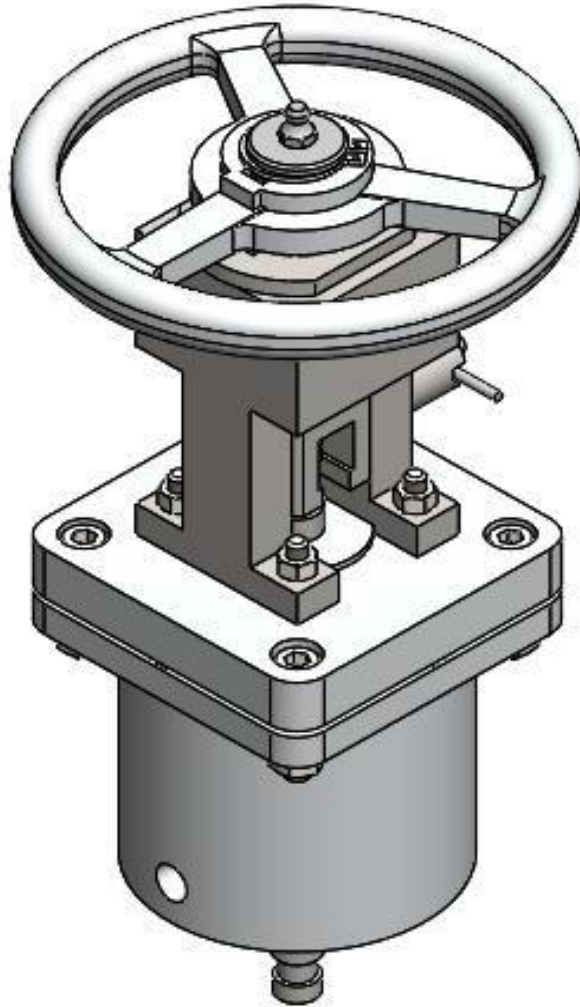


SINGLE ACTING PNEUMATIC CYLINDER

Installation, Operation and Maintenance manual

Sizes included – PA1200-FCS-5



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WARNINGS & SAFETY INSTRUCTIONS

For your safety and protection, it is important that the following precautions be taken prior to working on a Microfinish pneumatic cylinder.

1. It is the prime responsibility of the end user to determine the appropriate material compatible for the construction and the product pressure and temperature ratings for the service.
2. Do not unpack the cylinder from shipping package until just prior to installing it.
3. When unpacked, plug the inlet and outlet ports until they are connected to the compressed gas line.
4. Oxygen or hydrogen must not be used to pressurize the cylinders.
5. Pressure shall be in the range of 2 to 8 bar.
6. Temperature shall be in the range of -20 °C to +80 °C.
7. When used in sub-zero temperature it is essential to use a dryer on the supply line to prevent moisture and icing.
8. Use filter unit on the supply line for dust and moisture removal.
9. Read the entire IOM carefully and make sure everything is clear, in case of doubt consult Microfinish engineering team.

Note: All the illustrations in this IOM manual are for reference only

1. Introduction

Microfinish single acting pneumatic cylinder is designed and manufactured for long lasting, trouble free service.

This Installation, Operating & Maintenance manual covers the instructions required for safe use of Microfinish single acting pneumatic cylinder.

Storage

Prior to storage, inspect the pneumatic cylinder for shipping damage. It is recommended to keep the pneumatic cylinder packed and in a clean and in a protective environment until ready for use. Keep all protective packaging and plugs attached to the cylinder until ready for use.

Prior to Installation

Flush the supply line, and verify it is cleared of impurities such as sand, grit, dust, moisture or any particles that might damage the pneumatic cylinder.

Operate the Pneumatic cylinder at least two complete cycles prior to installation. Verify smooth operation.

Measure the cylinder shaft stroke, the pneumatic cylinder stroke should be more than the valve stroke on which it is being installed.

2. Installation

2.1. General

- 2.1.1. Microfinish pneumatic cylinder is designed for long lasting, maintenance-free service when used in accordance with the following instructions.
- 2.1.2. Ensure the Auto / Manual lever is kept in Manual position.
- 2.1.3. Install the pneumatic cylinder on a valve with appropriate couplings and fasteners. It is recommended to use Microfinish mounting kit.
- 2.1.4. Use the hand wheel to operate the pneumatic cylinder and to move the valve spindle up if required.
- 2.1.5. Connect the compressed gas supply line to the cylinder.
- 2.1.6. Switch Auto / Manual lever to Auto position.
- 2.1.7. Adjust the gas pressure / spring range and the thrust on the valve spindle (2b) to achieve the required closing force. (Refer Table 1)



- 2.1.8. Once the required force is achieved, lock the thrust adjuster (2a) with the help of thrust adjuster lock nut (2b).

Table 1

Cylinder model - PA1200-FSC-5	
Spring range (bar)	Thrust (N)
2.5 - 4.0	1200
2.6 - 4.0	1250
2.7 - 4.0	1300
2.8 - 4.0	1350
2.9 - 4.0	1400
3.0 - 4.0	1450

Note: If the required force is more than the figures listed above, consult Microfinish engineering team

- 2.1.9. Set the required gas pressure in supply line in the range of 2 to 8 bar and operate pneumatic cylinder along with valve. Verify smooth operation and sufficient stroke length.

3. Operation

3.1. Manual

- 3.1.1. Ensure Auto / Manual lever is kept in Manual position.
 3.1.2. Rotate the hand wheel counter clockwise to open the valve, and clockwise rotation to close the valve.

3.2. Pneumatic operation.

- 3.2.1. Ensure Auto / Manual lever is kept in Auto position.
 3.2.2. Use 3/2 way solenoid valve to operate the valve in Auto mode. Pressurize the cylinder with compressed gas to open the valve, and depressurized the compressed gas to close the valve.
 3.2.3. Keep hands away from moving parts.

4. Disassembly

4.1. Disassembly from valve

- 4.1.1. Depressurize the pipe line and drain the system
 4.1.2. Disconnect all pneumatic and electric connection.
 4.1.3. Wear protective glasses, clothing, and gloves.
 4.1.4. Turn the Auto / Manual lever to Manual position and remove the coupling between pneumatic cylinder and valve.
 4.1.5. Remove the fasteners connecting the pneumatic cylinder and the valve or yoke and remove the cylinder from the valve.

4.2. Disassembly of the Single acting pneumatic cylinder.

- 4.2.1. Mount the pneumatic cylinder on a platform.
 4.2.2. Remove the accessories installed on the pneumatic cylinder.
 4.2.3. Remove the thrust adjuster lock nut, and thrust adjuster.
 4.2.4. Turn the hand wheel in a counter clockwise rotation and ensure that the cylinder spindle is released from the hand wheel spindle.
 4.2.5. Remove the circlip (15b).
 4.2.6. Remove hand wheel and key. (15 & 15a)
 4.2.7. Unscrew spindle nut cap. (14)
 4.2.8. Remove spindle nut and thrust bearings. (12 & 13)



- 4.2.9. Remove hand wheel support nuts. (10b)
- 4.2.10. Remove hand wheel support and hand wheel spindle. (10 & 11)
- 4.2.11. Remove cylinder cover cap screws and nuts. (9b & 9c)
- 4.2.12. Remove top cover and bottom cover. (8 & 9)
- 4.2.13. Remove spring guide and spring set. (6 & 5)
- 4.2.14. Slide out spindle and piston assembly from the cylinder.
- 4.2.15. Unscrew the piston nut (4) and separate the spindle (2) and piston (3).
- 4.2.16. Remove and discard all O-rings (1b, 3a, 3b & 9a).
- 4.2.17. Keep all the dismantled parts on a clean surface.

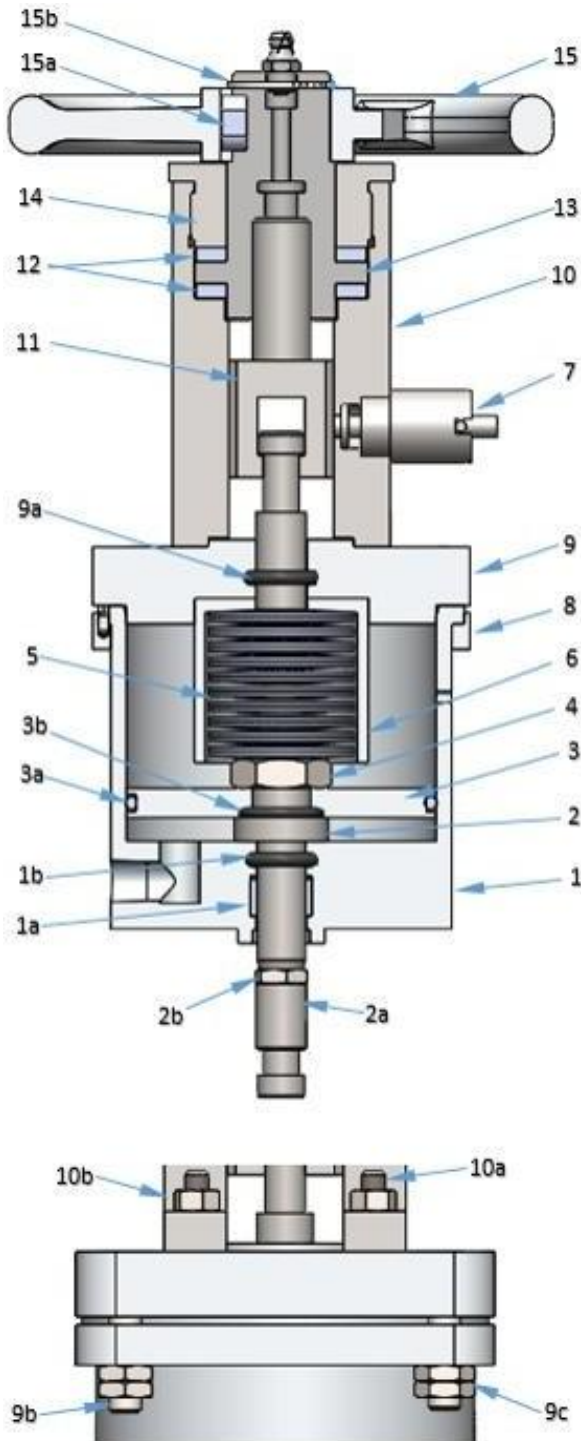
5. Assembly

CAUTION

Follow the safety rules and regulations to avoid personal injury or equipment damage

- 5.1. Use only Microfinish original spare parts.
- 5.2. Wear clean working clothes and lint free gloves throughout the complete process.
- 5.3. Cover the working table with clean plastic sheet.
- 5.4. Before assembling the pneumatic cylinder, examine all parts and replace any worn or damaged item.
- 5.5. Clean all parts carefully with Iso-Propyl Alcohol (IPA) and keep them on the cleaned working area.
- 5.6. For pneumatic cylinder assembly, follow the disassembly steps (paragraph 4) in a reverse order.

6. Single acting pneumatic cylinder assembly view



Item No.	Part description
1	Cylinder
1a	Guide ring
1b	Cylinder O-ring
2	Spindle
2a	Thrust adjuster
2b	Thrust adjuster lock nut
3	Piston
3a	Piston O-ring
3b	
4	Piston nut
5	Spring set
6	Spring guide
7	Auto manual lever
8	Bottom Cover
9	Top cover
9a	Top cover O-ring
9b	Cover cap screw
9c	Cover nut
10	hand wheel support
10a	hand wheel support stud
10b	hand wheel support nut
11	Hand wheel spindle
12	Thrust bearing
13	Spindle nut
14	Spindle nut cap
15	Hand Wheel
15a	Key
15b	Circlip

FIG -1