

ORTHONIA |

111-ED-040

■ User Manual



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*Thank you for purchasing our product.
Please read the user manual and use the product according
to the instructions.*

Use the product after fully recharging the batteries.



1. PRODUCT FEATURES


The ORTHONIA is an electronic, rechargeable battery powered torque driver used either to install or remove medical screws. It is used together with a screwdriver shaft which can be inserted in the driver holder.

ORTHONIA has the following features:

- An LCD panel for easier operation and for checking modes.
- Five torque levels ranging from 10N-cm ~ 30N-cm in every 5N-cm unit.
- Power saving function by automatic power off.
- Easily detachable and reusable driver holder that should be sterilized according to standard sterilization instructions.

2. PRODUCT SPECIFICATIONS

Type of protection against electric shock:

- Class II device (Charger)
- Internally powered device (Motor handpiece)
- Medical device in strict compliance with IEC/EN 60601-1-2:2006 EMC(Electro Magnetic Compatibility)
- Type BF applied parts. 

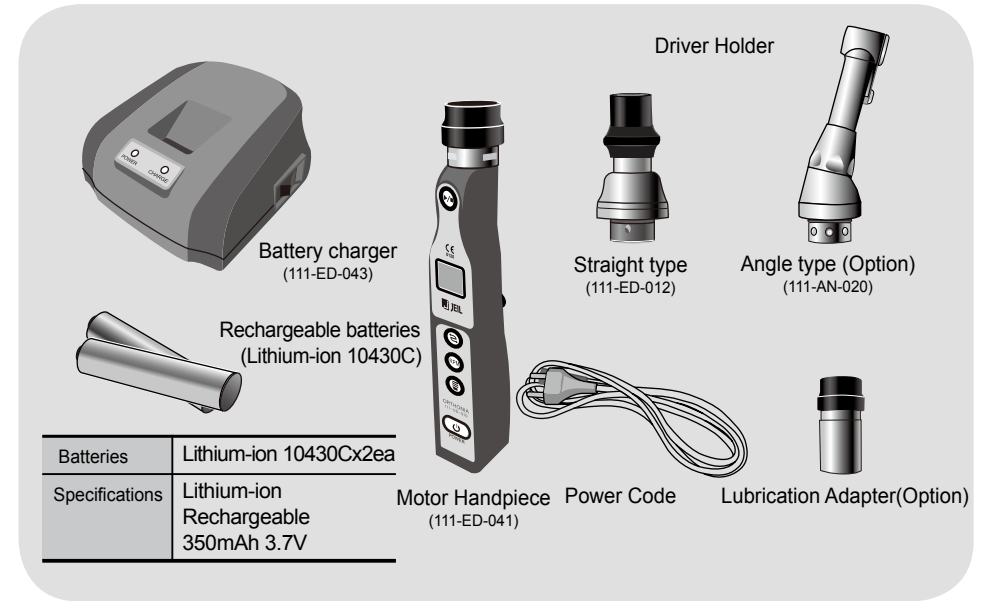
① Motor handpiece

Rated voltage	DC 3.7V
Power consumption	1.85VA
Weight	100g

② Battery charger

Rated voltage	AC 100-240V~, 50/60Hz
Power consumption	1.7W
Output	DC 4.2V ---0.3A
Charging time	90 minutes approximately
Weight	200g

3. PRODUCT COMPONENTS



4. SAFETY PRECAUTIONS

When using the product:

- To avoid any accidents when using this product, the user must be fully attentive for the safety of both the user and the patient.
- Only qualified medical specialists with the necessary medical and technical licenses are allowed to use the product.
- Check the battery level before use. Use the product after fully recharging the batteries.
- For the safety use, please confirm the assembly status between Motor Handpiece and Driver Holder(Angle type and Straight type) before using.
- The Driver Holder(Straight Type, Angle Type) has to be assembled with Motor Handpiece before using with Driver Shaft or Drills.
- Before starting any treatment on a patient, always test this product first by rotating it to check the product is operating smoothly.
- If any abnormality is detected in the product during use such as vibration, noise, overheating, rotation problems, etc., stop using the product immediately and contact the distributor.
- Only the screwdriver shaft made by the manufacturer (Jeil Medical Corporation) must be used with this product. Care must be taken and the screwdriver shaft must be cleaned and sterilized before use. (A dirty screwdriver shaft could infect patients with germs. A motor stall could also occur due to dust or impurities.)
- Compatible driver shaft information(113-MJ-103, 113-JB-101, 113-MD-101, 113-GD-101)
- The product must be switched off while the screwdriver shaft is being replaced. An accident could occur if the screwdriver shaft is replaced while the product is still on.

Precautions during battery recharging:

- Be conscious of the correct direction when inserting the Motor Handpiece into the battery charger. Do not use too much force when the Motor Handpiece is inserted into the battery charger in the wrong direction. (The user must make sure that electric terminals both of Motor Handpiece and battery charger are in contact. There should also be no impurities which can prevent the contact.)
- Rust could be created on the battery poles. Make sure that no liquid comes in contact with the exterior of the Motor Handpiece.
- Do not touch the power cord of the battery charger with wet hands to avoid electric shock.

Precautions during maintenance:

- Do not disassemble or modify the product at your own discretion. Only qualified engineers of the manufacturer can repair or modify the product.
- The Motor Handpiece and the battery charger should not be dropped or given an excessive shock of any kind.
- Having a short circuit may cause fire or electric shock, and also corrosion may cause malfunction. Therefore the Motor Handpiece and the battery charger must not be dropped either into water or any kind of liquid.
- The Motor Handpiece must not be sterilized by high pressure steam sterilization such as autoclave.
- Please sterilize the product by recommended sterilization method. Incorrect sterilization method will be a reason of a device trouble.
- If you do not keep the manufacturer's recommended maintenance methods (Sterilization method, Cleaning method, Oiling method), the products have a bad effect for the life.

Precautions during storage:

- Keep the product away from direct sunlight, high temperature, flammable liquids or gases.
- Do not use the battery charger when the temperature is below 0℃ or above 45℃. Recharge the batteries in the well-ventilated and even location with the temperature range from 20~25 ℃.

Precautions for battery maintenance:

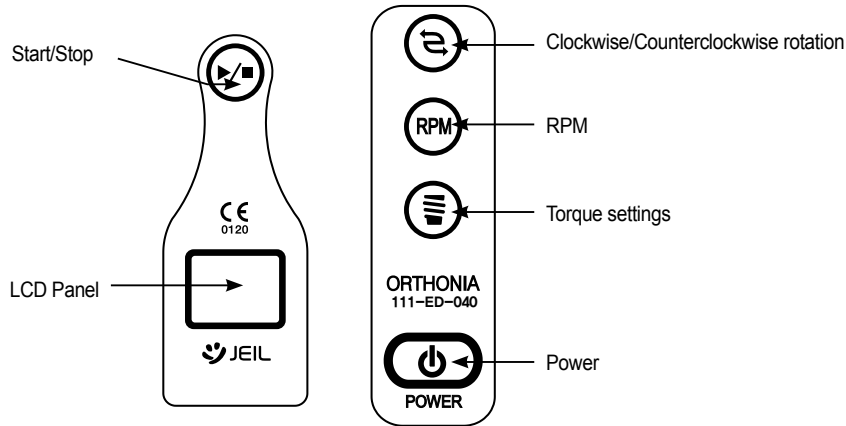
- Use only the rechargeable batteries that have been provided. Do not use manganese or alkaline batteries.
- Using unauthorized kinds of batteries might result in explosion or liquid leak. When your eyes are contaminated with liquid from the batteries, wash thoroughly with clean water and consult a doctor.
- Use only the battery charger approved by the manufacturer and read the user manual of the battery manufacturer carefully before using it.
- Liquid leak from the batteries might result in damage to the battery charger. Therefore store the batteries and the battery charger separately especially when they are not in use for a long period of time.
If liquid from the batteries causes discoloration or any superficial damage, stop using the products and contact distributor.
- Batteries are explosive. Batteries should be inserted correctly in accordance with polarities (+), (-).
- A small rise in the temperature of the batteries is normal during use or recharging.
- Rust on the polarities of batteries causes malfunction and therefore batteries must not be handled with wet hands.
- Batteries must be handled with care because could explode if they are disassembled, damaged, given excessive shock, excessive heat, submerged under water, punctured with sharp objects etc.

Precautions for electromagnetic waves:

This equipment has been tested and confirmed to comply with the limits for medical devices in IEC/EN 60601-1-2:2006. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment may radiate radio frequency energy if not installed or used in accordance with the instructions, which may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipments.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
- Consult the distributor or the manufacturer for help.

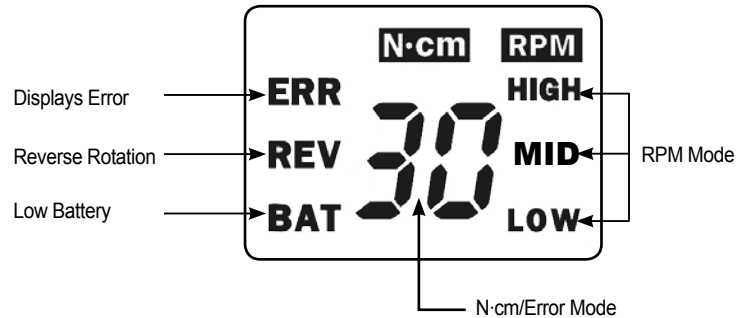
5. INTERFACE PANEL



Name	Function																		
Start/Stop button	This is used to turn the motor on or off. Two operation modes are possible: (1) General: The motor repeats start/stop whenever the button is pushed. (2) Temporary: If this button is being pushed down for more than 3 seconds, the motor rotates during that time. When this button is released, the motor stops.																		
LCD panel	This is designed to monitor the current operation status. LCD indicate real-time torque																		
Rotation direction button	This is used to change the direction of rotation. The direction changes when every time this button is pressed.																		
RPM settings button	This is used to choose proper RPM level. Three levels are possible:																		
	<table border="1"> <thead> <tr> <th rowspan="2">Straight Type</th> <th>Level</th> <th>LOW</th> <th>MID</th> <th>HIGH</th> <th rowspan="2">Angle Type</th> <th>Level</th> <th>LOW</th> <th>MID</th> <th>HIGH</th> </tr> <tr> <th>RPM</th> <td>30</td> <td>40</td> <td>50</td> <th>RPM</th> <td>27</td> <td>36</td> <td>45</td> </tr> </thead> </table>	Straight Type	Level	LOW	MID	HIGH	Angle Type	Level	LOW	MID	HIGH	RPM	30	40	50	RPM	27	36	45
Straight Type	Level		LOW	MID	HIGH	Angle Type		Level	LOW	MID	HIGH								
	RPM	30	40	50	RPM		27	36	45										
Torque settings button	This button is used to set up a torque limit value available from 10N-cm to 30N-cm. The torque limit value is adjusted in 5N-cm increase. If the load exceeds the settled torque limit value while rotating, the motor stops and an error message "OL" is displayed on LCD panel for 0.5 second. Choosing one of these torque limit values is allowed in clockwise rotation. A single fixed 30N-cm is allowed to use in counter clockwise rotation.																		
Power setting button	This is used to switch the product on or off. Push for more than one second to turn the product on or off.																		

* It is not possible to use any other buttons except for Start/Stop button while the motor is rotating.

■ LCD specifications



Display	Function
ERR	When an error occurs, this lights up and the corresponding error mode is displayed.
REV	Lights up in reverse rotation
BAT	Lights up when battery is discharged at lower than a certain voltage
RPM	A selected RPM level lights up among LOW/HIGH
N·cm/Error Mode	Displays a selected torque value and also an error mode if an error occurs

6. HOW TO USE

Points to check before using:

- ① Make sure that there are no abnormalities on the exterior of the product.
- ② Check the main body (motor handpiece) is charged or not.
- ③ Check the driver holder has been sterilized.

The sterilization methods and conditions suggested by the manufacturer are as follows;

- Sterilization method: Autoclave
 - Sterilization conditions: 132 ℃, 15 minutes
 - Driver Holder's maximum sterilization time: 100 times
- ④ The Drive Holder(Angle type) was packed with lubricant to maintain a good condition during storage. So before using at first time, please wash and sterilize it

How to use and operation sequence 1-1:

- ① Insert the sterilized driver holder into the Motor Handpiece. (Refer to "How to attach/detach driver holder")
- ② Insert the sterilized screwdriver shaft, considering purpose of use.
- ③ Push [POWER] button for more than one second to power on.
- ④ Push [RPM] button repeatedly to choose desired RPM level.
- ⑤ Push[Torque] to set up torque limit value. A pushing button increase the torque limit value by 5Ncm (It is only available in clockwise rotation. But torque is fixed at 30Ncm in counter clockwise rotation.)
- ⑥ To change the direction of the rotation, push the [Clockwise/counter clockwise rotation].
- ⑦ Push [START/STOP] button for start or stop.
- ⑧ Choose either the "General" or the "Temporary" operation mode as described in the chapter 5. Interface panel, depending on which mode is convenient for you.

After using the product (operation sequence 1-2):

⑨ After using the product, push [POWER] button for more than one second to switch it "OFF"

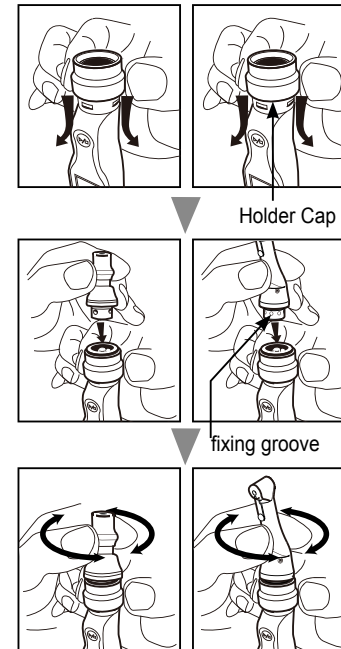
[Cautions]

- Please recharge the batteries fully before using the product. If "BAT" lights up while the motor is rotating, this means that the battery voltage is below 2.6 volts. The battery should be recharged.
- If the product is used for more than 20 times without charging the battery, the product might not perform at its best. Battery recharging is recommended.
- After operation, please washing and oiling for your Driver Holder(Angle type).
- After oiling, please sterilize the washed Driver Holder(Angle type) in the autoclave for 15 minutes at the temperature of 132 ℃, which are recommended sterilization condition. And then store the product in a dry location at room temperature.

⑩ Other functions

- **Power saving mode:** If there is no operation for one minute after switching the product on, the power is automatically switched off. Also if there is no operation for 10 minutes after using any button except for [POWER] button, the LCD is automatically turned off and it goes into power saving mode. However, if it is in error mode, it does not go into power saving mode.
- **Memory function:** Even if it is switched off, the current direction of rotation, RPM, and the torque value are not lost. The last set values reappear after switching on. However, if the batteries are removed, the current values are lost.
- **Safety function:** The motor handpiece is equipped with a temperature detection sensor. If the temperature of the sensor goes above 50 ℃ because of the rise in the temperature of the batteries, an error message "E1" flickers every 0.5 second on the LCD. Then the motor comes to a halt automatically. If the motor handpiece is stopped and the temperature goes down, the error mode automatically disappears.

⑪ How to detach the Driver Holder(Straight/Angle type)



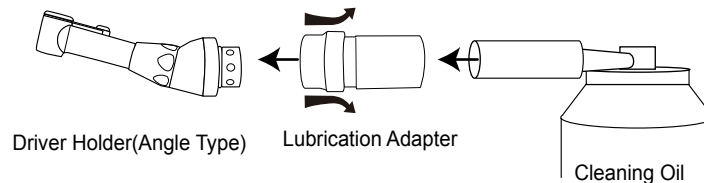
- Keeping the holder cap pressed to down in the direction of the arrow
- Fit the groove of Driver Holder(Angle type) to the ball that inside of the Motor Handpiece with demanded direction, and put Driver Holder(Angle type) into Motor Handpiece.
- Rotating the pushed Driver Holder(Angle type) brings back the holder cap to its original position and the attachment is complete. Please confirm the assembling status for safety use.
- In order to detach the Driver Holder(Angle type) after use, keep the holder cap pushed down and then detach the Driver Holder.

How to store and maintain :

- ① Detach the Driver Holder from the Motor Handpiece after use.
- ② If the exterior of Motor Handpiece and the Driver Holder are smudged, use gauze dipped in sterilizing alcohol to wipe the surface.
- ③ A Driver Holder(Angle type) should be cleaning by oil spray for hadpiece.
- ④ Wash driver holder and then sterilize the washed Driver Holder in the autoclave for 15 minutes at the temperature of 132℃, which are recommended sterilization conditions.
- ⑤ After use, store the product in a dry location at room temperature, and avoid direct sunlight.
- ⑥ Before using, please spread the lubrication oil into the Driver Holder(Angle type).
- ⑦ Dispose of the expired batteries in accordance with state regulations.

Recommend Oiling Term:

- Before sterilization
- After using for regular time (About 30 Minutes)

Cleaning & Oiling lubrication Method:**How to store and maintain:**

1. Before the oiling, please separate the Motor Handpiece and Driver Holder(Angle type).
2. Connect the oiling adapter and washing spray for handpiece
3. Connect the oiling adapter to the Driver Holder(Angle type).
4. Spread the washing spray for cleaning and oiling.
5. When you spread the washing spray, a Driver Holder(Angle type) may separate because of high pressure occurs. So please make sure to grasp the Driver Holder(Angle type) firmly during the lubricating.
6. Spread the washing spray in the Driver Holder(Angle type) until you can find clean oil without the pollutant.
7. Wipe the Driver Holder(Angle type)'s outside with alcohol.
8. Connect the Motor Handpiece and then check the working.

⚠ Caution

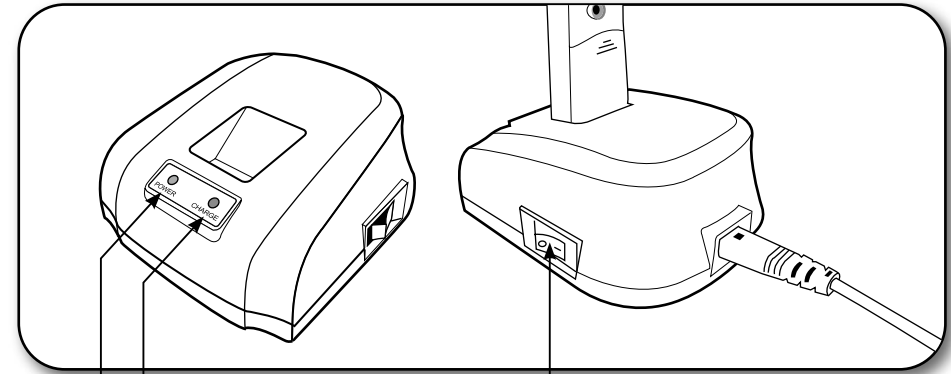
- The sterilization conditions recommended by manufacturer are to be strictly followed. The Motor Handpiece must not be sterilized under the high-temperature autoclave conditions. Benzene or thinner must not be used to clean the exterior of the motor handpiece.

7. HOW TO RECHARGE BATTERY

- ① Connect the power cord jack to the inlet at the back of the battery charger and insert the plug into 220V wall socket.
- ② Switch on the power button on the right side of the battery charger. Check if the power lamp turns green or not.
- ③ Check if the power of the motor handpiece is "OFF." Then, detach the driver holder and insert the motor handpiece into the battery charger as the LCD faces the front.
- ④ Recharging commences when the motor handpiece is correctly inserted into the battery charger. During recharging, the recharge lamp is in orange color. When recharging is completed, it turns green.
- ⑤ After recharging is completed, detach the motor handpiece and turn the charger off.

Caution

- When the [POWER] button is switched on, if the POWER and CHARGE lamps are off, check the power cord. Then switch off the [POWER] button and then switch on again. If the problem persists, contact the distributor.
- Use AC 220V plug and provided battery charger to ensure safety during use. Also, do not use the battery charger to recharge other unauthorized kinds of device.
- The optimal recharging time is 90 minutes. However, this is subject to the existing condition of the batteries and the ambient temperature.



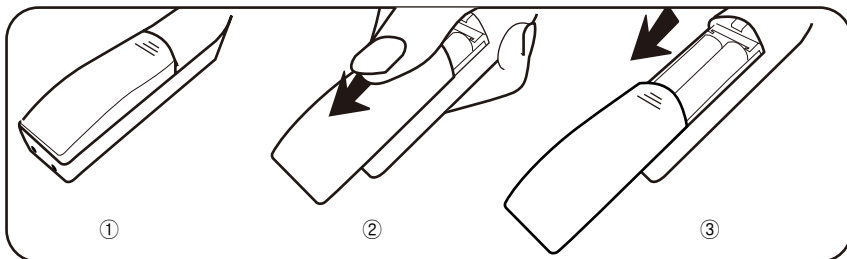
Power Lamp Recharge Lamp

Power switch

8. BATTERY REPLACEMENT & MAINTENANCE

- The batteries are rechargeable up to about 200 times, depending on the conditions of use. If the speed of rotation decreases during use even after full recharging, it is quite likely that the lifespan of the batteries has expired and they should be replaced. To purchase new batteries, either contact the distributor or manufacturer. Follow the precautionary measures while using the batteries. The manufacturer will not be held responsible for any breakdown or malfunction caused by the negligence on the part of the user.
- Recommended battery type by the manufacturer: Ni-MH Rechargeable 1000mAH 1.2V

How to replace batteries:



- Push in the direction of the arrow to open the battery cover.
- While replacing batteries, batteries must be inserted according to the correct polarities.

9. ERROR MODE & SOLUTION

Error Mode	Faulty condition	Cause	Solution
E1	When the motor stops, "E1" flickers at an interval of 0.5 second	<ul style="list-style-type: none"> ■ The temperature of the product could be above 50 °C due to the temperature of the batteries ■ A short circuit or loose contact in the PCB inside. 	<ul style="list-style-type: none"> ■ After stopping the operation, if the temperature comes back to normal, it can be reused ■ Contact the distributor
E2	"E2" flickers at an interval of 0.5 second	Bad motor connection	Contact the distributor
OL	When the motor stops, the "OL" is displayed for 0.5 second and disappears	Torque limit is exceeded	Select the torque limit suitable for user

10. REPAIR & EXCHANGE

The warranty period of this product is one year. Free repair service is provided for any malfunction that occurs during the warranty period and user will be provided with replacement products by the distributor or the manufacturer to make sure that there is no inconvenience caused. If any malfunction that occurs after the warranty period expires, the user can avail of the replacement products in a similar manner as above, however, extra expenses will be incurred for repair and replace of parts.

PRODUCT INFORMATION

Device name	Battery powered dental handpiece
Model	111-ED-040
Type of protection and extent from electric shock	Battery powered, BF type
Rated voltage	Motor handpiece (main body): DC 3.7V Charger: AC 100~240V, 50/60Hz
Power consumption	Motor handpiece (main body): 1.85VA Charger: 1.7W
Recharging time	90 minutes
Torque	10/15/20/25/30 N·Cm(5N·Cm step)
Power saving function	If there is no operation for one minute after switching the product on, the power is automatically switched off. Also if there is no operation for 10 minutes after using any button except for [POWER] button, the LCD is automatically turned off and it goes into power saving mode.
Memory function	Even if it is switched off, the current direction of rotation, RPM, and the torque value are not lost. The last set values reappear after switching on. However, if the batteries are removed, the current values are lost.
RPM (Low , Mid, High)	Straight Type: 30/40/50 RPM Angle Type: 13/18 RPM

Use	This device is a small, battery-powered, low speed electric motor handpiece and is intended for use in dental where low speed is required like insertion of screw etc.
Packaging unit	SET
Storage	To be stored in a dry location at room temperature

This product is a medical equipment

MEMO

MEMO

MEMO

QUALITY GUARANTEE CERTIFICATE

Thank you for purchasing our product.

This product has passed through the quality management and stringent inspection of the Jeil Medical Corporation. If you experience any manufacturing defect or malfunction of the product during **the warranty period of one year**, please **contact the distributor or the manufacturer**.

Please present this quality guarantee certificate to avail of free service.

Brand name		ORTHONIA	Model	111-ED-040
SERIAL NO.				
Date of purchase		Year	Month	Day
Distributor	Name		Name	
	Address		Tel.	
Customer	Address			
	Name		Tel.	

Only one quality guarantee certificate is issued for every product, so please keep it carefully. For any breakdown or malfunction caused under normal operating conditions during the warranty period, the repair service will be provided by either any of the distributor or the manufacturer. For any breakdown or malfunction caused by the negligence of the user, mishandling of the product or repair by unauthorized personnel, the warranty is not applicable. Please also keep in mind that any modification or repair by any unauthorized personnel who lacks knowledge or has no expertise on this product may lead to accidents.

EC REP

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