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1 Notes on the Operating Manual

This operating manual is a technical guide on how to operate the device safely and it contains all the information required for the areas specified in the table of contents. This technical documentation is a reference and instruction manual. The individual chapters are complete in themselves.

Familiarity (of the respective target groups defined according to area) with the relevant chapters is a precondition for the safe and appropriate use of the device.

This operating manual does not contain any repair instructions. If faults arise or repairs are necessary, please contact your supplier or get in touch with Retsch GmbH directly.

Application technology information relating to samples to be processed is not included but can be read on the Internet on the respective device’s page at www.retsch.com.

Changes
Subject to technical changes.

Copyright
Disclosure or reproduction of this documentation, use and disclosure of its contents are only permitted with the express permission of Retsch GmbH. Infringements will result in damage compensation liability.
1.1 Explanations of the safety warnings

In this Operating Manual we give you the following safety warnings

**Serious injury** may result from failing to heed these safety warnings. We give you the following warnings and corresponding content.

---

**WARNING**

*Type of danger / personal injury*

*Source of danger*

- Possible consequences if the dangers are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word box in the text or in the instructions on action to be taken:

---

**CAUTION**

*Type of danger / personal injury*

*Source of danger*

- Possible consequences if the dangers are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word box in the text or in the instructions on action to be taken:

---

In the event of possible **property damage** we inform you with the word “Instructions” and the corresponding content.

---

**NOTICE**

*Nature of the property damage*

*Source of property damage*

- Possible consequences if the instructions are not observed.
- **Instructions on how the dangers are to be avoided.**

We also use the following signal word in the text or in the instructions on action to be taken:

---

*NOTICE*

1.2 General safety instructions

**CAUTION**

**Read the Operating Manual**

Non-observance of these operating instructions

- The non-observance of these operating instructions can result in personal injuries.
- Read the operating manual before using the device.
- We use the adjacent symbol to draw attention to the necessity of knowing the contents of this operating manual.

**Target group:** All persons concerned with the machine in any form

This machine is a modern, high performance product from Retsch GmbH and complies with the state of the art. Operational safety is given if the machine is handled for the intended purpose and attention is given to this technical documentation.

You, as the owner/managing operator of the machine, must ensure that the people entrusted with working on the machine:

- have noted and understood all the regulations regarding safety,
- are familiar before starting work with all the operating instructions and specifications for the target group relevant for them,
- have easy access always to the technical documentation for this machine,
- and that new personnel before starting work on the machine are familiarised with the safe handling of the machine and its use for its intended purpose, either by verbal instructions from a competent person and/or by means of this technical documentation.

Improper operation can result in personal injuries and material damage. You are responsible for your own safety and that of your employees. Make sure that no unauthorised person has access to the machine.

**CAUTION**

**Changes to the machine**

- Changes to the machine may lead to personal injury.
- **Do not make any change to the machine and use spare parts and accessories that have been approved by Retsch exclusively.**

**NOTICE**

**Changes to the machine**

- The conformity declared by Retsch with the European Directives will lose its validity.
- You lose all warranty claims.
- **Do not make any change to the machine and use spare parts and accessories that have been approved by Retsch exclusively.**
### 1.3 Repairs

This operating manual does not contain any repair instructions. For your own safety, repairs may only be carried out by Retsch GmbH or an authorized representative or by Retsch service engineers.

**In that case please inform:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Retsch representative in your country</td>
<td></td>
</tr>
<tr>
<td>Your supplier</td>
<td></td>
</tr>
<tr>
<td>Retsch GmbH directly</td>
<td></td>
</tr>
</tbody>
</table>

**Your Service Address:**
2 Confirmation

This operating manual contains essential instructions for operating and maintaining the device which must be strictly observed. It is essential that they be read by the operator and by the qualified staff responsible for the device before the device is commissioned. This operating manual must be available and accessible at the place of use at all times.

The user of the device herewith confirms to the managing operator (owner) that (s)he has received sufficient instructions about the operation and maintenance of the system. The user has received the operating manual, has read and taken note of its contents and consequently has all the information required for safe operation and is sufficiently familiar with the device.

As the owner/managing operator you should for your own protection have your employees confirm that they have received the instructions about the operation of the machine.

I have read and taken note of the contents of all chapters in this operating manual as well as all safety instructions and warnings.

<table>
<thead>
<tr>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname, first name (block letters)</td>
</tr>
<tr>
<td>Position in the company</td>
</tr>
<tr>
<td>Signature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service technician or operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname, first name (block letters)</td>
</tr>
<tr>
<td>Position in the company</td>
</tr>
<tr>
<td>Place, date and signature</td>
</tr>
</tbody>
</table>
3 Transport, scope of delivery, installation

3.1 Packaging

The packaging has been adapted to the mode of transport. It complies with the generally applicable packaging guidelines.

**NOTICE**

**Storage of packaging**

– In the event of a complaint or return, your warranty claims may be endangered if the packaging is inadequate or the machine has not been secured correctly.

• Please keep the packaging for the duration of the warranty period.

3.2 Transport

**NOTICE**

**Transport**

– Mechanical or electronic components may be damaged.

• The machine may not be knocked, shaken or thrown during transport.

**NOTICE**

**Claim**

– In case of any transport damage, you must inform the forwarder and also Retsch GmbH immediately. Claims that are made later, may not be considered.

• Inform the forwarder and Retsch GmbH within 24h.

3.3 Temperature fluctuations and condensed water

**NOTICE**

**Temperature fluctuations**

The machine may be subject to strong temperature fluctuations during transport (e.g. aircraft transport)

– The resultant condensed water may damage electronic components.

• Protect the machine from condensed water.

3.4 Conditions for the place of installation

Ambient temperature: 5 °C to 40 °C
NOTICE

Ambient temperature

- Electronic and mechanical components may be damaged and the performance data alter to an unknown extent.

- Do not exceed or fall below the permitted temperature range of the machine (5 °C to 40 °C / ambient temperature).

3.5 Installation of the machine

Installation height: maximum 2000 m above sea level

3.6 Type plate description

![Type plate description](image)

Fig. 1: Type plate lettering

1. Device designation
2. Year of production
3. Part number
4. Serial number
5. Manufacturer's address
6. CE marking
7. Disposal label
8. Bar code
9. Power version
10. Mains frequency
11. Capacity
12. Amperage
13. Number of fuses
14. Fuse type and fuse strength

In the case of questions please provide the device designation (1) or the part number (3) and the serial number (4) of the device.
3.7 Electrical connection

**WARNING**

When connecting the power cable to the mains supply, use an external fuse that complies with the regulations applicable to the place of installation.

- Please check the type plate for details on the necessary voltage and frequency for the device.
- Make sure the levels agree with the existing mains power supply.
- Use the supplied connection cable to connect the device to the mains power supply.
- Make sure that the voltage and frequency of your mains connection corresponds to that on the type plate of the FT 100 XL.
  - The mains connection must be fused to at least 15A
  - An electrical connection without protective earth PE is not permitted.

3.8 Transport

**WARNING**

Serious personal injury
Falling loads
  - The appliance is very heavy and can therefore cause serious personal injuries if it falls down.
- Lifting above head height is not permissible!

**NOTICE**

Transport safeguard
  - Components may be damaged.
  - Operate the machine only without the transport safeguard or transport the machine only with transport safeguard.

Fig.2: Transport lock
Loosen the screws to release the transport lock before taking the machine out of the pallet.

---

**NOTICE**

**Transport**
- Mechanical or electronic components may be damaged.
- The machine may not be knocked, shaken or thrown during transport.

### 3.9 Installation of the machine

- Place the device on a firm surface.

Please refer to the “Technical Data” chapter for further parameters. The device must be locked before it is put into operation.
4 Technical data

4.1 Use of the machine for the intended purpose

**CAUTION**

RISK OF EXPLOSION OR FIRE
Changing sample properties
- Consider that the properties and therefore also the hazardousness of your sample can change during the flotation process.
- **Do not use any substances in this device which carry the risk of explosion or fire.**

**CAUTION**

RISK OF EXPLOSION OR FIRE
- On account of its design, the device is not suitable for use in hazardous (potentially explosive) atmospheres.
- **Do not operate the device in a hazardous atmosphere.**

**CAUTION**

DANGER OF PERSONAL INJURY
Dangerous nature of the sample
- Depending on the dangerous nature of your sample, take the necessary measures to rule out any danger to persons.
- **Observe the safety guidelines and datasheets of your sample material.**

**Target group:** Operator, All persons concerned with the machine in any form.
**Machine type designation:** FT 100 XL

**NOTICE**

**Area of use of the machine**
- This machine is a laboratory machine designed for 8-hour single-shift operation.
- **This machine may not be used as a production machine nor is it intended for continuous operation.**
4.2 Volume and feed size
0.5 to 5.0 litres depending on the flotation cell. The material should be pre-grind to 300-100μm

4.3 Rated power
0.37 KW
Make sure that the voltage and frequency of your mains connection corresponds to that on the type plate of the device. The mains connection must be fused to at least 15A.

4.4 Motor rotation speed
The speed is adjustable between 200-1200rpm.

4.5 Emissions

![CAUTION]

Possibility of acoustic signals not being heard
Loud flotation noises
- Acoustic alarms and voice communication might not be heard.
• Consider the volume of the flotation noise in relation to other acoustic signals in the work environment. You may wish to use additional visual signals.

4.5.1 Noise levels FT 100 XL:
Noise measurement in accordance with DIN 45635-31-01-KL3
The noise level is largely influenced by the machine speed, the flotation material and the flotation set.
Workplace-related emissions value LpAeq = up to 66dB (A)
Sound power level LWA = 79dB (A)
Measurement conditions:
Sample material: 50g copper ore, particle size 200μm
Sound level meter: Brüel & Kjaer 2237 Controller

4.6 Degree of protection
IP 55

4.7 Protective equipment
The device is equipped with an emergency switch which immediately stops the machine from running.

4.8 Dimensions and weight
Height: 760mm / Width: 600mm / Depth: 650mm
Weight: FT 100 XL net approx. 76kg

4.9 Required floor space
Height: 760mm / Width: 600mm / Depth: 650mm
5 Operating the machine

5.1 Views of the Instrument

5.2 Overview table of the parts of the device

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Emergency Stop-Button (Left side)</td>
<td>After pressing this button, the machine will immediately stop working</td>
</tr>
<tr>
<td>B</td>
<td>Control panel</td>
<td>Device controller</td>
</tr>
<tr>
<td>C</td>
<td>Collecting pan</td>
<td>Collects the material after flotation process</td>
</tr>
<tr>
<td>D</td>
<td>Flotation cell</td>
<td>Chamber for the testing process</td>
</tr>
<tr>
<td>E</td>
<td>Air-pressure switch</td>
<td>Starts / stops airflow</td>
</tr>
<tr>
<td>F</td>
<td>Air-pressure regulation</td>
<td>Regulates the air-pressure</td>
</tr>
<tr>
<td>G</td>
<td>Main switch (Back side)</td>
<td>Button for switching machine to On-/Off</td>
</tr>
</tbody>
</table>
5.3 Operating Elements and Display

Fig. 4: View of the control panel

5.4 Overview Table of the Operating Elements and the Display

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Operating button</td>
<td>Control to operate the device settings</td>
</tr>
<tr>
<td>I</td>
<td>Display</td>
<td>Displays the control functions and parameters</td>
</tr>
</tbody>
</table>
5.5 Inserting the flotation media

1. Place the collecting pan on the platform (K)

![Fig 5: collecting pan](image)

2. Release / attach the rotor (M) and stator (N) to the drive (L)

![Fig 6: Rotor / Stator](image)

The Stator (N) must be attached first and removed as the second part. The rotor (M) can be fixed by locking the drive via fixing a hexagon screw (O) on top of the machine (shown in the picture below).

![Fig 7: Locking the drive](image)
3. Set up the flotation cell

Fig. 8.: Locking the flotation cell

Set up the flotation cell as shown in the picture above and fix it via the lever (P).

5.6 Accessories

The Accessories consists of the flotation cells together with a rotor and the stator.

Fig. 9: Flotation cells with rotor and stator

Please note, that the flotation cells with a volume of 3 to 5 liters will have a bigger stator / rotor.
5.7 Display unit – operation of the device

Choose:
F1: Start - starts the flotation process
F2: Stop – stops the flotation process
F3: Reset – resets the settings and enables the start after pressing the emergency switch
F4: Set – opens the menu to set up the parameters
6 Lubrication, Service and returning for maintenance

![WARNING]

**WARNING**

**Risk of a fatal electric shock**
- An electric shock can cause injuries in the form of burns and cardiac arrhythmia, respiratory arrest or cardiac arrest.
- Do not clean the blender under running water. Use only a cloth dampened with water.
- Disconnect the power supply plug before cleaning the blender.

---

**WARNING**

The device must always be switched off and disconnected from the mains before any interventions for cleaning or servicing purposes.

6.1 Lubrication

Remove the Coverplate (Q) of the FT 100 XL

![Fig. 11: FT 100 XL](image)
Lubrication, Service and returning for maintenance

6.2 Service

The drive of the Flotation Tester FT 100 XL has 1 lubrication point which has to be lubricated regularly every 150 work hours. The drive is located behind the cover (Fig. 11). Only use lithium-based grease (graphite free) e.g. Shell Gadus S2 V220 2 or BP Energrease LS-EP 2.

**WARNING**

Risk of loss of life through electric shock
Strong voltage through capacitor discharge

- Due to capacitor discharge on the frequency inverter, the device conducts voltage for up to 3 minutes after the plug has been pulled out.
- You may come into contact with live contacts when the device is open. An electric shock can lead to burns and arrhythmia or to respiratory failure and heart failure.
- **After removing the mains lead, wait 3 minutes before opening the device.**
6.3 Returning for service and maintenance

Fig. 13: Returned goods dispatch note

RETSCH devices and accessories can only be accepted for repair, maintenance or calibration if the returned goods despatch note has been correctly completed in full.

- When returning a device, attach the returned goods dispatch note to the outside of the packaging.

In order to eliminate any health risk to our employees, we reserve the right to refuse acceptance and to return the respective delivery at the expense of the sender.
7 Disposal

Please observe the respective statutory requirements with respect to disposal. Information on disposal of electrical and electronic machines in the European Community.

Within the European Community the disposal of electrically operated devices is regulated by national provisions that are based on the EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Accordingly, all machines supplied after 13.08.2005 in the business-to-business area to which this product is classified, may no longer be disposed of with municipal or household waste. To document this they have the following label:

Fig. 14: Disposal label

Since the disposal regulations within the EU may differ from country to country we would request you to consult your supplier.
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Certificate of CE-Conformity according to:

**EC Mechanical Engineering Directive 2006/42/EC**

Applied harmonized standards, in particular:
DIN EN ISO 12100  Security of machines

**EC Directive Electromagnetic Compatibility 2014/30/EU**

Applied standards, in particular:
DIN EN 61010  Safety prescriptions concerning measuring-, operating-, controlling- and laboratory equipment

**Authorized person for the compilation of technical documents:**
H. Neumann (technical documentation)

**The following records are held by Retsch GmbH in the form of Technical Documentation:**
Detailed records of engineering development, construction plans, study (analysis) of the measures required for conformity assurance, analysis of the residual risks involved and operating instructions in due form according to the approved regulations for preparation of user information data.

The CE-conformity of the Retsch Flotation Tester Type FT 100 XL is assured herewith.

In case of a modification to the machine not previously agreed with us as well as the use of not licensed spare parts and accessories this certificate will lose its validity.

Retsch GmbH
Haan, December 2015

Holger Neumann