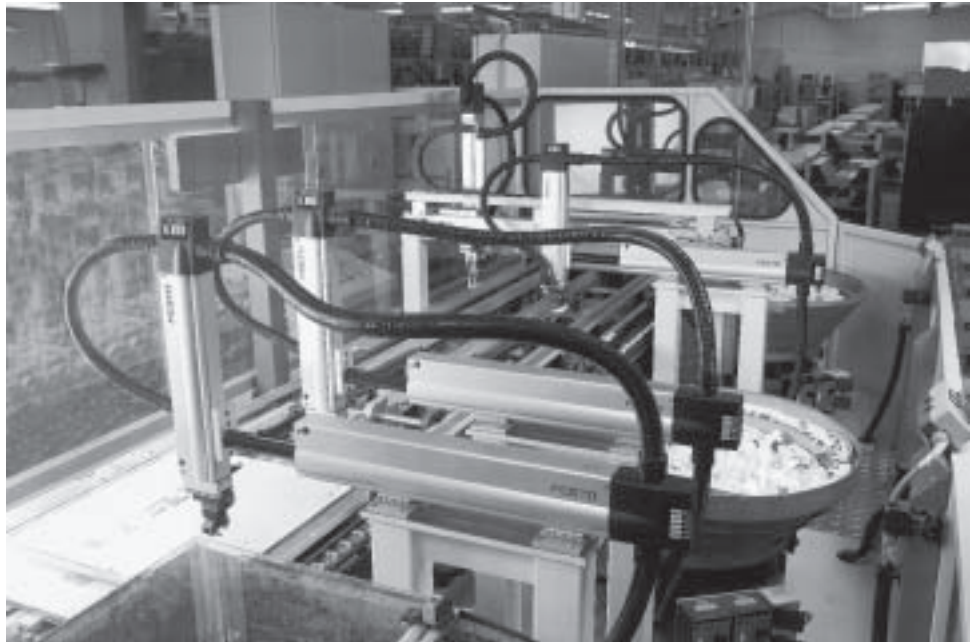


- Reliable guidance
- Rapid assembly and disassembly
- Low space requirement
- Low noise levels

Installation components

Key features

Installation components facilitate a clear-cut, safe layout of electrical cables and pneumatic tubing. They can be quickly dismantled and reassembled if servicing is required. As opposed to chain link trunking, they are distinguished by significantly reduced space requirements and lower noise levels, as well as excellent protection against environmental influences.



Protective conduit

MKR



Flexible conduit protects electrical cables and pneumatic tubing at machines and in installations. Corrugated conduit connector MKRT allows for insertion and fastening of a protective conduit with a small diameter into a protective conduit with a larger diameter. Intervention is thus possible at this point in the protective conduit system, for example for maintenance work.

Separable protective conduit

MKG



With separable connector

Internal and external conduits can be separated from one another. Electrical cables and pneumatic tubing need not be pulled through the protective conduit, but rather can be laid into it. The matching connector can also be opened.

Junction box

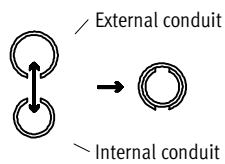
HMZV



Protected distribution for electrical cables and pneumatic tubing, especially for multi-axis systems.

Accessories

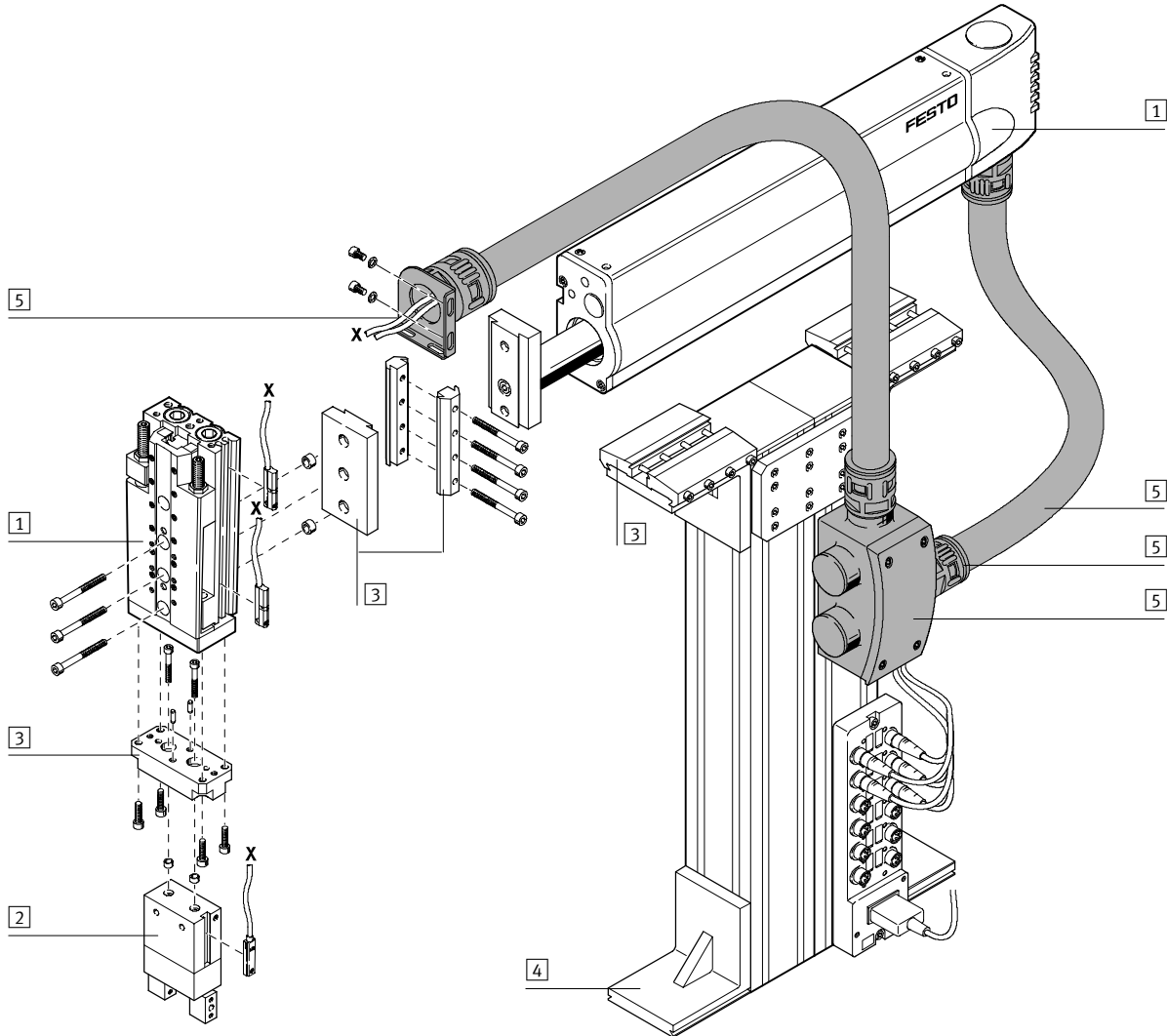
- Fittings and connectors
MKRV, MKGV, MKA, MKRL, MKRT, MKY
- Lock nut
MKM
- Retaining clip
MKRS
- Adapter plate
HMZAS



Installation components

System example

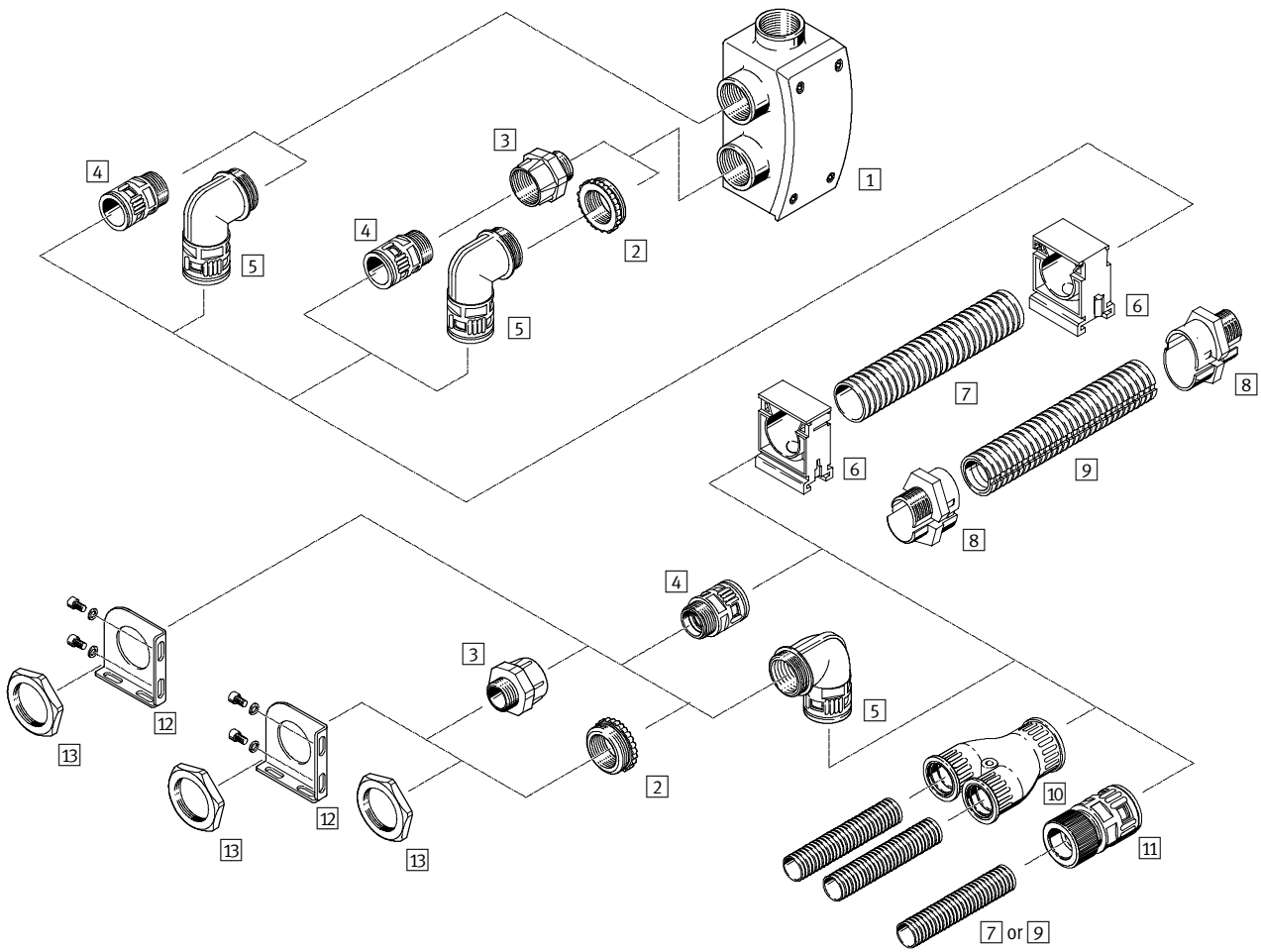
System product for handling and assembly technology



System elements and accessories			
	Brief description	→ Page	
1	Drives	Wide range of combination options within handling and assembly technology	Volume 1
2	Grippers	Wide range of combination options within handling and assembly technology	Volume 1
3	Adapters	For combining drives with drives and drives with grippers	Volume 5
4	Basic mounting components	Profiles and profile combinations as well as profile/drive combinations	Volume 5
5	Installation components	For achieving a clear-cut, safe layout for electrical cables and tubing	Volume 5
-	Axes	Wide range of combination options within handling and assembly technology	Volume 5
-	Motors	Servo and stepper motors, with or without gearing	Volume 5

Installation components

Peripherals overview



System components
Installation components

3.5

Installation components










Peripherals overview

Variants and accessories		
Type	Brief description	→ Page
1 Junction box HMZV	For bundling or distributing lines and tubing	5 / 3.5-9
2 Reducing connector MKA	For reducing thread size Material: Brass	5 / 3.5-13
3 Reducing connector MKA-KU	For reducing or enlarging thread size Material: Polyamide	5 / 3.5-14
4 Protective conduit connector MKRV	For securing the protective conduit	5 / 3.5-10
5 Elbow connector for protective conduit MKRL	For securing the protective conduit	5 / 3.5-11
6 Retaining clip MKRS	For securing the protective conduit over long distances	5 / 3.5-15
7 Protective conduit MKR	For protecting lines and tubing	5 / 3.5-8
8 Separable conduit connector MKGV	For securing the protective conduit. The connector is separable so that lines and tubing in the system can be easily replaced.	5 / 3.5-13
9 Separable protective conduit MKG	For protecting lines and tubing. The conduit is separable so that lines and tubing in the system can be easily replaced.	5 / 3.5-9
10 Y distributor MKY	For distributing lines and tubing	5 / 3.5-12
11 Protective conduit connector MKRT	The protective conduits (different sizes) can be pushed into one another by releasing the connector. This permits easy replacement of lines and tubing.	5 / 3.5-12
12 Adapter plate HMZAS	For securing protective conduit connectors at the drive	5 / 3.5-16
13 Lock nut MKM	For securing connectors at adapter plates	5 / 3.5-15

Installation components

Selection aid








Accessories		Protective conduit							Junction box HMZV	→ Page
		MKR				MKG, separable				
		Pg 9	Pg 11	Pg 16	Pg 21	Pg 29	Pg 21	Pg 29	Pg 29	
Protective conduit connector MKRV										
	Pg 9	■	-	-	-	-	-	-	-	5 / 3.5-10
	Pg 11	-	■	-	-	-	-	-	-	
	Pg 16	-	-	■	-	-	-	-	-	
	Pg 21	-	-	-	■	-	-	-	-	
	Pg 29	-	-	-	-	■	-	-	■	
Elbow connector for protective conduit MKRL										
	Pg 9	■	-	-	-	-	-	-	-	5 / 3.5-11
	Pg 11	-	■	-	-	-	-	-	-	
	Pg 16	-	-	■	-	-	-	-	-	
	Pg 21	-	-	-	■	-	-	-	-	
	Pg 29	-	-	-	-	■	-	-	■	
Y distributor MKY										
	Pg 21	-	-	-	■	-	-	-	-	5 / 3.5-12
	Pg 29	-	-	-	-	■	-	-	-	
Protective conduit connector MKRT										
	Pg 16	-	-	■	■	-	-	-	-	5 / 3.5-12
	Pg 21	-	-	■	■	-	-	-	-	
Protective conduit connector MKGV, separable										
	Pg 21	-	-	-	-	-	■	-	-	5 / 3.5-13
	Pg 29	-	-	-	-	-	-	■	■	
Reducing connector MKA										
	Pg 29	-	-	-	-	-	-	-	■	5 / 3.5-13
Reducing connector MKA-KU										
	Pg 29	-	-	-	-	-	-	-	■	5 / 3.5-14
Technical data → Page		5 / 3.5-8					5 / 3.5-9		5 / 3.5-9	

System components
Installation components
3.5

Installation components

Selection aid



Accessories		Protective conduit						Junction box HMZV		→ Page
		MKR						MKG, separable		
										
Connecting thread		Pg 9	Pg 11	Pg 16	Pg 21	Pg 29	Pg 21	Pg 29	Pg 29	
Lock nut MKM										
	Pg 9	■	-	-	-	-	-	-	-	5 / 3.5-15
	Pg 11	-	■	-	-	-	-	-	-	
	Pg 16	-	-	■	-	-	-	-	-	
	Pg 21	-	-	-	■	-	■	-	-	
	Pg 29	-	-	-	-	■	-	■	-	
Retaining clip MKRS										
	Pg 9	■	-	-	-	-	-	-	-	5 / 3.5-15
	Pg 11	-	■	-	-	-	-	-	-	
	Pg 16	-	-	■	-	-	-	-	-	
	Pg 21	-	-	-	■	-	■	-	-	
	Pg 29	-	-	-	-	■	-	■	-	
Adapter plate HMZAS										
	For connecting thread Pg 21 and Pg 29									5 / 3.5-16
	Technical data → Page									
				5 / 3.5-8			5 / 3.5-9		5 / 3.5-9	

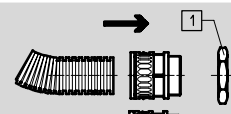
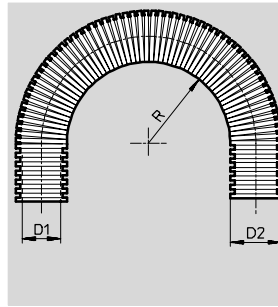
Installation components

Technical data



Protective conduit MKR
for Pg connecting thread

Material:
Polyamide
Free of copper, PTFE and silicone



- 1 Lock nut MKM
- 2 Pull back the retaining sleeve in order to release the conduit

Dimensions and ordering data					
Pg connecting thread	D1 Ø	D2 Ø	R min.		Protection class
			static	dynamic	
Pg 9	10	13	15	45	IP 68
Pg 11	12	15.8	22	55	
Pg 16	16.5	21.2	35	75	
Pg 21	23	28.5	45	100	
Pg 29	29	34.5	50	120	

Pg connecting thread	Temperature range [°C]	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g/m]	Part No.	Type
Pg 9	-50 ... +100	Any	2	24	177 564	MKR-10-PG-9
Pg 11				34	177 565	MKR-12-PG-11
Pg 16				56	177 566	MKR-16,5-PG-16
Pg 21				90	177 567	MKR-23-PG-21
Pg 29				120	177 568	MKR-29-PG-29

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

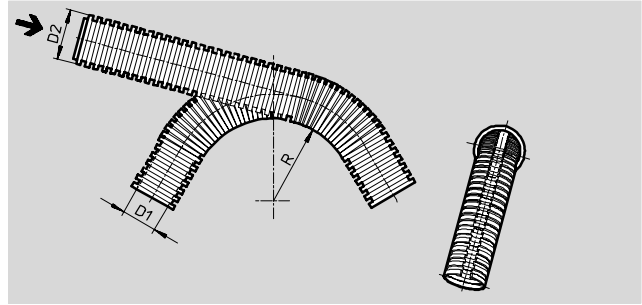
Installation components

Technical data



Protective conduit MKG, separable for Pg connecting thread

Material:
Polypropylene
Free of copper, PTFE and silicone



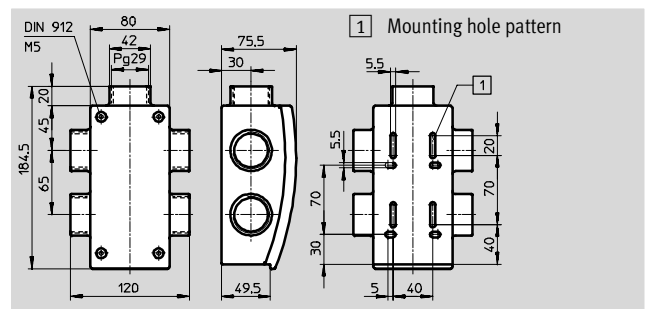
Dimensions and ordering data					
Pg connecting thread	D1 ∅	D2 ∅	R	Temperature range [°C]	Protection class
Pg 21	19.5	25.5	≥ 130	-20 ... +90	IP 50
Pg 29	24.2	31	≥ 155		
	31	41.4	≥ 205		

Pg connecting thread	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g/m]	Part No.	Type
Pg 21	Any	2	82	177 588	MKG-20-PG-21
Pg 29			123	177 589	MKG-23-PG-29
			195	177 590	MKG-37-PG-29

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Junction box HMZV with mounting kit for profile column HMBS

Material:
Polyamide
Free of copper, PTFE and silicone



Dimensions and ordering data						
Pg connecting thread	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No. Type
Pg 29	-10 ... +60	IP 50	Any	2	280	175 126 HMZV

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

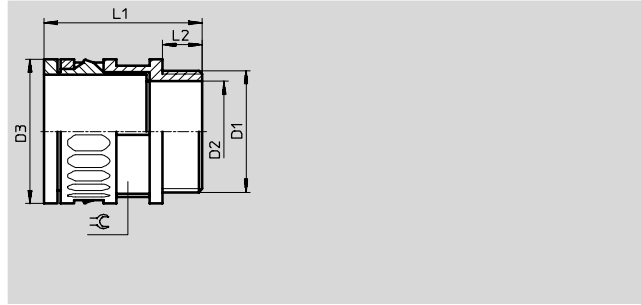
Installation components

Technical data



Protective conduit connector MKRV

Material:
Polyamide
Free of copper, PTFE and silicone



Dimensions and ordering data						
Pg connecting thread D1	D2	D3	L1	L2	⌀	Temperature range
∅	∅	∅				[°C]
Pg 9	10	20	35	10	18	-30 ... +100
Pg 11	12.5	23	37		21	
Pg 16	17	29.5	43.5		27	
Pg 21	23.5	37	46	12	34	
Pg 29	30.5	44	48		40	

Pg connecting thread D1	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
∅						
Pg 9	IP 67	Any	2	5	177 569	MKRV-10-PG-9
Pg 11				6	177 570	MKRV-21-PG-11
Pg 16				10	177 571	MKRV-16,5-PG-16
Pg 21				14	177 572	MKRV-23-PG-21
Pg 29				22	177 573	MKRV-29-PG-29

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

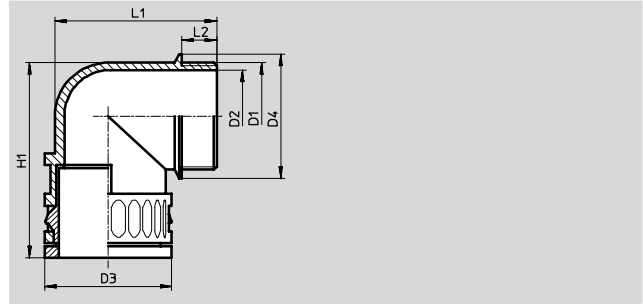
Installation components

Technical data



Elbow connector for protective conduit MKRL

Material:
Polyamide
Free of copper, PTFE and silicone



Dimensions and ordering data						
Pg connecting thread D1	D2	D3	D4	H1	L1	L2
∅	∅	∅	∅			
Pg 9	12	20	20	36	34	10
Pg 11	15.5	23	23	42	37.5	
Pg 16	18	29.5	27	49.5	47	
Pg 21	24	37	34	57	55	12
Pg 29	32	44	43	68	63	

Pg connecting thread D1	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
∅							
Pg 9	-30 ... +100	IP 67	Any	2	6	177 574	MKRL-10-PG-9
Pg 11					8	177 575	MKRL-12-PG-11
Pg 16					16	177 576	MKRL-16,5-PG-16
Pg 21					24	177 577	MKRL-23-PG-21
Pg 29					36	177 578	MKRL-29-PG-29

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

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

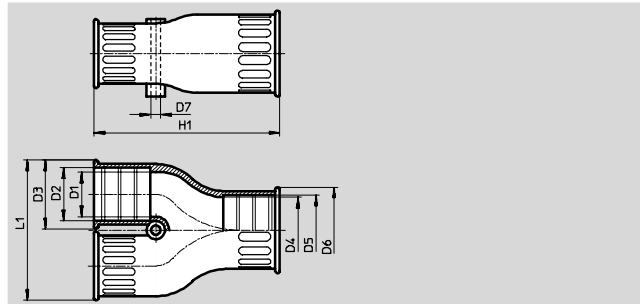
Installation components

Technical data



Y distributor MKY

Material:
Thermoplastic rubber
Free of copper, PTFE and silicone



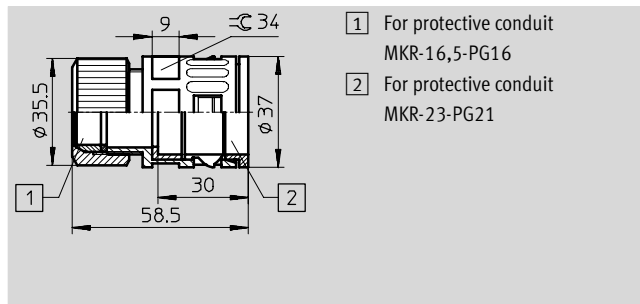
Dimensions and ordering data							
Pg connecting thread D1	D2	D3	D4	D5	D6	D7	H1
∅	∅	∅	∅	∅	∅	∅	
Pg 21	21.2	29.5	25.5	28.5	36.5	4	81.5
Pg 29	28.5	36.5	31.5	34.5	42.5		86

Pg connecting thread D1	L1	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
∅								
Pg 21	61	-30 ... +80	IP 67	Any	2	34	193 946	MKY-PG-21-2PG-16
Pg 29	79					50		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Protective conduit connector MKRT

Material:
Polyamide
Free of copper, PTFE and silicone



- 1) For protective conduit MKR-16,5-PG16
- 2) For protective conduit MKR-23-PG21

Dimensions and ordering data							
Pg connecting thread	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
Pg 16/Pg 21	-10 ... +60	IP 67	Any	2	40	194 321	MKRT-23-16,5

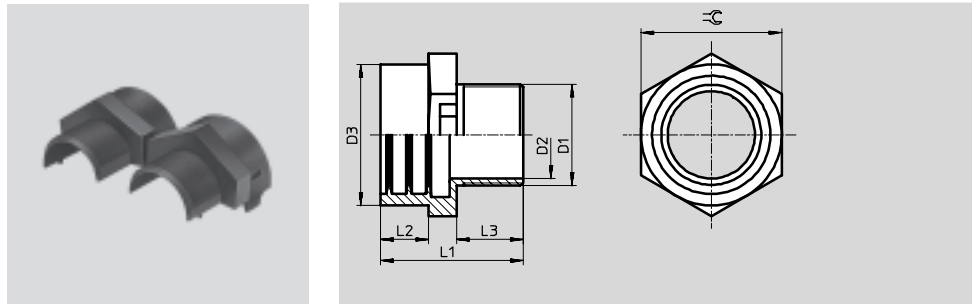
1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Installation components

Technical data

Protective conduit connector MKGV, separable

Material:
Polyamide
Free of copper, PTFE and silicone



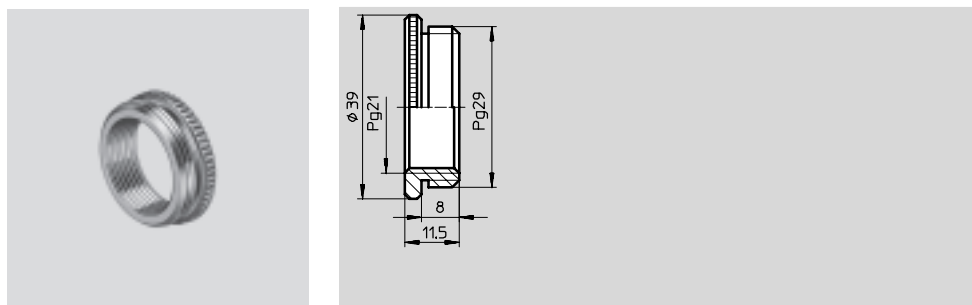
Dimensions and ordering data						
Pg connecting thread D1	D2	D3	L1	L2	L3	⌀
∅	∅	∅				
Pg 21	20	26	34	12	17	32
Pg 29	31	32	42	13	21	41
		42	50	17	22	50

Pg connecting thread D1	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
∅							
Pg 21	-20 ... +100	IP 50	Any	2	11	177 591	MKGV-20-PG-21
Pg 29					19	177 592	MKGV-23-PG-29
					27	177 593	MKGV-37-PG-29

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Reducing connector MKA For reducing Pg 29 to Pg 21

Material:
Nickel plated brass
Free of copper, PTFE and silicone



Dimensions and ordering data							
Pg connecting thread	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
Pg 29/Pg 21	-30 ... +80	IP 50	Any	2	41	177 595	MKA-PG-29-PG-21

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Installation components

Technical data



Reducing connector MKA-KU

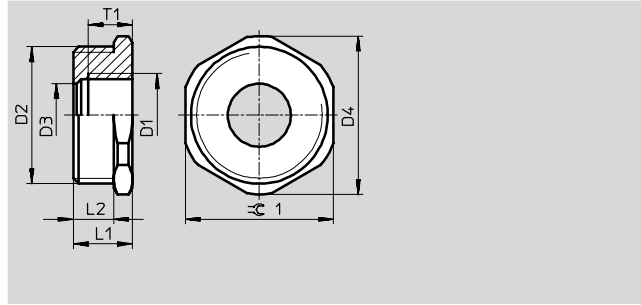
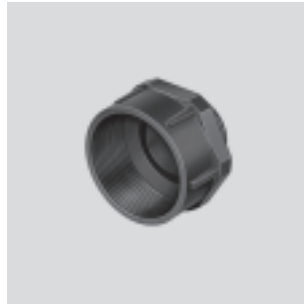
For reducing Pg 21 to Pg 16

For reducing Pg 29 to Pg 16

Material:

Polyamide

Free of copper, PTFE and silicone



Dimensions and ordering data							
Pg connecting thread	D1	D2	D3	D4	L1	L2	T1
Pg 21/Pg 16	Pg 16	Pg 21	16	35.5	16	11	12
Pg 29/Pg 16		Pg 29	17	42.8	17		

Pg connecting thread	⊕	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
Pg 21/Pg 16	81.5	-30 ... +80	IP 50	Any	2	8	193 948	MKA-PG-21-PG-16-KU
Pg 29/Pg 16	86					12	193 949	MKA-PG-29-PG-16-KU

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

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

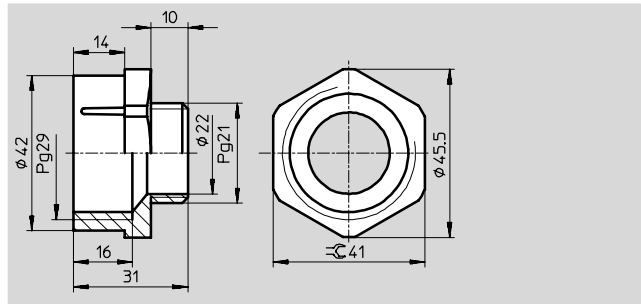
Reducing connector MKA-KU

For enlarging Pg 21 to Pg 29

Material:

Polyamide

Free of copper, PTFE and silicone



Dimensions and ordering data							
Pg connecting thread	Temperature range [°C]	Protection class	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
Pg 21/Pg 29	-30 ... +80	IP 50	Any	2	36	177 594	MKA-PG-21-PG-29-KU

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

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

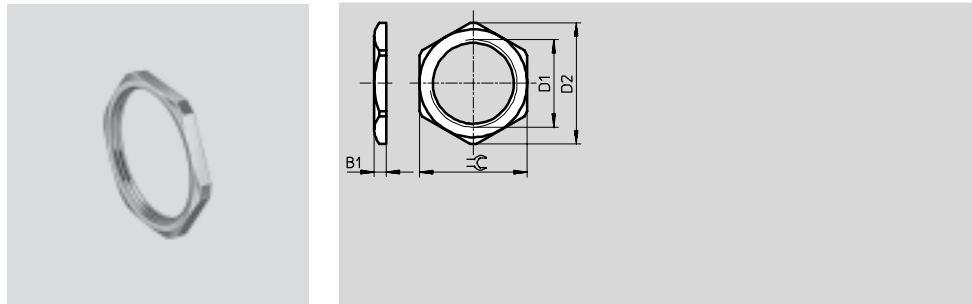
Installation components

Technical data



Lock nut MKM

Material:
Nickel plated brass
Free of copper, PTFE and silicone

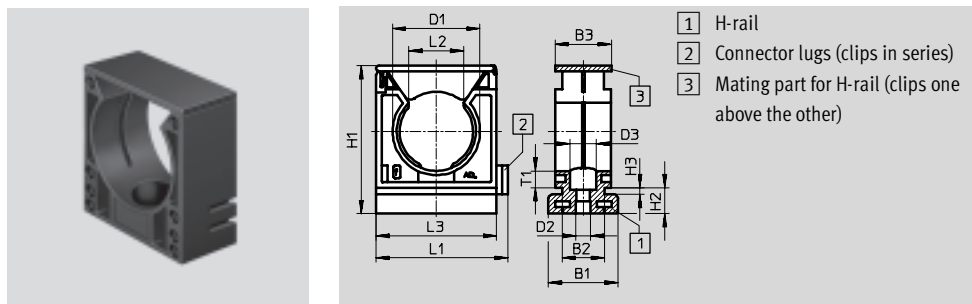


Dimensions and ordering data									
Pg connecting thread D1	D2	D3	$\approx \text{C}$	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type	
\emptyset	\emptyset	\emptyset							
Pg 9	20	2.8	18	Any	2	2	177 596	MKM-PG-9	
Pg 11	23.5	3	21			3	177 597	MKM-PG-11	
Pg 16	29		26			5	177 598	MKM-PG-16	
Pg 21	35.5	3.5	32			8	177 599	MKM-PG-21	
Pg 29	45	4	41			14	177 600	MKM-PG-29	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Retaining clip MKRS

Material:
Polyamide
Free of copper, PTFE and silicone



Dimensions and ordering data										
Pg connecting thread	B1	B2	B3	D1 \emptyset	D2 \emptyset	D3 \emptyset	H1	H2	H3	L1
Pg 9	25	15	20	13	4.2	8	32	9.3	2.3	30
Pg 11				15.8			40			
Pg 16				21.2			53.5			
Pg 21				28.5			47.5			
Pg 29				34.5						

Pg connecting thread	L2	L3	T1	Temperature range [°C]	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type	
Pg 9	8.5	26	5.7	-30 ... +80	2	5	192 287	MKRS-10-B	
Pg 11	10					6	192 288	MKRS-12-B	
Pg 16	16.6	43.5	6.8			8	192 289	MKRS-16,5-B	
Pg 21	20					12	192 290	MKRS-23-B	
Pg 29	25.5					14	192 291	MKRS-29-B	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Installation components

Technical data



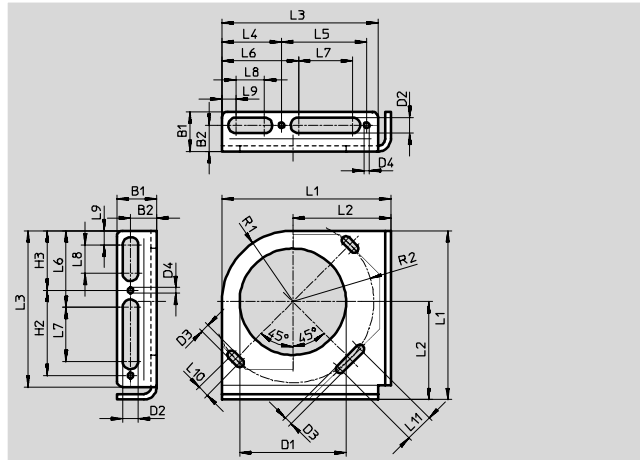
Installation kit HMZAS

For attaching a protective conduit to the front plate of linear modules

Material:

Powder coated steel

Free of copper, PTFE and silicone



Dimensions and ordering data									
For linear module	B1	B2	D1	D2	D3	D4	H2	H3	L1
HMPL	14	9.25	28.6	5.3	3	-	-	-	54.5
HMP			37.5						2

For linear module	L2	L3	L4	L5	L6	L7	L8	L9	L10
HMPL	33.5	50	-	-	19	26	4.5	5	4
HMP	34.5	55	21	30	27	19	10	5	4

For linear module	L11	R1	R2	Mounting position	Corrosion resistance CRC ¹⁾	Weight [g]	Part No.	Type
HMPL	10	21	22	Any	1	35	193 124	HMZAS-PG-21
HMP	10	25	28.5			44	177 603	HMZAS-PG-29

1) Corrosion resistance class 1 according to Festo standard 940 070
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.