

- Holding, clamping and braking of round material
- Wide choice of variants
- Any assembly position

Clamping cartridges/units

Key features

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At a glance

- The clamping cartridges/clamping units use spring force to hold round material in any desired position.
- Able to stop and hold material for long periods, even in applications involving varying loads, fluctuating operating pressure and system leaks.
- The clamping force is released by pressurising the clamping mechanism.
- Clamping cartridges and clamping units can be mounted in any position.
- They are not suitable for use as positioning devices.
- The clamping cartridge KP and the clamping units KPE, KEC, KEC-S are discrete components and are not intended for use as attachments for pneumatic cylinders.
- In their clamped state, the clamping cartridges and clamping units are not free of backlash when their piston rods are subjected to alternating loads.

Selection aid

Clamping cartridge KP

→ 1 / 10.5-4



- For in-house assembly of clamping units
- Not certified for use in safety-relevant control systems

Clamping unit KPE

→ 1 / 10.5-6



- Ready-to-install combination of clamping cartridge KP and housing
- Versatile mounting options
→ 1 / 10.5-7
- Not certified for use in safety-relevant control systems

Clamping unit KEC

→ 1 / 10.5-8



■ For use as holding device (static application):

- Holding and clamping in the event of a power failure
- Protection against pressure failure and pressure drop
- Securing the piston rod during intermediate stops for process operations

- Mounting hole pattern to ISO 15552 (DIN ISO 6431)
- Not certified for use in safety-relevant control systems

Clamping-unit cylinder KEC-...-S, for safety-related applications

→ 1 / 10.5-10



■ For use as holding device (static application):

- Holding and clamping in the event of a power failure
- Protection against pressure failure and pressure drop
- Securing of the piston rod during intermediate stops for process operations

■ For use as a braking device (dynamic application):

- Braking or stopping of movements
- Suspension of movement upon entering a danger area

- Mounting hole pattern to ISO 15552 (DIN ISO 6431)
- When used as a braking device, the overtravel must be checked regularly

- For use in category 1 control systems to DIN EN 954-1 ("reliable component"). For use in higher categories, additional control measures are required
- Certified for use in safety-relevant control systems by the BG-Institute for Occupational Safety and Health (Berufsgenossenschaftlichen Institut für Arbeitssicherheit – BGIA) in Germany
- Products intended for use in safety-related applications must be selected, sized and arranged in accordance with the risk assessment (EN1050) as well as any other valid standards and regulations.

Clamping cartridges/units

Key features and type codes

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Requirements for the round material to be clamped

- Hardened steel:
min. HRC 60 or hard-chromium
plated, coating thickness
min. 20 µm.
- The nominal diameter must lie in
the tolerance zone h8.
- The specified holding forces refer
to a static load. If these values are
exceeded, slippage may occur.
- Dynamic forces occurring during
operation must not exceed the
static holding force.
- Rolled steel:
tensile strength > 650 N/mm²,
hardness (HB30) > 175
- The surface roughness R_{max} must
not exceed 2.5 µm.

Type codes

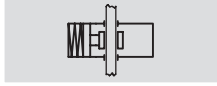
	KP	–	4	–	80	–	
Type							
KP	Clamping cartridge						
KPE	Clamping unit						
KEC							
Round material to be clamped ∅ [mm]							
Static holding force [N]							
Certification							
S	Certified for use in safety-relevant control systems by the BG-Institute for Occupational Safety and Health (Berufsgenossenschaftlichen Institut für Arbeitssicherheit – BGIA) in Germany						


Clamping cartridges KP


Technical data

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Function



-  - Diameter
of round material to be
clamped:
4 ... 32 mm

-  - Force
80 ... 7,500 N



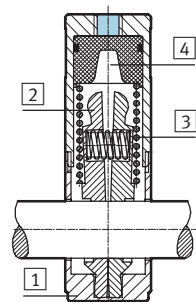
General technical data										
For round material Ø	4	6	8	10	12	16	20	25	32	
Pneumatic connection	M5						G1/8			
Design	Tilting wedge mechanism									
Type of mounting	Via self-configured housing									
Clamping type with effective direction	At both ends									
	Clamping via spring force, air to release									
Static holding force [N]	80	180	350	350	600	1,000	1,400	2,000	5,000	7,500
Min. release pressure [bar]	3									
Assembly position	Any									
Product weight [g]	10	15	50	50	50	90	170	170	700	1,600





Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated
Operating pressure [bar]	≤ 10
Ambient temperature [°C]	-10 ... +80
Corrosion resistance class CRC ¹⁾	2

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 normal industrial environment or media such as coolants or lubricating agents.

Materials

Sectional view



Clamping cartridge		
	Body	Anodised aluminium
	Clamping plates	Brass
	Spring	Spring steel
	Piston	Polyacetal
-	Seals	Nitrile rubber, polyurethane

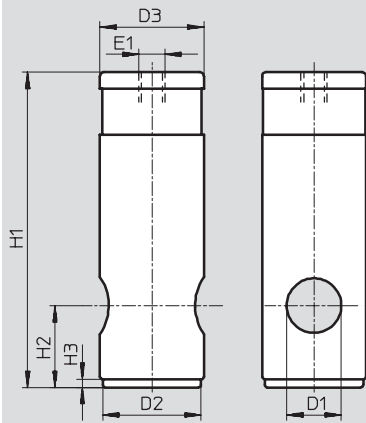
Clamping cartridges KP

Technical data

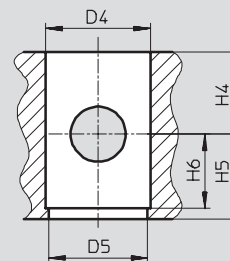
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Dimensions and ordering data

Download CAD data → www.festo.com/en/engineering



Installation dimensions



Note

When installing the clamping cartridge in a housing, plain bearings must be installed on both sides of this housing.

For Ø	D1	D2	D3	D4	D5	E1	H1	H2
[mm]	Ø	Ø h12	Ø f9	Ø D9	Ø			
4	4	10	12	12	11	M5	28	7
6	6	14	16	16	15	M5	35	10
8	8	18	20	20	19	M5	62	17.5
10	10	18	20	20	19	M5	62	17.5
12	12	18	20	20	19	M5	62	17.5
16	16	22	24	24	23	G1/8	83	22
20	20	28	30	30	29	G1/8	100	25
	20	36	38	38	37	G1/8	115.5	30
25	25	46	48	48	47	G1/8	155	36
32	32	63	65	65	64	G1/8	195	55

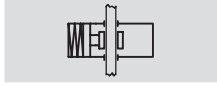
For Ø	H3	H4	H5	H6	Max. axial backlash of clamped round material	Weight	Part No.	Type
[mm]		min.	min.			[g]		
4	2	9	7	6	0.2	10	178 452	KP-4-80
6	3	10	11	8	0.2	15	178 453	KP-6-180
8	3	18	18.5	15.5	0.25	50	178 454	KP-8-350
10	3	18	18.5	15.5	0.25	50	178 455	KP-10-350
12	3	18	18.5	15.5	0.25	50	178 456	KP-12-600
16	3	22	23	20	0.25	90	178 457	KP-16-1000
20	3	25	26	23	0.3	170	178 458	KP-20-1400
	3	30	31	28	0.3	170	178 459	KP-20-2000
25	3	36	37	34	0.3	700	178 460	KP-25-5000
32	3	55	56	53	0.3	1,600	178 461	KP-32-7500

Clamping units KPE

Technical data

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Function



[www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



- Ø - Diameter
of round material to be
clamped:
4 ... 32 mm

- ≡ - Force
80 ... 7,500 N

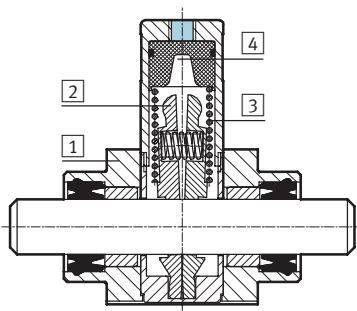
General technical data									
For round material Ø	4	6	8	10	12	16	20	25	32
Pneumatic connection	M5					G1/8			
Design	Tilting wedge mechanism								
Type of mounting	Via mounting thread Via through-holes								
Clamping type with effective direction	At both ends								
	Clamping via spring force, air to release								
Static holding force [N]	80	180	350	350	600	1,000	1,400	5,000	7,500
Min. release pressure [bar]	3								
Assembly position	Any								
Product weight [g]	100	150	240	260	270	410	930	2,000	4,600

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated
Operating pressure [bar]	≤ 10
Ambient temperature [°C]	-10 ... +80
Corrosion resistance class CRC ¹⁾	2

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 normal industrial environment or media such as coolants or lubricating agents.

Materials

Sectional view



Clamping unit		
1	Housing	Anodised aluminium
2	Clamping plates	Brass
3	Spring	Spring steel
4	Piston	Polyacetal
-	Seals	Nitrile rubber, polyurethane

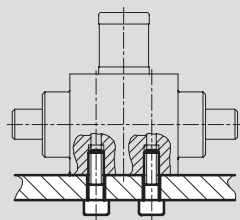
Clamping units KPE

Technical data

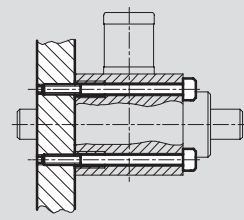
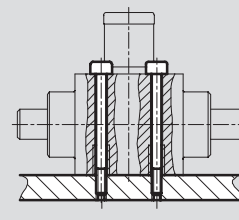
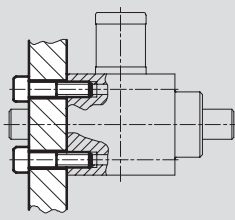
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Mounting options

Via mounting thread



Via through-holes

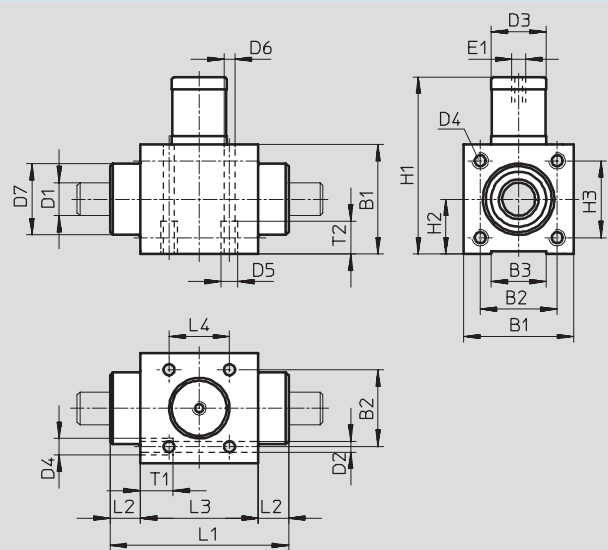
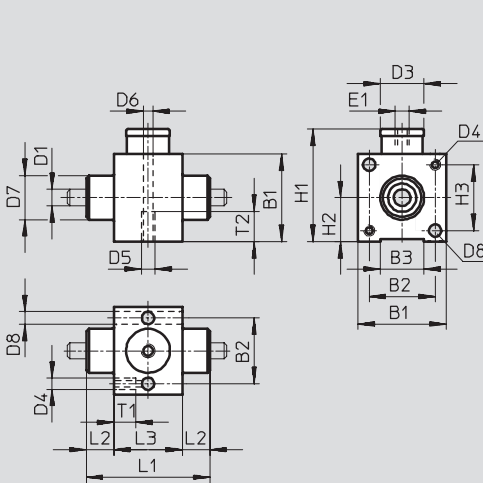


Dimensions and ordering data

For round material $\varnothing 4 \dots 6$ mm

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For round material $\varnothing 8 \dots 32$ mm



For \varnothing [mm]	B1	B2	B3	D1 \varnothing	D2 \varnothing	D3 \varnothing	D4	D5	D6 \varnothing	D7 \varnothing d11	D8 \varnothing	E1	H1	H2
4	27	19.5	12	4	–	12	–	M5	4.2	12	4.5	M5	34.5	13.5
6	32	24	16	6	–	16	–	M5	4.2	16	4.5	M5	41	16
8	36	27	20	8	4.2	20	M5	M5	4.2	22	–	M5	62.5	18
10	36	27	20	10	4.2	20	M5	M5	4.2	22	–	M5	62.5	18
12	40	28	20	12	5.2	20	M6	M6	5.2	28	–	M5	64.5	20
16	45	32.5	25	16	5.2	24	M6	M6	5.2	32	–	G $\frac{1}{8}$	83.5	22.5
20	65	50	38	20	6.5	38	M8	M8	6.5	45	–	G $\frac{1}{8}$	118	32.5
25	88	65	50	25	8.5	48	M10	M10	8.5	55	–	G $\frac{1}{8}$	163	44
32	118	90	70	32	10.3	65	M12	M12	10.3	60	–	G $\frac{1}{8}$	199	59

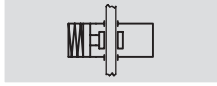
For \varnothing [mm]	H3	L1	L2	L3	L4	T1	T2	Max. axial backlash of clamped round material	Weight [g]	Part No.	Type
4	19.5	33	7.5	18	–	9	11	0.2	100	178 462	KPE-4
6	24	45	10	25	–	9	11	0.2	150	178 463	KPE-6
8	27	58	10	38	20	10	11	0.25	240	178 464	KPE-8
10	27	62	12	38	20	10	11	0.25	260	178 465	KPE-10
12	28	65	11	43	22	12	12	0.25	270	178 466	KPE-12
16	32.5	69	12.5	44	22	12	12	0.25	410	178 467	KPE-16
20	50	83	12.5	58	30	16	16	0.3	930	178 468	KPE-20
25	65	100	15	70	34	20	20	0.3	2,000	178 469	KPE-25
32	90	154	25	104	60	24	24	0.3	4,600	178 470	KPE-32

Clamping units KEC

Technical data

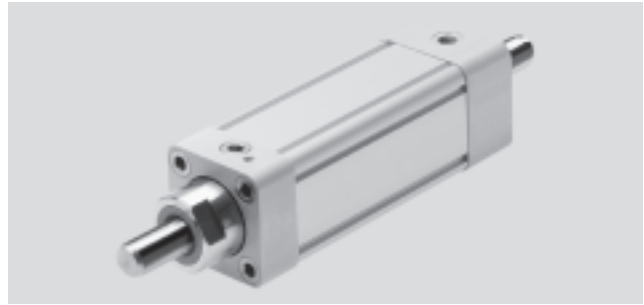
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Function



- Ø - Diameter
of round material to be
clamped:
16 ... 25 mm

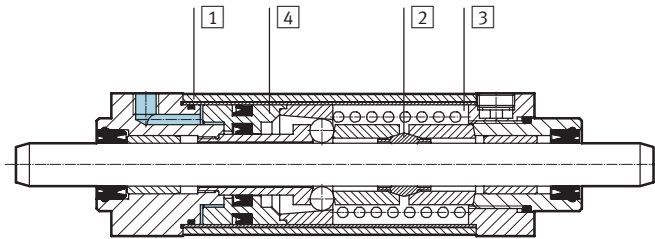
- ≡ - Force
1,300 ... 8,000 N



General technical data			
For round material Ø	16	20	25
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$
Type of mounting	Via accessories → 1 / 10.5-12		
Clamping type with effective direction	At both ends Clamping via spring force, air to release		
Static holding force	1,300	3,200	8,000
Min. release pressure [bar]	3.8		
Assembly position	Any		
Product weight [g]	1,860	4,515	16,760

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated
Operating pressure [bar]	3.8 ... 10
Ambient temperature [°C]	-20 ... +80

Materials	
Sectional view	



Clamping unit		
1	Housing	Wrought aluminium alloy
2	Clamping jaws	Tool steel
3	Spring	High-alloy steel
4	Piston	Wrought aluminium alloy
-	Seals	Nitrile rubber, polyurethane

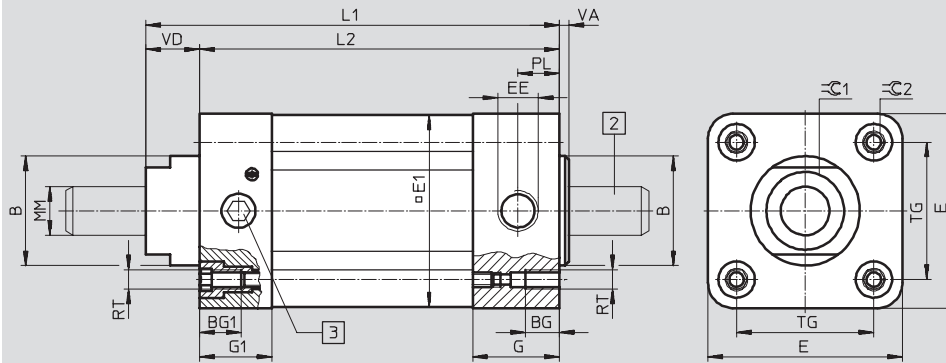
Clamping units KEC

Technical data

FESTO

Dimensions and ordering data

Download CAD data → www.festo.com/en/engineering



Note
The clamping unit can only be exhausted when it contains round material.

- 2 Round material to be clamped
- 3 Locking screw

For Ø	B	BG	BG1	E	E1	EE	G	G1	L1	L2	MM
[mm]	Ø f8										Ø
16	35	15	15	54	53	G ¹ / ₈	27	22	178	160	16
20	45	14	17	80	79	G ¹ / ₄	30	29.5	208.5	187	20
25	55	17	17	126	126	G ³ / ₈	32.5	32.5	287	258	25

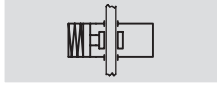
For Ø	PL	RT	TG	VA	VD	⌀1	⌀2	Weight	Part No.	Type
[mm]								[g]		
16	13	M6	38	5.5	18	30	6	1,860	527 492	KEC-16
20	15.5	M8	56.5	6	21.5	36	8	4,515	527 493	KEC-20
25	17	M10	89	7	29	41	10	15,600	527 494	KEC-25

Clamping units KEC-...-S

Technical data

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Function



Ø - Diameter of round material to be clamped:
16 ... 25 mm

≡ - Force
1,300 ... 8,000 N

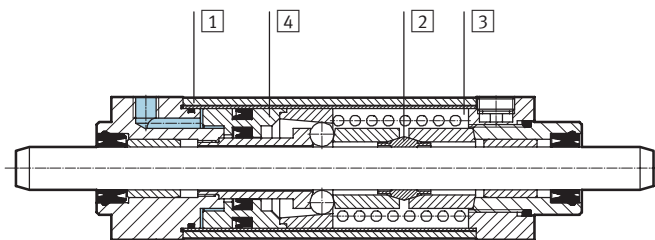


General technical data			
For round material Ø	16	20	25
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$
Type of mounting	Via accessories → 1 / 10.5-12		
Clamping type with effective direction	At both ends Clamping via spring force, air to release		
Static holding force	1,300	3,200	8,000
Min. release pressure [bar]	3.8		
Assembly position	Any		
CE symbol	EU-compliant to directive 98/37/EC (machines)		
Safety category	Cat 1 to DIN EN 954-1		
Certification	BGIA (Berufsgenossenschaftliches Institut für Arbeitssicherheit – BG-Institute for Occupational Safety and Health)		
Product weight [g]	1,860	4,515	15,600

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated
Operating pressure [bar]	3.8 ... 8
Max. permissible test pressure [bar]	10
Ambient temperature [°C]	–10 ... +60

<p>⚠ - Note</p> <p>The specified holding force refers to a static load. If this value is exceeded, slippage may occur. Dynamic forces occurring during operation must not exceed the static holding force if slippage is to be avoided.</p>			
<p>The clamping unit is not backlash-free in the clamped condition if varying loads are applied to the piston rod.</p>			
<p>Activation:</p> <p>The clamping unit may only be released when equilibrium of forces is present on the round material. Otherwise there is a risk of accidents due to the sudden movement of the round material. Blocking off the air supply at both ends (e.g. with a 5/3-way valve) does not provide any safety.</p>			

Materials	
Sectional view	



Clamping unit		
1	Housing	Wrought aluminium alloy
2	Clamping jaws	Tool steel
3	Spring	High-alloy steel
4	Piston	Wrought aluminium alloy
–	Seals	Nitrile rubber, polyurethane

Clamping units KEC-...-S

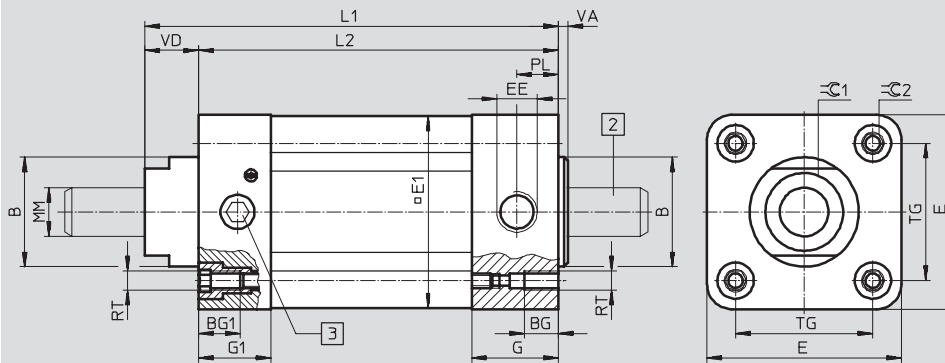
Technical data

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Dimensions and ordering data

Download CAD data → www.festo.com/en/engineering

for use in safety-relevant control systems



Note

The clamping unit can only be exhausted when it contains round material.

- 2 Round material to be clamped
- 3 Locking screw

For Ø	B	BG	BG1	E	E1	EE	G	G1	L1	L2	MM
[mm]	Ø f8										Ø
16	35	15	15	54	53	G $\frac{1}{8}$	27	22	178	160	16
20	45	14	17	80	79	G $\frac{1}{4}$	30	29.5	208.5	187	20
25	55	17	17	126	126	G $\frac{3}{8}$	32.5	32.5	287	258	25

For Ø	PL	RT	TG	VA	VD	1	2	Weight	Part No.	Type
[mm]								[g]		
16	13	M6	38	5.5	18	30	6	1,860	538 242	KEC-16-S
20	15.5	M8	56.5	6	21.5	36	8	4,515	538 243	KEC-20-S
25	17	M10	89	7	29	41	10	15,600	538 244	KEC-25-S

Note

The overtravel is the distance that the round material covers between exhausting of the clamping unit and coming to a standstill. It must be determined by the customer when setting up the machine and be compared with the calculated overtravel

(see DIN EN 999). For use in higher categories than category 1 to DIN 954-1, the overtravel must also be reached in the event of a fault. It is dependent on the environmental conditions and stress, e.g.:

- Operating pressure
- Nominal size of switching valve
- Line length
- Diameter of connecting line to clamping unit
- Load and speed

The overtravel can be reduced by attaching a quick exhaust valve to the supply port of the clamping unit.

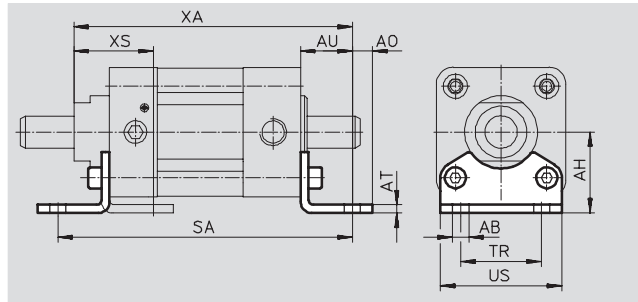
Clamping units

Accessories

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Foot mounting HNC

Material:
Galvanised steel
Free of copper, PTFE and silicone

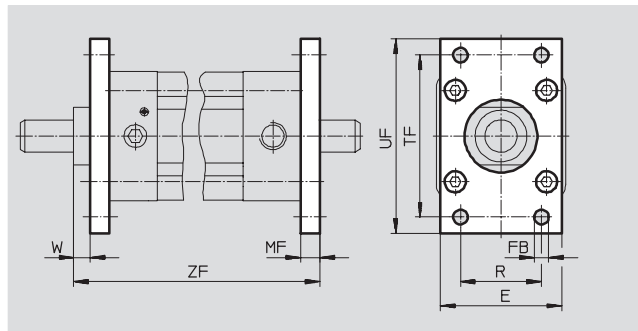


Dimensions and ordering data													
For Ø	AB Ø	AH	AO	AT	AU	SA	TR	US	XA	XS	CRC ¹⁾	Weight [g]	Part No. Type
[mm]													
16	10	36	9	5	28	216	36	54	206	42	2	180	174 370 HNC-40
20	10	50	12.5	6	32	251	50	75	240.5	48.5	2	405	174 372 HNC-63
25	14.5	71	17.5	6	41	340	75	110	328	64	2	1,000	174 374 HNC-100

- 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 normal industrial environment or media such as coolants or lubricating agents.

Flange mounting FNC

Material:
Galvanised steel
Free of copper, PTFE and silicone



Dimensions and ordering data												
For Ø	E	FB Ø	MF	R	TF	UF	W	ZF	CRC ¹⁾	Weight	Part No.	Type
[mm]		H13								[g]		
16	54	9	10	36	72	90	8	188	2	280	174 377	FNC-40
20	75	9	12	50	100	120	9.5	220.5	2	690	174 379	FNC-63
25	110	14	16	75	150	175	13	303	2	2,400	174 381	FNC-100

- 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 normal industrial environment or media such as coolants or lubricating agents.

Core Range