

Safety Air Device



Operation Manual

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1 About the Manual

1.1 General

This operation manual is supplied as non-separable part of the Normaco Safety Air Device. It contains important information that allows the user to safely and successfully operate and maintain the device. Prior commencing work or maintenance on the device, the operation manual must be familiarized with. During the operation of the machine, the manual must be kept readily available for the operators and service personnel.

1.2 Warnings and Symbols

This operation manual contains important information for the safe use of the Device. Also the manual helps in using the Device economically ensuring maximum performance and lifetime. Attention to these symbols and warnings helps to avoid dangers, decrease repair costs and down-time and to increase the reliability and life span of the Device.

Appearance and meaning of Symbols appearing in this operation manual:

**WARNING:**

A **WARNING** alert with the safety alert symbol indicates a potentially hazardous situation that could result in serious injury or death.

**CAUTION:**

A **CAUTION** alert with the safety alert symbol indicates a potentially hazardous situation that could result in minor or moderate injury or damage to the equipment.

**Note:**

This symbol indicates a note for the user. Notes provide additional information to help with easier or more economical operation

2 Safety

2.1 General information

Prior to commencing work with the Normaco Safety Air Device, operators and service personnel must read this manual carefully.

It is strictly forbidden to use the Device for any other purpose beyond the intended use and limits of the Device.

All changes and modification to Device construction are prohibited, without permission from the Manufacturer.

Additionally the operators must consider local laws and regulations regarding work safety or environmental protection that might affect the use of the Device.

2.2 Safe Work Area

- Keep work site clean. Remove non-essential tools, cables and materials from the work area.
- Keep the work area well lit.
- Keep non-essential personnel away from the work area.

2.3 Safe Operation and Service

- Make sure Normaco Safety Air Device is disconnected from power source before setup, maintenance and service!
- Before switching on the power and commencing work, make sure to follow steps in the operation manual of the machinery that the Normaco Safety Air Device is connected to.
- Use only original spare parts with the Normaco Safety Air Device.
- Maintenance and service must be done only by qualified and properly trained personnel.
- While operating always wear safety goggles and hearing protection.
- Never leave the device running unattended or without qualified supervision.
- Do not use the device if it is faulty!
- Keep the device clear from sharp objects such as metal shavings and tools that can damage the air tubes.
- Keep the device away from extreme heat, sparking and sources of fire. (welding, grinding, gas cutting, etc.)
- To prevent accidental start/stop and damage; keep tools, feet and objects away from the buttons of the device.
- Do proper maintenance and service for the Device. Safety functions depend on proper functionality of the system.
- Do not exceed maximum pressure parameters.
- Always use the device only when it is standing upright, on a level ground.

2.3 Safety Equipment and Labels

 <p>Wear eye protection</p>	<p>Safety glasses</p> <p>Wear eye protection thru-out the work, to protect eyes from particles flying due to pressurized air.</p>
 <p>Wear ear protectors</p>	<p>Hearing protection</p> <p>Use suitable ear protection while working.</p>

2.4 Noise Level

The Normaco Safety Air Device itself emits low level of noise. However, machinery (compressor, air motor) connected to the Device can emit high noise levels. Always wear ear protection while operating these machines.

3. About the Equipment

3.1 Intended Use

The Normaco Safety Air Device is designed to work as a safety device between the pneumatic power source (compressor) and pneumatic actuator (air motor, cylinder).

Main features are;

- Emergency stop
- Downstream bleed after stop
- Prevention of accidental start up, after main air is turned off and on again.
- Remote foot pedal for using the pneumatic machinery “hands-free” (optional)
- Air treatment set; Air filter, regulator and lubricator.

3.2 Dimensional Data

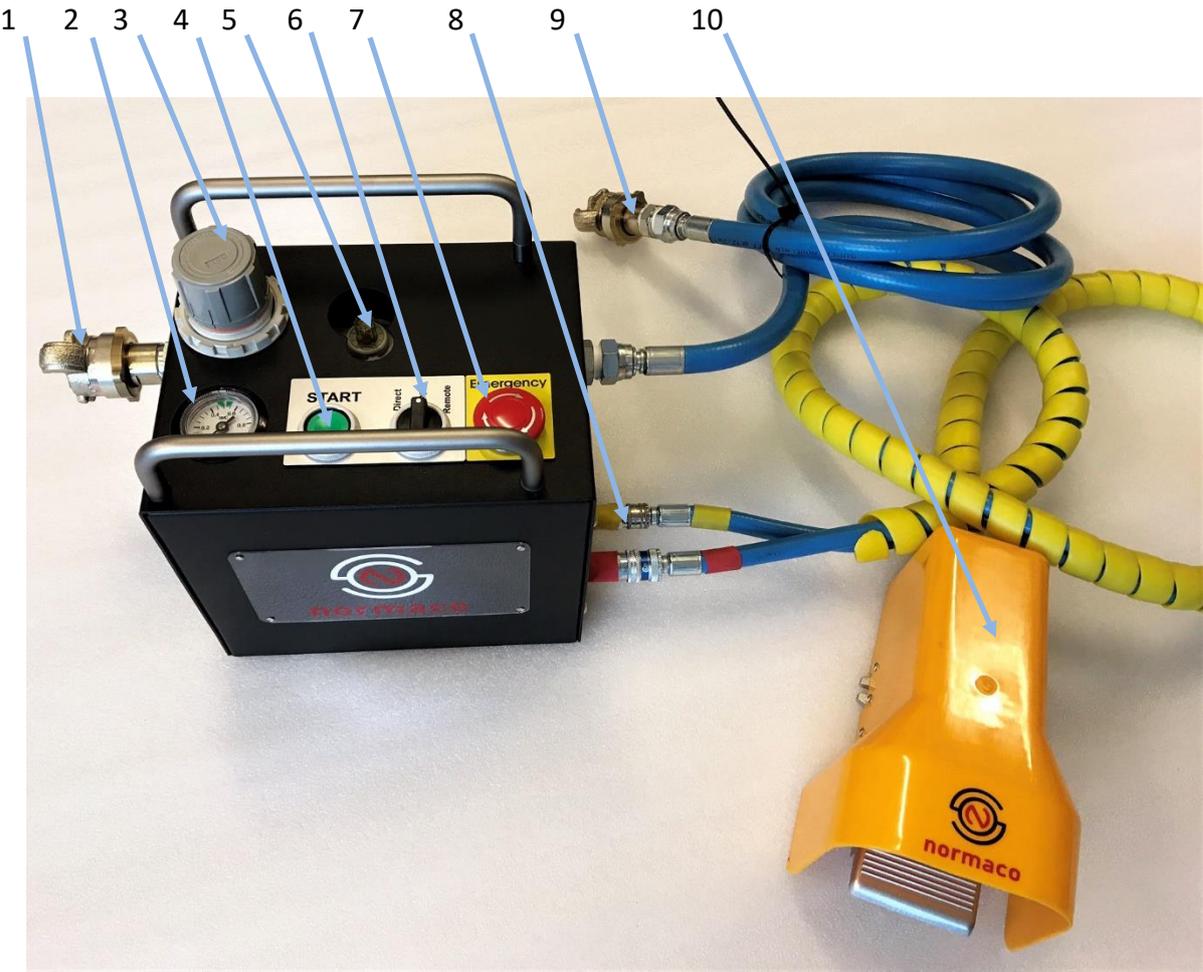
	Air Treatment Set	Air Safety Device	Air Safety device with foot pedal
Weight (kg)	7.6	8.1	11.1
Dimensions (cm)	37x19x28	37x19x28	37x19x28
Filter-regulator & lubricator	✓	✓	✓
Start/Stop		✓	✓
Foot pedal remote (detachable)			✓
Accidental startup prevention		✓	✓
Downstream bleed after stop		✓	✓
Emergency stop		✓	✓
Output hose length	2m	2m	2m
Output coupling	US CLAW	US CLAW	US CLAW
Input coupling; configurable	US/EU CLAW	US/EU CLAW	US/EU CLAW
Foot pedal hose length	N/A	N/A	2m

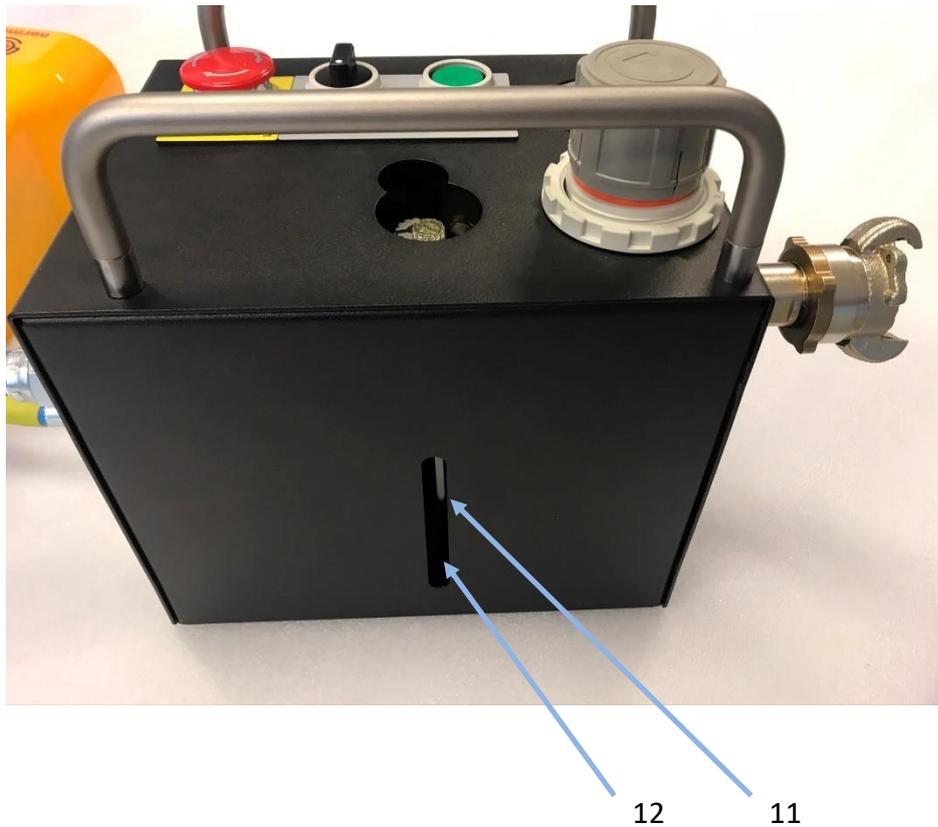
Filter	5 µm
Oil container	135 cm ³
Flow rate	2910 l/min *
Regulator Pressure Range	0.05-0.7Mpa
Max Inlet Pressure	1MPa
Operating temperature range	0 - 60 °C (No Freezing)

*conditions; input 0.7MPa. ΔP 0.12MPa (ANR)

3.3 Parts of the device

- 1. Input connector
- 2. Pressure gauge
- 3. Pressure regulator
- 4. Start button
- 5. Lubricator
- 6. Mode selector switch
- 7. Emergency stop
- 8. Foot pedal connectors (optional)
- 9. Output hose and connector.
- 10. Foot pedal
- 11. Oil level window
- 12. Water drain (on the bottom of the box)





3.4 Manufacturer, service address

Normaco Tools OÜ
Sinikivi tee 12
Lehmja küla, 75306
ESTONIA
Phone +372 6003704
info@thermotech.ee
sales@normaco-tools.com

4. Set-up

4.1 General

It is imperative that the Normaco Safety Air Device is properly set-up, before commencing the work.

Follow these steps to complete the set-up;

- Check main air pressure is off.
- Check the device is visually intact.
- Check mode selector is set in “Stop” position
- Fasten and secure the claw connectors for both input and output.
- Make sure device is stable and standing upright.
- Turn on the main air supply.
- Adjust the pressure to required setting (chapter 4.3). Do not exceed the maximum of 8 bars
- Listen for air leaks. In case air is escaping the system, recheck the connectors.
- Check that Emergency stop is not activated.
- Commence the work by following instructions in the chapter 5.

4.2 Air source

Connect the Normaco Safety Air Device only to source of pressurized air that:

- Does not exceed maximum pressure of 8 bars.
- Provides stable supply of clean air.



CAUTION:

Air containing much water can lead to malfunction. Install air drier to remove excess air humidity.



CAUTION:

Always use only clean air supply, air containing chemicals, organic solvents, synthetic oil, or corrosive gas, will lead to malfunction or component failure.

4.3 Air pressure regulation

To adjust the pressure setting, pull the regulator handle upwards, to open the locking mechanism.

Rotate the handle clock wise to raise the set pressure. Rotate the handle counterclockwise to lower the pressure.

Check the pressure level from the gauge. Do not exceed the maximum level of 8 bars.

Lock the handle after finishing with adjustment by pushing the lock down.

Outlet pressure might change after long use, re-check the pressure regularly.

**CAUTION:**

Adjust the pressure only by hand, using tools might break the handle.

4.4 Lubricator

Adjust the lubricator manually; Counterclockwise rotation increases the oil drop amount while clockwise rotation decreases the amount. Adjust only by hand, tools might damage the valve.

From the fully closed position, three rotations will bring it to the fully open position. Please do not rotate it any further than this. Note that the numbered scale markings are guidelines for adjusting the position, and not indicators of the dripping amount

**CAUTION:**

Check the dripping amount once a day. Drip failure can cause damage to the components that need lubrication.

**CAUTION:**

Always use the device only when it is standing upright, on a level ground.

5. Operating instructions

5.1 Operating modes

The Normaco Safety Air Device has two operating modes. Direct use and use with remote foot pedal.

Operating mode selector is only available in the model with the foot pedal.

5.2 Direct mode

Direct mode allows the user to operate air powered machinery directly by pushing the green start button on the Normaco Safety Air Device, without the remote foot pedal.

To use the Normaco Safety Air Device in the direct mode, first complete the set-up as described in the chapter 4. After completing the set-up, turn the twist selector to position “direct”. Release the emergency stop button by turning the knob clock-wise. Press start button for 2 seconds and the actuator will start. To stop the machine, turn the twist selector to “Stop” position.

5.3 Remote mode (optional)

Remote mode using the foot pedal gives the operator the flexibility to use air powered machinery with both hands free.

To use the Normaco Safety Air Device in the remote mode, first complete the set-up as described in the chapter 4. After completing the set-up, turn the twist selector to position “remote”. Release the emergency stop button by turning the knob clock-wise. Make sure the foot pedal is released and no objects are obstructing it. Press the start button. Machine is now ready to start when you press the foot pedal. When the foot pedal is released, machine will stop. To stop the machine, turn the twist selector to “Stop” position.

**CAUTION:**

While working with in remote mode, pay special attention to safety instructions of the machinery to prevent damages to hands.

6. Maintenance and Service

Inside the box the only serviceable parts are the air filter and lubricator.

In case of problems with the other components, contact the manufacturer. Do not attempt to repair the components yourself. It may lead to injury or mechanical failure.

6.1 Opening the box

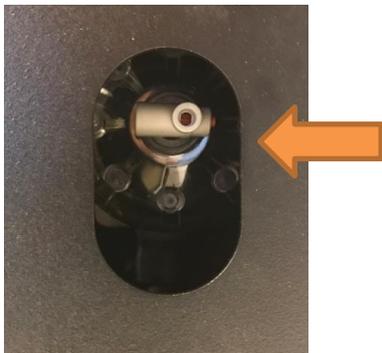
To open the Normaco Safety Air Device, follow these steps. Do not force open.

1. Unfasten the fixing screws on the both sides of the device.
2. Pull the lower half of the box outwards.

6.2 Air filter, Lubricator, Regulator

- Check the Air filter polycarbonate bowl for dirt regularly. In case of dirt, replace with clean bowl. Or wash with neutral detergent. Other washing chemicals can damage the bowl.

- Drain the bowl by opening and closing the drain valve. Drain valve is located on the bottom of the polycarbonate bowl. Draining must be performed when the system is pressurized



- Check the oil level regularly thru the slot on the back side of the device.

- Make sure oil level in the lubricator is between the min and max level indicated the bowl. If needed, add oil thru the fill opening. Type of oil according to ISO VG32



CAUTION:

Make sure to depressurize polycarbonate bowls of the filter and lubricator before opening!

⚠ Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for F.R.L. Precautions.
Please download it via our website, <http://www.smcworld.com>

Design / Selection

⚠ Warning

1. Although exhaust of the residual pressure to the inlet side is possible when eliminating the inlet pressure, exhaust is not possible when the set pressure is 0.15 MPa or less. Use the regulator with backflow function.
2. The standard bowl for the air filter, filter regulator, and lubricator, as well as the sight dome for the lubricator and bowl guard are made of polycarbonate. Do not use in an environment where they are exposed to or come in contact with organic solvents, chemicals, cutting oil, synthetic oil, alkali, and thread lock solutions.

Effects of atmosphere of organic solvents and chemicals, and where these elements are likely to adhere to the equipment.
Chemical data for substances causing degradation (Reference)

Type	Chemical name	Application examples	Material
			Polycarbonate
Acid	Hydrochloric acid Sulfuric acid, Phosphoric acid Chromic acid	Acid washing liquid for metals	△
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×
Inorganic salts	Sodium sulfide Sulfate of potash Sulfate of soda	—	×
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△
Oil	Gasoline Kerosene	—	×
Ester	Phthalic acid dimethyl Phthalic acid dimethyl Acetic acid	Synthetic oil Anti-rust additives	×
Ether	Methyl ether Ethyl ether	Brake oil additives	×
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerato	×
Other	Thread-lock fluid Seawater Leak tester	—	×

△ : Some effects may occur × : Effects will occur

Maintenance

⚠ Warning

1. Replace the element every 2 years or when the pressure drop becomes 0.1 MPa, whichever comes first, to prevent damage to the element.

Mounting and Adjustment

⚠ Warning

1. Set the regulator while verifying the displayed values of the inlet and outlet pressure gauges. Turning the regulator knob excessively can cause damage to the internal parts.
2. Do not use tools on the pressure regulator knob as this may cause damage. It must be operated manually.

Mounting and Adjustment

⚠ Caution

1. Be sure to unlock the knob before adjusting the pressure and lock it after setting the pressure. Failure to follow this procedure can cause damage to the knob and the outlet pressure may fluctuate.
 - Pull the pressure regulator knob to unlock. (You can visually verify this with the "orange mark" that appears in the gap.)
 - Push the pressure regulator knob to lock. When the knob is not easily locked, turn it left and right a little and then push it (when the knob is locked, the "orange mark", i.e., the gap will disappear).
2. Pulsation will be generated when the difference between the inlet and the outlet pressure is large. In this case, reduce the pressure difference between the inlet and the outlet. Consult SMC if the pulsation problem is not resolved.
3. When the bowl is installed, install them so that the lock button lines up to the groove of the front (or the back) of the body to avoid drop or damage of the bowl.



7. Troubleshooting

Symptom	Possible Cause	Fix
No output pressure	Pressure is set to zero	Check the regulator setting
	No mains air	Check the compressor is running, main air is switched on and hose properly attached
	Selector switch is not in operation mode	Check the selector position
	Emergency stop is activated	Release the emergency stop
Air leakage	Claw fittings not properly secured	Secure the fitting properly
	Internal connections damaged	Contact the manufacture.



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