USER MANUAL


PREP
ENDO
16:1
On
FWD
Air
Water
Setting
SPEED: r/min
1200
TORQUE: N.cm
2.0
P1
P2
P3
P4
P5
P6

CONTENTS

WARRANTY TERMS

I, Validity period:

From the date of purchase, we provide free maintenance for the whole machine 3 times in 2 years. (except mobile phones and easy worn parts.)

II, Warranty:

During the warranty period, we promise that the product quality such as raw materials or processing defects caused by responsible for the problem.

III, The following situations are not covered by the warranty

①. Damage caused by non-compliance with the operation manual or use for abnormal functions.

②. Man-made damage caused by improper operation or unauthorized disassembly.

③. Damage caused by improper transportation or storage and lack of maintenance.

④. There is no dealer's signature or the warranty is incomplete.

Dental Built-in Electric motor
WARRANTY CARD

Name of Customer	
Address Details	
Postal Code	
Tel	
Model	
Unit No.	
Handpiece No.	
Purchase Date	
Contact person	

Date	Maintenance Record	Repairer

1.For Customer
2.For Distributor
3.Return to Manufacturer

Dental Buit-in Electric motor
WARRANTY CARD

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1.For Customer
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01 SAFETY PRECAUTIONS

WARNING : Please read this manual carefully before using the device. And keep it properly for reference.

1) The equipment must be used within the scope mentioned in the manual. If the user does not operate according to the requirements of the manual or use the equipment for other purposes, the manufacturer will not be responsible for it;
2) When using an external power supply, please confirm whether the voltage is within the voltage range marked by the power adapter, otherwise it may cause injury to the operator or patient;
3) The use of non-original accessories, especially non-original contra-angle hand pieces, motors or power adapters, may be dangerous to the patient or operator. At the same time, it will cause damage to the equipment;
4) The accessories of this product, such as adapters, contra-angles, etc., are damaged. Please contact the manufacturer or dealer to purchase original accessories, and replace and use them according to the instructions in the manual;
5) To avoid electric shock. Do not insert other objects into the unit. Otherwise it may cause electric shock or damage to the machine;
6) Before initial start-up and after each use. Follow the instructions for cleaning and disinfection;
7) Avoid liquid entering the machine during maintenance to avoid short circuit and failure;
8) Before each use, please check whether the product and accessories are properly connected.
9) Before each use, please test run the equipment, if there is irregular running noise, excessive vibration or overheating, please stop using.
10) When the machine has serious abnormality caused by improper use or physical damage, stop using it immediately and turn off the equipment, contact the manufacturer or authorized dealer for repair;
11) Turn off the power after use, if the machine is stored for a long time, please drain the water in the hose;
12) The device has electromagnetic interference, please do not use it around patients with pacemakers or electronic surgery;
13) Unstable voltage and in the electromagnetic field will interfere with the normal operation of the machine;
14) Classified according to the degree of safety used in the case of flammable anesthetic gas mixed with air or flammable anesthetic gas mixed with nitrous oxide: non-AP/APG type;
15) This machine is for use by professional dentists only.

Expected usage:
This device is used with dental straight or contra-angle hand pieces to provide driving force for general dentistry, restorative dentistry and root canal therapy. For use only by a professional dentist in a hospital or dental office.

Contraindications:
Do not use this device on patients with implanted cardiac pacemakers or other systems.

02 PRODUCT STRUCTURE

①	Drive Box
②	Controller
③	Motor with cable
④	Power cord

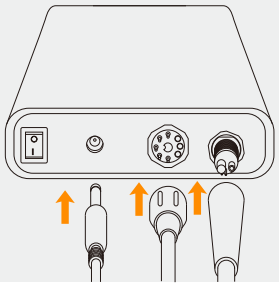
03 Installation

3.1 Connect motor

Connect the motor to the motor connector and tighten in the direction of the arrow.

3.2 Connect controller

1) Connect the motor tube to the motor connector of the main unit.
2) Connect the water and gas pipes to the 4-hole/2-hole standard connector on the main unit.
3) Insert the adapter plug into the adapter jack on the main unit.



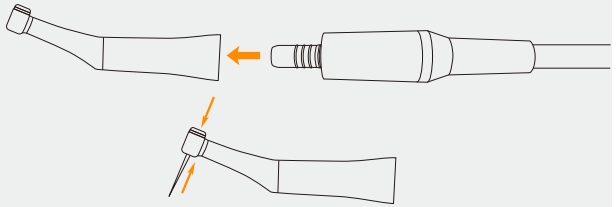
3.4 Connect handpieces / Burs / Files

Repair mode:
Align the phone port with the motor connection shaft, then press gently until it clicks into place. To remove the contra-angle hand-pieces, pull it straight out.

The motor can be adapted to all straight and curved hand-pieces according to ISO 3964.

Endo pattern:
1) Align the mobile phone interface with the motor connecting shaft, and then press gently to insert it until it clicks into place. To remove the contra-angle. Pull it out vertically.

2) Press the curved hand-pieces cover, insert the root canal file into the curved hand-pieces collet, release the cover after it is fully engaged, and pull it slightly along the axial direction to check whether the root canal file is securely clamped, and remove it if necessary For root canal file, firmly press the phone cover to pull out the file.



In this mode, only the dedicated 16:1 bending machine can be used, otherwise the equipment will be damaged.
Compliant with IS01797-1 type1. endo files with a diameter of 2.35mm can be connected to the bending machine.

04 Using Instruction

4.1 Operation interface

①	Gear ratio switching
②	Turn on/off motor LED light
③	Turn on/off cooling water
④	Turn on/off cooling air
⑤	Function setting button
⑥	Switch forward/reverse
⑦	Preparation mode button
⑧	Endo mode button
⑨	Display current speed
⑩	Display current torque
⑪	Speed adjustment button +/-
⑫	Torque adjustment Button +/-
⑬	Start button
⑭	Preset programs (6 in total)

1) Incorrect use of air pressure can cause equipment damage. Please set the air pressure as required.
2) Make sure to dry with compressed air free of dust and oil.
3) Make sure the water output value is between 7.2-7.8.
4) Route the power cord and motor hose correctly to avoid stepping on it.

WARNING : Before using the equipment, turn on the water and steam to run the equipment for at least 20 seconds.

4.2 On/Off

Press the power switch to turn the device on/off.

4.3 Start

Touch the screen to start:
Press ▶ to start the motor, and press this key again to stop.

Pedal:
Depress the foot pedal to start the motor, release it to stop.

4.4 Function option

Users can choose rotation direction, air, water, transmission ratio and LED light functions according to their needs.

Function	Options	description
Rotation direction	F R A	Forward,reverse,reciprocating motion automatic reverse
Air		On/Off air
Water		On/Off water
Transmission ratio	1:1 1:5 16:1	Select the transmission ratio (1:1,1:5,16:1)
LED light		On/Off motor LED light

4.4.1 Adjusting speed and torque

Press "⊕" or "⊖" to increase or decrease the speed value.

Press "⊕" or "⊖" to increase or decrease the torque value.

4.5 Operating modes

The device has two modes:
REPE: Tooth restoration, tooth preparation, break crown, pulp opening, caries removal and polishing
ENDO: The root canal is enlarged and shaped.
Press **"PREP"/"ENDO"** to switch between PREP mode or ENDOmode.

PREP MODE

ENDO MODE

4.5.1 PREP mode

There are 6 operating programs in this mode, including two user-defined programs:Custom 1 and Custom 2.
Users can select different programs by touching the program name button according to their needs.
The default settings for each program are as follows:

WARNING : The transmission ratio of the mobile phone set by the system must be consistent with the actual connection used.

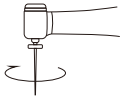
Preset Programs	Transmission Ratio	Rotation Speed	Rotation direction	Water	Air
P1	1:1	300	FWD	OFF	OFF
P2	1:1	5,000	FWD	OFF	OFF
P3	1:1	10,000	FWD	OFF	OFF
P4	1:1	20,000	FWD	OFF	OFF
P5	1:1	30,000	FWD	OFF	OFF
P6	1:1	40,000	FWD	OFF	OFF

4.5.2 ENDO mode

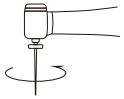
WARNING : In this mode, only a dedicated 16:1 bending machine can be used, otherwise it will cause equipment damage.

1) Be sure to use the file according to the file manufacturer's instructions.
2) Do not start the motor when installing/removing the file.
3) When choosing a file, it must be consistent with the actual root canal file used.
4) Do not confuse reciprocating burrs with continuous burrs.
5) Please properly maintain and maintain the bending machine, otherwise the torque value may be deviated.

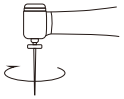
Auto reverse:
If the load reaches the preset torque limit while the motor is running, the motor will automatically rotate in reverse and exit. When the load decreases, the motor automatically returns to forward rotation.



The load is within the torque limit,The motor is rotatingforward.



If the load is further applied, the torque limit value is exceeded, and the motor rotates reflexively.

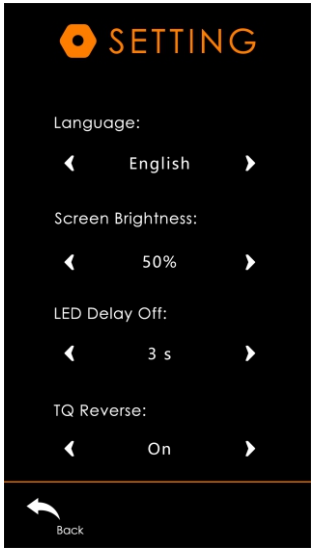


When the load decreases, Motor resumes forward rotation

05 Setting

Press ⬢ to enter the setting page

Setting page



1) Language:
Click "◯" to switch the language of the machine, the "◯" before the selected language becomes "●".

2) Screen brightness:
Press "❮ " or " ❯ " to adjust the screen brightness of the machine, The 5 levels are: 0%, 25%, 50%, 75%, 100%.

3) LED Delay off:
Press "❮ " or " ❯ " to adjust the LED Delay off, 1s, 3s, 5s are optional.

4) TQ Reverse:
Press "❮ " or " ❯ " to choose whether to turn on or off the Auto reverse function.

06 Cleaning and Sterilization

6.1 Cleaning (applicable parts: Controller, motor hose, motor connector, motor, contra angle handpieces)

1) Wipe the main unit, motor hose, motor connector, and contra-angle with an alcohol-drenched rag or disposable towel until there is no visible residue on the surface. (The contra-angle can be rinsed with drinking water <38°C).
2) Special attention; be careful when cleaning the main unit and motor joints. Keep liquids out of the device to avoid short circuits or malfunctions.
3) Remove residue of cleaning solution with a damp cloth.
4) Allow the device to air dry for at least 5 minutes.

6.2 Sterilization(applicable parts: controller, motor hose, motor connector, motor, contra angle handpieces)

1) After cleaning, wipe all surfaces of the device with a new disposable cloth soaked in disinfectant for 5 minutes of contact time.
Follow the disinfectant manufacturer's instructions for use.
2) Disinfect the motor joint and surrounding crevice area with wet wipes throughout the contact time.
Avoid sanitizers getting inside the motor connector. Be careful to wipe off any remaining excess liquid with a dry disposable towel.
3) Wipe the device with a clean cloth. Wipe the device with a cloth dampened with ionized water for at least 30 seconds to remove all disinfectant. Discard the used cloth and repeat with a new second damp cloth for 30 seconds. Discard the second cloth and finish with a new third damp cloth for 30 seconds.
4) Wipe the device with a fourth dry sterile lint-free cloth to remove any liquid.
5) Allow the device to air dry for at least 5 minutes.
Do not use chlorine-based disinfectants.

6.3 Drying(applicable parts: controller, motor hose, motor connector, motor, contra angle handpieces)

After cleaning and disinfection, please dry it. It is recommended to use compressed air to dry it.
Only motors and contra-angles are suitable for use with the device for drying, and the temperature should be <90°C.

6.4 Packaging(applicable parts:motor,contra angle hand pieces)

Immediately after drying, put the motor and the contra-angle into a steam sterilization bag for airtight packaging.

A steam sterilization bag conforming to IS011607-1 should be used, and the package must be sealed with a sealer.

6.5 Sterilization(applicable parts:motor,contra-angle hand-pieces)

Please use an autoclave according to ISO 17665-1 for sterilization.

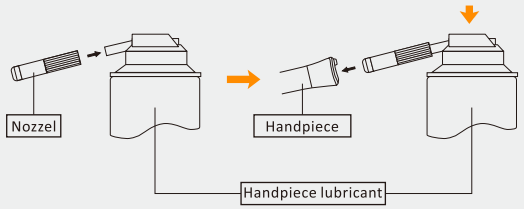
1) Sterilizable parts: contra-angle hand-pieces, motor;
2) Sterilization method: high pressure steam sterilization;
3) Sterilization conditions: at 134□, not less than 5min.
Before the motor can be sterilized, it must be removed from the motor connector.
4) Except for autoclavable parts. The rest of the components are not sterilizable.

6.6 Oiling

Oiling the hand-pieces,follow these steps:

1) Remove the bur (file):
2) Install the oil nozzle, insert the hand-pieces into the oil nozzle, and spray for 2-3 seconds.

It is recommended that straight or contra-angle hand-pieces be oiled after each cleaning, disinfection and before each sterilization.



07 Trouble Shooting

Fault decription	Cause analysis	Solution
Device not responding	Power is not turned on; The power cord is not plugged in properly;	Turn on the power switch of the device; Connect the power cord correctly;
Motor does not turn	Insufficient air pressure; I mproper motor connection; Excessive load;	Check whether the motor is connected correctly; Check whether the straight machine or the angle handpieces is faulty;
No cooling water /cooling air	The cooling water/cooling air function is not turned on; the internal components are faulty;	Turn on the cooling water/cooling air ; contact the dealer;
Insufficient cooling	Clogging of the spray holes	Clean the water holes
The motor makes a lot of noise or does not rotate smoothly	The motor is not installed or tightened properly;	Check that all connection interfaces are properly connected;
Torque calibration failed	The motor is not connected in place; contra angle handpieces/motor failure;	Reconnect the motor correctly; Replacing the contra angle handpieces /motor;
Straight/Contra angle handpieces does not emit light	Turn off the LED lighting function; Incorrect connection of straight/ contra-angle hand-pieces; LED damage; straight /contra angle hand pieces without lighting function;	Turn on the LED lighting function; Connect the straight /contra angle handpieces correctly until the positioning lock; replace the LED; replace the straight /contra angle handpieces with lighting function;
Insufficient torque	Wrong gear ratio setting; Straight handpieces/curved handpieces has large resistance;	Set the transmission ratio consistent with the use of a straight machine /angle hand pieces; Torque calibration before use;
Motor stops automatically	The auto-reverse function is not turned off;	Enter the settings page to turn off the auto-reverse function;
Overheating	The motor is overloaded;	Use after cooling down;
Too Fast/Too Slow	Wrong gear ratio setting;	Set the transmission ratio consistent with the use of straight handpieces /contra angle hand pieces;

08 Environment Storage Transportation

8.1 Operating Environment

Operating temperature	+5℃~+40℃
Working humidity	≤80%
Atmospheric pressure	86kPa~106kPa

8.2 Storage and transportation conditions

Storage temperature	+5℃~+55℃
Storage humidity	≤93%
Atmospheric pressure	50kPa~106kPa

8.3 Product Warranty

The warranty period of the host is 24 months from the date of purchase, the accessories (adapter and power cord) provided with the product are guaranteed for 6 months, and the rest of the accessories are not guaranteed.

8.4 Recycling and disposal

The warranty period of the host is 24 months from the date of purchase, the accessories (adapter and power cord) provided with the product are guaranteed for 6 months, and the rest of the accessories are not guaranteed.

09 Technical Parameters

9.1 Adapter input

input	AC100V-240V 50/60Hz
Output	DC28V/2.5A

9.2 Controller

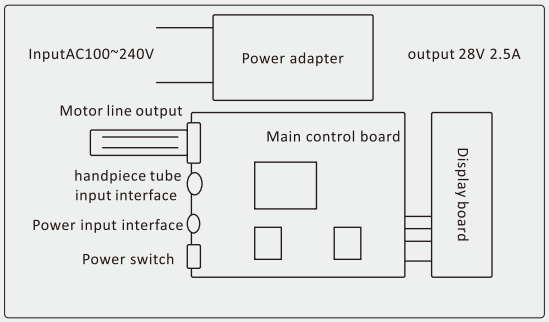
Dimension	L161mm x W126.5mm x H90mm
Operation mode	short-term operation

9.3 Motor

Motor speed	30,00~40,000 r/min
Torque	4 N.cm
Motor size	20.6 x 67.7mm
Motor cable length	1.65m
PH	7.2~7.8
Water supply	>50ml/min
Air flow volume	>1.5L/min (200kPa)
Maximum air flow	<40L/min250kPa-500kPa
Illumination	>1000lx
Classification by anti-motor program	type B
Classification by degree of protection against liquids	IPX0

10 Schemetics and Simpol

10.1 Circuit Schematic



10.2 Symbol Definitions


Warnning

Sterilizable temperature


indoor use

serial number

Type B device (not for heart)


up in this direction


Avoid get wet in the rain


Fragile, handle with care

11 Electromagnetic compatibility

1) Electromagnetic compatibility requirements of dental electric and Dafutai YY0505 standard;
2) The user should install and use it according to the electronic compatibility information provided by the insurance company;
3) Portable and mobile RF welcome devices may affect the performance of dental electric motors. Avoid strong electrical disturbances when using them, such as close to handpiece, microwave ovens, etc.;
4) The dental electric motor should not be used close to or stacked with other equipment. If it must be used close to or stacked, it should be observed and verified that it can operate normally in its configuration.
5) Except for cables sold by the manufacturer of the dental electric motor as spare parts for internal components, the use of unspecified accessories and cables may result in increased spectral emission or reduced immunity of the dental electric motor.

No.	Name	Cable length	Shielding
1	Power cord	1.5	No
2	Motor cable	1.65	No

Attachment:

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
(Dental Electric Motor) is intended for use in the electromagnetic environment specified below, The purchaser or user of (dental electric motor) should ensure that it is used in this electromagnetic environment:		
Emission test	**Compliance**	**Electromagnetic Environment - Guidelines**
GB4824 RF emission	Group 1	(Dental Electric Motor) uses RF energy only for its internal function. Therefore, its RF emissions are low and may not cause any interference in nearby electronic equipment.
GB4824 RF emission		(Dental Electric Motor) is suitable for use in all installations including domestic and direct connection to the domestic public low voltage supply network for domestic use.
GB17625.1 Harmonic emission		
GB17625.2 voltage fluctuation/ flicker emission		

Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
The purchaser or user of (dental low-voltage electric motor) is intended for use in the electromagnetic environment specified below, and the purchaser or user of (dental low-voltage electric motor) should ensure that it is used in this electromagnetic environment:			
Immunity test	**IEC 60601 Test Level**	**Compliance level**	**Electromagnetic Environment – Guidance**
Electrostatic Discharge (ESD) GB/T 17626.2	± 6kV contact discharge ± 8kV air discharge	± 6kV contact discharge ± 8kV air discharge	The ground should be wood,concrete or ceramic tiles, and if covered with synthetic material,the relative humidity should be at least 30%.
Electrical fast transient pulse group GB/T 17626.4	± 2kV to power wire	± 2kVto power wire	Grid power should be of quality typical in commercial or hospital settings.
Surge GB/T 17626.5	± 1kV wire-to-wire ± 2kV wire to ground	± 1kV wire-to-wire ± 2kV wire to ground	Grid power should be of quality typical in commercial or hospital settings.
Voltage sag, short-term interruption and voltage change on the input line GB/T 17626.11	<5% U_T lasting for 0.5 week (>95%dipping on U_T) 40%U_T lasting for 5 weeks (60% dipping on U_T) 70% U_T lasting for 25 weeks (30% dipping on U_T) <5% U_T lasting for 5s (> 95% dipping on U_T)	<5% U_T lasting for 0.5 weeks(>95%dipping on U_T) 40% U_T lasting for 5 weeks (60% dipping on U_T) 70% U_T lasting for 25 weeks (30% dipping on U_T) <5% U_T lasting for 5s (>95% dipping on U_T)	Grid power should be of quality typical in commercial or hospital settings.If the user of the (dental low-voltage electric motor) requires continuous operation during a power outage, and it is recommended that the (dental low-voltage electric motor) should be powered from an uninterruptible power supply or battery.
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m,50Hz/60Hz	The power frequency magnetic field should have the horizontal characteristics of power frequency magnetic field in typical places in typical commercial or hospital environment
Note: UT refers to alternating-current network voltage before test voltage is applied			
Rf conduction GB/T 17625.6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should not be used closer than the recommended separation distance to any part, including cables. This distance should be calculated by a formula corresponding to the frequency of the transmitter. Recommended separation distance d = 1.2√P d = √80 MHz to 800 MHZ d= 2.3√P 800 MHz to 2,5 GHz P In Watts (W), d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters are determined by surveying the electromagnetic sitea and should be lower than the compliance level in each frequency rangeb. Interference may occur near equipment marked with the following symbols.
Rf radiation GB/T 17626.3	3 V/m 80 MHz to 2,5 GHz	3 Vm	
Recommended separation distances between portable and mobile RF communication equipment and (dental low-voltage electric motors)			
Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
Recommended separation distances between portable and mobile RF communication equipment and (dental low-voltage electric motors)			

(Dental Electric Motor) is intended for use in an electromagnetic environment where radiated RF disturbances are controlled. According to the maximum output power of the communication equipment.(Dental Electric Motors) purchasers or users can maintain portable and mobile RF communication equipment through the recommendations below.Minimum distance between (transmitter) and (dental electric motor) to prevent electromagnetic interference.

Rated maximum output power/W of the transmitter.	**Isolation distance corresponding to different frequencies of the transmitter/m**		
	150 kHz ~ 80 MHz d = 1.2√P	80 MHz ~ 800 MHz d = 1.2√P	800 MHz ~ 2.5GHz d = 2.3√P
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For rated maximum output power of transmitters not listed in the table above, the recommended separation distance d, in meters (m), can be determined by the formula in the corresponding transmitter frequency column, where P is the maximum output rated power of the transmitter provided by the transmitter manufacturer in watts (W).
Note 1: At the frequency of 80MHz and 800MHz, the formula for the higher frequency range is used.
Note 2: These guidance may not be applicable in all cases where electromagnetic propagation is affected by absorption and reflection by buildings, objects and human bodies.