CT 293 Cyclotec™
User Manual

6007 0581 / Rev. 3

Original English Language Version

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FOSS

All information is liable to change without prior notice. For latest information about documentation updates for your specific instrument, please contact your local FOSS representative.

Rev.	Date of Issue	Revised Material
1	2016-09-20	First Issue.
2	2016-10-31	Update Safety Information.
3	2018-01-08	Correct PN and update.

Table of Contents

1 Safety

1.1 General

This user manual is addressed to laboratory personnel. Please read the manual carefully and act accordingly. For safety reasons personnel not familiar with the safety information and operating instructions must not use the instrument.

The instrument is designed and built in accordance with the state-of-art technology. Nevertheless, risks to users, property, and environment can arise when the instrument is used carelessly or improperly.

The manufacturer has determined residual dangers emanating from the instrument:

- If the instrument is operated by insufficiently trained personnel
- If the instrument is not operated according to its proper use

Appropriate warnings/cautions in this manual serve to make the user alert to these residual dangers.

Safety Symbols

Explanation of safety symbols used in this manual.

Symbol	Description
	General hazard.
	Electrical shock hazard.

Safety Terminology

Explanation of safety terms used in this manual.

Term	Description
Warning	Danger to human safety.
Caution	Danger to product performance/operation.
Note	Important supplementary information.

1.2 Personal Safety

Warning

Electrical hazard. Covers or panels should be removed by certified personnel only.

Caution

Use ear protection when operating the mills.

1.3 Product Safety

Caution

The responsible body shall be made aware that if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Caution

The instrument is designed and tested for European (CE) compliance. To ensure that this compliance is maintained, connect only CE approved equipment.

Caution

The system may only be repaired by personnel certified by FOSS.

FOSS recommends the use of original FOSS spare parts. If spare parts from other are used, the warranty no longer applies.

Warning

This device is equipped with a grounding/earthing type power plug for your protection against electrical shock hazard and should only be attached to a properly grounded/earthed receptacle.

1.4 Disposal Instructions

Do not dispose of this electrical device with unsorted household waste. Improper disposal may be harmful to environment and human health. Please refer to your local waste authority for information on return and collection systems in your area.

1.5 Warranty Policy

Warranty conditions are either specified on the order confirmation of the purchase order together with the invoice, or in the contract with the FOSS representative and only apply if:

- the Customer/User has followed all written instructions and documentation from FOSS regarding the product
- the product has been installed, maintained, adjusted and calibrated according to all descriptions and recommendations in the documentation
- the product has not been used for purposes other than those reasonably contemplated by FOSS
- the product has not been altered or repaired with non-original FOSS parts or by personnel not authorised by FOSS
- only original FOSS consumables and accessories or equivalents recommended by FOSS have been used
- the product has not in any other ways been handled contrary to ordinary practice
- the instrument has been properly maintained, as recommended by FOSS

Your instrument may contain parts that, due to wear during use of the instrument, are expected to have a shorter lifetime than the instrument in general. These parts are listed in the User Manual and/or in the FOSS product software and in the Owner's Guide.

The liability for worn down parts subject to wear is limited to cases with extraordinary wear due to defective material or production errors.

2 Introduction

The FOSS CT 293 Cyclotec Sample laboratory is ideal for rapid and flexible preparation of a wide variety of feeds, grains, leaves ad more for NIR or reference analysis. It is intended for laboratory environments only.

During the grinding operation, samples are rolled against an abrasive grinding ring by an impeller rotating at a high speed around 10000 rpm. The ground product is passed through a screen controlling the maximum particle size and fed into the sample bottle by a cyclone separator.

The rotating impeller creates a high air flow which serves as both transporter and cooling medium. The air stream exits the cyclone body through a diffuser. The remaining dust particles will be collected by a dust pad.

3 Installation

3.1 Unpacking

Use the packing list enclosed with the grinder together with Fig. 3:1 to ensure that no parts are missing. If you have any questions, please contact your FOSS representative.

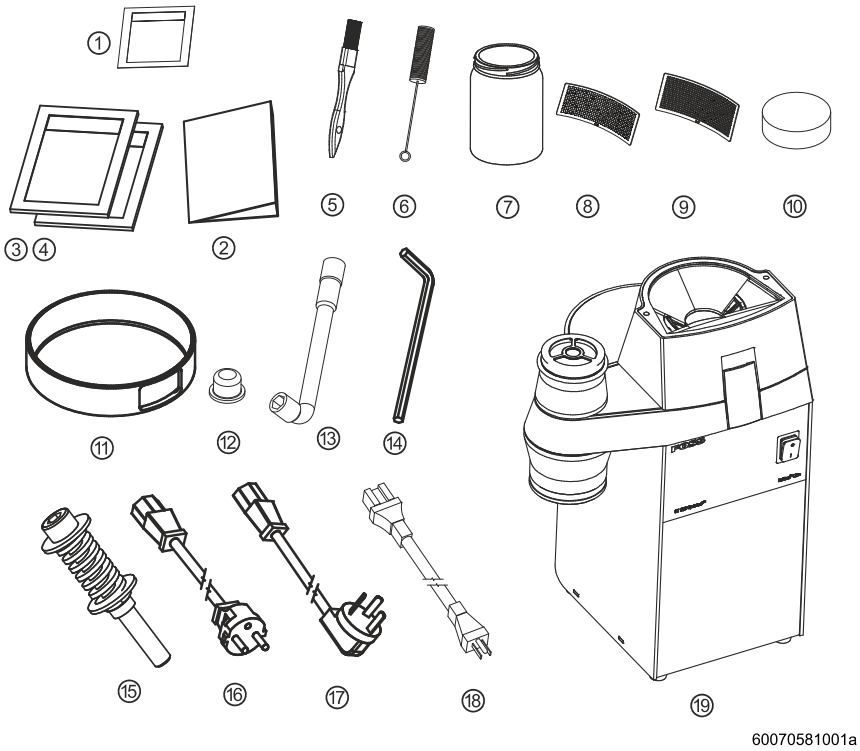

Fig. 3:1 Cyclotec and its accessories

1	Quick Guide (English)	60076375
2	Owner's Guide	60076374
3	User Manual (English)	60070581
4	Spare Parts Manual	60076379
5	Brush	60068476
6	Tube Brush	60063030
7	Glass Sample Bottle 350 ml, 4pcs/pkg	60068548
8	Screen 0.5 mm	60074893
9	Screen 1.0 mm	10001989
10	Dust Pad, 5 pcs	60075491
11	Grinding Ring - Standard, made of Tungsten Carbide	60065489
12	Silicone Plug	60074608
13	L-Type hexagon wrench, 8mm	60074443
14	Allen Wrench, 7mm	60074499
15	Belt Tension Adjust Assembly	60075039
16	European Standard Power Cable, 250V 10A (200-240V Version)	15650026
17	Chinese Standard Power Cable, 250V 10A (200-240V Version)	00500053

18	US Standard Power Cable, 125V 10A (110-120V Version)	60065342
19	Cyclotec	

3.2 Installation

The CT 293 Cyclotec should be positioned on a substantial, non-resonant work surface with a recommended height of 800-900 mm close to suitable power. Space requirements are indicated in the 8.2 Technical Data. Install the cord to an electrical outlet according to Fig. 3:2. Please observe the safety tags on the instrument.

1. Check the voltage and frequency.
2. If the motor is overloaded the overcurrent protection may release. Let cool down for some minutes. Press the thermal fuse shown in Fig. 3:2 to reset.

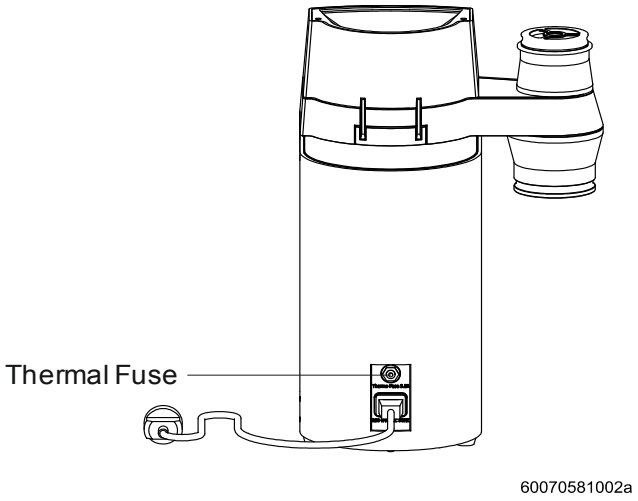

Fig. 3:2

3.3 Assembly

1. Check that the sample inlet bin is correctly positioned on the inlet connection as shown in Fig. 3:3.

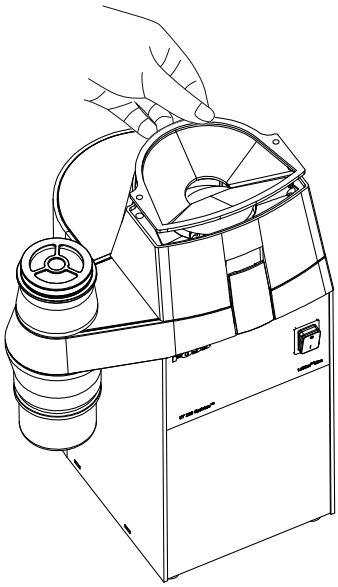

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Fig. 3:3

Note: When taking off the sample inlet. please use thumb to push the inlet towards the back of instrument to release the lock pin. Then remove the sample inlet from the top of instrument. (See Fig. 3:4)

If you feel it is hard to remove the sample inlet, please use two hands. While remove the sample inlet, please keep the inlet horizontal.

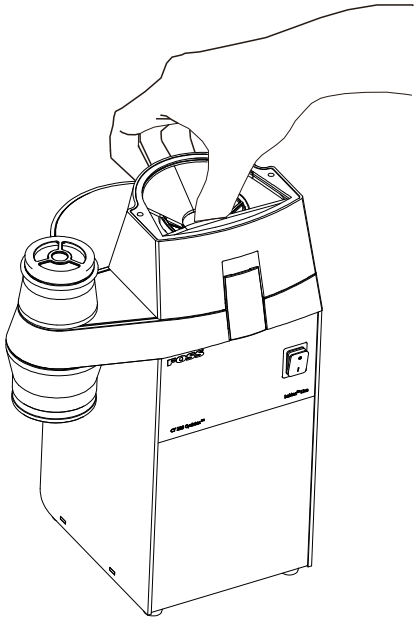

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Fig. 3:4

2. Check the function of sample outlet by assembling one sample bottle. The sample bottle should be tightly fixed.
3. Put a finger on the top of the lock and open it as shown in Fig. 3:5.

Note: When opening the lock, do not put your fingers under the lock to prevent your fingers pinched by the lock.

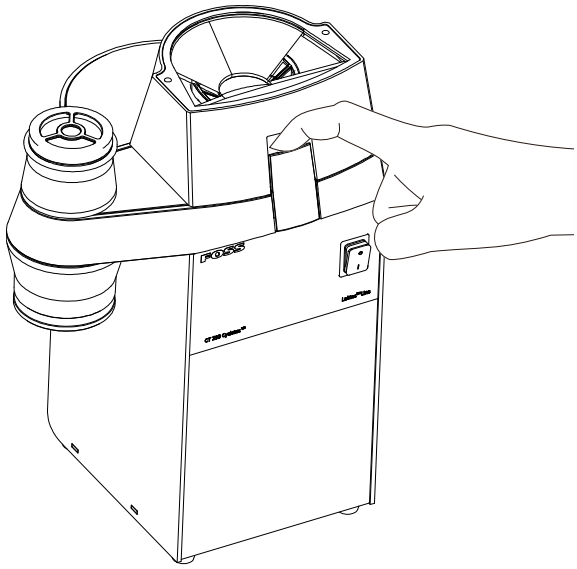

Fig. 3:5

4. Check that the intermediate plate is in the correct position according to Fig. 3:6.

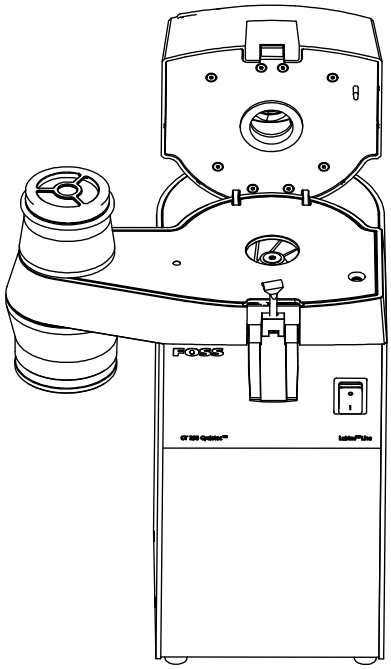

Fig. 3:6

5. To ensure that no dust escapes during use, the dust filter pad should be inserted correctly according to Fig. 3:7.

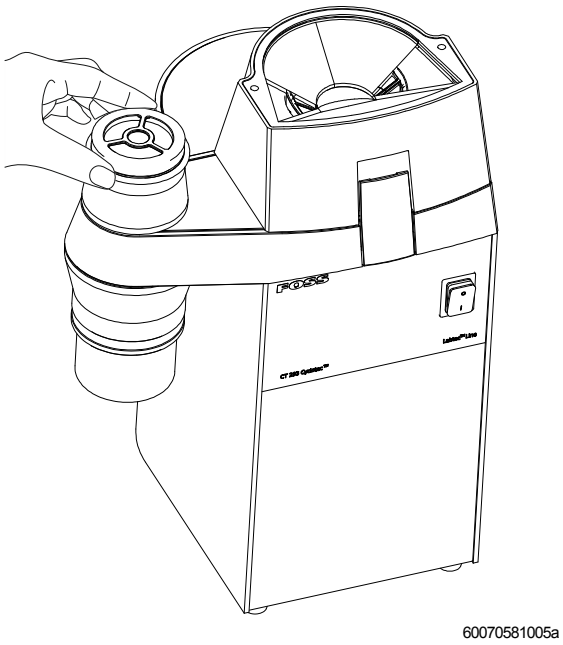

Fig. 3:7

4 Operating Instructions

Note: Ear Protection is required in the operation of CT 293 Cyclotec

4.1 General Information

The grinding is started with the power switch.

Note: The grinding must also be stopped with the power switch.

The dust pad should also be correctly positioned on the top of sample outlet to prevent the dust scattering.

4.2 Operation with Sample Inlet.

1. Fasten the sample bottle below the sample outlet.
2. Start the mill with the on/off switch.
3. Introduce the samples into sample bin. The feed rate can be adjusted manually..

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Fig. 4:1

4. When the cyclone body is clear of the sample, turn off the mill and then remove the bottle.

5. Fasten next sample bottle and repeat previous steps to grinding other samples.

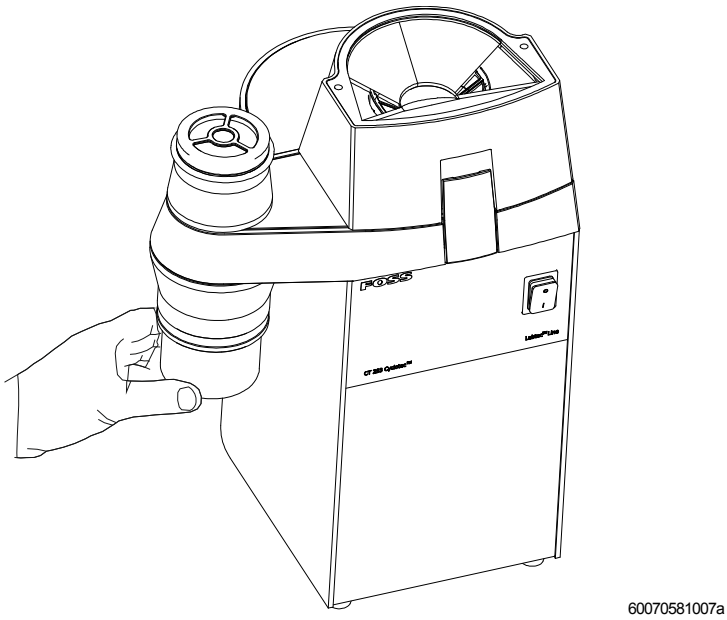

Fig. 4:2

4.3 Operation with Large Inlet

When grinding larger quantities of sample or bulky material, the large inlet is a convenient accessory.

1. Remove the sample inlet.

Note: When taking off the sample inlet. Please use thumb to push the inlet towards the back of instrument to release the lock pin. Then remove the sample inlet from the top of instrument. (See Fig. 3:4)

If you feel it is hard to remove the sample inlet, please use two hands. While remove the sample inlet, please keep the inlet horizontal.

2. Install the large inlet according to Fig. 4:3 and fix it by inserting into the correct position.

Note: When taking off the sample inlet, please remove the sample tray first. Then use thumb to push the large sample inlet towards the back of instrument to release lock pins. After that remove the sample inlet from the top of instrument.

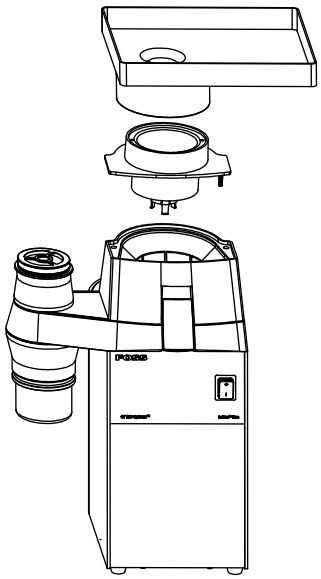

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Fig. 4:3

4.4 Dust Collection Using External Connection

The external connection is used when the sample give rise to more dust than normal, or when the standard dust filter pad fails to collect very fine dust.

To connect the mill to external system, exchange the dust pad for Part Number 60076071 and follow the instructions below:

1. Simply exchange the standard dust pad with the dust collector equipped with an external connection. Connect this to your dust collection system. See Fig. 4:4.

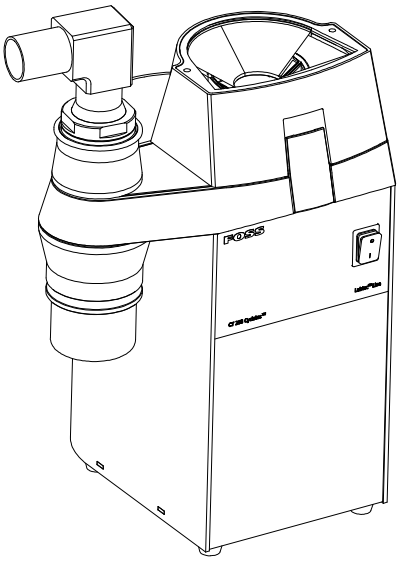


Fig. 4:4

2. To ensure that no dust escapes during use, make sure to press new cover firmly against the grinding chamber.

5 Maintenance

It is essential that your FOSS instrument receives a certain amount of regular maintenance to ensure optimum performance. This in turn ensures quality and consistency of results at the highest level.

To keep the Cyclotec Sample Mill clean, it is recommended to clean the grinding chamber and dust pad every time finish grinding samples. Please use brush to clean the impeller and mild detergent to clean the mill.

5.1 Cleaning of Dust Pad

The dust pad has a high efficiency and needs to be cleaned when the grinding capacity becomes lower. This is done according to Fig. 5:1.

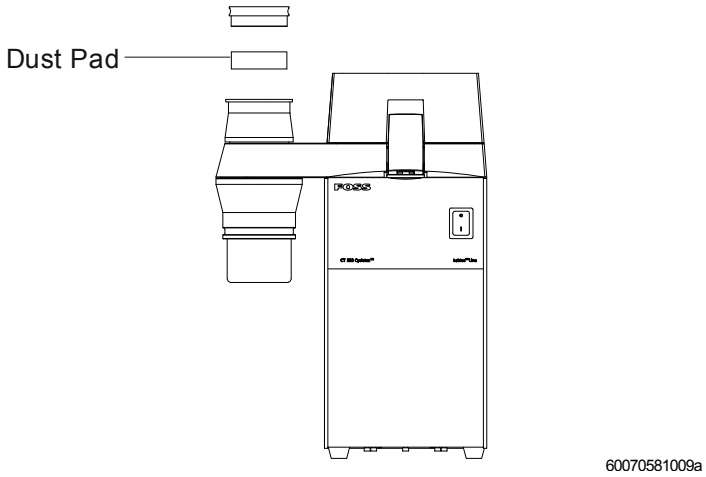
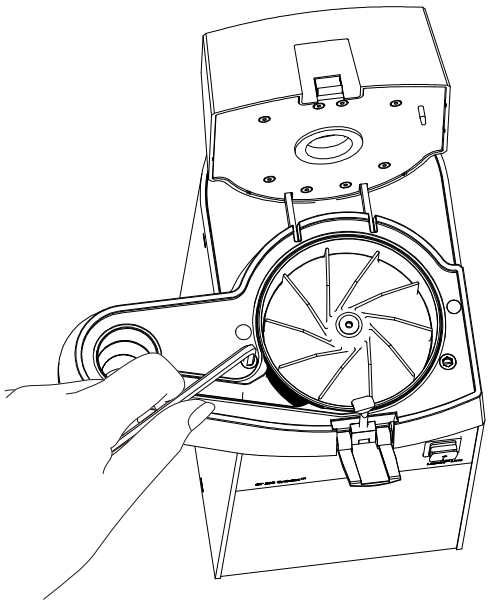


Fig. 5:1

1. Remove the dust pad from the top of the sample outlet.
2. Shake the dust pad to remove the dust.
3. If the dust pad is quite dirty, wash it with cleaning water. Then dry it at 103°C in an oven.
4. Replace in its original place.

5.2 Cleaning and Replacement of Silicone Plug

1. Use the Allen wrench supplied with the Cyclotec Mill to remove the nut.
2. Take out the silicon plug. Clean it or replace a new one.
3. Reconnect the nut.



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5.3 Replacement of Grinding Rings

This grinding ring is a full 360 degree design. No retainer or screw is required in the grinding chamber to keep it in place. This prevents the possibility of ground material becoming lodged behind the retainers and causing problems during grinding.

Care must be taken to place the screen opening correctly. Also be careful not to bend the ring at the screen opening where it has its weakest point. No screen retainer should be used when installing this grinding ring. See Fig. 5:2.

Note: To be sure the position of the ring does not change during the grinding procedure; the ring must be placed in the fixture which means the grinding ring grips against the grinding chamber.

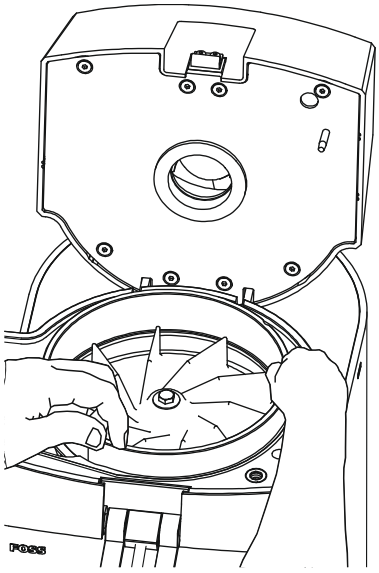

Fig. 5:2

5.4 Replacement of Impeller

Disconnect the apparatus from the mains power before starting dismantling.

1. Open the locker to the sample inlet.
2. Remove the intermediate plate covering the grinding chamber.
3. Remove the grinding ring and sieve.
4. Undo the hexagon screw on the top of impeller (Fig. 5:3).

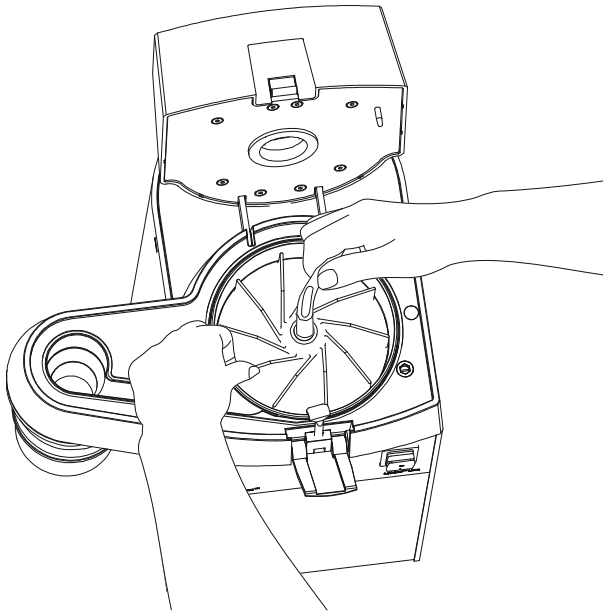

Fig. 5:3

5. Withdraw the impeller. Push the new impeller onto the axle shaft.
6. With a new spring wash in place, turn the hexagon screw to a firm stop position.

6 Troubleshooting

6.1 Diagnostics and Troubleshooting

Fault	Probable Cause	Action
Cannot start instrument	Mains cord disconnected.	Connect mains cord.
	Thermo fuse not activate.	Reset thermo fuse.
	Grinding chamber cover or/and sample inlet chamber are not closed.	Close grinding and sample inlet chambers.
	Motor failure.	Contact the FOSS Service Department.
Instrument stops during the operation	High current.	Reset thermo fuse.
	Impeller stuck or too high sample inlet speed.	Switch off and check if impeller is stuck; reduce sample inlet speed.
	Motor or brake failure.	Contact the FOSS Service Department.
Belt jumps or slips	Spring of tensioning pulley is too loose or broken.	Contact the FOSS Service Department.

7 Parts, Accessories and Consumables

7.1 Accessories/Optional

60068548	Glass bottle 350ml 4pcs/box
60076311	Glass bottle 350 ml 40 pcs/pkg
60074892	Screen 0.3mm
60074893	Screen 0.5mm
60068694	Screen 0.8mm
60074527	Screen 1.0mm
60076050	Screen 2.0mm
60068476	Brush
60063030	Tube brush
60074068	Silicon Plug
60074443	L-Type hexagon wrench, 8mm
60074499	Allen wrench, 7mm
60074824	Large Inlet/Forage Assembly Kit
60076275	Dust Pad 20 pcs/pkg
60074891	Impeller, Nickel-plated for material analysis
60071588	Impeller, Standard
60071781	Grinding Ring for hard sample
60075024	Grinding Ring Heavy Metals
60065489	Grinding Ring - Standard, made of Tungsten Carbide
60076071	Dust Collection for External Connection

7.2 Spare Parts

Please see spare parts manual.

8 Technical Specifications

8.1 Legal Data

The equipment is CE labelled and complies with the following directives:

- ElectroMagnetic Compatibility (EMC) Directive 2014/30/EU
- Low Voltage Directive (LVD) 2014/35/EU
- Machinery Directive (MD) 2006/42/EC
- Packaging and packaging waste Directive 94/62/EC
- WEEE Directive 2012/19/EU
- REACH Directive 1907/2006/EC

8.2 Technical Data

Dimensions (W x D x H)	317 x 307 x 452 mm
Weight	21.2 kg
Mains supply	100-120 VAC 60 Hz 200-240 VAC 50 Hz
Transient overvoltage	Category II
Pollution degree	3
Protection Class	IP20

8.3 Installation Requirement

Voltage	200-240 VAC, 50 Hz 100-120 VAC, 60 Hz
Power Consumption	600 W
Water supply	No
Drain	No
Use	Indoor
Altitude	Up to 2000 m
Temperature	5°C to 40°C
Relative humidity	Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C.