Industrial design patent No.: CN 200830300433.4
Please read this manual before operating

DTE®

D1 ULTRASONIC SCALER
INSTRUCTION MANUAL



www.glwoodpecker.com

GUILIN WOODPECKER MEDICAL INSTRUMENT CO., LTD.

Contents

1. The installation and components of equipment 1
2. Product function and operation 4
3. Maintenance 5
4. Cleaning, Disinfection and Sterilization 7
5. Precaution 13
6. After service 14
7. Symbol instruction 14
8. Environmental protection 15
9. Manufacturer's right 15
10. EMC - Declaration of conformity.....16
11. Statement 19
TABLE OF OPERATING POWER OF THE TIPS.....20

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 scalers. The product is mainly used for teeth cleaning and is also an indispensable equipment for teeth disease prevention and treatment. The product D1 ultrasonic scaler has scaling, perio functions.

It contains the following features:

1.1.1 Automatic frequency tracking ensures that the machine always works on the best frequency and performs more steadily.

1.1.2 Singlechip controlled, easy operation and more efficient for scaling.

1.2 Components

1.2.1 The components of the machine are listed in the packing list.

1.2.2 Product performance and structure

Ultrasonic scaler is composed of electrocircuit, water way and ultrasonic transducer.

1.2.3 Scope of application

Ultrasonic scaler Dl is used for the dental calculus elimination.

1.3 The main technical specifications

1.3.1 Power supply Input: 220-240V~ 50Hz/60Hz l50mA

1.3.2 Main unit input: 24V~ l.3A

1.3.3 Output primary tip Vibration excursion: ≤100μm

1.3.4 Output half-excursion force: <2N

1.3.5 Output tip Vibration frequency: 28kHz±3kHz

1.3.6 Output power: 3W to 20W

1.3.7 Main unit fuse: T l.6AL 250V

1.3.8 Power supply fuse: T0.5AL 250V

1.3.9 Water pressure: 0.lbar to 5bar (0.01MPa to 0.5MPa)

1.3.10 Weight of main unit: 0.62kg

1.3.11 Weight of power supply: 1 kg

1.3.12 Operating mode: Continuous operation

1.3.13 Type of protection against electric shock: Class II equipment

1.3.14 Degree of protection against electric shock: Type BF applied part

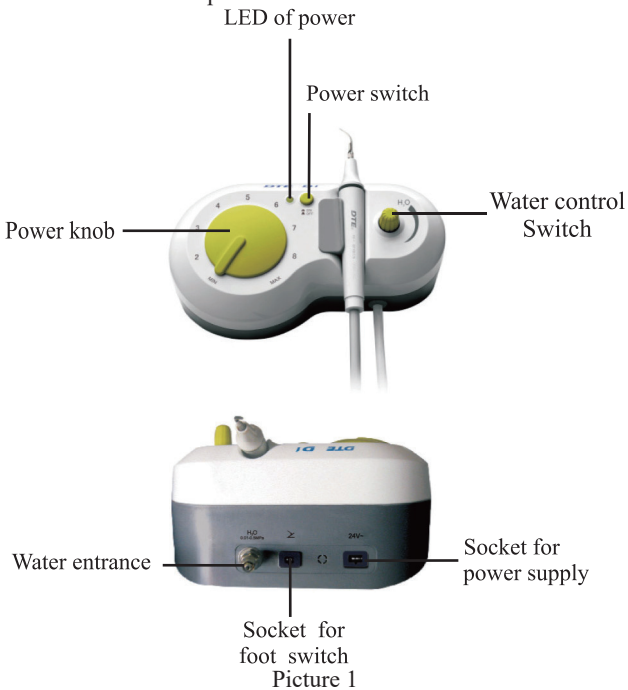
1.3.15 Degree of protection against harmful ingress of water: Ordinary equipment . Protection degree against water (used on foot switch): IPX1

1.3.16 Applied part of the equipment: handpiece and tip

1.3.17 Degree of safety of application in the presence of a Flammable Anesthetic Mixture with air or with Oxygen or Nitrous Oxide: Equipment not suitable for being used in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide

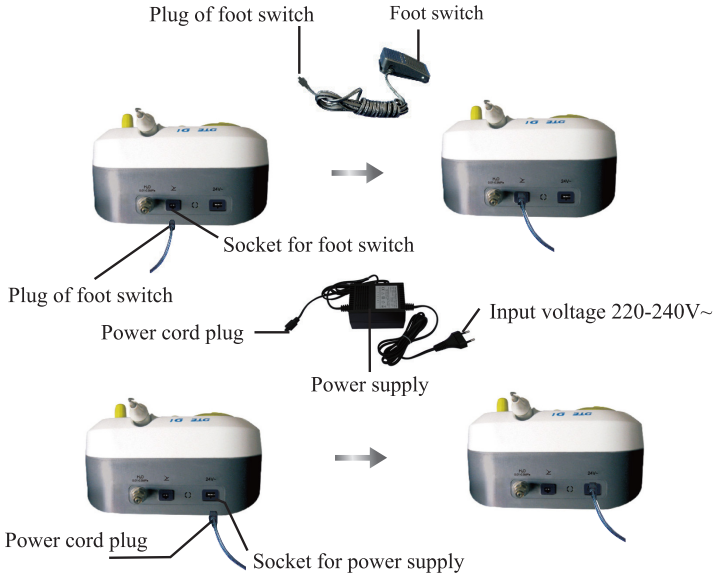
1.4 Installation of the main components

1.4.1 The front and back map of the main unit



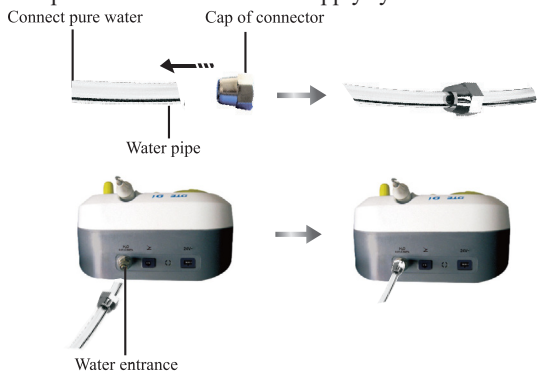
Picture 1

1.4.2 Sketch map for connection of foot switch,power supply and main unit



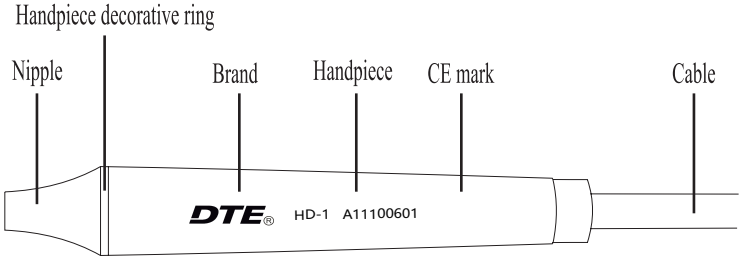
Picture 2

1.4.3 Sketch map for connection of water supply system



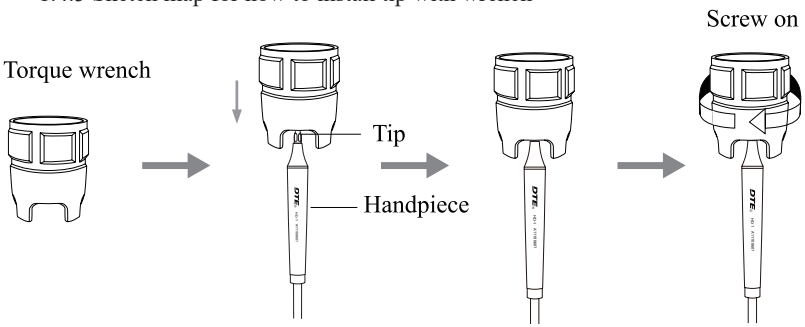
Picture 3

1.4.4 Sketch map for handpiece



Picture 4

1.4.5 Sketch map for how to install tip with wrench



Picture 5

2. Product function and operation

2.1 Scaling function

2.l.1 Operation

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 knob to the max based on symbol as shown in 3.5.2 [note l].

c) Insert the plug of the foot switch to its socket (picture 2).

d) Connect one end of the water pipe to the water entrance , and the other end to the pure water source (picture 3).

e) Insert the plug of the power supply to its socket , then get through to the power (picture 2).

f) Switch on the main unit, then the power indicator shines.

g) Select a suitable scaling tip as you need, screw it on the handpiece tightly by the torque wrench(picture5).

h)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 .

i)Vibrating intensity: Adjust the vibration intensity as you need, generally turn the knob to the middle grade. According to patients' different sensitivity and the rigidity of the gingival tartar, adjust the vibration intensity during the clinical treatment.

j) Water volume adjust: Step on the foot switch, 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.

k) The handpiece can be handled in the same gesture as a pen in hand.

l) 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.

3. Maintenance

3.1 Troubleshooting

Fault	Possible causes	Solutions
The scaling tip doesn't vibrate when stepping on the foot switch.	The power pipe 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 stepping on the foot switch.	The tip is in loose contact	Screw the tip on the handpiece tightly (picture5)
	The connect plug between the handpiece and the circuit board is in loose contact	Contact our dealers or us
	Problem of handpiece	Contact our dealers or us

Fault	Possible causes	Solutions
The scaling tip vibrates but there is no spay when stepping on the switch.	The water control switch is not on	Turn on the water control switch [note 1]
	There is impurity in the electric-magnetic valve	Contact our dealers or us
	The water system is blocked	Clean the water line by multi-function syringe [note 2]
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 [note 2]
The amount of spouting water is too little.	The water pressure is not high enough	Make the water pressure higher
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 tip is damaged [note3]	Change a new one

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

3.2 Notice

[Note l] The water control knob can adjust the water volume according to the symbol

[Note 2] Clean the water pipe with the multi-function syringe of the dental unit (as showed in picture 6):



Picture 6

a)Cut the water pipe at a distance of 10cm to 20cm from the water entrance

b)Turn on the electricity and get through to the electricity.

c)Connect the Multi-function syringe of dental unit to the water pipe.

d)Disassemble the tip or handpiece.

e)Step on the foot switch.

f)Turn on the switch of the Multi-function syringe, press the water into the machine and the impurity blocked in the water pipe can be eliminated.

[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:

a)The vibrating intensity and the water atomization degree become weak obviously.

b)During treatment, it produces the sound like "buzz" from the scaling tip.

4. Cleaning, Disinfection and Sterilization

The cleaning, disinfection and sterilization of tip, and wrench (include 1# torque wrench and Endo wrench) are as follow.

Unless otherwise stated, they will be hereinafter referred to as “products”.

Warnings

The use of strong detergent and disinfectant (alkaline pH>9 or acid pH <5) will reduce the life span of products. And in such cases, the manufacturer takes no responsibility.

This products shall not be exposed to high temperature above 138℃.

Processing limit

Theproducts have been designed for a large number of sterilization cycles. The materials used in manufacture were selected accordingly. However with every renewed preparation for use, thermal and chemical stresses will result in ageing of the products. The maximum number of sterilizations for tips is 300 times. And for wrench, it is 1000 times.

4.1 Initial processing

4.1.1 Processing principles

It is only possible to carry out effective sterilization after the completion of effective cleaning and disinfection. Please ensure that, as part of your responsibility for the sterility of products during use, only sufficiently validated equipment and product-specific procedures are used for cleaning/disinfection and

sterilization, and that the validated parameters are adhered to during every cycle.

Please also observe the applicable legal requirements in your country as well as the hygiene regulations of the hospital or clinic,especially with regard to the additional requirements for the inactivation of prions.

4.1.2 Post-operative treatment

The post-operative treatment must be carried out immediately, no later than 30 minutes after the completion of the operation. The steps are as follows:

Tools: Endo wrench or 1# torque wrench, tray, clean and dry soft cloth

1. Let the UltrasonicScaler works for 20-30 seconds at maximum water volume to flush the handpiece and tip;

2. Soak the soft cloth with pure water (or distilled water or deionized water), and then wipe all the surfaces of the handpiece and tip until the surface of them is not stained;

3. Dry the handpiece and tip with a clean, soft cloth;

4. Remove the tip from handpiece with Endo wrench or 1# torque wrench provided by Guilin Woodpecker Medical Instrument Co., Ltd, and then put the tip and wrench into a clean tray.

Notes

a) The water used here must be pure water, distilled water or deionized water.

4.2Cleaning

The cleaning should be performed no later than 24 hours after the operation.

The cleaning can be divided into automated cleaning and manual cleaning. Automated cleaning is preferred if conditions permit.

4.2.1Automated cleaning

•The cleaner is proved to be valid by CE certificationin accordance with EN ISO 15883.

▪There should be a flushing connector connected to the inner cavity of the product.

▪The cleaning procedure is suitable for the product, and the irrigating period is sufficient.

It is recommended to use a washer-disinfector in accordance with EN ISO 15883. For the specific procedure, please refer to the automated disinfection section in the next section "Disinfection".

Notes

a) The cleaning agent does not have to be pure water.It can be distilled water, deionized water or multi-enzyme. But please ensure that the selected cleaning agent is compatible with the product.

b) In washing stage, the water temperature should not exceed 45 °C, otherwise the protein will solidify and it would be difficult to remove.

c) After cleaning, the chemical residue should be less than 10mg / L.

4.3Disinfection

Disinfection must be performed no later than 2 hours after the cleaning phase.

Automated disinfection is preferred if conditions permit.

4.3.1 Automated disinfection-Washer-disinfector

•The washer-disinfector is proved to be valid by CE certification in accordance with EN ISO 15883.

•Use high temperature disinfection function. The temperature does not exceed 134 ° C, and the disinfection under the temperature cannot exceed 20 minutes.

•The disinfection cycle is in accordance with the disinfection cycle in EN ISO 15883.

Cleaning and disinfecting steps by using Washer-disinfector

1. Carefully place the product into the disinfection basket. Fixation of product is neededonly when the product is removable in the device. The products are not allowed to contact each other.

2. Use a suitable rinsing adaptor, and connect the internal water lines to the rinsing connection of the washer-disinfector.

3. Start the program.

4. After the program is finished, remove theproductfrom the washer-disinfector, inspect (refer to section "Inspection and Maintenance") and packaging (refer to chapter "Packaging"). Dry the productrepeatedly if necessary (refer to section "Drying").

Notes

a)Before use, you must carefully read the operating instructions provided by the equipment manufacturer to familiarize yourself with the disinfection process and precautions.

b)With this equipment, cleaning, disinfection and drying will be carried out together.

c)Cleaning: (c1)The cleaning procedure should be suitable for the product to be treated. The flushing period should be sufficient (5-10 minutes). Pre-wash for 3 minutes, wash for another 5 minutes, and rinse it for twice with each rinse lasting for 1 minute. (c2) In the washing stage, the water temperature should not exceed 45 °C, otherwise the protein will solidify and it is difficult to remove. (c3) The solution used can be pure water, distilled water, deionized water or multi-enzyme solution, etc., and only freshly prepared solutions can be used.(c4)During the use of cleaner, the concentration and time provided by manufacturer shall be obeyed. The used cleaner is neodisherMediZym (Dr. Weigert).

d)Disinfection: (d1) Direct use after disinfection: temperature ≥ 90 ° C, time ≥ 5 min or A0 ≥ 3000;

(d2)Sterilize it after disinfection and use: temperature ≥ 90 ° C, time ≥ 1 min or A0 ≥ 600

(d3) For the disinfection here,the temperature is 93 ° C, the time is 2.5 min, and A0>3000

e) Only distilled or deionized water with a small amount of microorganisms (<10 cfu/ml) can be used for all rinsing steps. (For example, pure water that is in accordance with the European Pharmacopoeia or the United States Pharmacopoeia).

f) After cleaning, the chemical residue should be less than 10mg / L.

g)The air used for drying must be filtered by HEPA.

h) Regularly repair and inspect the disinfector.

4.4Drying

If your cleaning and disinfection process does not have an automatic drying function, dry it after cleaning and disinfection.

Methods

1. Spread a clean white paper (white cloth) on the flat table, point the product against the white paper (white cloth), and then dry the product with filtered dry compressed air (maximum pressure 3 bar). Until no liquid is sprayed onto the white paper (white cloth), the productdrying is completed.

2. It can also be dried directly in a medical drying cabinet (or oven). The recommended drying temperature is 80℃~120℃ and the time should be 15~40 minutes.

Notes

a) The drying of product must be performed in a clean place.

b) The drying temperature should not exceed 138 °C;

c) The equipment used should be inspected and maintained regularly.

4.5Inspection and maintenance

In this chapter, we only check the appearance of the product.

4.5.1 Check theproduct. If there is still visible stain on the product after cleaning/disinfection, the entire cleaning/disinfection process must be repeated.

4.5.2 Check theproduct. If it is obviously damaged, smashed, detached, corroded or bent, it must be scrapped and not allowed to continue to be used.

4.5.3 Check theproduct. If the accessories are found to be damaged, please replace it before use. And the new accessories for replacement must be cleaned, disinfected and dried.

4.5.4 If the service time (number of times) of the product reaches the specified service life (number of times), please replace it in time.

4.6Packaging

Install the disinfected and driedproductand quickly package it in a medical sterilization bag (or special holder, sterile box).

Notes

a) The package used conforms to ISO 11607;

b) It can withstand high temperature of 138 °C and has sufficient steam permeability;

c) The packaging environment and related tools must be cleaned regularly to ensure cleanliness and prevent the introduction of contaminants;

d) Avoid contact with parts of different metals when packaging.

4.7Sterilization

Use only the following steam sterilization procedures (fractional pre-vacuum procedure*) for sterilization, and other sterilization procedures are prohibited:

1. The steam sterilizer complies with EN13060 or is certified according to EN 285 to comply with EN ISO 17665;

2. The highest sterilization temperature is 138 ° C;

3. The sterilization time is at least 4 minutes at a temperature of 132 ° C / 134 ° C and a pressure of 2.0 bar ~ 2.3 bars.

4. Allow a maximum sterilization time of 20 minutes at 134 °C.

Verification of the fundamental suitability of the products for effective steam sterilization was provided by a verified testing laboratory.

Notes

a) Only products that have been effectively cleaned and disinfected are allowed to be sterilized;

b) Before using the sterilizer for sterilization, read the Instruction Manual provided by the equipment manufacturer and follow the instructions;

c) Do not use hot air sterilization and radiation sterilization as this may result in damage to the product;

d) Please use the recommended sterilization procedures for sterilization. It is not recommended to sterilize with other sterilization procedures such as ethylene oxide, formaldehyde and low temperature plasma sterilization. The manufacturer assumes no responsibility for the procedures that have not been recommended. If you use the sterilization procedures that have not been recommended, please adhere to related effective standards and verify the suitability and effectiveness.

*Fractional pre-vacuum procedure = steam sterilization with repetitive pre-vacuum.The procedure used here is to perform steam sterilization through three pre-vacuums.

4.8Storage

4.8.1Store in a clean, dry, ventilated, non-corrosive atmosphere with a relative humidity of 10% to 93%, an atmospheric pressure of 70KPa to 106KPa, and a temperature of -20 °C to +55 °C;

4.8.2After sterilization,the product should be packaged in a medical sterilization bag or a clean sealing container, and stored in a special storage cabinet. The storage time should not exceed 7 days. If it is exceeded, it should be reprocessed before use.

Notes

a)The storage environment should be clean and must be disinfected regularly;

b) Product storage must be batched and marked and recorded.

4.9Transportation

1.Prevent excessive shock and vibration during transportation, and handle with care;

2. It should not be mixed with dangerous goodsduring transportation.

3. Avoid exposure to sun or rain or snow during transportation.

The cleaning and disinfection of main unit and handpiece are as follows.

1 Pre-Op processing

Before each use, the handpiece and main unitmust be cleaned and disinfected. The specific steps are as follows:

1.1 Manual cleaning steps:

1.1.1 Wet the soft cloth completely with distilled water or deionized water, and then wipe all the surfaces of the handpiece and main unit until the surface of them is not stained.

1.1.2 Wipe the surface of the handpiece and main unit with a dry soft nap-free cloth.

1.1.3 Repeat the above steps at least 3 times.

Notes:

a) Use distilled water or deionized water for cleaning at room temperature.

1.2 Manual disinfection steps:

1.2.1 Soak the dry soft cloth with 75% alcohol

1.1.2 Wipe all the surfaces of the handpiece and main unitwith a wet soft cloth for at least 3 minutes.

1.1.3 Wipe the surface of the handpiece and main unit with a dry soft nap-free cloth.

Notes:

a) The cleaning and disinfection must be performed within 10min before use.

b) The disinfectant used must be used immediately, no foaming is allowed.

c) In addition to 75% alcohol, you can use non-residue disinfectants such as Oxytechfrom Germany, but you must respect the concentration, temperature and time specified by the disinfectant manufacturer.

2 Post-Op processing

After each use, clean and disinfect the handpiece and main unit within 30 minutes. The specific steps are as follows:

Tools: Nap-free soft cloth, tray

2.1 Remove the tip from handpiece with Endo wrench or 1# torque wrench provided by Guilin Woodpecker Medical Instrument Co., Ltd, and then put the tip and wrench into a clean tray.

2.2 Soak the nap-free soft cloth with distilled water or deionized water, and then wipe all the surfaces of the handpiece andmain unituntil the surface of them is not stained.

2.3 Wet the dry soft cloth with 75% alcohol, and then wipe all surfaces of the handpiece andmain unit for 3 minutes.

2.4 Put the handpiece and main unit back into the clean storage area.

Notes:

a) The cleaning and disinfection must be performed within 10min before use.

b) The disinfectant used must be used immediately, no foaming is allowed.

c) In addition to 75% alcohol, you can use non-residue disinfectants such as Oxytechfrom Germany, but you must respect the concentration, temperature and time specified by the disinfectant manufacturer.

5. Precaution

5.1 Notice when using equipment

5.1.1 Keep the scaler clean before and after operation.

5.1.2 The handpiece, scaling tip, torque wrench, must be. sterilized before every treatment.

5.1.3 Don't screw the handpiece, scaling tip when stepping on the foot switch.

5.1.4 The scaling tip must be fastened and there must be fine spray or drip coming out from the tip when operating.

5.1.5 Change a new one when the tip and ultrasonic file are damaged or worn excessively.

5.1.6 While scaler working ,the heat of scaling tip will become higher if there is no water flowing out.Please keep the water flow smoothly.

5.1.7 Don't twist the tip or rub them.

5.1.8 Don't use impure water source and be sure not use normal brine instead of pure water source.

5.1.9 If use the water source without pressure, the water surface should be one meter higher than the head of the patient.

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

5.1.11 Don't knock or rub the handpiece.

5.1.12 Please put the power plug into the socket easy to pull out, to make sure it can be pull out in emergency.

5.1.13 The power supply is considered as a part of ME equipment.This device can only be equipped with the special power supply of Guilin Woodpecker Medical Instrument Co., Ltd.

5.1.14 The power supply is NOT waterproof. Please keep it dry and away from the water.

5.1.15 After operating, turn off power, then pull out the plug.

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

a) The maintenance, repair and modification are made by the manufacturer of the authorized dealer.

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

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

5.1.18 Please select a suitable power when using different type of tips (refer to "TABLE OF OPERATING POWER OF THE TIPS").

5.2 Contraindication

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

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

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

5.3 Storage and maintenance

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

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

5.3.3 This equipment should be stored in a room where the relative humidity is 10% ~ 93%, atmospheric pressure is 70kPa to106kPa, and the temperature is -20°C ~ +55°C.

5.3.4 If the machine is not used for a long time, please make it get through the power and water once per month for five minutes.

5.4 Transportation

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

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

5.4.3 Avoid solarization and getting wet in rain or snow during transportation.

5.5 Working condition

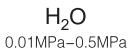
a) Environment temperature: 5°C to 40°C
b) Relative humidity: 30% ~ 75%
c) Atmosphere pressure: 70kPa to 106kPa
d) A temperature of the water at the inlet ~ not higher than 25°C

6. After service

We offer one year's free repair to the equipment according to the warranty card. 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.

7. Symbol instruction

DTE®	Trademark		Used indoor only
	Follow Instructions for Use		Appliance compliance WEEE directive
	Date of manufacture	~	Alternating current

	Manufacturer		Power switch
	Class II equipment		Socker for the foot switch
	Type BF applied part		Recovery
IPX1	Anti-drip device		Handle with care
~24V	24VAC power supply socket		Keep dry
	Adjustment for the water flow		
	Water entrance pressure 0.01MPa-0.5MPa		
	Atmospheric pressure for storage		
	Temperature limitation for storage		
	Humidity limitation for storage		

8. Environmental protection

Please dispose according to the local laws.

9. Manufacturer's right

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.

10. EMC - Declaration of conformity

<table>
<tr><th colspan="3">Guidance and manufacturer's declaration - electromagnetic emissions</th></tr>
<tr><td colspan="3">The model UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are intended for use in the electromagnetic environment specified below. The customer or the user of the model UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED should assure that it is used in such an environment.</td></tr>
<tr><th>Emissions test</th><th>Compliance</th><th>Electromagnetic environment - guidance</th></tr>
<tr><td>RF emissions
CISPR 11</td><td>Group 1</td><td>The models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED use 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.</td></tr>
<tr><td>RF emissions
CISPR11</td><td>Class B</td><td rowspan="3">The modesl UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are suitable for used in domestic establishment and in establishment directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.</td></tr>
<tr><td>Harmonic emissions
IEC 61000-3-2</td><td>Class A</td></tr>
<tr><td>Voltage fluctuations
/ flicker emissions
IEC 61000-3-3</td><td>Complies</td></tr>
</table>

Guidance & Declaration — electromagnetic immunity			
The models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are intended for use in the electromagnetic environment specified below. The customer or the user of the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED 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	±6 kV contact ±8 kV air	±6 kV contact ±8 kV 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 ±1 kV for Input/output lines	±2kV for power supply lines ±1kV for interconnecting cable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line to line ±2 kV line to earth	±1 kV 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 40 % U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 5 sec	<5 % U_T (>95% dip in U_T.) for 0.5 cycle 40 % U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED require continued operation during power mains interruptions, it is recommended that the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 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.			

Guidance & Declaration - Electromagnetic immunity

The models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are intended for use in the electromagnetic environment specified below. The customer or the user of the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	*3V* *3 V/m*	Portable and mobile RF communications equipment should be used no closer to any part of the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** 3V $d=1.2\times P^{1/2}$ 80 MHz to 800 MHz $d=2.3\times P$ 800 MHz to 2.5 GHz where *P* is the maximum output power rating of the transmitter In watts (W) according to the transmitter manufacturer and *d* Is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur In the vicinity of equipment marked with the following symbol: 

NOTE I At 80 MHz end 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 fixed transmitters, such as base stations for radio (cellular/cordless) telephones 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 due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are used exceeds the applicable RF compliance level above, the model UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Recommended separation distances between portable and mobile RF communications equipment and the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED

The model UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED is intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the models UDS-J, UDS-K, UDS-K LED, UDS-L, UDS-L LED, UDS-A, UDS-A LED, UDS-P, UDS-E, UDS-P LED, UDS-E LED, D1, D3, D5, D7, D3 LED, D5 LED, D7 LED are recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	**Separation distance according to frequency o m**		
	150kHz to 80MHz $d=1.2\times P^{1/2}$	**80MHz to 800MHz** $d=1.2\times P^{1/2}$	**800MHz to 2,5GHz** $d=2.3\times P^{1/2}$
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 transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) accordable to the transmitter manufacturer.

NOTE I At 80 MHz and 800 MHz. the separation distance for 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.

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.

11. 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 claimed for several patents by WOODPECKER, any copy or fake product must take legal responsibilities.

TABLE OF OPERATING POWER OF THE TIPS

Scaling	
Tip Model	Power
GD 1	1-9
GD 2	1-9
GD 3	1-9
GD 4	1-9
GD 5	1-9
GD 6	1-9
GD 7	1-9
GD 8	1-9
GD 9	1-9
GD 10	1-9
GD 11	1-9

Periodontics	
Tip Model	Power
PD1	1-6
PD2L	1-2
PD2LD	1
PD2R	1-2
PD2RD	1
PD3	1-3
PD3D	1-3
PD4	1-3
PD4D	1-3

Endodontics	
Tip Model	Power
ED1	--
ED2	--
ED3	--
ED3D	--
ED4	--
ED4D	--
ED5	--
ED5D	--
ED8	--
ED9	--
ED10	--
ED10D	--
ED11	--
ED11D	--
ED14	--
ED15	--

Cavity Preparation	
Tip Model	Power
SBD1	1-6
SBD2	1-6
SBD3	1-6
SBDL	1-6
SBDR	1-6

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