



PicoFlow RAPID

For fiber dimensions 0.8-3.0 mm



Operating manual

Responsible manufacturer: Fremco A/S

Machine: PicoFlow RAPID

This is the original operating manual for PicoFlow RAPID from Fremco.



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3-YEAR EXTENDED WARRANTY

The most expensive machine is the one *not* in use.

Choosing a fiber blowing machine is a big decision and ensuring its durability is crucial for your business. Fremco now offers an exclusive **3-year extended warranty included in the purchase of your Fremco fiber blowing machine**. This warranty gives you peace of mind, knowing that your fiber blowing investment is protected for the long run.



To keep your extended warranty valid, all you must do is schedule a yearly machine service at your nearest authorized Fremco Service center. On the machine, there is a service sticker reminding you of the machine's last service. Failing to do so will invalidate the extended warranty.

Regular maintenance ensures that your machine runs smoothly and efficiently, preventing potential issues before they become problems. It is a small step that guarantees you getting the most out of your equipment without any unexpected costs.

How to get your machine serviced?

Request a service at the nearest Fremco service center:



1. INTRODUCTION

Original instructions

These instructions are Fremco A/S' original instructions for the PicoFlow RAPID (hereafter called the machine).

Purpose

The purpose of these instructions is to ensure the correct installation, use, handling, and maintenance of the machine.

Accessibility

The instructions are to be kept in a location known to the staff and must be easily accessible for the operators and maintenance personnel.

Knowledge

It is the duty of the employer (the owner of the machine) to ensure that everybody operating, servicing, maintaining, or repairing the machine reads and understands the instructions. As a minimum, they should read the part(s) relevant to their work.

In addition to this, everybody operating, servicing, maintaining, or repairing the machine is obliged to seek out information in the operating manual when needed.

2. SAFETY INSTRUCTIONS

Read and understand this operating manual before operating the Machine. Follow all safety instructions. Failure to follow the instructions may lead to damage to the machine and mild to severe personal injury.

Make sure to disconnect the machine from the air compressor and dismount the drill machine before any kind of adjustment to the internal part and maintenance takes place.

- The operator must ensure that the machine is in working order and free of damages to the surface and internal construction.



WARNING: Hard handling of the machine may result in defects to the surface, which may lead to sharp objects. Always inspect the machine before use and always use protective gloves when handling the machine.

- The air pressure should never exceed the recommendations from the suppliers of microducts and fiber. The pressure may never exceed 16 bar, which is the maximum pressure for the Machine.



WARNING: Exceeding max. pressure may lead to machine damage and mild to severe personal injury.

- Necessary measures must be taken to reduce noise at the workplace to an acceptable level. The discharge of compressed air from the machine may cause noise levels to increase. This can be reduced by using the correct gasket size, wear on gaskets can also result in increased noise levels. In addition to noise generated by the machine, consideration must also be given to additional process equipment (eg. compressors) If the machine is used correctly the noise level should not exceed the allowed noise level, but if the noise level is above the permitted limit value (EU Limit Value 80db), hearing protection should be used.



WARNING: Noise above limit values may cause permanent hearing damage.

- Only use drill machines with manual hold to drive operation.



WARNING: Use of locking mechanism on the drill machine disabling the need for operator input is not allowed.

- The machine must not be run with an open lid, due to the possibility of getting in contact with moving parts.



WARNING: running with the lid open may cause personal injuries.



WARNING: insufficient fastening/connections of ducts or other pressurized components can lead to the ejection of parts, which can cause personal injury.

- Never wear loose Hair, jewellery, or clothing, while operating the machine



WARNING: Loose Hair, jewellery and clothing may become entangled in the machine.

- The machine's protective covers may not be removed under daily use, Protective covers may only be removed by authorized personnel for service and maintenance, and only when the drive machine and compressed air supply are disconnected. After all types of service and maintenance the protective covers must be put back in place and secured properly with all screws before operating.



WARNING: running with protective covers removed may cause both the machine and personal injuries.

- Always ensure that the machine is kept in a stable position, recommended on a stable platform. Make sure that the fiber and duct are placed correctly in the machine.
- Make sure you do not touch the fiber too close to the machine due to the risk of injuries to your fingers. Make sure that the fiber does not make loops that might be dangerous to persons around the machine.



WARNING: loss of stability.

If the Machine is not placed on a stable foundation, the machine can lose its stability and fall, causing damage to the machine and mild to severe personal injury. Protective footwear must be always used. Handheld operation is recommended using a monopod to prevent the rotation of the machine.

- Make sure the working environment is clean and tidy to avoid injuries due to stumbling over fiber and equipment.
- The use of Personal Protection Equipment may not limit the operator's ability to operate the machine safely.
The operator must always be able to interfere with the machine's operations.



WARNING: Use Proper Personal Protection Equipment

- The use of compressors with uncooled pressurized air is not advisable.



WARNING: Usage of uncooled compressed Air when operating the machine, may expose operators to hot surfaces and lead to personal injuries.

- The operator must ensure nearby persons are informed when the operation is initiated.
- The operator must make sure that no other persons are close to the machine and cable drums in a way that could be dangerous when the machine is started.
- The operator must ensure that the exit end of the duct is secured, and that discharged air, cable, and debris are contained safely. Operators must pay special attention when blowing sponges and steel pins.



WARNING: Exhaust air can contain objects dust and particles and may be ejected from duct and machine during the blowing process, this can cause eye and personal injuries, so protective eyewear must be always used.

3. GENERAL INFORMATION

3.1. MANUFACTURER

The machine is manufactured by.

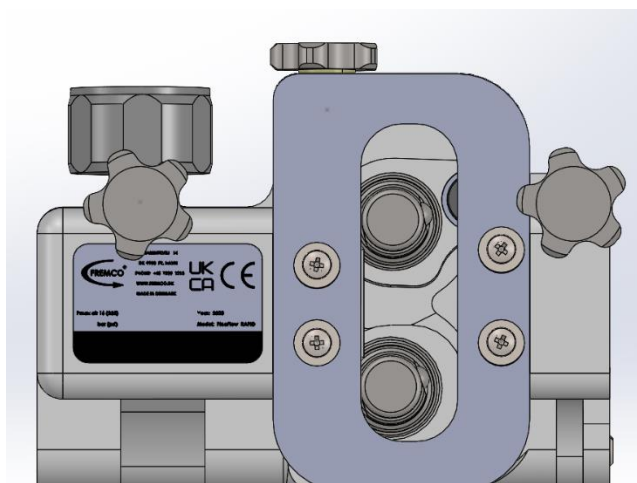
Company name: Fremco A/S
 Company address: Ellehammervej 14
 DK-9900 Frederikshavn

3.2. THE MACHINE'S DESIGNATION

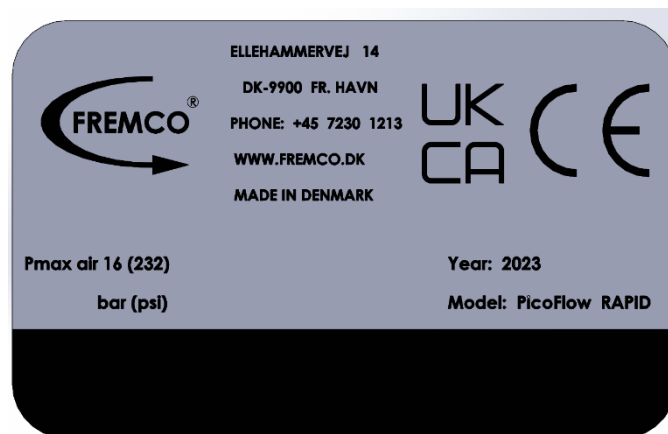
The machine's complete designation is PicoFlow RAPID.

3.3. MACHINE PLATE

The machine plate is situated on the front of the machine:



Placement of the Marking Plate



Content of the Marking Plate

3.4. APPLICATION

The fiber blowing machine is constructed for blowing fiber into microducts within the FTTH segment.

Fremco does not recommend or support the use of the machine in other applications.

Always use adaptor plates designed for the actual diameter of fiber and duct. The adaptor plates are marked with the size for which they are intended.

It is very important to use the correct adaptor plates. If the adaptor plates do not fit the duct, dangerous situations may occur.

The machine comes in a carrying case. When the machine is not in use or during transportation, always store it in the carrying case.

*NB: The machine is intended for indoor use.
If the machine is exposed to rain or high humidity,
operator must ensure that the machine is dried
before storage.*

3.5. TECHNICAL SPECIFICATIONS

These specifications cover the PicoFlow RAPID fiber blowing machine.

PicoFlow RAPID

Manufacturer

Fremco A/S
Ellehammervej 14
9900 Frederikshavn
Denmark

Item No.....	101-231211100
Fiber diameter	0.8-3 mm
Duct diameter	3-12.7 mm
Blowing distances	Up to 500 m (1640 ft)
Blowing speed ^{1,2}	Up to 90 m/min. (295 ft/min)
Pushing force ²	0-2 kg (0-4.4 lbs)
Maximum air pressure.....	Max. 16 bar (232 psi)
Recommended airflow ³	Min. 200 l/min. (7.1 cfm)
Ambient temperature.....	0-40°C (32-104°F)
Clamping force on cable	Manually adjusted
Weight (Unconfigured)	0.590 kg (1.3 lbs)
Weight (Configured)	0.690 kg (1.5 lbs)
Weight (with transport box + parts)	5.8 kg (12.8 lbs)
Length.....	111 mm (4.37")
Width.....	77 mm (3.03")
Height	87 mm (3.43")

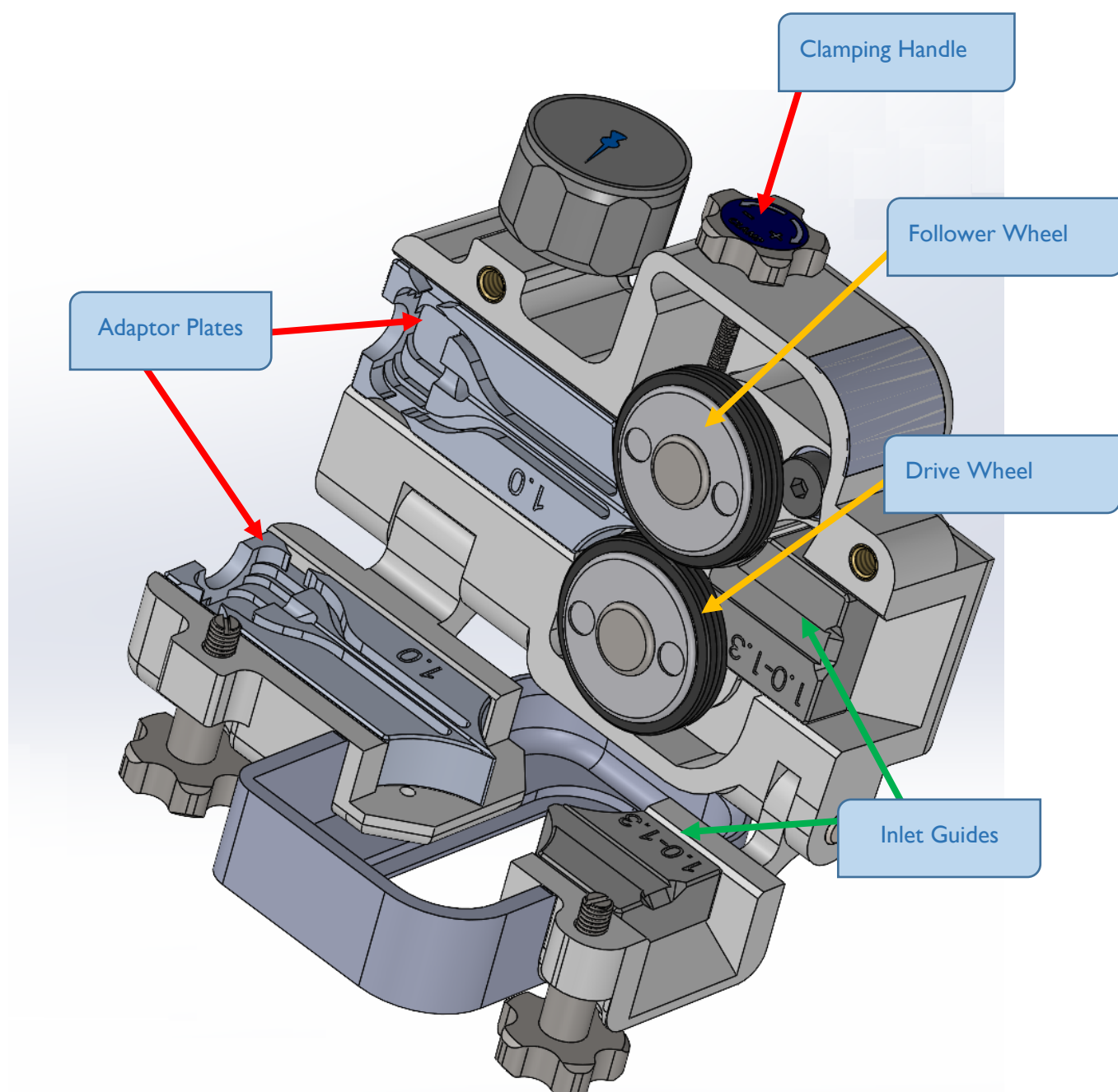
¹ Depending on the type and quality of fiber and microduct

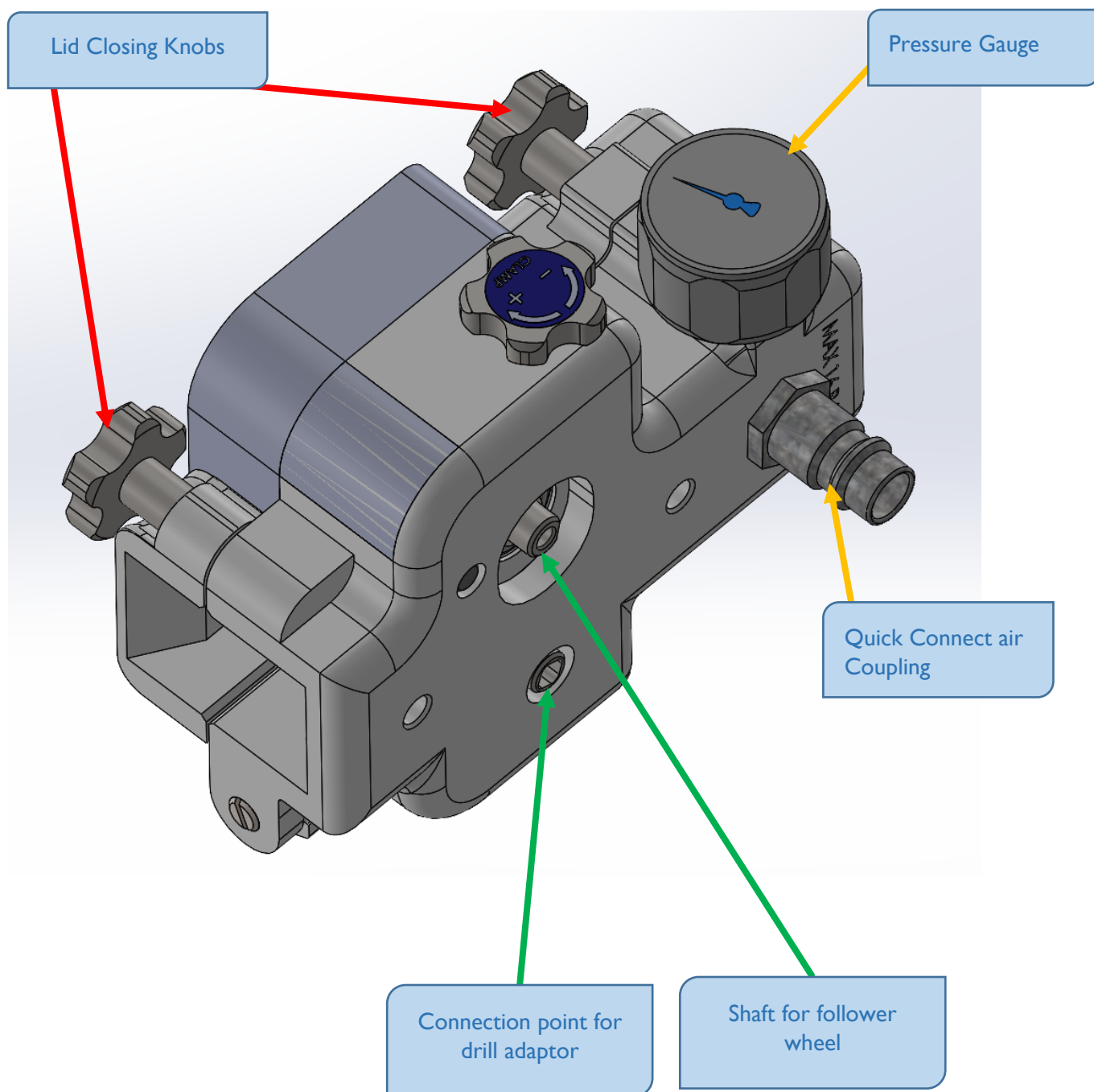
² Depending on the drill machine used to drive the blowing machine

³ Air must be filtered, cooled, and dried



3.6. MACHINE OVERVIEW – TECHNICAL DRAWINGS





3.7. CONTENT OF THE BOX



4. TRANSPORTATION, HANDLING AND STORAGE

The Machine is delivered in a transport box, with parts and pieces needed for usage. Always keep the machine in the box when not in use, to prevent loss of components and damage to the machine. The box gives a direct overview of the parts, making it easy to identify missing parts.

When storing the machine for prolonged periods, ensure that the machine, the accessories, and the internal of the box are dry and free of moisture. If needed a moist absorber may be placed in the box.

There are no components that must be lubricated before storage.

5. MOUNTING

Make sure to create a stable platform before blowing.

It is recommended to place the PicoFlow RAPID on a tripod or similar device that can hold the machine during use. Please see the section on Accessories on page 11 for further information.

When used handheld it is recommended to stabilize the machine with a monopod handle.



5.1. TRIPOD AND MONOPOD

Before mounting the machine on a tripod or monopod, the tripod bracket must be installed.



Locate the Tripod Bracket and the two finger screws.



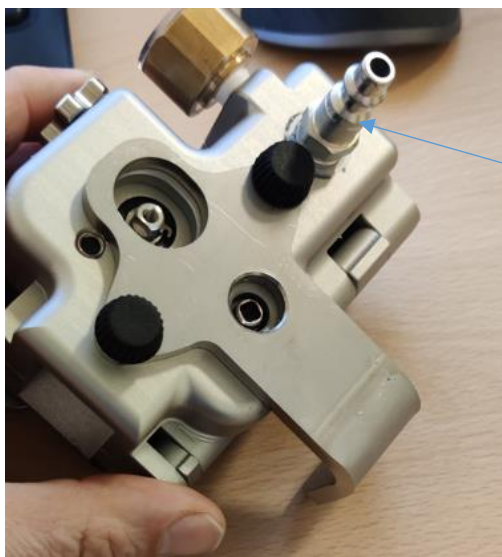
Mount the tripod bracket with the two finger screws. Tighten firmly by hand, do not use tools.

5.2. SUPPLY OF COMPRESSED AIR

The volume and quality of compressed air are one of the most important parameters to achieve good results when blowing fiber. The amount of air needed depends on fiber size, duct size, and blowing distance. A capacity of less than 200 l/min. is not recommended for long blowing distances.

The compressed air must be filtered, cooled, and dried to avoid moisture and dirt in the microduct.

For short blowing distances, the Machine can be used without the supply of air.



Connection for quickconnect air supply

6. FACTORY SETTINGS

The machine is delivered ready to run. There is no requirement for adjustments or calibration before being put into service.

7. RUNNING THE FIBER BLOWING MACHINE

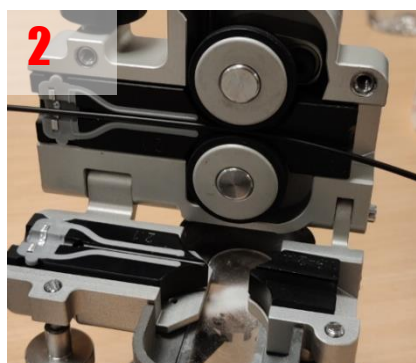
The machine is designed to be very simple and requires no initial installation to run.

7.1. MACHINE OPERATIONS



Open the Lid of the PicoFlow Machine
If adaptor plates and Inlets have not yet been mounted, follow the instructions.

Chapter 8. Adaptor plates and duct adaptors



Untighten the clamping screw to lift the support wheel and push the fiber in between the wheels, approx. 15 cm. Tighten the clamping screw to clamp the cable with the support wheel, thus fixing the fiber between the wheels. Check that the fiber is placed correctly in the grooves of the wheels.
Ensure that the clamping force is adjusted so the cable can slip when the wheels are blocked.



Mount the duct over the fiber and into the adaptor plate.



Close the lid and lock it with the two closing knobs. Check that the fiber is not stuck and runs smoothly in the machine by pulling the fiber a little back and forth.

Check that both the drive wheel and follow wheel turns along with the movement of the cable.



Mount the drive adaptor in the battery machine.



Connect the battery machine to the PicoFlow with the mounted drill adaptor. The connection point is the bottom of the two-wheel shafts.



Connect the air supply control unit to the machine and connect the air supply to the air control supply control unit.



The PicoFlow system is now ready to blow fiber.

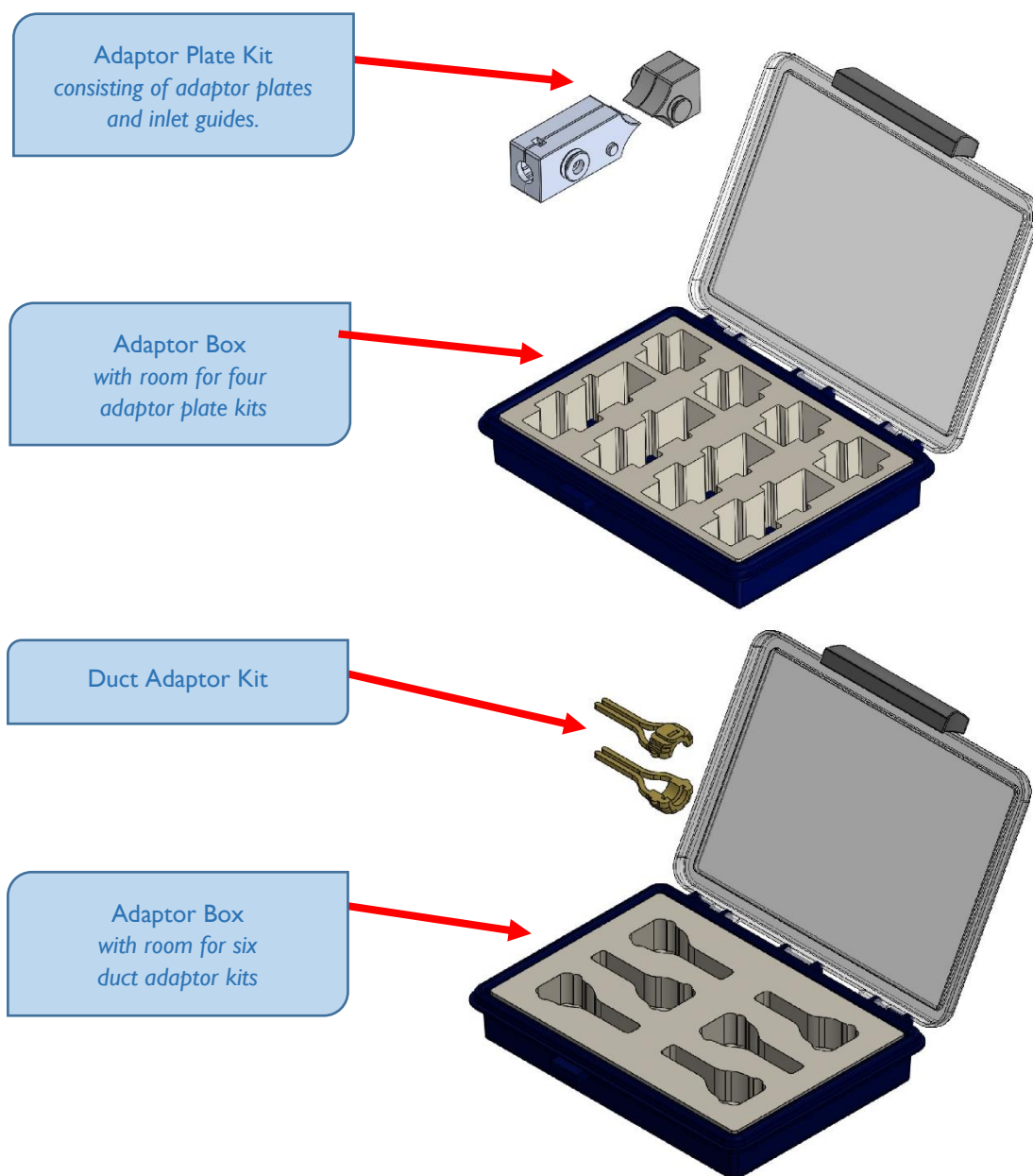
7.2. FIBER PROTECTION

The PicoFlow RAPID does not offer any automated Fiber protection systems. The operator is required to monitor the process and ensure continuous cable movement.

To best ensure that the cable is moving according to the driven wheel, monitor the follower wheel and the cable. The rotational speed of the follower wheel should match that of the driven wheel. The movement of the follower wheel is caused by the movement of the cable. Missing movement of the follower wheel is a key indicator for a non-moving cable.

8. ADAPTOR PLATES AND DUCT ADAPTORS

The adaptor plates and duct adaptors must fit the actual size of the fiber and the duct. Below is an overview of the different adaptor components for the Machine.



Many different sizes of adaptor plates and duct adaptors for many different combinations of fiber and duct.

8.1. Choosing the correct adaptor plates

A rule of thumb is that the adaptor plate must be at least 0.2 mm larger than the fiber.

Example: If the fiber is 1.1 mm, choose a 1.3 mm adaptor plate.

The machine must not be run with an open lid, due to the possibility of getting in contact with moving parts.

8.2. PHOTO GUIDE, CHANGING ADAPTOR SET & INLET SET

Preparation of adaptor kit for correct fiber and duct size



- Choose the correct size of the Adaptor set and Inlet Set to fit the fiber.
- Choose the correct size of duct adaptor for the duct.



- Mount duct adaptors in both adaptor plates.
- Carefully press in the duct adaptors.



- Check that the position of the duct adaptors is correct. They must fit completely towards the bottom of the adaptor plates.
- The adaptor plates are now ready for mounting in the Machine.

Mounting Adaptor Plates



- Check that the wheels are mounted correctly.
- Make sure that machine and wheels are clean and free from grease and dirt.



- The adaptor plates are not identical. One is for the top and one is for the bottom.
- The design of the adaptor plates ensures that it is not possible to mount them the wrong way.
- Like the adaptor plates, the inlet guides are not identical. One is for the top, and one is for the bottom.
- Like the adaptor plates, the inlet guides must be at least 0.2 mm larger than the fiber. Example: If the fiber is 1.1 mm, choose 1.3 mm inlet guides.



- Click the Top adaptor plate and Inlet into position in the lid



- Click the bottom adaptor plate and Inlet into position in the Body.

9. MAINTENANCE

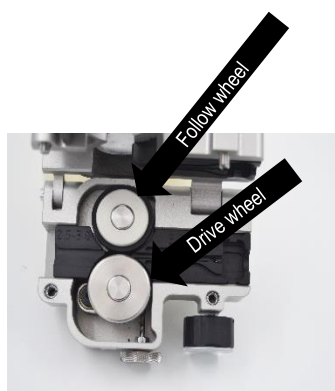
The Machine is designed with low maintenance requirements in mind. Follow these recommendations to prolong the service intervals:
Compressed air must be clean and dry. Use an air filter and water separator.

NB: Humid and polluted air may influence machine life and performance and may result in increased wear.

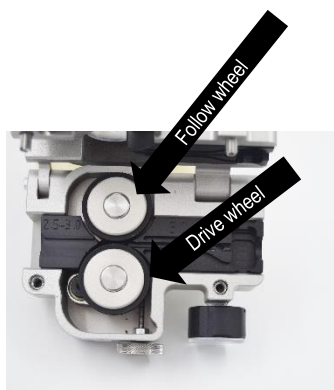
Clean the wheels regularly, at least once a day when the machine is in use. Check duct adaptors and rubber belts on wheels for wear and tear daily.

NB: Failure to maintain and clean the machine may affect machine reliability and performance.

Replace if necessary.



It is easy to remove and mount the wheels, as they are mounted and unmounted without tools



Machine service is required annually or for every 350 km of installed fiber.

The PicoFlow does not have an internal counter for keeping track of installed length, why it's advised to keep track of installed fibers.

NB: To maintain your extended warranty, you must meet the given service requirements.

After service ensure that the guidelines in **12 DISPOSAL OF MACHINE AND PARTS** are followed

10. CLEANING

Cleaning of the machine is important to ensure prolonged use.

Cleaning is best performed with a damp cloth. Clean the machine by wiping away dirt and grease, be sure to clean the space around the follower wheel thoroughly.

Cleaning of the wheels is important and must be done daily. Remove dirt from the surface of the wheel with a hard – noncutting tool and wipe over with a damp cloth.

Before storing the machine after cleaning, ensure that the machine is dry.

11. TROUBLESHOOTING

Follow the troubleshooting guide when problems occur.

Also find training in Fremco's Online Training Academy, by using the QR code on the front of the machine.

Error	Problem	Solution
Cable Not moving	The drive wheel and follower wheel are not in contact with the cable	Tighten the follower wheel, using the handle
	The follower wheel tightened too hard	Release the follower wheel using the handle
	The drive wheel or follower wheel is missing	Insert missing wheel
	Inlet guide or adaptor plate too small	Use the correct adaptor plates
	Cable resistance too high	Increase airflow
Installation fails after a few meters	Too high airflow	Went the duct and restarted the process, adding air slowly in a controlled fashion
	Duct blocked	Remove blockade

12. DISPOSAL OF MACHINE AND PARTS

The machine consists of metal and plastic elements. Ensure that the machine and parts are recycled according to local requirements.

The machine is not produced with any dangerous substances or oils.

Use the proper local waste handling system and be aware of compliance with all local regulations. In case of doubt seek assistance with your local Fremco Reseller



WARNING: Improper disposal of materials may damage the environment

13. ACCESSORIES

We offer a number of accessories for use with the Machine:



Aluminum tripod incl. quick connector

Mount the Machine on the tripod and get a good and stable foundation for fiber blowing. The tripod comes with a quick connector, facilitating the mounting of the Machine. The tripod is easy to move around from job to job.



Fiber stop end kit

To be placed at the end of the fiber so that the fiber can move towards a stop and activate the fiber safety.



Valve for reverse airflow

For the removal of fiber from a duct, use the valve to blow compressed air through the duct so that the fiber can be pulled out.

14. EC DECLARATION OF CONFORMITY

Manufacturer:

Fremco A/S
Ellehammervej 14
DK-9900 Frederikshavn
Denmark

We hereby declare that.

101-231211100 PicoFlow RAPID fiber blowing machine

Is manufactured in conformity with the EC Directives

EC Directives:

2006/42/EC – the Machinery Directive

The directive has the dual aim of harmonizing the health and safety requirements applicable to machinery based on a high level of protection of health and safety while ensuring the free circulation of machinery on the EU market.

International standards:

DS/EN ISO 12100:2011 - Safety of machinery

The standard specifies basic terminology, principles, and a methodology for achieving safety in the design of machinery. It specifies principles of risk assessment and risk reduction to help designers in achieving this objective.

European standards:

DS/EN ISO 4414:2010 - Pneumatic fluid power

ISO 4414:2010 deals with all significant hazards associated with pneumatic fluid power systems and specifies principles to apply in order to avoid those hazards when the systems are put to their intended use.

Technical file responsible:

Kasper Mikkelsen
Research & Development Manager
Ellehammervej 14, DK-9900 Frederikshavn

Attested by:



Kim Lindblad Carlsen
Managing Director
Frederikshavn, 24.01.2024



Kasper Mikkelsen
R&D Manager
Frederikshavn, 24.01.2024

15. UKCA DECLARATION OF CONFORMITY

Manufacturer:

Fremco A/S
Ellehammervej 14
DK-9900 Frederikshavn
Denmark

We hereby declare that.

101-231211100 PicoFlow RAPID fiber blowing machine
from Serial No. 9328.3023

Is manufactured in conformity with.

UK Directives:

2008 No. 1597 – Supply of Machine (safety) Regulations 2008

The purpose of the legislation is to ensure safe machinery is placed on the market or put into service by requiring manufacturers to show how their machinery meets the 'essential health and safety requirements'.

2016 No. 1091 - Electromagnetic Compatibility Regulations 2016

The purpose of the legislation is to ensure safe products are placed on the GB market by requiring manufacturers to show how their products meet the 'essential requirements'.

2016 No. 1101 – Electrical Equipment (Safety) Regulations 2016

International standards:

DS/EN ISO 12100:2011 - Safety of machinery

The standard specifies basic terminology, principles, and a methodology for achieving safety in the design of machinery. It specifies principles of risk assessment and risk reduction to help designers in achieving this objective.

European standards:

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