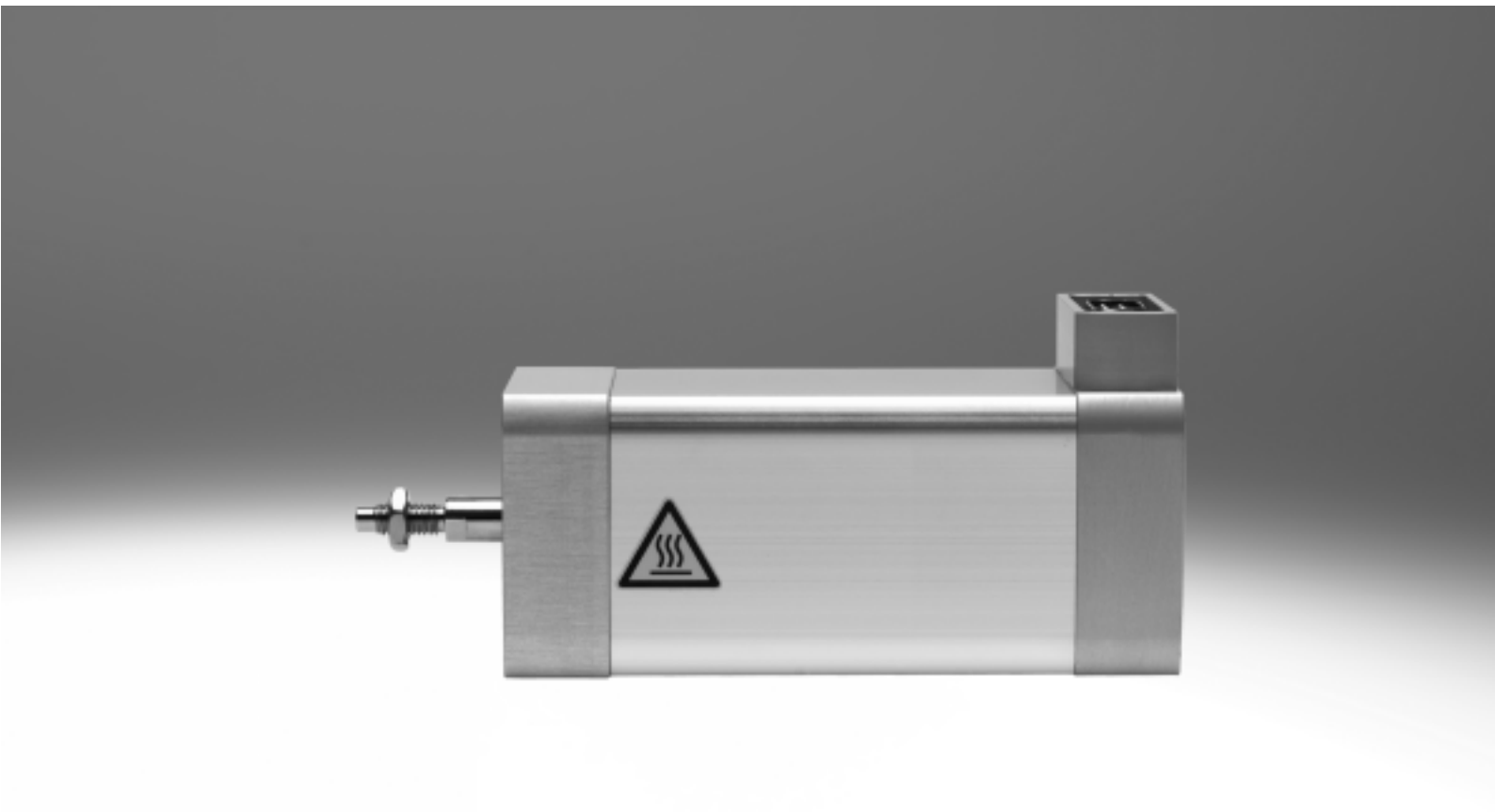
Short-stroke cylinders ADNE-LAS, with linear motor

FESTO



Short-stroke cylinders ADNE-LAS, with linear motor

Key features

At a glance

Properties

- Electric short-stroke cylinder with integrated linear motor, specifically designed for dynamic movements between two end positions
- A cycle of advancing and retracing motion over 15 mm can be achieved in 64 ms (movement frequency of up to 13.6 Hz)
- Festo plug & work: connect, switch on, teach-in end positions and then the system is ready to use. There is no need to set servo parameters
- Mechanical interfaces are largely compatible with the pneumatic compact cylinder ADN
- Electronic end-position cushioning, i.e. constant force across the entire stroke with the force only reduced at the end positions as end-position cushioning
- No external magnetic fields

Range of applications

- Dynamic movement with secondary accuracy requirements:
  - Switching deflectors
  - Rejecting good/bad parts from an ongoing production process
  - Blocking movements
  - Checking switches
  - Applying labels

Everything from a single source

Short-stroke cylinder
ADNE-LAS
➔ 3

End-position controller
CMFL
➔ Internet: cmfl

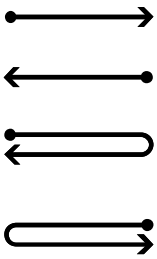
- Short-stroke cylinder ADNE-LAS
- End-position controller CMFL
- Motor cable NEBM
- Power supply cable KPWR
- Pilot line KES

The short-stroke cylinder ADNE-LAS and the end-position controller CMFL form one unit. Only one cable is required between the short-stroke cylinder and end-position controller.

Movement pattern

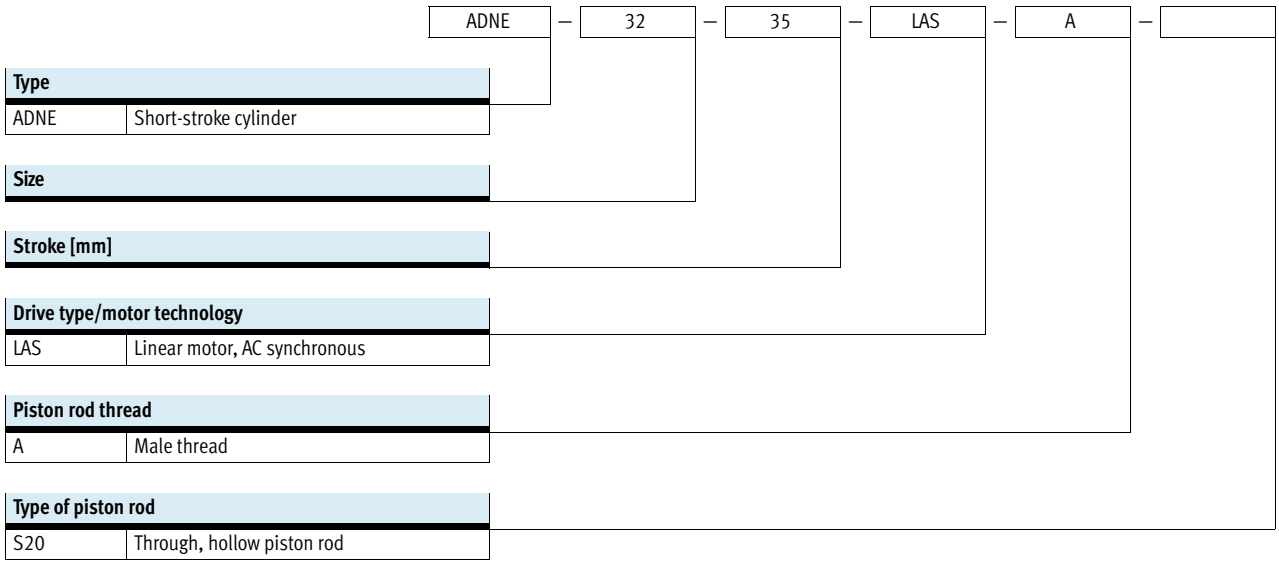
Four movement patterns can be selected via inputs.

1. Advancing
2. Retracting
3. Advancing and then retracting again
4. Retracting and then advancing again



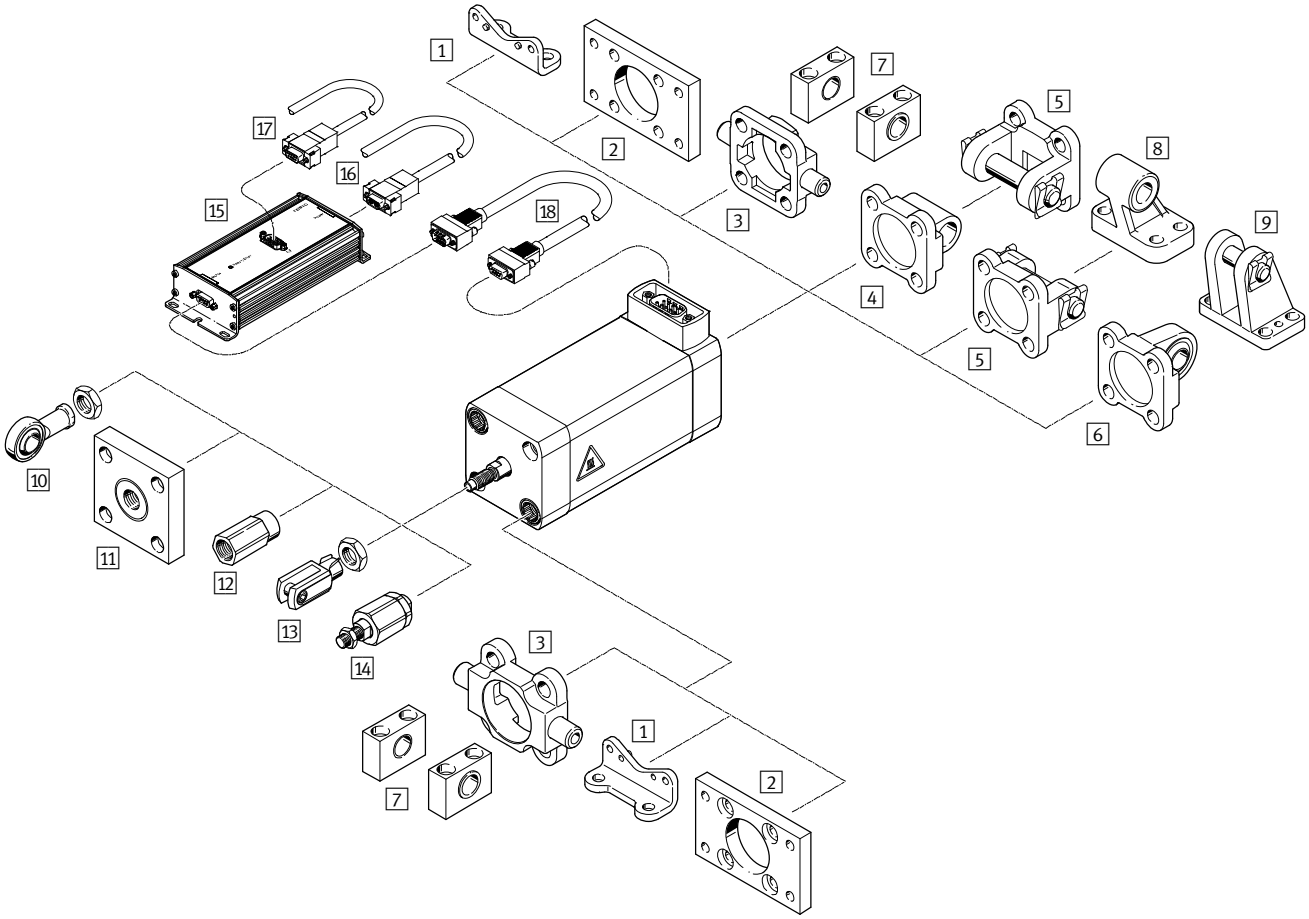
Short-stroke cylinders ADNE-LAS, with linear motor

Type codes



Short-stroke cylinders ADNE-LAS, with linear motor

Peripherals overview



Short-stroke cylinders ADNE-LAS, with linear motor

Peripherals overview

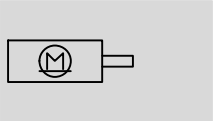
Mounting attachments and accessories					
		Brief description	Variant		→ Page/Internet
			Basic version	S20	
1	Foot mounting HNA	For bearing or end caps	■	■	15
2	Flange mounting FNC	For bearing or end caps	■	■	15
3	Trunnion flange ZNCF	For bearing or end caps	■	■	17
4	Swivel flange SNCL	For end caps	■	–	16
5	Swivel flange SNCB	For end caps	■	–	16
6	Swivel flange SNCS	For end caps, with spherical bearing	■	–	17
7	Trunnion support LNZG	In combination with trunnion flange ZNCF	■	■	18
8	Clevis foot LNG	In combination with swivel flange SNCB	■	–	18
9	Clevis foot LBG	In combination with swivel flange SNCS	■	–	18
10	Rod eye SGS	With spherical bearing	■	■	18
11	Coupling piece KSZ	Compensates radial misalignments up to ±1 mm	■	■	18
12	Adapter AD	Specially for through, hollow piston rods, for example for connecting vacuum generators	■	■	18
13	Rod clevis SG	–	■	■	18
14	Self-aligning rod coupler FK	Compensates radial and angular misalignments	■	■	18
15	End-position controller CMFL	For parameterising and positioning the short-stroke cylinder	■	■	cmfl
16	Power supply cable KPWR	For connecting the load and logic supply	■	■	cmfl
17	Pilot line KES	For I/O interface to any controller	■	■	cmfl
18	Motor cable NEBM	For connecting the motor and end-position controller	■	■	cmfl

Short-stroke cylinders ADNE-LAS, with linear motor

Technical data

FESTO

Function



- Size
  32, 40
- Stroke length
  15 ... 45 mm

Note

All values are based on a standard temperature of 23 °C.
Dynamic response and accuracy are dependent on the mounting (rigidity) and the derivation of the thermal energy (heat concentration).

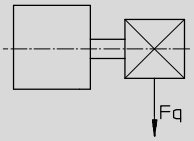
General technical data						
Size			32		40	
Stroke		[mm]	15	35	20	45
Design			Electric linear direct drive			
			Electric cylinder with piston rod			
Based on standard			ISO 21287			
Type of mounting			Via female thread			
			Via accessories			
Mounting position			Horizontal			
Minimum stroke		[mm]	7.5	17.5	10	22.5
Max. effective load		[g]	500			
Max. speed		[m/s]	1.9	1.8	1.5	1.6
Repetition accuracy		[mm]	±0.1			

Mechanical data						
Size			32		40	
Stroke		[mm]	15	35	20	45
Deflection of piston rod[1]	Retracted	[mm]	0.14	0.14	0.15	0.15
	Advanced	[mm]	0.25	0.35	0.25	0.50
At operating voltage of 48 V						
Continuous feed force[2]		[N]	10.5	5.9	14.2	11
Peak feed force		[N]	26	15	51	30
Holding force in the end positions		[N]	3	2	6	4.5
At operating voltage of 24 V						
Continuous feed force[2]		[N]	10.5	5.9	14.2	11
Peak feed force		[N]	13	8	28	16
Holding force in the end positions		[N]	3	2	6	4.5

1) In new condition
2) Measured at a motor temperature of 70 °C

Note

- Due to the maximum effective load of 500 g, the lateral force Fq of max. 5 N must not be exceeded.



- No torques are permissible on the piston rod.

Short-stroke cylinders ADNE-LAS, with linear motor

Technical data

Electrical data	
Motor type	Linear AC synchronous motor
End-position detection	Internal, non-contacting
Magnetic radiation	None

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... +40
Motor temperature during teach-in procedure	[°C]	+15 ... +50
Max. motor temperature	[°C]	70 (shuts down at 75 °C/in the event of a malfunction over 100 °C)
Standard temperature[1)]	[°C]	23
Temperature monitoring		Shuts down if motor overheats
Storage temperature	[°C]	−20 ... +60
Protection class (mechanical system)		IP40
Protection class (electrical connection)		IP65
Relative air humidity (non-condensing)	[%]	95
CE marking (see declaration of conformity)		To EU EMC Directive
Certification		C-Tick
Corrosion resistance class CRC[2)]		2

1) Unless otherwise stated, all values are based on standard temperature.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

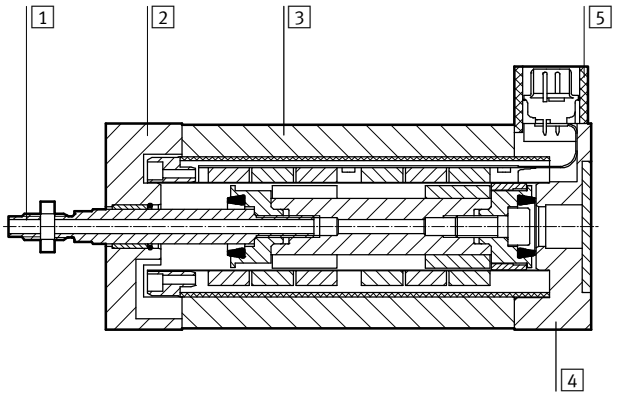
Weight [g]					
Size		32		40	
Stroke	[mm]	15	35	20	45
Product weight		710	940	1260	1710
	S20	725	960	1290	1750
Moving load		105	130	275	350
	S20	120	150	305	390

Short-stroke cylinders ADNE-LAS, with linear motor

Technical data

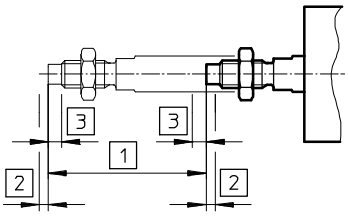
Materials

Sectional view



Short-stroke cylinder	
1 Piston rod	High-alloy stainless steel
2 Bearing cap	Anodised wrought aluminium alloy
3 Housing	Anodised wrought aluminium alloy
4 Connector cap	Anodised wrought aluminium alloy
5 Cover	Anodised wrought aluminium alloy
– Plain bearing	Polyacetal
– Screws, nuts	Steel
Note on materials	Contains PWIS (paint-wetting impairment substances)
	RoHS-compliant

Internal cushioning



1 Working stroke:
The recommended, available operating range

2 Cushioning length:
The distance from the end positions of the working stroke to the mechanical end position

3 Rebound:
How far the drive rebounds depends on the load, the dynamics of the movement and the temperature of the cylinder

Size		32		40	
Stroke	[mm]	15	35	20	45
Working stroke	[mm]	15	35	20	45
Minimum stroke	[mm]	7.5	17.5	10	22.5
Cushioning length	[mm]	0.7	0.7	0.8	0.8
Rebound at 48 V[1)]	[mm]	0.8	0.8	0.5	1.3
Rebound at 24 V[1)]	[mm]	0.3	0.6	0.5	1.3

1) Repeat the teach-in procedure if the rebound is too strong.

Max. frequency f as a function of effective load m and voltage U, briefly

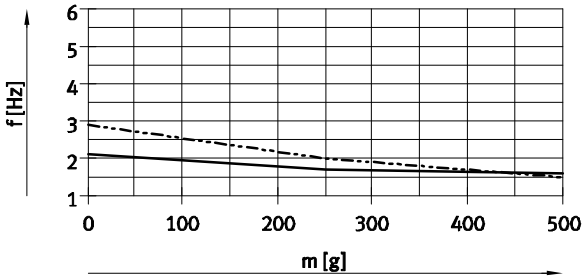
Size			32		40	
Stroke		[mm]	15	35	20	45
At operating voltage of 48 V						
Frequency	Effective load = 0 g	[Hz]	13.6	7.1	11.6	5.1
	Effective load = 250 g	[Hz]	7.2	5.8	8.9	4.9
	Effective load = 500 g	[Hz]	4.7	4.5	7	4.1
At operating voltage of 24 V						
Frequency	Effective load = 0 g	[Hz]	11.1	5.5	8.8	4.2
	Effective load = 250 g	[Hz]	9.1	4.7	7.2	3.9
	Effective load = 500 g	[Hz]	6	3.2	5.4	3

Note

Applies to a motor temperature up to max. 74 °C.

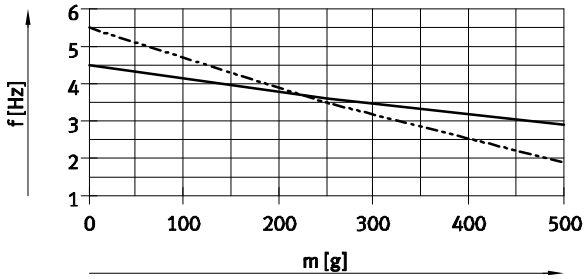
Frequency f as a function of effective load m and voltage U, during continuous operation

At U = 48 V
ADNE-32-15/35



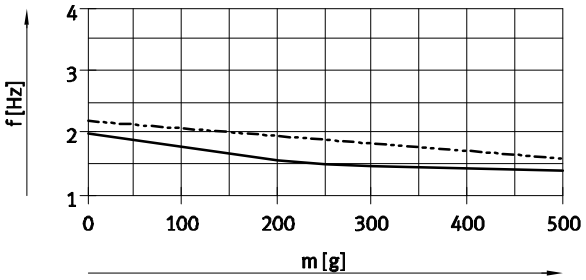
ADNE-32-15
ADNE-32-35

At U = 24 V
ADNE-32-15/35



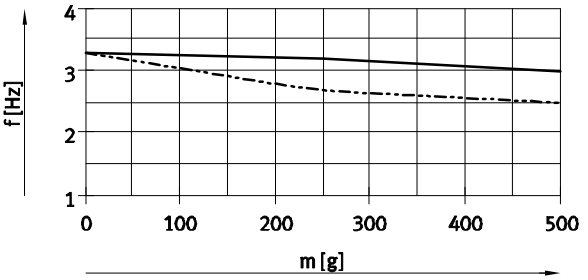
ADNE-32-15
ADNE-32-35

ADNE-40-20/45



ADNE-40-20
ADNE-40-45

ADNE-40-20/45



ADNE-40-20
ADNE-40-45

Short-stroke cylinders ADNE-LAS, with linear motor

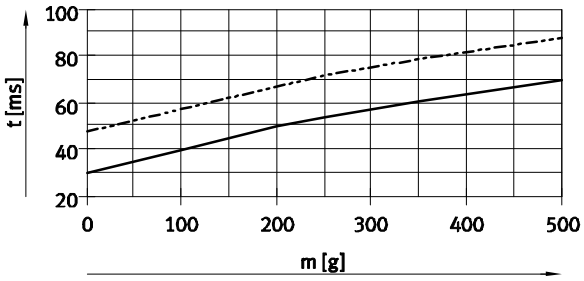
Technical data

Min. positioning time t as a function of voltage U, at an effective load of 0 g

Size		32		40	
Stroke	[mm]	15	35	20	45
At operating voltage of 48 V					
Positioning time	[ms]	30	48	36	75
At operating voltage of 24 V					
Positioning time	[ms]	30	62	44	100

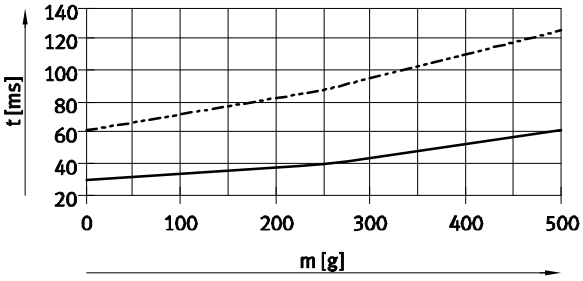
Positioning time t as a function of effective load m and voltage U

At U = 48 V
ADNE-32-15/35



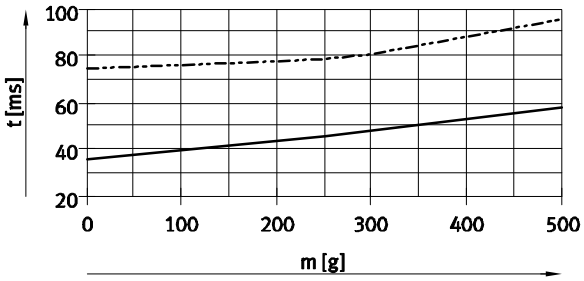
ADNE-32-15
ADNE-32-35

At U = 24 V
ADNE-32-15/35



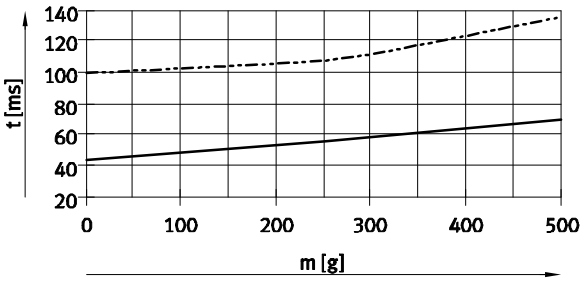
ADNE-32-15
ADNE-32-35

ADNE-40-20/45



ADNE-40-20
ADNE-40-45

ADNE-40-20/45



ADNE-40-20
ADNE-40-45

Short-stroke cylinders ADNE-LAS, with linear motor

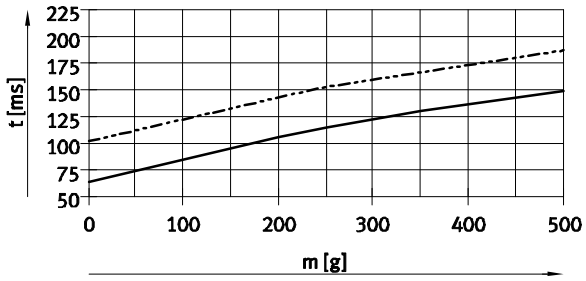
Technical data

Min. positioning time t as a function of voltage U, at an effective load of 0 g

Size		32		40	
Stroke	[mm]	15	35	20	45
At operating voltage of 48 V					
Positioning time	[ms]	64	102	77	160
At operating voltage of 24 V					
Positioning time	[ms]	64	132	94	213

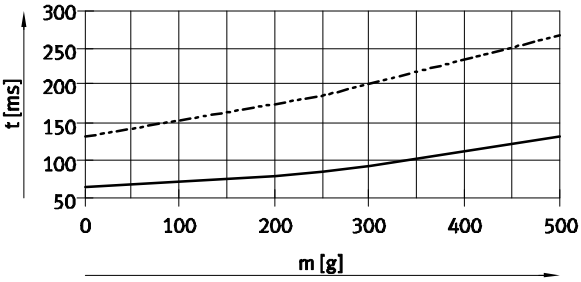
Positioning time t as a function of effective load m and voltage U

At U = 48 V
ADNE-32-15/35



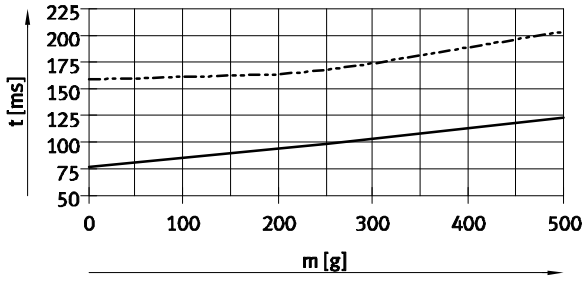
ADNE-32-15
ADNE-32-35

At U = 24 V
ADNE-32-15/35



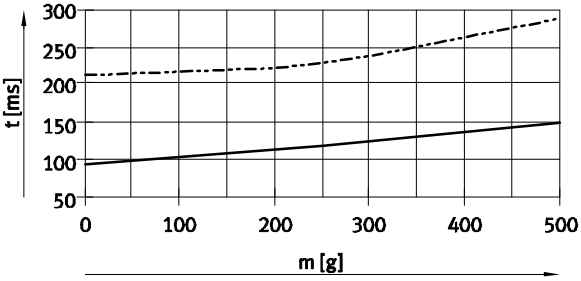
ADNE-32-15
ADNE-32-35

ADNE-40-20/45



ADNE-40-20
ADNE-40-45

ADNE-40-20/45

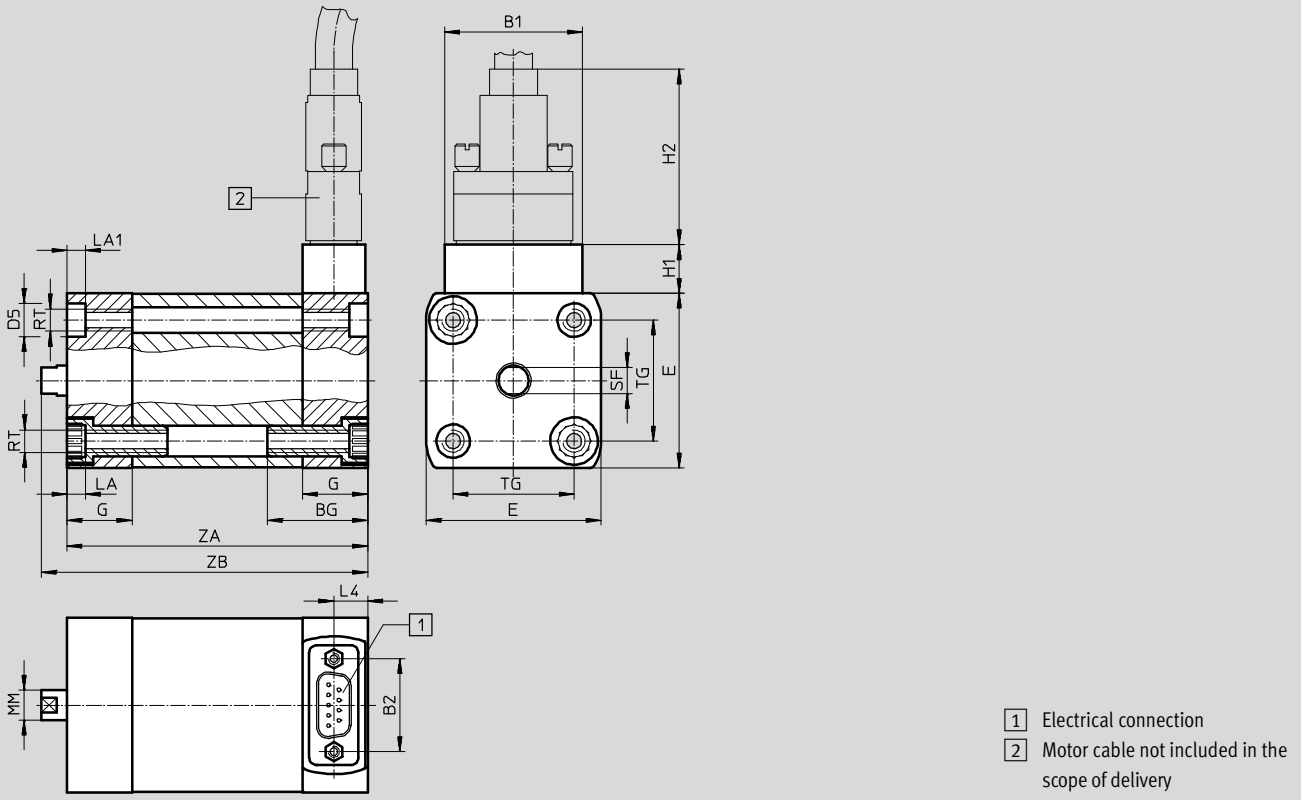


ADNE-40-20
ADNE-40-45

Short-stroke cylinders ADNE-LAS, with linear motor

Technical data

Dimensions – Basic version Download CAD data ➔ **www.festo.com**



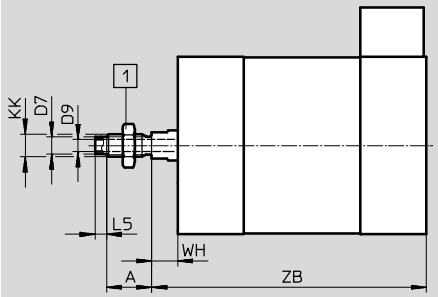
1 Electrical connection
2 Motor cable not included in the scope of delivery

Size	Stroke [mm]	B1	B2	BG	D5 ∅ F9	E +0.3	G	H1	H2	LA +0.4
32	15	37	25	26	9	47	17.5	13	50	4.6
	35									
40	20					54.5				
	45									

Size	Stroke [mm]	LA1	L4	MM ∅ h9	RT	SF h13	TG ±0.2	ZA +0.4/–0.2	ZB +0.75/–0.35
32	15	5	9.1	8	M6	7	32.5	110.8	117.65
	35							150.8	157.65
40	20			10		9	38	136.5	143.4
	45							186.5	193.4

Dimensions – Variants Download CAD data ➔ **www.festo.com**

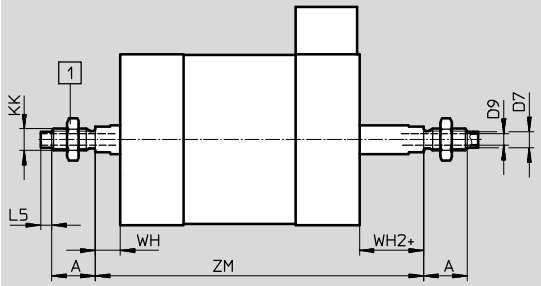
A – Male thread



1 Hex nut DIN 439-B included in the scope of delivery

Size	Stroke [mm]	A −0.5	D7 ∅	D9 ∅	KK	L5	WH +0.75 −0.55	ZB +0.75 −0.35
32	15	12	4.5	3.2	M6	3	6.85	117.65
	35							157.65
40	20	16	6	3.8	M8	2	6.9	143.4
	45							193.4

S20 – Through, hollow piston rod



1 Hex nut DIN 439-B included in the scope of delivery

\+ = plus stroke length

Size	Stroke [mm]	A −0.5	D7 ∅	D9 ∅	KK	L5	WH +0.75 −0.55	WH2 +0.55 −0.75	ZM +0.6 −0.4
32	15	12	4.5	3.2	M6	3	6.85	6.85	140
	35								200
40	20	16	6	3.8	M8	2	6.9	6.9	170.8
	45								245.8

Short-stroke cylinders ADNE-LAS, with linear motor

Ordering data – Modular products

FESTO

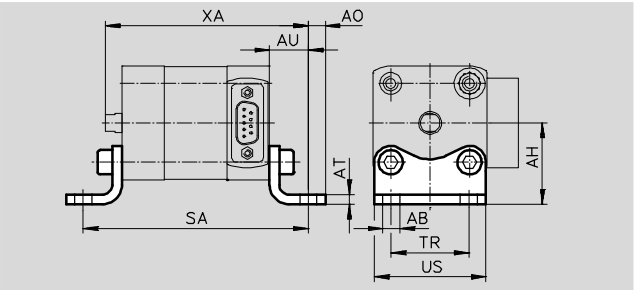
Ordering table							
Size		32	40	Condi-tions	Code		Enter code
M	Module No.	**566415**	**566416**				
	Function	Electric short-stroke cylinder, based on ISO 21287			**ADNE**		ADNE
	Size	32	40		**-...**		
	Stroke [mm]	15, 35	20, 45		**-...**		
	Drive type	Linear motor			**-L**		-L
	Motor technology	AC synchronous			**AS**		AS
	Piston rod thread	Male thread			**-A**		A
O	Type of piston rod	Through, hollow piston rod			**-S20**		

Transfer order code

	ADNE	–		–		–	**L**	**AS**	–	**A**	–	

Foot mounting HNA

Material:
HNA: Galvanised steel
HNA-...-R3: Steel with protective coating
Free of copper and PTFE
RoHS-compliant



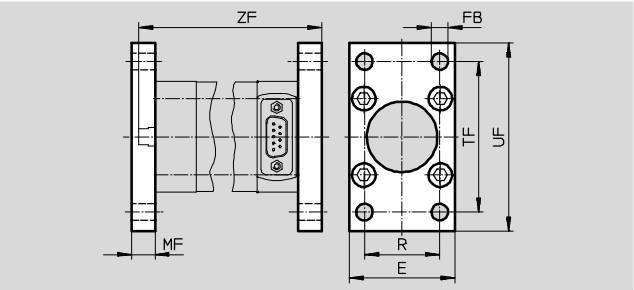
Dimensions and ordering data

For size	Stroke [mm]	AB ∅ H14	AH JS14	AO	AT ±0.5	AU ±0.2	SA	TR ±0.2	US −0.5	XA
32	15	7	33.5	7	4	16	142.8	32	46	133.65
	35						182.8			173.65
40	20	10	38	9	4	18	172.5	36	54	161.4
	45						222.5			211.4

For size	Basic version				High corrosion protection			
	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
32	1	123	**537241**	**HNA-32**	3	123	**537256**	**HNA-32-R3**
40	1	157	**537242**	**HNA-40**	3	157	**537257**	**HNA-40-R3**

Flange mounting FNC

Material:
Galvanised steel
Free of copper and PTFE
RoHS-compliant



Dimensions and ordering data

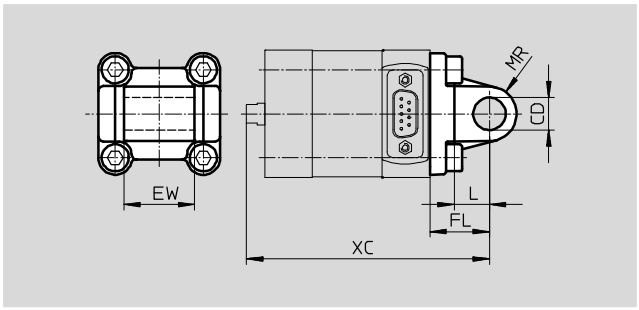
For size	Stroke [mm]	E	FB ∅	MF	R	TF	UF ±1	ZF
32	15	45	7	10	32	64	80	127.65
	35							167.65
40	20	54	9	10	36	72	90	153.4
	45							203.4

For size	Basic version				High corrosion protection			
	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
32	1	221	**174376**	**FNC-32**	4	220	**161846**	**CRFNG-32**
40	1	291	**174377**	**FNC-40**	4	291	**161847**	**CRFNG-40**

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.
Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (➔ also FN 940082) using appropriate media.

Swivel flange SNCL

Material:
SNCL: Die-cast aluminium
Free of copper and PTFE
RoHS-compliant



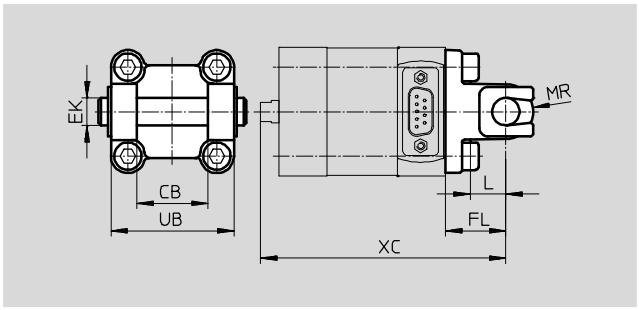
Dimensions and ordering data

For size	Stroke [mm]	CD ∅ H9	EW h12	FL ±0.2	L	MR	XC
32	15	10	26	22	13	10	139.65
	35						179.65
40	20	12	28	25	16	12	168.4
	45						218.4

For size	Basic version			
	CRC[1]	Weight [g]	Part No.	Type
32	2	71	**174404**	**SNCL-32**
40	2	95	**174405**	**SNCL-40**

Swivel flange
SNCB/SNCB-...-R3

Material:
SNCB: Die-cast aluminium
SNCB-...-R3: Die-cast aluminium with protective coating, high corrosion protection
Free of copper and PTFE
RoHS-compliant



Dimensions and ordering data

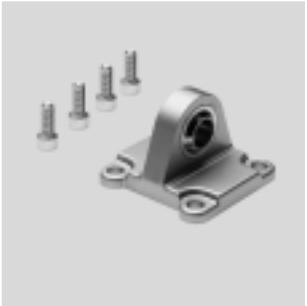
For size	Stroke [mm]	CB H14	EK ∅ e8	FL ±0.2	L	MR	XC
32	15	26	10	22	13	8.5	139.65
	35						179.65
40	20	28	12	25	16	12	168.4
	45						218.4

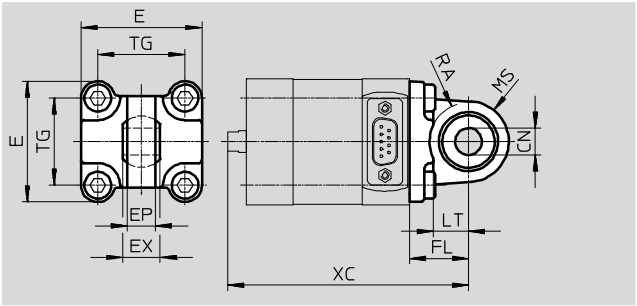
For size	Basic version				High corrosion protection			
	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
32	2	103	**174390**	**SNCB-32**	3	100	**176944**	**SNCB-32-R3**
40	2	155	**174391**	**SNCB-40**	3	151	**176945**	**SNCB-40-R3**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Swivel flange SNCS

Material:
SNCL: Die-cast aluminium
Free of copper and PTFE
RoHS-compliant





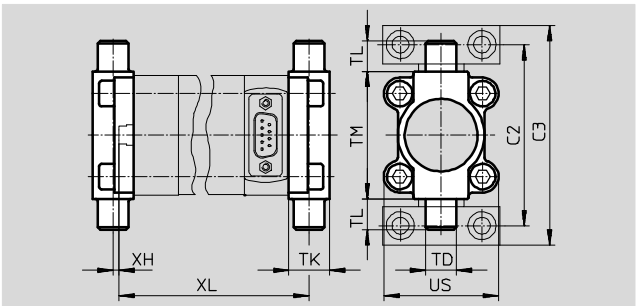
Dimensions and ordering data

For size	Stroke [mm]	CN ∅	E	EP ±0.2	EX	FL ±0.2	LT	MS	RA +1	TG	XC
32	15	$10^{+0.013}$	$45^{+0.2/-0.5}$	10.5	14	22	13	$15_{+0.5}$	14.5	32.5	139.65
	35										179.65
40	20	$12^{+0.015}$	$54_{-0.5}$	12	16	25	16	$17_{+0.5}$	17.5	38	168.4
	45										218.4

For size	Basic version			
	CRC[1)]	Weight [g]	Part No.	Type
32	2	86	**174397**	**SNCS-32**
40	2	122	**174398**	**SNCS-40**

Trunnion flange ZNCF/CRZNG

Material:
ZNCF: Stainless steel casting
CRZNG: Electropolished stainless steel casting
Free of copper and PTFE
RoHS-compliant

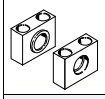
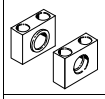


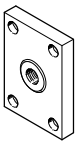
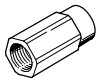
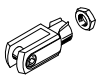
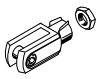
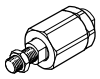
Dimensions and ordering data

For size	Stroke [mm]	C2	C3	TD ∅ e9	TK	TL	TM	US	XH	XL
32	15	71	86	12	16	12	50	45	1.15	125.65
	35									165.65
40	20	87	105	16	20	16	63	54	3.1	153.4
	45									203.4

For size	Basic version				High corrosion protection			
	CRC[1)]	Weight [g]	Part No.	Type	CRC[1)]	Weight [g]	Part No.	Type
32	2	150	**174411**	**ZNCF-32**	4	150	**161852**	**CRZNG-32**
40	2	285	**174412**	**ZNCF-40**	4	285	**161853**	**CRZNG-40**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (➔ also FN 940082) using appropriate media.

Ordering data			
Designation	For size	Part No.	Type
Trunnion support LNZG			
	32	**32959**	**LNZG-32**
	40	**32960**	**LNZG-40/50**
Trunnion support CRLNZG, corrosion-resistant			
	32	**161874**	**CRLNZG-32**
	40	**161875**	**CRLNZG-40/50**
Clevis foot LNG			
	32	**33890**	**LNG-32**
	40	**33891**	**LNG-40**
Clevis foot CRLNG, corrosion-resistant			
	32	**161840**	**CRLNG-32**
	40	**161841**	**CRLNG-40**
Clevis foot LBG			
	32	**31761**	**LBG-32**
	40	**31762**	**LBG-40**
Rod eye SGS			
	32	**9254**	**SGS-M6**
	40	**9255**	**SGS-M8**
Rod eye CRSGS, corrosion-resistant			
	32	**195580**	**CRSGS-M6**
	40	**195581**	**CRSGS-M8**

Ordering data			
Designation	For size	Part No.	Type
Coupling piece KSZ			
	32	**36123**	**KSZ-M6**
	40	**36124**	**KSZ-M8**
Adapter AD			
	32	**157328**	**AD-M6-M5**
		157329	**AD-M6-⅛**
		157330	**AD-M6-¼**
	40	**157331**	**AD-M8-⅛**
		157332	**AD-M8-¼**
Rod clevis SG			
	32	**3110**	**SG-M6**
	40	**3111**	**SG-M8**
Rod clevis CRSG, corrosion-resistant			
	32	**13567**	**CRSG-M6**
	40	**13568**	**CRSG-M8**
Self-aligning rod coupler FK			
	32	**2061**	**FK-M6**
	40	**2062**	**FK-M8**