Handling modules HSP

Pneumatic and electric

FESTO

For incredibly low cycle times and maximum flexibility

Info 123 →→

Ultra-fast, flexible and compact

Link-guided
This is the secret of maximum productivity, minimum cycle times and impressive precision.

Pneumatics
For dynamism and power.

Electrics
For maximum flexibility.

All this combined gives: HSP
The fastest and most flexible pick & place unit in its class.

Three drive variants provide the most economical solution for every application

- Pneumatic: at 100 parts/min, no other picker works faster. Ready to install, dynamic and powerful.
- Electric: this means full flexibility with regard to position, acceleration and speed – without costly and time-consuming system planning.
- Without drive: the most compact HSP variant can be used universally with customised drives.

Smarter thanks to more intelligence
Independent adjustment of the Y and Z strokes of pick and place positions ensures high flexibility in all variants during commissioning.

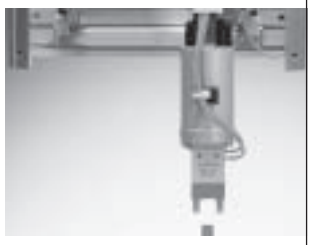
Small thanks to the compact, ready-to-install unit
The HSP permits the design of more compact yet still clearly arranged machines. Straightforward system planning also saves time and money – this is especially the case with the electrical motor-driven variant which permits fast teach-in with user-friendly menus.

Simple and well thought-out installation concept with adaptation options
Guideways retain all of the tubes and cables and routes them to the rear. Universal adapters ensure a perfect fit for grippers and rotary drives.

The pneumatic HSP variant. Gain 20% more production time – hardly surprising with cycle rates of 0.6 to 1.0 sec.

0 sec

0.15 sec



0.3 sec

The perfect combination for ultimate productivity

For incredibly low cycle times combined with ultimate productivity when handling small parts: the handling module HSP.

	Advantages for Engineering & Design	Advantages for Purchasing
1. Combines ultimate productivity with flexible strokes	■ Increase in productivity to 100 parts/min. ■ Y and Z strokes of pick & place positions can be set independently of each other ■ Freely programmable motion with the electric HSP	■ Reduced ordering costs ■ Numerous variants for a variety of solutions
2. Ready-to-install subsystem	■ Compact unit allowing pick & place operations even in extremely small spaces ■ Ready to install for reduced planning costs	■ Solution from a single source ■ Reduced logistics due to fewer individual parts
3. Rapid assembly and commissioning	■ Installation concept for quick and easy installation of tubing and cables ■ Universal adapter for connection of grippers, rotary drives and suction grippers	■ Standard products for simple ordering ■ Reduces costs for assembly and commissioning

New

Handling modules HSP

Key features at a glance

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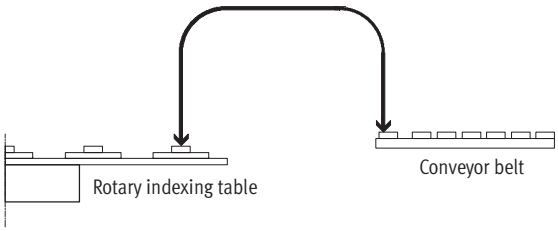
Field of application

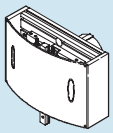
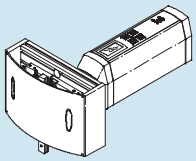
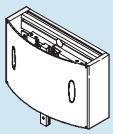
The handling module is a new generation of function modules for the automatic transfer, feed and removal of small parts in extremely confined spaces.
This is achieved by means of a guided vertical and horizontal motion sequence. A backlash-free cross-guide with recirculating ball bearing elements ensures high precision and good rigidity.
The combination of a semi-rotary drive and a slotted guide system produces a compact unit for a complete pick & place cycle.

Special features

- Compact design
- Extremely short cycle times
- Low cost
- Simple commissioning
- For working loads up to 1.6 kg
- Stroke adjustment along Y- and Z-axes
- Wait positions possible
- No planning costs



Three drive variants are available

	Pneumatic: HSP-...-AP, with swivel module DSM	Electric: HSP-...-AE, with servo motor unit MTR-DCI-...-HM	Without drive: HSP-...-AE, with drive shaft
			
Advantages			
	■ Fast ■ Cost-effective ■ Ready to install ■ No system planning required ■ Simple commissioning	■ Freely positionable ■ Freely selectable speed ■ Smooth motion sequence ■ Ready to install ■ No system planning required ■ Simple commissioning using teach-in procedure	■ Compact ■ Universal compatibility ■ Variable drive interface ■ On request: Drive options in combination with servo motors MTR-AC
Technical data			
Stroke Y [mm]	52 ... 170		
Z [mm]	20 ... 70		
Min. cycle time [s]	0.6 ... 1.0	0.8 ... 1.2	Depends on drive
Working load [g]	0 ... 1600		
Repetition accuracy at end positions [mm]	±0.02		
Wait positions	Max. 2	Any	Depends on drive
Function of wait position	Pulling with return cylinder	Freely approachable	Depends on drive
Repetition accuracy at wait positions [mm]	< 1	< 2	Depends on drive
Data sheet	➔ 10	➔ 20	➔ 34

Handling modules HSP

Typical applications

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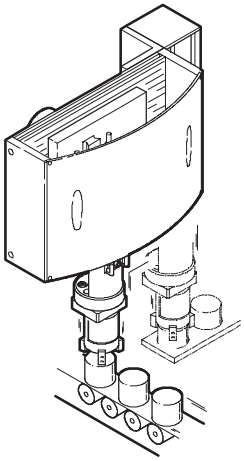
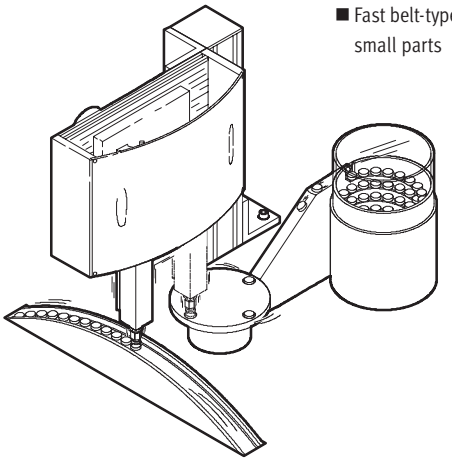
HSP-...-AP, pneumatic

Linear transfer



- Fast feed and removal, e.g. for linear transfer or rotary indexing table

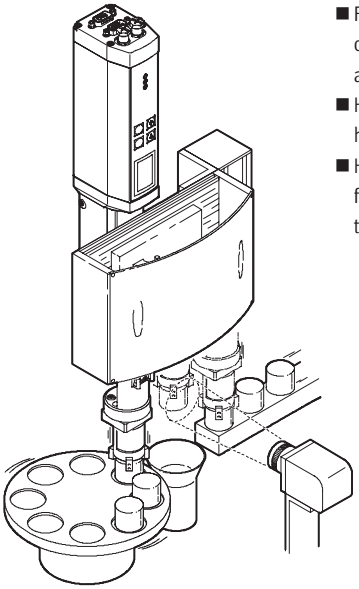
Belt-type part positioning



- Fast belt-type part positioning of small parts

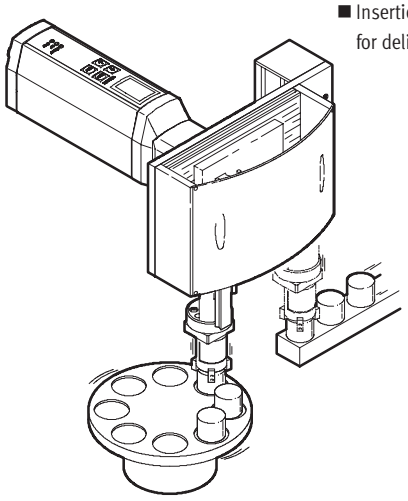
HSP-...-AE, electric

Rotary indexing table



- Flexible pick & place unit with quality inspection of components and ejector for reject parts
- Handling of parts with different heights
- Handling at different speeds, e.g. for linear transfer or rotary indexing table

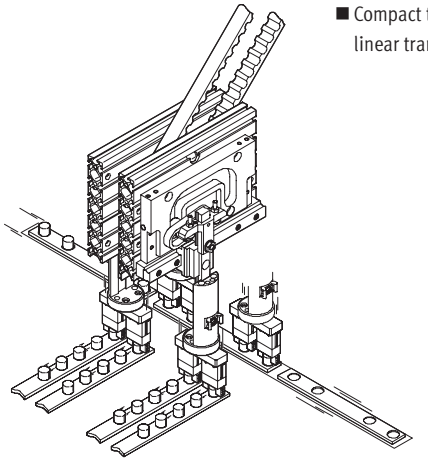
Rotary indexing table



- Adjustable wait position module directly above workpiece/workpiece carrier
- Insertion tasks at different speeds for delicate components

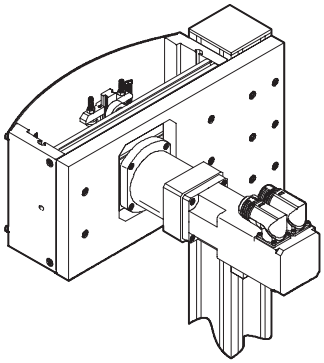
HSP-...-AS, without drive

Linear transfer



- Compact twin pick & place unit for linear transfer

Rotary indexing table, linear transfer

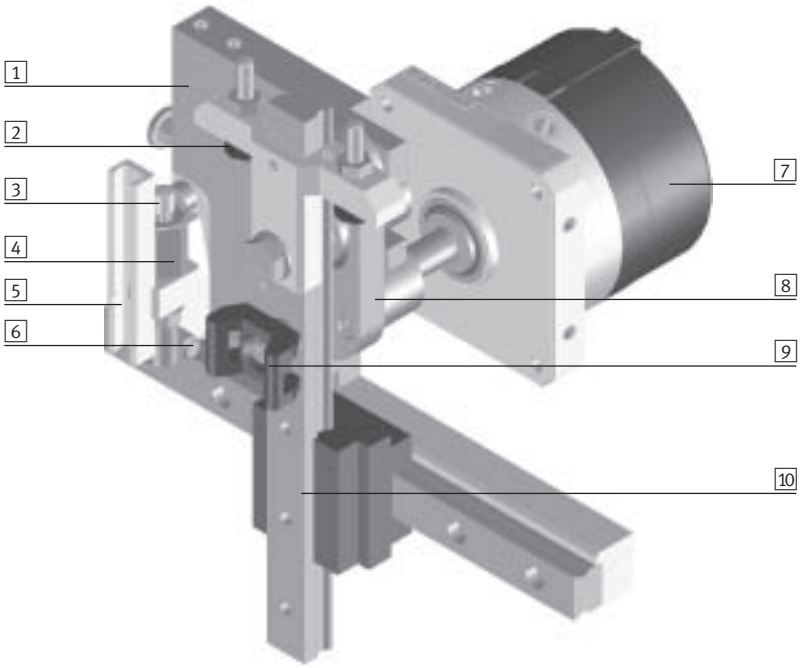


- Fast and flexible pick & place unit with servo motor MTR-AC
- Electrical variant using third-party motor

Handling modules HSP

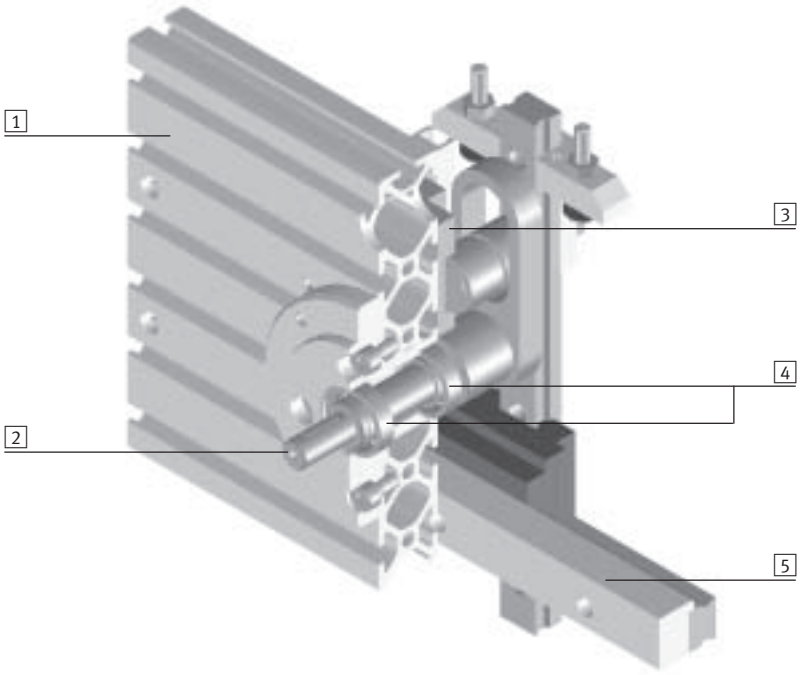
Key features at a glance

HSP-...-AP – pneumatic with swivel module DSM



1 Slotted guide plate
2 Adjustable stop
3 Shock absorber YSRW
4 Stop sleeve
5 Sensor rail
6 Pressure piece
7 Swivel module DSM
8 Swivel lever
9 Cable binder holder
10 Cross-guide

HSP-...-AS – without drive (rear side)



1 Back plate
2 Shaft with Woodruff key
3 Slotted guide plate
4 Ball bearings
5 Aluminium rail for alignment of slotted guide plates

Handling modules HSP

Key features at a glance

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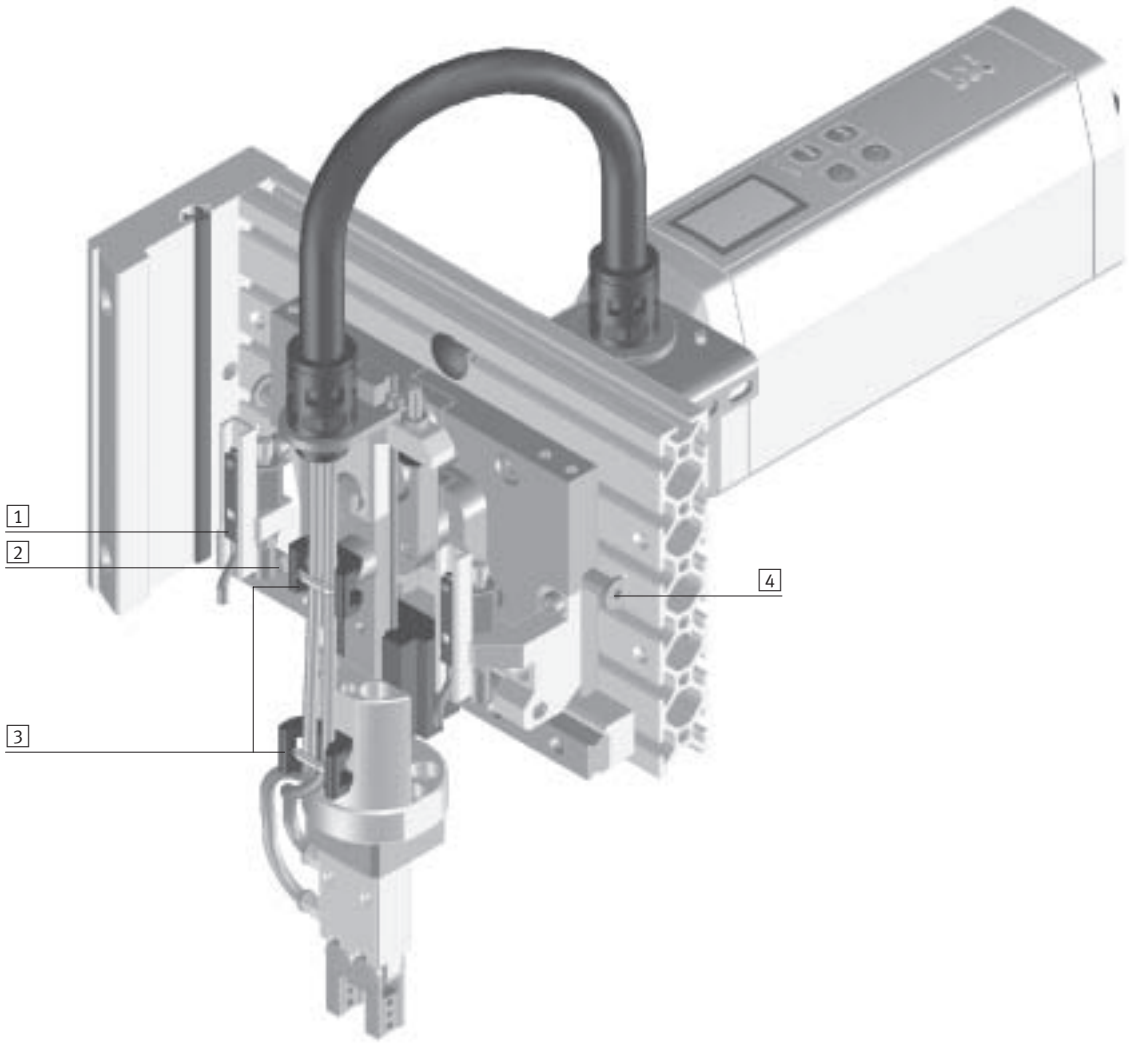
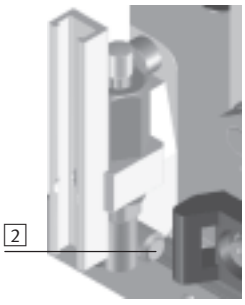
HSP-...-AE – electrical version with servo motor unit MTR-DCI-...-HM



The technology in detail

1 Proximity sensor cables are installed via profile slots in the side and back plate.



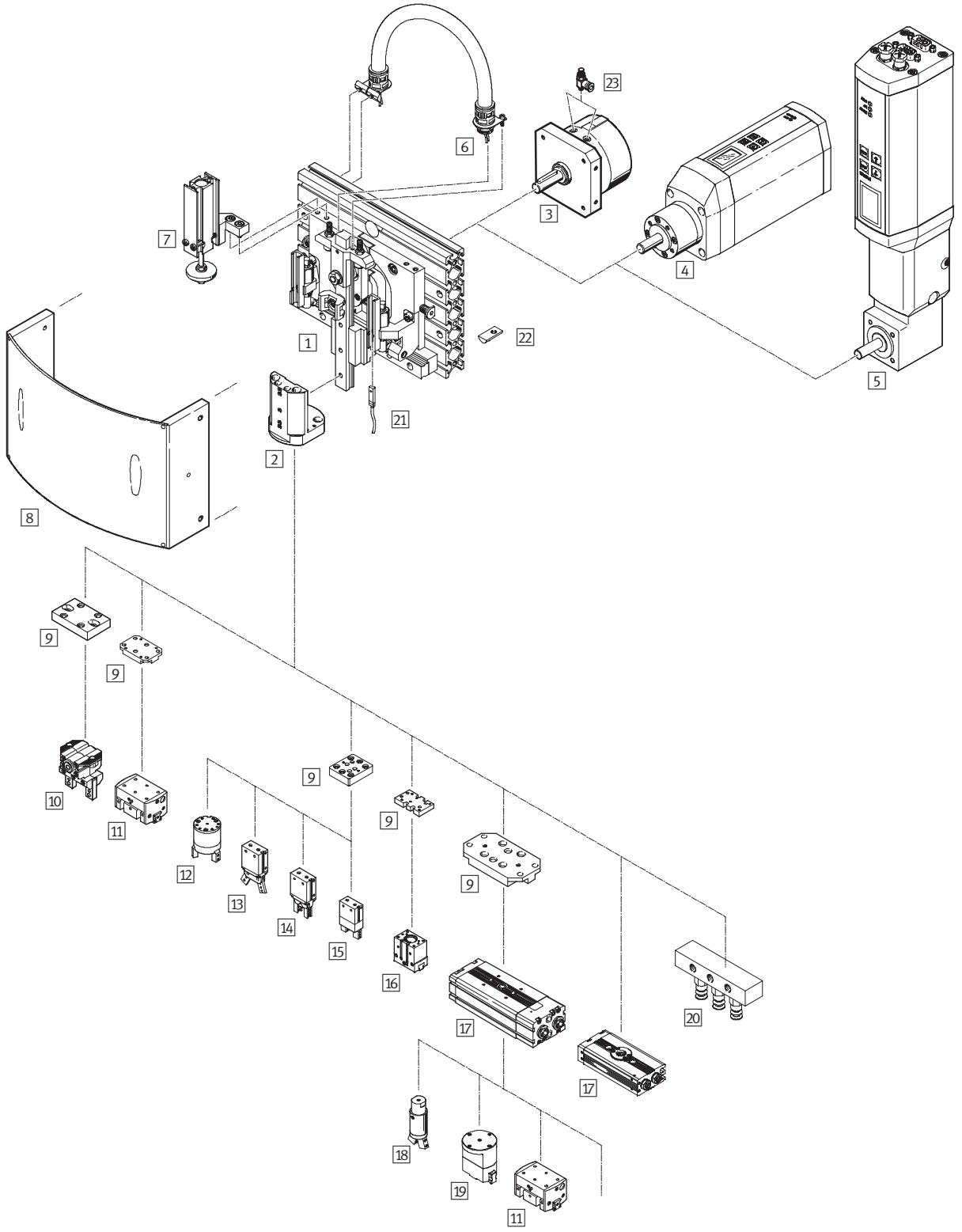
2 The pressure piece guarantees freedom from backlash and precision at the end positions and in the effective linear stroke along the Z-axis.

3 Cable binder holders facilitate the secure routing of tubing and cables.

4 The adjustable slotted guide plate permits precise stroke setting.

Handling modules HSP

Peripherals overview



Handling modules HSP

Peripherals overview

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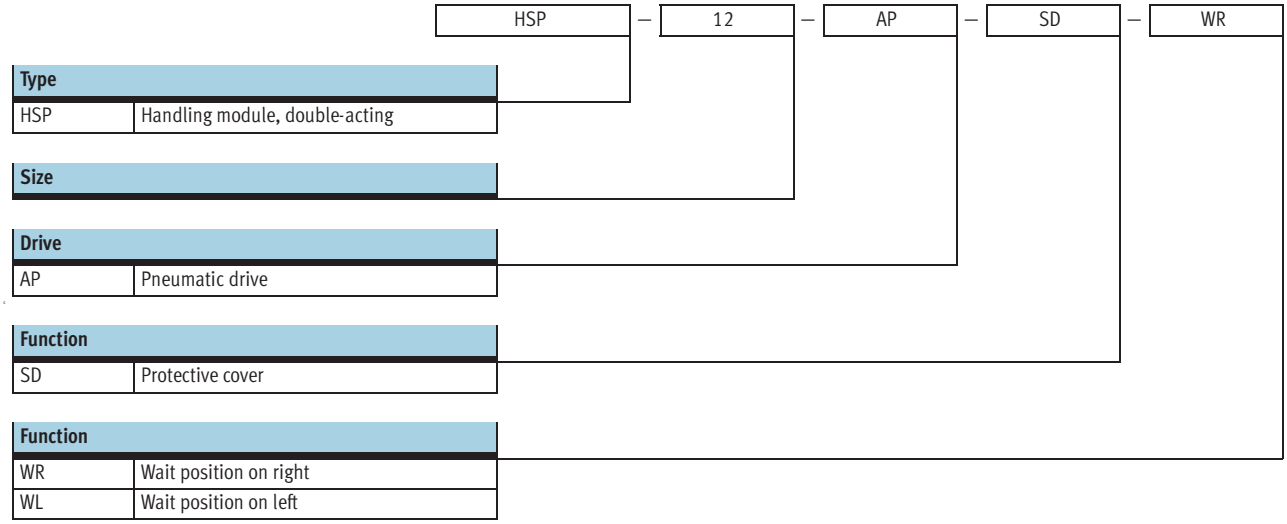
Accessories					
	Brief description	12	16	25	➔ Page
1 Handling module HSP	Standard module without accessories	■	■	■	11
2 Adapter kit HAPG	Interface for grippers, semi-rotary drives, etc.	■	■	■	38
3 Swivel module DSM	Pneumatic drive, adapted to each size	■	■	■	www.festo.com
4 Motor unit MTR-DCI-...-HM	Servo motor with integrated power electronics	■	■	■	27
5 Motor unit MTR-DCI-...-HM	Servo motor with angle gear unit and integrated power electronics	■	■	■	27
6 Installation kit MKRP	Conduit to protect electric cables and tubing	■	■	■	38
7 Wait position module BWL-/BWR-HSP	With pneumatic drive: Function for retracting the swivel arm from operating area	■	■	■	39
8 Cover kit BSD-HSP	To protect against accidental contact	■	■	■	39
9 Adapter kit HAPG	Interface between HSP and gripper or semi-rotary drive	–	■	■	40
10 Parallel gripper HGPC	Appropriate gripper for every application	–	■	■	40
11 Precision gripper HGPP		–	■	■	40
12 Standard gripper HGD		–	■	■	40
13 Standard gripper HGW		■	■	■	40
14 Standard gripper HGR		■	■	■	40
15 Standard gripper HGP		■	■	■	40
16 T-slot gripper HGPT		■	■	■	40
17 Semi-rotary drive DRQD	Semi-rotary drive for transferring parts	■	■	■	www.festo.com
18 Micro angle gripper HGWM	Appropriate gripper for every application	■	■	■	www.festo.com
19 Micro parallel gripper HGPM		■	■	■	www.festo.com
20 Suction cups	Appropriate suction cup for every application	■	■	■	www.festo.com
21 Proximity sensor SME-/SMT-8	Sensing facility for end positions	■	■	■	42
22 Slot nut HMBN	Mounting element	■	■	■	43
23 Non-return and flow control valve GRLA	Speed setting of pneumatic drives	■	■	■	www.festo.com

Handling modules HSP, pneumatic

Type code



Handling modules HSP, pneumatic

Data sheet

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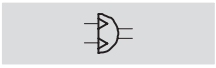
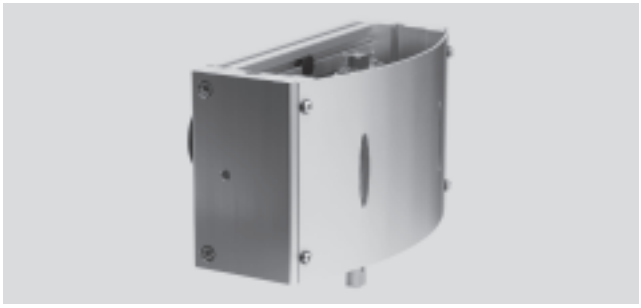
Function



www.festo.com/en/
Spare_parts_service



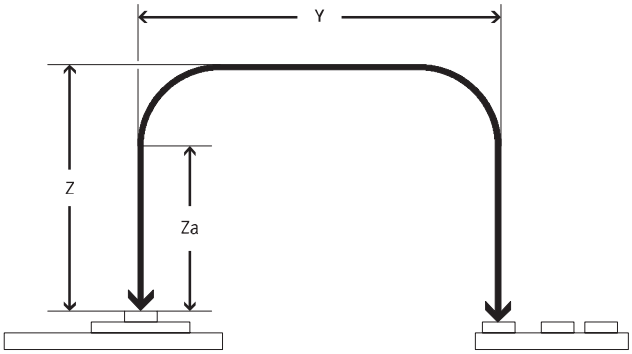
- Size
  12, 16 and 25
- Y-stroke length
  52 ... 170
- Z-stroke length
  20 ... 70

General technical data	
Type	HSP-...-AP
Pneumatic connection	M5
Mode of operation	Double-acting
Operating medium	Filtered compressed air, lubricated or unlubricated
Constructional design	Swivel module
	Cross-guide
	Guided motion sequence
Cushioning	Shock absorber at both ends, soft characteristic curve
Position sensing	For proximity sensing
Type of mounting	With through-holes
	With slot nuts
Mounting position	Guide rail, vertical/horizontal

Operating and environmental conditions		
Type		HSP-...-AP
Operating pressure	[bar]	4 ... 8
Ambient temperature	[°C]	0 ... +60

Stroke [mm]

Size		12	16	25
Y-axis				
Stroke		52 ... 68	90 ... 110	130 ... 170
Z-axis				
Stroke	Z	20 ... 30	35 ... 50	50 ... 70
Working stroke	Za	5 ... 15	5 ... 20	5 ... 25

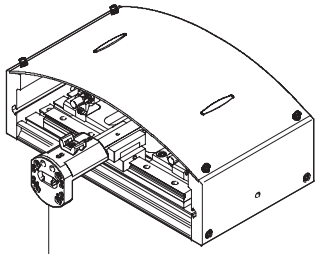


Forces [N]			
Size	12	16	25
Z-axis			
Effective force at 6 bar	40	50	65
Y-axis			
Permissible process force	30	35	50

Weight [g]			
Size	12	16	25
HSP-...-AP	1900	2900	6400
HSP-...-AP-SD	2600	3400	7600
HSP-...-AP-SD-WR	2800	3600	8100
HSP-...-AP-SD-WL	2800	3600	8100

Repetition accuracy [mm]

To ensure low-vibration operation, the working load should be mounted as close as possible to the guide rail of the handling module.
Repetition accuracy is guaranteed by mounting the working load (adapter plate, rotary drive and/or gripper, gripper finger, workpiece) within the mounting surface of the adapter kit HAPG.



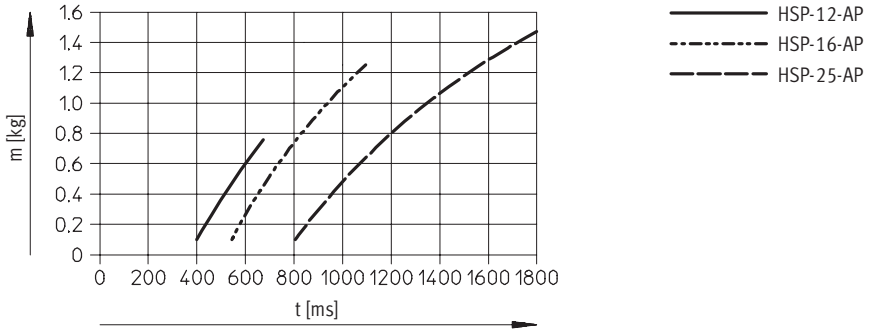
Mounting surface of HAPG

Size	12	16	25
Repetition accuracy at end positions	±0.01	±0.01	±0.02

Travel times t as a function of working load m

The travel time t is the time taken for the handling module to move from one end position to the other and back again.

The working load m is the load attached to the vertical guide rail (e.g. adapter, gripper, semi-rotary drive and workpiece).



Cycle times [s]

The cycle time t_t comprises the travel time t and the dwell time t_e at the end positions.

t_t = travel time t + dwell time t_e
The value must not fall below the minimum cycle time.

Size	12	16	25
Min. cycle time	0.6	0.8	1.0

Example for HSP-12-AP

Step 1:
The following values are assumed:
Working load m = 0.15 kg
Dwell time t_e= 2 x 50 ms
(50 ms per end position)

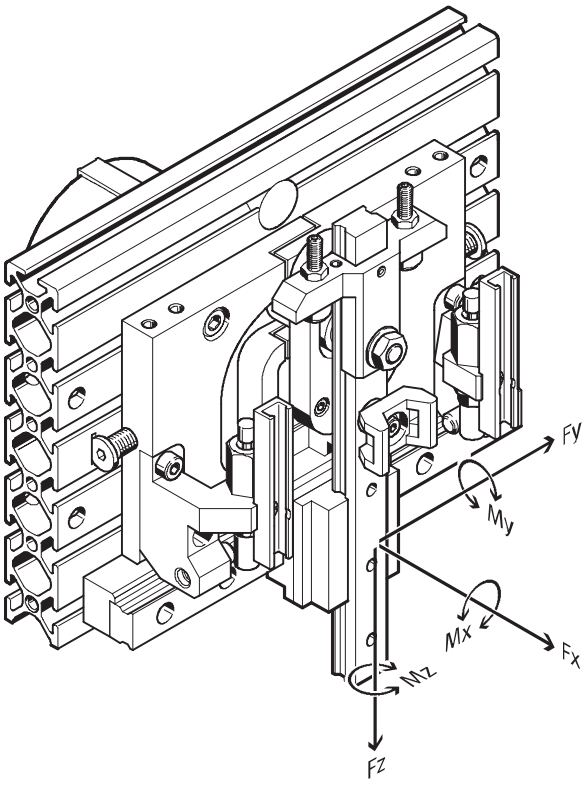
Step 2:
The travel time can be determined from the graph:
t = 400 ms

Step 3:
This gives us a cycle time:
t_t = 400 ms + 100 ms = 500 ms

Step 4:
The table gives us a min. cycle time of 600 ms. This means that the movement has to be controlled.

Permissible static/dynamic characteristic load values

Cross-guide



Note

The torques apply to the centre of the vertical guide.

Combined load

The following torque equation must be satisfied with combined load:

$$\frac{M_x}{Mx_{perm.}} + \frac{M_y}{My_{perm.}} + \frac{M_z}{Mz_{perm.}} \leq 1$$

Dynamic characteristic load values				
Size		12	16	25
Max. torques $Mx_{perm.}$, $My_{perm.}$, $Mz_{perm.}$	[Nm]	1.1	2.4	3.2

Combined load

The following torque equation must be satisfied with combined load:

$$\frac{M_{ox}}{Mox_{perm.}} + \frac{M_{oy}}{Moy_{perm.}} + \frac{M_{oz}}{Moz_{perm.}}$$

Static characteristic load values				
Size		12	16	25
Max. torques $Mox_{perm.}$, $Moy_{perm.}$, $Moz_{perm.}$	[Nm]	5	10	15

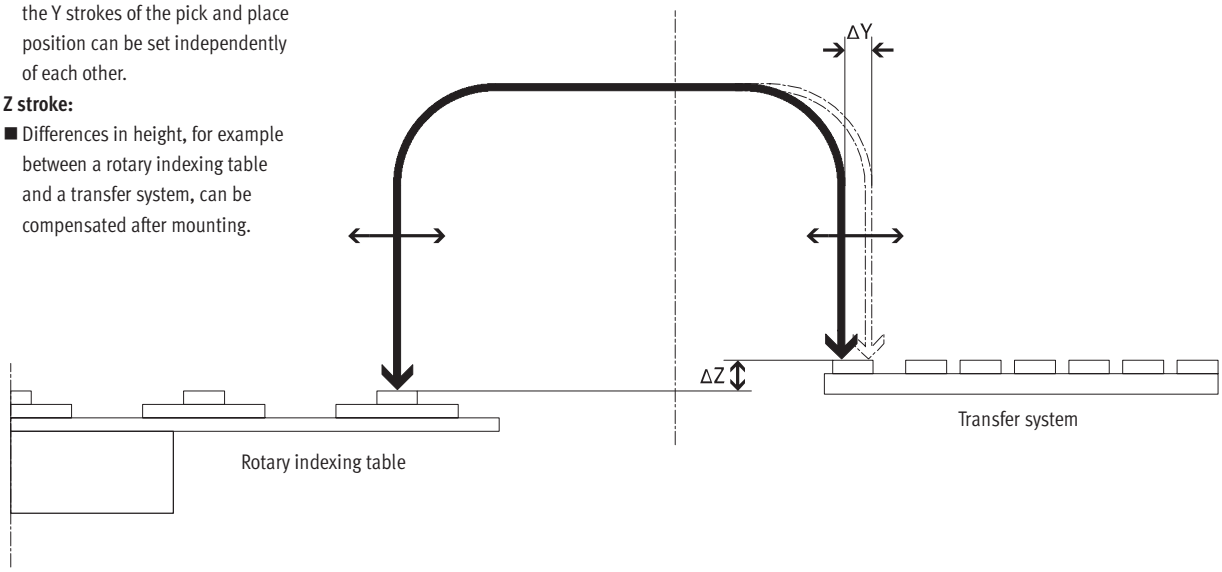
Stroke adjustment

Y stroke:

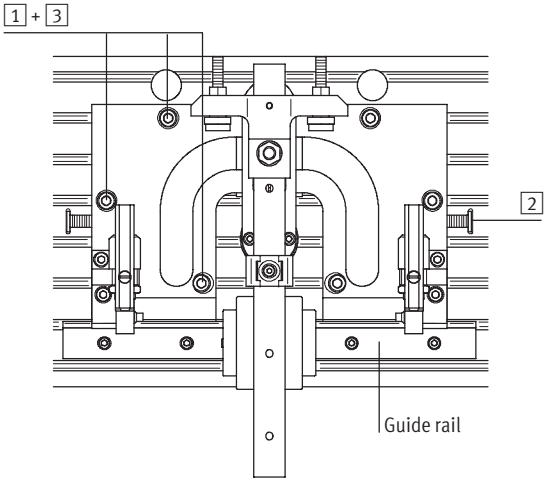
- Once the HSP has been mounted, the Y strokes of the pick and place position can be set independently of each other.

Z stroke:

- Differences in height, for example between a rotary indexing table and a transfer system, can be compensated after mounting.



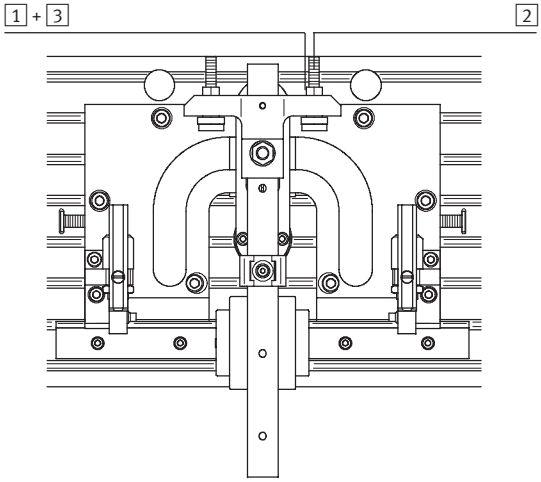
Y-axis (horizontal)



Procedure:

1. Loosen the screws
2. Adjust the slotted guide plate using the adjustment screw (the slotted guide plate must always make contact with the guide rail)
3. Tighten the screws

Z-axis (vertical)



Procedure:

1. Loosen the lock nut
2. Set the desired Z stroke using the set screw
3. Tighten the lock nut

Wait position module

Application and mode of operation

Figure 1:

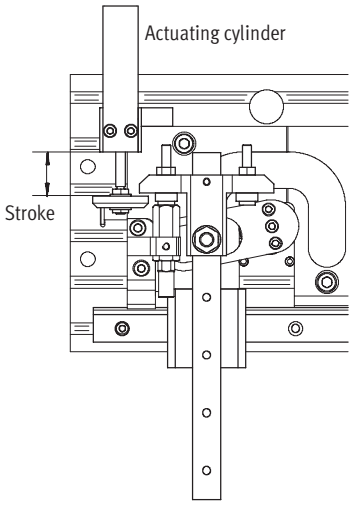
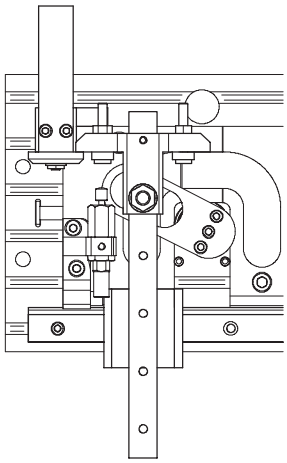
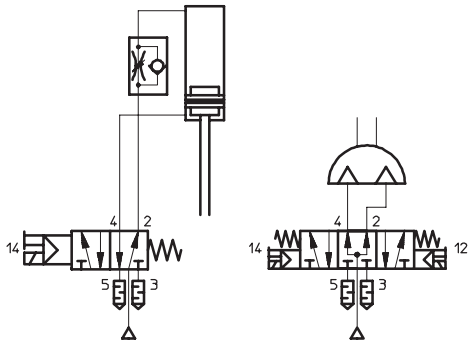


Figure 2:



Circuit diagram for HSP with wait position module



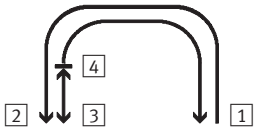
1 The handling module HSP is at the right-hand end position. The actuating cylinder is extended in its initial position.

2 The 5/3-way valve is reset once the handling module reaches the left-hand end position. (Figure 1)

3 During retraction, the actuating cylinder pulls the handling module upwards to its wait position. The operating area is then free. (Figure 2)

4 From the wait position, the handling module can move either to the initial position or to the other end position.

Cycle

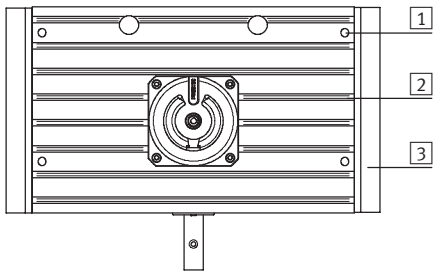


- - Note

When used in combination with the wait position module, the handling module HSP must be actuated using a 5/3-way valve (normally pressurised). The actuating cylinder is actuated using a 5/2-way valve. The actuating cylinder may only be used for "pulling" applications.

Size	HSP-12	HSP-16	HSP-25
Max. Z stroke of wait position module	15	25	25

Mounting options



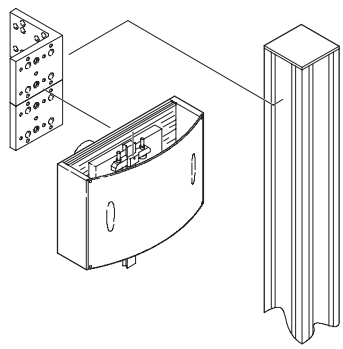
1 Direct mounting via through-holes

2 Via slot nuts

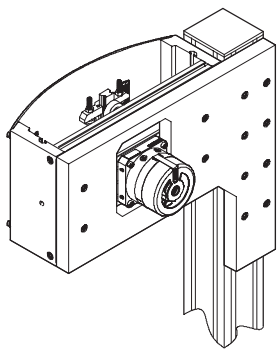
3 User-specific

Examples:

With adapter kit HMBV

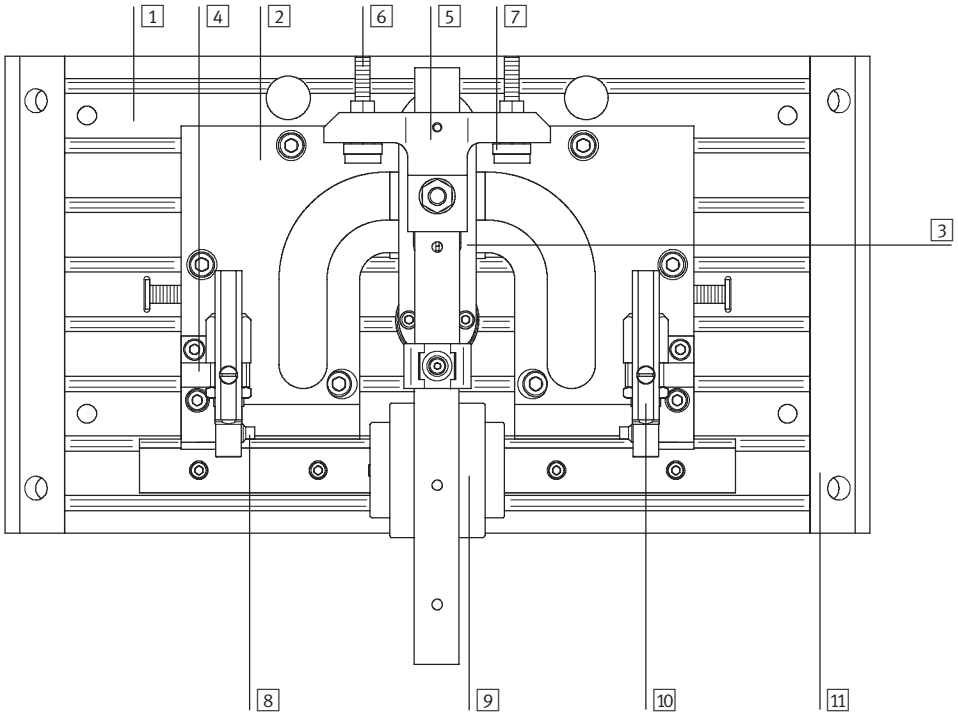


User-specific



Materials

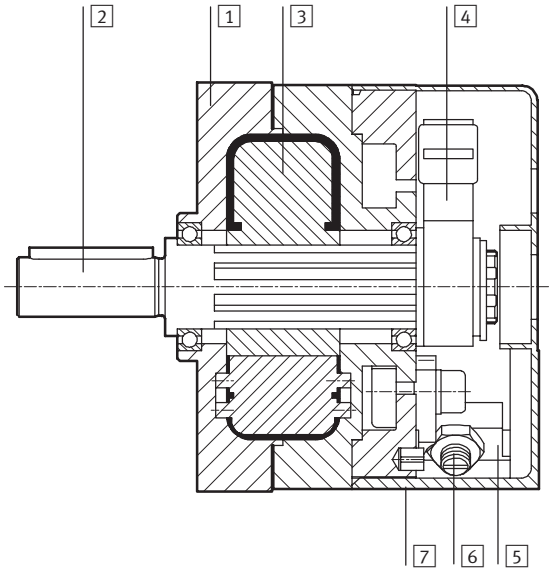
Sectional view of handling module HSP



Handling module		
1	Back plate	Wrought aluminium alloy, anodised
2	Slotted guide plate	Case-hardened steel, burnished
3	Swivel lever	Case-hardened steel, burnished
4	Retainer	Wrought aluminium alloy, anodised
5	Flange	Wrought aluminium alloy, anodised
6	Adjusting screw	High-alloy steel
7	Stop sleeve	High-alloy steel
8	Pressure piece	High-alloy steel
9	Cross-guide	Tempered steel
10	Sensor rail	Wrought aluminium alloy, anodised
11	Housing	Wrought aluminium alloy, anodised
	Material note	Copper, PTFE and silicone-free

Materials

Sectional view of swivel module DSM

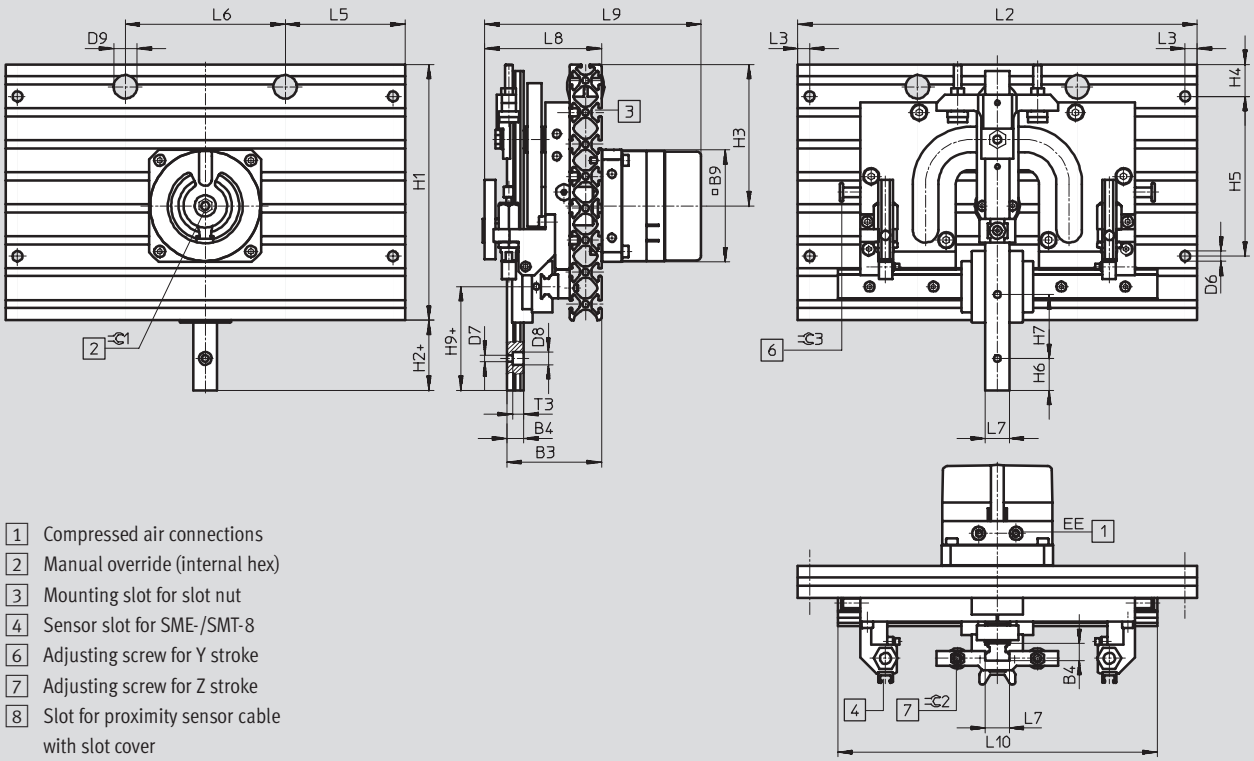


Swivel module		
1	Housing	Wrought aluminium alloy
2	Shaft	Steel with nickel-plated surface
3	Rotary vane	Fibreglass reinforced plastic
4	Stop lever	Anodised aluminium
5	Stop/shock absorber retainer	Stainless steel
6	Stop screw	Stainless steel
7	Cap	Fibreglass reinforced plastic
–	Seals	Polyurethane
	Material note	Copper, PTFE and silicone-free

Dimensions

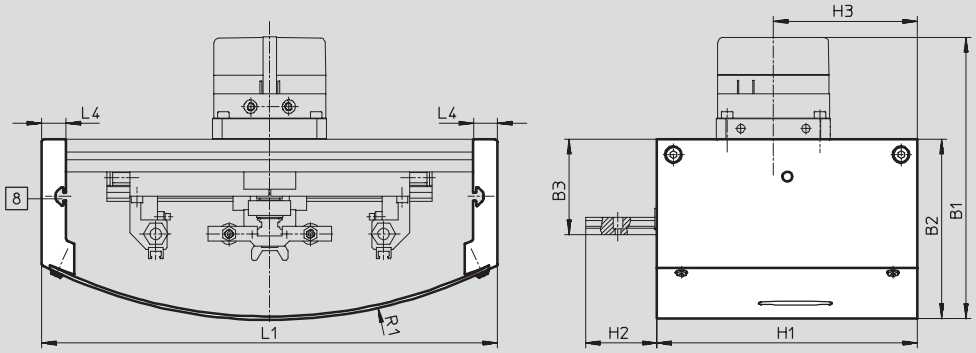
Download CAD data ➔ **www.festo.com/en/engineering**

With swivel module DSM

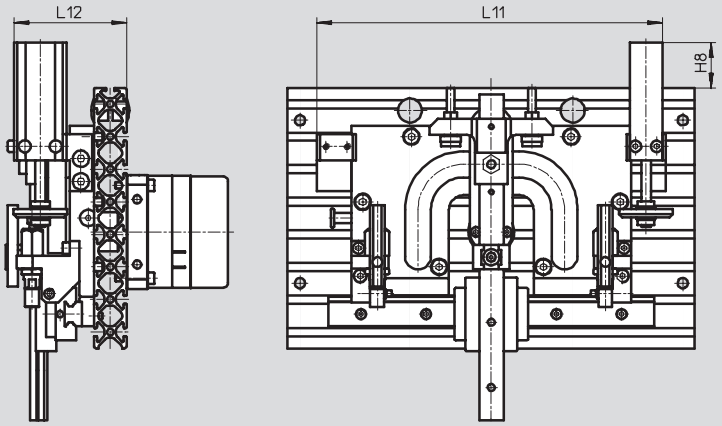


1 Compressed air connections
2 Manual override (internal hex)
3 Mounting slot for slot nut
4 Sensor slot for SME-/SMT-8
6 Adjusting screw for Y stroke
7 Adjusting screw for Z stroke
8 Slot for proximity sensor cable with slot cover

With swivel module DSM and protective cover



With wait position on right



Size	B1 ±3	B2 ±2	B3 ±0.5	B4	B9	D6 ∅	D7 ∅	D8 ∅	D9 ∅
12	146	93	56	9 –0.03	56	6.3	3.5	6.2	13
16	173	111	60	10.6 –0.03	70	6.3	4.3	8	13
25	184	115	62	10 ±0.05	83	6.3	4.5	10	13

Size	EE	H1	H2 ±0.2	H3	H4	H5 ±0.2	H6	H7	H8
12	M5	120	34	66	40	40	12.5	25	30
16	M5	160	44	88.5	20	100	20	40	33
25	M5	200	75	110	40	100	20	30	13

Size	H9	L1 ±0.6	L2 ±0.2	L3	L4	L5	L6	L7	L8 ±1.2
12	44	200	170	7.5	15	85	–	12 –0.01/–0.05	65
16	65	280	250	7.5	15	75	100	15 –0.01/–0.05	73
25	101	370	340	7.5	15	30	280	23.2 ±0.05	80

Size	L9 ±3	L10	L11[1)]	L12	R1	T3	⌭1	⌭2	⌭3
12	118	150	141.5	64	200	6	6	2	3
16	136	200	210	69	306	6.5	8	2.5	3
25	136	250	277	79	484	6.3	8	2.5	4

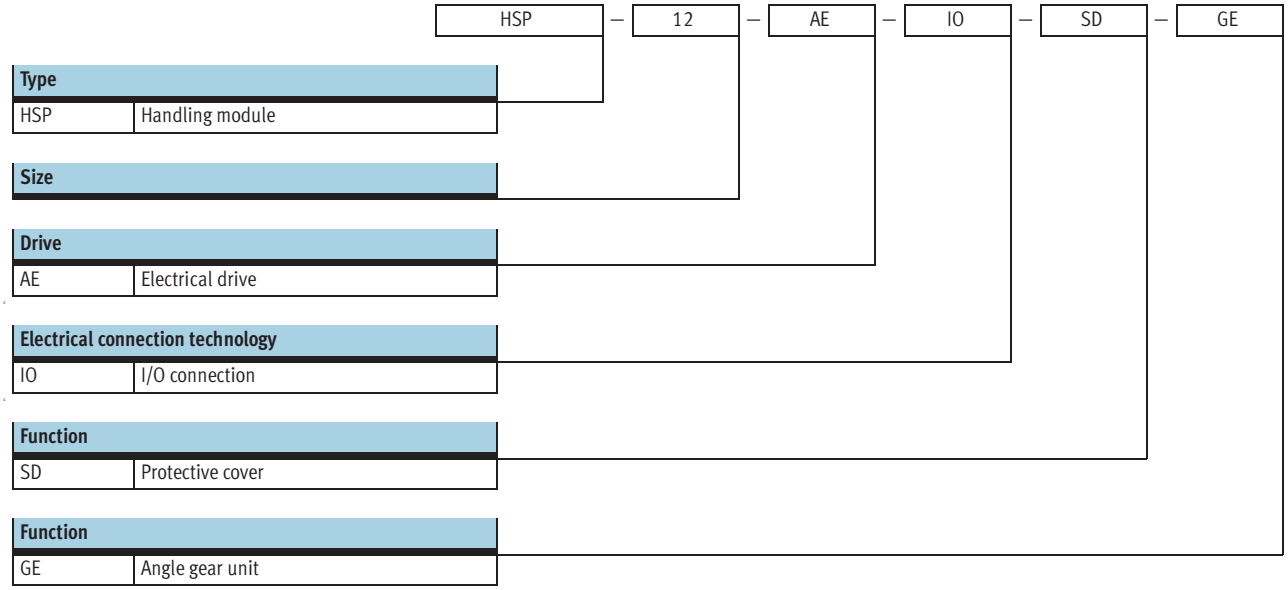
1) If the Y stroke is increased, the change in stroke must be added to the dimension.

Ordering data for HSP-...-AP								
Size	12		16		25	
	Part No.	Type	Part No.	Type	Part No.	Type
Without protective cover						
–	**533 599**	**HSP-12-AP**	**533 607**	**HSP-16-AP**	**533 615**	**HSP-25-AP**
Wait position on right	**533 603**	**HSP-12-AP-WR**	**533 611**	**HSP-16-AP-WR**	**533 619**	**HSP-25-AP-WR**
Wait position on left	**533 604**	**HSP-12-AP-WL**	**533 612**	**HSP-16-AP-WL**	**533 620**	**HSP-25-AP-WL**
With protective cover						
–	**533 600**	**HSP-12-AP-SD**	**533 608**	**HSP-16-AP-SD**	**533 616**	**HSP-25-AP-SD**
Wait position on right	**533 601**	**HSP-12-AP-SD-WR**	**533 609**	**HSP-16-AP-SD-WR**	**533 617**	**HSP-25-AP-SD-WR**
Wait position on left	**533 602**	**HSP-12-AP-SD-WL**	**533 610**	**HSP-16-AP-SD-WL**	**533 618**	**HSP-25-AP-SD-WL**

New

Handling modules HSP, electric

Type code



Handling modules HSP, electric

Data sheet

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Function

www.festo.com/en/
Spare_parts_service

Diameter
12, 16 and 25

Y-stroke length
52 ... 170

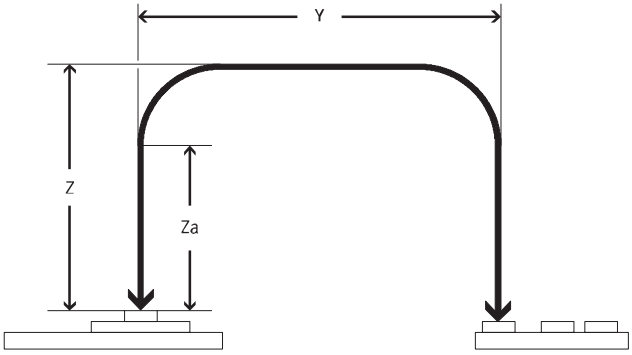
Z-stroke length
20 ... 70

General technical data	
Type	HSP-...-AE
Constructional design	Motor unit
	Cross-guide
	Guided motion sequence
Cushioning	Noise reduction via buffers
Type of mounting	With through-holes
	With slot nuts
Mounting position	Guide rail, vertical/horizontal

Operating and environmental conditions		
Type		HSP-...-AE
Ambient temperature	[°C]	0 ... +50
Protection class handling module		IP40
Protection class motor		IP54
CE marking symbol (see conformity declaration)		As per EU EMC directive

Stroke [mm]

Size		12	16	25
Y-axis				
Stroke		52 ... 68	90 ... 110	130 ... 170
Z-axis				
Stroke	Z	20 ... 30	35 ... 50	50 ... 70
Working stroke	Za	5 ... 15	5 ... 20	5 ... 25



Forces [N]						
Size	12		16		25	
Stroke [mm]	52	68	90	110	130	170
Z-axis						
Effective force at 40% of drive torque (preset)	10		10		15	
Max. effective force relative to stroke	22	17	24	20	48	36
Y-axis						
Permissible process force	30		35		50	

Handling modules HSP, electric

Data sheet

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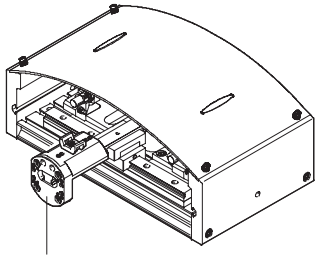
Weight [g]			
Size	12	16	25
HSP-...-AE	3700	5300	9000
HSP-...-AE-SD	4500	6600	10700
HSP-...-AE-GE	4000	5700	10100
HSP-...-AE-SD-GE	4800	7000	11800

Repetition accuracy [mm]

To ensure low-vibration operation, the working load should be mounted as close as possible to the guide rail of the handling module.
Repetition accuracy is guaranteed by mounting the working load (adapter plate, rotary drive and/or gripper, gripper finger, workpiece) within the mounting surface of the adapter kit HAPG.



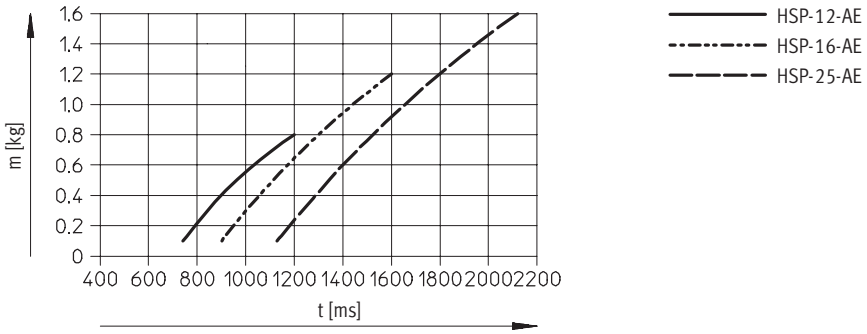
Mounting surface of HAPG

Size		12	16	25
Repetition accuracy	At end positions	±0.01	±0.01	±0.02
	Intermediate positions	< 1.5	< 1.5	< 2

Travel times t as a function of working load m

The travel time t is the time taken for the handling module to move from one end position to the other and back again.

The working load m is the load attached to the vertical guide rail (e.g. adapter, gripper, semi-rotary drive and workpiece)



Handling modules HSP, electric

Data sheet

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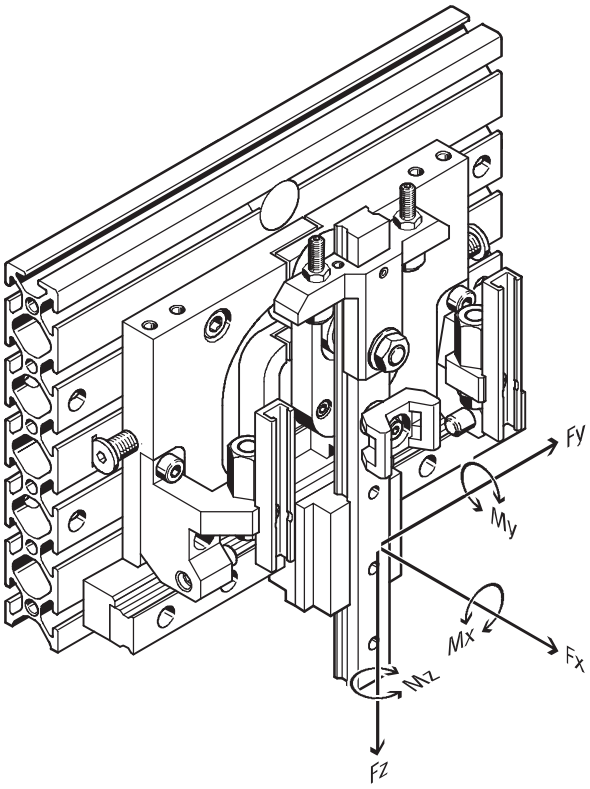
Permissible static/dynamic characteristic load values

Cross-guide



Note

The torques apply to the centre of the vertical guide.

Combined load

The following torque equation must be satisfied with combined load:

$$\frac{M_x}{Mx_{perm.}} + \frac{M_y}{My_{perm.}} + \frac{M_z}{Mz_{perm.}} \leq 1$$

Dynamic characteristic load values			
Size	12	16	25
Max. torques [Nm] $Mx_{perm.}$, $My_{perm.}$, $Mz_{perm.}$	1.1	2.4	3.2

Combined load

The following torque equation must be satisfied with combined load:

$$\frac{M_{ox}}{Mox_{perm.}} + \frac{M_{oy}}{Moy_{perm.}} + \frac{M_{oz}}{Moz_{perm.}}$$

Static characteristic load values			
Size	12	16	25
Max. torques [Nm] $Mox_{perm.}$, $Moy_{perm.}$, $Moz_{perm.}$	5	10	15

Handling modules HSP, electric

Data sheet

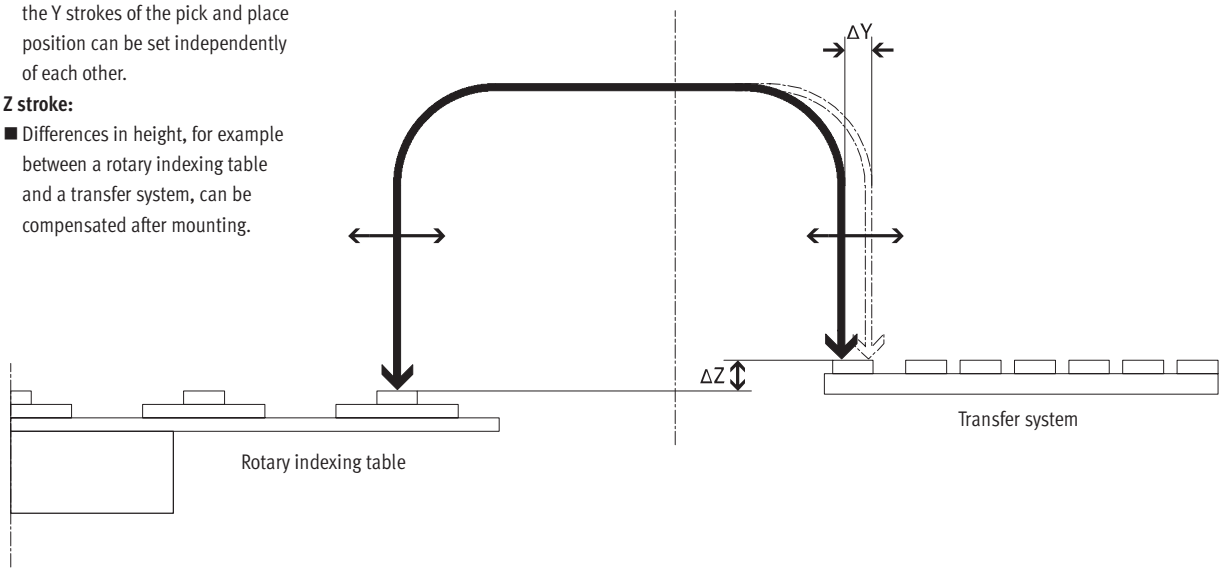
Stroke adjustment

Y stroke:

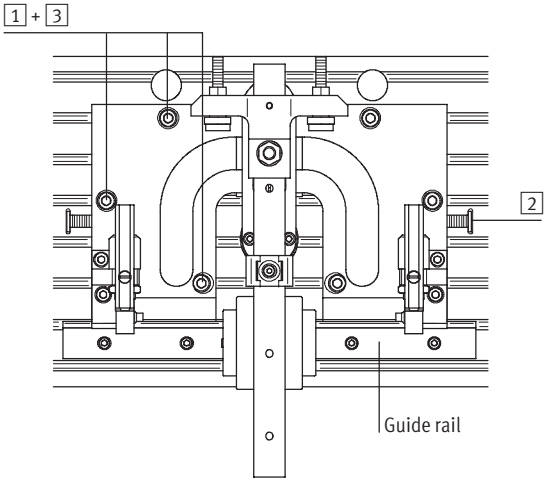
- Once the HSP has been mounted, the Y strokes of the pick and place position can be set independently of each other.

Z stroke:

- Differences in height, for example between a rotary indexing table and a transfer system, can be compensated after mounting.



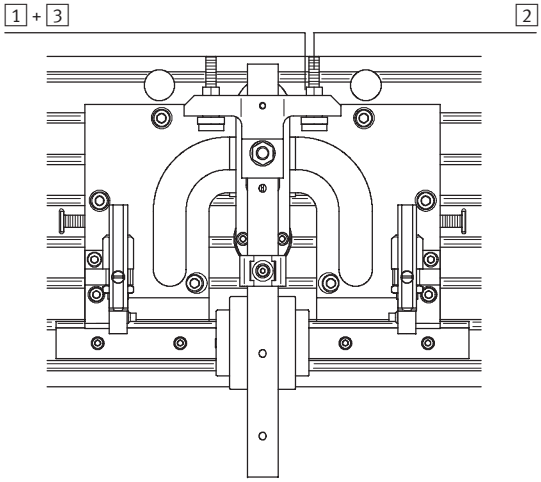
Y-axis (horizontal)



Procedure:

1. Loosen the screws
2. Adjust the slotted guide plate using the adjustment screw (the slotted guide plate must always make contact with the guide rail)
3. Tighten the screws

Z-axis (vertical)



Procedure:

1. Loosen the lock nut
2. Set the desired Z stroke using the set screw
3. Tighten the lock nut

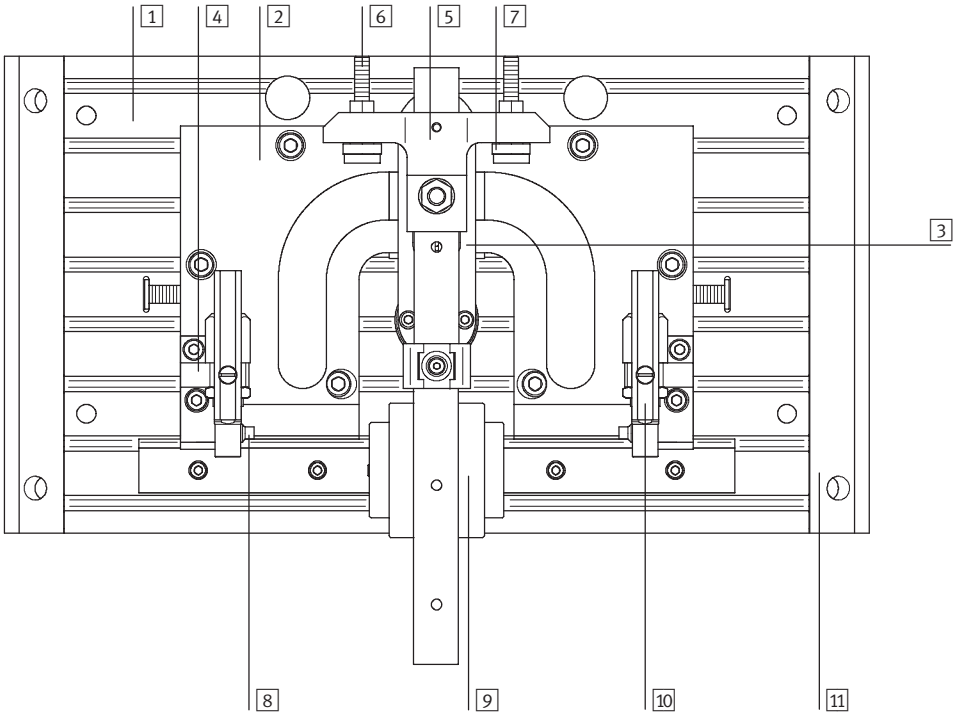
Handling modules HSP, electric

Data sheet

FESTO

Materials

Sectional view



Handling module		
1	Back plate	Wrought aluminium alloy, anodised
2	Slotted guide plate	Case-hardened steel, burnished
3	Swivel lever	Case-hardened steel, burnished
4	Retainer	Wrought aluminium alloy, anodised
5	Flange	Wrought aluminium alloy, anodised
6	Adjusting screw	High-alloy steel
7	Stop sleeve	High-alloy steel
8	Pressure piece	High-alloy steel
9	Cross-guide	Tempered steel
10	Sensor rail	Wrought aluminium alloy, anodised
11	Housing	Wrought aluminium alloy, anodised
	Material note	Copper, PTFE and silicone-free

Handling modules HSP, electric

Data sheet

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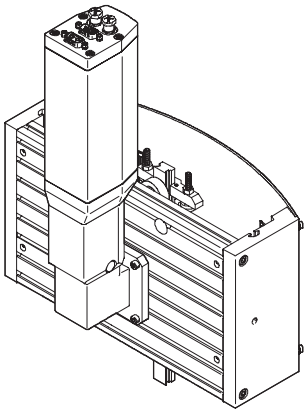
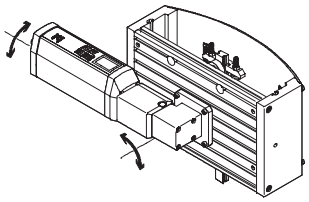
Motor mounting variants

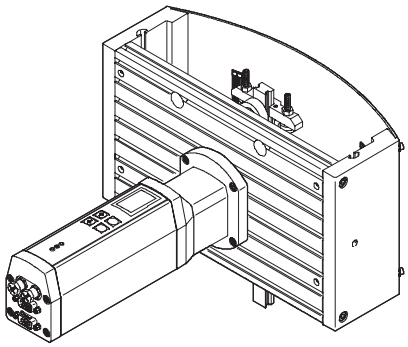
Motor pointing upwards/to side



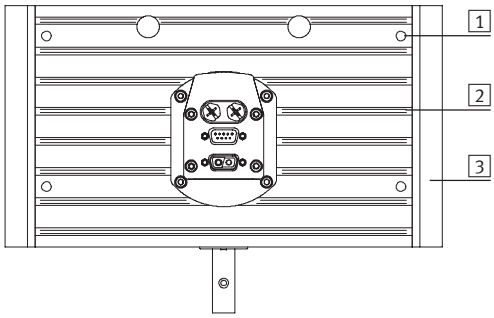
Control panel and access to the connections can be rotated according to space requirements.



Motor towards rear



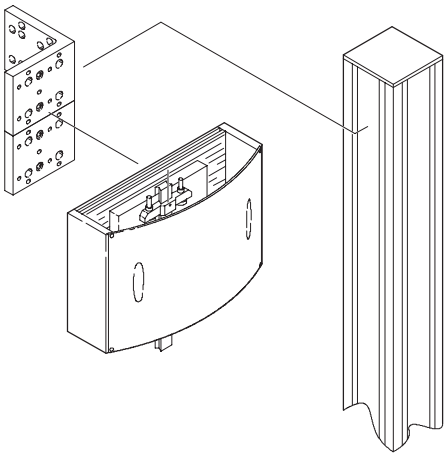
Mounting options



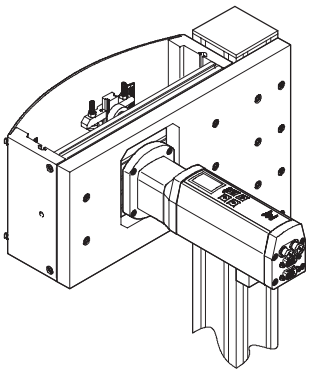
1 Direct mounting via through-holes
2 Via slot nuts
3 User-specific

Examples:

With adapter kit HMBV



User-specific



Handling modules HSP, electric

Data sheet

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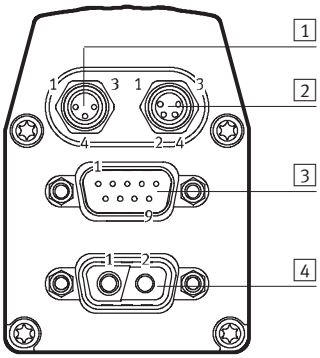
Servo-motor unit MTR-DCI-...-HM

General technical data			→ www.festo.com
Type		MTR-DCI-...	
for handling module		HSP-12-AE	HSP-16/25-AE
Rotary position generator		Optical encoder	
No. of increments/revolution		500	
Temperature monitoring		Silicon absolute temperature sensor, switches off at temperatures > 70 °C	
Display resolution		128 x 64 pixels	
Type of mounting		Can be screwed on or clamped to gearing flange	
Gearing type		Planetary gear unit	
Gear reduction ratio		6.752 (7:1); 1-stage	13.73 (14:1); 2-stage

Electrical data			→ www.festo.com
Type		MTR-DCI-42-HM	MTR-DCI-52-HM
for handling module		HSP-12/16-AE	HSP-25-AE
Nominal voltage	[V DC]	24 ±10%	24 ±10%
Nominal current (motor)	[A]	2	5.1
Peak current	[A]	3.8	7.7
Nominal power (motor)	[W]	48	122.4
Max. current (digital logic outputs)	[mA]	200	60
No. of digital logic inputs (with I/O connection)	–	6	
No. of digital logic outputs (with I/O connection)	–	2	
Parameterisation interface		RS232, 9600 baud	

Pin allocation



1 3-pin M8 socket	
Pin	Function
1	Unused
3	Unused
4	Unused
–	

2 RS 232 interface, 4-pin M8 socket	
Pin	Function
1	0 V
2	Transmitted Data (TxD)
3	Received Data (RxD)
4	–

3 I/O interface, 9-pin SUB-D plug	
Pin	Function
1	Travel time coding, bit 0
2	Travel time coding, bit 1
3	Travel time coding, bit 2
4	Travel time coding, bit 3
5	Start bit
6	Enable bit
7	Ready signal output
8	MC signal output
9	0 V

4 Power supply, 2-pin plug	
Pin	Function
1	24 V DC
2	0 V
–	
–	
–	
–	
–	
–	
–	

New

Handling modules HSP, electric

Data sheet

FESTO

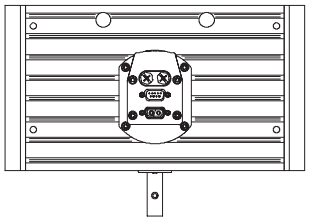
Simple solution for your application

Advantages of handling module HSP-...-AE – Installation and commissioning

- Handling module is supplied with motor already attached.
- Less wiring required thanks to integration of controller concept.
- Motor with gear unit, controller and power electronics are all fitted in one housing. This means that only one unit has to be taken into consideration when planning the system.
- Only one voltage supply of 24 V is required for commissioning.
- Commissioning via:
  - control panel on handling module
  - PC using FESTO Configuration Tool (FCT) software

Installation and commissioning

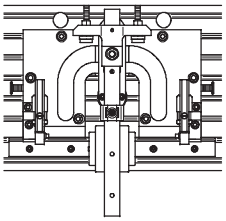
Step 1: Mount the handling module



- Wide choice of mounting options

➔ 26

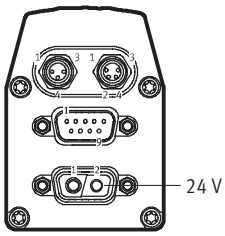
Step 2: Mechanically adjust the end positions



- End positions of strokes along Y- and Z-axes can be adjusted independently of each other

➔ 24

Step 3: Connect the 24 V voltage supply

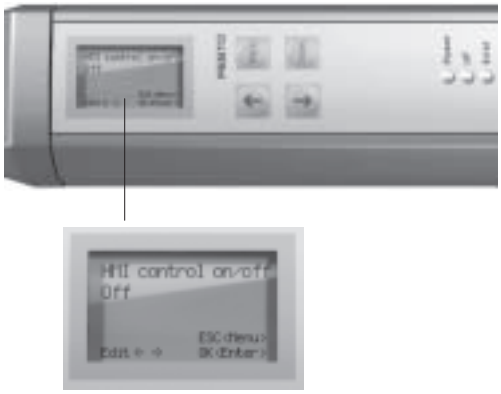


- Plug and work:
  Connect voltage –
  HSP is ready for operation

➔ 27

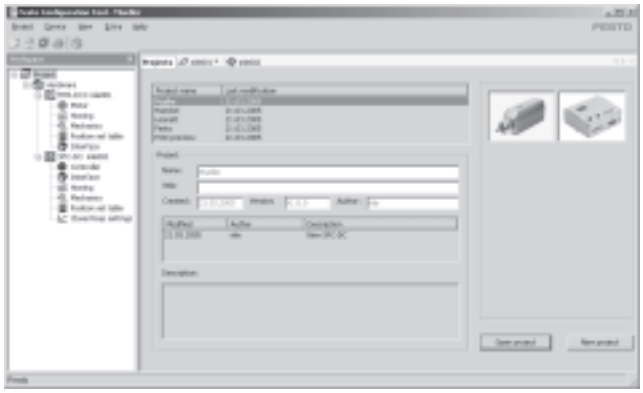
Step 4: Parameterisation either via control panel on motor or using FCT software

Control panel on motor



- Clearly arranged LCD display
- All data is entered and saved using 4 keys:
  - menu key
  - arrow keys for changing parameter values or traversing records
  - key for confirming the entered actions

FCT software – Festo Configuration Tool



- All the drives in a system can be managed and archived in the common project
- Project and data management for all supported device types
- Simple to use thanks to graphically supported parameter entry
- Universal mode of operation for all drives
- Working offline at your desk or online at the machine

Handling modules HSP, electric

Data sheet

FESTO

Step 5: Selection of predefined motion sequences (HSP mode) via the control panel or using the FCT software

HSP mode 1

- Precise travel to the mechanical end position

HSP mode 2

- Additional adjustable wait position module directly above workpiece/ workpiece carrier
- Handling of parts with different heights
- Insertion procedures at different speeds

HSP mode 3

- Additional ejector station for reject parts or quality inspection
- Precise travel to end position with setup position

HSP mode 4

- Insertion procedures with defined force
- Continued travel from wait position with adjustable torque

HSP mode 5

- Insertion procedures with defined force and additional intermediate position
- Continued travel from wait position with adjustable torque

Step 6: Fine adjustment

- Adjustment of preset positions, speeds and torques
- Addition of new traversing records (where necessary)

Handling modules HSP, electric

Data sheet

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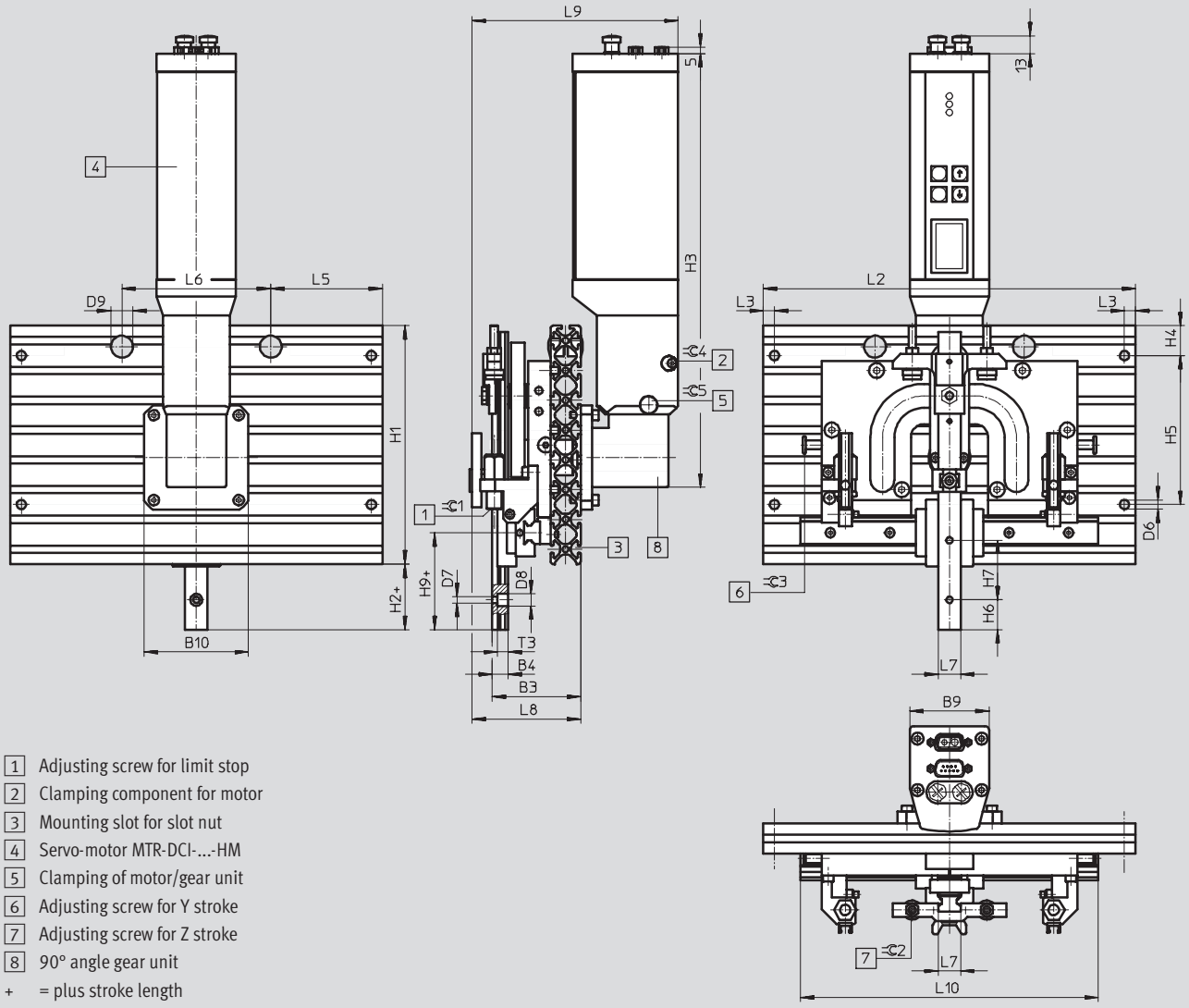
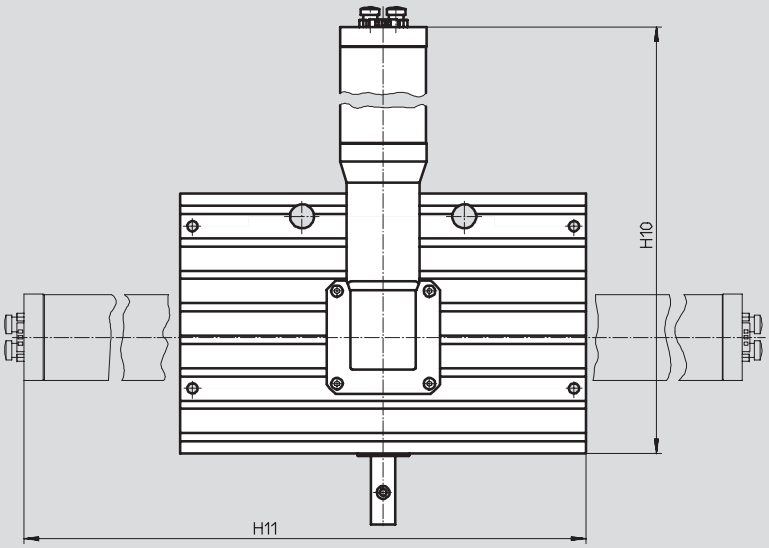
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

With motor unit pointing upwards



1 Adjusting screw for limit stop
2 Clamping component for motor
3 Mounting slot for slot nut
4 Servo-motor MTR-DCI-...-HM
5 Clamping of motor/gear unit
6 Adjusting screw for Y stroke
7 Adjusting screw for Z stroke
8 90° angle gear unit
\+ = plus stroke length

With motor unit pointing sideways



Handling modules HSP, electric

Data sheet

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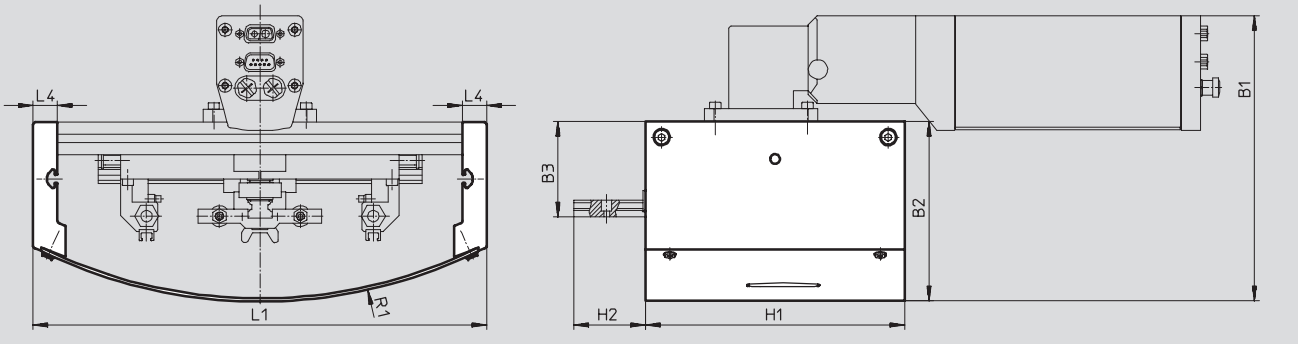
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

With motor unit pointing upwards and protective cover



Size	B1 ±3	B2 ±2	B3 ±0.5	B4	B9	B10	D6 ∅	D7 ∅	D8 ∅
12	159	93	56	9 –0.03	53.3	59	6.3	3.5	6.2
16	178	111	60	10.6 –0.03	53.3	70	6.3	4.3	8
25	203	115	62	10 ±0.05	69.5	100	6.3	4.5	10

Size	D9 ∅	H1	H2 ±0.2	H3	H4	H5 ±0.2	H6	H7	H9	H10
12	13	120	34	278	40	40	12.5	25	44	312
16	13	160	44	291	20	100	20	40	65	343
25	13	200	75	321	40	100	20	30	101	391

Size	H11	L1 ±0.6	L2 ±0.2	L3	L4	L5	L6	L7	L8 ±1.2
12	344	200	170	7.5	15	85	–	12 –0.01/–0.05	65
16	397	280	250	7.5	15	75	100	15 –0.01/–0.05	73
25	485	370	340	7.5	15	30	280	23.2 ±0.05	80

Size	L9 ±3	L10	R1	T3	⌭1	⌭2	⌭3	⌭4	⌭5	Woodruff key to DIN 6885[1)]
12	118	150	200	6	2.5	2	3	2.5	2.5	A2x2x12
16	136	200	306	6.5	3	2.5	3	2.5	2.5	A3x3x18
25	136	250	484	6.3	3	2.5	4	5	3	A4x4x25

1) included in scope of delivery

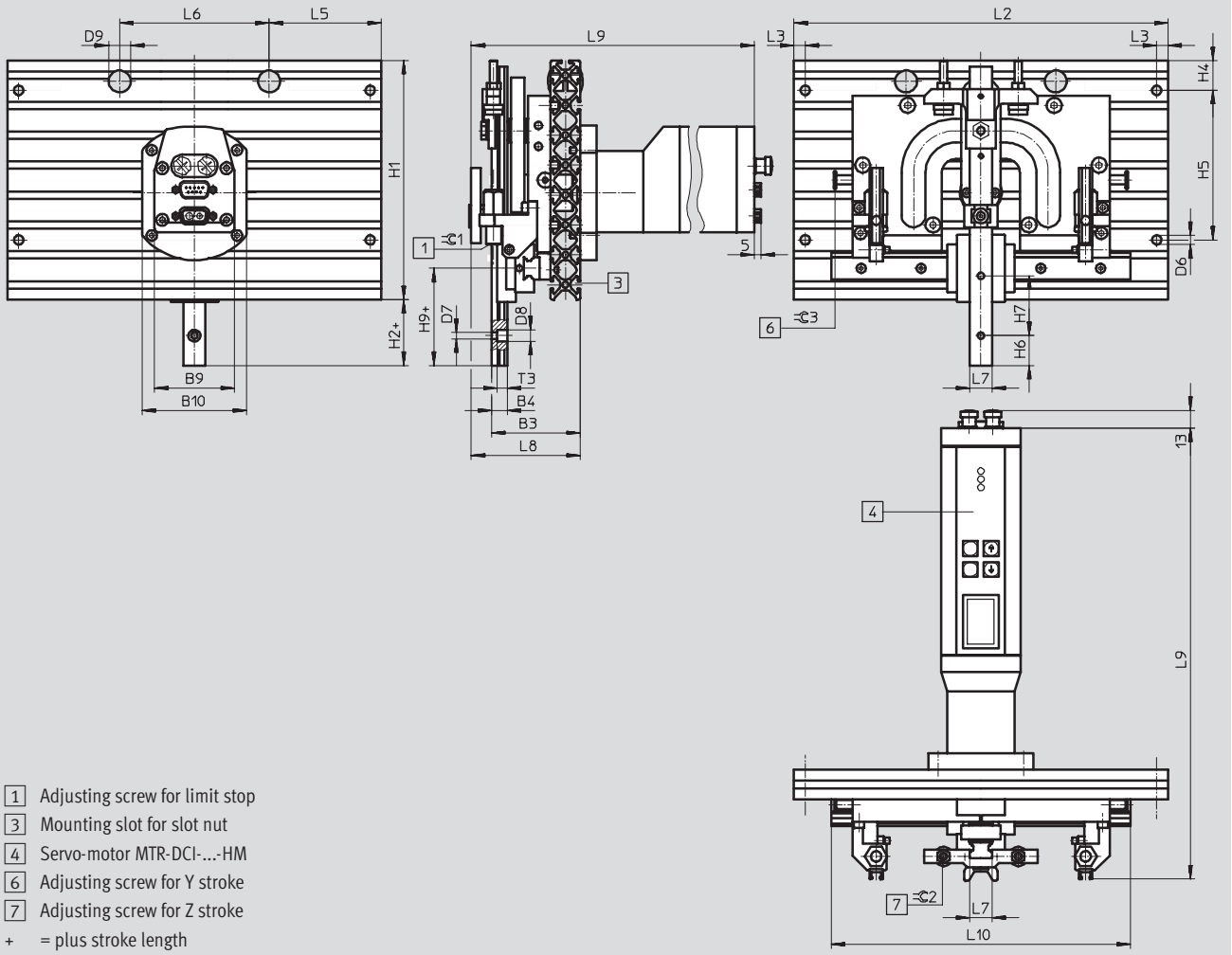
Handling modules HSP, electric

Data sheet

FESTO

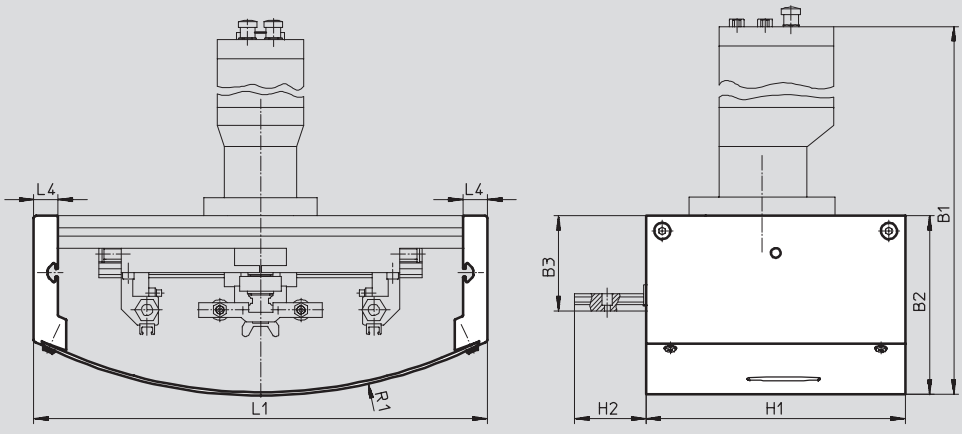
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

With motor unit towards the rear



1 Adjusting screw for limit stop
3 Mounting slot for slot nut
4 Servo-motor MTR-DCI-...-HM
6 Adjusting screw for Y stroke
7 Adjusting screw for Z stroke
\+ = plus stroke length

With motor unit towards the rear and protective cover



Handling modules HSP, electric

Data sheet

FESTO

Size	B1 ±3	B2 ±2	B3 ±0.5	B4	B9	B10	D6 ∅	D7 ∅
12	308	93	56	9 –0.03	53.3	71	6.3	3.5
16	339	111	60	10.6 –0.03	53.3	70	6.3	4.3
25	372	115	62	10 ±0.05	69.5	90	6.3	4.5

Size	D8 ∅	D9 ∅	H1	H2 ±0.2	H4	H5 ±0.2	H6	H7
12	6.2	13	120	34	40	40	12.5	25
16	8	13	160	44	20	100	20	40
25	10	13	200	75	40	100	20	30

Size	H9	L1 ±0.6	L2 ±0.2	L3	L4	L5	L6	L7
12	44	200	170	7.5	15	85	–	12 –0.01/–0.05
16	65	280	250	7.5	15	75	100	15 –0.01/–0.05
25	101	370	340	7.5	15	30	280	23.2 ±0.05

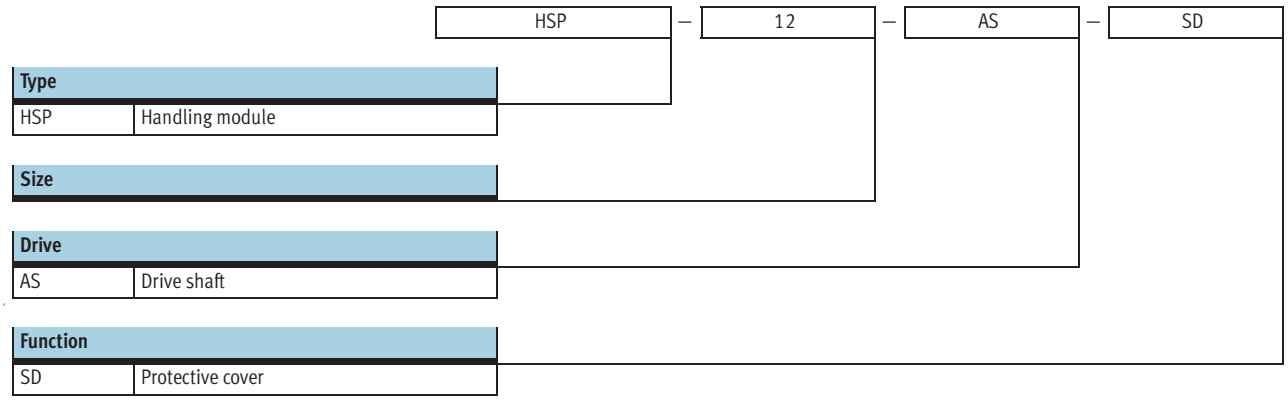
Size	L8 ±1.2	L9 ±3	L10	R1	T3	⌯1	⌯2	⌯3
12	65	280	150	200	6	6	2	3
16	73	301	200	306	6.5	8	2.5	3
25	80	337	250	484	6.3	8	2.5	4

Ordering data for HSP-...-AE

Size	12		16		25	
	Part No.	Type	Part No.	Type	Part No.	Type
I/O connection						
Without gear unit						
Without protective cover	**539 536**	**HSP-12-AE-IO**	**539 544**	**HSP-16-AE-IO**	**539 552**	**HSP-25-AE-IO**
With protective cover	**539 538**	**HSP-12-AE-IO-SD**	**539 546**	**HSP-16-AE-IO-SD**	**539 554**	**HSP-25-AE-IO-SD**
With angle gear unit						
Without protective cover	**539 537**	**HSP-12-AE-IO-GE**	**539 545**	**HSP-16-AE-IO-GE**	**539 553**	**HSP-25-AE-IO-GE**
With protective cover	**539 539**	**HSP-12-AE-IO-SD-GE**	**539 547**	**HSP-16-AE-IO-SD-GE**	**539 555**	**HSP-25-AE-IO-SD-GE**

Handling modules HSP, without drive

Type code

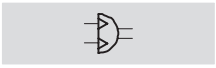


Handling modules HSP, without drive

Data sheet

FESTO

Function



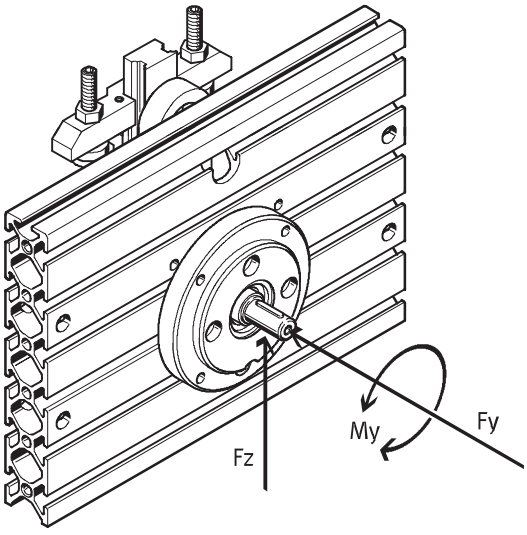
www.festo.com/en/
Spare_parts_service

- Diameter
  12, 16 and 25
- Y-stroke length
  52 ... 170
- Z-stroke length
  20 ... 70

General technical data	
Type	HSP-...-AS
Constructional design	Drive shaft
	Cross-guide
	Guided motion sequence
Cushioning	Noise reduction via buffers
Type of mounting	With through-holes
	With slot nuts
Mounting position	Guide rail, vertical/horizontal

Weight [g]			
Size	12	16	25
HSP-...-AS	1800	2700	6200
HSP-...-AS-SD	2500	3200	7400

Permissible static/dynamic characteristic load values

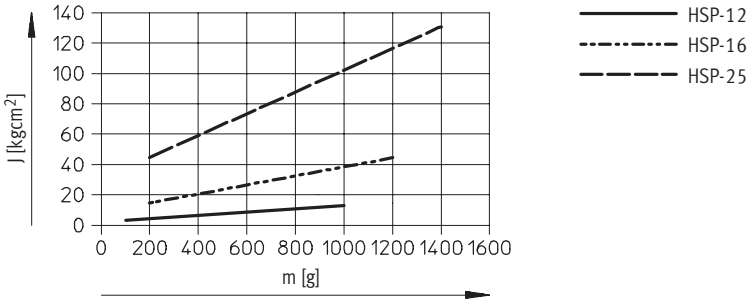


Note

Technical data for mechanical components ➔ 23.

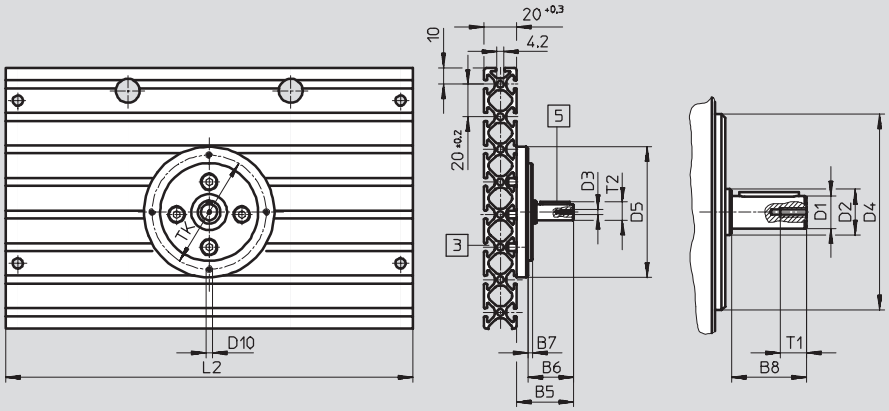
Characteristic load values				
Size		12	16	25
Max. axial force $F_{Yperm.}$	[N]	18	30	50
Max. radial force $F_{Zperm.}$	[N]	45	75	120
Max. drive torque $M_{Yperm.}$	[Nm]	1.25	2.5	5

Mass moment of inertia J_0 as a function of working load m (for cylinder sizing)



Dimensions

Download CAD data ➔ **www.festo.com/en/engineering**



Basic dimensions
➔30
3 Mounting slot for slot nut
5 Woodruff key

Size	B5	B6	B7	B8	D1 ∅ g7	D2 ∅	D3
12	29	22	3	17.5	8	12.5	M3
16	35	28	3	23	10	14	M3
25	44	36	4	30	12	17	M4

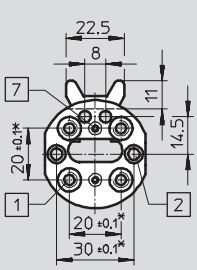
Size	D4 ∅ f8	D5 ∅	D10	L2 ±0.2	T1	T2 max.	TK ±0.1
12	45	65	M4	170	9	8.8	55
16	60	80	M4	250	9	11.2	70
25	70	95	M5	340	10	13.5	82

Ordering data for HSP-...-AS								
Size	12			16			25	
	Part No.	Type		Part No.	Type		Part No.	Type
Without protective cover	**533 605**	**HSP-12-AS**		**533 613**	**HSP-16-AS**		**533 621**	**HSP-25-AS**
With protective cover	**533 606**	**HSP-12-AS-SD**		**533 614**	**HSP-16-AS-SD**		**533 622**	**HSP-25-AS-SD**

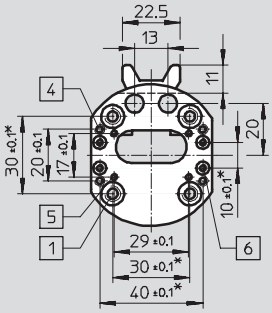
Adapter kit HAPG-B

Material:
Wrought aluminium alloy, anodised

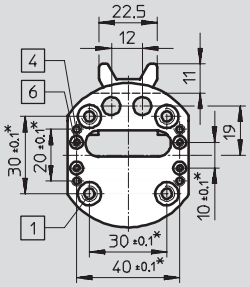
HAPG-70-B

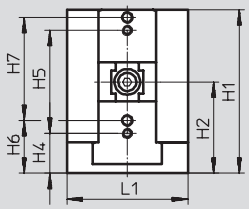


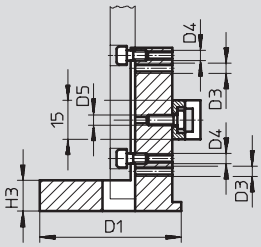
HAPG-71-B

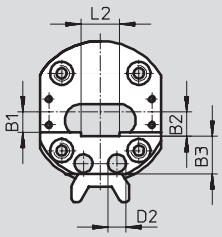


HAPG-72-B



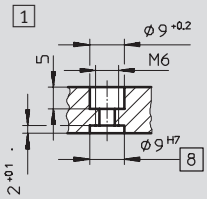


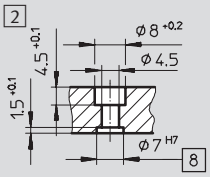


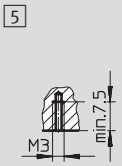


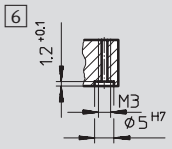
* Tolerance for centring hole ±0.02

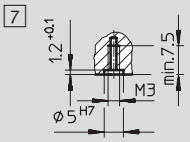
8 Centring hole for centring sleeve ZBH











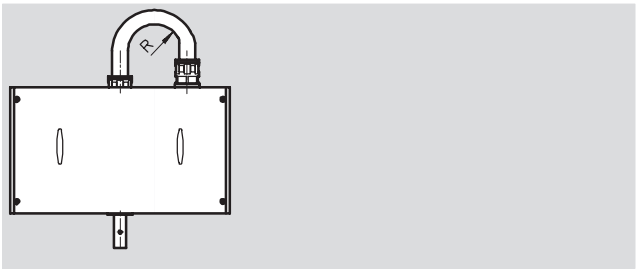
Dimensions and ordering data

Type	B1	B2 +0.2	B3	D1 ∅	D2 ∅	D3	D4	D5	H1	H2
HAPG-70-B	5	6	11.5	42	4.5	–	M3	M4	50	28.5
HAPG-71-B	8	9.5	14.5	56	7	M4	M4	M4	63.5	35.5
HAPG-72-B	8	9.5	15	56	7	–	M4	M4	60	41.5

Type	H3	H4 +0.2	H5 ±0.2	H6 +0.2	H7 ±0.2	L1	L2 +0.1	Weight [g]	Part No.	Type
HAPG-70-B	12	–	–	15	25	39	12	55	**540 881**	**HAPG-70-B**
HAPG-71-B	12	15.5	40	20.5	40	47	15	110	**540 882**	**HAPG-71-B**
HAPG-72-B	12	–	–	20.5	30	47	23.2	115	**540 883**	**HAPG-72-B**

Installation kit MKRP

Material:
Conduit/fitting: Polyamide
Reducer/lock nut:
Nickel-plated brass
Adapter plate/bracket:
Powder-coated steel



Ordering data

For size	Max. bending radius for conduit[1)] R	Tubing I.D. [mm]	Weight [g]	Part No.	Type
12	55	12	150	**533 632**	**MKRP-1**
16	75	16.5	160	**533 633**	**MKRP-2**
25	75	16.5	160	**533 634**	**MKRP-3**

1) The conduit must not be filled beyond 70%.

Cover kit BSD-HSP

Material:
Wrought aluminium alloy, anodised

Dimensions HSP-...-AP → 18
HSP-...-AE → 32
HSP-...-AS → 32

Ordering data

For size	Weight [g]	Part No.	Type
12	825	**533 635**	**BSD-HSP-12**
16	1 350	**533 636**	**BSD-HSP-16**
25	1 770	**533 637**	**BSD-HSP-25**

Wait position module BWL-/BWR-HSP for HSP-...-AP

Material:
Wrought aluminium alloy, anodised

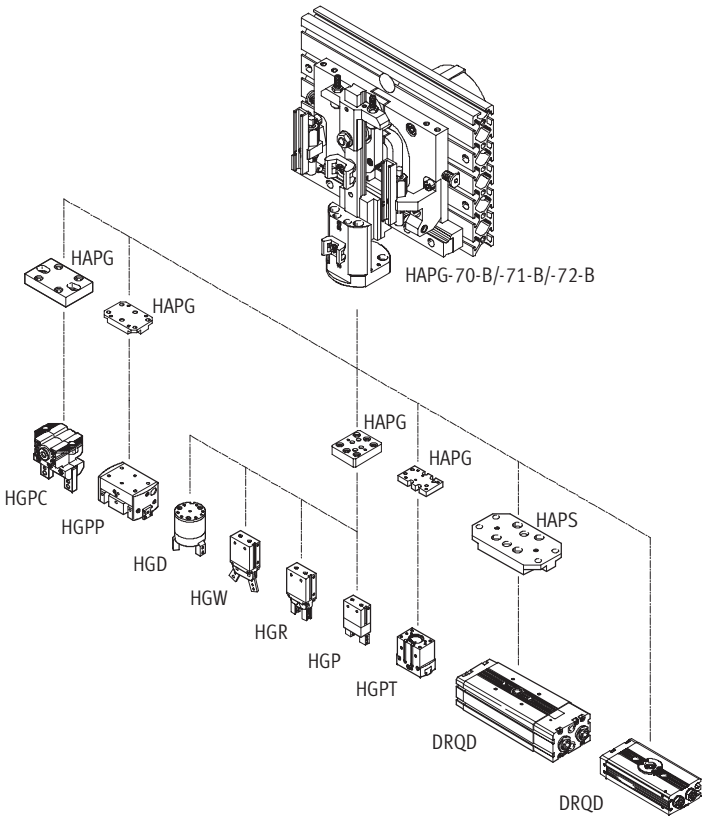
Dimensions → 18

Ordering data

For size	Wait position	Weight [g]	Part No.	Type
12	Right	75	**533 623**	**BWR-HSP-12**
	Left	75	**533 624**	**BWL-HSP-12**
16	Right	135	**533 625**	**BWR-HSP-16**
	Left	135	**533 626**	**BWL-HSP-16**
25	Right	275	**533 627**	**BWR-HSP-25**
	Left	275	**533 628**	**BWL-HSP-25**

Adapter kits for grippers

For combining HSP with grippers HG... or semi-rotary drive DRQD



Gripper Part No.	Type	Adapter kit Part No.	Type	Required mounting components	B1	D1	D2	H1	L1
HSP-12-... with HAPG-70-B									
174 815	**HGP-06-A**	**192 709**	**HAPG-60-S1**	–	12	M3	M5	30	30
174 817	**HGR-10-A**								
174 818	**HGW-10-A**								
535 858	**HGPT-16-A**	**537 169**	**HAPG-75**		8	M2.5	3	27	49.6
1)	**DRQD-6...**	–		M4 x 20	–				
HSP-16-... with HAPG-71-B									
174 815	**HGP-06-A**	**192 706**	**HAPG-37-S1**	–	12	M3	M5	42	50
174 817	**HGR-10-A**								
174 818	**HGW-10-A**								
197 542	**HGP-10-A-B**	**192 705**	**HAPG-36-S1**		12	M3	M5	42	50
174 819	**HGD-16-A**				12	M3	M5	42	50
161 829	**HGR-16-A**				12	M3	M5	42	50
161 833	**HGW-16-A**								
525 658	**HGPP-10-A**	**529 017**	**HAPG-57**[2)]		8	M3	M4	33	49.6
187 867	**HGPP-12-A**	**191 900**	**HAPG-54**		12	M3	M5	44	52
535 858	**HGPT-16-A**	**537 169**	**HAPG-75**		8	M2.5	3	27	49.6
535 861	**HGPT-20-A**								
539 269	**HGPC-16-A**	**191 901**	**HAPG-55**		10	M3	M5	40	62
1)	**DRQD-8-...**	**178 448**	**HAPS-2**[2)]		8	M4	M4	28	48
1)	**DRQD-12-...**								

1) The semi-rotary drive DRQD is a modular product; for information on configuration and ordering, visit www.festo.com
2) The centring sleeves for attaching to the adapter kit HAPG-71-B are not required.

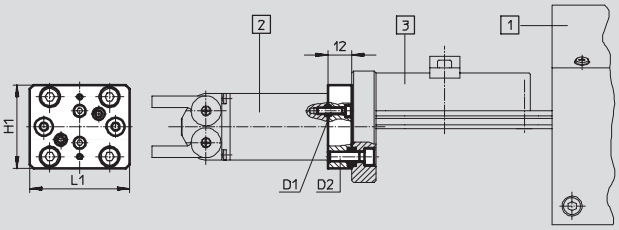
Handling modules HSP

Accessories

Gripper Part No.	Type	Adapter kit Part No.	Type	Required mounting components	B1	D1	D2	H1	L1
HSP-25-... with HAPG-72-B									
197 542	**HGP-10-A-B**	**192 705**	**HAPG-36-S1**	–	12	M3	M5	42	50
174 819	**HGD-16-A**								
161 829	**HGR-16-A**								
161 833	**HGW-16-A**								
197 545	**HGP-16-A-B**	**193 922**	**HAPG-37-S4**		12	M4	M5	42	50
161 830	**HGR-25-A**								
161 834	**HGW-25-A**								
525 658	**HGPP-10-A**	**529 017**	**HAPG-57**[2)]		8	M3	M4	33	49.6
187 867	**HGPP-12-A**	**191 900**	**HAPG-54**		12	M3	M5	44	52
187 870	**HGPP-16-A**	**191 901**	**HAPG-55**		10	M3	M5	40	62
535 858	**HGPT-16-A**	**537 169**	**HAPG-75**		8	M2.5	3	27	49.6
535 861	**HGPT-20-A**								
539 271	**HGPC-20-A**	**191 901**	**HAPG-55**		10	M3	M5	40	62
1)	**DRQD-12-...**	**178 448**	**HAPS-2**[2)]		8	M4	M4	28	28
1)	**DRQD-16-...**	**192 707**	**HAPG-38**		12	M4	M5	50	71

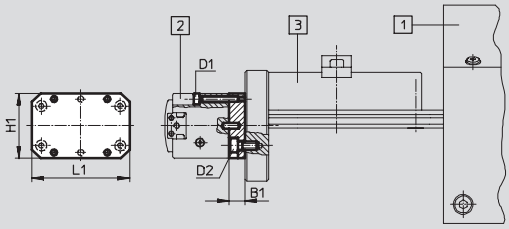
1) The semi-rotary drive DRQD is a modular product; for information on configuration and ordering, visit www.festo.com
2) The centring sleeves for attaching to the adapter kit HAPG-71-B are not required.

Adapter kit HAPG-36/-37/-38/-60



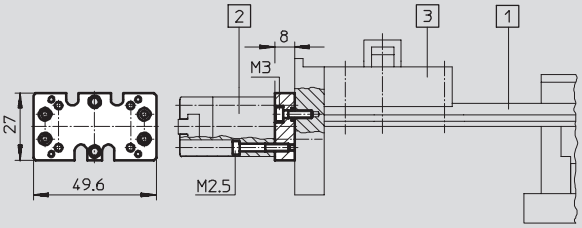
1 Handling module HSP
2 Standard gripper HG...
3 Adapter kit HAPG

Adapter kit HAPG38/-54/-55/-57



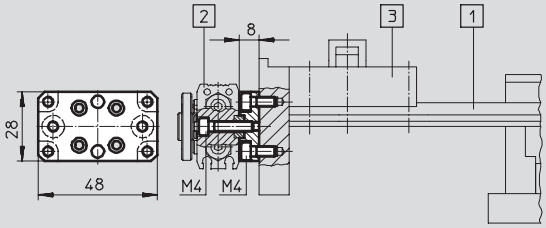
1 Handling module HSP
2 Parallel gripper HGP...
3 Adapter kit HAPG

Adapter kit HAPG-75



1 Handling module HSP
2 T-slot gripper HGPT
3 Adapter kit HAPG

Adapter kit HAPS-2



1 Handling module HSP
2 Semi-rotary drive DRQD
3 Adapter kit HAPG

Ordering data – Proximity sensors for T-slot, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection			Cable length [m]	Part No.	Type
			Cable	M8 plug	M12 plug			
N/O contact								
	Insertable from above	PNP	3-wire	–	–	2.5	**525 898**	**SMT-8F-PS-24V-K2,5-OE**
		NPN					**525 909**	**SMT-8F-NS-24V-K2,5-OE**
		–	2-wire	–	–	2.5	**525 908**	**SMT-8F-ZS-24V-K2,5-OE**
		PNP	–	3-pin	–	0.3	**525 899**	**SMT-8F-PS-24V-K0,3-M8D**
		NPN					**525 910**	**SMT-8F-NS-24V-K0,3-M8D**
		PNP	–	–	3-pin	0.3	**525 900**	**SMT-8F-PS-24V-K0,3-M12**
	Insertable from end, flush with cylinder profile	PNP	3-wire	–	–	2.5	**175 436**	**SMT-8-PS-K-LED-24-B**
			–	3-pin	–	0.3	**175 484**	**SMT-8-PS-S-LED-24-B**
N/C contact								
	Insertable from above	PNP	3-wire	–	–	7.5	**525 911**	**SMT-8F-PO-24V-K7,5-OE**

Ordering data – Proximity sensors for T-slot, magnetic reed — Technical data ➔ www.festo.com

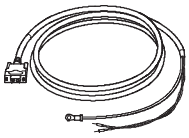
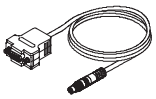
	Mounting	Electrical connection		Cable length [m]	Part No.	Type
		Cable	M8 plug			
N/O contact						
	Insertable from above	3-wire	–	2.5	**525 895**	**SME-8F-DS-24V-K2,5-OE**
				5.0	**525 897**	**SME-8F-DS-24V-K5,0-OE**
		2-wire	–	2.5	**525 907**	**SME-8F-ZS-24V-K2,5-OE**
		–	3-pin	0.3	**525 896**	**SME-8F-DS-24V-K0,3-M8D**
	Insertable from end, flush with cylinder profile	3-wire	–	2.5	**150 855**	**SME-8-K-LED-24**
		–	3-pin	0.3	**150 857**	**SME-8-S-LED-24**
N/C contact						
	Insertable from end, flush with the cylinder profile	3-wire	–	7.5	**160 251**	**SME-8-O-K-LED-24**

Ordering data – Plug sockets with cable — Technical data ➔ www.festo.com

	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight socket							
	Union nut M8	■	■	3-pin	2.5	**159 420**	**SIM-M8-3GD-2,5-PU**
					5	**159 421**	**SIM-M8-3GD-5-PU**
	Union nut M12	■	■	3-pin	2.5	**159 428**	**SIM-M12-3GD-2,5-PU**
					5	**159 429**	**SIM-M12-3GD-5-PU**
Angled socket							
	Union nut M8	■	■	3-pin	2.5	**159 422**	**SIM-M8-3WD-2,5-PU**
					5	**159 423**	**SIM-M8-3WD-5-PU**
	Union nut M12	■	■	3-pin	2.5	**159 430**	**SIM-M12-3WD-2,5-PU**
					5	**159 431**	**SIM-M12-3WD-5-PU**

Core Range

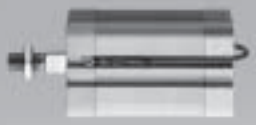
Ordering data			Technical data ➔ www.festo.com
	Brief description	Part No.	Type
Slot cover for T-slot			
	For protecting against ingress of dirt and securing proximity sensor cables. Scope of delivery: 2x 0.5 m	**151 680**	**ABP-5-S**
Slot nut for back plate			
	Inserted from above	**189 654**	**HMBN-5-M5**

Ordering data – Cables for HSP-...-AE				
	Brief description	Cable length	Part No.	Type
	Supply cable	2.5 m	**537 931**	**KPWR-MC-1-SUB-9HC-2,5**
		5 m	**537 932**	**KPWR-MC-1-SUB-9HC-5**
		10 m	**537 933**	**KPWR-MC-1-SUB-9HC-10**
	Control cable for I/O connection to any PLC controller	2.5 m	**537 923**	**KES-MC-1-SUB-9-2,5**
		5 m	**537 924**	**KES-MC-1-SUB-9-5**
		10 m	**537 925**	**KES-MC-1-SUB-9-10**
	Programming cable	2.5 m	**537 926**	**KDI-MC-M8-SUB-9-2,5**

Ordering data – Documentation and software for HSP-...-AE				
	Brief description	Language	Part No.	Type
	Description User's manual in paper form is not included in the scope of delivery.	DE	**541 945**	**P.BE-HSP-AE-IO-DE**
		EN	**541 946**	**P.BE-HSP-AE-IO-EN**
		ES	**541 947**	**P.BE-HSP-AE-IO-ES**
		FR	**541 948**	**P.BE-HSP-AE-IO-FR**
		IT	**541 949**	**P.BE-HSP-AE-IO-IT**
		SV	**541 950**	**P.BE-HSP-AE-IO-SV**
	Documentation package User's manual on CD-ROM, in the languages DE, EN, ES, FR, IT, SV, is included in the scope of delivery.		**541 951**	**P.BE-HSP-AE-UDOK**
	Configuration package The configuration package FCT (Festo Configuration Tool) on CD-ROM is included in the scope of delivery.		**539 622**	**P.SW-FCT**

Products and services – everything from a single source

Products incorporating new ideas are created when enthusiasm for technology and efficiency come together. Tailor-made service goes without saying when the customer is the focus of attention.



Pneumatic and electrical drives

- Pneumatic cylinders
- Semi-rotary drives
- Handling modules
- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers

Valves and valve terminals

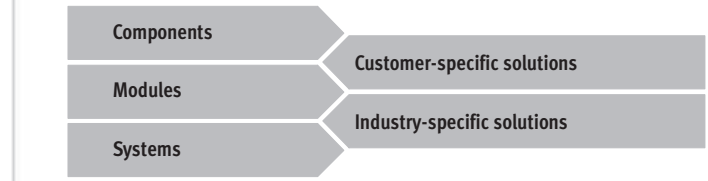
- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX

Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
- On-off and soft-start valves
- Dryers
- Pressure amplifiers
- Accessories for compressed air preparation



Services from Festo to increase your productivity – across the entire value creation sequence

Engineering – for greater speed in the development process

- CAD models
- 14 engineering tools
- Digital catalogue
- FluidDRAW®
- More than 1,000 technical consultants and project engineers worldwide
- Technical hotlines

Supply chain – for greater speed in the procurement process

- E-commerce and online shop
- Online order tracking
- Euro special manufacturing service
- Logistics optimisation

Gripping and vacuum technology

- Vacuum generators
- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
- Standard grippers
- Micro grippers
- Precision grippers
- Heavy-duty grippers

Sensors and monitoring units

- Proximity sensors
- Pressure and flow sensors
- Display and operating units
- Inductive and optical proximity sensors
- Displacement encoders for positioning cylinders
- Optical orientation detection and quality inspection

Controllers/bus systems

- Pneumatic and electropneumatic controllers
- Programmable logic controllers
- Fieldbus systems and accessories
- Timers/counters
- Software for visualisation and data acquisition
- Display and operating units

Accessories

- Pipes
- Tubing
- Pipe connectors and fittings
- Electrical connection technology
- Silencers
- Reservoirs
- Air guns

All in all, 100% product and service quality

A customer-oriented range with unlimited flexibility:
Components combine to produce ready-to-install modules and systems. Included in this are special designs – since at Festo, most industry-specific products and customer-specific solutions are based on the 23,000 plus catalogue products. Combined with the services for the entire value creation sequence, the end result is unbeatable economy.

Assembly – for greater speed in the assembly/commissioning process

- Prepack
- Preassembly
- Turnkey pneumatics
- Handling solutions

Operation – for greater speed in the operational process

- Spare parts service
- Energy saving service
- Compressed air consumption analysis
- Compressed air quality analysis
- Customer service

What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.
When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.
When Festo components are used in safety-oriented applications, the user shall ensure that all applicable national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed.
Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible.
Festo does not accept any liability for resulting damages.
You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.