

# ***DTE***

## ***D5* ULTRASONIC PIEZO SCALER INSTRUCTION MANUAL**

(Please read this manual before operating)



Guilin Woodpecker Medical Instrument Co.,Ltd.

Website: [www.glwoodpecker.com](http://www.glwoodpecker.com)

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## **1. The installation and components of equipment**

### 1.1 Instruction

Guilin Woodpecker Medical Instrument Co., Ltd. is a professional manufacturer in researching, developing and producing ultrasonic piezo scaler. The product is mainly used for teeth cleaning and also an indispensable equipment for tooth disease prevention and treatment. The new product D5 ultrasonic piezo scaler has scaling, perio, endo functions. It contains the following features:

1. Automatic frequency tracking ensures that the machine always works on the best frequency and more steadily.
2. The handpiece is detachable and can be autoclaved under the high temperature of 135°C and the pressure of 0.22MPa.
3. Digitally controlled, easy operation and more efficient for scaling.

These features make D5 become a new generation product in the world dental market nowadays.

### 1.2 Components

1.2.1 The following parts should be included in a complete "DTE" D5 ultrasonic piezo scaler:

#### 1.2.2 Product performance and structure

a) Ultrasonic piezo scaler is composed of electrocircuit, waterway and ultrasonic transducer.

#### 1.2.3 Scope of application

a) Ultrasonic piezo scaler D5 is used for the dental calculus elimination and root canal treatment.

Number	Description	Type
1	Main unit	/
2	Detachable handpiece	Φ 18mm×117mm
3	Adapter of power supply	133mm × 58mm× 35mm
4	Foot pedal	100mm × 62mm× 36mm
5	Scaling tip	/
6	Water line	Φ 6mm×Φ4mm
7	Torque wrench	Φ 32mm×39mm
8	Handpiece decorative ring	Φ17mm×Φ15.4mm×2mm
9	Waterproof "o" ring	Φ3.2mm×1.1mm
10	Packing list	/
11	Instruction manual	/
12	Warranty card	/
13	Qualified certificate	/
14	Endochuck	/
15	Endo wrench	/

**The DTE scaling tips and their accessories are not listed in this instruction manual completely. The detail can be found in the instruction for tips and packing list attached to the machine.**

### 1.3 The main technical specifications

#### 1.3.1 Technical specifications of ultrasonic scaler

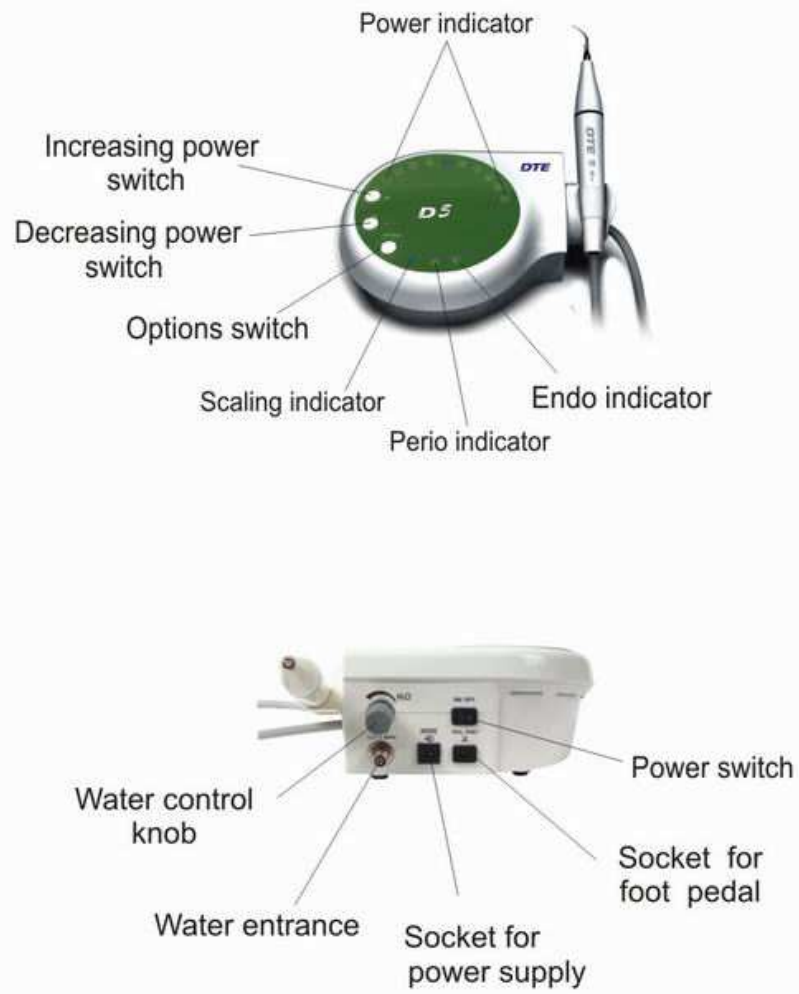
- a) Power source Input: 100V-240V~ 50Hz/60Hz 1.2A (max)
- b) main unit input: 30VDC 1.3A
- c) Output primary tip Vibration excursion:  $\leq 100\mu\text{m}$
- d) Output half-excursion force:  $< 2\text{N}$
- e) Output tip Vibration frequency:  $28\text{kHz} \pm 3\text{kHz}$
- f) Output power: 3W ~20W
- g) main unit fuse: 250V/ T 1.6AL
- h) power source fuse: 250V /T 2.0AL
- i) Water pressure: 0.1bar~5bar (0.01MPa ~0.5MPa)
- j) Weight of main unit: 0.65kg
- k) Weight of power source: 0.3kg
- l) main unit volume:  $188\text{mm} \times 159\text{mm} \times 81\text{mm}$
- m) Operating mode: Continuous operation
- n) Type of protection against electric shock: Class II
- o) Degree of protection against electric shock: Type BF equipment
- p) Degree of protection against harmful ingress of water: Ordinary equipment (IPX0) Protection degree against water(used on the pedal): IPX1
- q) Degree of safety of application in the presence of a Flammable Anaesthetic Mixture with air or with Oxygen or Nitrous Oxide: Equipment not suitable for being used in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide

### 1.4 Installation of the main components

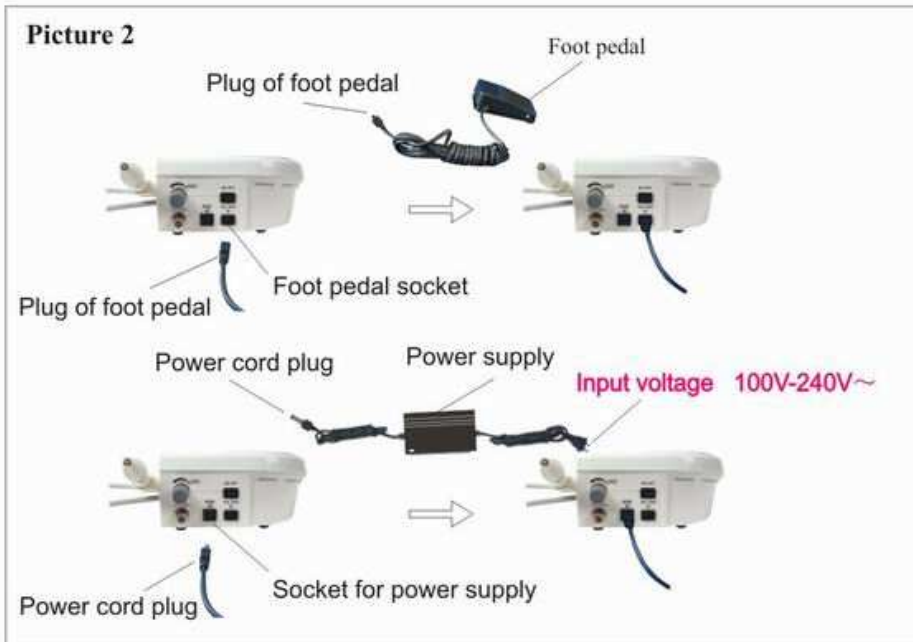
#### 1.4.1 Sketch map for installation and connection.

a)The components of the equipment

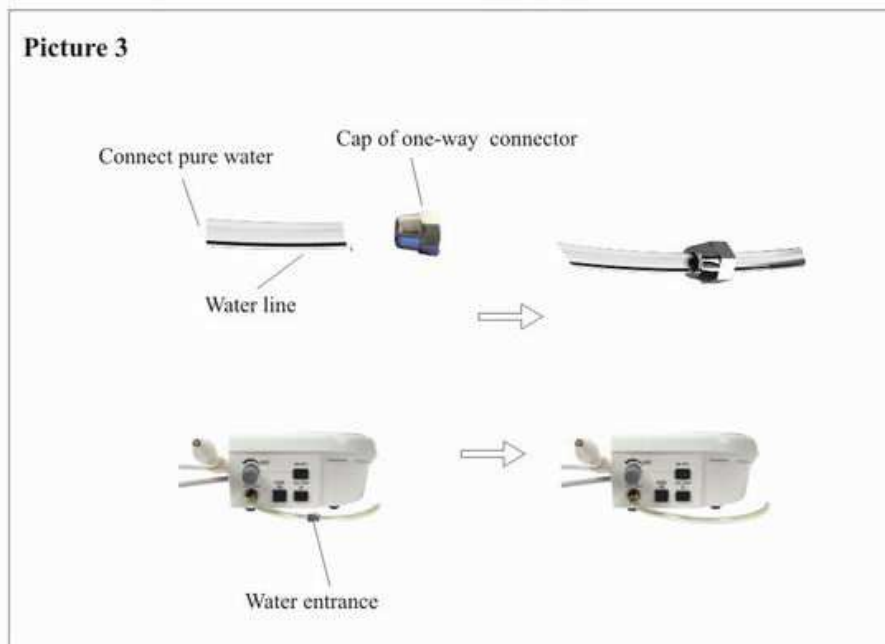
Picture 1



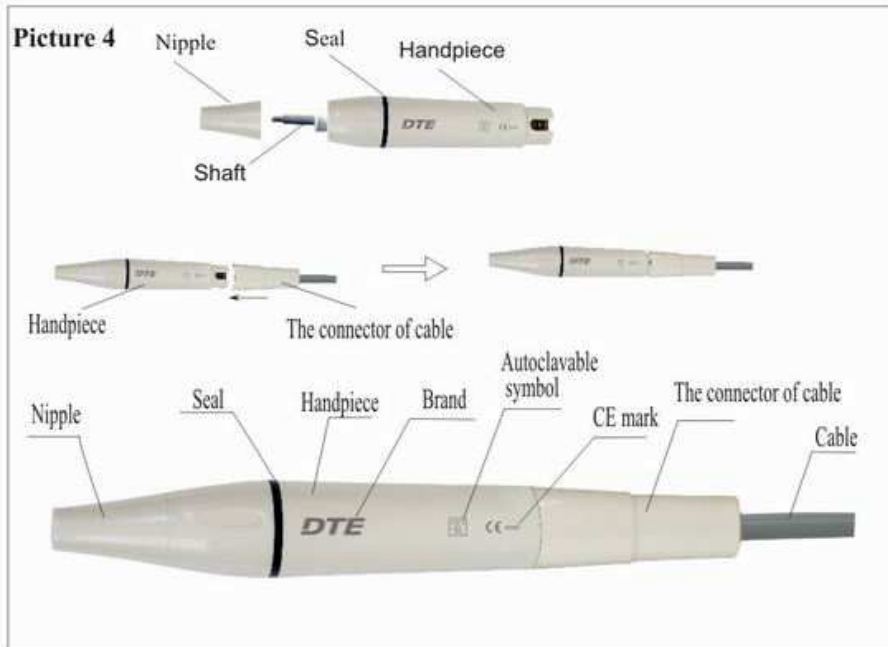
b) Sketch map for connection of foot pedal , power supply and main unit



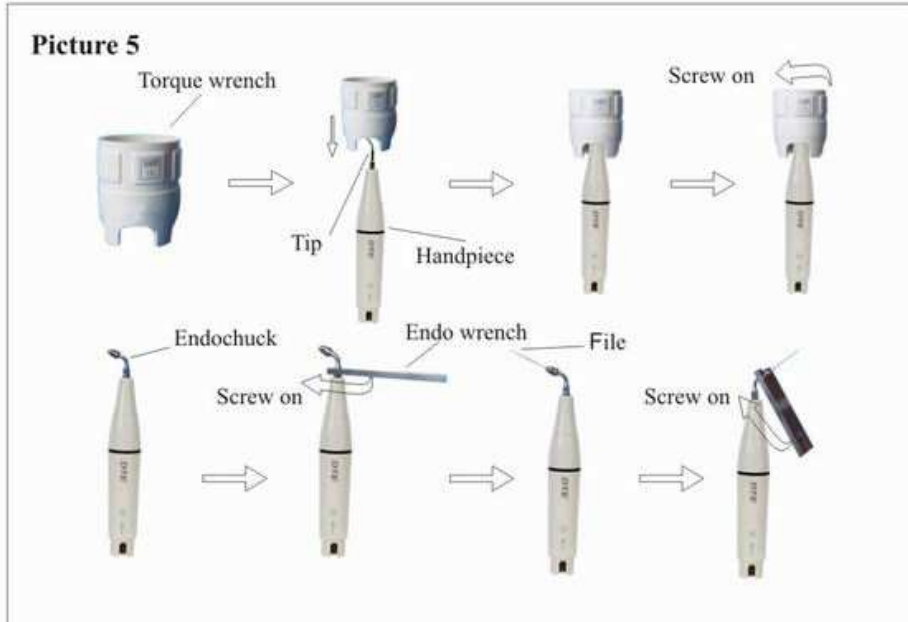
c) Sketch map for connection of wate supply system



d) Sketch map for connection of detachable handpiece



e) Sketch map for how to install tip and endochuck with wrench





## **2. Product function and usage**

### 2.1 Scaling function

#### 2.1.1 Usage

- a) Open the packing box, make sure that all the parts and accessories are complete according to the packing list. Take the main unit out of the box and put it on a stable plane.
- b) Turn the water control switch to the max based on symbol as shown as 3.5.2[note 1].
- c) Insert the plug of the foot pedal to its socket (picture 2).
- d) Connect one end of the water line to the water entrance, and the other end to the pure water source (picture 3).
- e) Screw the scaling tip tightly to handpiece by torque wrench, then connect the handpiece and the connector of cable correctly.
- f) Insert the plug of the power source to its socket, then get through to the electricity (picture 2).
- g) Switch on the main unit, then the scaling indicator and the fifth lead light of power regulator shine.
- h) Select a suitable scaling tip as you need, screw it on the handpiece tightly by the torque wrench (picture 5).
- i) The normal frequency is extremely high. Under the normal working state of scaling tips, a light touch and a certain to-and-fro motion will eliminate the tartar without heating. Overexertion and long-time lingering are forbidden.
- j) Vibrating intensity: Adjust the vibration intensity as you need, generally turn the knob to the middle grade. According to patient's different sensitivity and the rigidity of the gingival tartar, adjust the vibration intensity during the clinical treatment.
- k) Water volume adjust: Step on the foot pedal, and the tip begins to vibrate, then turn the water control switch to form fine spray to cool down the handpiece and clean the teeth.
- l) The handpiece can be handled in the same gesture as a pen in hand.

m) During the clinical treatment, be sure not to make the end of tip touch the teeth vertically and not to make the tip overexert on the surface of the teeth in case of hurting the teeth and damaging the tip.

n) After finishing operation, keep the machine working for 30 seconds on the water supply condition in order to clean the handpiece and the scaling tip.

o) Unscrew the scaling tip and pull out handpiece, then sterilize them.

Notice: Don't pull out the handpiece when the foot pedal is stepped on and the machine is vibrating.

2.1.2 Instruction for main components of detachable handpiece (showed in picture 4):

a) Nipple: The nipple can be removed. You can screw out the nipple and clean the pole with alcohol termly.

b) Handpiece seal: The seal can be removed and cleaned with alcohol termly.

c) Handpiece: The main part of the whole handpiece, can be autoclaved under the high temperature and pressure.

d) The connector of the cable: Connect the handpiece with the water source and power supply of the main unit.

**Notice:** Keep dry when the detachable handpiece connect to the connector of the cable.

2.1.3 Torque wrench use instruction (showed in picture 5)

a) The torque wrench's structure is designed in special way which can control the strength of the scaling tip's installation properly and correctly. It also can guarantee the operator screw or unscrew the scaling tip effectively and keep their hands away from being scratched.

b) Operation

① Take the scaling tip into the torque wrench; operate as showed in picture 5.

② Tip installation: Hold the handpiece turn the tip toward direction as showed in picture 5 with the torque wrench. Turn two more circles when the tip stops, then the tip is installed.

③ Tip uninstallation: Hold the handpiece, turn the wrench toward anti-clockwise

direction.

- ④ Sterilize it in sterilizer after each treatment.
- ⑤ The torque wrench must be cooled naturally after sterilization to avoid scald when using next time.
- ⑥ Keep the torque wrench in a cool, dry and ventilated place and be clean.

**c) Precaution**

The following sterilizing methods are forbidden.

- ① Braise in liquor;
- ② Dip in iodine, alcohol or glutaraldehyde;
- ③ Torrefy in oven or microwave oven.

Notice: we are not responsible for any damage of the torque wrench directly or indirectly made by any way in the above items.

**2.2 Endo function**

**a) Usage process**

- ① Fix endochuck to handpiece by endo wrench.
- ② Unscrew the screw cap on the endochuck.
- ③ Put the ultrasonic file into the hole in the front of endochuck.
- ④ Screw down the screw cap with endo wrench to tight up the ultrasonic file.
- ⑤ Press option key, turn to endo function.
- ⑥ When ultrasonic scaler turns into endo function, only the first lead light is on and the power is at 1st grade. Put the ultrasonic file into the patient's root canal slowly, step on the foot pedal, then make endo treatment. During the treatment, turn up the power gradually according to the needs.

**b) Notice**

- ① When fixing endochuck, it must be screwed down.
- ② The screw on the endochuck must be screwed down.
- ③ Don't press it too much when the ultrasonic file in root canal.
- ④ Don't start up the foot pedal until the ultrasonic file is in root canal.
- ⑤ The power range is supposed from 1st to 5th grades.

### 3. Sterilization and maintenance

#### 3.1 Sterilization of detachable handpiece

##### 3.1.1 Autoclaved in high temperature/pressure:

- a) 121°C/1bar (0.1MPa)
- b) 135°C/2.2bar (0.22MPa)
- c) Pull out the handpiece and unscrew scaling tip and endochuck after each operating.
- d) Pack the handpiece with sterile gauze or sterile bag before sterilizing.
- e) Reuse handpiece after it cools naturally in case of burning hand.

##### 3.1.2 Notice

- a) Clear the cleaning liquid in the handpiece with compressed air before sterilization.
- b) Be sure that the scaling tip has been unscrewed from the handpiece and it cannot be sterilized with others.
- c) Please notice whether the outer of the handpiece is damaged during the treatment or sterilization, don't smear any protective oil on the surface of handpiece.
- d) There are two waterproof "o" rings at the end of handpiece. Please lubricate them with dental lube frequently, as sterilization and repeated pulling and inserting will reduce their using life. Change a new one once it is damaged or worn excessively.
- e) The following sterilizing methods are forbidden:
  - ① Put handpiece into any liquid for boiling.
  - ② Dip handpiece in disinfectors such as iodine, alcohol and glutaraldehyde.
  - ③ Put handpiece into oven or microwave oven for baking.

#### 3.2 Sterilization of scaling tips and endochuck

- a) All the scaling tips and endochuck can be disinfected with alcohol cotton or disinfected cloth. It's also ok to disinfect them by ultrasonic cleaner.

#### 3.3 Sterilization of torque wrench and endo wrench

a)The torque wrench and endo wrench can be disinfected by neutral non-corrosive disinfectant for cleaning and sterilizing, or be sterilized in high temperature and pressure.

b) The following sterilization ways for torque wrench are forbidden:

- ① Braise in liquor;
- ② Dip in iodine, alcohol or glutaraldehyde;
- ③Torrefy in oven or microwave oven.

Notice: We are not responsible for any damage of the torque wrench directly or indirectly made by any way in the above items.

3.4 Cleaning of tips, endocuck, torque wrench and endo wrench The scaling tip, endochuck, torque wrench and endo wrench can be cleaned by ultrasonic cleaner.

### 3.5 Trouble analysis , solutions and notes

#### 3.5.1 Trouble analysis and solutions

Phenomena of troubles	Possible causes	Solutions
The scaling tip doesn't vibrate and there is no water flowing out when getting through the electricity.	The power line plug is in loose contact	Make the plug insert to the socket well
	The foot switch is in loose contact	Insert the foot switch to its socket tightly
	The fuse of transformer is broken	Contact our dealers or us
	The fuse in the main unit is broken	Contact our dealers or us
The scaling tip doesn't vibrate but there is water flowing out when getting through the electricity	The tip is in loose contact	Screw the tip on the handpiece tightly (picture 5 )
	The connect plug between the handpiece and the circuit board is in loose contact	Contact our dealers or us
	Something wrong with the handpiece	Dismantle the handpiece and send it to our company to repair
	Something wrong with the cable	Contact our dealers or us
The scaling tip vibrates but there is no spray when getting through the electricity	The water control switch is not on	Turn on the water control switch <b>【note 1】</b>
	There is impurity in the electric-magnetic valve	Contact our dealers or us
	The water system is blocked	Clean the water line by three-way syringe <b>【note2】</b>

There is still water flowing out after the power is off.	There is impurity in the electric-magnetic valve	Contact our dealers or us
The handpiece generates heat	The water control switch is in a low setting	Turn the water control switch to a higher grade <b>【note 2】</b>
The amount of spouting water is too little	The water pressure is not high enough	Make the water pressure higher
	The water line is blocked	Clean the water line by three-way syringe <b>【note2】</b>
The vibration of the tip becomes weak	The tip hasn't been screwed on to the handpiece tightly	Screw the tip on the handpiece tightly(as showed in picture 5)
	The tip is loose by because of vibration	Screw on the tip tightly (as showed in picture 5)
	The coupling between the handpiece and the cable isn't dry	Dry it by the hot air
	The tip is damaged <b>【note3】</b>	Change a new one
There is water seeping from the coupling between the handpiece and the cable	The waterproof "O " ring is damaged	Change a new "O " ring
The u-file doesn't vibrate	The screw is loose	Tighten it
	Endochuck is damaged	Change a new one
There is noise coming from the endochuck	The screw is loose	Tighten it

If the problem still can't be solved, please contact with local dealer or manufacturer.

### 3.5.2 Notes

- a) [Note 1] Turn the water control switch toward direction showed in symbol till not be able to turn anymore, it comes to the min; on the contrary direction, the water volume increases step by step till the knob is black-out.
- b) [Note 2] Clean the water line with the three-way syringe of the dental unit (as showed in picture 6):

**Picture 6**



- ① Cut the water line at a distance of 10cm~20cm from the water entrance.
- ② Turn on the electricity and get through the electricity.
- ③ Connect the three-way syringe of dental unit to the water line.
- ④ Disassemble the tip or handpiece.
- ⑤ Step on the foot pedal.
- ⑥ Turn on the switch of the three-way syringe, press the water into the machine and the impurity blocked in the water line can be eliminated.

c) [Note 3] If the scaling tip has been screwed on tightly and there is fine spray too, the following phenomena show that the scaling tip is damaged:

- ① The vibrating intensity and the water atomization degree become weak obviously.
- ② During treatment, it produces the sound like "buzz" from the scaling tip.

#### **4. Precaution**



##### 4.1 Notice when using equipment

- 4.1.1 Keep the scaler clean before and after operation.
- 4.1.2 The handpiece, scaling tip, torque wrench, endo wrench and endochuck must be sterilized before each treatment.
- 4.1.3 Don't screw or unscrew the scaling tip and endochuck when step on the foot pedal.
- 4.1.4 The scaling tip must be fastened and there must be fine spray or drip coming from the tip when operating.
- 4.1.5 Change a new one when the tip and ultrasonic file are damaged or worn excessively.
- 4.1.6 Don't twist the tip and endochuck or rub them.
- 4.1.7 Don't use impurity water source and be sure not use normal brine instead of purity water source.
- 4.1.8 If use the water source without hydraulic pressure, the water surface should be one meter higher than the head of the patient.
- 4.1.9 Insure the connector of handpiece and the socket of the cable dry before installing the handpiece.

4.1.10 Don't pull the cable forcibly in case of the handpiece falling off the cable.

4.1.11 Don't knock or rub the handpiece.

4.1.12 After operating, turn off electricity source, then pull out the plug.

4.1.13 We are only responsible for the safety on the following conditions:

I The maintenance, repairment and modification are made by the manufacturer or the authorized dealer.

II The changed components are original of "DTE" and operated according to instruction manual.

4.1.14 The internal screw thread of the scaling tips produced by some manufactures is coarse, rusty and collapsed. This will damage the external screw thread of the handpiece irretrievably. Please use "DTE" brand scaling tips.

#### 4.2 Contraindication

4.2.1 The hemophilia disease patient is not allowed to use this equipment.

4.2.2 The patients or doctors with heart pacemaker are forbidden to use this equipment.

4.2.3 The heart disease patient, pregnant woman and children should be cautious to use the equipment.

#### 4.3 Storage and maintenance

4.3.1 The equipment should be handled carefully and lightly. Be sure that it is far from the vibration, and installed or kept in a cool,dry and ventilated place.

4.3.2 Don't store the machine together with the articles that are combustible, poisonous, caustic, and explosive.

4.3.3 This equipment should be stored in a room where the relative humidity is  $\leq 80\%$  , atmospheric pressure is 50kPa~106kPa, and the temperature is  $-10^{\circ}\text{C}\sim+50^{\circ}\text{C}$ .

4.3.4 If not use for a long time, please make the machine get through the electricity and water once per month for five minutes.

#### 4.4 Transportation

4.4.1 Excessive impact and shake should be prevented in transportation. Lay it carefully and lightly and don't invert it.

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

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

#### 4.5 Working condition

a) Environment temperature: $5^{\circ}\text{C}\sim40^{\circ}\text{C}$

b) Relative humidity: $\leq 80\%$



c) Atmosphere pressure : 50kPa~106kPa









4.6 Notice: This model was only matched the adapter of our company.

### 5. After-service

We offer one year's free repair to the equipment from the date when it is sold and lifetime maintenance.

The repair of the equipment should be carried out by our professional technician. We are not responsible for any irretrievable damage caused by the non-professional person.

### 6. Symbol instruction

	Trademark		Notice ! Please read the instruction
	Class II equipment		Use indoor only
	Type BF equipment	IPX0	Ordinary equipment
	Alternating current	IPX1	Drip-proof
	Connection for the pedal		Can be autoclaved
	Adjustment for the water flow		30VDC power supply socket
ON/OFF	Power switch		Water entrance pressure 0.01MPa-0.5MPa
	CE marked product		FDA marked product
	Appliance compliance WEEE directive		

Product conforms with the standard of ENISO 9001:2000, ENISO 13485:2003, IEC 60601-1, EN 60601-1-2

## **7. Environmental Protection**

There is not any harm factor in our product. You can deal with it based on the local law.

**We reserve the right to change the design of the equipment, the technique, fittings, the instruction manual and the content of the original packing list at any time without notice. If there are some differences between blueprint and real equipment, take the real equipment as the norm.**

## **8. For technical data, please contact**

YAOTONG S.L.  
MAYORISTA IMPORTACIÓN Y EXPORTACIÓN  
C/: AUSIÀS MARC 92-98 esc.C entre.3a  
08013 BARCELONA ESPAÑA  
TEL:0034-93 244 0204

## **9. Warning**

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 effected by electromagnetic interference. Avoid using the device in high electromagnetic environment.

## Guilin Woodpecker Medical Instrument Co.,Ltd.

Add: 2 Fuxing Road, Guilin, Guangxi , China

Tel: 86-773-5855350(English service for 24 hours)  
86-773-5831172

Fax: 86-773-5822450

E-mail: [woodpecker@gx163.net](mailto:woodpecker@gx163.net)

Website: [www.glwoodpecker.com](http://www.glwoodpecker.com)

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