

## Adaptive gripper fingers DHAS

**FESTO**



# Adaptive gripper fingers DHAS

Features

## 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:

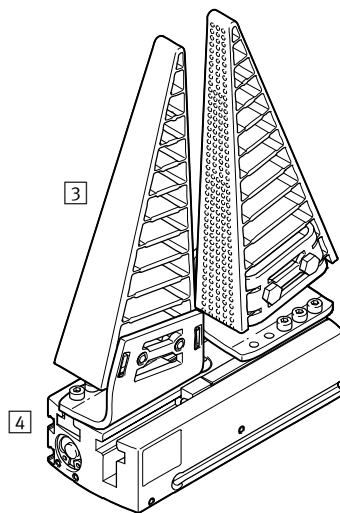
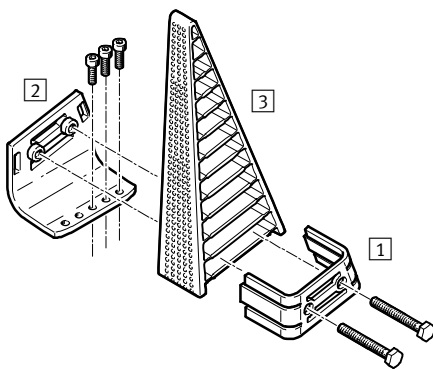
- Mechanical engineering
- Agriculture
- Man-machine cooperation

## 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.

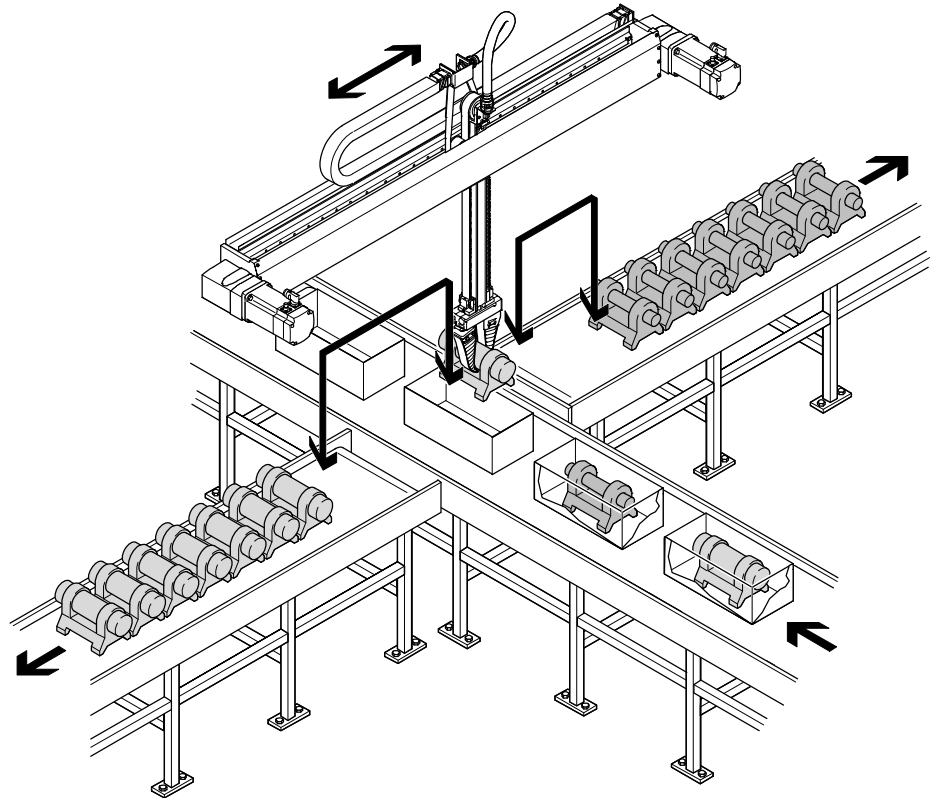
# Adaptive gripper fingers DHAS

Features

## Sample applications

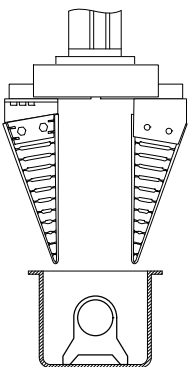
Transferring parts from tight packaging

- 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



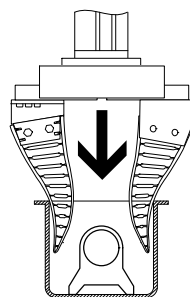
### Step 1

Position the gripper fingers above the packaging



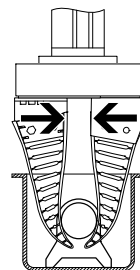
### Step 2

Slide the gripper fingers into the packaging



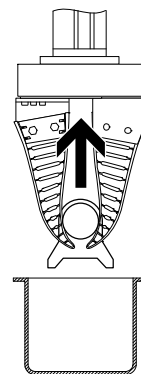
### Step 3

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



### Step 4

Lift the workpiece



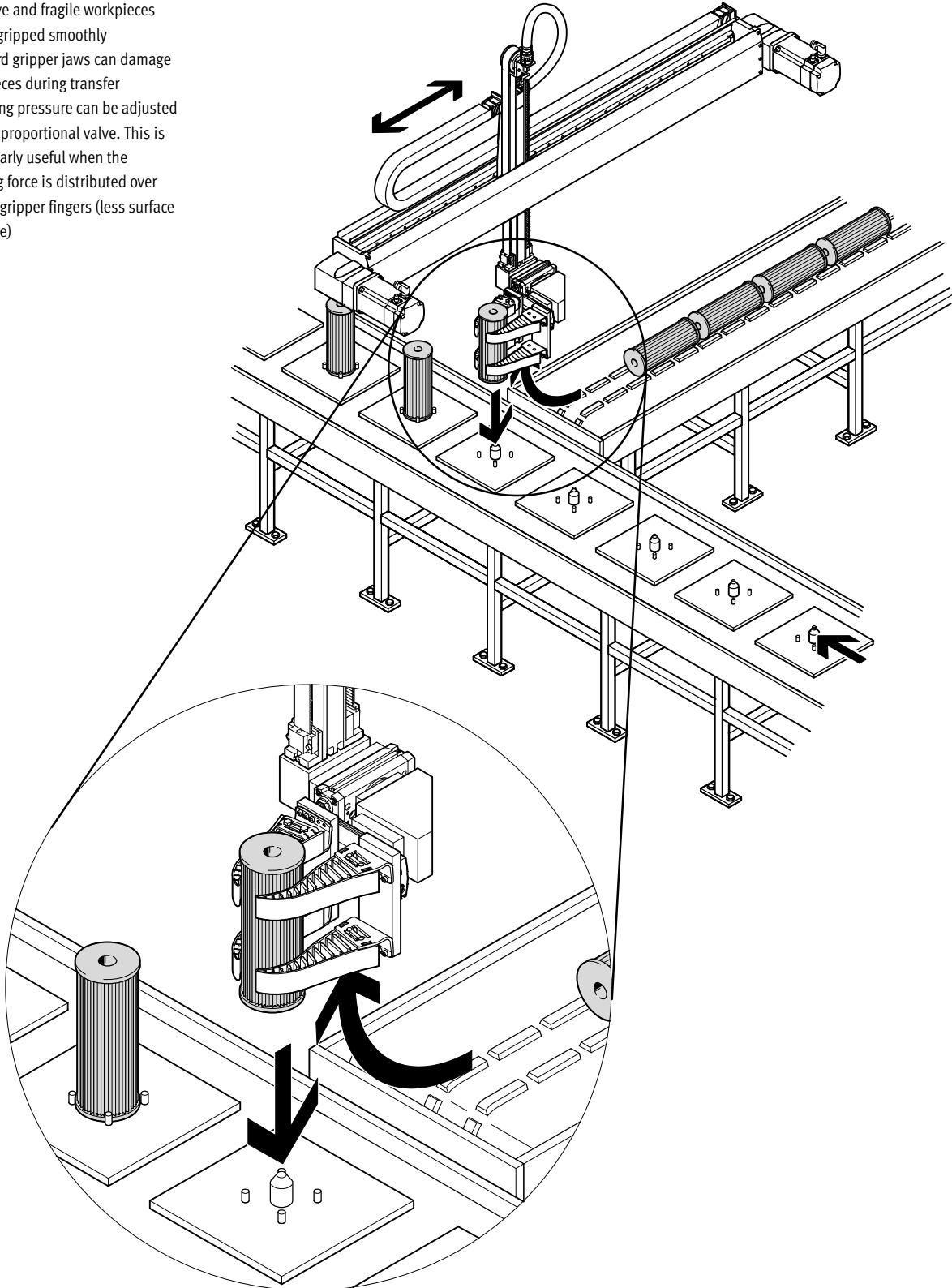
## Adaptive gripper fingers DHAS

Features

### 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)



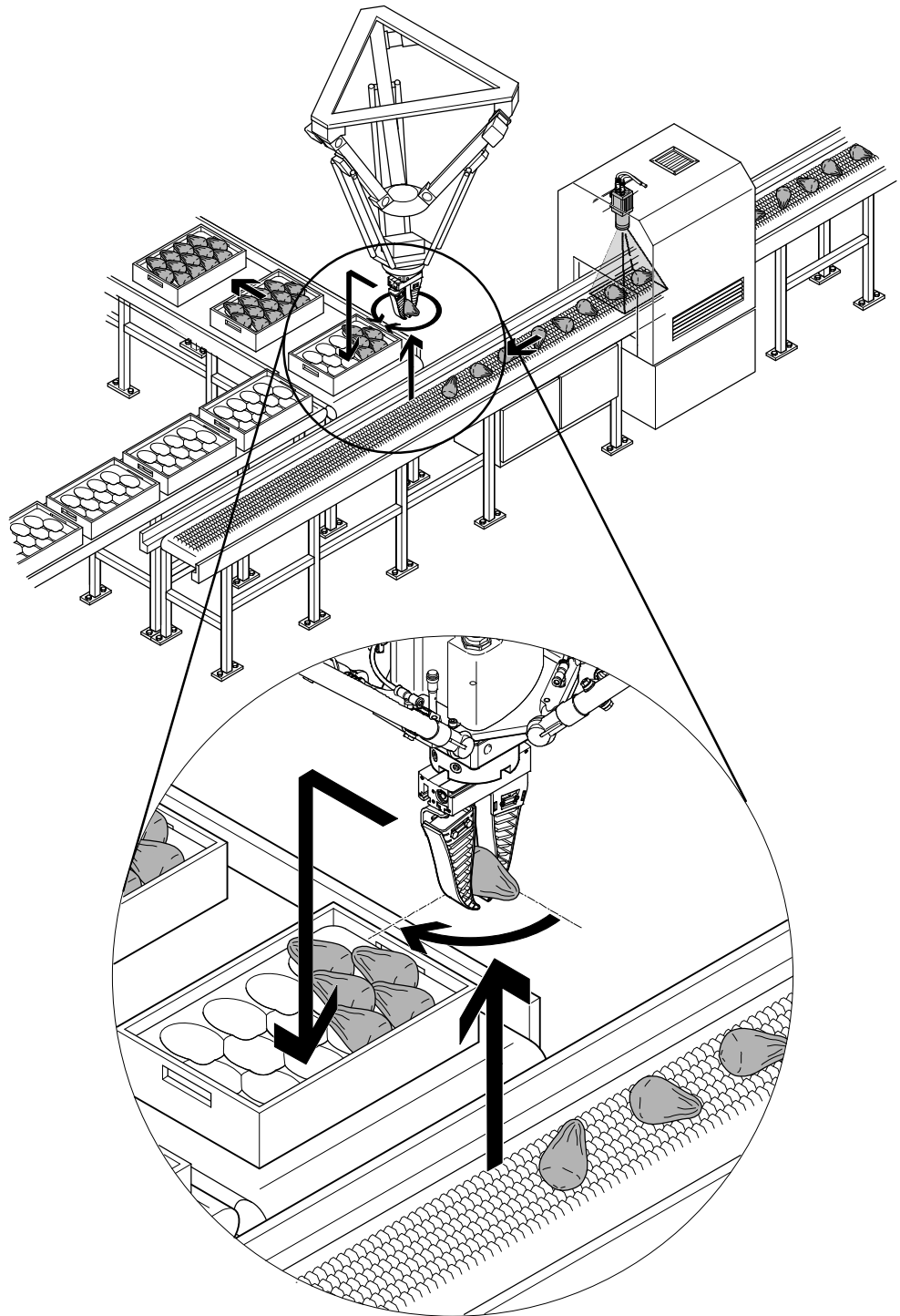
# Adaptive gripper fingers DHAS

Features

## Sample applications

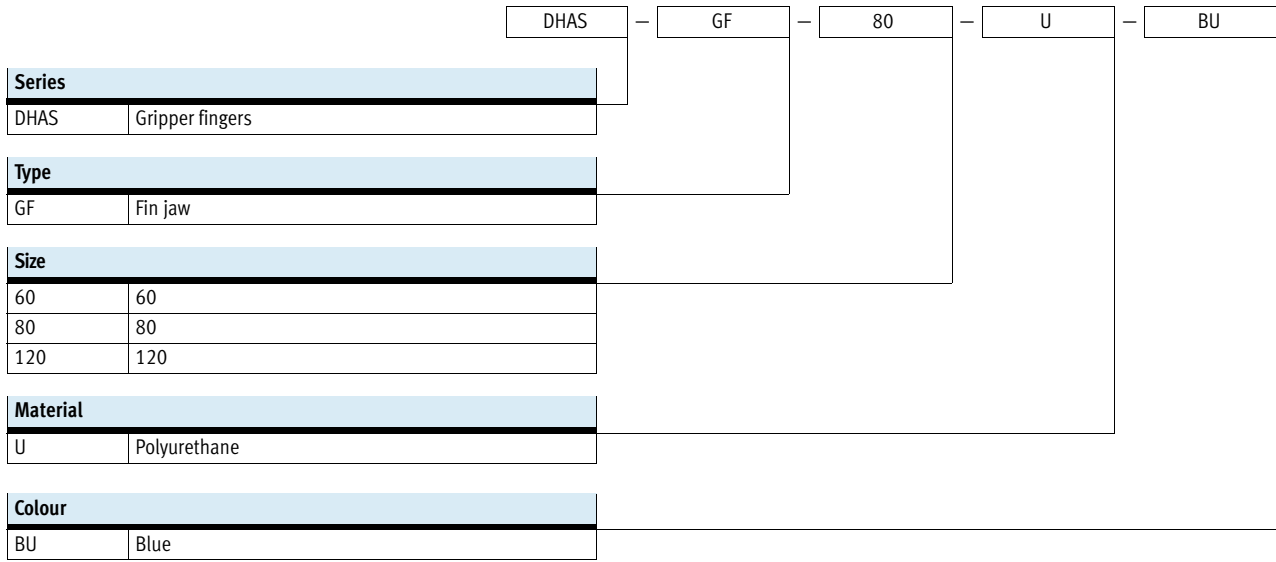
Transferring unevenly shaped parts such as avocados

- 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



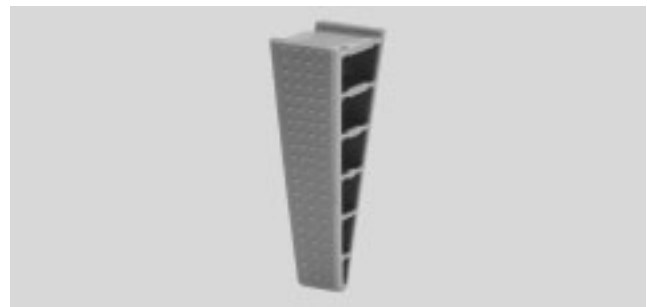
# Adaptive gripper fingers DHAS

Type codes



# Adaptive gripper fingers DHAS


Technical data

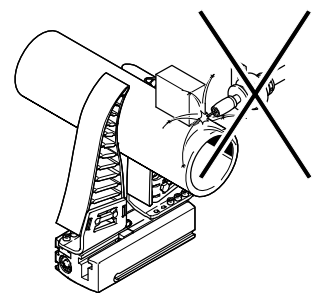
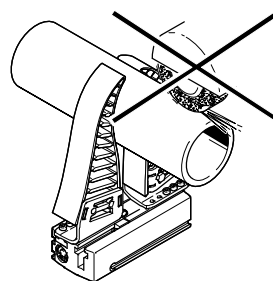
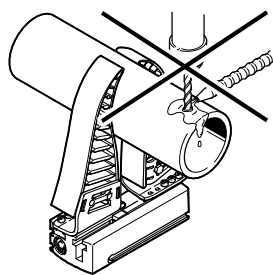


General technical data				
Size		60	80	120
Assembly position		Any		
Weights				
Gripper fingers	[g]	6.5	13	29
Angle bracket	[g]	23	38	59
Retainer	[g]	7	13	23
Screws	[g]	2.5	6	7
Clamping jaw materials		TPE-U (PU)		
Note on materials		Free of copper and PTFE		
		RoHS compliant		

Operating and environmental conditions				
Size		60	80	120
Ambient temperature	[°C]	10 ... 50		
Corrosion resistance class CRC <sup>1)</sup>		2		
Food suitability <sup>2)</sup>		→ 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](http://www.festo.com/sp) → Certificates.

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



- Machining
- Aggressive media

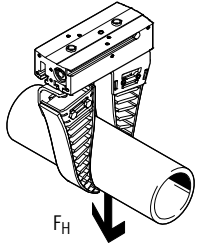
- Grinding dust

- Welding spatter

# Adaptive gripper fingers DHAS

Technical data

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



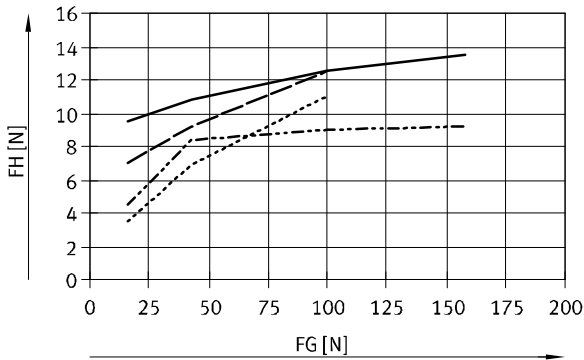
The retention force  $F_H$  is the maximum force that may be applied so that the gripper fingers can still hold the workpiece.

The values were determined under the following conditions:

- With parallel grippers HGPL-14
- Cylindrical workpiece

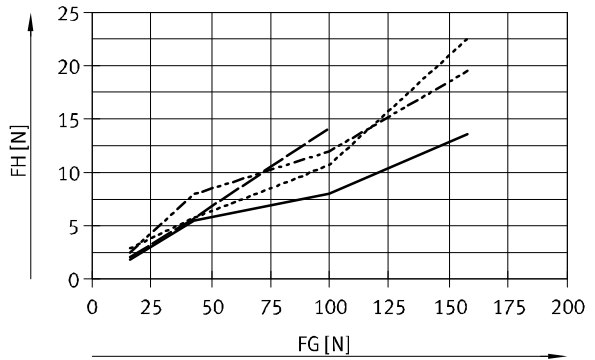
The values may differ under other ambient conditions (additional information on request).

### Size 60



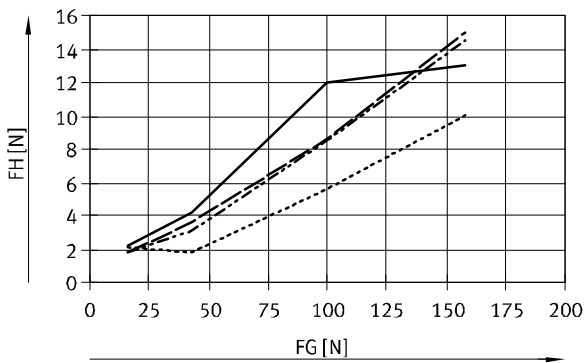
- $\varnothing$  6 mm
- - -  $\varnothing$  20 mm
- · -  $\varnothing$  40 mm
- · · -  $\varnothing$  50 mm

### Size 80



- $\varnothing$  40 mm
- - -  $\varnothing$  50 mm
- · -  $\varnothing$  70 mm
- · · -  $\varnothing$  80 mm

### Size 120



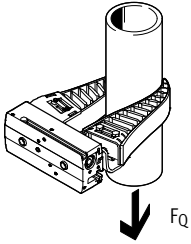
- $\varnothing$  70 mm
- - -  $\varnothing$  80 mm
- · -  $\varnothing$  100 mm
- · · -  $\varnothing$  120 mm



# 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



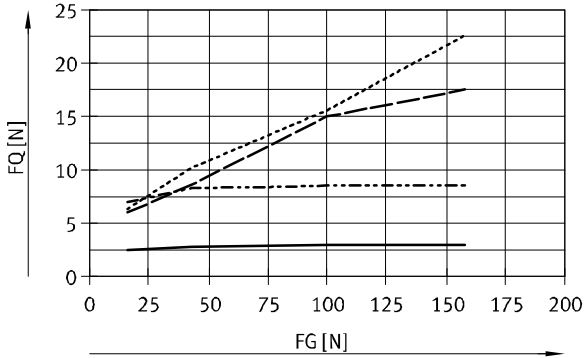
The lateral force  $F_Q$  is the maximum force that may be applied so that the workpiece does not begin to slip.

The values were determined under the following conditions:

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

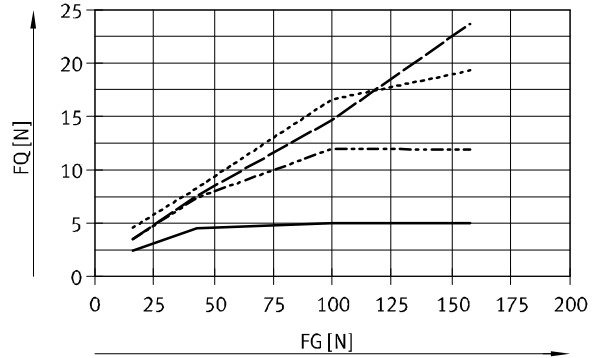
The values may differ under other ambient conditions (additional information on request).

### Size 60



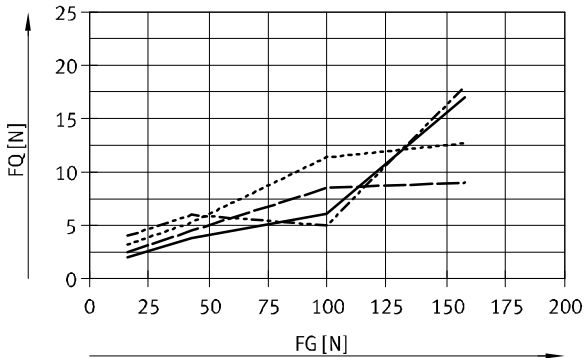
- Ø 6 mm
- - - - - Ø 20 mm
- · - · - Ø 40 mm
- · - · - Ø 50 mm

### Size 80



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

### Size 120

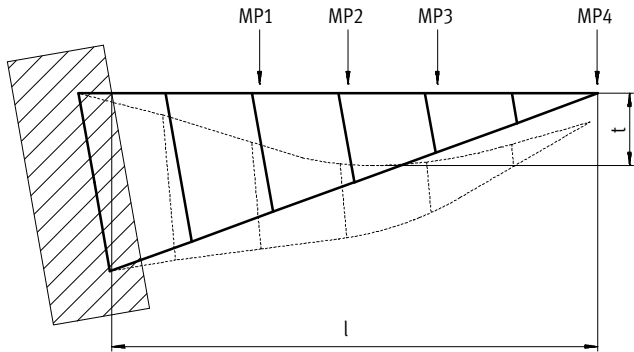


- Ø 70 mm
- - - - - Ø 80 mm
- · - · - Ø 100 mm
- · - · - Ø 120 mm

# Adaptive gripper fingers DHAS

Technical data

## 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

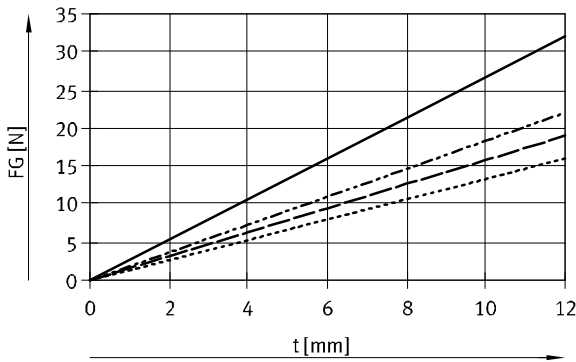
The values may differ under other ambient conditions (additional information on request).

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

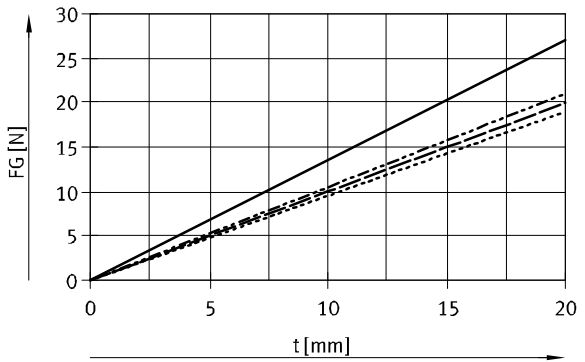
Size	l [mm]	MP1 [mm]	MP2 [mm]	MP3 [mm]	MP4 [mm]
60	50	15	25	35	50
80	80	30	40	50	80
120	115	47.5	57.5	67.5	115

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

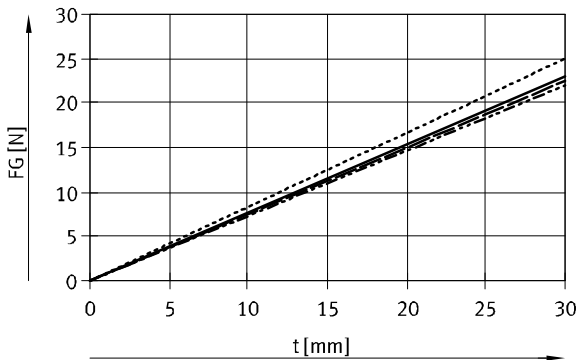
Size 60



Size 80



Size 120



- MP1
- - - MP2
- · - MP3
- · · MP4

# Adaptive gripper fingers DHAS

Technical data

**Dimensions**

Download CAD data → [www.festo.com](http://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

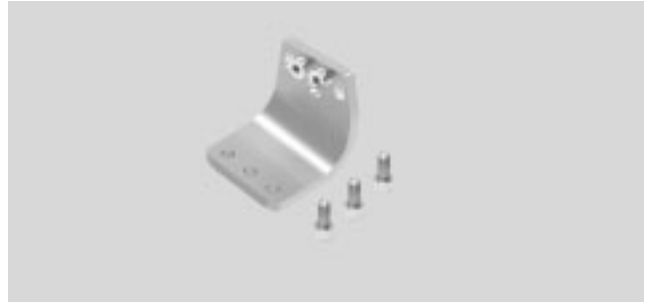
**Ordering data**

Size	Part No.	Type
60	<b>3998967</b>	<b>DHAS-GF-60-U-BU</b>
80	<b>3998964</b>	<b>DHAS-GF-80-U-BU</b>
120	<b>3998959</b>	<b>DHAS-GF-120-U-BU</b>

# Adaptive gripper fingers DHAS

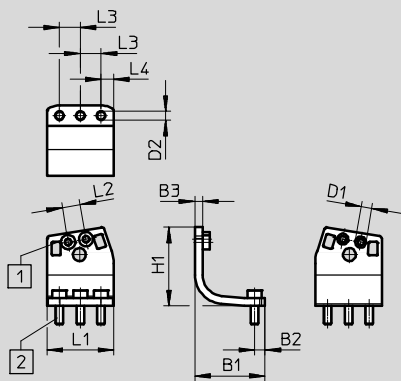
Accessories

## Mounting bracket DHAS-MA

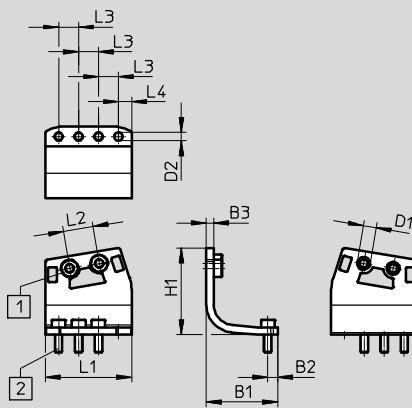


### Dimensions and ordering data

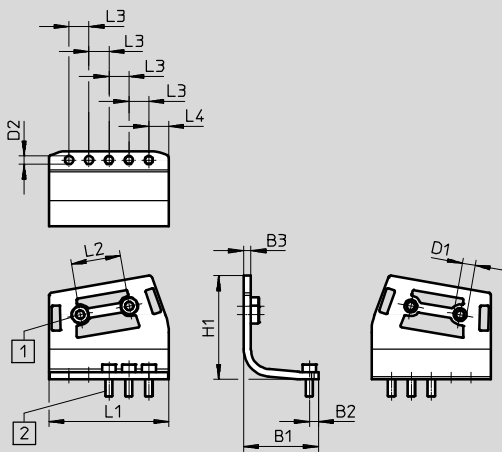
#### For size 60



#### For size 80



#### For size 120



- 1 Press-fit nut  
for size 60: M3  
for sizes 80 and 120: M4
- 2 Screw M3x8-10.9

For size	B1	B2	B3 ±0.2	D1 ∅	D2 ∅	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	<b>3920696</b>	<b>DHAS-MA-B6-60</b>
80	34.5	12	8	5.25	<b>3899099</b>	<b>DHAS-MA-B6-80</b>
120	48	20	8	8	<b>3889257</b>	<b>DHAS-MA-B6-120</b>

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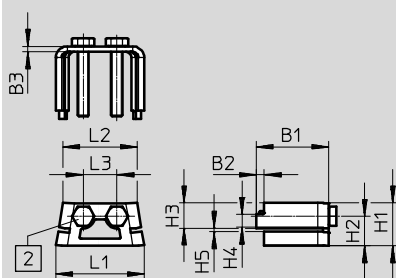
Accessories

## Mounting kit DHAS-ME

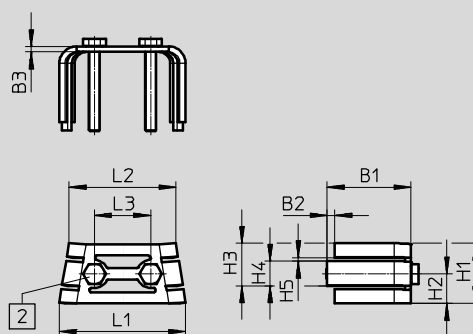


### Dimensions and ordering data

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