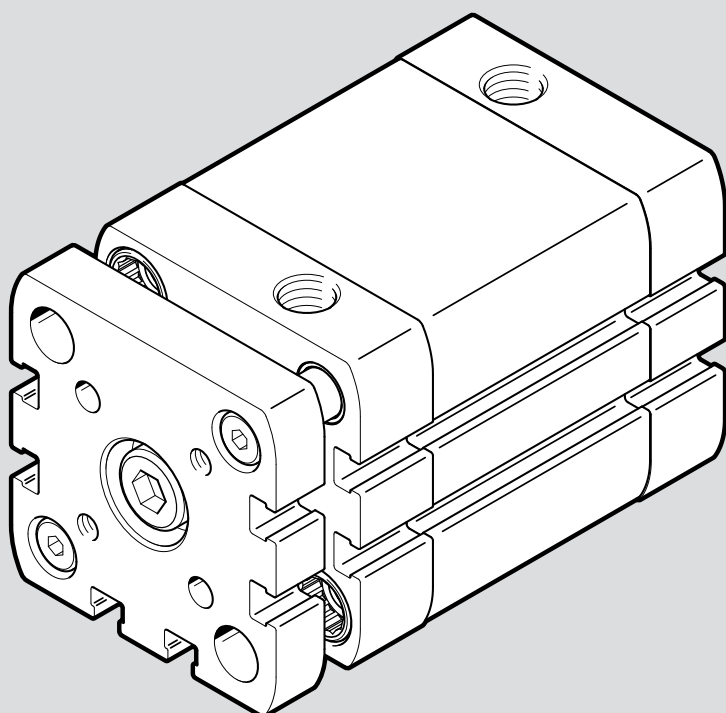


ADNGF

Compact cylinder



FESTO

Operating instructions



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Original instructions

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1 Applicable documents



All available documents for the product → www.festo.com/sp.

2 Safety

2.1 Safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Observe the identifications on the product.
- Take into account the ambient conditions at the location of use.
- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.
- Before working on the product, switch off the compressed air supply and lock it to prevent it from being switched on again.

2.2 Intended use

The compact cylinder moves masses and transmits forces. The product is intended for use in industrial environments.

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in pneumatics.

3 Additional information

- Contact the regional Festo contact if you have technical problems
→ www.festo.com.
- Accessories and spare parts → www.festo.com/catalogue.

4 Product design

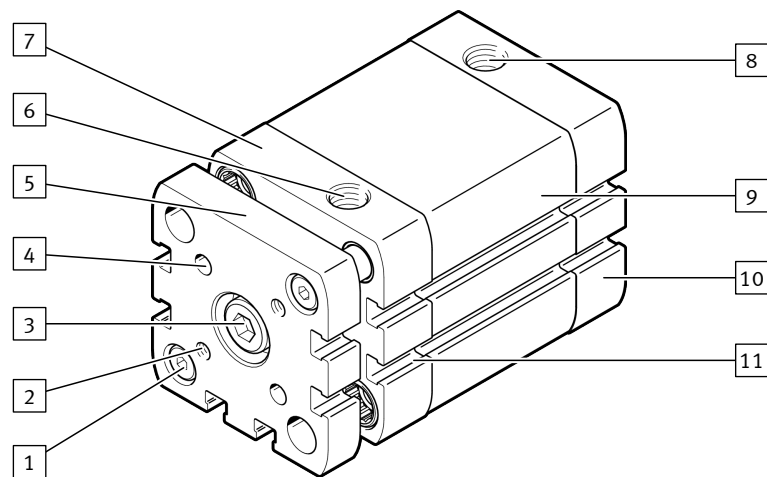


Fig. 1: Product design ADNGF-40-30

- | | | | |
|---|---|----|--|
| 1 | Guide rod (2x) | 7 | Bearing cap |
| 2 | Thread for mounting the payload (2x) | 8 | Pneumatic port 2 |
| 3 | Piston rod | 9 | Cylinder barrel |
| 4 | Centring hole for mounting the payload (2x) | 10 | End cap, with mounting option, female thread |
| 5 | Yoke plate | 11 | Slot for proximity switch (4x) |
| 6 | Pneumatic port 1 | | |

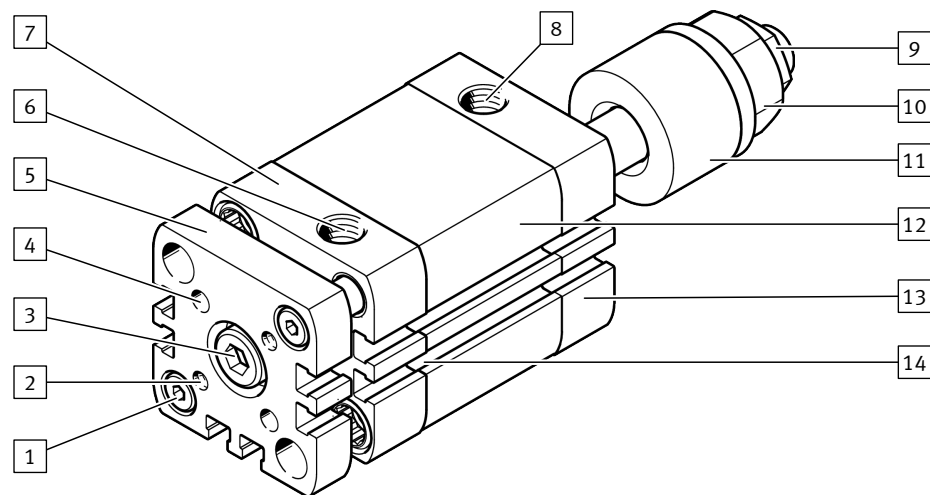


Fig. 2: Product design ADNGF-32-10KE

- | | |
|--|--|
| 1 Guide rod (2x) | 8 Pneumatic port 2 |
| 2 Thread for mounting the payload (2x) | 9 Lock nut for adjustable stroke |
| 3 Piston rod | 10 Stop nut for adjustable stroke |
| 4 Centring hole for mounting the payload (2x) | 11 Stop sleeve for adjustable stroke |
| 5 Yoke plate | 12 Cylinder barrel |
| 6 Pneumatic port 1 | 13 End cap, with mounting option, female thread |
| 7 Bearing cap | 14 Slot for proximity switch |

5 Function

When the cylinder chamber is pressurised at pneumatic port 2, the piston rod moves outwards. When the cylinder chamber is pressurised at pneumatic port 1, the piston rod moves inwards.

The cylinder force varies during advance and retracting. The position of the piston can be queried by proximity switches.

The combination of guide rods and yoke plate prevents rotation of the piston rod.

Variant with adjustable stroke:

– ADNGF-...-10KE: the advancing stroke can be infinitely adjusted by 10 mm.

6 Mounting

Mounting compact cylinder

Requirement:

- The product is installed without tension.

ADNGF	-12	-16	-20	-25	-32
Thread	M4	M4	M5	M5	M6
Tightening torque [Nm]	3 ± 20%	3 ± 20%	5 ± 20%	5 ± 20%	8 ± 20%

Tab. 1: Tightening torque ADNGF-12 ... -32

ADNGF	-40	-50	-63	-80	-100
Thread	M6	M8	M8	M10	M10
Tightening torque [Nm]	8 ± 20%	23 ± 20%	23 ± 20%	32 ± 20%	32 ± 20%

Tab. 2: Tightening torque ADNGF-40 ... -100

1. Mount the compact cylinder with 2 screws or 4 screws. Observe the tightening torque.
2. Avoid mechanical alignment inaccuracy between the piston rod and, for example, in combination with an external guide by precise alignment. A rigid coupling will reduce the service life and adversely affect the function of the cylinder.

Mounting payload

ADNGF	-12	-16	-20	-25	-32
Thread	M3	M3	M4	M5	M5
Centring	Ø 3 H8	Ø 3 H8	Ø 4 H8	Ø 5 H8	Ø 5 H8
Screw-in depth [mm]	6	6	8	8	10
Maximum tightening torque on yoke plate [Nm]	1.9	1.9	4	8	8

Tab. 3: Maximum tightening torque on yoke plate, ADNGF-12 ... -32

ADNGF	-40	-50	-63	-80	-100
Thread	M5	M6	M6	M8	M10
Centring	Ø 5 H8	Ø 6 H8	Ø 6 H8	Ø 8 H8	Ø 10 H8
Screw-in depth [mm]	10	12	12	14	14
Maximum tightening torque on yoke plate [Nm]	8	14	14	34	50

Tab. 4: Maximum tightening torque on yoke plate, ADNGF-40 ... -100



- For ADNGF-...-S2: do not counter-rotate the through piston rod by the spanner flats. This may disconnect the piston rod connection from the piston.
- For ADNGF-...-10KE: when loosening and tightening the lock nut only counter hold directly against the spanner flat of the stop nut.
- Mount the payload on the yoke plate. Do not exceed the maximum tightening torque.

Mounting accessories

In the case of large payload, high piston speed or when using quick exhaust valves:

- Use suitable shock absorbers or external stops.

To prevent the payload from dropping suddenly in a horizontal or inclined mounting position due to pressure failure:

- Use one-way flow control valves.

To set the speed:

- Screw the one-way flow control valves into the pneumatic ports.

For position sensing with proximity switch:

- Use proximity switches with mounting kit. Avoid external influence caused by magnetic or ferritic parts in the vicinity of the proximity switches.
Distance: ≥ 10 mm

7 Installation

- Connect tubing to the pneumatic ports.

8 Commissioning

Preparing commissioning

- Slowly pressurise the complete system. A soft-start valve is used for the slow switch-on pressurisation → www.festo.com/catalogue.

With medium or large payloads or at high speeds:

- Use a sufficiently sized arrester fixture. Without external arrester fixture apply the specifications from the catalogue → www.festo.com/catalogue.

Commissioning procedure

1. Screw the one-way flow control valves all the way in on both sides, then back one revolution.
2. Pressurise the cylinder simultaneously on both port sides.
⇒ The piston rod slowly extends to the end position.
3. Exhaust the cylinder on one side.
⇒ The piston rod moves to the end position.
4. Start the test run.
5. If the piston rod strikes hard against the end positions or rebounds, adjust the speed with the one-way flow control valves.

Stroke adjustment with ADNGF-...-10KE



To avoid unintentional loosening of the piston rod:

- When loosening and tightening the lock nut only counter hold directly against the spanner flat of the stop nut.



Keep the motion range of the piston rod clear:

- There must be no foreign objects between the stop sleeve and the end cap.

1. Loosen the lock nut.
2. Adjust the stop nut. Reduce the stroke by a maximum of 10 mm.
3. Tighten the lock nut. Do not exceed the maximum tightening torque.

ADNGF-...-10KE	-12	-16	-20	-25
Lock nut	M6	M6	M8	M8
Max. tightening torque [Nm]	5	5	10	10

ADNGF-...-10KE	-32	-40	-50	-63
Lock nut	M10x1.25	M10x1.25	M12x1.25	M12x1.25
Max. tightening torque [Nm]	20	20	35	35

4. Pressurise the compact cylinder.
5. Start the test run and test the adjusted stroke.

9 Cleaning

- Clean the product with a clean, soft cloth and non-abrasive cleaning agents.

10 Fault clearance

Malfunction	Cause	Remedy
Uneven movement of the piston rod.	The one-way flow control valves throttle the exhaust air too much.	– Reduce exhaust air throttling.
	The piston rod is dirty.	– Clean the cylinder – Relubricate after cleaning. – Install a covering.
	The supply air is insufficient.	– Keep the tubing short and select large cross sections. – Select the correct operating pressure. – Maintain a constant operating pressure.
	The pressure is too low.	– Connect a volume upstream. – Increase the pressure.
	The cylinder is damaged.	– Repair or replace the cylinder.
	The guide is not parallel to the direction of stroke.	– Use a self-aligning rod coupler.
The piston does not move to the end position.	The cylinder is damaged.	– Replace the cylinder.
	There are particles in the cylinder.	– Filter the compressed air.
	The cylinder travels to an external end stop.	– Readjust the end stop.
Malfunctions with the position sensing.	The temperatures are too high or too low.	– Maintain the permissible temperature range.
	The proximity switches are defective.	– Replace the proximity switches.
	Incorrect proximity switch installed.	– Use suitable proximity switches.
	Magnetic or ferritic components near the proximity switches.	– Increase the distance from the components. – Remove the components.

Tab. 5: Fault clearance

11 Technical data

11.1 Technical data, general

ADNGF	-12	-16	-20	-25	-32
Certificates, declaration of conformity	➔ www.festo.com/sp				
Mounting position	Any				
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Information on the operating medium	Lubricated operation possible, in which case lubricated operation will always be required				
Pneumatic ports	M5	M5	M5	M5	G 1/8
Ambient temperature					
ADNGF [°C]	−20 ... +80				
ADNGF-...-S6 [°C]	0 ... +120				
End-position cushioning					
ADNGF-...-P	Elastic cushioning rings/plates on both sides				
ADNGF-...-PPS	–	–	Pneumatic cushioning, both sides, self-adjusting		
Theoretical force at 0.6 MPa (6 bar; 90 psi)					
ADNGF, advancing [N]	68	121	188	295	483
ADNGF, retracting [N]	51	90	141	247	415
ADNGF-...-S2, advancing [N]	51	90	141	247	415
ADNGF-...-S2, retracting [N]	51	90	141	247	415
Max. impact energy at the end positions					
ADNGF [J]	0.07	0.15	0.2	0.3	0.4
ADNGF-...-S6 [J]	0.035	0.075	0.1	0.15	0.2
ADNGF-...-KE [J]	0.055	0.12	0.16	0.24	0.32

Tab. 6: Technical data, general ADNGF-12 ... -32

ADNGF	-40	-50	-63	-80	-100
Certificates, declaration of conformity	➔ www.festo.com/sp				
Mounting position	Any				
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Information on the operating medium	Lubricated operation possible, in which case lubricated operation will always be required				
Pneumatic ports	G 1/8	G 1/8	G 1/8	G 1/8	G 1/8
Ambient temperature					
ADNGF [°C]	−20 ... +80				
ADNGF-...-S6 [°C]	0 ... +120				
End-position cushioning					
ADNGF-...-P	Elastic cushioning rings/plates on both sides				
ADNGF-...-PPS	Pneumatic cushioning, both sides, self-adjusting				
Theoretical force at 0.6 MPa (6 bar; 90 psi)					
ADNGF, advancing [N]	754	1178	1870	3016	4712
ADNGF, retracting [N]	686	1057	1750	2827	4524
ADNGF-...-S2, advancing [N]	686	1057	1750	2827	4524
ADNGF-...-S2, retracting [N]	686	1057	1750	2827	4524
Max. impact energy at the end positions					
ADNGF [J]	0.7	1	1.3	1.8	2.5
ADNGF-...-S6 [J]	0.35	0.5	0.65	0.9	1.25
ADNGF-...-KE [J]	0.56	0.8	1	–	–

Tab. 7: Technical data, general ADNGF-40 ... -100

11.2 Technical data, pneumatic

ADNGF		-12	-16	-20	-25	-32
ADNGF	[MPa]	0.15 ... 1			0.1 ... 1	
	[bar]	1.5 ... 10			1 ... 10	
	[psi]	21.76 ... 145			14.5 ... 145	
ADNGF-...-PPS	[MPa]	—	—	0.19 ... 1		
	[bar]	—	—	1.9 ... 10		
	[psi]	—	—	27.56 ... 145		
ADNGF-...-S2/-10KE	[MPa]	0.15 ... 1				0.1 ... 1
	[bar]	1.5 ... 10				1 ... 10
	[psi]	21.76 ... 145				14.5 ... 145

Tab. 8: Technical data, pneumatic ADNGF-12 ... -32

ADNGF		-40	-50	-63	-80	-100
ADNGF	[MPa]	0.1 ... 1				
	[bar]	1 ... 10				
	[psi]	14.5 ... 145				
ADNGF-...-PPS	[MPa]	0.14 ... 1				
	[bar]	1.4 ... 10				
	[psi]	20.31 ... 145				
ADNGF-...-S2/-10KE	[MPa]	0.1 ... 1				
	[bar]	1 ... 10				
	[psi]	14.5 ... 145				

Tab. 9: Technical data, pneumatic ADNGF-40 ... -100

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