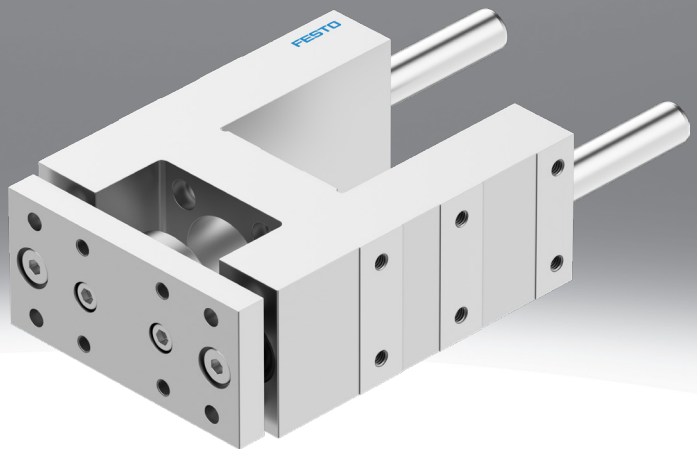
Guide unit, metric FENG



Characteristics

At a glance Link feng

Guide units FENG protect ISOcylinders DSBC, DSBG and DNC against torsion when these are subjected to high torque loads. They offer a high level of guide precision for workpiece handling and other applications.

There are two guide variants to choose from:
- [GF] Plain-bearing guide
- [KF] Recirculating ball bearing guide

Position sensing:
- By using proximity switches, any position can be detected.
- For standards-based cylinders DNC, a mounting kit is required to sense the front end position. The rear end position can be sensed directly via the sensor slot.

Additional documents Link feng

In the additional document FEN-FENG-ADD you will find calculation examples.

Diagrams Link feng

The diagrams shown in this document are also available online. These can be used to display precise values.

Type code

001	Series	
FENG	Guide unit for standards-based cylinder to ISO 15552	

002	Size	
32	32 mm	
40	40 mm	
50	50 mm	
63	63 mm	
80	80 mm	
100	100 mm	

003	Stroke range [mm]	
...	10 ... 500	

004	Guide	
GF	Plain bearing	
KF	Recirculating ball bearing guide	

Datasheet

General technical data

Size	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
Guide	Plain-bearing guide	Recirculating ball bearing guide	Plain-bearing guide	Recirculating ball bearing guide	Plain-bearing guide	Recirculating ball bearing guide	Plain-bearing guide	Recirculating ball bearing guide	Plain-bearing guide	Recirculating ball bearing guide	Plain-bearing guide	Recirculating ball bearing guide
Stroke	10 ... 500 mm											
Design	Guidance											
Displacement force	30 N	15 N	30 N	15 N	50 N	15 N	50 N	15 N	70 N	40 N	70 N	40 N
Type of mounting	Via female thread											
Mounting position	optional											
Ambient temperature	-20 ... 80°C											

Weight

Size	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
Guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide
Basic weight for 0 mm stroke	1,570 g	1,530 g	2,480 g	2,370 g	4,190 g	4,030 g	5,540 g	5,410 g	10,720 g	10,430 g	13,420 g	12,990 g
Additional weight per 10 mm stroke	17 g	18 g	31 g	32 g	48 g	49 g	48 g	49 g	76 g	77 g	76 g	77 g
Moving mass for 0 mm stroke	478 g	483 g	782 g	792 g	1,414 g	1,430 g	1,720 g	1,739 g	4,955 g	4,990 g	5,935 g	5,970 g
Additional moving mass per 10 mm stroke	17 g	18 g	31 g	32 g	48 g	49 g	48 g	49 g	76 g	77 g	76 g	77 g

Centre of gravity of the moving mass

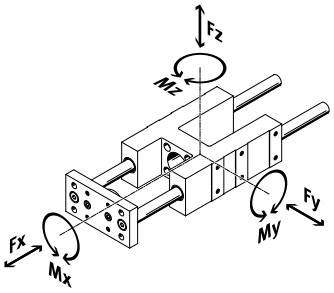
Size	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Centre of gravity at 0 mm stroke	43 mm	57 mm	60 mm	69 mm	54 mm	47 mm
Centre of gravity additional of moving mass per 10 mm	4.5 mm	4.7 mm		4.6 mm	3.9 mm	3.6 mm

Materials

Size	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
Guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide	Plain bearing	Recirculating ball bearing guide
Material housing	Anodised wrought aluminium alloy											
Material guide component	High-alloy steel	Tempered steel	High-alloy steel	Tempered steel	High-alloy steel	Tempered steel	High-alloy steel	Tempered steel	High-alloy steel	Tempered steel	High-alloy steel	Tempered steel
Material yoke plate	Anodised wrought aluminium alloy								Tempered steel			
Note on materials	RoHS-compliant											
LABS (PWIS) conformity	VDMA24364-B2-L											

Datasheet

Load values



The indicated forces and torques refer to the centre of the guide.

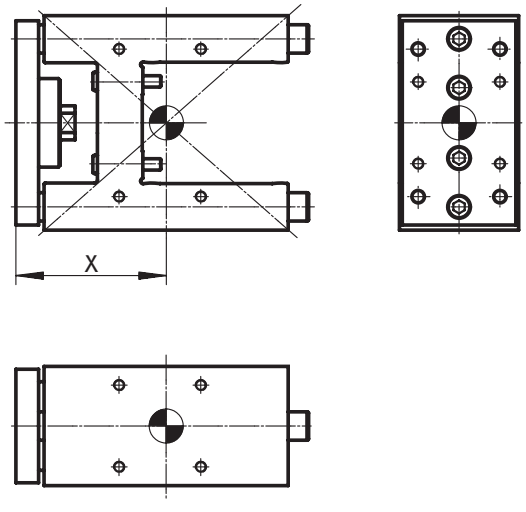
Size	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Max. force Fy static	1,020 N	1,260 N	1,600 N		3,120 N	
Max. force Fz static	1,020 N	1,260 N	1,600 N		3,120 N	
Max. torque Mx static	38 Nm	55 Nm	83 Nm	95 Nm	231 Nm	268 Nm
Max. torque My static	46 Nm	65 Nm	89 Nm	115 Nm	259 Nm	267 Nm
Max. torque Mz static	46 Nm	65 Nm	89 Nm	115 Nm	259 Nm	267 Nm
Max. force Fy	750 N	1,000 N	1,260 N		2,300 N	
Max. force Fz	750 N	1,000 N	1,260 N		2,300 N	
Max. moment Mx	28 Nm	44 Nm	65 Nm	75 Nm	170 Nm	198 Nm
Max. moment My	34 Nm	52 Nm	70 Nm	90 Nm	191 Nm	197 Nm
Max. moment Mz	34 Nm	52 Nm	70 Nm	90 Nm	191 Nm	197 Nm

Load characteristics – Calculation of the load comparison factor

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

If the guide unit is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Load parameters – position of the centre of the guide

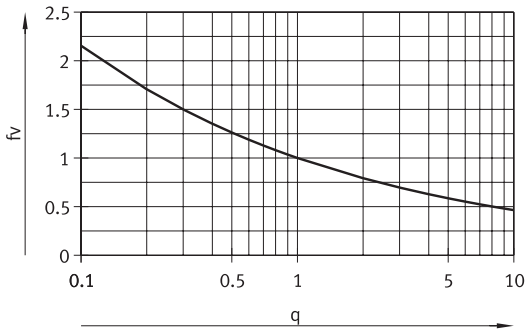


Distance X:

- FENG-32-...-KF: 83 mm
- FENG-40-...-KF: 85 mm
- FENG-50-...-KF: 99 mm
- FENG-63-...-KF: 117 mm
- FENG-80-...-KF: 142 mm
- FENG-100-...-KF: 145 mm

Datasheet

Calculating the service life



The service life of the guide depends on the load. To provide a rough indication of the service life of the guide, the graph below plots the load comparison factor fv against the service life ratio q.
These values are only theoretical. You must consult your local contact at Festo for load comparison factors fv greater than 1.5.

Load comparison factor fv as a function of service life ratio q:

Example:
The effect on the service life, deviating from the specified reference service life, can be determined using the service life ratio q:

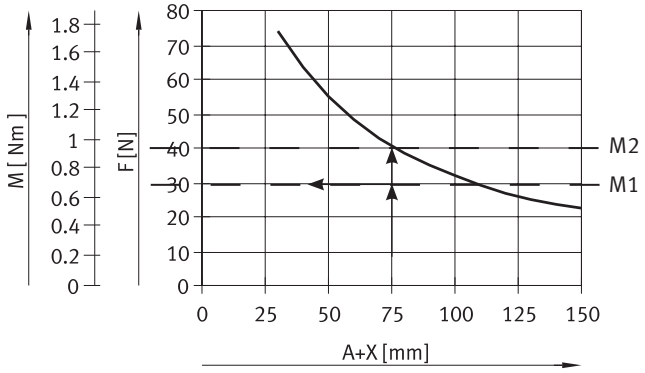
Where:
Reference service life = 5000 km
Required service life = 3000 km

q = (3000 km / 5000 km) = 0.6

The graph shows a load comparison factor fv of 1.2. This means that the permissible total load can be utilised up to 120%.

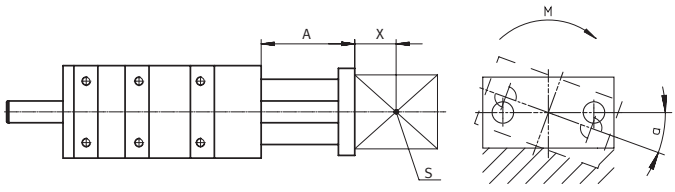
fv > 1.5 are only theoretical comparison values.

Max. payload F and torque M as a function of projection A –Explanation of how to read the graphs in the case of a combined load



- Determine projection (75 mm)
- Enter proportion of payload (30 N)
- Enter distance from curve
- Permitted torque is the difference between M2 and M1

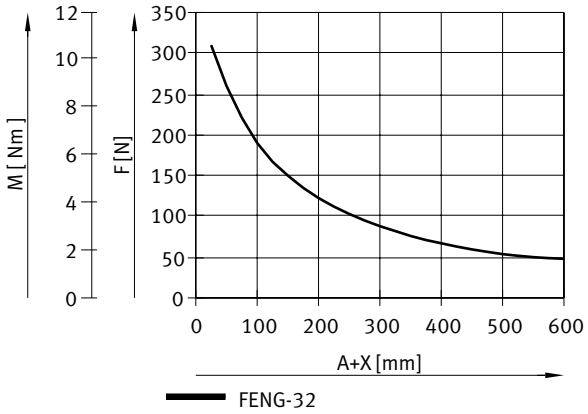
Max. payload F and torque M as a function of projection A – FENG-...-GF



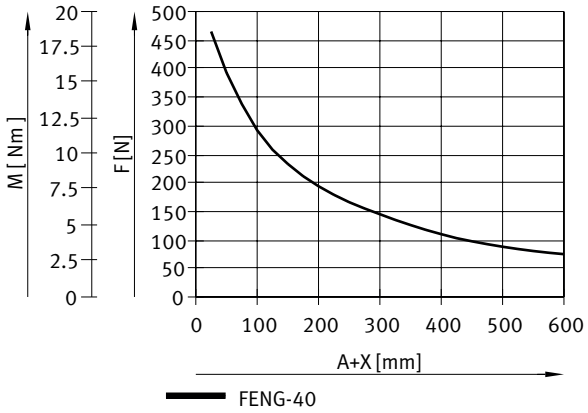
A = projection
X = distance to the centre of gravity of the payload
S = centre of gravity of the payload
M = torque

Datasheet

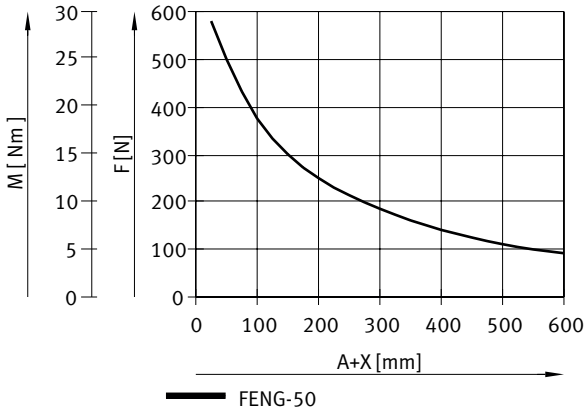
Max. payload F and torque M as a function of projection A – FENG-32-GF



Max. payload F and torque M as a function of projection A – FENG-40-GF

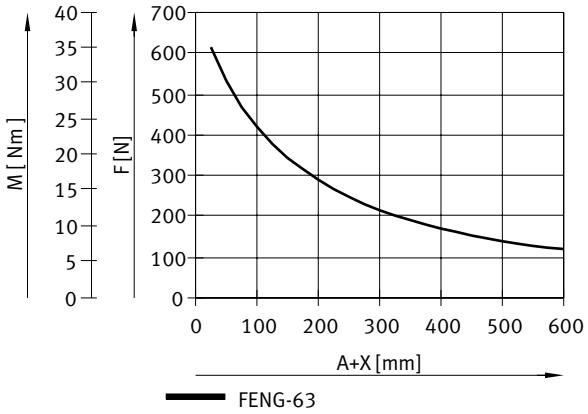


Max. payload F and torque M as a function of projection A – FENG-50-GF

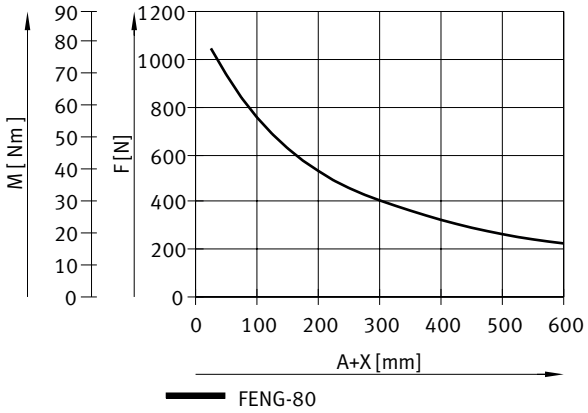


Datasheet

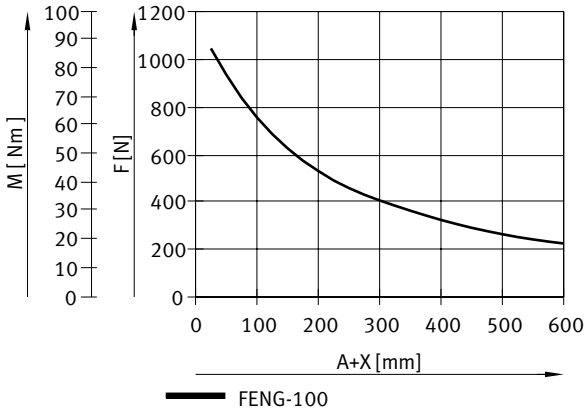
Max. payload F and torque M as a function of projection A – FENG-63-GF



Max. payload F and torque M as a function of projection A – FENG-80-GF

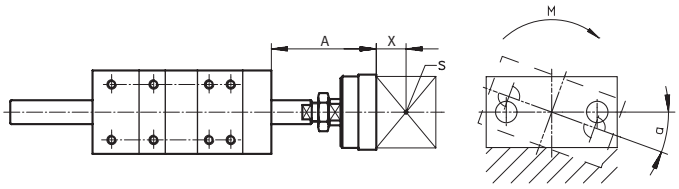


Max. payload F and torque M as a function of projection A – FENG-100-GF



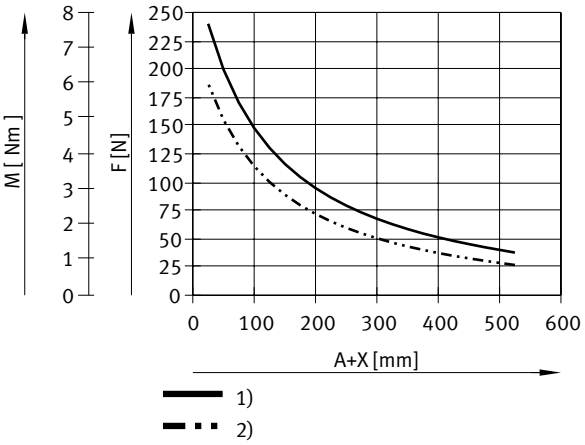
Datasheet

Max. payload F and torque M as a function of projection A – FENG-...-KF



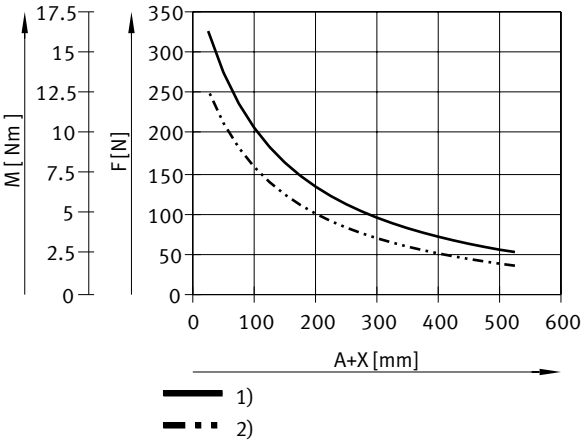
A = projection
X = distance to the centre of gravity of the payload
S = centre of gravity of the payload
M = torque

Max. payload F and torque M as a function of projection A – FENG-32-KF



1) Running performance of 5000 km
2) Running performance of 10000 km

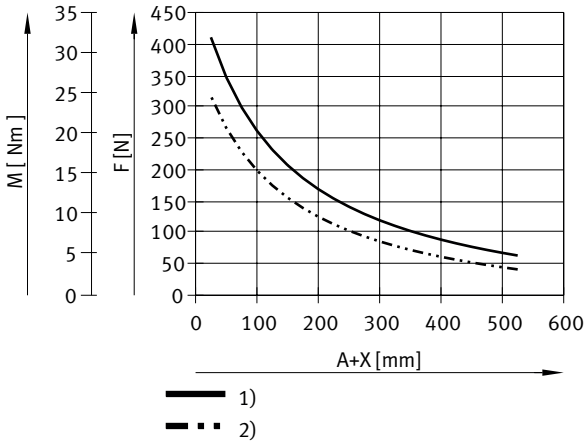
Max. payload F and torque M as a function of projection A – FENG-40-KF



1) Running performance of 5000 km
2) Running performance of 10000 km

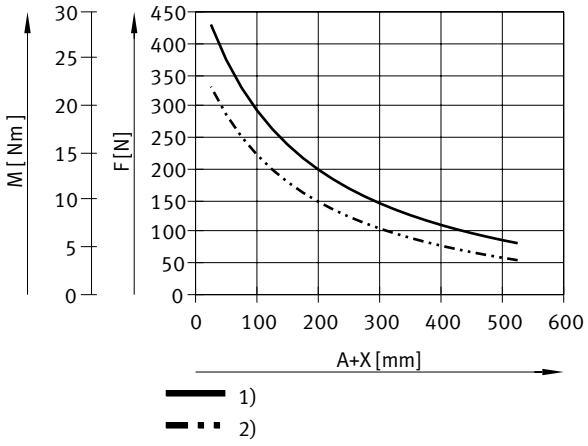
Datasheet

Max. payload F and torque M as a function of projection A – FENG-50-KF



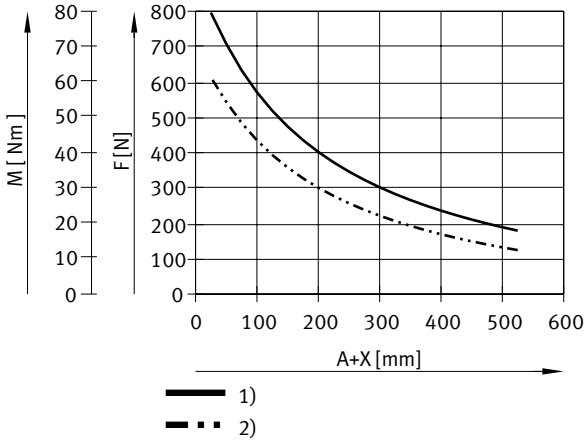
1) Running performance of 5000 km
2) Running performance of 10000 km

Max. payload F and torque M as a function of projection A – FENG-63-KF



1) Running performance of 5000 km
2) Running performance of 10000 km

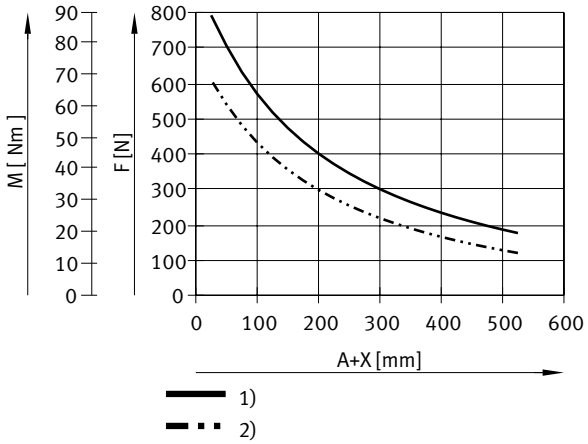
Max. payload F and torque M as a function of projection A – FENG-80-KF



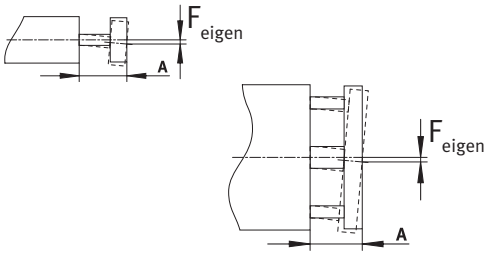
1) Running performance of 5000 km
2) Running performance of 10000 km

Datasheet

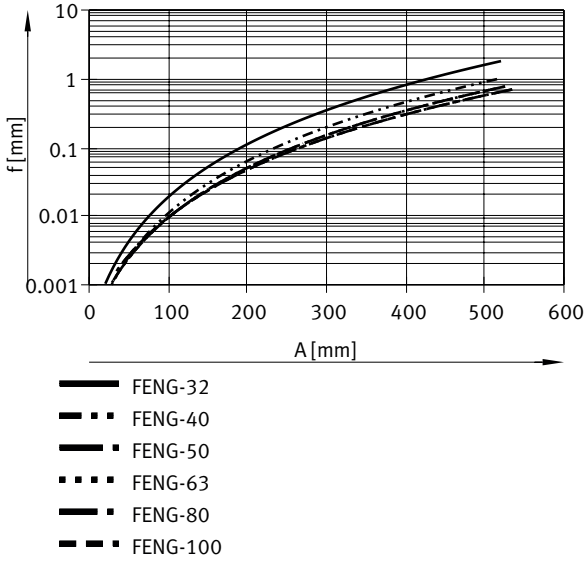
Max. payload F and torque M as a function of projection A – FENG-100-KF



Deflection Ftare (due to tare weight) as a function of projectionA

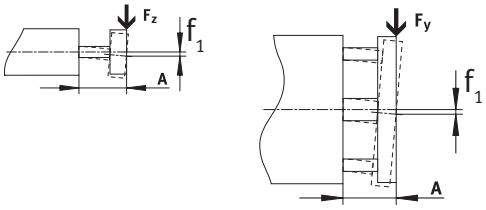


Deflection of Ftare (due to tare weight) as a function of projection A – FENG-32 ... 100-GF/KF



Datasheet

Deflection Fstandard (due to lateral force) as a function of projectionA



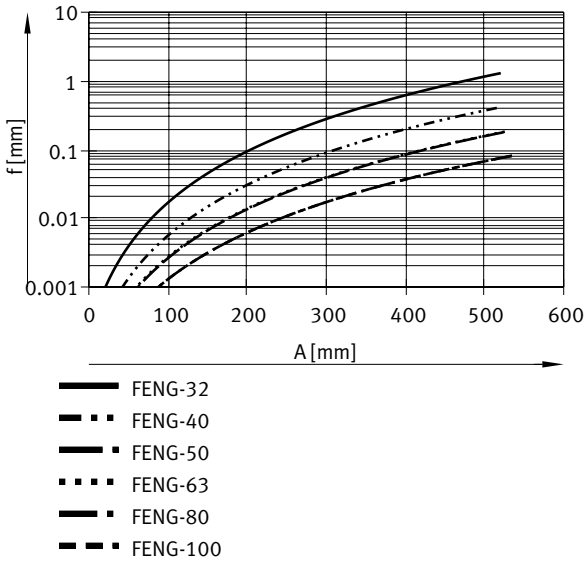
The maximum permissible lateral force must not be exceeded.

f1 = (F1/F2)*f2

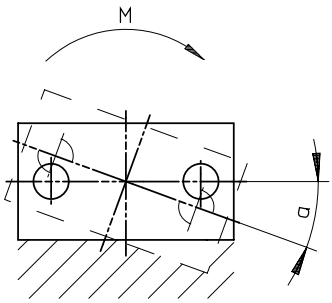
F2 = 10 N

A = projection for guide rod
f1 = deflection due to lateral force
F1 = lateral force
F2 = standardised lateral force
f2 = deflection due to standardised lateral force (value from graph)

Deflection Fstandard (due to lateral force) as a function of projection A – FENG-32 ... 100-GF/KF



Incline a1 (due to torque) as a function of projection A



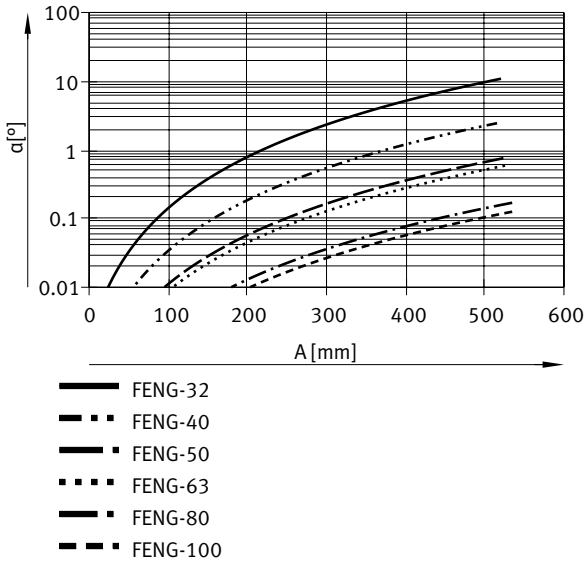
a1 = (M1/M2)*a2

M2 = 2 Nm (valid for ≤ 10°)

A = projection for guide rod
a1 = incline due to torque
M1 = torque
M2 = standardised torque
a2 = deflection due to standardised lateral force

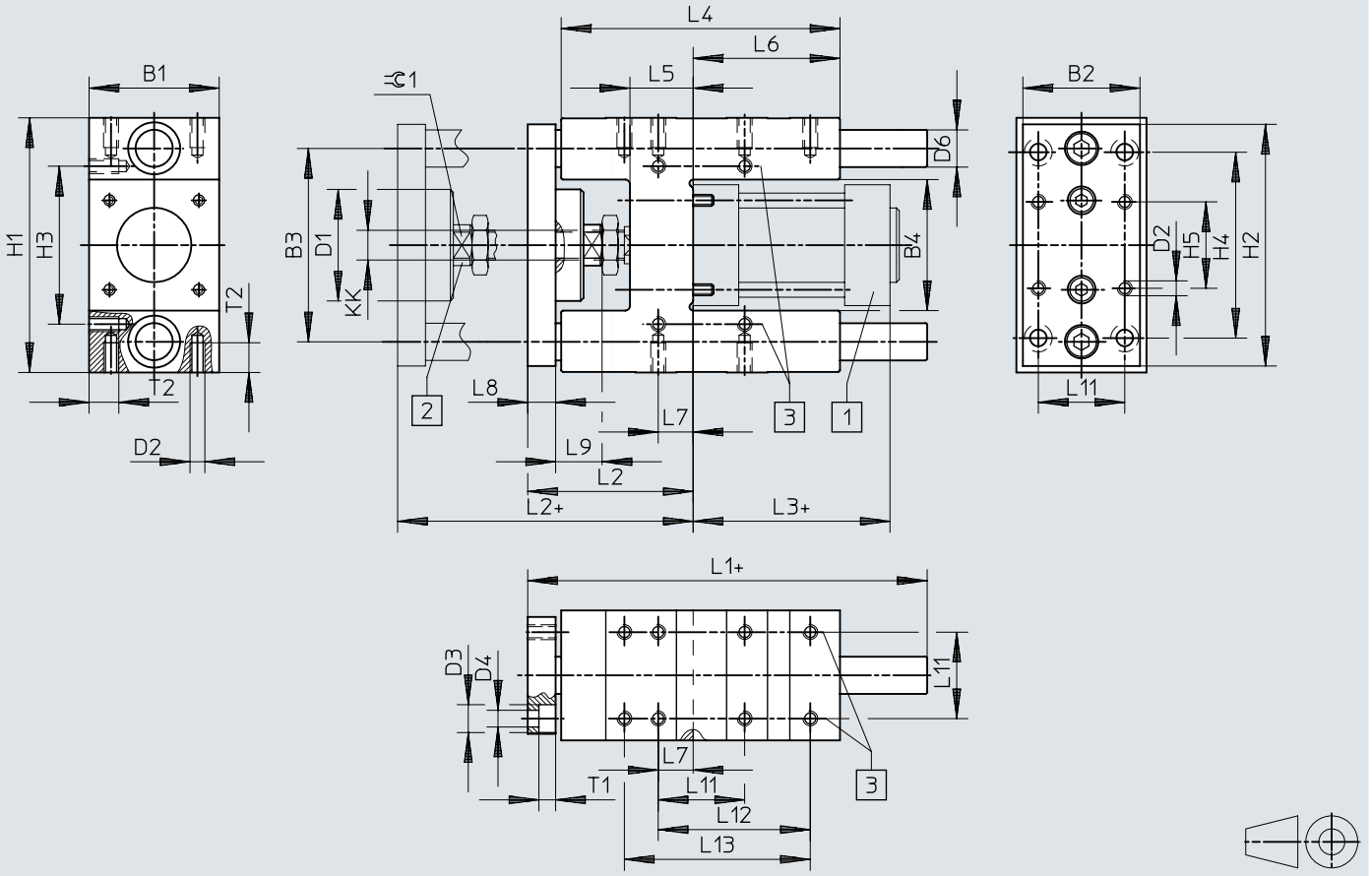
Datasheet

Incline a1 (due to torque) as a function of projection A – FENG-32 ... 100-GF/KF



Dimensions

Dimensions – FENG-32 ... 100 Download CAD data www.festo.com



[1] Standards-based cylinder DSBC
[2] Compensating coupling for radial and axial alignment
[3] Customers can drill additional mounting holes along these axes as required.
[4] + = plus stroke length

	B1 –0,3	B2	B3 ±0,2	B4	D1 ø	D2	D3 ø	D4 ø	D6[1] ø	H1	H2	H3 ±0,2	H4 ±0,2	H5 ±0,2	KK
FENG-32	50	45	74	50,5 ±0,3	45	M6	11	6,6	12	97 –0,4	90	61	78	32,5	M10x1,25
FENG-40	58	54	87	58,5 ±0,3	45	M6	11	6,6	16	115 –0,4	110	69	84	38	M12x1,25
FENG-50	70	63	104	70,5 ±0,3	60	M8	15	9	20	137 –0,5	130	85	100	46,5	M16x1,5
FENG-63	85	80	119	85,5 ±0,3	60	M8	15	9	20	152 –0,5	145	100	105	56,5	M16x1,5
FENG-80	105	100	148	106 ±0,6	78	M10	18	11	25	189 –0,5	180	130	130	72	M20x1,5
FENG-100	130	120	172	131 ±0,6	78	M10	18	11	25	213 –0,5	200	150	150	89	M20x1,5

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L11 ±0,2	L12 ±0,2	L13 ±0,2	T1	T2 max.	⌀C1
FENG-32	155	67 +5	94	125	24	76	4,3	12	20	32,5	70,3	78	6,5	14	15
FENG40	170	75 +5	105	140	28	81	11	12	22	38	84	–	6,5	14	15
FENG-50	188	89 +10	106	150	34	79	18,8	15	25	46,5	81,8	100	9	16	19
FENG-63	220	89 +10	121	182	34	111	15,3	15	25	56,5	105	–	9	16	19
FENG-80	258	111 +10	128	215	40	128	21	20	32	72	–	–	11	20	27
FENG-100	263	116 +10	138	220	40	128	24,5	20	32	89	–	–	11	20	27

1) FENG-...-GF: Tolerance class h8, FENG-...-KF: Tolerance class h7

Ordering data

FENG-...-GF – variable strokes

	Size	Stroke	Part no.	Type
	32 mm	10 ... 500 mm	34481	FENG-32- -GF
	40 mm		34482	FENG-40- -GF
	50 mm		34483	FENG-50- -GF
	63 mm		34484	FENG-63- -GF
	80 mm		34485	FENG-80- -GF
	100 mm		34486	FENG-100- -GF

FENG-...-KF – variable strokes

	Size	Stroke	Part no.	Type
	32 mm	10 ... 500 mm	34487	FENG-32- -KF
	40 mm		34488	FENG-40- -KF
	50 mm		34489	FENG-50- -KF
	63 mm		34490	FENG-63- -KF
	80 mm		34491	FENG-80- -KF
	100 mm		34492	FENG-100- -KF

FENG-...-GF – fixed strokes

	Size	Stroke	Part no.	Type
	32 mm	50 mm	8204059	FENG-32-50-GF
		80 mm	8204060	FENG-32-80-GF
		100 mm	8204061	FENG-32-100-GF
		125 mm	8204062	FENG-32-125-GF
		160 mm	8204063	FENG-32-160-GF
		200 mm	8204064	FENG-32-200-GF
		250 mm	8204065	FENG-32-250-GF
		320 mm	8204066	FENG-32-320-GF
		400 mm	8204067	FENG-32-400-GF
		500 mm	8204068	FENG-32-500-GF
	40 mm	50 mm	8204069	FENG-40-50-GF
		100 mm	8204070	FENG-40-100-GF
		160 mm	8204071	FENG-40-160-GF
		200 mm	8204072	FENG-40-200-GF
		250 mm	8204073	FENG-40-250-GF
		320 mm	8204074	FENG-40-320-GF
		500 mm	8204075	FENG-40-500-GF
	50 mm	50 mm	8204076	FENG-50-50-GF
		80 mm	8204077	FENG-50-80-GF
		100 mm	8204078	FENG-50-100-GF
		200 mm	8204079	FENG-50-200-GF
		250 mm	8204080	FENG-50-250-GF

FENG-...-KF – fixed strokes

	Size	Stroke	Part no.	Type
	32 mm	50 mm	34493	FENG-32-50-KF
		100 mm	34494	FENG-32-100-KF
		160 mm	34495	FENG-32-160-KF
		200 mm	34496	FENG-32-200-KF
		250 mm	150289	FENG-32-250-KF
		320 mm	34497	FENG-32-320-KF
		400 mm	150290	FENG-32-400-KF
		500 mm	34498	FENG-32-500-KF
	40 mm	50 mm	34499	FENG-40-50-KF
		100 mm	34500	FENG-40-100-KF

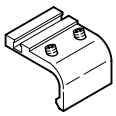
Ordering data

FENG-...-KF – fixed strokes

	Size	Stroke	Part no.	Type
	40 mm	160 mm	**34501**	**FENG-40-160-KF**
		200 mm	**34502**	**FENG-40-200-KF**
		250 mm	**34503**	**FENG-40-250-KF**
		320 mm	**34504**	**FENG-40-320-KF**
		400 mm	**150291**	**FENG-40-400-KF**
		500 mm	**34505**	**FENG-40-500-KF**
	50 mm	50 mm	**34506**	**FENG-50-50-KF**
		100 mm	**34507**	**FENG-50-100-KF**
		160 mm	**34508**	**FENG-50-160-KF**
		200 mm	**34509**	**FENG-50-200-KF**
		250 mm	**34510**	**FENG-50-250-KF**
		320 mm	**34511**	**FENG-50-320-KF**
		400 mm	**150292**	**FENG-50-400-KF**
		500 mm	**34512**	**FENG-50-500-KF**
	63 mm	50 mm	**34513**	**FENG-63-50-KF**
		100 mm	**34514**	**FENG-63-100-KF**
		160 mm	**34515**	**FENG-63-160-KF**
		200 mm	**34516**	**FENG-63-200-KF**
		250 mm	**34517**	**FENG-63-250-KF**
		320 mm	**34518**	**FENG-63-320-KF**
		400 mm	**34519**	**FENG-63-400-KF**
		500 mm	**34520**	**FENG-63-500-KF**
	80 mm	50 mm	**34521**	**FENG-80-50-KF**
		100 mm	**34522**	**FENG-80-100-KF**
		160 mm	**34523**	**FENG-80-160-KF**
		200 mm	**34524**	**FENG-80-200-KF**
		250 mm	**34525**	**FENG-80-250-KF**
		320 mm	**34526**	**FENG-80-320-KF**
		400 mm	**34527**	**FENG-80-400-KF**
		500 mm	**34528**	**FENG-80-500-KF**
	100 mm	50 mm	**34529**	**FENG-100-50-KF**
		100 mm	**34530**	**FENG-100-100-KF**
		160 mm	**34531**	**FENG-100-160-KF**
		200 mm	**34532**	**FENG-100-200-KF**
		250 mm	**34533**	**FENG-100-250-KF**
		320 mm	**34534**	**FENG-100-320-KF**
		400 mm	**34535**	**FENG-100-400-KF**
		500 mm	**34536**	**FENG-100-500-KF**

Accessories

Mounting kit SMB-8-FENG-... – for standards-bases cylinder DNC-...-A

	Size [mm]	Part no.	Type
	32 mm, 40 mm	**175705**	**SMB-8-FENG-32/40**
	50 mm, 63 mm	**175706**	**SMB-8-FENG-50/63**
	80 mm, 100 mm	**175707**	**SMB-8-FENG-80/100**