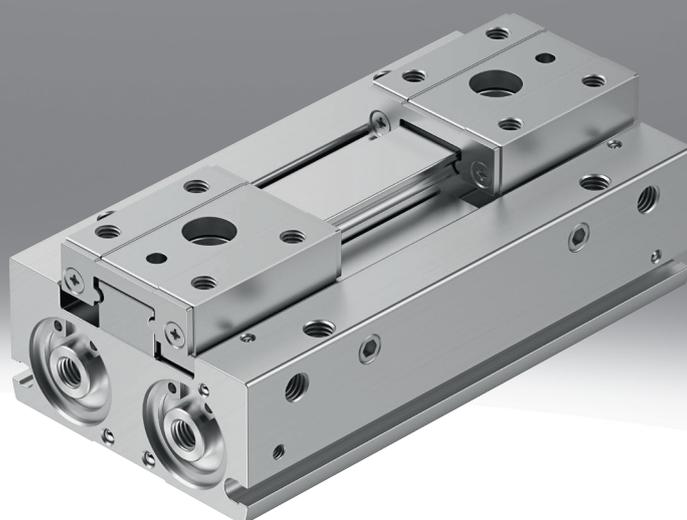


## Parallel gripper HPPF

**FESTO**



## Characteristics

### At a glance

[Link](#)  [hppf](#)

- Low height, ideal for applications with limited installation space
- Double-acting piston drive
- Optionally with adjustable stroke
- Resilient and precise ball guide
- High gripping forces with compact dimensions
- Wide range of mounting and connection options
- Mounting proximity switches via C-slot

When using a gripper, note the following:

- Protect against vibrations
- Comply with torques
- Protect against magnetic fields

### Engineering tools

[Link](#)  [engineering tools](#)



Save time with engineering tools: Smart engineering for the optimal solution. Our goal is to increase your productivity. Our engineering tools play an integral part in achieving this goal. They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain. In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools that will be of use to you.

Gripper selection:

- This tool helps you to select the right grippers by simply entering the exact parameters for your application

### Diagrams

[Link](#)  [hppf](#)



The diagrams shown in this document are also available online. These can be used to display precise values.

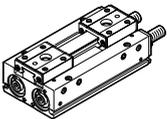
### Position sensing

[A] For proximity sensor

By using proximity switches, any position can be detected.

### Stroke variant

[S] Adjustable stroke



Enables the stroke to be adjusted over the entire gripper stroke, normally closed contact and normally closed contact

### Special material properties

Product:

Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, circuit boards, cables, electrical plug connectors and coils

Accessories:

Please contact your Festo representative for information on which accessories are suitable for manufacturing lithium-ion batteries

## Type code

001	Series
HPPF	Parallel gripper

002	Size [mm]
8	8
12	12
16	16
20	20

003	Complete stroke [mm]
8	8
12	12
16	16
20	20
24	24
32	32
40	40
48	48
64	64
80	80

004	Position sensing
A	For proximity sensor

005	Stroke variant
	Without
S	Adjustable stroke

## Datasheet

### General technical data

Size	8			12			16			20		
Total stroke	8	16	32	12	24	48	16	32	64	20	40	80
Stroke per gripper jaws	4	8	16	6	12	24	8	16	32	10	20	40
Design	Flat mounting method for gripper fingers, Rack and pinion, Force pilot operated motion sequence											
Mode of operation	Double-acting											
Guide	Ball guide											
Gripper function	Parallel											
Cushioning	Elastic cushioning rings/plates at both ends											
Number of gripper jaws	2											
Max. mass per external gripper finger <sup>1)</sup>	20 g			130 g			335 g			625 g		
Pneumatic connection	M3			M5								
Repetition accuracy, gripper <sup>2)</sup>	≤0.03 mm			≤0.02 mm			≤0.06 mm					
Max. operating frequency of gripper	2 Hz						1 Hz					
Position detection	Via proximity switch											
Type of mounting	Direct mounting via through-hole, Direct mounting via thread											
Mounting position	optional											

1) Applies to unthrottled operation

2) Under constant exposure to operating conditions, end-position drift occurs in the direction of movement of the gripper jaws, at 100 consecutive strokes

### Operating and environmental conditions

Size	8			12			16			20		
Operating pressure	0.15 ... 0.7 MPa			0.1 ... 0.7 MPa								
Operating pressure	21.75 ... 101.5 psi			14.5 ... 101.5 psi								
Operating pressure	1.5 ... 7 bar			1 ... 7 bar								
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]											
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)											
Ambient temperature <sup>1)</sup>	-10 ... 60°C											
Corrosion resistance class CRC <sup>2)</sup>	0 - No corrosion stress											

1) Note the operating range of the proximity switches

2) More information: [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Weight – HPPF-8 ... 12

Size	8						12					
Total stroke	8		16		32		12		24		48	
Stroke variant	Without	Adjustable stroke										
Product weight	68 g	78 g	83 g	95 g	122 g	135 g	157 g	182 g	205 g	233 g	305 g	339 g

### Weight – HPPF-16 ... 20

Size	16						20					
Total stroke	16		32		64		20		40		80	
Stroke variant	Without	Adjustable stroke										
Product weight	366 g	415 g	471 g	524 g	691 g	755 g	690 g	783 g	887 g	993 g	1,326 g	1,458 g

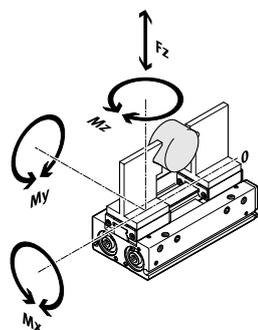
## Datasheet

Materials				
Size	8	12	16	20
Material housing	Anodised wrought aluminium alloy			
Material cover	Anodised wrought aluminium alloy			
Material cover cap	Wrought aluminium alloy, anodised			
Material end plate	High-alloy stainless steel			
Material gripper jaws	High-alloy steel			
Material piston seal	TPE-U(PU)			
Gear rack material	High-alloy stainless steel			
Material screws	Coated steel			
LABS (PWIS) conformity	VDMA24364 zone III			
Material o-ring	NBR			
Note on materials	RoHS-compliant			
Suitability for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)			

Measured gripping force with a lever arm of 20 mm				
Size <sup>1)</sup>	8	12	16	20
Total gripping force, closing, 0.6MPa (6bar, 87 psi)	54.44 N	120.3 N	218.2 N	346.6 N
Total gripping force, opening, 0.6MPa (6bar, 87 psi)	54.44 N	120.3 N	218.2 N	346.6 N
Gripper force per gripper jaw, closing, 0.6 MPa (6 bar, 87 psi)	27.22 N	60.15 N	109.1 N	173.3 N
Gripper force per gripper jaw, opening, 0.6 MPa (6 bar, 87 psi)	27.22 N	60.15 N	109.1 N	173.3 N

1) Graphs relating to this are on the following pages.

### Static load values at the gripper jaws



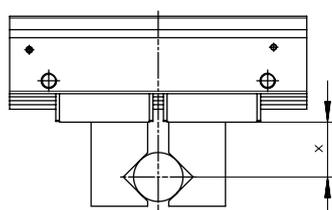
The indicated permissible forces and torques refer to one gripper jaw. The indicated values include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement. The zero coordinate line (gripper jaw guide) must be taken into account when calculating the torques.

Note: A collision of the slides must be avoided. In the event of a collision, the slides can get damaged.

More information → User documentation

Size	8	12	16	20
Max. force on gripper jaw $F_z$ static	60 N	100 N	180 N	320 N
Max. moment $M_x$	0.9 Nm	2.2 Nm	4.4 Nm	6 Nm
Max. moment $M_y$	0.4 Nm	1.12 Nm	2.2 Nm	3 Nm
Max. moment $M_z$	0.4 Nm	1.12 Nm	2.2 Nm	3 Nm

### Gripping force $FG_r$ per gripper jaw as a function of the operating pressure and lever arm $x$

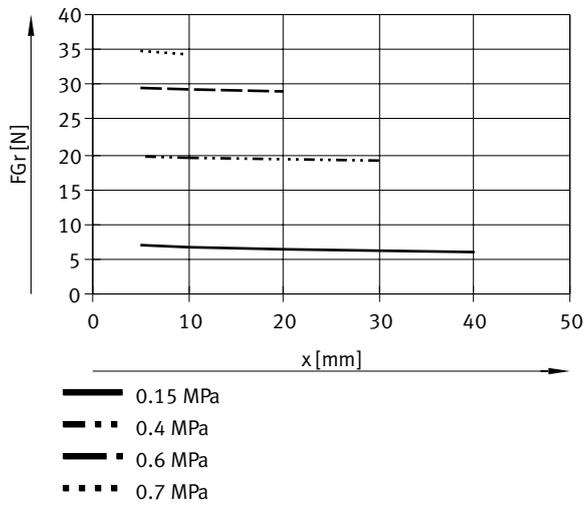


The gripping forces as a function of operating pressure and lever arm can be determined from the following graphs.

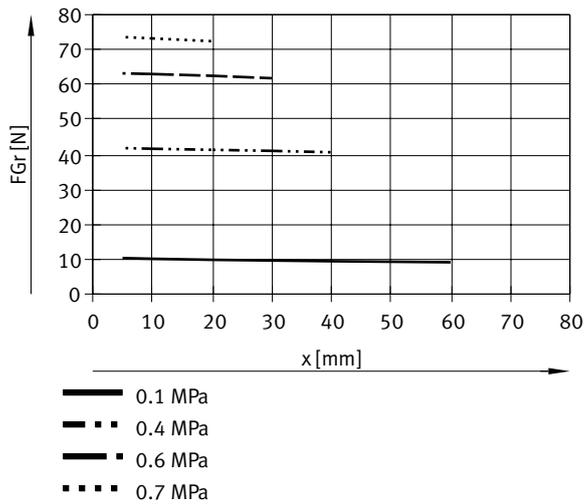
Sizing software for gripper selection → <https://www.festo.com/x/topic/eng>

Datasheet

Gripping force  $F_{Gr}$  per gripper jaw as a function of operating pressure and lever arm  $x$  – external gripping (closing), double-acting – HPPF-8

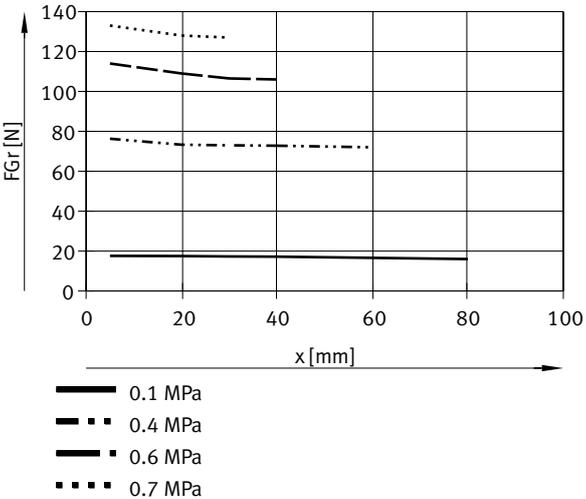


Gripping force  $F_{Gr}$  per gripper jaw as a function of operating pressure and lever arm  $x$  – external gripping (closing), double-acting – HPPF-12

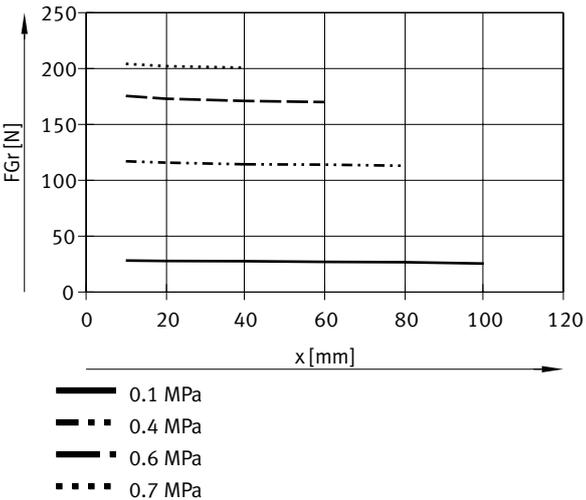


Datasheet

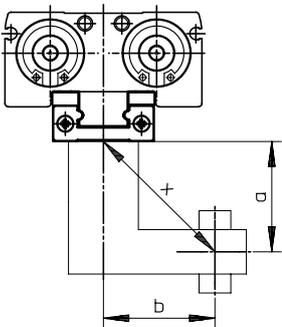
Gripping force  $F_{Gr}$  per gripper jaw as a function of operating pressure and lever arm  $x$  – external gripping (closing), double-acting – HPPF-16



Gripping force  $F_{Gr}$  per gripper jaw as a function of operating pressure and lever arm  $x$  – external gripping (closing), double-acting – HPPF-20



Gripping force  $F_{Gr}$  per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm  $x$  and eccentricity  $a$  and  $b$



## Datasheet

### Gripping force FGr per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity a and b

$$x = \sqrt{a^2 + b^2} = \sqrt{20^2 + 25^2} = 32 \text{ mm}$$

The formula (on the left) must be used to calculate the lever arm x with eccentric gripping.  
The gripping force FGr can then be read from the graphs using the calculated value x.

Calculation example:

Where:

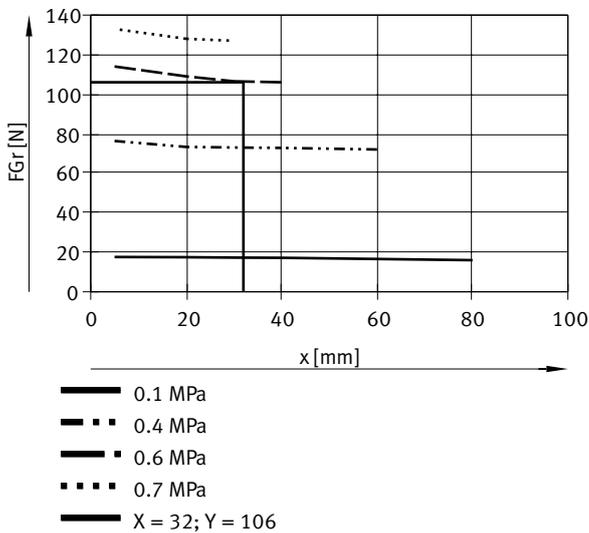
Distance a = 20 mm

Distance b = 25 mm

To be determined:

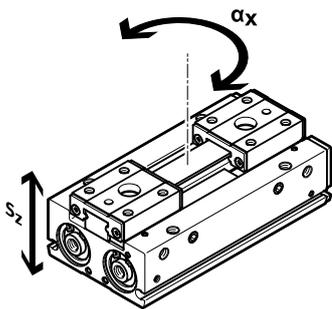
The gripping force at 0.6 MPa (6 bar, 87 psi), with an HPPF-16, used as an external gripper.

### Gripping force FGr per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity a and b



The graph gives a value of FGr = 106 N for the gripping force.

### Gripper jaw backlash



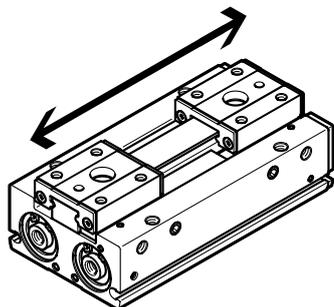
The gripper has a ball guide, which eliminates any possible backlash between the gripper jaws and the housing. The backlash values listed in the table have been calculated based on the traditional accumulative tolerance method.

Size <sup>1)</sup>	8	12	16	20
Max. gripper jaw backlash Sz	0 mm			
Max. angular gripper jaw backlash ax, ay	0 deg			

<sup>1)</sup> The values only apply when the gripper is open.

Datasheet

Opening and closing times – HPPF-8 ... 12



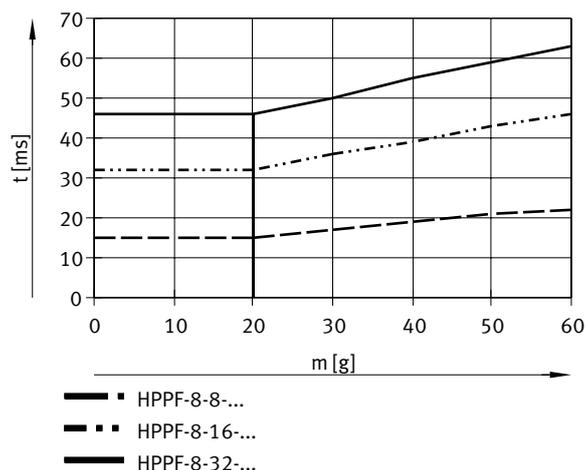
The specified opening and closing times [ms] were measured at room temperature and with the gripper installed horizontally without additional gripper fingers. The grippers must be throttled for higher masses [g]. Opening and closing times must then be adjusted accordingly.

Size	8				12				12				24				48			
Total stroke	8		16		32		12		24		48		12		24		48			
Stroke variant	Without	Adjustable stroke																		
Min. opening time at 0.6 MPa (6 bar, 87 psi)	15 ms		32 ms		46 ms				75 ms				121 ms							
Min. closing time at 0.6 MPa (6 bar, 87 psi)	12 ms		31 ms		44 ms				43 ms	44 ms	73 ms				105 ms					

Opening and closing times – HPPF-16 ... 20

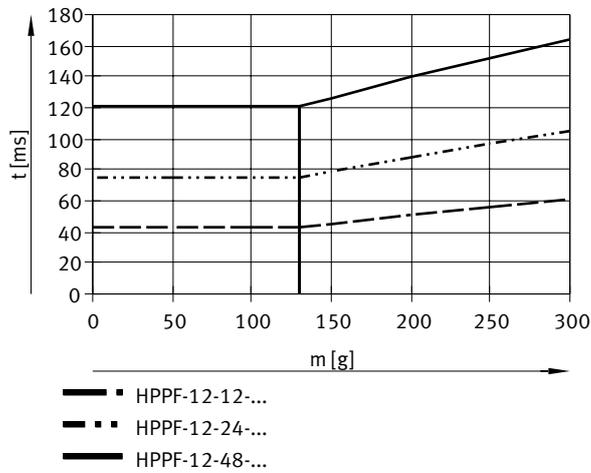
Size	16				32				64				20				40				80			
Total stroke	16		32		64		20		40		80		16		32		64		20		40		80	
Stroke variant	Without	Adjustable stroke																						
Min. opening time at 0.6 MPa (6 bar, 87 psi)	55 ms		93 ms		189 ms				90 ms				120 ms				240 ms							
Min. closing time at 0.6 MPa (6 bar, 87 psi)	47 ms		91 ms		181 ms				70 ms				110 ms				225 ms							

Opening and closing times as a function of the gripper finger mass – HPPF-8

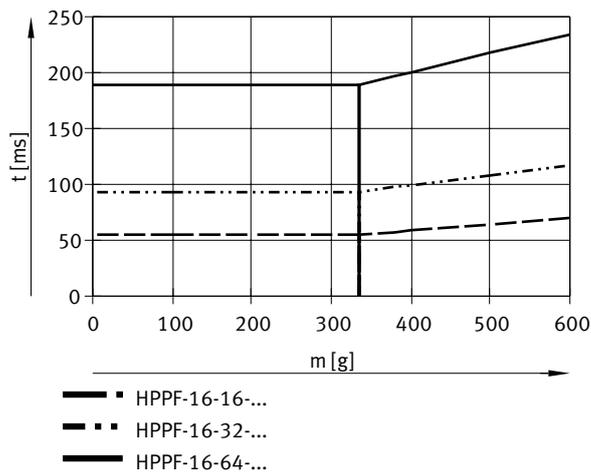


Datasheet

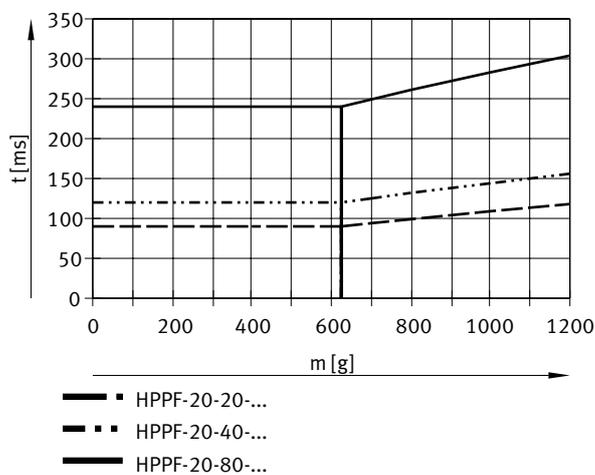
Opening and closing times as a function of the gripper finger mass – HPPF-12



Opening and closing times as a function of the gripper finger mass – HPPF-16



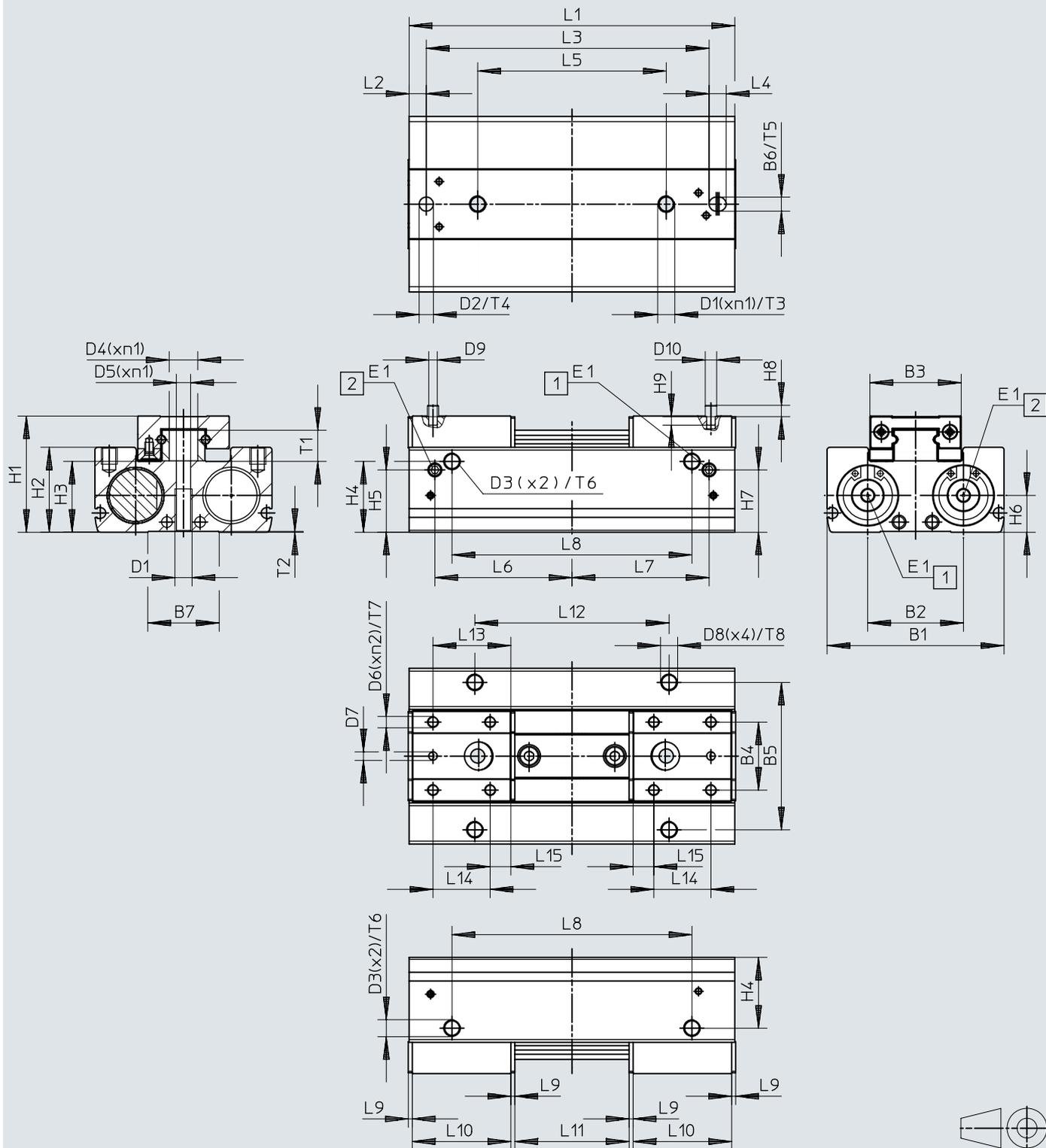
Opening and closing times as a function of the gripper finger mass – HPPF-20



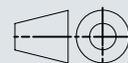
# Dimensions

Dimensions – Parallel gripper HPPF

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- [1] Open pneumatic connection
- [2] Close pneumatic connection
- [3] Note: The values apply at an operating pressure of 0 bar.



## Dimensions

	L <sup>1)</sup>	B1	B2	B3	B4	B5	B6	B7	D1	D2 ∅ H9	D3	D4 ∅	D5 ∅	D6	D7 H9	D8	D9 ∅	D10 ∅
HPPF-8	8																	
	16	32	15,7	17	12	26	2,5	16	M3	2,5	M3	4,4	2,5	M2,5	2	M3	2	2,5
	32																	
HPPF-12	12																	
	24	40	20,3	20	15	33	3	16,6	M4	3	M4	5,5	3,5	M3	2,5	M4	2,5	3
	48																	
HPPF-16	16																	
	32	50	24	27	20	43	4	15,6	M5	4	M5	8	4,2	M4	3	M5	3	4
	64																	
20	62	33,5	32	24	52	5	25	M6	5	M6	10	5	M6					
HPPF-20	40																	
	80																	

	L <sup>1)</sup>	E1	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	L6	L7
HPPF-8	8																	
	16	M3	19	14	11,2	11	7,6	5,9	7,6	2	2,5	38,5	3	31,1	3,4	16	13,8	13,5
	32											48		40,3		28	18,5	17,7
												72		64,3		17	29,9	29,7
HPPF-12	12	M5	25	19	15,2	15	14,7	7,7	14,7	2,5	3	52	4	42	4	26	8,2	8,2
	69											58		42		16,7	16,7	
	104											94		26		34,2	34,2	
HPPF-16	16	M5	33	25	21	20	20	10,5	20	3	4	72	6	60	5	38	11	11
	94											81		60		22	22	
	142											129,5		36		46	46	
HPPF-20	20	M5	41	30	25,2	25	22	13	22	3	4	87	6	71	6	38	34,5	34,5
	114											99		66		48	48	
	174											159		42		78	78	

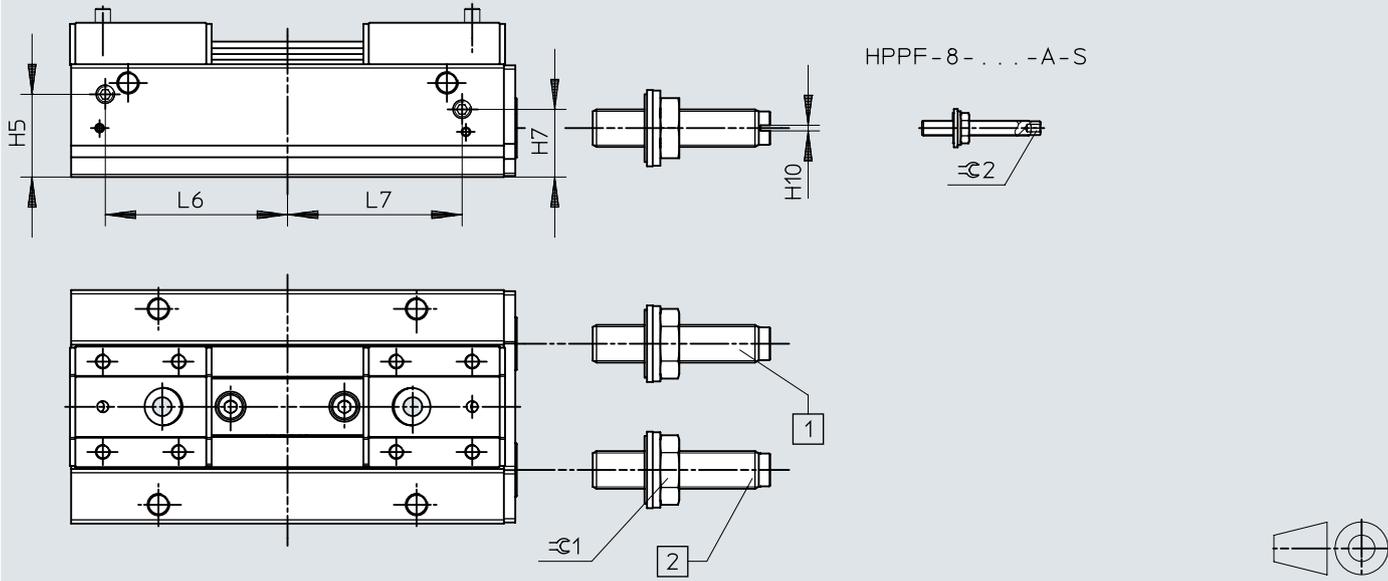
	L <sup>1)</sup>	L8	L9	L10	L11	L12	L13	L14	L15	n1	n2	T1	T2	T3	T4	T5	T6	T7	T8
HPPF-8	8	22	0,9	12	8	14	10	0	6	2	2	5,2	0,2	4	2,5	2,5	4	3	4
	16	34		14	16	26	11		7										
	32	58		18	32	50	13		8										
HPPF-12	12	38	1	20,5	24	44	16,3	12	4,3	2	2	6,6		10			5		5
	24	54		27	48	80	22,5	18	4,5										
	48	90		37	64	106	31,5	26	5,5										
HPPF-16	16	52	1,2	25	16	36	20	15	5	2	4	8,2	0,3	12	3	3		4	5,5
	32	74		29	32	58	23,5	18											
	64	122		37	64	106	31,5	26											
HPPF-20	20	56	1,4	31	20	40	23,5	16	7,5	2	4	10,8		15	4	4	6		6
	40	84		34,5	40	68	27,3	20											
	80	144		44,5	80	128	37,3	30											

1) Stroke

Dimensions

Dimensions – Parallel gripper HPPF-...-S – adjustable stroke

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- [1] For adjusting the stroke, opening
- [2] For adjusting the stroke, closing

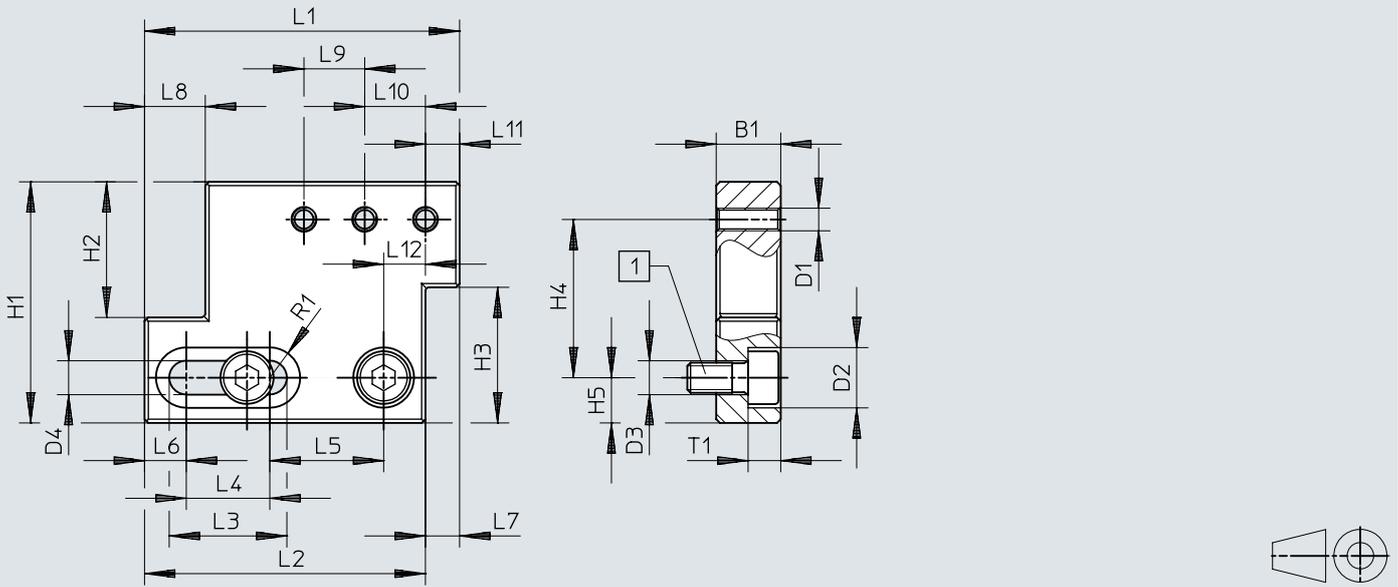
	L <sup>1)</sup>	H5	H7	H10	L6	L7	$\varnothing C1$	$\varnothing C2$
HPPF-8	8	7,6	7,6	-	13,8	13,5	7	2
	16				18,5	17,7		
	32				29,9	29,7		
HPPF-12	12	14,7	14,7	0,8	8,2	8,2	10	
	24				16,7	16,7		
	48				34,2	34,2		
HPPF-16	16	20	20	1,5	11	11	13	-
	32				22	22		
	64				46	46		
HPPF-20	20	22,5	18	1,5	35,5	32,5	16	
	40	22			48	46		
	80				78	76		

1) Stroke

## Dimensions

### Dimensions – Intermediate plate HAMF-PA

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[1] HAMF-PA-B30-16: screw M4x8-10.9, HAMF-PA-B30-20: screw M4x10-10.9 (included in the scope of delivery)

	L <sup>1)</sup>	B1 ±0,1	D1	D2 ∅	D3 ∅	D4 +0,1	H1	H2	H3	H4	H5	L1	L2
HAMF-PA-B30-16	32, 64	8,5	M3	8	4,5	4,5	32	18	18	21	6	41,5	37
HAMF-PA-B30-20	40, 80	8,5	M3	8	4,5	4,5	36	21	21	23	6	47,5	42,8

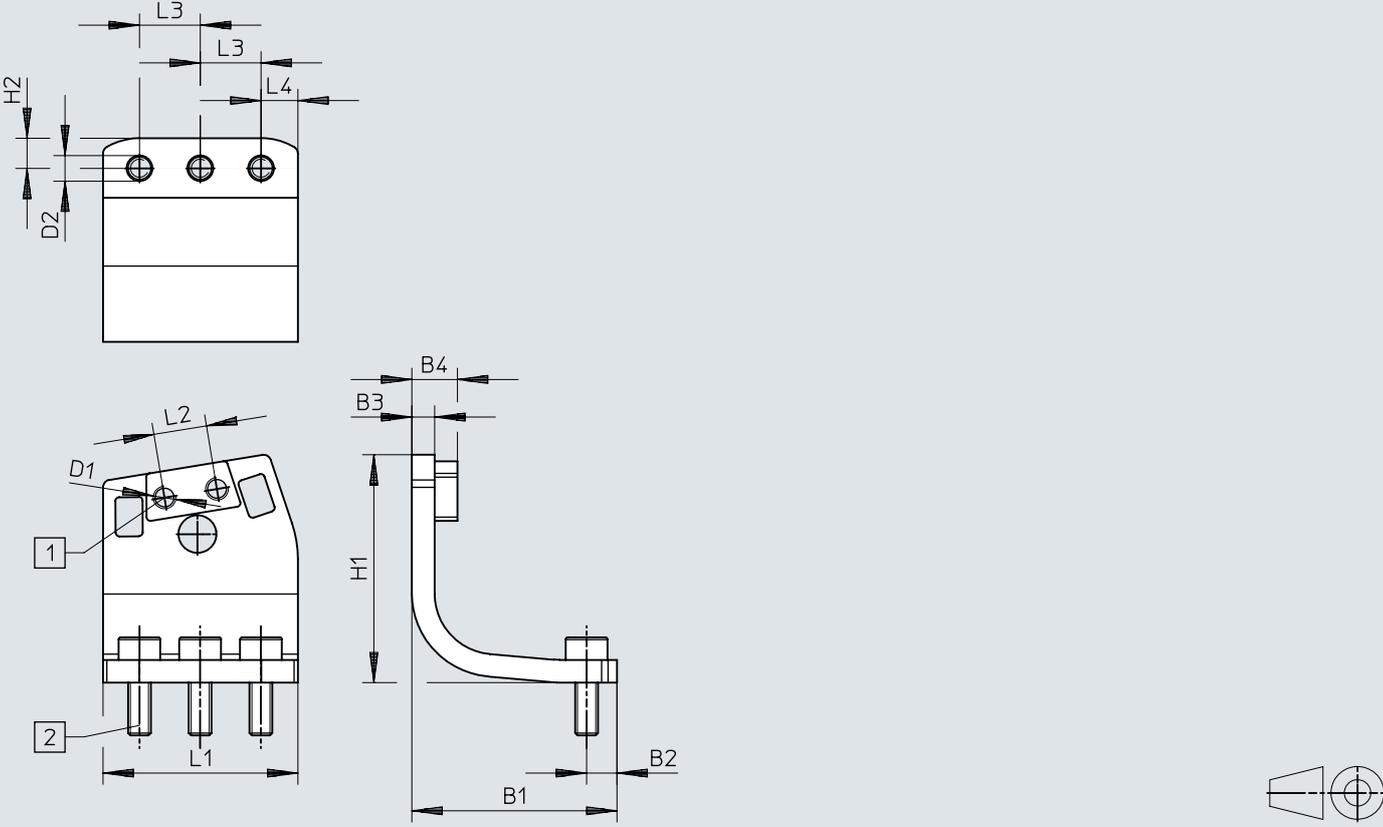
	L <sup>1)</sup>	L3 +0,2	L4	L5	L6	L7	L8	L9	L10	L11	L12	R1	T1
HAMF-PA-B30-16	32, 64	15,5	11	15	5,5	4,5	8	8	8	4,5	5,5	4	4,3
HAMF-PA-B30-20	40, 80	19,5	15	15	5,3	4,8	12	8	8	4,5	7,5	4	4,3

1) Stroke

Dimensions

Dimensions – Mounting bracket DHAS-MA-B6-60

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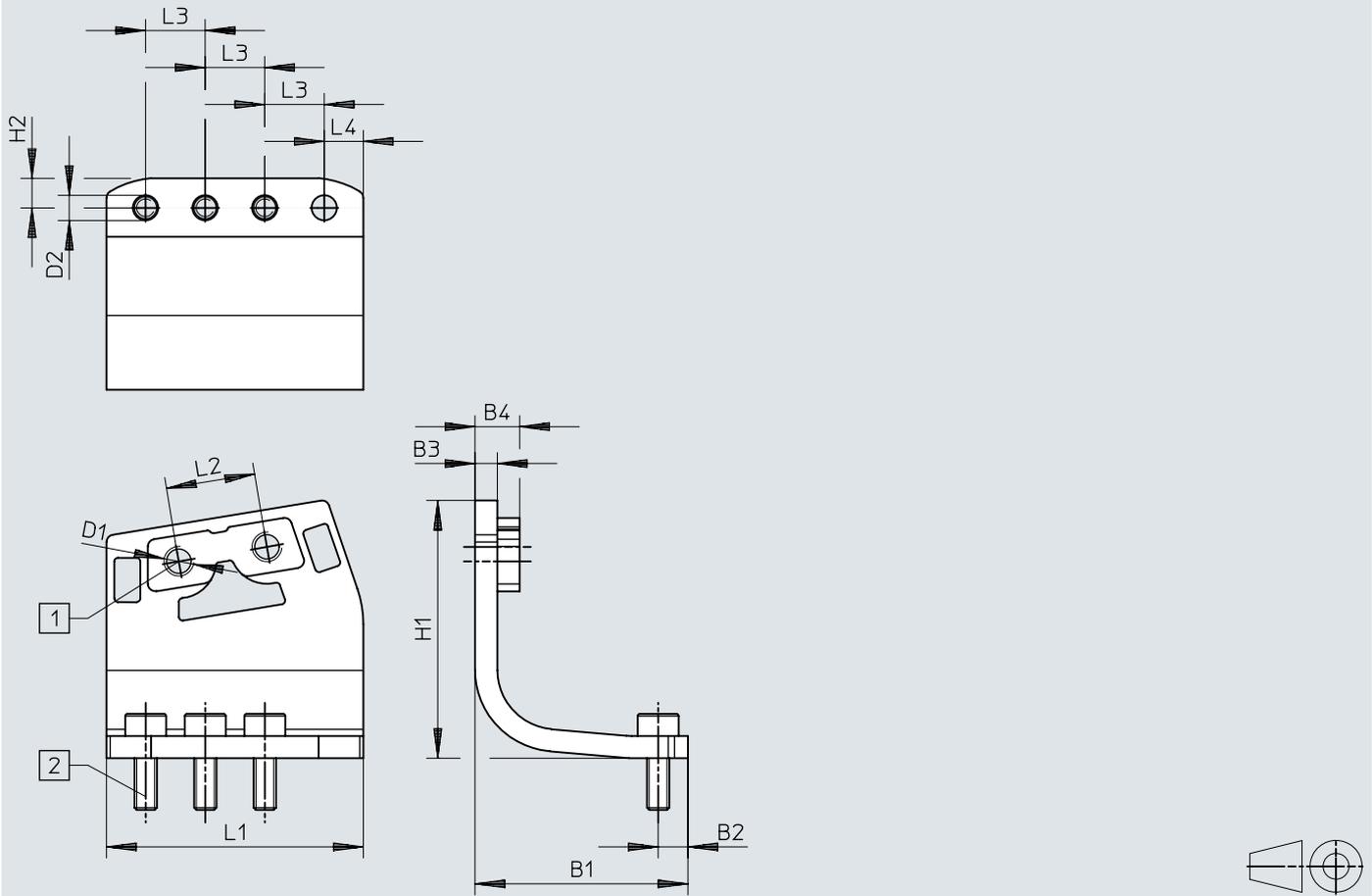
- [1] Mounting thread
- [2] Screw M3x8-8.8 (included in the scope of delivery)

	B1	B2	B3	B4	D1	D2	H1	H2	L1	L2	L3	L4
			±0,2	±0,1		∅				±0,1	±0,1	
DHAS-MA-B6-60	27	4	3	6	M3	3,4	30,3	4	25,7	7	8	4,85

## Dimensions

### Dimensions – Mounting bracket DHAS-MA-B6-80

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[1] Mounting thread

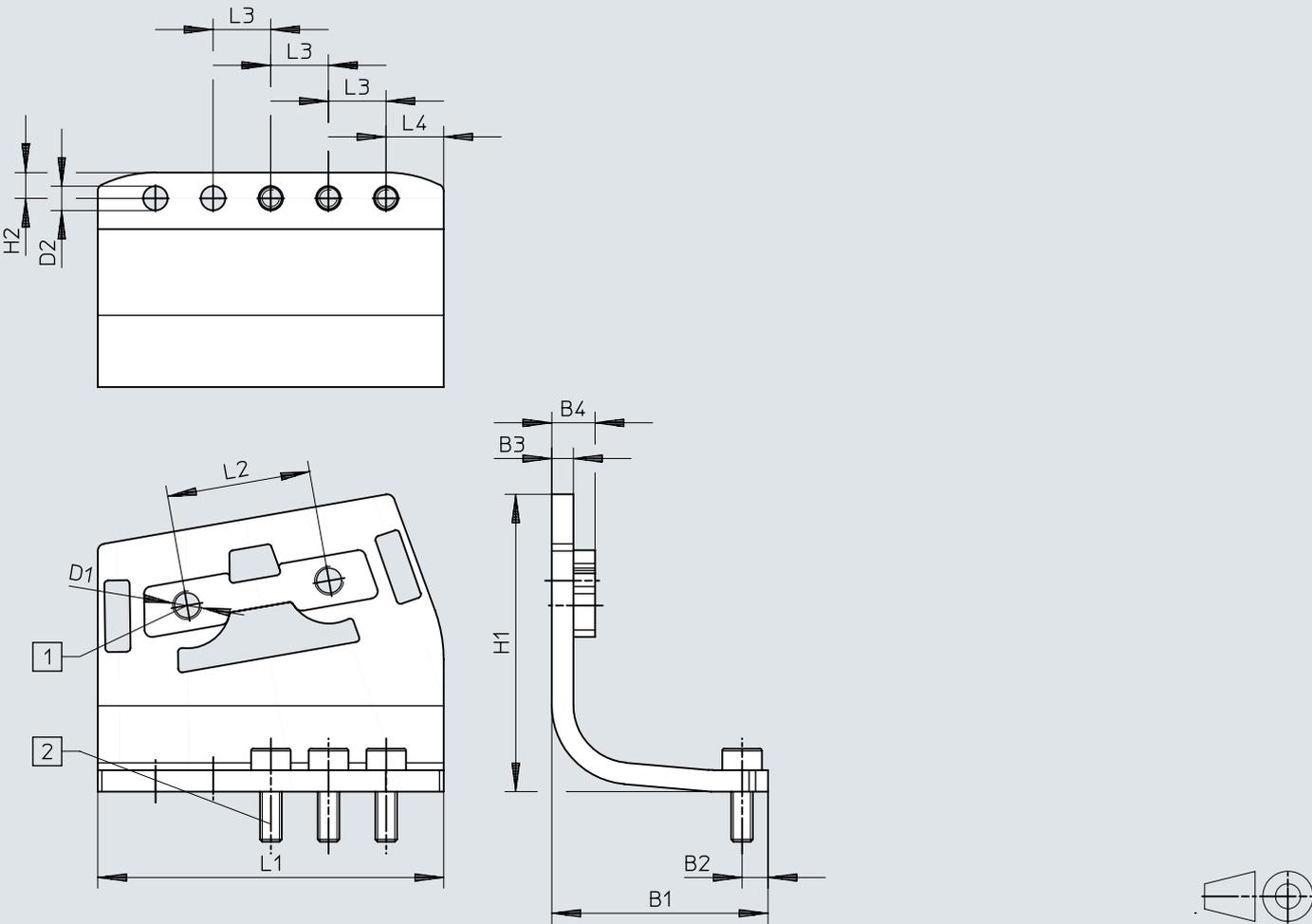
[2] Screw M3x8-8.8 (included in the scope of delivery)

	B1	B2	B3	B4	D1	D2	H1	H2	L1	L2	L3	L4
			±0,2	±0,1		∅				±0,1	±0,1	
DHAS-MA-B6-80	28,6	4	3	6	M4	3,3	35	4	34,5	12	8	5,25

Dimensions

Dimensions – Mounting bracket DHAS-MA-B6-120

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- [1] Mounting thread
- [2] Screw M3x8-8.8 (included in the scope of delivery)

	B1	B2	B3	B4	D1	D2	H1	H2	L1	L2	L3	L4
			±0,2	±0,1		∅				±0,1	±0,1	
DHAS-MA-B6-120	30	3,6	3	6	M4	3,4	41,7	3,6	48	20	8	7,9

## Dimensions

### Dimensions – Adaptive gripper finger DHAS-GF

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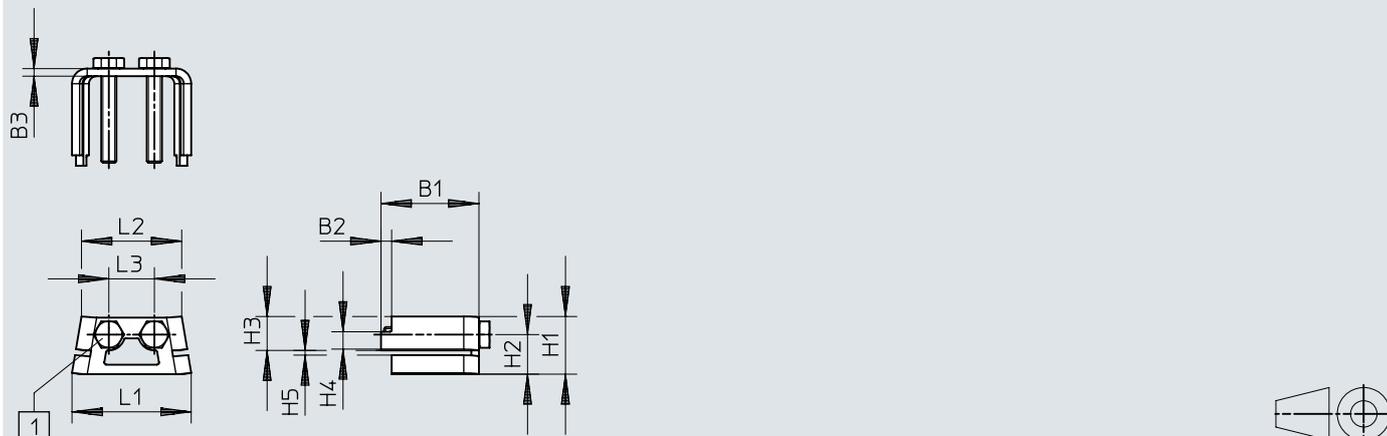


	B1	B2	H1	L1
DHAS-GF-60-U-BU	18	11,8	61,5	26
DHAS-GF-80-U-BU	21,3	11,8	94,5	37,5
DHAS-GF-120-U-BU	25	11,8	134,5	50

## Dimensions

### Dimensions – Mounting kit DHAS-ME-H9-60/80

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



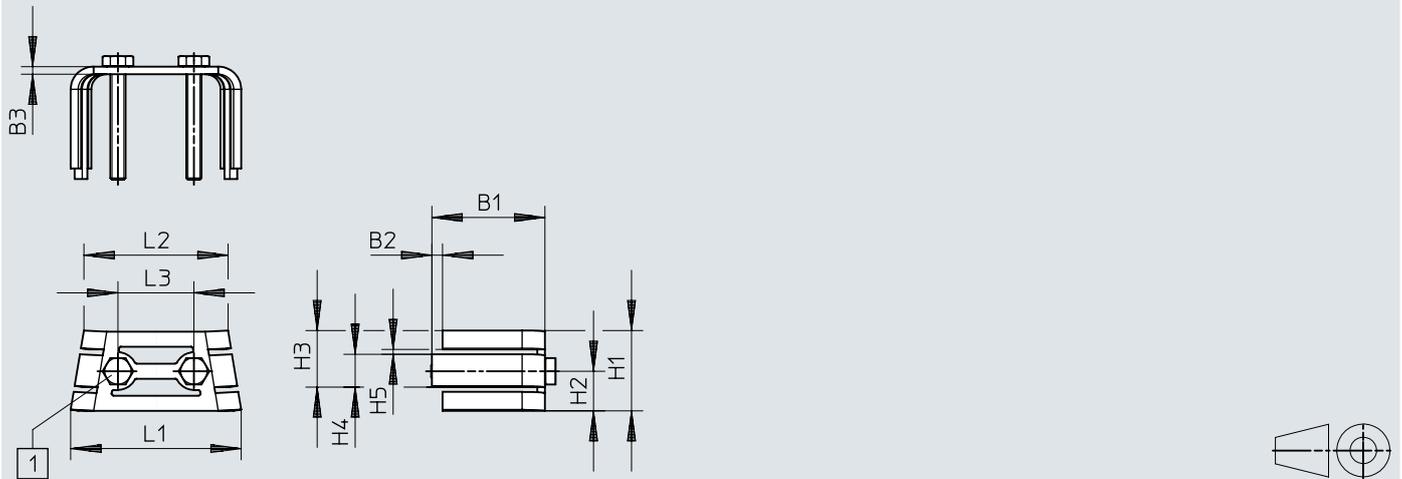
[1] DHAS-ME-H9-60: screw ISO 4017-M3x22-A2-70 / DHAS-ME-H9-80: screw ISO 4017-M4x25-A2-70 (included in the scope of delivery)

	B1	B2	B3	H1	H2	H3	H4	H5	L1	L2	L3
			±0,1					±0,1			±0,1
DHAS-ME-H9-60	22,8	2,8	2	10,3	6,7	7	3,6	1,3	20,7	17,4	7
DHAS-ME-H9-80	25,8	2,8	2	15,3	10,5	9	4,6	1,3	31,4	26,4	12

## Dimensions

### Dimensions – Mounting kit DHAS-ME-H9-120

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



[1] DHAS-ME-H9-120: screw ISO 4017-M4x30-A2-70 (included in the scope of delivery)

	B1	B2	B3	H1	H2	H3	H4	H5	L1	L2	L3
			±0,1					±0,1			±0,1
DHAS-ME-H9-120	29,8	2,8	2	21,3	10,5	15	8,7	1,3	44,9	38	20

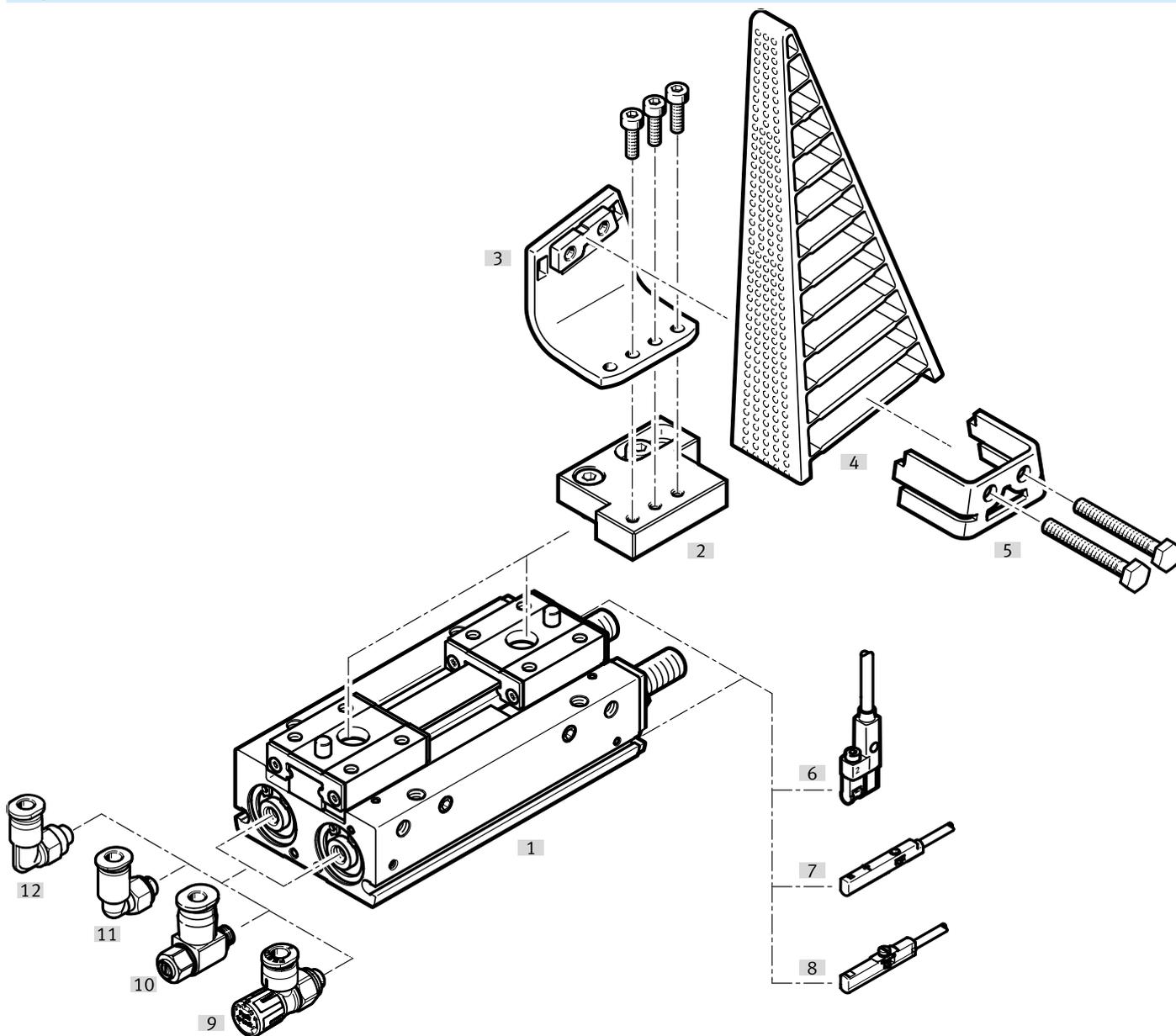
## Ordering data

HPPF						
	Size	Total stroke	Mode of operation	Product weight	Part no.	Type
	8	8 mm	Double-acting	68 g	8133724	HPPF-8-8-A
		16 mm		83 g	8133731	HPPF-8-16-A
		32 mm		122 g	8128415	HPPF-8-32-A
	12	12 mm		157 g	8139790	HPPF-12-12-A
		24 mm		205 g	8139791	HPPF-12-24-A
		48 mm		305 g	8139792	HPPF-12-48-A
	16	16 mm		366 g	8105829	HPPF-16-16-A
		32 mm		471 g	8143243	HPPF-16-32-A
		64 mm		691 g	8143246	HPPF-16-64-A
	20	20 mm		690 g	8141226	HPPF-20-20-A
		40 mm		887 g	8143408	HPPF-20-40-A
		80 mm		1,326 g	8143409	HPPF-20-80-A

HPPF...-S – adjustable stroke						
	Size	Total stroke	Mode of operation	Product weight	Part no.	Type
	8	8 mm	Double-acting	78 g	8134368	HPPF-8-8-A-S
		16 mm		95 g	8134375	HPPF-8-16-A-S
		32 mm		135 g	8134364	HPPF-8-32-A-S
	12	12 mm		182 g	8141587	HPPF-12-12-A-S
		24 mm		233 g	8141588	HPPF-12-24-A-S
		48 mm		339 g	8141589	HPPF-12-48-A-S
	16	16 mm		415 g	8143712	HPPF-16-16-A-S
		32 mm		524 g	8143713	HPPF-16-32-A-S
		64 mm		755 g	8143714	HPPF-16-64-A-S
	20	20 mm		783 g	8143425	HPPF-20-20-A-S
		40 mm		993 g	8143426	HPPF-20-40-A-S
		80 mm		1,458 g	8143427	HPPF-20-80-A-S

## Peripherals

### Peripherals overview

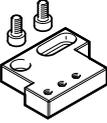


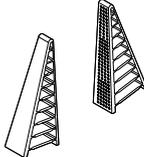
Accessories		→ Link
Type/order code	Description	
[1] Parallel gripper HPPF	Double-acting; with ball guide, optionally with adjustable stroke	<a href="#">hppf</a>
[2] Intermediate plate HAMF-PA	<ul style="list-style-type: none"> <li>For fitting the mounting bracket DHAS-MA on the gripper</li> <li>Available for sizes 16, 20</li> </ul>	<a href="#">24</a>
[3] Mounting bracket DHAS-MA	For mounting the adaptive gripper finger DHAS-GF on the intermediate plate HAMF-PA	<a href="#">24</a>
[4] Adaptive gripper finger DHAS-GF	<ul style="list-style-type: none"> <li>For flexible gripping</li> <li>Available in the sizes 60, 80, 120</li> <li>The mounting components HAMF-PA, DHAS-MA and DHAS-ME are also required to attach the gripper fingers to the gripper</li> </ul>	<a href="#">24</a>
[5] Mounting kit DHAS-ME	For mounting the adaptive gripper finger DHAS-GF on the mounting bracket DHAS-MA	<a href="#">24</a>
[6] Proximity switch SMT-10G	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>	<a href="#">25</a>
[7] Proximity switch SMT-10M	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>	<a href="#">24</a>
[8] Proximity switch SDBC-MSB	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>	<a href="#">25</a>
[9] One-way flow control valve VFOE	For regulating speed	<a href="#">26</a>
[10] One-way flow control valve GRLA	For regulating speed	<a href="#">26</a>

## Peripherals

Accessories		→ Link
Type/order code	Description	
[11] Push-in fitting QS	For connecting tubing with standard O.D	<a href="#">qs</a>
[12] Push-in fitting NPQE	For connecting tubing with standard O.D	<a href="#">npqe</a>

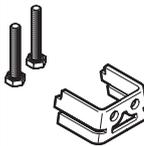
Accessories

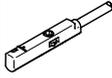
Intermediate plate HAMF-PA					
	Description	Material adapter plate	Product weight	Part no.	Type
	For size 16	Aluminium	25 g	<b>8175319</b>	<b>HAMF-PA-B30-16</b>
	For size 20		31 g	<b>8175321</b>	<b>HAMF-PA-B30-20</b>

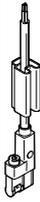
Adaptive gripper finger DHAS-GF <span style="float: right;">Link <a href="#">dhas-gf</a></span>					
	Description <sup>1)</sup>	Material clamp jaws	Product weight	Part no.	Type
	For DHAS-MA-B6-60	TPE-U(PU)	7 g	<b>3998967</b>	<b>DHAS-GF-60-U-BU</b>
	For DHAS-MA-B6-80		13 g	<b>3998964</b>	<b>DHAS-GF-80-U-BU</b>
	For DHAS-MA-B6-120		29 g	<b>3998959</b>	<b>DHAS-GF-120-U-BU</b>

1) The mounting components HAMF-PA, DHAS-MA and DHAS-ME are also required to attach the gripper fingers to the gripper.

Mounting bracket DHAS-MA					
	Description	Material adapter bracket	Product weight	Part no.	Type
	For HAMF-PA-B30	High-alloy stainless steel	23 g	<b>3920696</b>	<b>DHAS-MA-B6-60</b>
			38 g	<b>3899099</b>	<b>DHAS-MA-B6-80</b>
			59 g	<b>3889257</b>	<b>DHAS-MA-B6-120</b>

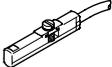
Mounting kit DHAS-ME					
	Description	Material adapter	Product weight	Part no.	Type
	For DHAS-GF-60-U-BU	High-alloy stainless steel	7 g	<b>4464306</b>	<b>DHAS-ME-H9-60</b>
	For DHAS-GF-80-U-BU		13 g	<b>4463570</b>	<b>DHAS-ME-H9-80</b>
	For DHAS-GF-120-U-BU		23 g	<b>4461433</b>	<b>DHAS-ME-H9-120</b>

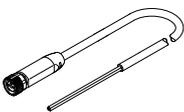
Proximity switch SMT-10M for round slot, magneto-resistive <span style="float: right;">Link <a href="#">smt</a></span>						
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Screw-clamped, Insertable in the slot from above	3-wire PNP N/O contact	Open end	2.5 m	<b>551374</b>	<b>SMT-10M-PS-24V-E-2,5-Q-OE</b>
				0.3 m	<b>551373</b>	<b>SMT-10M-PS-24V-E-2,5-L-OE</b>
			Plug M8, A-coded	0.3 m	<b>551375</b>	<b>SMT-10M-PS-24V-E-0,3-L-M8D</b>
				0.3 m	<b>551376</b>	<b>SMT-10M-PS-24V-E-0,3-Q-M8D</b>

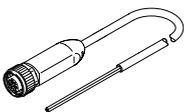
Proximity switch SMT-10G for round slot, magneto-resistive <span style="float: right;">Link <a href="#">smt</a></span>						
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Clamped in C-slot, Insertable in the slot lengthwise	3-wire NPN N/O contact	Open end	2.5 m	<b>8065030</b>	<b>SMT-10G-NS-24V-E-2,5Q-OE</b>

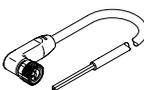
## Accessories

Proximity switch SMT-10G for round slot, magneto-resistive <span style="float: right;">Link <a href="#">smt</a></span>						
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Clamped in C-slot, Insertable in the slot lengthwise	3-wire NPN N/O contact	Plug M8, A-coded	0.3 m	<b>8065029</b>	<b>SMT-10G-NS-24V-E-0,3Q-M8D</b>
		3-wire PNP N/O contact	Open end	2.5 m	<b>547862</b>	<b>SMT-10G-PS-24V-E-2,5Q-OE</b>
			Plug M8, A-coded	0.3 m	<b>547863</b>	<b>SMT-10G-PS-24V-E-0,3Q-M8D</b>

Proximity switch SDBC-MSB for round slot, magneto-resistive <span style="float: right;">Link <a href="#">sdbc</a></span>						
	Switching output	Switching element function	Electrical connection	Cable length	Part no.	Type
	NPN	N/O contact	Open end	2 m	<b>8139724</b>	<b>SDBC-MSB-1L-NU-K-2-LE</b>
			Plug M8, A-coded	0.3 m	<b>8139727</b>	<b>SDBC-MSB-1L-NU-K-0.3-M8</b>
	PNP		Open end	2 m	<b>8139723</b>	<b>SDBC-MSB-1L-PU-K-2-LE</b>
			Plug M8, A-coded	0.3 m	<b>8139726</b>	<b>SDBC-MSB-1L-PU-K-0.3-M8</b>
	Non-contacting, 2-wire		Open end	2 m	<b>8139725</b>	<b>SDBC-MSB-1L-ZU-K-2-LE</b>

Connecting cables NEBA, straight, M8 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	<b>8078223</b>	<b>NEBA-M8G3-U-2.5-N-LE3</b>
				5 m	<b>8078224</b>	<b>NEBA-M8G3-U-5-N-LE3</b>

Connecting cables NEBA, straight, M12 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	<b>8078236</b>	<b>NEBA-M12G5-U-2.5-N-LE3</b>
				5 m	<b>8078237</b>	<b>NEBA-M12G5-U-5-N-LE3</b>

Connecting cables NEBA, angled, M8 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	<b>8078230</b>	<b>NEBA-M8W3-U-2.5-N-LE3</b>
				5 m	<b>8078231</b>	<b>NEBA-M8W3-U-5-N-LE3</b>

## Accessories

### Connecting cables NEBA, angled, M12 connection

	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	<b>8078245</b>	<b>NEBA-M12W5-U-2.5-N-LE3</b>
				5 m	<b>8078246</b>	<b>NEBA-M12W5-U-5-N-LE3</b>

### One-way flow control valves GRLA – for exhaust air

	Pneumatic connection 1	Pneumatic connection, port 2	Part no.	Type
	Same size as pneumatic connection 2	M3	<b>175038</b>	<b>GRLA-M3</b>
	Push-in connector 3 mm	M5	<b>175041</b>	<b>GRLA-M3-QS-3</b>
	Push-in connector 4 mm		<b>193137</b>	<b>GRLA-M5-QS-3-D</b>
	Push-in connector 6 mm		<b>193138</b>	<b>GRLA-M5-QS-4-D</b>
			<b>193139</b>	<b>GRLA-M5-QS-6-D</b>

### One-way flow control valves VFOE – for exhaust air

	Pneumatic connection 1	Pneumatic connection, port 2	Part no.	Type
	Push-in connector 4 mm	M5	<b>8068723</b>	<b>VFOE-LE-T-M5-Q4</b>
			<b>8095432</b>	<b>VFOE-LE-T-M5-Q4-P50</b>
	Push-in connector 6 mm		<b>8068724</b>	<b>VFOE-LE-T-M5-Q6</b>