

Linear modules HMP



# Linear modules HMP

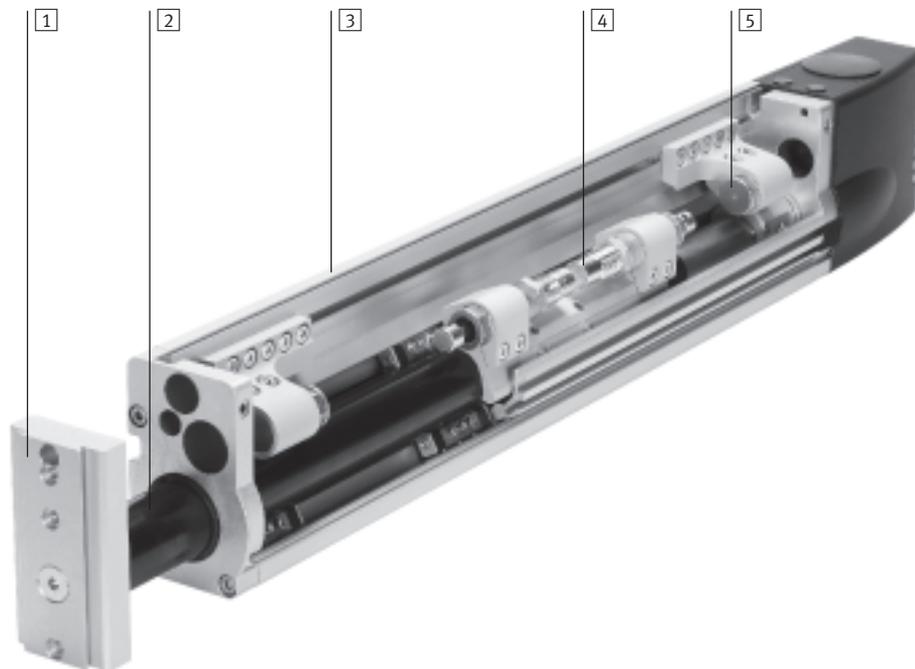
Key features

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## At a glance

 New

- Sturdier
- Optimised end stop system
- Optimised intermediate position module
- Minimised susceptibility to wear
- One-way flow control valves that can be externally adjusted
- Integrated sensor strip
- Diameters of 16 ... 32 mm
- Stroke lengths of 50 ... 400 mm
- Extremely rigid basic profile
- Infinitely adjustable end stops
- Rotatable yoke plate
- Integrated clamping unit
- Precision backlash-free guide system
- Freely adjustable intermediate position
- Adjustable end-position cushioning
- Integrated sensors:
  - Sensor strip for proximity sensors for end-position sensing
  - Mounting slot for proximity sensors for position sensing
- Functional end cap:
  - Pneumatic interface
  - Electrical interface
- Highly flexible thanks to various mounting and assembly options:
  - Basic profile
  - Yoke plate
- Large selection of adapters for:
  - Drives
  - Grippers
- Innovative and user-friendly installation system



- 1** Yoke plate  
Can be turned to any angle from 0 to 360°. The yoke plate cannot be turned if combined with the clamping unit. Drives and grippers can be mounted on the yoke plate by means of adapter kits (direct mounting or dovetail connections).
- 2** Guide system  
Extremely high rigidity thanks to the hardened steel guide barrel which is supported in pre-loaded and backlash-free recirculating ball bearing guides guaranteeing the utmost precision.
- 3** Basic profile  
Drives and basic components can be attached to the rigid light alloy profile using adapter, connector and component kits.
- 4** End-position cushioning.  
Extremely dynamic operation thanks to hydraulic shock absorbers which cushion the piston sleeve at the end positions.
- 5** End stop  
Any desired intermediate position can be set between minimum and maximum stroke (plus the strokes of the shock absorbers).

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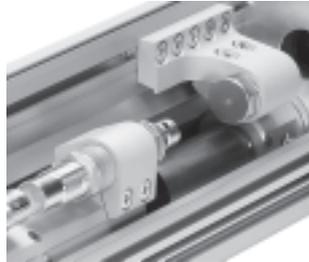
Key features

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## Wide choice of variants

### End stop

The optimised end stop system is practically wear-free. Rough adjustment is performed by moving the stop into the profile groove. Fine adjustment is performed using compressed air via a rotatable sleeve.



### Clamping unit

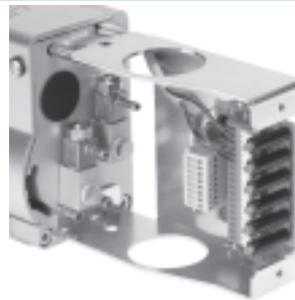
The pneumatically-powered clamping unit can be used to hold loads at any end position and with the module installed at any angle. In the case of a pressure drop or pressure failure, the clamping unit acts like an EMERGENCY STOP device. The clamping unit can be released by means of the manual override.



### End cap

Connections can be made on the top and bottom of the end cap. Pneumatic tubing and electrical cables can be bundled and routed through the end cap via conduits.

Max. 6 proximity sensors can be connected to the integral terminal strip. The switching states of the proximity sensors are indicated via a display window in the end cap.



### Intermediate position module

The intermediate position module permits advancing to an additional position between the two end positions. This is done by swivelling a lever into the traversing range of the moving stop on the guide tube.

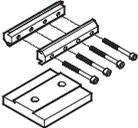
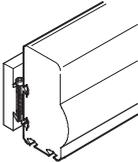
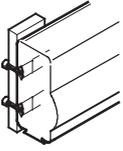
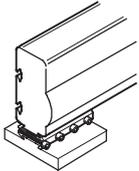
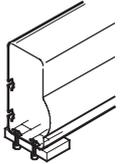
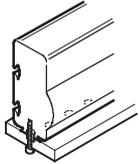
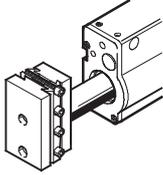
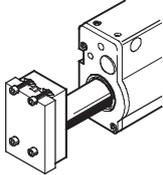
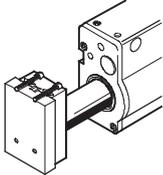
The intermediate position can be activated during the advancing stroke or retracting stroke, depending on the type of design. Multiple intermediate position modules can be installed on request.



# Linear modules HMP

Key features

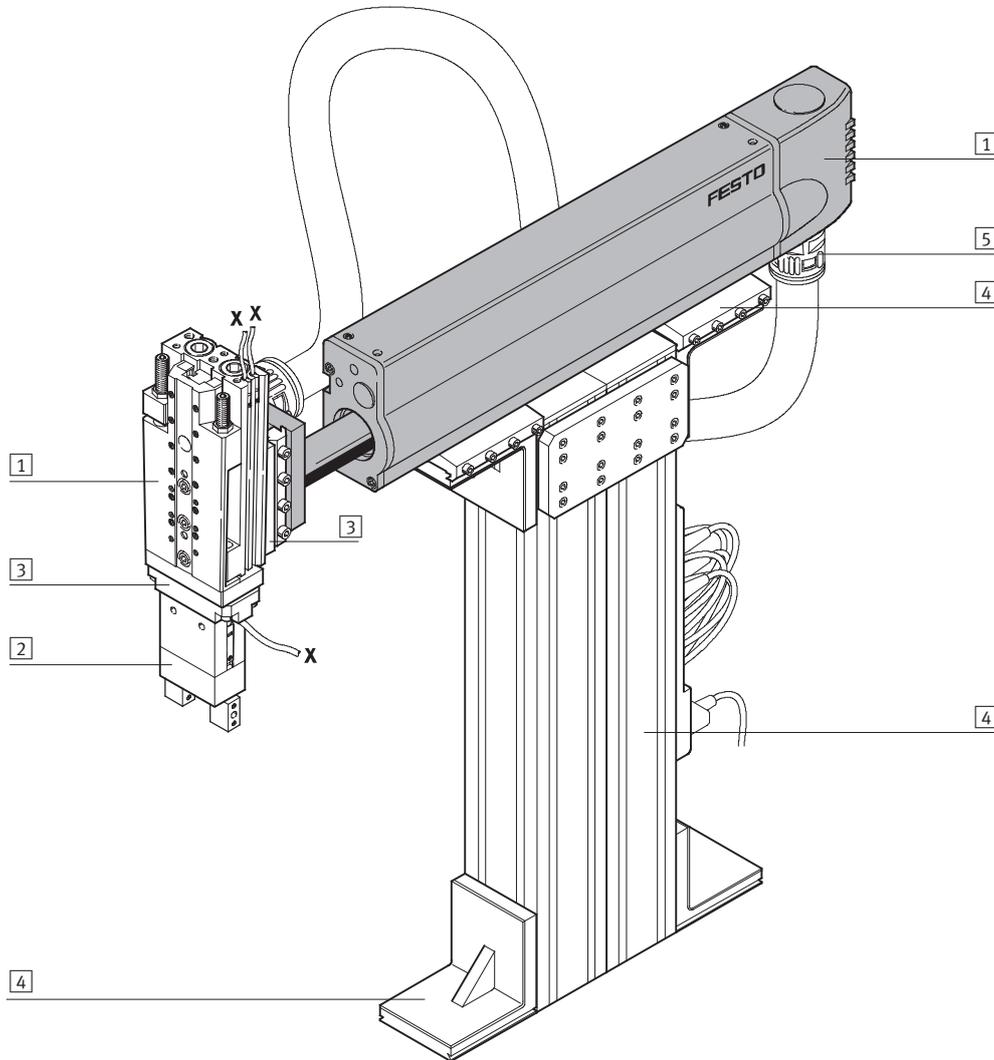


Mounting and assembly options			
Mounting options			
	Dovetail mounting using connecting kit HAVB 	Direct mounting using screws and slot nuts NST 	Direct mounting using screws and centring sleeves ZBH 
Mounting surfaces			
On the side of the basic profile	HMP-16/-20/-25/-32 	HMP-16/-20/-25/-32 	
On the underside of the basic profile	HMP-16/-20/-25/-32 	HMP-25/-32 	HMP-16/-20 
On the yoke plate	HMP-16/-20/-25/-32 	HMP-25/-32 	HMP-16/-20/-25/-32 

# Linear modules HMP

System example

System product for handling and assembly technology



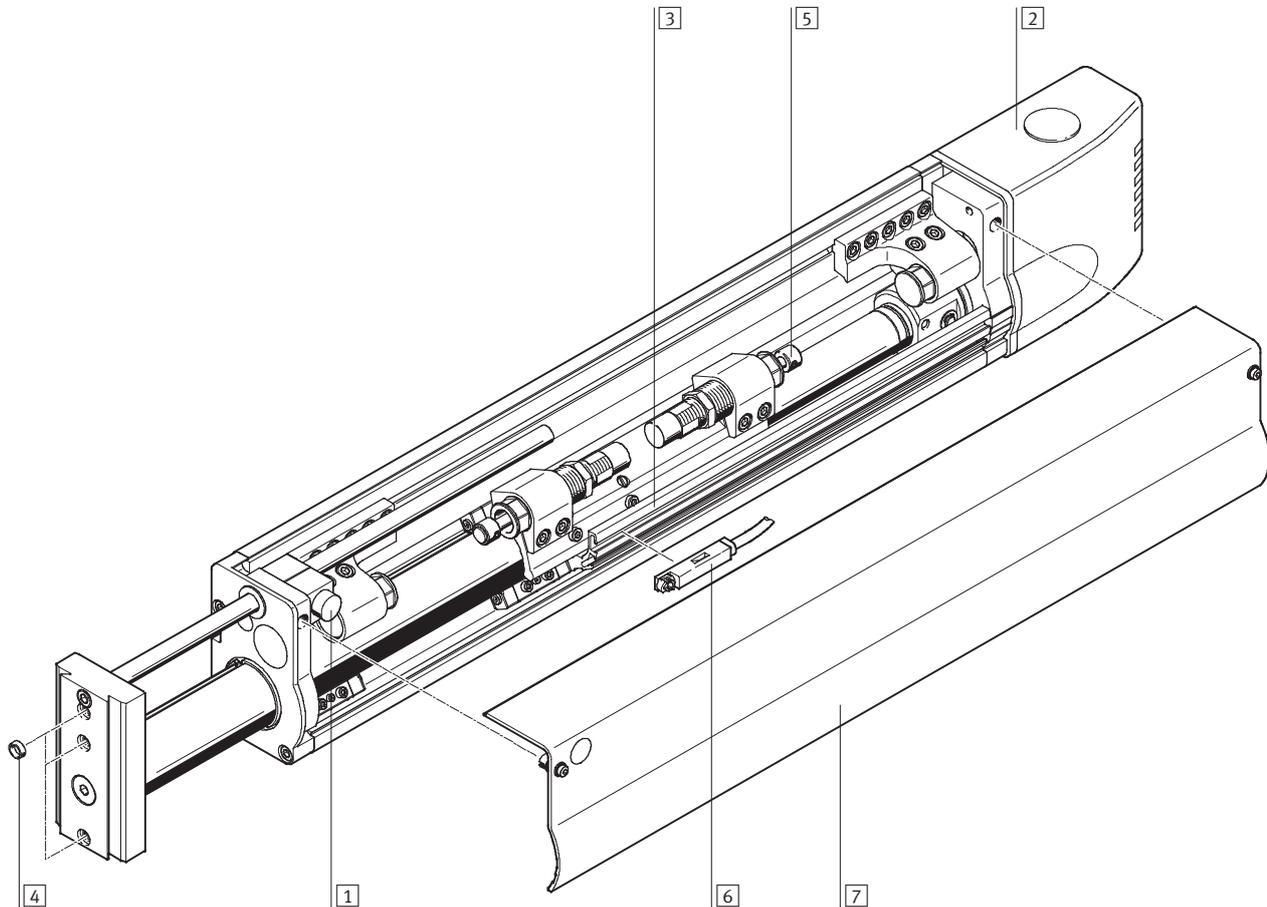
System elements and accessories		
	Brief description	→ Page/Internet
1	Drives	Wide range of combination options within handling and assembly technology drive
2	Grippers	Wide range of optional variants within handling and assembly technology gripper
3	Adapters	For drive/drive and drive/gripper combinations adapter kit
4	Basic components	Profiles and profile combinations as well as profile/drive combinations basic component
5	Installation components	For achieving a clear-cut, safe layout of electrical cables and tubing installation component
-	Axes	Wide range of combination options within handling and assembly technology axes
-	Motors	Servo and stepper motors, with or without gearing motor

# Linear modules HMP

Peripherals overview

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With clamping unit KP



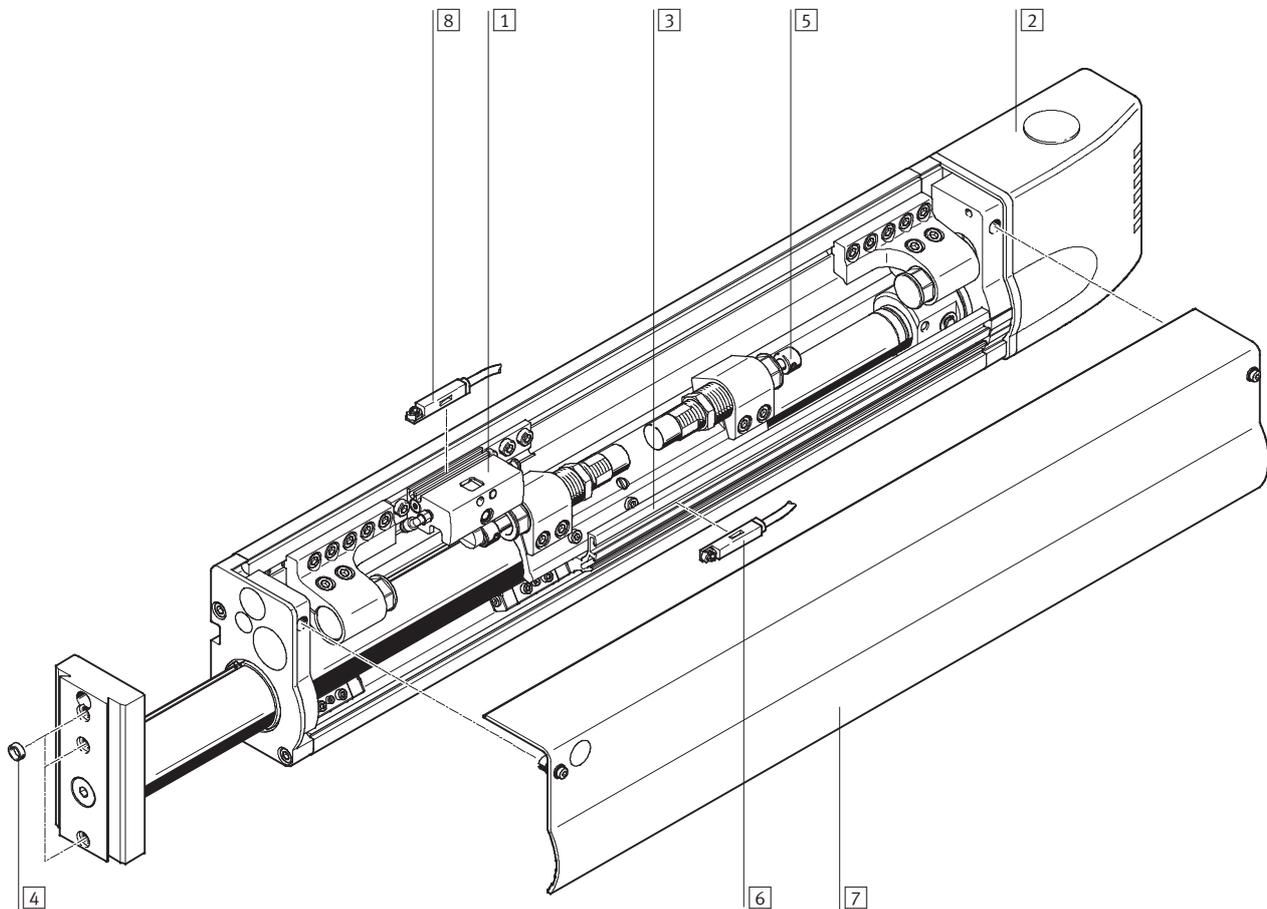
Accessories			
	Brief description	→ Page/Internet	
1	Clamping unit KP	For holding loads in all mounting and end positions in the event of a drop in pressure	24
2	End cap AD/EL	The end cap (EL) houses an integrated electrical interface	24
3	Sensor strip SL	For mounting proximity sensors and flexible sensing of any desired end positions. Included in the scope of delivery of the linear module.	24
4	Centring sleeve Z	For centring loads and attachments on the yoke plate	26
5	Shock absorber	Included in the scope of delivery of the linear module	26
6	Proximity sensor A...	For position sensing via the sensor strip	27
7	Housing cover	Included in the scope of delivery of the linear module	–
–	Cable with socket V	For proximity sensor	27
–	Slot cover A	For protecting the proximity sensor cable	26

# Linear modules HMP

Peripherals overview

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## With intermediate position module Z1A



Accessories			
	Brief description	→ Page/Internet	
1	Intermediate position module Z1A	For approaching an intermediate position during the advance stroke. The intermediate position module Z1E is used to approach an intermediate position during the return stroke.	18
2	End cap AD/EL	The end cap (EL) houses an integrated electrical interface	24
3	Sensor strip SL	For mounting proximity sensors and flexible sensing of any desired end positions. Included in the scope of delivery of the linear module.	24
4	Centring sleeve Z	For centring loads and attachments on the yoke plate	26
5	Shock absorber	Included in the scope of delivery of the linear module	26
6	Proximity sensor A...	For position sensing via the sensor strip	27
7	Housing cover	Included in the scope of delivery of the linear module	-
8	Proximity sensor A...	For sensing the position of the lever at the intermediate position module (intermediate position active/not active)	28
-	Cable with socket V	For proximity sensor	27
-	Slot cover A	For protecting the proximity sensor cable	26

# Linear modules HMP

Type codes

HMP – 16 – 150 – B – SL – 2G3 – KP – – EL – A1 – E

## Type

HMP	Linear module
-----	---------------

## Piston Ø [mm]

## Stroke [mm]

## Generation

B	B series
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## Sensing

SL	Sensor strip
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## Pneumatic connection

2G3	For 3 mm I.D. tubing
2G4	For 4 mm I.D. tubing
2G6	For 6 mm I.D. tubing

## Clamping unit

KP	Attached
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## Intermediate position module

Z1A	For advance stroke
Z1E	For return stroke

## Interface

AD	End cap
EL	End cap with electrical interface

## Proximity sensor

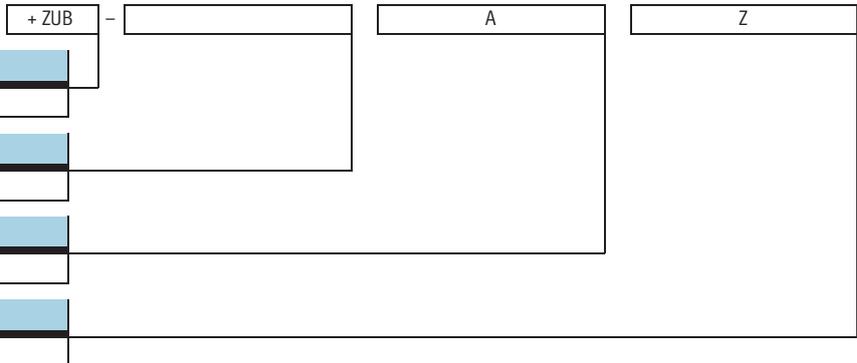
A1	With cable, 2.5 m
A2	Contactless with cable, 2.5 m, NPN
A3	Contactless with cable, 2.5 m, PNP
A4	With plug
A5	Contactless with plug, NPN
A6	Contactless with plug, PNP

## User documentation

E	English
S	Spanish
F	French
I	Italian
V	Swedish
B	Express waiver – no manual to be included (already available)

# Linear modules HMP

Type codes



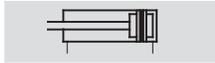
# Linear modules HMP

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Technical data

Function

Standard version



with clamping unit



-  - Piston  $\varnothing$   
16 ... 32 mm

-  - Stroke length  
50 ... 400 mm

-  - [www.festo.com](http://www.festo.com)



General technical data					
Piston $\varnothing$	16	20	25	32	
System mode	Yoke				
Mode of operation	Double-acting				
Protection against torsion	Guide				
Connection type	Female thread				
Pneumatic connection, linear module	M5	G $\frac{1}{8}$	G $\frac{1}{8}$	G $\frac{1}{4}$	
Pneumatic connection, intermediate position module	M3				
Assembly position	Any				
Effective stroke [mm]	16 ... 320	24 ... 400	24 ... 400	40 ... 400	
Position sensing	For proximity sensing				
Max. repetition accuracy <sup>1)</sup> [mm]	0.01				
Max. speed	advancing [m/s]	0.8	1.1	1.1	1.2
	returning [m/s]	0.8	1.1	1.1	1.1
Swivel time of lever at intermediate position module	advancing [s]	0.04	0.04	0.04	0.072
	returning [s]	0.04	0.036	0.034	0.065

1) Variation of end position and intermediate position for 100 successive strokes under constant operating conditions

Operating and environmental conditions				
Piston $\varnothing$	16	20	25	32
Operating pressure [bar]	4 ... 8			
Operating medium	Dried compressed air, lubricated or unlubricated			
Ambient temperature <sup>1)</sup> [°C]	0 ... +60			
Protection class to EN 60 529	IP 40			
Noise level $F_{LEQ}$ [dB(A)]	62	65	68	69
Corrosion resistance class CRC <sup>2)</sup>	2			

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. 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.

Forces [N]				
Piston $\varnothing$	16	20	25	32
Theoretical force at 6 bar, advancing <sup>1)</sup>	121	188	295	483
Theoretical force at 6 bar, returning <sup>1)</sup>	104	158	247	415

1) Theoretical values, please note: Degree of efficiency: approx. 90%

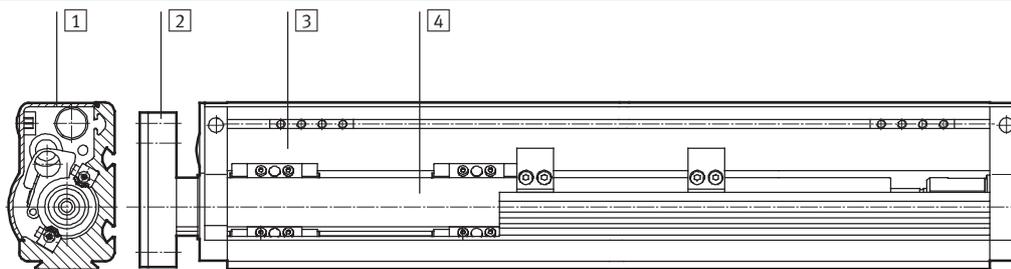
# Linear modules HMP

Technical data

Weight [g]		16	20	25	32
Piston Ø					
Product weight	with 0 mm stroke	2100	4700	6300	10900
	per 10 mm stroke	88	110	150	200
Moving load	with 0 mm stroke	900	1500	2300	4000
	per 10 mm stroke	28	37	55	74
End cap	HMP-...-AD	180	270	300	400
	HMP-...-EL	210	300	330	430
Clamping unit HMP-...-KP for effective stroke	50 mm	109	114	-	-
	100 mm	120	125	-	-
	150 mm	131	136	-	-
	200 mm	142	147	-	-
	250 mm	153	158	-	-
	320 mm	168	173	-	-
400 mm	-	191	-	-	
Intermediate position module	HMP-...-Z1A/Z1E	165	206	227	321

## Materials

Sectional view

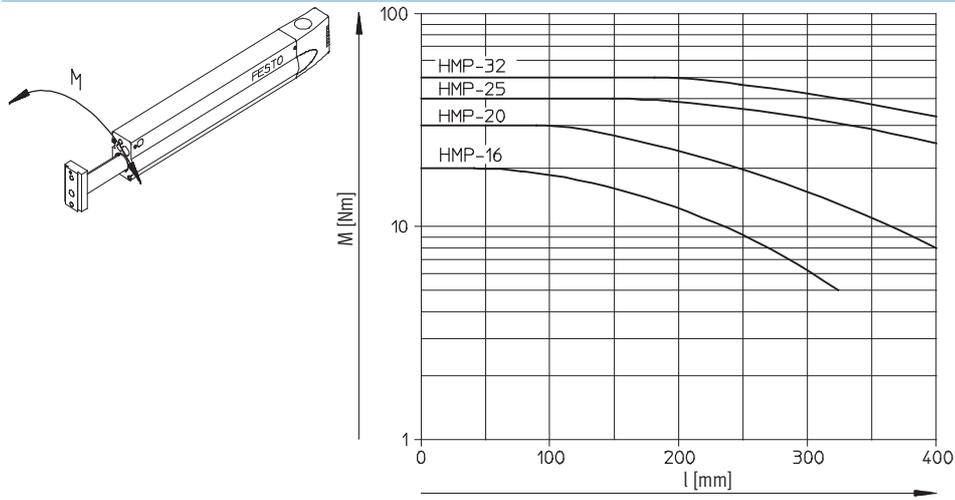


Linear module		
1	Housing cover	Anodised aluminium
2	Yoke plate	Anodised aluminium
3	Profile	Anodised aluminium
4	Guide barrel	Tool steel
-	Seals	Nitrile rubber, polyurethane

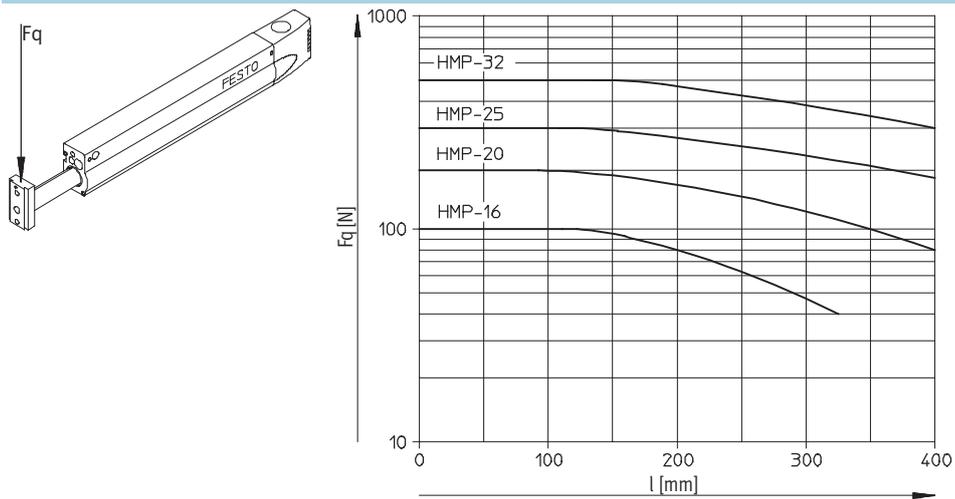
# Linear modules HMP

Technical data

Permissible torque M as a function of the stroke length l (at the yoke plate)



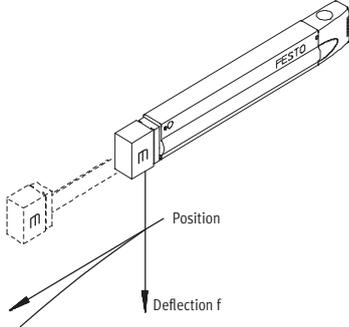
Permissible effective load Fq as a function of the stroke length l (at the yoke plate)



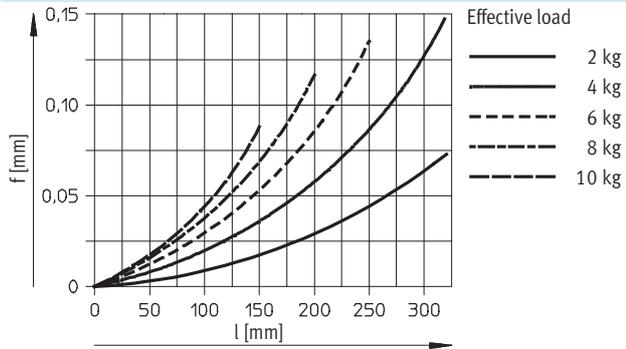
# Linear modules HMP

Technical data

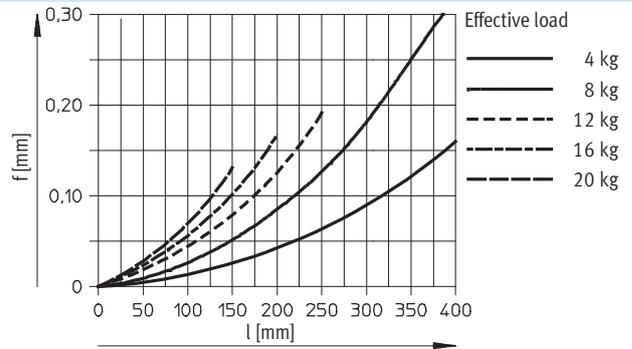
Deflection/deformation  $f$  as a function of the effective load  $m$  and the position  $l$  (stroke)



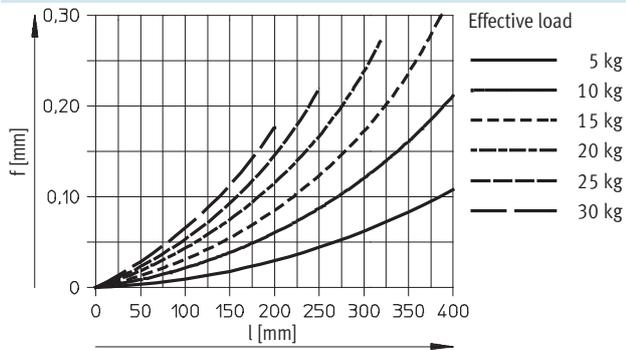
HMP-16



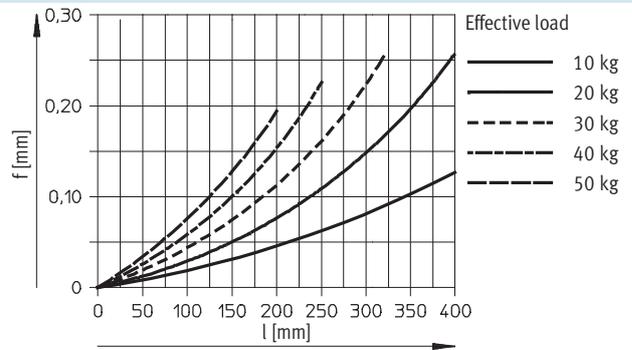
HMP-20



HMP-25



HMP-32



# Linear modules HMP

Technical data



Max. permissible horizontal effective load at 6 bar

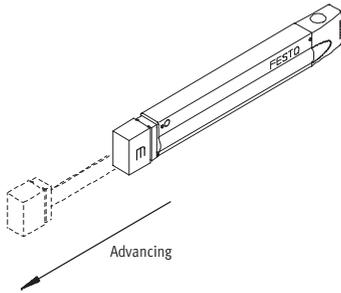
HMP-16: 10 kg

HMP-20: 20 kg

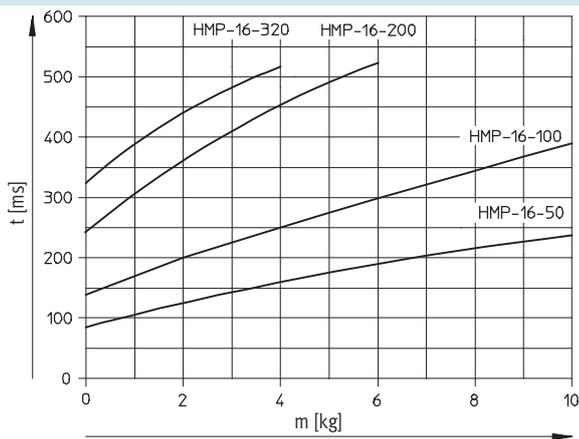
HMP-25: 30 kg

HMP-32: 50 kg

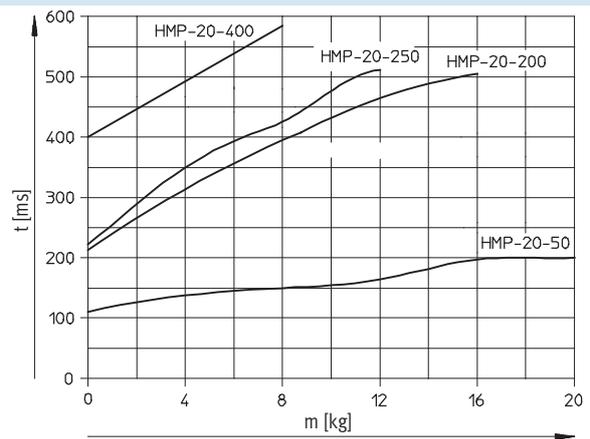
Permissible horizontal advancing time  $t$  as a function of the stroke length and the effective load  $m$  with optimum shock absorber stroke



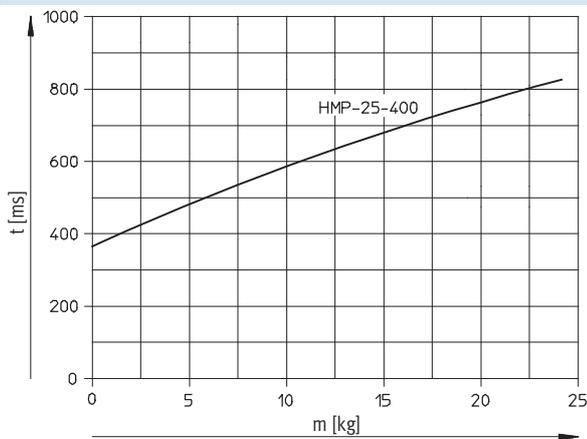
HMP-16<sup>1)</sup>



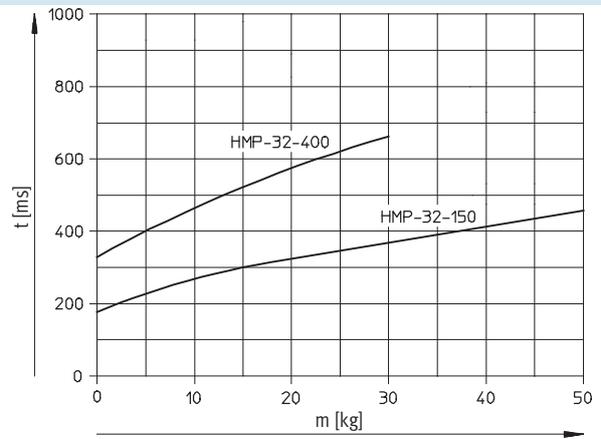
HMP-20<sup>1)</sup>



HMP-25<sup>1)</sup>



HMP-32<sup>1)</sup>



1) Further nominal strokes in preparation

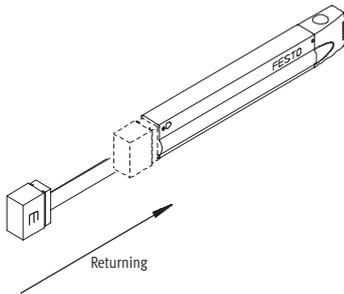
# Linear modules HMP

Technical data

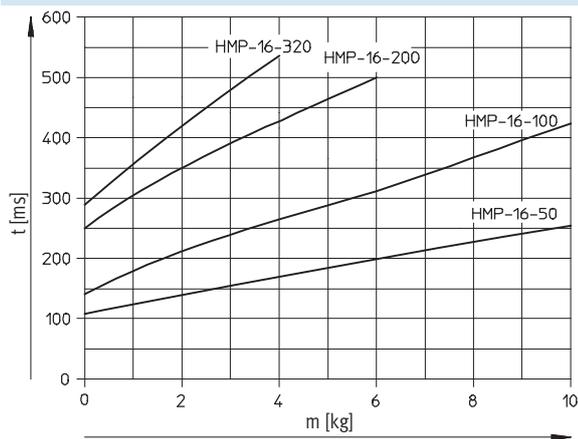
Max. permissible horizontal effective load at 6 bar

- HMP-16: 10 kg
- HMP-20: 20 kg
- HMP-25: 30 kg
- HMP-32: 50 kg

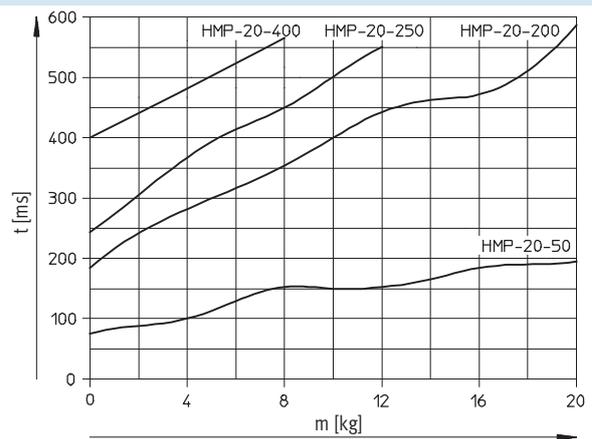
Permissible horizontal returning time  $t$  as a function of the stroke length and the effective load  $m$  with optimum shock absorber stroke



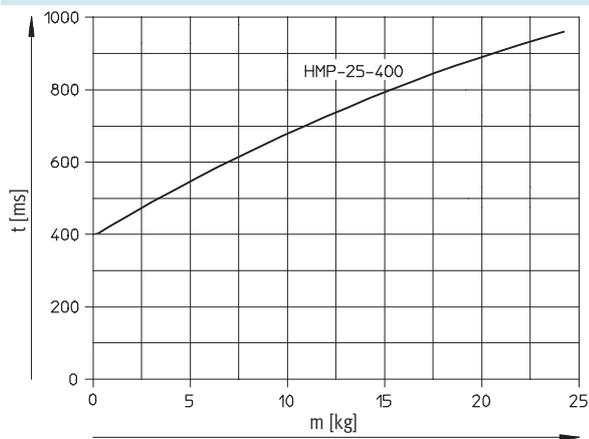
HMP-16<sup>1)</sup>



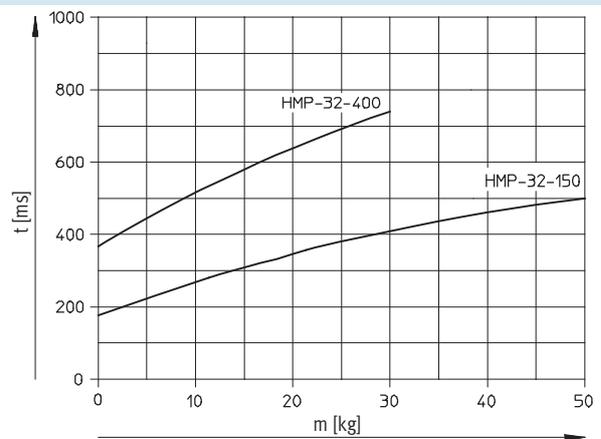
HMP-20<sup>1)</sup>



HMP-25<sup>1)</sup>



HMP-32<sup>1)</sup>



1) Further nominal strokes in preparation

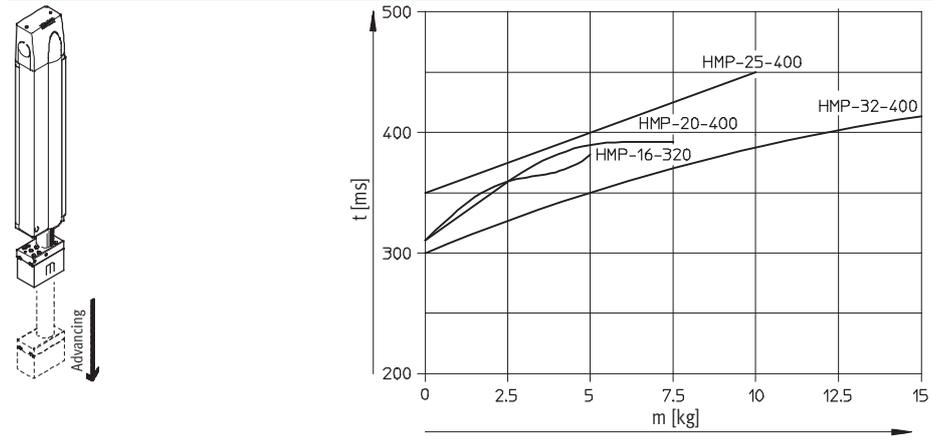
# Linear modules HMP

Technical data

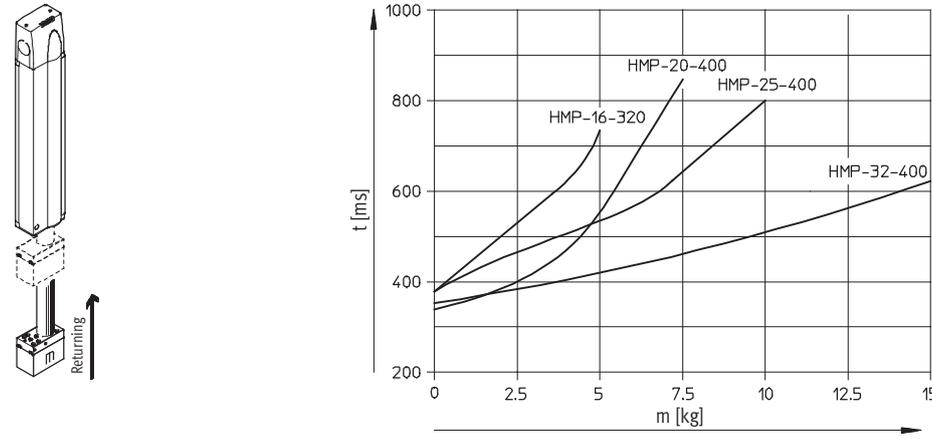
**Max. permissible vertical effective load at 6 bar**

without clamping cartridge	with clamping cartridge
HMP-16: 5 kg	HMP-16: 4 kg
HMP-20: 10 kg	HMP-20: 7.5 kg
HMP-25: 15 kg	
HMP-32: 25 kg	

**Permissible vertical advancing time  $t$  as a function of the stroke length and the effective load  $m$  with optimum shock absorber stroke**  
HMP-16/-20/-25/-32<sup>1)</sup>



**Permissible vertical returning time  $t$  as a function of the stroke length and the effective load  $m$  with optimum shock absorber stroke**  
HMP-16/-20/-25/-32<sup>1)</sup>



1) Further nominal strokes in preparation

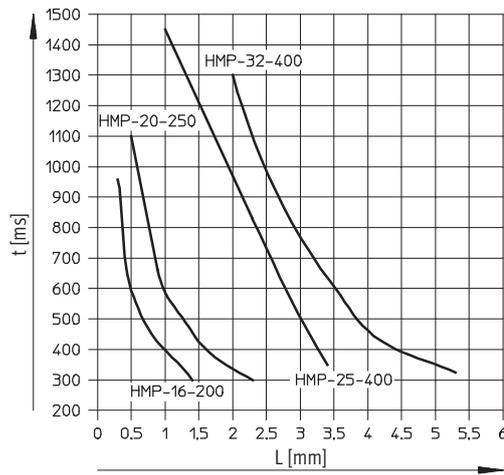
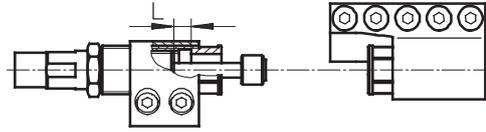
# Linear modules HMP

Technical data

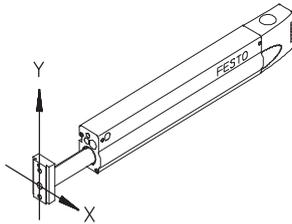
## Advancing/returning time $t$ as a function of the optimum length $L$ to which the shock absorber should be screwed out

In order to obtain the shortest possible travel time with a linear module HMP, it is essential to adjust the shock absorbers to match the advancing/returning time  $t$ .

The optimum length  $L$  to which the shock absorbers should be screwed out is shown in the adjacent graph.

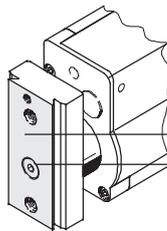


## Determining the permissible effective load



As long as the centre of gravity of the effective load on the yoke plate lies within the outline of this plate, it is impossible to overload the linear module.

Centre of gravity



When dovetail mounting components are used, the centre of gravity should be within this area.

Recommended position of centre of gravity for low-vibration operation.

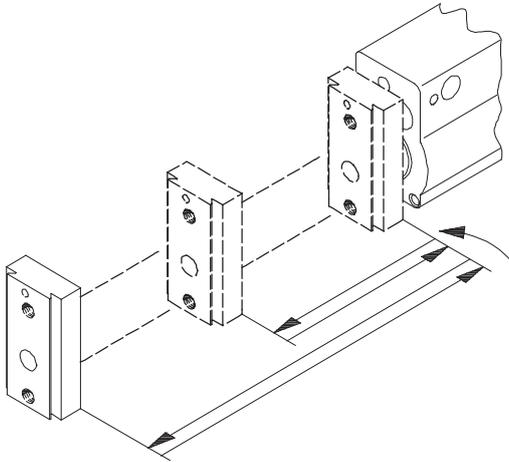
# Linear modules HMP

Technical data

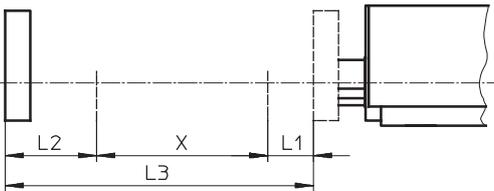
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## Intermediate position module Z1A/Z1E

Intermediate position with advancing with Z1A



### Range for possible intermediate positions when advancing



L1 = Rear non-operational zone  
L2 = Front non-operational zone  
L3 = Effective stroke

X = Zone for possible intermediate positions  
X = L3 - L1 - L2

### Non-operational zones [mm]

Piston Ø	16	20	25	32
L1	33	42	42	55.5
L2	66	68.5	54.5	56

### Calculation example

Given:  
Linear module  
HMP-16-200-...-Z1A-...

To be found:  
In which zone of the effective stroke  
are intermediate positions possible?

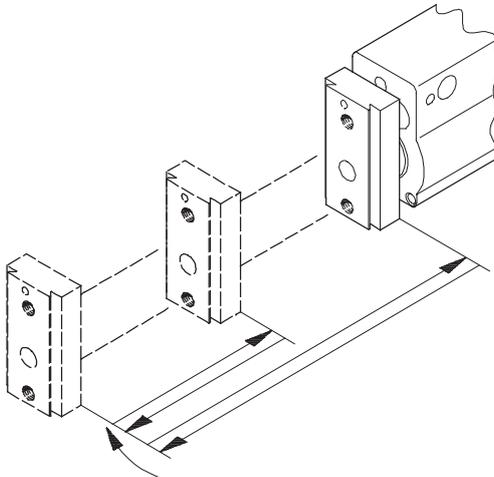
Calculation:  
The piston Ø of the linear module  
(16 mm) determines the following  
non-operational zones which do not  
permit intermediate positions:  
L1 = 33 mm  
L2 = 66 mm  
  
X = L3 - L1 - L2 = 101 mm

This means:  
The lower limit of the effective stroke  
range for permissible intermediate  
positions is:  
L1 = 33 mm  
  
The upper limit of the effective stroke  
range for permissible intermediate  
positions is:  
L1 + X = 134 mm

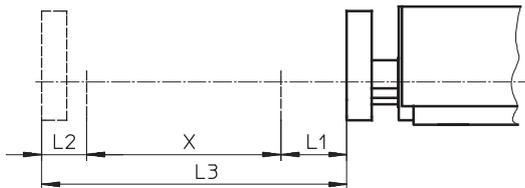
# Linear modules HMP

Technical data

## Intermediate position when returning with Z1E



## Range for possible intermediate positions when returning



- L1 = Rear non-operational zone
- L2 = Front non-operational zone
- L3 = Effective stroke
- X = Zone for possible intermediate positions
- X =  $L3 - L1 - L2$

### Non-operational zones [mm]

Piston Ø	16	20	25	32
L1	47.5	62	54.5	56
L2	33	42	42	55.5

### Calculation example

Given:  
Linear module  
HMP-16-200-...-Z1E-...

To be found:  
In which zone of the effective stroke  
are intermediate positions possible?

Calculation:  
The piston Ø of the linear module  
(16 mm) determines the following  
non-operational zones which do not  
permit intermediate positions:  
L1 = 47.5 mm  
L2 = 33 mm  
  
X =  $L3 - L1 - L2 = 119.5$  mm

This means:  
The lower limit of the effective stroke  
range for permissible intermediate  
positions is:  
L1 = 47.5 mm  
  
The upper limit of the effective stroke  
range for permissible intermediate  
positions is:  
L1 + X = 167 mm

# Linear modules HMP

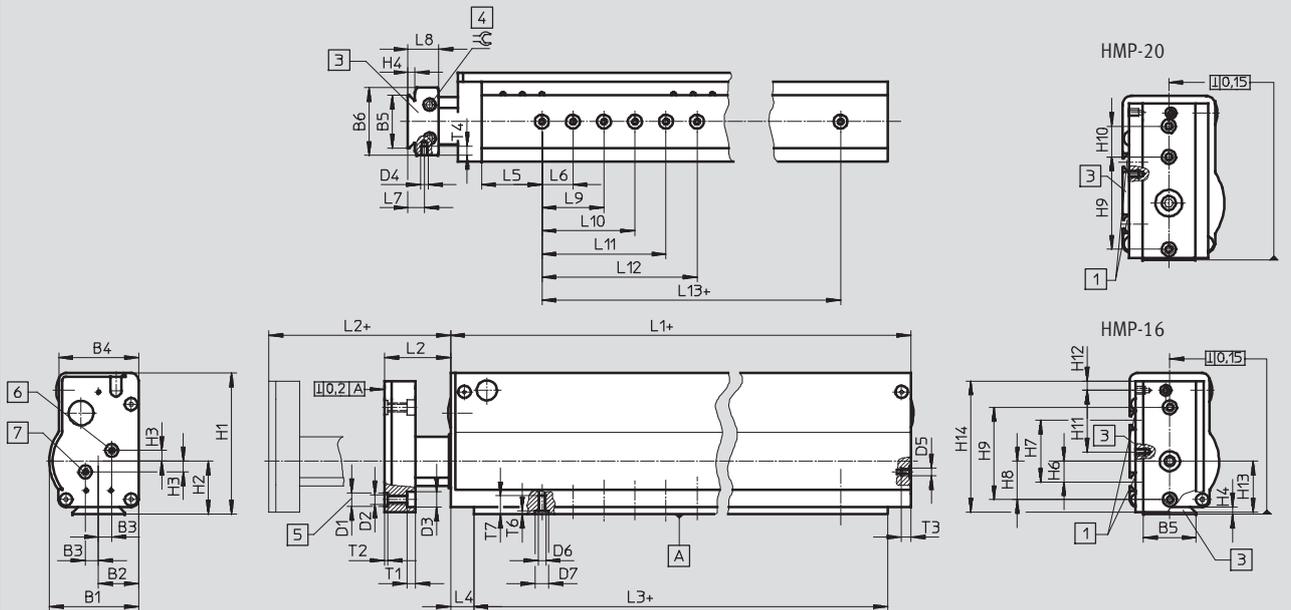
Technical data

FESTO

## Dimensions

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

Piston Ø 16/20 mm



- 1 2 mounting slots for slot nuts HMBN-5-2M5
- 2 Dovetail mounting facility
- 3 Set screw for clamping of yoke plate (can be turned through 360°)
- 4 Thread and centring hole for load attachment with centring sleeves ZBH-9
- 5 Air connection, advancing
- 6 Air connection, returning
- 7 + = plus stroke length

Type	B1	B2	B3	B4	B5	B6	D1	D2	D3	D4	D5	D6	D7	H1	H2	H3
			±0.1				∅ H7		∅ H13				∅ H7			±0.1
HMP-16	57.8	26	8.5	51.7	34	44	9	M6	10	M5	M5	M5	9	92	34.5	7
HMP-20	65.8	30	10	59.8		51					G1/8					

Type	H4	H6	H7	H8	H9	H10	H11	H12	H13	H14	H17	L1	L2	L3	L4
					±0.03 <sup>1)</sup>	±0.03 <sup>1)</sup>									+0.2
HMP-16	4.5	13.5	40	25	60	-	40	6	33	85	38	247	23	217	15
HMP-20				30		20			35.5	100.4	40	320		290	

Type	L5	L6	L7	L8	L9	L10	L11	L12	L13	T1	T2	T3	T4	T6	T7	∅
		±0.03		+0.2	±0.03	±0.03	±0.03	±0.03	±0.03		+0.1			+0.1		
HMP-16	39	20	10.75	20	40	60	80	100	140	5.7	2.1	6.4	6	2.1	12	4
HMP-20	45								200			9				

1) Tolerance specification applies to countersink D1; tolerance for thread D2: ±0.2

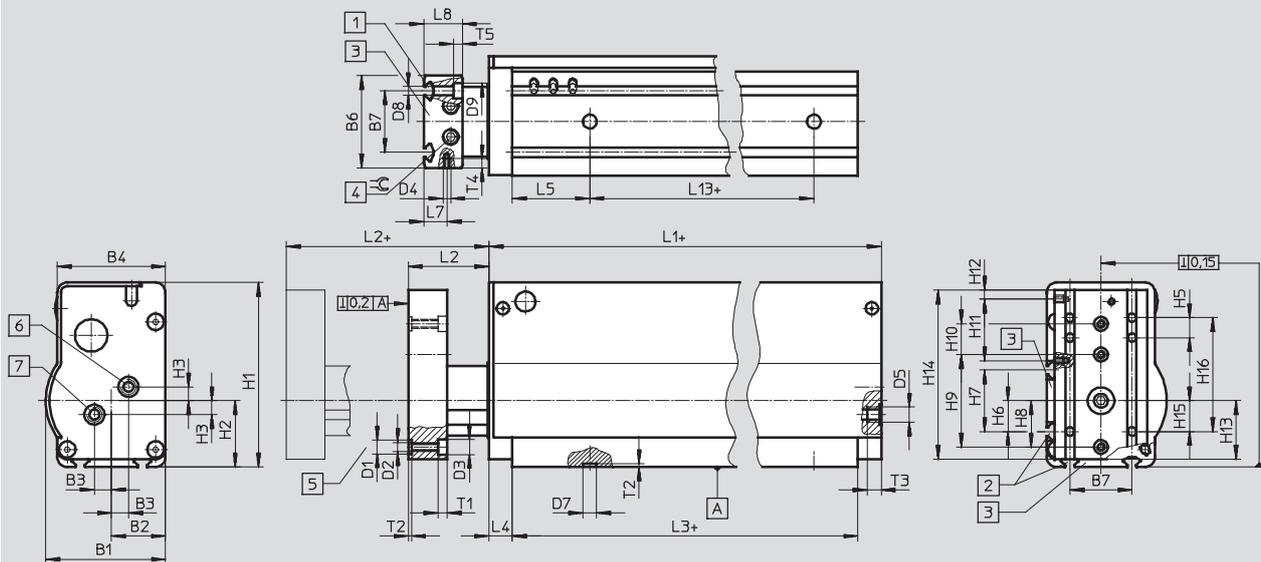
# Linear modules HMP

Technical data

## Dimensions

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

Piston  $\varnothing$  25/32 mm



- 1) 2 mounting slots for slot nuts HMBN-5-2M5
  - 2) 4 mounting slots for slot nuts HMBN-5-2M5
  - 3) Dovetail mounting facility
  - 4) Set screw for clamping of yoke plate (can be turned through 360°)
  - 5) Thread and centring hole for load attachment with centring sleeves ZBH-9
  - 6) Air connection, advancing
  - 7) Air connection, returning
- + = plus stroke length

Type	B1	B2	B3	B4	B6	B7	D1	D2	D3	D4	D5	D7	D8	D9
			±0.1				$\varnothing$ H7		$\varnothing$ H13			$\varnothing$ H7	$\varnothing$ H13	$\varnothing$
HMP-25	77.3	35	11	69.8	60	40	9	M6	10	M5	G $\frac{1}{8}$	9	5.5	10
HMP-32	90.8	40		79.8	70						G $\frac{3}{4}$			

Type	H1	H2	H3	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16
			±0.1					±0.03 <sup>1)</sup>	±0.03 <sup>1)</sup>						
HMP-25	120	43	9	13	20	40	30	60	20	40	6	38	110	20	74
HMP-32	143	53			30		40	80				48	133		

Type	H17	L1	L2	L3	L4	L5	L7	L8	L13	T1	T2	T3	T4	T5	⌀
					+0.2			±0.2	±0.03		+0.1				
HMP-25	40	320	28	290	15	50	15	25	190	5.7	2.1	9	6	5.7	5
HMP-32		427		392					290			12			

1) Tolerance specification applies to countersink D1; tolerance for thread D2: ±0.2

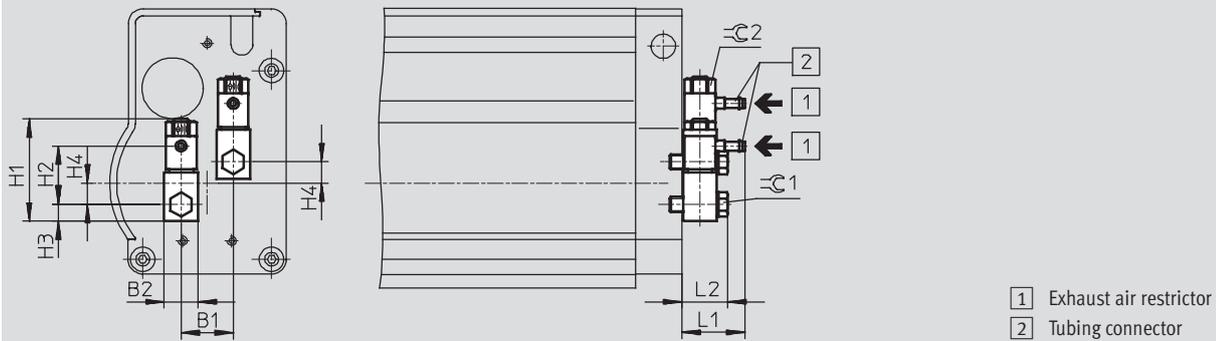
# Linear modules HMP

Technical data

FESTO

## Dimensions – Pneumatic connections (code 2G3/2G4/2G6)

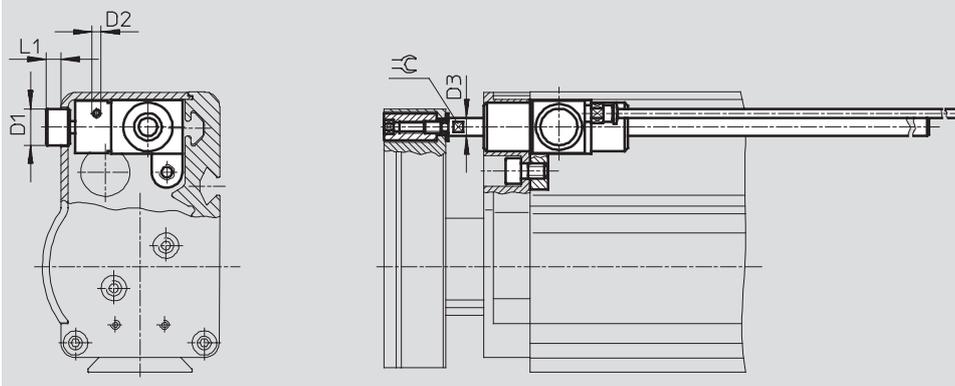
Download CAD data → [www.festo.com](http://www.festo.com)



Type	B1	B2	H1	H2	H3	H4	L1	L2	≅C1	≅C2
HMP-16-...-2G3	17	11	33.6	19	5.5	7	20.6	15	7	9
HMP-16-...-2G4				22.6						
HMP-20-...-2G4	20	16	48.7	28.9	8		31.3			
HMP-20-...-2G6				27.5			31.4			
HMP-25-...-2G4	22	20	61.8	28.9	10	9	31.3	28.2	17	17
HMP-25-...-2G6				27.5			31.4			
HMP-32-...-2G4				37.9			35.8			
HMP-32-...-2G6				38.2			35.9			

## Dimensions – Clamping unit (code KP)

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



Type	D1 ∅	D2 1)	D3 ∅	L1	≅C	Holding force [N]	Effective load	
							horizontal [kg]	vertical [kg]
HMP-16	11.4	M3	6	5	5	100	10	4
HMP-20				3.8			20	7.5

1) Air connection is supplied ready-fitted with QS connector QSM-M3-4

### Note

The clamping unit must only be operated when the rod is stationary (end position). Dynamic braking operations can result in severe damage to the clamping device.

Precision positioning cannot be guaranteed with the clamping unit since slippage of approx. 1 – 2 mm can occur.

When using the linear module HMP-20 together with the clamping unit, the max. possible stroke is reduced by 12.5 mm.

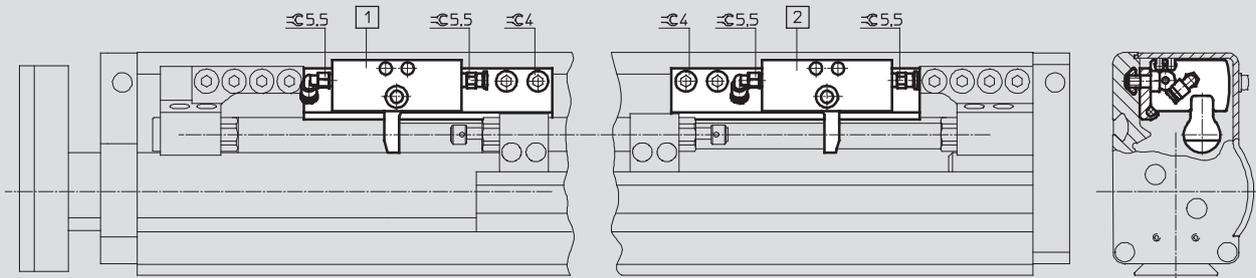
# Linear modules HMP

Technical data

## Dimensions – Intermediate position modules

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

(code Z1A/Z1E)

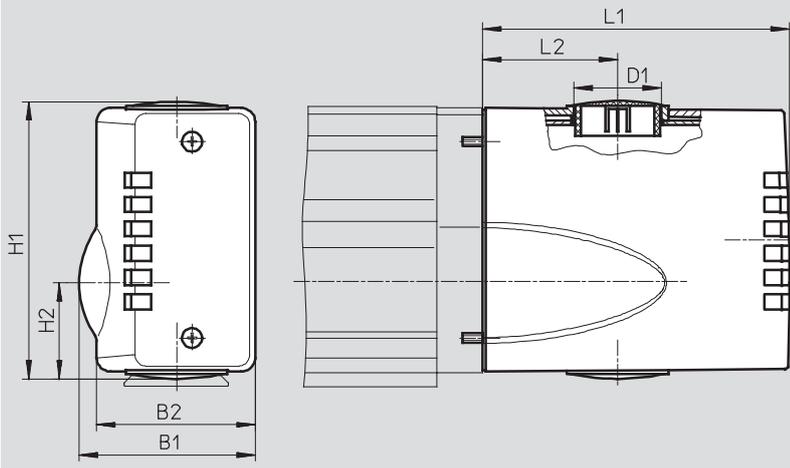


- 1 Intermediate position module Z1A for advance stroke
- 2 Intermediate position module Z1E for return stroke

## Dimensions – End cap

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

(code AD/EL)



Type	B1	B2	D1 ∅	H1	H2	L1	L2
HMP-16	57.4	51.2	28.5 (PG 21)	91.3	31.5	100	44
HMP-20	65.4	59.2	37.2 (PG 29)	106.3	34.4	120	55
HMP-25	76.9	69.2		119	40.1		
HMP-32	90.4	79.2		141.6	49.9		

# Linear modules HMP

Ordering data – Modular products



**M** Mandatory data →

Module No.	Function	Piston Ø	Stroke	Generation	Position sensing	Pneumatic connection
537 940	HMP	16	50	B	SL	2G3
537 941		20	100			2G4
537 942		25	150			2G6
537 943		32	200			
						250
			320			
			400			
<b>Ordering example</b>						
537 940	HMP	- 16	- 150	- B	- SL	- 2G3

Ordering table								
Size	16	20	25	32	Condi- tions	Code	Enter code	
<b>M</b> Module No.	537 940	537 941	537 942	537 943				
Function	Linear module with ball bearing guide					HMP		HMP
Piston Ø [mm]	16	20	25	32		-...		
Stroke [mm]	50	50	-	-		-50		
	100	100	100	100		-100		
	150	150	150	150		-150		
	200	200	200	200		-200		
	250	250	250	250		-250		
	320	320	320	320		-320		
	-	400	400	400		-400		
Generation	B series					-B		-B
Position sensing	Sensor strip					-SL		-SL
Pneumatic connection	One-way flow control valve, 3 mm barbed connector	-	-	-		-2G3		
	One-way flow control valve, 4 mm barbed connector					-2G4		
	-	One-way flow control valve, 6 mm barbed connector				-2G6		

Transfer order code

# Linear modules HMP

Ordering data – Modular products



Options								
Clamping unit	Intermediate position	Interface	Proximity sensor set	User documentation	Accessories	Cable with socket	Slot cover	Centring sleeves
KP	Z1A Z1E	AD EL	A1 A2 A3 A4 A5 A6	E S F I V B	ZUB	...V	A	...Z
-	- <b>Z1A</b>	- <b>EL</b>	- <b>A1</b>	- <b>B</b>	<b>ZUB</b>	- <b>2V</b>		

Ordering table									
Size	16	20	25	32	Condi- tions	Code	Enter code		
0 Clamping unit	Attached				-	-	1	-KP	
Intermediate position	1 intermediate position, advancing						2	-Z1A	
	1 intermediate position, returning						2	-Z1E	
Interface	End cap							-AD	
	End cap with electrical interface							-EL	
Proximity sensor, assembled	Proximity sensor with cable, 2.5 m							-A1	
	Proximity sensor, contactless, NPN with cable, 2.5 m							-A2	
	Proximity sensor, contactless, PNP with cable, 2.5 m							-A3	
	Proximity sensor with plug M8						3	-A4	
	Proximity sensor, contactless, NPN with plug M8						3	-A5	
	Proximity sensor, contactless, PNP with plug M8						3	-A6	
Alternative user documentation (standard is German/English)	User documentation, English							-E	
	User documentation, Spanish							-S	
	User documentation, French							-F	
	User documentation, Italian							-I	
	User documentation, Swedish							-V	
	Express waiver - no manual to be included (already available)							-B	
Accessories	Supplied separately							ZUB-	ZUB-
Cable with socket, 2.5 m	1 ... 10							...V	
Slot cover	Slot cover							A	
Centring sleeves (pack of 10)	10, 20, 30, 40, 50, 60, 70, 80, 90							...Z	

1 KP Not with intermediate position Z1A, Z1E.

2 Z1A, Z1E Min. stroke: 150 mm.

3 A4, A5, A6 Not with interface EL

Max. stroke: Piston Ø 16, 20, 25 mm: 200 mm  
Piston Ø 32 mm: 150 mm

Transfer order code

-  -  -  -  -  -  **ZUB** -

# Linear modules HMP

Accessories

**FESTO**

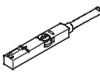
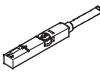
Ordering data						
	For piston Ø [mm]	Remarks	Order code	Part No.	Type	PU <sup>1)</sup>
Centring sleeve ZBH <span style="float: right;">Technical data → Internet: zbh</span>						
	16 ... 32	For yoke plate	Z	150 927	ZBH-9	10
Slot cover ABP						
	16 ... 32	For sensor strip every 0.5 m	A	151 681	ABP-5	2
Shock absorber YSRW <span style="float: right;">Technical data → Internet: ysrw</span>						
	16	-	-	191 194	YSRW-8-14	1
	20			191 196	YSRW-12-20	
	25			191 196	YSRW-12-20	
	32			191 197	YSRW-16-26	

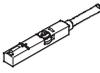
1) Packaging unit quantity

# Linear modules HMP

Accessories

FESTO

Ordering data – Proximity sensors for T-slot, magneto-resistive						Technical data → Internet: <a href="#">smt</a>	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type	
<b>N/O contact</b>							
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	2.5	<b>543 867</b>	<b>SMT-8M-PS-24V-K-2,5-OE</b>	
			Plug M8x1, 3-pin	0.3	<b>543 866</b>	<b>SMT-8M-PS-24V-K-0,3-M8D</b>	
			Plug M12x1, 3-pin	0.3	<b>543 869</b>	<b>SMT-8M-PS-24V-K-0,3-M12</b>	
	Insertable in the slot lengthwise, flush with the cylinder profile	PNP	Cable, 3-wire	2.5	<b>543 870</b>	<b>SMT-8M-NS-24V-K-2,5-OE</b>	
			Plug M8x1, 3-pin	0.3	<b>543 871</b>	<b>SMT-8M-NS-24V-K-0,3-M8D</b>	
<b>N/C contact</b>							
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	7.5	<b>543 873</b>	<b>SMT-8M-PO-24V-K7,5-OE</b>	

Ordering data – Proximity sensors for T-slot, magnetic reed						Technical data → Internet: <a href="#">sme</a>	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type	
<b>N/O contact</b>							
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	<b>543 862</b>	<b>SME-8M-DS-24V-K-2,5-OE</b>	
				5.0	<b>543 863</b>	<b>SME-8M-DS-24V-K-5,0-OE</b>	
			Plug M8x1, 3-pin	2.5	<b>543 872</b>	<b>SME-8M-ZS-24V-K-2,5-OE</b>	
				0.3	<b>543 861</b>	<b>SME-8M-DS-24V-K-0,3-M8D</b>	
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	<b>150 855</b>	<b>SME-8-K-LED-24</b>	
			Plug M8x1, 3-pin	0.3	<b>150 857</b>	<b>SME-8-S-LED-24</b>	
<b>N/C contact</b>							
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	<b>160 251</b>	<b>SME-8-O-K-LED-24</b>	

# Linear modules HMP

Accessories

FESTO

Ordering data – Proximity sensors for C-slot, magneto-resistive					Technical data → Internet: smt	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above	PNP	Cable, 3-wire, in-line	2.5	551 373	SMT-10M-PS-24V-E-2,5-L-OE
			Plug M8x1, 3-pin, in-line	0.3	551 375	SMT-10M-PS-24V-E-0,3-L-M8D
			Plug M8x1, 3-pin, lateral	0.3	551 376	SMT-10M-PS-24V-E-0,3-Q-M8D

Ordering data – Proximity sensors for C-slot, magnetic reed					Technical data → Internet: sme	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above	Contacting	Plug M8x1, 3-pin, in-line	0.3	551 367	SME-10M-DS-24V-E-0,3-L-M8D
			Cable, 3-wire, in-line	2.5	551 365	SME-10M-DS-24V-E-2,5-L-OE
			Cable, 2-wire, in-line	2.5	551 369	SME-10M-ZS-24V-E-2,5-L-OE
	Insertable in the slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173 212	SME-10-SL-LED-24
			Cable, 3-wire, in-line	2.5	173 210	SME-10-KL-LED-24

Ordering data – Connecting cables				Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 333	NEBU-M8G3-K-2.5-LE3
			5	541 334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541 363	NEBU-M12G5-K-2.5-LE3
			5	541 364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 338	NEBU-M8W3-K-2.5-LE3
			5	541 341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541 367	NEBU-M12W5-K-2.5-LE3
			5	541 370	NEBU-M12W5-K-5-LE3