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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

---

**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:

The Retsch representative in your country
Your supplier
Retsch GmbH directly

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.

<table>
<thead>
<tr>
<th>I have read and taken note of the contents of all chapters in this operating manual as well as all safety instructions and warnings.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User</strong></td>
</tr>
<tr>
<td>Surname, first name (block letters)</td>
</tr>
<tr>
<td>Position in the company</td>
</tr>
<tr>
<td>Signature</td>
</tr>
<tr>
<td><strong>Service technician or operator</strong></td>
</tr>
<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

- 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

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 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: Dismounting the transport screws (TS)](image)

**NOTICE**

Transport

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

3.8 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.
Mount the underframe as shown in the picture below.

Fig. 2: Dismounting the transport screws

4 Technical data

4.1 Use of the machine for the intended purpose

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
</table>
| **Risk of explosion or fire**  
Changing sample properties  
– Consider that the properties and therefore also the hazardousness of your sample can change during the grinding 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: IT 100 XL

The IMPACT TESTER is a laboratory test machine, which is suitable to determine the crushability test that was developed by F.C. Bond.

• The Impact Tester consists of two pendulum-mounted hammers, each weighing approximately 30 lb, and mounted to simultaneously strike equal blows on opposite sides of each rock specimen.
• The crushability test is to be performed on ten or more representative pieces of broken stone. Each is to pass a 3-in. square opening and be retained on a 2-in. square opening. More specimens will increase the reliability of the test results.

4.2 Feed size

Max. 76mm
4.3 Emissions

![CAUTION]

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

4.4 Protective equipment

The device is equipped with a manual closing which prevents access to the crushing chamber during the crushing process.

4.5 Dimensions and weight

Height: up to approx. 2150mm / Width: 2000mm / Depth: 500mm
Weight: net approx. 300kg

4.6 Required floor space

Height: 2150mm / Width: 200mm / Depth: 500mm;
A clearance distance of 1000mm is necessary at the front to guarantee space to operate the handle.
5 Operating the machine

5.1 Views of the Instrument

Fig. 4: Front view of the device

5.2 Overview table of the parts of the device

<table>
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<tr>
<th>Element</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Handle</td>
<td>Pull down to move the hammers upwards</td>
</tr>
<tr>
<td>B</td>
<td>Pointer</td>
<td>Shows the current angle on the scale (C)</td>
</tr>
<tr>
<td>C</td>
<td>Scale</td>
<td>Shows in which angle the hammers are positioned</td>
</tr>
<tr>
<td>D</td>
<td>Grinding chamber lid</td>
<td>Lid to secure the grinding chamber during the process</td>
</tr>
<tr>
<td>E</td>
<td>Collecting pan</td>
<td>Collects the material which falls through the grid after crushing</td>
</tr>
<tr>
<td>F</td>
<td>Removable Hammer</td>
<td>Hammer to crush the Material in between (removable)</td>
</tr>
<tr>
<td>G</td>
<td>Platform for the material</td>
<td>Platform for placing the material in between the hammers (modelling clay to fix the material is recommended)</td>
</tr>
<tr>
<td>H</td>
<td>Separation grid</td>
<td>Separation grid, which the material must pass after it is crushed</td>
</tr>
</tbody>
</table>
5.3 Preparing the crushing process

Fig. 5: Close-up of grinding chamber

Place the sample to be crushed on the crushing platform (G). Make sure that the correct size sample is placed on the platform between the two hammers. A piece of modelling clay or similar material makes the mounting of the specimen easier so that it will not fall off without any greater impact. The specimen should be mounted so that its smallest dimension is between the two hammers.

5.4 Adjusting the crushing angle and starting the test procedure

Close the door before starting the crushing process to avoid access to the crushing chamber. After this you can raise the hammers by pulling the rope via the handle. Use a starting angle of 10 deg. and release the rope so that the hammers can perform a to fall free and strike the test sample. Check the specimen for cracking or breaking and note the number of major fragments from the broken specimen.

Fig. 6: Scale

Test: At least 10 specimens preferably 20 specimens to be tested. Each broken stone has to pass a 3-inch square mesh and be retained on a 2-inch square mesh
Determine the specific gravity of a representative sample of the specimens tested
5.5 Increasing the crushing angle

If still whole, check the mounting of the specimen and repeat steps 5.3 and 5.4, increasing hammer release angle by 5 deg. each time until the specimen is broken. Note the last release angle used (fig. 5)

Fig. 8: Scale (15 deg. angle)
5.6 Removing the hammer

NOTE

Reduction of tool service life
Abrasive sample materials
– The presence of abrasive composite materials during grinding can considerably reduce tool service life.
• When grinding electronic scrap, take the properties of the composite materials into account.

Release the locking screws (S) and pull out the hammers (T).
Mount the new hammers by repeating the steps backwards.
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