



Grinder™

User Guide

Engineering Process

About This Guide

Thank you for purchasing the Grinder™, which enables you to create grinding within less than 30 minutes !

- **Chapter 1, Introducing the Grinder Process**, page 7, introduces the Grinder and describes its components and how it works.
- **Chapter 2, Using the Grinder**, page 13, describes how to transform
- **Appendix A, Specifications**, page 24, describes the specifications for the Grinder.
- **Appendix B, Labeling**, page 25, shows the label that appears on the Grinder.

Important Notice

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Date: 05/2013

Document #: 13-10-01

Document Version: 1.0

Device Version: 1.1



Patent Pending No. US61/752,453

CE Representative: Mr. Kfir Atias

2 Devonshire Place W16HG

London, England

Telephone: 08000842417

Table of Contents

| | |
|---|-----------|
| About This Guide | 1 |
| Important Notice | 3 |
| Table of Figures | 5 |
| Documentation Conventions | 5 |
| Safety Information | 6 |
| Chapter 1: Introducing the Grinder Process | 7 |
| ❖ What is the Grinder? | 7 |
| Device Intended Use | 7 |
| ❖ Indications for Use..... | 7 |
| ❖ Contraindications | 7 |
| ❖ Grinder Components | 8 |
| Disposable Chamber | 9 |
| Basic Cleansing Solution and Containers | 10 |
| Hot Plate..... | 10 |
| ❖ How Does the Grinder Work? | 11 |
| Step 1, Using | 11 |
| Step 2, Grinding | 11 |
| Step 3, Others | 12 |
| Chapter 2: Using the Grinder | 13 |
| ❖ Workflow Overview | 13 |
| ❖ Step 1, Preparing | 14 |
| ❖ Step 2, Preparing the Grinder | 14 |
| ❖ Step 3, Placing in the Grinder | 17 |
| ❖ Step 4, Configuring the Grinder | 18 |
| ❖ Step 5, Grinding | 20 |
| ❖ Step 6, Cleansing the Particles | 21 |
| ❖ Step 7, Drying the Particulate..... | 23 |
| Appendix A: Specifications | 24 |
| Appendix B: Labeling | 25 |

Table of Figures

| | |
|---|----|
| Figure 1: Grinder Components | 8 |
| Figure 2: Disposable Chamber | 9 |
| Figure 3: Grinding Blade and Particulate Sieve | 9 |
| Figure 4: Particulate Drawer Compartments | 10 |
| Figure 6: Using the Grinder – Workflow Diagram | 13 |
| Figure 7: Attaching the Chamber | 15 |
| Figure 8: Chamber is Locked | 15 |
| Figure 10: Switching On the Grinder | 16 |
| Figure 11: Power Indicator | 16 |
| Figure 12: Removing the Chamber Cap | 17 |
| Figure 13: Placing in the Grinder | 17 |
| Figure 14: Closing the Chamber Cap | 18 |
| Figure 15: Grinding for 3 Seconds | 19 |
| Figure 16: Sorting for 20 Seconds | 19 |
| Figure 17: Pulling Out the Drawers | 21 |
| Figure 18: Pulling Out the Top Drawer Compartment | 21 |
| Figure 19: Harvesting the Implantable Particles | 22 |
| Figure 20: Hot Plate | 23 |
| Figure 21: Grinder Label | 25 |

Documentation Conventions

NOTE:

Notes provide additional important information.



TIP:

Tips provide shortcuts or special guidance that may enable optimal performance.

WARNING!

Warnings indicate conditions or practices that could result in death or serious injury. It may also describe potential serious adverse reactions and safety hazards.

CAUTION:

Caution indications relate to conditions or practices that are potentially hazardous that may result in minor or moderate injury to the user or damage to the equipment or other property. Caution indications may also be used to indicate practices necessary for effective use of the device.

Safety Information

WARNINGS!

Adhere to the following warnings and safety information for the use of this device:

- The Grinder must only be used with its original parts.
- No modification of the Grinder is permitted.
- The Grinder must only be operated in accordance with the instructions provided in this user guide and for the purpose described in this user guide.
- Keep the Grinder away from heat or open flame.
- To avoid electric shock or device malfunction, liquids must not be allowed to enter the device.
- Do not plug in the Grinder while barefoot or with wet hands.
- Do not use the Grinder in an explosive environment or in the presence of flammable anesthetics or gases.
- Do not use the Grinder in an oxygen-rich environment.
- The Grinder should not be operated when there is any visible physical damage, such as cracks, breaks and so on.

CAUTIONS:

- This device is not defibrillation proof.
 - The device is intended for non-continuous operation.
 - Storage and transportation temperature is between -5°C to +55°C.
 - The Grinder must only be serviced by an authorized representative.
-

1

Introducing the Grinder Process

This chapter introduces the Grinder™ and describes its components and how it works.

❖ What is the Grinder?

The Grinder provides an innovative solution. It enables you to convert extracted into a free particulate ready for transplant within less than 30 minutes.

Device Intended Use

Domain of use :
Widely used in general industrial materials grinding.

Feature :

- Chamber.
- Particulate Drawer
- Operation Panel
- Removable See-through Cap
- Multi-compartment Drawer
- Grinding Blade and Strainer
- Easy to operate.

❖ Indications for Use

- The Grinder is to be used:
 - Have one or more non-essential that are specified to be extracted

❖ Grinder Components

The following lists the contents of the Grinder package

WARNING!

Check the package contents for damage. If any of the contents of the package are damaged, do not use the Grinder and return it to your supplier.

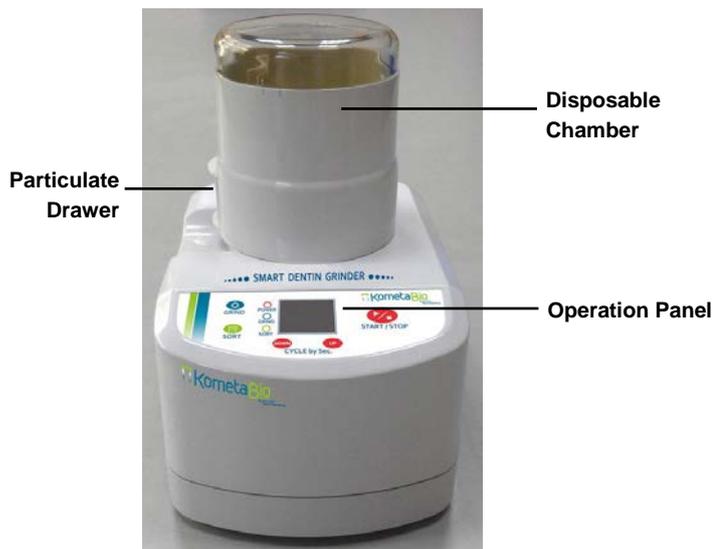


Figure 1: Grinder Components

Each of the components of the Grinder is described below:

- **Disposable Chamber,** page 9
- **Cleansing Solution and Containers,** page 10
- **Hot Plate,** page 10

Disposable C hamber

The Grinder is provided with three disposable chambers, each of which must only be used during a single session. Each chamber is provided , sealed packaging.

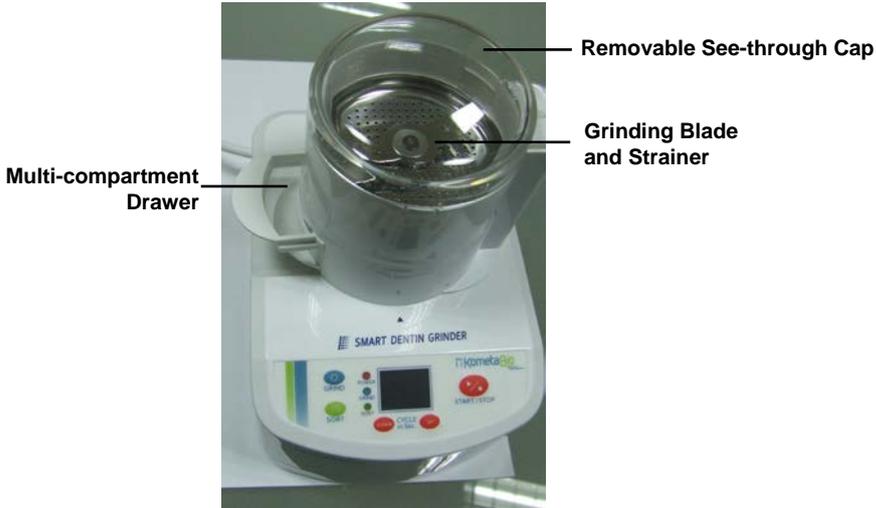


Figure 2: Disposable Chamber

Each disposable chamber has a see-through cap. When the cap is open, you can see the grinding blade and particulate sieve, as shown below:



Figure 3: Grinding Blade and Particulate Sieve

The Particulate Drawer has two compartments (sub-drawers), as shown below:

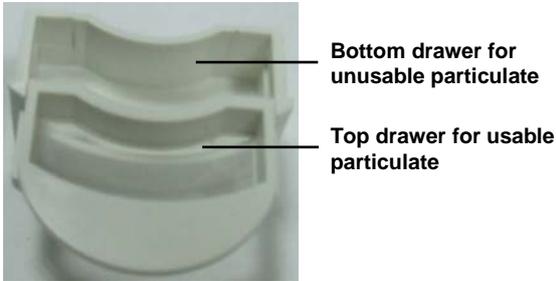


Figure 4: Particulate Drawer Compartments

NOTE:

Contact your local distributor when you need more disposable chambers.

Basic Cleansing Solution and Containers

The Grinder package is provided with a bottle of cleansing solution and three containers to be used during the cleansing process.

Store the cleansing solution at room temperature. Contact your local distributor when you need more cleansing solution or containers.

WARNING!

Do not reuse the same chamber, solution or containers for the same in different sessions. The cleansing solution bottle contains enough solution for a few.

WARNING!

The cleansing solution contains high pH (very basic) Sodium hydroxide in ethanol. Wear eye protection while handling the cleansing solution.

Hot Plate

After the particulate has been rinsed thoroughly with saline and the saline has been decanted leaving wet particulate, you can use the hot plate to dry the particulate. The hot plate can be reused as needed.

❖ How Does the Grinder Work?

The Grinder into particulate, separates the particulate into specific sized particles and then provides a cleansing solution that leaves the particles-free.

The following provides an overview of how the Grinder works. Detailed operation instructions are provided in *Chapter 2, Using the Grinder* on page 13.

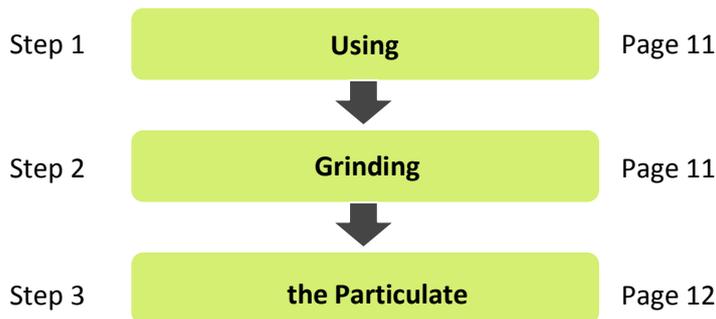


Figure 5: Stages of the Grinder Process

Step 1, Using

Step 2, Grinding

The Grinder is specially designed for grinding into particulate

For implanting (between 300 and 1,200 microns) are automatically stored in the Grinder's top drawer compartment.

Large particles can be reground in order to obtain more particles of the proper size (between 300 and 1,200 microns).

Extremely small particles (below 200 microns) fall into its bottom drawer compartment for disposal. Efficiency is approximately 95%, meaning that typically 95% of the extracted.

The Grinder enables you to configure the grinding time and the sorting time of the particulate.

NOTE:

Grinding speed and vibration intensity are predefined and cannot be changed.

Step 3, The Particulate

The Grinder process provides a special particulate chemical cleanser

2 Using the Grinder

This chapter describes how to transform an extracted and clean particulate.

❖ Workflow Overview

The following describes the workflow for using the Grinder.

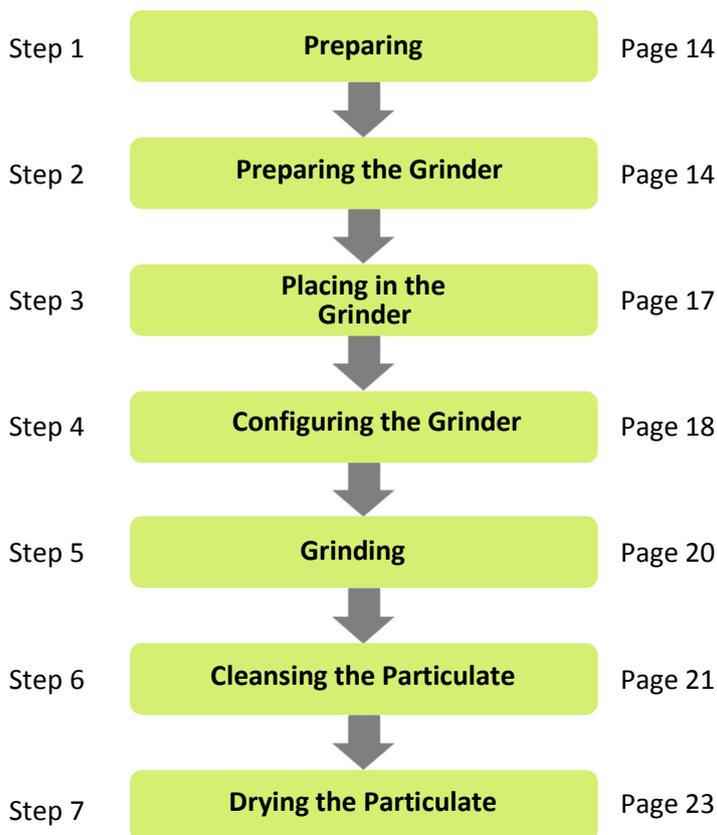


Figure 6: Using the Grinder – Workflow Diagram

❖ Step 1, Preparing

▶ To handle the extracted:

- 1 This should be done during the same treatment session as the grinding, not before.
- 2 Use a tungsten bur to remove all cavities and artificial material , so that only the clean tooth remains.
Artificial material to be removed may include fillings, crowns and any prosthetic materials.
- 3 Remove all surface debris, especially on the root.

❖ Step 2, Preparing the Grinder

This step describes how to prepare the Grinder for a procedure.

CAUTION:

The Grinder vibrates and therefore must be kept on a stable surface away from the table's edges.

CAUTION:

Each chamber comes in packaging. Do not open its packaging before this point.

► **To prepare the Grinder:**

- 1 Place the Grinder on a flat and stable surface or tabletop.
- 2 Plug in the Grinder into a standard electrical outlet.
- 3 Open the chamber's packaging.
- 4 Put the chamber on the top of the Grinder , as shown below:



Figure 7: Attaching the Chamber

- 5 Align the small arrow on the chamber with the one in the center of the grinder, as shown below:



Aligning the Arrows

Figure 8: Aligning the Arrows

- 6 Turn the chamber counterclockwise to lock it in position. When locked, the **LOCK** indicator arrow on the chamber is to the right of the arrow in the center of the grinder.

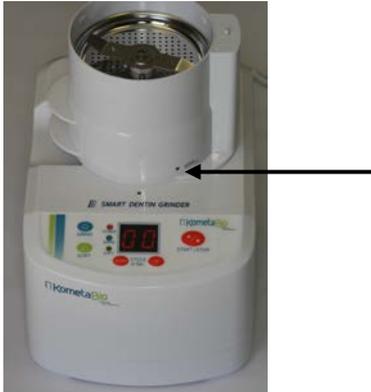


Figure 9: Chamber is Locked

- 7 Switch on the Grinder, as shown below:



Figure 10: Switching On the Grinder

The **POWER** indicator should light up on the operation panel, as shown below:



Figure 11: Power Indicator

❖ Step 3, Placing in the Grinder

► To grind:

- 1 Remove the cap of the disposable chamber, as shown below:



Figure 12: Removing the Chamber Cap

- 2 Place the prepared teeth on the grinding sieve next to the blades, as shown below:



Figure 13: Placing in the Grinder

- 3 Close the chamber cap and twist it counterclockwise so that it clicks into place.



Figure 14: Closing the Chamber Cap

NOTE:

The chamber cap has a safety latch so that the Grinder stops immediately when the cap is open.

❖ Step 4, Configuring the Grinder

The Grinder enables you to configure its grinding time and sorting time .

 **TIP:**

We highly recommend grinding less time as opposed to more time. The reason is that grinding too long produces unusable particulate (particles of less than 200 microns). Therefore, it is much preferable to grind less time and then to repeat the grinding process by pressing the **START** button again.

NOTE:

The Grinder retains the latest configuration that you set (as described below) unless it is powered off.

► **To configure the Grinder:**

- 1 Grinding time refers to the number of seconds that the Grinder spins its blade in order to break down the material into particles.

To configure Grinding Time:

- Press the **GRIND** button. The **GRIND** indicator lights up.
- Press the **UP** and/or the **DOWN** button as many times as needed in order to set the preferred Grinding Time.

We recommend setting grinding time to **3 seconds**, as shown below:



Figure 15: Grinding for 3 Seconds

- 2 Sorting Time refers to the number of seconds that the Grinder vibrates in order to filter the particles through the grinder's sieve and the removable chamber's drawers.

To configure the Sorting time, in seconds:

- Press the **SORT** button. The **SORT** indicator lights up.
- Press the **UP** and/or the **DOWN** button as many times as needed in order to set the preferred Sorting Time.

We recommend setting sorting time to **20 seconds**, as shown below:



Figure 16: Sorting for 20 Seconds

 **TIP:**

To display the currently configured Grinding Time, simply press the **GRIND** button.

To display the currently configured Sorting Time, simply press the **SORT** button.

❖ Step 5, Grinding

▶ To start the Grinder:

- 1 Press the **START** button to start the grinding process. The sorting (vibrating) process starts automatically afterwards.
 - Dentin particles smaller than 1,200 microns fall into the top drawer.
 - The bottom of the top drawer is mesh that allows particles smaller than 200 microns to fall into the bottom drawer. These particles are to be disposed of.
 - This leaves particles of between 300 to 1,200 microns in the top drawer. The resulting particulate dentin in this top drawer may be two to three times the volume of the original root.
- 2 Click the **START** button again to grind for another 3 seconds and to sort for another 20 seconds.
- 3 If large pieces are left in the grinding chamber, then press the **START** button again to grind for another 3 seconds and to sort for another 20 seconds.

If it appear to be ground already, but the particulate has simply not fallen through the grinding sieve holes, then set the Grinding to **0** and then press the **START** button again to only perform the sorting procedure.

❖ Step 6, Cleansing the Particles

► **To cleanse the particles so that they are free:**

- 1 Pull the chamber drawers out of the disposable chamber, as shown below:



Figure 17: Pulling Out the Drawers

- 2 Pull out/apart the top drawer compartment, which contains particles of between 300 – 1,200 microns, as shown below:



Figure 18: Pulling Out the Top Drawer Compartment

- 3 Dump the contents of the top drawer compartment into one of the provided containers.



Figure 19: Harvesting the Implantable Particles

- 4 Pour the provided cleanser into the container with the particulate. Fill approximately half the container. Make sure the cleansing solution covers all the particulate and a bit more.

WARNING!

The cleansing solution contains high pH (very basic) Sodium hydroxide in ethanol. Wear eye protection while handling the cleansing solution.

- 5 Close the container's cap by turning it clockwise. This cleanser dissolves organic material, and leaves the particulate clean and bacteria-free.
- 6 Leave the particulate in the cleansing solution for 12 to 15 minutes at room temperature.
- 7 Gently pour out the cleansing solution without dumping out any of the particulate.
- 8 Pour saline or Phosphate Buffered Saline (PBS) into the container. Fill approximately half the container. Make sure the saline covers all the particulate and a bit more.
- 9 Repeat step 8.
- 10 Gently stick a small piece into the top of the container in order to absorb the remaining saline on top of the particulate.

❖ Step 7, Drying the Particulate

Perform the following if drying is required or if you want to store the particulate for future use.

▶ **To dry the particulate:**

- 1 Plug in the hot plate and turn it on.
- 2 Place the open container holding the wet particulate on the hot plate.
- 3 Leave the container on the hot plate for five minutes.
- 4 Close the cap on the container until you are ready to implant the particulate.

WARNING!

The container is hot. Do not touch it.

- 5 Turn off and unplug the hot plate.



Figure 20: Hot Plate

A Specifications

The Grinder has the specifications described below.

Table 1: Grinder Specifications

| Product name | M.U. | Grinder |
|-----------------------|-------------|----------------|
| Model | - | GR101 |
| Grind Mode | | |
| Operation Time | Sec. | 1~99 |
| Applied Voltage | V AC | 240 |
| Frequency | Hz | 50 |
| No Load Speed | rpm | 16000± 10% |
| Sort Mode | | |
| Operation Time | Sec. | 1~30 |
| Applied Voltage | V DC | 6 |
| No Load Speed | rpm | 10000± 15% |
| Other Features | | |
| Style | - | Tabletop |
| Power Requirements | V AC | 240 |
| Electric current | A | 1 |
| Power consumption | W | 220 (Max.) |
| Machine Dimensions | mm | 170*122*95 |
| Machine Weight | kg | 1.24 |

B Labeling

I. Labeling

This appendix shows the label that appears on the Grinder



Figure 21: Grinder Label

II. Warning signs



Stay away from the shavers



Be careful of the risk of electrical shock



Ear muffle

C Machine noise

DECLARED NOISE EMISSION VALUES in accordance with ISO 4871.

| | Operating |
|--|-----------|
| Declared A-weighted Sound Power Level (dB) | 105 |
| Declared A-Weighted Emission Sound Pressure Level at the operator's position. (dB) | 93 |

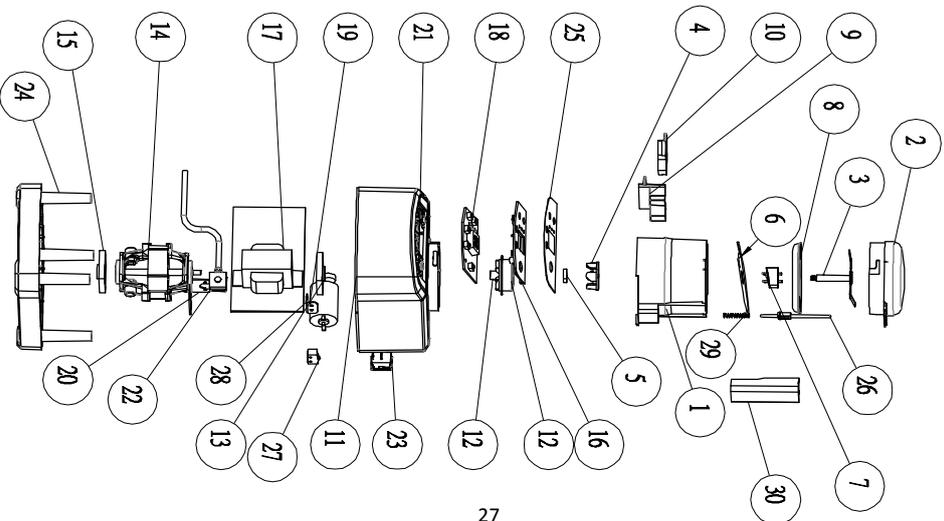
The values are determined according to specific test code ISO 3746.

The figures quoted are emission levels and are not necessarily safe work levels, whilst there is a correlation between emission and the exposure level. This cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of work piece include the duration of noise. (i.e. The number of other adjacent machines).

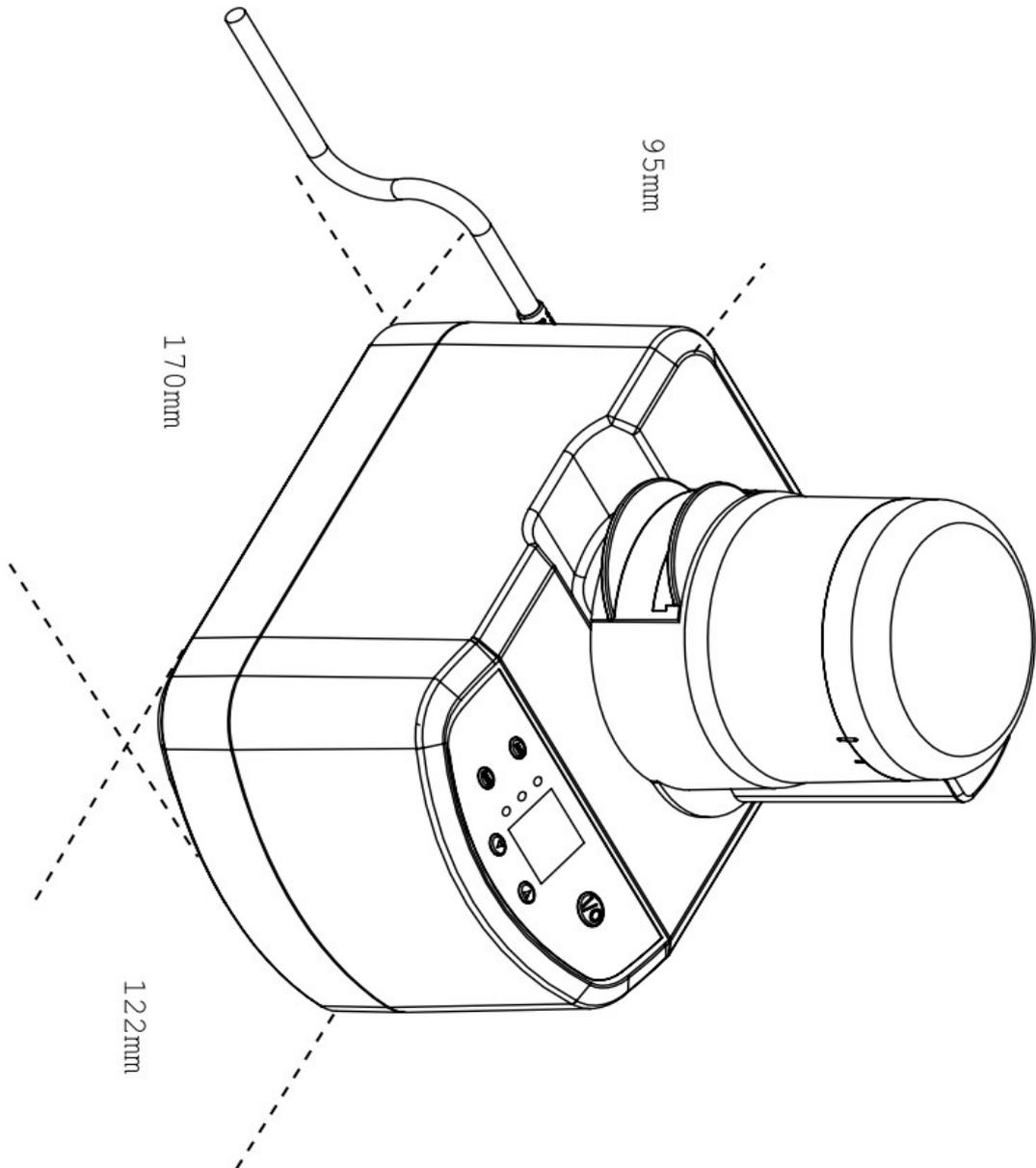
Also, the permissible exposure levels can vary country to country. The information, however, will enable the machine user to make a better evaluation of hazard and the risk.

D Legend of part drawing

| Item | Part Name | Description | Qty |
|------|--------------------------------------|---------------------------|-----|
| 1 | Bowl main body 1129 | ABS+Ball screw+roller pin | 1 |
| 2 | Bowl cover 1129 | PC | 1 |
| 3 | Blade with shaft 1129 | SUS | 1 |
| 4 | Topping swivel 1129 | ABS | 1 |
| 5 | Topping swivel screw nut 1129 | SPCC | 1 |
| 6 | Down iron net 1129 | SUS | 1 |
| 7 | Upper and down iron stator ring 1129 | ABS | 1 |
| 8 | Upper iron net 1212 | ABS | 1 |
| 9 | Main body of bit plate 1129A | ABS | 1 |
| 10 | Bit plate 1129 | ABS+net | 1 |
| 11 | Upper shell 1129 | ABS | 1 |
| 12 | Down swivel seat 1129 | ABS+copper tube | 1 |
| 13 | Damper rubber A1129 | Rubber | 1 |
| 14 | Series breaking tooth motor2 | Rubber | 1 |
| 15 | Damper rubber b1129 | Rubber | 1 |
| 16 | Control panel 1129g | ABS | 1 |
| 17 | Main Base plate 1129 | | 1 |
| 18 | Base plate 1129 | | 1 |
| 19 | Vibration motor 1129 | | 1 |
| 20 | Vibration motor stator 1129 | SUS | 1 |
| 21 | Push Button 1129 | ABS | 1 |
| 22 | Power wire 1129 | | 1 |
| 23 | Switch | | 1 |
| 24 | Down shell 1129 | ABS | 1 |
| 25 | Aluminum plate 1129 | | 1 |
| 26 | Connecting bar | | 1 |
| 27 | Micro switch a | | 1 |
| 28 | Micro switch stator | | 1 |
| 29 | Spring | | 1 |
| 30 | Shell | | 1 |



E Overall drawing





F

Maintenance (every time)

- 1 If necessary, clean the dusts, avoid falling into the machine and affecting the next users.
- 2 Due to one-time disposable cup, the operator must use the new one every time to ensure the grinder functioning properly.



G Trouble shooting

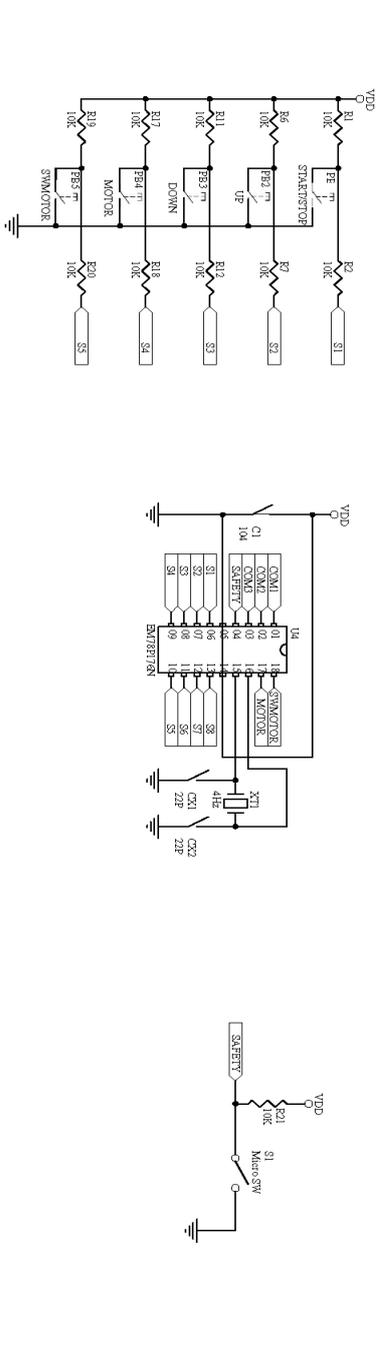
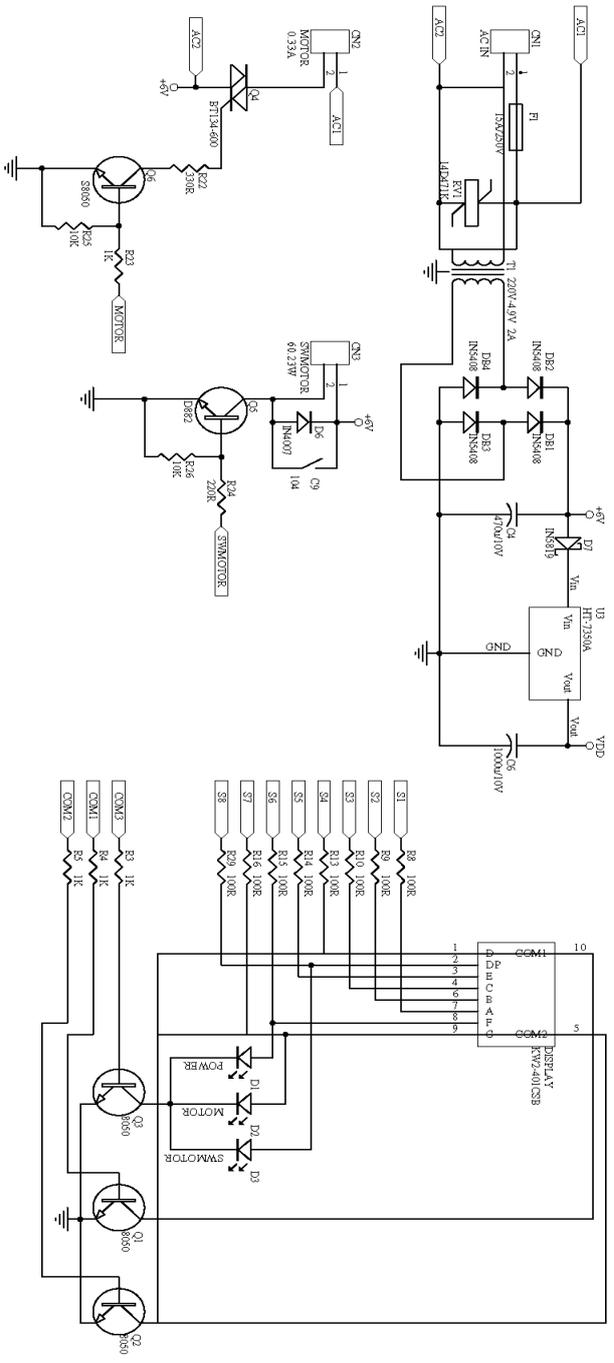
1. Turn on the power switch → If the power indicated LED is not light → Check if the AC power wire plugged in or not
2. Turn on the power switch → If keys have no effect → Check if the cup base or cup lid is tighten indeed or not

H Safety rules for Electric control system

1. Only personnel who are properly trained and have adequate knowledge and skill should undertake all electrical/electronic troubleshooting and repair.
2. Do not alter or bypass protective interlocks.
3. Before starting, read and observe all warning labels.
4. When trouble shooting make sure the power source has been disconnected and main switch has been locked.
5. Take extra precautions in damp areas to protect you from accidental grounding.
6. Before applying power to any equipment it must be established, without a doubt, that all persons are clear.
7. Do not open the electrical control panel unless it is necessary to check the electrical equipment.
8. Do not alter the electrical circuits unless authorized to do so by the manufacturer.
9. When replacing electrical components, make sure they conform to the manufacturer's specifications, including proper colour coding.
10. Do not wear metal frame glasses, metallic necklaces or chains while working on any electrical equipment. Also do not wear any ring, watch or bracelet while operating electrical equipment.

Electrical circuit diagram and part list

AC 220V 50Hz



| Symbol | Item | Maker | Model | specification |
|---------------|-----------------|---------------------|--------------|-----------------------------------|
| PB1~PB5 | switch | SPECTRA | 6*6*5 | 4.9V |
| F1 | Fuse | Walter | FSD(P) | 15A/250V |
| T1 | Transformer | Gang song | GS-122478 | 220V-4.9V 2A |
| Motor | Vibration Motor | Deng Shuenn | DS-AC001 | AC220V/0.33A |
| SW Motor | Series Motor | Johnson electric | HC313MG | Maximum Output Power : 60.23 W |

Contact Information:

Head Office:

3 Maza Street

Holon, Israel

+972-3-6298719

www.kometabio.com

info@kometabio.com

 **KometaBio**
Engineering