

Pneumatic actuators

Fig.544 : Scotch yoke



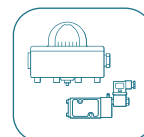
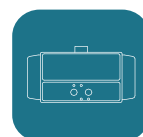
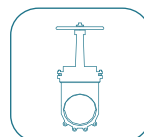
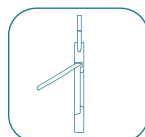
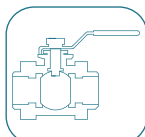
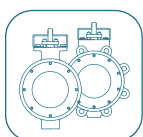
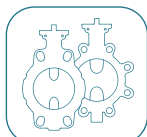
Introduction

This instruction manual contains important information regarding the installation, operation, maintenance and storage for Coreline Fig.544 scotch yoke pneumatic actuators. For errors resulting from improper installation, the manufacturer or Distributer can not be held responsible. Please read these instructions carefully and save them for future reference. Other information can be found in our latest product catalogue from our website - www.coreline.dk .

Requirements for the maintenance staff

The staff assigned to assembly, operating and maintenance tasks, should be qualified to carry out such jobs and in any circumstance, ensure personal safety.

www.coreline.dk



1. Introduction

The Coreline Fig.544 pneumatic actuator is a scotch yoke type actuator designed for precise and efficient valve control. This document provides guidance on installation, operation, and maintenance to ensure reliable and safe actuator performance.



Specifications

Operating Medium: Dry or lubricated compressed air, non-corrosive gas

Operating Pressure: 3.5 - 7 bar

Operating Temperature:

Standard: -20°C to +80°C (NBR O-ring)

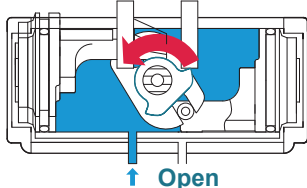
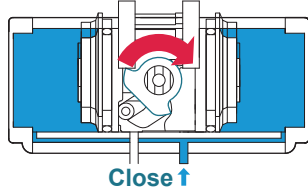
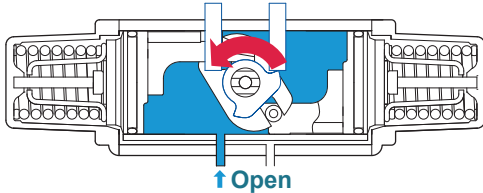
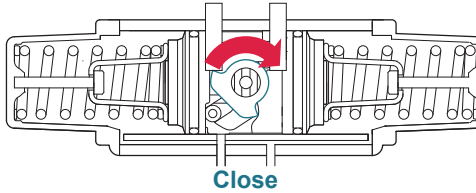
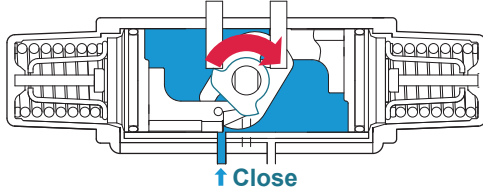
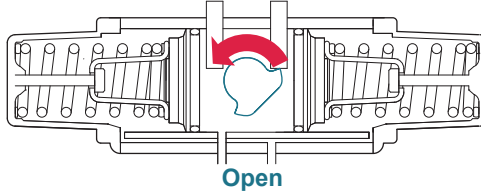
Low Temperature: -40°C to +80°C (Silicone O-ring)

High Temperature: -20°C to +150°C (FPM O-ring)

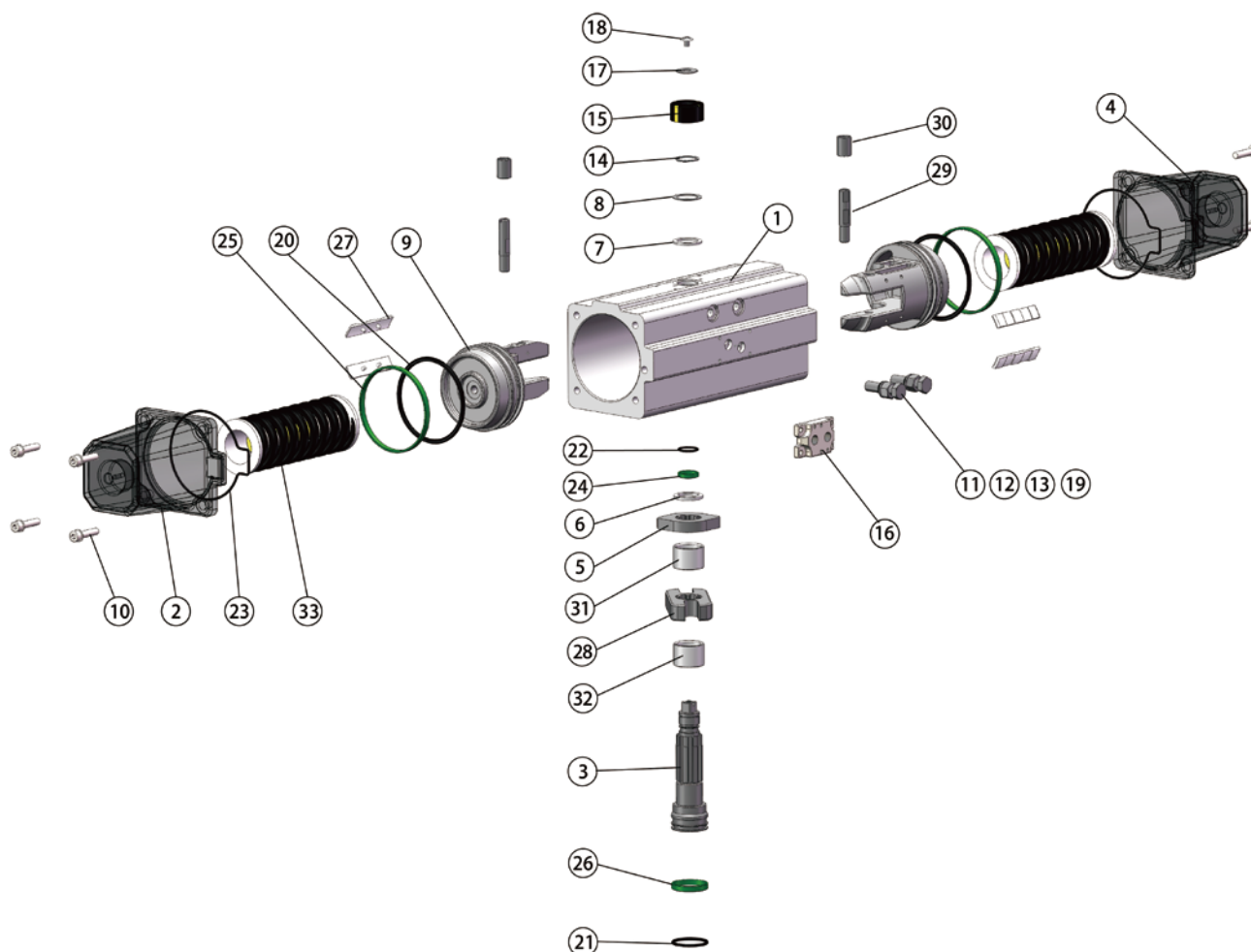
Travel Adjustment: $\pm 5^\circ$ at 0° and 90° positions

Construction: High-performance scotch yoke mechanism for enhanced torque efficiency and stability.

2. Operating principle

Air/Air		
Air/Spring - FC		
Air/Spring - FO		

3. Material part list



No.	Part Name	Material	Quantity	No.	Part Name	Material	Quantity
1	Cylinder	Aluminium Alloy	1	19	O-Ring (Adjustment) *	Rubber	2
2	Left End Cap	Aluminium Alloy	1	20	O-Ring (Piston)*	Rubber	2
3	Driving Shaft	Alloy Steel	1	21	O-Ring (Lower Part Of Shaft)*	Rubber	1
4	Right End Cap	Aluminium Alloy	1	22	O-Ring (Upper Part Of Shaft)*	Rubber	1
5	Stopper	Alloy Steel	1	23	O-Ring (End Cap)*	Rubber	2
6	Inner Shim *	Acetal Resin (POM)	1	24	Upper Retaining Ring *	Acetal Resin (POM)	1
7	Outer Shim *	Acetal Resin (POM)	1	25	Support Band *	Acetal Resin (POM)	2
8	Washer	Stainless Steel	1	26	Lower Retainer Ring *	Acetal Resin (POM)	1
9	Piston	Aluminium Alloy	2	27	Support Element *	Acetal Resin (POM)	4
10	End Cover Bolt	Stainless Steel	8	28	Scotch Yoke	Alloy Steel	1
11	Adjusting Bolt	Stainless Steel	2	29	Piston Pin	Alloy Steel	2
12	Adjusting Nut	Stainless Steel	2	30	Piston Roller	Alloy Steel	2
13	Washer	Stainless Steel	2	31	Upper Supporting Ring	Acetal Resin (POM)	1
14	Elastic Collar	Spring Steel	1	32	Lower Support Ring	Acetal Resin (POM)	1
15	Indicator	Acetal Resin (POM)	1	33	Spring	Spring Steel	2
16	Adapter Plate	Aluminium Alloy	1				
17	Indicator Gasket	Stainless Steel	1				
18	Screw	Stainless Steel	1	Notes : * Materials Contained In The Repair Kit			

4. Installation

4.1 Mounting to a Valve

Ensure Compatibility: Check that the actuator's torque output matches the valve's torque requirements.

Verify Air Supply: Confirm that the air pressure meets the recommended range of 4-6 bar.

Align the Actuator and Valve: Ensure the rotation direction and indicator orientation match.

Fix the Actuator: Secure the actuator to the valve flange according to ISO 5211 mounting dimensions.

Connect Air Supply: Attach the air supply to the designated ports following NAMUR standards.

Check Operation: Perform a function test before full operation.

4.2 Safety Precautions

Ensure only qualified personnel install or service the actuator.

Do not pressurize the actuator until fully mounted on the valve.

Avoid exposure to corrosive environments without proper protection.

For actuators in explosive zones, ensure internal components do not contact external atmospheres.

5. Operation

5.1 Standard Operating Procedure

Apply air pressure to the corresponding port to open or close the valve.

For spring-return actuators, the valve will return to its default position upon air supply removal.

Observe the position indicator to verify correct operation.

5.2 Angle Adjustment

The actuator is equipped with two external adjustment bolts for precise $\pm 5^\circ$ adjustments at 0° and 90° positions.

To adjust:

Loosen the locking nut.

Turn the adjustment bolt clockwise to decrease the angle or counterclockwise to increase it.

Once set, retighten the nut to secure the adjustment.

Test with compressed air to confirm the new settings.

6. Maintenance

6.1 Routine Inspection

Regularly check for air leaks at fittings and seals using soapy water.

Inspect the position indicator for proper alignment.

Verify that fasteners remain tight and secure.

Ensure the air filter is clean to prevent contamination.

6.2 Disassembly & Repair

Depressurize the actuator before any servicing.

Avoid disassembling the spring cartridge to prevent injury.

Replace worn-out O-rings, seals, or bearings as needed.

Contact Coreline support for assistance with complex repairs.

7. Troubleshooting

Issue	Possible Cause	Solution
Actuator does not move	Insufficient air pressure	Increase air supply
Leaking air	Worn seals or loose fittings	Replace sealstighten connections
ncorrect rotation	Misaligned valve/actuator	Check alignment,reinstal
Excessive noise	nternal wear or debris	Inspect and clean internals