



Key features

# **FESTO**

# 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)
- 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

→ 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	$\longleftrightarrow$
2.	Retracting	<b>~~~~•</b>
3.	Advancing and then retracting again	

4. Retracting and then advancing again

**FESTO** 

# Short-stroke cylinders ADNE-LAS, with linear motor

	ADNE – 32 – 35 – LAS – A –	
Type           ADNE         Short-stroke cylinder		
Size		
Stroke [mm]		
Drive type/motor technology		
LAS Linear motor, AC synchronous		
Piston rod thread		
A Male thread		
Type of piston rod		
S20 Through, hollow piston rod		

# Short-stroke cylinders ADNE-LAS, with linear motor Peripherals overview



·O· New

# Short-stroke cylinders ADNE-LAS, with linear motor Peripherals overview

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

Technical data

# **FESTO**



32,40 Stroke length -T-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 dri	ve			
		Electric cylinder with pi	ston 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 <sup>1)</sup>	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 <sup>2)</sup> [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 <sup>2)</sup> [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.

·O· New

# Short-stroke cylinders ADNE-LAS, with linear motor

člectrical 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 <sup>1)</sup>	[°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	[%]	95			
(non-condensing)					
CE marking		To EU EMC Directive			
(see declaration of conformity)					
Certification		C-Tick			
Corrosion resistance class CRC <sup>2)</sup>		2			

1) Unless otherwise stated, all values are based on standard temperature.

Corrosion resistance class 2 according to Festo standard 940 070
 Components subject to moderate corrosion stress. 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.

Weight [g]					
Size		32		40	
Stroke	[mm]	15	35	20	45
Product weight		710	940	1,260	1,710
	S20	725	960	1,290	1,750
Moving load		105	130	275	350
	S20	120	150	305	390

# FESTO

Technical data



Shor	rt-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



 Working stroke:
 The recommended, available operating range
 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 <sup>1)</sup>	[mm]	0.8	0.8	0.5	1.3
Rebound at 24 V <sup>1)</sup>	[mm]	0.3	0.6	0.5	1.3

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

Technical data

# FESTO

## 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 6 5 f [Hz] 4 3-2 1-100 200 0 300 400 500 m [g] - ADNE-32-15





----- ADNE-40-45







----- ADNE-40-45

Technical data

**FESTO** 

# 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
<b>~~~~</b>	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

At U = 24 V

ADNE-32-15/35 140

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



300

200

m [g]

400

500





----- ADNE-40-45

100

ADNE-40-20

20-

0

·O· New

# 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

225 200-175 t [ms] 150 125 100 75-50 100 300 0 200 400 500 m [g]



----- ADNE-32-35

- ADNE-32-15





----- ADNE-40-45

----- ADNE-32-35



----- ADNE-40-45



**FESTO** 

# Short-stroke cylinders ADNE-LAS, with linear motor

12

16

4.5

6

Technical data



5120	Stroke	~~~~~	07	07		LJ	****	20
			Ø	Ø			+0.75	+0.75
	[mm]	-0.5					-0.55	-0.35
32	15	12	4.5	3.0	M6	3	6.85	117.65
	35	12	4.5	5.2	MO	)	0.05	157.65
40	20	16	6	3 8	Mg	2	6.0	143.4
	45	10	0	5.0	MO	Z	0.9	193.4



M6

M8

3

2

6.85

6.9

6.85

6.9

200

170.8

245.8

3.2

3.8

35

20

45

40

# Short-stroke cylinders ADNE-LAS, with linear motor Ordering data – Modular products

# **FESTO**

Or	dering table					
Siz	e	32	40	Condition	Code	Enter
				s		code
М	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	А
0	Type of piston rod	Through, hollow piston rod			-\$20	

Transfer order code AS - A ADNE - L \_

Accessories

# Foot mounting HNA

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





Dimensior	Dimensions and ordering data												
For size	Stroke	AB	AH	AO	AT	AU	SA	TR	US	ХА			
		Ø											
	[mm]	H14	JS14		±0.5	±0.2		±0.2	-0.5				
32	15	7	33 5	7	4	16	142.8	30	46	133.65			
	35	· ·		/	4	10	182.8	)2	40	173.65			
40	20	10	38	0	4	18	172.5	36	5.4	161.4			
	45	10	50	,	4	10	222.5	50	54	211.4			

For size	Basic version					High corrosion protection				
	CRC <sup>1)</sup> Weight Part No. Type				CRC <sup>1)</sup>	Weight	Part No.	Туре		
		[g]					[g]			
32	2	70	537241	HNA-32		3	70	537256	HNA-32-R3	
40	2	90	537242	HNA-40		3	90	537257	HNA-40-R3	

### Flange mounting FNC

Material: Galvanised steel Free of copper, PTFE and silicone





Dimension	ns and order	ring data						
For size	Stroke	E	FB	MF	R	TF	UF	ZF
			Ø					
	[mm]						±1	
32	15	4 E	7	10	22	64	80	127.65
	35	40	/	10	52	04	80	167.65
40	20	5/1	0	10	36	72	90	153.4
	45	54	,	10	50	12	20	203.4

For size	Basic version			
	CRC <sup>1)</sup>	Weight	Part No.	Туре
		[g]		
32	1	221	174376	FNC-32
40	1	291	174377	FNC-40

1) CRC1: Corrosion resistance class to Festo standard 940070

Components with light corrosion exposure. Protection for transport and storage. Components without significant decorative function or surface, e.g. installed out of sight internally or behind covers. Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. 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.

Corrosion resistance class 3 according to Festo standard 940 070

High corrosion protection									
CRC <sup>1)</sup>	Weight	Part No.	Туре						
	[g]								
4	240	161846	CRFNG-32						
4	300	161847	CRFNG-40						

Components subject to high corrosion stress. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Corrosion resistance class 4 according to Festo standard 940 070

Components subject to particularly high corrosion stress. Parts used with aggressive media, e.g. in the food or chemical industry. These applications should be supported with special tests with the media if required.

# **FESTO**

Accessories

# Swivel flange SNCL

Material: SNCL: Die-cast aluminium Free of copper, PTFE and silicone





Dimension	mensions and ordering data											
For size	Stroke	CD	EW	FL	L	MR	XC					
		Ø										
	[mm]	Н9	h12	±0.2								
32	15	10	26	22	13	10	139.65					
	35	10	20	22	15	10	179.65					
40	20	10	28	25	16	10	168.4					
	45	12	20	2.5	10	12	218.4					

For size	Basic version									
	CRC <sup>1)</sup>	Weight P								
		[g]								
32	2	85	174404	SNCL-32						
40	2	115	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, PTFE and silicone







Dimension	is and order	ring data					
For size	Stroke	CB	EK	FL	L	MR	XC
			Ø				
	[mm]	H14	e8	±0.2			
32	15	24	10	22	12	Q E	139.65
	35	20	10	22	15	0.0	179.65
40	20	28	10	25	16	10	168.4
	45	20	12	2.5	10	12	218.4

For size	For size Basic version					High corrosion protection				
	CRC <sup>1)</sup> Weight Part No. Type					CRC <sup>1)</sup>	Weight	Part No.	Туре	
		[g]					[g]			
32	2	100	174390	SNCB-32		3	100	176944	SNCB-32-R3	
40	2	150	174391	SNCB-40		3	150	176945	SNCB-40-R3	

1) Corrosion resistance class 2 according to Festo standard 940 070 Components subject to moderate corrosion stress. 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.

Corrosion resistance class 3 according to Festo standard 940 070

Components subject to high corrosion stress. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Accessories

# Swivel flange SNCS

Material: SNCL: Die-cast aluminium





Dimensions and ordering data											
For size	Stroke	CN	EP	EX	FL	LT	MS	XC			
		Ø									
	[mm]	H7	±0.2		±0.2						
32	15	10	10.5	1/	22	13	15	139.65			
	35	10	10.5	14	22	15	15	179.65			
40	20		12	16	25	16	17	168.4			
	20	12	12	16	25	16	17	100.4			

# For size Basic version

	CRC <sup>1)</sup>	Weight	Part No.	Туре
		[g]		
32	2	85	174397	SNCS-32
40	2	125	174398	SNCS-40

### Trunnion flange ZNCF/CRZNG

Material: ZNCF: Stainless steel casting CRZNG: Electropolished stainless steel casting Free of copper, PTFE and silicone







Dimensions and ordering data											
For size	Stroke	C2	C3	TD	TK	TL	TM	US	ХН	XL	
				Ø							
	[mm]			e9							
32	15	71	86	12	16	12	50	45	1 1 5	125.65	
	35	/1	80	12	10	12	50	45	1.15	165.65	
40	20	87	105	16	20	16	63	54	3.1	153.4	
	45	0/	105	10	20	10	05	54	J.1	203.4	

For size Basic version					High corrosion protection				
	CRC <sup>1)</sup>	Weight	Part No.	Туре	CRC <sup>1)</sup>	Weight	Part No.	Туре	
		[g]				[g]			
32	2	130	174411	ZNCF-32	4	150	161852	CRZNG-32	
40	2	240	174412	ZNCF-40	4	260	161853	CRZNG-40	

1) Corrosion resistance class 2 according to Festo standard 940 070 Components subject to moderate corrosion stress. 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.

Corrosion resistance class 4 according to Festo standard 940 070

Components subject to particularly high corrosion stress. Parts used with aggressive media, e.g. in the food or chemical industry. These applications should be supported with special tests with the media if required.

Ordering data								
Designation	For size	Part No.	Туре					
Trunnion support LNZG								
<u>2</u> 9	32	32959	LNZG-32					
000	40	32960	LNZG-40/50					
Trunnion support CRLNZG, corrosion-resistant								
1	32	161874	CRLNZG-32					
000	40	161875	CRLNZG-40/50					
Clevis foot LNG								
$\bigcirc$	32	33890	LNG-32					
305	40	33891	LNG-40					
Clevis foot CRL	NG, corrosion-resistant							
	32	161840	CRLNG-32					
903	40	161841	CRLNG-40					
Clauia faat I DC								
Clevis Iool LBG	22	247/4	LDC 22					
Pa	32	31701	LBG-32					
a log	40	51/62	LDG-40					
<u> </u>								
Rod eve SGS								
8	32	9254	SGS-M6					
	40	9255	SGS-M8					
Ø								
Rod eye CRSGS	, corrosion-resistant	1						
	32	195580	CRSGS-M6					
	40	195581	CRSGS-M8					

Ordering data									
Designation	For size	Part No.	Туре						
Coupling piece KSZ									
	32	36123	KSZ-M6						
0	40	36124	KSZ-M8						
0									
Ø									
Adapter AD	22	457000							
	32	157328	AD-M6-M5						
		157329	AD-M6-1/8						
		157330	AD-M6-1/4						
	40	157331	AD-M8-1/8						
		157332	AD-M8-1/4						
De de la de CC									
ROD CLEVIS SG	22	2110	5C W(						
	32	3110	SG-M6						
60	40	3111	20-M8						
Pod clavic CPS	G correction registrant								
	32	13567	CRSG-M6						
	/0	13568	CRSG-M8						
0	40	19900							
	<u> </u>	I							
Self-aligning re	od coupler FK								
	32	2061	FK-M6						
6	40	2062	FK-M8						
SP.									
	1	1							

# Product Range and Company Overview

## **A Complete Suite of Automation Services**

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



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