

**FESTO**

Selected products



Your partner for battery production

Selected products  
Your partner for battery production

Edition 2025/04

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**Legend:**

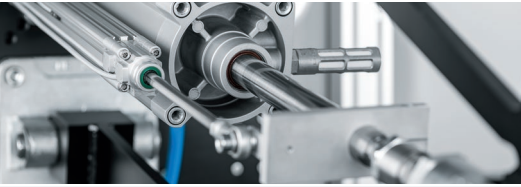









**Blue type code on the product pages:**

Not recommended for production facilities for the manufacture of lithium-ion batteries.  
Type code for online searches.

**Example:**

dsnu



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## Requirements for cell production

Producing battery cells is a highly sensitive process where different parts of the system have different requirements. But all three areas, whether for work, transport or control, must meet the cleanliness requirements. Contaminants such as copper, zinc or electrically conductive or non-conductive particles reduce the quality of the batteries or render them unusable.

Copper- and zinc-free products are therefore frequently required and cleanroom products are recommended. Even our standard products often conform to the recommended cleanroom class, which is more cost-effective for you!

### The areas

#### 1 Transport area

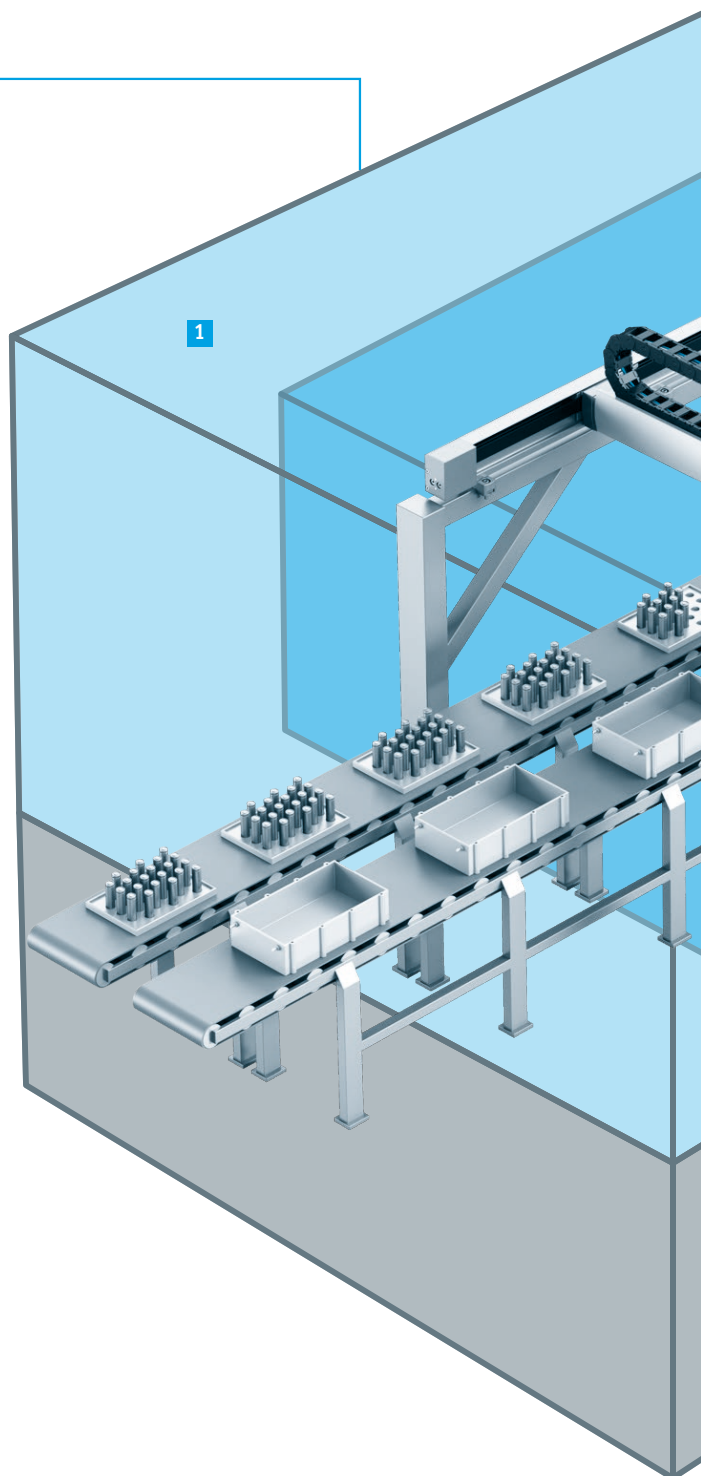
The automation technology is not installed directly above the battery cells and does not come into contact with them. To reduce the risk during battery production, unwanted particles with a diameter >5 microns should be avoided.

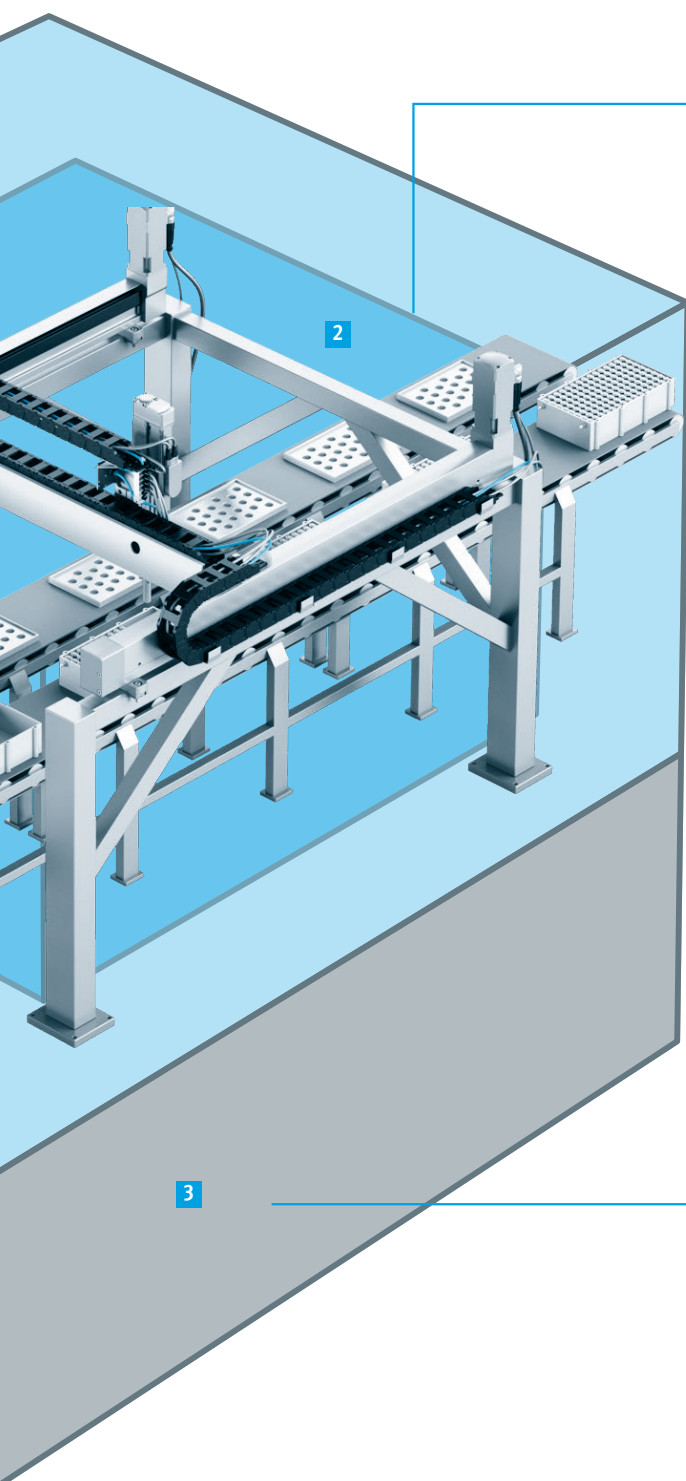
You can use all cylinders, pneumatic valves, pneumatic grippers and final control elements, all industrial robots, vacuum and compressed air systems, sensors, compressed air filters, compressed air regulators and pneumatic process valves from more than 80 products areas from Festo in cleanroom class ISO 7. Most of them are also suitable for use in classes 6 and 5, and many can even be used in class 4 environments. You can also find suitable customised solutions at Festo.

All our cleanroom products are classified into cleanroom classes in accordance with ISO 14664. It is best to discuss the exact requirements with our specialists, since particle emissions depend on the application in question. That is the quickest way for you to find a practical solution.

Festo recommends using components from cleanroom class ISO 6 or better.

You will find further information in our cleanroom catalogue. Moreover, products with a permissible pressure dew point of  $-80^{\circ}\text{C}$  should also be used.





## 2 Working area

Here the automation technology is installed immediately above the battery cells and in close contact with them. This is where copper, zinc and particles >5 microns in particular pose a threat to the quality of the batteries.

Festo recommends using copper- and zinc-free products from cleanroom class ISO 7. Contact our experts to discuss your requirements.

## 3 Control area

The automation technology is installed under the process and is therefore not in contact with the battery cells.



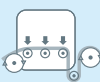
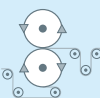











Festo recommends using products from the cleanroom class ISO 7. Almost all standard products from Festo conform to cleanroom class ISO 7.

You will find further information in our Festo product catalogue.

## Product features for components in secondary battery manufacturing

The production environment plays a key role in the manufacturing of lithium-ion cells. In particular, the humidity and possible contamination by interfering particles during the production process have a major influence on the quality and safety of the manufactured battery cell.

Festo therefore evaluates its product design in line with common market criteria and based on detailed requirements from customers. In order to meet these high process requirements, large parts of the production process are currently carried out in clean and dry rooms.

Production process	Cleanroom class	Dry room (dew point)	Temperature	Annotations
 <b>Material distribu- tion</b>	ISO 8	/	20 ... 24 °C	The electrode is produced under cleanroom conditions, since interfering particles in the coating can no longer be removed by cleaning methods in the subsequent process.
 <b>Coating</b>	ISO 7	-5 ... +5 °C		
 <b>Drying</b>				
 <b>Calendering</b>				
 <b>Slitting</b>				
 <b>Vacuum-drying</b>		-30 ... 0 °C		
 <b>Separation</b>	ISO 7 or better	-35 ... -25 °C	20 ... 24 °C	The cell must be assembled under dry condi- tions, as water in the cell leads to severe quality losses (service life) and poses a risk (formation of hydrofluoric acid).
 <b>Stacking/winding</b>		-50 ... -40 °C		
 <b>Packaging</b>				
 <b>Filling</b>		-80 ... -50 °C		
 <b>Formation</b>	/	/	19 ... 25 °C	The cell is finished in a normal environment. Since the cell is already closed and the degassing takes place in a vacuum chamber, there are few demands on the environment in terms of particles and humidity.
 <b>Degassing</b>				
 <b>High temp aging</b>			30 ... 50 °C	
 <b>Low temp aging</b>			20 ... 24 °C	
 <b>EOL testing</b>				

[Source: VDMA Battery Production Roadmap 2020]



**+ Dry room**

A dry-room environment with a pressure condensation point of  $-50^{\circ}\text{C}$  down to sometimes  $-80^{\circ}\text{C}$  is typical for lithium-ion cell production. An appropriate dry-room environment inhibits the hydrophilic tendency of many electrolytes and prevents aggressive hydrofluoric acid from forming through the reaction with atmospheric moisture.

All catalogue products from Festo can be used in the dry room without restriction. This is thanks to the consistent use of water-free lubricants, which do not deteriorate prematurely in dry-room environments and retain their normal lubricating properties. In addition, Festo uses only GRP/CFRP-reinforced polymers in components subject to abrasion and mechanical stress, since their wear and strength are not affected by dry-room environments.

**+ Cleanroom**

Products used in cell production must comply with certain cleanliness requirements and in some cases even cleanroom classes in order to minimise the ingress of interfering particles into the production process. Festo classifies and tests the cleanroom suitability of its products in a standardised procedure in accordance with ISO 14644-14. Cylinders, valves, grippers and drives, all handling, vacuum and compressed air systems, sensors, filters, regulators and fittings from many product series from Festo can be used in ISO class 7 cleanroom environments. Most of them are also suitable for classes 6 and 5, some even for class 4.

You will find further information in our Festo cleanroom catalogue or on our website → [www.festo.com/cleanroom](http://www.festo.com/cleanroom)

**+ Products free from copper, nickel and zinc**

Depending on the application, products in battery cell production must not emit any copper, zinc or nickel particles. Otherwise there is a risk that the quality of the batteries is reduced or even that they are unusable. Festo offers an extensive product range for battery cell production that takes these requirements into account.

Festo has defined an internal guideline for the development of these products, which is binding for the entire company. Its implementation falls under Festo's ISO 9001 certification. Compliance is confirmed by periodic ISO 9001 re-certifications. Battery compliance is specified for all relevant products in the technical data of the catalogue.

**Exceptions from material restrictions regarding copper, zinc and nickel:**

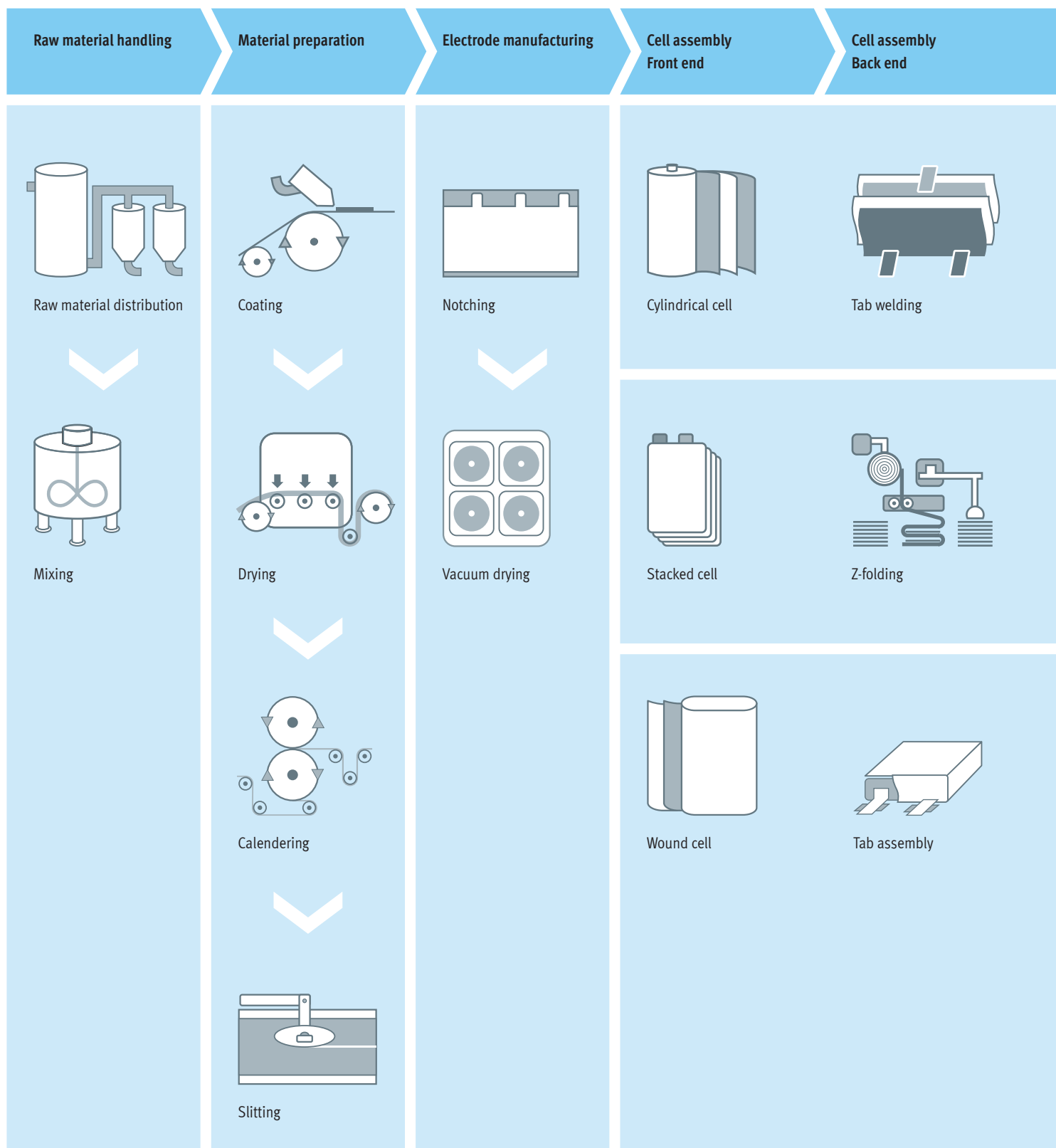
- Nickel in ferrous metals
- Electroless nickel plating without copper base layer
- Inert chemical compounds, such as oxides and sulfides
- PCBs, electric connectors, cables, wires and coils

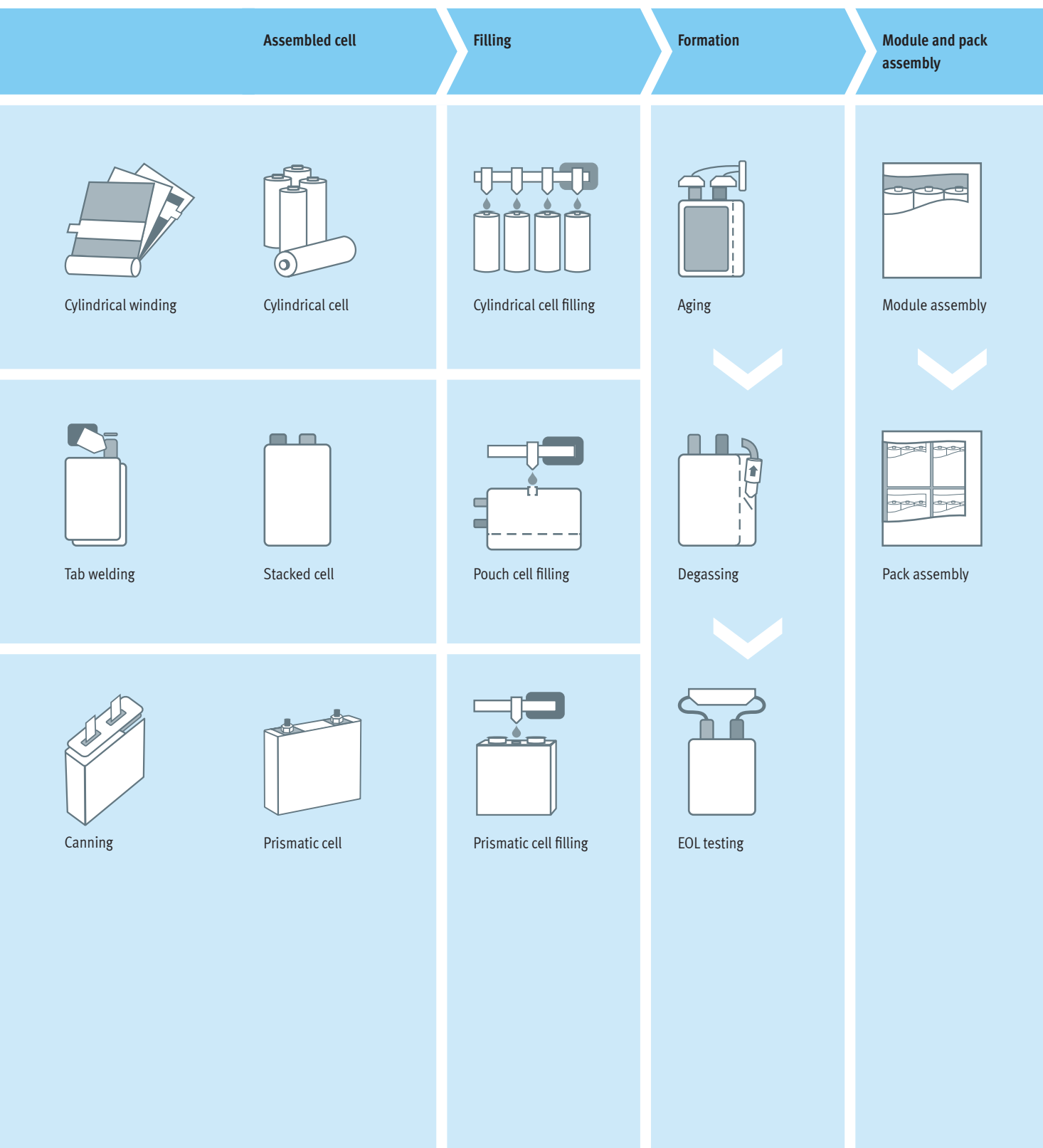
Would you like to find out more about our range of solutions for battery production?

Then visit our website → [www.festo.com/battery](http://www.festo.com/battery)

## Battery production process













For each of the numerous steps involved in producing batteries, Festo offers the right automation solutions, whether pneumatic, electric or a combination of several technologies.




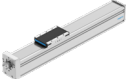












## The right automation for your battery production












Components from Festo can be used in all the process steps in battery production. The solution that is right for you depends entirely on your exact requirements. We have put together an overview to give you a rough idea of which components our experts consider to be particularly well suited for each individual production step.








		Raw material preparation	Mixing	Coating	Slitting	Winding	Stacking	Inserting into housing	Packing	Filling	Formation	Module assembly
Pneumatic drives												
	DSNU	■	■	■	■	■	■	■	■	■	■	■
	DSNU-S	■	■	■	■	■	■	■	■	■	■	■
	ADN	■	■	■	■	■	■	■	■	■	■	■
	ADN-S	■	■	■	■	■	■	■	■	■	■	■
	DPDM	■	■	■	■	■	■	■	■	■	■	■
	DSBC	■	■	■	■	■	■	■	■	■	■	■
	DRRS	■	■	■	■	■	■	■	■	■	■	■
	DRVS					■	■	■	■	■	■	■
	DGSS	■	■	■	■	■	■	■	■	■	■	■
	DGST	■	■	■	■	■	■	■	■	■	■	■
	DFM	■	■	■	■	■	■	■	■	■	■	■
	DYSS	■	■	■	■	■	■	■	■	■	■	■













		Raw material preparation	Mixing	Coating	Slitting	Winding	Stacking	Inserting into housing	Packing	Filling	Formation	Module assembly
Electric drives												
	ELGC					■	■	■	■	■	■	■
	ELGD					■	■	■	■	■	■	■
	ELGT					■	■	■	■	■	■	■
	EPCC					■	■	■	■	■	■	■
	ESBF					■	■	■	■	■	■	■
	EGSC					■	■	■	■	■	■	■
	ELFC					■	■	■	■	■	■	■
	ELFD					■	■	■	■	■	■	■
Grippers												
	HEPP				■	■	■	■	■	■	■	■
	HPPF				■	■	■	■	■	■	■	■
	DHPC				■	■	■	■	■	■	■	■
	DHAS				■	■	■	■	■	■	■	■

# The right automation for your battery production

		Raw material preparation	Mixing	Coating	Slitting	Winding	Stacking	Inserting into housing	Packing	Filling	Formation	Module assembly
Vacuum technology												
	VN					■	■	■	■	■		■
	VAL					■	■	■	■	■		■
	OVPN					■	■	■	■	■		■
	OVGN					■	■	■	■	■		■
Valves and valve terminals												
	VUVG	■	■	■	■	■	■	■	■	■	■	■
	VFOE	■	■	■	■	■	■	■	■	■	■	■
	CRGRLA	■	■	■						■	■	
	VBOC	■	■	■						■	■	
	VPPE			■	■	■	■	■	■	■	■	
	VZQA	■	■		■		■	■	■	■	■	■
	VTUG	■	■	■	■	■	■	■	■	■	■	■

		Raw material preparation	Mixing	Coating	Slitting	Winding	Stacking	Inserting into housing	Packing	Filling	Formation	Module assembly
<b>Sensors</b>												
	SMT	■	■	■	■	■	■	■	■	■	■	■
	SDBT	■	■	■	■	■	■	■	■	■	■	■
	SDBC	■	■	■	■	■	■	■	■	■	■	■
	SIES-8M	■	■	■	■	■	■	■	■	■	■	■
	SPAN	■	■	■	■	■	■	■	■	■	■	■
	SPAЕ	■	■	■	■	■	■	■	■	■	■	■
	SPTE	■	■	■	■	■	■	■	■	■	■	■
	SFTE	■	■	■	■	■	■	■	■	■	■	■
	SFAH	■	■	■	■	■	■	■	■	■	■	■
	SDAT	■	■	■	■	■	■	■	■	■	■	■
	SDAP	■	■	■	■	■	■	■	■	■	■	■
	SDAS	■	■	■	■	■	■	■	■	■	■	■
	SDAC	■	■	■	■	■	■	■	■	■	■	■

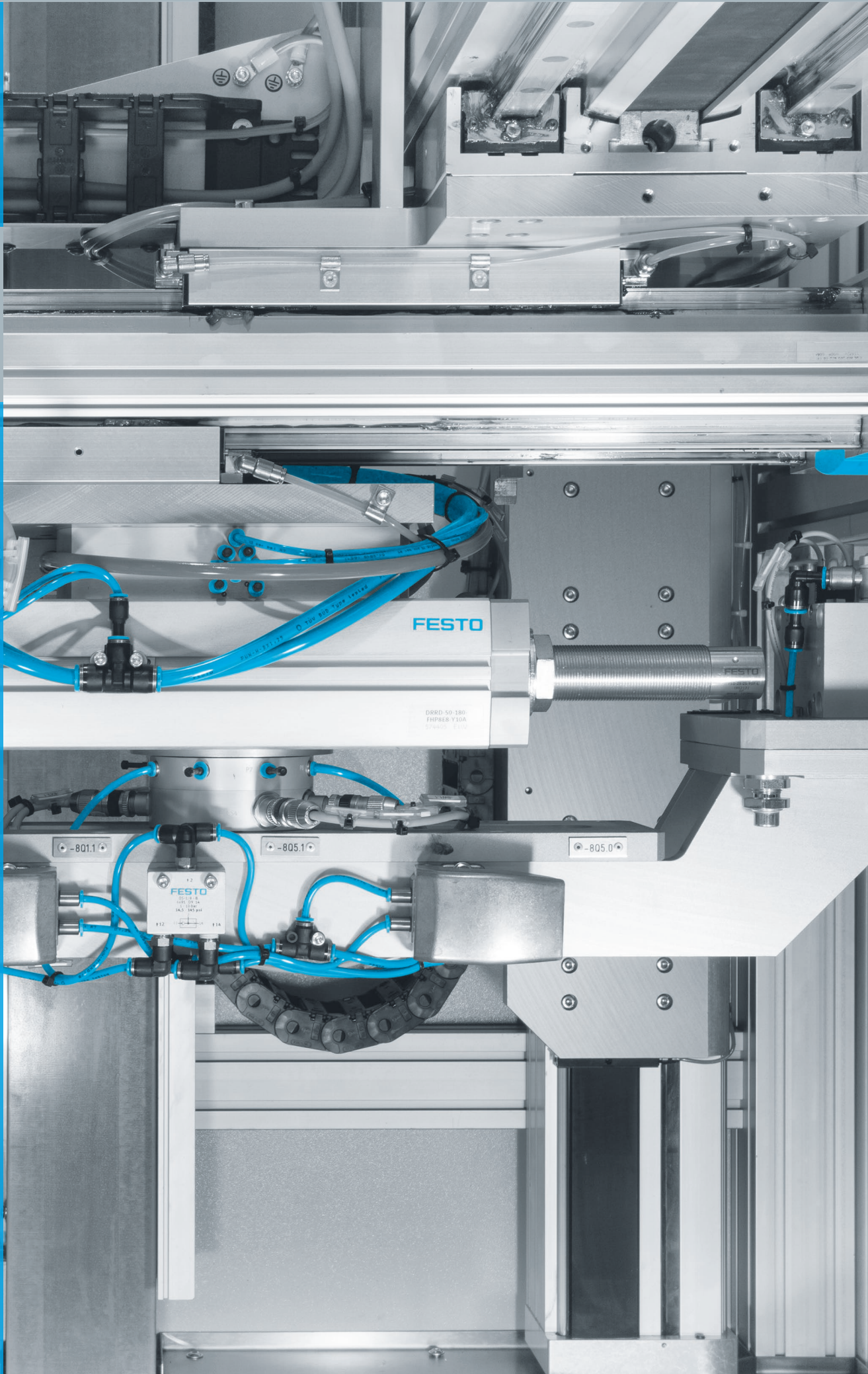
		Raw material preparation	Mixing	Coating	Slitting	Winding	Stacking	Inserting into housing	Packing	Filling	Formation	Module assembly
Compressed air preparation												
	MS-Reihe	■	■	■	■	■	■	■	■	■	■	■
	LRP	■	■	■	■	■	■	■	■	■	■	■
Electrical connection technology												
	NEBA	■	■	■	■	■	■	■	■	■	■	■
Pneumatic connection technology												
	PUN-H	■	■	■	■	■	■	■	■	■	■	■
	NPQE	■	■	■	■	■	■	■	■	■	■	■
	NPQR	■	■	■						■	■	
	NPCK	■	■	■	■	■	■	■	■	■	■	■
	B	■	■	■	■	■	■	■	■	■	■	■
	NPFC	■	■	■	■	■	■	■	■	■	■	■
	OL	■	■	■	■	■	■	■	■	■	■	■



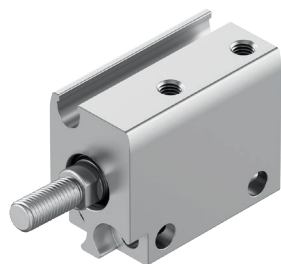


01

# Pneumatic drives



# Highlights



Compact cylinder

**ADN-S**

- + Minimal installation space
- + Ideal for micro movements

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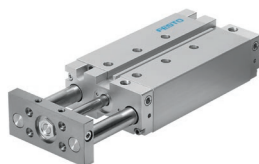


Mini slide

**DGST**

- + Powerful dual piston drive
- + Shortest mini slide on the market
- + Precise recirculating ball bearing guide
- + Versatile mounting options

→ 61



Guided drive

**DFM**

- + Minimum cycle times
- + High load capacity thanks to the integrated guides
- + A wide range of mounting options

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## Product overview

### Software-Tools

#### Pneumatic sizing



Size pneumatic control loop systems quickly and energy-efficiently. In order to survive in a tough competitive environment, many companies are looking for ways to make savings in their production.

Such savings can often be found in their existing compressed air systems, which have generally been in place for years. Up to 60% of energy costs can be saved through optimisation at both the production facility and system level.

This tool can be found at  
→ [www.festo.com/x/pneumatic-sizing](http://www.festo.com/x/pneumatic-sizing)

#### Air consumption of cylinders



Calculate your system's air consumption. Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated for you. The input table including the result can be exported directly to Excel.

This tool can be found at  
→ [www.festo.com/x/air-consumption](http://www.festo.com/x/air-consumption)

#### Pneumatic simulation



Perfect simulations replace expensive real-life tests! The tool is an expert system that supports you in the selection and configuration of the entire pneumatic control chain. If one parameter is changed, the program automatically adapts all the others.

This tool can be found at  
→ [www.festo.com/x/pneumatic-simulation](http://www.festo.com/x/pneumatic-simulation)

#### Festo Design Tool 3D



The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo. The configurator makes your search for the right accessory easier, more reliable and faster.

You can then order the module that has been created as a single order item, either completely pre-assembled or as individual parts in a single box. This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified.

This tool can be found at  
→ [www.festo.com/x/festo-design-tool](http://www.festo.com/x/festo-design-tool)

#### CO2 & TCO Guide






CO2 values and TCO for your application. Take a quantum leap in automation technology. By using suitable components from Festo in an intelligent way, you can reduce the energy consumption of your systems and thus specifically lower your production's carbon emissions.

This tool can be found at  
→ [www.festo.com/x/co2-tco](http://www.festo.com/x/co2-tco)



## Piston rod cylinder &gt;



## Round cylinders

			
	<b>Standards-based cylinder DSNU</b>	<b>Round cylinders DSNU</b>	<b>Round cylinders DSNU-S</b>
<b>Mode of operation</b>	Double-acting	Double-acting	Double-acting
<b>Piston diameter</b>	8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm	32 mm, 40 mm	8 mm, 12 mm, 16 mm, 20 mm, 25 mm
<b>Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing</b>	30.2 ... 294.5 N	482.5 ... 752.9 N	30.2 ... 294.5 N
<b>Stroke</b>	1 ... 500 mm	1 ... 500 mm	1 ... 200 mm
<b>Cushioning</b>	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning, Pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning, Pneumatic cushioning, adjustable at both ends	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning
<b>Cleanroom class</b>	Class 5 according to ISO 14644-1	Class 5 according to ISO 14644-1	Class 5 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• ISO 6432</li> <li>• Wide range of variants for customised applications</li> <li>• Good running performance and long service life</li> <li>• Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes</li> <li>• Piston rod with female or male thread</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Wide range of variants for customised applications</li> <li>• Good running performance and long service life</li> <li>• Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes</li> <li>• Piston rod with female or male thread</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Short variant of ISO cylinder DSNU</li> <li>• Quick and easy installation, even in tight spaces</li> <li>• Light weight</li> <li>• Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes</li> <li>• Piston rod with male thread</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
<b>online: →</b>	<b>27</b>	<b>27</b>	<b>31</b>

Product overview

Piston rod cylinder >

Compact, short-stroke and flat cylinders

	 <p><b>Compact cylinders ADN</b></p>	 <p><b>Compact cylinder ADN-S</b></p>
Mode of operation	Double-acting	Double-acting
Piston diameter	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm	6 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm
Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing	51 ... 7363 N	17 ... 1870 N
Stroke	1 ... 500 mm	5 ... 50 mm
Cushioning	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning	Elastic cushioning rings/plates at both ends, No cushioning
Cleanroom class	Class 5 according to ISO 14644-1	Class 5 according to ISO 14644-1
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
LABS (PWIS) conformity	VDMA24364-B1/B2-L, VDMA24364 zone III	VDMA24364-B2-L
Description	<ul style="list-style-type: none"> <li>• ISO 21287</li> <li>• Up to 50% less installation space than comparable standards-based cylinders to ISO 15552</li> <li>• Good running performance and long service life</li> <li>• Wide range of variants for customised applications</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Minimal installation space</li> <li>• Very lightweight</li> <li>• Ideal for small movements</li> <li>• Piston rod with female or male thread</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
online: ➔	34	38

## Piston rod cylinder &gt;

## Multimount and cartridge cylinders



**Compact cylinders, multimount  
DPDM**

<b>Mode of operation</b>	Double-acting, Pushing, Single-acting, Pulling, Secured against rotation
<b>Piston diameter</b>	6 mm, 10 mm, 16 mm, 20 mm, 25 mm, 32 mm
<b>Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing</b>	13 ... 483 N
<b>Stroke</b>	5 ... 50 mm
<b>Cushioning</b>	Elastic cushioning rings/plates at both ends
<b>Cleanroom class</b>	Class 6 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Mounting using through-hole and female thread</li> <li>• Compact design</li> <li>• Piston rod variants</li> <li>• For position sensing</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
<b>online: →</b>	<b>45</b>

## Product overview

Piston rod cylinder >

### Profile and tie rod cylinders

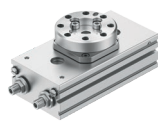


**Standards-based cylinders pre-configured  
DSBC**

<b>Mode of operation</b>	Double-acting
<b>Piston diameter</b>	32 mm, 40 mm, 50 mm, 63 mm, 80 mm, 100 mm, 125 mm
<b>Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing</b>	483 ... 7363 N
<b>Stroke</b>	1 ... 2800 mm
<b>Cushioning</b>	Elastic cushioning rings/plates at both ends, Self-adjusting pneumatic end-position cushioning, Pneumatic cushioning, adjustable at both ends
<b>Cleanroom class</b>	Class 5 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-C1-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes</li> <li>• ISO 15552 (ISO 6431, VDMA 24562)</li> <li>• Standard profile with two sensor slots</li> <li>• Wide range of variants for customised applications</li> <li>• Comprehensive range of mounting accessories for just about every type of installation</li> <li>• For position sensing</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>47</b>

## Semi-rotary drives &gt;

## Semi-rotary drives with rack and pinion



**Quarter turn actuators  
DRRS**

<b>Size</b>	12, 16, 20, 25
<b>Theoretical torque at 0.6 MPa (6 bar, 87 psi)</b>	0.9 ... 6.6 Nm
<b>Permissible mass moment of inertia</b>	50 ... 400 kgcm <sup>2</sup>
<b>Position sensing</b>	Via proximity switch
<b>Swivel angle</b>	180 deg
<b>Cleanroom class</b>	Class 9 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-C1-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Twin-piston drive, power transmission via rack and pinion principle</li> <li>• High torque with low weight</li> <li>• Mounting: simple, stable, flexible</li> <li>• Variants suitable for battery production according to F1A</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
<b>online: →</b>	<b>51</b>



## Drives with guides &gt;

## Linear slides



**Mini slide  
DGSS**




**Mini slides  
DGST**

	Mini slide DGSS	Mini slides DGST
<b>Piston diameter</b>	6 mm, 10 mm, 16 mm, 20 mm	6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm
<b>Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing</b>	17 ... 188 N	34 ... 589 N
<b>Stroke</b>	5 ... 60 mm	10 ... 200 mm
<b>Cushioning</b>	Elastomer cushioning, double-sided, stroke not adjustable	Short elastic cushioning rings/pads at both ends, Elastomer cushioning, double-sided, stroke not adjustable, Elastic cushioning rings/plates at both ends, Elastic cushioning rings/pads at both ends with fixed stop, External hydraulic cushioning
<b>Position sensing</b>	Via proximity switch	Via proximity switch
<b>Cleanroom class</b>	Class 5 according to ISO 14644-1	Class 5 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-C1-L	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Slim design</li> <li>• Excellent positioning accuracy</li> <li>• Precise and resilient roller bearing guide</li> <li>• Optimum price/performance ratio</li> <li>• Slide and yoke plate from one component</li> <li>• Can be operated without additional cushioning elements</li> <li>• Optional: stroke adjustment and external cushioning using accessories</li> <li>• Recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Powerful twin-piston drive</li> <li>• Shortest mini slide on the market</li> <li>• Precise recirculating ball bearing guide</li> <li>• Versatile mounting options</li> <li>• Version with mirrored supply port configuration and sensor slots for compact assembly available to order using the configurator</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
<b>online: →</b>	<b>58</b>	<b>61</b>

## Product overview

Drives with guides >

### Drives with guide rods

	 <p><b>Guided drives</b> <b>DFM</b></p>
<b>Piston diameter</b>	12 mm, 16 mm, 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm
<b>Theoretical force at 0.6 MPa (6 bar, 87 psi), advancing</b>	68 ... 1870 N
<b>Stroke</b>	10 ... 200 mm
<b>Cushioning</b>	Elastic cushioning rings/plates at both ends
<b>Position sensing</b>	Via proximity switch
<b>Cleanroom class</b>	Class 6 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Drive and guide unit in a single housing</li> <li>• High resistance to torques and lateral forces</li> <li>• Plain or recirculating ball bearing guide</li> <li>• Wide variety of mounting and attachment options</li> <li>• Wide range of variants for customised applications</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>64</b>



## Software-Tools

## Shock absorber



All types of cushioned movements, whether diagonal or vertical, curved or straight, lever or disc, are taken into account. The software tool always recommends the best shock absorber.

This tool can be found at

→ [www.festo.com/x/shock-absorber-selection-tool](http://www.festo.com/x/shock-absorber-selection-tool)

## Industrial shock absorbers



**Shock absorbers  
DYSS**

<b>Size</b>	2, 3, 4, 5, 7, 8, 10, 12
<b>Stroke</b>	4 ... 12 mm
<b>Max. energy absorption per stroke</b>	0.1 ... 10 J
<b>Cushioning</b>	Self-adjusting
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Hydraulic shock absorber with path-controlled flow control function</li> <li>• Rapidly increasing cushioning force curve</li> <li>• Short cushioning stroke</li> <li>• Suitable for low-vibration operation</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>69</b>

## Pneumatic drives

Customised components – for your specific requirements



Can't find the pneumatic drive you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

- Materials for special environmental conditions
- Customised dimensions
- Special strokes
- Customised mounting options
- Implementation of special cylinder functions (cylinder/valve combinations, single-acting principle, etc.)

Many additional variants are possible.

Ask your Festo sales engineer, who will be happy to help you:

➔ [www.festo.com/contact](http://www.festo.com/contact)

## Round cylinders DSNU, double-acting



- Wide range of variants for customised applications
- Good running performance and long service life
- Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes
- Piston rod with female or male thread
- For position sensing


## Type codes

001	Series	
DSNU	Round cylinder, double-acting, based on ISO 6432	
002	Piston diameter [mm]	
8	8	
10	10	
12	12	
16	16	
20	20	
25	25	
32	32	
40	40	
003	Stroke range [mm]	
...	10 ... 500	
004	Cushioning	
P	Elastic cushioning rings/plates on both sides	
PPS	Pneumatic cushioning, self-adjusting at both ends	
PPV	Pneumatic cushioning, adjustable at both ends	
005	Position sensing	
A	For proximity sensor	
006	Special material properties	
	None	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
007	Cylinder end cap	
	Standard	
MA	Axial air connection, end cap	
MQ	Transverse supply port, end cap	
008	Protection against rotation	
009	Piston rod type	
	At one end	
S2	Through piston rod	

010	Piston rod thread extension	
	None	
...K2	1 ... 70 mm	
011	K6 - Shortened male piston rod thread	
	None	
K6	1 ... 10 mm	
012	Piston rod thread type	
	Male thread	
K3	Female thread	
013	Custom thread	
„M10“K5	M10	
„M12“K5	M12	
014	Piston rod extension	
	None	
...K8	1 ... 500 mm	
015	Clamping unit	
	None	
016	Temperature range	
	Standard	
017	Constant motion	
	Standard	
018	Corrosion protection	
	Standard	
019	Scraper variant	
020	EU certification	
	None	

Piston rod cylinders > Round cylinders >  
Round cylinders DSNU, double-acting

## Ordering data

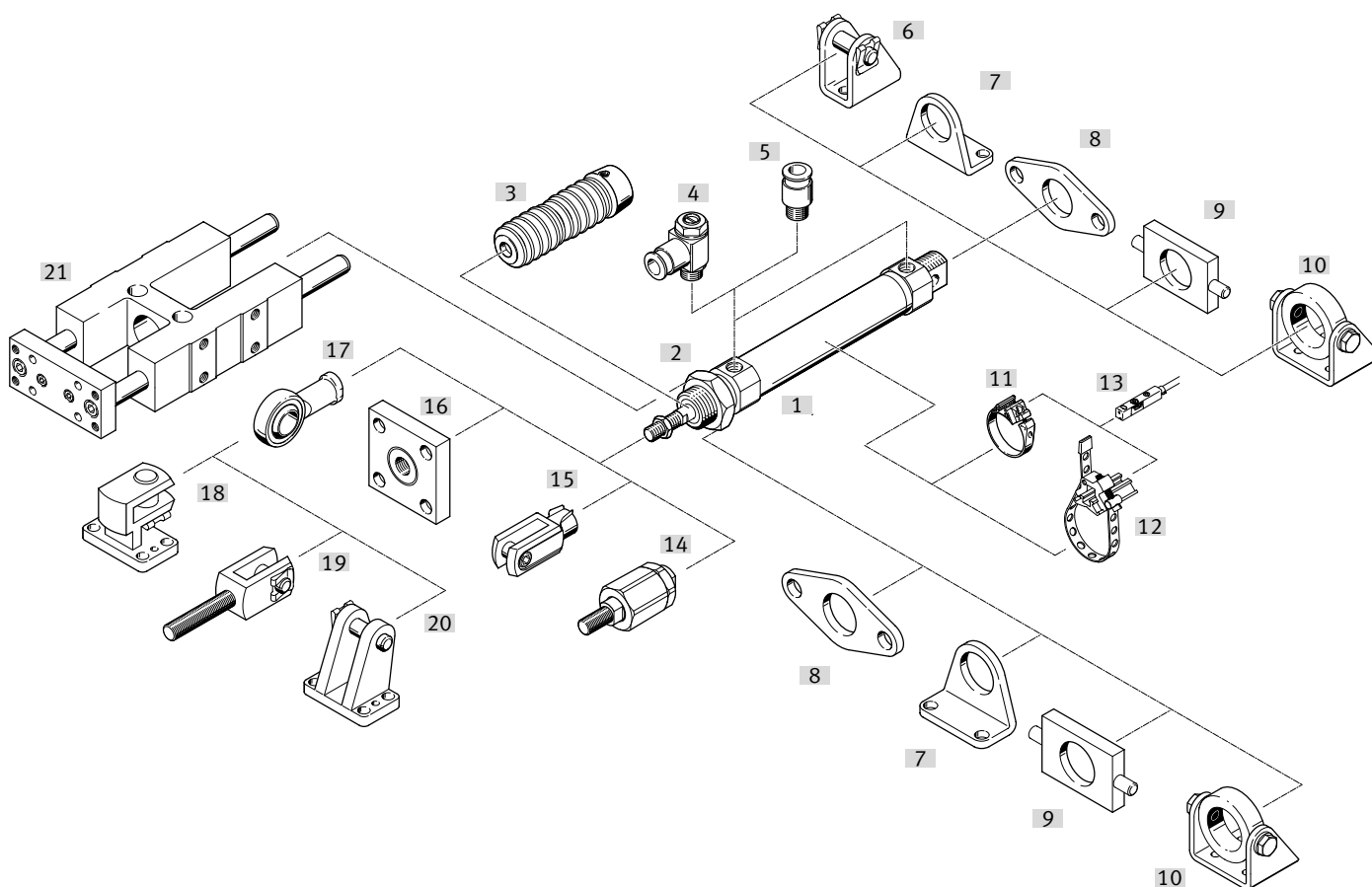
 Configurable product

This product and all its product options can be ordered online via the configurator:  
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

### Modular product system – For the production of Li-ion batteries

Piston diameter	Stroke	Part no.	Type
8 mm	1 ... 100 mm	8150747	DSNU-8- -F1A-
10 mm		8149443	DSNU-10- -F1A-
12 mm		8149444	DSNU-12- -F1A-
16 mm		8149445	DSNU-16- -F1A-
20 mm	1 ... 320 mm	8149446	DSNU-20- -F1A-
25 mm	1 ... 500 mm	8149447	DSNU-25- -F1A-
32 mm		8149448	DSNU-32- -F1A-
40 mm		8149449	DSNU-40- -F1A-

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Round cylinder DSNU-F1A	Round cylinder		27
[2] Hex nut MSK	For mounting the cylinder		<a href="#">dsnu</a>
[3] Bellows kit DADB	The bellows kit protects the cylinder (piston rod, seal and bearing) against a wide variety of media and thus prevents premature wear. It can only be used in combination with an extended piston rod (K8)		<a href="#">dsnu</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Accessories			→ Link*
Type/order code	Description		
[4] One-way flow control valve GRLA/GRLZ	For regulating speed		<a href="#">dsnu</a>
[5] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[6] Clevis foot LBN/CRLBN	For bearing cap		29
[7] Foot mounting HBN/CRHBN/CRH	<ul style="list-style-type: none"> <li>For bearing cap</li> <li>CRHBN/CRH: High corrosion protection</li> </ul>		29
[8] Flange mounting FBN/CRFBN/CRFV	<ul style="list-style-type: none"> <li>For bearing cap</li> <li>CRFBN/CRFV: high corrosion protection</li> </ul>		29
[9] Swivel mounting WBN	<ul style="list-style-type: none"> <li>For bearing cap</li> <li>Cannot be used in combination with bellows kit DADB</li> </ul>		<a href="#">dsnu</a>
[10] Swivel mounting SBN	<ul style="list-style-type: none"> <li>For bearing cap</li> <li>Cannot be used in combination with bellows kit DADB</li> </ul>		<a href="#">dsnu</a>
[11] Mounting kit SMBR	For direct fastening on the cylinder		<a href="#">dsnu</a>
[12] Mounting kit SMBR...S6	<ul style="list-style-type: none"> <li>For direct mounting on the cylinder</li> <li>For temperature range S6</li> </ul>		<a href="#">dsnu</a>
[13] Position transmitter SDAS/SDAT/SMAT	With mounting kit SMBR		30
[13] Proximity switch SMT/CRSMT/SDBT	With mounting kit SMBR		30
[14] Self-aligning rod coupler FK/CRFK/DARP	<ul style="list-style-type: none"> <li>To compensate for radial and angular deviations</li> <li>CRFK: high corrosion protection</li> </ul>		<a href="#">dsnu</a>
[15] Rod clevis SG/CRSG	<ul style="list-style-type: none"> <li>Allows a swivelling movement of the cylinder in one plane</li> <li>CRSG: high corrosion protection</li> </ul>		<a href="#">dsnu</a>
[16] Coupling piece KSG/KSZ	To compensate for radial deviations		<a href="#">dsnu</a>
[17] Rod eye SGS/CRSGS	<ul style="list-style-type: none"> <li>With spherical bearing</li> <li>CRSGS: High corrosion protection</li> </ul>		<a href="#">dsnu</a>
[18] Clevis foot, transverse, LQG	–		<a href="#">dsnu</a>
[19] Rod clevis SGA	With male thread		<a href="#">dsnu</a>
[20] Clevis foot LBG	–		<a href="#">dsnu</a>
[21] Guide unit FEN	<ul style="list-style-type: none"> <li>For protecting standards-based cylinders against rotation</li> <li>With plain bearing</li> </ul>		<a href="#">dsnu</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Foot mounting CRHBN		
Size	Part no.	Type
12/16	<a href="#">161866</a>	<a href="#">CRHBN-12/16X1</a>
20/25	<a href="#">161867</a>	<a href="#">CRHBN-20/25X1</a>

Foot mounting CRH		
Size	Part no.	Type
32	<a href="#">162951</a>	<a href="#">CRH-32</a>
40	<a href="#">162952</a>	<a href="#">CRH-40</a>
50	<a href="#">162953</a>	<a href="#">CRH-50</a>
63	<a href="#">162954</a>	<a href="#">CRH-63</a>

Flange mounting CRFBN		
Size	Part no.	Type
12/16	<a href="#">161864</a>	<a href="#">CRFBN-12/16</a>
20/25	<a href="#">161865</a>	<a href="#">CRFBN-20/25</a>

Flange mounting CRFV		
Size	Part no.	Type
32	<a href="#">161858</a>	<a href="#">CRFV-32</a>
40	<a href="#">161859</a>	<a href="#">CRFV-40</a>
50	<a href="#">161860</a>	<a href="#">CRFV-50</a>
63	<a href="#">161861</a>	<a href="#">CRFV-63</a>

Clevis foot CRLBN		
Size	Part no.	Type
32	<a href="#">195866</a>	<a href="#">CRLBN-32</a>
40	<a href="#">195867</a>	<a href="#">CRLBN-40</a>
12/16	<a href="#">161862</a>	<a href="#">CRLBN-12/16</a>
20/25	<a href="#">161863</a>	<a href="#">CRLBN-20/25</a>
50/63	<a href="#">195868</a>	<a href="#">CRLBN-50/63</a>

Piston rod cylinders > Round cylinders >

Round cylinders DSNU, double-acting

## Accessories

Proximity switch SMT-8M for T-slot, magneto-resistive			Link <a href="#">smt</a>
Type of mounting	Part no.	Type	
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE	
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D	
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE	
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D	
Screw-clamped, Insertable in the slot from above	8165237	SMT-8M-A-ZS-24V-E-5,0-OE	

Proximity switch SDBT-MSX for T-slot, Magnetic Hall			Link <a href="#">sdbt</a>
Switching output	Part no.	Type	
PNP/NPN, switchable	8059121	SDBT-MSX-1L-PU-E-2.5-N-LE	
PNP/NPN, switchable	8059124	SDBT-MSX-1L-NU-E-2.5-N-LE	
PNP/NPN, switchable	8059123	SDBT-MSX-1L-NU-E-0.3-N-M8	
PNP/NPN, switchable	8059120	SDBT-MSX-1L-PU-E-0.3-N-M8	

Position transmitter SDAT for T-slot, plug M8, A-coded			Link <a href="#">sdat</a>
Sensing range	Part no.	Type	
0 ... 50.000 mm	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8	
0 ... 80.000 mm	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8	
0 ... 100.000 mm	1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8	
0 ... 125.000 mm	1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8	
0 ... 160.000 mm	1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8	

Piston rod cylinders > Round cylinders >  
Round cylinder DSNU-S, double-acting

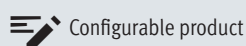
- Short variant of ISO cylinder DSNU
- Quick and easy installation, even in tight spaces
- Light weight
- Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes
- Piston rod with male thread
- For position sensing
- Sustainable in production thanks to reduced use of materials

## Type codes

001	Series
DSNU	Round cylinder, double-acting, based on ISO 6432
002	Design type
S	Short
003	Piston diameter [mm]
8	8
12	12
16	16
20	20
25	25
004	Stroke [mm]
...	1 ... 200
005	Cushioning
P	Elastic cushioning rings/plates on both sides
PPS	Pneumatic cushioning, self-adjusting at both ends
006	Position sensing
A	For proximity sensor

007	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A
008	Cylinder end cap
MA	Axial air connection, end cap
MQ	Transverse supply port, end cap
MP	Swivel mounting, end cap
MX	Mounting thread, end cap
009	Piston rod thread extension
	None
K2	1 ... 35 mm
010	Piston rod thread type
	Male thread
K3	With female thread
011	K6 - Shortened male piston rod thread
	None
K6	1 ... 8 mm
012	Piston rod extension
	None
...K8	1 ... 150 mm

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

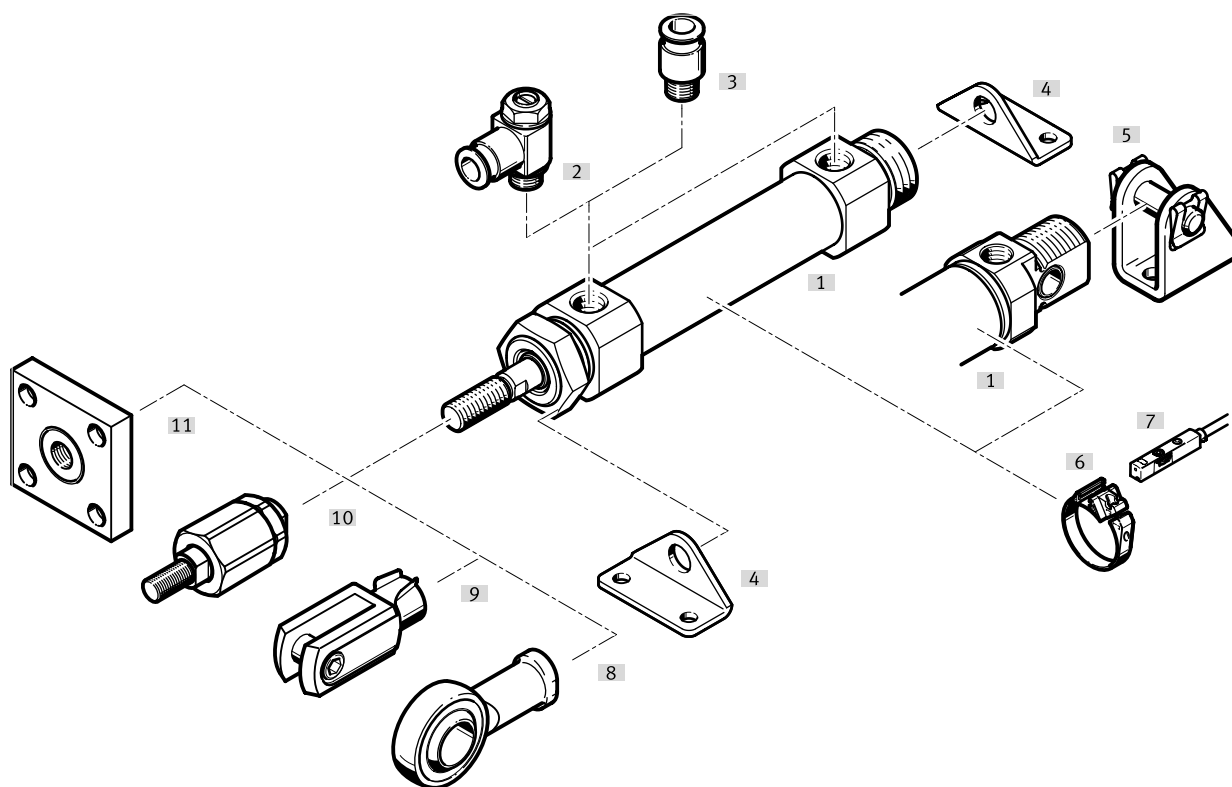
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Modular product system – For the production of Li-ion batteries			Link <a href="#">dsnu-s</a>
Piston diameter	Stroke <sup>1)</sup>	Part no.	Type
8 mm	1 ... 100 mm	8148785	DSNU-S-8- -F1A-
12 mm	1 ... 150 mm	8148786	DSNU-S-12- -F1A-
16 mm	1 ... 200 mm	8148787	DSNU-S-16- -F1A-
20 mm		8148788	DSNU-S-20- -F1A-
25 mm	1 ... 200 mm	8148789	DSNU-S-25- -F1A-

<sup>1)</sup> Also available with longer strokes on request.



## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Round cylinder DSNU-S-F1A	Round cylinder, space-saving		31
[2] One-way flow control valve GRLA/GRLZ	For regulating speed		<a href="#">dsnu-s</a>
[3] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[4] Foot mounting HBN-S	For bearing or end caps		<a href="#">dsnu-s</a>
[5] Clevis foot LBN	For bearing cap		<a href="#">dsnu-s</a>
[6] Mounting kit SMBR	For proximity switches and position transmitters		<a href="#">dsnu-s</a>
[7] Proximity switch SMT/SDBT	Can be integrated in the cylinder profile		32
[7] Position transmitter SDAS/SDAT/SMAT	<ul style="list-style-type: none"> <li>Continuously senses the position of the piston</li> <li>Has an analogue output</li> </ul>		33
[8] Rod eye SGS	With spherical bearing		<a href="#">dsnu-s</a>
[9] Rod clevis SG	Permits a swivelling movement of the cylinder in one plane		<a href="#">dsnu-s</a>
[10] Self-aligning rod coupler FK/DARP	To compensate for radial and angular deviations		<a href="#">dsnu-s</a>
[11] Coupling piece KSG	To compensate for radial deviations		<a href="#">dsnu-s</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Proximity switch SMT-8M for T-slot, magneto-resistive			Link <a href="#">smt</a>
Type of mounting	Part no.	Type	
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE	
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D	
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE	
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D	
Screw-clamped, Insertable in the slot from above	8165237	SMT-8M-A-ZS-24V-E-5,0-OE	

Proximity switch SDBT-MSX for T-slot, magnetic Hall			Link <a href="#">sdbt</a>
Switching output	Part no.	Type	
PNP/NPN, switchable	8059121	SDBT-MSX-1L-PU-E-2.5-N-LE	
PNP/NPN, switchable	8059124	SDBT-MSX-1L-NU-E-2.5-N-LE	
PNP/NPN, switchable	8059123	SDBT-MSX-1L-NU-E-0.3-N-M8	
PNP/NPN, switchable	8059120	SDBT-MSX-1L-PU-E-0.3-N-M8	

## Accessories

Connecting cables NEBA, straight, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, straight, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078236	NEBA-M12G5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078237	NEBA-M12G5-U-5-N-LE3

Connecting cables NEBA, angled, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Connecting cables NEBA, angled, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078245	NEBA-M12W5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078246	NEBA-M12W5-U-5-N-LE3

Position transmitter SDAT for T-slot, connector M8, A-coded			Link <a href="#">sd</a> <a href="#">at</a>
Sensing range	Part no.	Type	
0 ... 50.000 mm	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8	
0 ... 80.000 mm	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8	
0 ... 100.000 mm	1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8	
0 ... 125.000 mm	1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8	
0 ... 160.000 mm	1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8	

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078228	NEBA-M8G4-U-5-N-LE4

Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078234	NEBA-M8W4-U-5-N-LE4

Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >  
Compact cylinders ADN, to ISO 21287, double-acting



- ISO 21287
- Up to 50% less installation space than comparable standards-based cylinders to ISO 15552
- Good running performance and long service life
- Wide range of variants for customised applications
- For position sensing
- Variants recommended for production systems for manufacturing lithium-ion batteries
- Sustainable thanks to extended life cycle and easier repairs

## Type codes

001	Series
ADN	Compact cylinder, double-acting, based on ISO 21287

002	Piston diameter [mm]
12	12
16	16
20	20
25	25
32	32
40	40
50	50
63	63
80	80
100	100
125	125

003	Stroke range [mm]
...	1 ... 500

004	Piston rod thread type
A	Male thread
I	Female thread

005	Cushioning
P	Elastic cushioning rings/plates on both sides
PPS	Pneumatic cushioning, self-adjusting at both ends

006	Position sensing
A	For proximity sensor

007	Special material properties
	None
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

008	Protection against rotation
	None
Q	Square piston rod

009	Piston rod type
	At one end
S2	Through piston rod
S20	Through, hollow piston rod

010	Custom thread
„M5“K5	M5
„M6“K5	M6
„M8“K5	M8
„M10“K5	M10
„M10x1,25“K5	M10x1.25
„M12“K5	M12
„M16“K5	M16
„M20“K5	M20
„M20x1,5“K5	M20x1.5

011	Temperature range
	Standard
S6	Heat-resistant seals max. 120 °C

012	Constant motion
S10	Uniform, slow movement

013	Running characteristics
	Standard
S11	Low friction

014	Improved running performance
	None
K10	Smooth anodised aluminium coated piston rod

015	Corrosion protection
	Standard
R3	High corrosion protection

016	Increased lateral force
	None
S1	Reinforced piston rod or extended piston rod bearing

017	Captive rating plate
	Rating plate, glued
TL	Laser etched rating plate

018	Low temperature
	None
TT	-40 °C ... +80 °C

019	Scraper variant
	Standard
R8	Dust protection

020	EU certification
	None
EX4	II 2GD

## Ordering data



Configurable product

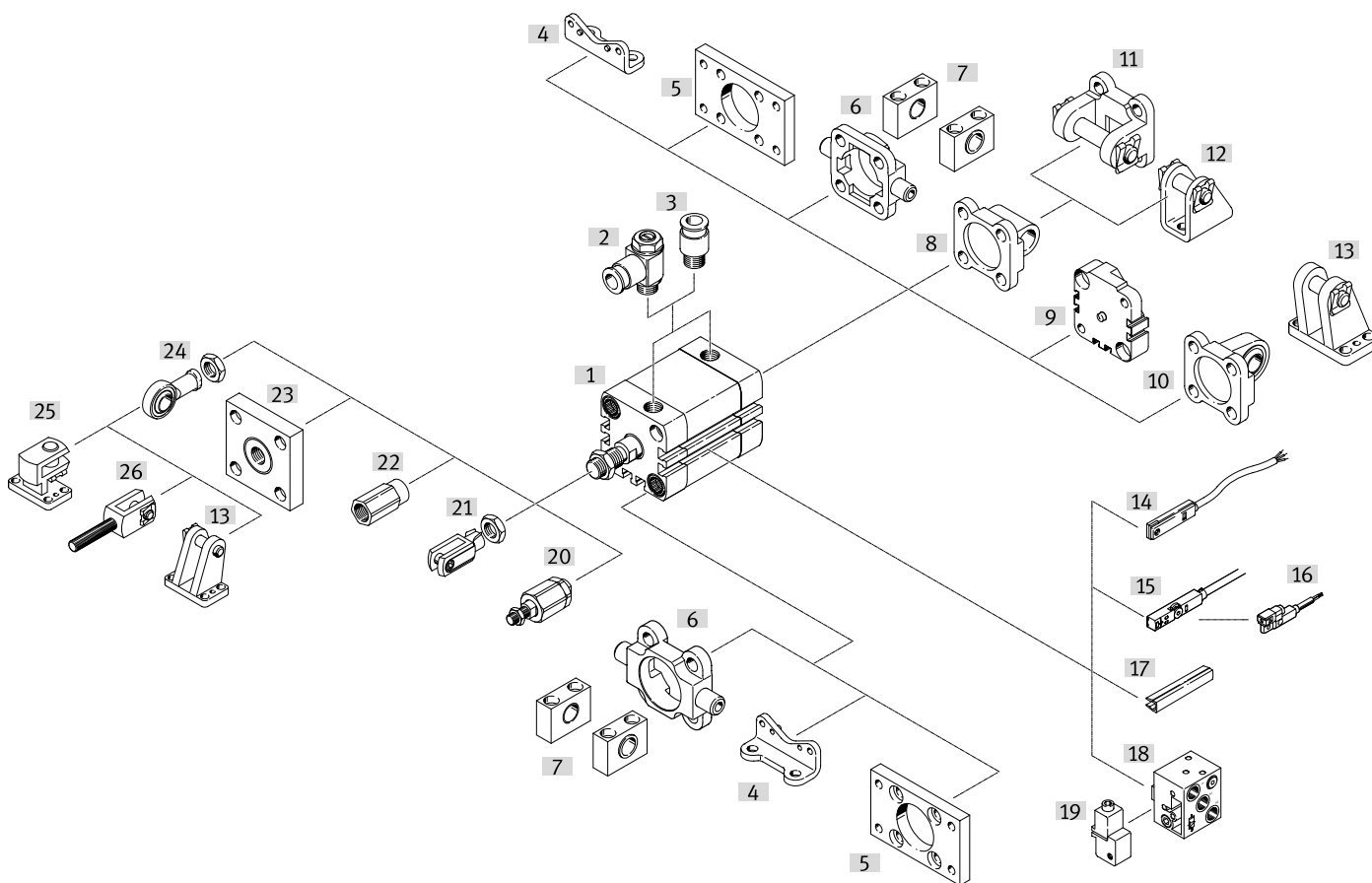
This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Modular product system			
Piston diameter	Stroke	Part no.	Type
12 mm	1 ... 300 mm	536203	ADN-12- -
16 mm		536218	ADN-16- -
20 mm		536233	ADN-20- -
25 mm		536250	ADN-25- -
32 mm	1 ... 400 mm	536267	ADN-32- -
40 mm		536288	ADN-40- -
50 mm		536309	ADN-50- -
63 mm		536330	ADN-63- -
80 mm	1 ... 500 mm	536351	ADN-80- -
100 mm		536372	ADN-100- -
125 mm		536393	ADN-125- -

Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >  
Compact cylinders ADN, to ISO 21287, double-acting

## Peripherals overview



Accessories		→ Link*
Type/order code	Description	
[1] Compact cylinder ADN	Compact cylinder, double-acting	34
[2] One-way flow control valve GRLA	For regulating speed	<a href="#">adn</a>
[2] One-way flow control valve GRLZ	For regulating speed	<a href="#">adn</a>
[3] Push-in fitting QS	For connecting tubing with standard O.D.	<a href="#">adn</a>
[4] Foot mounting HNA	For bearing or end caps	<a href="#">adn</a>
[4] Foot mounting HNA-...-R3	For bearing or end caps, high corrosion protection	<a href="#">adn</a>
[5] Flange mounting FNC	For bearing or end caps	<a href="#">adn</a>
[6] Trunnion flange ZNCF	For bearing cap	<a href="#">adn</a>
[6] Trunnion flange CRZNG	For bearing caps, high corrosion protection	<a href="#">adn</a>
[7] Trunnion support LN2G	For trunnion flange ZNCF/CRZNG	37
[8] Swivel flange SNCL	For end cap	<a href="#">adn</a>
[8] Swivel flange SNCL-...-R3	For end caps, high corrosion protection	<a href="#">adn</a>
[9] Multi-position kit DPNA	For connecting two cylinders with the same piston diameter to create a multi-position cylinder	<a href="#">adn</a>
[10] Swivel flange SNCS-...-R3	For end caps, high corrosion protection	<a href="#">adn</a>
[10] Swivel flange SNCS	For end cap	<a href="#">adn</a>
[10] Swivel flange CRSNCS	For end caps, high corrosion protection	<a href="#">adn</a>
[11] Swivel flange SNCB	For swivel flange SNCL	<a href="#">adn</a>
[11] Swivel flange SNCB-...-R3	For swivel flange SNCL, high corrosion protection	<a href="#">adn</a>
[12] Clevis foot LBN	For swivel flange SNCL	<a href="#">adn</a>
[12] Clevis foot CRLBN	For swivel flange SNCL, high corrosion protection	37
[13] Clevis foot LBG	For swivel flange SNCS	<a href="#">adn</a>
[13] Clevis foot LBG-...-R3	For swivel flange SNCS, high corrosion protection	<a href="#">adn</a>
[14] Proximity switch SME-8	Can be integrated in the cylinder profile barrel	<a href="#">adn</a>
[15] Proximity switch SME/SMT-8M	Can be integrated in the cylinder profile barrel	37
[16] Proximity switch SMT-8G	Can be inserted in the slot lengthwise	37
[17] Slot cover ABP-5-S	To protect the sensor cables and the sensor slots from contamination	<a href="#">adn</a>
[18] Proximity switch SMPO-8E	Output signal, pneumatic	<a href="#">adn</a>
[19] Mounting kit SMB-8E	For proximity switch SMPO-8E	<a href="#">adn</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Accessories			→ Link*
Type/order code	Description		
[20]	Self-aligning rod coupler FK	To compensate for radial and angular deviations	<a href="#">adn</a>
[20]	Self-aligning rod coupler CRFK	To compensate for radial and angular deviations, high corrosion protection	<a href="#">adn</a>
[21]	Rod clevis SG	Permits a swivelling movement of the cylinder in one plane	<a href="#">adn</a>
[21]	Rod clevis CRSG	Allows a swivelling movement of the cylinder in one plane, higher corrosion protection	<a href="#">adn</a>
[22]	Adapter AD	For attaching a suction cup to a hollow piston rod	<a href="#">adn</a>
[23]	Coupling piece KSG	To compensate for radial deviations	<a href="#">adn</a>
[23]	Coupling piece KSZ	To compensate for radial deviations	<a href="#">adn</a>
[24]	Rod eye SGS	With spherical bearing	<a href="#">adn</a>
[24]	Rod eye CRSGS	With spherical bearing, high corrosion protection	<a href="#">adn</a>
[25]	Clevis foot, right angled LQG	For rod eye SGS	<a href="#">adn</a>
[26]	Rod clevis SGA	With male thread	<a href="#">adn</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Clevis foot CRLBN		
Description	Part no.	Type
For Ø 12/16	<b>161862</b>	<b>CRLBN-12/16</b>
For Ø 20/25	<b>161863</b>	<b>CRLBN-20/25</b>

Trunnion support LNZG		
Description	Part no.	Type
For Ø 32	<b>32959</b>	<b>LNZG-32</b>
For Ø 40, 50	<b>32960</b>	<b>LNZG-40/50</b>
For Ø 63, 80	<b>32961</b>	<b>LNZG-63/80</b>
For Ø 100, 125	<b>32962</b>	<b>LNZG-100/125</b>

Proximity switch SMT-8M for T-slot, magneto-resistive			Link <a href="#">smt</a>
Type of mounting	Part no.	Type	
Screw-clamped, Insertable in the slot from above	<b>574338</b>	<b>SMT-8M-A-NS-24V-E-2,5-OE</b>	
Screw-clamped, Insertable in the slot from above	<b>574339</b>	<b>SMT-8M-A-NS-24V-E-0,3-M8D</b>	
Screw-clamped, Insertable in the slot from above	<b>574340</b>	<b>SMT-8M-A-PO-24V-E-7,5-OE</b>	
Screw-clamped, Insertable in the slot from above	<b>574335</b>	<b>SMT-8M-A-PS-24V-E-2,5-OE</b>	
Screw-clamped, Insertable in the slot from above	<b>574334</b>	<b>SMT-8M-A-PS-24V-E-0,3-M8D</b>	
Screw-clamped, Insertable in the slot from above	<b>574337</b>	<b>SMT-8M-A-PS-24V-E-0,3-M12</b>	

Proximity switch SMT-8G for T-slot, magneto-resistive			Link <a href="#">smt</a>
Type of mounting	Part no.	Type	
Clamped in T-slot, Insertable in the slot lengthwise	<b>8065028</b>	<b>SMT-8G-NS-24V-E-2,5Q-OE</b>	
Clamped in T-slot, Insertable in the slot lengthwise	<b>8065027</b>	<b>SMT-8G-NS-24V-E-0,3Q-M8D</b>	
Clamped in T-slot, Insertable in the slot lengthwise	<b>547859</b>	<b>SMT-8G-PS-24V-E-2,5Q-OE</b>	
Clamped in T-slot, Insertable in the slot lengthwise	<b>547860</b>	<b>SMT-8G-PS-24V-E-0,3Q-M8D</b>	

Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >  
Compact cylinder ADN-S, double-acting



- Minimal installation space
- Very lightweight
- Ideal for small movements
- Piston rod with female or male thread
- For position sensing
- Variants recommended for production systems for manufacturing lithium-ion batteries
- Sustainable in production thanks to reduced use of materials

## Type codes

001	Series
ADN-S	Compact cylinder, double-acting
002	Design type
S	Short
003	Piston diameter [mm]
6	6
10	10
12	12
16	16
20	20
25	25
32	32
40	40
50	50
63	63

004	Stroke [mm]
5	5
10	10
15	15
20	20
25	25
30	30
35	35
40	40
45	45
50	50
005	Piston rod thread type
A	Male thread
I	Female thread
006	Cushioning
	No cushioning
P	Elastic cushioning rings/plates on both sides
007	Position sensing
	None
A	For proximity sensor
008	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

## Ordering data

With female thread – I; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
6 mm	5 mm	2 - Moderate corrosion stress	8142509	ADN-S-6-5-I-F1A
	10 mm		8142510	ADN-S-6-10-I-F1A
10 mm	5 mm		8142518	ADN-S-10-5-I-F1A
	10 mm		8142519	ADN-S-10-10-I-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

With female thread – I; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
6 mm	5 mm	2 - Moderate corrosion stress	8142511	ADN-S-6-5-I-A-F1A
	10 mm		8142512	ADN-S-6-10-I-A-F1A
10 mm	5 mm		8142520	ADN-S-10-5-I-A-F1A
	10 mm		8142521	ADN-S-10-10-I-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)



## Ordering data

With male thread – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
6 mm	5 mm	2 - Moderate corrosion stress	8142513	ADN-S-6-5-A-F1A
	10 mm		8142514	ADN-S-6-10-A-F1A
10 mm	5 mm		8142522	ADN-S-10-5-A-F1A
	10 mm		8142523	ADN-S-10-10-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

With male thread – A; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
6 mm	5 mm	2 - Moderate corrosion stress	8142515	ADN-S-6-5-A-A-F1A
	10 mm		8142516	ADN-S-6-10-A-A-F1A
10 mm	5 mm		8142517	ADN-S-10-5-A-A-F1A
	10 mm		8142524	ADN-S-10-10-A-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

With cushioning – P; with female thread – I; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
12 mm	5 mm	2 - Moderate corrosion stress	8142562	ADN-S-12-5-I-P-A-F1A
	10 mm		8142563	ADN-S-12-10-I-P-A-F1A
	15 mm		8142564	ADN-S-12-15-I-P-A-F1A
	20 mm		8142565	ADN-S-12-20-I-P-A-F1A
	25 mm		8142566	ADN-S-12-25-I-P-A-F1A
	30 mm		8142567	ADN-S-12-30-I-P-A-F1A
	35 mm		8142568	ADN-S-12-35-I-P-A-F1A
16 mm	5 mm		8142728	ADN-S-16-5-I-P-A-F1A
	10 mm		8142729	ADN-S-16-10-I-P-A-F1A
	15 mm		8142730	ADN-S-16-15-I-P-A-F1A
	20 mm		8142731	ADN-S-16-20-I-P-A-F1A
	25 mm		8142732	ADN-S-16-25-I-P-A-F1A
	30 mm		8142733	ADN-S-16-30-I-P-A-F1A
	35 mm		8142734	ADN-S-16-35-I-P-A-F1A
20 mm	5 mm		8142756	ADN-S-20-5-I-P-A-F1A
	10 mm		8142757	ADN-S-20-10-I-P-A-F1A
	15 mm		8142758	ADN-S-20-15-I-P-A-F1A
	20 mm		8142759	ADN-S-20-20-I-P-A-F1A
	25 mm		8142760	ADN-S-20-25-I-P-A-F1A
	30 mm		8142761	ADN-S-20-30-I-P-A-F1A
	35 mm		8142762	ADN-S-20-35-I-P-A-F1A
	40 mm		8142763	ADN-S-20-40-I-P-A-F1A
	45 mm		8142764	ADN-S-20-45-I-P-A-F1A
	50 mm		8142765	ADN-S-20-50-I-P-A-F1A
25 mm	5 mm		8142806	ADN-S-25-5-I-P-A-F1A
	10 mm		8142807	ADN-S-25-10-I-P-A-F1A
	15 mm		8142808	ADN-S-25-15-I-P-A-F1A
	20 mm		8142809	ADN-S-25-20-I-P-A-F1A
	25 mm		8142810	ADN-S-25-25-I-P-A-F1A
	30 mm		8142811	ADN-S-25-30-I-P-A-F1A
	35 mm		8142812	ADN-S-25-35-I-P-A-F1A
	40 mm		8142813	ADN-S-25-40-I-P-A-F1A
	45 mm		8142814	ADN-S-25-45-I-P-A-F1A
	50 mm		8142815	ADN-S-25-50-I-P-A-F1A
32 mm	5 mm		8142846	ADN-S-32-5-I-P-A-F1A
	10 mm		8142847	ADN-S-32-10-I-P-A-F1A
	15 mm		8142848	ADN-S-32-15-I-P-A-F1A
	20 mm		8142849	ADN-S-32-20-I-P-A-F1A
	25 mm		8142850	ADN-S-32-25-I-P-A-F1A
	30 mm		8142851	ADN-S-32-30-I-P-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >

Compact cylinder ADN-S, double-acting

With cushioning – P; with female thread – I; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
32 mm	35 mm	2 - Moderate corrosion stress	8142852	ADN-S-32-35-I-P-A-F1A
	40 mm		8142853	ADN-S-32-40-I-P-A-F1A
	45 mm		8142854	ADN-S-32-45-I-P-A-F1A
	50 mm		8142855	ADN-S-32-50-I-P-A-F1A
40 mm	5 mm		8142876	ADN-S-40-5-I-P-A-F1A
	10 mm		8142877	ADN-S-40-10-I-P-A-F1A
	15 mm		8142878	ADN-S-40-15-I-P-A-F1A
	20 mm		8142879	ADN-S-40-20-I-P-A-F1A
	25 mm		8142880	ADN-S-40-25-I-P-A-F1A
	30 mm		8142881	ADN-S-40-30-I-P-A-F1A
	35 mm		8142882	ADN-S-40-35-I-P-A-F1A
	40 mm		8142883	ADN-S-40-40-I-P-A-F1A
	45 mm		8142884	ADN-S-40-45-I-P-A-F1A
	50 mm		8142885	ADN-S-40-50-I-P-A-F1A
			8142897	ADN-S-50-5-I-P-A-F1A
			8142898	ADN-S-50-10-I-P-A-F1A
50 mm	10 mm		8142899	ADN-S-50-15-I-P-A-F1A
	15 mm		8142900	ADN-S-50-20-I-P-A-F1A
	20 mm		8142901	ADN-S-50-25-I-P-A-F1A
	25 mm		8142902	ADN-S-50-30-I-P-A-F1A
	30 mm		8142903	ADN-S-50-35-I-P-A-F1A
	35 mm		8142904	ADN-S-50-40-I-P-A-F1A
	40 mm		8142905	ADN-S-50-45-I-P-A-F1A
	45 mm		8142906	ADN-S-50-50-I-P-A-F1A
	50 mm		8142917	ADN-S-63-5-I-P-A-F1A
			8142918	ADN-S-63-10-I-P-A-F1A
			8142919	ADN-S-63-15-I-P-A-F1A
			8142920	ADN-S-63-20-I-P-A-F1A
63 mm	25 mm		8142921	ADN-S-63-25-I-P-A-F1A
	30 mm		8142922	ADN-S-63-30-I-P-A-F1A
	35 mm		8142923	ADN-S-63-35-I-P-A-F1A
	40 mm		8142924	ADN-S-63-40-I-P-A-F1A
	45 mm		8142925	ADN-S-63-45-I-P-A-F1A
	50 mm		8142926	ADN-S-63-50-I-P-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

Piston rod cylinder &gt; Compact pneumatic cylinders, short-stroke and flat cylinders &gt;

## Compact cylinder ADN-S, double-acting

With cushioning – P; with male thread – A; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
12 mm	5 mm	2 - Moderate corrosion stress	8142576	ADN-S-12-5-A-P-A-F1A
	10 mm		8142577	ADN-S-12-10-A-P-A-F1A
	15 mm		8142578	ADN-S-12-15-A-P-A-F1A
	20 mm		8142579	ADN-S-12-20-A-P-A-F1A
	25 mm		8142580	ADN-S-12-25-A-P-A-F1A
	30 mm		8142581	ADN-S-12-30-A-P-A-F1A
	35 mm		8142582	ADN-S-12-35-A-P-A-F1A
16 mm	5 mm		8142735	ADN-S-16-5-A-P-A-F1A
	10 mm		8142736	ADN-S-16-10-A-P-A-F1A
	15 mm		8142737	ADN-S-16-15-A-P-A-F1A
	20 mm		8142738	ADN-S-16-20-A-P-A-F1A
	25 mm		8142739	ADN-S-16-25-A-P-A-F1A
	30 mm		8142740	ADN-S-16-30-A-P-A-F1A
	35 mm		8142741	ADN-S-16-35-A-P-A-F1A
20 mm	5 mm		8142766	ADN-S-20-5-A-P-A-F1A
	10 mm		8142767	ADN-S-20-10-A-P-A-F1A
	15 mm		8142768	ADN-S-20-15-A-P-A-F1A
	20 mm		8142769	ADN-S-20-20-A-P-A-F1A
	25 mm		8142770	ADN-S-20-25-A-P-A-F1A
	30 mm		8142771	ADN-S-20-30-A-P-A-F1A
	35 mm		8142772	ADN-S-20-35-A-P-A-F1A
	40 mm		8142773	ADN-S-20-40-A-P-A-F1A
	45 mm		8142774	ADN-S-20-45-A-P-A-F1A
	50 mm		8142775	ADN-S-20-50-A-P-A-F1A
25 mm	5 mm		8142826	ADN-S-25-5-A-P-A-F1A
	10 mm		8142827	ADN-S-25-10-A-P-A-F1A
	15 mm		8142828	ADN-S-25-15-A-P-A-F1A
	20 mm		8142829	ADN-S-25-20-A-P-A-F1A
	25 mm		8142830	ADN-S-25-25-A-P-A-F1A
	30 mm		8142831	ADN-S-25-30-A-P-A-F1A
	35 mm		8142832	ADN-S-25-35-A-P-A-F1A
	40 mm		8142833	ADN-S-25-40-A-P-A-F1A
	45 mm		8142834	ADN-S-25-45-A-P-A-F1A
	50 mm		8142835	ADN-S-25-50-A-P-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

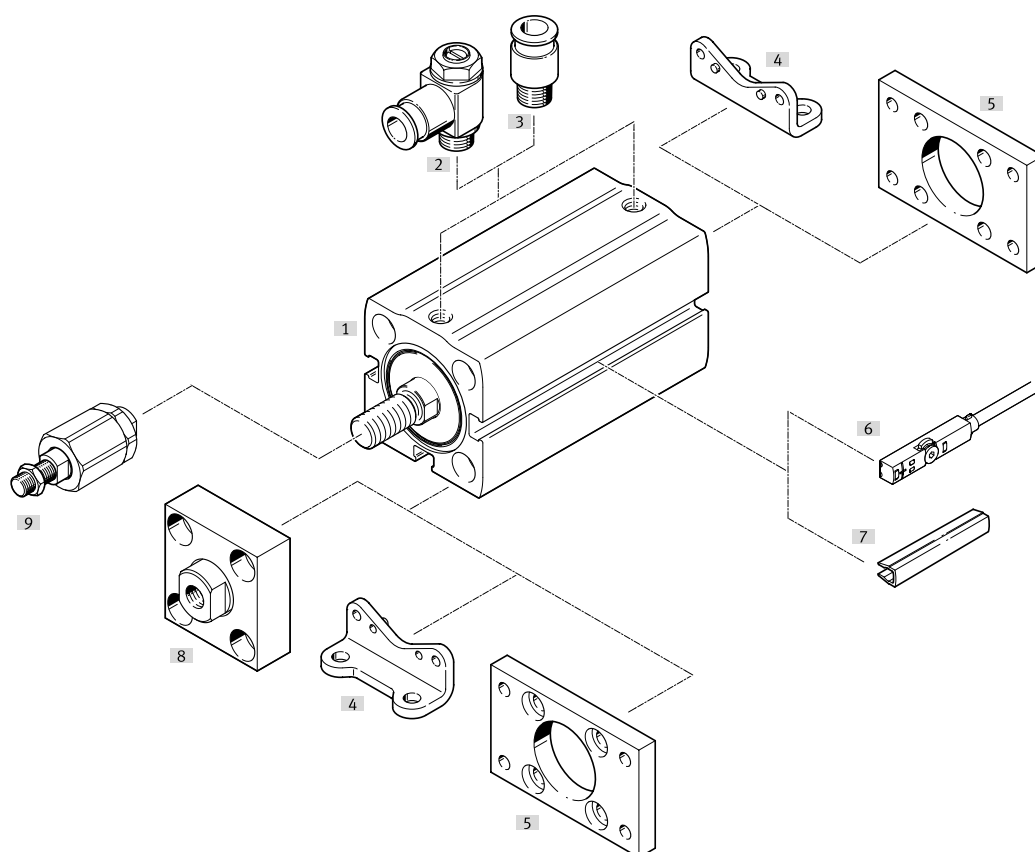
Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >

## Compact cylinder ADN-S, double-acting

With cushioning – P; with male thread – A; with position sensing – A; for battery production – F1A				
Piston diameter	Stroke	Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
32 mm	5 mm	0 - No corrosion stress	8142866	ADN-S-32-5-A-P-A-F1A
	10 mm		8142867	ADN-S-32-10-A-P-A-F1A
	15 mm		8142868	ADN-S-32-15-A-P-A-F1A
	20 mm		8142869	ADN-S-32-20-A-P-A-F1A
	25 mm		8142870	ADN-S-32-25-A-P-A-F1A
	30 mm		8142871	ADN-S-32-30-A-P-A-F1A
	35 mm		8142872	ADN-S-32-35-A-P-A-F1A
	40 mm		8142873	ADN-S-32-40-A-P-A-F1A
	45 mm		8142874	ADN-S-32-45-A-P-A-F1A
	50 mm		8142875	ADN-S-32-50-A-P-A-F1A
40 mm	5 mm		8142886	ADN-S-40-5-A-P-A-F1A
	10 mm		8142887	ADN-S-40-10-A-P-A-F1A
	15 mm		8142888	ADN-S-40-15-A-P-A-F1A
	20 mm		8142889	ADN-S-40-20-A-P-A-F1A
	25 mm		8142890	ADN-S-40-25-A-P-A-F1A
	30 mm		8142891	ADN-S-40-30-A-P-A-F1A
	35 mm		8142892	ADN-S-40-35-A-P-A-F1A
	40 mm		8142893	ADN-S-40-40-A-P-A-F1A
	45 mm		8142894	ADN-S-40-45-A-P-A-F1A
	50 mm		8142895	ADN-S-40-50-A-P-A-F1A
50 mm	5 mm		8142907	ADN-S-50-5-A-P-A-F1A
	10 mm		8142908	ADN-S-50-10-A-P-A-F1A
	15 mm		8142909	ADN-S-50-15-A-P-A-F1A
	20 mm		8142910	ADN-S-50-20-A-P-A-F1A
	25 mm		8142911	ADN-S-50-25-A-P-A-F1A
	30 mm		8142912	ADN-S-50-30-A-P-A-F1A
	35 mm		8142913	ADN-S-50-35-A-P-A-F1A
	40 mm		8142914	ADN-S-50-40-A-P-A-F1A
	45 mm		8142915	ADN-S-50-45-A-P-A-F1A
	50 mm		8142916	ADN-S-50-50-A-P-A-F1A
63 mm	5 mm		8142927	ADN-S-63-5-A-P-A-F1A
	10 mm		8142928	ADN-S-63-10-A-P-A-F1A
	15 mm		8142929	ADN-S-63-15-A-P-A-F1A
	20 mm		8142930	ADN-S-63-20-A-P-A-F1A
	25 mm		8142931	ADN-S-63-25-A-P-A-F1A
	30 mm		8142932	ADN-S-63-30-A-P-A-F1A
	35 mm		8142933	ADN-S-63-35-A-P-A-F1A
	40 mm		8142934	ADN-S-63-40-A-P-A-F1A
	45 mm		8142935	ADN-S-63-45-A-P-A-F1A
	50 mm		8142936	ADN-S-63-50-A-P-A-F1A

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Compact cylinder ADN-S-F1A	Double-acting		38
[2] One-way flow control valve GRLA	For Ø 12 ... 63: for regulating speed		<a href="#">adn-s</a>
[2] One-way flow control valve GRLZ	For Ø 12 ... 63: for regulating speed		<a href="#">adn-s</a>
[3] Push-in fitting QS	For Ø 12 ... 63: For connecting tubing with standard O.D.		<a href="#">adn-s</a>
[4] Foot mounting HNA	For Ø 12 ... 63: for bearing or end caps		<a href="#">adn-s</a>
[5] Flange mounting FNC	For Ø 12 ... 63: for bearing or end caps		<a href="#">adn-s</a>
[6] Proximity switch SMT-10	For Ø 6 ... 10: can be integrated in the cylinder profile barrel		44
[6] Proximity switch SMT-8	For Ø 12 ... 63: can be integrated in the cylinder profile barrel		44
[6] Position transmitter SDAS-MHS	For Ø 12 ... 63: can be integrated in the cylinder profile barrel		44
[6] Position transmitter SDAT-MHS	For Ø 12 ... 63: can be integrated in the cylinder profile barrel		<a href="#">adn-s</a>
[6] Position transmitter SMAT-8	For Ø 12 ... 63: can be integrated in the cylinder profile barrel		<a href="#">adn-s</a>
[7] Slot cover ABP	For Ø 12 ... 63: to protect the sensor cables and the sensor slots from contamination		<a href="#">adn-s</a>
[8] Coupling piece KSG	For Ø 32 ... 63: to compensate for radial deviations		<a href="#">adn-s</a>
[8] Coupling piece KSZ	For Ø 32 ... 63: to compensate for radial deviations		<a href="#">adn-s</a>
[9] Self-aligning rod coupler FK/DARP	For Ø 12 ... 63: To compensate for radial and angular deviations		<a href="#">adn-s</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Piston rod cylinder > Compact pneumatic cylinders, short-stroke and flat cylinders >

## Compact cylinder ADN-S, double-acting

### Accessories

Proximity switch SMT-10 for round slot, magneto-resistive – for Ø 6 ... 10 <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551377	SMT-10M-NS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551379	SMT-10M-NS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551373	SMT-10M-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551375	SMT-10M-PS-24V-E-0,3-L-M8D

Proximity switch SMT-8 for T-slot, magneto-resistive – for Ø 12 ... 63 <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-L-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-L-M8D

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

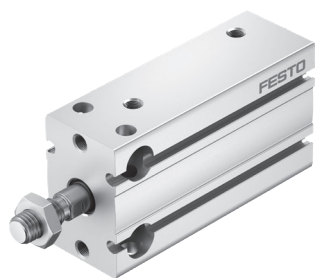
Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Position transmitter SDAS for T-slot, plug M8, A-coded – for Ø 12 ... 63 <a href="#">Link</a> <a href="#">sdas</a>		
Description	Part no.	Type
Operating modes: two adjustable switching outputs; IO-Link®	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8
Operating modes: two adjustable switching outputs; IO-Link®	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078228	NEBA-M8G4-U-5-N-LE4

Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078234	NEBA-M8W4-U-5-N-LE4





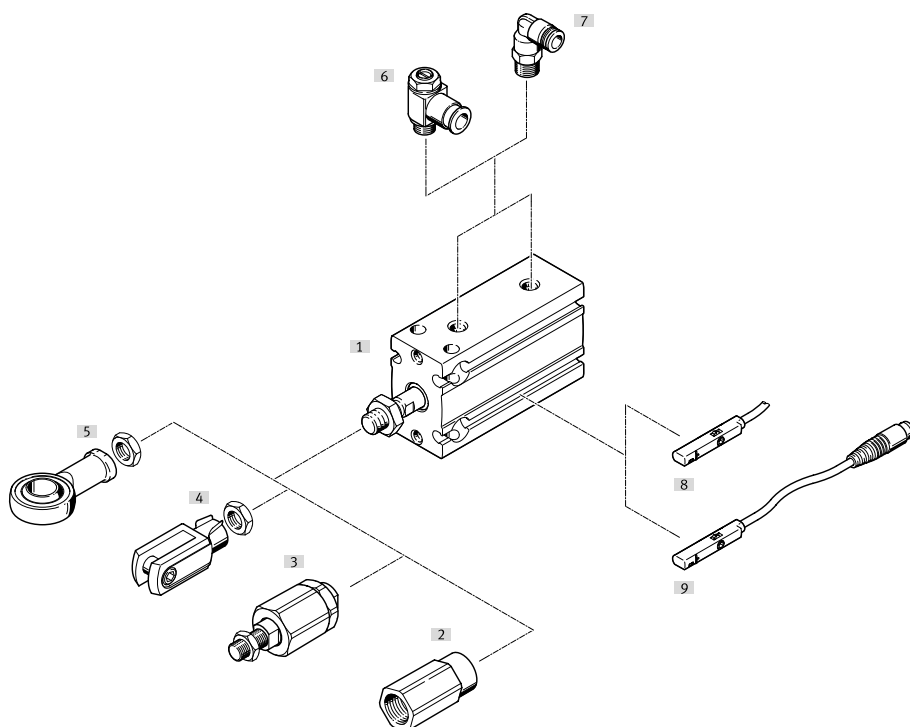
- Mounting using through-hole and female thread
- Compact design
- Piston rod variants
- For position sensing
- Sustainable in production thanks to reduced use of materials

## Ordering data – Modular product system

Ordering data									
	6	10	16	20	25	32	Conditions	Code	Enter code
Module no.	4674228	4693549	4186566	4654766	4328892	4650681			
Function	Compact cylinder							DPDM	DPDM
Protection against rotation	None								
	With protection against rotation							-Q	
Piston diameter [mm]	6	10	16	20	25	32		-...	
Stroke [mm]	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50	5, 10, 15, 20, 25, 30, 40, 50		-...	
Function	Double-acting								
	Single-acting, pulling						[1]	-P	
	Single-acting, pushing						[1]	-S	
Piston rod type	At one end								
	Through, hollow piston rod						[2]	H	
	Through piston rod						[2]	T	
Cushioning	Elastic cushioning rings/plates at both ends							-P	-P
Position sensing	Via proximity switch							A	A
Temperature range	Standard								
	Heat-resistant seals max. 120 °C						[2] [3]	-T1	
Special material properties	None								
	Recommended for production plants for manufacturing lithium-ion batteries						[4]	F1A	

- [1] P, S Only with stroke 5, 10, 15 mm  
 [2] H, T, T1 Not with P, S  
 [3] T1 Not with H, T  
 [4] T1 Not with P, S, T1

## Peripherals overview



Accessories		Manual	→ Link*
[1]	Compact cylinder DPDM-F1A	Double- and single-acting versions	45
[2]	Adapter AD	For suction cups with connection	<a href="#">dpdm</a>
[3]	Self-aligning rod coupler FK	For compensating radial and angular deviations	<a href="#">dpdm</a>
[4]	Rod clevis SG	Permits a swivelling movement of the cylinder in one plane	<a href="#">dpdm</a>
[5]	Rod eye SGS	With spherical bearing	<a href="#">dpdm</a>
[6]	One-way flow control valve GRLA/VFOH	For speed regulation	<a href="#">dpdm</a>
[7]	Push-in fitting QS	For connecting tubing with standard outside diameters	<a href="#">dpdm</a>
[8] [9]	Proximity switch SME/SMT-8, SMT-10	Can be integrated in the cylinder profile barrel	46



\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

### Proximity switches for piston diameter 6 ... 20

Ordering data – Proximity switches for C-slot, magnetoresistive							Data sheets → Internet: smt
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type	
<b>N/O contact</b>							
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5 m	551373	SMT-10M-PS-24V-E-2,5-L-OE	
		NPN	Cable, 3-wire	2.5 m	551377	SMT-10M-NS-24V-E-2,5-L-OE	

### Proximity switches for piston diameter 25/32

Ordering data – Proximity switches for T-slot, magnetoresistive						Data sheets → Internet: smt	
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type	
N/O contact							
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2,5-OE	
		NPN	Cable, 3-wire	2.5	574338	SMT-8M-A-NS-24V-E-2,5-OE	
N/C contact							
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7,5-OE	

## Standards-based cylinder DSBC, to ISO 15552, double-acting



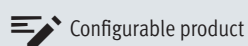
- Self-adjusting pneumatic end-position cushioning saves time during commissioning and adapts optimally to load and speed changes
- ISO 15552 (ISO 6431, VDMA 24562)
- Sustainable thanks to extended life cycle and easier repairs
- Standard profile with two sensor slots
- Wide range of variants for customised applications
- Comprehensive range of mounting accessories for just about every type of installation
- For position sensing
- Variants recommended for production systems for manufacturing lithium-ion batteries

## Type codes

001	Series	
DSBC	Standards-based cylinder, double-acting, based on ISO 15552	
002	Protection against rotation	
	None	
003	Running characteristics	
	Standard	
004	Piston diameter [mm]	
32	32	
40	40	
50	50	
63	63	
80	80	
100	100	
125	125	
005	Stroke [mm]	
...	1 ... 2800	
006	Clamping unit	
	None	
007	End-position locking	
	None	
008	Piston rod type	
	At one end	
T	Through piston rod	
009	Piston rod thread type	
	Male thread	
F	Female thread	
010	Profile type	
D3	Sensor slots on 3 profile sides	
	Sensor slot on one profile side only	

011	Cushioning	
P	Elastic cushioning rings/plates on both sides	
PPS	Pneumatic cushioning, self-adjusting at both ends	
PPV	Pneumatic cushioning, adjustable at both ends	
012	Position sensing	
A	For proximity sensor	
013	Corrosion protection	
	Standard	
014	Temperature range	
	Standard	
015	Protection against particles	
	Standard	
016	Scraper variant	
	None	
017	Special material properties	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
018	EU certification	
	None	
019	Piston rod extension	
	None	
...E	1 ... 500 mm	
020	Piston rod thread extension	
	None	
...L	0 ... 70 mm	

## Ordering data



Configurable product

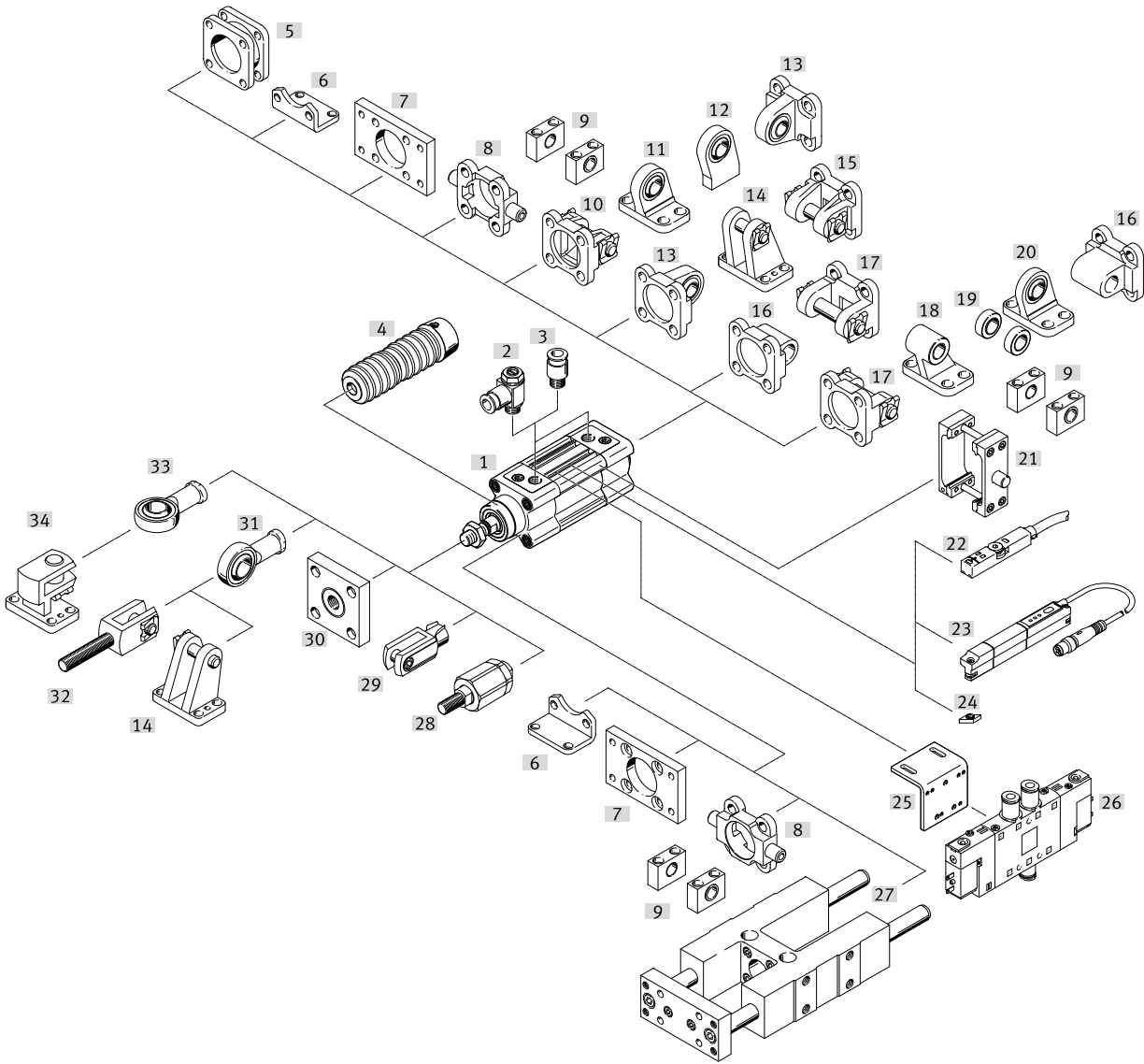
This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Piston rod cylinder > Profile cylinder and tie rod cylinder >  
Standards-based cylinder DSBC, to ISO 15552, double-acting

Modular product system – For the production of Li-ion batteries			
Piston diameter	Stroke range [mm]	Part no.	Type
32 mm	1 ... 2800 mm	8150687	DSBC-...-32- -F1A-
40 mm		8150688	DSBC-...-40- -F1A-
50 mm		8150689	DSBC-...-50- -F1A-
63 mm		8150690	DSBC-...-63- -F1A-
80 mm		8150691	DSBC-...-80- -F1A-
100 mm	1 ... 2800 mm	8150692	DSBC-...-100- -F1A-
125 mm		8150693	DSBC-...-125- -F1A-

Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Standards-based cylinder DSBC-F1A	Standards-based cylinder without accessories, basic version		47
[2] One-way flow control valve GRLA	For regulating speed		<a href="#">dsbc</a>
[3] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[4] Bellows kit DADB	<ul style="list-style-type: none"><li>Protects the cylinder (piston rod, seal and bearing) from a wide variety of media and thus prevents premature wear</li><li>Can only be used in combination with an extended piston rod (E)</li></ul>		<a href="#">dsbc</a>
[5] Multi-position kit DPNC	For connecting two cylinders with the same piston Ø to form a multi-position cylinder		<a href="#">dsbc</a>
[6] Foot mounting HNC	For bearing or end caps		<a href="#">dsbc</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Piston rod cylinder > Profile cylinder and tie rod cylinder >  
Standards-based cylinder DSBC, to ISO 15552, double-acting

Accessories		→ Link*
Type/order code	Description	
[6] Foot mounting CRHNC	<ul style="list-style-type: none"> <li>For bearing or end caps</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[7] Flange mounting CRFNG	<ul style="list-style-type: none"> <li>For bearing or end caps</li> <li>- Cannot be used on the bearing cap in combination with bellows kit DADB</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[7] Flange mounting FNC	<ul style="list-style-type: none"> <li>For bearing or end caps</li> <li>Cannot be used in combination with bellows kit DADB on the bearing cap</li> </ul>	<a href="#">dsbc</a>
[8] Trunnion flange ZNCF	<ul style="list-style-type: none"> <li>For bearing or end caps</li> <li>Cannot be used in combination with bellows kit DADB on the bearing cap</li> </ul>	<a href="#">dsbc</a>
[8] Trunnion flange CRZNG	<ul style="list-style-type: none"> <li>For bearing or end caps</li> <li>Cannot be used in combination with bellows kit DADB on the bearing cap</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[9] Trunnion support CRLNZG	-	50
[9] Trunnion support LNZG	-	50
[10] Swivel flange SNC	For end cap	<a href="#">dsbc</a>
[11] Clevis foot LSNG	With spherical bearing	<a href="#">dsbc</a>
[12] Clevis foot LSNSG	Weldable, with spherical bearing	<a href="#">dsbc</a>
[13] Swivel flange SNCS	With spherical bearing for end caps	<a href="#">dsbc</a>
[13] Swivel flange CRSNCS	<ul style="list-style-type: none"> <li>With spherical bearing for end caps</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[13] Swivel flange SNCS-...-R3	<ul style="list-style-type: none"> <li>With spherical bearing for end caps</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[14] Clevis foot LBG	-	<a href="#">dsbc</a>
[14] Clevis foot LBG-...-R3	-	<a href="#">dsbc</a>
[15] Swivel flange SNC	For end cap	<a href="#">dsbc</a>
[16] Swivel flange SNCL	For end cap	<a href="#">dsbc</a>
[17] Swivel flange SNCB	For end cap	<a href="#">dsbc</a>
[17] Swivel flange SNCB-...-R3	<ul style="list-style-type: none"> <li>For end cap</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[18] Clevis foot LNG	-	<a href="#">dsbc</a>
[18] Clevis foot CRLNG	-	50
[19] Clevis foot LSN	With spherical bearing	<a href="#">dsbc</a>
[21] Trunnion flange DAMT	For mounting anywhere on the cylinder profile barrel	<a href="#">dsbc</a>
[22] Proximity switch SME	Can be integrated in the cylinder profile	<a href="#">dsbc</a>
[22] Proximity switch SMT	Can be integrated in the cylinder profile	50
[22] Proximity switch SDBT	Can be integrated in the cylinder profile	<a href="#">dsbc</a>
[23] Position transmitter SMAT	<ul style="list-style-type: none"> <li>Continuously detects the position of the piston</li> <li>Has an analogue output</li> </ul>	<a href="#">dsbc</a>
[23] Position transmitter SDAT	<ul style="list-style-type: none"> <li>Continuously detects the position of the piston</li> <li>Has an analogue output</li> </ul>	50
[24] Slot nut ABAN	Inserted in the slot from above	<a href="#">dsbc</a>
[25] Mounting kit DAVM	For valve mounting	<a href="#">dsbc</a>
[26] Solenoid valve CPE	For standards-based cylinders	<a href="#">dsbc</a>
[26] Solenoid valve VUVG	For standards-based cylinders	<a href="#">dsbc</a>
[26] Solenoid valve VUVS	For standards-based cylinders	<a href="#">dsbc</a>
[27] Guide unit FENG	For protecting standards-based cylinders against rotation at high torque loads	<a href="#">dsbc</a>
[28] Self-aligning rod coupler FK	To compensate for radial and angular deviations	<a href="#">dsbc</a>
[28] Self-aligning rod coupler CRFK	<ul style="list-style-type: none"> <li>To compensate for radial and angular deviations</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[29] Rod clevis SG	Allows a swivelling movement of the cylinder in one plane	<a href="#">dsbc</a>
[29] Rod clevis CRSG	<ul style="list-style-type: none"> <li>Permits a swivelling movement of the cylinder in one plane</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[30] Coupling piece KSG	To compensate for radial deviations	<a href="#">dsbc</a>
[30] Coupling piece KSZ	For cylinders with a non-rotating piston rod to compensate for radial deviations	<a href="#">dsbc</a>
[31] Rod eye SGS/CRSGS	<ul style="list-style-type: none"> <li>With spherical bearing</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[32] Rod clevis SGA	With male thread	<a href="#">dsbc</a>
[33] Rod eye SGS/CRSGS	<ul style="list-style-type: none"> <li>With spherical bearing</li> <li>High corrosion protection</li> </ul>	<a href="#">dsbc</a>
[34] Clevis foot, transverse, LQG	-	<a href="#">dsbc</a>
Slot cover ABP	For protecting the sensor cables and the sensor slots from contamination	<a href="#">dsbc</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Piston rod cylinder > Profile cylinder and tie rod cylinder >

## Standards-based cylinder DSBC, to ISO 15552, double-acting

### Accessories

Trunnion support LN2G		
Description	Part no.	Type
For Ø 32	32959	LN2G-32
For Ø 40, 50	32960	LN2G-40/50
For Ø 63, 80	32961	LN2G-63/80
For Ø 100, 125	32962	LN2G-100/125

Trunnion support CRLN2G		
Description	Part no.	Type
For Ø 32	161874	CRLN2G-32
For Ø 40, 50	161875	CRLN2G-40/50
For Ø 63, 80	161876	CRLN2G-63/80
For Ø 100, 125	161877	CRLN2G-100/125

Clevis foot CRLNG		
Description	Part no.	Type
For Ø 32	161840	CRLNG-32
For Ø 40	161841	CRLNG-40
For Ø 50	161842	CRLNG-50
For Ø 63	161843	CRLNG-63
For Ø 80	161844	CRLNG-80
For Ø 100	161845	CRLNG-100
For Ø 125	176951	CRLNG-125

Connecting cables NEBA, straight – for solenoid valves VUVG		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, angled – for solenoid valves VUVG		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Proximity switch SMT for T-slot, magneto-resistive <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574337	SMT-8M-A-PS-24V-E-0,3-M12

Connecting cables NEBA, straight, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, straight, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078236	NEBA-M12G5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078237	NEBA-M12G5-U-5-N-LE3

Connecting cables NEBA, angled, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Connecting cables NEBA, angled, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078245	NEBA-M12W5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078246	NEBA-M12W5-U-5-N-LE3

Position transmitter SDAT for T-slot, plug M8, A-coded <a href="#">Link</a> <a href="#">sdat</a>		
Sensing range	Part no.	Type
0 ... 50.000 mm	8115394	SDAT-MHS-M50-1L-SV-E-0.3-M8
0 ... 50.000 mm	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
0 ... 80.000 mm	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
0 ... 100.000 mm	1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
0 ... 125.000 mm	1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
0 ... 160.000 mm	1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078228	NEBA-M8G4-U-5-N-LE4

Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078234	NEBA-M8W4-U-5-N-LE4



- Twin-piston drive, power transmission via rack and pinion principle
- Attractively priced semi-rotary drive for standard energy consumption (load capacity + speed)
- For torque requirements up to 33 Nm at 0.6 MPa
- Recommended for production plants for manufacturing Li-ion batteries
- Sustainable in production thanks to reduced use of materials

## Type codes

001	Series
<b>DRRS</b>	Semi-rotary drive
002	Size [mm]
<b>12</b>	12
<b>16</b>	16
<b>20</b>	20
<b>25</b>	25
003	Nominal swivel angle [°]
<b>180</b>	180

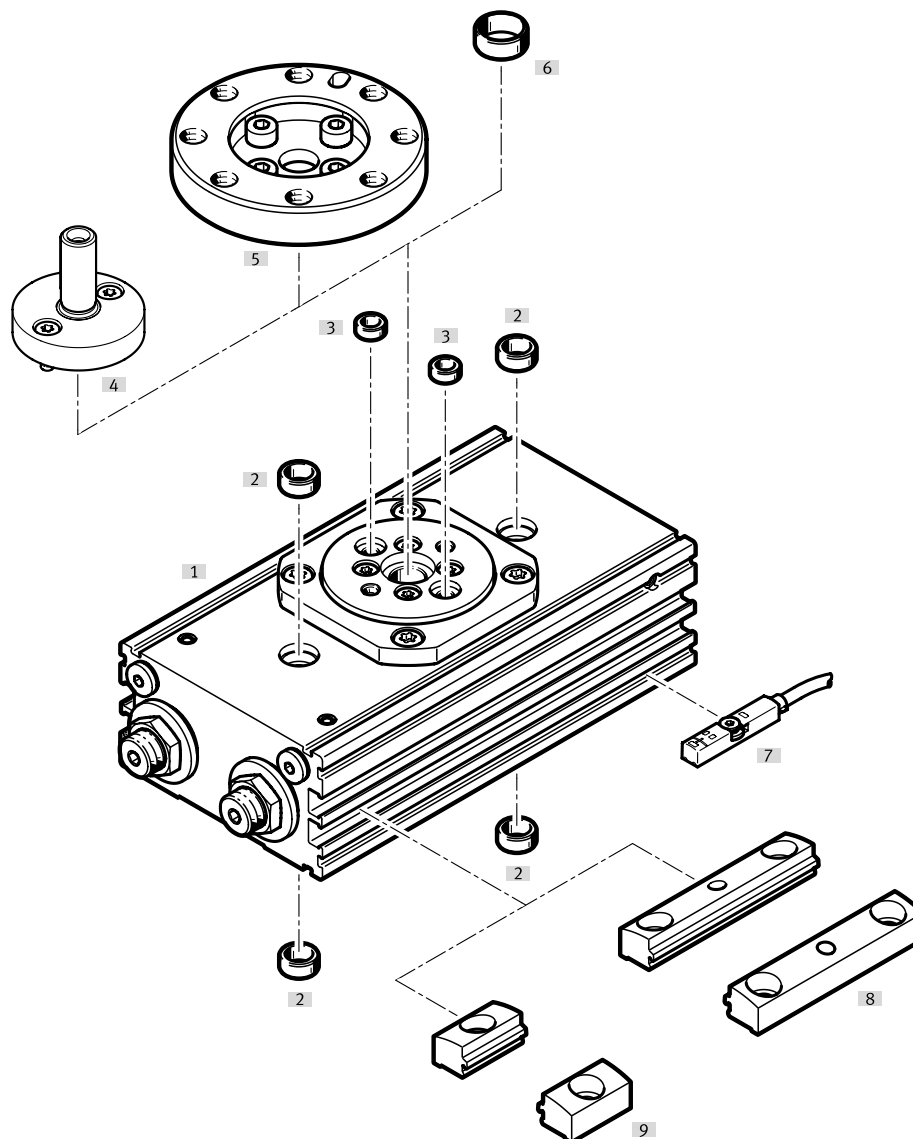
004	Output shaft
<b>FH</b>	Flanged shaft, hollow
005	Cushioning
<b>P</b>	Elastic cushioning rings/plates on both sides
<b>Y9</b>	Shock absorber, self-adjusting, linear, at both ends
006	Position sensing
<b>A</b>	For proximity sensor

## Ordering data

<b>DRRS</b>					
Size	Swivel angle	Cushioning	Pneumatic connection	Part no.	Type
12	180 deg	Elastic cushioning rings/ plates at both ends	M3	<b>8163607</b>	<b>DRRS-12-180-FH-PA</b>
16			M5	<b>8163609</b>	<b>DRRS-16-180-FH-PA</b>
20				<b>8163611</b>	<b>DRRS-20-180-FH-PA</b>
25				<b>8163613</b>	<b>DRRS-25-180-FH-PA</b>

<b>With cushioning Y9</b>				
Cushioning	Size	Part no.	Type	
Shock absorber, self-adjusting, linear, at both ends	12	<b>8163608</b>	<b>DRRS-12-180-FH-Y9A</b>	
	16	<b>8163610</b>	<b>DRRS-16-180-FH-Y9A</b>	
	20	<b>8163612</b>	<b>DRRS-20-180-FH-Y9A</b>	
	25	<b>8163614</b>	<b>DRRS-25-180-FH-Y9A</b>	

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Semi-rotary drive DRRS	Double-acting		51
[2] Centring sleeve ZBH	For centring the drive		<a href="#">drrs</a>
[3] Centring sleeve ZBH	For centring attachments (included in the scope of delivery of the attachments)		<a href="#">drrs</a>
[4] Push-on flange DARF-Q13-...-1	For mounting on the flanged shaft		53
[5] Push-on flange DARF-Q13-...-1	For mounting on the flanged shaft		53
[6] Centring sleeve ZBH	For centring attachments (included in the scope of delivery of the attachments)		<a href="#">drrs</a>
[7] Proximity switch SMT-8	- For sizes 16 ... 25 - For sensing the piston position		53
[7] Proximity switch SDBT-MSB	- For sizes 16 ... 25 - For sensing the piston position		53
[7] Proximity switch SMT-10	- For size 12 - For sensing the piston position		53
[7] Proximity switch SDBC-MSB	- For size 12 - For sensing the piston position		53
[8] Profile mounting EAHF-L2-...-P	For mounting on the side of the profile		<a href="#">drrs</a>
[9] Profile mounting EAHF-L2-...-P-S	For mounting on the side of the profile		<a href="#">drrs</a>
[10] Cushioning P	Elastic cushioning, with metal stop		<a href="#">dyef</a>
[10] Cushioning Y9	Shock absorber, self-adjusting, linear at both ends		<a href="#">dyef</a>
[11] One-way flow control valve GRLA	For adjusting the swivel speed		<a href="#">drrs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



## Accessories

## Drive shaft adapter DARF-Q13-...

Size	Part no.	Type
12	8200997	DARF-Q13-12
16	8200998	DARF-Q13-16
20	8200999	DARF-Q13-20
25	8201000	DARF-Q13-25

## Push-on flange DARF-Q13-...-1

Size	Part no.	Type
12	8163621	DARF-Q13-12-1
16	8163622	DARF-Q13-16-1
20	8163623	DARF-Q13-20-1
25	8163624	DARF-Q13-25-1

Proximity switch SMT-10M for round slot, magneto-resistive – for sizes 12 Link [smt](#)

Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551377	SMT-10M-NS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551379	SMT-10M-NS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551373	SMT-10M-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551375	SMT-10M-PS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551382	SMT-10M-ZS-24V-E-2,5-L-OE

Proximity switch SDBC-MSB for round slot, magneto-resistive – for size 12 Link [sdbc](#)

Switching output	Part no.	Type
NPN	8139724	SDBC-MSB-1L-NU-K-2-LE
PNP	8139723	SDBC-MSB-1L-PU-K-2-LE
Non-contacting, 2-wire	8139725	SDBC-MSB-1L-ZU-K-2-LE

Proximity switch SMT-8M for T-slot, magneto-resistive – for sizes 16 ... 25 Link [smt](#)

Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	8165237	SMT-8M-A-ZS-24V-E-5,0-OE

Proximity switch SDBT-MSB for T-slot, magneto-resistive – for sizes 16 ... 25 Link [sdbt](#)

Switching output	Part no.	Type
NPN	8150172	SDBT-MSB-1L-NU-K-2-LE
PNP	8150171	SDBT-MSB-1L-PU-K-2-LE
Non-contacting, 2-wire	8150173	SDBT-MSB-1L-ZU-K-2-LE

## Connecting cables NEBA, straight

Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

## Connecting cables NEBA, angled

Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Rotary actuators > Vane drives >

## Semi-rotary drive DRVS, double-acting



- Double-acting semi-rotary drive with rotary vane
- Lighter than other semi-rotary drives
- Fixed swivel angle, adjustable swivel angle possible with the help of accessories
- Housing protected against splash water and dust
- Sustainable in production thanks to reduced use of materials

### Type codes

001	Series
DRVS	Semi-rotary drive, double-acting
002	Size [mm]
6	6
8	8
12	12
16	16
25	25
32	32
40	40

003	Nominal swivel angle [°]
90	90 deg
180	180 deg
270	270 deg
004	Cushioning
P	Elastic cushioning rings/plates on both sides
005	EU certification
EX4	II 2GD

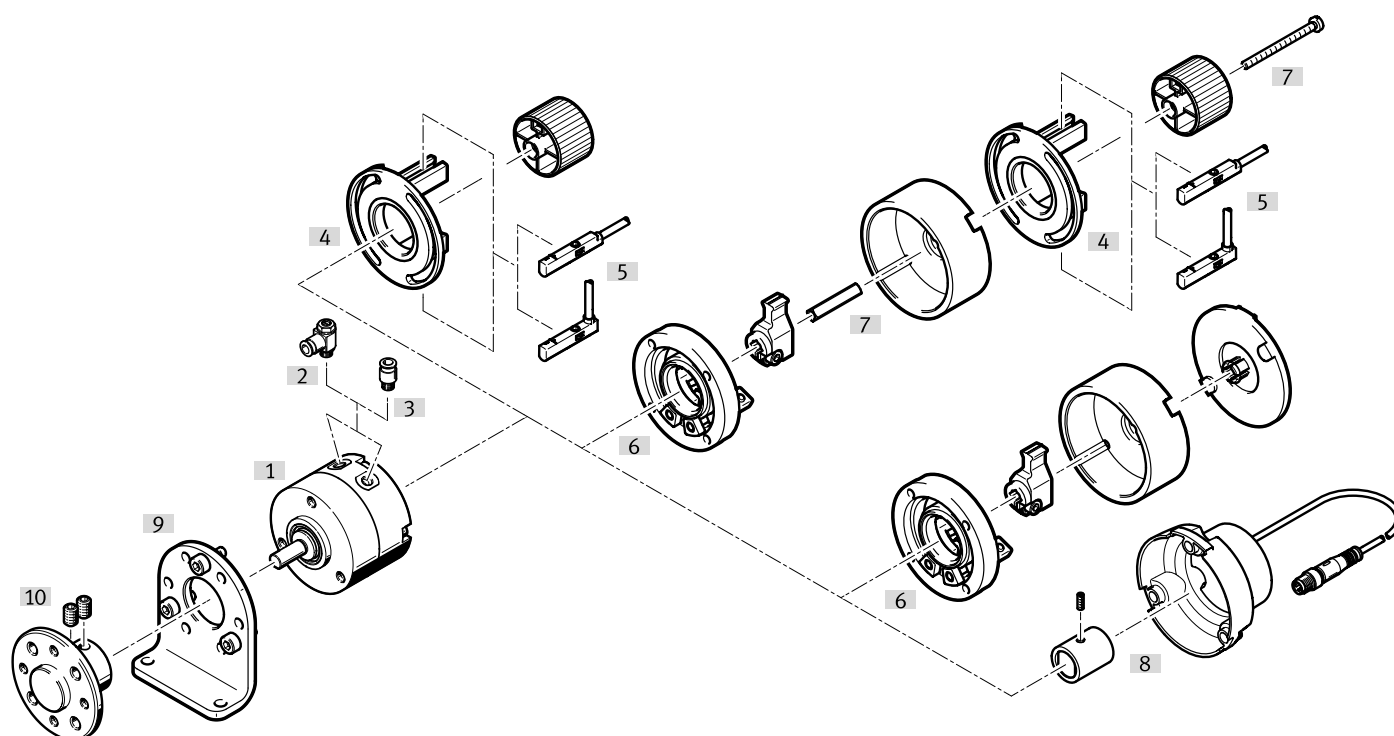
### Ordering data

DRVS with ATEX certification				
Size	Nominal swivel angle [°]	Pneumatic connection	Part no.	Type
6	90 deg	M3	2536483	DRVS-6-90-P-EX4
	180 deg		2536484	DRVS-6-180-P-EX4
8	90 deg		2536485	DRVS-8-90-P-EX4
	180 deg		2536486	DRVS-8-180-P-EX4

DRVS with ATEX certification				
Size	Nominal swivel angle [°]	Pneumatic connection	Part no.	Type
12	90 deg	M5	2536487	DRVS-12-90-P-EX4
	180 deg		2536488	DRVS-12-180-P-EX4
	270 deg		2536489	DRVS-12-270-P-EX4
16	90 deg		2536490	DRVS-16-90-P-EX4
	180 deg		2536491	DRVS-16-180-P-EX4
	270 deg		2536492	DRVS-16-270-P-EX4

DRVS with ATEX certification				
Size	Nominal swivel angle [°]	Pneumatic connection	Part no.	Type
25	90 deg	M5	2536493	DRVS-25-90-P-EX4
	180 deg		2536494	DRVS-25-180-P-EX4
	270 deg		2536495	DRVS-25-270-P-EX4
32	90 deg	G1/8	2536496	DRVS-32-90-P-EX4
	180 deg		2536497	DRVS-32-180-P-EX4
	270 deg		2536498	DRVS-32-270-P-EX4
40	90 deg		2536499	DRVS-40-90-P-EX4
	180 deg		2536500	DRVS-40-180-P-EX4
	270 deg		2536501	DRVS-40-270-P-EX4

## DRVS-6 ... 8

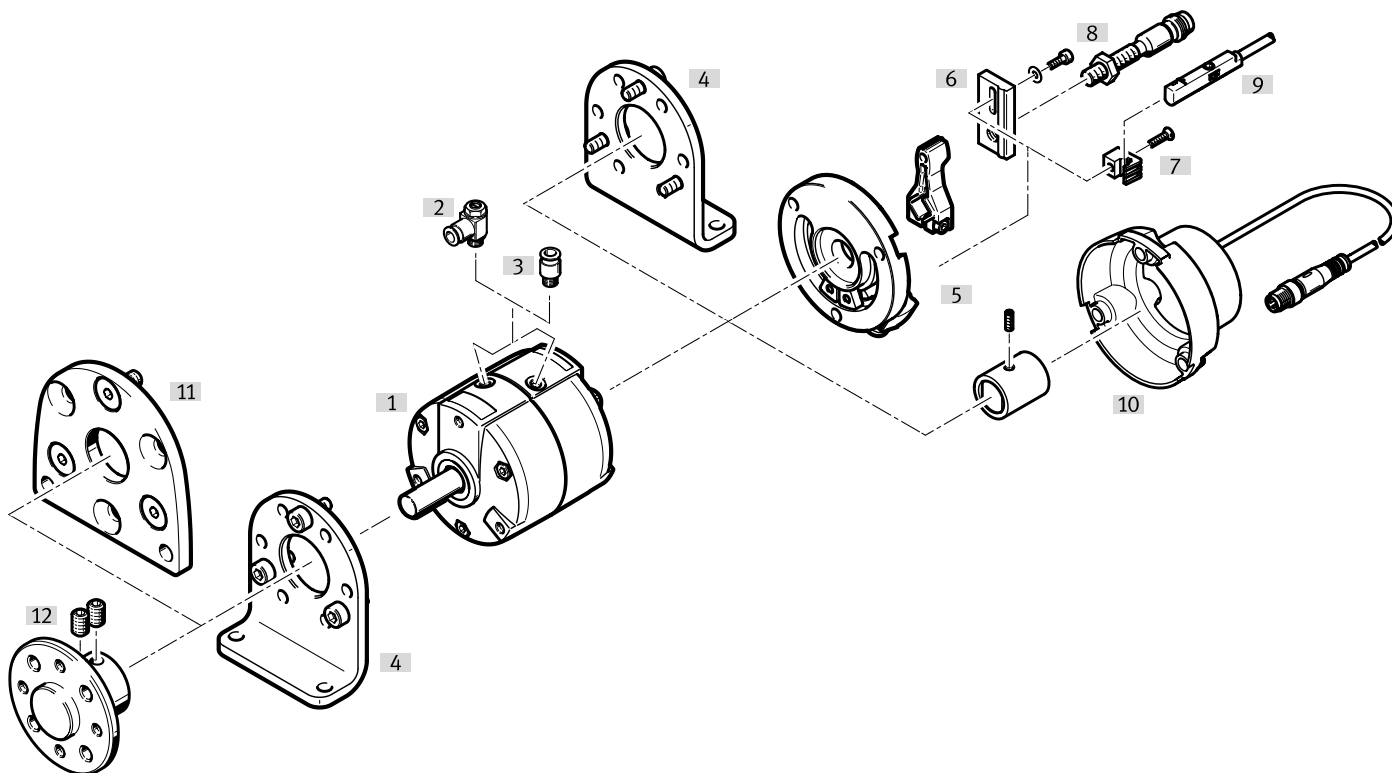


Accessories			→ Link*
Type/order code	Description		
[1] Semi-rotary drive DRVS	Semi-rotary drive		54
[2] One-way flow control valve GRLA	For regulating speed		<a href="#">drvs</a>
[3] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[4] Mounting kit WSM	<ul style="list-style-type: none"> <li>• For sensing the swivel angle</li> <li>• For mounting the proximity switches SME-/SMT-10</li> <li>• Must be ordered separately as accessories</li> <li>• Can be combined with stop kit KSM</li> <li>• The adapter kit DADP-AK must also be ordered in combination with the stop kit KSM</li> </ul>		<a href="#">drvs</a>
[5] Proximity switch SME/SMT	For sensing the end position		57
[6] Stop kit KSM	<ul style="list-style-type: none"> <li>• To adjust the swivel angle</li> <li>• Must be ordered separately as accessories</li> <li>• Can be combined with mounting kit WSM</li> <li>• The adapter kit DADP-AK must also be ordered in combination with the mounting kit WSM</li> </ul>		<a href="#">drvs</a>
[7] Adapter kit DADP-AK	For attaching the mounting kit WSM to the stop kit KSM		<a href="#">drvs</a>
[8] Position sensor SRBS	<ul style="list-style-type: none"> <li>• For sensing the swivel angle</li> <li>• For mounting directly on the quarter-turn actuator</li> <li>• Must be ordered separately as accessories</li> <li>• The scope of delivery of the position sensor includes a magnet, which must be mounted on the shaft of the quarter-turn actuator</li> </ul>		<a href="#">drvs</a>
[9] Foot mounting DAMH	<ul style="list-style-type: none"> <li>• For mounting the semi-rotary drive</li> <li>• Front mounting only</li> </ul>		<a href="#">drvs</a>
[10] Push-on flange FWSR	For mounting attachments		<a href="#">drvs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Rotary actuators > Vane drives >  
Semi-rotary drive DRVS, double-acting

DRVS-12 ... 40



Accessories			→ Link*
Type/order code	Description		
[1] Semi-rotary drive DRVS	Semi-rotary drive		54
[2] One-way flow control valve GRLA	For regulating speed		<a href="#">drvs</a>
[3] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[4] Foot mounting DAMH	<ul style="list-style-type: none"> <li>For mounting the quarter-turn actuator</li> <li>Can be mounted on one or both sides</li> </ul>		<a href="#">drvs</a>
[5] Stop kit DADP-ES	<ul style="list-style-type: none"> <li>For adjusting the swivel angle</li> <li>Must be ordered separately as accessories</li> </ul>		<a href="#">drvs</a>
[6] Sensor bracket SL-DSM-S	For mounting the round inductive proximity sensors SIEN		<a href="#">drvs</a>
[7] Sensor bracket SL-DSM-B	For mounting the proximity switches SME/SMT-10		<a href="#">drvs</a>
[8] Proximity switch SIEN	For sensing the end position		<a href="#">drvs</a>
[9] Proximity switch SME/SMT	For sensing the end position		57
[10] Position sensor SRBS	<ul style="list-style-type: none"> <li>For sensing the swivel angle</li> <li>For mounting directly on the quarter-turn actuator</li> <li>Must be ordered separately as accessories</li> <li>The scope of delivery of the position sensor includes a magnet, which must be mounted on the shaft of the quarter-turn actuator</li> </ul>		<a href="#">drvs</a>
[11] Flange mounting DAMF	For mounting the semi-rotary drive on the front using two mounting holes		<a href="#">drvs</a>
[12] Push-on flange DARF	For mounting attachments		<a href="#">drvs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Proximity switch SMT for round slot, magneto-resistive – for DRVS-6 ... 40 <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting <sup>1)</sup>	Part no.	Type
Screw-clamped, Insertable in the slot from above	<b>551373</b>	<b>SMT-10M-PS-24V-E-2,5-L-OE</b>
Screw-clamped, Insertable in the slot from above	<b>551375</b>	<b>SMT-10M-PS-24V-E-0,3-L-M8D</b>

1) For DRVS-6 ... 8: With mounting kit WSM-... SME-10

For DRVS-12 ... 40: Attached to the DRVS with sensor bracket SL-DSM-B

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	<b>8078223</b>	<b>NEBA-M8G3-U-2.5-N-LE3</b>
M8x1, A-coded, to EN 61076-2-104	<b>8078224</b>	<b>NEBA-M8G3-U-5-N-LE3</b>

Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	<b>8078230</b>	<b>NEBA-M8W3-U-2.5-N-LE3</b>
M8x1, A-coded, to EN 61076-2-104	<b>8078231</b>	<b>NEBA-M8W3-U-5-N-LE3</b>

Guided cylinders > Drives with slides >  
Mini slide DGSS



- Slim design
- Excellent positioning accuracy
- Precise and resilient roller bearing guide
- Optimum price/performance ratio
- Slide and yoke plate from one component
- Can be operated without additional cushioning elements
- Optional: stroke adjustment and external cushioning using accessories

## Type codes

001	Series	
DGSS	Mini slide	

002	Size [mm]	
6	6	
10	10	
16	16	
20	20	

003	Stroke [mm]	
5	5	
10	10	
15	15	
20	20	
25	25	
30	30	
40	40	
50	50	
60	60	

004	Cushioning	
E1	Elastomer cushioning, double-sided, stroke not adjustable	

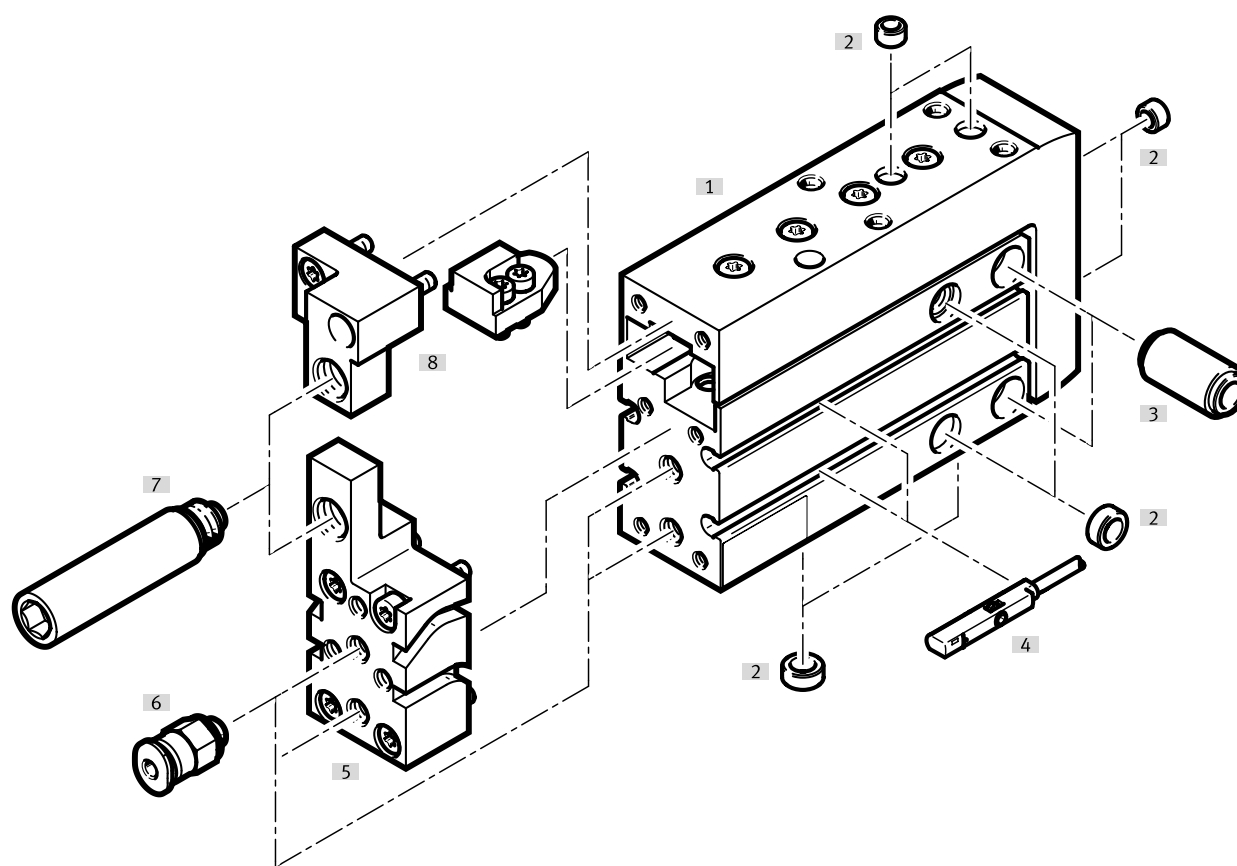
005	Position sensing	
A	For proximity sensor	

## Ordering data

Size	Stroke	Cushioning	Part no.	Type
6	5 mm	Elastomer cushioning, double-sided, stroke not adjustable	8164050	DGSS-6-5-E1A
	10 mm		8164051	DGSS-6-10-E1A
	15 mm		8164052	DGSS-6-15-E1A
	20 mm		8164053	DGSS-6-20-E1A
	25 mm		8164054	DGSS-6-25-E1A
	30 mm		8164055	DGSS-6-30-E1A
	40 mm		8164056	DGSS-6-40-E1A
	50 mm		8164057	DGSS-6-50-E1A
	60 mm		8164058	DGSS-6-60-E1A
10	5 mm		8164059	DGSS-10-5-E1A
	10 mm		8164060	DGSS-10-10-E1A
	15 mm		8164061	DGSS-10-15-E1A
	20 mm		8164062	DGSS-10-20-E1A
	25 mm		8164063	DGSS-10-25-E1A
	30 mm		8164064	DGSS-10-30-E1A
	40 mm		8164065	DGSS-10-40-E1A
	50 mm		8164066	DGSS-10-50-E1A
	60 mm		8164067	DGSS-10-60-E1A

Size	Stroke	Cushioning	Part no.	Type
16	5 mm	Elastomer cushioning, double-sided, stroke not adjustable	8164068	DGSS-16-5-E1A
	10 mm		8164069	DGSS-16-10-E1A
	15 mm		8164070	DGSS-16-15-E1A
	20 mm		8164071	DGSS-16-20-E1A
	25 mm		8164072	DGSS-16-25-E1A
	30 mm		8164073	DGSS-16-30-E1A
	40 mm		8164074	DGSS-16-40-E1A
	50 mm		8164075	DGSS-16-50-E1A
	60 mm		8164076	DGSS-16-60-E1A
20	5 mm		8164077	DGSS-20-5-E1A
	10 mm		8164078	DGSS-20-10-E1A
	15 mm		8164079	DGSS-20-15-E1A
	20 mm		8164080	DGSS-20-20-E1A
	25 mm		8164081	DGSS-20-25-E1A
	30 mm		8164082	DGSS-20-30-E1A
	40 mm		8164083	DGSS-20-40-E1A
	50 mm		8164084	DGSS-20-50-E1A
	60 mm		8164085	DGSS-20-60-E1A

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Mini slide DGSS	Compact version	58	
[2] Centring sleeve ZBH	<ul style="list-style-type: none"> <li>For centring loads and attachments</li> <li>Centring sleeves are not in the scope of delivery of the mini slide</li> </ul>	<a href="#">dgss</a>	
[3] Centring sleeve ABAZ	For mounting several mini slides next to each other	60	
[4] Proximity switch SMT-10M	<ul style="list-style-type: none"> <li>For round slot</li> <li>For position sensing</li> </ul>	60	
[4] Proximity switch SMT-10G	<ul style="list-style-type: none"> <li>For round slot</li> <li>For position sensing</li> </ul>	60	
[5] Stop kit DADP-...-R	<ul style="list-style-type: none"> <li>For mounting shock absorbers</li> <li>For cushioning the extended and retracted end position</li> <li>Stop kit DADP-...-F included in the scope of delivery</li> </ul>	60	
[6] Push-in fitting QSM	For connecting tubing with standard O.D	<a href="#">dgss</a>	
[6] One-way flow control valve GRLA	For regulating speed	<a href="#">dgss</a>	
[7] Shock absorber DYEF-G8-...-Y1	<ul style="list-style-type: none"> <li>Cushioning -P</li> <li>For cushioning the end positions</li> <li>Elastic cushioning rings/pads at both ends without metal fixed stop</li> <li>Threaded sleeve included in the scope of delivery</li> </ul>	<a href="#">dgss</a>	
[7] Shock absorber DYEF-G8-S-...-Y1	<ul style="list-style-type: none"> <li>Cushioning -E</li> <li>For cushioning the end positions</li> <li>Elastic cushioning rings/pads at both ends without metal fixed stop</li> <li>Short design</li> <li>Threaded sleeve included in the scope of delivery</li> </ul>	<a href="#">dgss</a>	
[7] Shock absorber DYSS-G8-...-Y1F	<ul style="list-style-type: none"> <li>Cushioning -Y12</li> <li>For cushioning the end positions</li> <li>Self-adjusting, hydraulic</li> <li>Threaded sleeve included in the scope of delivery</li> </ul>	60	
[7] Shock absorber DYEF-G8-...-Y1F	<ul style="list-style-type: none"> <li>Cushioning P1</li> <li>For cushioning the end positions</li> <li>Elastic cushioning rings/pads at both ends with metal fixed stop</li> <li>Threaded sleeve included in the scope of delivery</li> </ul>	<a href="#">dgss</a>	
[8] Stop kit DADP-...-F	<ul style="list-style-type: none"> <li>For mounting shock absorbers</li> <li>For cushioning the extended end position</li> </ul>	60	

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Proximity switch SMT-10M for round slot, magneto-resistive <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551377	SMT-10M-NS-24V-E-2,5-L-OE
	551379	SMT-10M-NS-24V-E-0,3-L-M8D
	551373	SMT-10M-PS-24V-E-2,5-L-OE
	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	551382	SMT-10M-ZS-24V-E-2,5-L-OE

Proximity switch SMT-10G for round slot, magneto-resistive <a href="#">Link</a> <a href="#">smt</a>		
Type of mounting	Part no.	Type
Clamped in C-slot, Insertable in the slot lengthwise	8065030	SMT-10G-NS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
Clamped in C-slot, Insertable in the slot lengthwise	547862	SMT-10G-PS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	547863	SMT-10G-PS-24V-E-0,3Q-M8D

Connecting cables NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Stop kit DADP-...-F		
Size	Part no.	Type
6	8173536	DADP-SP-G9-6-F
10	8173537	DADP-SP-G9-10-F
16	8173538	DADP-SP-G9-16-F
20	8173539	DADP-SP-G9-20-F

Stop kit DADP-...-R		
Size <sup>1)</sup>	Part no.	Type
6	8173532	DADP-SP-G9-6-R
10	8173533	DADP-SP-G9-10-R
16	8173534	DADP-SP-G9-16-R
20	8173535	DADP-SP-G9-20-R

1) Scope of delivery: DADP-...-R and DADP-...-F stop kits

Shock absorber DYSS-G8-...-Y1F (cushioning -Y12)		
Description <sup>1)</sup>	Part no.	Type
For size 6	8119980	DYSS-G8-2-4-Y1F-F1A
For size 10	8119982	DYSS-G8-4-4-Y1F-F1A-G2
For size 16	8119983	DYSS-G8-5-5-Y1F-F1A
For size 20	8119984	DYSS-G8-7-5-Y1F-F1A

1) Scope of delivery: 1 cushioning and 1 threaded sleeve

DYSS-...-F1A: recommended for production plants for manufacturing lithium-ion batteries. More information [www.festo.com/x/topic/bat](http://www.festo.com/x/topic/bat)

Centring sleeve ABAZ		
Description	Part no.	Type
For size 6	8183326	ABAZ-G9-HD-6
For sizes 10, 16	8183327	ABAZ-G9-HD-10
For size 20	8183328	ABAZ-G9-HD-20





- Powerful twin-piston drive
- Shortest mini slide on the market
- Precise recirculating ball bearing guide
- Versatile mounting options
- Version with mirrored supply port configuration and sensor slots for compact assembly available to order using the configurator
- Sustainable in production thanks to reduced use of materials

## Type codes

001	Series
DGST	Slide drive

002	Size [mm]
6	6
8	8
10	10
12	12
16	16
20	20
25	25

003	Stroke [mm]
10	10
20	20
30	30
40	40
50	50
80	80
100	100
125	125
150	150
200	200

004	Version
	Standard
L	Mirror-inverted

005	Cushioning
E	Elastomer cushioning, short, on both sides
E1	Elastomer cushioning, double-sided, stroke not adjustable
P	Elastic cushioning rings/plates on both sides
P1	Elastomer cushioning, adjustable on both sides, with fixed stop
Y12	Shock absorber, self-adjusting, linear at both ends, external

006	Position sensing
A	For proximity sensor

007	Special material properties
	None
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

008	Lubrication
	Standard
H1	Food-safe lubrication

## Ordering data



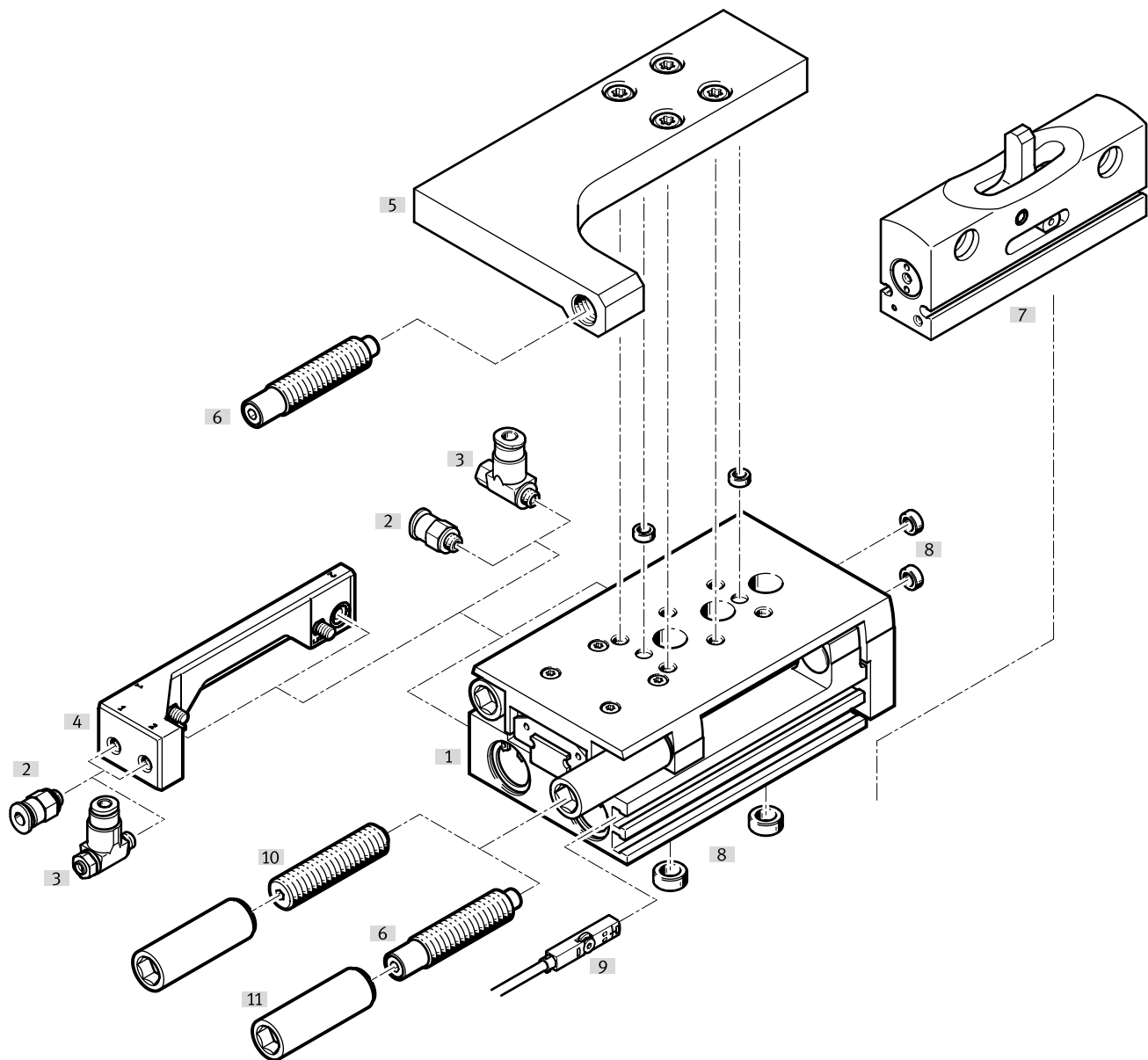
Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Modular product system			
Size [mm]	Stroke	Part no.	Type
6 mm	10 ... 50 mm	8073891	DGST-6- -
8 mm	10 ... 80 mm	8073892	DGST-8- -
10 mm	10 ... 100 mm	8073893	DGST-10- -
12 mm		8073894	DGST-12- -
16 mm	10 ... 150 mm	8073895	DGST-16- -
20 mm	10 ... 200 mm	8073896	DGST-20- -
25 mm		8073897	DGST-25- -

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Mini slide DGST	Compact design		61
[2] Push-in fitting QSM	For connecting tubing with standard O.D.		<a href="#">dgst</a>
[3] One-way flow control valve GRLA	For regulating speed		<a href="#">dgst</a>
[4] Connection kit DADG-AK-G8	For axial connection of tubing		<a href="#">dgst</a>
[5] Shock absorber retainer DADP	<ul style="list-style-type: none"> <li>Mounting for the shock absorber</li> <li>For positioning and cushioning the intermediate position</li> </ul>		<a href="#">dgst</a>
[6] Cushioning Y12	Shock absorber, self-adjusting, linear at both ends, external		<a href="#">dgst</a>
[7] Intermediate-position module DADM	With stop lever for intermediate position		<a href="#">dgst</a>
[8] Centring sleeve ZBH	<ul style="list-style-type: none"> <li>For centring loads and attachments</li> <li>Centring sleeves are not in the scope of delivery of the mini slide</li> </ul>		63
[9] Position transmitter SMAT-8M/SDAT	<ul style="list-style-type: none"> <li>Analogue position feedback possible</li> <li>Analogue output selectable: 0 ... 10 V, 0 ... 20 mA</li> </ul>		63
[9] Proximity switches SMT-10/-8	For position detection. Can be integrated in the sensor slot, thus no protrusion		63
[10] Cushioning P	Elastic cushioning rings/plates at both ends		<a href="#">dgst</a>
[10] Cushioning P1	Elastomer cushioning, adjustable at both ends, with fixed stop		<a href="#">dgst</a>
[10] Cushioning E	Elastomer cushioning, short, at both ends		<a href="#">dgst</a>
[11] Threaded sleeve	To fix the cushioning elements		<a href="#">dgst</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Centring sleeve ZBH – for shock absorber retainer DADP		
Description	Part no.	Type
For sizes 12, 16	8146543	ZBH-5-B
For sizes 20, 25	8137185	ZBH-12-B

Shock absorber – for DGST-...-Y12		
Description	Part no.	Type
For size 6	8119980	DYSS-G8-2-4-Y1F-F1A
For size 8	8119981	DYSS-G8-3-4-Y1F-F1A-G2
For size 10	8119982	DYSS-G8-4-4-Y1F-F1A-G2
For size 12	8119983	DYSS-G8-5-5-Y1F-F1A
For size 16	8119984	DYSS-G8-7-5-Y1F-F1A
For size 20	8132349	DYSS-G8-8-8-Y1F-F1A
For size 25	8132350	DYSS-G8-10-10-Y1F-F1A

Centring sleeve ZBH – for slides		
Description	Part no.	Type
For sizes 6, 8, 10, 12, 16	8146543	ZBH-5-B
For sizes 20, 25	8137185	ZBH-12-B

Centring sleeve/centring pin ZBH/ZBS – for yoke plate		
Description	Part no.	Type
For sizes 8, 10	8146543	ZBH-5-B
For sizes 12, 16	8146544	ZBH-7-B
For sizes 20, 25	8137185	ZBH-12-B

Centring sleeve ZBH – for basic drive		
Description	Part no.	Type
For size 6, 8	8119593	ZBH-5-M4
For size 16	8137184	ZBH-9-B
For size 20, 25	8137185	ZBH-12-B
For sizes 25, 32	8146544	ZBH-7-B

Proximity switch SMT-10 for round slot, magneto-resistive – for sizes 6 ... 12 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551377	SMT-10M-NS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551378	SMT-10M-NS-24V-E-2,5-Q-OE
Screw-clamped, Insertable in the slot from above	551380	SMT-10M-NS-24V-E-0,3-Q-M8D

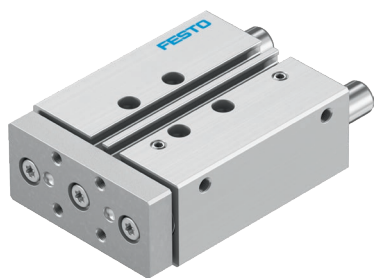
Proximity switch SMT-10 for round slot, magneto-resistive – for sizes 6 ... 12 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551379	SMT-10M-NS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551373	SMT-10M-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551375	SMT-10M-PS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551376	SMT-10M-PS-24V-E-0,3-Q-M8D

Proximity switch SMT-8 for T-slot, magneto-resistive – for sizes 16 ... 25 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D

Position transmitter SDAT for T-slot, M8 plug, A-coded – For size 16 ... 25 Link <a href="#">sdas</a>		
Sensing range	Part no.	Type
0 ... 50.000 mm	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
0 ... 80.000 mm	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
0 ... 100.000 mm	1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
0 ... 125.000 mm	1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
0 ... 160.000 mm	1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

Position transmitter SDAS for T-slot, connector M8, A-coded Link <a href="#">sdas</a>		
Description	Part no.	Type
Operating modes: two adjustable switching outputs; IO-Link®	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8
Operating modes: two adjustable switching outputs; IO-Link®	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE

Guided cylinders > Drives with guide rods >  
Guided drive DFM, double-acting



- Drive and guide unit in a single housing
- High resistance to torques and lateral forces
- Plain or recirculating ball bearing guide
- Wide variety of mounting and attachment options
- Wide range of variants for customised applications

## Type codes

001	Series
DFM	Guided drive, double-acting
002	Piston diameter [mm]
12	12
16	16
20	20
25	25
32	32
40	40
50	50
63	63
003	Stroke range [mm]
...	10, 20, 25, 30, 40, 50, 80, 100, 125, 160, 200
004	Generation
	Standard
005	Cushioning
P	Elastic cushioning rings/plates on both sides
006	Position sensing
A	For proximity sensor

007	Guide
GF	Plain bearing
KF	Recirculating ball bearing guide
008	Temperature range
	Standard
009	Precision adjustment extended
	None
010	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A
011	Precision adjustment retracting
	None
012	Slot cover, sensor slot
	None
013	Proximity switch, with cable, 2.5 m
	None
014	Proximity switch, contactless, with cable, 2.5 m
	None

## Ordering data

DFM with plain-bearing guide GF and variant F1A (recommended for production facilities for manufacturing lithium-ion batteries)			
Piston diameter	Stroke	Part no.	Type
12 mm	10 mm	8118623	DFM-12-10-P-A-GF-F1A
	20 mm	8118624	DFM-12-20-P-A-GF-F1A
	25 mm	8118625	DFM-12-25-P-A-GF-F1A
	30 mm	8118626	DFM-12-30-P-A-GF-F1A
	40 mm	8118627	DFM-12-40-P-A-GF-F1A
	50 mm	8118628	DFM-12-50-P-A-GF-F1A
	80 mm	8118629	DFM-12-80-P-A-GF-F1A
	100 mm	8118630	DFM-12-100-P-A-GF-F1A
16 mm	10 mm	8118822	DFM-16-10-P-A-GF-F1A
	20 mm	8118823	DFM-16-20-P-A-GF-F1A
	25 mm	8118824	DFM-16-25-P-A-GF-F1A
	30 mm	8118825	DFM-16-30-P-A-GF-F1A
	40 mm	8118826	DFM-16-40-P-A-GF-F1A
	50 mm	8118827	DFM-16-50-P-A-GF-F1A
	80 mm	8118828	DFM-16-80-P-A-GF-F1A
	100 mm	8118829	DFM-16-100-P-A-GF-F1A

## Ordering data

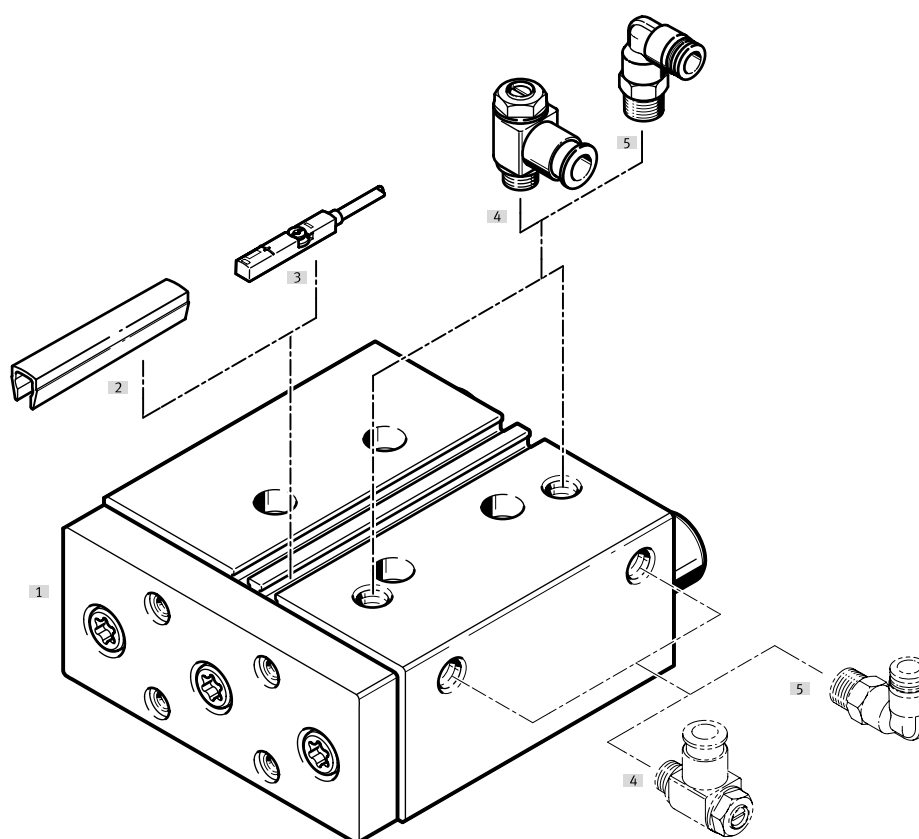
DFM with plain-bearing guide GF and variant F1A (recommended for production facilities for manufacturing lithium-ion batteries)			
Piston diameter	Stroke	Part no.	Type
20 mm	20 mm	8118843	DFM-20-20-P-A-GF-F1A
	25 mm	8118844	DFM-20-25-P-A-GF-F1A
	30 mm	8118845	DFM-20-30-P-A-GF-F1A
	40 mm	8118846	DFM-20-40-P-A-GF-F1A
	50 mm	8118847	DFM-20-50-P-A-GF-F1A
	80 mm	8118848	DFM-20-80-P-A-GF-F1A
	100 mm	8118849	DFM-20-100-P-A-GF-F1A
25 mm	20 mm	8118862	DFM-25-20-P-A-GF-F1A
	25 mm	8118863	DFM-25-25-P-A-GF-F1A
	30 mm	8118864	DFM-25-30-P-A-GF-F1A
	40 mm	8118865	DFM-25-40-P-A-GF-F1A
	50 mm	8118866	DFM-25-50-P-A-GF-F1A
	80 mm	8118867	DFM-25-80-P-A-GF-F1A
	100 mm	8118868	DFM-25-100-P-A-GF-F1A
32 mm	20 mm	8118881	DFM-32-20-P-A-GF-F1A
	25 mm	8118882	DFM-32-25-P-A-GF-F1A
	30 mm	8118883	DFM-32-30-P-A-GF-F1A
	40 mm	8118884	DFM-32-40-P-A-GF-F1A
	50 mm	8118885	DFM-32-50-P-A-GF-F1A
	80 mm	8118886	DFM-32-80-P-A-GF-F1A
	100 mm	8118887	DFM-32-100-P-A-GF-F1A
	125 mm	8118888	DFM-32-125-P-A-GF-F1A
	160 mm	8118889	DFM-32-160-P-A-GF-F1A
40 mm	200 mm	8118890	DFM-32-200-P-A-GF-F1A
	25 mm	8118907	DFM-40-25-P-A-GF-F1A
	50 mm	8118908	DFM-40-50-P-A-GF-F1A
	80 mm	8118909	DFM-40-80-P-A-GF-F1A
	100 mm	8118910	DFM-40-100-P-A-GF-F1A
	125 mm	8118911	DFM-40-125-P-A-GF-F1A
	160 mm	8118912	DFM-40-160-P-A-GF-F1A
	200 mm	8118913	DFM-40-200-P-A-GF-F1A
50 mm	25 mm	8118927	DFM-50-25-P-A-GF-F1A
	50 mm	8118928	DFM-50-50-P-A-GF-F1A
	80 mm	8118929	DFM-50-80-P-A-GF-F1A
	100 mm	8118930	DFM-50-100-P-A-GF-F1A
	125 mm	8118931	DFM-50-125-P-A-GF-F1A
	160 mm	8118932	DFM-50-160-P-A-GF-F1A
	200 mm	8118933	DFM-50-200-P-A-GF-F1A
63 mm	25 mm	8118947	DFM-63-25-P-A-GF-F1A
	50 mm	8118948	DFM-63-50-P-A-GF-F1A
	80 mm	8118949	DFM-63-80-P-A-GF-F1A
	100 mm	8118950	DFM-63-100-P-A-GF-F1A
	125 mm	8118951	DFM-63-125-P-A-GF-F1A
	160 mm	8118952	DFM-63-160-P-A-GF-F1A
	200 mm	8118953	DFM-63-200-P-A-GF-F1A

Guided cylinders > Drives with guide rods >  
Guided drive DFM, double-acting

## Ordering data

DFM with recirculating ball bearing guide KF and variant F1A (recommended for production facilities for the manufacture of lithium-ion batteries)			
Piston diameter	Stroke	Part no.	Type
12 mm	10 mm	8118631	DFM-12-10-P-A-KF-F1A
	20 mm	8118632	DFM-12-20-P-A-KF-F1A
	25 mm	8118633	DFM-12-25-P-A-KF-F1A
	30 mm	8118634	DFM-12-30-P-A-KF-F1A
	40 mm	8118635	DFM-12-40-P-A-KF-F1A
	50 mm	8118636	DFM-12-50-P-A-KF-F1A
	80 mm	8118637	DFM-12-80-P-A-KF-F1A
	100 mm	8118638	DFM-12-100-P-A-KF-F1A
16 mm	10 mm	8118830	DFM-16-10-P-A-KF-F1A
	20 mm	8118831	DFM-16-20-P-A-KF-F1A
	25 mm	8118832	DFM-16-25-P-A-KF-F1A
	30 mm	8118833	DFM-16-30-P-A-KF-F1A
	40 mm	8118834	DFM-16-40-P-A-KF-F1A
	50 mm	8118835	DFM-16-50-P-A-KF-F1A
	80 mm	8118836	DFM-16-80-P-A-KF-F1A
	100 mm	8118837	DFM-16-100-P-A-KF-F1A
20 mm	20 mm	8118850	DFM-20-20-P-A-KF-F1A
	25 mm	8118851	DFM-20-25-P-A-KF-F1A
	30 mm	8118852	DFM-20-30-P-A-KF-F1A
	40 mm	8118853	DFM-20-40-P-A-KF-F1A
	50 mm	8118854	DFM-20-50-P-A-KF-F1A
	80 mm	8118855	DFM-20-80-P-A-KF-F1A
	100 mm	8118856	DFM-20-100-P-A-KF-F1A
25 mm	20 mm	8118869	DFM-25-20-P-A-KF-F1A
	25 mm	8118870	DFM-25-25-P-A-KF-F1A
	30 mm	8118871	DFM-25-30-P-A-KF-F1A
	40 mm	8118872	DFM-25-40-P-A-KF-F1A
	50 mm	8118873	DFM-25-50-P-A-KF-F1A
	80 mm	8118874	DFM-25-80-P-A-KF-F1A
	100 mm	8118875	DFM-25-100-P-A-KF-F1A
32 mm	20 mm	8118891	DFM-32-20-P-A-KF-F1A
	25 mm	8118892	DFM-32-25-P-A-KF-F1A
	30 mm	8118893	DFM-32-30-P-A-KF-F1A
	40 mm	8118894	DFM-32-40-P-A-KF-F1A
	50 mm	8118895	DFM-32-50-P-A-KF-F1A
	80 mm	8118896	DFM-32-80-P-A-KF-F1A
	100 mm	8118897	DFM-32-100-P-A-KF-F1A
	125 mm	8118898	DFM-32-125-P-A-KF-F1A
	160 mm	8118899	DFM-32-160-P-A-KF-F1A
	200 mm	8118900	DFM-32-200-P-A-KF-F1A
40 mm	25 mm	8118914	DFM-40-25-P-A-KF-F1A
	50 mm	8118915	DFM-40-50-P-A-KF-F1A
	80 mm	8118916	DFM-40-80-P-A-KF-F1A
	100 mm	8118917	DFM-40-100-P-A-KF-F1A
	125 mm	8118918	DFM-40-125-P-A-KF-F1A
	160 mm	8118919	DFM-40-160-P-A-KF-F1A
	200 mm	8118920	DFM-40-200-P-A-KF-F1A
50 mm	25 mm	8118934	DFM-50-25-P-A-KF-F1A
	50 mm	8118935	DFM-50-50-P-A-KF-F1A
	80 mm	8118936	DFM-50-80-P-A-KF-F1A
	100 mm	8118937	DFM-50-100-P-A-KF-F1A
	125 mm	8118938	DFM-50-125-P-A-KF-F1A
	160 mm	8118939	DFM-50-160-P-A-KF-F1A
	200 mm	8118940	DFM-50-200-P-A-KF-F1A
63 mm	25 mm	8118954	DFM-63-25-P-A-KF-F1A
	50 mm	8118955	DFM-63-50-P-A-KF-F1A
	80 mm	8118956	DFM-63-80-P-A-KF-F1A
	100 mm	8118957	DFM-63-100-P-A-KF-F1A
	125 mm	8118958	DFM-63-125-P-A-KF-F1A
	160 mm	8118959	DFM-63-160-P-A-KF-F1A
	200 mm	8118960	DFM-63-200-P-A-KF-F1A

## Peripherals overview – DFM-12 ... 100



Accessories			→ Link*
Type/order code	Description		
[1] Guided drive DFM-F1A	Guided drive, basic version		64
[2] Slot cover ABP-5-S	To protect the sensor cables and the sensor slots from contamination		<a href="#">dfm</a>
[3] Proximity switch SME-/SMT-8	Can be integrated in the profile barrel		68
[4] One-way flow control valve GRLA	For regulating speed		<a href="#">dfm</a>
[5] Push-in fitting QSM/QS	For connecting tubing with standard O.D.		<a href="#">qs</a>
[6] Centring sleeves ZBH	4 or 6 pieces included in the scope of delivery		68
[7] Adapter kit DHAA	For combining DFM with DGC/EGC		<a href="#">dfm</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Guided cylinders > Drives with guide rods >  
Guided drive DFM, double-acting

## Accessories

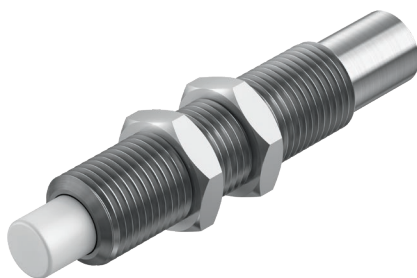
Centring sleeve ZBH		
Description	Part no.	Type
For housing Ø 20 ... 25, To be attached to the housing and the yoke plate	8146544	ZBH-7-B
For yoke plate Ø 100, For housing Ø 100, To be attached to the housing and the yoke plate	191409	ZBH-15
For yoke plate Ø 12 ... 16, For housing Ø 12 ... 16, To be attached to the housing and the yoke plate	8146543	ZBH-5-B
For yoke plate Ø 20 ... 40, For housing Ø 12 ... 25, To be attached to the housing and the yoke plate	8137184	ZBH-9-B
For yoke plate Ø 50 ... 80, For housing Ø 50 ... 80, To be attached to the housing and the yoke plate	8137185	ZBH-12-B

DFM-6 ... 10 – Proximity switch SMT-10G for round slot, magneto-resistive Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Clamped in C-slot, Insertable in the slot lengthwise	8065030	SMT-10G-NS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
Clamped in C-slot, Insertable in the slot lengthwise	547862	SMT-10G-PS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	547863	SMT-10G-PS-24V-E-0,3Q-M8D

DFM-12-B – Proximity switch SMT-10M for round slot, magneto-resistive Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551373	SMT-10M-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551375	SMT-10M-PS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551376	SMT-10M-PS-24V-E-0,3-Q-M8D

DFM-12 ... 100 – Proximity switch SMT-8M for T-slot, magneto-resistive Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574337	SMT-8M-A-PS-24V-E-0,3-M12





- Hydraulic shock absorber with path-controlled flow control function
- Rapidly increasing cushioning force curve
- Short cushioning stroke
- Suitable for low-vibration operation

## Type codes

001	Series
DYSS	Shock absorber
002	Allocation
	None
G8	Version G8
003	Size
2	2 mm
3	3 mm
4	4 mm
5	5 mm
7	7 mm
8	8 mm
10	10 mm

004	Stroke [mm]
4	4
5	5
8	8
10	10
005	Geometric characteristics
Y1	Internal hex
006	Stop
F	With fixed stop
007	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

## Ordering data

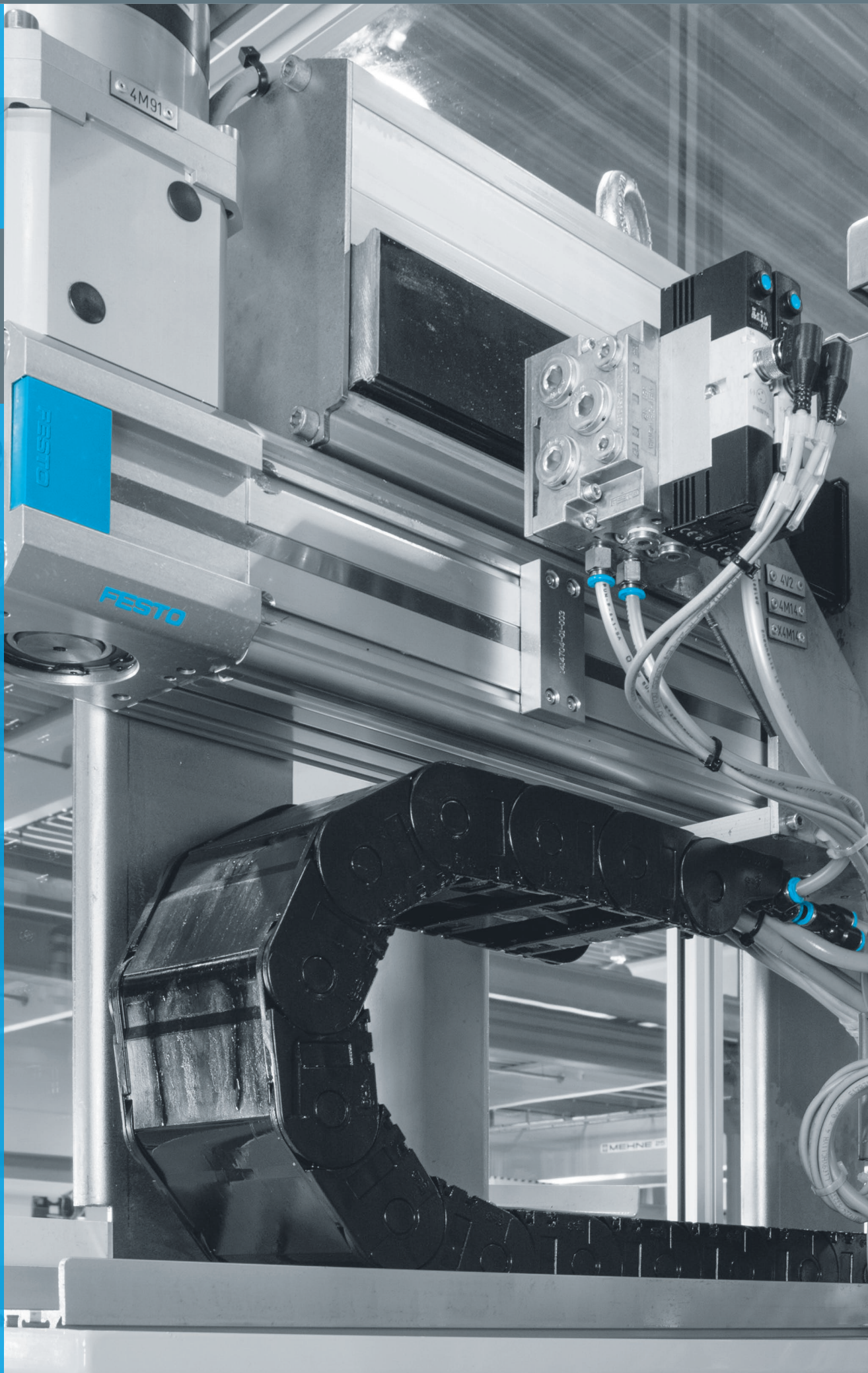
DYSS-...-Y1F-F1A-... – For manufacturing Li-ion batteries					
Size	Stroke	Cushioning	Allocation	Part no.	Type
2	4 mm	Self-adjusting	None	8119993	DYSS-2-4-Y1F-F1A
3				8179966	DYSS-3-4-Y1F-F1A-G2
4				8119994	DYSS-4-4-Y1F-F1A-G2
5	5 mm			8179967	DYSS-5-5-Y1F-F1A
7				8179968	DYSS-7-5-Y1F-F1A
8				8179969	DYSS-8-8-Y1F-F1A
10	10 mm			8179970	DYSS-10-10-Y1F-F1A

DYSS-G8-...-Y1F-F1A-... – for manufacturing Li-ion batteries, for DGSS/DGST					
Size	Stroke	Cushioning	Allocation <sup>1)</sup>	Part no.	Type
2	4 mm	Self-adjusting	Version G8	8119980	DYSS-G8-2-4-Y1F-F1A
3				8119981	DYSS-G8-3-4-Y1F-F1A-G2
4				8119982	DYSS-G8-4-4-Y1F-F1A-G2
5	5 mm			8119983	DYSS-G8-5-5-Y1F-F1A
7				8119984	DYSS-G8-7-5-Y1F-F1A
8				8132349	DYSS-G8-8-8-Y1F-F1A
10	10 mm			8132350	DYSS-G8-10-10-Y1F-F1A

<sup>1)</sup> Version G8 = for mini slide DGSS/DGST

# 02

## Electric drives



# Highlights



Electric cylinder units with spindle drive

## EPCC

- + Low-cost: optimum price-performance ratio
- + Dynamic due to low internal friction

→ 103

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Toothed belt axis ELGD-TB-KF-WD, with recirculating ball bearing guide, wide design	81
Ball screw axes ELGD-BS-KF, with recirculating ball bearing guide	85
Ball screw axes ELGD-BS-KF-WD, with recirculating ball bearing guide, wide version	89
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Spindle axis ELGC-BS-KF, with recirculating ball bearing guide	95
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Mini slide EGSC-BS-KF	112
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## Product overview

### Software-Tools

#### Electric Motion Sizing



Find the right electric or electromechanical servo drive.  
This is how you can quickly and easily find the right electromechanical drive solution for your application:  
Electric Motion Sizing, the online sizing and simulation tool for electric drives (servo drives and motors = servo drive package) as well as for electromechanical drive solutions (= electromechanical servo drive package consisting of servo drives and motors as well as mechanics) helps you do this.

This tool can be found at  
→ [www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

#### Simplified Motion Series – Solution Finder



The simplicity of pneumatics is now combined for the first time with the advantages of electric automation thanks to the Simplified Motion Series.  
These integrated drives are the perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks, but don't want the commissioning process for traditional electric drive systems that can often be quite complex.

This tool can be found at  
→ [www.festo.com/x/simplified-motion-series](http://www.festo.com/x/simplified-motion-series)


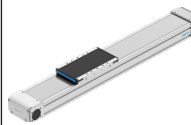
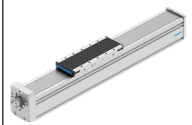
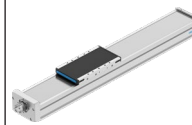
#### CO2 & TCO Guide



CO2 values and TCO for your application.  
Take a quantum leap in automation technology. By using suitable components from Festo in an intelligent way, you can reduce the energy consumption of your systems and thus specifically lower your production's carbon emissions.

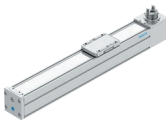


This tool can be found at  
→ [www.festo.com/x/co2-tco](http://www.festo.com/x/co2-tco)

## Electric linear drives




	 <b>Toothed belt axis ELGD-TB-KF</b>	 <b>Toothed belt axis ELGD-TB-KF-WD</b>	 <b>Ball screw axis ELGD-BS-KF</b>	 <b>Ball screw axis ELGD-BS-KF-WD</b>
<b>Size</b>	60, 80	100	60, 80	100
<b>Max. feed force F<sub>x</sub></b>	350 ... 800 N	240 N	1550 ... 2650 N	1100 N
<b>Repetition accuracy</b>	+/-0.1 mm	+/-0.1 mm	+/-0.01 mm	+/-0.01 mm
<b>Working stroke</b>	50 ... 8500 mm	50 ... 8500 mm	50 ... 2000 mm	50 ... 1000 mm
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• For applications requiring a high dynamic response and short positioning times</li> <li>• For long strokes</li> <li>• Excellent rigidity and load capacity of the guide for greater load in the same installation space</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced profile heights offer smaller installation dimensions for handling systems and applications that do not require such high feed forces</li> <li>• For applications requiring a high dynamic response and short positioning times</li> <li>• For long strokes</li> <li>• 30% lighter, while rigidity and guide load capacity are still similar to the axis in the standard design</li> </ul>	<ul style="list-style-type: none"> <li>• For applications requiring precision</li> <li>• High reliability and long service life</li> <li>• For high loads</li> <li>• Excellent rigidity and load capacity of the guide for greater load in the same installation space</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced profile heights offer smaller installation dimensions for handling systems and applications that do not require such high feed forces</li> <li>• For applications requiring precision</li> <li>• High reliability and long service life</li> <li>• For high loads</li> <li>• 30% lighter, while rigidity and guide load capacity are still similar to the axis in the standard design</li> </ul>
<b>online:</b> →	<b>77</b>	<b>81</b>	<b>85</b>	<b>89</b>

Product overview

Electric linear drives

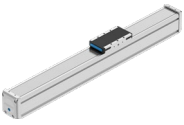

			
	<b>Toothed belt axes ELGC-TB-KF</b>	<b>Spindle axes ELGC-BS-KF</b>	<b>Spindle axes ELGT-BS</b>
Size	45, 60, 80	32, 45, 60, 80	90, 120, 160
Max. feed force Fx	75 ... 250 N	40 ... 350 N	805 ... 1575 N
Repetition accuracy	+/-0.1 mm	+/-0.01 mm, +/-0.015 mm	+/-0.02 mm
Working stroke	200 ... 2000 mm	100 ... 1000 mm	50 ... 1400 mm
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
Description	<ul style="list-style-type: none"> <li>• Precision guide rail with high load capacity</li> <li>• Internal guide and toothed belt</li> <li>• Flexible motor mounting</li> <li>• The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Internal guide and ball screw drive</li> <li>• Space-saving position sensing</li> <li>• Flexible motor mounting</li> <li>• The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Great resilience and rigidity due to double-acting guide</li> <li>• Compact design</li> <li>• With ball screw drive</li> <li>• Optimal ratio between installation space and working space due to the optimised axis design</li> <li>• Simple integration of motors with mounting kits</li> <li>• Optimised for use in the electronics and automotive industry</li> </ul>
online: ➔	92	95	98

## Electric cylinders and slides

			
	<b>Electric cylinder EPCC-BS</b>	<b>Electric cylinders ESBF</b>	<b>Mini slides EGSC-BS-KF</b>
<b>Size</b>	25, 32, 45, 60	32, 40, 50, 63, 80, 100	25, 32, 45, 60
<b>Max. feed force F<sub>x</sub></b>	75 ... 1000 N	1000 ... 17000 N	20 ... 250 N
<b>Repetition accuracy</b>	+/-0.02 mm		+/-0.015 mm
<b>Stroke</b>	25 ... 500 mm	30 ... 1500 mm	25 ... 200 mm
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Low-cost: optimum price/performance ratio</li> <li>• Flexible: wide range of mounting options for the motor</li> <li>• Dynamic: lower internal friction</li> <li>• Non-rotating piston rod with plain-bearing guide, stroke up to 500 mm</li> <li>• Weight-optimised design – ideal for handling systems</li> <li>• Unique: “One-size-down” assembly system for the best use of space in combination with toothed belt/spindle axis ELGC</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Available with ball screw drive (size 32 ... 100) or lead screw (size 32 ... 50)</li> <li>• Ball screw: with three spindle pitches for selecting the optimal force-speed ratio</li> <li>• Optional: high corrosion protection, degree of protection IP65, food-safe (see <a href="http://www.festo.com/certificates/ESBF">www.festo.com/certificates/ESBF</a>), piston rod extension</li> <li>• Axial or parallel motor mounting</li> <li>• 68 types in stock with short delivery times and modular products for custom variants</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Precise guide and ball screw drive</li> <li>• Compact dimensions</li> <li>• Flexible motor mounting</li> <li>• The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>103</b>	<b>108</b>	<b>112</b>

## Accessories for electric drives &gt;

## Linear guides

		
	<b>Guide axes ELFD</b>	<b>Guide axes ELFC</b>
<b>Size</b>	60, 80	32, 45, 60, 80
<b>Stroke</b>	50 ... 8500 mm	100 ... 2000 mm
<b>Guide</b>	Recirculating ball bearing guide	Recirculating ball bearing guide
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• For ball screw/toothed belt axes with recirculating ball bearing guide ELGD-BS-KF/ELGD-TB-KF (drive axes)</li> <li>• Driveless linear guide unit with guide and freely movable slide unit</li> <li>• For supporting forces and torques in multi-axis applications</li> <li>• High torsional resistance</li> <li>• Reduced vibrations with dynamic loads</li> </ul>	<ul style="list-style-type: none"> <li>• Toothed belt axes with recirculating ball bearing guide ELGA-BS-KF/ELGA-TB-KF (drive axes)</li> <li>• Driveless linear guide unit with guide and freely movable slide unit</li> <li>• For supporting forces and torques in multi-axis applications</li> <li>• High torsional resistance</li> <li>• Reduced vibrations with dynamic loads</li> </ul>
<b>online: →</b>	<b>115</b>	<b>119</b>

## Product overview

### Customised components – for your specific requirements



#### Drives with customised designs

Can't find the electromechanical drive you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Special strokes
- Design for special environmental conditions
- Design optimised for the installation space
- Design with opposing carriages
- Design with absolute encoder

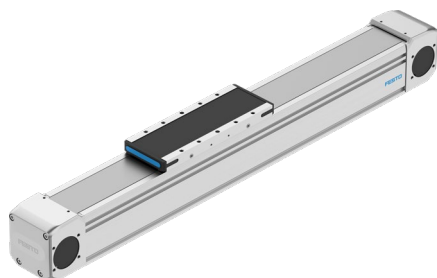
Many additional variants are possible.

Ask your Festo sales engineer, who will be happy to help you:

→ [www.festo.com/contact](http://www.festo.com/contact)



## Toothed belt axes ELGD-TB-KF, with recirculating ball bearing guide



- For applications requiring a high dynamic response and short positioning times
- For long strokes
- Excellent rigidity and load capacity of the guide for greater load in the same installation space

## Type codes

001	Series	
ELGD	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
KF	Recirculating ball bearing guide	
004	Size	
60	60	
80	80	
005	Stroke [mm]	
200	200	
300	300	
500	500	
600	600	
800	800	
1000	1000	
1200	1200	
1500	1500	
1800	1800	
2000	2000	
...	50 ... 2850	

006	Stroke reserve	
0H	None	
...H	0 ... 999 mm	
007	Slide design	
	Standard	
L	Slide, long	
008	Additional slide	
	None	
ZL	1 slide left	
ZR	1 slide right	
009	Lubrication	
	Standard	
GN	Lubrication nipple	
010	Material of toothed belt	
PU1	Uncoated PU, FDA-compliant	
PU2	Coated PU	

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system		
Size	Part no	Type
60	8176884	ELGD-TB-KF-60- -
80	8176885	ELGD-TB-KF-80- -

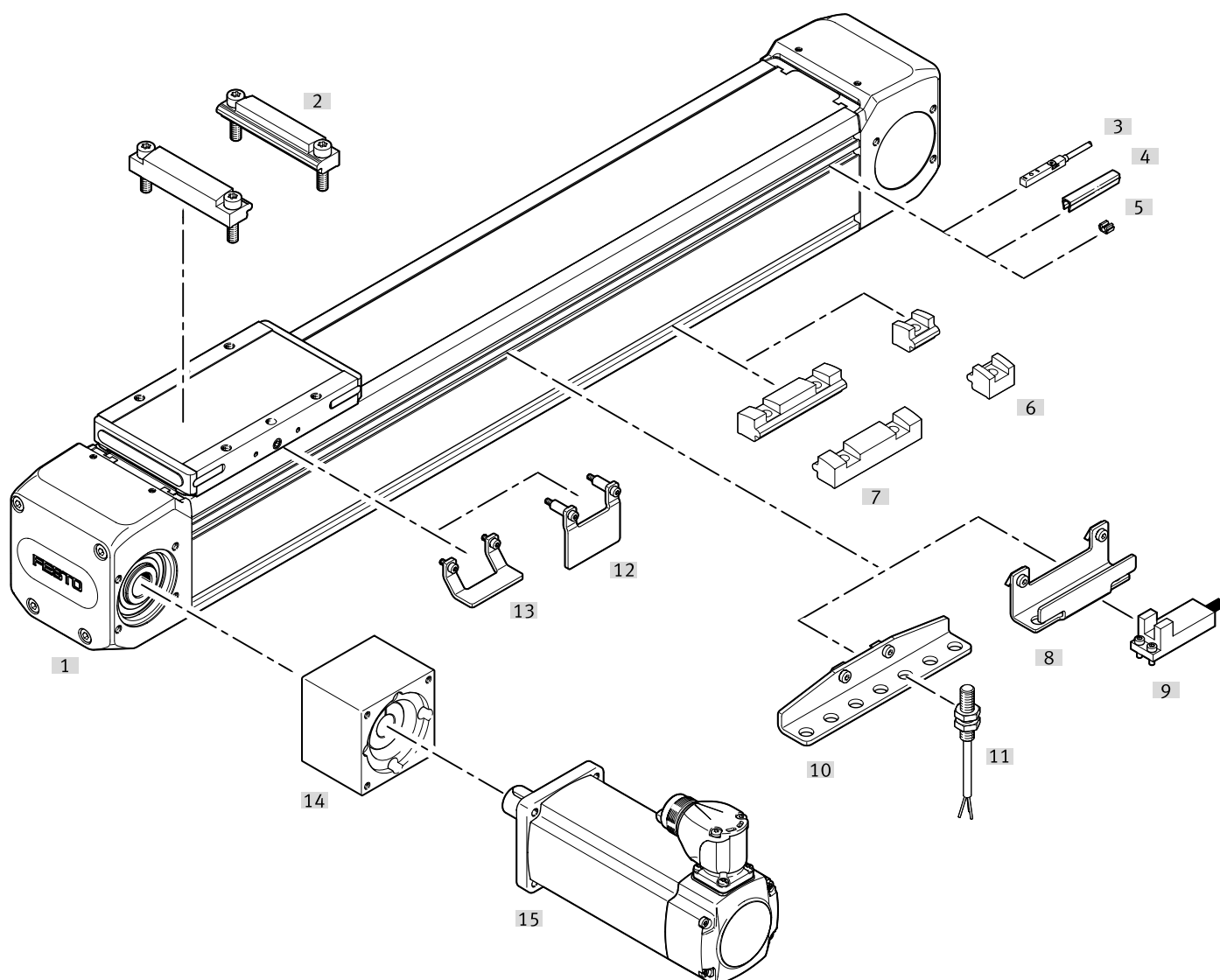
Linear axes >

Toothed belt axes ELGD-TB-KF, with recirculating ball bearing guide

## Ordering data

Size	Stroke	Part no.	Type
60	200 mm	8192344	ELGD-TB-KF-60-200-0H-PU2
	300 mm	8192345	ELGD-TB-KF-60-300-0H-PU2
	500 mm	8192346	ELGD-TB-KF-60-500-0H-PU2
	600 mm	8192347	ELGD-TB-KF-60-600-0H-PU2
	800 mm	8192348	ELGD-TB-KF-60-800-0H-PU2
	1.000 mm	8192349	ELGD-TB-KF-60-1000-0H-PU2
60	1.200 mm	8192350	ELGD-TB-KF-60-1200-0H-PU2
	1.500 mm	8192351	ELGD-TB-KF-60-1500-0H-PU2
	1.800 mm	8192352	ELGD-TB-KF-60-1800-0H-PU2
	2.000 mm	8192353	ELGD-TB-KF-60-2000-0H-PU2
80	200 mm	8192354	ELGD-TB-KF-80-200-0H-PU2
	300 mm	8192355	ELGD-TB-KF-80-300-0H-PU2
	500 mm	8192356	ELGD-TB-KF-80-500-0H-PU2
	600 mm	8192357	ELGD-TB-KF-80-600-0H-PU2
	800 mm	8192358	ELGD-TB-KF-80-800-0H-PU2
	1.000 mm	8192359	ELGD-TB-KF-80-1000-0H-PU2
	1.200 mm	8192360	ELGD-TB-KF-80-1200-0H-PU2
	1.500 mm	8192361	ELGD-TB-KF-80-1500-0H-PU2
	1.800 mm	8192362	ELGD-TB-KF-80-1800-0H-PU2
	2.000 mm	8192363	ELGD-TB-KF-80-2000-0H-PU2

## Peripherals overview



Accessories			→ Link*
Type	Description		
[1]	Toothed belt axis ELGD-TB	Electric drive	77
[2]	Profile mounting EAHF-E24-...-D	For axis/axis mounting with adapter plate	80
[3]	Proximity switch, T-slot SIES-8M	Inductive proximity switch, for T-slot	80
[4]	Slot cover ABP-S	For protection against contamination	<a href="#">elgd-tb</a>
[5]	Clip SMBK	For mounting the proximity switch cable in the slot	<a href="#">elgd-tb</a>
[6]	Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile	<a href="#">elgd-tb</a>
[7]	Profile mounting EAHF-E24-...-	For mounting the axis on the side of the profile	<a href="#">elgd-tb</a>
[8]	Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis	<a href="#">elgd-tb</a>
[9]	Sensor OMRON	Third-party sensor OMRON, EE-SX674 series	-
[10]	Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity switches SIEN-M8 (round design) on the axis	<a href="#">elgd-tb</a>
[11]	Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design	<a href="#">elgd-tb</a>
[12]	Switch lug EAPM-E24-SLS	For sensing the slide position using inductive proximity switch SIES-8M or for optical sensors (Omron) with sensor bracket EAPM-E24-SHO	<a href="#">elgd-tb</a>
[13]	Switch lug EAPM-E24-SLE	For sensing the slide position using inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE	<a href="#">elgd-tb</a>
[14]	Axial kit EAMM	For axial motor mounting	<a href="#">eamm-a</a>
[15]	Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emmt-as</a>
[15]	Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emme-as</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Linear axes >

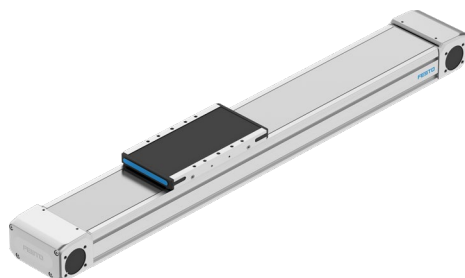
Toothed belt axes ELGD-TB-KF, with recirculating ball bearing guide

## Accessories

Profile mounting EAHF-E24-....-P-D		
Material	Part no.	Type
Anodised wrought aluminium alloy	8197131	EAHF-E24-60-P-D5
	8197129	EAHF-E24-60-P-D4
	8197130	EAHF-E24-60-P-D6

Proximity switch SIES for T-slot, inductive		Link <a href="#">sies-8m</a>
Switching output	Part no.	Type
NPN	551401	SIES-8M-NO-24V-K-7,5-OE
NPN	551396	SIES-8M-NS-24V-K-7,5-OE
PNP	551391	SIES-8M-PO-24V-K-7,5-OE
PNP	551386	SIES-8M-PS-24V-K-7,5-OE

## Toothed belt axis ELGD-TB-KF-WD, with recirculating ball bearing guide, wide design



- Reduced profile heights offer smaller installation dimensions for handling systems and applications that do not require such high feed forces
- For applications requiring a high dynamic response and short positioning times
- For long strokes
- 30% lighter, while rigidity and guide load capacity are still similar to the axis in the standard design

## Type codes

001	Series	
ELGD	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
KF	Recirculating ball bearing guide	
004	Design type	
WD	Wide	
005	Size	
100	100	
005	Stroke [mm]	
200	200	
300	300	
500	500	
600	600	
800	800	
1000	1000	
1200	1200	
1500	1500	
1800	1800	
2000	2000	
...	50 ... 2850	

006	Stroke reserve	
0H	None	
...H	0 ... 999 mm	
007	Slide design	
L	Slide, long	
008	Additional slide	
	None	
ZL	1 slide left	
ZR	1 slide right	
009	Lubrication	
	Standard	
GN	Lubrication nipple	
010	Material of toothed belt	
PU1	Uncoated PU, FDA-compliant	
PU2	Coated PU	

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system		
Size	Part no.	Type
100	8176888	ELGD-TB-KF-WD-100- -

Linear axes >

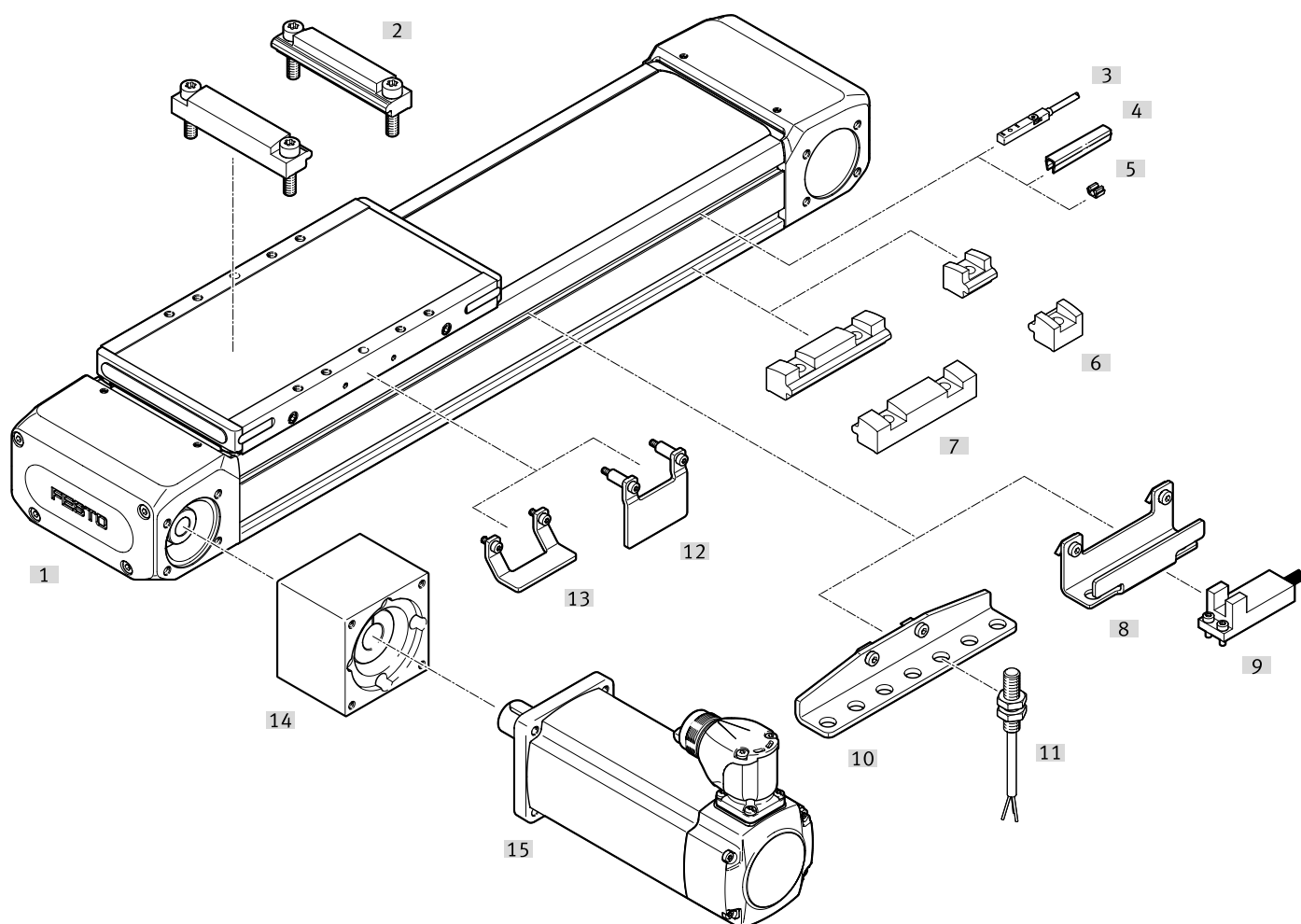
Toothed belt axis ELGD-TB-KF-WD, with recirculating ball bearing guide, wide design

## Ordering data

Size	Stroke	Part no.	Type
100	200 mm	8192374	ELGD-TB-KF-WD-100-200-0H-L-PU2
	300 mm	8192375	ELGD-TB-KF-WD-100-300-0H-L-PU2
	500 mm	8192376	ELGD-TB-KF-WD-100-500-0H-L-PU2
	600 mm	8192377	ELGD-TB-KF-WD-100-600-0H-L-PU2
100	800 mm	8192378	ELGD-TB-KF-WD-100-800-0H-L-PU2
	1.000 mm	8192379	ELGD-TB-KF-WD-100-1000-0H-L-PU2
	1.200 mm	8192380	ELGD-TB-KF-WD-100-1200-0H-L-PU2
	1.500 mm	8192381	ELGD-TB-KF-WD-100-1500-0H-L-PU2
	1.800 mm	8192382	ELGD-TB-KF-WD-100-1800-0H-L-PU2
	2.000 mm	8192383	ELGD-TB-KF-WD-100-2000-0H-L-PU2

## Toothed belt axis ELGD-TB-KF-WD, with recirculating ball bearing guide, wide design

## Peripherals overview



Accessories			→ Link*
Type	Description		
[1] Toothed belt axis ELGD-TB-WD	Electric drive		81
[2] Profile mounting EAHF-E24-...-D	For axis/axis mounting with adapter plate		<a href="#">elgd-tb</a>
[3] Proximity switch, T-slot SIES-8M	Inductive proximity switch, for T-slot		84
[4] Slot cover ABP-S	For protection against contamination		<a href="#">elgd-tb</a>
[5] Clip SMBK	For mounting the proximity switch cable in the slot		<a href="#">elgd-tb</a>
[6] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile		<a href="#">elgd-tb</a>
[7] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile		<a href="#">elgd-tb</a>
[8] Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis		<a href="#">elgd-tb</a>
[9] Sensor OMRON	Third-party sensor OMRON, EE-SX674 series		–
[10] Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity switches SIEN-M8 (round design) on the axis		<a href="#">elgd-tb</a>
[11] Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design		<a href="#">elgd-tb</a>
[12] Switch lug EAPM-E24-SLS	For sensing the slide position using inductive proximity switch SIES-8M or for optical sensors (Omron) with sensor bracket EAPM-E24-SHO		<a href="#">elgd-tb</a>
[13] Switch lug EAPM-E24-SLE	For sensing the slide position using inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE		<a href="#">elgd-tb</a>
[14] Axial kit EAMM	For axial motor mounting		<a href="#">eamm-a</a>
[15] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emmt-as</a>
[15] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emme-as</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Linear axes >

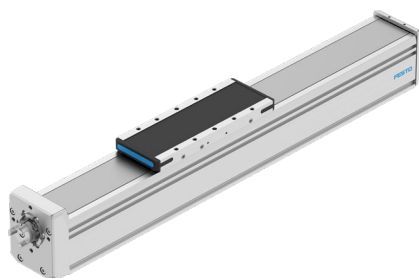
Toothed belt axis ELGD-TB-KF-WD, with recirculating ball bearing guide, wide design

## Accessories

Proximity switch SIES for T-slot, inductive		Link <a href="#">sies-8m</a>
Switching output	Part no.	Type
NPN	551401	SIES-8M-NO-24V-K-7,5-OE
	551396	SIES-8M-NS-24V-K-7,5-OE
PNP	551391	SIES-8M-PO-24V-K-7,5-OE
	551386	SIES-8M-PS-24V-K-7,5-OE



## Ball screw axes ELGD-BS-KF, with recirculating ball bearing guide



- For applications requiring precision
- High reliability and long service life
- For high loads
- Excellent rigidity and load capacity of the guide for greater load in the same installation space

## Type codes

001	Series	
ELGD	Gantry axis	
002	Drive system	
BS	Ball screw drive	
003	Guide	
KF	Recirculating ball bearing guide	
004	Size	
60	60	
80	80	
005	Stroke [mm]	
100	100	
200	200	
300	300	
400	400	
500	500	
600	600	
800	800	
1000	1000	
...	50 ... 2000	

006	Stroke reserve	
0H	None	
...H	0 ... 999 mm	
007	Spindle pitch	
5P	5 mm	
10P	10 mm	
20P	20 mm	
008	Slide design	
	Standard	
L	Slide, long	
009	Additional slide	
	None	
ZR	1 slide right	
010	Lubrication	
	Standard	
GN	Lubrication nipple	

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system		
Size	Part no.	Type
60	8176874	ELGD-BS-KF-60- -
80	8176875	ELGD-BS-KF-80- -

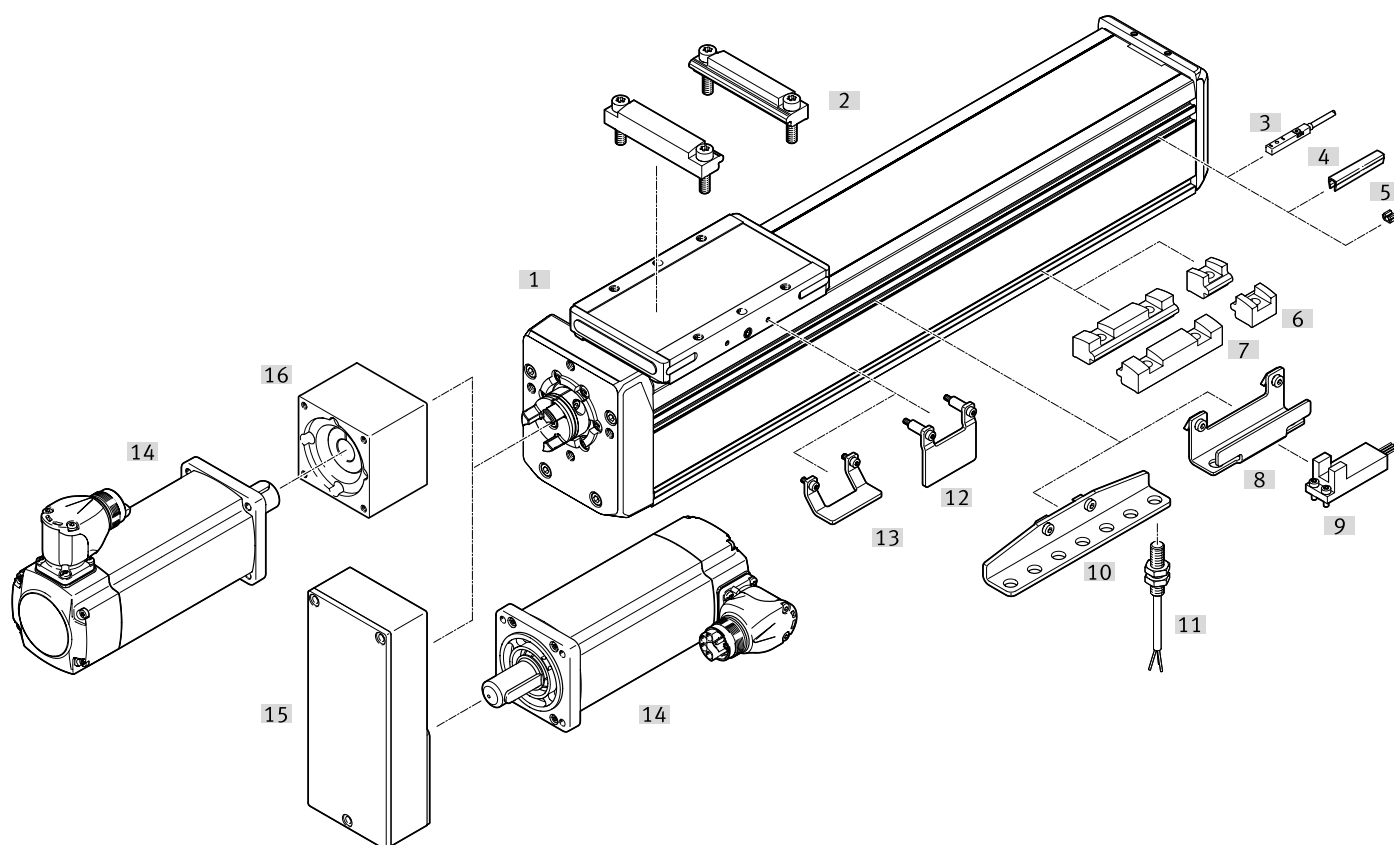
Linear axes >

Ball screw axes ELGD-BS-KF, with recirculating ball bearing guide

## Ordering data

Size	Screw pitch	Stroke	Part no.	Type
60	5 mm/U	100 mm	8192253	ELGD-BS-KF-60-100-0H-5P
		200 mm	8192254	ELGD-BS-KF-60-200-0H-5P
		300 mm	8192255	ELGD-BS-KF-60-300-0H-5P
		400 mm	8192256	ELGD-BS-KF-60-400-0H-5P
		500 mm	8192257	ELGD-BS-KF-60-500-0H-5P
		600 mm	8192258	ELGD-BS-KF-60-600-0H-5P
		800 mm	8192259	ELGD-BS-KF-60-800-0H-5P
	10 mm/U	100 mm	8192260	ELGD-BS-KF-60-100-0H-10P
60	10 mm/U	200 mm	8192261	ELGD-BS-KF-60-200-0H-10P
		300 mm	8192262	ELGD-BS-KF-60-300-0H-10P
		400 mm	8192263	ELGD-BS-KF-60-400-0H-10P
		500 mm	8192264	ELGD-BS-KF-60-500-0H-10P
		600 mm	8192265	ELGD-BS-KF-60-600-0H-10P
		800 mm	8192266	ELGD-BS-KF-60-800-0H-10P
80	5 mm/U	100 mm	8192267	ELGD-BS-KF-80-100-0H-5P
		200 mm	8192268	ELGD-BS-KF-80-200-0H-5P
		300 mm	8192269	ELGD-BS-KF-80-300-0H-5P
		400 mm	8192270	ELGD-BS-KF-80-400-0H-5P
		500 mm	8192271	ELGD-BS-KF-80-500-0H-5P
		600 mm	8192272	ELGD-BS-KF-80-600-0H-5P
		800 mm	8192273	ELGD-BS-KF-80-800-0H-5P
		1.000 mm	8192274	ELGD-BS-KF-80-1000-0H-5P
	10 mm/U	100 mm	8192275	ELGD-BS-KF-80-100-0H-10P
		200 mm	8192276	ELGD-BS-KF-80-200-0H-10P
		300 mm	8192277	ELGD-BS-KF-80-300-0H-10P
		400 mm	8192278	ELGD-BS-KF-80-400-0H-10P
		500 mm	8192279	ELGD-BS-KF-80-500-0H-10P
		600 mm	8192280	ELGD-BS-KF-80-600-0H-10P
		800 mm	8192281	ELGD-BS-KF-80-800-0H-10P
		1.000 mm	8192282	ELGD-BS-KF-80-1000-0H-10P
	20 mm/U	100 mm	8192283	ELGD-BS-KF-80-100-0H-20P
		200 mm	8192284	ELGD-BS-KF-80-200-0H-20P
		300 mm	8192285	ELGD-BS-KF-80-300-0H-20P
		400 mm	8192286	ELGD-BS-KF-80-400-0H-20P
		500 mm	8192287	ELGD-BS-KF-80-500-0H-20P
		600 mm	8192288	ELGD-BS-KF-80-600-0H-20P
		800 mm	8192289	ELGD-BS-KF-80-800-0H-20P
		1.000 mm	8192290	ELGD-BS-KF-80-1000-0H-20P

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Spindle axis ELGD-BS	Electric drive		85
[2] Profile mounting EAHF-E24-...-D	For axis/axis mounting with adapter plate		88
[3] Proximity switch, T-slot SIES-8M	Inductive proximity sensor, for T-slot		88
[4] Slot cover ABP-S	For protecting against contamination		<a href="#">elgd-bs</a>
[5] Clip SMBK	For fitting the proximity switch cable in the slot		<a href="#">elgd-bs</a>
[6] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile		<a href="#">elgd-bs</a>
[7] Profile mounting EAHF-E24-...	For mounting the axis on the side of the profile		<a href="#">elgd-bs</a>
[8] Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis		<a href="#">elgd-bs</a>
[9] OMRON sensor	Third-party sensor OMRON, EE-SX674 series		–
[10] Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity sensor SIEN-M8 (round design) on the axis		<a href="#">elgd-bs</a>
[11] Proximity switch, M8 SIEN-M8	Inductive proximity sensor, round design		<a href="#">elgd-bs</a>
[12] Switch lug EAPM-E24-...-SLS	For sensing the slide position via inductive proximity sensor SIES-8M or for opto-electrical sensors (Omron) with sensor bracket EAPM-E24-SHO		<a href="#">elgd-bs</a>
[13] Switch lug EAPM-E24-...-SLE	For sensing the slide position via inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE		<a href="#">elgd-bs</a>
[14] Axial kit EAMM	For axial motor mounting		<a href="#">eamm-a</a>
[15] Parallel kit EAMM	For parallel motor mounting		<a href="#">eamm-u</a>
[16] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emmt-as</a>
[16] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emme-as</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Linear axes >

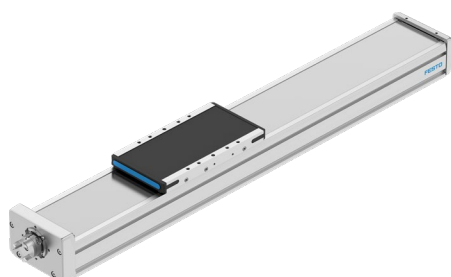
## Ball screw axes ELGD-BS-KF, with recirculating ball bearing guide

### Accessories

Profile mounting EAHF-E24-....-P-D		
Material plate	Part no.	Type
Anodised wrought aluminium alloy	8197131	EAHF-E24-60-P-D5
	8197129	EAHF-E24-60-P-D4
	8197130	EAHF-E24-60-P-D6

Proximity switch SIES for T-slot, inductive			Link <a href="#">sies-8m</a>
Switching output	Part no.	Type	
NPN	551401	SIES-8M-NO-24V-K-7,5-OE	
NPN	551396	SIES-8M-NS-24V-K-7,5-OE	
PNP	551391	SIES-8M-PO-24V-K-7,5-OE	
PNP	551386	SIES-8M-PS-24V-K-7,5-OE	

## Ball screw axes ELGD-BS-KF-WD, with recirculating ball bearing guide, wide version



- Reduced profile heights offer smaller installation dimensions for handling systems and applications that do not require such high feed forces
- For applications requiring precision
- High reliability and long service life
- For high loads
- 30% lighter, while rigidity and guide load capacity are still similar to the axis in the standard design

## Type code

001	Series	
ELGD	Gantry axis	
002	Drive system	
BS	Ball screw drive	
003	Guide	
KF	Recirculating ball bearing guide	
004	Design type	
WD	Wide	
005	Size	
100	100	
006	Stroke [mm]	
100	100	
200	200	
300	300	
400	400	
500	500	
600	600	
800	800	
...	50 ... 1000	

007	Stroke reserve	
0H	None	
...H	0 ... 999 mm	
008	Spindle pitch	
10P	10 mm	
009	Slide design	
L	Slide, long	
010	Additional slide	
	None	
ZR	1 slide right	
011	Lubrication	
	Standard	
GN	Lubrication nipple	

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

## Ordering information – Modular product system

Size	Part no.	Type
100	8176878	ELGD-BS-KF-WD-100- -

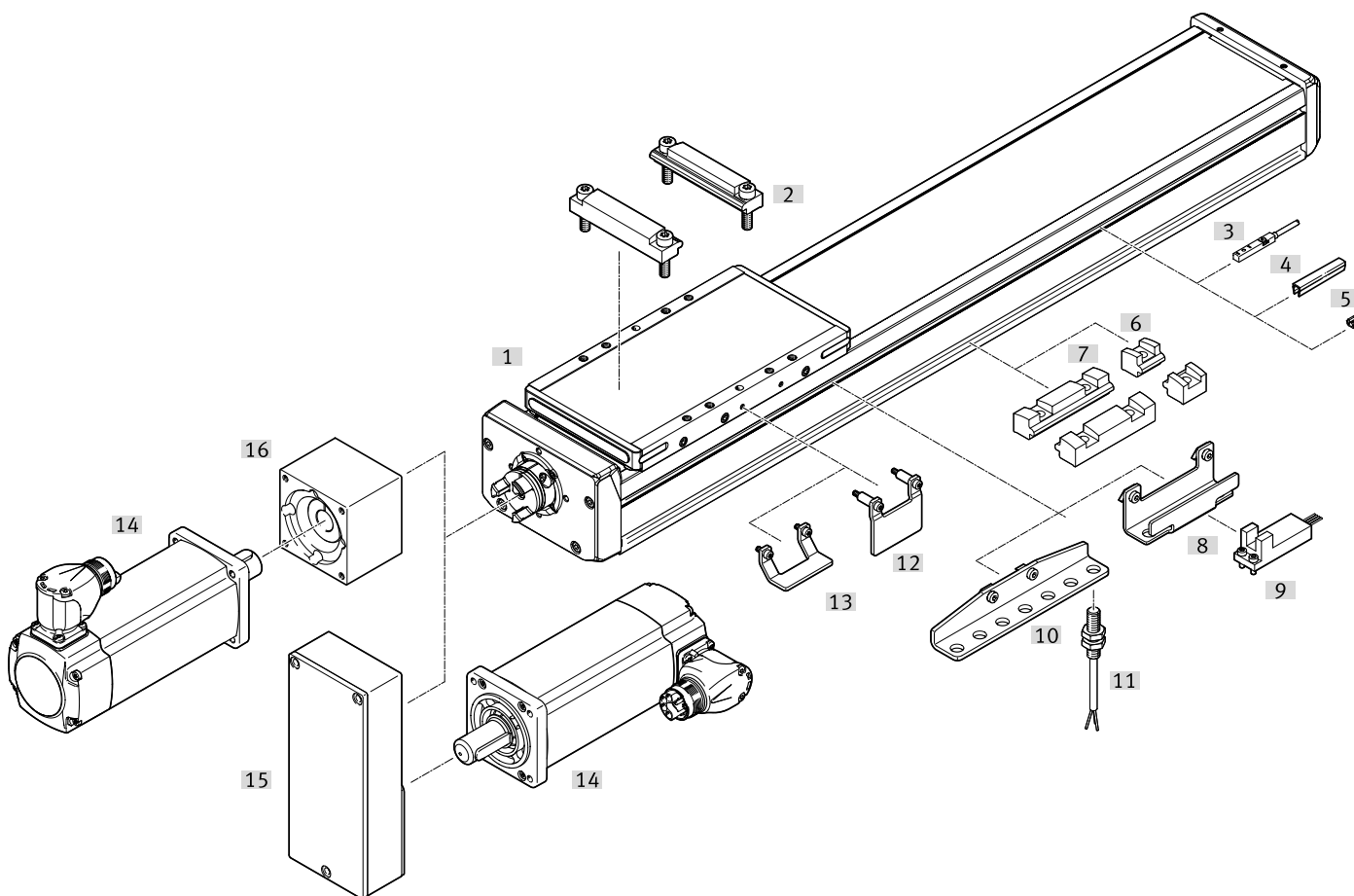
## Ordering data

Size	Spindle pitch	Working stroke	Part no.	Type
100	10 mm/U	100 mm	8192320	ELGD-BS-KF-WD-100-100-0H-10P-L
		200 mm	8192321	ELGD-BS-KF-WD-100-200-0H-10P-L
		300 mm	8192322	ELGD-BS-KF-WD-100-300-0H-10P-L
		400 mm	8192323	ELGD-BS-KF-WD-100-400-0H-10P-L
		500 mm	8192324	ELGD-BS-KF-WD-100-500-0H-10P-L
100	10 mm/U	600 mm	8192325	ELGD-BS-KF-WD-100-600-0H-10P-L
		800 mm	8192326	ELGD-BS-KF-WD-100-800-0H-10P-L
		1,000 mm	8192327	ELGD-BS-KF-WD-100-1000-0H-10P-L

Electrical linear drives >

Ball screw axes ELGD-BS-KF-WD, with recirculating ball bearing guide, wide version

## Peripherals overview



Accessories		→ Link
Type/order code	Description	
[1] Spindle axis ELGD-BS	Electric drive	89
[2] Profile mounting EAHF-E24-...-D	For axis/axis mounting with adapter plate	<a href="#">elgd-bs</a>
[3] Proximity switch, T-slot SIES-8M	Inductive proximity sensor, for T-slot	91
[4] Slot cover ABP-S	For protecting against contamination	<a href="#">elgd-bs</a>
[5] Clip SMBK	For fitting the proximity switch cable in the slot	<a href="#">elgd-bs</a>
[6] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile	<a href="#">elgd-bs</a>
[7] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile	<a href="#">elgd-bs</a>
[8] Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis	<a href="#">elgd-bs</a>
[9] OMRON sensor	Third-party sensor OMRON, EE-SX674 series	–
[10] Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity sensor SIEN-M8 (round design) on the axis	<a href="#">elgd-bs</a>
[11] Proximity switch, M8 SIEN-M8	Inductive proximity sensor, round design	<a href="#">elgd-bs</a>
[12] Switch lug EAPM-E24-...-SLS	For sensing the slide position via inductive proximity sensor SIES-8M or for opto-electrical sensors (Omron) with sensor bracket EAPM-E24-SHO	<a href="#">elgd-bs</a>
[13] Switch lug EAPM-E24-...-SLE	For sensing the slide position via inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE	<a href="#">elgd-bs</a>
[14] Axial kit EAMM	For axial motor mounting	<a href="#">eamm-a</a>
[15] Parallel kit EAMM	For parallel motor mounting	<a href="#">eamm-u</a>
[16] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emmt-as</a>
[16] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emme-as</a>

## Ball screw axes ELGD-BS-KF-WD, with recirculating ball bearing guide, wide version

## Accessories

Proximity switch SIES for T-slot, inductive		Link <a href="#">sies-8m</a>
Switching output	Part no.	Type
NPN	551401	SIES-8M-NO-24V-K-7,5-OE
	551396	SIES-8M-NS-24V-K-7,5-OE
PNP	551391	SIES-8M-PO-24V-K-7,5-OE
	551386	SIES-8M-PS-24V-K-7,5-OE

Linear axes >

Toothed belt axis ELGC-TB-KF, with recirculating ball bearing guide



- Precision guide rail with high load capacity
- Internal guide and toothed belt
- Flexible motor mounting
- The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation

Type code

001	Series	005	Stroke [mm]
ELGC	Gantry axis	200	200
		300	300
		500	500
		600	600
		800	800
		1000	1000
		1200	1200
		1500	1500
		1800	1800
		2000	2000

002	Drive system
TB	Toothed belt

003	Guide
KF	Recirculating ball bearing guide

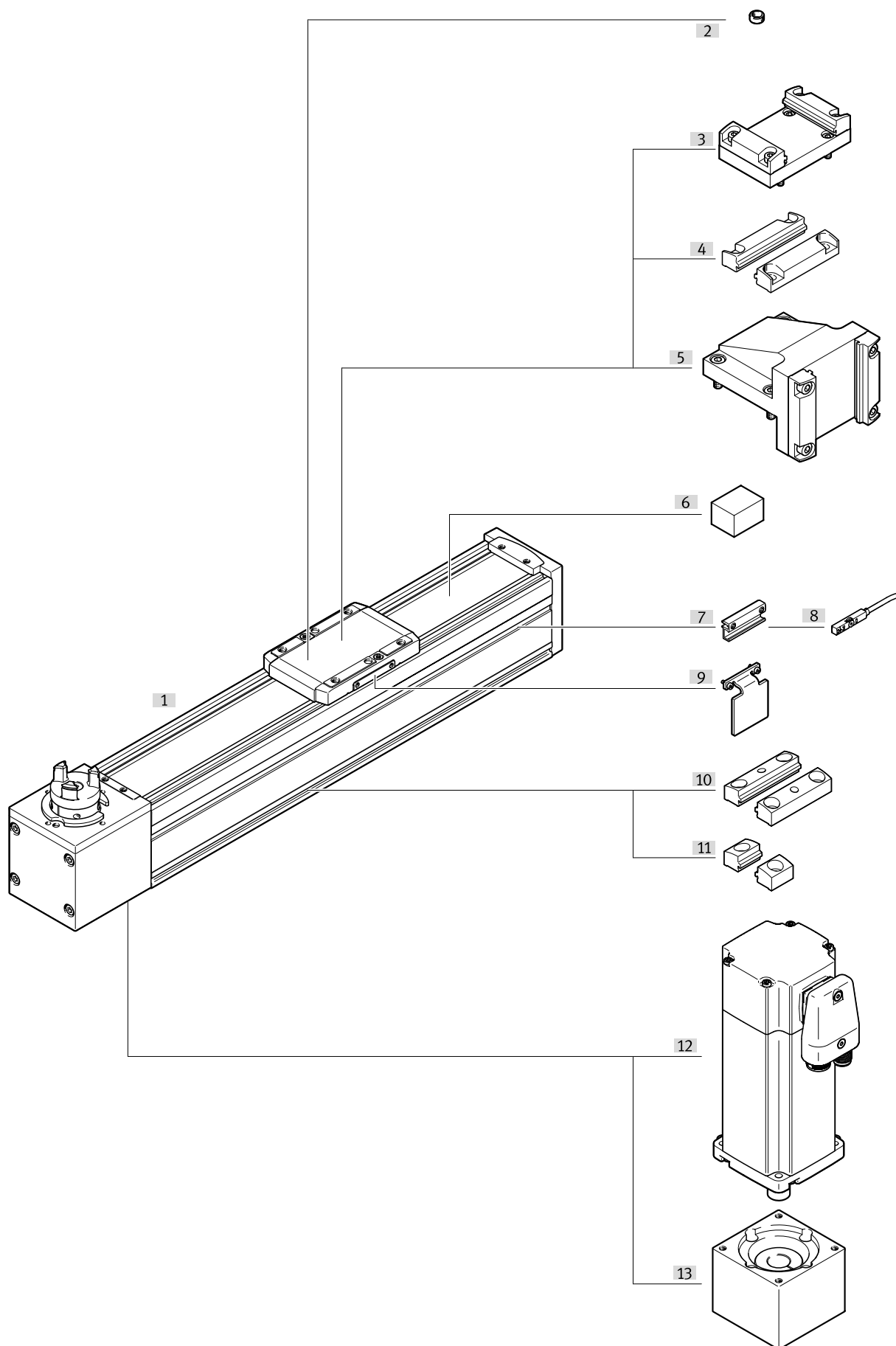
004	Size
45	45
60	60
80	80

Ordering data

with recirculating ball bearing guide			
Size	Working stroke	Part no.	Type
45	200 mm	8062768	ELGC-TB-KF-45-200
	300 mm	8062769	ELGC-TB-KF-45-300
	500 mm	8062770	ELGC-TB-KF-45-500
	600 mm	8062771	ELGC-TB-KF-45-600
	800 mm	8062772	ELGC-TB-KF-45-800
	1,000 mm	8062773	ELGC-TB-KF-45-1000
	1,200 mm	8062774	ELGC-TB-KF-45-1200
	1,500 mm	8062775	ELGC-TB-KF-45-1500
60	200 mm	8062776	ELGC-TB-KF-60-200
	300 mm	8062777	ELGC-TB-KF-60-300
	500 mm	8062778	ELGC-TB-KF-60-500
	600 mm	8062779	ELGC-TB-KF-60-600
	800 mm	8062780	ELGC-TB-KF-60-800
	1,000 mm	8062781	ELGC-TB-KF-60-1000
	1,200 mm	8062782	ELGC-TB-KF-60-1200
	1,500 mm	8062783	ELGC-TB-KF-60-1500
	1,800 mm	8062784	ELGC-TB-KF-60-1800
	2,000 mm	8062785	ELGC-TB-KF-60-2000
80	200 mm	8062786	ELGC-TB-KF-80-200
	300 mm	8062787	ELGC-TB-KF-80-300
	500 mm	8062788	ELGC-TB-KF-80-500
	600 mm	8062789	ELGC-TB-KF-80-600
	800 mm	8062790	ELGC-TB-KF-80-800
	1,000 mm	8062791	ELGC-TB-KF-80-1000
	1,200 mm	8062792	ELGC-TB-KF-80-1200
	1,500 mm	8062793	ELGC-TB-KF-80-1500
	1,800 mm	8062794	ELGC-TB-KF-80-1800
	2,000 mm	8062795	ELGC-TB-KF-80-2000



## Peripherals overview



Linear axes &gt;

## Toothed belt axis ELGC-TB-KF, with recirculating ball bearing guide

Accessories			→ Link*
Type/order code	Description		
[1] Toothed belt axis ELGC-TB-KF	Electric drive		92
[2] Centring sleeve ZBH	For centring loads and attachments on the slide		<a href="#">elgc-tb</a>
[2] Centring pin ZBS	For centring loads and attachments on the slide		<a href="#">elgc-tb</a>
[3] Adapter kit EHAA-D-L2	<ul style="list-style-type: none"><li>For axis/axis mounting with adapter plate</li><li>Mounting option: base axis with the same size or one-size-down assembly axis</li><li>When motors are mounted using parallel kits, interfering contours may occur. In this case, the adapter plate is required for height compensation</li></ul>		<a href="#">elgc-tb</a>
[4] Profile mounting EAHF-L2-...-P-D	<ul style="list-style-type: none"><li>For axis/axis mounting without adapter plate</li><li>Mounting option: base axis with one-size-down assembly axis</li></ul>		94
[5] Angle kit EHAA-D-L2-...-AP	For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position „slide at top“		<a href="#">elgc-tb</a>
[6] Clamping element EADT-S-L5	Tool for retensioning the cover strip		<a href="#">elgc-tb</a>
[7] Sensor bracket EAPM-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket		<a href="#">elgc-tb</a>
[8] Proximity switch SIES-8M	Inductive proximity sensors, for T-slot		94
[8] Proximity switches SMT-8M	Magnetic proximity switches, for T-slot		94
[9] Switch lug EAPM-L2-...-SLS	For sensing the slide position in conjunction with inductive proximity switches SIES-8M		94
[10] Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drilled hole in the centre		<a href="#">elgc-tb</a>
[11] Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile		<a href="#">elgc-tb</a>
[12] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eam">www.festo.com/catalogue/eam</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emme-as</a>
[12] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eam">www.festo.com/catalogue/eam</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emmt-as</a>
[12] Motor EMMS-ST	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eam">www.festo.com/catalogue/eam</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emms-st</a>
[13] Axial kit EAMM-A	For axial motor mounting Detailed information: <a href="http://www.festo.com/catalogue/eam">www.festo.com/catalogue/eam</a>		<a href="#">eamm-a</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Profile mounting EAHF-L2-...-P-D...		
Description <sup>1)</sup>	Part no.	Type
For size 45/32	4759748	EAHF-L2-25-P-D2
For size 60/45	4759739	EAHF-L2-45-P-D3
For size 80/60	4759726	EAHF-L2-45-P-D4

1) Base axis/assembly axis

Switch lug EAPM-L2-SLS		
Description	Part no.	Type
For size 45	8067260	EAPM-L2-45-SLS
For size 60	8067261	EAPM-L2-60-SLS
For size 80	8067262	EAPM-L2-80-SLS

Proximity switch SIES for T-slot, inductive			Link <a href="#">sies-8m</a>
Switching output	Part no.	Type	
NPN	551402	SIES-8M-NO-24V-K-0,3-M8D	
NPN	551401	SIES-8M-NO-24V-K-7,5-OE	
NPN	551397	SIES-8M-NS-24V-K-0,3-M8D	
NPN	551396	SIES-8M-NS-24V-K-7,5-OE	
PNP	551392	SIES-8M-PO-24V-K-0,3-M8D	
PNP	551391	SIES-8M-PO-24V-K-7,5-OE	
PNP	551387	SIES-8M-PS-24V-K-0,3-M8D	
PNP	551386	SIES-8M-PS-24V-K-7,5-OE	

Proximity switch SMT for T-slot, magneto-resistive			Link <a href="#">smt-8m</a>
Type of mounting	Part no.	Type	
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE	
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE	
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D	

Connecting cable NEBA, straight			Link <a href="#">neba</a>
Electrical connection 1, connector system	Part no.	Type	
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3	
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3	

Connecting cable NEBA, angled			Link <a href="#">neba</a>
Electrical connection 1, connector system	Part no.	Type	
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3	
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3	

## Spindle axis ELGC-BS-KF, with recirculating ball bearing guide



- Internal guide and ball screw drive
- Space-saving position sensing
- Flexible motor mounting
- The toothed belt axes, spindle axes ELGC and mini slides EGSC form a scalable modular system for compact automation

## Type code

001	Series
ELGC	Gantry axis
002	Drive system
BS	Ball screw drive
003	Guide
KF	Recirculating ball bearing guide
004	Size
32	32
45	45
60	60
80	80

005	Stroke [mm]
100	100
200	200
300	300
400	400
500	500
600	600
800	800
1000	1000
006	Spindle pitch
8P	8 mm
10P	10 mm
12P	12 mm
16P	16 mm

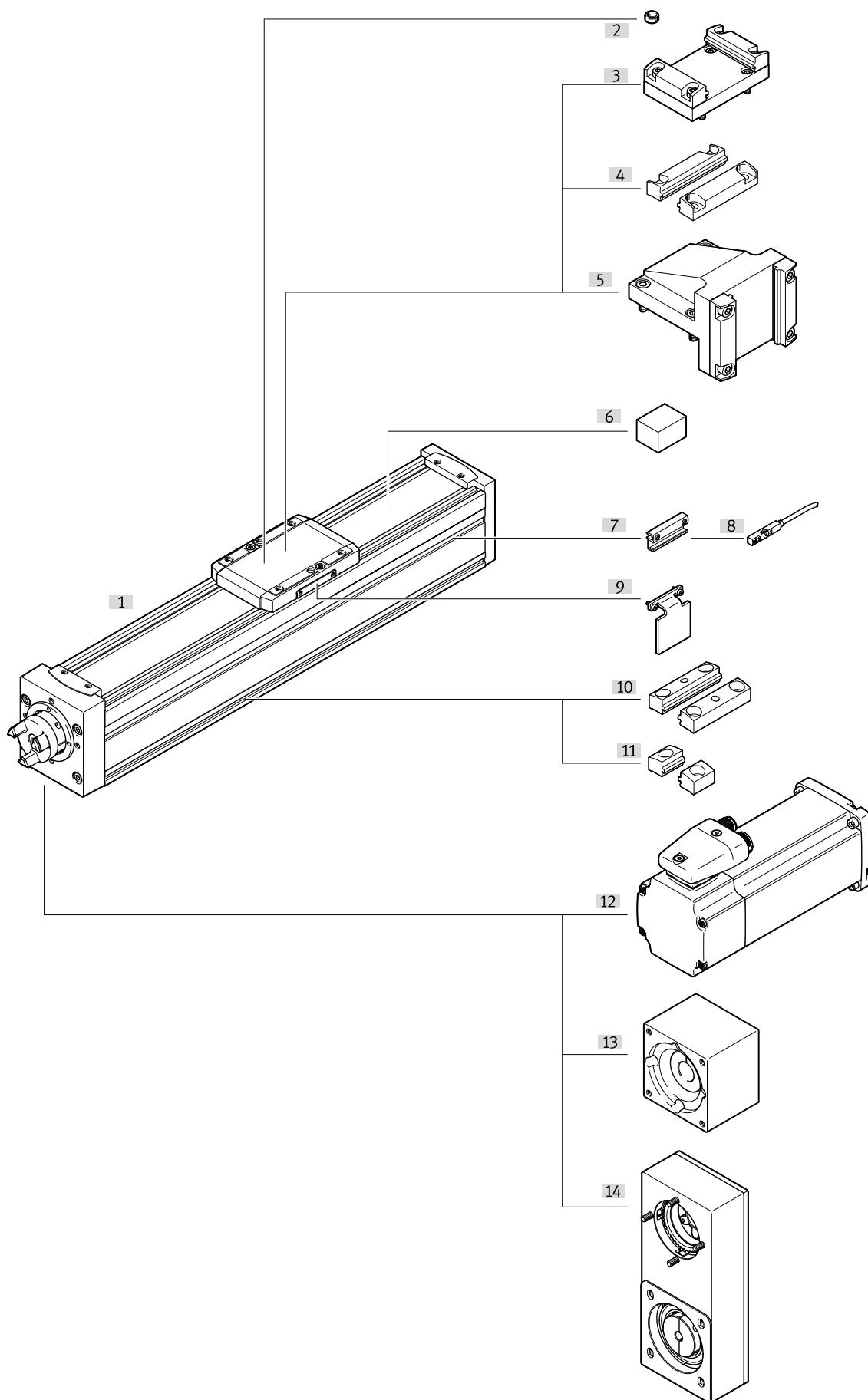
## Ordering data

with recirculating ball bearing guide				
Size	Spindle pitch	Working stroke	Part no.	Type
32	8 mm/U	100 mm	8061477	ELGC-BS-KF-32-100-8P
		200 mm	8061478	ELGC-BS-KF-32-200-8P
		300 mm	8061479	ELGC-BS-KF-32-300-8P
		400 mm	8061480	ELGC-BS-KF-32-400-8P
		500 mm	8061481	ELGC-BS-KF-32-500-8P
		600 mm	8061482	ELGC-BS-KF-32-600-8P
		800 mm	8061483	ELGC-BS-KF-32-800-8P
45	10 mm/U	100 mm	8061484	ELGC-BS-KF-45-100-10P
		200 mm	8061485	ELGC-BS-KF-45-200-10P
		300 mm	8061486	ELGC-BS-KF-45-300-10P
		400 mm	8061487	ELGC-BS-KF-45-400-10P
		500 mm	8061488	ELGC-BS-KF-45-500-10P
		600 mm	8061489	ELGC-BS-KF-45-600-10P
		800 mm	8061490	ELGC-BS-KF-45-800-10P
60	12 mm/U	100 mm	8061491	ELGC-BS-KF-60-100-12P
		200 mm	8061492	ELGC-BS-KF-60-200-12P
		300 mm	8061493	ELGC-BS-KF-60-300-12P
		400 mm	8061494	ELGC-BS-KF-60-400-12P
		500 mm	8061495	ELGC-BS-KF-60-500-12P
		600 mm	8061496	ELGC-BS-KF-60-600-12P
		800 mm	8061497	ELGC-BS-KF-60-800-12P
80	16 mm/U	100 mm	8061498	ELGC-BS-KF-80-100-16P
		200 mm	8061499	ELGC-BS-KF-80-200-16P
		300 mm	8061500	ELGC-BS-KF-80-300-16P
		400 mm	8061501	ELGC-BS-KF-80-400-16P
		500 mm	8061502	ELGC-BS-KF-80-500-16P
		600 mm	8061503	ELGC-BS-KF-80-600-16P
		800 mm	8061504	ELGC-BS-KF-80-800-16P
		1,000 mm	8061505	ELGC-BS-KF-80-1000-16P

Linear axes >

## Spindle axis ELGC-BS-KF, with recirculating ball bearing guide

### Peripherals overview



## Spindle axis ELGC-BS-KF, with recirculating ball bearing guide

Accessories			→ Link*
Type/order code	Description		
[1] Spindle axis ELGC-BS-KF	Electric drive		95
[2] Centring sleeve ZBS	For centring loads and attachments on the slide		<a href="#">elgc-bs</a>
[2] Centring sleeve ZBH	For centring loads and attachments on the slide		<a href="#">elgc-bs</a>
[3] Adapter kit EHAA-D-L2	- For axis/axis mounting with adapter plate - Mounting option: Base axis with either same size or one-size-down assembly axis - When assembling the motor with parallel kits, interfering contours may occur. In this case, the adapter plate is required for height compensation		<a href="#">elgc-bs</a>
[4] Profile mounting EAHF-L2-...-P-D	- For axis/axis mounting without adapter plate - Mounting option: Base axis with one-size-down assembly axis		97
[5] Angle kit EHAA-D-L2-...-AP	For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position „slide at top“		<a href="#">elgc-bs</a>
[6] Clamping element EADT-S-L5	Tool for retensioning the cover strip		<a href="#">elgc-bs</a>
[7] Sensor bracket EAPM-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket		<a href="#">elgc-bs</a>
[8] Proximity switch SIES-8	Inductive proximity sensors, for T-slot 27		97
[8] Proximity switch SMT-8	Magnetic proximity switches, for T-slot		97
[9] Switch lug EAPM-L2-...-SLS	For sensing the slide position in conjunction with inductive proximity sensors SIES		97
[10] Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drilled hole in the centre		97
[11] Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile		97
[12] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emme-as</a>
[12] Motor EMMS-ST	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emms-st</a>
[12] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emmt-as</a>
[13] Axial kit EAMM-A	For axial motor mounting More detailed information → <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">eamm-a</a>
[14] Parallel kit EAMM-U	For parallel motor mounting		<a href="#">eamm-u</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Profile mounting EAHF-L2-...-P-S		
Description	Part no.	Type
For size 32	<b>5183153</b>	<b>EAHF-L2-25-P-S</b>
For size 45, 60, 80	<b>5184133</b>	<b>EAHF-L2-45-P-S</b>

Profile mounting EAHF-L2-...-P		
Description	Part no.	Type
For size 32	<b>4835684</b>	<b>EAHF-L2-25-P</b>
For size 45, 60, 80	<b>4835728</b>	<b>EAHF-L2-45-P</b>

Profile mounting EAHF-L2-...-P-D...		
Description <sup>1)</sup>	Part no.	Type
For size 32/25	<b>4759753</b>	<b>EAHF-L2-25-P-D1</b>
For size 45/32	<b>4759748</b>	<b>EAHF-L2-25-P-D2</b>
For size 60/45	<b>4759739</b>	<b>EAHF-L2-45-P-D3</b>
For size 80/60	<b>4759726</b>	<b>EAHF-L2-45-P-D4</b>

1) Base axis/assembly axis

Switch lug EAPM-L2-SLS		
Description	Part no.	Type
For size 32	<b>8067259</b>	<b>EAPM-L2-32-SLS</b>
For size 45	<b>8067260</b>	<b>EAPM-L2-45-SLS</b>
For size 60	<b>8067261</b>	<b>EAPM-L2-60-SLS</b>
For size 80	<b>8067262</b>	<b>EAPM-L2-80-SLS</b>

Proximity switch SIES for T-slot, inductive			Link <a href="#">sies-8m</a>
Switching output	Part no.	Type	
NPN	<b>551401</b>	<b>SIES-8M-NO-24V-K-7,5-OE</b>	
NPN	<b>551396</b>	<b>SIES-8M-NS-24V-K-7,5-OE</b>	
PNP	<b>551391</b>	<b>SIES-8M-PO-24V-K-7,5-OE</b>	
PNP	<b>551386</b>	<b>SIES-8M-PS-24V-K-7,5-OE</b>	

Proximity switch SMT for T-slot, magneto-resistive			Link <a href="#">smt-8m</a>
Type of mounting	Part no.	Type	
Screw-clamped, Insertable in the slot from above	<b>574340</b>	<b>SMT-8M-A-PO-24V-E-7,5-OE</b>	
Screw-clamped, Insertable in the slot from above	<b>574335</b>	<b>SMT-8M-A-PS-24V-E-2,5-OE</b>	
Screw-clamped, Insertable in the slot from above	<b>574334</b>	<b>SMT-8M-A-PS-24V-E-0,3-M8D</b>	

Connecting cable NEBA, straight			Link <a href="#">neba</a>
Electrical connection 1, connector system	Part no.	Type	
M8x1, A-coded, to EN 61076-2-104	<b>8078223</b>	<b>NEBA-M8G3-U-2.5-N-LE3</b>	
M8x1, A-coded, to EN 61076-2-104	<b>8078224</b>	<b>NEBA-M8G3-U-5-N-LE3</b>	

Connecting cable NEBA, angled			Link <a href="#">neba</a>
Electrical connection 1, connector system	Part no.	Type	
M8x1, A-coded, to EN 61076-2-104	<b>8078230</b>	<b>NEBA-M8W3-U-2.5-N-LE3</b>	
M8x1, A-coded, to EN 61076-2-104	<b>8078231</b>	<b>NEBA-M8W3-U-5-N-LE3</b>	

Linear axes >

## Spindle axis ELGT-BS



- Great resilience and rigidity due to double-acting guide
- Compact design
- With ball screw drive
- Optimal ratio between installation space and working space due to the optimised axis design
- Simple integration of motors with mounting kits
- Optimised for use in the electronics and automotive industry

### Type code

001	Series
ELGT	Gantry axis

002	Drive system
BS	Ball screw drive

003	Size
90	90
120	120
160	160

004	Stroke [mm]
50	50
100	100
150	150
200	200
250	250
300	300
350	350
400	400
450	450
500	500
550	550
600	600
650	650
700	700
750	750
800	800
900	900
1000	1000
1100	1100
1200	1200
1300	1300
1400	1400

005	Spindle pitch
10P	10 mm
20P	20 mm

006	Additional slide
	None
ZL	1 slide left
ZR	1 slide right

007	Anti-reflection coating
	None
AR	Outer surfaces

### Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

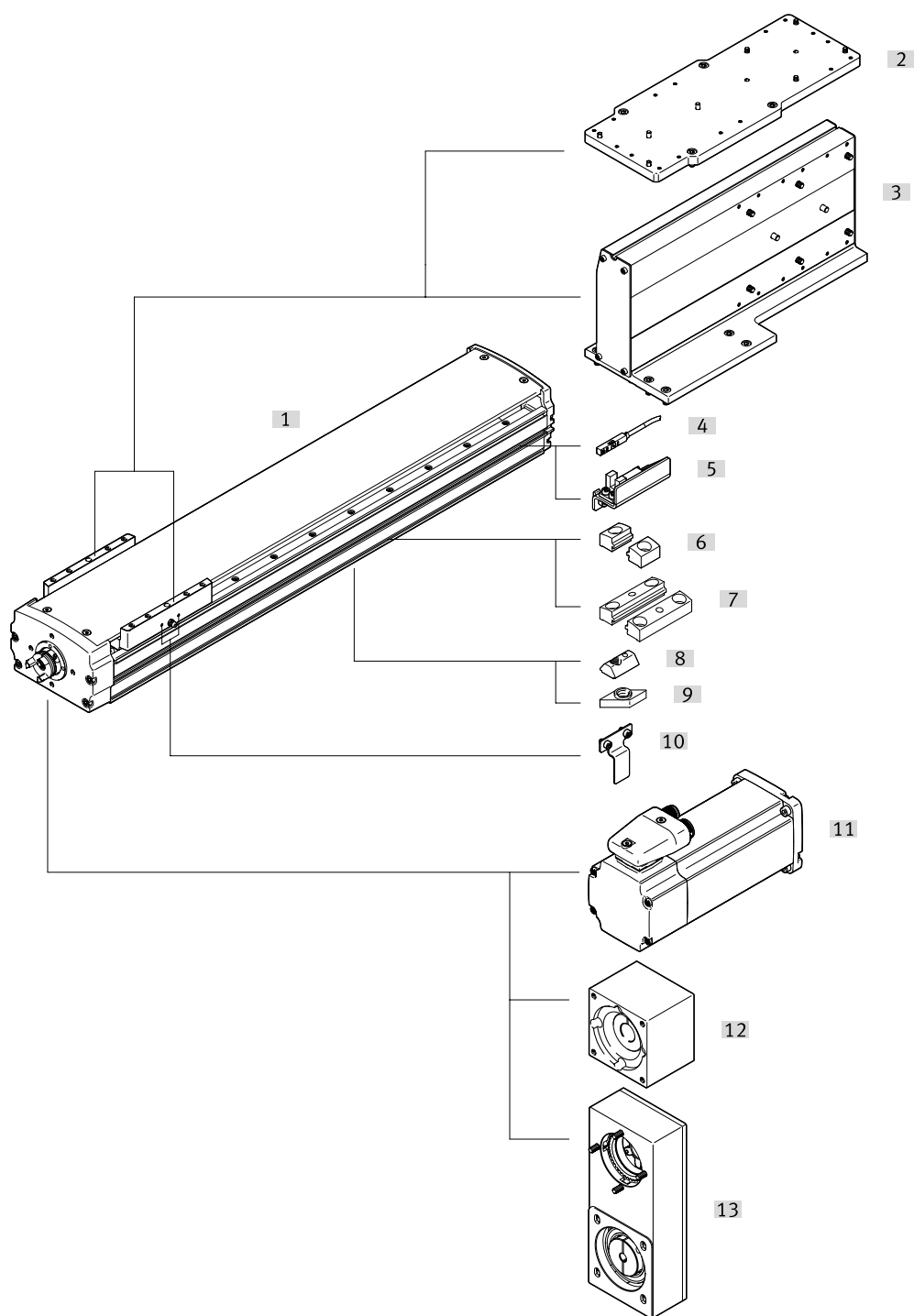
Ordering information – Modular product system		
Size	Part no.	Type
90	8121224	ELGT-BS-90- -
120	8121225	ELGT-BS-120- -
160	8121226	ELGT-BS-160- -

Ordering data				
Size	Spindle pitch	Stroke [mm]	Part no.	Type
90	10 mm/U	50 mm	8124410	ELGT-BS-90-50-10P
		100 mm	8124401	ELGT-BS-90-100-10P
		150 mm	8124402	ELGT-BS-90-150-10P
		200 mm	8124403	ELGT-BS-90-200-10P
		250 mm	8124404	ELGT-BS-90-250-10P
		300 mm	8124405	ELGT-BS-90-300-10P
		350 mm	8124406	ELGT-BS-90-350-10P
		400 mm	8124407	ELGT-BS-90-400-10P
		450 mm	8124408	ELGT-BS-90-450-10P
		500 mm	8124409	ELGT-BS-90-500-10P
		550 mm	8124411	ELGT-BS-90-550-10P
		600 mm	8124412	ELGT-BS-90-600-10P
		650 mm	8124413	ELGT-BS-90-650-10P
		700 mm	8124414	ELGT-BS-90-700-10P
		750 mm	8124415	ELGT-BS-90-750-10P
		800 mm	8124416	ELGT-BS-90-800-10P
		900 mm	8124417	ELGT-BS-90-900-10P
		1,000 mm	8124400	ELGT-BS-90-1000-10P
	20 mm/U	50 mm	8124418	ELGT-BS-90-50-20P
		100 mm	8124419	ELGT-BS-90-100-20P
		150 mm	8124420	ELGT-BS-90-150-20P
		200 mm	8124421	ELGT-BS-90-200-20P
		250 mm	8124422	ELGT-BS-90-250-20P
		300 mm	8124423	ELGT-BS-90-300-20P
		350 mm	8124424	ELGT-BS-90-350-20P
		400 mm	8124425	ELGT-BS-90-400-20P
		450 mm	8124426	ELGT-BS-90-450-20P
		500 mm	8124427	ELGT-BS-90-500-20P
		550 mm	8124428	ELGT-BS-90-550-20P
		600 mm	8124429	ELGT-BS-90-600-20P
		650 mm	8124430	ELGT-BS-90-650-20P
		700 mm	8124431	ELGT-BS-90-700-20P
		750 mm	8124432	ELGT-BS-90-750-20P
		800 mm	8124433	ELGT-BS-90-800-20P
		900 mm	8124434	ELGT-BS-90-900-20P
		1,000 mm	8124435	ELGT-BS-90-1000-20P





## Peripherals overview



Linear axes >

## Spindle axis ELGT-BS

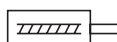
Accessories		→ Link*
Type/order code	Description	
[1] Spindle axes ELGT-BS		98
[2] Adapter kit EHAM-MA-L9-...	<ul style="list-style-type: none"> <li>For axis/axis mounting</li> <li>When motors are mounted using parallel kits, this may lead to interfering contours. In this case, height compensation is required for the adapter plate (Download CAD-data → <a href="http://www.festo.com">www.festo.com</a>)</li> </ul>	<a href="#">elgt-bs</a>
[2] Adapter kit EHAM-MA-L9-...S	<ul style="list-style-type: none"> <li>For axis/axis mounting</li> <li>When motors are mounted using parallel kits, this may lead to interfering contours. In this case, height compensation is required for the adapter plate (Download CAD-data → <a href="http://www.festo.com">www.festo.com</a>)</li> </ul>	<a href="#">elgt-bs</a>
[2] Adapter kit EHAM-MA-L9-...L2-...	<ul style="list-style-type: none"> <li>For axis/axis mounting</li> <li>When motors are mounted using parallel kits, this may lead to interfering contours. In this case, height compensation is required for the adapter plate (Download CAD-data → <a href="http://www.festo.com">www.festo.com</a>)</li> </ul>	<a href="#">elgt-bs</a>
[3] Angle kit EHAM-AK-L9-...-MR	For axis/axis mounting	<a href="#">elgt-bs</a>
[3] Angle kit EHAM-AK-L9-...-ML	For axis/axis mounting	<a href="#">elgt-bs</a>
[4] Proximity switch SIES-8M	Inductive proximity switches, for T-slot	102
[4] Proximity switch SME-8M	Magnetic proximity switches, for T-slot	<a href="#">elgt-bs</a>
[4] Proximity switch SMT-8M	Magnetic proximity switches, for T-slot	102
[5] Sensor bracket EAPM-L9-SHE	For mounting third-party sensors on the axis	<a href="#">elgt-bs</a>
[5] Switch lug EAPM-L9-...-SLE	For mounting third-party sensors on the axis	<a href="#">elgt-bs</a>
[5] Switch lug EAPM-L9-...-SLS	For mounting third-party sensors on the axis	<a href="#">elgt-bs</a>
[6] Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile	<a href="#">elgt-bs</a>
[7] Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile	<a href="#">elgt-bs</a>
[8] Slot nut NST	For mounting attachments	<a href="#">elgt-bs</a>
[9] Slot nut ABAN	For mounting attachments	<a href="#">elgt-bs</a>
[10] Switch lug EAPM-L9	For sensing the slide position in conjunction with inductive proximity switches SIES-8M	<a href="#">elgt-bs</a>
[11] Motor EMCA-EC, EMME-AS, EMMS-ST, EMMT-AS	Motors specially matched to the axis, with or without brake	<a href="#">emca-ec, emme-as, emms-st, emmt-as</a>
[12] Axial kit EAMM-A	For axial motor mounting	<a href="#">eamm-a</a>
[13] Parallel kit EAMM-U	For parallel motor mounting	<a href="#">eamm-u</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Proximity switch for T-slot, inductive		
Switching element function	Part no.	Type
N/C contact	<a href="#">551401</a>	<a href="#">SIES-8M-NO-24V-K-7,5-OE</a>
N/C contact	<a href="#">551391</a>	<a href="#">SIES-8M-PO-24V-K-7,5-OE</a>
N/O contact	<a href="#">551396</a>	<a href="#">SIES-8M-NS-24V-K-7,5-OE</a>
N/O contact	<a href="#">551386</a>	<a href="#">SIES-8M-PS-24V-K-7,5-OE</a>

Proximity switch for T-slot, magneto-resistive		
Switching element function	Part no.	Type
N/C contact	<a href="#">574340</a>	<a href="#">SMT-8M-A-PO-24V-E-7,5-OE</a>
N/O contact	<a href="#">574335</a>	<a href="#">SMT-8M-A-PS-24V-E-2,5-OE</a>
Screw-clamped, Insertable in the slot from above	<a href="#">574334</a>	<a href="#">SMT-8M-A-PS-24V-E-0,3-M8D</a>



- Low-cost: optimum price/performance ratio
- Flexible: wide range of mounting options for the motor
- Dynamic: lower internal friction
- Non-rotating piston rod with plain-bearing guide, stroke up to 500 mm
- Weight-optimised design – ideal for handling systems
- Unique: “One-size-down” assembly system for the best use of space in combination with toothed belt/spindle axis ELGC

## Type code

001	Series
EPCC	Electric cylinder

002	Drive system
BS	Ball screw drive

003	Size
25	25
32	32
45	45
60	60

004	Stroke [mm]
25	25
50	50
75	75
100	100
125	125
150	150
175	175
200	200
250	250
300	300
350	350
400	400
500	500

005	Spindle pitch
2P	2 mm
3P	3 mm
5P	5 mm
6P	6 mm
8P	8 mm
10P	10 mm
12P	12 mm

006	Piston rod thread type
	Male thread
F	Female thread

007	Scraper variant
	None
A7	Wiper

008	Piston rod extension
	None
...E	1 ... 100 mm

009	Position sensing
A	For proximity sensor

010	Guide unit
	None
KF	Recirculating ball bearing with two guide rods

## Ordering data



Configurable product


This product and all its product options can be ordered online via the configurator:


→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)


	Size	Stroke	Spindle pitch	Part no.	Type
	25	25 ... 200 mm	2 ... 6 mm/U	5428821	EPCC-BS-25-
	32		3 ... 8 mm/U	5428849	EPCC-BS-32-
	45	25 ... 300 mm	3 ... 10 mm/U	5428878	EPCC-BS-45-
	60	25 ... 500 mm	5 ... 12 mm/U	5428914	EPCC-BS-60-

Electric cylinders and slide actuators >  
Electric cylinder EPCC


## Ordering data


EPCC-BS-25				
	Stroke	Spindle pitch	Part no.	Type
	25 mm	2 mm/U	5428805	EPCC-BS-25-25-2P-A
		6 mm/U	5428813	EPCC-BS-25-25-6P-A
	50 mm	2 mm/U	5428806	EPCC-BS-25-50-2P-A
		6 mm/U	5428814	EPCC-BS-25-50-6P-A
	75 mm	2 mm/U	5428807	EPCC-BS-25-75-2P-A
		6 mm/U	5428815	EPCC-BS-25-75-6P-A
	100 mm	2 mm/U	5428808	EPCC-BS-25-100-2P-A
		6 mm/U	5428816	EPCC-BS-25-100-6P-A
	125 mm	2 mm/U	5428809	EPCC-BS-25-125-2P-A
		6 mm/U	5428817	EPCC-BS-25-125-6P-A
	150 mm	2 mm/U	5428810	EPCC-BS-25-150-2P-A
		6 mm/U	5428818	EPCC-BS-25-150-6P-A
	175 mm	2 mm/U	5428811	EPCC-BS-25-175-2P-A
		6 mm/U	5428819	EPCC-BS-25-175-6P-A
	200 mm	2 mm/U	5428812	EPCC-BS-25-200-2P-A
		6 mm/U	5428820	EPCC-BS-25-200-6P-A

EPCC-BS-32				
	Stroke	Spindle pitch	Part no.	Type
	25 mm	3 mm/U	5428833	EPCC-BS-32-25-3P-A
		8 mm/U	5428841	EPCC-BS-32-25-8P-A
	50 mm	3 mm/U	5428834	EPCC-BS-32-50-3P-A
		8 mm/U	5428842	EPCC-BS-32-50-8P-A
	75 mm	3 mm/U	5428835	EPCC-BS-32-75-3P-A
		8 mm/U	5428843	EPCC-BS-32-75-8P-A
	100 mm	3 mm/U	5428836	EPCC-BS-32-100-3P-A
		8 mm/U	5428844	EPCC-BS-32-100-8P-A
	125 mm	3 mm/U	5428837	EPCC-BS-32-125-3P-A
		8 mm/U	5428845	EPCC-BS-32-125-8P-A
	150 mm	3 mm/U	5428838	EPCC-BS-32-150-3P-A
		8 mm/U	5428846	EPCC-BS-32-150-8P-A
	175 mm	3 mm/U	5428839	EPCC-BS-32-175-3P-A
		8 mm/U	5428847	EPCC-BS-32-175-8P-A
	200 mm	3 mm/U	5428840	EPCC-BS-32-200-3P-A
		8 mm/U	5428848	EPCC-BS-32-200-8P-A

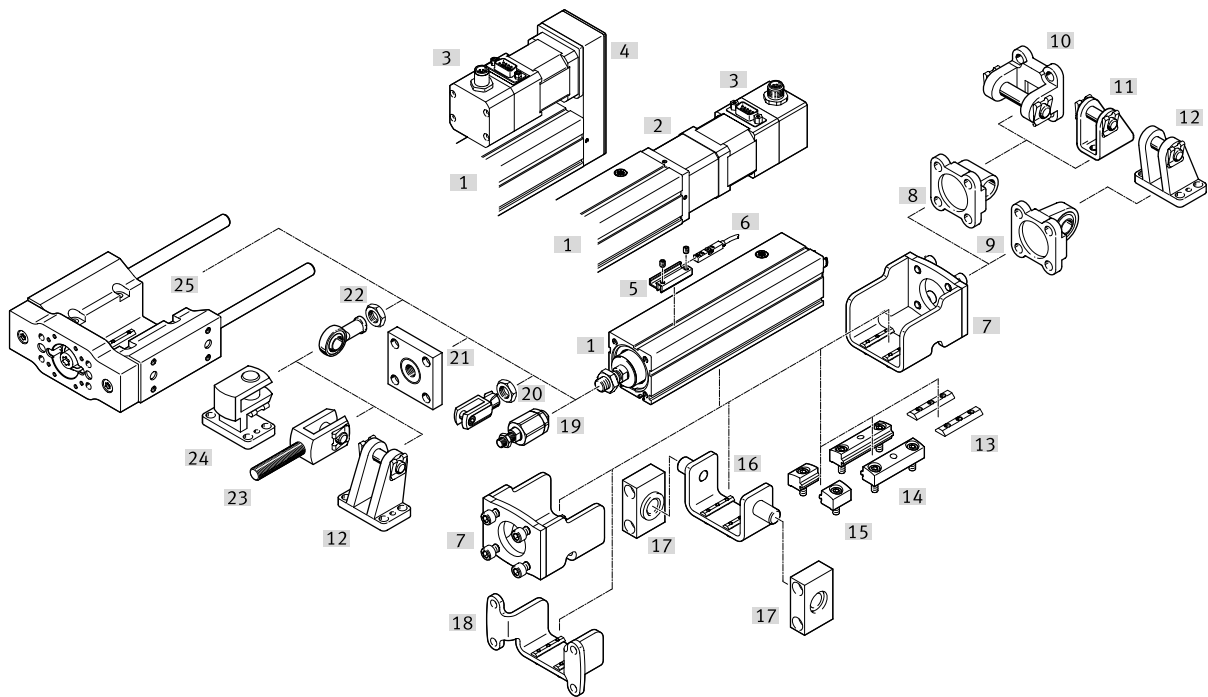
EPCC-BS-45				
	Stroke	Spindle pitch	Part no.	Type
	25 mm	3 mm/U	5428858	EPCC-BS-45-25-3P-A
		10 mm/U	5428868	EPCC-BS-45-25-10P-A
	50 mm	3 mm/U	5428859	EPCC-BS-45-50-3P-A
		10 mm/U	5428869	EPCC-BS-45-50-10P-A
	75 mm	3 mm/U	5428860	EPCC-BS-45-75-3P-A
		10 mm/U	5428870	EPCC-BS-45-75-10P-A
	100 mm	3 mm/U	5428861	EPCC-BS-45-100-3P-A
		10 mm/U	5428871	EPCC-BS-45-100-10P-A
	125 mm	3 mm/U	5428862	EPCC-BS-45-125-3P-A
		10 mm/U	5428872	EPCC-BS-45-125-10P-A
	150 mm	3 mm/U	5428863	EPCC-BS-45-150-3P-A
		10 mm/U	5428873	EPCC-BS-45-150-10P-A
	175 mm	3 mm/U	5428864	EPCC-BS-45-175-3P-A
		10 mm/U	5428874	EPCC-BS-45-175-10P-A
	200 mm	3 mm/U	5428865	EPCC-BS-45-200-3P-A
		10 mm/U	5428875	EPCC-BS-45-200-10P-A

## Ordering data

EPCC-BS-45				
	Stroke	Spindle pitch	Part no.	Type
	250 mm	3 mm/U	5428866	EPCC-BS-45-250-3P-A
		10 mm/U	5428876	EPCC-BS-45-250-10P-A
	300 mm	3 mm/U	5428867	EPCC-BS-45-300-3P-A
		10 mm/U	5428877	EPCC-BS-45-300-10P-A

EPCC-BS-60				
	Stroke	Spindle pitch	Part no.	Type
	25 mm	5 mm/U	5428888	EPCC-BS-60-25-5P-A
		12 mm/U	5428901	EPCC-BS-60-25-12P-A
	50 mm	5 mm/U	5428889	EPCC-BS-60-50-5P-A
		12 mm/U	5428902	EPCC-BS-60-50-12P-A
	75 mm	5 mm/U	5428890	EPCC-BS-60-75-5P-A
		12 mm/U	5428903	EPCC-BS-60-75-12P-A
	100 mm	5 mm/U	5428891	EPCC-BS-60-100-5P-A
		12 mm/U	5428904	EPCC-BS-60-100-12P-A
	125 mm	5 mm/U	5428892	EPCC-BS-60-125-5P-A
		12 mm/U	5428905	EPCC-BS-60-125-12P-A
	150 mm	5 mm/U	5428893	EPCC-BS-60-150-5P-A
		12 mm/U	5428906	EPCC-BS-60-150-12P-A
	175 mm	5 mm/U	5428894	EPCC-BS-60-175-5P-A
		12 mm/U	5428907	EPCC-BS-60-175-12P-A
	200 mm	5 mm/U	5428895	EPCC-BS-60-200-5P-A
		12 mm/U	5428908	EPCC-BS-60-200-12P-A
	250 mm	5 mm/U	5428896	EPCC-BS-60-250-5P-A
		12 mm/U	5428909	EPCC-BS-60-250-12P-A
	300 mm	5 mm/U	5428897	EPCC-BS-60-300-5P-A
		12 mm/U	5428910	EPCC-BS-60-300-12P-A
	350 mm	5 mm/U	5428898	EPCC-BS-60-350-5P-A
		12 mm/U	5428911	EPCC-BS-60-350-12P-A
	400 mm	5 mm/U	5428899	EPCC-BS-60-400-5P-A
		12 mm/U	5428912	EPCC-BS-60-400-12P-A
	500 mm	5 mm/U	5428900	EPCC-BS-60-500-5P-A
		12 mm/U	5428913	EPCC-BS-60-500-12P-A

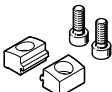
Peripherals overview

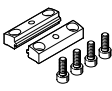


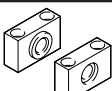
Type/order code	Description	→ Link*
[1] Electric cylinder EPCC	Electric drive	103
[2] Axial kit EAMM-A	For axial motor mounting	<a href="#">eamm-a</a>
[3] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="#">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="#">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emmt-as</a>
[3] Motor EMME-AS	Motors and kits specially matched with the axis Detailed information: <a href="#">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="#">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emme-as</a>
[3] Motor EMMS-ST	Motors and kits specially matched with the axis Detailed information: <a href="#">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="#">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emms-st</a>
[4] Parallel kit EAMM-U	For parallel motor mounting	<a href="#">eamm-u</a>
[5] Sensor bracket EAPM-L2	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket	107
[6] Proximity switches SMT-8M	Magnetic proximity switches, for T-slot	107
[7] Adapter kit EAHA-P2	- For mounting the swivel flange and trunnion flange on the front - Can only be mounted on the rear in conjunction with parallel kit EAMM-U	<a href="#">epcc</a>
[8] Swivel flange SNCL	With parallel motor mounting	<a href="#">epcc</a>
[9] Swivel flange SNCS	With parallel motor mounting	<a href="#">epcc</a>
[10] Swivel flange SNCB	For parallel motor mounting, for spherical bearing	<a href="#">epcc</a>
[11] Clevis foot LBN	For parallel motor mounting, for spherical bearing	<a href="#">epcc</a>
[12] Clevis foot LBG/LBG-...-R3	For parallel motor mounting, for spherical bearing	<a href="#">epcc</a>
[13] Slot nut ABAN	For mounting the electric cylinder	<a href="#">epcc</a>
[14] Profile mounting EAHF-L2-P	- For mounting the axis on the side of the profile - The hole in the middle allows the profile mounting to be attached to the mounting surface	107
[15] Profile mounting EAHF-L2-P-S	For mounting the axis on the side of the profile	107
[16] Swivel mounting EAHS-P2	Position freely selectable along the cylinder length	<a href="#">epcc</a>
[17] Trunnion support LN2G	For cylinders with trunnion mounting	107
[18] Flange mounting EAHH-P2	- For mounting the electric cylinder via the profile - Position within the cylinder length freely selectable	<a href="#">epcc</a>
[19] Self-aligning rod coupler FK/CRFK	To compensate for radial and angular deviations	<a href="#">epcc</a>
[20] Rod clevis SG/CRSG	Allows a swivelling movement of the cylinder in one plane	<a href="#">epcc</a>
[21] Coupling piece KSG	To compensate for radial deviations	<a href="#">epcc</a>
[22] Rod eye SGS/CRSGS	With spherical bearing	<a href="#">epcc</a>
[23] Rod clevis SGA	For swivelling cylinder mounting	<a href="#">epcc</a>
[24] Right angle clevis foot LQG	For rod eye SGS	<a href="#">epcc</a>
[25] Guide unit EAGF	For protecting electric cylinders against rotation at high torque loads	<a href="#">epcc</a>

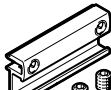
\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

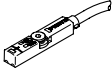
## Accessories

Profile mounting EAHF-L2-...-P-S						
	Description	Material plate	Note on materials	Product weight	Part no.	Type
	For sizes 25 and 32	Anodised wrought aluminium alloy	RoHS-compliant	4 g	5183153	EAHF-L2-25-P-S
	For size 45, 60			6 g	5184133	EAHF-L2-45-P-S

Profile mounting EAHF-L2-...-P						
	Description	Material plate	Note on materials	Product weight	Part no.	Type
	For sizes 25 and 32	Anodised wrought aluminium alloy	RoHS-compliant	19 g	4835684	EAHF-L2-25-P
	For size 45, 60			35 g	4835728	EAHF-L2-45-P

Trunnion support LNZZ						
	Description	Material mounting	Note on materials	Product weight	Part no.	Type
	For size 45	Wrought aluminium alloy	RoHS-compliant	83 g	32959	LNZZ-32
	For size 60			129 g	32960	LNZZ-40/50

Sensor bracket EAPM-L2					
	Material sensor bracket	Note on materials	Product weight	Part no.	Type
	Anodised wrought aluminium alloy	RoHS-compliant	4 g	4759852	EAPM-L2-SH

Proximity switch SMT for T-slot, magneto-resistive						
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Screw-clamped, Insertable in the slot from above	3-wire N/C contact NPN	Open end	2.5 m	8138000	SMT-8M-A-NO-24V-E-2,5-OE
				7.5 m	8138001	SMT-8M-A-NO-24V-E-7,5-OE
				2.5 m	574338	SMT-8M-A-NS-24V-E-2,5-OE
		3-wire PNP N/C contact	Open end	7.5 m	574340	SMT-8M-A-PO-24V-E-7,5-OE
				2.5 m	574335	SMT-8M-A-PS-24V-E-2,5-OE

Connecting cable NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cable NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Electric cylinders and slide actuators >

## Electric cylinder ESBF



- Available with ball screw drive (size 32 ... 100) or lead screw (size 32 ... 50)
- Ball screw: with three spindle pitches for selecting the optimal force-speed ratio
- Optional: high corrosion protection, degree of protection IP65, food-safe (see [www.festo.com/certificates/ESBF](http://www.festo.com/certificates/ESBF)), piston rod extension
- Axial or parallel motor mounting
- 68 types in stock with short delivery times and modular products for custom variants

## Type code

001	Series	
ESBF	Electric cylinder, with spindle drive	

002	Drive system	
BS	Ball screw drive	
LS	Lead screw	

003	Size	
32	32	
40	40	
50	50	
63	63	
80	80	
100	100	

004	Stroke [mm]	
100	100	
200	200	
300	300	
400	400	
...	30 ... 1500	

005	Spindle pitch	
2.5P	2.5 mm	
3P	3 mm	
4P	4 mm	
5P	5 mm	
10P	10 mm	
15P	15 mm	
16P	16 mm	
20P	20 mm	
25P	25 mm	
32P	32 mm	
40P	40 mm	

006	Piston rod thread type	
	Male thread	
F	Female thread	

007	Degree of protection, electrical system	
	Standard	
S1	IP65	

008	Corrosion protection	
	Standard	
R3	High corrosion protection	


009	Special material properties	
	None	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

010	Additional characteristics	
	None	
F1	Food-safe according to supplementary information on materials	

011	Piston rod extension	
...E	1 ... 500 mm	



## Ordering data

 Configurable product

This product and all its product options can be ordered online via the configurator:

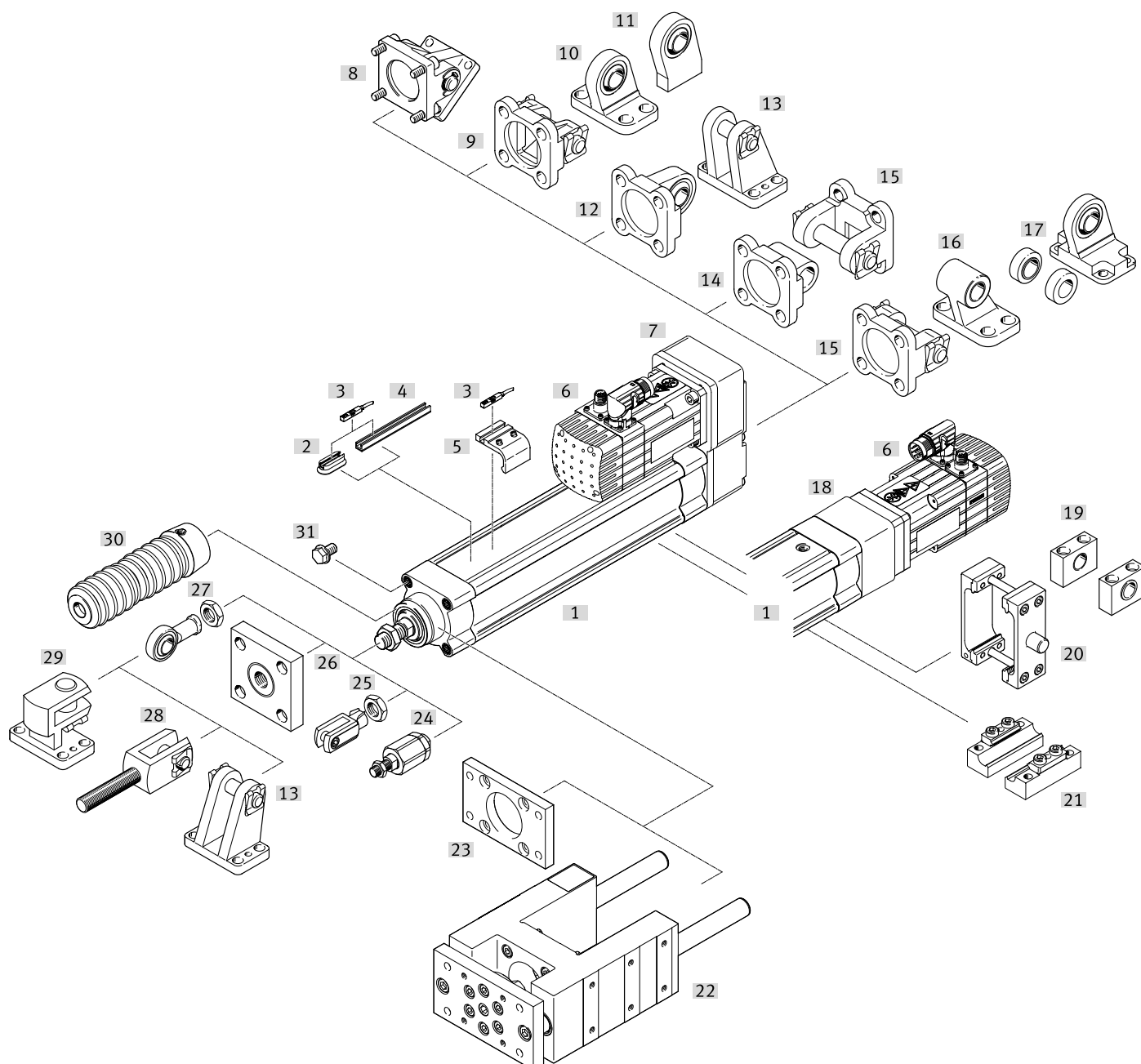
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

## Ordering information – Modular product system

Link [esbf](#)

Size	Spindle pitch	Part no.	Type
32	2.5 mm, 5 mm, 10 mm	8022569	ESBF-...-32- -
40	3 mm, 5 mm, 10 mm, 16 mm	8022585	ESBF-...-40- -
50	4 mm, 5 mm, 10 mm, 20 mm	8022601	ESBF-...-50- -
63	5 mm, 10 mm, 25 mm	574090	ESBF-...-63- -
80	5 mm, 15 mm, 32 mm	574091	ESBF-...-80- -
100	5 mm, 20 mm, 40 mm	574092	ESBF-...-100- -

## Peripherals overview



Electric cylinders and slide actuators >

## Electric cylinder ESBF

Accessories		→ Link*
Type/order code	Description	
[1] Electric cylinder ESBF-F1A	- with spindle drive - Note: The max. load capacity of the attachments must be greater than the max. occurring load. The weight of the cylinder incl. motor must also be taken into account.	108
[2] Mounting kit CRSMB	For proximity switch with T-slot	<a href="#">esbf</a>
[3] Proximity switches SMT-8	For position sensing	111
[3] Proximity switch CRSMT-8	For position detection, corrosion-resistant	<a href="#">esbf</a>
[4] Sensor rail SAMH	For proximity switch with T-slot	111
[5] Mounting kit SMB-8-FENG	For proximity switch with T-slot	<a href="#">esbf</a>
[6] Motor EMMT-AS	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emmt-as</a>
[6] Motor EMMS-ST	Motors and kits specially matched with the axis Detailed information: <a href="http://www.festo.com/catalogue/eamm">www.festo.com/catalogue/eamm</a> Engineering tool: <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>	<a href="#">emms-st</a>
[7] Parallel kit EAMM-U	For parallel motor mounting	<a href="#">eamm-u</a>
[8] Swivel flange DAMS-KV1	With parallel motor mounting	<a href="#">esbf</a>
[9] Swivel flange SNC	With parallel motor mounting	<a href="#">esbf</a>
[10] Clevis foot LSNG	For parallel motor mounting, with spherical bearing	<a href="#">esbf</a>
[10] Clevis foot DAMC-V1	• For parallel motor mounting, with spherical bearing • For high load capacity	<a href="#">esbf</a>
[11] Clevis foot LSNSG	For parallel motor mounting, can be welded, with spherical bearing	<a href="#">esbf</a>
[12] Swivel flange SNCS	With parallel motor mounting	<a href="#">esbf</a>
[12] Swivel flange CRSNCS	With parallel motor mounting, high corrosion protection	<a href="#">esbf</a>
[12] Swivel flange SNCS-...-R3	With parallel motor mounting, high corrosion protection	<a href="#">esbf</a>
[12] Swivel flange DAMS-V1	• For parallel motor mounting, for spherical bearing • For high load capacity	<a href="#">esbf</a>
[13] Clevis foot LBG	For parallel motor mounting, with spherical bearing	<a href="#">esbf</a>
[13] Clevis foot LBG-...-R3	For parallel motor mounting, with spherical bearing, high corrosion protection	<a href="#">esbf</a>
[14] Swivel flange SNCL	With parallel motor mounting	<a href="#">esbf</a>
[15] Swivel flange SNCB	For parallel motor mounting, for spherical bearing	<a href="#">esbf</a>
[15] Swivel flange SNCB-...-R3	For parallel motor mounting, for spherical bearing, high corrosion protection	<a href="#">esbf</a>
[16] Clevis foot LNG	With parallel motor mounting	<a href="#">esbf</a>
[16] Clevis foot CRLNG	With parallel motor mounting, high corrosion protection	111
[17] Clevis foot LSN	For parallel motor mounting, with spherical bearing	<a href="#">esbf</a>
[18] Axial kit EAMM-A	For axial motor mounting	<a href="#">eamm-a</a>
[19] Trunnion support LNZG	For cylinders with trunnion mounting	111
[19] Trunnion support CRLNZG	For cylinders with trunnion mounting, high corrosion protection	111
[20] Trunnion flange DAMT	For mounting anywhere on the cylinder profile pipe. Cannot be mounted in the area of the engine in the case of parallel engine mounting	<a href="#">esbf</a>
[21] Profile mounting EAHF-...-P	- For mounting the electric cylinder via the profile - In combination with the parallel kit EAMM-U (in the area of the motor), with some combinations, cannot be mounted	<a href="#">esbf</a>
[22] Guide unit EAGF	- For protection against rotation: at high torques - Cannot be used in combination with bellows kit EADB	<a href="#">esbf</a>
[23] Flange mounting EAHH	- On bearing cap - Cannot be used in combination with bellows kit EADB	<a href="#">esbf</a>
[24] Self-aligning rod coupler FK	To compensate for radial and angular deviations	<a href="#">esbf</a>
[24] Self-aligning rod coupler CRFK	For compensating for radial and angular deviations, high corrosion protection	<a href="#">esbf</a>
[25] Rod clevis SG	Allows a swivelling movement of the cylinder in one plane	<a href="#">esbf</a>
[25] Rod clevis CRSG	Allows a swivelling movement of the cylinder in one plane, higher corrosion protection	<a href="#">esbf</a>
[26] Coupling piece KSZ	To compensate for radial deviations	<a href="#">esbf</a>
[27] Rod eye SGS	With spherical bearing	<a href="#">esbf</a>
[27] Rod eye CRSGS	With spherical bearing, high corrosion protection	<a href="#">esbf</a>
[27] Rod eye DARE	• With spherical bearing • For high load capacity	<a href="#">esbf</a>
[28] Rod clevis SGA	For swivelling cylinder mounting	<a href="#">esbf</a>
[29] Right angle clevis foot LQG	For rod eye SGS	<a href="#">esbf</a>
[30] Bellows kit EADB	- Protects the cylinder (piston rod, seal and bearing) from a wide variety of media and thus prevents premature wear - The kit can only be used in conjunction with an extended piston rod (...E)	<a href="#">esbf</a>
[31] Plug screw DAMD-PS	To cover the mounting threads that are not used	<a href="#">esbf</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Trunnion support LNZG		
Description	Part no.	Type
For size 32	32959	LNZG-32
For size 40/50	32960	LNZG-40/50
For size 63/80	32961	LNZG-63/80
For size 100	32962	LNZG-100/125

Trunnion support CRLNZG, corrosion-resistant		
Description	Part no.	Type
For size 32	161874	CRLNZG-32
For size 40/50	161875	CRLNZG-40/50
For size 63/80	161876	CRLNZG-63/80
For size 100	161877	CRLNZG-100/125

Clevis foot CRLNG, corrosion-resistant		
Size	Part no.	Type
32	161840	CRLNG-32
40	161841	CRLNG-40
50	161842	CRLNG-50
63	161843	CRLNG-63
80	161844	CRLNG-80
100	161845	CRLNG-100

Sensor rail SAMH		
Description	Part no.	Type
For size 32 ... 100, The sensor strip is glued onto the cylinder, For proximity switch SMT/CRSMT-8	1600093	SAMH-N8-SR-50
For size 32 ... 100, The sensor strip is glued onto the cylinder, For proximity switch SMT/CRSMT-8	1600118	SAMH-N8-SR-100

Proximity switch SMT for T-slot, magneto-resistive		
Link <a href="#">smt-8m</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D

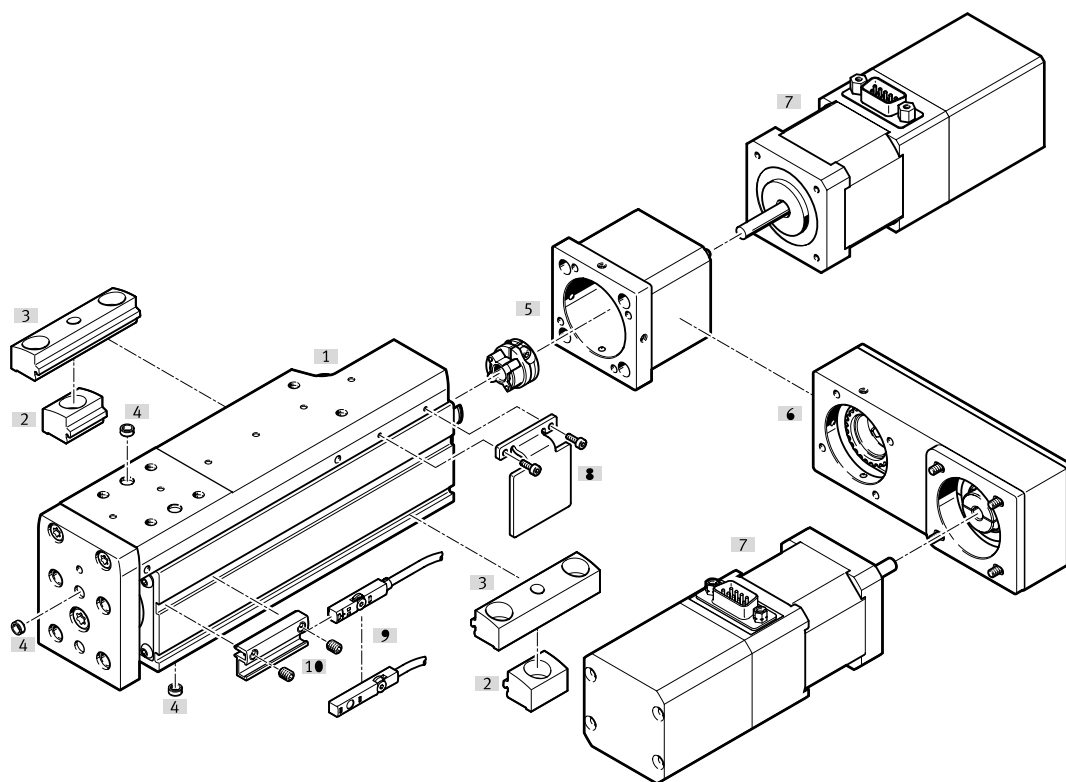
Connecting cable NEBA, straight		
Link <a href="#">neba</a>		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cable NEBA, angled		
Link <a href="#">neba</a>		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3



with recirculating ball bearing guide				
Size	Spindle pitch	Working stroke	Part no.	Type
60	5 mm/U	50 mm	8162086	EGSC-BS-KF-60-50-5P
		75 mm	8162087	EGSC-BS-KF-60-75-5P
		100 mm	8162082	EGSC-BS-KF-60-100-5P
		125 mm	8162083	EGSC-BS-KF-60-125-5P
		150 mm	8162084	EGSC-BS-KF-60-150-5P
		200 mm	8162085	EGSC-BS-KF-60-200-5P
	12 mm/U	50 mm	8048362	EGSC-BS-KF-60-50-12P
		75 mm	8048363	EGSC-BS-KF-60-75-12P
		100 mm	4356469	EGSC-BS-KF-60-100-12P
		125 mm	8048364	EGSC-BS-KF-60-125-12P
		150 mm	8048365	EGSC-BS-KF-60-150-12P
		200 mm	8048366	EGSC-BS-KF-60-200-12P

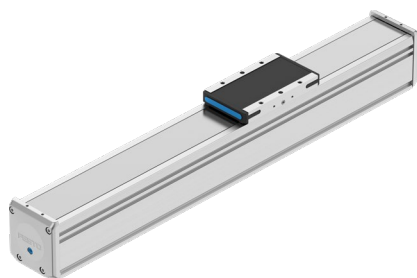
## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Mini slide EGSC-BS	egsc		112
[2] Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile		114
[3] Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drilled hole in the centre		114
[4] Centring sleeve ZBS	For centring loads and attachments on the slide		<a href="#">egsc</a>
[4] Centring pin ZBH	For centring loads and attachments on the slide		<a href="#">egsc</a>
[5] Axial kit EAMM-A	For axial motor mounting More detailed information → <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">eamm-a</a>
[6] Parallel kit EAMM-U	For parallel motor mounting More detailed information → <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">eamm-u</a>
[7] Motor EMMS-ST	Motors specially matched with the axis More detailed information → <a href="http://www.festo.com/x/electric-motion-sizing">www.festo.com/x/electric-motion-sizing</a>		<a href="#">emms-st</a>
[8] Switch lug EAPM-L2-...-SLS	For sensing the slide position in conjunction with inductive proximity switches SIES-8M		114
[9] Proximity switch SIES-8M	Inductive proximity sensors, for T-slot		114
[9] Proximity switches SMT-8M	Magnetic proximity switches, for T-slot		114
[10] Sensor bracket EAPM-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket		<a href="#">egsc</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Connecting cable NEBA, angled		Link <a href="#">neba</a>
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3



- For ball screw/toothed belt axes with recirculating ball bearing guide ELGD-BS-KF/ELGD-TB-KF (drive axes)
- Driveless linear guide unit with guide and freely movable slide unit
- For supporting forces and torques in multi-axis applications
- High torsional resistance
- Reduced vibrations with dynamic loads

## Type codes

001	Series	
ELFD	Guide axis, without drive	
002	Guide	
KF	Recirculating ball bearing guide	
003	Size	
60	60	
80	80	
004	Stroke [mm]	
...	50 ... 2850	
005	Stroke reserve	
0H	None	
...H	0 ... 999 mm	

006	Slide design	
	Standard	
L	Slide, long	
007	Additional slide	
	None	
ZL	1 slide left	
ZR	1 slide right	
008	Lubrication	
	Standard	
GN	Lubrication nipple	

## Ordering data



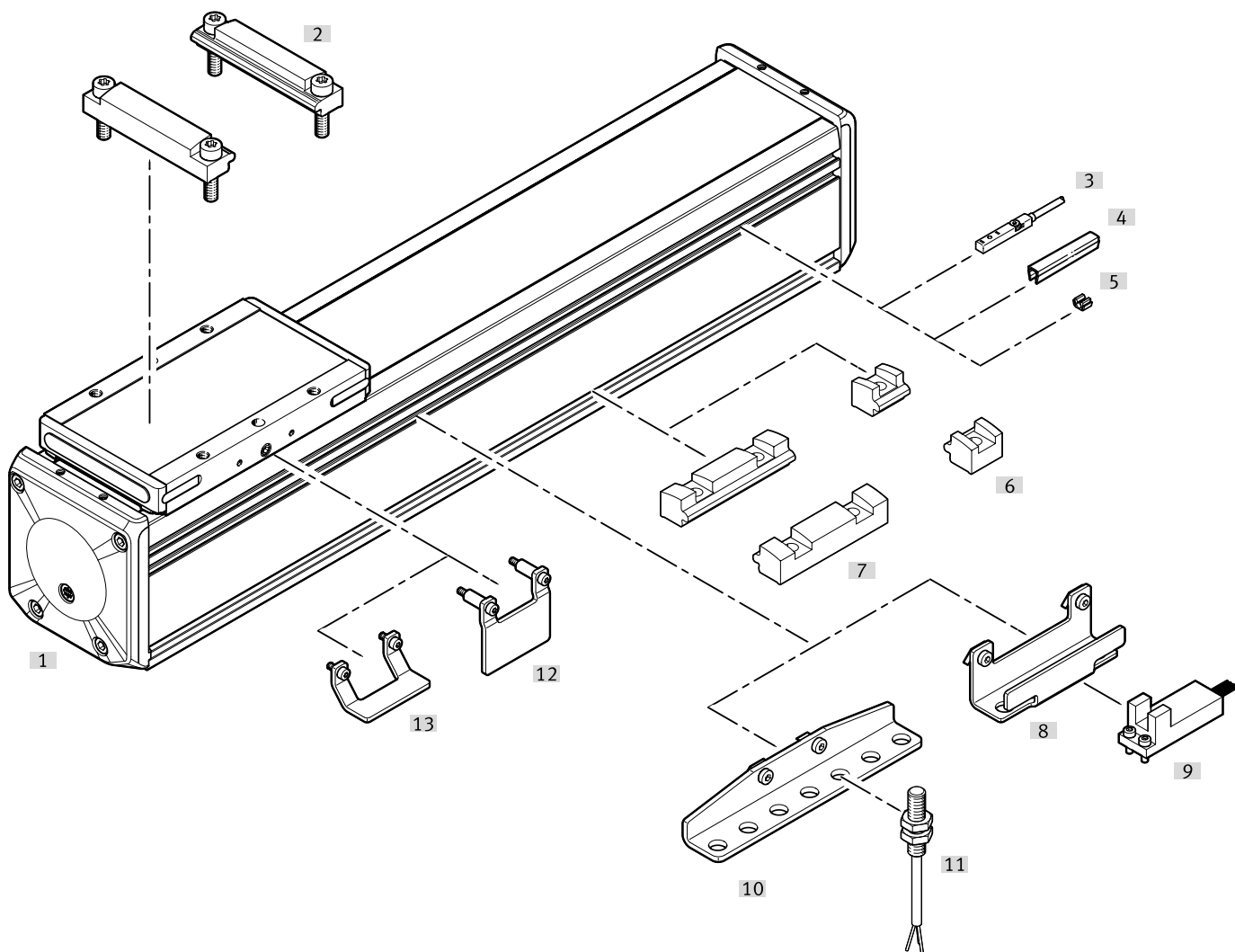
Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system					Weitere Informationen → elfd
	Size	Stroke [mm]	Part no.	Type	
	60	50 ... 2850	8182487	ELFD-KF-60-...	
	80	50 ... 2850	8182488	ELFD-KF-80-...	

Peripherals overview

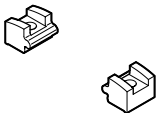


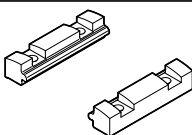
Accessories			
Type	Description		→ Link*
[1]	Guide axis ELFD	Guide axis	115
[2]	Profile mounting EAHF-E24-...-D...	For axis/axis mounting with adapter plate	117
[3]	Proximity switch, T-slot SIES-8M	Inductive proximity switch, for T-slot	118
[4]	Slot cover ABP-S	For protection against contamination	<a href="#">elfd</a>
[5]	Clip SMBK	For mounting the proximity switch cable in the slot	<a href="#">elfd</a>
[6]	Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile	117
[7]	Profile mounting EAHF-E24-...	For mounting the axis on the side of the profile	117
[8]	Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis	118
[9]	Sensor OMRON	Third-party sensor OMRON, EE-SX674 series	–
[10]	Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity switches SIEN-M8 (round design) on the axis	118
[11]	Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design	<a href="#">elfd</a>
[12]	Switch lug EAPM-E24-SLS	For sensing the slide position via inductive proximity switch SIES-8M or for optical sensors (Omron) with sensor bracket EAPM-E24-SHO	117
[13]	Switch lug EAPM-E24-SLE	For sensing the slide position via inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE	117

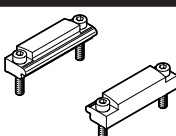
\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

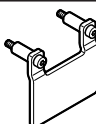


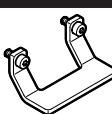
## Accessories

Profile mounting EAHF-E24-...-P-S					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Anodised wrought aluminium alloy	18 g	<b>8197128</b>	<b>EAHF-E24-60-P-S</b>

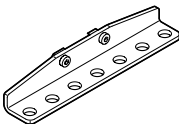
Profile mounting EAHF-E24-...-P					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Anodised wrought aluminium alloy	71 g	<b>8197132</b>	<b>EAHF-E24-60-P</b>

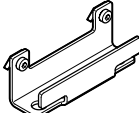
Profile mounting EAHF-E24-...-P-D...					
	Description	Material	Product weight	Part no.	Type
	ELGD-60 to ELGD-60	Anodised wrought aluminium alloy	87 g	<b>8197131</b>	<b>EAHF-E24-60-P-D5</b>
	ELGD-60 to ELGD-80		119 g	<b>8197129</b>	<b>EAHF-E24-60-P-D4</b>
	ELGD-80 to ELGD-100		133 g	<b>8197130</b>	<b>EAHF-E24-60-P-D6</b>

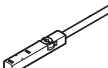
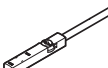
Switch lug EAPM-E24-...-SLS					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Steel	32 g	<b>8197117</b>	<b>EAPM-E24-60-SLS</b>

Switch lug EAPM-E24-...-SLE					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Steel	20 g	<b>8197116</b>	<b>EAPM-E24-60-SLE</b>

# Accessories

Sensor bracket EAPM-E24-...-SHE					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Steel	103 g	8197123	EAPM-E24-60-SHE

Sensor bracket EAPM-E24-...-SHO					
	Description	Material	Product weight	Part no.	Type
	For size 60, 80	Steel	67 g	8197121	EAPM-E24-60-SHO

Proximity switch for T-slot, inductive						Datasheets → Internet: <a href="#">sies</a>
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-core	7.5	551386	SIES-8M-PS-24V-K-7.5-OE
		NPN	Cable, 3-core	7.5	551396	SIES-8M-NS-24V-K-7.5-OE
N/C						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-core	7.5	551391	SIES-8M-PO-24V-K-7.5-OE
		NPN	Cable, 3-core	7.5	551401	SIES-8M-NO-24V-K-7.5-OE



- Toothed belt axes with recirculating ball bearing guide ELGA-BS-KF/ ELGA-TB-KF (drive axes)
- Driveless linear guide unit with guide and freely movable slide unit
- For supporting forces and torques in multi-axis applications
- High torsional resistance
- Reduced vibrations with dynamic loads

## Type code

001	Series
ELFC	Guide axis, without drive
002	Guide
KF	Recirculating ball bearing guide
003	Size
32	32
45	45
60	60
80	80

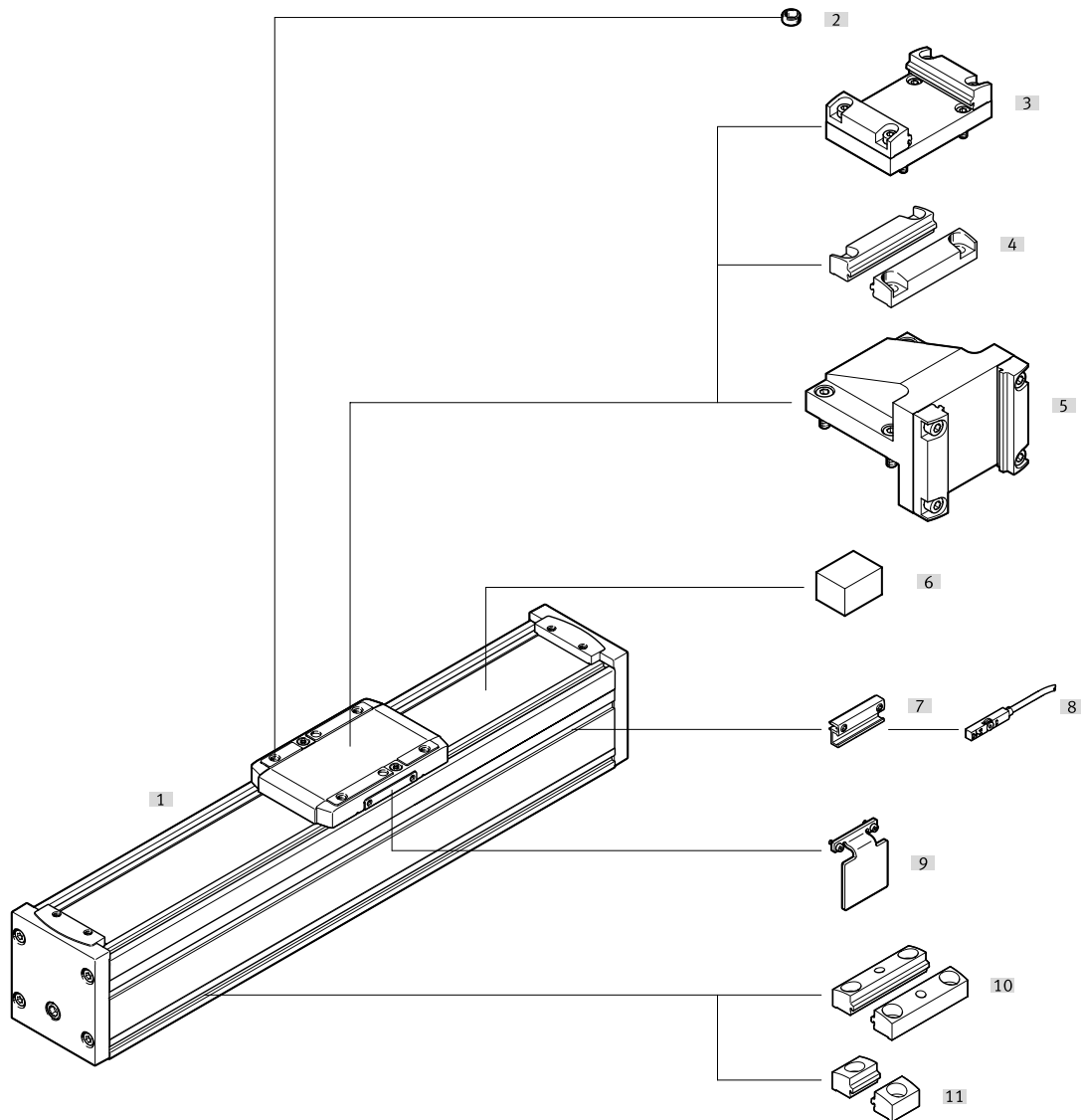
004	Stroke [mm]
100	100
200	200
300	300
400	400
500	500
600	600
800	800
1000	1000
1200	1200
1500	1500
1800	1800
2000	2000

## Ordering data

Size	Stroke [mm]	Part no.	Type
32	100	8062796	ELFC-KF-32-100
	200	8062797	ELFC-KF-32-200
	300	8062798	ELFC-KF-32-300
	400	8062799	ELFC-KF-32-400
	500	8062800	ELFC-KF-32-500
	600	8062801	ELFC-KF-32-600
	800	8062876	ELFC-KF-32-800
45	100	8062802	ELFC-KF-45-100
	200	8062803	ELFC-KF-45-200
	300	8062804	ELFC-KF-45-300
	400	8062805	ELFC-KF-45-400
	500	8062806	ELFC-KF-45-500
	600	8062807	ELFC-KF-45-600
	800	8062808	ELFC-KF-45-800
	1000	8062809	ELFC-KF-45-1000
	1200	8062810	ELFC-KF-45-1200
	1500	8062811	ELFC-KF-45-1500
60	100	8062812	ELFC-KF-60-100
	200	8062813	ELFC-KF-60-200
	300	8062814	ELFC-KF-60-300
	400	8062815	ELFC-KF-60-400
	500	8062816	ELFC-KF-60-500
	600	8062817	ELFC-KF-60-600
	800	8062818	ELFC-KF-60-800
	1000	8062819	ELFC-KF-60-1000
	1200	8062820	ELFC-KF-60-1200
	1500	8062821	ELFC-KF-60-1500
	1800	8062822	ELFC-KF-60-1800
	2000	8062823	ELFC-KF-60-2000

Size	Stroke [mm]	Part no.	Type
80	100	8062824	ELFC-KF-80-100
	200	8062825	ELFC-KF-80-200
	300	8062826	ELFC-KF-80-300
	400	8062827	ELFC-KF-80-400
	500	8062828	ELFC-KF-80-500
	600	8062829	ELFC-KF-80-600
	800	8062830	ELFC-KF-80-800
	1000	8062831	ELFC-KF-80-1000
	1200	8062832	ELFC-KF-80-1200
	1500	8062833	ELFC-KF-80-1500
	1800	8062834	ELFC-KF-80-1800
	2000	8062835	ELFC-KF-80-2000

## Peripherals overview



Accessories			→ Link*
[1]	Guide axis ELFC	Without drive	119
[2]	Centring sleeve/centring pins	For centring loads and attachments on the slide	<a href="#">elfc</a>
[3]	Adapter kit EHAA-D-L2	<ul style="list-style-type: none"> <li>For axis/axis mounting with adapter plate</li> <li>Mounting option: base axis with the same size or one-size-down assembly axis</li> <li>When motors are mounted using parallel kits, interfering contours may occur. In this case, the adapter plate is required for height compensation</li> </ul>	<a href="#">elfc</a>
[4]	Profile mounting EAHF-L2-...-P-D...	<ul style="list-style-type: none"> <li>For axis/axis mounting without adapter plate</li> <li>Mounting option: base axis with one-size-down assembly axis</li> </ul>	121
[5]	Angle kit EHAA-D-L2-...-AP	For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position „slide at top“	<a href="#">elfc</a>
[6]	Clamping element EADT-S-L5-32	Tool for retensioning the cover strip	<a href="#">elfc</a>
[7]	Sensor bracket EAMP-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket	<a href="#">elfc</a>
[8]	Proximity switch SIES-8M	Inductive proximity sensors, for T-slot	121
[8]	Proximity switch SMT-8M	Magnetic proximity switches, for T-slot	121
[9]	Switch lug EAMP-L2-...-SLS	For sensing the slide position in conjunction with inductive proximity switches SIES-8M	121
[10]	Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drilled hole in the centre	<a href="#">elfc</a>
[11]	Profile mounting EAHF-L2-...-P-S	For mounting the axis on the side of the profile	121

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Profile mounting EAHF-L2-....-P-S		
Description	Part no.	Type
For size 32	5183153	EAHF-L2-25-P-S
For size 45, 60, 80	5184133	EAHF-L2-45-P-S

Profile mounting EAHF-L2-....-P		
Description	Part no.	Type
For size 32	4835684	EAHF-L2-25-P
For size 45, 60, 80	4835728	EAHF-L2-45-P

Profile mounting EAHF-L2-....-P-D...		
Description <sup>1)</sup>	Part no.	Type
For size 32/25	4759753	EAHF-L2-25-P-D1
For size 45/32	4759748	EAHF-L2-25-P-D2
For size 60/45	4759739	EAHF-L2-45-P-D3
For size 80/60	4759726	EAHF-L2-45-P-D4

1) Base axis/assembly axis

Switch lug EAPM-L2-SLS		
Description	Part no.	Type
For size 32	8067259	EAPM-L2-32-SLS
For size 45	8067260	EAPM-L2-45-SLS
For size 60	8067261	EAPM-L2-60-SLS
For size 80	8067262	EAPM-L2-80-SLS

Proximity switch SIES for T-slot, inductive		
Switching output	Part no.	Type
NPN	551401	SIES-8M-NO-24V-K-7,5-OE
NPN	551396	SIES-8M-NS-24V-K-7,5-OE
PNP	551391	SIES-8M-PO-24V-K-7,5-OE
PNP	551386	SIES-8M-PS-24V-K-7,5-OE

Link [sies-8m](#)

Proximity switch SMT for T-slot, magneto-resistive		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D

Link [smt-8m](#)

Connecting cable NEBA, straight		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

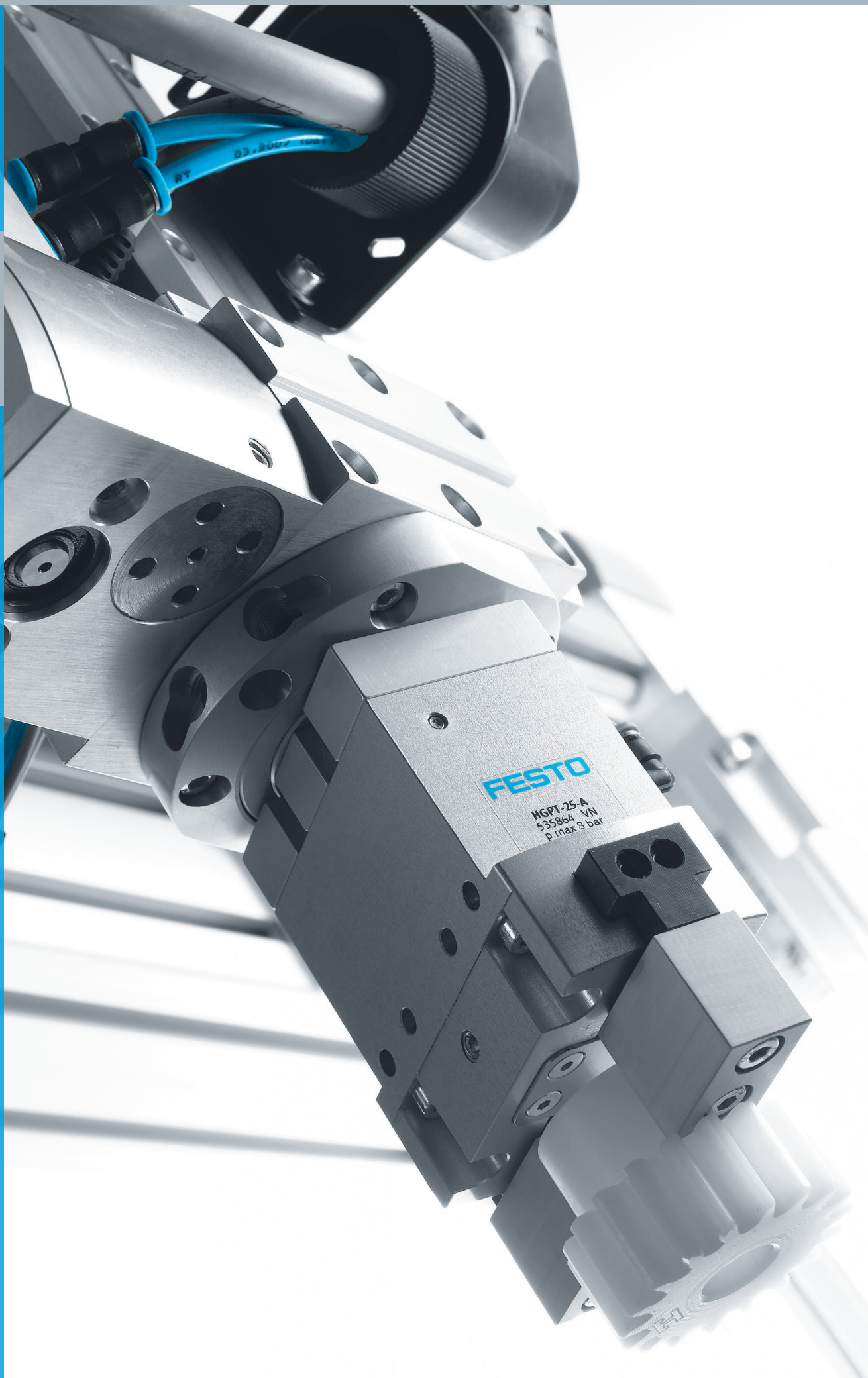
Link [neba](#)

Connecting cable NEBA, angled		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Link [neba](#)

# 03

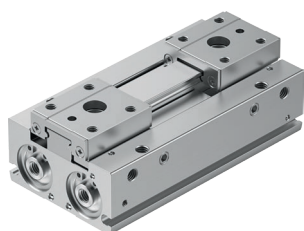
## Grippers





## Highlights

## Contents



Parallel grippers

### HPPF

- + Optimal: compact and flat design
- + Durable: integrated guide and sturdy design

→ 128



Parallel grippers

### DHPC

- + Resilient and precise ball guide
- + Wide variety of mounting and attachment options

→ 131

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Parallel gripper HPPF	128
Parallel gripper DHPC	131
Adaptive gripper finger DHAS	138

## Product overview

## Software-Tools

### Product Finder for grippers



A secure grip is a question of the right calculation. In this case, calculation of weight, direction of movement, distances, etc.  
The software tool immediately determines which type of gripper – parallel, three-point, angle or swivel gripper – and which size best matches your requirements.

These tools can be found at

- [www.festo.com/x/gripper-parallel](http://www.festo.com/x/gripper-parallel)
- [www.festo.com/x/gripper-3-point](http://www.festo.com/x/gripper-3-point)
- [www.festo.com/x/gripper-angle](http://www.festo.com/x/gripper-angle)
- [www.festo.com/x/gripper-radial](http://www.festo.com/x/gripper-radial)

### Parallel gripper

## Parallel grippers



**Parallel gripper  
HEPP**



**Parallel gripper  
HPPF**




**Parallel gripper  
DHPC**

	Parallel gripper HEPP	Parallel gripper HPPF	Parallel gripper DHPC
<b>Size</b>	28, 36, 42	8, 12, 16, 20	6, 10, 16, 20, 25, 32
<b>Stroke per gripper jaw</b>	15 ... 28 mm	4 ... 40 mm	2 ... 11 mm
<b>Total gripping force at 0.6 MPa (6 bar, 87 psi), closing</b>		60.32 ... 377 N	7.8 ... 442.6 N
<b>Max. force on gripper jaw F<sub>z</sub>, static</b>	680 ... 1100 N	58 ... 294 N	5 ... 171.5 N
<b>Gripping force backup</b>		None	During opening, During closing, None
<b>Gripper repetition accuracy</b>	0.01 mm, 0.02 mm	0.02 mm, 0.03 mm, 0.06 mm	0.02 mm
<b>Position sensing</b>	Motor encoder	Via proximity switch	Via proximity switch
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Powerful and flexible</li> <li>• Dynamic motor for adjustable motion response</li> <li>• Easy, adjustable parameterisation</li> <li>• Compact thanks to integrated controller</li> <li>• High precision thanks to cross-roller guide</li> <li>• Control via PROFINET®, EtherNet/IP®, EtherCat®</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>	<ul style="list-style-type: none"> <li>• Optimal: compact and flat design</li> <li>• Durable: integrated guide and sturdy design</li> <li>• Economical: best price/performance ratio</li> <li>• Can be combined: available in many sizes and strokes</li> <li>• Sustainable thanks to reduced material use and maintenance-free over the entire service life.</li> </ul>	<ul style="list-style-type: none"> <li>• Resilient and precise ball guide</li> <li>• High gripping force and compact size</li> <li>• Max. repetition accuracy</li> <li>• Can be used as a double-acting or single-acting gripper</li> <li>• Single-acting variant or with gripping force retention normally open (NO) or normally closed (NC)</li> <li>• Suitable for external and internal gripping</li> <li>• Wide variety of mounting and attachment options</li> <li>• Sustainable in production thanks to reduced use of materials</li> </ul>
<b>online: →</b>	<b>126</b>	<b>128</b>	<b>131</b>



## Accessories for grippers

	 <b>Adaptive gripper fingers DHAS-GF</b>
<b>Size</b>	60, 80, 120
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"><li>• Self-adapting to different workpiece shapes</li><li>• Adaptive gripper fingers for gentle and flexible gripping using the Fin Ray Effect® modelled on a fish's tail fin</li><li>• For workpiece diameters from 6 to 120 mm</li></ul>
<b>online:</b> →	<b>138</b>

## Parallel gripper HEPP



- Powerful and flexible
- Dynamic motor for adjustable motion response
- Easy, adjustable parameterisation
- Compact thanks to integrated controller
- High precision thanks to cross-roller guide
- Control via PROFINET®, EtherNet/IP®, EtherCat®
- Sustainable in production thanks to reduced use of materials

### Type code

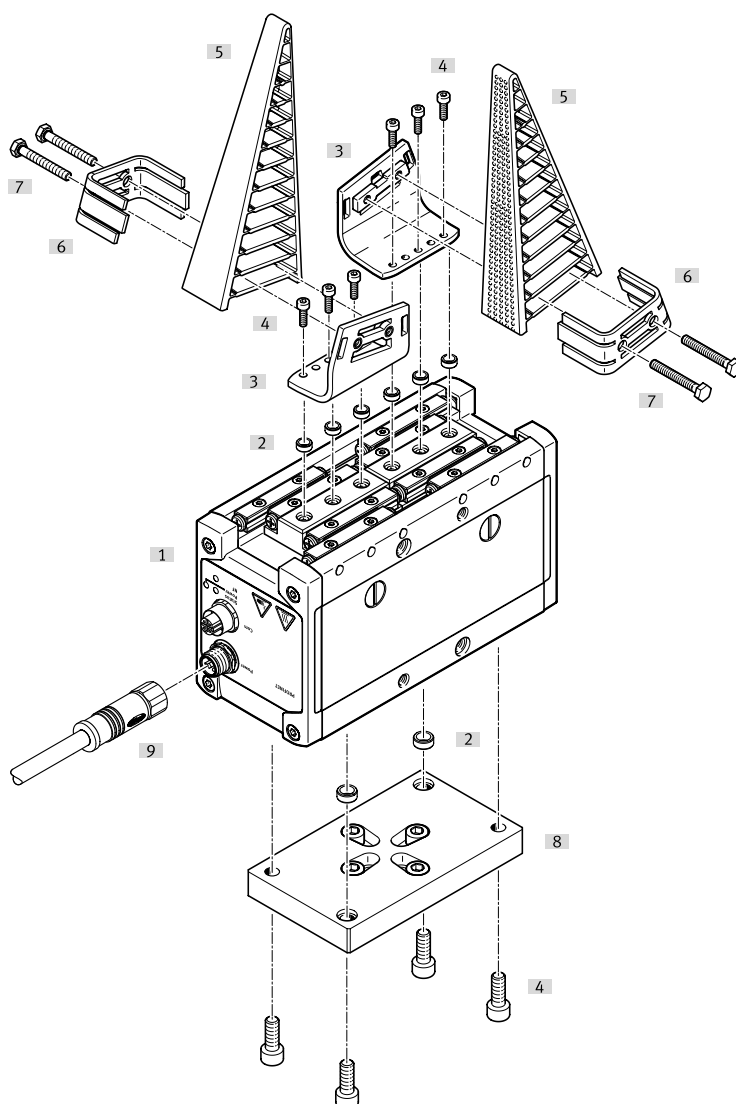
001	Series
HEPP	Parallel gripper HEPP
002	Size [mm]
28	28
36	36
42	42
003	Complete stroke [mm]
30	30
45	45
56	56

004	Bus protocol/activation
EC	EtherCAT®
EP	EtherNet/IP
PN	Profinet
005	Brake
	None
B	With brake

### Ordering data

Size	Total stroke	Fieldbus link	Part no.	Type
28	30 mm	EtherCAT	8146668	HEPP-28-30-EC
			8146667	HEPP-28-30-EC-B
		EtherNet/IP	8146670	HEPP-28-30-EP
			8146669	HEPP-28-30-EP-B
		PROFINET	8117631	HEPP-28-30-PN
			8146666	HEPP-28-30-PN-B
36	45 mm	EtherCAT	8146662	HEPP-36-45-EC-B
			8146663	HEPP-36-45-EC
		EtherNet/IP	8146665	HEPP-36-45-EP
			8146664	HEPP-36-45-EP-B
		PROFINET	8117630	HEPP-36-45-PN
			8146661	HEPP-36-45-PN-B
42	56 mm	EtherCAT	8146657	HEPP-42-56-EC-B
			8146658	HEPP-42-56-EC
		EtherNet/IP	8146660	HEPP-42-56-EP
			8146659	HEPP-42-56-EP-B
		PROFINET	8146656	HEPP-42-56-PN-B
			8117629	HEPP-42-56-PN

## Peripherals overview



Accessories		→ Link*
Type/order code	Description	
[1] Parallel gripper HEPP	Electric parallel gripper	126
[2] Mounting bracket DHAS-MA	For mounting the gripper finger on the gripper	<a href="#">hepp</a>
[3] Adaptive gripper finger DHAS	For gentle and flexible gripping	<a href="#">hepp</a>
[4] Mounting kit DHAS-ME	For mounting the gripper finger on the gripper	127
[5] Adapter kit DHAA	Connecting plate between gripper and drive/axis	<a href="#">hepp</a>
[6] Connecting cable NEBM	To control the parallel gripper	<a href="#">hepp</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

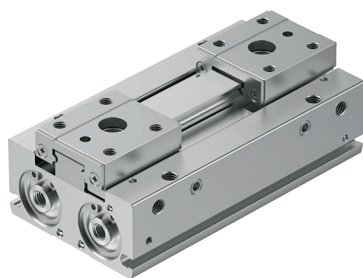
## Accessories

Adaptive gripper finger DHAS		
Suitability for the production of Li-ion batteries	Part no.	Type
Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	3998964	DHAS-GF-80-U-BU
	3998959	DHAS-GF-120-U-BU

Centring sleeve ZBH for centring the gripper jaws		
Material sleeve	Part no.	Type
Steel	8146544	ZBH-7-B
Steel	8146543	ZBH-5-B

Centring sleeve ZBH for centring the gripper		
Material sleeve	Part no.	Type
Steel	8146544	ZBH-7-B
Steel	8137184	ZBH-9-B

## Parallel gripper HPPF



- Optimal: compact and flat design
- Durable: integrated guide and sturdy design
- Economical: best price/performance ratio
- Can be combined: available in many sizes and strokes
- Sustainable thanks to reduced material use and maintenance-free over the entire service life

### Type code

001	Series
HPPF	Parallel grippers
002	Size [mm]
8	8
12	12
16	16
20	20

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

004	Position sensing
A	For proximity sensor

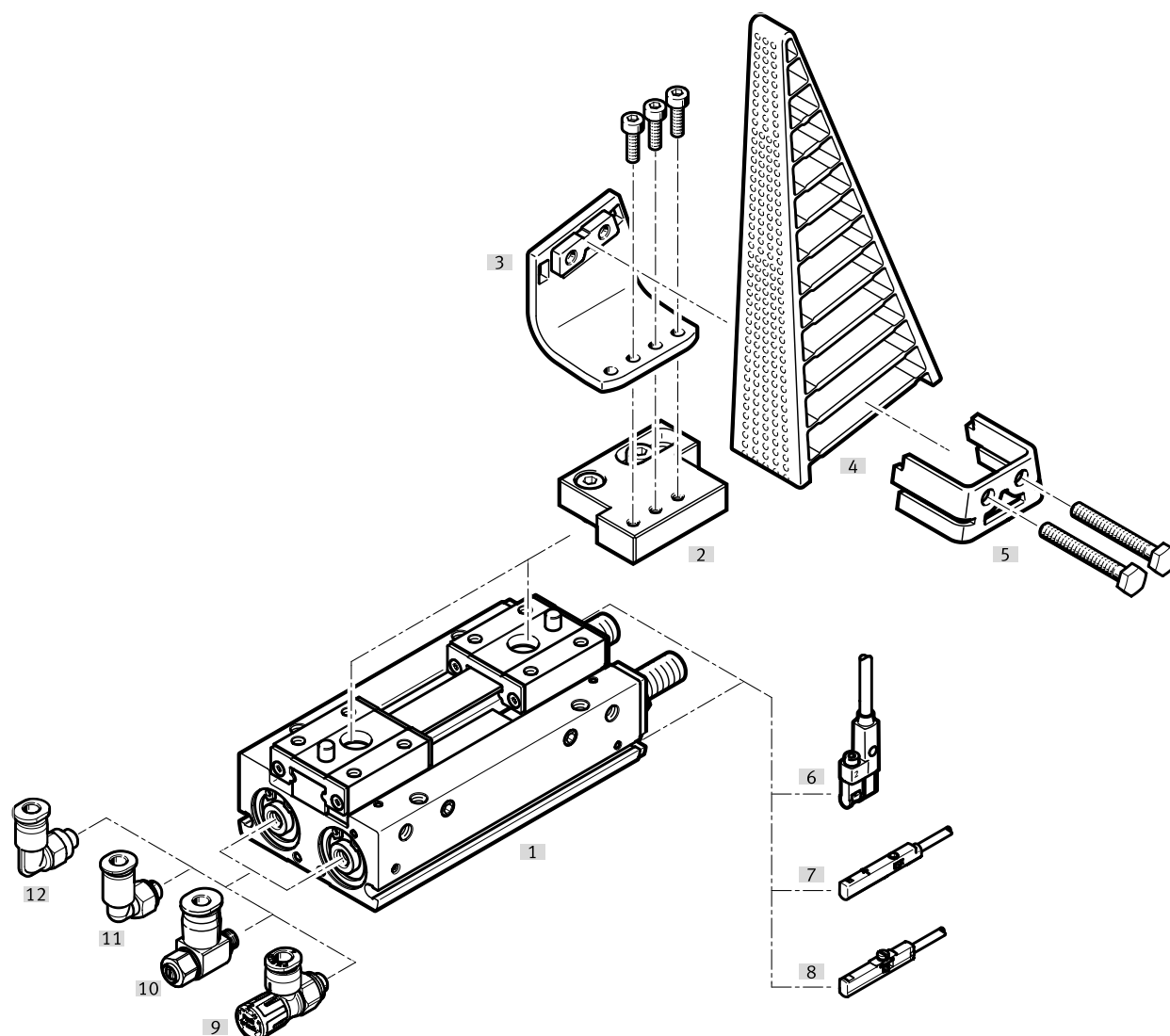
005	Stroke variant
	Without
S	Adjustable stroke

### Ordering data

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

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

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Parallel gripper HPPF	Double-acting; with ball guide, optionally with adjustable stroke		128
[2] Intermediate plate HAMF-PA	<ul style="list-style-type: none"> <li>For fitting the mounting bracket DHAS-MA on the gripper</li> <li>Available for sizes 16, 20</li> </ul>		<a href="#">hppf</a>
[3] Mounting bracket DHAS-MA	For mounting the adaptive gripper finger DHAS-GF on the intermediate plate HAMF-PA		<a href="#">hppf</a>
[4] Adaptive gripper finger DHAS-GF	<ul style="list-style-type: none"> <li>For flexible gripping</li> <li>Available in the sizes 60, 80, 120</li> <li>The mounting components HAMF-PA, DHAS-MA and DHAS-ME are also required to attach the gripper fingers to the gripper</li> </ul>		130
[5] Mounting kit DHAS-ME	For mounting the adaptive gripper finger DHAS-GF on the mounting bracket DHAS-MA		<a href="#">hppf</a>
[6] Proximity switch SMT-10G	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>		130
[7] Proximity switch SMT-10M	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>		130
[8] Proximity switch SDBC-MSB	<ul style="list-style-type: none"> <li>For round slot</li> <li>For sensing the piston position in the end positions</li> </ul>		130
[9] One-way flow control valve VFOE	For regulating speed		<a href="#">hppf</a>
[10] One-way flow control valve GRLA	For regulating speed		<a href="#">hppf</a>
[11] Push-in fitting QS	For connecting tubing with standard O.D		<a href="#">qs</a>
[12] Push-in fitting NPQE	For connecting tubing with standard O.D		<a href="#">npqe</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Parallel gripper HPPF

Accessories

Adaptive gripper finger DHAS-GF <span>Link <a href="#">dhas-gf</a></span>		
Description <sup>1)</sup>	Part no.	Type
For DHAS-MA-B6-60	3998967	DHAS-GF-60-U-BU
For DHAS-MA-B6-80	3998964	DHAS-GF-80-U-BU
For DHAS-MA-B6-120	3998959	DHAS-GF-120-U-BU

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

Proximity switch SMT-10M for round slot, magneto-resistive <span>Link <a href="#">smt</a></span>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551374	SMT-10M-PS-24V-E-2,5-Q-OE
Screw-clamped, Insertable in the slot from above	551373	SMT-10M-PS-24V-E-2,5-L-OE
Screw-clamped, Insertable in the slot from above	551375	SMT-10M-PS-24V-E-0,3-L-M8D
Screw-clamped, Insertable in the slot from above	551376	SMT-10M-PS-24V-E-0,3-Q-M8D

Proximity switch SMT-10G for round slot, magneto-resistive <span>Link <a href="#">smt</a></span>		
Type of mounting	Part no.	Type
Clamped in C-slot, Insertable in the slot lengthwise	8065030	SMT-10G-NS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
Clamped in C-slot, Insertable in the slot lengthwise	547862	SMT-10G-PS-24V-E-2,5Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	547863	SMT-10G-PS-24V-E-0,3Q-M8D

Proximity switch SDBC-MSB for round slot, magneto-resistive <span>Link <a href="#">sdbc</a></span>		
Switching output	Part no.	Type
NPN	8139724	SDBC-MSB-1L-NU-K-2-LE
PNP	8139723	SDBC-MSB-1L-PU-K-2-LE
Non-contacting, 2-wire	8139725	SDBC-MSB-1L-ZU-K-2-LE

Connecting cables NEBA, straight, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, straight, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078236	NEBA-M12G5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078237	NEBA-M12G5-U-5-N-LE3

Connecting cables NEBA, angled, M8 connection		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3

Connecting cables NEBA, angled, M12 connection		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078245	NEBA-M12W5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078246	NEBA-M12W5-U-5-N-LE3

## Parallel gripper DHPC



- Resilient and precise ball guide
- High gripping force and compact size
- Max. repetition accuracy
- Can be used as a double-acting or single-acting gripper
- Single-acting variant or with gripping force retention normally open (NO) or normally closed (NC)
- Suitable for external and internal gripping
- Wide variety of mounting and attachment options
- Sustainable in production thanks to reduced use of materials

## Type code

001	Series
DHPC	Parallel gripper
002	Gripper characteristic
	Standard
L	Long stroke
003	Size [mm]
6	6
10	10
16	16
20	20
25	25
32	32
004	Position sensing
A	For proximity sensor

005	Gripping force backup
	None
NC	N/O contact
NO	Opening
006	Pneumatic connection
B	Bottom
S	On the side
Z	Via mounting spigot
007	Dust protection
	None
C	Protective dust cap
008	Type of mounting gripper finger
	None
1	Mounting holes at the side
2	Flat gripper fingers


## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

DHPC – Modular product system					Link  dhpc
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type
6	None, N/O contact, Opening	Standard	None, Mounting holes at the side, Flat gripper fingers	<b>8116728</b>	<b>DHPC-...-6-A-</b>
10		Standard, Long stroke		<b>8116729</b>	<b>DHPC-...-10-A-</b>

DHPC-...-B – Pneumatic connection underneath					
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type
6	None	Standard	None	8116738	DHPC-6-A-B
			Mounting holes at the side	8116739	DHPC-6-A-B-1
			Flat gripper fingers	8116740	DHPC-6-A-B-2
10		Long stroke	None	8116756	DHPC-10-A-B
			Mounting holes at the side	8116757	DHPC-10-A-B-1
			Flat gripper fingers	8116758	DHPC-10-A-B-2
			None	8116774	DHPC-L-10-A-B
			Mounting holes at the side	8116775	DHPC-L-10-A-B-1
			Flat gripper fingers	8116776	DHPC-L-10-A-B-2

## Parallel gripper DHPC

### Ordering data

DHPC-...-B – Pneumatic connection underneath					
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type
16	None	Standard	None	8116788	DHPC-16-A-B
			Mounting holes at the side	8116789	DHPC-16-A-B-1
			Flat gripper fingers	8116790	DHPC-16-A-B-2
		Long stroke	None	8116806	DHPC-L-16-A-B
			Mounting holes at the side	8116807	DHPC-L-16-A-B-1
			Flat gripper fingers	8116808	DHPC-L-16-A-B-2
20	None	Standard	None	8116820	DHPC-20-A-B
			Mounting holes at the side	8116821	DHPC-20-A-B-1
			Flat gripper fingers	8116822	DHPC-20-A-B-2
		Long stroke	None	8116838	DHPC-L-20-A-B
			Mounting holes at the side	8116839	DHPC-L-20-A-B-1
			Flat gripper fingers	8116840	DHPC-L-20-A-B-2
25	None	Standard	None	8116852	DHPC-25-A-B
			Mounting holes at the side	8116853	DHPC-25-A-B-1
			Flat gripper fingers	8116854	DHPC-25-A-B-2
		Long stroke	None	8116870	DHPC-L-25-A-B
			Mounting holes at the side	8116871	DHPC-L-25-A-B-1
			Flat gripper fingers	8116872	DHPC-L-25-A-B-2
32	None	Standard	None	8116884	DHPC-32-A-B
			Mounting holes at the side	8116885	DHPC-32-A-B-1
			Flat gripper fingers	8116886	DHPC-32-A-B-2

DHPC-....S – Pneumatic connection on the side						
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type	
6	None	Standard	None	8116735	DHPC-6-A-S	
			Mounting holes at the side	8116736	DHPC-6-A-S-1	
			Flat gripper fingers	8116737	DHPC-6-A-S-2	
	N/O contact		None	8116747	DHPC-6-A-NC-S	
			Mounting holes at the side	8116748	DHPC-6-A-NC-S-1	
			Flat gripper fingers	8116749	DHPC-6-A-NC-S-2	
	Opening		None	8116741	DHPC-6-A-NO-S	
			Mounting holes at the side	8116742	DHPC-6-A-NO-S-1	
			Flat gripper fingers	8116743	DHPC-6-A-NO-S-2	
10	None		None	8116753	DHPC-10-A-S	
			Mounting holes at the side	8116754	DHPC-10-A-S-1	
			Flat gripper fingers	8116755	DHPC-10-A-S-2	
		Long stroke	None	8116771	DHPC-L-10-A-S	
			Mounting holes at the side	8116772	DHPC-L-10-A-S-1	
			Flat gripper fingers	8116773	DHPC-L-10-A-S-2	
		N/O contact	Standard	None	8116765	DHPC-10-A-NC-S
				Mounting holes at the side	8116766	DHPC-10-A-NC-S-1
				Flat gripper fingers	8116767	DHPC-10-A-NC-S-2
	Long stroke		None	8116780	DHPC-L-10-A-NC-S	
			Mounting holes at the side	8116781	DHPC-L-10-A-NC-S-1	
			Flat gripper fingers	8116782	DHPC-L-10-A-NC-S-2	
	Opening	Standard	None	8116759	DHPC-10-A-NO-S	
			Mounting holes at the side	8116760	DHPC-10-A-NO-S-1	
			Flat gripper fingers	8116761	DHPC-10-A-NO-S-2	
		Long stroke	None	8116777	DHPC-L-10-A-NO-S	
			Mounting holes at the side	8116778	DHPC-L-10-A-NO-S-1	
			Flat gripper fingers	8116779	DHPC-L-10-A-NO-S-2	
16	None	Standard	None	8116785	DHPC-16-A-S	
			Mounting holes at the side	8116786	DHPC-16-A-S-1	
			Flat gripper fingers	8116787	DHPC-16-A-S-2	
		Long stroke	None	8116803	DHPC-L-16-A-S	
			Mounting holes at the side	8116804	DHPC-L-16-A-S-1	
			Flat gripper fingers	8116805	DHPC-L-16-A-S-2	



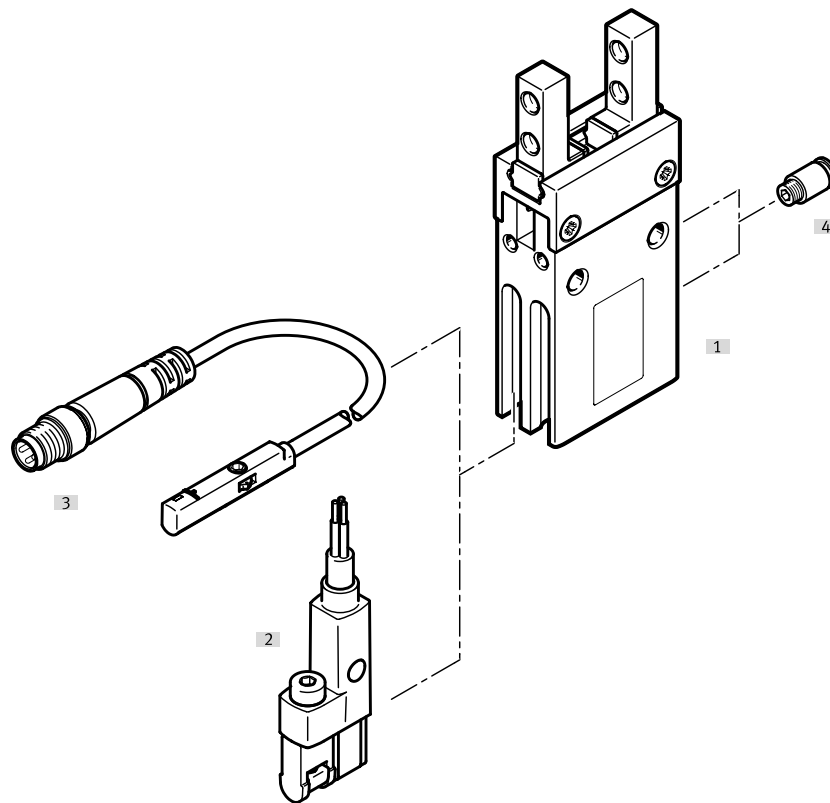
## Ordering data

DHPC....S – Pneumatic connection on the side					
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type
20	None	Standard	None	8116817	DHPC-20-A-S
			Mounting holes at the side	8116818	DHPC-20-A-S-1
			Flat gripper fingers	8116819	DHPC-20-A-S-2
		Long stroke	None	8116835	DHPC-L-20-A-S
			Mounting holes at the side	8116836	DHPC-L-20-A-S-1
			Flat gripper fingers	8116837	DHPC-L-20-A-S-2
25	None	Standard	None	8116849	DHPC-25-A-S
			Mounting holes at the side	8116850	DHPC-25-A-S-1
			Flat gripper fingers	8116851	DHPC-25-A-S-2
		Long stroke	None	8116867	DHPC-L-25-A-S
			Mounting holes at the side	8116868	DHPC-L-25-A-S-1
			Flat gripper fingers	8116869	DHPC-L-25-A-S-2
32	None	Standard	None	8116881	DHPC-32-A-S
			Mounting holes at the side	8116882	DHPC-32-A-S-1
			Flat gripper fingers	8116883	DHPC-32-A-S-2

DHPC-....Z – Pneumatic connection via mounting trunnion					
Size	Gripping force backup	Gripper characteristic	Type of mounting gripper finger	Part no.	Type
6	N/O contact	Standard	None	8116750	DHPC-6-A-NC-Z
			Mounting holes at the side	8116751	DHPC-6-A-NC-Z-1
			Flat gripper fingers	8116752	DHPC-6-A-NC-Z-2
	Opening		None	8116744	DHPC-6-A-NO-Z
			Mounting holes at the side	8116745	DHPC-6-A-NO-Z-1
			Flat gripper fingers	8116746	DHPC-6-A-NO-Z-2
10	N/O contact		None	8116768	DHPC-10-A-NC-Z
			Mounting holes at the side	8116769	DHPC-10-A-NC-Z-1
			Flat gripper fingers	8116770	DHPC-10-A-NC-Z-2
	Opening		None	8116762	DHPC-10-A-NO-Z
			Mounting holes at the side	8116763	DHPC-10-A-NO-Z-1
			Flat gripper fingers	8116764	DHPC-10-A-NO-Z-2

## Parallel gripper DHPC

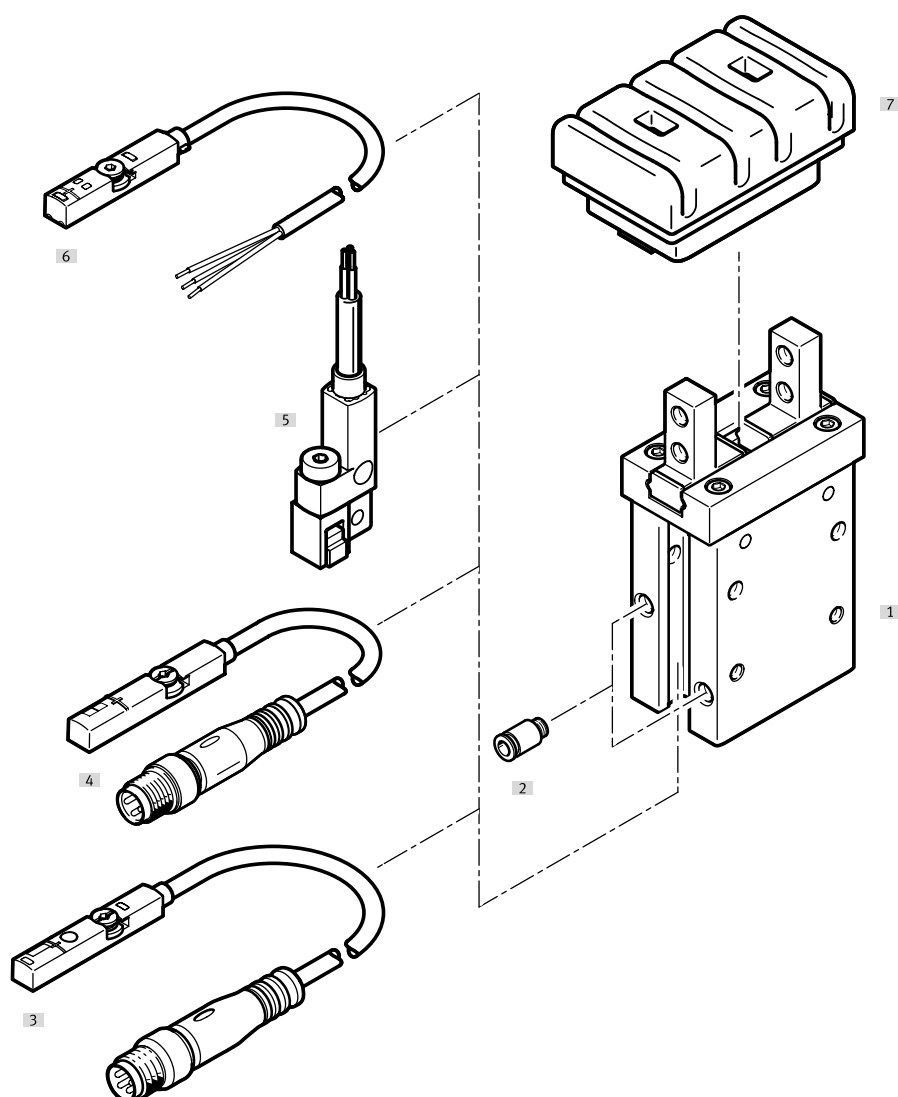
### Peripherals overview size 6



Accessories			→ Link*
Type/order code	Description		
[1] Parallel grippers DHPC	Can be used either as double-acting or single-acting gripper		131
[2] Proximity switch SMT-10G	For sensing the piston position in the end positions		137
[3] Proximity switch SMT-10M	For sensing the piston position in the end positions		137
[4] Push-in fitting QS	For connecting tubing with standard O.D.		<a href="#">qs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Peripherals overview size 10



Accessories			→ Link*
Type/order code	Description		
[1]	Parallel grippers DHPC	Can be used either as double-acting or single-acting gripper	131
[2]	Push-in fitting QS	For connecting tubing with standard O.D.	<a href="#">qs</a>
[3]	Position transmitter SDAS-MHS	For sensing the piston position at any point	<a href="#">dhpc</a>
[4]	Position transmitter SMAT-8M	For sensing the piston position at any point	<a href="#">dhpc</a>
[5]	Proximity switch SMT-8G	For sensing the piston position in the end positions	137
[6]	Proximity switch SMT-8M	For sensing the piston position in the end positions	137
[7]	Protective cap DHAS-DP	For protecting the gripper against the ingress of dust	137

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



## Accessories

Protective cap DHAS-DP		
Size [mm] <sup>1)</sup>	Part no.	Type
10 mm	8116784	DHAS-DP-B23-10-L-N
	8116783	DHAS-DP-B23-10-N
16 mm	8116815	DHAS-DP-B23-16-N
	8116816	DHAS-DP-B23-16-L-N
20 mm	8116847	DHAS-DP-B23-20-N
	8116848	DHAS-DP-B23-20-L-N
25 mm	8116879	DHAS-DP-B23-25-N
	8116880	DHAS-DP-B23-25-L-N

1) The protective cap can only be fitted on grippers with the DHPC-...-C variant.

Proximity switch SMT-10M for round slot, magneto-resistive – For sizes 6, 16 ... 40 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	551374	SMT-10M-PS-24V-E-2,5-Q-OE
	551373	SMT-10M-PS-24V-E-2,5-L-OE
	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	551376	SMT-10M-PS-24V-E-0,3-Q-M8D

Proximity switch SMT-10G for round slot, magneto-resistive – for sizes 6, 16 ... 40 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Clamped in C-slot, Insertable in the slot lengthwise	8065030	SMT-10G-NS-24V-E-2,5-Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
Clamped in C-slot, Insertable in the slot lengthwise	547862	SMT-10G-PS-24V-E-2,5-Q-OE
Clamped in C-slot, Insertable in the slot lengthwise	547863	SMT-10G-PS-24V-E-0,3Q-M8D

Proximity switch SMT-8M for T-slot, magneto-resistive – For sizes 10 ... 40 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Screw-clamped, Insertable in the slot from above	574338	SMT-8M-A-NS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574339	SMT-8M-A-NS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574340	SMT-8M-A-PO-24V-E-7,5-OE
Screw-clamped, Insertable in the slot from above	574335	SMT-8M-A-PS-24V-E-2,5-OE
Screw-clamped, Insertable in the slot from above	574334	SMT-8M-A-PS-24V-E-0,3-M8D
Screw-clamped, Insertable in the slot from above	574337	SMT-8M-A-PS-24V-E-0,3-M12

Proximity switch SMT-8G for T-slot, magneto-resistive – For sizes 10 ... 40 Link <a href="#">smt</a>		
Type of mounting	Part no.	Type
Clamped in T-slot, Insertable in the slot lengthwise	8065028	SMT-8G-NS-24V-E-2,5Q-OE
Clamped in T-slot, Insertable in the slot lengthwise	8065027	SMT-8G-NS-24V-E-0,3Q-M8D
Clamped in T-slot, Insertable in the slot lengthwise	547859	SMT-8G-PS-24V-E-2,5Q-OE
Clamped in T-slot, Insertable in the slot lengthwise	547860	SMT-8G-PS-24V-E-0,3Q-M8D

Position transmitter SDAS for T-slot, M8 plug, A-coded – For size 10 ... 40 Link <a href="#">sdas</a>		
Description	Part no.	Type
Operating modes: two adjustable switching outputs; IO-Link®	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8
Operating modes: two adjustable switching outputs; IO-Link®	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE

Accessories for grippers >

## Adaptive gripper finger DHAS



- Self-adapting to different workpiece shapes
- Adaptive gripper fingers for gentle and flexible gripping using the Fin Ray Effect® modelled on a fish's tail fin
- For workpiece diameters from 6 to 120 mm

### Type code

001	Series
DHAS	Gripper finger
002	Product type
GF	Fin jaw
003	Size [mm]
60	60
80	80
120	120

004	Material
U	Polyurethane
005	Colour
BU	Blue

### Ordering data

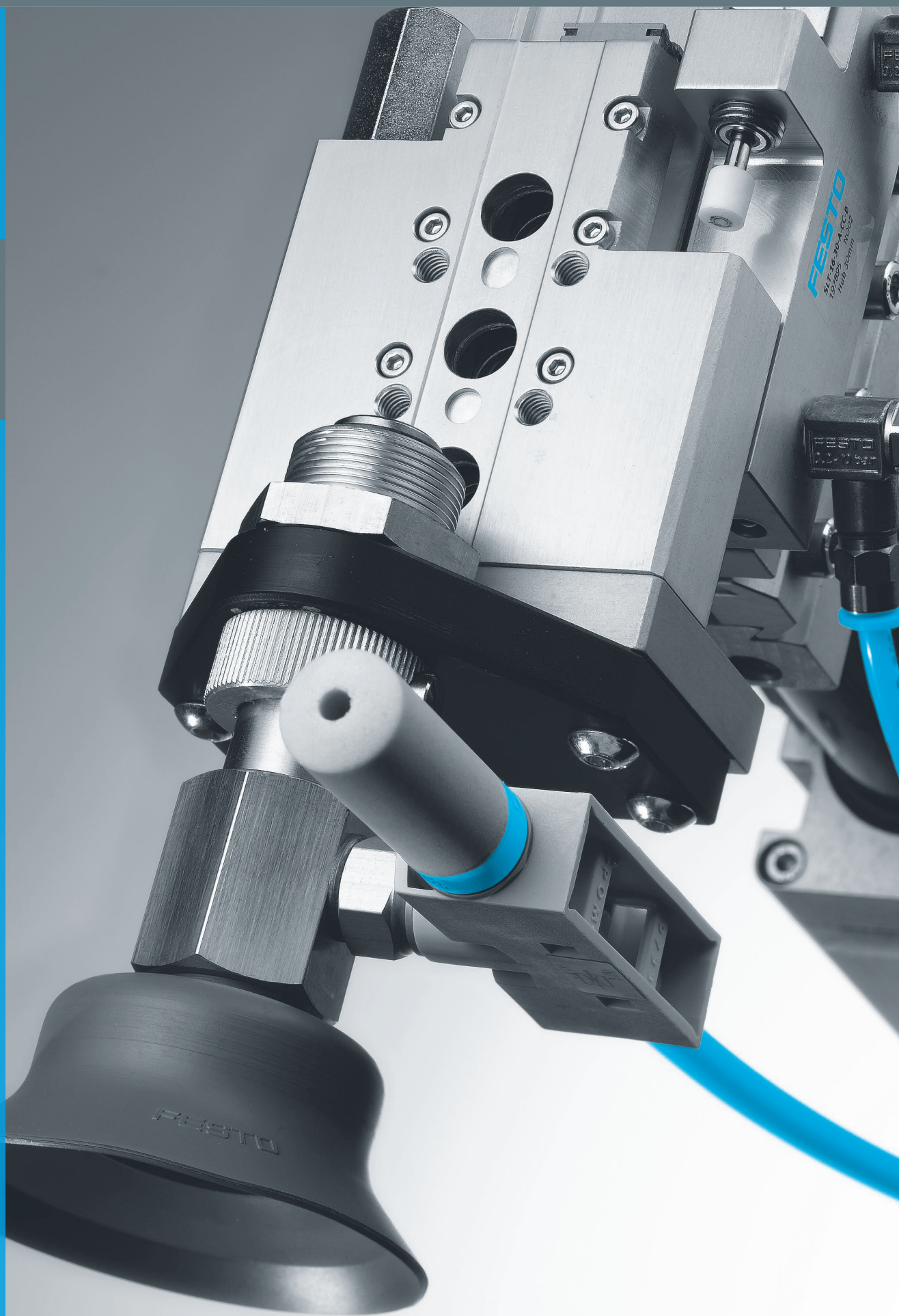
Adaptive gripper finger DHAS		
Size	Part no.	Type
60	3998967	DHAS-GF-60-U-BU
80	3998964	DHAS-GF-80-U-BU
120	3998959	DHAS-GF-120-U-BU





# 04

## Vacuum technology





## Highlights

## Contents



Vacuum generators

### VN

- + Generate a vacuum quickly and easily
- + Lightweight design for mounting in the gripping area

→ 147

Product overview	142
Vacuum generator OVPN	144
Vacuum generator VN, pneumatic	147
Suction cup with connection OGVN	149
Vacuum filter VAF-PK	151
Length compensator VAL	152

## Product overview

## Software-Tools

### Vacuum design



Which suction cup is used for which surface and which movement?  
Don't experiment – calculate!  
The vacuum selection program helps you select the right suction cups, tubing and venturi nozzles. It also calculates the distribution of the forces acting on the individual suction cups, as well as the evacuation time.  
This software tool even enables a distinction to be made between linear and rotary movements.

This tool can be found at  
→ [www.festo.com/x/vacuum-sizing](http://www.festo.com/x/vacuum-sizing)

## Vacuum generators




**Vacuum generator  
OVPN**



**Vacuum generators, pneumatic  
VN**



	Vacuum generator OVPN	Vacuum generators, pneumatic VN
<b>Nominal width of Laval nozzle</b>	1.4 ... 2.6 mm	0.45 ... 1.4 mm
<b>Ejector characteristics</b>	High suction rate	High vacuum, Standard
<b>Integrated function</b>	Open silencer	Open silencer
<b>Max. suction rate with respect to atmosphere</b>	160 ... 960 l/min	6.2 ... 51.6 l/min
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Vacuum generator with very high suction capacity ideal for porous materials</li> <li>• Nozzle technology with maximum energy efficiency</li> <li>• High initial suction rate</li> <li>• Reduced sound pressure level thanks to an integrated, open silencer</li> <li>• Can be used flexibly for centralised or decentralised vacuum generation</li> <li>• Very lightweight</li> <li>• Sustainable operation thanks to optimised air consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Can be used directly in the work space</li> <li>• Available as straight type (in-line: vacuum port in line with the supply port) or T-shape (standard: vacuum port at 90° to the supply port)</li> <li>• Compact and cost-effective</li> <li>• Maintenance-free operation and reduced noise level through an integrated, open silencer</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>144</b>	<b>147</b>

## Suction cup with connection

	 <p><b>Suction cup with connection OGVN</b></p>
<b>Suction cup diameter</b>	20 ... 75 mm
<b>Holding force at nominal operating pressure</b>	14.5 ... 173 N
<b>Information on suction cup materials</b>	PUR
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Ideal for workpieces with uneven surfaces</li> <li>• Easy to replace the suction cup material without the need for tools</li> <li>• Made from wear-resistant polyurethane</li> <li>• Easy to mount, even when the installation space is limited, thanks to hex socket</li> <li>• Recommended for production plants for manufacturing Li-ion batteries</li> </ul>
<b>online: →</b>	<b>149</b>

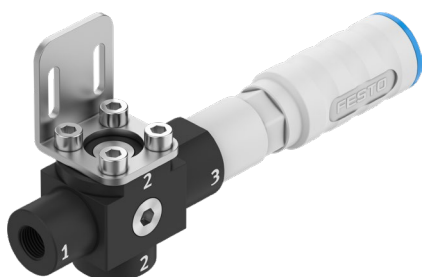
## Accessories for vacuum &gt;

## Vacuum-specific accessories

	 <p><b>Vacuum filters VAF</b></p>	 <p><b>Length compensator VAL</b></p>
<b>Vacuum connection</b>		M5, G1/8, G1/4
<b>Pneumatic connection</b>	PK-3 Via union nut, PK-4 Via union nut, PK-6 Via union nut	
<b>Type of mounting</b>	In-line installation	With male thread M16x1, With male thread M22x1.5, With male thread M26x1.5
<b>Grade of filtration</b>	50 µm	
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Vacuum filter ESF: for suction gripper ESG</li> <li>• Vacuum filter VAF: with transparent housing or bowl to allow users to assess contamination level</li> <li>• Vacuum filter OAFF: for vacuum generators OVEL</li> </ul>	<ul style="list-style-type: none"> <li>• For suction cup VAS/VASB</li> <li>• Vacuum port M5, G1/8, G1/4</li> <li>• To compensate for a possible excess stroke of the handling device</li> <li>• To compensate for tolerance differences in the workpiece thickness</li> </ul>
<b>online: →</b>	<b>151</b>	<b>152</b>

Vacuum generators >

## Vacuum generator OVPN



- Vacuum generator with very high suction capacity ideal for porous materials
- Nozzle technology with maximum energy efficiency
- High initial suction rate
- Reduced sound pressure level thanks to an integrated, open silencer
- Can be used flexibly for centralised or decentralised vacuum generation
- Very lightweight
- Sustainable operation thanks to optimised air consumption

## Type code

001	Series
OVPN	Vacuum generator
002	Vacuum generation
14	Laval nozzle 1.4 mm
20	Laval nozzle, 2.0 mm
23	Laval nozzle 2.3 mm
26	Laval nozzle 2.6 mm
003	Vacuum type
L	High suction rate

004	Large suction rate
2	2-stage
3	3-stage
005	Supply air connection
PG14	G1/4
006	Vacuum port
G12	G1/2
G34	G3/4
007	Exhaust connection
UA	Open silencer UO

## Ordering data

Ordering information OVPN-14					
Grid dimension	Design	Nominal size, Laval nozzle	Product weight	Part no.	Type
33 mm	Vacuum generator 2-stage	1.4 mm	205 g	8199142	OVPN-14-L2-PG14-G12-UA
	Vacuum generator, 3-stage		225 g	8199143	OVPN-14-L3-PG14-G12-UA

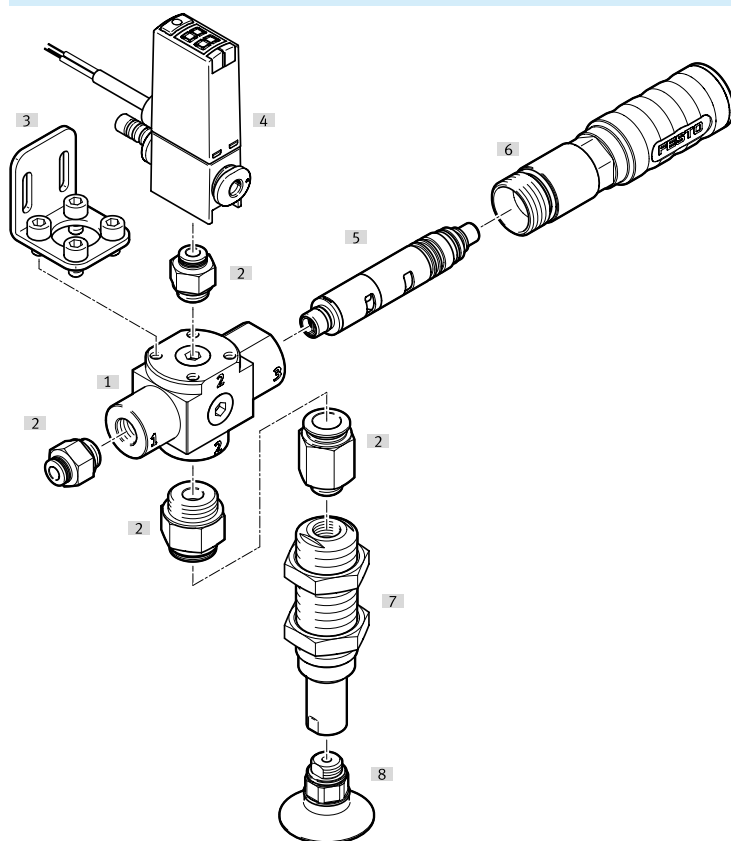
Ordering information OVPN-20					
Grid dimension	Design	Nominal size, Laval nozzle	Product weight	Part no.	Type
29.4 mm	Vacuum generator 2-stage	2 mm	470 g	8199144	OVPN-20-L2-PG14-G34-UA
	Vacuum generator, 3-stage		510 g	8199145	OVPN-20-L3-PG14-G34-UA

Ordering information OVPN-23					
Grid dimension	Design	Nominal size, Laval nozzle	Product weight	Part no.	Type
60 mm	Vacuum generator 2-stage	2.3 mm	880 g	8199146	OVPN-23-L2-PG14-G34-UA
	Vacuum generator, 3-stage		940 g	8199148	OVPN-23-L3-PG14-G34-UA

Ordering information OVPN-26					
Grid dimension	Design	Nominal size, Laval nozzle	Product weight	Part no.	Type
60 mm	Vacuum generator 2-stage	2.6 mm	915 g	8199149	OVPN-26-L2-PG14-G34-UA
	Vacuum generator, 3-stage		1,000 g	8199150	OVPN-26-L3-PG14-G34-UA

## Peripherals overview

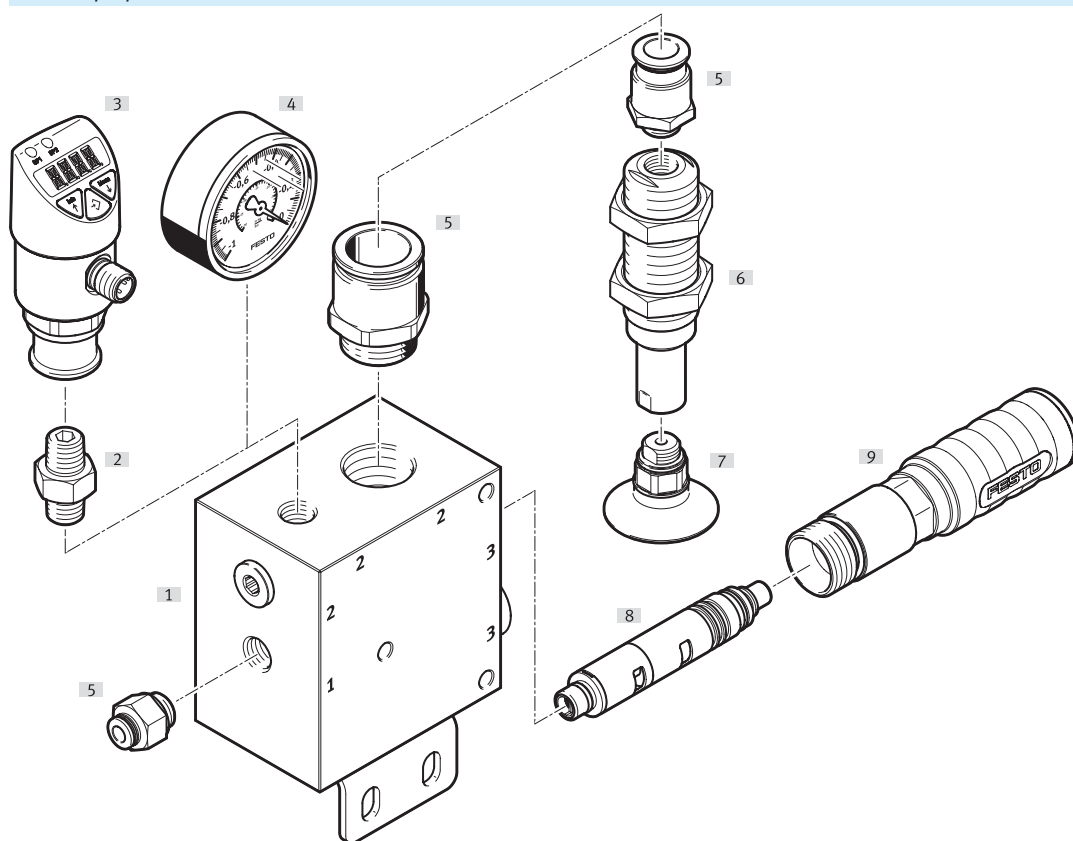
## OVPN-14



Accessories			→ Link
Type/order code	Description		
[1] Vacuum generator OVPN			144
[2] Push-in fitting QS			<a href="#">qs</a>
[3] Retainer	Included in the scope of delivery		<a href="#">ovpn</a>
[4] Pressure sensor SPAE	Also suitable for use: Pressure transmitter SPTE		<a href="#">spae</a>
[5] Vacuum generator cartridges OASP	Included in the scope of delivery		146
[6] Silencer open (...-UA)	Included in the scope of delivery		146
[7] Length compensator VAL			152
[8] Suction cup with connector VAS			<a href="#">vas</a>

## Peripherals overview

OVPN-20/23/26

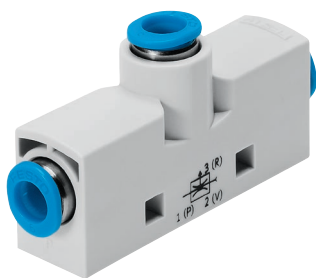


Accessories			→ Link
Type/order code	Description		
[1]	Vacuum generator OVPN		144
[2]	Double nipple ESK		<a href="#">esk</a>
[3]	Pressure sensor SPAW		Also suitable for use:Pressure sensor SPAE, pressure transmitter SPTE/SPTW, pressure switch VPEV <a href="#">spaw</a>
[4]	Vacuum gauge VAM, EN 837-1		<a href="#">vam</a>
[5]	Push-in fitting QS		<a href="#">qs</a>
[6]	Length compensator VAL		152
[7]	Suction cup with connector VAS		<a href="#">vas</a>
[8]	Vacuum generator cartridges OASP		Included in the scope of delivery 146
[9]	Silencer open (...-UA)		Included in the scope of delivery 146

## Accessories

Vacuum generator cartridges OASP						
	Design	Product weight		Part no.	Type	
	Vacuum generator 2-stage	31 g		8199152	OASP-G4-14-L2	
	Vacuum generator, 3-stage	45 g		8199154	OASP-G4-14-L3	
	Design	Integrated function	Sound pressure level at nominal operating pressure	Product weight	Part no.	Type
	Vacuum generator 2-stage	Open silencer	60 dB(A)	102 g	8199153	OASP-G4-14-L2-UA
	Vacuum generator, 3-stage			123 g	8199155	OASP-G4-14-L3-UA

## Vacuum generator VN, pneumatic



- Can be used directly in the work space
- Available as straight type (in-line: vacuum port in line with the supply port) or T-shape (standard: vacuum port at 90° to the supply port)
- Compact and cost-effective
- Maintenance-free operation and reduced noise level through an integrated, open silencer

## Type code

001	Series	
VN	Vacuum generator	
002	Nominal width of Laval nozzle	
05	0.45 mm	
07	0.70 mm	
10	0.95 mm	
14	1.4 mm	
003	Ejector characteristics	
H	High vacuum/standard	
004	Housing type	
T3	T-shape, pitch 14 mm	
T4	T-shape, grid dimension 18 mm (with switching output PNP (P), grid dimension 16 mm)	
005	Compressed air connection	
PQ2	Push-in connector 6 mm	

006	Vacuum connection	
VQ2	Push-in fitting QS-6	
VQ3	Push-in fitting QS-8	
007	Switching function	
008	Electrical output	
009	Exhaust port	
R01	Silencer UO	
R02	Silencer UOM	
010	Integrated function	
011	Special material properties	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

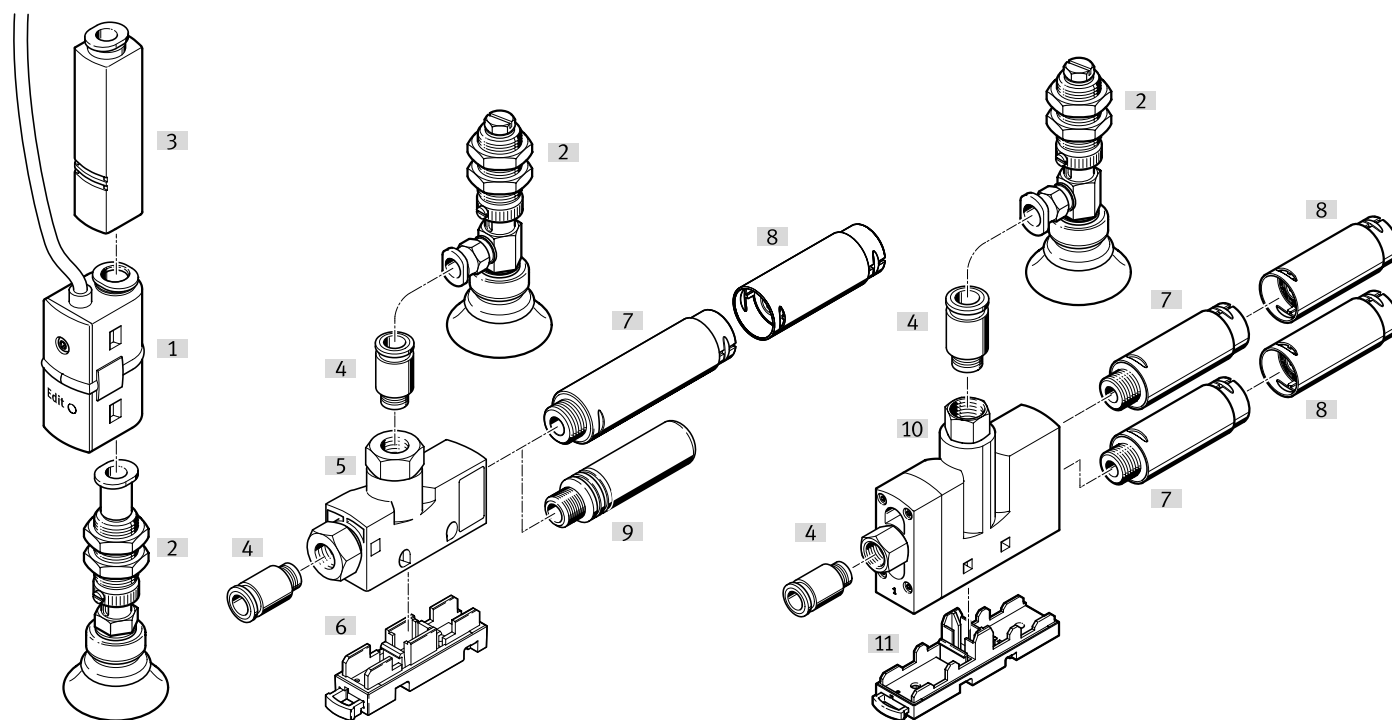
## Ordering data

Standard, high vacuum H					
Grid dimension	Design	Nominal size, Laval nozzle	Product weight	Part no.	Type
14 mm	T-shape	0.45 mm	24 g	8187682	VN-05-H-T3-PQ2-VQ2-R01-F1A
		0.7 mm		8187683	VN-07-H-T3-PQ2-VQ2-R01-F1A
		0.95 mm		8187684	VN-10-H-T3-PQ2-VQ2-R01-F1A
18 mm		1.4 mm	36 g	8187685	VN-14-H-T4-PQ2-VQ3-R02-F1A

Vacuum generators >

## Vacuum generator VN, pneumatic

### Peripherals overview VN



Accessories		→ Link*
Type/order code	Description	
[1] Pressure switch SDE5		<a href="#">sde5</a>
[2] Suction gripper ESG		<a href="#">esg</a>
[3] Vacuum generator	VN-05/07/10/14; straight shape	<a href="#">vn</a>
[4] Push-in fitting QS		<a href="#">qs</a>
[5] Vacuum generator	VN-05/07/10/14; T-shape	<a href="#">147</a>
[6] Mounting plate VN-...-BP-NRH		<a href="#">vn</a>
[7] Silencer UOM		<a href="#">vn</a>
[8] Silencer extension UOMS		<a href="#">vn</a>
[9] Silencer UO		<a href="#">vn</a>
[9] Silencer AMTE		<a href="#">vn</a>
[10] Vacuum generator	VN-20/30; T-shape	<a href="#">vn</a>
[11] Mounting plate VN-...-BP-NRH		<a href="#">vn</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



## Suction cup with connection OGVN



- Ideal for workpieces with uneven surfaces
- Easy to replace the suction cup material without the need for tools
- Made from wear-resistant polyurethane
- Easy to mount, even when the installation space is limited, thanks to hex socket
- Recommended for production plants for manufacturing Li-ion batteries

## Type code

001	Series
OGVN	Suction cup with connection
002	Suction cup size
20	20 mm diameter
35	35 mm diameter
52	52 mm diameter
75	75 mm diameter
003	Suction cup shape
A	Round, bellows, 1.5 convolutions

004	Material
U	Polyurethane
005	Vacuum port
	None
G14	G1/4
G18	G1/8
G38	G3/8
M5	M5
006	Thread type
	Male thread
F	Female thread

## Ordering data

OGVN, round, protective bellows 1.5 convolutions (male thread)						
Vacuum connection	Suction cup diameter	Height compensator for suction cup	Suction cup volume	Product weight	Part no.	Type
G1/8	20 mm	4.6 mm	1.04 cm <sup>3</sup>	4.1 g	8204816	OGVN-20-A-U-G18
G1/4	35 mm	9.5 mm	4.4 cm <sup>3</sup>	13 g	8204819	OGVN-35-A-U-G14
	52 mm	11.2 mm	13.3 cm <sup>3</sup>	27.1 g	8204833	OGVN-52-A-U-G14
G3/8	35 mm	9.5 mm	4.4 cm <sup>3</sup>	15.2 g	8204825	OGVN-35-A-U-G38
	52 mm	11.2 mm	13.3 cm <sup>3</sup>	27.7 g	8204834	OGVN-52-A-U-G38
	75 mm	16 mm	42.8 cm <sup>3</sup>	46 g	8204836	OGVN-75-A-U-G38

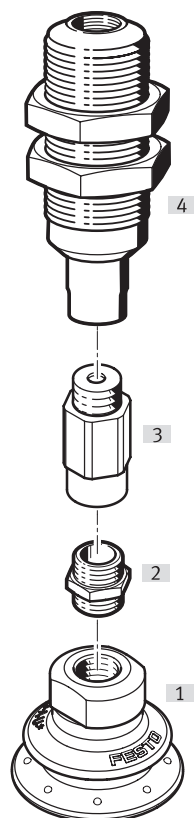
OGVN, round, protective bellows 1.5 convolutions (female thread)						
Vacuum connection	Suction cup diameter	Height compensator for suction cup	Suction cup volume	Product weight	Part no.	Type
Female thread G1/8	35 mm	9.5 mm	4.4 cm <sup>3</sup>	11 g	8204818	OGVN-35-A-U-G18-F
	52 mm	11.2 mm	13.3 cm <sup>3</sup>	27.3 g	8204832	OGVN-52-A-U-G18-F
Female thread M5	20 mm	4.6 mm	1.04 cm <sup>3</sup>	3.7 g	8204815	OGVN-20-A-U-M5-F

OGVN, round, protective bellows 1.5 convolutions (without fitting)						
Suction cup diameter	Height compensator for suction cup	Suction cup volume	Product weight	Part no.	Type	
20 mm	4.6 mm	1.04 cm <sup>3</sup>	1.1 g	8204817	OGVN-20-A-U	
35 mm	9.5 mm	4.4 cm <sup>3</sup>	5.1 g	8204827	OGVN-35-A-U	
52 mm	11.2 mm	13.3 cm <sup>3</sup>	15 g	8204835	OGVN-52-A-U	
75 mm	16 mm	42.8 cm <sup>3</sup>	40 g	8204838	OGVN-75-A-U	

Vacuum suction cups >

## Suction cup with connection OGVN

### Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1]	Suction cup with connection OGVN		149
[2]	Double nipple NPFC-D		150
[3]	Vacuum security valve ISV	The vacuum security valves are designed to maintain the vacuum in applications where several suction cups are used and one or more suction cups fail.	<a href="#">ogvn</a>
[4]	Length compensator VAL	Workpieces are handled gently thanks to compensation for a possible overstroke of the handling device or for compensating for tolerance differences in the workpiece thickness.	150

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

### Accessories

Double nipple NPFC-D					
	Pneumatic connection, port 1	Pneumatic connection, port 2	Product weight	Part no.	Type
	G1/8	G1/8	10 g	8133311	NPFC-D-2G18-M-F1A

Length compensator VAL						
	Suction cup mounting	Vacuum connection	Height compensator for suction-cup holder	Product weight	Part no.	Type
	G1/4	G1/4	20 mm	118 g	151211	VAL-1/4-20
	G1/8	G1/8	10 mm	62 g	151210	VAL-1/8-10
	M5	M5	5 mm	25 g	151209	VAL-M5-5

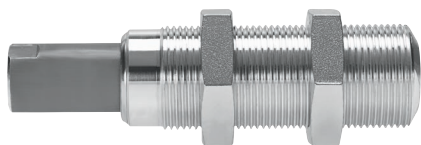


- Vacuum filter VAF: with transparent housing or bowl to allow users to assess contamination level

## Ordering data

Ordering data – vacuum filter VAF-PK					
Pneumatic connection	Nominal size	Grade of filtration	Product weight	Part no.	Type
PK-3 with union nut	2 mm	50 µm	4 g	<b>535883</b>	<b>VAF-PK-3</b>
PK-4 with union nut	3 mm		6 g	<b>15889</b>	<b>VAF-PK-4</b>
PK-6 with union nut	4.6 mm		10 g	<b>160239</b>	<b>VAF-PK-6</b>


## Length compensator VAL



- Vacuum port M5, G1/8, G1/4
- To compensate for a possible excess stroke of the handling device
- To compensate for tolerance differences in the workpiece thickness

## Ordering data

## Length compensator VAL

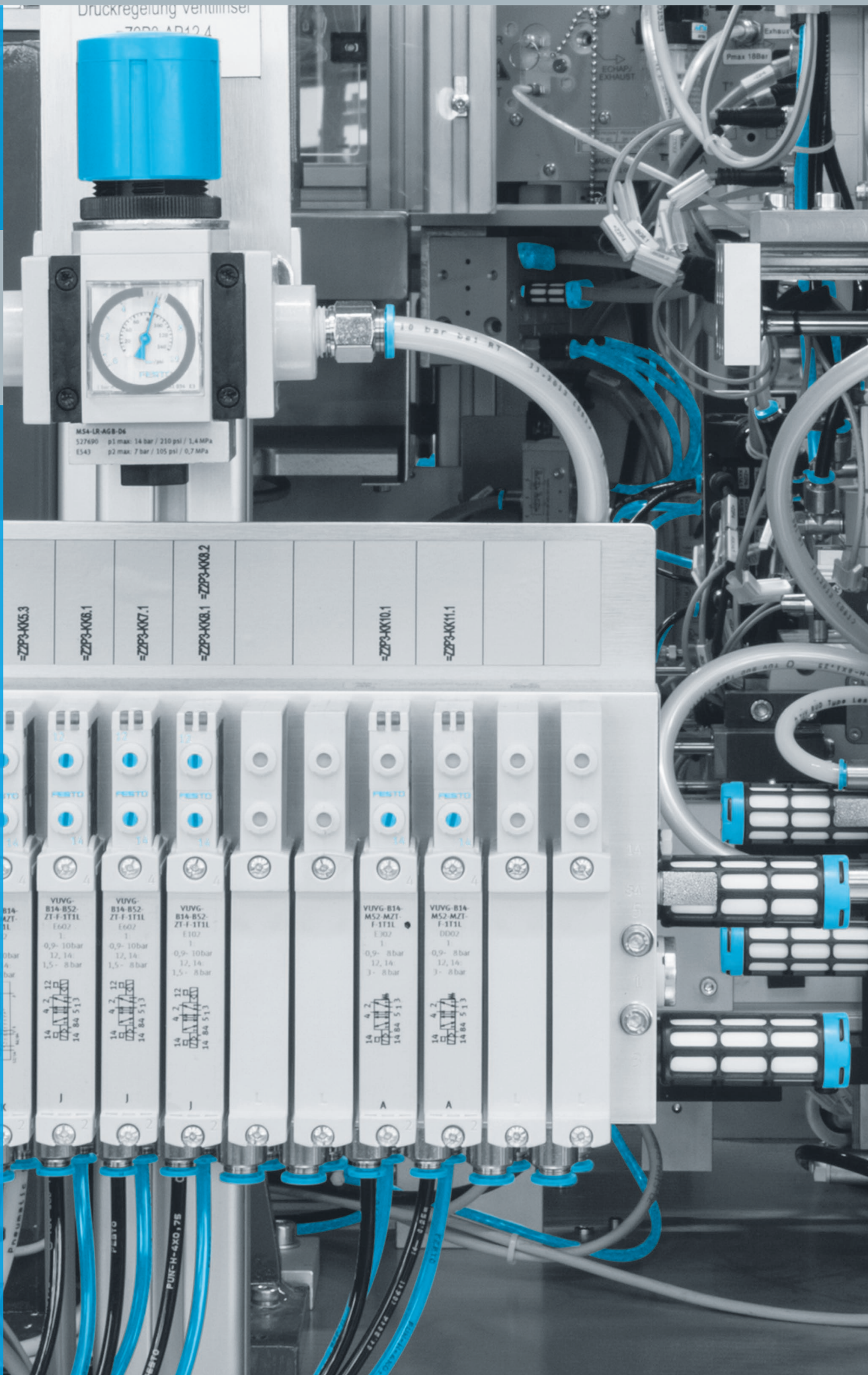
Length compensator VAL						
	Suction cup mounting	Vacuum connection	Height compensator for suction-cup holder	Product weight	Part no.	Type
	G1/4	G1/4	20 mm	118 g	<b>151211</b>	<b>VAL-1/4-20</b>
	G1/8	G1/8	10 mm	62 g	<b>151210</b>	<b>VAL-1/8-10</b>
	M5	M5	5 mm	25 g	<b>151209</b>	<b>VAL-M5-5</b>





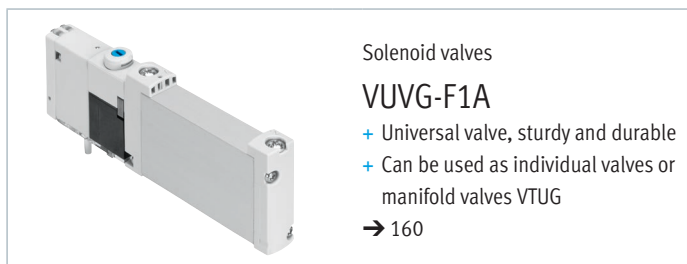
05

Valves



# Highlights

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## Pneumatic shut-off valves &gt;

## Shut-off valves and ball valves

	
<b>Shut-off valves VBOC</b>	
<b>Valve function</b>	2/2-way, closed, monostable
<b>Pneumatic connection 1</b>	G1/2, G1/4, G1/8, G3/8
<b>Operating pressure [MPa]</b>	0.05 ... 1 MPa
<b>Operating pressure</b>	0.5 ... 10 bar
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364 zone III
<b>Description</b>	<ul style="list-style-type: none"> <li>• 2/2-way valve for direct mounting on the cylinder with switching position monitoring</li> <li>• Suitable for safety functions according to DIN 13849</li> <li>• Extremely sturdy in the event of pressure surges from the cylinder</li> <li>• Optional: fully integrated additional functions</li> <li>• Pneumatically actuated</li> </ul>
<b>online: →</b>	<b>170</b>

## Flow control valves &gt;

## One-way flow control valves

			
<b>One-way flow control valves VFOE-L</b>		<b>One-way flow control valves CRGRLA</b>	
<b>Valve function</b>	Exhaust air one-way flow control function, Supply air one-way flow control function	One-way flow control function	
<b>Pneumatic connection 1</b>	QS-10, QS-12, QS-4, QS-6, QS-8	G1/2, G1/4, G1/8, G3/8, M5	
<b>Standard nominal flow rate in flow control direction</b>	85 ... 1200 l/min	95 ... 2100 l/min	
<b>Adjusting element</b>	Rotary knob with detent	Slotted head screw	
<b>Cleanroom class</b>	Class 4 according to ISO 14644-1	Class 4 according to ISO 14644-1	
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	
	The information in the certificate must be observed., For zone 1, 2, 21, 22, The information in the certificate must be observed!	For zone 1, 2, 21, 22, The information in the certificate must be observed!	
<b>LABS (PWIS) conformity</b>	VDMA24364 zone III	VDMA24364-B2-L	
<b>Description</b>	<ul style="list-style-type: none"> <li>• Low-cost solution for standard applications</li> <li>• Simple and reliable adjustment of pneumatic cylinder speed</li> <li>• Extremely easy assembly</li> <li>• Fast commissioning</li> <li>• Compact dimensions</li> </ul>	<ul style="list-style-type: none"> <li>• Functional combination of one-way flow control valve and piloted check valve</li> <li>• Flow control valve, flow control at one end</li> <li>• Polymer, metal or stainless steel design</li> <li>• Standard, mini, in-line variants with different flow rates</li> <li>• Connections: thread at both ends, push-in connector at both ends, thread/push-in connector</li> </ul>	
<b>online: →</b>	<b>172</b>	<b>173</b>	

## Product overview

### Proportional valves >

## Pressure regulators



**Proportional pressure regulators  
VPPE**

<b>Valve function</b>	3-way proportional pressure regulator
<b>Pneumatic connection 1</b>	G1/8
<b>Pressure regulation range [MPa]</b>	0.006 ... 1 MPa
<b>Pressure regulation range</b>	0.06 ... 10 bar
<b>Operating pressure [MPa]</b>	
<b>Operating pressure</b>	
<b>Standard nominal flow rate</b>	800 ... 1250 l/min
<b>Cleanroom class</b>	Class 5 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Piloted pressure regulator</li> <li>• Setpoint input as analogue voltage signal (0 ... 10 V)</li> <li>• Electrical connection via M12x1 plug, 4 or 5-pin</li> <li>• Available with setpoint module</li> <li>• Variant with display with three retrievable presets and digital controller electronics</li> <li>• For simple control tasks</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>174</b>

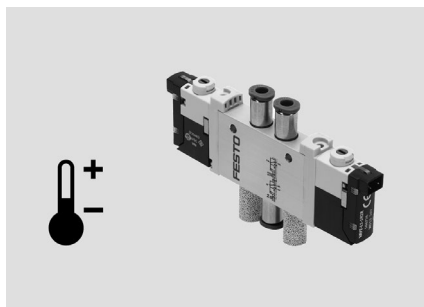
## Process and media valves



**Pinch valves  
VZQA**

<b>Design</b>	Pinch valve, pneumatically actuated
<b>Valve function</b>	2/2 open, single solenoid
<b>Actuation type</b>	Pneumatic
<b>Nominal size DN</b>	6, 15, 25, 50
<b>Process valve connection</b>	Clamp to ASME-BPE, type A, Clamp to ASME-BPE, type B, Clamp to DIN 32676 series A, 1 NPT, 1/2 NPT, 1/4 NPT, 2 NPT, G1, G1/2, G1/4, G2
<b>Flow rate Kv</b>	0.7 ... 72 m³/h
<b>Temperature of medium</b>	-5 ... 150°C
<b>Medium pressure [MPa]</b>	0 ... 0.4 MPa
<b>Medium pressure</b>	0 ... 4 bar
<b>Nominal pressure process valve PN</b>	10
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
	For zone 0, 1, 2, 20, 21, 22
<b>Description</b>	<ul style="list-style-type: none"> <li>• Modular design</li> <li>• Quick and easy replacement of the diaphragm</li> <li>• For critical, abrasive and viscous media</li> <li>• Easy-to-clean design</li> <li>• Flow direction is freely selectable</li> <li>• Versions with end-position sensing</li> </ul>
<b>online: →</b>	<b>177</b>

## Customised components – for your specific requirements



### Valves with customised designs

Can't find the valve you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Coatings for special ambient conditions
- Customised cables: length, pin allocation, pre-assembled with plug
- Modified actuating elements
- Modified connecting thread
- Modified valve sub-bases

Many additional variants are possible.

Ask your Festo sales engineer, who will be happy to help you:

→ [www.festo.com/contact](http://www.festo.com/contact)

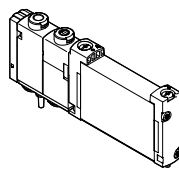


- Sub-base valve
- For valve terminal VTUG with multi-pin, fieldbus interface

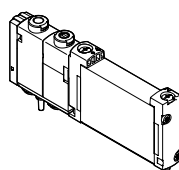
001	Type
VUVG	Solenoid valve
002	Directional control valve type
B	Sub-base valve
003	Design principle
–	Piston spool
004	Size
10	Size 10
14	Size 14
005	Valve function
B52	5/2-way valve, double solenoid/bistable
M52	5/2-way valve, single solenoid/monostable
P53C	5/3-way valve, mid-position closed
P53E	5/3-way valve, mid-position exhausted
P53U	5/3-way valve, mid-position pressurised
T32C	2x3/2-way valve, normally closed
T32H	2x3/2-way valve, 1x normally closed, 1x normally open
T32U	2x3/2-way valve, normally open
006	Reset method for monostable/single solenoid valves
–	None, for valve function B52 and P53
A	Pneumatic spring, for valve function T32 and M52
M	Mechanical spring, for valve function M52
R	Pneumatic/mechanical spring, for valve function M52
007	Pilot air
–	Internal
Z	External

008	Manual override
T	Non-detenting, detenting with accessories
009	Pneumatic connection
F	Flange/sub-base
010	Exhaust
–	Without fitting
011	Nominal operating voltage
1	24 V DC
012	Electrical connection
T1	Plug-in
013	Signal status display
L	LED (integrated)
014	Electrical accessories, valve
–	None
015	Version
–	Extended features
016	Special material properties
F1A	Recommended for production facilities for the manufacture of lithium-ion batteries

## Ordering data

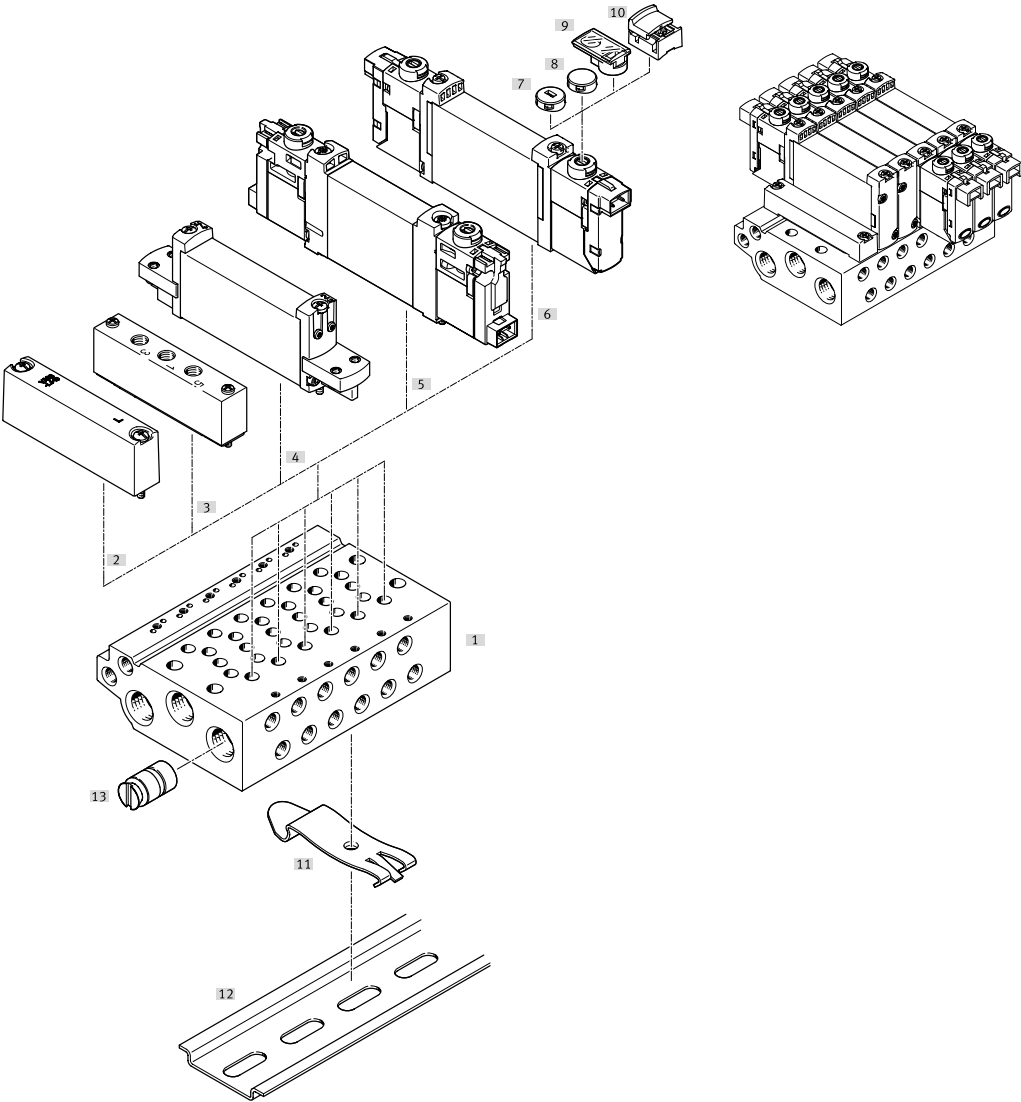
Size 10				
Description		Part no.	Type	
Sub-base valve M5/M7				
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring return	8150399	VUVG-B10-T32C-AZT-F-1T1L-F1A
		Normally open, pneumatic spring return	8141516	VUVG-B10-T32U-AZT-F-1T1L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	8141517	VUVG-B10-T32H-AZT-F-1T1L-F1A
		Normally closed, mechanical spring return	8141518	VUVG-B10-T32C-MZT-F-1T1L-F1A
		Normally open, mechanical spring return	8141519	VUVG-B10-T32U-MZT-F-1T1L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8141520	VUVG-B10-T32H-MZT-F-1T1L-F1A
	5/2-way valve, single solenoid			
	External pilot air supply	Mechanical spring return	8150460	VUVG-B10-M52-MZT-F-1T1L-F1A
		Pneumatic/mechanical spring return	8150397	VUVG-B10-M52-RZT-F-1T1L-F1A
5/2-way valve, double solenoid				
External pilot air supply		8150398	VUVG-B10-B52-ZT-F-1T1L-F1A	
5/3-way valve				
External pilot air supply	Mid-position closed, mechanical spring return	8141521	VUVG-B10-P53C-ZT-F-1T1L-F1A	
	Mid-position pressurised, mechanical spring return	8141523	VUVG-B10-P53U-ZT-F-1T1L-F1A	
	Mid-position exhausted, mechanical spring return	8141522	VUVG-B10-P53E-ZT-F-1T1L-F1A	

Size 14

Description		Part no.	Type	
Sub-base valve G1/8				
	2x 3/2-way valve			
	External pilot air supply	Normally closed, pneumatic spring return	8150402	VUVG-B14-T32C-AZT-F-1T1L-F1A
		Normally open, pneumatic spring return	8141527	VUVG-B14-T32U-AZT-F-1T1L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	8141528	VUVG-B14-T32H-AZT-F-1T1L-F1A
		Normally closed, mechanical spring return	8141529	VUVG-B14-T32C-MZT-F-1T1L-F1A
		Normally open, mechanical spring return	8141530	VUVG-B14-T32U-MZT-F-1T1L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8141531	VUVG-B14-T32H-MZT-F-1T1L-F1A
	5/2-way valve, single solenoid			
	External pilot air supply	Pneumatic spring return	8150400	VUVG-B14-M52-AZT-F-1T1L-F1A
		Mechanical spring return	8150461	VUVG-B14-M52-MZT-F-1T1L-F1A
	5/2-way valve, double solenoid			
	External pilot air supply		8150401	VUVG-B14-B52-ZT-F-1T1L-F1A
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring return	8141532	VUVG-B14-P53C-ZT-F-1T1L-F1A
		Mid-position pressurised, mechanical spring return	8141534	VUVG-B14-P53U-ZT-F-1T1L-F1A
		Mid-position exhausted, mechanical spring return	8141533	VUVG-B14-P53E-ZT-F-1T1L-F1A

Peripherals overview example – Sub-base valves

Manifold assembly

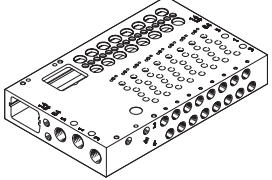


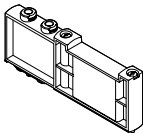

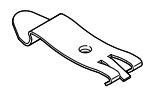
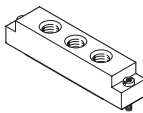
Manifold assembly and accessories			
	Type	Description	→ Link*
[1] Manifold rail	VABM-L1-...	For 2 to 10, 12, 14 and 16 valve positions	163
[2] Cover plate	VABB-L1-...	For covering a vacant position	163
[3] Supply plate	VABF-L1-...	For air supply at duct 1 and duct 3 and 5	163
[4] Solenoid valve	VUVG-...-P1	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	<a href="#">vuvg</a>
[5] Solenoid valve	VUVG-BK...	Sub-base valve 2x 3/2-way, 5/2-way and 5/3-way	<a href="#">vuvg</a>
[6] Solenoid valve	VUVG-B...	Sub-base valve 2x 3/2-way, 5/2-way and 5/3-way	160
[7] Cover cap (non-detenting)	VMPA-HB...-B	For manual override	<a href="#">vuvg</a>
[8] Cover cap (concealed)	VMPA-HB...-B	For manual override	<a href="#">vuvg</a>
[9] Identification holder	ASLR-D	For labelling the valves, covering the retaining screw and the manual override	<a href="#">vuvg</a>
[10] Cover cap (detenting)	VAMC-L1-...	For manual override	<a href="#">vuvg</a>
[11] H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold assembly on an H-rail	<a href="#">vuvg</a>
[12] H-rail	NRH-35-2000	For mounting the valve manifold assembly	<a href="#">vuvg</a>
[13] Separator	VABD- ...	For creating pressure zones	163

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-B-F1A, Plug-in

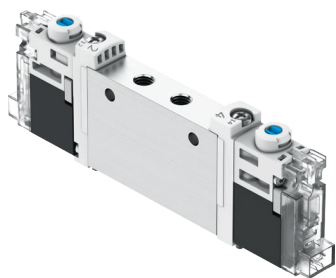
## Accessories

	Description	Part no.	Type
<b>Manifold rail for sub-base valve</b>			
	<b>Size 10 mm</b>		
	Ports 2, 4 at the front	4 valve positions	573434 VABM-L1-10HW-G18-4-GR
		5 valve positions	573435 VABM-L1-10HW-G18-5-GR
		6 valve positions	573436 VABM-L1-10HW-G18-6-GR
		7 valve positions	573437 VABM-L1-10HW-G18-7-GR
		8 valve positions	573438 VABM-L1-10HW-G18-8-GR
		9 valve positions	573439 VABM-L1-10HW-G18-9-GR
		10 valve positions	573440 VABM-L1-10HW-G18-10-GR
		12 valve positions	573441 VABM-L1-10HW-G18-12-GR
		16 valve positions	573442 VABM-L1-10HW-G18-16-GR
		20 valve positions	573443 VABM-L1-10HW-G18-20-GR
		24 valve positions	573444 VABM-L1-10HW-G18-24-GR
		8 double solenoid + 8 single solenoid valves	573930 VABM-L1-10HW-G18-16-M-GR
		4 double solenoid + 16 single solenoid valves	573931 VABM-L1-10HW-G18-20-M-GR
		24 single solenoid valves	573932 VABM-L1-10HW-G18-24-M-GR
	<b>Size 14 mm</b>		
	Ports 2, 4 at the front	4 valve positions	573500 VABM-L1-14W-G14-4-GR
		5 valve positions	573501 VABM-L1-14W-G14-5-GR
		6 valve positions	573502 VABM-L1-14W-G14-6-GR
		7 valve positions	573503 VABM-L1-14W-G14-7-GR
		8 valve positions	573504 VABM-L1-14W-G14-8-GR
		9 valve positions	573505 VABM-L1-14W-G14-9-GR
		10 valve positions	573506 VABM-L1-14W-G14-10-GR
		12 valve positions	573507 VABM-L1-14W-G14-12-GR
		16 valve positions	573508 VABM-L1-14W-G14-16-GR
		20 valve positions	573509 VABM-L1-14W-G14-20-GR
		24 valve positions	573510 VABM-L1-14W-G14-24-GR
		8 double solenoid + 8 single solenoid valves	573936 VABM-L1-14W-G14-16-M-GR
		4 double solenoid + 16 single solenoid valves	573937 VABM-L1-14W-G14-20-M-GR
		24 single solenoid valves	573938 VABM-L1-14W-G14-24-M-GR

	Description		Part no.	Type	PU <sup>1)</sup>
Cover plate					
	Vacant position width 10 mm	Recommended for production facilities for manufacturing lithium-ion batteries	8141537	VABB-L1-10-T-F1A	1
	Vacant position width 14 mm		8141538	VABB-L1-14-T-F1A	1
Separator					
	For all manifold rails, size 14	Recommended for production facilities for manufacturing lithium-ion batteries	8145480	VABD-10-B-F1A	1
	For all manifold rails, size 18		8145481	VABD-12-B-F1A	1
H-rail mounting			Datasheets → Internet: vame		
	Use the following screws for mounting: Size 10: DIN 912: M4x30 Size 14: DIN 912: M4x40	Recommended for production facilities for manufacturing lithium-ion batteries	8142649	VAME-T-M4-F1A	
Supply plate			Datasheets → Internet: vabf		
	size 10	Recommended for production facilities for manufacturing lithium-ion batteries	8141539	VABF-L1-10-P3A4-M7-T1-F1A	
	size 14		8141540	VABF-L1-14-P3A4-G18-T1-F1A	

1) Packaging unit.

Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-L-F1A, for individual connection




- Compact universal valve
- Connection technology via electrical connection box (E-box)
- High flow rate relative to its size
- In-line valves can be used as individual valves or manifold valves

## Type code

001	Type
VUVG	Solenoid valve
002	Directional control valve type
L	In-line valve
003	Design principle
–	Piston spool
K	Piston spool with sealing ring
004	Size
10	Size 10
14	Size 14
18	Size 18
005	Valve function
B52	5/2-way valve, double solenoid/bistable
M52	5/2-way valve, single solenoid/monostable
P53C	5/3-way valve, mid-position closed
P53E	5/3-way valve, mid-position exhausted
P53U	5/3-way valve, mid-position pressurised
T32C	2x3/2-way valve, normally closed
T32H	2x3/2-way valve, 1x normally closed, 1x normally open
T32U	2x3/2-way valve, normally open
006	Reset method for monostable/single solenoid valves
–	None
A	Pneumatic spring
M	Mechanical spring
R	Mixed, pneumatic/mechanical spring
007	Pilot air
–	Internal

008	Manual override
T	Non-detenting, detenting with accessories
009	Pneumatic connection
M5	M5
M7	M7
G18	G1/8
G14	G1/4
010	Exhaust
–	No fitting
011	Nominal operating voltage
1	24 V DC
012	Electrical connection
H2	Connection pattern H, horizontal plug
013	Display
L	LED
014	Electrical valve accessories
–	None
015	Version
–	Expanded properties
016	Special material properties
F1A	Recommended for production facilities for the manufacture of lithium-ion batteries

## Ordering data

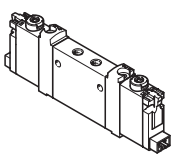
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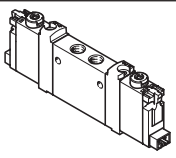
This product and all its product options can be ordered online via the configurator:  
→ [www.festo.com/catalogue/...](https://www.festo.com/catalogue/...)

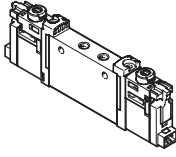


Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-L-F1A, for individual connection

## Ordering data

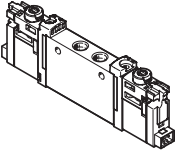
	Description	Part no.	Type
<b>In-line valve M5, for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, pneumatic spring return	<b>8173199</b> VUVG-LK10-T32C-AT-M5-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Pneumatic spring return	<b>8173200</b> VUVG-LK10-M52-AT-M5-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	Internal pilot air supply		<b>8173201</b> VUVG-LK10-B52-T-M5-1H2L-F1A

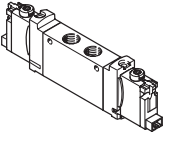
	Description	Part no.	Type
<b>In-line valve M7, for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, pneumatic spring return	<b>8173202</b> VUVG-LK10-T32C-AT-M7-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Pneumatic spring return	<b>8173203</b> VUVG-LK10-M52-AT-M7-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	Internal pilot air supply		<b>8173204</b> VUVG-LK10-B52-T-M7-1H2L-F1A

	Description	Part no.	Type
<b>In-line valve M5, suited for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, mechanical spring return	<b>8164322</b> VUVG-L10-T32C-MT-M5-1H2L-F1A
		Normally open, pneumatic spring return	<b>8164323</b> VUVG-L10-T32U-AT-M5-1H2L-F1A
		Normally open, mechanical spring return	<b>8164324</b> VUVG-L10-T32U-MT-M5-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	<b>8164325</b> VUVG-L10-T32H-AT-M5-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	<b>8164326</b> VUVG-L10-T32H-MT-M5-1H2L-F1A
	External pilot air supply	Normally closed, pneumatic spring return	<b>8164331</b> VUVG-L10-T32C-AZT-M5-1H2L-F1A
		Normally closed, mechanical spring return	<b>8164332</b> VUVG-L10-T32C-MZT-M5-1H2L-F1A
		Normally open, pneumatic spring return	<b>8164333</b> VUVG-L10-T32U-AZT-M5-1H2L-F1A
		Normally open, mechanical spring return	<b>8164334</b> VUVG-L10-T32U-MZT-M5-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	<b>8164335</b> VUVG-L10-T32H-AZT-M5-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	<b>8164336</b> VUVG-L10-T32H-MZT-M5-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Mechanical spring return	<b>8164327</b> VUVG-L10-M52-MT-M5-1H2L-F1A
	External pilot air supply	Pneumatic/mechanical spring return	<b>8164337</b> VUVG-L10-M52-RZT-M5-1H2L-F1A
		Mechanical spring return	<b>8164338</b> VUVG-L10-M52-MZT-M5-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	External pilot air supply		<b>8164339</b> VUVG-L10-B52-ZT-M5-1H2L-F1A
	<b>5/3-way valve</b>		
	Internal pilot air supply	Mid-position closed	<b>8164328</b> VUVG-L10-P53C-T-M5-1H2L-F1A
		Mid-position exhausted	<b>8164329</b> VUVG-L10-P53E-T-M5-1H2L-F1A
		Mid-position pressurised	<b>8164330</b> VUVG-L10-P53U-T-M5-1H2L-F1A
	External pilot air supply	Mid-position closed	<b>8164340</b> VUVG-L10-P53C-ZT-M5-1H2L-F1A
		Mid-position exhausted	<b>8164341</b> VUVG-L10-P53E-ZT-M5-1H2L-F1A
		Mid-position pressurised	<b>8164342</b> VUVG-L10-P53U-ZT-M5-1H2L-F1A

Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-L-F1A, for individual connection

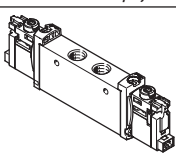
## Ordering data

	Description	Part no.	Type
<b>In-line valve M7, suited for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, mechanical spring return	<b>8164343</b> VUVG-L10-T32C-MT-M7-1H2L-F1A
		Normally open, pneumatic spring return	<b>8164344</b> VUVG-L10-T32U-AT-M7-1H2L-F1A
		Normally open, mechanical spring return	<b>8164345</b> VUVG-L10-T32U-MT-M7-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	<b>8154346</b> VUVG-L10-T32H-AT-M7-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	<b>8164347</b> VUVG-L10-T32H-MT-M7-1H2L-F1A
	External pilot air supply	Normally closed, pneumatic spring return	<b>8164352</b> VUVG-L10-T32C-AZT-M7-1H2L-F1A
		Normally closed, mechanical spring return	<b>8164353</b> VUVG-L10-T32C-MZT-M7-1H2L-F1A
		Normally open, pneumatic spring return	<b>8164354</b> VUVG-L10-T32U-AZT-M7-1H2L-F1A
		Normally open, mechanical spring return	<b>8164355</b> VUVG-L10-T32U-MZT-M7-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	<b>8164356</b> VUVG-L10-T32H-AZT-M7-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	<b>8164357</b> VUVG-L10-T32H-MZT-M7-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Mechanical spring return	<b>8164348</b> VUVG-L10-M52-MT-M7-1H2L-F1A
	External pilot air supply	Pneumatic/mechanical spring return	<b>8164358</b> VUVG-L10-M52-RZT-M7-1H2L-F1A
		Mechanical spring return	<b>8164359</b> VUVG-L10-M52-MZT-M7-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	External pilot air supply		<b>8164360</b> VUVG-L10-B52-ZT-M7-1H2L-F1A
	<b>5/3-way valve</b>		
	Internal pilot air supply	Mid-position closed	<b>8164349</b> VUVG-L10-P53C-T-M7-1H2L-F1A
		Mid-position exhausted	<b>8164350</b> VUVG-L10-P53E-T-M7-1H2L-F1A
		Mid-position pressurised	<b>8164351</b> VUVG-L10-P53U-T-M7-1H2L-F1A
	External pilot air supply	Mid-position closed	<b>8164361</b> VUVG-L10-P53C-ZT-M7-1H2L-F1A
		Mid-position exhausted	<b>8164362</b> VUVG-L10-P53E-ZT-M7-1H2L-F1A
		Mid-position pressurised	<b>8164363</b> VUVG-L10-P53U-ZT-M7-1H2L-F1A

	Description	Part no.	Type
<b>In-line valve G1/8, for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, pneumatic spring return	<b>8173205</b> VUVG-LK14-T32C-AT-G18-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Pneumatic spring return	<b>8173206</b> VUVG-LK14-M52-AT-G18-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	Internal pilot air supply		<b>8173207</b> VUVG-LK14-B52-T-G18-1H2L-F1A

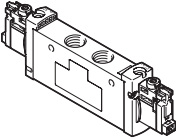
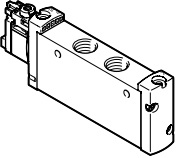
Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-L-F1A, for individual connection

## Ordering data

	Description	Part no.	Type
<b>In-line valve G1/8, suited for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, mechanical spring return	8164552 VUVG-L14-T32C-MT-G18-1H2L-F1A
		Normally open, pneumatic spring return	8164553 VUVG-L14-T32U-AT-G18-1H2L-F1A
		Normally open, mechanical spring return	8164554 VUVG-L14-T32U-MT-G18-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	8164555 VUVG-L14-T32H-AT-G18-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8164556 VUVG-L14-T32H-MT-G18-1H2L-F1A
	External pilot air supply	Normally closed, pneumatic spring return	8164561 VUVG-L14-T32C-AZT-G18-1H2L-F1A
		Normally closed, mechanical spring return	8164562 VUVG-L14-T32C-MZT-G18-1H2L-F1A
		Normally open, pneumatic spring return	8164563 VUVG-L14-T32U-AZT-G18-1H2L-F1A
		Normally open, mechanical spring return	8164564 VUVG-L14-T32U-MZT-G18-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	8164565 VUVG-L14-T32H-AZT-G18-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8164566 VUVG-L14-T32H-MZT-G18-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Mechanical spring return	8164557 VUVG-L14-M52-MT-G18-1H2L-F1A
	External pilot air supply	Pneumatic/mechanical spring return	8164567 VUVG-L14-M52-AZT-G18-1H2L-F1A
		Mechanical spring return	8164568 VUVG-L14-M52-MZT-G18-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	External pilot air supply		8164569 VUVG-L14-B52-ZT-G18-1H2L-F1A
	<b>5/3-way valve</b>		
	Internal pilot air supply	Mid-position closed	8164558 VUVG-L14-P53C-T-G18-1H2L-F1A
		Mid-position exhausted	8164559 VUVG-L14-P53E-T-G18-1H2L-F1A
		Mid-position pressurised	8164560 VUVG-L14-P53U-T-G18-1H2L-F1A
	External pilot air supply	Mid-position closed	8164570 VUVG-L14-P53C-ZT-G18-1H2L-F1A
		Mid-position exhausted	8164571 VUVG-L14-P53E-ZT-G18-1H2L-F1A
		Mid-position pressurised	8164572 VUVG-L14-P53U-ZT-G18-1H2L-F1A

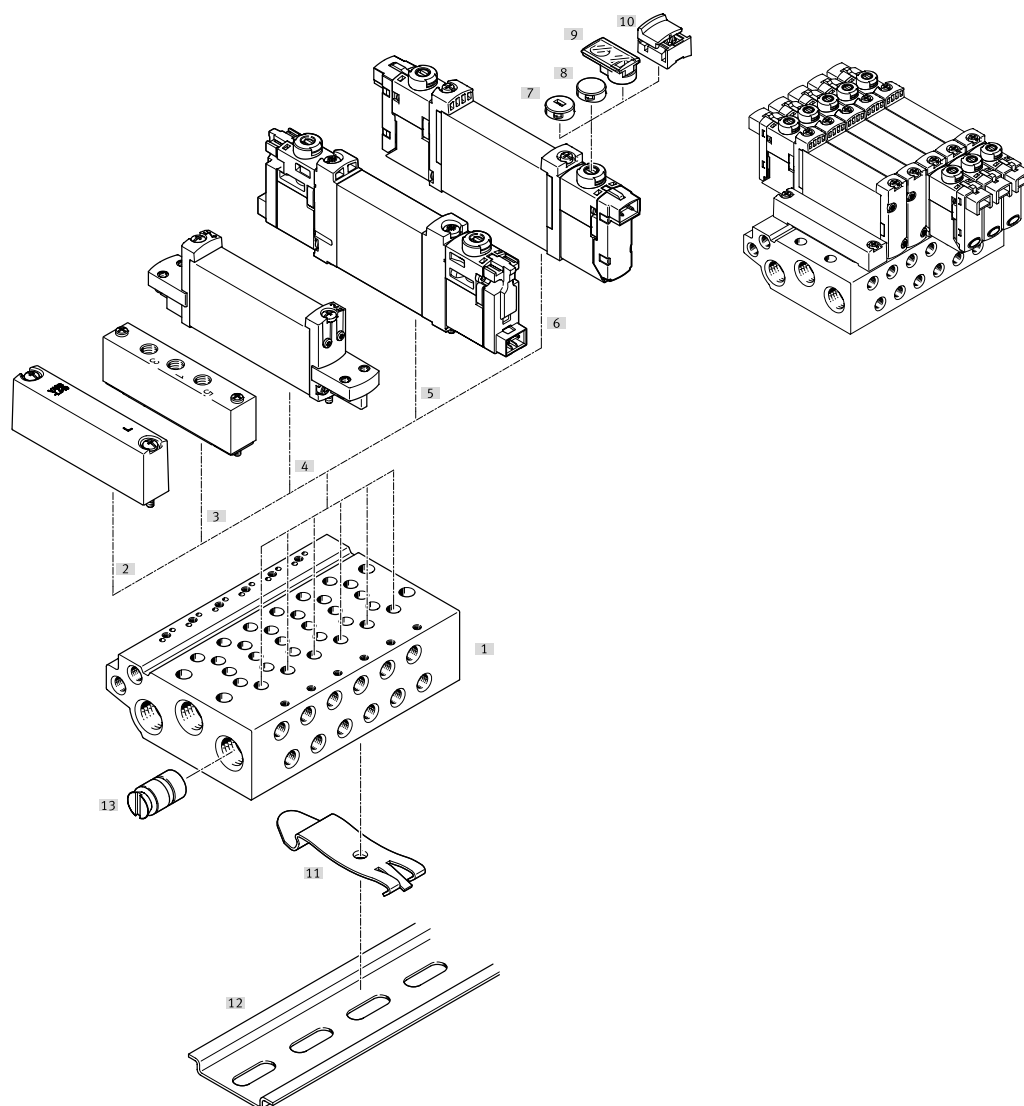
Electrically and pneumatically actuated directional control valves > Universal directional control valves >  
Solenoid valve VUVG-L-F1A, for individual connection

## Ordering data

	Description	Part no.	Type
<b>In-line valve G1/4, for battery manufacturing</b>			
	<b>2x 3/2-way valve</b>		
	Internal pilot air supply	Normally closed, pneumatic spring return	8172829 VUVG-L18-T32C-AT-G14-1H2L-F1A
		Normally closed, mechanical spring return	8172830 VUVG-L18-T32C-MT-G14-1H2L-F1A
		Normally open, pneumatic spring return	8172831 VUVG-L18-T32U-AT-G14-1H2L-F1A
		Normally open, mechanical spring return	8172832 VUVG-L18-T32U-MT-G14-1H2L-F1A
		1x normally open, 1x normally closed, pneumatic spring return	8172833 VUVG-L18-T32H-AT-G14-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8172834 VUVG-L18-T32H-MT-G14-1H2L-F1A
	External pilot air supply	Normally closed, mechanical spring return	8172841 VUVG-L18-T32C-MZT-G14-1H2L-F1A
		Normally open, pneumatic spring return	8172842 VUVG-L18-T32U-MZT-G14-1H2L-F1A
		1x normally open, 1x normally closed, mechanical spring return	8172843 VUVG-L18-T32H-MZT-G14-1H2L-F1A
	<b>5/2-way valve, single solenoid</b>		
	Internal pilot air supply	Pneumatic/mechanical spring return	8172835 VUVG-L18-M52-RT-G14-1H2L-F1A
		Mechanical spring return	8172836 VUVG-L18-M52-MT-G14-1H2L-F1A
	External pilot air supply	Pneumatic/mechanical spring return	8172844 VUVG-L18-M52-RZT-G14-1H2L-F1A
		Mechanical spring return	8172845 VUVG-L18-M52-MZT-G14-1H2L-F1A
	<b>5/2-way valve, double solenoid</b>		
	Internal pilot air supply		8172837 VUVG-L18-B52-T-G14-1H2L-F1A
	External pilot air supply		8172846 VUVG-L18-B52-ZT-G14-1H2L-F1A
	<b>5/3-way valve</b>		
	Internal pilot air supply	Mid-position closed	8172838 VUVG-L18-P53C-T-G14-1H2L-F1A
		Mid-position exhausted	8172839 VUVG-L18-P53E-T-G14-1H2L-F1A
			8172840 VUVG-L18-P53U-T-G14-1H2L-F1A
	External pilot air supply	Mid-position closed	8172847 VUVG-L18-P53C-ZT-G14-1H2L-F1A
		Mid-position exhausted	8172848 VUVG-L18-P53E-ZT-G14-1H2L-F1A
		Mid-position pressurised	8172849 VUVG-L18-P53U-ZT-G14-1H2L-F1A

## Peripherals overview example – Sub-base valves

## Manifold assembly



## Manifold assembly and accessories

	Type	Description	→ Link*
[1] Manifold rail	VABM-L1-...	For 2 to 10, 12, 14 and 16 valve positions	<a href="#">vuvg</a>
[2] Cover plate	VABB-L1-...	For covering a vacant position	<a href="#">vuvg</a>
[3] Supply plate	VABF-L1-...	For air supply at duct 1 and duct 3 and 5	<a href="#">vuvg</a>
[4] Solenoid valve	VUVG-...-P1	In-line valve 2x 3/2-way, 5/2-way and 5/3-way	<a href="#">vuvg</a>
[5] Solenoid valve	VUVG-BK...	Sub-base valve 2x 3/2-way, 5/2-way and 5/3-way	164
[6] Solenoid valve	VUVG-B...	Sub-base valve 2x 3/2-way, 5/2-way and 5/3-way	164
[7] Cover cap (non-detenting)	VMPA-HB...-B	For manual override	<a href="#">vuvg</a>
[8] Cover cap (concealed)	VMPA-HB...-B	For manual override	<a href="#">vuvg</a>
[9] Identification holder	ASLR-D	For labelling the valves, covering the retaining screw and the manual override	<a href="#">vuvg</a>
[10] Cover cap (detenting)	VAMC-L1-...	For manual override	<a href="#">vuvg</a>
[11] H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold assembly on an H-rail	<a href="#">vuvg</a>
[12] H-rail	NRH-35-2000	For mounting the valve manifold assembly	<a href="#">vuvg</a>
[13] Separator	VABD- ...	For creating pressure zones	<a href="#">vuvg</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Stop valves > Ball valves and on off valves >  
Shut-off valve VBOC



- 2/2-way valve for direct mounting on the cylinder with switching position monitoring
- Suitable for safety functions according to DIN 13849
- Extremely sturdy in the event of pressure surges from the cylinder
- Optional: fully integrated additional functions
- Pneumatically actuated

## Type code

001	Series		006	Switching input/output	
VBOC	Shut-off valve		P	PNP	
002	Design		007	Electrical connection	
L	L-shape		M12	Plug M12, A-coded, to EN 61076-2-101	
003	Valve function		M8	M8 plug, A-coded, to EN 61076-2-104	
2	2/2-way		008	Pneumatic connection 1	
004	Additional function 1		E	Same size as pneumatic connection 2	
	None		009	Pneumatic connection 2	
E	One-way flow control valve for exhaust air		G18	G1/8	
005	Additional function 2		G14	G1/4	
	None		G38	G3/8	
S7	Exhaust function, manual		G12	G1/2	

## Ordering data

Ordering data – Basic valve: shut-off valve with diagnostic function (switching position sensing)					
Pneumatic connection, port 1	Pneumatic connection, port 2	Electrical connection 1, number of connections/cores	Product weight	Part no.	Type
G1/8	G1/8	3	46 g	8177462	VBOC-L2-P-M8-G18-E
		4	53 g	8177451	VBOC-L2-P-M12-G18-E
G1/4	G1/4	3	87 g	8177464	VBOC-L2-P-M8-G14-E
		4	94 g	8177452	VBOC-L2-P-M12-G14-E
G3/8	G3/8	3	133 g	8177470	VBOC-L2-P-M8-G38-E
		4	140 g	8177453	VBOC-L2-P-M12-G38-E
G1/2	G1/2	3	238 g	8177468	VBOC-L2-P-M8-G12-E
		4	145 g	8177454	VBOC-L2-P-M12-G12-E

Function – basic valve with manual exhaust function					
Pneumatic connection, port 1	Pneumatic connection, port 2	Electrical connection 1, number of connections/cores	Product weight	Part no.	Type
G1/8	G1/8	3	57 g	8179237	VBOC-L2-S7-P-M8-G18-E
		4	64 g	8181754	VBOC-L2-S7-P-M12-G18-E
G1/4	G1/4	3	97 g	8180683	VBOC-L2-S7-P-M8-G14-E
		4	104 g	8180685	VBOC-L2-S7-P-M12-G14-E
G3/8	G3/8	3	147 g	8180903	VBOC-L2-S7-P-M8-G38-E
		4	154 g	8180904	VBOC-L2-S7-P-M12-G38-E
G1/2	G1/2	3	257 g	8181283	VBOC-L2-S7-P-M8-G12-E
		4	264 g	8181284	VBOC-L2-S7-P-M12-G12-E

## Ordering data

Ordering data – Basic valve with adjustable one-way flow control function (exhaust air)					
Pneumatic connection, port 1	Pneumatic connection, port 2	Electrical connection 1, number of connections/cores	Product weight	Part no.	Type
G1/8	G1/8	3		8177460	VBOC-L2-E-P-M8-G18-E
		4		8177447	VBOC-L2-E-P-M12-G18-E
G1/4	G1/4	3		8177463	VBOC-L2-E-P-M8-G14-E
		4		8177448	VBOC-L2-E-P-M12-G14-E
G3/8	G3/8	3	140,1 g	8177469	VBOC-L2-E-P-M8-G38-E
		4		8177449	VBOC-L2-E-P-M12-G38-E
G1/2	G1/2	3		8177467	VBOC-L2-E-P-M8-G12-E
		4		8177450	VBOC-L2-E-P-M12-G12-E

Ordering data – Basic valve with adjustable one-way flow control function (exhaust air) and manual exhaust function					
Pneumatic connection, port 1	Pneumatic connection, port 2	Electrical connection 1, number of connections/cores	Product weight	Part no.	Type
G1/8	G1/8	3	61 g	8177459	VBOC-L2-E-S7-P-M8-G18-E
		4	68 g	8177443	VBOC-L2-E-S7-P-M12-G18-E
G1/4	G1/4	3	122 g	8177461	VBOC-L2-E-S7-P-M8-G14-E
		4	104 g	8177444	VBOC-L2-E-S7-P-M12-G14-E
G3/8	G3/8	3	209 g	8177466	VBOC-L2-E-S7-P-M8-G38-E
		4	216 g	8177445	VBOC-L2-E-S7-P-M12-G38-E
G1/2	G1/2	3	385 g	8177465	VBOC-L2-E-S7-P-M8-G12-E
		4	392 g	8177446	VBOC-L2-E-S7-P-M12-G12-E

Flow control valves >

## One-way flow control valve VFOE



- Low-cost solution for standard applications
- Simple and reliable adjustment of pneumatic cylinder speed
- Extremely easy assembly
- Fast commissioning
- Compact dimensions

## Type code

001	Series		006	Pneumatic connection 1	
VFOE	One-way flow control valve		Q4	Push-in connector 4 mm	
002	Design		Q6	Push-in connector 6 mm	
L	L-shape		Q8	Push-in connector 8 mm	
003	Function		Q10	Push-in connector 10 mm	
E	One-way flow control valve for exhaust air		Q12	Push-in connector 12 mm	
S	One-way flow control valve for supply air		007	Special material properties	
004	Adjusting component		F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
T	Rotary knob with detent		008	Package unit	
005	Pneumatic connection 2			Standard	
M5	M5				
R12	R1/2				
R14	R1/4				
R18	R1/8				
R38	R3/8				

## Ordering data

Ordering data Products for battery production – exhaust air one-way flow control function					
Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
M5	QS-4	90 l/min	50 ... 90 l/min	8157642	VFOE-LE-T-M5-Q4-F1A
	QS-6	105 l/min	60 ... 105 l/min	8157641	VFOE-LE-T-M5-Q6-F1A
R1/8	QS-4	150 l/min	90 ... 150 l/min	8157640	VFOE-LE-T-R18-Q4-F1A
	QS-6	165 l/min	110 ... 200 l/min	8157639	VFOE-LE-T-R18-Q6-F1A
	QS-8	170 l/min	130 ... 200 l/min	8157638	VFOE-LE-T-R18-Q8-F1A
R1/4	QS-6	400 l/min	350 ... 450 l/min	8157637	VFOE-LE-T-R14-Q6-F1A
	QS-8	500 l/min	370 ... 500 l/min	8157636	VFOE-LE-T-R14-Q8-F1A
	QS-10			8157635	VFOE-LE-T-R14-Q10-F1A
R3/8	QS-8	720 l/min	600 ... 900 l/min	8157634	VFOE-LE-T-R38-Q8-F1A
	QS-10	750 l/min	700 ... 1000 l/min	8157633	VFOE-LE-T-R38-Q10-F1A

Ordering data Products for battery production – Supply air one-way flow control function					
Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
M5	QS-4	85 l/min	50 ... 90 l/min	8157630	VFOE-LS-T-M5-Q4-F1A
	QS-6	100 l/min	60 ... 100 l/min	8157629	VFOE-LS-T-M5-Q6-F1A
R1/8	QS-4	165 l/min	90 ... 165 l/min	8157628	VFOE-LS-T-R18-Q4-F1A
	QS-6	170 l/min	110 ... 200 l/min	8157627	VFOE-LS-T-R18-Q6-F1A
	QS-8		130 ... 200 l/min	8157626	VFOE-LS-T-R18-Q8-F1A



## One-way flow control valve CRGRLA, corrosion resistant



- Functional combination of one-way flow control valve and piloted check valve
- Flow control valve, flow control at one end
- Polymer, metal or stainless steel design
- Standard, mini, in-line variants with different flow rates
- Connections: thread at both ends, push-in connector at both ends, thread/push-in connector

## Type code

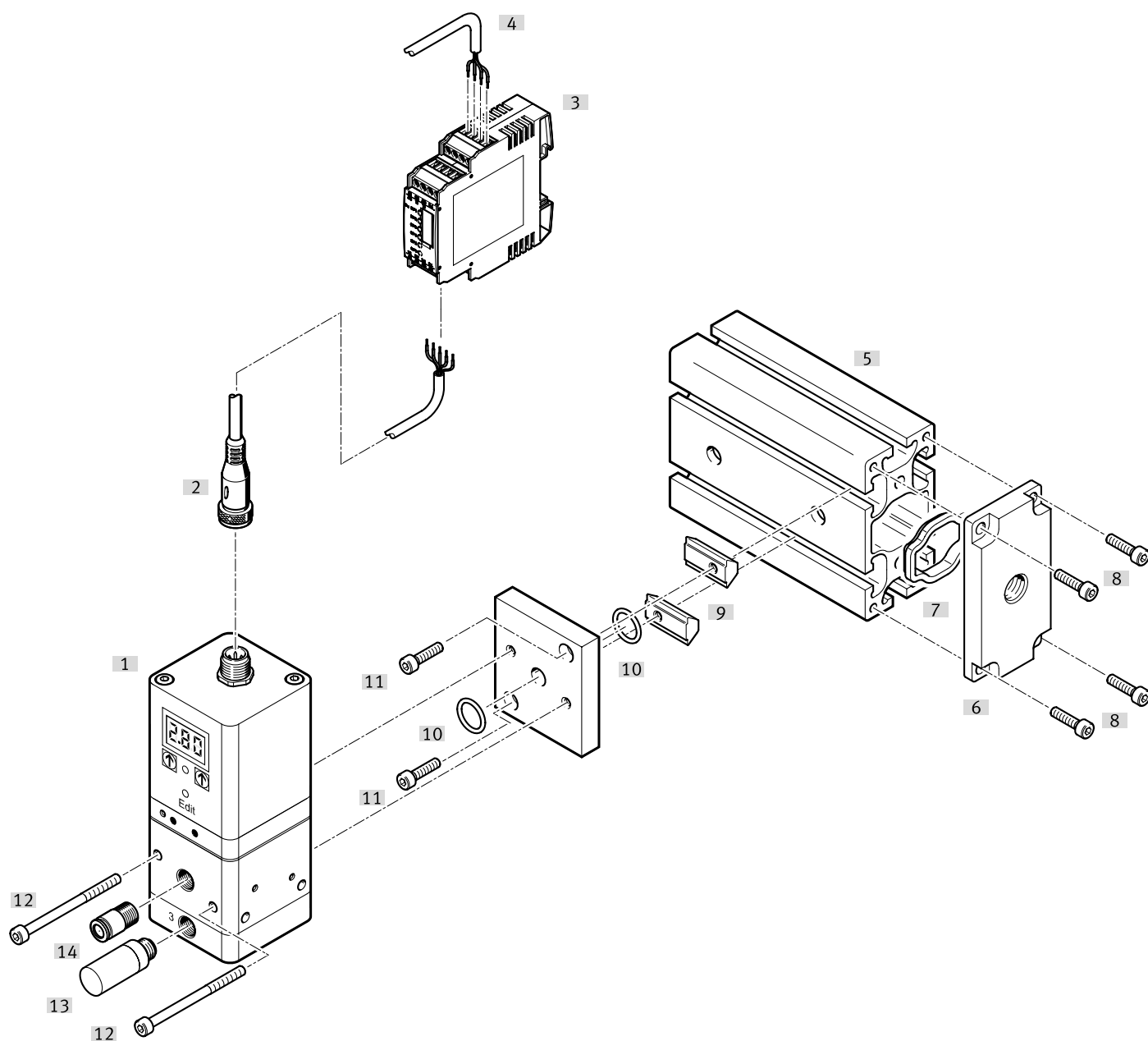
001	Series	003	Pneumatic connection 1
CRGRLA	One-way flow control valve, corrosion resistant		Connection size as for port 1 or 2
002	Pneumatic connection	004	Adjusting component
M5	Male thread M5		Standard
1/8	Male thread G1/8		
1/4	Male thread G1/4	005	Flow rate characteristic
3/8	Male thread G3/8		None
1/2	Male thread G1/2	006	Generation
		B	Series B

## Ordering data

Ordering data CRGRLA – female thread (stainless steel)					
Pneumatic connection, port 2	Pneumatic connection, port 1	Corrosion resistance class CRC	Product weight	Part no.	Type
M5	M5	3 - high corrosion stress	10.2 g	161403	CRGRLA-M5-B
G1/8	G1/8		37.8 g	161404	CRGRLA-1/8-B
G1/4	G1/4		71.6 g	161405	CRGRLA-1/4-B
G3/8	G3/8		126.9 g	161406	CRGRLA-3/8-B
G1/2	G1/2		262.3 g	161407	CRGRLA-1/2-B



## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Proportional pressure regulator	VPPE-F1A		174
[2] Connecting cable	With straight plug socket for actuating the VPPE		<a href="#">vppe</a>
[3] Setpoint module	For generating 6+1 analogue voltage signals		<a href="#">vppe</a>
[4] Digital input/output	For actuating the setpoint module		<a href="#">vppe</a>
[5] Profile strip	Standard profile strip as central air supply		<a href="#">vppe</a>
[6] Compressed air supply plate (set)	For supplying compressed air (consists of compressed air supply plate, screws and seal)		<a href="#">vppe</a>
[7] Seal	–		<a href="#">vppe</a>
[8] Socket head screw M5x12	For fitting pressure supply plate with profile strip		<a href="#">vppe</a>
[9] Slot nuts	For fastening on the profile strip using clamps		<a href="#">vppe</a>
[10] O-ring	For sealing		<a href="#">vppe</a>
[11] Socket head screw M5x12	For fitting pressure supply plate with profile strip		<a href="#">vppe</a>
[12] Socket head screw M4x16	For fitting the mounting plate to the slot nut		<a href="#">vppe</a>
[13] Silencer	For mounting in exhaust ports		<a href="#">u</a>
[14] Push-in fitting	For connecting tubing with standard O.D.		<a href="#">qs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.





- Modular design
- Quick and easy replacement of the diaphragm
- For critical, abrasive and viscous media
- Easy-to-clean design
- Flow direction is freely selectable
- Versions with end-position sensing

## Type code

001	Series
VZQA	Pinch valve, pneumatically actuated
002	Product version
C	Easy-to-clean design
003	Valve function
M22U	2/2-way valve, normally open
004	Nominal diameter DN [mm]
6	6
15	15
25	25
50	50
005	Process valve connection type 1
G	G female thread
S1	Clamp ferrule to ASME-BPE, type A
S5	Clamp ferrule to DIN 32676, series A
S12	Clamp ferrule to ASME-BPE, type B
T	NPT female thread
006	Process valve connection type 2
G	G female thread
S1	Clamp ferrule to ASME-BPE, type A
S5	Clamp ferrule to DIN 32676, series A
S12	Clamp ferrule to ASME-BPE, type B
T	NPT female thread

007	Housing material
AL	Aluminium
V2	Stainless steel (nickel-chrome austenitic/1.4301, 1.4303, 1.4306 (AISI 304L))
V4	Stainless steel (chrome-nickel-molybdenum, austenitic/1.4401, 1.4404 (AISI 316L), 1.4408)
008	Housing cover material
AL	Aluminium
V4	Stainless steel (austenitic chromium-nickel-molybdenum/1.4401, 1.4404 (AISI 316L), 1.4408)
POM	Polyoxymethylene
009	Shut-off element material
E	EPDM
N	NBR
S1	Silicone
010	Pressure range of media
2	0 ... 2 bar
4	0 ... 4 bar
6	0 ... 6 bar
011	Type of sensing
	None
012	Temperature range
	Standard
013	Use in a potentially explosive atmosphere
	No
EXA	Assessed for use in an explosive atmosphere

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system				
Valve function	Material housing cover	Material shut-off element	Part no.	Type
2/2 open, single solenoid	POM, High-alloy stainless steel, Wrought aluminium alloy	EPDM, NBR, VMQ (silicone)	2037881	VZQA-C-M22U-...

Process and media valves > Pinch valves >

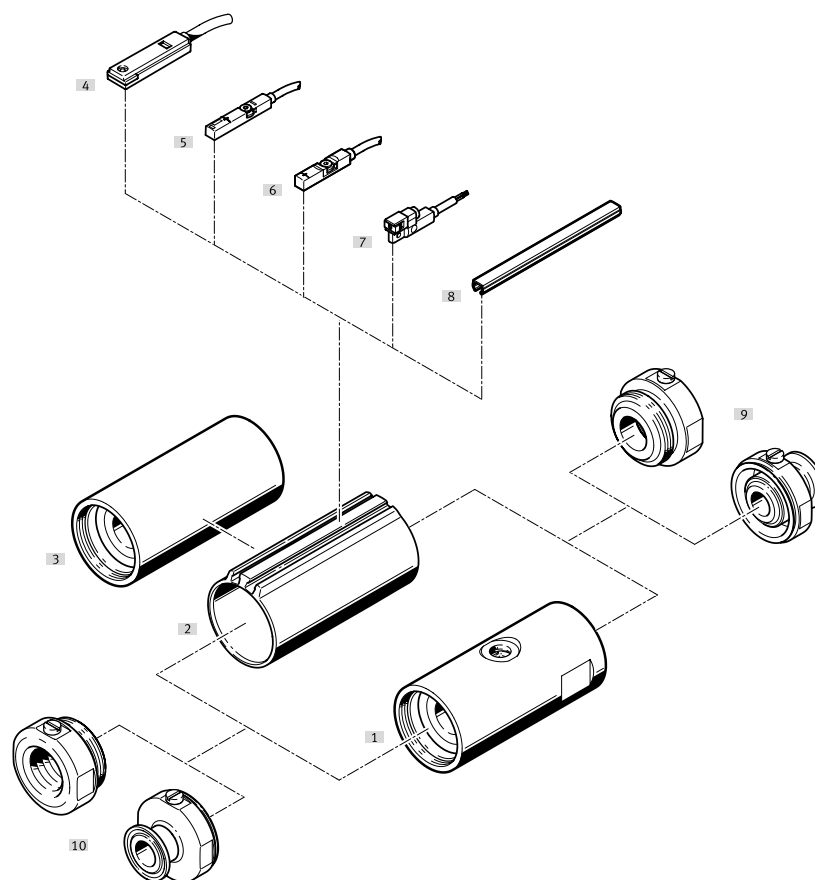
## Pinch valve VZQA

### Ordering data

Ordering data VZQA-C-M22U, aluminium housing material					
Nominal size DN	Connection Process valve	Material shut-off element	Product weight	Part no.	Type
6	G1/4	NBR	105.5 g	2931679	VZQA-C-M22U-6-GG-ALV4N-4
15	G1/2		158 g	3022832	VZQA-C-M22U-15-GG-ALPOMN-4
			265 g	3022831	VZQA-C-M22U-15-GG-ALV4N-4
25	G1	EPDM	480 g	3968923	VZQA-C-M22U-25-GG-ALALE-4
50	Clamp to DIN 32676 series A	EPDM	2,432 g	8161474	VZQA-C-M22U-50-S5S5-ALV4E-2
	G2		1,302 g	8161473	VZQA-C-M22U-50-GG-ALALE-2
			2,090 g	8161475	VZQA-C-M22U-50-GG-ALV4E-2
			2 NPT	1,302 g	8161477
	2,090 g			8161476	VZQA-C-M22U-50-TT-ALV4E-2

Ordering data VZQA-C-M22U, stainless steel housing material					
Nominal size DN	Connection Process valve	Material shut-off element	Product weight	Part no.	Type
6	Clamp to ASME-BPE, type A	VMQ (silicone)	195 g	2931684	VZQA-C-M22U-6-S1S1-V4V4S1-4
	Clamp to DIN 32676 series A	EPDM	215 g	2931681	VZQA-C-M22U-6-S5S5-V4V4E-4
		VMQ (silicone)		2931682	VZQA-C-M22U-6-S5S5-V4V4S1-4
	G1/4	EPDM	157 g	2931678	VZQA-C-M22U-6-GG-V4V4E-4
6	G1/4	EPDM	163 g	2931686	VZQA-C-M22U-6-GG-V4V4E-4-EXA
		VMQ (silicone)	157 g	2931683	VZQA-C-M22U-6-GG-V4V4S1-4
	1/4 NPT			2931685	VZQA-C-M22U-6-TT-V4V4S1-4
15	Clamp to ASME-BPE, type A		495 g	3022837	VZQA-C-M22U-15-S1S1-V4V4S1-4
	Clamp to DIN 32676 series A	EPDM	559 g	3022833	VZQA-C-M22U-15-S5S5-V4V4E-4
		VMQ (silicone)		3022834	VZQA-C-M22U-15-S5S5-V4V4S1-4
	G1/2	EPDM	431 g	3022829	VZQA-C-M22U-15-GG-V4V4E-4
			453 g	3022839	VZQA-C-M22U-15-GG-V4V4E-4-EXA
		NBR	431 g	3022830	VZQA-C-M22U-15-GG-V4V4N-4
		VMQ (silicone)		3022835	VZQA-C-M22U-15-GG-V4V4S1-4
	1/2 NPT			3022838	VZQA-C-M22U-15-TT-V4V4S1-4
25	Clamp to ASME-BPE, type B		1,516 g	3968927	VZQA-C-M22U-25-S1S12-V4V4S1-4
	Clamp to DIN 32676 series A	EPDM	1,474 g	3968924	VZQA-C-M22U-25-S5S5-V4V4E-4
		VMQ (silicone)		3968925	VZQA-C-M22U-25-S5S5-V4V4S1-4
25	G1	EPDM	1,178 g	3968922	VZQA-C-M22U-25-GG-V4V4E-4
			1,227 g	3968929	VZQA-C-M22U-25-GG-V4V4E-4-EXA
	1 NPT	VMQ (silicone)	1,178 g	3968926	VZQA-C-M22U-25-GG-V4V4S1-4
				3968928	VZQA-C-M22U-25-TT-V4V4S1-4
50	G2	EPDM	2,886 g	8172745	VZQA-C-M22U-50-GG-V2V4E-2

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Basic body VZQA-C-M22U	Normal position open		177
[2] Basic body VZQA-C-M22C	- Normally closed - Variant with „aluminium housing material“ (always with T-slots). - Integrated ring magnet only available when selecting „Type of sensing end positions“		<a href="#">vzqa</a>
[3] Basic body VZQA-C-M22C	- Normally closed - Variant with stainless steel housing material		<a href="#">vzqa</a>
[4] Proximity switch for T-slot SME-8	Magnetic reed, can be inserted in the slot lengthwise		<a href="#">vzqa</a>
[5] Proximity switch for T-slot SME-8M	Magnetic reed, can be inserted into the slot from above		<a href="#">vzqa</a>
[6] Proximity switch for T-slot SMT-8M	Magneto-resistive, can be inserted into the slot from above, according to EU explosion protection directive		180
[7] Proximity switch for T-slot SMT-8G	Magneto-resistive, can be inserted in the slot lengthwise		180
[8] Slot cover ABP-5-S	To protect the sensor cables and slots from contamination		<a href="#">vzqa</a>
[9] Connection 2	- Various connections are available for selection: - G female thread - NPT female thread - Clamp ferrule, DIN 32676, A series - Clamp ferrule, ASME-BPE, type A - Clamp ferrule, ASME-BPE, type B		<a href="#">vzqa</a>
[10] Connection 1	- Various connections are available for selection: - G female thread - NPT female thread - Clamp ferrule, DIN 32676, A series - Clamp ferrule, ASME-BPE, type A - Clamp ferrule, ASME-BPE, type B		<a href="#">vzqa</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Process and media valves > Pinch valves >

## Pinch valve VZQA

### Accessories

Proximity switch for T-slot, magneto-resistive		
Switching element function	Part no.	Type
N/C contact	574340	SMT-8M-A-PO-24V-E-7,5-OE
N/C or N/O contact, switchable	8059120	SDBT-MSX-1L-PU-E-0,3-N-M8
N/O contact	574338	SMT-8M-A-NS-24V-E-2,5-OE
	574339	SMT-8M-A-NS-24V-E-0,3-M8D
	547859	SMT-8G-PS-24V-E-2,5Q-OE
	574335	SMT-8M-A-PS-24V-E-2,5-OE
	574336	SMT-8M-A-PS-24V-E-5,0-OE
	574334	SMT-8M-A-PS-24V-E-0,3-M8D
	574337	SMT-8M-A-PS-24V-E-0,3-M12
	547860	SMT-8G-PS-24V-E-0,3Q-M8D

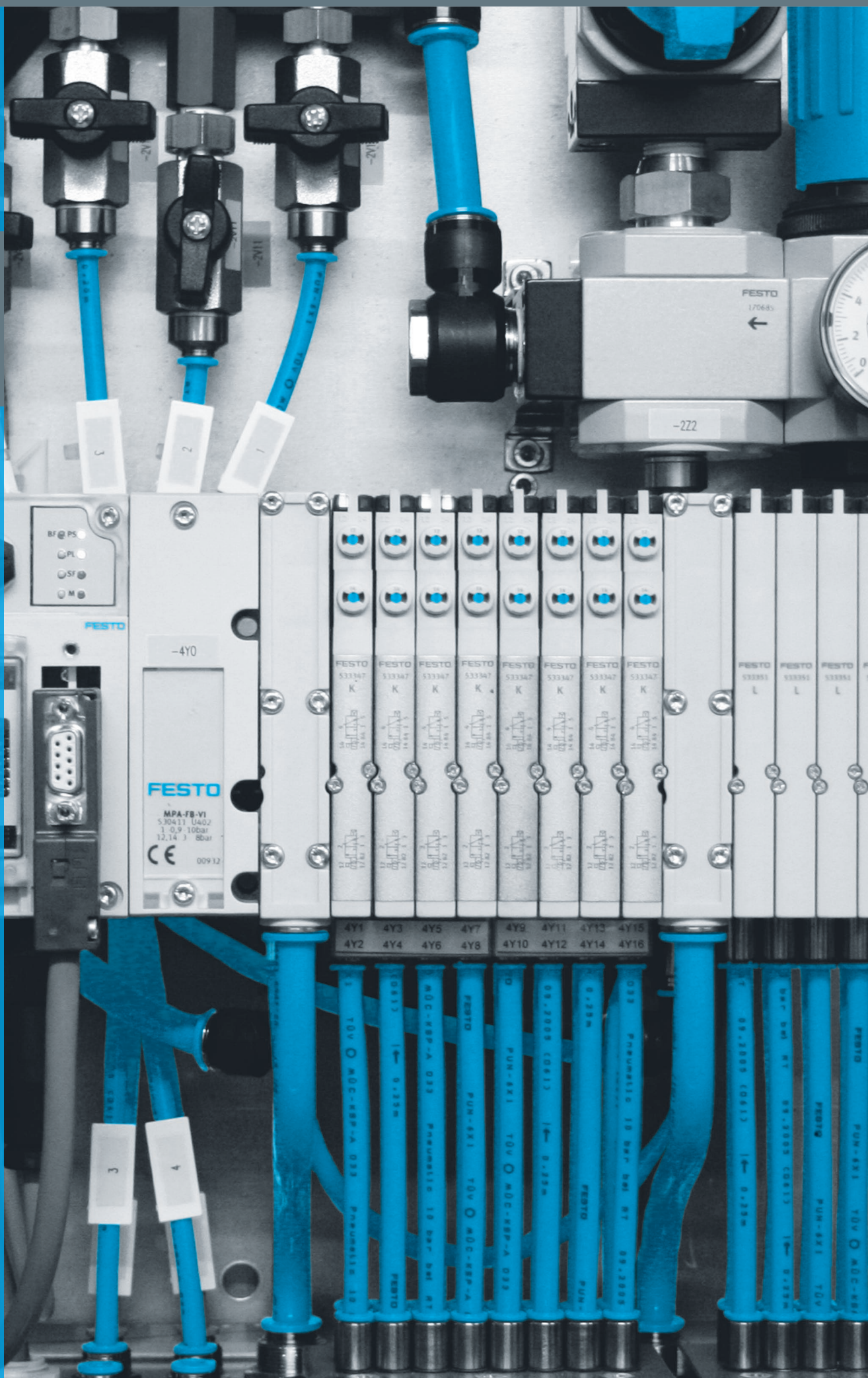
Position transmitter for T-slot, magnetic Hall		
Switching output	Part no.	Type
2x PNP or 2x NPN adjustable	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2,5-LE
2x PNP or 2x NPN adjustable	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0,3-M8





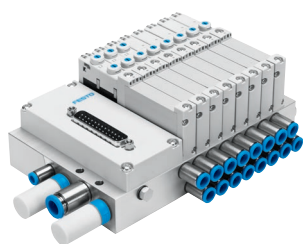
# 06

## Valve terminals



# Highlights

# Contents



Valve terminals with multi-pin or  
fieldbus connection

## VTUG

- + Energy-efficient thanks to reverse operation and targeted pressure reduction
- + Particularly attractive for the control cabinet

→ 186

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Valve terminal VTUG-F1A with multi-pin plug and fieldbus interface	186

## Product overview

## Software-Tools

### Configurator for valve terminals



Design a product with numerous features reliably and quickly with the help of the configurator. Select all the required product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection. A dynamic graphic generated on the basis of the configuration provides a visual aid for selecting the correct product features. You can find the configurator for your product

1. at [www.festo.com/catalogue/valve-terminal](http://www.festo.com/catalogue/valve-terminal)
2. Select the product you want
3. Click on the blue „Configure product“ button

## Universal valve terminals



**Valve terminal with multi-pin, fieldbus interface  
VTUG-F1A**

<b>Valve size</b>	10 mm, 14 mm
<b>Valve function</b>	2x3/2-way, monostable, closed, 2x3/2-way, open, monostable, 2x3/2-way, open/closed, monostable, 3/2-way, closed, monostable, 3/2 open, single solenoid, 5/2 double solenoid, 5/2-way, monostable, 5/3-way, pressurised, 5/3 exhausted, 5/3 closed
<b>Max. standard nominal flow rate</b>	330 l/min at 10 mm, 630 l/min at 14 mm
<b>Max. no. of valve positions</b>	24
<b>Max. no. of pressure zones</b>	13
<b>Electrical actuation</b>	AP interface, I-Port, IO-Link®, Multi-pin plug
<b>Valve terminal design</b>	Fixed grid
<b>Cleanroom class</b>	Class 5 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364 zone III
<b>Description</b>	<ul style="list-style-type: none"> <li>• Recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Low-cost fixed grid</li> <li>• Extremely easy assembly</li> <li>• Exchangeable electrical control</li> <li>• IO-Link® capable</li> <li>• Part of the VG series</li> <li>• Energy-efficient thanks to reverse operation and targeted pressure reduction</li> </ul>
<b>online: →</b>	<b>186</b>

## Customised components – for your specific requirements



### Valve terminals with customised designs

Can't find the valve terminal you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Coatings for special ambient conditions
- Customised cables: length, pin allocation, pre-assembled with plug
- Modified actuating elements
- Modified connecting thread
- Modified valve sub-bases

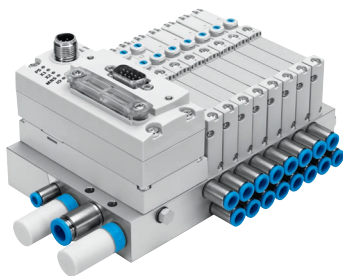
Many additional variants are possible.

Ask your Festo sales engineer, who will be happy to help you:

→ [www.festo.com/contact](http://www.festo.com/contact)



## Valve terminal VTUG-F1A with multi-pin plug and fieldbus interface



- Recommended for production systems for manufacturing lithium-ion batteries
- Low-cost fixed grid
- Extremely easy assembly
- Exchangeable electrical control
- IO-Link® capable
- Part of the VG series
- Energy-efficient thanks to reverse operation and targeted pressure reduction

### Key features

#### Innovative

- Festo-specific I-Port interface for bus nodes (CTEU)
- IO-Link® mode for direct connection to a higher-level IO-Link master
- Flexible multi-pin plug connection using Sub-D or ribbon cable
- Reversible piston spool valves, up to 24 valve positions
- Reduced power consumption
- Excellent price/performance ratio

#### Versatile

- Choice of quick push-in connectors
- Multiple pressure zones possible
- Sub-D variant and fieldbus interface with protection to IP67
- Internal or external pilot air with the same manifold rail possible by using blanking plugs
- Sub-base valves with working ports underneath for installation in control cabinets

#### Reliable

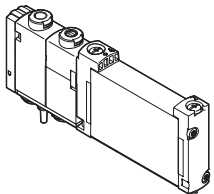
- Sturdy and durable metal components
  - Valves
  - Manifold rails
- Fast troubleshooting thanks to LED indicator
- Manual override: choose from non-detenting, detenting or covered

#### Easy to install

- Easy to mount thanks to captive screws and seal
- Easy-to-change connection technology
- Inscription label holder for labelling

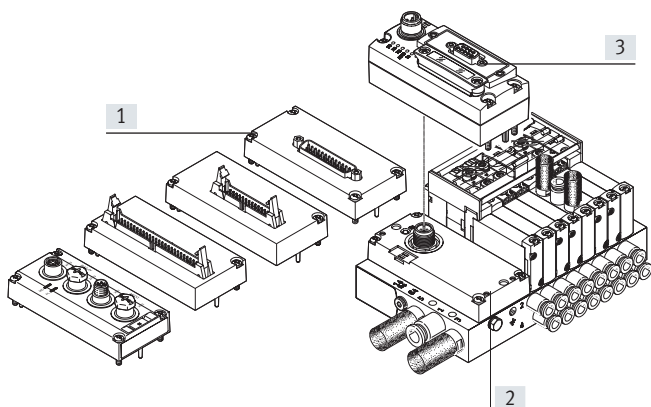
### Sub-base valves for valve terminal VTUG-F1A

VUVG-B...1T1, sub-base valve



In the case of sub-base valves, the supply ports (1, 3 and 5) and the working ports (2, 4) are connected to the valve via pneumatic links (e.g. sub-base).

### Overview – Valve terminal with multi-pin plug connection and fieldbus interface



Different electrical connections:

- [1] Ribbon cable or Sub-D
- [2] I-Port interface
- [3] Bus node CTEU

## Valve terminal VTUG-F1A with multi-pin plug and fieldbus interface

## Key features

## Equipment options

## Valve functions

- 2x 3/2-way, 3/2-way, 5/2-way, 5/3-way valves
- Reversible piston spool valves, up to 24 valve positions

## Electrical connection options

- IO-Link® mode for direct connection to a higher-level IO-Link master
- Festo-specific I-Port interface for bus nodes (CTEU)
- Flexible multi-pin plug connection using Sub-D or ribbon cable

## Basic valves VUVG-F1A

## Size

- 10
- 14

## Variants

- Sub-base valve

## Valve functions

## 3/2-way valve

- Single solenoid
- Normally open
- Normally closed

## 2x 3/2-way valve

- Single solenoid
- Normally open
- Normally closed
- 1x normally closed, 1x normally open
- Mechanical spring
- Pneumatic spring

## 5/2-way valve

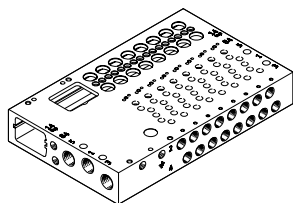
- Single solenoid
- Pneumatic/mechanical spring
- Mechanical spring
- Pneumatic spring
- Double solenoid valve

## 5/3-way valve

- Mid-position pressurised
- Mid-position exhausted
- Mid-position closed

## Manifold rail

## For sub-base valves



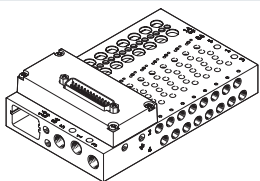
The sub-base valves are supplied with external pilot air. The pilot air is set via the manifold rail. The scope of delivery of the manifold rail includes a short and a long blanking plug for setting the pilot air.

- For sub-base valves M5/M7 (size 10), G1/8 (size 14)
- For 2x 3/2-way, 3/2-way, 5/2-way and 5/3-way valves
- 4 to 24 valve positions with electrical links

## Key features

### Electrical connection

#### Multi-pin plug connection



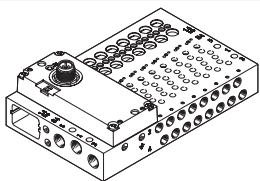
The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection.

This substantially reduces installation time compared to individually connected valves. The valve terminal can be equipped with max. 48 solenoid coils.

Versions:

- Sub-D connection
- Ribbon cable

### I-Port interface



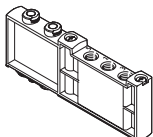
Festo-specific interface as a basis for bus nodes (CTEU) or in IO-Link® mode for direct connection to a higher-order IO-Link master.

Communication and power supply take place via a common M12 interface.

Connection options:

- As I-Port interface for bus nodes (CTEU)
- In IO-Link® mode for direct connection to an IO-Link master

### Supply plate

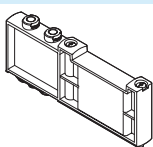


For additional air supply and exhaust via a valve position (ports for duct 1, 3 and 5).

#### Note

The supply plate VABF-L1-14-P3A4-G18-T1 can only be used with G fittings. R fittings are not permissible.

### Cover plate for vacant position



Vacant position cover

### Separator for pressure zones



For creating multiple pressure zones in a valve terminal

### Creating pressure zones and separating exhaust air

Compressed air is supplied and exhausted via the manifold rail and via supply plates.

The position of the supply plates and duct separations can be freely selected with the VTUG.

A pressure zone is created by separating the internal supply ducts using a separator.

Pressure zone separation can be used for the following ducts:

- Duct 1
- Duct 3
- Duct 5

#### Note

- Use a separator if the exhaust air pressures are high
- Use at least one supply plate/air supply for each pressure zone
- Pressure zone separation is not possible in duct 12/14 (pilot air supply)

## Ordering data

### Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the part number or the type.

Part no. **8143237** Type **VTUG-F1A**

The valve manifold is fully assembled according to your order specification and individually checked. This reduces assembly and installation time to a minimum.




## Valve terminal VTUG-F1A with multi-pin plug and fieldbus interface

# 07

## Sensors



# Highlights




Proximity switch, for T-slot

**SMT-8M**

- + Short design
- + Variants with cables suitable for energy chains and robot applications

→ 198



Proximity switch, for T-slot

**SDBT-MSX**

- + Quick and easy installation without having to search for switching points
- + Oil-resistant, welding field immune, resistant to welding spatter

→ 201



Pressure sensors

**SPAN**

- + Pressure and vacuum
- + 13 pressure measuring ranges
- + All common pressure units

→ 223

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Pressure transmitter SPTE	229
Flow transmitter SFTE	231
Flow sensor SFAH	232

## Product overview

## Software-Tools

### Festo Design Tool 3D







The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo.  
The configurator makes your search for the right accessory easier, more reliable and faster.

You can then order the module that has been created as a single order item, either completely pre-assembled or as individual parts in a single box. This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified.

This tool can be found at  
[→ www.festo.com/x/festo-design-tool](http://www.festo.com/x/festo-design-tool)




### Proximity switches >

## Proximity switches for T-slot


				
	<b>Proximity sensors SMT-8M</b>	<b>Proximity sensors SDBT-MSX</b>	<b>Proximity sensors SMT-8G</b>	<b>Proximity sensors SDBT-MSB</b>
<b>Electrical connection, connection type</b>	Cable, Cable with plug	Cable, Cable with plug	Cable, Cable with plug	Cable, Cable with plug
<b>Electrical connection, connection technology</b>	M12x1, A-coded to EN 61076-2-101, M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104, Open end
<b>Operating voltage range DC</b>	5 ... 30 V	10 ... 30 V	10 ... 30 V	10 ... 30 V
<b>Switching element function</b>	N/C contact, N/O contact	N/C or N/O contact, switchable	N/O contact	N/O contact
<b>Switching output</b>	NPN, PNP, Non-contacting, 2-wire	PNP/NPN, switchable	NPN, PNP	NPN, PNP, Non-contacting, 2-wire
<b>Cleanroom class</b>	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L	VDMA24364-B2-L	VDMA24364-B2-L	VDMA24364 zone III
<b>Description</b>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>For universal use</li> <li>Individually configurable or pre-assembled</li> <li>Inserted in the slot from above, flush with the cylinder profile</li> <li>LED switching status indication</li> <li>LED operating reserve indication</li> <li>Cable length 0.1 ... 30 m</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magnetic Hall</li> <li>Auto teach-in: automatic teach-in of the switching point at system start-up</li> <li>Programmable: PNP/NPN, NO/NC and switching window range between 2 ... 15 mm</li> <li>Insertable in the slot from above, screw-clamped</li> <li>LED status indicator</li> <li>Cable length 0.3 ... 5 m</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>SMT-8G: design ideal for gripper sensing</li> <li>Insertable in the slot lengthwise or from above</li> <li>LED switching status indication</li> <li>Cable length 0.3, 2.5, 5 m</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>Insertable in the slot from above, screw-clamped</li> <li>LED switching status indication</li> <li>Cable length 0.3, 2 m</li> </ul>
<b>online: →</b>	<b>198</b>	<b>201</b>	<b>204</b>	<b>206</b>

## Proximity switches &gt;

## Round slot proximity switch




			
	<b>Proximity switch SMT-10M</b>	<b>Proximity switch SMT-10G</b>	<b>Proximity sensor SDBC-MSB</b>
<b>Electrical connection, connection type</b>	Cable, Cable with plug	Cable, Cable with plug	Cable, Cable with plug
<b>Electrical connection, connection technology</b>	M12x1, A-coded to EN 61076-2-101, M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104, Open end
<b>Electrical connection, number of pins/wires</b>	2, 3	3	2, 3
<b>Operating voltage range DC</b>	5 ... 30 V	10 ... 30 V	10 ... 30 V
<b>Switching element function</b>	N/O contact	N/O contact	N/O contact
<b>Switching output</b>	NPN, PNP, Non-contacting, 2-wire	NPN, PNP	NPN, PNP, Non-contacting, 2-wire
<b>Cleanroom class</b>	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L	VDMA24364-B2-L	VDMA24364 zone III
<b>Description</b>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>For universal use</li> <li>Individually configurable or pre-assembled</li> <li>Inserted in the slot from above, flush with the cylinder profile</li> <li>LED switching status indication</li> <li>Cable length 0.3, 2.5 m</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>SMT-10G: design ideal for gripper sensing</li> <li>Insertable in the slot lengthwise or from above</li> <li>LED switching status indication</li> <li>Cable length 0.3, 2.5 m</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magneto-resistive</li> <li>Insertable in the slot from above, screw-clamped</li> <li>LED switching status indication</li> <li>Cable length 0.3, 2 m</li> </ul>
<b>online: →</b>	<b>207</b>	<b>209</b>	<b>211</b>

## Inductive sensors



	
	<b>Proximity switch SIES-8M</b>
<b>Size</b>	Slot 8
<b>Switching output</b>	NPN, PNP
<b>Switching element function</b>	N/C contact, N/O contact
<b>Operating voltage range DC</b>	10 ... 30 V
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>Ideally suited for position sensing for electric axes and grippers with T-slot</li> <li>Flush mounting</li> <li>Switching status indication with 2 LEDs for better visibility regardless of the direction from which it is approached</li> <li>Single inductive sensor for 8 slot with patented LED status indicator</li> </ul>
<b>online: →</b>	<b>212</b>

## Product overview

### Position sensors

			
	<b>Position transmitter SDAC-MHS</b>	<b>Position transmitters SDAT-MHS</b>	<b>Position transmitters SDAS-MHS</b>
<b>Design type</b>	For C-slot	For T-slot	For T-slot
<b>Sensing range</b>	25000 ... 35000 µm	0 ... 160000 µm	≤52000 µm
<b>Analogue output</b>	0 - 10 V	0 - 10 V, 4 - 20 mA	
<b>Electrical connection, connection type</b>	Cable, Cable with plug	Cable with plug	Cable, Cable with plug
<b>Electrical connection, connection technology</b>	M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104	M8x1, A-coded, to EN 61076-2-104, Open end
<b>Electrical connection, occupied pins/wires</b>	3, 4	4	4
<b>Cleanroom class</b>	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L	VDMA24364-B2-L	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>Measuring principle: magnetic Hall</li> <li>Sensing range up to 35 mm</li> <li>IO-Link®, 2 programmable switching outputs</li> <li>Analogue output 0 ... 10 V</li> <li>Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space</li> <li>LED status indicator</li> <li>Cable length 0.3, 2.5 m</li> <li>Suitable for round slot</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magnetic Hall</li> <li>Analogue output 0 ... 10 V or 4 ... 20 mA</li> <li>Programmable IO-Link®/switching output</li> <li>Insertable in the slot from above, screw-clamped</li> <li>LED status indicator</li> <li>Cable length 0.3 m</li> <li>Suitable for T-slot</li> </ul>	<ul style="list-style-type: none"> <li>Measuring principle: magnetic Hall</li> <li>IO-Link®, 2 programmable switching outputs</li> <li>Inserted in the slot from above</li> <li>Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space</li> <li>LED status indicator</li> <li>Cable length 0.3, 2.5 m</li> <li>Suitable for T-slot</li> </ul>
<b>online: →</b>	<b>213</b>	<b>214</b>	<b>216</b>




## Position sensors

		
	<b>Position transmitter SMAT-8M</b>	<b>Position transmitters SDAP-MHS</b>
<b>Design type</b>	For T-slot	For T-slot
<b>Sensing range</b>	≤52000 µm	0 ... 160000 µm
<b>Analogue output</b>	0 - 10 V, 0 - 10 V	4 - 20 mA
<b>Electrical connection, connection type</b>	Cable, Cable with plug	Cable with plug
<b>Electrical connection, connection technology</b>	M8x1, A-coded, to EN 61076-2-104, Open end	M8x1, A-coded, to EN 61076-2-104
<b>Electrical connection, occu- pied pins/wires</b>	3, 4	4
<b>Cleanroom class</b>	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Measuring principle: magnetic Hall</li> <li>• Analogue output 0 ... 10 V</li> <li>• Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space</li> <li>• Insertable in the slot from above, screw-clamped</li> <li>• LED status indicator</li> <li>• Cable length 0.3 m</li> <li>• Suitable for T-slot</li> </ul>	<ul style="list-style-type: none"> <li>• Only for use with Festo Motion Terminal VTEM</li> <li>• Analogue sensor for VTEM input module CTMM</li> <li>• Measuring principle: magnetic Hall</li> <li>• Insertable in the slot from above, screw-clamped</li> <li>• LED status indicator</li> <li>• Cable length 0.3 m</li> <li>• Suitable for T-slot</li> </ul>
<b>online: →</b>	<b>219</b>	<b>222</b>





## Product overview

### Pressure and vacuum sensors

	 <b>Pressure sensors SPAN</b>	 <b>Pressure sensors SPAE</b>	 <b>Pressure transmitters SPTE</b>
<b>Pressure measuring range [MPa]</b>	-0.1 ... 1 MPa	-0.1 ... 1 MPa	-0.1 ... 1 MPa
<b>Pressure measuring range</b>	-1 ... 10 bar	-1 ... 10 bar	-1 ... 10 bar
<b>Pressure measuring range [psi]</b>	-14.5 ... 145 psi	-14.5 ... 145 psi	-14.5 ... 145 psi
<b>Switching element function</b>	N/C or N/O contact, switchable	N/C contact, N/O contact, Switchable	
<b>Switching output</b>	2 x PNP or 2 x NPN, switchable, PNP/NPN, switchable	PNP/NPN, switchable	
<b>Pneumatic connection</b>	Female thread G1/8, M5, For tubing O.D. 4 mm, Male thread G1/8, R1/8	Cartridge 10 mm, Push-in sleeve QS-4, QS-6	Cartridge 10 mm, Push-in sleeve QS-4, QS-6
<b>Electrical connection</b>		3-wire, Cable, Open end	3-wire, Cable, Open end
<b>Electrical connection 1, connection type</b>	Plugs		
<b>Display type</b>	Illuminated LCD	LED indicator, 2-digit	
<b>Cleanroom class</b>	Class 4 according to ISO 14644-1	Class 4 according to ISO 14644-1	Class 4 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L	VDMA24364-B2-L	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• For monitoring compressed air and non-corrosive gases</li> <li>• For network monitoring, regulator monitoring, leak testing, object detection</li> <li>• Relative measurement method based on a piezoresistive measuring cell</li> <li>• Serial communication integrated using IO-Link® 1.1</li> <li>• Compact design 30x30 mm</li> <li>• High-contrast display with blue backlight</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, numeric pressure indicator in percent, operating key and a switching output, PNP/NPN switchable</li> <li>• Display of minimum and maximum measured value</li> <li>• All parameters entered can be transferred to other SPAEs (replicating function)</li> <li>• Communication interface IO-Link®</li> </ul>	<ul style="list-style-type: none"> <li>• Piezoresistive pressure sensor</li> <li>• Measured variable: relative pressure</li> <li>• Cable length 2.5 m</li> <li>• Compact: 8-bracket wall mount for manifold mounting</li> </ul>
<b>online: ➔</b>	<b>223</b>	<b>227</b>	<b>229</b>



## Flow sensors

		
	<b>Flow transmitters SFTE</b>	<b>Flow sensors SFAH</b>
<b>Flow measuring range</b>	0 ... 10 l/min	0.002 ... 200 l/min
<b>Operating medium</b>	Nitrogen, Compressed air ISO 8573-1:2010 [6:4:4]	Argon, Nitrogen, Compressed air ISO 8573-1:2010 [6:4:4]
<b>Operating pressure</b>	-0.9 ... 10 bar	-0.9 ... 10 bar
<b>Pneumatic connection</b>	Female thread M5	Female thread G1/4, G1/8, For tubing O.D. 4 mm, 6 mm, 8 mm
<b>Switching output</b>		2 x PNP or 2 x NPN, switchable
<b>Electrical connection, connection type</b>	Cable, Cable with plug	Plugs
<b>Electrical connection, connection technology</b>	M8x1, A-coded, to EN 61076-2-104, Open end	Connection pattern L1J, M8x1, A-coded, to EN 61076-2-104
<b>Cleanroom class</b>	Class 4 according to ISO 14644-1	Class 4 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Compact design</li> <li>• Universal flow detection</li> <li>• Simple installation</li> <li>• Reliable pick &amp; place application for extremely small workpieces</li> </ul>	<ul style="list-style-type: none"> <li>• Process air, compressed air, forming gas consumption and pneumatic object monitoring, handling ultra-small parts, leak test</li> <li>• Compact design 20x58 mm</li> <li>• Clear 2-line display</li> <li>• Mounting: H-rail mounting, wall or surface mounting, front panel mounting</li> <li>• Serial communication integrated using IO-Link® 1.1</li> </ul>
<b>online: →</b>	<b>231</b>	<b>232</b>

T-slot cylinder sensors >

## Proximity switch SMT-8M, for T-slot



- Measuring principle: magneto-resistive
- For universal use
- Individually configurable or pre-assembled
- Inserted in the slot from above, flush with the cylinder profile
- LED switching status indication
- LED operating reserve indication
- Cable length 0.1 ... 30 m

## Type code

001	Series	007	Cable characteristic
SMT	Proximity sensor	E	Suitable for energy chains/robot applications
002	Design type	008	Cable length [m]
8	For T-slot		0.1 ... 30 m
003	Sensor version	2,5	2.5 m
M	Inserted in the slot from above	5,0	5 m
		7,5	7.5 m
004	Design	009	Cable identification
A	Short		With label holder
		N	Without label holder
005	Switching output	010	Connection technology
NO	3-wire N/C contact NPN	OE	Open end
NS	3-wire NPN N/O contact	M8	M8, snap-on flange
PO	3-wire PNP N/C contact	M8D	M8, rotatable thread
PS	3-wire PNP N/O contact	M12	M12, rotatable thread
ZS	2-wire PNP N/O contact		
006	Rated operating voltage		
24V	24 V		

## Ordering data



Configurable product

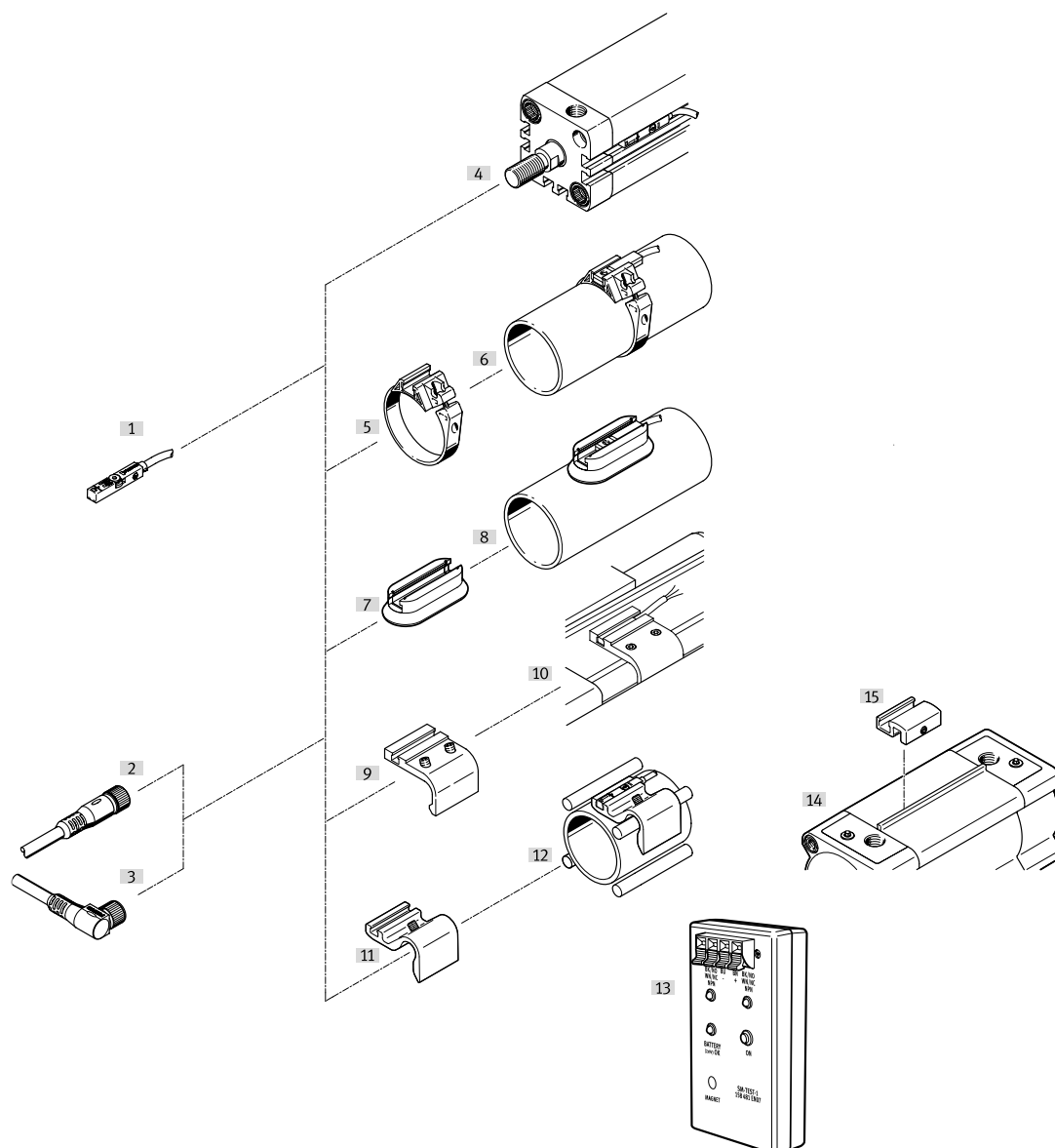
This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering information – Modular product system				
Design	Switching output	Switching element function	Part no.	Type
For T-slot	NPN, PNP, Non-contacting, 2-wire	N/C contact, N/O contact	574333	SMT-8M-A

Switching output	Switching element function	Cable length	Product weight	Part no.	Type
NPN	N/C contact	2.5 m	29.1 g	8138000	SMT-8M-A-NO-24V-E-2,5-OE
		7.5 m	85.1 g	8138001	SMT-8M-A-NO-24V-E-7,5-OE
	N/O contact	0.3 m	8.9 g	574339	SMT-8M-A-NS-24V-E-0,3-M8D
		2.5 m	29.1 g	574338	SMT-8M-A-NS-24V-E-2,5-OE
PNP	N/C contact	7.5 m	85.1 g	574340	SMT-8M-A-PO-24V-E-7,5-OE
		0.3 m	8.9 g	574334	SMT-8M-A-PS-24V-E-0,3-M8D
	N/O contact		15.9 g	574337	SMT-8M-A-PS-24V-E-0,3-M12
		2.5 m	29.1 g	574335	SMT-8M-A-PS-24V-E-2,5-OE
		5 m	57.1 g	574336	SMT-8M-A-PS-24V-E-5,0-OE
				8165237	SMT-8M-A-ZS-24V-E-5,0-OE
Non-contacting, 2-wire					

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] SMT-8M-A proximity switch	With cable		198
[2] Connecting cables NEBA-M...G...	-		200
[3] Connecting cables NEBA-M...W...	-		200
[4] Drives with T-slot e.g. ADN	-		—
[5] Mounting kit SMBR	For round cylinders		<a href="#">smt-8m-a</a>
[6] Round cylinder e.g. DSNU	-		—
[7] Mounting kit CRSMB	For round cylinders, corrosion protected		<a href="#">smt-8m-a</a>
[8] Round cylinder e.g. CRDSNU	-		—
[9] Mounting kit SMB-8-FENG	-		<a href="#">smt-8m-a</a>
[10] Standards-based cylinder DSBC	-		<a href="#">dsbc</a>
[11] Sensor holder DASP-M4-...	-		<a href="#">smt-8m-a</a>
[12] Drives with tie rod or mounting rod e.g. DSBG	-		—
[13] Sensor tester SM-TEST-1	Checking the function of proximity switches using the built-in voltage source. Adjusting proximity switches on the cylinder.		<a href="#">smt-8m-a</a>
[14] Standards-based cylinder DSBF	-		<a href="#">dsbf</a>
[15] Mounting kit SMB-8-C	-		<a href="#">smt-8m-a</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Proximity switch SMT-8M, for T-slot

## Accessories

Connecting cable NEBA, socket M8x1, 3-pin		
Connection technology left, field device side	Part no.	Type
Socket M8x1 A-coded, EN 61076-2-104	<b>8078223</b>	<b>NEBA-M8G3-U-2.5-N-LE3</b>
Socket M8x1 A-coded, EN 61076-2-104	<b>8078224</b>	<b>NEBA-M8G3-U-5-N-LE3</b>
Socket M8x1 A-coded, EN 61076-2-104	<b>8078230</b>	<b>NEBA-M8W3-U-2.5-N-LE3</b>
Socket M8x1 A-coded, EN 61076-2-104	<b>8078231</b>	<b>NEBA-M8W3-U-5-N-LE3</b>

Connecting cable NEBU, socket M12x1, 5-pin		
Connection technology left, field device side	Part no.	Type
Socket M12x1 A-coded, EN 61076-2-101	<b>8078236</b>	<b>NEBA-M12G5-U-2.5-N-LE3</b>
Socket M12x1 A-coded, EN 61076-2-101	<b>8078237</b>	<b>NEBA-M12G5-U-5-N-LE3</b>
Socket M12x1 A-coded, EN 61076-2-101	<b>8078245</b>	<b>NEBA-M12W5-U-2.5-N-LE3</b>

## Proximity switch SDBT-MSX, for T-slot



- Measuring principle: magnetic Hall
- Auto teach-in: automatic teach-in of the switching point at system start-up
- Programmable: PNP/NPN, NO/NC and switching window range between 2 ... 15 mm
- Insertable in the slot from above, screw-clamped
- LED status indicator
- Cable length 0.3 ... 5 m

## Type code

001	Series
<b>SDBT</b>	Sensor, position, binary, T series
002	Sensor version
<b>M</b>	Can be inserted in the slot
003	Sensor principle
<b>S</b>	Contactless (solid state)
004	Additional features
<b>X</b>	Automatic teach-in and programmable
005	Nominal operating voltage
<b>1</b>	24 V DC
006	Display
<b>L</b>	LED

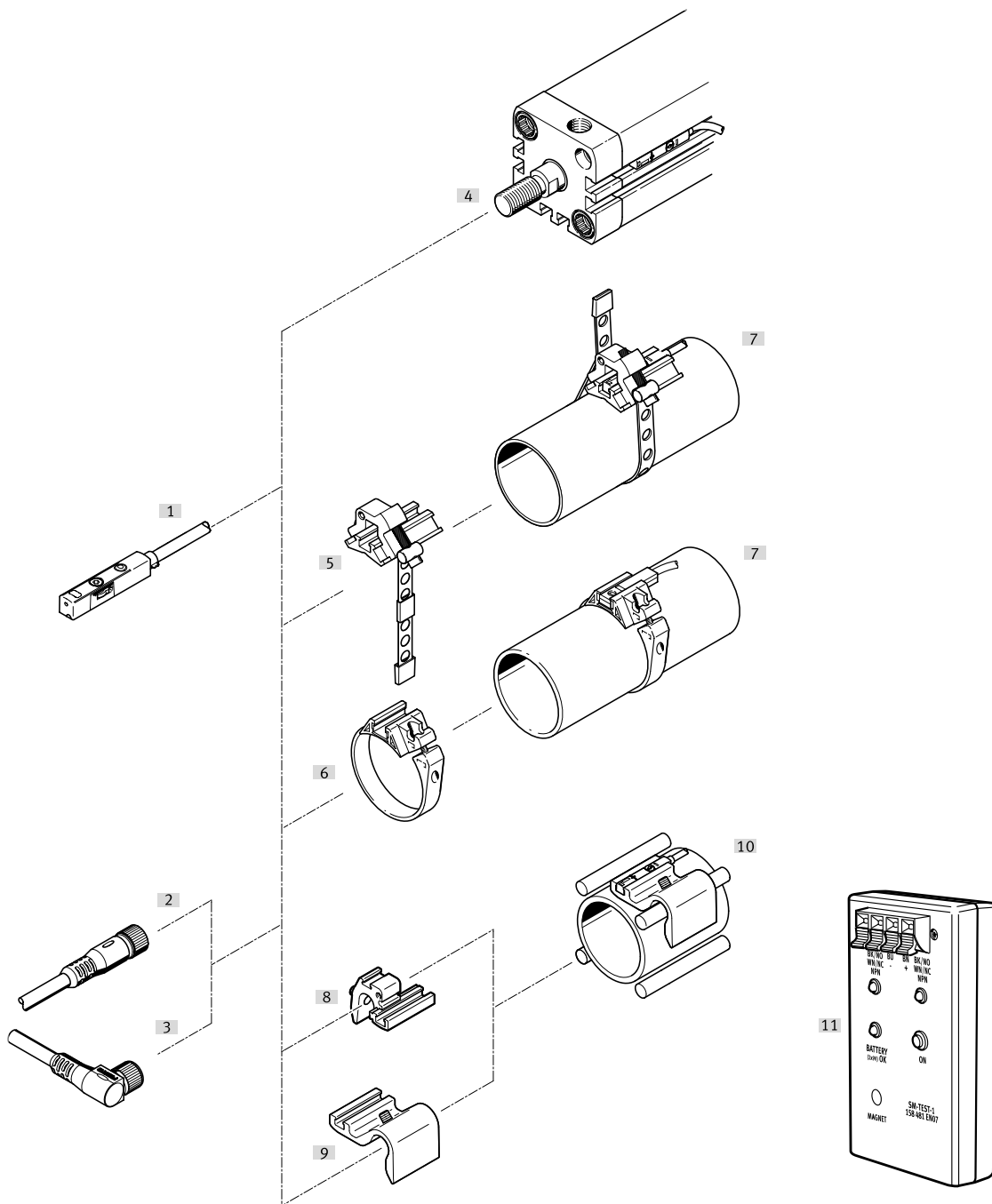
007	Digital switching output
<b>NU</b>	3-wire N/O contact, NPN
<b>PU</b>	3-wire N/O contact, PNP
008	Cable characteristic
<b>E</b>	Suitable for energy chains/robot applications
009	Cable length [m]
<b>0.3</b>	0.3 m
<b>2.5</b>	2.5 m
<b>5</b>	5 m
010	Cable identification
<b>N</b>	Without label holder
011	Electrical connection
<b>LE</b>	Open end
<b>M8</b>	Plug M8, A-coded
<b>M12</b>	Plug M12, A-coded

## Ordering data

Proximity switch				
Switching output	Cable length	Product weight	Part no.	Type
PNP/NPN, switchable	0.3 m	10 g	<b>8059123</b>	<b>SDBT-MSX-1L-NU-E-0.3-N-M8</b>
		12 g	<b>8222734</b>	<b>SDBT-MSX-1L-PU-E-0.3-N-M12</b>
	2.5 m	29 g	<b>8059121</b>	<b>SDBT-MSX-1L-PU-E-2.5-N-LE</b>
			<b>8059124</b>	<b>SDBT-MSX-1L-NU-E-2.5-N-LE</b>
	5 m	56 g	<b>8059125</b>	<b>SDBT-MSX-1L-NU-E-5-N-LE</b>
			<b>8059122</b>	<b>SDBT-MSX-1L-PU-E-5-N-LE</b>

T-slot cylinder sensors >  
Proximity switch SDBT-MSX, for T-slot

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Proximity switch SDBT-MSX-...	-		201
[2] Connecting cables NEBU-M...G...	Straight socket		203
[3] Connecting cables NEBU-M...W...	Angled socket		203
[4] Drives with T-slot	-		-
[5] Mounting kit SMBR-8-8/100-S6	Heat-resistant design		<a href="#">sdbt-msx</a>
[6] Mounting kit SMBR	For round cylinders		<a href="#">sdbt-msx</a>
[7] Round cylinder	Ex.: DSNU		-
[8] Sensor bracket SMBZ-8-...	-		<a href="#">sdbt-msx</a>
[9] Sensor bracket DASP-M4-...	-		<a href="#">sdbt-msx</a>
[10] Drives with tie rod or mounting rod	For example: DSBG		-
[11] Sensor tester SM-TEST-1	Checking the functionality of proximity switches using the integrated voltage supply. Adjusting proximity switches on the cylinder.		<a href="#">sdbt-msx</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

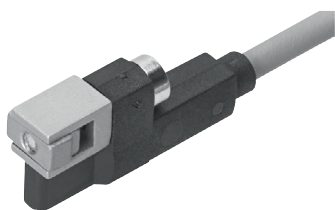
## Accessories

Connecting cables socket M8x1, 3-pin, straight socket		
Electrical connection 1, number of connections/cores	Part no.	Type
3	8078223	NEBA-M8G3-U-2.5-N-LE3
3	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables socket M8x1, 3-pin, angled plug socket		
Electrical connection 1, number of connections/cores	Part no.	Type
3	8078230	NEBA-M8W3-U-2.5-N-LE3
3	8078231	NEBA-M8W3-U-5-N-LE3

Connecting cables socket M12x1, 5-pin, straight socket		
Electrical connection 1, number of connections/cores	Part no.	Type
5	8078236	NEBA-M12G5-U-2.5-N-LE3
5	8078237	NEBA-M12G5-U-5-N-LE3

## T-slot cylinder sensors > Proximity switch SMT-8G, for T-slot



- Measuring principle: magneto-resistive
- SMT-8G: design ideal for gripper sensing
- Insertable in the slot lengthwise or from above
- LED switching status indication
- Cable length 0.3, 2.5, 5 m

### Type code

001	Series
<b>SMT</b>	Proximity sensor
002	Design type
<b>8</b>	For T-slot
003	Sensor version
<b>G</b>	Inserted in the slot lengthwise, optimised for gripper sensing
004	Switching output
<b>NS</b>	3-wire NPN N/O contact
<b>PS</b>	3-wire PNP N/O contact
005	Rated operating voltage
<b>24V</b>	24 V

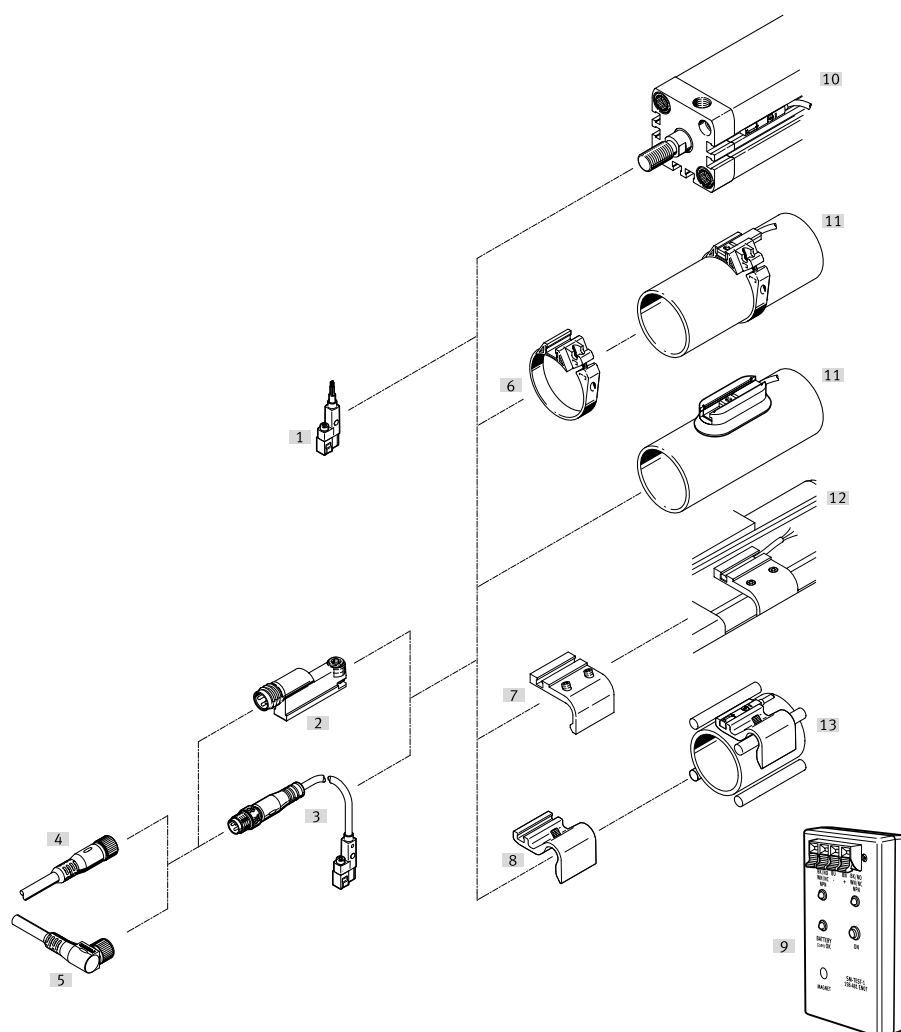
006	Cable characteristic
<b>E</b>	Suitable for energy chains/robot applications
007	Cable length [m]
<b>0.3</b>	0.3
<b>2.5</b>	2.5
008	Cable outlet
<b>Q</b>	Transverse
009	Electrical connection
<b>M8D</b>	Cable with M8x1 plug, 3-pin, rotatable thread
<b>OE</b>	Open end

### Ordering data

Ordering data SMT-8G				
Switching output	Electrical connection 1, connection type	Cable length	Part no.	Type
NPN	Cable	2.5 m	<b>8065028</b>	<b>SMT-8G-NS-24V-E-2,5Q-OE</b>
	Cable with plug	0.3 m	<b>8065027</b>	<b>SMT-8G-NS-24V-E-0,3Q-M8D</b>
PNP	Cable	2.5 m	<b>547859</b>	<b>SMT-8G-PS-24V-E-2,5Q-OE</b>
	Cable with plug	0.3 m	<b>547860</b>	<b>SMT-8G-PS-24V-E-0,3Q-M8D</b>



## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] SMT-8-G-...-OE	With cable	204	
[2] SMT-8-SL-...	With plug	<a href="#">smt-8-sl</a>	
[3] SMT-8-G-...-M...	With cable and plug	<a href="#">smt-8g</a>	
[4] Connecting cable NEBA-M8	Straight socket	205	
[5] Connecting cable NEBA-M8	Angled socket	205	
[6] Mounting kit SMBR	For round cylinders	<a href="#">smt-8g</a>	
[7] Mounting kit SMB-8-FENG	—	<a href="#">smt-8g</a>	
[8] Sensor bracket DASP-M4-...	For DSBG-125 ... 320	<a href="#">smt-8g</a>	
[9] Sensor tester SM-TEST-1	Checking that the proximity switches are functioning using the built-in voltage source. Adjusting proximity switches on the cylinder.	<a href="#">smt-8g</a>	
[10] Drives with T-slot	e.g. ADN	—	
[11] Round cylinder	e.g. CRDSNU	—	
[12] Standards-based cylinder DSBC	—	—	
[13] Drives with tie rod or mounting rod	—	—	

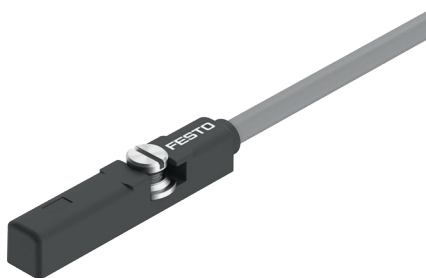
\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Cable structure	Part no.	Type
3 x 0.25 mm <sup>2</sup>	<a href="#">8078230</a>	NEBA-M8W3-U-2.5-N-LE3
3 x 0.25 mm <sup>2</sup>	<a href="#">8078223</a>	NEBA-M8G3-U-2.5-N-LE3
3 x 0.25 mm <sup>2</sup>	<a href="#">8078231</a>	NEBA-M8W3-U-5-N-LE3
3 x 0.25 mm <sup>2</sup>	<a href="#">8078224</a>	NEBA-M8G3-U-5-N-LE3

T-slot cylinder sensors >

## Proximity switch SDBT-MSB, for T-slot



- Measuring principle: magneto-resistive
- LED switching status indication
- Insertable in the slot from above, screw-clamped
- Cable length 2 m

### Type code

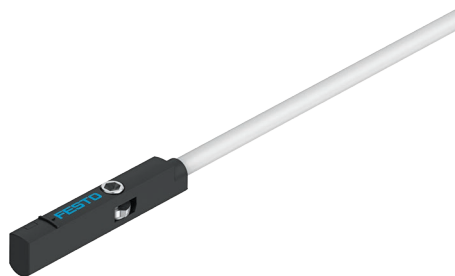
001	Series
SDBT	Sensor, position, binary, T series
002	Sensor version
M	Can be inserted in the slot
003	Sensor principle
S	Contactless (solid state)
004	Additional features
B	Basic
005	Nominal operating voltage
1	24 V DC
006	Display
L	LED

007	Digital switching output
NU	3-wire N/O contact, NPN
PU	3-wire N/O contact, PNP
ZU	2-wire N/O contact
008	Cable characteristic
K	Standard/suitable for energy chains
009	Cable length [m]
2	2 m
010	Cable identification
	With label holder
011	Electrical connection
LE	Open end

### Ordering data

	Switching output	Cable length	Part no.	Type
	NPN	2 m	8150172	SDBT-MSB-1L-NU-K-2-LE
	PNP		8150171	SDBT-MSB-1L-PU-K-2-LE
	Non-contacting, 2-wire		8150173	SDBT-MSB-1L-ZU-K-2-LE

## Proximity switch SMT-10M, for C-slot



- Measuring principle: magneto-resistive
- For universal use
- Individually configurable or pre-assembled
- Inserted in the slot from above, flush with the cylinder profile
- LED switching status indication
- Cable length 0.2 ... 30 m

## Type code

001	Series
<b>SMT</b>	Proximity sensor
002	Design type
<b>10M</b>	For C-slot, inserted in slot from above
003	Switching output
<b>NS</b>	3-wire NPN N/O contact
<b>PS</b>	3-wire PNP N/O contact
<b>ZS</b>	2-wire PNP N/O contact
004	Rated operating voltage
<b>24V</b>	24 V
005	Cable characteristic
<b>E</b>	Suitable for energy chains/robot applications
006	Cable length [m]
	0.2 ... 30
<b>0.3</b>	0.3
<b>2.5</b>	2.5

007	Display
<b>L</b>	LED
008	Cable outlet
<b>Q</b>	Transverse
<b>L</b>	Longitudinal
009	Cable identification
	With label holder
<b>N</b>	
010	Connection technology
<b>OE</b>	Open end
<b>M8</b>	M8, snap-on flange
<b>M8D</b>	M8, rotatable thread
<b>M12</b>	M12, rotatable thread

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

## Ordering data – Modular product system

Design	Switching output	Part no.	Type
For C-slot	NPN, PNP, Non-contacting, 2-wire	<b>551372</b>	<b>SMT-10M</b>

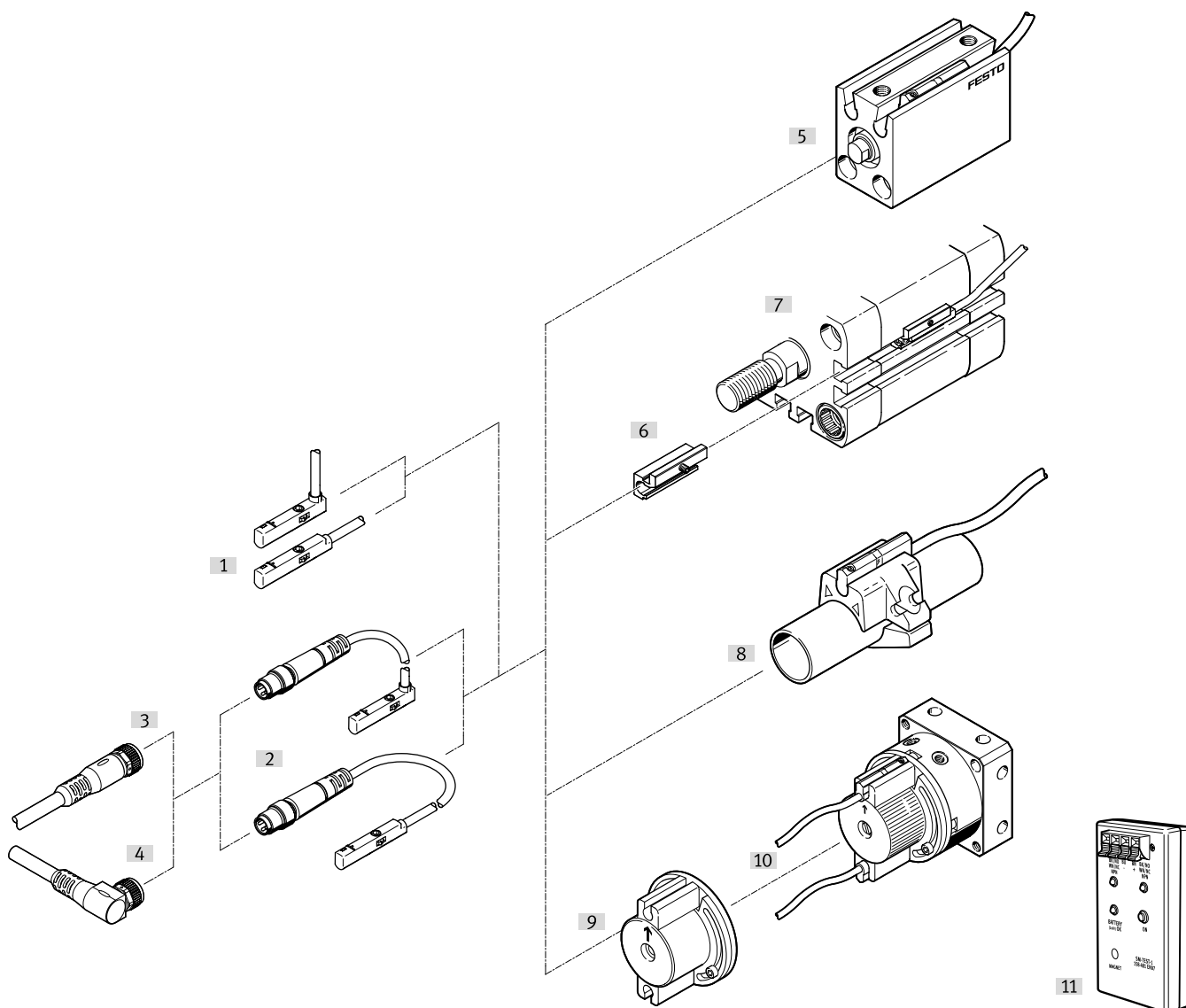
## Ordering data

	Switching output	Cable length	Product weight	Part no.	Type
	NPN	0.3 m	6.7 g	<b>551380</b>	<b>SMT-10M-NS-24V-E-0,3-Q-M8D</b>
				<b>551379</b>	<b>SMT-10M-NS-24V-E-0,3-L-M8D</b>
		2.5 m	16.8 g	<b>551377</b>	<b>SMT-10M-NS-24V-E-2,5-L-OE</b>
				<b>551378</b>	<b>SMT-10M-NS-24V-E-2,5-Q-OE</b>
	PNP	0.3 m	6.7 g	<b>551375</b>	<b>SMT-10M-PS-24V-E-0,3-L-M8D</b>
				<b>551376</b>	<b>SMT-10M-PS-24V-E-0,3-Q-M8D</b>
			14 g	<b>8152201</b>	<b>SMT-10M-PS-24V-E-0,3-L-M12</b>
		2.5 m	16.8 g	<b>551374</b>	<b>SMT-10M-PS-24V-E-2,5-Q-OE</b>
	Non-contacting, 2-wire			<b>551373</b>	<b>SMT-10M-PS-24V-E-2,5-L-OE</b>
			14.6 g	<b>551383</b>	<b>SMT-10M-ZS-24V-E-2,5-Q-OE</b>
				<b>551382</b>	<b>SMT-10M-ZS-24V-E-2,5-L-OE</b>

C-slot cylinder sensors >

Proximity switch SMT-10M, for C-slot

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Proximity switch SMT-10M-...-OE	Can be inserted into the slot from above, flush with the cylinder profile, with cable		207
[2] Proximity switch SMT-10M-...-M...	Can be inserted into the slot from above, flush with the cylinder profile, with cable and plug		<a href="#">smt-10m</a>
[3] Connecting cable NEBA-M8	Straight socket		208
[4] Connecting cable NEBA-M8	Angled socket		208
[5] Drives with round slot	-		-
[6] Mounting kit SMBN-10	For mounting proximity switches on drives with T-slot		<a href="#">smt-10m</a>
[7] Drives with T-slot	-		-
[8] Round cylinder	-		-
[9] Mounting kit WSM-...-SME-10	Mounting kit for mounting proximity switches on semi-rotary drive DSM		<a href="#">smt-10m</a>
[10] Semi-rotary drive DSM-B	-		<a href="#">dsm</a>
[11] Sensor tester SM-TEST-1	Checking the function of proximity switches using the built-in voltage source. Adjusting proximity switches on the cylinder.		<a href="#">smt-10m</a>

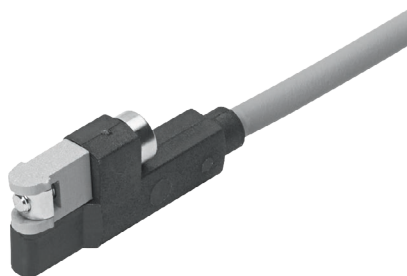
\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Cable structure	Part no.	Type
3 x 0.25 mm <sup>2</sup>	8078230	NEBA-M8W3-U-2.5-N-LE3
3 x 0.25 mm <sup>2</sup>	8078223	NEBA-M8G3-U-2.5-N-LE3

Connecting cable NEBA-M8		
Cable structure	Part no.	Type
3 x 0.25 mm <sup>2</sup>	8078231	NEBA-M8W3-U-5-N-LE3
3 x 0.25 mm <sup>2</sup>	8078224	NEBA-M8G3-U-5-N-LE3

## Proximity switch SMT-10G, for C-slot



- Measuring principle: magneto-resistive
- SMT-10G: design ideal for gripper sensing
- Insertable in the slot lengthwise or from above
- LED switching status indication
- Cable length 0.3 m, 2.5 m

## Type code

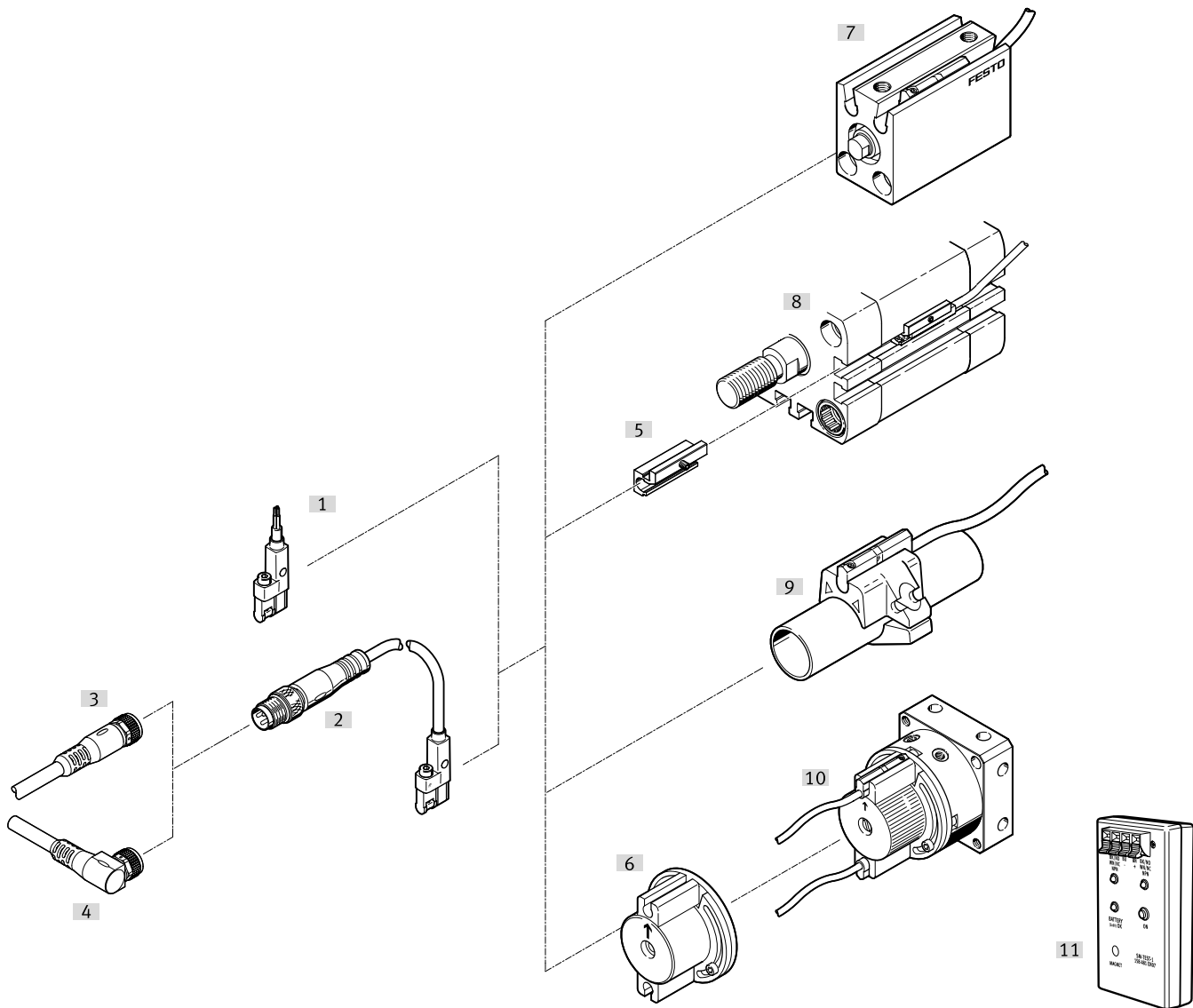
001	Series	005	Cable characteristic
SMT	Proximity sensor	E	Suitable for energy chains/robot applications
002	Design type	006	Cable length [m]
10G	For round slot, inserted in the slot lengthwise	0,3	0.3 m
		2,5	2.5 m
003	Switching output	007	Cable outlet
NS	3-wire NPN N/O contact	Q	Transverse
PS	3-wire PNP N/O contact		
004	Rated operating voltage	008	Electrical connection
24V	24 V	M8D	Cable with M8x1 plug, 3-pin, rotatable thread
		OE	Open end

Switching output	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Cable length	Part no.	Type
NPN	M8x1, A-coded, to EN 61076-2-104	3	0.3 m	8065029	SMT-10G-NS-24V-E-0,3Q-M8D
	Open end		2.5 m	8065030	SMT-10G-NS-24V-E-2,5Q-OE
PNP	M8x1, A-coded, to EN 61076-2-104		0.3 m	547863	SMT-10G-PS-24V-E-0,3Q-M8D
	Open end		2.5 m	547862	SMT-10G-PS-24V-E-2,5Q-OE

C-slot cylinder sensors >

Proximity switch SMT-10G, for C-slot

## Peripherals overview



Mounting components and accessories		→ Link*
Proximity sensors		
[1]	SMT-10G-...-OE, with cable	209
[2]	SMT-10G-...-M..., with cable and plug	<a href="#">smt-10g</a>
Connecting cables		
[3]	Connecting cable NEBA-M...G...	210
[4]	Connecting cable NEBA-M...W...	210
Mounting kits		
[5]	Mounting kit SMBN-10	<a href="#">smt-10g</a>
[6]	Mounting kit WSM-...-SME-10	<a href="#">smt-10g</a>

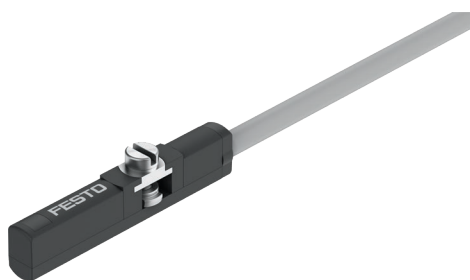
\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Cable structure	Part no.	Type
3 x 0.25 mm <sup>2</sup>	8078230	NEBA-M8W3-U-2.5-N-LE3
	8078223	NEBA-M8G3-U-2.5-N-LE3
	8078231	NEBA-M8W3-U-5-N-LE3
	8078224	NEBA-M8G3-U-5-N-LE3

Mounting components and accessories		→ Link*
Accessories		
[11]	Sensor tester SM-TEST-1	<a href="#">smt-10g</a>
–	Positioning element SMM-10	<a href="#">smt-10g</a>
–	Clip SMBK-10	<a href="#">smt-10g</a>
–	Inscription label ASLR	<a href="#">smt-10g</a>
–	Safety clip NEAU	<a href="#">smt-10g</a>
Drives		
[7]	Drives with C-slot	–
[8]	Drives with T-slot	–
[9]	Round cylinder	–
[10]	Semi-rotary drive DSM	–

## Proximity switch SDBC-MSB, for C-slot



- Measuring principle: magneto-resistive
- LED switching status indication
- Insertable in the slot from above, screw-clamped
- Cable length 2 m

## Type code

001	Series
<b>SDBC</b>	Proximity sensor
002	Sensor version
<b>M</b>	Can be inserted in the slot
003	Sensor principle
<b>S</b>	Contactless (solid state)
004	Additional features
<b>B</b>	Basic
005	Nominal operating voltage
<b>1</b>	24 V DC
006	Display
<b>L</b>	LED

007	Digital switching output
<b>NU</b>	3-wire N/O contact, NPN
<b>PU</b>	3-wire N/O contact, PNP
<b>ZU</b>	2-wire N/O contact
008	Cable characteristic
<b>K</b>	Standard/suitable for energy chains
009	Cable length
<b>2</b>	2 m
010	Electrical connection
<b>LE</b>	Open end

## Ordering data

	Switching output	Cable length	Part no.	Type
	NPN	2 m	<b>8139724</b>	<b>SDBC-MSB-1L-NU-K-2-LE</b>
	PNP		<b>8139723</b>	<b>SDBC-MSB-1L-PU-K-2-LE</b>
	Non-contacting, 2-wire		<b>8139725</b>	<b>SDBC-MSB-1L-ZU-K-2-LE</b>

Inductive proximity switches >

Proximity switch SIES-8M, inductive



- Ideally suited for position sensing for electric axes and grippers with T-slot
- Flush mounting
- Switching status indication with 2 LEDs for better visibility regardless of the direction from which it is approached
- Single inductive sensor for 8 slot with patented LED status indicator

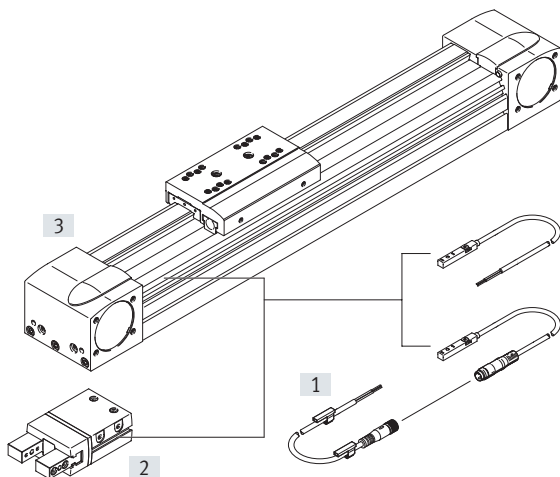
Type code

001	Series
SIE	Proximity switch, inductive
002	Design type
S	Special design
003	Design
8M	For T-slot
004	Switching input/output
N	NPN
P	PNP
005	Switching element function
O	N/C contact
S	N/O contact
006	Rated operating voltage
24V	24 V
007	Cable characteristic
K	Standard/suitable for energy chains
008	Cable length [m]
7.5	7.5
009	Electrical connection
OE	Open end

Ordering data

Rated operating distance	Mounting type	Switching output	Switching element function	Part no.	Type
1.5 mm	Flush	NPN	N/C contact	551401	SIES-8M-NO-24V-K-7,5-OE
			N/O contact	551396	SIES-8M-NS-24V-K-7,5-OE
		PNP	N/C contact	551391	SIES-8M-PO-24V-K-7,5-OE
			N/O contact	551386	SIES-8M-PS-24V-K-7,5-OE

Peripherals overview



Mounting components and accessories		→ Link*
[1]	Connecting cable NEBU-M8...3	<a href="#">sies-8m</a>
[2]	Gripper with T-slot e.g. parallel gripper DHPS	<a href="#">gripper</a>
[3]	Electric axis EGC	<a href="#">egc</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



## Position transmitter SDAC-MHS



- Measuring principle: magnetic Hall
- Sensing range up to 35 mm
- IO-Link®, 2 programmable switching outputs
- Analogue output 0 ... 10 V
- Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space
- LED status indicator
- Cable length 0.3, 2.5 m
- Suitable for round slot

## Type code

001	Series		007	Electrical output 1	
SDAC	Position transmitter		PNLK	PNP/NPN/IO-Link	
			V	0 ... 10 V	
002	Sensor version		008	Electrical output 2	
M	Can be inserted in the slot			None	
			PN	PNP or NPN	
003	Sensor principle		009	Cable length [m]	
HS	Hall sensor		0.3	0.3 m	
			2.5	2.5 m	
004	Measuring range		010	Connection outlet	
M20	Typically up to 20 mm			Axial	
M30	Typically up to 30 mm		011	Electrical connection	
			LE	Open end	
005	Nominal operating voltage		M8	Plug M8, A-coded	
1	24 V DC				
006	Display				
L	LED				

## Ordering data

Position transmitter, 0 to 10V					
Electrical connection 1, connection type	Electrical connection 1, connector system	Cable length	Analogue output	Part no.	Type
Cable	Open end	2.5 m	0 - 10 V	8128403	SDAC-MHS-M20-1L-V-E-2.5-LE
Cable with plug	M8x1, A-coded, to EN 61076-2-104	0.3 m		8128402	SDAC-MHS-M20-1L-V-E-0.3-M8

Position transmitter, IO-Link®					
Electrical connection 1, connection type	Electrical connection 1, connector system	Cable length	Protocol	Part no.	Type
Cable	Open end	2.5 m	IO-Link®	8128405	SDAC-MHS-M30-1L-PNLK-PN-E-2.5-LE
Cable with plug	M8x1, A-coded, to EN 61076-2-104	0.3 m		8128404	SDAC-MHS-M30-1L-PNLK-PN-E-0.3-M8

Position sensors >

## Position transmitter SDAT-MHS



- Measuring principle: magnetic Hall
- Analogue output 0 ... 10 V or 4 ... 20 mA
- Programmable IO-Link®/switching output
- Insertable in the slot from above, screw-clamped
- LED status indicator
- Cable length 0.3 m
- Suitable for T-slot

## Type code

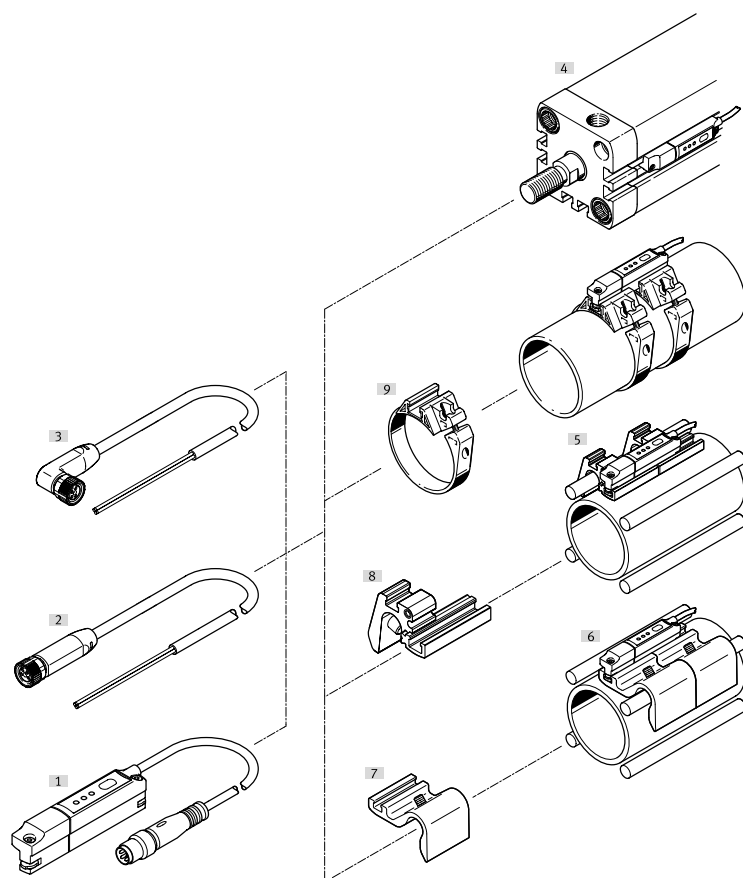
001	Series
SDAT	Position transmitter, magnetic
002	Sensor version
M	Can be inserted in the slot
003	Sensor principle
HS	Hall sensor
004	Measuring range
M50	50 mm
M80	80 mm
M100	100 mm
M125	125 mm
M160	160 mm

005	Nominal operating voltage
1	24 V DC
006	Display
L	LED
007	Switching input/output
008	Cable characteristic
E	Suitable for energy chains/robots
009	Cable length [m]
0.3	0.3 m
010	Electrical connection
M8	Plug M8, A-coded

## Ordering data

	Electrical connection 1, connection type	Electrical connection 1, connector system	Cable length	Product weight	Part no.	Type
	Cable with plug	M8x1, A-coded, to EN 61076-2-104	0.3 m	19 g	8115394	SDAT-MHS-M50-1L-SV-E-0.3-M8
					1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
				23 g	1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
					8115395	SDAT-MHS-M80-1L-SV-E-0.3-M8
				26 g	8115396	SDAT-MHS-M100-1L-SV-E-0.3-M8
					1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
				30 g	8115397	SDAT-MHS-M125-1L-SV-E-0.3-M8
					1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
				35 g	8115398	SDAT-MHS-M160-1L-SV-E-0.3-M8
					1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

## Peripherals overview



Type/order code	Description	→ Link*
[1] Position transmitter SDAT-MHS	—	214
[2] Connecting cable NEBA-M...G...	—	215
[3] Connecting cable NEBA-M...W...	—	215
[4] Standards-based cylinder DNC	—	<a href="#">dnc</a>
[4] Compact cylinder ADN	—	<a href="#">adn</a>
[4] Short-stroke cylinders ADVC, AEVC	—	<a href="#">advc</a>
[4] Compact cylinder ADVU, AEVU	—	<a href="#">advu</a>
[4] Flat cylinder DZF	—	<a href="#">dzf</a>
[4] Linear drive DGC	—	<a href="#">dgc</a>
[4] Guided drive DFM	—	<a href="#">dfm</a>
[5] Standards-based cylinder, round cylinder DSNU	—	<a href="#">dsnu</a>
[5] Linear drive unit SLE	—	<a href="#">sle</a>
[6] Standards-based cylinder DSBG	—	<a href="#">dsbg</a>
[7] Sensor bracket DASP-M4-...	—	<a href="#">sdat-mhs</a>
[8] Mounting SMBZ-8	—	<a href="#">sdat-mhs</a>
[9] Mounting kit SMBR	For round cylinders	<a href="#">sdat-mhs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Cable structure	Part no.	Type
4 x 0.25 mm <sup>2</sup>	<a href="#">8078227</a>	NEBA-M8G4-U-2.5-N-LE4
4 x 0.25 mm <sup>2</sup>	<a href="#">8078233</a>	NEBA-M8W4-U-2.5-N-LE4
4 x 0.25 mm <sup>2</sup>	<a href="#">8078295</a>	NEBA-M8G4-U-2.5-N-M8G4
4 x 0.25 mm <sup>2</sup>	<a href="#">8078234</a>	NEBA-M8W4-U-5-N-LE4
4 x 0.25 mm <sup>2</sup>	<a href="#">8078228</a>	NEBA-M8G4-U-5-N-LE4

Position sensors >

Position transmitter SDAS-MHS



- Measuring principle: magnetic Hall
- IO-Link®, 2 programmable switching outputs
- Inserted in the slot from above
- Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space
- LED status indicator
- Cable length 0.3, 2.5 m
- Suitable for T-slot

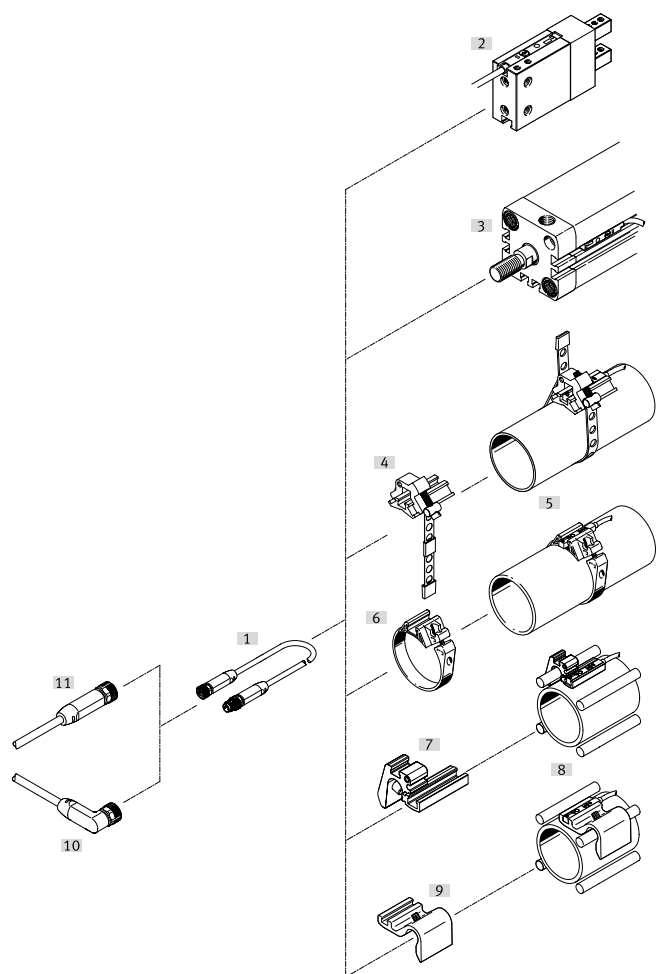
Type code

001	Series	007	Electrical output 1
SDAS	Position transmitter/cylinder switch	PNLK	PNP/NPN/IO-Link
002	Sensor version	008	Electrical output 2
M	Can be inserted in the slot	PN	PNP or NPN
003	Sensor principle	009	Cable characteristic
HS	Hall sensor	E	Suitable for energy chains/robots
004	Measuring range	010	Cable length [m]
M40	Typically up to 40 mm	0.3	0.3
005	Nominal operating voltage	2.5	2.5
1	24 V DC	011	Electrical connection
006	Display	LE	Open end
L	LED	M8	Plug M8, A-coded

Ordering data

	Electrical connection 1, connection type	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Part no.	Type
	Cable	Open end	4	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE
	Cable with plug	M8x1, A-coded, to EN 61076-2-104		8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1]	Proximity switch SDAS-MHS	–	216
[2]	Three-point gripper HGDD	–	<a href="#">hgdd</a>
[2]	Parallel gripper DHPS	–	<a href="#">dhps</a>
[2]	Parallel gripper HGPD	–	<a href="#">hgpd</a>
[2]	Parallel gripper HGPT	–	<a href="#">hgpt</a>
[2]	Angle gripper DHWS	–	<a href="#">dhws</a>
[2]	Radial gripper DHRS	–	<a href="#">dhrs</a>
[2]	Radial gripper HGRT	–	<a href="#">hgtr</a>
[3]	Standards-based cylinder DSBC	–	<a href="#">dsbc</a>
[3]	Standards-based cylinder DNC	–	<a href="#">dnc</a>
[3]	Compact cylinder ADN	–	<a href="#">adn</a>
[3]	Short-stroke cylinders ADVC, AEVC	–	<a href="#">advc</a>
[3]	Compact cylinder ADVU, AEVU	–	<a href="#">advu</a>
[3]	Flat cylinder DZF	–	<a href="#">dzf</a>
[3]	Linear drive DGC	–	<a href="#">dgc</a>
[3]	Linear/swivel clamp CLR	–	<a href="#">clr</a>
[3]	Guided drive DFM	–	<a href="#">dfm</a>
[4]	Mounting kit SMBR-8-8/100-S6, heat resistant	For round cylinders, heat-resistant version	<a href="#">sdas-mhs</a>
[5]	Standards-based cylinder, round cylinder DSNU	–	<a href="#">dsnu</a>
[5]	Linear drive unit SLE	–	<a href="#">sle</a>
[6]	Mounting kit SMBR	For round cylinders	<a href="#">sdas-mhs</a>
[7]	Mounting SMBZ-8		<a href="#">sdas-mhs</a>
[8]	Standards-based cylinder DSBG	–	<a href="#">dsbg</a>
[9]	Sensor bracket DASP-M4-...		218
[10]	Connecting cable NEBA-M8W4	Angled plug socket	218

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Position sensors >

## Position transmitter SDAS-MHS

### Accessories

Connecting cable NEBA, straight socket		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	<b>8078227</b>	<b>NEBA-M8G4-U-2.5-N-LE4</b>
M8x1, A-coded, to EN 61076-2-104	<b>8078228</b>	<b>NEBA-M8G4-U-5-N-LE4</b>

Connecting cable NEBA, angled socket		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	<b>8078233</b>	<b>NEBA-M8W4-U-2.5-N-LE4</b>
M8x1, A-coded, to EN 61076-2-104	<b>8078234</b>	<b>NEBA-M8W4-U-5-N-LE4</b>

## Position transmitter SMAT-8M



- Measuring principle: magnetic Hall
- Analogue output 0 ... 10 V
- Very compact design makes the unit especially well suited to work with grippers, compact cylinders and any application in a tight space
- Insertable in the slot from above, screw-clamped
- LED status indicator
- Cable length 0.3 m
- Suitable for T-slot

## Type code

001	Series
<b>SMAT</b>	Position transmitter, magnetic
002	Design type
<b>8</b>	For T-slot
003	Sensor version
<b>M</b>	Inserted in the slot from above
004	Analogue output
<b>U</b>	0 ... 10 V

005	Cable characteristic
<b>E</b>	Suitable for energy chains/robots
006	Cable length [m]
<b>0,3</b>	0.3 m
<b>2,5</b>	2.5 m
007	Electrical connection
<b>M8D</b>	Plug M8, 4-pin, rotatable thread
<b>OE</b>	Open end

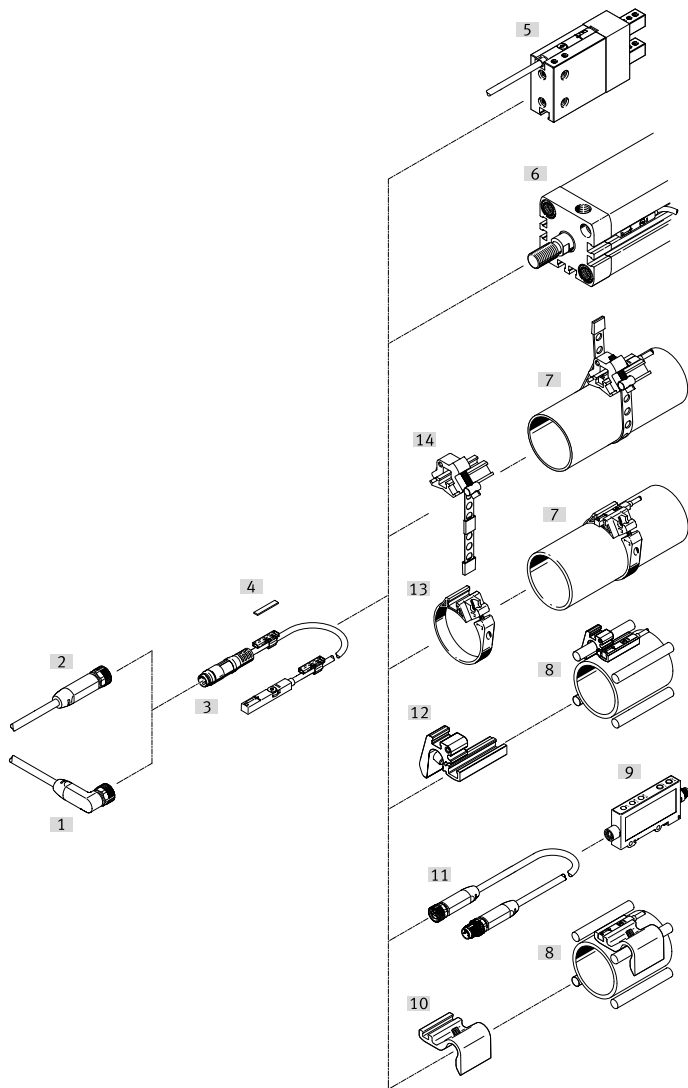
## Ordering data

	Electrical connection 1, connector system	Analogue output	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	0 - 10 V	0.3 m	<b>553744</b>	<b>SMAT-8M-U-E-0,3-M8D</b>
	Open end		2.5 m	<b>8200152</b>	<b>SMAT-8M-U-E-2,5-OE</b>

Position sensors >

## Position transmitter SMAT-8M

### Peripherals overview



Accessories		→ Link*
Type/order code	Description	
[1] Connecting cable NEBA-M8W4	Angled design	221
[2] Connecting cable NEBA-M8G4	Straight design	221
[3] Position transmitter SMAT-8M	–	219
[4] Inscription label ASLR	–	<a href="#">smat</a>
[5] Three-point gripper DHDS	–	<a href="#">dhds</a>
[5] Three-point gripper HGDD	–	<a href="#">hgdd</a>
[5] Parallel gripper DHPS	–	<a href="#">dhps</a>
[5] Parallel gripper HGPD	–	<a href="#">hgpd</a>
[5] Parallel gripper HGPT	–	<a href="#">hgpt</a>
[5] Angle gripper DHWS	–	<a href="#">dhws</a>
[5] Radial gripper DHRS	–	<a href="#">dhrs</a>
[5] Radial gripper HGRT	–	<a href="#">hgrr</a>
[6] Standards-based cylinder DSBC	–	<a href="#">dsbc</a>
[6] Standards-based cylinder DNC	–	<a href="#">dnc</a>
[6] Compact cylinder ADN	–	<a href="#">adn</a>
[6] Short-stroke cylinder ADVC/AEVC	–	<a href="#">advc</a>
[6] Compact cylinder ADVU/AEUV	–	<a href="#">advu</a>
[6] Flat cylinder DZF	–	<a href="#">dzf</a>
[6] Linear drive DGC	–	<a href="#">dgc</a>
[6] Linear/swivel clamp CLR	–	<a href="#">clr</a>
[6] Guided drive DFM	–	<a href="#">dfm</a>
[7] Standards-based cylinder/round cylinder DSNU	–	<a href="#">dsnu</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



Accessories			→ Link*
Type/order code	Description		
[7] Linear drive unit SLE	–		<a href="#">sle</a>
[8] Standards-based cylinder DSBG	–		<a href="#">dsbg</a>
[9] Signal converter SVE4	–		<a href="#">sve4</a>
[10] Sensor bracket DASP-M4	For DSBG-125 ... 320		<a href="#">smat</a>
[11] Connecting cable NEBA-M8G4	–		221
[12] Mounting SMBZ-8	–		<a href="#">smat</a>
[13] Mounting kit SMBR	–		<a href="#">smat</a>
[14] Mounting kit SMBR-8-8/100-S6, heat resistant	Heat-resistant design		<a href="#">smat</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078234	NEBA-M8W4-U-5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078228	NEBA-M8G4-U-5-N-LE4

Position sensors >

## Position transmitter SDAP-MHS



- Only for use with Festo Motion Terminal VTEM
- Analogue sensor for VTEM input module CTMM
- Measuring principle: magnetic Hall
- Insertable in the slot from above, screw-clamped
- LED status indicator
- Cable length 0.3 m
- Suitable for T-slot

## Type code

001	Series	005	Nominal operating voltage
SDAP	Position transmitter	1	24 V DC
002	Sensor version	006	Display
M	Can be inserted in the slot	L	LED
003	Sensor principle	007	Switching input/output
HS	Hall sensor	008	Cable characteristic
004	Measuring range	E	Suitable for energy chains/robots
M50	50 mm	009	Cable length [m]
M100	100 mm	0.3	0.3
M160	160 mm	010	Electrical connection
		M8	Plug M8, A-coded

## Ordering data

Sensing range	Product weight	Part no.	Type
0 ... 50 mm	19 g	8050120	SDAP-MHS-M50-1L-A-E-0.3-M8
0 ... 100 mm	26 g	8050121	SDAP-MHS-M100-1L-A-E-0.3-M8
0 ... 160 mm	35 g	8050122	SDAP-MHS-M160-1L-A-E-0.3-M8



- For monitoring compressed air and non-corrosive gases
- For network monitoring, regulator monitoring, leak testing, object detection
- Relative measurement method based on a piezoresistive measuring cell
- Serial communication integrated using IO-Link® 1.1
- Compact design 30x30 mm
- High-contrast display with blue backlight

## Type code

001	Series
SPAN	Pressure sensor
002	Product version
003	Pressure measuring range
B2	-1 ... 1 bar
B11	-1 ... 10 bar
P10	0 ... 10 bar
V1	0 ... -1 bar
004	Pressure inlet
R	Relative pressure
005	Pneumatic connection
G18	G1/8
M5	M5
Q4	Push-in connector 4 mm
R18	R1/8
006	Thread type
	None
F	Female
M	Male
007	Thread material
	Standard
AL	Aluminium
PM	Polymer

008	Electrical output 1
PN	PNP/NPN
PNLK	PNP/NPN/IO-Link
009	Electrical output 2
	None
PN	PNP or NPN
PNVBA	PNP or NPN or 0 ... 10 V or 1 ... 5 V or 4 ... 20 mA
010	Electrical connection
L1	Plug type L1
011	Mounting accessories
012	Electrical adapter
013	Electrical accessories
	None
2.5S	Straight socket, cable 2.5 m
014	Protective devices
	None
015	Certificate
	None

## Ordering data

Ordering information – Pressure measuring range -1 ... 0 bar						
Switching output	Analogue output	Protocol	Pneumatic connection	Electrical accessories	Part no.	Type
2 x PNP or 2 x NPN, switchable	0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	Male thread G1/8, Female thread M5	None	8035546	SPAN-V1R-G18M-PN-PN-L1
			Male thread R1/8, Female thread M5		8035549	SPAN-V1R-R18M-PN-PN-L1
			Male thread G1/8, Female thread M5		8035535	SPAN-V1R-G18M-PNLK-PNVBA-L1
			Male thread R1/8, Female thread M5		8035538	SPAN-V1R-R18M-PNLK-PNVBA-L1

Pressure and vacuum sensors >  
Pressure sensor SPAN

## Ordering data

Ordering information – Pressure measuring range -1 ... 0 bar						
Switching output	Analogue output	Protocol	Pneumatic connection	Electrical accessories	Part no.	Type
PNP/NPN, switchable			Female thread M5	None	8114758	SPAN-B-V1R-M5FAL-PN-L1
				Straight socket, cable 2.5 m	8114773	SPAN-B-V1R-M5FAL-PN-L1+2.5S
			Female thread G1/8	None	8114764	SPAN-B-V1R-G18FPM-PN-L1
				Straight socket, cable 2.5 m	8114779	SPAN-B-V1R-G18FPM-PN-L1+2.5S
			For tubing O.D. 4 mm	None	8114761	SPAN-B-V1R-Q4-PN-L1
				Straight socket, cable 2.5 m	8114776	SPAN-B-V1R-Q4-PN-L1+2.5S

Ordering information – Pressure measuring range -1 ... +1 bar						
Switching output	Pneumatic connection	Electrical accessories	Analogue output	Protocol	Part no.	Type
2 x PNP or 2 x NPN, switchable	Male thread G1/8, Female thread M5	None			8035545	SPAN-B2R-G18M-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035534	SPAN-B2R-G18M-PNLK-PNVBA-L1
	Male thread R1/8, Female thread M5				8035548	SPAN-B2R-R18M-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035537	SPAN-B2R-R18M-PNLK-PNVBA-L1
	Female thread M5				8035551	SPAN-B2R-M5F-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035540	SPAN-B2R-M5F-PNLK-PNVBA-L1

Ordering information – Pressure measuring range -1 ... +1 bar						
Switching output	Pneumatic connection	Electrical accessories	Analogue output	Protocol	Part no.	Type
PNP/NPN, switchable	Female thread M5	None			8114757	SPAN-B-B2R-M5FAL-PN-L1
		Straight socket, cable 2.5 m			8114772	SPAN-B-B2R-M5FAL-PN-L1+2.5S
	Female thread G1/8	None			8114763	SPAN-B-B2R-G18FPM-PN-L1
		Straight socket, cable 2.5 m			8114778	SPAN-B-B2R-G18FPM-PN-L1+2.5S
	For tubing O.D. 4 mm	None			8114760	SPAN-B-B2R-Q4-PN-L1
		Straight socket, cable 2.5 m			8114775	SPAN-B-B2R-Q4-PN-L1+2.5S

Ordering information – Pressure measuring range -1 ... +10 bar						
Switching output	Pneumatic connection	Electrical accessories	Analogue output	Protocol	Part no.	Type
2 x PNP or 2 x NPN, switchable	Male thread G1/8, Female thread M5	None	0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	609149	SPAN-B11R-G18M-PNLK-PNVBA-L1
	Male thread R1/8, Female thread M5				609554	SPAN-B11R-R18M-PNLK-PNVBA-L1
2 x PNP or 2 x NPN, switchable	Female thread M5	None	0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	610282	SPAN-B11R-M5F-PNLK-PNVBA-L1

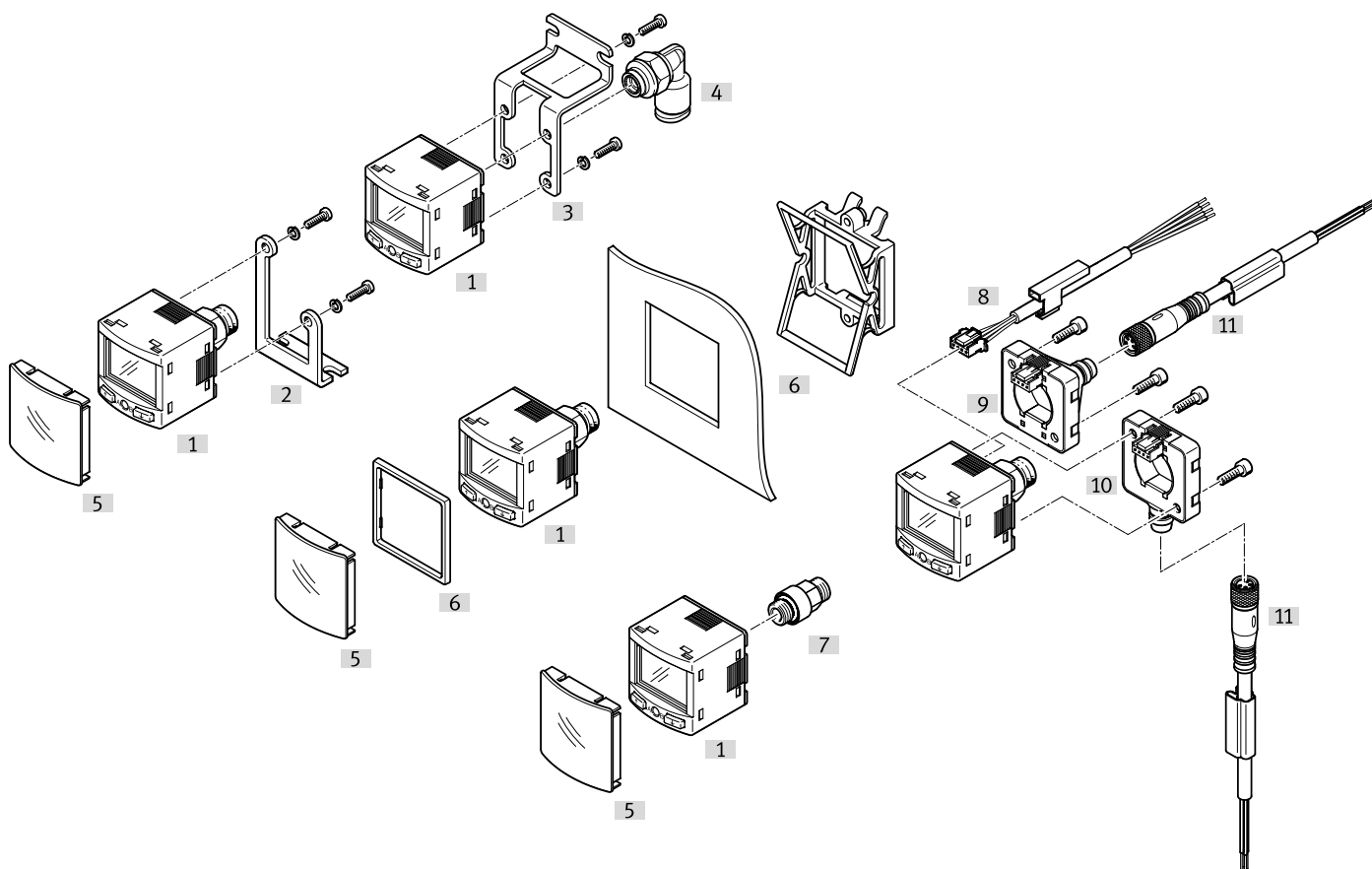
## Ordering data

Ordering information – Pressure measuring range -1 ... +10 bar						
Switching output	Pneumatic connection	Electrical accessories	Analogue output	Protocol	Part no.	Type
2 x PNP or 2 x NPN, switchable	Male thread G1/8, Female thread M5	None			8134892	SPAN-B11R-G18M-PN-PN-L1
	Male thread R1/8, Female thread M5				8134891	SPAN-B11R-R18M-PN-PN-L1
	Female thread M5				8134893	SPAN-B11R-M5F-PN-PN-L1
PNP/NPN, switchable		8114756			SPAN-B-B11R-M5FAL-PN-L1	
		8114771			SPAN-B-B11R-M5FAL-PN-L1+2.5S	
	Female thread G1/8	8114762			SPAN-B-B11R-G18FPM-PN-L1	
		8114777			SPAN-B-B11R-G18FPM-PN-L1+2.5S	
	For tubing O.D. 4 mm	8114759			SPAN-B-B11R-Q4-PN-L1	
		8114774			SPAN-B-B11R-Q4-PN-L1+2.5S	

Ordering information – Pressure measuring range 0 ... +10 bar						
Switching output	Pneumatic connection	Electrical accessories	Analogue output	Protocol	Part no.	Type
2 x PNP or 2 x NPN, switchable	Male thread G1/8, Female thread M5	None			8035544	SPAN-P10R-G18M-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035533	SPAN-P10R-G18M-PNLK-PNVBA-L1
	Male thread R1/8, Female thread M5				8035547	SPAN-P10R-R18M-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035536	SPAN-P10R-R18M-PNLK-PNVBA-L1
	Female thread M5				8035550	SPAN-P10R-M5F-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8035539	SPAN-P10R-M5F-PNLK-PNVBA-L1
	Female thread G1/8				8134896	SPAN-P10R-G18F-PN-PN-L1
			0 - 10 V, 4 - 20 mA, 1 - 5 V	IO-Link®	8134897	SPAN-P10R-G18F-PNLK-PNVBA-L1

Pressure and vacuum sensors >  
Pressure sensor SPAN

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1] Pressure sensors SPAN-/SPAN-B-	-		223
[2] Mounting bracket SAMH-PU-A	For mounting devices (upright or suspended) on level surfaces		<a href="#">span</a>
[3] Wall mounting SAMH-PN-W	For mounting devices on vertical surfaces		<a href="#">span</a>
[4] Push-in fitting QSML-M5	-		<a href="#">span</a>
[5] Protective hood SACC-PN-G	For protecting the display and operating components		<a href="#">span</a>
[6] Front panel mounting kit SAMH-PN-F	Mounting kit for front panel		<a href="#">span</a>
[7] Adapter SASA-PN-A-MG18	(for -G18FPM- with electrical adapter)		<a href="#">span</a>
[8] Connecting cable NEBS-L1G4	-		<a href="#">span</a>
[9] Electrical adapter SASC-P4-A-M8-S	For outlet direction to the rear. Only with connecting cable NEBU-M8-...		<a href="#">span</a>
[10] Electrical adapter SASC-P4-A-M8-A	For outlet orientation underneath. Only with connecting cable NEBU-M8-...		<a href="#">span</a>
[11] Connecting cable NEBU-M8	-		<a href="#">span</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



- Electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, numeric pressure indicator in percent, operating key and a switching output, PNP/NPN switchable
- Display of minimum and maximum measured value
- All parameters entered can be transferred to other SPAEs (replicating function)
- Communication interface IO-Link®

## Type code

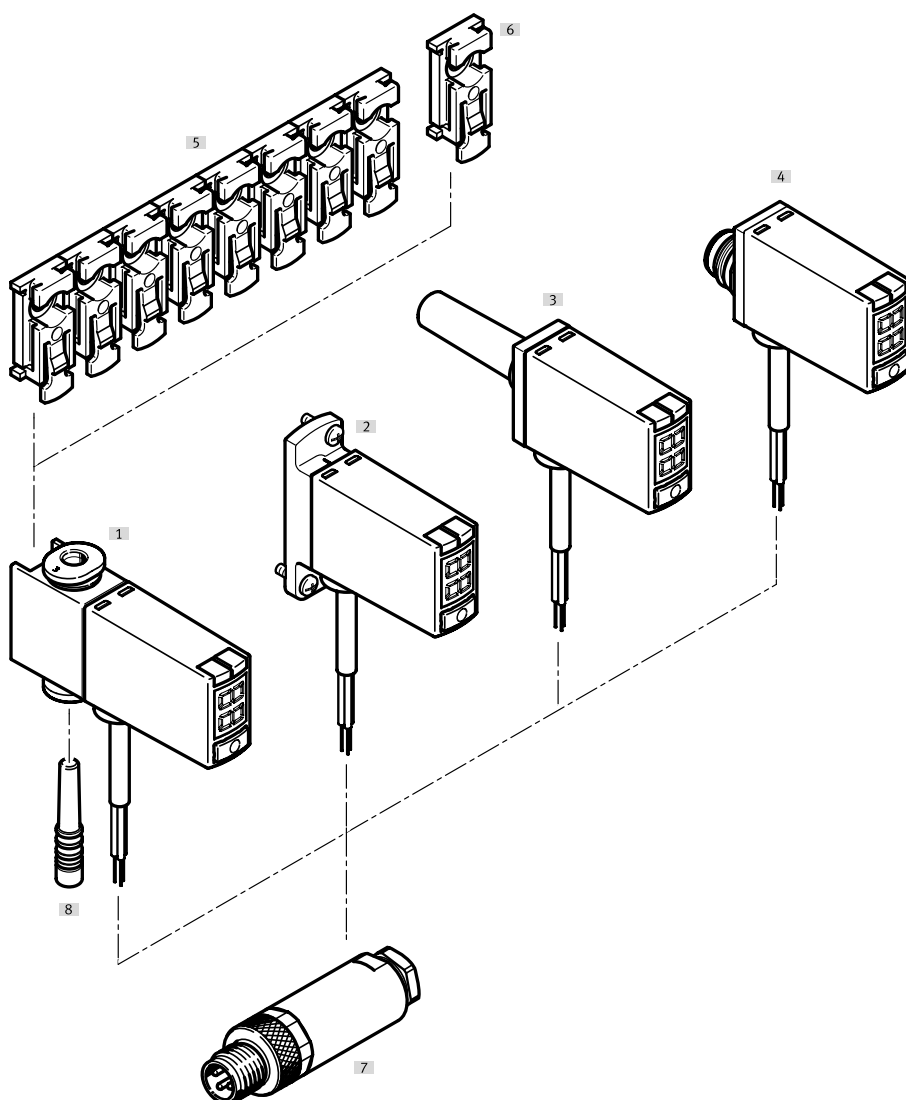
001	Series		004	Pneumatic connection	
SPAE	Pressure sensor		PC10	Cartridge 10 mm	
			S4	Push-in sleeve 4 mm	
			S6	Push-in sleeve 6 mm	
002	Pressure measuring range		005	Electrical output 1	
B2	-1 ... 1 bar		PNLK	PNP/NPN/IO-Link	
P10	0 ... 10 bar				
V1	0 ... -1 bar		006	Electrical connection	
			2.5K	Cable 2.5 m, open end	
003	Pressure inlet				
R	Relative pressure				

## Ordering data

Ordering data - Push-in sleeve				
Start value for pressure measuring range	End value for pressure measuring range	Pneumatic connection	Part no.	Type
0 bar	-1 bar	Push-in sleeve QS-4	8001440	SPAE-V1R-S4-PNLK-2.5K
		Push-in sleeve QS-6	8001441	SPAE-V1R-S6-PNLK-2.5K
	10 bar	Push-in sleeve QS-4	8001445	SPAE-P10R-S4-PNLK-2.5K
		Push-in sleeve QS-6	8001446	SPAE-P10R-S6-PNLK-2.5K

Ordering information – Cartridge				
Start value for pressure measuring range	End value for pressure measuring range	Pneumatic connection	Part no.	Type
-1 bar	1 bar	Cartridge 10 mm	8025979	SPAE-B2R-PC10-PNLK-2.5K
0 bar	-1 bar		8025978	SPAE-V1R-PC10-PNLK-2.5K

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1]	Pressure sensor SPAE-...-Q...	With push-in connector 3 mm, or 4 mm	<a href="#">spae</a>
[2]	Pressure sensor SPAE-...-F...	With flange plate, sub-base	<a href="#">spae</a>
[3]	Pressure sensor SPAE-...-S...	With push-in sleeve 4 mm or 6 mm	227
[4]	Pressure sensor SPAE-...-PC10...	With cartridge 10 mm	227
[5]	Mounting clip SAMH-PE-MC-8	can be shortened to the required number of slots	<a href="#">spae</a>
[6]	Mounting clip SAMH-PE-MC-1	–	<a href="#">spae</a>
[7]	Plug	–	<a href="#">spae</a>
[8]	Blanking plug	(included in the scope of delivery of SPAE-...-Q...)	<a href="#">qs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



Pressure and vacuum sensors >  
Pressure transmitter SPTE

- Piezoresistive pressure sensor
- Measured variable: relative pressure
- Cable length 2.5 m
- Compact: 8-bracket wall mount for manifold mounting

## Type code

001	Series
SPTE	Pressure transmitter
002	Pressure measuring range
B2	-1 ... 1 bar
P10	0 ... 10 bar
V1	0 ... -1 bar
003	Pressure inlet
R	Relative pressure

004	Pneumatic connection
PC10	Cartridge 10 mm
S4	Push-in sleeve 4 mm
S6	Push-in sleeve 6 mm
005	Electrical output 1
B	1 ... 5 V
V	0 ... 10 V
006	Electrical connection
2.5K	Cable 2.5 m, open end

## Ordering data

Ordering data – Push-in sleeve				
Start value for pressure measuring range <sup>1)</sup>	End value for pressure measuring range	Pneumatic connection	Part no.	Type
0 bar	-1 bar	Push-in sleeve QS-4	571474	SPTE-V1R-S4-V-2.5K
			571469	SPTE-V1R-S4-B-2.5K
		Push-in sleeve QS-6	571475	SPTE-V1R-S6-V-2.5K
			571470	SPTE-V1R-S6-B-2.5K
	10 bar	Push-in sleeve QS-4	571479	SPTE-P10R-S4-B-2.5K
			571484	SPTE-P10R-S4-V-2.5K
		Push-in sleeve QS-6	571480	SPTE-P10R-S6-B-2.5K
			571485	SPTE-P10R-S6-V-2.5K

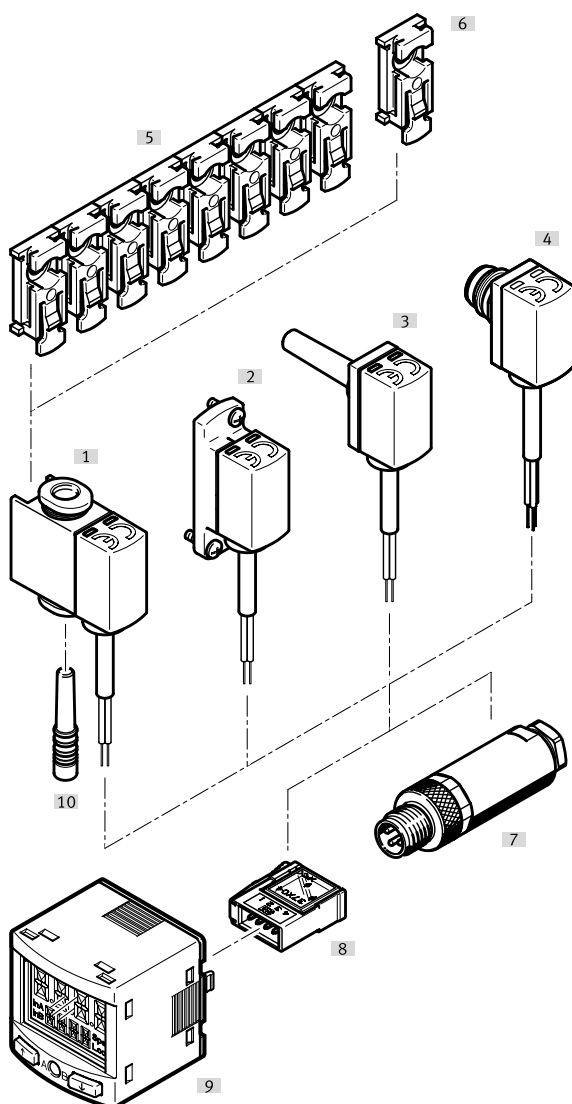
1) Additional pressure ranges on request (batch size 80)

Ordering information – Cartridge				
Start value for pressure measuring range <sup>1)</sup>	End value for pressure measuring range	Pneumatic connection	Part no.	Type
-1 bar	1 bar	Cartridge 10 mm	8025977	SPTE-B2R-PC10-B-2.5K
			8025976	SPTE-B2R-PC10-V-2.5K
0 bar	-1 bar		8025975	SPTE-V1R-PC10-B-2.5K
			8025974	SPTE-V1R-PC10-V-2.5K

1) Additional pressure ranges on request (batch size 80)

Pressure and vacuum sensors >  
Pressure transmitter SPTE

## Peripherals overview



Accessories			→ Link*
Type/order code	Description		
[1]	Pressure transmitter SPTE-...-Q...	With push-in connector 3 mm or 4 mm	<a href="#">spte</a>
[2]	Pressure transmitter SPTE-...-F...	With flange/connecting plate	<a href="#">spte</a>
[3]	Pressure transmitter SPTE-...-S...	With push-in sleeve 4 mm or 6 mm	229
[4]	Pressure transmitter SPTE-...-PC10...	With cartridge 10 mm	229
[5]	Mounting clip SAMH-PE-MC-8	can be shortened to the required number of slots	<a href="#">spte</a>
[6]	Mounting clip SAMH-PE-MC-1	–	<a href="#">spte</a>
[7]	Plug NECU-S-M8G3-HX-Q3	–	<a href="#">spte</a>
[8]	Plug NECU-S-ECG4-HX-Q3	–	<a href="#">spte</a>
[9]	Signal converter SCDN-2V-EC4-PNLK-L1	–	<a href="#">scdn</a>
[10]	Blanking plug QSMC-3H	(included in the scope of delivery with SPTE-...-Q...)	<a href="#">qs</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.



- Compact design
- Universal flow detection
- Simple installation
- Reliable pick & place application for extremely small workpieces

## Type code

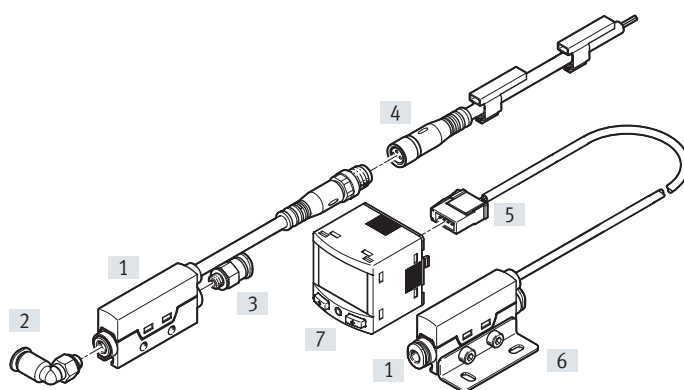
001	Series
SFTE	Flow transmitter
002	Flow measuring range
1	Max. 1 l/min
5	Max. 5 l/min
10	Max. 10 l/min
003	Flow rate input
U	Unidirectional

004	Pneumatic connection
M5	M5
005	Thread type
F	Female thread
006	Electrical output 1
B	1 ... 5 V
007	Electrical connection
2.5K	Cable 2.5 m, open end

## Ordering data

Design	Flow measuring range [l/min]	Connection type	Voltage output [V]	Part no.	Type
	0 ... 1	Female thread M5	1 ... 5	8058510	SFTE-1U-M5F-B-2.5K
	0 ... 5	Female thread M5		8058512	SFTE-5U-M5F-B-2.5K
	0 ... 10	Female thread M5		8058514	SFTE-10U-M5F-B-2.5K

## Peripherals overview



Mounting components and accessories		Description	→ Link*
[1]	SFTE Flow transmitter	Flow transmitter	231
[2]	QSML-M5-3 Push-in fitting	90° connection	<a href="#">sfte</a>
[3]	QSM-M5-6 Push-in fitting	Straight connection	<a href="#">sfte</a>
[4]	NEBU-M8G3- ... Connecting cable	M8x1, straight socket	<a href="#">sfte</a>
[5]	NECU-S-ECG4-HX-Q3 Plug	Square design, 4-pin, straight, insulation displacement connector	<a href="#">sfte</a>
[6]	SAMH-FE-A Mounting bracket	For wall or surface mounting (screws are not included in scope of delivery)	231
[7]	SCDN- ... Signal converter	Converts analogue signals into digital switching signals or IO-Link	<a href="#">sfte</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Mounting bracket SAMH-FE-A			
Description	CRC <sup>1)</sup>	Part no.	Type
For wall or surface mounting	2	8058519	SAMH-FE-A

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Flow sensors >

## Flow sensor SFAH



- Process air, compressed air, forming gas consumption and pneumatic object monitoring, handling ultra-small parts, leak test
- Compact design 20x58 mm
- Clear 2-line display
- Mounting: H-rail mounting, wall or surface mounting, front panel mounting
- Serial communication integrated using IO-Link® 1.1

## Type code

001	Series
<b>SFAH</b>	Flow sensor

002	Flow measuring range
<b>0.1</b>	Max. 0.1 l/min
<b>0.5</b>	Max. 0.5 l/min
<b>1</b>	Max. 1 l/min
<b>5</b>	Max. 5 l/min
<b>10</b>	Max. 10 l/min
<b>50</b>	Max. 50 l/min
<b>100</b>	Max. 100 l/min
<b>200</b>	Max. 200 l/min

003	Flow rate input
<b>B</b>	Bidirectional
<b>U</b>	Unidirectional

004	Pneumatic connection
<b>G18</b>	G1/8
<b>G14</b>	G1/4
<b>Q4</b>	Push-in connector 4 mm
<b>Q6</b>	Push-in connector 6 mm
<b>Q8</b>	Push-in connector 8 mm

005	Thread type
	None
<b>F</b>	Female

006	Outlet orientation
<b>S</b>	Straight
<b>AR</b>	Angled, adjustable

007	Electrical output 1
<b>PNLK</b>	PNP/NPN/IO-Link

008	Electrical output 2
<b>PNVBA</b>	PNP or NPN or 0 ... 10 V or 1 ... 5 V or 4 ... 20 mA

009	Electrical connection
<b>L1</b>	Plug type L1
<b>M8</b>	Plug M8, A-coded

010	Mounting accessories
	None
<b>FP</b>	Front panel mounting kit
<b>H</b>	H-rail mounting
<b>W</b>	Wall mounting

011	Electrical accessories
	None
<b>2.5A</b>	Angled socket, cable 2.5 m
<b>2.5S</b>	Straight socket, cable 2.5 m
<b>5A</b>	Angled socket, cable 5 m
<b>5S</b>	Straight socket, cable 5 m

012	Protective devices
	None
<b>G</b>	Protective hood

013	Certificate
	None
<b>T</b>	Test report

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

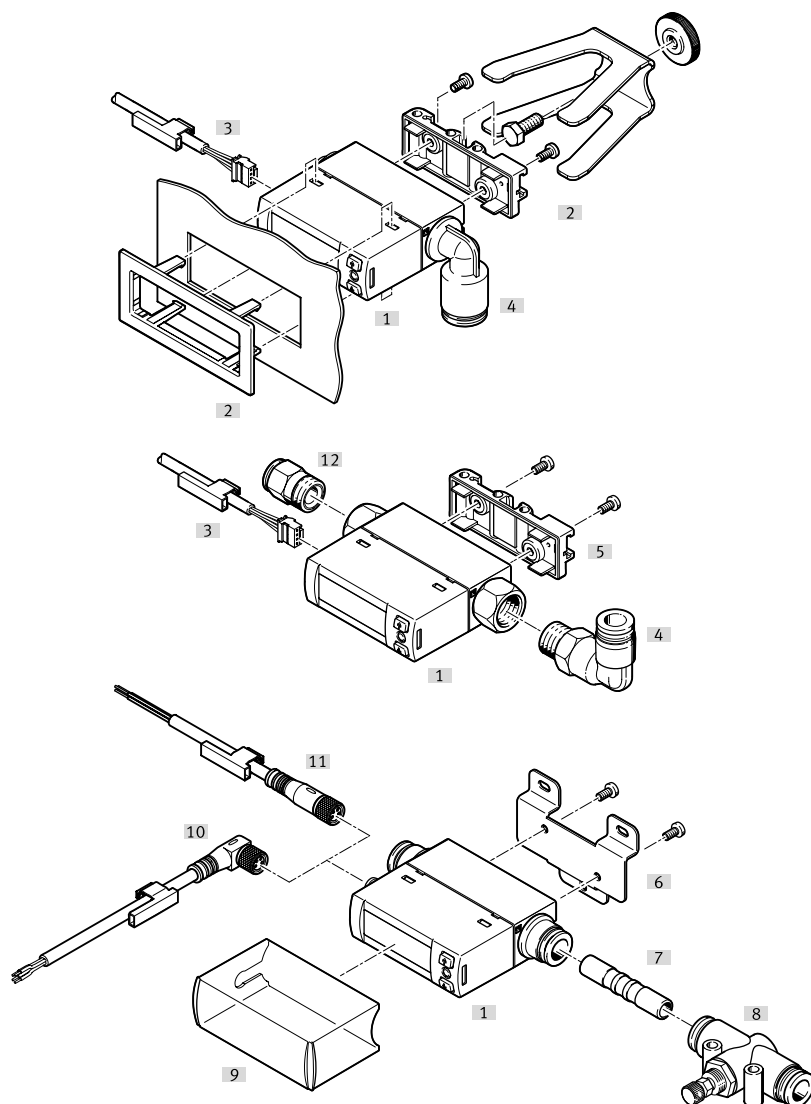
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering information – Modular product system			
End value for flow rate measuring range	Pneumatic connection	Part no.	Type
0.1 ... 200 l/min	Female thread G1/8, Female thread G1/4, For tubing O.D. 4 mm, For tubing O.D. 6 mm, For tubing O.D. 8 mm	<b>8035300</b>	<b>SFAH-</b>

## Ordering data

End value for flow rate measuring range	Pneumatic connection	Part no.	Type
0.1 l/min	Female thread G1/8	8159375	SFAH-0.1U-G18FS-PNLK-PNVBA-L1
100 l/min	Female thread G1/4	8158422	SFAH-100U-G14FS-PNLK-PNVBA-L1
200 l/min		609555	SFAH-200U-G14FS-PNLK-PNVBA-L1

## Peripherals overview



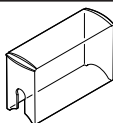
Accessories		→ Link*
Type/order code	Description	
[1] Flow sensor SFAH	—	232
[2] Panel mounting kit SAMH-FH-F	—	<a href="#">sfah</a>
[3] Connecting cable NEBS-L1G4-...	—	<a href="#">sfah</a>
[4] Push-in fitting QSL	—	<a href="#">sfah</a>
[5] H-rail mounting SAMH-FH-H	—	<a href="#">sfah</a>
[6] Wall mounting SAMH-FH-W	—	<a href="#">sfah</a>
[7] Push-in sleeve QSH	—	<a href="#">qsh</a>
[8] One-way flow control valve GRO-QS-...	—	<a href="#">gro</a>
[9] Protective hood SACC-FH-G-S3	Only in combination with electrical connection M8	234
[10] Connecting cable NEBA-M8W4-...	Angled socket	<a href="#">sfah</a>
[11] Connecting cable NEBA-M8G4-...	Straight socket	<a href="#">sfah</a>
[12] Push-in fitting QS	—	<a href="#">sfah</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

Flow sensors >

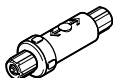
## Flow sensor SFAH

### Accessories

Safety guard SACC-FH-G-S3			
	Material	Part no.	Type
	PA, RoHS-compliant	<b>8069031</b>	<b>SACC-FH-G-S3</b>

Only in combination with electrical connection M8.

For degree of protection IP54, protection against splashing water from every direction to ISO 20653/DIN EN 60529 with horizontal mounting as illustrated → [www.festo.com/catalogue/sfah](http://www.festo.com/catalogue/sfah)

Vacuum filter				
	Nominal size	Pneumatic connection	Part no.	Type
	2 mm	PK-3 with union nut	<b>535883</b>	<b>VAF-PK-3</b>
	3 mm	PK-4 with union nut	<b>15889</b>	<b>VAF-PK-4</b>
	4.6 mm	PK-6 with union nut	<b>160239</b>	<b>VAF-PK-6</b>





# 08

## Compressed air preparation





# Highlights

# Contents



Filter regulators, MS-B series

## MS-LFR-B

- + Size 2, 4, 6
- + Flow rate 140 ... 5300 l/min
- + Pressure gauge with bar, psi, MPa

→ 246



Pressure regulators, MS-B series

## MS-LR-B

- + Size 2, 4, 6
- + Flow rate 170 ... 6000 l/min
- + Pressure gauge with bar, psi, MPa


→ 250

Product overview	238
Service unit combinations MS4/MS6-EM1FR-B, MS-B series	244
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Pressure regulator MS2/MS4/MS6-LR-B, MS-B series	250
Precision pressure regulator LRP	252
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On/off valve MS4/MS6-EE, MS-B series	255
On/off valve MS4/MS6-EM1, MS series	257
Branching modules MS4/MS6-FRM, MS series	260

Product overview

Software-Tools

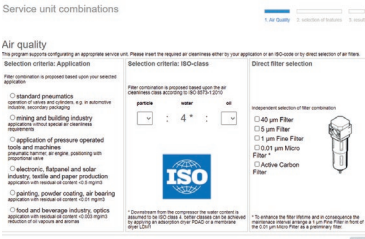
Air consumption



Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated for you. It includes a feature for exporting the input table together with the result directly to Excel.

This tool can be found at  
[www.festo.com/x/air-consumption](http://www.festo.com/x/air-consumption)

Configurator




Design a product with numerous features reliably and quickly with the help of the configurator. Select all the required product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection.

A dynamic graphic generated on the basis of the configuration provides a visual aid for selecting the correct product features.

This tool can be found at  
[www.festo.com/x/service-unit-sizing](http://www.festo.com/x/service-unit-sizing)

Service units for compressed air >

Series MS-B

<div>  </div> <div> Service units  MS4-EM1FR, MS6-EM1FR </div>	
Size	4, 6
Pressure indication	Prepared for G1/8, With pressure gauge
Operating pressure [MPa]	0.1 ... 1 MPa
Operating pressure	1 ... 10 bar
Standard nominal flow rate	1500 ... 5300 l/min
Type of mounting	Either:, In-line installation, Via mounting bracket, With accessories
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Description	<ul style="list-style-type: none"> <li>Combination of on/off valve and filter regulator</li> <li>With manual or fully automatic condensate drain</li> <li>For filtered and unlubricated compressed air supply</li> <li>Supply pressure can be switched on or off</li> <li>Output pressure is continuously adjustable within the pressure regulation range</li> <li>Grid dimensions 40, 62 mm (size 4, 6)</li> </ul>
online: ➔	244

## Filter regulators &gt;

## Series MS-B



Filter regulators

MS2-LFR-B, MS4-LFR-B, MS6-LFR-B

<b>Pneumatic connection 1</b>	G1/2, G1/4
<b>Standard nominal flow rate</b>	1500 ... 5300 l/min
<b>Pressure regulation range [MPa]</b>	0.03 ... 0.7 MPa
<b>Pressure regulation range</b>	0.3 ... 7 bar
<b>Grade of filtration</b>	5 µm, 40 µm
<b>Operating pressure [MPa]</b>	0.1 ... 1 MPa
<b>Operating pressure</b>	1 ... 10 bar
<b>Cleanroom class</b>	Class 7 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Competitively priced basic component focused on the most important technical functions</li> <li>• Lightweight and sturdy thanks to modern polymer materials</li> <li>• Compatible with the MS series for the ideal combination of low-cost basic functionality and high-end functional requirements</li> <li>• Stable control response</li> <li>• With or without pressure gauge</li> <li>• Rotary knob with latch</li> <li>• With integrated secondary exhausting and primary exhausting with return flow function</li> <li>• MS2: Directly operated diaphragm regulator</li> <li>• MS4, MS6: directly actuated piston regulator</li> <li>• Grid dimension 25, 40, 62 mm (sizes 2, 4, 6)</li> </ul>
<b>online: →</b>	<b>246</b>

## Compressed air filters &gt;

## Series MS-B



Filter

MS2-LF-B

<b>Pneumatic connection 1</b>	M5, QS-6
<b>Standard nominal flow rate</b>	225 ... 250 l/min
<b>Operating pressure</b>	1 ... 10 bar
<b>Grade of filtration</b>	5 µm
<b>Cleanroom class</b>	Class 7 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Very compact and extremely lightweight series for use close to the process directly in the machine</li> <li>• Lightweight and sturdy thanks to modern polymer materials</li> <li>• Compatible with the MS series for the ideal combination of low-cost basic functionality and high-end functional requirements</li> <li>• With manual condensate drain, rotating</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>248</b>

## Product overview

Pressure regulators >

### Series MS-B



**Pressure regulators**  
**MS2-LR-B, MS4-LR-B, MS6-LR-B**

<b>Pneumatic connection 1</b>	G1/2, G1/4, M5, QS-6
<b>Standard nominal flow rate</b>	170 ... 6000 l/min
<b>Pressure regulation range</b>	0.3 ... 7 bar
<b>Operating pressure [MPa]</b>	0.1 ... 1 MPa
<b>Operating pressure</b>	1 ... 10 bar
<b>Cleanroom class</b>	Class 7 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Competitively priced basic component focused on the most important technical functions</li> <li>• Lightweight and sturdy thanks to modern polymer materials</li> <li>• Compatible with the MS series for the ideal combination of low-cost basic functionality and high-end functional requirements</li> <li>• Stable control response</li> <li>• With or without pressure gauge</li> <li>• Rotary knob with latch</li> <li>• With integrated secondary exhausting and primary exhausting with return flow function</li> <li>• MS2: Directly operated diaphragm regulator</li> <li>• MS4, MS6: directly actuated piston regulator</li> <li>• Grid dimension 25, 40, 62 mm (sizes 2, 4, 6)</li> <li>• Sustainable operation thanks to reduced pressure level</li> </ul>
<b>online: →</b>	<b>250</b>

Pressure regulators >

### Individual devices





**Precision pressure regulators**  
**LRP**

<b>Pneumatic connection 1</b>	G1/4
<b>Standard nominal flow rate</b>	800 ... 2300 l/min
<b>Pressure regulation range</b>	0.05 ... 10 bar
<b>Operating pressure [MPa]</b>	0.1 ... 1.2 MPa
<b>Operating pressure</b>	1 ... 12 bar
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Lockable design</li> <li>• Good control characteristics with minimal pressure hysteresis and primary pressure compensation</li> <li>• High secondary exhausting</li> <li>• Variants to EU Explosion Protection Directive (ATEX)</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>
<b>online: →</b>	<b>252</b>

## On/off and soft-start valves &gt;


## Series MS-B

		
	<b>Soft-start valves</b> <b>MS4-EDE-B, MS6-EDE-B</b>	<b>On/off valves</b> <b>MS4-EE-B, MS6-EE-B</b>
<b>Design</b>	Poppet valve, electrically actuated	Poppet valve, electrically actuated
<b>Pneumatic connection 1</b>	G1/2, G1/4	G1/2, G1/4
<b>Operating pressure [MPa]</b>	0.3 ... 0.7 MPa	0.3 ... 0.7 MPa
<b>Operating pressure</b>	3 ... 7 bar	3 ... 7 bar
<b>Standard nominal flow rate</b>	2000 ... 5000 l/min	2000 ... 5000 l/min
<b>Exhaust air function</b>	Without flow control option	
<b>Electrical connection</b>	Type C, To EN 175301-803	Type C, To EN 175301-803
<b>Cleanroom class</b>	Class 7 according to ISO 14644-1	Class 7 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Very compact and extremely lightweight series for use close to the process directly in the machine</li> <li>• Electrically operated 3/2-way valve for slowly pressurising and exhausting pneumatic systems</li> <li>• The switching pressure can be precisely controlled with a solenoid valve</li> <li>• Adjustable switching time delay</li> <li>• Built-in connections into which the tubing can be directly inserted</li> <li>• Detenting and non-detenting manual override</li> <li>• Supply voltage 24 V DC</li> <li>• With solenoid coil, without plug socket</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Grid dimension 40, 62 mm (size 4, 6)</li> </ul>	<ul style="list-style-type: none"> <li>• Very compact and extremely lightweight series for use close to the process directly in the machine</li> <li>• Electrically operated 3/2-way valve for pressurising and exhausting pneumatic systems</li> <li>• Ducted exhaust air possible via threaded connection with silencer</li> <li>• Detenting and non-detenting manual override</li> <li>• Supply voltage 24 V DC</li> <li>• With solenoid coil, without plug socket</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Grid dimension 40, 62 mm (size 4, 6)</li> </ul>
<b>online: →</b>	<b>253</b>	<b>255</b>

## Product overview


On/off and soft-start valves >

### MS series

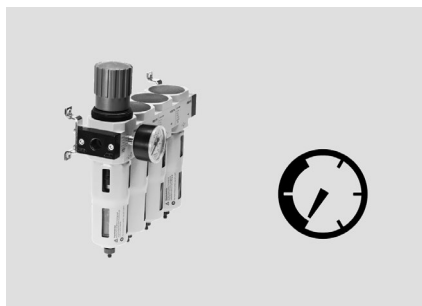
 <p><b>On/off valves</b> <b>MS4-EM1, MS6-EM1</b></p>	
<b>Pneumatic connection 1</b>	G1/2, G1/4
<b>Standard nominal flow rate</b>	2200 ... 8700 l/min
<b>Operating pressure</b>	0 ... 18 bar
<b>Actuation type</b>	Manual
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Manual 3/2-way valve for pressurising and exhausting pneumatic systems</li> <li>• A silencer can be attached or the exhaust air ducted at port 3</li> <li>• Switching position is immediately recognisable</li> <li>• Optionally with pressure gauge and pressure sensor</li> <li>• Variants to EU Explosion Protection Directive (ATEX)</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Grid dimension 40, 62, 90, 124 mm (size 4, 6, 9, 12)</li> </ul>
<b>online: →</b>	<b>257</b>

Compressed air distributors >

### MS series

 <p><b>Branching modules</b> <b>MS4-FRM, MS6-FRM, MS9-FRM</b></p>	
<b>Pneumatic connection 1</b>	G1/4, G1/2, G1/2, G1/4
<b>Standard nominal flow rate in main flow direction 1-&gt;2</b>	4600 ... 14700 l/min
<b>Operating pressure</b>	0 ... 20 bar
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B1/B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Optionally with integrated non-return function and pressure switch</li> <li>• Outlet at top and bottom</li> <li>• Can be used as an intermediate distributor for varying air qualities</li> <li>• Optionally with pressure sensor</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Grid dimension 40, 62, 90, 124 mm (size 4, 6, 9, 12)</li> </ul>
<b>online: →</b>	<b>260</b>

## Customised components – for your specific requirements



### Components for compressed air preparation with customised designs

Can't find the compressed air preparation components you need in our catalogue?

We can offer you customised components that are tailored to your specific requirements.

Common product modifications:

- Modified pressure range
- Rotary knob: in a special colour, with protection against rotation
- Fitting: integrated throttling port, special thread
- Tubing with special printing
- Pressure gauge with red-green range

Many additional variants are possible.

Ask your Festo sales engineer, who will be happy to help you:

→ [www.festo.com/contact](http://www.festo.com/contact)

## Service unit combinations MS4/MS6-EM1FR-B, MS-B series



- Combination of on/off valve and filter regulator
- With manual or fully automatic condensate drain
- For filtered and unlubricated compressed air supply
- Supply pressure can be switched on or off
- Output pressure is continuously adjustable within the pressure regulation range
- Grid dimensions 40, 62 mm (size 4, 6)

### Type code

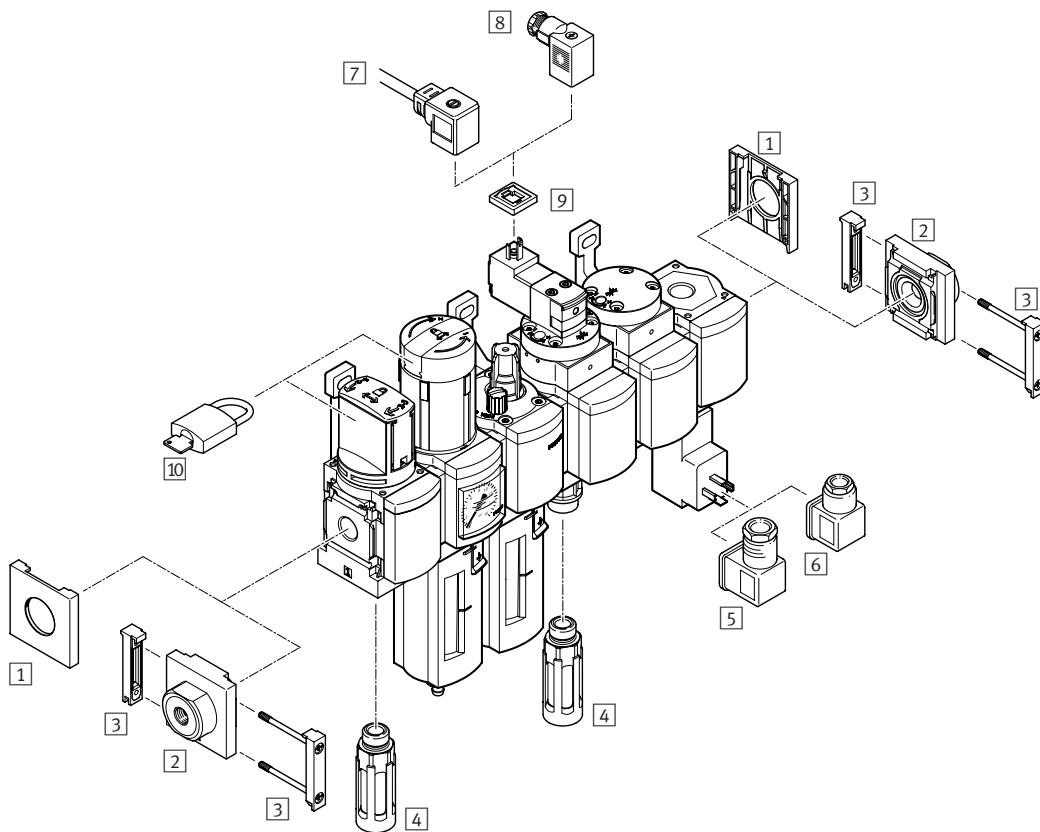
001	Series	007	Bowl
MS	MS series	P	Plastic bowl
002	Size	008	Condensate drain
4	Grid dimension 40 mm	M	Manually
6	Grid dimension 62 mm	009	Pressure gauge
003	Function	A8	Adapter for EN pressure gauge 1/8, without pressure gauge
EM1FR	On/off valve, manually operated with filter control valve	AG	With pressure gauge
004	Pneumatic connection	010	Alternative pressure gauge scale
1/4	Female thread G1/4		MS pressure gauge
1/2	Female thread G1/2	BAR	bar
005	Pressure regulation range	MPA	MPa
D6	0.5 – 7 bar	011	Type of mounting
006	Filter design	WP	Mounting bracket basic design
C	5 µm	012	Version
E	40 µm	B	Second generation

### Ordering data

Ordering data – MSB4/6-EM1FR-...-B – Products for battery production				
Size	Standard nominal flow rate (standardised to DIN 1343)	Product weight	Part no.	Type
4	1,500 l/min	470 g	8176525	MS4-EM1FR-1/4-D6-C-P-M-A8-WP-F1A-B
			8176522	MS4-EM1FR-1/4-D6-C-P-M-AG-MPA-WP-F1A-B
			8176521	MS4-EM1FR-1/4-D6-C-P-M-AG-BAR-WP-F1A-B
	1,700 l/min		8176526	MS4-EM1FR-1/4-D6-E-P-M-A8-WP-F1A-B
			8176524	MS4-EM1FR-1/4-D6-E-P-M-AG-MPA-WP-F1A-B
			8176523	MS4-EM1FR-1/4-D6-E-P-M-AG-BAR-WP-F1A-B
6	4,750 l/min	1,250 g	8176531	MS6-EM1FR-1/2-D6-C-P-M-A8-WP-F1A-B
			8176527	MS6-EM1FR-1/2-D6-C-P-M-AG-BAR-WP-F1A-B
			8176528	MS6-EM1FR-1/2-D6-C-P-M-AG-MPA-WP-F1A-B
	5,300 l/min		8176530	MS6-EM1FR-1/2-D6-E-P-M-AG-MPA-WP-F1A-B
			8176529	MS6-EM1FR-1/2-D6-E-P-M-AG-BAR-WP-F1A-B
			8176532	MS6-EM1FR-1/2-D6-E-P-M-A8-WP-F1A-B



## Peripherals overview



- 1 Cover cap MS4/6-END  
→ [ms4-end](#)
- 2 Connecting plate kit MS4/6-AG...  
→ [ms4-ag](#)
- 3 Module connector MS-MV  
→ 245
- 4 Silencer U-B → [ms4-em1fr](#)
- 5 Angled socket PEV-1/4-WD-LED  
→ [ms4-em1fr](#)
- 6 Plug socket MSSD-C-4P  
→ [ms4-em1fr](#)
- 7 Plug socket with cable KMEB-3  
→ [ms4-em1fr](#)
- 8 Plug socket MSSD-EB  
→ [ms4-em1fr](#)
- 9 Illuminating seal MEB-LD  
→ [ms4-em1fr](#)
- 10 Padlock LRVS-D → [msb](#)

Mounting bracket  
MS4/MS6-WP → 245,  
MS4/MS6-WPB,  
MS4/MS6-WPM → 245  
MS4/6-WPE → [ms4-wp](#)

blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

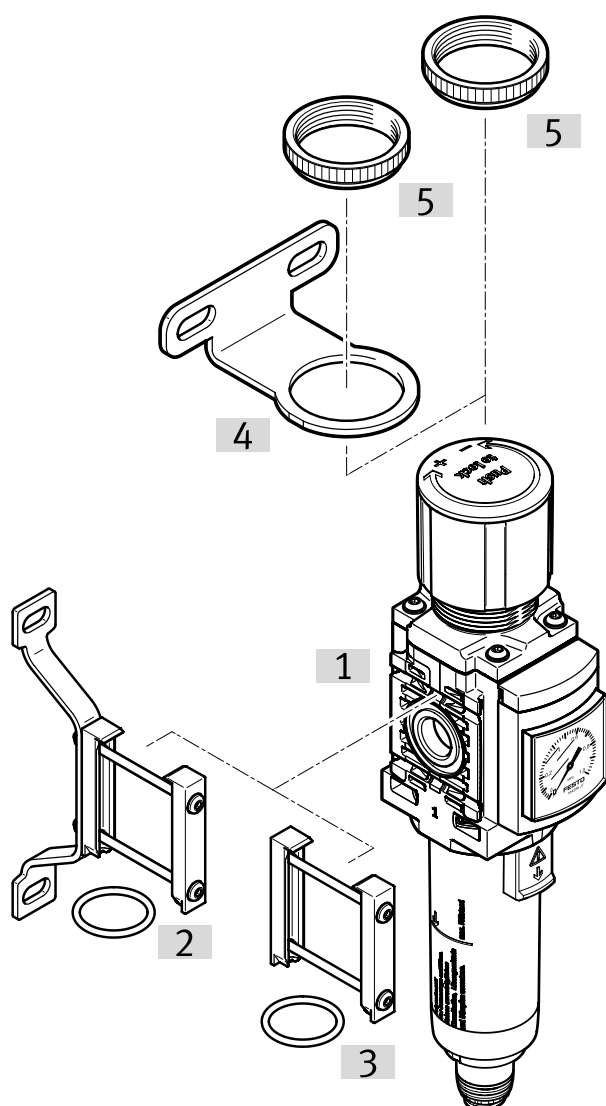
## Accessories

Module connector MS...-MV1		
Size	Part no.	Type
4	8176695	MS4-MV1-F1A
6	8176697	MS6-MV1-F1A

Mounting bracket MS4/6-WP		
Size	Part no.	Type
for wall mounting		
4	8176694	MS4-WP -F1A
6	8176698	MS6-WP -F1A



## Peripherals overview Size 4 und 6



Type/order code	Description	→ Link*
[1] Filter regulator MS4/6-LFR-...-F1A-B		246
[2] Wall mounting kit MS...-WPE-B	For connecting the modules for wall mounting	<a href="#">ms-lfr-b</a>
[3] Module connector MS...-MV1	For connecting the modules	247
[4] Mounting bracket MS...-WR-B	For wall mounting, knurled nut included in the scope of delivery	247
[5] Nut MS...-WRS	For front panel mounting	<a href="#">ms-lfr-b</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Mounting bracket MS...-WR-B		
Size	Part no.	Type
4	<a href="#">8176693</a>	MS4-WR-F1A-B
6	<a href="#">8176696</a>	MS6-WR-F1A-B

Module connector MS...-MV1		
Size	Part no.	Type
4	<a href="#">8176695</a>	MS4-MV1-F1A
6	<a href="#">8176697</a>	MS6-MV1-F1A

## Compressed air filters > MS-B series > Filter MS2-LF-B, MS-B series



- Very compact and extremely lightweight series for use close to the process directly in the machine
- Lightweight and sturdy thanks to modern polymer materials
- Compatible with the MS series for the ideal combination of low-cost basic functionality and high-end functional requirements
- With manual condensate drain, rotating

## Type code

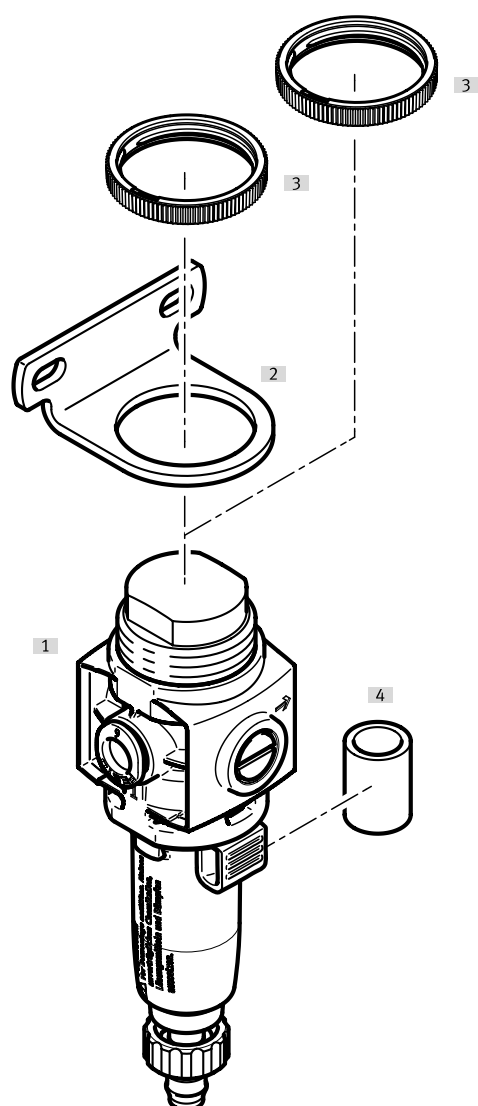
001	Series
MS	MS series
002	Size
2	Grid dimension 25 mm
003	Function
LF	Filter
004	Pneumatic connection
M5	Female thread M5
QS6	Push-in connector 6 mm

005	Filter design
C	5 µm
006	Condensate drain
M	Manually
007	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A
008	Version
B	Second generation

## Ordering data

Size	Pneumatic connection, port 1	Product weight	Part no.	Type
2	M5	45.3 g	8181093	MS2-LF-M5-C-P-M-F1A-B
	QS-6	42.1 g	8181092	MS2-LF-QS6-C-P-M-F1A-B

## Peripherals overview Size 2



Type/order code	Description	
[1] Filter MS2-LF-...F1A-B		248
[2] Mounting bracket MS2-WR-B	For wall mounting, knurled nut included in scope of delivery	249
[3] Nut MS2-WRS	For front panel mounting	<a href="#">ms2-lf-b</a>
[4] Filter cartridge MS2-LFP...		<a href="#">ms2-lf-b</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Mounting bracket MS2-WR-B		
Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
Class 1 to ISO 14644-1	<b>8167322</b>	<b>MS2-WR-F1A-B</b>

1) More information → [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

Pressure regulator > MS-B series >

Pressure regulator MS2/MS4/MS6-LR-B, MS-B series



- Competitively priced basic component focused on the most important technical functions
- Lightweight and sturdy thanks to modern polymer materials
- Compatible with the MS series for the ideal combination of low-cost basic functionality and high-end functional requirements
- Stable control response
- With or without pressure gauge
- Rotary knob with latch
- With integrated secondary exhausting and primary exhausting with return flow function
- MS2: Directly operated diaphragm regulator
- MS4, MS6: directly actuated piston regulator
- Grid dimension 25, 40, 62 mm (sizes 2, 4, 6)
- Sustainable operation thanks to reduced pressure level

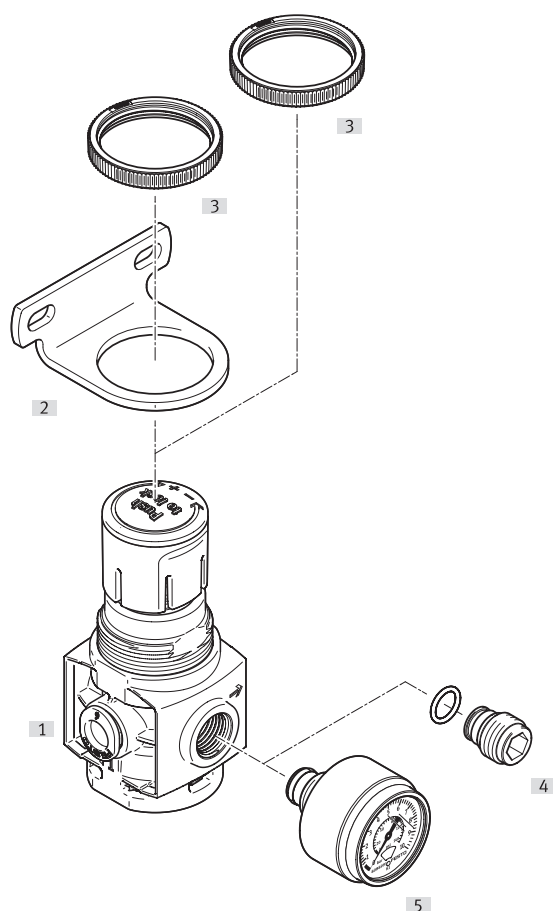
Type code

001	Series	005	Pressure regulation range
MS	MS series	D6	0.3 ... 7 bar
002	Size	006	Pressure gauge alternatives
2	Grid dimension 25 mm	A8	Adapter for EN pressure gauge 1/8, without pressure gauge
4	Grid dimension 40 mm	AG	MS pressure gauge
6	Grid dimension 62 mm	AR	With pressure gauge
003	Function	007	Alternative pressure gauge scale
LR	Pressure regulator		MS pressure gauge
004	Pneumatic connection	BAR	bar
M5	Female thread M5	MPA	MPa
QS6	Push-in connector 6 mm	008	Special material properties
1/4	Female thread G1/4	F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A
1/2	Female thread G1/2	009	Version
		B	Second generation

Ordering data

Ordering data – Products for battery production						
Size	Pneumatic connection, port 1	Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Product weight	Cleanroom class	Part no.	Type
2	M5	Prepared for G1/8	30.8 g	Class 4 according to ISO 14644-1	8167260	MS2-LR-M5-D6-A8-F1A-B
		With pressure gauge	38.6 g		8167259	MS2-LR-M5-D6-AR-MPA-F1A-B
	QS-6	Prepared for G1/8	28.3 g		8167258	MS2-LR-M5-D6-AR-BAR-F1A-B
		With pressure gauge	36.1 g		8167263	MS2-LR-QS6-D6-A8-F1A-B
					8167262	MS2-LR-QS6-D6-AR-MPA-F1A-B
					8167261	MS2-LR-QS6-D6-AR-BAR-F1A-B
4	G1/4	Prepared for G1/8	163 g	Class 7 according to ISO 14644-1	8175243	MS4-LR-1/4-D6-A8-F1A-B
		With pressure gauge	165 g		8175241	MS4-LR-1/4-D6-AG-BAR-F1A-B
	G1/2	Prepared for G1/8	479 g		8175242	MS4-LR-1/4-D6-AG-MPA-F1A-B
		With pressure gauge	482 g		8175352	MS6-LR-1/2-D6-A8-F1A-B
6	G1/2	Prepared for G1/8	479 g		8175354	MS6-LR-1/2-D6-AG-BAR-F1A-B
		With pressure gauge	482 g		8175353	MS6-LR-1/2-D6-AG-MPA-F1A-B

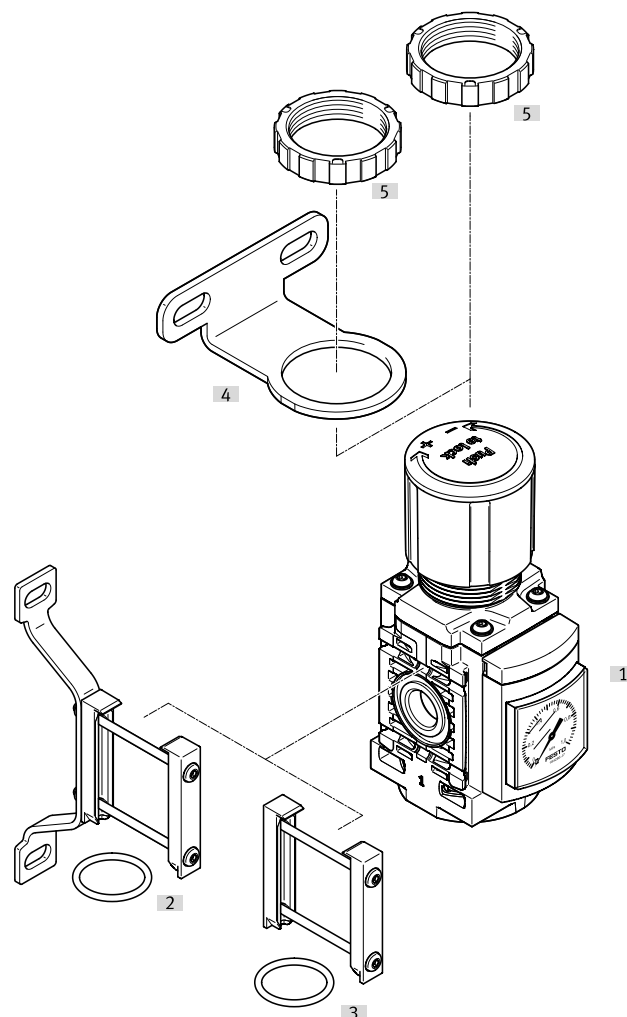
## Peripherals overview – Size 2



Type/order code	Description	→ Link*
[1] Pressure regulator MS2-LR-...-F1A-B		250
[2] Mounting bracket MS2-WR-B	For wall mounting, knurled nut included in the scope of delivery	251
[3] Nut MS2-WRS	For front panel mounting	<a href="#">ms-lr-b</a>
[4] Plug screw MS2-G18S		<a href="#">ms-lr-b</a>
[5] Pressure gauge PAGN		<a href="#">ms-lr-b</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Peripherals overview – Size 4 and 6



Type/order code	Description	→ Link*
[1] Pressure regulator MS4/6-LR-...-F1A-B		250
[2] Module connector MS4/6-MV1	For connecting the modules	251
[3] Wall mounting kit MS4/6-WPE-B	For connecting the modules for wall mounting	<a href="#">ms-lr-b</a>
[4] Mounting bracket MS4/6-WR-B	For wall mounting, knurled nut included in the scope of delivery	251
[5] Nut MS4/6-WRS	For front panel mounting	<a href="#">ms-lr-b</a>

## Accessories

Mounting bracket MS...-WR-B		
Size	Part no.	Type
2	8167322	MS2-WR-F1A-B
4	8176693	MS4-WR-F1A-B
6	8176696	MS6-WR-F1A-B

Module connector MS...-MV1		
Size	Part no.	Type
4	8176695	MS4-MV1-F1A
6	8176697	MS6-MV1-F1A

Pressure regulators > Individual devices >  
Precision pressure regulator LRP



- Lockable design
- Good control characteristics with minimal pressure hysteresis and primary pressure compensation
- High secondary exhausting

## Type code

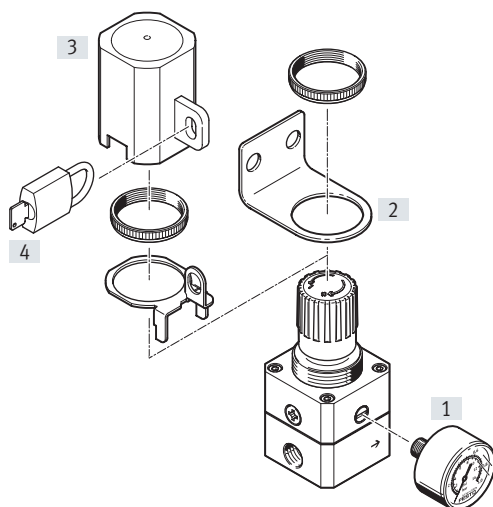
001	Series
LRP	Precision pressure regulator
002	Pneumatic connection
1/4	Female thread G1/4
003	Pressure regulation range
0,7	Up to 0.7 bar
2,5	Up to 2.5 bar
10	Up to 10 bar

004	EU certification
	None
005	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

## Ordering data

Pneumatic connection, port 1	Pressure regulation range	Product weight	Part no.	Type
G1/4	0.05 ... 0.7 bar	310 g	8196140	LRP-1/4-0.7-F1A
	0.05 ... 2.5 bar		8196141	LRP-1/4-2.5-F1A
	0.1 ... 10 bar		8196142	LRP-1/4-10-F1A

## Peripherals overview



Mounting attachments and accessories		→ Link*
[1]	Precision pressure gauge MAP	<a href="#">lrp</a>
[2]	Mounting bracket HR	252
[3]	Regulator lock with locking plate LRVS-LRP	<a href="#">lrp</a>
[4]	Padlock LRVS-D	<a href="#">lrp</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Mounting bracket HR		
Corrosion resistance class CRC <sup>1)</sup>	Part no.	Type
4 - Very high corrosion stress	8175928	HR-1/4-P-F1A

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



## Soft-start valve MS4/MS6-EDE-B, MS-B series



- Very compact and extremely light-weight series for use close to the process directly in the machine
- Electrically operated 3/2-way valve for slowly pressurising and exhausting pneumatic systems
- The switching pressure can be precisely controlled with a solenoid valve
- Adjustable switching time delay
- Built-in connections into which the tubing can be directly inserted
- Detenting and non-detenting manual override
- Supply voltage 24 V DC
- With solenoid coil, without plug socket
- Grid dimension 40, 62 mm (size 4, 6)

## Type code

001	Series	
MS	MS series	
002	Size	
6	Grid dimension 62 mm	
003	Function	
EDE	Soft-start valve, electrically actuated	
004	Pneumatic connection	
1/2	Female thread G1/2	

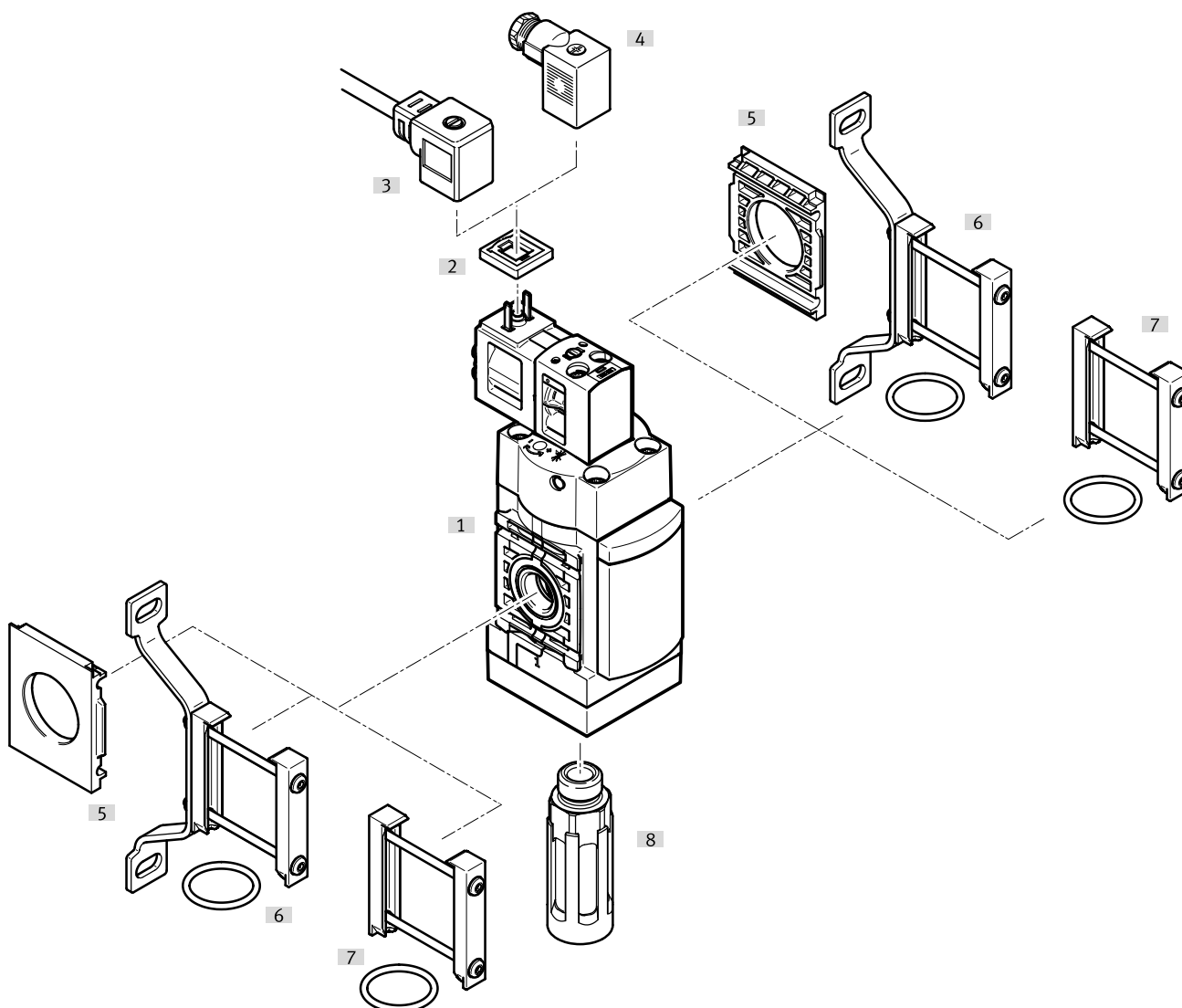
005	Supply voltage	
V24	24 V DC (connection pattern to EN 175301)	
006	Special material properties	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
007	Version	
B	Second generation	

## Ordering data

Ordering data – Products for battery production				
Size	Pneumatic connection, port 1	Product weight	Part no.	Type
4	G1/4	196 g	8176511	MS4-EDE-1/4-V24-F1A-B
6	G1/2	517 g	8176513	MS6-EDE-1/2-V24-F1A-B

Shut off valves and soft-start dump valves > MS-B series > Electrically actuated on/off valves >  
Soft-start valve MS4/MS6-EDE-B, MS-B series

## Peripherals overview



Type/order code	Description	→ Link*
[1] On/off valve MS4/6-EDE-F1A-B		253
[2] Illuminating seal MEB-LD		<a href="#">ms-ed-e-b</a>
[3] Plug socket with cable KMEB		<a href="#">ms-ed-e-b</a>
[4] Plug socket MSSD-EB	For on/off valve MS...-V24P and MS...-V24-...-EX2, the plug socket is included in the scope of delivery.	<a href="#">ms-ed-e-b</a>
[5] Mounting plate MS...-AEND	Module connector MS4/6-MV [2] or mounting bracket MS4-WP, WPB, WPE, WPM [3] is required for mounting.	<a href="#">ms-ed-e-b</a>
[6] Wall mounting kit MS...-WPE-B	Without illustration	<a href="#">ms-ed-e-b</a>
[7] Module connector MS...-MV1		254
[8] Silencer U		<a href="#">ms-ed-e-b</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Module connector MS...-MV1		
Size	Part no.	Type
4	8176695	MS4-MV1-F1A
	8176697	MS6-MV1-F1A

Shut off valves and soft-start dump valves > MS-B series >  
On/off valve MS4/MS6-EE, MS-B series



- Very compact and extremely light-weight series for use close to the process directly in the machine
- Electrically operated 3/2-way valve for pressurising and exhausting pneumatic systems
- Ducted exhaust air possible via threaded connection with silencer
- Detenting and non-detenting manual override
- Supply voltage 24 V DC
- With solenoid coil, without plug socket
- Grid dimension 40, 62 mm (size 4, 6)

## Type code

001	Series	
MS	MS series	
002	Size	
4	Grid dimension 40 mm	
6	Grid dimension 62 mm	
003	Function	
EE	On/off valve, electric	

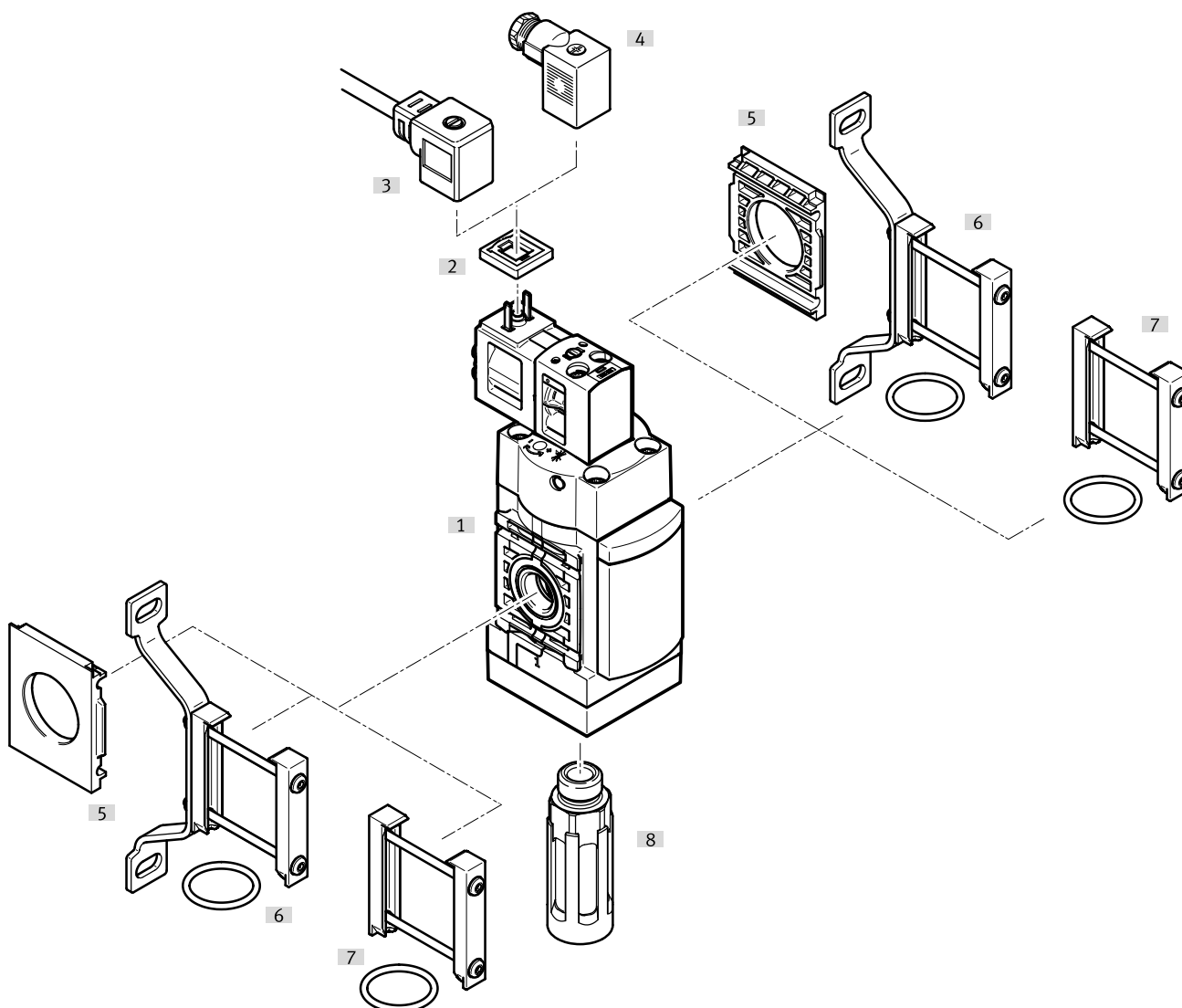
004	Pneumatic connection	
1/4	Female thread G1/4	
1/2	Female thread G1/2	
005	Supply voltage	
V24	24 V DC (connection pattern to EN 175301)	
006	Special material properties	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
007	Version	
B	Second generation	

## Ordering data

Ordering data – Products for battery production				
Size	Pneumatic connection, port 1	Product weight	Part no.	Type
4	G1/4	194 g	8176512	MS4-EE-1/4-V24-F1A-B
6	G1/2	517 g	8176514	MS6-EE-1/2-V24-F1A-B

Shut off valves and soft-start dump valves > MS-B series >  
On/off valve MS4/MS6-EE, MS-B series

## Peripherals overview



Accessories		
Type/order code	Description	→ Link*
[1] On/off valve MS-EE-F1A-B		255
[2] Illuminating seal MEB-LD		<a href="#">ms-ee-b</a>
[3] Plug socket with cable KMEB		<a href="#">ms-ee-b</a>
[4] Plug socket MSSD-EB	For on/off valve MS...-V24P and MS...-V24...-EX2, the plug socket is included in the scope of delivery.	<a href="#">ms-ee-b</a>
[5] Mounting plate MS...-AEND	Module connector MS4/6-MV [2] or mounting bracket MS4-WP, WPB, WPE, WPM [3] is required for mounting.	<a href="#">ms-ee-b</a>
[6] Wall mounting kit MS...-WPE-B	Without illustration	<a href="#">ms-ee-b</a>
[7] Module connector MS...-MV1		256
[8] Silencer U		<a href="#">ms-ee-b</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Module connector MS...-MV1		
Size	Part no.	Type
4	8176695	MS4-MV1-F1A
6	8176697	MS6-MV1-F1A

Shut off valves and soft-start dump valves > MS series > Manually operated on/off valves >  
On/off valve MS4/MS6-EM1, MS series

- Manual 3/2-way valve for pressurising and exhausting pneumatic systems
- A silencer can be attached or the exhaust air ducted at port 3
- Switching position is immediately recognisable
- Optionally with pressure gauge and pressure sensor
- Grid dimension 40, 62 mm (size 4, 6)

## Type code

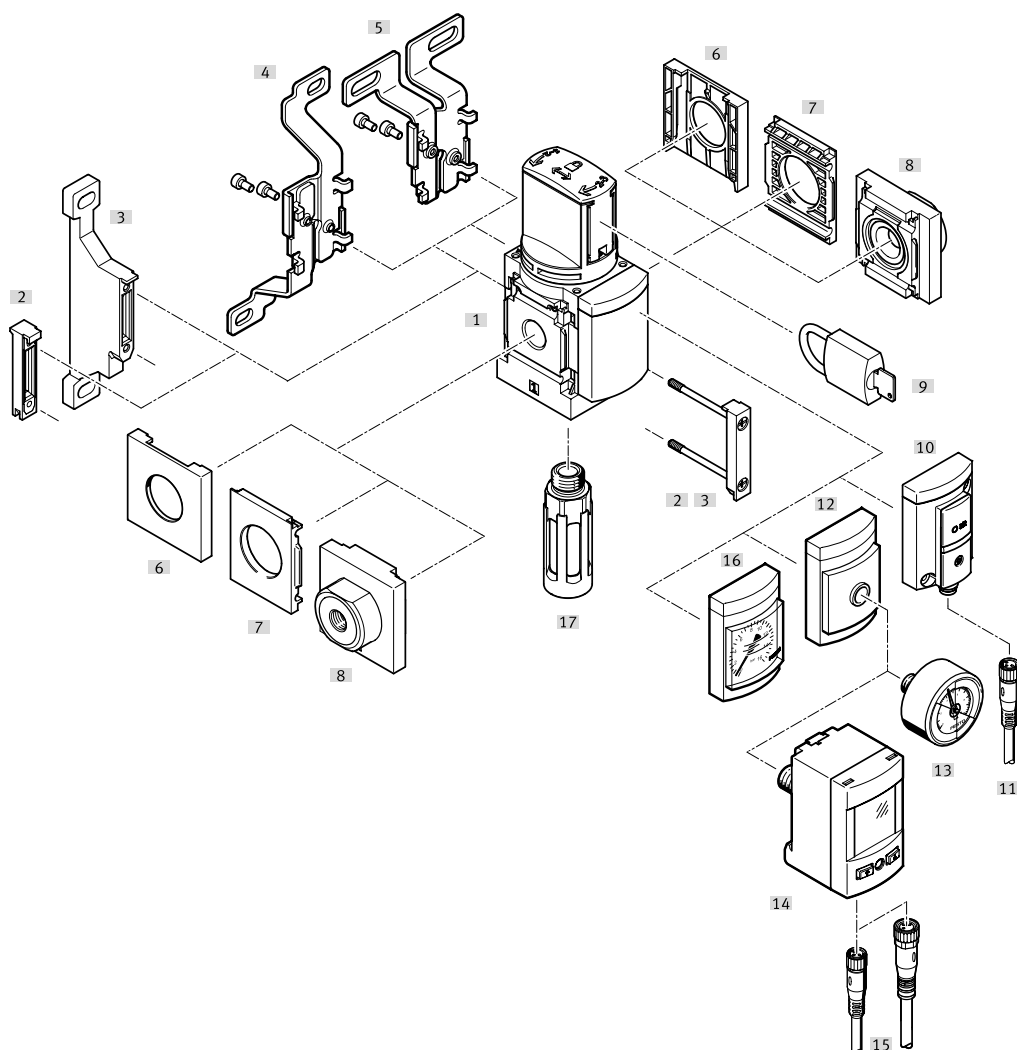
001	Series		007	Alternative pressure gauge scale	
MS	MS series			None	
002	Size		008	Type of mounting	
4	Grid dimension 40 mm			Without mounting bracket	
6	Grid dimension 62 mm				
003	Function		009	EU certification	
EM1	On/off valve, manual			None	
004	Pneumatic connection		010	UL certification	
1/4	Female thread G1/4			None	
1/2	Female thread G1/2				
005	Silencer		011	Flow direction	
	None			Flow direction from left to right	
006	Pressure gauge alternatives		012	Special material properties	
	None		F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

## Ordering data

Size	Connection	Flow direction	Silencer	Part no.	Type
4	G1/4	From left to right	None	8183561	MS4-EM1-1/4-F1A
6	G1/2			8183562	MS6-EM1-1/2-F1A

Shut off valves and soft-start dump valves > MS series > Manually operated on/off valves >  
 On/off valve MS4/MS6-EM1, MS series

## Peripherals overview



Type/order code	Description	→ Link*
[1] On/off valve MS4-EM1-F1A		257
[2] Module connector MS4-MV1		<a href="#">ms4-em1</a>
[3] Mounting bracket MS4-WP	Order code [WP]	<a href="#">ms4-em1</a>
[3] Mounting bracket MS4-WPB	Without illustration	<a href="#">ms4-em1</a>
[3] Mounting bracket MS4-WPE	Without illustration	<a href="#">ms4-em1</a>
[3] Mounting bracket MS4-WPM	Order code [WPM] (without illustration)	<a href="#">ms4-em1</a>
[4] Mounting bracket MS4-WB	Order code [WB]	<a href="#">ms4-em1</a>
[5] Mounting bracket MS4-WBM	Order code [WBM]	<a href="#">ms4-em1</a>
[6] Cover cap MS4-END		<a href="#">ms4-em1</a>
[7] Mounting plate MS4-AEND	Module connector MS4/6-MV [2] or mounting bracket MS4-WP, WPB, WPE, WPM [3] is required for mounting.	<a href="#">ms4-em1</a>
[8] Connecting plate SET MS4-AG...	Order code [AG...]; module connector MS4-MV1 [2] or mounting bracket MS4-WP, WPB, WPE, WPM [3] is required for mounting.	<a href="#">ms4-em1</a>
[8] Connecting plate SET MS4-AQ...	Order code [AQ...]	<a href="#">ms4-em1</a>
[9] Padlock LRVS-D		<a href="#">ms4-em1</a>
[10] Pressure sensor with switching indicator SDE5	Order code [AD7], [AD8], [AD9], [AD10]	<a href="#">sde5</a>
[11] Connecting cable NEBA-M8...-LE3		259
[12] Adapter for EN pressure gauge 1/8, 1/4	Order code [A8], [A4]	<a href="#">ms4-em1</a>
[13] Pressure gauge MA		<a href="#">ms4-em1</a>
[14] Pressure sensor SPAU-...-T		<a href="#">ms4-em1</a>
[15] Connecting cable NEBA-M8...-LE4, NEBA-M12...-LE4		259
[16] Pressure gauge MS	Order code [AG], [RG]	<a href="#">ms4-em1</a>
[17] Silencer U		<a href="#">ms4-em1</a>
[17] Silencer S	Order code [S]	<a href="#">ms4-em1</a>

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	541333	NEBU-M8G3-K-2.5-LE3
M8x1, A-coded, to EN 61076-2-104	541334	NEBU-M8G3-K-5-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	541338	NEBU-M8W3-K-2.5-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3
M8x1, A-coded, to EN 61076-2-104	541341	NEBU-M8W3-K-5-LE3
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4

Connecting cable NEBA-M12		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078239	NEBA-M12G5-U-2.5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078240	NEBA-M12G5-U-5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078248	NEBA-M12W5-U-2.5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078249	NEBA-M12W5-U-5-N-LE4

Compressed air distributors > MS series >

Branching modules MS4/MS6-FRM, MS series



- Optionally with integrated non-return function and pressure switch
- Outlet at top and bottom
- Can be used as an intermediate distributor for varying air qualities
- Optionally with pressure sensor

## Type code

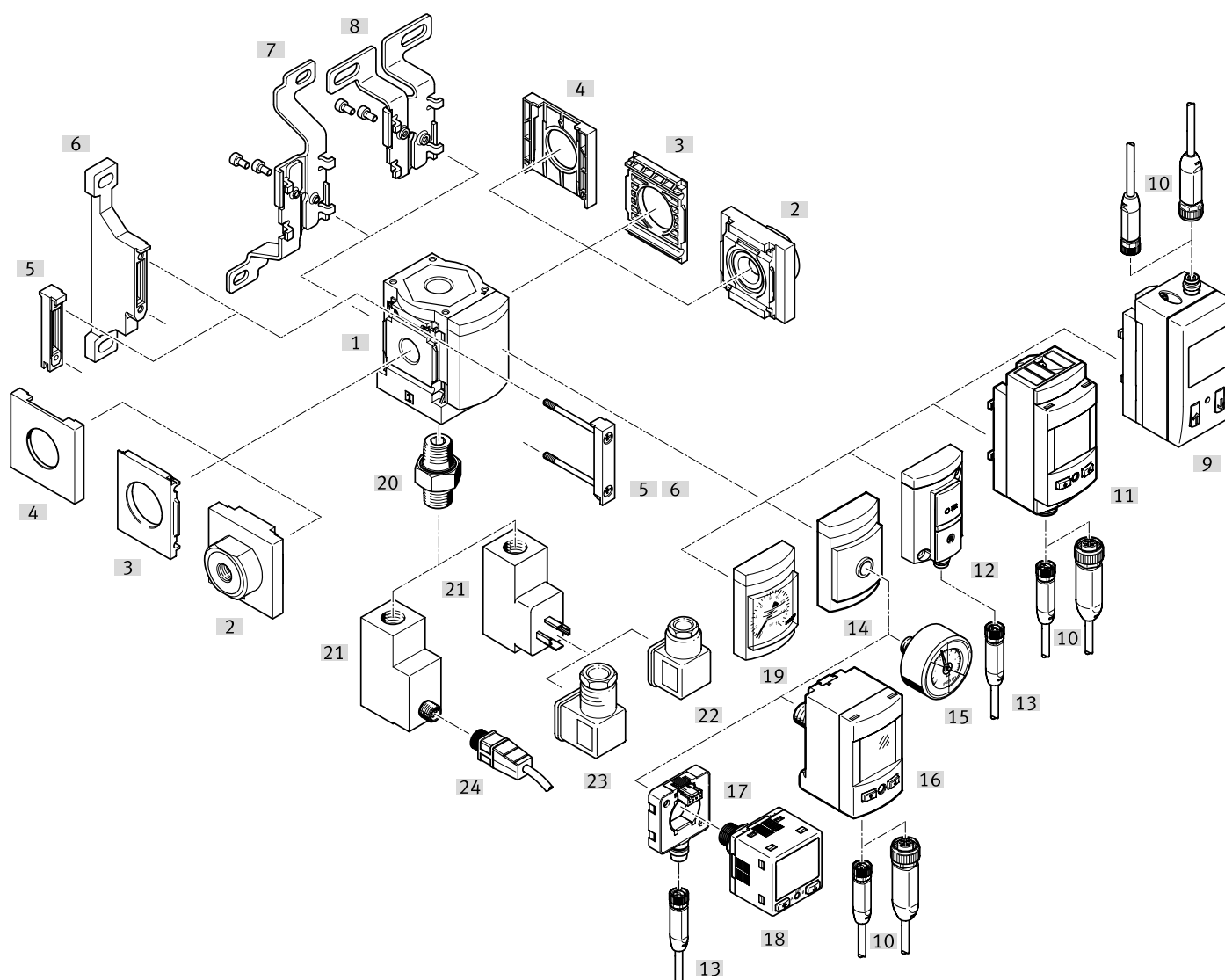
001	Series		007	Alternative pressure gauge scale	
MS	MS series, size 4			MS pressure gauge	
002	Size		008	Pressure switch	
4	Grid dimension 40 mm			None	
6	Grid dimension 62 mm		009	Type of mounting	
003	Function			Without mounting bracket	
FRM	Branching module		010	EU certification	
004	Pneumatic connection			None	
1/4	Female thread G1/4		011	UL certification	
1/2	Female thread G1/2			None	
005	Additional function		012	Flow direction	
	None			Flow direction from left to right	
006	Pressure gauge alternatives		013	Special material properties	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge		F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge				

## Ordering data

Ordering information – Products for battery production				
Pneumatic connection, port 1	Pressure gauge alternatives	Product weight	Part no.	Type
G1/4	Adapter for EN pressure gauge 1/8, without pressure gauge	165 g	8183570	MS4-FRM-1/4-A8-F1A
G1/2	Adapter for EN pressure gauge 1/4, without pressure gauge	458 g	8183566	MS6-FRM-1/2-A4-F1A
	Adapter for EN pressure gauge 1/8, without pressure gauge		8183567	MS6-FRM-1/2-A8-F1A



## Peripherals overview



Accessories		→ Link*
Type/order code	Description	
[1] Branching module MS4-FRM		260
[2] Connecting plate SET MS4-AG...	Order code [AG...]; module connector MS4-MV1 is used for mounting [5] or mounting bracket MS4-WP, WPB, WPE, WPM [6] required.	<a href="#">ms4-frm</a>
[3] Mounting plate MS4-AEND	Order code [AG...]; module connector MS4-MV1 [5] or mounting bracket MS4-WP, WPB, WPE, WPM [6] is required for mounting.	<a href="#">ms4-frm</a>
[4] Cover cap MS4-END		<a href="#">ms4-frm</a>
[5] Module connector MS4-MV1	Included in the scope of delivery	<a href="#">ms4-frm</a>
[6] Mounting bracket MS4-WP	Order code [WP]	<a href="#">ms4-frm</a>
[6] Mounting bracket MS4-WPB	Without illustration	<a href="#">ms4-frm</a>
[6] Mounting bracket MS4-WPE	Not shown	<a href="#">ms4-frm</a>
[6] Mounting bracket MS4-WPM	Order code [WPM] (without illustration)	<a href="#">ms4-frm</a>
[7] Mounting bracket MS4-WB	Order code [WB]	<a href="#">ms4-frm</a>
[8] Mounting bracket MS4-WBM	Order code [WBM]	<a href="#">ms4-frm</a>
[9] Pressure sensor with LCD display SPAU	Order code [AD11], [AD12]	<a href="#">spau</a>
[10] Pressure sensor with operational status indicator SDE5	Order code [AD7], [AD8], [AD9], [AD10]	<a href="#">sde5</a>
[11] Adapter for EN pressure gauge 1/8, 1/4	Order code [A8], [A4]	<a href="#">ms4-frm</a>
[12] Pressure gauge MS	Order code [AG], [RG]	<a href="#">ms4-frm</a>
[13] Connecting cable NEBA-M8...-LE4, NEBA-M12...-LE4		262

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

\* blue type code: Not recommended for production facilities for the manufacture of lithium-ion batteries.

## Accessories

Connecting cable NEBA-M8		
Electrical connection 1, connector system	Part no.	Type
M8x1, A-coded, to EN 61076-2-104	8078223	NEBA-M8G3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078224	NEBA-M8G3-U-5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078230	NEBA-M8W3-U-2.5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078231	NEBA-M8W3-U-5-N-LE3
M8x1, A-coded, to EN 61076-2-104	8078227	NEBA-M8G4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078228	NEBA-M8G4-U-5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078233	NEBA-M8W4-U-2.5-N-LE4
M8x1, A-coded, to EN 61076-2-104	8078234	NEBA-M8W4-U-5-N-LE4

Connecting cable NEBA-M12		
Electrical connection 1, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101	8078239	NEBA-M12G5-U-2.5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078236	NEBA-M12G5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078240	NEBA-M12G5-U-5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078237	NEBA-M12G5-U-5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078248	NEBA-M12W5-U-2.5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078245	NEBA-M12W5-U-2.5-N-LE3
M12x1, A-coded to EN 61076-2-101	8078249	NEBA-M12W5-U-5-N-LE4
M12x1, A-coded to EN 61076-2-101	8078246	NEBA-M12W5-U-5-N-LE3




# 09

## Electrical connection technology



## Highlights

## Contents



Connecting cables

**NEBA**


- + Suitable for harsh environments and applications in constant motion or subject to vibration
- + For measuring, control and laboratory devices
- + High IP65, IP68, IP69k degree of protection

→ 267

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Connecting cable NEBA, universal	267

Software-Tools

Configurator for connecting cable NEBU



Design a product with numerous features reliably and quickly with the help of the configurator.

Select all the required product features step-by-step.  
The use of logic checks ensures that only correct configurations are available for selection.


A dynamic graphic generated on the basis of the configuration provides a visual aid for selecting the correct product features.

You will find the configurator

- at [www.festo.com/catalogue/neba](http://www.festo.com/catalogue/neba)
- Click on the product
- Click on the blue „Configure your product“ button

Connecting cables >

Connecting cables, universal

	<div></div> <div>Connecting cables NEBA</div>
Electrical connection, connection type	Socket, Cable, Plugs
Electrical connection, cable outlet	Straight, Straight, angled, Angled
Electrical connection, design	Round
Electrical connection, connection technology	M12x1, A-coded to EN 61076-2-101, M8x1, A-coded to EN 61076-2-104, M8x1, A-coded, to EN 61076-2-104, Open end, Diameter 8 mm, A-coded to EN 61076-2-104
Electrical connection, number of pins/wires	3, 4, 5
Cable length	0.3 ... 30 m
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
Description	<ul style="list-style-type: none"><li>• Powerful universal connecting cables</li><li>• Suitable for harsh environments and applications in constant motion or vibration</li><li>• Meets the safety requirements of IEC 61010-1 and IEC 61010-2-202 for electrical equipment for measurement, control, and laboratory devices</li><li>• High IP65, IP68, IP69k degree of protection</li><li>• Resistant to abrasion and low adhesion</li><li>• Suitable for use with energy chains and robots</li><li>• Flame-retardant and self-extinguishing</li><li>• Recommended for production systems for manufacturing lithium-ion batteries</li></ul>
online: ➔	267





- Powerful universal connecting cables
- Suitable for harsh environments and applications in constant motion or vibration
- Meets the safety requirements of IEC 61010-1 and IEC 61010-2-202 for electrical equipment for measurement, control, and laboratory devices
- High IP65, IP68, IP69k degree of protection
- Resistant to abrasion and low adhesion
- Suitable for use with energy chains and robots
- Flame-retardant and self-extinguishing
- Recommended for production systems for manufacturing lithium-ion batteries

## Type code

001	Series	
NEBA	Connecting cable	
002	Connection technology left, field device side	
LE	Open end	
M8	Socket M8x1 A-coded, EN 61076-2-104	
M8C	Socket diameter 8 mm with snap-locking, A-coded, EN 61076-2-104	
M12	Socket M12x1 A-coded, EN 61076-2-101	
003	Cable outlet left	
	None	
G	Straight	
W	Angled	
004	Number of pins/wires on the left	
3	3	
4	4	
5	5	
005	Display	
	None	
N	LED switching state, NPN	
P	LED switching state, PNP	
006	Cable characteristic	
U	Suitable for energy chains/robot applications	

007	Cable length	
	...m	
0.5	0.5 m	
1	1 m	
1.5	1.5 m	
2	2 m	
2.5	2.5 m	
5	5 m	
10	10 m	
20	20 m	
008	Cable identification	
N	Without label holder	
009	Connection technology right, controller side	
LE	Open end	
M8	Plug M8x1 A-coded, EN 61076-2-104	
M12	Plug M12x1 A-coded, EN 61076-2-101	
010	Cable outlet right	
	None	
G	Straight	
W	Angled	
011	Number of pins/wires on the right	
3	3	
4	4	
5	5	

## Ordering data



Configurable product

This product and all its product options can be ordered online via the configurator:

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Ordering data – Modular product system					
Electrical connection 1, connector system	Cable characteristic	Cable length	Electrical connection 2, connector system	Part no.	Type
M12x1, A-coded to EN 61076-2-101, M8x1, A-coded, to EN 61076-2-104, Open end, Diameter 8 mm, A-coded to EN 61076-2-104	Suitable for energy chains/robot applications, Abrasion-resistant, Low adhesion, Flame-retardant and self-extinguishing	0.3 ... 30 m	M12x1, A-coded to EN 61076-2-101, M8x1, A-coded to EN 61076-2-104, Open end	<b>8078221</b>	<b>NEBA-</b>

## Ordering data

Ordering data – Electrical connection 1 open end						
Electrical connection 1, number of connections/cores	Electrical connection 2, cable outlet	Electrical connection 2, number of connections/cores	Cable length	Product weight	Part no.	Type
3	Straight	3	2.5 m	50 g	8078270	NEBA-LE3-U-2.5-N-M8G3
			5 m	96 g	8078271	NEBA-LE3-U-5-N-M8G3
4		4	2.5 m	67 g	8078272	NEBA-LE4-U-2.5-N-M8G4
			5 m	129 g	8078273	NEBA-LE4-U-5-N-M8G4
5		5	2.5 m	77 g	8078268	NEBA-LE5-U-2.5-N-M12G5
			5 m	144 g	8078269	NEBA-LE5-U-5-N-M12G5

Ordering data – Electrical connection 1 M8 socket, 3-pin, with switching status indication						
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Electrical connection 1, display	Cable length	Product weight	Part no.	Type
Angled	Open end	Status indicator LED green, Switching status indication, yellow LED for PNP N/O contact	2.5 m	50 g	8078260	NEBA-M8W3P-U-2.5-N-LE3
			5 m	96 g	8078261	NEBA-M8W3P-U-5-N-LE3
		Status indicator LED green, Switching status indication, yellow LED for NPN N/O contact	2.5 m	50 g	8078262	NEBA-M8W3N-U-2.5-N-LE3
			5 m	96 g	8078263	NEBA-M8W3N-U-5-N-LE3

Ordering data – Electrical connection 1 M8 socket, 3-pin, without switching status indication						
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Electrical connection 2, cable outlet	Cable length	Product weight	Part no.	Type
Straight	M12x1, A-coded to EN 61076-2-101	Straight	0.5 m	23 g	8078278	NEBA-M8G3-U-0.5-N-M12G3
			1 m	33 g	8078279	NEBA-M8G3-U-1-N-M12G3
			2.5 m	60 g	8078280	NEBA-M8G3-U-2.5-N-M12G3
			5 m	107 g	8078281	NEBA-M8G3-U-5-N-M12G3
	M8x1, A-coded to EN 61076-2-104	Straight	0.5 m	17 g	8078282	NEBA-M8G3-U-0.5-N-M8G3
			1 m	26 g	8078283	NEBA-M8G3-U-1-N-M8G3
			1.5 m	35 g	8078284	NEBA-M8G3-U-1.5-N-M8G3
			2 m	44 g	8078285	NEBA-M8G3-U-2-N-M8G3
			2.5 m	54 g	8078286	NEBA-M8G3-U-2.5-N-M8G3
			5 m	100 g	8078287	NEBA-M8G3-U-5-N-M8G3
			10 m	192 g	8078288	NEBA-M8G3-U-10-N-M8G3
	Open end	Straight	1 m	22 g	8078222	NEBA-M8G3-U-1-N-LE3
			2.5 m	50 g	8078223	NEBA-M8G3-U-2.5-N-LE3
			5 m	96 g	8078224	NEBA-M8G3-U-5-N-LE3
			10 m	188 g	8078225	NEBA-M8G3-U-10-N-LE3
			20 m	373 g	8078226	NEBA-M8G3-U-20-N-LE3
Angled	M8x1, A-coded to EN 61076-2-104	Straight	0.5 m	17 g	8078298	NEBA-M8W3-U-0.5-N-M8G3
			1 m	26 g	8078299	NEBA-M8W3-U-1-N-M8G3
			2.5 m	54 g	8078300	NEBA-M8W3-U-2.5-N-M8G3
			5 m	100 g	8078301	NEBA-M8W3-U-5-N-M8G3
	Open end	Straight	2.5 m	50 g	8078230	NEBA-M8W3-U-2.5-N-LE3
			5 m	96 g	8078231	NEBA-M8W3-U-5-N-LE3
			10 m	189 g	8078232	NEBA-M8W3-U-10-N-LE3



## Ordering data

Ordering data – Electrical connection 1 M8 socket, 3-pin, with snap-locking					
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Cable length	Product weight	Part no.	Type
Straight	Open end	2.5 m	49 g	8078264	NEBA-M8CG3-U-2.5-N-LE3
		5 m	95 g	8078265	NEBA-M8CG3-U-5-N-LE3
Angled		2.5 m	49 g	8078266	NEBA-M8CW3-U-2.5-N-LE3
		5 m	95 g	8078267	NEBA-M8CW3-U-5-N-LE3

Ordering data – Electrical connection 1 M8 socket, 4-pin						
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Electrical connection 2, cable outlet	Cable length	Product weight	Part no.	Type
Straight	M12x1, A-coded to EN 61076-2-101	Straight	0.5 m	27 g	8078289	NEBA-M8G4-U-0.5-N-M12G4
			1 m	39 g	8078290	NEBA-M8G4-U-1-N-M12G4
			2.5 m	77 g	8078291	NEBA-M8G4-U-2.5-N-M12G4
			5 m	139 g	8078292	NEBA-M8G4-U-5-N-M12G4
	M8x1, A-coded to EN 61076-2-104		0.5 m	20 g	8078293	NEBA-M8G4-U-0.5-N-M8G4
			1 m	33 g	8078294	NEBA-M8G4-U-1-N-M8G4
			2.5 m	70 g	8078295	NEBA-M8G4-U-2.5-N-M8G4
			5 m	133 g	8078296	NEBA-M8G4-U-5-N-M8G4
	Open end		2.5 m	66 g	8078227	NEBA-M8G4-U-2.5-N-LE4
			5 m	129 g	8078228	NEBA-M8G4-U-5-N-LE4
			10 m	254 g	8078229	NEBA-M8G4-U-10-N-LE4
			2.5 m	66 g	8078233	NEBA-M8W4-U-2.5-N-LE4
Angled			5 m	129 g	8078234	NEBA-M8W4-U-5-N-LE4
			10 m	254 g	8078235	NEBA-M8W4-U-10-N-LE4

Ordering data – Electrical connection 1 M12 socket, 5-pin, with switching status indication						
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Electrical connection 1, display	Cable length	Product weight	Part no.	Type
Angled	Open end	Status indicator LED green, Switching status indication, yellow LED for PNP N/O contact	2.5 m	56 g	8078256	NEBA-M12W5P-U-2.5-N-LE3
			5 m	103 g	8078257	NEBA-M12W5P-U-5-N-LE3
		Status indicator LED green, Switching status indication, yellow LED for NPN N/O contact	2.5 m	56 g	8078258	NEBA-M12W5N-U-2.5-N-LE3
			5 m	103 g	8078259	NEBA-M12W5N-U-5-N-LE3

## Ordering data

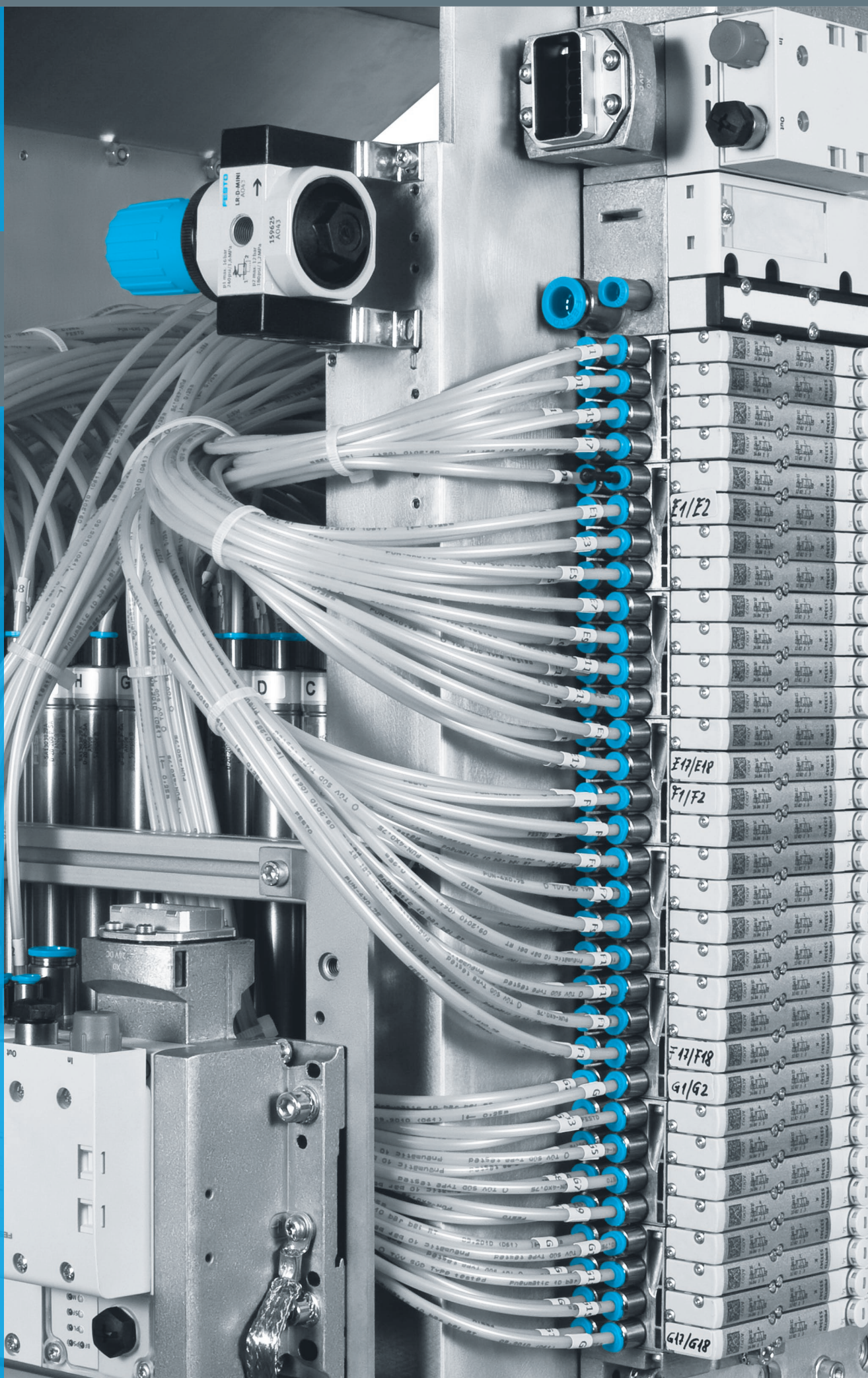
Ordering data – Electrical connection 1 M12 socket, 5-pin, without switching status indication									
Electrical connection 1, cable outlet	Electrical connection 2, connector system	Electrical connection 2, cable outlet	Electrical connection 2, number of connections/cores	Cable length	Product weight	Part no.	Type		
Straight	M12x1, A-coded to EN 61076-2-101	Straight	5	0.5 m	34 g	8078274	NEBA-M12G5-U-0.5-N-M12G5		
				1 m	47 g	8078275	NEBA-M12G5-U-1-N-M12G5		
				2.5 m	87 g	8078276	NEBA-M12G5-U-2.5-N-M12G5		
				5 m	153 g	8078277	NEBA-M12G5-U-5-N-M12G5		
	Open end		3	2.5 m	55 g	8078236	NEBA-M12G5-U-2.5-N-LE3		
				5 m	102 g	8078237	NEBA-M12G5-U-5-N-LE3		
				10 m	194 g	8078238	NEBA-M12G5-U-10-N-LE3		
			4	2.5 m	72 g	8078239	NEBA-M12G5-U-2.5-N-LE4		
				5 m	134 g	8078240	NEBA-M12G5-U-5-N-LE4		
				10 m	259 g	8078241	NEBA-M12G5-U-10-N-LE4		
			5	2.5 m	85 g	8078242	NEBA-M12G5-U-2.5-N-LE5		
				5 m	142 g	8078243	NEBA-M12G5-U-5-N-LE5		
				10 m	274 g	8078244	NEBA-M12G5-U-10-N-LE5		
			Angled		3	2.5 m	56 g	8078245	NEBA-M12W5-U-2.5-N-LE3
						5 m	103 g	8078246	NEBA-M12W5-U-5-N-LE3
						10 m	195 g	8078247	NEBA-M12W5-U-10-N-LE3
					4	2.5 m	73 g	8078248	NEBA-M12W5-U-2.5-N-LE4
						5 m	135 g	8078249	NEBA-M12W5-U-5-N-LE4
10 m	260 g	8078250				NEBA-M12W5-U-10-N-LE4			
5	2.5 m	76 g			8078251	NEBA-M12W5-U-2.5-N-LE5			
	5 m	143 g	8078252	NEBA-M12W5-U-5-N-LE5					
			10 m	275 g	8078253	NEBA-M12W5-U-10-N-LE5			





# 10

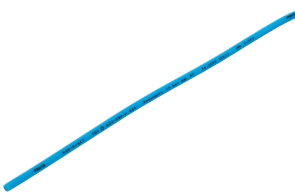
## Pneumatic connection technology





# Highlights

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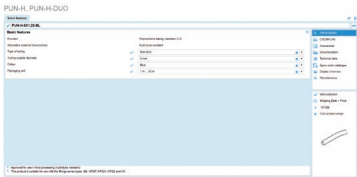



Plastic tubing  
**PUN-H**  
+ Wide range of variants  
+ PUN-H: high microbe and hydrolysis resistance and food-safe  
+ PUN-H-T: translucent black, blue, green, red, yellow  
→ 279

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Product overview

Software-Tools

<b>Calculating the media resistance</b>		<p>Which Festo tubing is resistant to benzene? Can elastomers withstand contact with glycol? Which type of stainless steel can be used in acetic acid?</p> <p>You can find the answer to these and many other questions about media resistance right here.</p> <p>You can search for chemical reactions from A to Z.</p> <p>You can filter the media either by name or chemical formula and/or select the material in question.</p> <p>This tool can be found at <a href="http://www.festo.com/x/media-resistance">www.festo.com/x/media-resistance</a></p>
<b>Configurator for tubing</b>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the required product features step-by-step.</p> <p>The use of logic checks ensures that only correct configurations are available for selection.</p> <p>You will find the configurator for your desired product</p> <ul style="list-style-type: none"><li>• at <a href="http://www.festo.com/catalogue/tubing">www.festo.com/catalogue/tubing</a></li><li>• Select your desired product</li><li>• Click on the blue „Configure product“ button</li></ul>
<b>Festo Design Tool 3D</b>		<p>The Festo Design Tool 3D is a 3D product configurator for generating specific CAD product combinations from Festo.</p> <p>The configurator makes your search for the right accessory easier, more reliable and faster.</p> <p>You can then order the module that has been created as a single order item, either completely pre-assembled or as individual parts in a single box.</p> <p>This considerably reduces your bill of materials, and downstream processes such as product ordering, order picking and assembly are significantly simplified.</p> <p>This tool can be found at <a href="http://www.festo.com/x/festo-design-tool">www.festo.com/x/festo-design-tool</a></p>

## Pneumatic tubing &gt;



## Standard O.D. pneumatic tubing

	 Plastic tubing PUN-H, PUN-H-DUO	 Plastic tubing PUN-H, NPT
Outside diameter	3 ... 16 mm	1/8", 5/32", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8"
Inside diameter	2.1 ... 11 mm	
Temperature-dependent operating pressure [MPa]	-0.095 ... 1 MPa	
Temperature-dependent operating pressure	-0.95 ... 10 bar	-0.993 ... 9.997 bar
Temperature-dependent operating pressure [psi]	-13.775 ... 145 psi	-14.4 ... +145psi
Ambient temperature	-35 ... 60°C	-31 ... +145 °F
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production:Metals with more than 1% by mass of copper, zinc or nickel are excluded from use.The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
LABS (PWIS) conformity	VDMA24364-B2-L	VDMA24364-B2-L
Description	<ul style="list-style-type: none"> <li>• Polyurethane</li> <li>• High resistance to microbes and hydrolysis</li> <li>• Suitable for use with energy chains</li> <li>• Clean room-compatible combination with fitting NPKA</li> <li>• Also available as DUO plastic tubing</li> <li>• Operating media compressed air, vacuum, water. Water as per the manufacturer's declaration, see <a href="http://www.festo.com/certificates/PUN_H">www.festo.com/certificates/PUN_H</a></li> </ul>	<ul style="list-style-type: none"> <li>• Polyurethane</li> <li>• High resistance to microbes and hydrolysis</li> <li>• Suitable for use with energy chains</li> <li>• Operating medium: compressed air, vacuum, water</li> </ul>
online: →	279	283

## Product overview

### Pneumatic fittings >


## Pneumatics push-in fittings

		
	<b>Push-in fittings/connectors NPQE-F1A</b>	<b>Push-in fittings/connectors NPQR</b>
<b>Pneumatic connection 1</b>	For tubing O.D. 10 mm, 12 mm, 4 mm, 6 mm, 8 mm, Male thread G1/4, G1/8, M3, M5, M7, R1/4, R1/8	For tubing O.D. 10 mm, 12 mm, 14 mm, 16 mm, 4 mm, 6 mm, 8 mm, Male thread G1/2, G1/4, G1/8, G3/8, M5, M7
<b>Pneumatic connection 2</b>	For tubing O.D. 10 mm, 12 mm, 4 mm, 6 mm, 8 mm	For tubing O.D. 10 mm, 12 mm, 14 mm, 16 mm, 4 mm, 6 mm, 8 mm
<b>Design type</b>	L-shape, T-shape, Y-shape, Straight design	L-shape, Bulkhead, T-shape, Plug screw, Y-shape, Straight design
<b>Operating pressure for entire temperature range</b>	-0.95 ... 8 bar	-0.95 ... 16 bar
<b>Ambient temperature</b>	-5 ... 60°C	-20 ... 150°C
<b>Cleanroom class</b>	Class 4 according to ISO 14644-1	Class 4 according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364 zone III	VDMA24364-B2-L
<b>Description</b>	<ul style="list-style-type: none"> <li>• Economical push-in fittings for pneumatic applications</li> <li>• Recommended for production systems for manufacturing lithium-ion batteries</li> <li>• Tapered thread in accordance with JIS B0203 and compatible with pressure-tight media to DIN EN 10226</li> <li>• Operating medium: compressed air, vacuum</li> <li>• Straight shape, T-shape, L-shape, Y-shape</li> </ul>	<ul style="list-style-type: none"> <li>• Very easy to clean thanks to chamfered O-ring and fewer edges where dirt can accumulate</li> <li>• Optimal price/performance ratio, perfect for applications from a single source</li> <li>• Maximum corrosion resistance (corrosion resistance class CRC 4 to Festo standard 940 070) and chemical resistance</li> <li>• High temperature resistance</li> <li>• Stainless steel</li> <li>• Operating media: compressed air, vacuum, (water)</li> <li>• Straight shape, L-shape, T-shape, Y-shape, push-in bulkhead connector</li> </ul>
<b>online: →</b>	<b>286</b>	<b>289</b>





## Pneumatic fittings &gt;

## Barbed fittings

	 <p><b>Fitting NPKK</b></p>
<b>Nominal size</b>	2 ... 6.2 mm
<b>Pneumatic connection 1</b>	Male thread G1/4, G1/8, G3/8, M5
<b>Pneumatic connection 2</b>	For tubing O.D. 10 mm, 4 mm, 6 mm, 8 mm
<b>Design type</b>	Straight design
<b>Operating pressure for entire temperature range</b>	-0.95 ... 12 bar
<b>Ambient temperature</b>	-20 ... 120°C
<b>Cleanroom class</b>	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>LABS (PWIS) conformity</b>	VDMA24364-B2-L, VDMA24364 zone III
<b>Description</b>	<ul style="list-style-type: none"> <li>• Stainless steel design</li> <li>• Food grade see <a href="http://www.festo.com/certificates/NPKK">www.festo.com/certificates/NPKK</a></li> <li>• Fulfills all clean design requirements</li> <li>• Operating media compressed air, vacuum, water. Water as per the manufacturer's declaration, see <a href="http://www.festo.com/certificates/NPKK">www.festo.com/certificates/NPKK</a></li> <li>• Straight shape</li> </ul>
<b>online: →</b>	<b>293</b>

## Pneumatic fittings &gt;

## Threaded fittings

	 <p><b>Blanking plugs B</b></p>	 <p><b>Threaded fittings NPFC</b></p>
<b>Pneumatic connection 1</b>	Male thread G1/4, G1/8, M5, M7	G1, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, M7, R1, R1/2, R1/4, R1/8, R3/4, R3/8
<b>Pneumatic connection 2</b>		G1, G1/2, G1/4, G1/8, G3/4, G3/8, M3, M5, R1, R1/2, R1/4, R1/8, R3/4, R3/8
<b>Ambient temperature</b>		-20 ... 150°C
<b>Suitability for the production of Li-ion batteries</b>	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
<b>Description</b>	<ul style="list-style-type: none"> <li>• Aluminium, stainless steel</li> <li>• With sealing ring</li> <li>• Variants recommended for production systems for manufacturing lithium-ion batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Brass, nickel-plated</li> <li>• Sleeve</li> <li>• Extension</li> <li>• Double nipple</li> <li>• Reducing nipple</li> <li>• Operating medium: compressed air, vacuum</li> <li>• Straight shape, L-shape, T-shape, X-shape, Y-shape</li> </ul>
<b>online: →</b>	<b>294</b>	<b>295</b>

## Product overview

Accessories for pneumatic connection technology >

### Sealing material



Sealing ring  
OL

Based on standard	ISO 16030
Operating pressure complete temperature range	-0.095 MPa ... 3 MPa
Operating pressure complete temperature range	-0.95 bar ... 30 bar
Corrosion resistance class CRC	2 - Moderate corrosion stress
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1
Ambient temperature	-40 °C ... 100 °C
Description	<ul style="list-style-type: none"> <li>• Based on ISO 16030 standard</li> <li>• Seals when tightened by hand at room temperature</li> <li>• Captive</li> <li>• Reusable</li> <li>• Compatible with the existing O and OK sealing rings</li> </ul>
online: →	296

## Plastic tubing PUN-H, PUN-H-DUO, hydrolysis-resistant



- Polyurethane
- High resistance to microbes and hydrolysis
- Suitable for use with energy chains
- Clean room-compatible combination with fitting NPKA
- Also available as DUO plastic tubing
- Operating media compressed air, vacuum, water. Water as per the manufacturer's declaration, see [www.festo.com/certificates/PUN\\_H](http://www.festo.com/certificates/PUN_H)

## Type code

001	Series	
<b>PUN</b>	Plastic tubing, polyurethane	
002	Alternative material characteristic	
<b>H</b>	Hydrolysis-resistant	
003	Pipe/tubing O.D. x wall thickness	
<b>3x0,5</b>	3x0.5 mm	
<b>4x0,75</b>	4x0.75 mm	
<b>6x1</b>	6x1 mm	
<b>8x1,25</b>	8x1.25 mm	
<b>10x1,5</b>	10x1.5 mm	
<b>12x2</b>	12x2 mm	
<b>14x2</b>	14x2 mm	
<b>16x2,5</b>	16x2.5 mm	
004	Tubing type	
	Standard	
<b>DUO</b>	DUO pneumatic tubing	

005	Colour	
<b>BL</b>	Blue	
<b>BS</b>	Blue/black	
<b>GE</b>	Yellow	
<b>GN</b>	Green	
<b>NT</b>	Natural	
<b>RT</b>	Red	
<b>SI</b>	Silver	
<b>SW</b>	Black	
<b>TBL</b>	Translucent blue	
<b>TGE</b>	Translucent yellow	
<b>TGN</b>	Translucent green	
<b>TRT</b>	Translucent red	
<b>TSW</b>	Translucent black	

006	Packaging unit [m]	
	Standard	
<b>25</b>	25 m	
<b>100</b>	100 m	
<b>200</b>	200 m	
<b>300</b>	300 m	
<b>400</b>	400 m	
<b>500</b>	500 m	

## Ordering data PUN-H

Ordering data PUN-H					
Outside diameter	Packaging unit [m] <sup>1)</sup>	Product weight according to length	Colour	Part no.	Type
3 mm	Standard	0.004 kg/m	Blue	<b>197382</b>	<b>PUN-H-3X0,5-BL</b>
			Yellow	<b>558298</b>	<b>PUN-H-3X0,5-GE</b>
			Green	<b>558291</b>	<b>PUN-H-3X0,5-GN</b>
			Natural	<b>197375</b>	<b>PUN-H-3X0,5-NT</b>
			Red	<b>558284</b>	<b>PUN-H-3X0,5-RT</b>
3 mm	Standard 500 m	0.004 kg/m	Black	<b>197389</b>	<b>PUN-H-3X0,5-SW</b>
			Silver	<b>558277</b>	<b>PUN-H-3X0,5-SI</b>
			Blue	<b>558256</b>	<b>PUN-H-3X0,5-BL-500</b>
			Natural	<b>558263</b>	<b>PUN-H-3X0,5-NT-500</b>
			Black	<b>558249</b>	<b>PUN-H-3X0,5-SW-500</b>
			Silver	<b>558270</b>	<b>PUN-H-3X0,5-SI-500</b>

1) Standard: 50 m

Pneumatic tubing > Standard pneumatic tubing >  
Plastic tubing PUN-H, PUN-H-DUO, hydrolysis-resistant

## Ordering data PUN-H

Ordering data PUN-H						
Outside diameter	Packaging unit [m] <sup>1)</sup>	Product weight according to length	Colour	Part no.	Type	
4 mm	Standard	0.009 kg/m	Blue	197383	PUN-H-4X0,75-BL	
			Yellow	558299	PUN-H-4X0,75-GE	
			Green	558292	PUN-H-4X0,75-GN	
			Natural	197376	PUN-H-4X0,75-NT	
			Red	558285	PUN-H-4X0,75-RT	
			Black	197390	PUN-H-4X0,75-SW	
			Silver	558278	PUN-H-4X0,75-SI	
			Translucent blue	8048671	PUN-H-4X0,75-TBL	
			Translucent yellow	8048679	PUN-H-4X0,75-TGE	
			Translucent green	8048677	PUN-H-4X0,75-TGN	
			Translucent red	8048675	PUN-H-4X0,75-TRT	
			Translucent black	8048673	PUN-H-4X0,75-TSW	
	25 m		Blue	8205512	PUN-H-4X0,75-BL-25	
			Red	8204445	PUN-H-4X0,75-RT-25	
			Black	8205515	PUN-H-4X0,75-SW-25	
			Translucent blue	8205518	PUN-H-4X0,75-TBL-25	
			500 m	Blue	558257	PUN-H-4X0,75-BL-500
	Natural			558264	PUN-H-4X0,75-NT-500	
	Black			558250	PUN-H-4X0,75-SW-500	
	Silver			558271	PUN-H-4X0,75-SI-500	
	Translucent blue			8048672	PUN-H-4X0,75-TBL-500	
	Translucent yellow			8048680	PUN-H-4X0,75-TGE-500	
	Translucent green			8048678	PUN-H-4X0,75-TGN-500	
	Translucent red			8048676	PUN-H-4X0,75-TRT-500	
	Translucent black			8048674	PUN-H-4X0,75-TSW-500	
6 mm	Standard	0.018 kg/m		Blue	197384	PUN-H-6X1-BL
				Yellow	558300	PUN-H-6X1-GE
				Green	558293	PUN-H-6X1-GN
				Natural	197377	PUN-H-6X1-NT
			Red	558286	PUN-H-6X1-RT	
			Black	197391	PUN-H-6X1-SW	
			Silver	558279	PUN-H-6X1-SI	
			Translucent blue	8048681	PUN-H-6X1-TBL	
			Translucent yellow	8048689	PUN-H-6X1-TGE	
			Translucent green	8048687	PUN-H-6X1-TGN	
			Translucent red	8048685	PUN-H-6X1-TRT	
			Translucent black	8048683	PUN-H-6X1-TSW	
	25 m		Blue	8205513	PUN-H-6X1-BL-25	
			Red	8204446	PUN-H-6X1-RT-25	
			Black	8205516	PUN-H-6X1-SW-25	
			Translucent blue	8205519	PUN-H-6X1-TBL-25	
			500 m	Blue	558258	PUN-H-6X1-BL-500
	Natural			558265	PUN-H-6X1-NT-500	
	Black			558251	PUN-H-6X1-SW-500	
	Silver			558272	PUN-H-6X1-SI-500	
	Translucent blue			8048682	PUN-H-6X1-TBL-500	
	Translucent yellow			8048690	PUN-H-6X1-TGE-500	
	Translucent green			8048688	PUN-H-6X1-TGN-500	
	Translucent red			8048686	PUN-H-6X1-TRT-500	
	Translucent black			8048684	PUN-H-6X1-TSW-500	

1) Standard: 50 m

## Ordering data PUN-H

Ordering data PUN-H					
Outside diameter	Packaging unit [m] <sup>1)</sup>	Product weight according to length	Colour	Part no.	Type
8 mm	Standard	0.029 kg/m	Blue	197385	PUN-H-8X1,25-BL
			Yellow	558301	PUN-H-8X1,25-GE
			Green	558294	PUN-H-8X1,25-GN
			Natural	197378	PUN-H-8X1,25-NT
			Red	558287	PUN-H-8X1,25-RT
			Black	197392	PUN-H-8X1,25-SW
			Silver	558280	PUN-H-8X1,25-SI
			Translucent blue	8048691	PUN-H-8X1,25-TBL
			Translucent yellow	8048699	PUN-H-8X1,25-TGE
			Translucent green	8048697	PUN-H-8X1,25-TGN
			Translucent red	8048695	PUN-H-8X1,25-TRT
			Translucent black	8048693	PUN-H-8X1,25-TSW
	25 m		Blue	8205514	PUN-H-8X1,25-BL-25
			Red	8204447	PUN-H-8X1,25-RT-25
			Black	8205517	PUN-H-8X1,25-SW-25
	400 m		Translucent blue	8205520	PUN-H-8X1,25-TBL-25
			Blue	558259	PUN-H-8X1,25-BL-400
			Natural	558266	PUN-H-8X1,25-NT-400
			Black	558252	PUN-H-8X1,25-SW-400
			Silver	558273	PUN-H-8X1,25-SI-400
			Translucent blue	8048692	PUN-H-8X1,25-TBL-400
			Translucent yellow	8048700	PUN-H-8X1,25-TGE-400
			Translucent green	8048698	PUN-H-8X1,25-TGN-400
			Translucent red	8048696	PUN-H-8X1,25-TRT-400
			Translucent black	8048694	PUN-H-8X1,25-TSW-400
10 mm	Standard	0.046 kg/m	Blue	197386	PUN-H-10X1,5-BL
			Yellow	558302	PUN-H-10X1,5-GE
			Green	558295	PUN-H-10X1,5-GN
			Natural	197379	PUN-H-10X1,5-NT
			Red	558288	PUN-H-10X1,5-RT
			Black	197393	PUN-H-10X1,5-SW
			Silver	558281	PUN-H-10X1,5-SI
			Translucent blue	8048701	PUN-H-10X1,5-TBL
			Translucent yellow	8048709	PUN-H-10X1,5-TGE
			Translucent green	8048707	PUN-H-10X1,5-TGN
			Translucent red	8048705	PUN-H-10X1,5-TRT
			Translucent black	8048703	PUN-H-10X1,5-TSW
	25 m		Blue	8204441	PUN-H-10X1,5-BL-25
			Red	8204448	PUN-H-10X1,5-RT-25
			Black	8204443	PUN-H-10X1,5-SW-25
	300 m		Translucent blue	8205521	PUN-H-10X1,5-TBL-25
			Blue	558260	PUN-H-10X1,5-BL-300
			Natural	558267	PUN-H-10X1,5-NT-300
			Black	558253	PUN-H-10X1,5-SW-300
			Silver	558274	PUN-H-10X1,5-SI-300
			Translucent blue	8048702	PUN-H-10X1,5-TBL-300
			Translucent yellow	8048710	PUN-H-10X1,5-TGE-300
			Translucent green	8048708	PUN-H-10X1,5-TGN-300
			Translucent red	8048706	PUN-H-10X1,5-TRT-300
			Translucent black	8048704	PUN-H-10X1,5-TSW-300

1) Standard: 50 m

# Ordering data PUN-H

Ordering data PUN-H					
Outside diameter	Packaging unit [m] <sup>1)</sup>	Product weight according to length	Colour	Part no.	Type
12 mm	Standard	0.073 kg/m	Blue	197387	PUN-H-12X2-BL
			Yellow	558303	PUN-H-12X2-GE
			Green	558296	PUN-H-12X2-GN
			Natural	197380	PUN-H-12X2-NT
			Red	558289	PUN-H-12X2-RT
			Black	197394	PUN-H-12X2-SW
			Silver	558282	PUN-H-12X2-SI
			Translucent blue	8048711	PUN-H-12X2-TBL
			Translucent yellow	8048719	PUN-H-12X2-TGE
			Translucent green	8048717	PUN-H-12X2-TGN
			Translucent red	8048715	PUN-H-12X2-TRT
			Translucent black	8048713	PUN-H-12X2-TSW
	25 m		Blue	8204442	PUN-H-12X2-BL-25
			Red	8204449	PUN-H-12X2-RT-25
			Black	8204444	PUN-H-12X2-SW-25
	200 m		Translucent blue	8205522	PUN-H-12X2-TBL-25
			Blue	558261	PUN-H-12X2-BL-200
			Natural	558268	PUN-H-12X2-NT-200
			Black	558254	PUN-H-12X2-SW-200
			Silver	558275	PUN-H-12X2-SI-200
			Translucent blue	8048712	PUN-H-12X2-TBL-200
			Translucent yellow	8048720	PUN-H-12X2-TGE-200
			Translucent green	8048718	PUN-H-12X2-TGN-200
			Translucent red	8048716	PUN-H-12X2-TRT-200
			Translucent black	8048714	PUN-H-12X2-TSW-200
14 mm	Standard	0.091 kg/m	Blue	570386	PUN-H-14X2-BL
			Natural	570388	PUN-H-14X2-NT
			Black	570387	PUN-H-14X2-SW
16 mm	100 m	0.123 kg/m	Blue	197388	PUN-H-16X2,5-BL
			Yellow	558304	PUN-H-16X2,5-GE
			Green	558297	PUN-H-16X2,5-GN
			Natural	197381	PUN-H-16X2,5-NT
			Red	558290	PUN-H-16X2,5-RT
			Black	197395	PUN-H-16X2,5-SW
			Silver	558283	PUN-H-16X2,5-SI
			Blue	558262	PUN-H-16X2,5-BL-100
			Natural	558269	PUN-H-16X2,5-NT-100
			Black	558255	PUN-H-16X2,5-SW-100
			Silver	558276	PUN-H-16X2,5-SI-100

1) Standard: 50 m

# Ordering data PUN-H-DUO

Outside diameter	Packaging unit [m] <sup>1)</sup>	Product weight according to length	Colour	Part no.	Type
4 mm	Standard	0.017 kg/m	Blue/black	197396	PUN-H-4X0,75-DUO
6 mm		0.037 kg/m		197397	PUN-H-6X1-DUO
8 mm		0.057 kg/m		197398	PUN-H-8X1,25-DUO
10 mm		0.093 kg/m		197399	PUN-H-10X1,5-DUO

1) Standard: 50 m



- Polyurethane
- High resistance to microbes and hydrolysis
- Suitable for use with energy chains
- Operating medium: compressed air, vacuum, water

## Type code

001	Series	
PUN	Plastic tubing, polyurethane	
002	Alternative material characteristic	
H	Hydrolysis-resistant	
003	Tubing outside diameter	
5/32	5/32"	
1/8	1/8"	
3/16	3/16"	
1/4	1/4"	
5/16	5/16"	
1/2	1/2"	
3/8	3/8"	
5/8	5/8"	
004	Tubing type	
	Standard	

005	Colour	
BL	Blue	
BR	Brown	
NT	Natural	
SW	Black	
GN	Green	
SI	Silver	
GE	Yellow	
RT	Red	
WS	White	
TBL	Translucent blue	
TGE	Translucent yellow	
TGN	Translucent green	
TRT	Translucent red	
TSW	Translucent black	

006	Packaging unit [m]	
150	150 ft	
500	500 ft	
1000	1000 ft	

004	Packaging	
CB	Cardboard box	
HA	Reel	

## Ordering data PUN-H, NPT

Ordering data PUN-H					
Pneumatic connection	Packaging unit [ft]	Product weight according to length	Colour	Part no.	Type
For push-in connector outside diameter of 5/32"	150 ft	0.09 oz/ft	Blue	567946	PUN-H-5/32-BL-150-CB
			Brown	567994	PUN-H-5/32-BR-150-CB
			Natural	567962	PUN-H-5/32-NT-150-CB
			Black	567954	PUN-H-5/32-SW-150-CB
For push-in connector outside diameter of 5/32"	500 ft	0.09 oz/ft	Black	568017	PUN-H-5/32-SW-500-HA
For push-in connector outside diameter of 1/8"	150 ft	0.06 oz/ft	Blue	567945	PUN-H-1/8-BL-150-CB
			Brown	567993	PUN-H-1/8-BR-150-CB
			Green	567977	PUN-H-1/8-GN-150-CB
			Natural	567961	PUN-H-1/8-NT-150-CB
			Black	567953	PUN-H-1/8-SW-150-CB
			Silver	567937	PUN-H-1/8-SI-150-CB
For push-in connector outside diameter of 3/16"		0.13 oz/ft	Blue	567947	PUN-H-3/16-BL-150-CB
			Yellow	567971	PUN-H-3/16-GE-150-CB
			Green	567979	PUN-H-3/16-GN-150-CB
			Natural	567963	PUN-H-3/16-NT-150-CB
			Black	567955	PUN-H-3/16-SW-150-CB

## Ordering data PUN-H, NPT

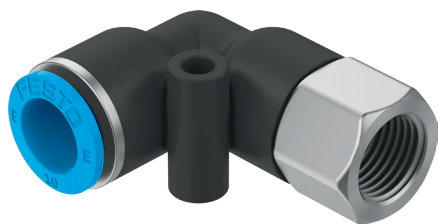
Ordering data PUN-H						
Pneumatic connection	Packaging unit [ft]	Product weight according to length	Colour	Part no.	Type	
For push-in connector O.D. 1/4"		0.23 oz/ft	Translucent blue	8203970	PUN-H-1/4-TBL-150-CB	
			Translucent yellow	8203974	PUN-H-1/4-TGE-150-CB	
			Translucent green	8203973	PUN-H-1/4-TGN-150-CB	
			Translucent red	8203972	PUN-H-1/4-TRT-150-CB	
			Translucent black	8203971	PUN-H-1/4-TSW-150-CB	
			Blue	567948	PUN-H-1/4-BL-150-CB	
			Yellow	567972	PUN-H-1/4-GE-150-CB	
			Green	567980	PUN-H-1/4-GN-150-CB	
			Natural	567964	PUN-H-1/4-NT-150-CB	
			Red	567988	PUN-H-1/4-RT-150-CB	
			Black	567956	PUN-H-1/4-SW-150-CB	
			Silver	567940	PUN-H-1/4-SI-150-CB	
	White	568004	PUN-H-1/4-WS-150-CB			
	150 ft	Blue	568014	PUN-H-1/4-BL-500-HA		
		Natural	8003126	PUN-H-1/4-NT-500-HA		
		Black	568018	PUN-H-1/4-SW-500-HA		
		Silver	568010	PUN-H-1/4-SI-500-HA		
		Blue	568021	PUN-H-1/4-BL-1000-HA		
		Black	568023	PUN-H-1/4-SW-1000-HA		
		500 ft	0.31 oz/ft	Blue	567949	PUN-H-5/16-BL-150-CB
Brown				567997	PUN-H-5/16-BR-150-CB	
Natural	567965			PUN-H-5/16-NT-150-CB		
Black	567957			PUN-H-5/16-SW-150-CB		
1000 ft	Natural	8003127	PUN-H-5/16-NT-500-HA			
	Silver	568011	PUN-H-5/16-SI-500-HA			
	Blue	568022	PUN-H-5/16-BL-1000-HA			
	Black	568024	PUN-H-5/16-SW-1000-HA			
For push-in connector O.D 3/8"		0.48 oz/ft	Translucent blue	8203975	PUN-H-3/8-TBL-150-CB	
			Translucent yellow	8203979	PUN-H-3/8-TGE-150-CB	
			Translucent green	8203978	PUN-H-3/8-TGN-150-CB	
			Translucent red	8203977	PUN-H-3/8-TRT-150-CB	
			Translucent black	8203976	PUN-H-3/8-TSW-150-CB	
			Blue	567950	PUN-H-3/8-BL-150-CB	
			Brown	567998	PUN-H-3/8-BR-150-CB	
			Yellow	567974	PUN-H-3/8-GE-150-CB	
			Green	567982	PUN-H-3/8-GN-150-CB	
			Natural	567966	PUN-H-3/8-NT-150-CB	
			Red	567990	PUN-H-3/8-RT-150-CB	
			Black	567958	PUN-H-3/8-SW-150-CB	
	Silver	567942	PUN-H-3/8-SI-150-CB			
	White	568006	PUN-H-3/8-WS-150-CB			
	150 ft	Blue	568016	PUN-H-3/8-BL-500-HA		
		Natural	8003128	PUN-H-3/8-NT-500-HA		
		Black	568020	PUN-H-3/8-SW-500-HA		
		500 ft	0.88 oz/ft	Translucent blue	8203980	PUN-H-1/2-TBL-150-CB
				Translucent yellow	8203984	PUN-H-1/2-TGE-150-CB
				Translucent green	8203983	PUN-H-1/2-TGN-150-CB
Translucent red				8203982	PUN-H-1/2-TRT-150-CB	



## Ordering data PUN-H, NPT

Ordering data PUN-H					
Pneumatic connection	Packaging unit [ft]	Product weight according to length	Colour	Part no.	Type
For push-in connector O.D 1/2"	150 ft	0.88 oz/ft	Translucent black	8203981	PUN-H-1/2-TSW-150-CB
			Blue	567951	PUN-H-1/2-BL-150-CB
			Yellow	567975	PUN-H-1/2-GE-150-CB
			Green	567983	PUN-H-1/2-GN-150-CB
			Natural	567967	PUN-H-1/2-NT-150-CB
			Red	567991	PUN-H-1/2-RT-150-CB
			Black	567959	PUN-H-1/2-SW-150-CB
			Silver	567943	PUN-H-1/2-SI-150-CB
			White	568007	PUN-H-1/2-WS-150-CB
			Blue	567952	PUN-H-5/8-BL-150-CB
For push-in connector outside diameter of 5/8"		1.38 oz/ft	Brown	568000	PUN-H-5/8-BR-150-CB
			Yellow	567976	PUN-H-5/8-GE-150-CB
			Green	567984	PUN-H-5/8-GN-150-CB
			Red	567992	PUN-H-5/8-RT-150-CB
			White	568008	PUN-H-5/8-WS-150-CB

Pneumatic fittings > Pneumatic push-in fittings >  
Push-in fitting NPQE-F1A



- Economical push-in fittings for pneumatic applications
- Recommended for production systems for manufacturing lithium-ion batteries
- Tapered thread in accordance with JIS B0203 and compatible with pressure-tight media to DIN EN 10226
- Operating medium: compressed air, vacuum
- Straight shape, T-shape, L-shape, Y-shape

## Type code

001	Series
NPQE	Push-in fitting

002	Design
D	Straight
L	L-shape
T	T-shape
Y	Y-shape

003	Mounting method
	Standard
K	Internal hex

004	Pneumatic connection 1
G14	G1/4
G18	G1/8
M3	M3
M5	M5
M7	M7
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
Q10	Push-in connector 10 mm
Q12	Push-in connector 12 mm
R14	R1/4
R18	R1/8

005	Pneumatic connection 2
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
Q10	Push-in connector 10 mm
Q12	Push-in connector 12 mm

006	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

007	Packaging quantity [pieces]
P10	10

Ordering data – Push-in fitting NPQE-DK					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	1.5 mm	For tubing outside diameter of 4 mm	Male thread M3	8158773	NPQE-DK-M3-Q4-F1A-P10
	2.5 mm		Male thread M5	8144595	NPQE-DK-M5-Q4-F1A-P10
		For tubing outside diameter of 6 mm		8144596	NPQE-DK-M5-Q6-F1A-P10
	3 mm		Male thread M7	8144597	NPQE-DK-M7-Q4-F1A-P10
	4 mm	For tubing outside diameter of 6 mm	Male thread G1/8	8144599	NPQE-DK-G18-Q4-F1A-P10
			Male thread M7	8144598	NPQE-DK-M7-Q6-F1A-P10
Standard			Male thread G1/8	8144600	NPQE-DK-G18-Q6-F1A-P10
			Male thread G1/4	8144603	NPQE-DK-G14-Q6-F1A-P10
	5 mm	For tubing outside diameter of 8 mm	Male thread G1/8	8144601	NPQE-DK-G18-Q8-F1A-P10
				8144602	NPQE-DK-G18-Q10-F1A-P10
		For tubing outside diameter of 10 mm	Male thread G1/4	8144604	NPQE-DK-G14-Q8-F1A-P10
				8144605	NPQE-DK-G14-Q10-F1A-P10
Standard	7 mm	For tubing outer diameter of 12 mm	Male thread G1/4	8144606	NPQE-DK-G14-Q12-F1A-P10

Ordering data – Push-in connector NPQE-D					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	2.3 mm	For tubing outside diameter of 4 mm	For tubing outer diameter of 4 mm	8158787	NPQE-D-Q4-E-F1A-P10
	4 mm	For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	8158788 8158789	NPQE-D-Q6-Q4-F1A-P10 NPQE-D-Q6-E-F1A-P10
Standard	5.3 mm	For tubing outside diameter of 6 mm	For tubing outer diameter of 8 mm	8158790	NPQE-D-Q8-Q6-F1A-P10
	7.1 mm	For tubing outside diameter of 8 mm	For tubing outer diameter of 8 mm	8158791	NPQE-D-Q8-E-F1A-P10
	9.3 mm	For tubing outside diameter of 10 mm	For tubing outer diameter of 10 mm	8158792	NPQE-D-Q10-Q8-F1A-P10
		For tubing outside diameter of 10 mm	For tubing outer diameter of 10 mm	8158793	NPQE-D-Q10-E-F1A-P10
	10 mm	For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	8158794 8158795	NPQE-D-Q12-Q10-F1A-P10 NPQE-D-Q12-E-F1A-P10

Ordering data – Push-in L-fitting NPQE-L					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	1 mm	For tubing outside diameter of 4 mm	Male thread M3	8158774	NPQE-L-M3-Q4-F1A-P10
	2.3 mm	For tubing outside diameter of 4 mm	Male thread M5	8158775	NPQE-L-M5-Q4-F1A-P10
			Male thread M7	8158777	NPQE-L-M7-Q4-F1A-P10
			Male thread M5	8158776	NPQE-L-M5-Q6-F1A-P10
	3.4 mm	For tubing outside diameter of 6 mm	Male thread M7	8158778	NPQE-L-M7-Q6-F1A-P10
			Male thread R1/8	8158779	NPQE-L-R18-Q4-F1A-P10
Standard	4 mm	For tubing outside diameter of 6 mm	Male thread R1/4	8158780	NPQE-L-R18-Q6-F1A-P10
	6 mm	For tubing outside diameter of 8 mm	Male thread R1/4	8158783	NPQE-L-R14-Q6-F1A-P10
	6.5 mm	For tubing outside diameter of 10 mm	Male thread R1/8	8158781	NPQE-L-R18-Q8-F1A-P10
	8.5 mm	For tubing outside diameter of 10 mm	Male thread R1/4	8158784	NPQE-L-R14-Q8-F1A-P10
			Male thread R1/8	8158782	NPQE-L-R18-Q10-F1A-P10
			Male thread R1/4	8158785	NPQE-L-R14-Q10-F1A-P10
		For tubing outer diameter of 12 mm		8158786	NPQE-L-R14-Q12-F1A-P10

Ordering data – Push-in L-connector NPQE-L					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	2.3 mm	For tubing outside diameter of 4 mm	For tubing outer diameter of 4 mm	8158796	NPQE-L-Q4-E-F1A-P10
	4 mm	For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	8158797	NPQE-L-Q6-E-F1A-P10
Standard	7.1 mm	For tubing outside diameter of 8 mm	For tubing outer diameter of 8 mm	8158798	NPQE-L-Q8-E-F1A-P10
	9.3 mm	For tubing outside diameter of 10 mm	For tubing outer diameter of 10 mm	8158799	NPQE-L-Q10-E-F1A-P10

Pneumatic fittings > Pneumatic push-in fittings >

## Push-in fitting NPQE-F1A

Ordering data – Push-in T-connector NPQE-T					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	2.3 mm	For tubing outside diameter of 4 mm	For tubing outer diameter of 4 mm	8158800	NPQE-T-Q4-E-F1A-P10
Mini	4 mm	For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	8158801	NPQE-T-Q6-E-F1A-P10
Standard	7.1 mm	For tubing outside diameter of 8 mm	For tubing outer diameter of 8 mm	8158802	NPQE-T-Q8-E-F1A-P10
	9.3 mm	For tubing outside diameter of 10 mm	For tubing outer diameter of 10 mm	8158803	NPQE-T-Q10-E-F1A-P10

Ordering data – Push-in Y-connector NPQE-Y					
Size	Nominal size	Pneumatic connection, port 2	Pneumatic connection, port 1	Part no.	Type
Mini	2.3 mm	For tubing outside diameter of 4 mm	For tubing outer diameter of 4 mm	8158804	NPQE-Y-Q4-E-F1A-P10
	4 mm	For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	8158805	NPQE-Y-Q6-E-F1A-P10
Standard	8.2 mm	For tubing outside diameter of 8 mm	For tubing outer diameter of 8 mm	8158806	NPQE-Y-Q8-E-F1A-P10
		For tubing outside diameter of 10 mm	For tubing outer diameter of 10 mm	8158807	NPQE-Y-Q10-E-F1A-P10

Pneumatic fittings > Pneumatic push-in fittings >  
Push in fitting NPQR, stainless steel

- Very easy to clean thanks to chamfered O-ring and fewer edges where dirt can accumulate
- Optimal price/performance ratio, perfect for applications from a single source
- Maximum corrosion resistance (corrosion resistance class CRC 4 to Festo standard 940 070) and chemical resistance
- High temperature resistance
- Stainless steel
- Operating media: compressed air, vacuum, (water)
- Straight shape, L-shape, T-shape, Y-shape, push-in bulkhead connector

## Type code

001	Series
NPQR	Push-in fitting
002	Design
B	Plug screw
D	Straight
H	Bulkhead
L	L-shape
T	T-shape
Y	Y-shape
003	Mounting method
	Standard
K	Internal hex

004	Pneumatic connection 1
G12	G1/2
G14	G1/4
G18	G1/8
G38	G3/8
M5	M5
M7	M7
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
Q10	Push-in connector 10 mm
Q12	Push-in connector 12 mm
Q14	Push-in connector 14 mm
Q16	Push-in connector 16 mm

005	Pneumatic connection 2
	None
E	Same size as connection 1
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
Q10	Push-in connector 10 mm
Q12	Push-in connector 12 mm
Q14	Push-in connector 14 mm
Q16	Push-in connector 16 mm

006	Packaging quantity [pieces]
	Standard

Push-in fitting NPQR-DK					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Type of mounting	Part no.	Type
Male thread M5	For tubing outside diameter of 4 mm	2.1 mm	Internal hexagon, size 2 mm	8085657	NPQR-DK-M5-Q4
	For tubing outside diameter of 6 mm	2.6 mm	Internal hexagon, size 2.5 mm	8085659	NPQR-DK-M5-Q6
Male thread M7	For tubing outside diameter of 4 mm			8085658	NPQR-DK-M7-Q4
	For tubing outside diameter of 6 mm	4.2 mm	Internal hexagon, size 4 mm	8085660	NPQR-DK-M7-Q6
Male thread G1/8	For tubing outside diameter of 4 mm	2.6 mm	Internal hexagon, size 2.5 mm	8085661	NPQR-DK-G18-Q4
	For tubing outside diameter of 6 mm	4.2 mm	Internal hexagon, size 4 mm	8085662	NPQR-DK-G18-Q6
	For tubing outside diameter of 8 mm	5.3 mm	Internal hexagon, size 5 mm	8085663	NPQR-DK-G18-Q8
	For tubing outside diameter of 10 mm			8087695	NPQR-DK-G18-Q10

Pneumatic fittings > Pneumatic push-in fittings >  
Push in fitting NPQR, stainless steel

Push-in fitting NPQR-DK					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Type of mounting	Part no.	Type
Male thread G1/4	For tubing outside diameter of 6 mm	4.2 mm	Internal hexagon, size 4 mm	8085664	NPQR-DK-G14-Q6
	For tubing outside diameter of 8 mm	6.3 mm	Internal hexagon, size 6 mm	8085665	NPQR-DK-G14-Q8
	For tubing outside diameter of 10 mm			8085666	NPQR-DK-G14-Q10
Male thread G3/8	For tubing outside diameter of 8 mm	7.3 mm	Internal hexagon, A/F 7 mm	8086953	NPQR-DK-G38-Q8
	For tubing outside diameter of 10 mm			8085667	NPQR-DK-G38-Q10
	For tubing outer diameter of 12 mm	8.4 mm	Internal hexagon, size 8 mm	8085668	NPQR-DK-G38-Q12
Male thread G1/2	For tubing outside diameter of 14 mm	11.6 mm	Internal hexagon, size 10 mm	8085669	NPQR-DK-G12-Q12
	For tubing outside diameter of 16 mm			8085670	NPQR-DK-G12-Q14
	For tubing outside diameter of 16 mm	12.6 mm	Internal hexagon, size 12 mm	8085671	NPQR-DK-G12-Q16

Push-in connector NPQR-D					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outer diameter of 4 mm	For tubing outside diameter of 4 mm	3 mm	9.8 g	8085697	NPQR-D-Q4-E
For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	5 mm	15 g	8085698	NPQR-D-Q6-E
For tubing outer diameter of 8 mm	For tubing outside diameter of 8 mm	7 mm	19.4 g	8085699	NPQR-D-Q8-E
For tubing outer diameter of 10 mm	For tubing outside diameter of 10 mm	9 mm	32.4 g	8085700	NPQR-D-Q10-E
For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	11 mm	49.1 g	8085701	NPQR-D-Q12-E
For tubing outer diameter of 14 mm	For tubing outside diameter of 14 mm	13 mm	47.8 g	8085702	NPQR-D-Q14-E
For tubing outer diameter of 16 mm	For tubing outside diameter of 16 mm	15 mm	65.6 g	8085703	NPQR-D-Q16-E

Push-in connector NPQR-D (reducing)					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outside diameter of 6 mm	For tubing outside diameter of 4 mm	3 mm	12 g	8085704	NPQR-D-Q6-Q4
For tubing outer diameter of 8 mm	For tubing outside diameter of 6 mm	5 mm	16.7 g	8085705	NPQR-D-Q8-Q6
For tubing outer diameter of 10 mm	For tubing outside diameter of 8 mm	7 mm	25.1 g	8085706	NPQR-D-Q10-Q8
For tubing outer diameter of 12 mm	For tubing outside diameter of 10 mm	9 mm	39.6 g	8085707	NPQR-D-Q12-Q10
For tubing outer diameter of 16 mm	For tubing outer diameter of 12 mm	11 mm	63.7 g	8085708	NPQR-D-Q16-Q12

Push-in bulkhead connector NPQR-H					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outer diameter of 4 mm	For tubing outside diameter of 4 mm	3 mm	24.3 g	8085729	NPQR-H-Q4-E
For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	5 mm	28.3 g	8085730	NPQR-H-Q6-E
For tubing outer diameter of 8 mm	For tubing outside diameter of 8 mm	7 mm	37.1 g	8085731	NPQR-H-Q8-E

**Push-in bulkhead connector NPQR-H**

Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outer diameter of 10 mm	For tubing outside diameter of 10 mm	9 mm	66.8 g	8085732	NPQR-H-Q10-E
For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	11 mm	88.1 g	8085733	NPQR-H-Q12-E
For tubing outer diameter of 16 mm	For tubing outside diameter of 16 mm	15 mm	153.6 g	8099104	NPQR-H-Q16-E

**Plug screw NPQR-BK**

Pneumatic connection, port 1	Type of mounting	Product weight	Part no.	Type
Male thread M5		3.2 g	8104803	NPQR-BK-M5
Male thread M7	Internal hexagon, size 3 mm	2.1 g	8085672	NPQR-BK-M7
Male thread G1/8	Internal hexagon, size 5 mm	4 g	8085673	NPQR-BK-G18
Male thread G1/4	Internal hexagon, size 6 mm	11 g	8085674	NPQR-BK-G14
Male thread G3/8	Internal hexagon, size 8 mm	17 g	8085675	NPQR-BK-G38
Male thread G1/2	Internal hexagon, size 10 mm	29 g	8085676	NPQR-BK-G12

**Push-in L-fitting NPQR-L**

Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Type of mounting	Part no.	Type
Male thread M5	For tubing outside diameter of 4 mm	2 mm	External hexagon, A/F 8 mm	8085679	NPQR-L-M5-Q4
	For tubing outside diameter of 6 mm			8098626	NPQR-L-M5-Q6
Male thread G1/8	For tubing outside diameter of 4 mm	4 mm	External hex, A/F 13 mm	8085680	NPQR-L-G18-Q4
	For tubing outside diameter of 6 mm		External hexagon, A/F 13 mm	8085681	NPQR-L-G18-Q6
	For tubing outside diameter of 8 mm			8085682	NPQR-L-G18-Q8
Male thread G1/4	For tubing outside diameter of 6 mm	4 mm	External hexagon, A/F 15 mm	8085683	NPQR-L-G14-Q6
	For tubing outside diameter of 8 mm	6 mm		8085684	NPQR-L-G14-Q8
	For tubing outside diameter of 10 mm	8 mm		8085685	NPQR-L-G14-Q10
Male thread G3/8	For tubing outer diameter of 12 mm	10 mm	External hexagon, A/F 20 mm	8085686	NPQR-L-G38-Q10
	For tubing outer diameter of 14 mm	12 mm		8085687	NPQR-L-G38-Q12
Male thread G1/2	For tubing outside diameter of 16 mm	14 mm	External hexagon, A/F 25 mm	8085688	NPQR-L-G12-Q12
				8085689	NPQR-L-G12-Q14
				8085690	NPQR-L-G12-Q16

**Push-in L-connector NPQR-L**

Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outer diameter of 4 mm	For tubing outside diameter of 4 mm	3 mm	7.8 g	8085709	NPQR-L-Q4-E
For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	5 mm	14.9 g	8085710	NPQR-L-Q6-E
For tubing outer diameter of 8 mm	For tubing outside diameter of 8 mm	7 mm	20.4 g	8085711	NPQR-L-Q8-E
For tubing outer diameter of 10 mm	For tubing outside diameter of 10 mm	9 mm	29.9 g	8085712	NPQR-L-Q10-E
For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	11 mm	51.8 g	8085713	NPQR-L-Q12-E
For tubing outer diameter of 14 mm	For tubing outside diameter of 14 mm	14 mm	60.6 g	8085714	NPQR-L-Q14-E
For tubing outer diameter of 16 mm	For tubing outside diameter of 16 mm	16 mm	83.8 g	8085715	NPQR-L-Q16-E

Pneumatic fittings > Pneumatic push-in fittings >  
Push in fitting NPQR, stainless steel

Push-in T-fitting NPQR-T					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Type of mounting	Part no.	Type
Male thread M5	For tubing outside diameter of 4 mm	2 mm	External hexagon, A/F 8 mm	8085691	NPQR-T-M5-Q4
	For tubing outside diameter of 6 mm	2.2 mm		8099103	NPQR-T-M5-Q6
Male thread G1/8	For tubing outside diameter of 8 mm	4 mm	External hexagon, A/F 13 mm	8085692	NPQR-T-G18-Q6
	For tubing outside diameter of 10 mm	6 mm		8085693	NPQR-T-G18-Q8
Male thread G1/4	For tubing outside diameter of 12 mm	8 mm	External hexagon, A/F 15 mm	8085694	NPQR-T-G14-Q8
	For tubing outside diameter of 14 mm			8099100	NPQR-T-G14-Q10
Male thread G3/8	For tubing outer diameter of 16 mm	10 mm	External hexagon, A/F 20 mm	8085695	NPQR-T-G38-Q10
	For tubing outer diameter of 18 mm			8099101	NPQR-T-G38-Q12
Male thread G1/2	For tubing outside diameter of 20 mm	14 mm	External hexagon, A/F 25 mm	8099102	NPQR-T-G12-Q12
	For tubing outside diameter of 22 mm			8085696	NPQR-T-G12-Q16

Push-in T-connector NPQR-T					
Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
For tubing outer diameter of 4 mm	For tubing outside diameter of 4 mm	3 mm	10 g	8085716	NPQR-T-Q4-E
For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	5 mm	19.2 g	8085717	NPQR-T-Q6-E
For tubing outer diameter of 8 mm	For tubing outside diameter of 8 mm	7 mm	26.1 g	8085718	NPQR-T-Q8-E
For tubing outer diameter of 10 mm	For tubing outside diameter of 10 mm	9 mm	37.7 g	8085719	NPQR-T-Q10-E
For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	11 mm	66.7 g	8085720	NPQR-T-Q12-E
For tubing outer diameter of 14 mm	For tubing outside diameter of 14 mm	14 mm	85 g	8085721	NPQR-T-Q14-E
For tubing outer diameter of 16 mm	For tubing outside diameter of 16 mm	16 mm	114.7 g	8085722	NPQR-T-Q16-E

Push-in Y-connector NPQR-Y				
Pneumatic connection, port 1	Pneumatic connection, port 2	Product weight	Part no.	Type
For tubing outer diameter of 4 mm	For tubing outside diameter of 4 mm	18.2 g	8085723	NPQR-Y-Q4-E
For tubing outside diameter of 6 mm	For tubing outside diameter of 6 mm	30.6 g	8085724	NPQR-Y-Q6-E
For tubing outer diameter of 8 mm	For tubing outside diameter of 8 mm	37.8 g	8085725	NPQR-Y-Q8-E
For tubing outer diameter of 10 mm	For tubing outside diameter of 10 mm	65.2 g	8085726	NPQR-Y-Q10-E
For tubing outer diameter of 12 mm	For tubing outer diameter of 12 mm	106.4 g	8085727	NPQR-Y-Q12-E
For tubing outer diameter of 16 mm	For tubing outside diameter of 16 mm	140.9 g	8085728	NPQR-Y-Q16-E





- Stainless steel design
- Food grade see [www.festo.com/certificates/NPCK](http://www.festo.com/certificates/NPCK)
- Fulfils all clean design requirements
- Operating media compressed air, vacuum, water. Water as per the manufacturer's declaration, see [www.festo.com/certificates/NPCK](http://www.festo.com/certificates/NPCK)
- Straight shape

## Type code

001	Series
NPCK	Fitting
002	Product version
C	Easy-to-clean design
003	Design
D	Straight

004	Pneumatic connection 1
G14	G1/4
G18	G1/8
G38	G3/8
M5	M5
005	Pneumatic connection 2
K4	Terminal connection 4 mm
K6	Terminal connection 6 mm
K8	Terminal connection 8 mm
K10	Terminal connection 10 mm

## Ordering data

Pneumatic connection, port 1	Pneumatic connection, port 2	Nominal size	Product weight	Part no.	Type
Male thread M5	For tubing outside diameter of 4 mm	2 mm	4.2 g	1857681	NPCK-C-D-M5-K4
Male thread G1/8	For tubing outside diameter of 6 mm	2.9 mm	14.1 g	1366257	NPCK-C-D-G18-K6
	For tubing outside diameter of 8 mm	4.9 mm	13.4 g	1490383	NPCK-C-D-G18-K8
Male thread G1/4			28.85 g	1691701	NPCK-C-D-G14-K8
	For tubing outside diameter of 10 mm	6.1 mm	32.9 g	1489336	NPCK-C-D-G14-K10
Male thread G3/8		6.2 mm	51.15 g	1489614	NPCK-C-D-G38-K10



- Aluminium, stainless steel
- With sealing ring

Type code

001	Series	003	Special material properties
B	Blanking plug	F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A
002	Pneumatic connection 1	004	Packaging quantity [pieces]
G14	G1/4		10
G18	G1/8		
M5	M5		
M7	M7		

Ordering data

Blanking plug with internal hex socket and sealing ring (F1A)				
Pneumatic connection, port 1	Size of pack	Product weight	Part no.	Type
Male thread M5	10	1 g	8142288	B-M5-F1A
Male thread M7		2 g	8144525	B-M7-F1A
Male thread G1/8		7 g	8142289	B-1/8-F1A
Male thread G1/4		15 g	8142290	B-1/4-F1A



- Brass, nickel-plated
- Sleeve
- Extension
- Double nipple
- Reducing nipple
- Operating medium: compressed air, vacuum
- Straight shape, L-shape, T-shape, X-shape, Y-shape

## Type code

001	Series	005	Number, connection type 2
NPFC	Fitting		None
002	Design type	006	Connection type 2
D	Double nipple, straight		None
003	Number, connection type 1	007	Thread type
2	2 connections	M	Male
004	Connection type 1	008	Special material properties
G18	G1/8	F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

## Ordering data

Ordering data – Double nipple NPFC-D				
Pneumatic connection, port 1 <sup>1)</sup>	Pneumatic connection, port 2	Product weight	Part no.	Type
G1/8	G1/8	10 g	8133311	NPFC-D-2G18-M-F1A

1) F1A: Products for battery production

Accessories for pneumatic connectors >

## Sealing ring OL



- Based on ISO 16030 standard
- Seals when tightened by hand at room temperature
- Captive
- Reusable
- Compatible with the existing O and OK sealing rings

## Ordering data

Sealing ring OL						
Pneumatic connec- tion	Nominal torque <sup>1)</sup>	Tolerance for nominal tightening torque	Size of pack	Product weight	Part no.	Type
M5	2.5 Nm	± 20%		0.06 g	34634	OL-M5
			500		534231	OL-M5-500
M6			0.05 g	161180	OL-M6	
G1/8	6 Nm			0.14 g	33840	OL-1/8
			500		534232	OL-1/8-500
G1/4	10 Nm			0.32 g	34635	OL-1/4
			200		534233	OL-1/4-200
G3/8	13 Nm			0.57 g	34636	OL-3/8
			200		534234	OL-3/8-200
G1/2	23 Nm			0.68 g	34637	OL-1/2
G1/2	23 Nm	± 20%	100		534235	OL-1/2-100
G3/4				0.95 g	34638	OL-3/4

1) Tolerance for nominal tightening torque: ±20%

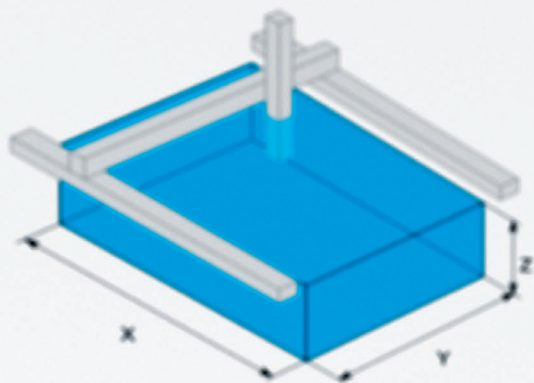




# Appendix

## Axis definition

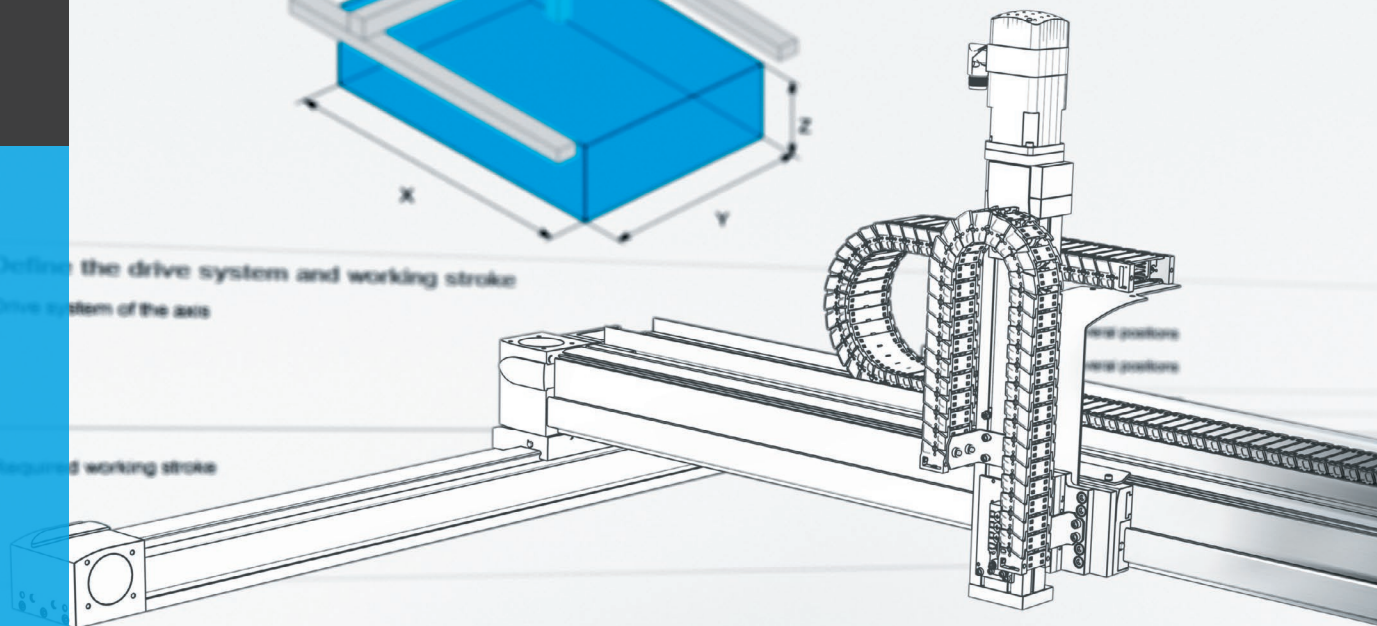
Find your handling solution in a few steps



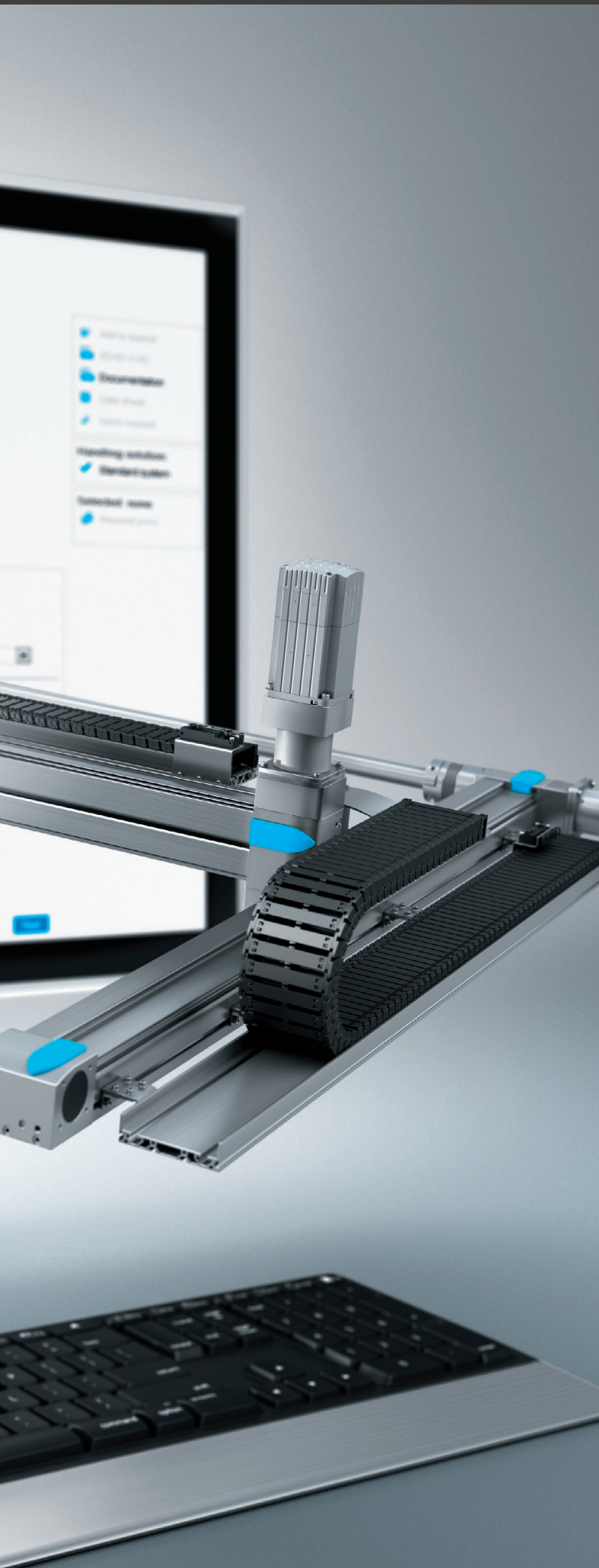
Define the drive system and working stroke

Drive system of the axis

Required working stroke







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Festo Services and Support	302
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What must be taken into account when using Festo products?	304
Trademark notices	305

## Energy efficiency

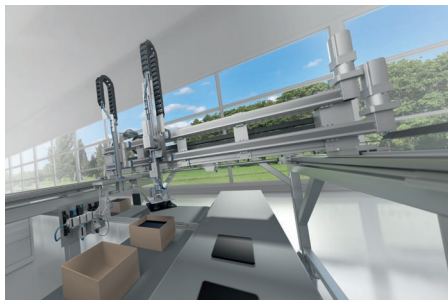
### Sustainability in manufacturing

Automation solutions enable faster, more flexible and more cost-efficient production, but they also consume energy – whether to generate compressed air in pneumatic systems or to operate electric components. We support you in four core areas to achieve greater sustainability in manufacturing: our products and solutions have the greatest impact on

your energy footprint and on protecting the climate. The sustainability of our portfolio extends from its production and operation, right through to the end of its long service life. We support you with digital tools for the design of energy-efficient systems. Our services help you to identify potential savings in your compressed air system and our offer of basic and

further training gives your current and future experts the knowledge they need to work sustainably. Improve your energy efficiency and productivity with us. We are your partner on the journey to CO<sub>2</sub>-neutral production.

### Products for sustainable operation



Festo offers products and solutions that use energy more efficiently so that you can realise significant potential savings right now, whether with high-performance, simple pneumatic systems or precise, dynamic electric automation technology.

### Save energy with good design



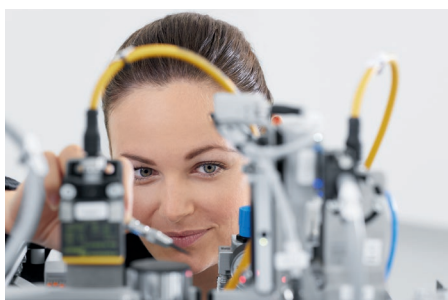
Your applications are most efficient when they are tailored exactly to your individual requirements. By selecting the right technology and optimally sizing components, you will create the framework for long-term energy savings. And by using our numerous engineering tools this process is made even easier.

### Save more energy with Festo services



High energy prices, rising cost pressure and a growing awareness of climate protection have undoubtedly made industrial energy efficiency a key activity in your business. Festo Energy Saving Services according to DIN EN ISO 11011 offer you a tailor-made range of services that enable you to identify and utilise potential compressed air savings in an optimal, integrated and sustainable way.

### Sustainability in basic and further training



Energy efficiency and sustainability start in the minds of your employees. Festo Didactic is the world's leading specialist in technical education. We teach the specialists of today and tomorrow the knowledge and skills they need to identify potential savings in their work and implement them systematically, from the design of your systems through to day-to-day operation.



## Ways to make automation more efficient



MSE6-C2M with pressure reduction and soft start for restarting

Up to  
**20%**

### Energy efficiency modules from the MSE6 series

Avoid unnecessary compressed air consumption. In some work cycles, the energy supply can be temporarily stopped – right up to zero energy consumption and zero leakage. That is why the intelligent energy efficiency modules of the MSE6 series constantly monitor the compressed air consumption and shut

off the compressed air during non-production times after a certain amount of time. The MSE6-C2M and MSE6-D2M also maintain the system pressure at a minimum standby pressure level.

→ [www.festo.com/mse6](http://www.festo.com/mse6)



MSE6-E2M with complete pressure shut-off



MSE6-D2M as an extension for a second string on the MSE6-C2M or a CPX terminal



Up to  
**20%**

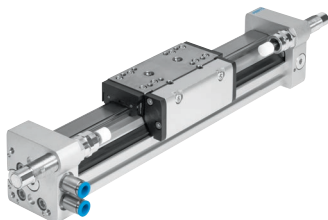


### Flow sensor SFAM

You can install the flow sensor SFAM as a stand-alone device or in combination with an MS series service unit so you get a transparent impression of

the compressed air consumption straight away. Because a changing flow value is often a sign that there is a potential for savings.

→ [www.festo.com/sfam](http://www.festo.com/sfam)



Up to  
**10%**

### Pneumatic linear drive DGC

The patented sealing band in the rodless drive's sealing system really comes into its own with long strokes. Virtually leakage free, the drive systemati-

cally reduces compressed air consumption.

→ [www.festo.com/dgc](http://www.festo.com/dgc)



Up to  
**60%**

### Vacuum generator OVEM

Reliably holding objects using vacuum does not necessarily require a constant vacuum pressure. In particular with smooth surfaces, you can avoid continuous air consumption with an air-saving circuit.

The intelligent vacuum generator OVEM monitors the vacuum pressure, generates vacuum only when it is needed and thus significantly reduces energy consumption.

→ [www.festo.com/ovem](http://www.festo.com/ovem)

Up to  
**20%**



The percentage values for energy saving potential are based on calculations carried out at Festo for a sample application. We will be happy to explain the details to you and also to calculate your specific cost benefits.

The saving is not generated by using the product itself, but rather by detecting the status and monitoring for leakages.

## Festo Services and Support

### Consistent and comprehensive support

The service and support philosophy of Festo is based on a constant analysis of the value chains of different types of customers.

Festo has built on this knowledge to develop a sophisticated portfolio that supports you along your entire value chain.

It includes numerous services such as the Energy Saving Services, customised developments of ready-to-install solutions and special designs.

Our networked digital information system now consists of a database-driven catalogue with over 30,000 products and accessories as well as tools for configuration, planning and design. Globally standardised application platforms for product lifecycle, production, logistics, sales and finance help to create integrated, global processes that will benefit you.

#### Engineering



- Consulting
- Design aids
- 2D/3D CAD drawings and models
- Design and sizing tools
- Selection tools
- Engineering of ready-to-install solutions

#### Procurement/logistics



- Festo Online Shop
- 24-hour delivery service
- Logistics optimisation service
- PrePack

#### Assembly and commissioning



- Commissioning axis systems
- Compressed air consumption analysis
- Commissioning and training for servo-pneumatic welding guns

#### Operation



- Worldwide after-sales service
- Energy Saving Services
- Compressed air quality analysis
- Support Portal with documentation for the entire product lifecycle

Are you interested in these services?

Simply ask your local contact person or find out more at [→ www.festo.com/services](https://www.festo.com/services)

You will find further information about our services there.



## Training programme for industry

Festo Didactic is a leading global solution provider for technical basic and further training with a strong industrial DNA.

Thanks to a state-of-the-art approach to training and education, we ensure the employability and productivity of our customers. Our product and service portfolio offers comprehensive training solutions for key technology areas in factory and

process automation. We integrate technical teaching content with expertise and training from other specialist areas such as process optimisation, management and communication to offer you a complete training experience. Our experienced trainers teach content that is relevant and tailored to each specific group.

## Our offer

The aim is to maximise added value. This can be achieved through training on a variety of topics and formats.



### Technology

Development of technical skills: core technologies in factory and process automation



### Organisation

Driving continuous improvement: strategic planning and process optimisation along the value chain



### People

Development of behaviour and attitude: teamwork, communication skills and leadership qualities



### Innovations

Skills development for the future: learning, managing and being ready for future production in the context of Industry 4.0



### Overview of topics

- Pneumatics
- Hydraulics
- PLCs (programmable logic controllers)
- Electrical engineering/electronics
- Process automation
- Handling systems
- Water management
- Maintenance
- Supply chain management
- Lean production
- Process optimisation
- Service and sales competence
- Industry 4.0
- Machine safety
- Battery life cycle management



### Quality offer

- Public courses
- Company-specific training courses
- Consulting
- Coaching
- Skills programmes
- Business games
- Learning needs analyses, certifications, blended learning concepts

### +++ NEW – Battery cycle management training +++

#### Basics of battery life cycle management (duration: 4 hours online)

Main points of emphasis:

- Introduction to battery life cycle management
- What do terms such as free of non-ferrous metals, cleanroom, dry room mean?
- Making battery cell production energy-efficient
- Safety in general and specifically in the applications for battery life cycle management
- End-of-life of a battery cell – battery recycling
- Training employees

#### What are you waiting for? Contact us:

Festo Didactic SE | Rechbergstraße 3 | D-73770 Denkendorf | [did@festo.com](mailto:did@festo.com)

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

## What must be taken into account when using Festo products?

The limit values specified in the technical data and any specific safety instructions must be adhered to by the user in order to ensure correct functioning.

The pneumatic components must be supplied with correctly prepared compressed air without aggressive media.

Take the ambient conditions at the place of use into consideration. Corrosive, abrasive and dusty environments (e.g. water, ozone, grinding dust) will reduce the service life of the product.

Check the resistance of the materials of Festo products to the media used and surrounding media.

When using Festo products in safety-oriented applications, all national and international laws and regulations, for example the EC Machinery Directive, must be observed and complied with together with the relevant references to standards, trade association rules and the applicable international regulations.

Unauthorised conversions or modifications to products and systems from Festo constitute a safety risk and are thus not permitted.

Festo doesn't accept any liability for any resulting damage.

You should contact Festo if one of the following applies 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 the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

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