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 桂林市啄木鸟医疗器械有限公司 Guilin Woodpecker Medical Instrument Co., Ltd.			

Endo Space Endo Motor and Apex Locator Unit Instruction Manual

Please read this manual before operating
ZMN-SM-923 V1.0-20240807

CE 0197



Guilin Woodpecker Medical Instrument Co., Ltd.

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Note: the description on reciprocating mode is only applicable for the device that has reciprocating mode.

1 Product introduction

1.1 Preface

Guilin Woodpecker Medical Instrument Co., Ltd is a professional manufacturer researching, developing, and producing dental products. Woodpecker owns a sound quality control system. Guilin Woodpecker Medical Instrument Co., Ltd has two brands, Woodpecker and DTE. Its main products include Ultrasonic Scaler, Curing light, Apex locator, Ultrasurgery, Endo Motor, etc.

1.2 Product description

Endo Space Endo Motor and Apex Locator Unit is mainly used in Endodontic treatment. It is a cordless endo motor with root canal measurement capability. It can be used as an Endo Motor for preparation and enlargement of root canals, or a device for measuring canal length. It can be used to enlarge the canals while monitoring the position of the file tip inside the canal.

Features:

- a) Efficient brushless motor; low noise, long service life.
- b) Cordless portable Endo Motor and Apex Locator Unit with combined length determination.
- c) 360 degrees rotation of contra angle.
- d) Adopt real-time feedback technology and dynamic torque control, Effectively preventing file separation.

1.3 Model and specification

Endo Space

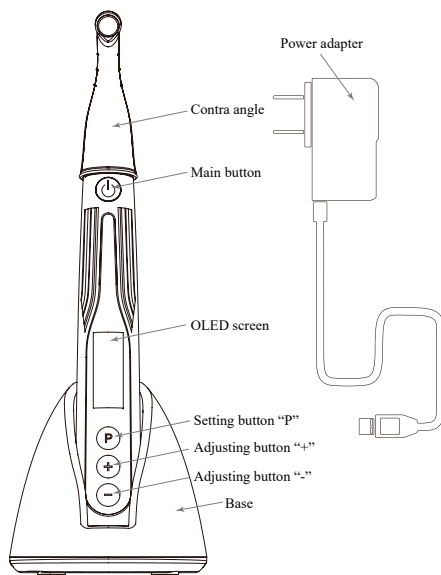
please refer to packing list for device configurations.

1.4 Performance and composition

The device is composed of base, motor handpiece, contra angle, measuring wire, lip hook, file clip, power adapter, protective silicon cover, touch probe, etc.

Attachment: lip hook, file clip, touch probe;

Detachable part: base, measuring wire, contra angle, power adapter, protective silicon cover.



1.5 Scope of application

1.5.1 The device can be used for preparation and enlargement of root canals, or for measuring canal length.

1.5.2 The device must be operated in the dental office of hospitals or clinics by the qualified dentists.

1.6 Contraindications

- a) Doctors with a pacemaker are forbidden to use the device.
- b) Patients with a pacemaker (or other electrical equipment) and patients warned not to use small appliances (such as electric shavers, hair dryers, etc.) are forbidden to use the device.
- c) Hemophilia patients are forbidden to use the device.
- d) Use with caution in patients with heart disease, pregnant women and young children.

1.7 Warnings

1.7.1 Please carefully read this Instruction Manual before first operation.

1.7.2 This device should be operated by professional and qualified dentists in qualified hospitals or clinics.

1.7.3 Do not directly or indirectly place this device near heat source. Operate and store this device in reliable environment.

1.7.4 This device requires special precautions regarding electromagnetic compatibility (EMC) and must be in strict accordance with the EMC information

for installation and use. Do not use this device especially in the vicinity of fluorescent lamps, radio transmitting devices, remote control devices, handheld and mobile high-frequency communication devices.

1.7.5 Long time use of Reciprocating Motion Mode may result in motor handpiece overheat, thus it should be left to cool for next use. If the motor handpiece is overheated frequently, please contact local distributor.

1.7.6 Please use the original contra angle. Otherwise it will not work or cause adverse consequences.

1.7.7 Please do not make any changes to the device. Any changes may violate safety regulations, causing harm to the patient. There will be no promises of any modification.

1.7.8 Please use the original power adapter. Other power adapters will result in damage to lithium battery and control circuit.

1.7.9 The motor handpiece cannot be autoclaved. Use disinfectant of neutral pH value or ethyl alcohol to wipe its surface.

1.7.10 Before the contra angle stops rotating, do not press the push cover of contra angle. Otherwise the contra angle will be broken.

1.7.11 Before the motor handpiece stops rotating, do not remove the contra angle. Otherwise the contra angle and the gear inside motor handpiece will be damaged.

1.7.12 Please confirm whether the file is well installed and locked before starting the motor handpiece.

1.7.13 Please set torque and speed as per the recommended specifications of file manufacturer:

1.7.14 Error in replacing lithium batteries can lead to unacceptable risks, so use the original lithium battery and replace the lithium battery according to the correct steps in the instructions.

1.7.15 Do not place the device where it is difficult to disconnect the power supply.

1.7.16 Please remove the battery if the motor handpiece is not likely to be used for some time.

1.7.17 The device can't be used in circumstances where HF surgical equipment, MRI equipment or CT equipment are present.

1.7.18 Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

1.7.19 Use of accessories and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

1.8 Device safety classification

1.8.1 Type of operation mode: Continuous operating device

1.8.2 Type of protection against electric shock: Class II equipment with internal power supply

1.8.3 Degree of protection against electric shock: contra angle, lip hook, file clip, touch probe are B type applied part

1.8.4 Degree of protection against harmful ingress of water: Ordinary equipment (IPX0)

1.8.5 Degree of safety application in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide: Equipment cannot be used in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.

1.8.6 Applied part: contra angle, lip hook, file clip, touch probe.

1.8.7 The contact duration of applied part: 1 to 10 minutes.

1.8.8 The temperature of the surface of applied part may reach 46.6°C.

1.9 Primary technical specifications

1.9.1 Battery

Lithium battery in motor handpiece: 3.6V /850mAh

1.9.2 Power adapter

Input: 100V-240V 50Hz/60Hz 0.4A-0.2A

Output: DC5V/1A

1.9.3 Torque range: 0.4N·cm-5.0N·cm(4mNm ~ 50mNm)

1.9.4 Speed range: 100r/min~1800r/min

1.10 Environment parameters

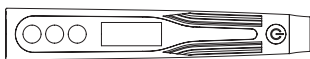
1.10.1 Environment temperature: +5°C ~ +40°C

1.10.2 Relative humidity: 30% ~ 75%

1.10.3 Atmospheric pressure: 70kPa ~ 106kPa

2 Installation

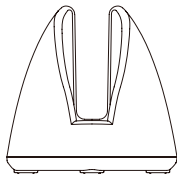
2.1 Basic accessories the of product



Motor handpiece



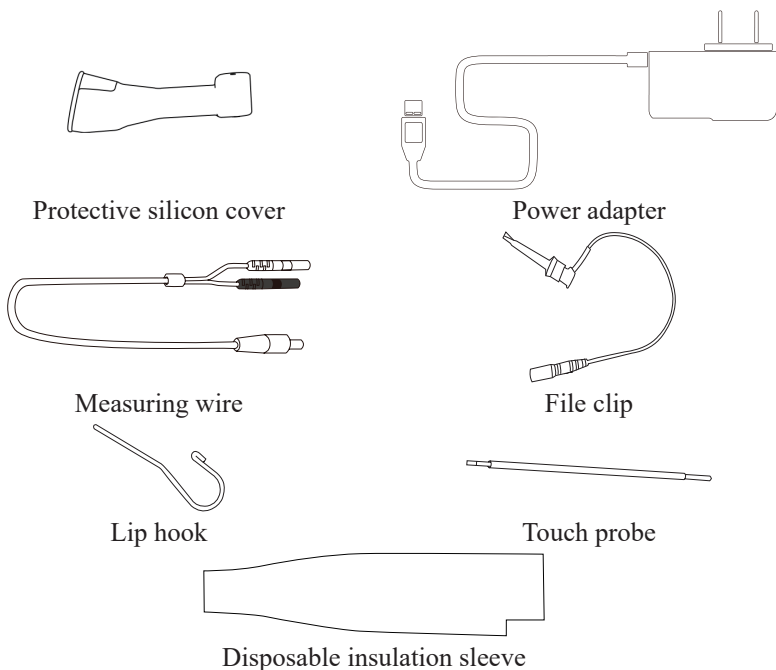
Contra angle



Base



Nozzle

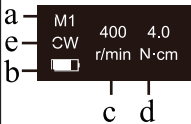
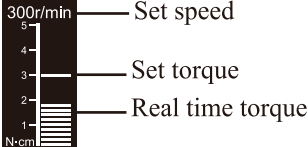
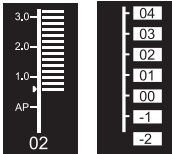
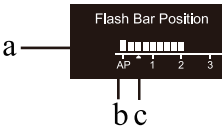


2.2 Display Screens

The system operation modes are divided into Simple Mode and Advanced Mode, with Advanced Mode being the default setting at the factory. For details about how to switch between the two modes, see section 4.3.

Operation Mode	Simple Mode Interface	Advanced Mode Interface	Overview of Modes
CW Mode			The motor handpiece rotates forward 360°, clockwise direction. Used for rotaty fles likes DM-F1.
CCW Mode			The motor handpiece rotates counterclockwise direction only. This mode is used to inject calcium hydroxide and other medicant. When this mode is being used, a double-beep sounds continuously.

REC Mode			Reciprocating mode. It is suggested that the difference between the forward angle and reverse angle should be greater than or equal to 120 degrees, otherwise, root canals cannot be prepared effectively. Forward Angle<Reverse Angle, such as F:30/R:150. Effective cutting angle is Reverse Angle. This REC setting is suitable for reciprocating files likes WOODPECKER W3 -ONE. Forward Angle>Reverse Angle, such as F:180/R:30, effective cutting angle is Forward Angle, it is suitable for used the reciprocating files likes SENDONE-LINE S1. Note: In Simple Mode, the default torque for REC mode is 4.0 and the torque is not adjustable.
ATR Mode			ATR: Adaptive Torque Reverse function. When the load of the file is greater than the set torque limit, the file will start to rotate alternately at the set angle. Note: In Simple Mode, the default reversal angle of ATR mode is 180°, the default forward angle is 90°, and the angle is not adjustable.
EAL Mode			Canal measurement mode interface This mode is for canal measurement. The motor handpiece does not run in this mode. a: Apical reference point flash bar b: EAL: Electronic apex locator.
Canal measurement state interface			a. Canal length indicator bar b. Indication number c. Apical foramen Digital numbers 00-16 do not represent the actual distance from the apical foramen. It simply indicates the file progression towards the apex. Number “00” indicate that the file has reached the apical foramen.

Standby interface			a. Customized program sequence number 0-9, totally 10 programs. (Not available in Simple Mode) b. Battery consumption c. Set speed d. Set torque e. Operation mode
Working interface Torque Display			This appears when the motor is running. Meter shows the torque load on the file.
Canal Measurement Display			This appears when a file is inside the canal and the lip hook is contacting the patient mouth. Bars in meter show the location of the file tip. In the EAL Mode, If the meter numbers is less than 1.0, the display will be enlarged. The meter numbers 1.0, 2.0, 3.0 and digital numbers 00-16 do not represent the actual distance from the apical foramen. It simply indicates the file progression towards the apex. The digital numbers -1 and -2 indicate that the file has gone beyond apical foramen. The digital number "00" indicates that the file has reached the apex foramen. Subtract 0.5mm-1.0mm from the measured file length as the working length. These numbers are used to estimate the canal's working length.
Apical reference point setting interface (Only available In Advanced Mode.)	/		a. Apical reference point flash bar b. Apical foramen c. Digital "02" merer reading, very near physiological apical foramen.

2.3 Instructions for contra angle

2.3.1 The contra angle adopts precise gear transmission, and the transmission ratio is 6:1.

2.3.2 Before the first use and after treatments, please clean and disinfect contra angle with disinfectant of neutral PH value. After disinfection, lubricate it with specific cleaning oil. Finally, sterilize it under high temperature and high pres-

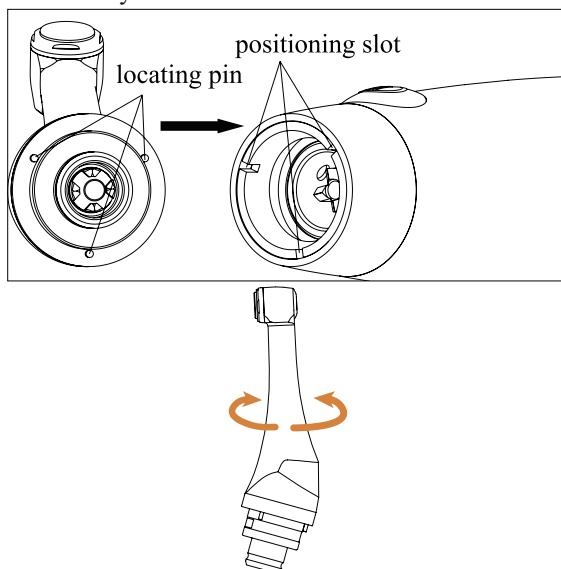
sure (134°C, 2.0bar~2.3bar (0.20MPa~0.23MPa)).

2.3.3 The contra angle can only be used cooperatively with this device. Otherwise the contra angle will be damaged.

2.4 Installation and removal of contra angle

2.4.1 Installation

Align any locating pin of the contra angle with the positioning slot on the motor handpiece and push the contra angle horizontally. The three locating pins on the contra angle are inserted into those three positioning slots on the motor handpiece. A “click” sound indicates that the installation is in place. The contra angle can be rotated 360° freely.



The contra angle is free to rotate, adapting to the root canal of different positions, and it is convenient to watch the screen when operating.

2.4.2 Removal

Pull out the contra angle horizontally when the motor handpiece does not run.



Warnings:

- Before plugging in or pulling out contra angle, please first stop the motor handpiece.
- After installation, please check and confirm that the contra angle has been well installed.

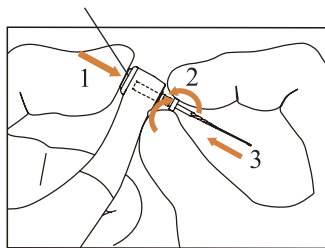
2.5 Installation and removal off File

2.5.1 Installation off file

Before starting the device, plug the file into the hole of contra angle head.

Hold down the push button on the contra angle and insert the file. Turn the file back and forth until it is lined up with interior latch groove and slips into place. Release the button to lock the file into the contra angle.

Push Button



Warnings:

After plugging the file into contra angle, let go the hand on push button to assure that the file cannot be taken out.

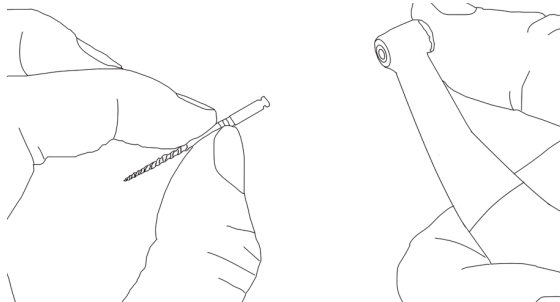
Be careful when inserting files to avoid injury to fingers.

Inserting and removing files without holding the push button may damage the chuck of contra angle.

Please use files with shanks meeting the ISO standard. (ISO standard: Ø2.334 – 2.350 mm)

2.5.2 Removal of file

Pressing the push button, and then directly pull out the file.



Warnings:

Before plugging and pulling out the file, the motor handpiece must be stopped.

Be careful when removing files to avoid injury to fingers.

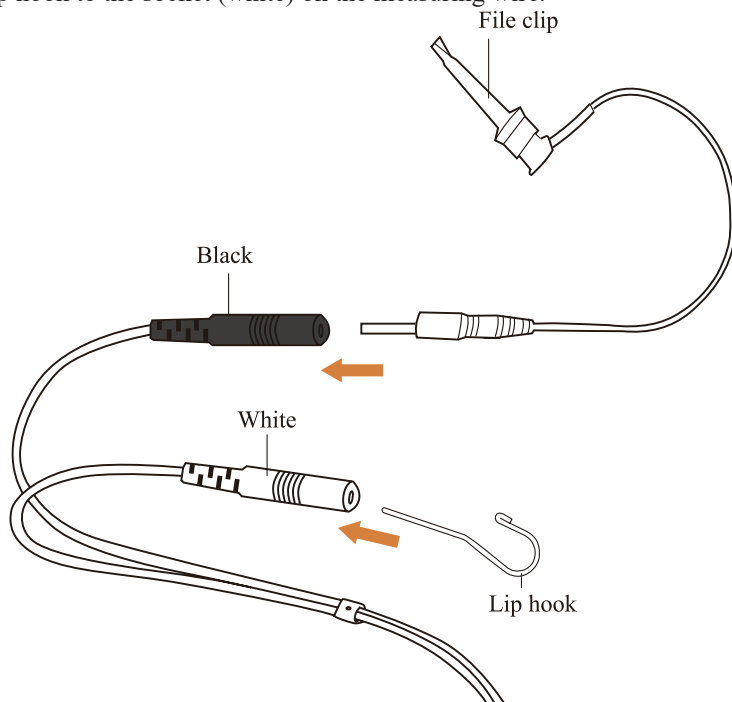
Removing files without holding the push button will damage the chuck of contra

angle.

2.6 Canal measurement function connection

This is not required if the canal measurement function will not be used. Connect the measuring wire to the motor handpiece. Line up the measuring wire plug with the notch on the back of the motor and push it all the way in.

Connect the file clip plug into the socket (black) on the measuring wire. Connect the lip hook to the socket (white) on the measuring wire.



Warnings:

Connect the lip hook to the socket (white) on the measuring wire. Otherwise, the function of root canal preparation and root canal length measurement cannot be used together.

2.7 Installation and removal of disposable insulation sleeve

2.7.1 Installation

Before each use of the handpiece and after the handpiece is cleaned and disinfected, put on a disposable insulation sleeve. Take the isolation sleeve out of the isolation sleeve box, then insert the isolation sleeve into the motor handpiece from the thin end of the handpiece, and install the isolation sleeve until there is

no obvious wrinkle.

After installing the disposable insulation sleeve, wrap the barrier film around the handpiece surface. After that, clean and disinfect the surface of the handpiece. Refer to Chapter 6.3 for cleaning and disinfection procedures.

2.7.2 Removing

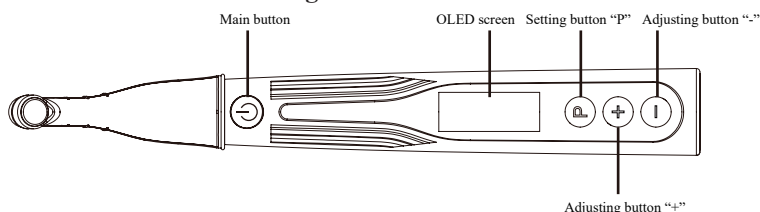
After each use, remove the barrier film and slowly pull the insulation sleeve from the thin end of the handpiece.



Warning: insulation sleeves are not reusable.

3 Function and operation of the product

3.1 Button definition and settings



a. Turn power on

Press Main button to turn on motor handpiece.

b. Turn power off

Hold down the Setting button “P”, then press Main button to turn off motor handpiece.

c. Customized program change

Press Adjusting button “+”/“-” during standby state.

d. Parameter setting

Press Setting button “P” to switch target parameters that need to be adjusted, press Adjusting button “+”/“-” to change, then press Main button or wait 5 seconds to confirm.

e. Preset program selection

In Advanced Mode, long press Setting button “P” to enter preset program during standby state, press Adjusting button “+”/“-” to select file system, press setting button “P” to enter select file number, press Adjusting button “+”/“-” to select file number, then press Main button to confirm.

f. Handpiece functions setting

With the motor handpiece turned off, hold down the Setting button “P” and press Main button to enter handpiece functions setting, press Setting button “P” to switch target setting, press Adjusting button “+”/“-” to adjust, then press Main button to confirm.

3.2 Terms and definitions

CW	Clockwise rotation, forward rotation Be applied to rotary file
CCW	Counter clockwise rotation, reverse rotation Be applied to special file, inject calcium hydroxide and other solutions
REC	Reciprocating motion Be applied to reciprocating file, path file and rotary file protection by setting some special angles.
ATR	Adaptive torque reverse When the set torque is reached, the motor will operate in ATR mode; When the torque drops to the normal value, the motor will rotate clockwise.
Forward Angle	Angle of clockwise rotation of the file
Reverse Angle	Angle of counter clockwise rotation of the file
EAL	Electronic apex locator In the mode, the device will work like a stand-alone apex locator
AP	Apical foramen
Apical Action	The file action when file tip reaches the flash bar point. Note: This feature is only available In Advanced Mode.
Flash Bar Position	Shows the point inside the canal where specified apical action is triggered. Note: This feature is only available In Advanced Mode.
Auto Start	The file rotation starts automatically when the file is inserted in the canal. Note: This feature is only available In Advanced Mode.
Auto Stop	The file rotation stops automatically when the file is taken out of the canal. Note: This feature is only available In Advanced Mode.
Apical Slow Down	The file slows down automatically as it approaches the apex. Activating in CW and CCW operation modes. Note: This feature is only available In Advanced Mode.
Operation Mode	5 operation modes for canal preparation and measurement. Such as CW, CCW, REC, ATR and EAL.
Speed	File rotation speed
Torque (Torque Limit / Trigger Torque)	For CW and CCW modes, the torque value (Torque Limit) that triggers reverse rotation. For ATR mode, the torque value (Trigger Torque) that triggers ATR action.

4 Operation instruction

4.1 Power on and power off

4.1.1 Starting and stopping of motor handpiece

a) Under the power-off state of motor handpiece, press Main button, the screen displays the model “Endo Space”, and then the motor handpiece will enter Standby interface. The Standby interface is the working mode when it was last exited.

b) Under Standby interface, press Main button, and then the motor handpiece will enter Working interface. The interface displays are as follow:



Working interface

c) Press the Main button again, and then the motor handpiece backs to Standby interface.

d) Hold down the Setting button “P”, then press Main button to turn off motor handpiece. In standby Interface, the motor hand piece would automatically shut down after 3 minutes without any button-pressing operation.

4.2 Selecting customized program sequence number

In Advanced Mode: The motor handpiece has 10 memory programs (M0-M9) and 5 preset programs. Press Adjusting button “+”/“-” to change customized program sequence number during standby state.

M0-M9 is a memory program for canal preparation and measurement, every memory program has its own parameters such as operation mode, speed and torque, all and these parameters can be changed.

In Simple Mode: In The motor handpiece has 6 memory programs (M0-M5). Press Adjusting button “+”/“-” to change customized program sequence number during standby state. M0-M5 is a memory program for canal preparation and measurement, every memory program has its own parameters such as Operation mode, speed and torque, and all these parameters can be changed.

4.3 Handpiece functions setting

With the motor handpiece turned off, hold down the Setting button “P” and press Main button to enter handpiece functions setting, press Setting button “P” to enter target setting, press Adjusting button “+”/“-” to adjust, then press Main button to confirm.

Settings Content	Interface Display	Operation Instructions
Software Version	Software Version V1.0.1	In the power-off state, press and hold the button “P” while pressing the standby button to enter the software version interface, which displays the current software version of the device. After 3 seconds, it will automatically jump to the Auto Power OFF time setting interface.
Auto Power OFF time	Auto Power OFF 5 min	After 3 seconds of displaying the version number on the screen, the “Auto Power OFF” can be change, press Adjusting button “+”/“-” to adjust, then press to “Main” button to confirm. It can be set from 3 to 30 minutes in 1 minute increments. No buttons are pressed, auto power of time of motor hand-piece.

Auto Standby Scr	Auto Standby Scr 30 sec	Press Setting button “P” again, the “Auto Standby Scr” can be change, press Adjusting button “+”/“-” to adjust, then press to “Main” button to confirm. No buttons are pressed, auto return to standby display of motor handpiece. It can be set from 3 to 30 seconds in 1 second increments.
Dominant Hand	Dominant Hand Right	Press Setting button “P” again, the “Dominant Hand” can be changed, press Adjusting button “+”/“-” to adjust, then press to “Main” button to confirm. The right hand and the left hand can be set.
Calibration	Calibration OFF	Press Setting button “P” again, the “Calibration” can be changed, press Adjusting button “+”/“-” to select “ON”, then press Main button to calibrate. During the calibration process, the motor speed gradually increases from slow to fast. After calibration is complete, it will jump to the standby interface. During calibration, the screen displays “Calibrating...”. Before calibrating, making sure the original contra angle is installed, and do not install the fle. When calibrating, if a non-oral contra angle is used or the chuck is subject to resistance, the torque will be inaccurate, and there is a risk of file separation and fracture. After replacement of contra angle, the contra angle shall be calibrated before use.
Beeper Volume	Beeper Volume Vol.3	Press Setting button “P” again, the “Beeper Volume” can be changed, press Adjusting button “+”/“-” to adjust, then press “Main” button to confirm. The “Beeper Volume” can be set from 0-3. Vol.0: Mute.
Selection of operation mode	Operation Mode Advanced Mode	Press Setting button “P” again, the “Operation Mode” can be changed. Press Adjusting button “+”/“-” to adjust, then press to Main button to confirm. Press the “P” button to keep the operation mode settings and proceed to the next setting. Press the Main button to enter the standby interface of this operation mode.
Apex Switch	Apex Switch NO	It can be selected to be enabled or disabled. The factory setting of the system is enabled. When enabled, the root canal length measurement function can be used. When disabled, the device’s root canal length measurement function will be deactivated.
Restore Defaults	Restore Defaults OFF	Press Setting button “P” again, the “Restore Defaults” can be changed, press Adjusting button “+”/“-” to select “ON” press “Main” button to restore defaults.

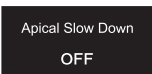
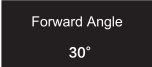
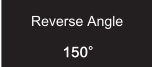
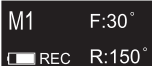
4.4 Parameter Settings



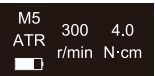
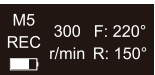
Before starting of motor handpiece, please check whether the operation mode is correct.

All parameters must be set according to files, Be sure to confirm that all parameters are correct before starting the motor handpiece, otherwise there is a risk of file separation.

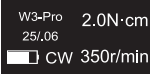
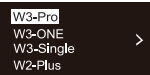
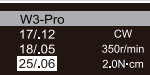
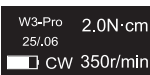
4.4.1 In Advanced Mode		
Settings Content	Interface Display	Operation Instructions
Operation Mode setting	Operation Mode CW	It has 5 operation modes for canal preparation and measurement: CW, CCW, REC, ATR and EAL (see chapter 3.2 Terms and definitions to get the explanations of these modes.) Press Setting button “P” once during standby state, press Adjusting button “+”/“-” to select correct Operation mode. CCW mode is used to inject calcium hydroxide and other medicant. When this mode is being used, a double-beep sounds continuously, used for indicating counter clockwise rotation happening.
Press the “P” button to enter the next level of parameters setting. If you need to adjust the parameters, press the “+”/“-” button to adjust.		
Speed setting	Speed 250r/min	The speed setting can be adjusted from 100 r/min to 1800 r/min. Press Adjusting button “+”/“-” to increase or decrease speed. Long press to fast increase or fast decrease speed. In ATR mode, the speed range is: 100r/min ~500r/min. In REC mode, the speed range is: 100r/min ~500r/min.
Torque setting	Torque Limit 2.0N·cm	The torque setting can be adjusted from 0.4N·cm to 5.0N·cm. Press Adjusting button “+”/“-” to increase or decrease torque. Long press to fast increase or fast decrease torque. In ATR mode, the trigger torque range is 0.4N·cm~4.0N·cm . In REC mode, the torque range is 2.0N·cm~5.0N·cm.
Apical Action Setting	Apical Action OFF	Actions that happen automatically when the file tip reaches the point inside the canal determined by the Flash Bar setting. Benefit from integration of length determination, when the file reaches the reference point, the motor will respond according to setting, it can be Reverse, Stop and OFF. Press Adjusting button “+”/“-” to change. OFF: Disable Apical Action function, file rotating as usual even if the file tip reaches the reference point. Stop: File automatically stops rotation when file tip reaches the reference point, and will rotate again when lifted upward a little bit. Reverse: File automatically reverses when file tip reaches or passes the reference point, and the original rotation direction will be restored when the file is lifted upward a little bit.

Auto Start		Rotation starts automatically when the file is inserted into the canal and the canal length indicator bar lights up more than 2 bars. Press Adjusting button “+”/“-” to change. OFF: Motor does not start when the file is inserted into the canal. The Main button is used to start and stop the motor handpiece. ON: Motor starts automatically.
Flash Bar Position		This is the reference point where various apical actions are triggered. Press Adjusting button “+”/“-” to select reference point by changing the flash bar. The meter’s 0.5 reading indicates that the file tip is located very near the physiological apical foramen. The reference point (flash bar) can be set from 2 to AP (Apical foramen) on the meter.
Apical Slow Down		Rotation automatically slows down as the file tip approaches the reference point. Press Adjusting button “+”/“-” to change. OFF: Disable Apical Slow Down function. ON: Rotation automatically slows down as the file tip approaches the reference point.
	  	Only activating in REC and ATR operationmode. F: Forward Angle. In the REC mode, the forward angle range is: 20°~400°. In the ATR mode, the forward angle range is: 60°~400°. R: Reverse Angle. In the REC mode, the reverse angle range is: 20°~400°. In the ATR mode, the reverse angle cannot be greater than the forward angle. Press Adjusting button “+”/“-” to change angle. adjustable every 10 degrees. It is suggested that the difference between the forward angle and reverse angle should be greater than or equal to 120 degrees, otherwise, root canals cannot be prepared effectively. Forward Angle<Reverse Angle, such as F:30°/R: 150°. Effective cutting angle is Reverse Angle. It is suitable for used the reciprocating files likes WOODPECKER W3-ONE. Forward Angle>Reverse Angle, such as F:180°/R: 30°, Effective cutting angle is Forward Angle, It is suitable for reciprocating files likes SENDONELINE S1.

4.4.2 In Simple Mode

Operating Mode setting		It has 5 operation modes for canal shaping and measurement: CW, CCW, REC, ATR and EAL (see chapter 3.2 Terms and definitions to get the explanations of these modes.) Press the “P” button, the mode display position will flash. Adjust the Operating Mode using the “+”/“-” buttons, and press the main button to confirm. CCW mode is used to inject calcium hydroxide and other medicant. When this mode is being used, a double-beep sounds continuously, used for indicating counter clockwise rotation happening.
Adjustment of other parameters		In Simple Mode, press the “P” button to switch to parameters that need to be adjusted (such as speed, torque, angle, mode, etc.). The flashing parameter indicates that it is currently selected. After selecting the parameter to be adjusted, use the “+”/“-” buttons to switch to specific values. Press the main button to confirm the selected parameter.
 Note: Apical action and file systems cannot be set in Simple Mode.		

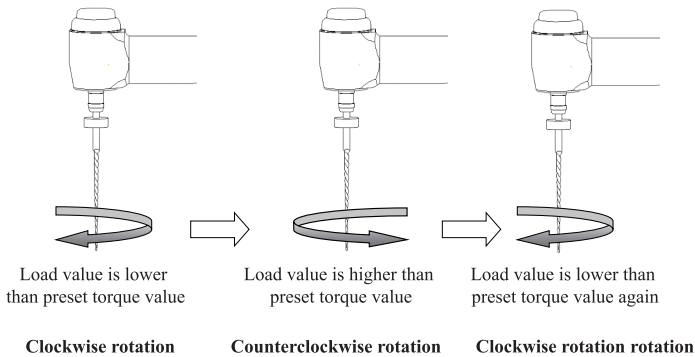
4.5 Preset program selection (This function is available only In Advanced Mode.)

	For convenience, we preset some common file systems. Press Adjusting button “+”/“-” to switch to preset program (M0-M9, preset program 1-5), the interface will show as left.
	Long press Setting button “P” to enter preset program during standby state, the interface will show as left. Press Adjusting button “+”/“-” to select file system.
	After selecting file system, press Setting button “P” to enter file number selection interface, press Adjusting button “+”/“-” to select file number, then press Main button to confirm.
	The parameters of “W3-Pro” can also be changed making it different from default setting. If you want to change back to default setting, long press Setting button “P” to enter preset program during standby state, select “W3-Pro” and press Main button to confirm, the default setting will be reloaded. Turn off the motor handpiece and then power on, the preset program can also restore the default setting. Changing the preset program default setting is not recommended, otherwise it has a risk of file separation.

4.6 Protective function of automatic reverse

During operation, if the load value exceeds the preset torque value, the file rotation mode will automatically change to Reverse Mode. And the file would return

to normal rotation mode when the load is below the preset torque value again.



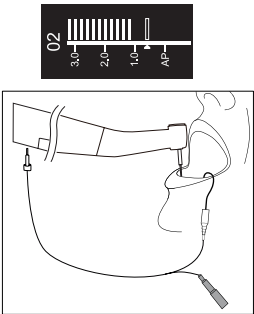
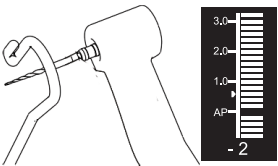
Cautions:

1. Protective function of automatic reverse is ONLY suitable for CW mode.
2. In REC mode, when the load value is higher than preset torque value, if Forward angle is greater than Reverse angle, the file rotation automatically changes to reverse rotation; if Forward angle is less than Reverse angle again, the file rotation automatically changes back to forward rotation.
3. This function is forbidden under CCW mode and ATR mode.
4. When the motor handpiece battery indicator indicates a low battery capacity, the low battery capacity is insufficient to support the motor handpiece to reach the torque value limit, that is, the auto-reverse function will not work properly. Please charge it in time.
5. If the motor handpiece is under load all the time, the device may stop automatically as a result of overheat protection. If it happens, turn off the motor handpiece for a while until the temperature drops.

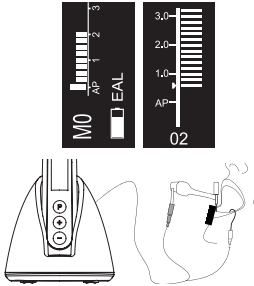
4.7 Motor operation

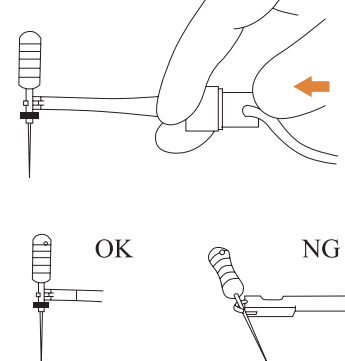
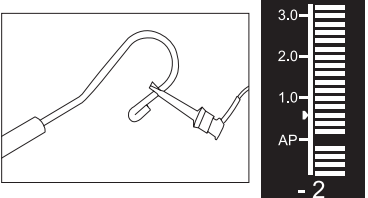
Please set operation mode, torque and speed as per the recommended specifications of file manufacturer.

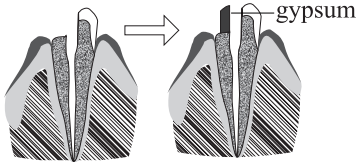
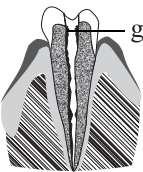
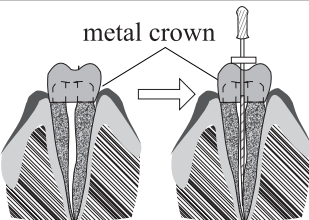
	Motor alone mode In motor alone mode, the torque bar will show on the screen. (More information about torque bar, please see chapter 2.2 Display Screens)
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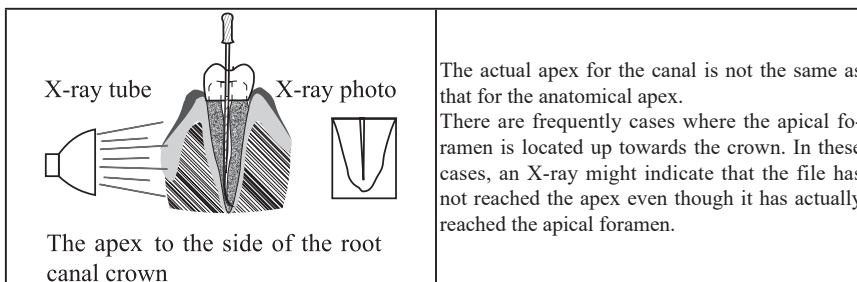
	Motor combined canal measurement function mode When using motor combined canal measurement function, the measuring wire must be connecting with motor handpiece by type_C socket, and white socket must be connected to patient's lip by lip hook, keep the black socket idle. The canal length indicator bar will show on the screen (More information about canal length indicator bar, please see chapter 2.2 Display Screens) Setting parameters of automatic functions as needed, such as Apical Action, Auto Start, etc (More information about automatic functions, please see chapter 4.4 Parameter setting).
	Connection testing Strongly recommend testing the connecting every time before use. Touch the lip hook with the file in the contra angle and ensure that all the bars on the screen of the meter light up, and the motor should be reversed continuously, otherwise, the measuring wire or contra angle should be replaced.

4.8 Canal measurement operation

	When using apex locator mode alone, we suggest putting the motor handpiece on the base to get better visual angle. Press Setting button “P” once during standby state, press Adjusting button “+”/“-” to select EAL operation mode, then press Main button to confirm. (See chapter 3.2 Terms and definitions to get the explanations of operation modes.) The measuring wire must be connected with motor handpiece by type C socket, white socket connected with the patient's lip by lip hook, and black socket connected with file clip. The canal length indicator bar will show on the screen (more information about canal length indicator bar, please see chapter 2.2 Display Screens).
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	The file clip must hold the file correctly. Push the button on the file clip with your thumb in the direction shown by the arrow. Clip the holder onto the metal upper part of the file and then release the button.
	Connection testing Strongly recommend testing the connection testing every time before use. Clip the holder onto lip hook and ensure that all the bars on the meter on the screen light up, otherwise, the measuring wire or file clip should be replaced.
Root canals not suitable for canal measurement Accurate measurement cannot be obtained if the root canal conditions are shown below.	
	Root canal with a large apical foramen Root canal that has an exceptionally large apical foramen due to a lesion or incomplete development cannot be accurately measured. The results may show shorter measurement than the actual length.
	Root canal with blood overflowing from the opening If blood overflows from the opening of the root canal and contacts the gums, this will result in electrical leakage and an accurate measurement cannot be obtained. Wait for bleeding to stop completely. Clean the inside and opening of the canal thoroughly to get rid of all blood, and then make a measurement. Root canal with a chemical solution overflowing from the opening An accurate measurement cannot be obtained if some chemical solution is overflowing from the canal opening. In this case, clean the canal and its opening. It is important to get rid of any solution overflowing the opening.

	Broken crown If the crown is broken and a section of the gingival tissue intrudes into the cavity surrounding the canal opening, contact between the gingival tissue and the file will result in electrical leakage and an accurate measurement cannot be obtained. In this case, build up the tooth with a suitable material to insulate the gingival tissue.
	Fractured tooth Leakage through a branch canal Fractured tooth will cause electrical leakage and an accurate measurement cannot be obtained. A branch canal will also cause electrical leakage.
	Re-treatment of a root filled with guttapercha The guttapercha must be completely removed to eliminate its insulating effect. After removing the guttapercha, pass a small file all the way through the apical foramen and then put a little saline in the canal, but do not let it overflow the canal opening.
	Crown or metal prosthesis touching gingival tissue Accurate measurement cannot be obtained if the file touches a metal prosthesis that is touching gingival tissue. In this case, widen the opening at the top of the crown so that the file will not touch the metal prosthesis before taking a measurement.
 Too dry	Extremely dry canal If the canal is extremely dry, the meter may not move until it is quite close to the apex. In this case, try moistening the canal with saline.
Measuring result difference between apex locator reading and radiography Sometimes the reading of apex locator and the X-ray image will not correspond. This does not mean that the apex locator is not working properly or that the X-ray exposure is a failure. An X-ray image might not show the apex correctly depending on the angle of the X-ray beam, and the location of the apex might seem to be other than it really is.	



4.9 Battery Charging

There is a built-in rechargeable lithium battery in the motor handpiece. Insert the power adapter plug into the motor handpiece and confirm that they are correctly connected.

When the screen battery indicator flashes, it is charging.

After charging, please unplug the power adapter.

This device must use the original power adapter.

4.10 Replacing Battery

1. When this device is not in use, turn off the power switch and unplug the power plug.
2. If this device is in a low battery state for a long time, it will shorten the battery life. Please charge it promptly when the battery is low.
3. When this device is not in use for a long time, it should be charged once a month for 1 hour each time.
4. If the usage time of the device is significantly shorter than the original time, please replace the battery in a timely manner.
5. To replace the battery, please use the original lithium battery. It is recommended to contact local distributors and manufacturers for battery replacement.
 - a) Please shut down before replacing the battery
 - b) Remove the handpiece. retainer ring.
 - c) Remove the handpiece. turntable with the hex socket.
 - d) Remove the battery compartment.
 - e) Remove the old battery.
 - f) Connect the new battery and place it in the battery compartment, turn it on and confirm that the device is working properly.
 - g) Install the battery compartment into the handpiece.
 - h) Install the handpiece retainer ring and the handpiece.

4.11 Oiling of contra angle

Only the original oil injection nozzle can be used for oiling of contra angle. The contra angle needs to be lubricated after cleaning and disinfection, but before

sterilization.

1. Firstly, screw the injection nozzle into jet of oil bottle. (Around 1 to 3 circles)
2. Next, plug the nozzle into the end part of contra angle, and then oil the contra angle for 2-3s till the oil flows out of contra angle head part.
3. Vertically place the end part of contra angle more than 30 minutes to let go the redundant oil under gravity.



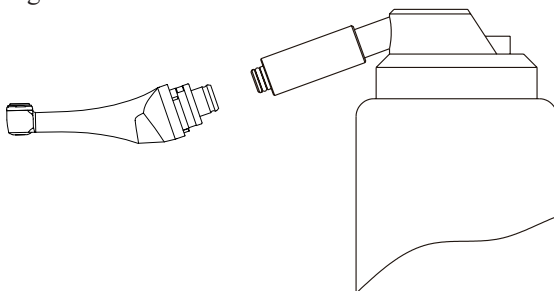
Warnings

Motor handpiece cannot be filled with oil.



Cautions

- a: To avoid the contra angle from flying out for the pressure, use hand to safely hold the contra angle while oiling.
- b: Do not use a swing nozzle. Swing nozzle can only be used for injection of gas, not for oiling.



5 Troubleshooting

Failure	Possible cause	Solution
The motor handpiece does not rotate.	Chose EAL mode, EAL mode is only for canal measurement.	changing to CW, CCW, REC or ATR mode.
There is continuous beep sound after starting the motor handpiece.	The continuous beep sound is indicating that the motor handpiece is under CCW mode.	Stop the motor handpiece and change the operating mode to CW Mode.
Contra angle calibration failure	Calibration failure caused by strong resistance of contra angle	Clean the contra angle, and recalibrate after oil injection.
Motor handpiece heating	Under Reciprocating Motion Mode, the using time is too long.	Stop use. Use after the temperature of motor handpiece drops.
The time of endurance becomes shorter after charging.	Battery capacity becomes smaller.	Please contact local distributor or manufacturer.
No sound	Beeper Volume set to 0. Vol.0: Mute.	Set Beeper Volume to 1, 2, 3.
The continuously rotating file is stuck at the root canal.	Incorrect specification setting. Too high load torque of file.	Choose CCW Mode, start the motor handpiece, and take the file out.

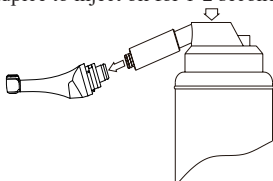
6 Reprocessing process

Cleaning, Disinfection and Sterilization.

1. Reprocessing procedures for contra-angle, file clip, touch probe and lip hook.

Device	Contra-angle	File clip, touch probe and lip hook
 Warnings	1. The contra-angle handpieces are not suitable for ultrasonic cleaning. 2. The use of strong detergent and disinfectant (alkaline pH>9 or acid pH <5) will reduce the life span of products. And in 4) such cases, the manufacturer takes no responsibility;	
Advice	Reprocessing procedures have only limited implications to products. The limitation of the numbers of reprocessing procedures is therefore determined by the function / wear of the device. However with every renewed preparation for use, thermal and chemical stresses will result in ageing of the products. The specified maximum times of sterilization for contra-angle is 1000 times. The specified maximum times of sterilization for file clip,touch probe and lip hook is 900 times. In case of damage the device should be reprocessed before sending back to the manufacturer for repair or scrapped.	
Reprocessing Instructions		
Preparation at the Point of Use	Remove the shanks/files and disconnect the contra-angle handpiece from Motor handpiece. Disconnect the file clip,touch probe and lip hook from the measuring wire.Remove gross soiling of the instrument with cold water (<40°C) immediately after use. Don't use a fixating detergent or hot water (>40C) as this can cause the fixation of residuals which may influence the result of the reprocessing process. Store the device in a humid surrounding.	
Transportation	Safe storage and transportation to the reprocessing area to avoid any damage and contamination to the environment.	
Preparation for reprocessing	The products must be reprocessed in a disassembled state.	
Pre-cleaning	Tools: tray, soft brush, clean and dry soft cloth Do a manual pre-cleaning, until the devices are visually clean.Submerge the devices in a cleaning solution and flush the lumens with a water jet pistol with cold water for at lest 10 seconds. Clean the surface with a soft bristle brush.	

Cleaning	Regarding cleaning/disinfection, rinsing and drying, it is to distinguish between manual and automated reprocessing methods. Preference is to be given to automated reprocessing methods, especially due to the better standardizing potential and industrial safety. Automatic cleaning: Use a washer-disinfector meeting the requirements of the ISO 15883 series. The devices are placed on the cleaning rack of the WD. The lumen is connected to the flushing port of the WD. The devices in the washer-disinfector are arranged in such a way that there is no rinsing shadow and the water drains off quickly. Start the program: • 4min pre-washing with cold water(<40°C); • Emptying • 5 min washing with a mild alkaline cleaner at 55°C; • Emptying • 3 min neutralizing with warm water(>40°C); • Emptying • 5 min intermediate rinsing with warm water(>40°C); • Emptying • Drying the device at 80°C for 15min The automated cleaning processes have been validated by using 0.5% neodisher MediClean forte (Dr. Weigert). Note Demineralised water should be used for the automated cleaning process. Water quality refer to EN 285. Note Acc. to EN ISO 17664 no manual reprocessing methods are required for these devices. If a manual reprocessing method has to be used, please validate it prior to use.
Disinfection	Automated Thermal Disinfection in washer/disinfector under consideration of national requirements in regards to A0 value (see EN 15883). A disinfection cycle of 5 min disinfection at 93°C has been validated for the device to achieve an A0 value of 3000.
Drying	Drying the device through drying cycle of washer/disinfector. If needed, additional manual drying can be performed through lint free towel. Insufflate cavities of products by using sterile compressed air.
Functional testing, Maintenance	Visually inspect the cleanliness of the instruments. Perform Functional test according to instructions of use. If there is still visible stain on the device after cleaning, the entire cleaning process must be repeated. If the device is obviously damaged, smashed, detached, corroded or bent, it must be discarded and not allowed to continue to be used. Discard and replace any components as necessary. Before packaging and sterilization, make sure that the contra-angle, file clip, touch probe and lip hook has been maintained acc. to manufacturer's instruction.

Injection	Use lubricant to lubricate the contra-angle and dried it prior to sterilization. Aim the nozzle of lubricant bottle to the air hole at the end of the contra-angle handpiece to inject oil for 1-2 seconds. 	
Packaging	Pack the instruments in an appropriate packaging material for sterilization. The packaging material and system refer to EN ISO 11607. Precautions 1) Only use a legally marketed sterilization pouch; 2) The package should withstand high temperature of 137 °C and has sufficient steam permeability; 3) The packaging environment and related tools must be cleaned regularly to ensure cleanliness and prevent the introduction of contaminants; 4) Avoid contact with different metals when packaging.	
Sterilization	Sterilization of instruments by applying a fractionated pre-vacuum steam sterilization process (according to EN 285/EN 13060/EN ISO 17665) under consideration of the respective country requirements. Minimum requirements: at least 3 min at 134 °C (in EU: 5 min at 134 °C) Maximum sterilization temperature: 137°C Flash sterilization is not allowed on lumen instruments!	
Storage	Storage of sterilized devices in a dry, clean and dust free environment at modest temperatures, refer to label and instructions for use.	
Additional Instructions: None		
It is the duty of the user to ensure that the reprocessing processes including resources, materials and personnel are capable to reach the required results. State of the art and often national law requiring these processes and included resources to be validated and maintained properly.		

2. Reprocessing procedure for motor handpiece

As a non-critical medical device, motor handpiece of Endo Motor and Apex Locator Unit has only contact with intact skin. For this device, a general decontamination should be performed after each use on patient.

The motor handpiece of Endo Motor and Apex Locator Unit contains a lithium battery. An automated or immersion cleaning and disinfection is not possible. This device has no lumen or other complicated structure on/in it, the cleanliness of the device can be judged by visual control.

The motor handpiece should be disconnected from the power supply before cleaning and disinfection each time.

Cleaning

Wet the soft cloth completely with deionized water, and wipe the surface of motor handpiece thoroughly for 2 times. After each wipe, replace the clean soft

cloth. If there are still visible stains, wipe repeatedly until there are no visible stains. Then wipe the surface with a clean soft cloth until there is no water stains.

Disinfection

a. Wet the clean soft cloth completely with 75% alcohol, wipe the surface for 1.5 times.

b. Wet the clean soft cloth completely with sterile water, wipe the surface of the test sample thoroughly for 3 times. Wipe for 30 s each time, to remove the residual disinfectant on the surface.

c. Wipe the surfaces of the motor handpiece with a dry soft lint-free cloth.

Caution: Do not use the following methods of disinfection

(1) Do not use organic solvents or corrosive cleaning products to clean the Endo Motor and Apex Locator unit;

(2) Do not spray detergent directly on the Endo Motor and Apex Locator Unit;

(3) Do not use organic solvent or corrosive disinfectant to disinfect the Endo Motor and Apex Locator Unit;

(4) Do not spray disinfectant directly on the Endo Motor and Apex Locator Unit.

7 Storage, maintenance and transportation

7.1 Storage

7.1.1 This device should be stored in a room where the relative humidity is 10% ~ 93%, atmospheric pressure is 70kPa to 106kPa, and the temperature is -20°C ~ +55°C.

7.1.2 Avoid the storage in a too hot condition. High temperature will shorten the life of electronic components, damage battery, reshape or melt some plastics.

7.1.3 Avoid the storage in a too cold condition. Otherwise, when the temperature of the device increases to a normal level, there will be dew that will possibly damage PCB board.

7.2 Maintenance

7.2.1 This device do not include accessories for repair usage. The repair should be carried out by authorized person or authorized after service center.

7.2.2 Keep the device in a dry storage condition.

7.2.3 Do not throw, beat or shock the equipment.

7.2.4 Do not smear the device with pigments.

7.2.5 Calibration is recommended when using a new/other contra angle or after an extended period of operation, as the running properties can change with usage, cleaning and sterilization.

7.2.6 Replace the battery if it seems to be running out of power sooner than it should.

7.3 Transportation

7.3.1 Excessive impact and shake should be prevented in transportation. Lay it

carefully and lightly and don't invert it.

7.3.2 Don't put it together with dangerous goods during transportation.

7.3.3 Avoid solarization and getting wet in rain and snow during transportation.

8 Environmental protection

Please dispose according to the local laws.

9 After service

From the date of sale of this device, if there is any quality problem with this device, we will repair it free of charge with the warranty card.

Please refer to the warranty card for the warranty period.

10 European authorized representative



MedNet EC-REP C IIb GmbH
Borkstrasse 10 · 48163 Muenster · Germany

11 Symbol instruction

	Follow Instructions for Use		Serial number
	Date of manufacture		Manufacturer
	Type B applied part		Class II equipment
IPX0	Ordinary equipment		Recovery
	Used indoor only		Keep dry
	Handle with care		Appliances compliance with WEEE directive
	Humidity limitation		Temperature limitation
			CE marked product
	Atmospheric pressure for storage		Standby symbol
			Sterilizable in a steam sterilizer (autoclave) at the temperature specified
	Authorised Representative in the EUROPEAN COMMUNITY		
	Medical Device		

12 Statement

All rights of modifying the product are reserved to the manufacturer without further notice. The pictures are only for reference. The final interpretation rights belong to GUILIN WOODPECKER MEDICAL INSTRUMENT CO., LTD. The industrial design, inner structure, etc, have been claimed for several patents by WOODPECKER, any counterfeiting or forgery of products must undertake legal responsibilities.

13 EMC-Declaration of conformity

The device has been tested and homologated in accordance with EN 60601-1-2 for EMC. This does not guarantee in any way that this device will not be affected by electromagnetic interference. Avoid using the device in high electromagnetic environment.

Cable Name	Cable Type	Cable Length
Power adapter output line	Unshielded parallel lines	1.8m
Measuring wire	Unshielded parallel lines	1.6m
File clip line	Unshielded parallel lines	0.2m

Technical Description Concerning Electromagnetic Emission

Table 1: Declaration - electromagnetic emissions

Guidance and manufacturer's declaration - electromagnetic emissions		
The model Endo Space is intended for use in the electromagnetic environment specified below. The customer or the user of the model Endo Space should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The model Endo Space uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	
		The model Endo Space is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.

Technical Description Concerning Electromagnetic Immunity

Table 2: Guidance & Declaration - electromagnetic immunity

Guidance & Declaration — electromagnetic immunity			
The model Endo Space is intended for use in the electromagnetic environment specified below. The customer or the user of the model Endo Space should assure that It is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance

Electrostatic discharge (ESD) IEC 61000-4-2	±8kV contact ±2, ±4, ±8, ±15kV air	±8kV contact ±2, ±4, ±8, ±15kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines ±1kV for input/output lines	±2kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±0.5, ±1kV line to line ±0.5, ±1, ±2kV line to earth	±0.5, ±1kV line to line	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95% dip in U_T) for 0.5 cycle <5 % U_T (>95% dip in U_T) for 1 cycle 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 250 cycles	<5 % U_T (>95% dip in U_T) for 0.5 cycle <5 % U_T (>95% dip in U_T) for 1 cycle 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 250 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of the models Endo Space requires continued operation during power mains interruptions, it is recommended that the models Endo Space be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

Table 3: Guidance & Declaration - electromagnetic immunity concerning Conducted RF & Radiated RF

Guidance & Declaration - Electromagnetic immunity			
The model Endo Space are intended for use in the electromagnetic environment specified below. The customer or the user of the model Endo space should assure that they are used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance

Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz 6 Vrms in ISM bands	3 Vrms 150 kHz to 80 MHz 6 Vrms in ISM bands	
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 385MHz- 5785MHz Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communi- cation equipment (Refer to table 9 of IEC 60601-1- 2:2014+A1:2020)	3 V/m 80 MHz to 2.7 GHz 385MHz- 5785MHz Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communi- cation equipment (Refer to table 9 of IEC 60601-1- 2:2014+A1:2020)	Portable RF communi-cations equip- ment(in-cluding peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Endo Space, including cables specied by the manufacturer. Otherwise, degrada- tion of the performance of this device could occur.
NOTE 1 At 80 MHz and 800 MHz. the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
A) Field strengths from fxd transmitters, such as base stations for radio (cellular/cordless) tele- phones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment of fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the model Endo Space is used exceeds the applicable RF compliance level above, the model Endo Space should be observed to verify normal operation. If abnormal perfor- mance is observed, additional measures may be necessary, such as reorienting or relocating the model Endo Space.			
B) Over the frequency range 150KHz to 80 MHz, feld strengths should be less than 3V/m.			

Scan and Login website
for more information



Cut along the dashed line



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Website: <http://www.glwoodpecker.com>



MedNet EC-REP C IIb GmbH
Borkstrasse 10 · 48163 Muenster · Germany

Warranty Card

Name of Customer		(I) For Distributor
Address Details		
Postal Code		
Tel		
Model		
Motor Handpiece No.		
Contra-angle No.		
Purchase Date		
Contact Person		
Date	Maintenance Record	Repairer

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 Website: http://www.glwoodpecker.com

Distributor:

Seal

Warranty Card

Name of Customer		(II) Return to Manufacturer
Address Details		
Postal Code		
Tel		
Model		
Motor Handpiece No.		
Contra-angle No.		
Purchase Date		
Contact Person		
Date	Maintenance Record	Repairer

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Seal

Warranty Instruction

I Period validity:

The base, handpiece, power adapter have two years warranty period from the date of purchase. The contra-angle has one year warranty period. Other spare parts have six months warranty period.

II Range of warranty:

Within the warranty period of validity, we are responsible for any troubles caused by quality problems or products technique and structure.

III The following are beyond our warranty:

1. The damage caused by disobeying the operation instruction or lack of the needed condition.
2. The damage caused by unsuitable operation or disassembly without authorization.
3. The damage on product that caused by users' unexpected drop or impact to product.
4. The damage caused by unadvisable transportation or preservation.
5. There isn't the seal of distributor or the warranty card isn't filled in completed.

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Harm of fake products

 and **DTE** are two brands of Guilin woodpecker medical instrument company. Recently, growing fake ultrasonic scaler handpieces, tips curing lights are produced and sold on the market, which do harm to users' interest. On this issue, We Woodpecker will crack down fake products and provide safe and secure medical instrument products.

1. Harm of fake ultrasonic scaler handpieces.

- 1.1 Fake handpieces with poor-designed inner structure can lead to frequent power leakage, which may cause medical accidents.
- 1.2 Material used on fake handpieces don't pass biocompatible test, which can easily lead to irritability and poisoning.
- 1.3 Fake handpieces have quality problems of overheating, non-vibration and cracking, which cause ultrasonic scalers out of order.
- 1.4 Fake handpieces can't be compatible with ultrasonic scalers, thus leading to circuit burn out.

2. Harm of fake scaler tips.

- 2.1 Fake tips are low in toughness, poor in resistance and easy to crack, thus easily cause medical accident.
- 2.2 Fake tips' screw threads are roughly processed, which can cause handpiece's screw loosening and cracking.
- 2.3 Material used on fake tips is inferior and easily rusting, which can cause infection of patient.
- 2.4 Fake tips have used problem of poor water-spraying, bad screw-thread fit and water leaking, which leads ultrasonic scalers work wrongly.

3. Harm of fake curing light.

- 3.1 Fake curing light's batteries can cause self-ignite, even explosion with poor-quality material and no complete charging management.
- 3.2 Light intensity of fake curing light is not constant, when battery level goes down under 60%, it would lead to incomplete solidification of resin, causing secondary dental caries.

