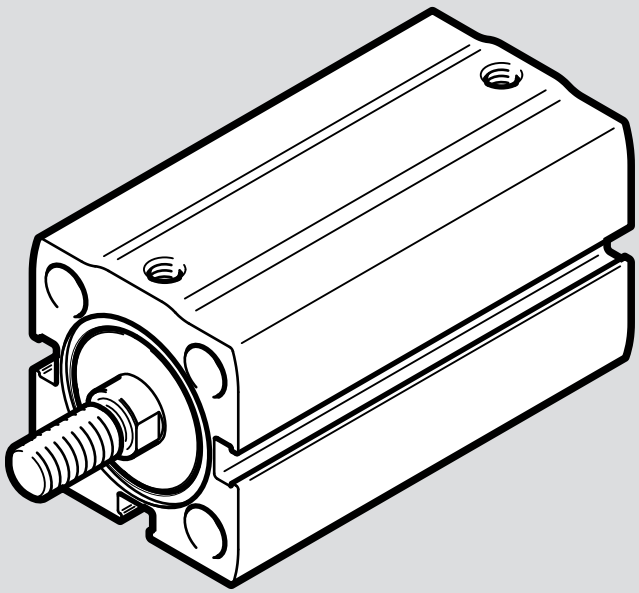
ADN-S/AEN-S
Compact cylinder



FESTO

Operating instruction

8233200

8233200
2025-02a
[8233202]

Original instructions

Table of contents

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

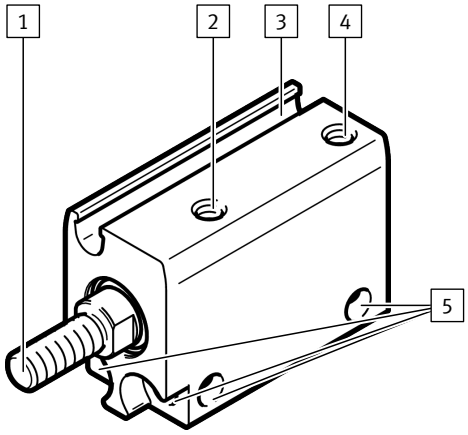
Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in pneumatics.

3 Additional information

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

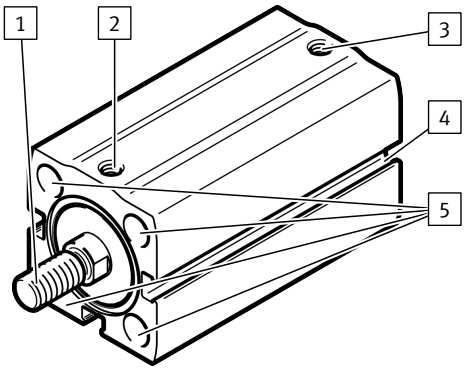
4 Product overview

4.1 Product design



1 Thread for mounting the payload
2 Pneumatic port 1
3 Slot for proximity switch
4 Pneumatic port 2
5 Through-hole for mounting (4x)

Fig. 1: Product design
ADN-S/AEN-S-6/-10



1 Thread for mounting the payload
2 Pneumatic port 1
3 Pneumatic port 2
4 Slot for proximity switch (2x)
5 Through-hole for mounting (4x)

Fig. 2: Product design
ADN-S/AEN-S-12 ... -63

4.2 Function

When the cylinder chamber is pressurised at pneumatic port 2, the piston rod moves outwards.
Retracting the piston rod:
– For single-acting cylinders by the integrated return spring.
– For double-acting cylinders by pressurisation of the cylinder chamber at pneumatic port 1.
The cylinder force varies during advance and retracting. The position of the piston can be queried by proximity switches.

5 Mounting

5.1 Mounting

ADN-S/AEN-S		-6	-10	-12	-16	-20	-25
Thread		–		M4		M5	
Tightening torque	[Nm]	–		2.5		5	

Tab. 1: Tightening torques ADN-S/AEN-S-6 ... -25

ADN-S/AEN-S		-32	-40	-50	-63
Thread		M6		M8	
Tightening torque	[Nm]	8		18	19

Tab. 2: Tightening torques ADN-S/AEN-S-32 ... -63

- Handle the cylinder carefully to avoid damage to the cylinder barrel and piston rod.

1. Note the following points:
   – Parallel mounting when using external guides.
   – Mounting without distortion.
   – Compliance with the permissible loads as per catalogue specifications.
2. Avoid mechanical alignment inaccuracy between the piston rod and, for example, an external guide by precise alignment. A rigid coupling will reduce the service life and adversely affect the function of the cylinder.

5.2 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:
– Use one-way flow control valves at the pneumatic ports.
  – For single-acting cylinders: GRLZ (supply air)
  – For double-acting cylinders: GRLA (exhaust air)
  The one-way flow control valves are screwed into the pneumatic ports. Use of other accessories with an excessive screw-in depth will damage the cushioning piston.
For position sensing with proximity switches:
– 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

6 Installation

- Connect tubing to the pneumatic ports.

7 Commissioning

7.1 Preparation

- Slowly pressurise the complete system. A soft-start valve is used for gradual start-up pressurisation ➔ www.festo.com/catalogue.

With medium or large payloads or at high speeds:
– Use sufficiently dimensioned arrester fixtures. Without external arrester fixtures the information in the ➔ www.festo.com/catalogue catalogue applies.

7.2 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 sides.
   ⇨ The piston rod moves slightly to a point of balance.
3. Exhaust the cylinder on one side.
   ⇨ The piston rod moves to an 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.

8 Cleaning

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

9 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. 3: Fault clearance

10 Technical data

10.1 Technical data, general

ADN-S/AEN-S		-6	-10	-12	-16	-20	-25
Mounting position		Any					
Pneumatic port		M3		M5			
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					
Ambient temperature	[°C]	–10 ... +60		0 ... +80			
Piston rod thread							
ADN-S/AEN-S-...-A		M3	M4	M5	M6	M8	
ADN-S/AEN-S-...-I		M2.5	M3		M4	M6	
End-position cushioning							
ADN-S/AEN-S		(Fixed) stop		–			
ADN-S/AEN-S-...-P		–		Elastic cushioning rings/plates on both sides			
Theoretical force at 0.6 MPa (6 bar; 90 psi)							
ADN-S, advancing	[N]	17	47	68	121	188	295
ADN-S, retracting	[N]	9.4	30.2	51	90	141	247
AEN-S, advancing	[N]	13	42	60	95	162	259
AEN-S, retracting	[N]	Corresponds to the spring force ➔ www.festo.com/catalogue.					

Tab. 4: Technical data, general ADN-S/AEN-S-6 ... -25

ADN-S/AEN-S		-32	-40	-50	-63
Mounting position		Any			
Pneumatic port		M5		G 1/8	
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			
Ambient temperature	[°C]	0 ... +80			
Piston rod thread					
ADN-S/AEN-S-...-A		M10x1.25		M12x1.25	
ADN-S/AEN-S-...-I		M8		M10	
End-position cushioning					
ADN-S/AEN-S		–			
ADN-S/AEN-S-...-P		Elastic cushioning rings/plates on both sides			
Theoretical force at 0.6 MPa (6 bar; 90 psi)					
ADN-S, advancing	[N]	483	754	1178	1870
ADN-S, retracting	[N]	415	686	1057	1750
AEN-S, advancing	[N]	439	700	1106	1780
AEN-S, retracting	[N]	Corresponds to the spring force ➔ www.festo.com/catalogue.			

Tab. 5: Technical data, general ADN-S/AEN-S-32 ... -63

10.2 Technical data, pneumatic

ADN-S/AEN-S		-6	-10	-12	-16	-20	-25
ADN-S	[MPa]	0.15 … 0.8	0.1 … 0.8	0.1 … 1		0.06 … 1	
	[bar]	1.5 … 8	1 … 8	1 … 10		0.6 … 10	
	[psi]	21.75 … 116	14.5 … 116	14.5 … 145		8.7 … 145	
AEN-S	[MPa]	0.25 … 0.8	0.15 … 0.8	0.15 … 1		0.1 … 1	
	[bar]	2.5 … 8	1.5 … 8	1.5 … 10		1 … 10	
	[psi]	36.25 … 116	21.75 … 116	21.75 … 145		14.5 … 145	

Tab. 6: Technical data, pneumatic ADN-S/AEN-S-6 … -25

ADN-S/AEN-S		-32	-40	-50	-63
ADN-S	[MPa]	0.06 … 1		0.04 … 1	
	[bar]	0.6 … 10		0.4 … 10	
	[psi]	8.7 … 145		5.8 … 145	
AEN-S	[MPa]	0.1 … 1			
	[bar]	1 … 10			
	[psi]	14.5 … 145			

Tab. 7: Technical data, pneumatic ADN-S/AEN-S-32 … -63

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