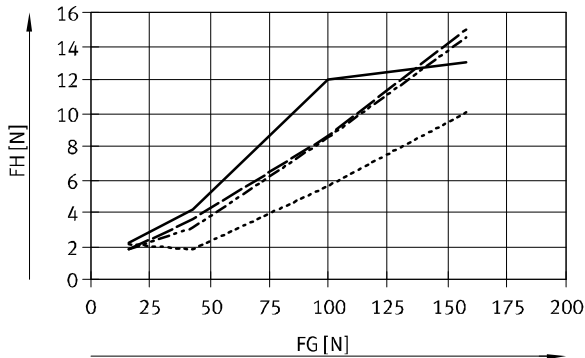
- Ø 6 mm
- - - Ø 20 mm
- · - · - Ø 40 mm
- · · · · Ø 50 mm

Size 80



- Ø 40 mm
- - - Ø 50 mm
- · - · - Ø 70 mm
- · · · · Ø 80 mm

Size 120

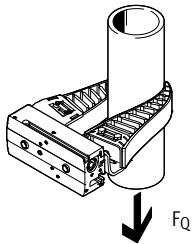


- Ø 70 mm
- - - Ø 80 mm
- · - · - Ø 100 mm
- · · · · Ø 120 mm

Adaptive gripper fingers DHAS

Technical data

Max. lateral force F_Q as a function of gripping force F_G (of two gripper fingers) and workpiece diameter at 23°C



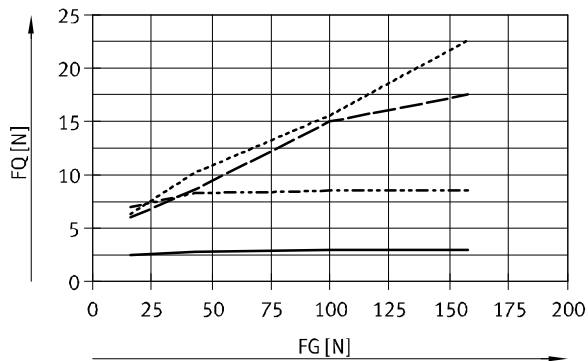
The lateral force F_Q is the maximum force that may be applied so that the workpiece does not begin to slip.

The values were determined under the following conditions:

- With parallel grippers HGPL-14
- Cylindrical workpiece
- In the middle of the gripper finger (MP2 → 10)

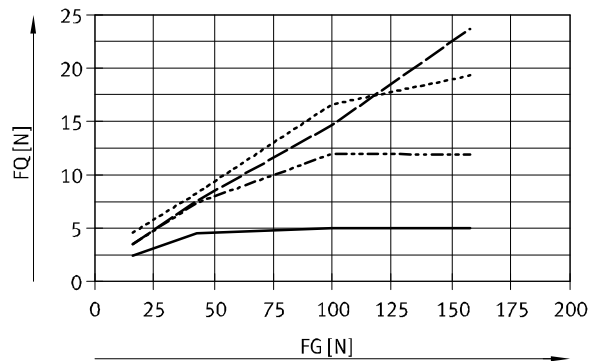
The values may differ under other ambient conditions (additional information on request).

Size 60



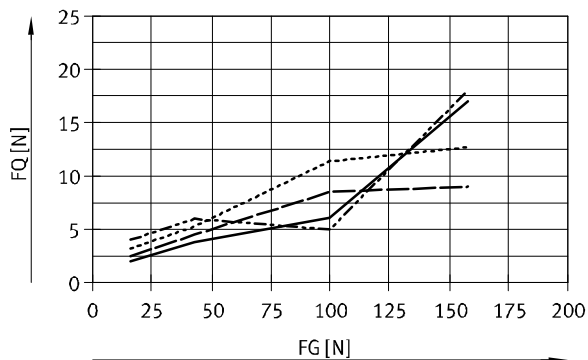
- Ø 6 mm
- - - Ø 20 mm
- · - · - Ø 40 mm
- · · · · Ø 50 mm

Size 80



- Ø 40 mm
- - - Ø 50 mm
- · - · - Ø 70 mm
- · · · · Ø 80 mm

Size 120



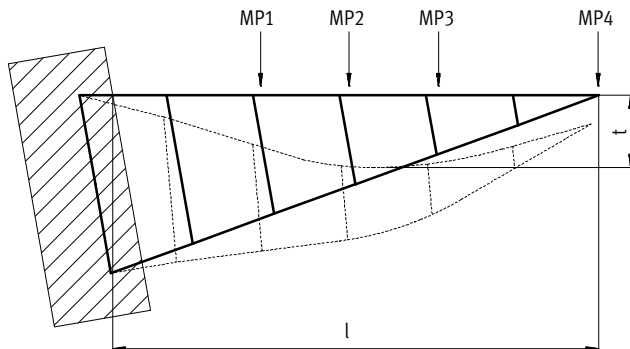
- Ø 70 mm
- - - Ø 80 mm
- · - · - Ø 100 mm
- · · · · Ø 120 mm

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Technical data

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Indentation depth t as a function of gripping force F_G (per gripper finger) at 23°C



MP1 Measuring point 1
MP2 Measuring point 2
MP3 Measuring point 3
MP4 Measuring point 4
l Total length
t Indentation depth

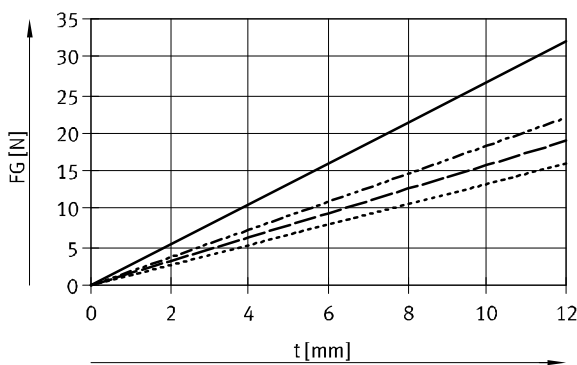
The values may differ under other ambient conditions (additional information on request).

Workpieces are best gripped in the middle of the gripper finger (MP2).

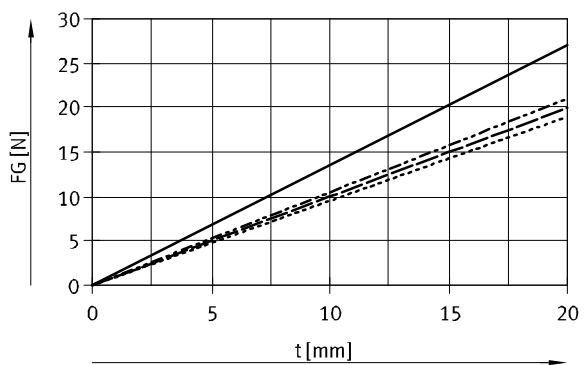
| Size | l [mm] | MP1 [mm] | MP2 [mm] | MP3 [mm] | MP4 [mm] |
|------|--------|----------|----------|----------|----------|
| 60 | 50 | 15 | 25 | 35 | 50 |
| 80 | 80 | 30 | 40 | 50 | 80 |
| 120 | 115 | 47.5 | 57.5 | 67.5 | 115 |

| Size | Indentation depth at MP2 [mm] |
|------|-------------------------------|
| 60 | 12 |
| 80 | 20 |
| 120 | 30 |

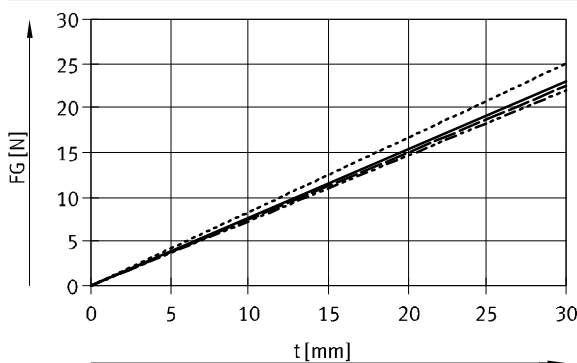
Size 60



Size 80



Size 120



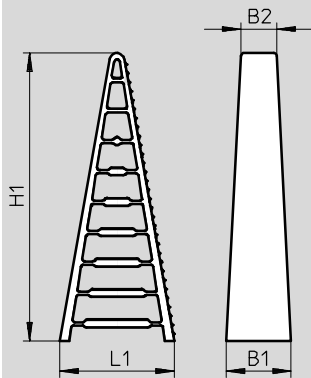
— MP1
- - - MP2
- · - MP3
· · · MP4

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Technical data

Dimensions

Download CAD data → www.festo.com



| Size | B1 | B2 | H1 | L1 |
|------|------|------|-------|------|
| 60 | 18 | 11.8 | 61.5 | 26 |
| 80 | 21.3 | 11.8 | 94.5 | 37.5 |
| 120 | 25 | 11.8 | 134.5 | 50 |

Ordering data

| Size | Part No. | Type |
|------|----------------|-------------------------|
| 60 | 3998967 | DHAS-GF-60-U-BU |
| 80 | 3998964 | DHAS-GF-80-U-BU |
| 120 | 3998959 | DHAS-GF-120-U-BU |

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Accessories

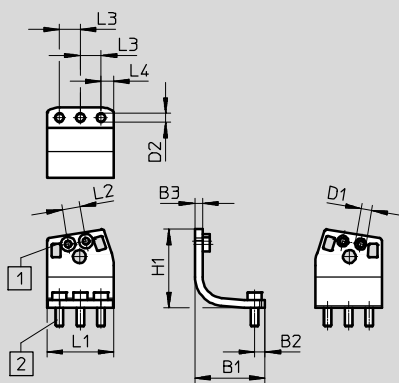
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Mounting bracket DHAS-MA

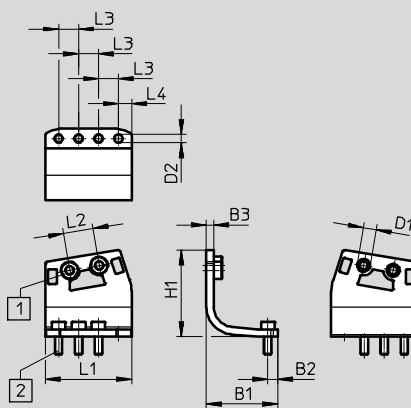


Dimensions and ordering data

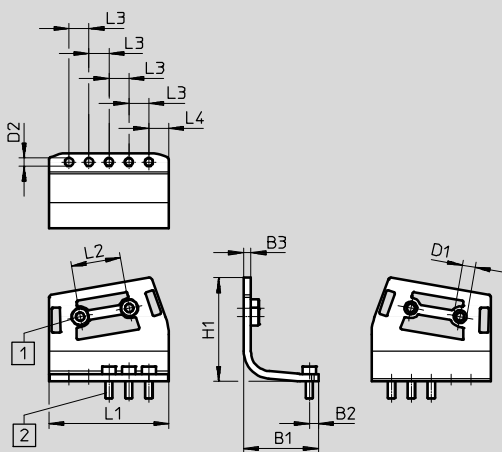
For size 60



For size 80



For size 120



- 1 Press-fit nut
for size 60: M3
for sizes 80 and 120: M4
- 2 Screw DIN 912-M3x10-12.9

| For size | B1 | B2 | B3 ±0.2 | D1 Ø | D2 Ø | H1 |
|----------|------|-----|------------|---------|---------|------|
| 60 | 27 | 4 | 3 | 4.2 | 3.4 | 30.2 |
| 80 | 28.6 | 4 | 3 | 5.2 | 3.4 | 34.9 |
| 120 | 30 | 3.6 | 3 | 5.2 | 3.4 | 41.5 |

| For size | L1 | L2 ±0.1 | L3 ±0.1 | L4 | Part No. | Type |
|----------|------|------------|------------|------|----------------|-----------------------|
| 60 | 25.7 | 7 | 8 | 5 | 3920696 | DHAS-MA-B6-60 |
| 80 | 34.5 | 12 | 8 | 5.25 | 3899099 | DHAS-MA-B6-80 |
| 120 | 48 | 20 | 8 | 8 | 3889257 | DHAS-MA-B6-120 |

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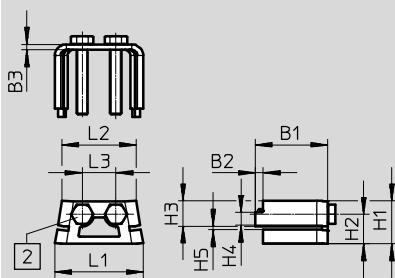
Accessories

Mounting kit DHAS-ME

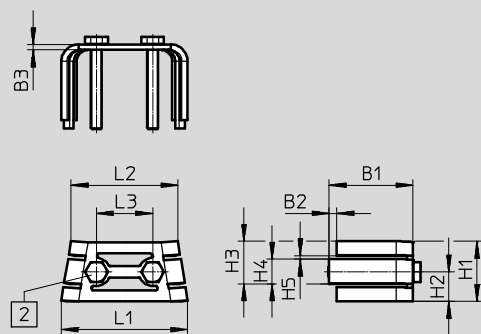


Dimensions and ordering data

For sizes 60 and 80



For size 120



- 2 Screw
For size 60: ISO 4017-M3x22-A2-70
For size 80: ISO 4017-M4x25-A2-70
For size 120: ISO 4017-M4x30-A2-70

Dimensions

| For size | B1 | B2 | B3 ±0.1 | H1 | H2 | H3 | H4 |
|----------|------|-----|------------|------|------|----|-----|
| 60 | 22.8 | 2.8 | 2 | 10.3 | 6.7 | 7 | 3.6 |
| 80 | 25.8 | 2.8 | 2 | 15.3 | 10.5 | 9 | 4.6 |
| 120 | 29.8 | 2.8 | 2 | 21.3 | 10.5 | 15 | 8.7 |

| For size | H5 +0.1 | L1 | L2 | L3 ±0.1 | Part No. | Type |
|----------|------------|------|------|------------|----------|----------------|
| 60 | 1.3 | 20.7 | 17.4 | 7 | 4464306 | DHAS-ME-H9-60 |
| 80 | 1.3 | 31.4 | 26.4 | 12 | 4463570 | DHAS-ME-H9-80 |
| 120 | 1.3 | 44.9 | 38 | 20 | 4461433 | DHAS-ME-H9-120 |