

C SERIES

ULTRASONIC SCALER

INSTRUCTION MANUAL



Please read the instruction manual carefully before operating

CE 0197

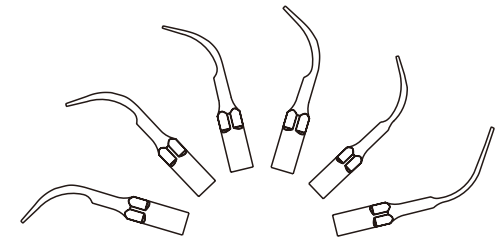


Well Kang Limited
The Black Church, St. Mary's
Place, Dublin 7, Ireland



NANNING BAOLAI MEDICAL INSTRUMENT CO., LTD
7th Floor, General Building, Hetai Sci. &Tech. Park, No.9
Gaoxin 4th RD., Nanning, Guangxi, 530007, China
Service Number: 0086-771-3815998 E-mail: info@boool.com
Fax Number: 0086-771-3217883 Web: www.boool.com

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C SERIES

ULTRASONIC SCALER

This manual is suitable for C5 & C5S & C6 & C7 & C7L & C5L & CD1 & CD2 & CD3 ultrasonic scaler















Recommended separation distances between portable and mobile RF communications equipment and the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3.			
The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter 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
<p>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.</p> <p>NOTE 1 At 80 MHz and 800 MHz. the separation distance for the higher frequency range applies.</p> <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p> <p>NOTE 3 An additional factor of 10/3 has been incorporated into the formulae used in calculating the recommended separation distance for transmitters in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2,5 Ghz to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas.</p> <p>NOTE 4 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			

Guidance & Declaration - Electromagnetic immunity			
The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are intended for use in the electromagnetic environment specified below. The customer or the user of the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 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 3V/m	Portable and mobile RF communications equipment should be used no closer to any part of the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3, including cables, than therecommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1.2 \times P^{1/2}$ $d=1.2 \times P^{1/2}$ 80 MHz to 800 MHz $d=2.3 \times P^{1/2}$ 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 1 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 C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are used exceeds the applicable RF compliance level above, the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3.			
^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.			

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1 Symbol instruction

 Trademark	 Alternating current
 Autoclavable	 Ordinary equipment
 Caution	 Follow instructions for use
 Appliance compliance WEEE directive	 Type B applied part
 Use indoor only	 Date of manufacture
 Serial number	 Manufacturer
 Authorised representative in the European Community	 CE marked product

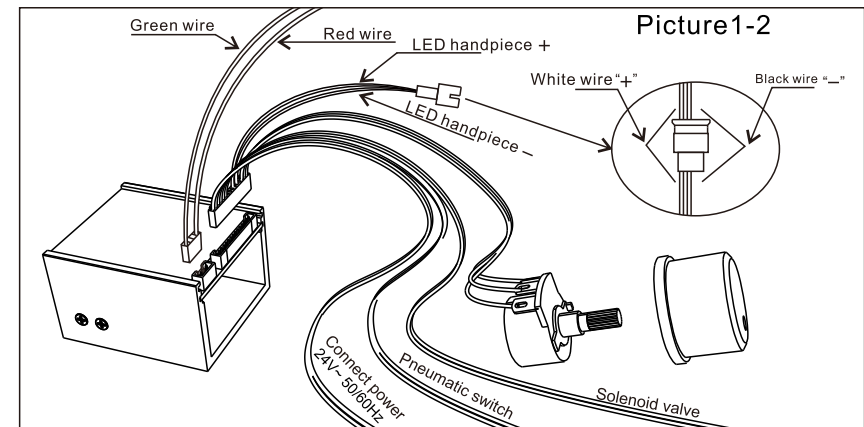
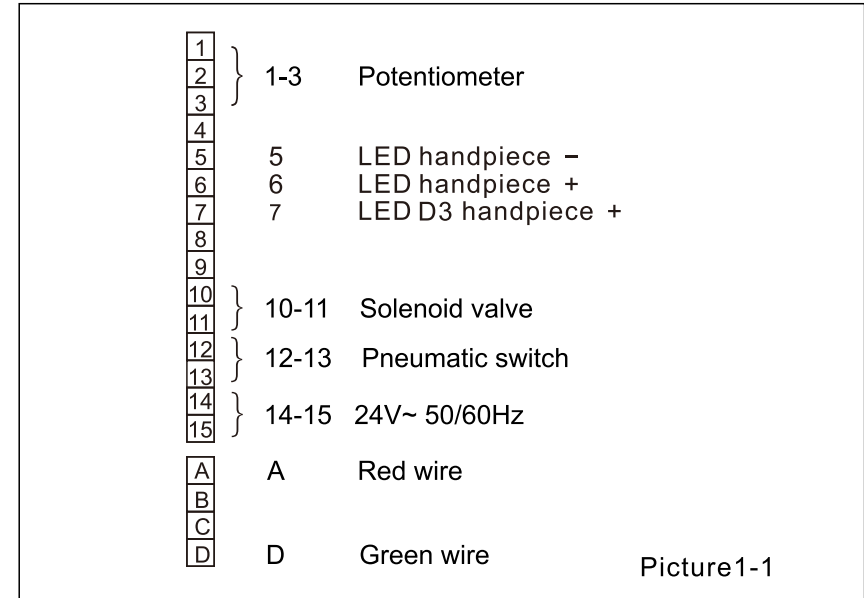
Guidance & Declaration-electromagnetic immunity			
The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are intended for use in the electromagnetic environment specified below. The customer or the user of the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 should assure that it is used in such an 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	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 C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 requires continued operation during power mains interruptions, it is recommended that the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 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.			

13 EMC–Declaration of conformity

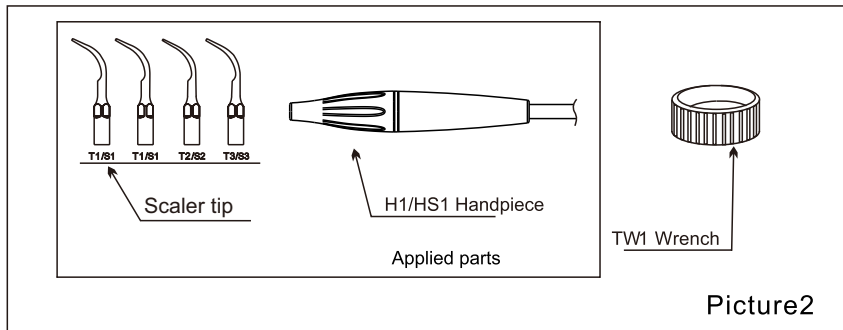
Guidance and manufacturer's declaration-electromagnetic emissions		
The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are intended for use in the electromagnetic environment specified below. The customer or the user of the models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 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.
RF emissions CISPR 11	Class B	The models C5, C5S, C6, C7, C7L, C5L, CD1, CD2 and CD3 are suitable for use in domestic establishment and in establishment directly Not connected to a low voltage power supply network which supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Complies	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

2 Sketch map

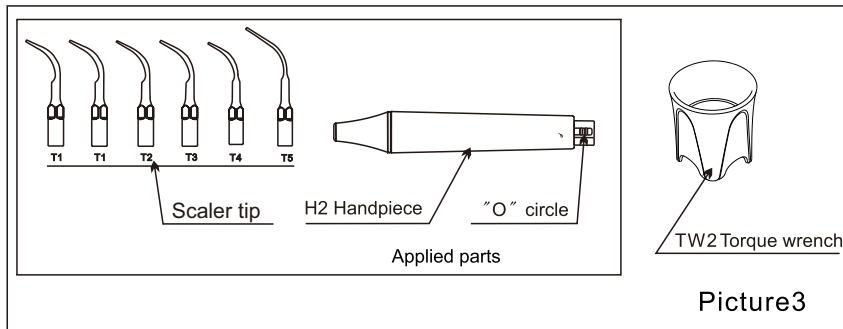
2.1 Sketch map for connection of wire



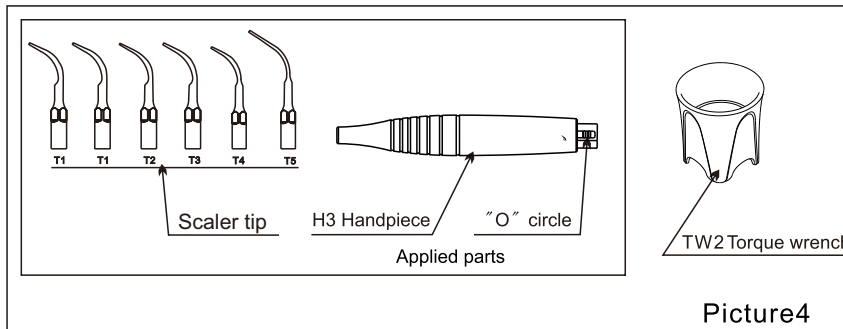
2.2 C5/C5S accessories



2.3 C6 accessories



2.4 C7 accessories



12 Environmental protections

12.1 You can deal with it based on the local law.

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

10 Storage and transportation

10.1 Environmental conditions of storage and transportation:

- a) Relative humidity: 0 - 80%
- b) Atmospheric pressure: 50kPa - 106kPa
- c) Environmental temperature: -10°C to +50°C

10.2 Prevent excessive shock and vibration in transportation, be sure to handle with care and avoid inversion.

10.3 Don't mix with dangerous goods during transportation.

10.4 Avoid the sun, rain or snow during transportation.

10.5 The equipment should be handled carefully and lightly. Be sure that it's far from the vibration, and install or store in a cool, dry and ventilated place.

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

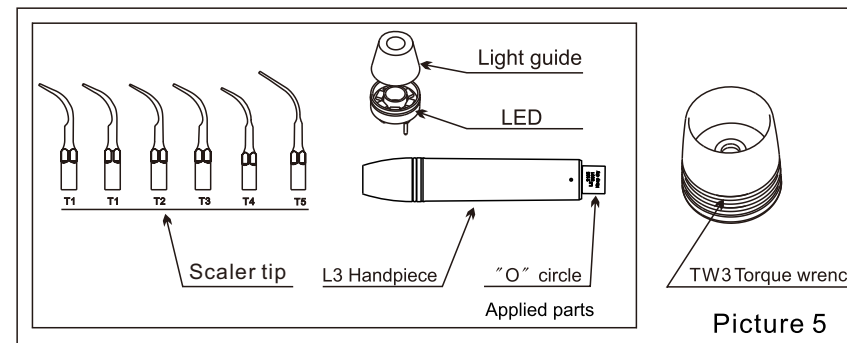
11 After sales service

11.1 We offer 15 months free repair to the equipment based on warranty card from the date when it is sold to the end user. Lifetime maintenance.

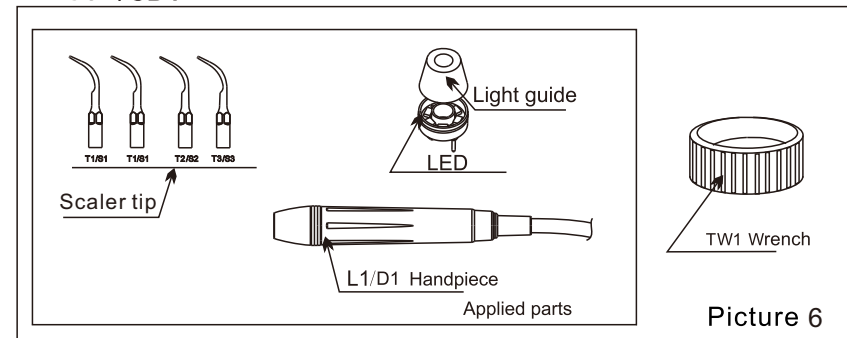
11.2 If necessary, we can provide the circuit schematic diagram and guide the attendant to repair products.

11.3 The repair of the equipment should be carried out by our professional technician. Irretrievable damage caused by the nonprofessional technician, and damage accidentally or deliberately caused by operators, are out of the range of warranty.

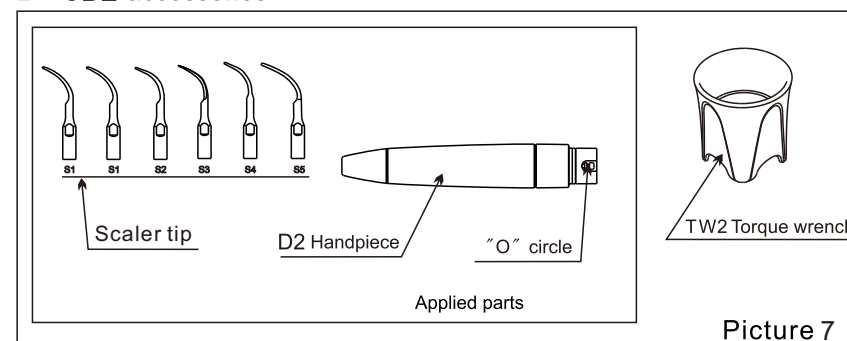
2.5 C7L accessories



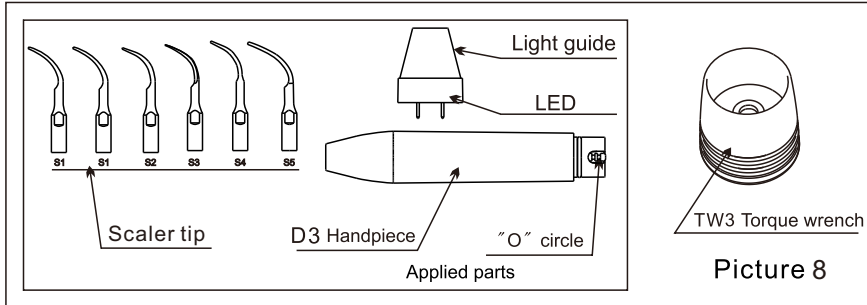
2.6 C5L/CD1 accessories



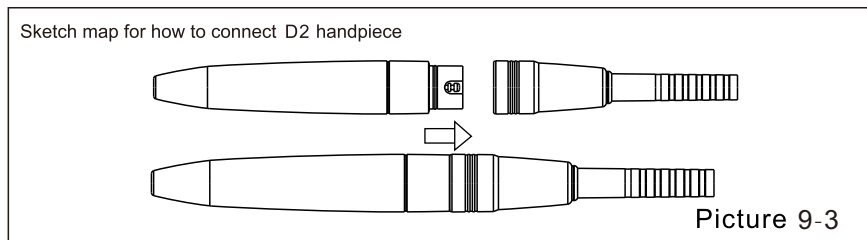
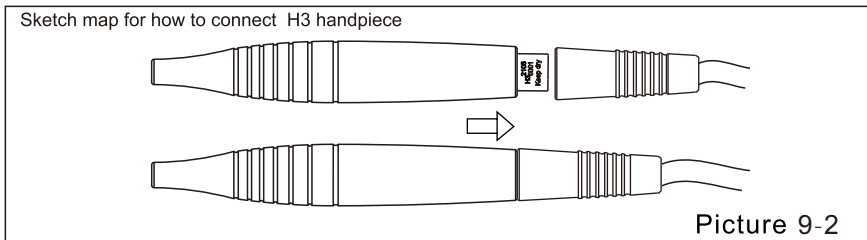
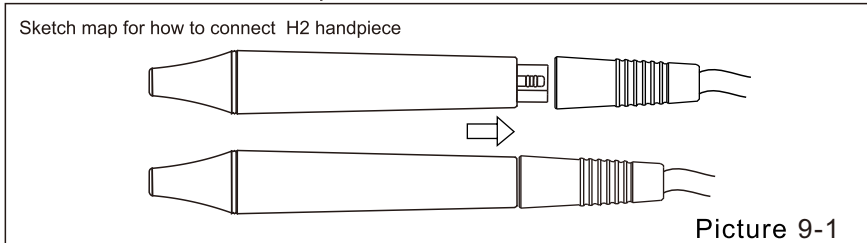
2.7 CD2 accessories



2.8 CD3 accessories



2.9 Connection sketch map



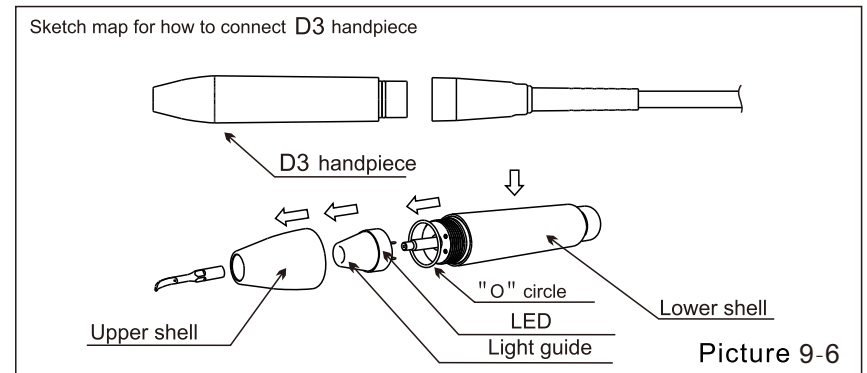
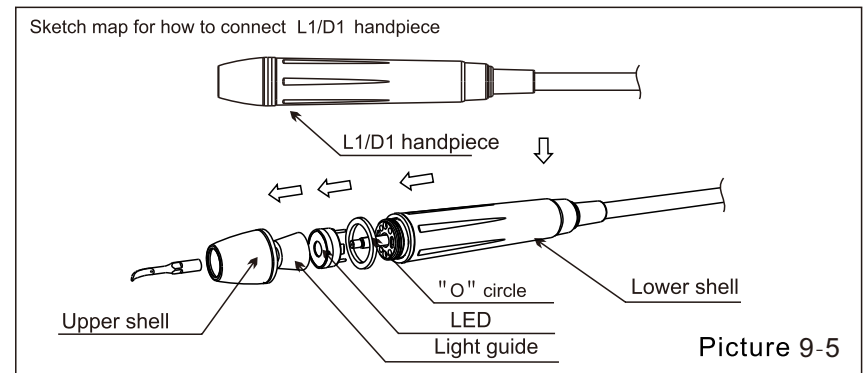
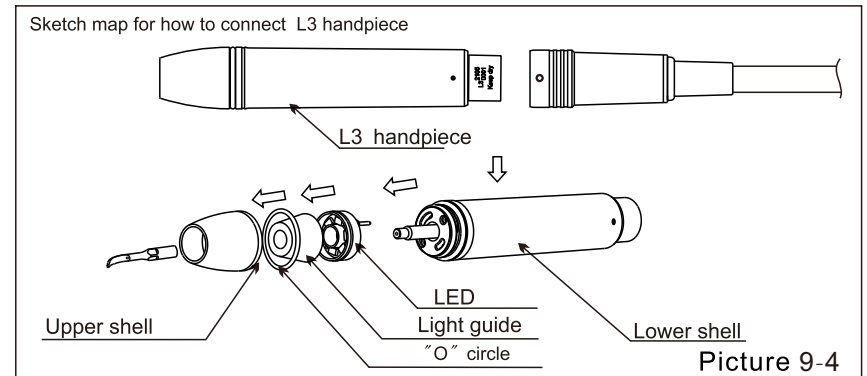
9 Troubleshooting and notes

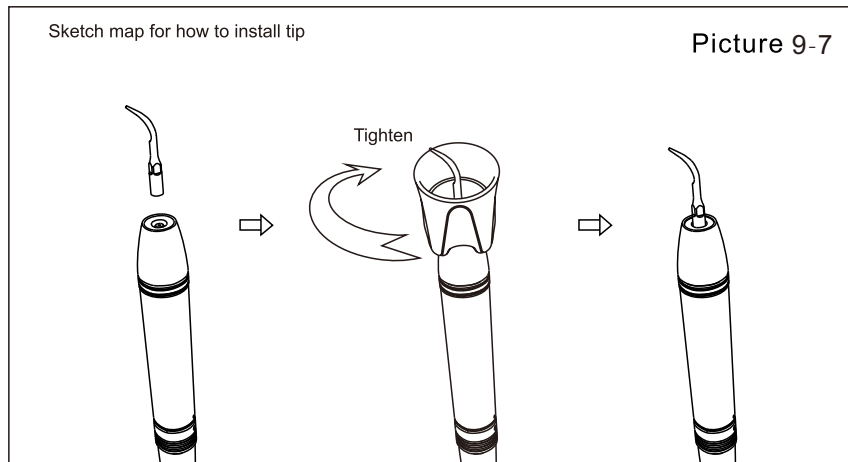
Fault	Possible cause	Solutions
The scaler tip doesn't vibrate and there is no water flowing out when stepping on the switch	The power pipe plug is in loose contact	Contact our dealers or us
	The fuse of main unit is cut off	Contact our dealers or us
The scaler tip doesn't vibrate but there is water flowing out when stepping on the switch	The tip is in loose contact	Screw the tip on the handpiece tightly
	The connect plug between the handpiece and the circuit board is in loose contact	Contact our dealers or us
	Problem of handpiece	Pull out the handpiece, deliver to dealer or us for repairment
	Problem of cable	Contact our dealers or us
The tips vibrates when getting electricity but there is no water spray	The water control is off	Turn on the water control
	The water system is blocked	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
The amount of spouting water is too little	The water pressure is not high enough	Make the water pressure higher
	The water system is blocked	Contact our dealers or us
The vibration of the tip becomes weak	The tip hasn't been screwed on the handpiece tightly	Screw the tip on the handpiece tightly (See picture 9-7)
	The tip is loose because of vibration	Screw the tip on the handpiece tightly (See picture 9-7)
	The connected place is wet	Dry the connected place with hot wind
	The tip is damaged	Change a new one
The joint of the handpiece and cable has water leakage	"O" circle is damaged	Change a new one

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

8 Precautions

- 8.1 Please keep the scaler clean.
- 8.2 The handpiece, scaler tip, torque wrench must be sterilized before each treatment.
- 8.3 Don't screw or unscrew handpiece and scaler tip when stepping on the foot switch.
- 8.4 The scaler tip must be fastened by torque wrench and there must be fine spray coming from the tip when operating.
- 8.5 Change a new one when the tip is damaged or worn excessively.
- 8.6 Don't twist the tip or rub it.
- 8.7 Please use purity water source and be sure not to use normal brine instead of purity water source.
- 8.8 If use non-pressure water, the water should be one meter higher than the head of the patient.
- 8.9 When the scaler is operated, please don't pull the handpiece forcibly in case of the handpiece or handpiece cord damage.
- 8.10 Don't knock or rub the handpiece.
- 8.11 After operating, turn off power (turn the power switch to OFF), then pull out the plug, and cut off power supply.
- 8.12 We are only responsible for the safety of machine in the following conditions:
 - I. The maintenance, repair and modification are made by the manufacturer or the authorized dealer.
 - II. The changed components are original of "C series" and operated according to instruction manual.
- 8.13 Please use our T series tips for C5/C6/C7/C7L/C5L and use S series tips for C5S/CD1/CD2/CD3, if forcibly use other tips which may not match the scaler it may result in damage beyond repair.
- 8.14 Temperature at the top end of scaler tip will reach 44.8°C when water supply is insufficient.





3 Product structure, scope of application and contraindication

3.1 Product performance and structure

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

3.2 Intended use

A powered device utilizing a vibrating ultrasonic tip to remove calculus and other accretions from tooth surfaces during dental cleaning.

3.3 Contraindication

3.3.1 The hemophilia disease patients or patients with thrombocytopenia purpura are forbidden to use this equipment.

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

3.3.3 The heart disease patients, pregnant women and children should be cautious to use the equipment.

7.2.2 Cleaning, disinfection and sterilization procedure

Operation	Operating mode	Warning
1 Cleaning and disinfection	Disassemble handpiece from detachable cable. Disassemble tip from handpiece. Wipe handpiece & scaler tip & torque wrench with medical alcohol or with special dental disinfection towel.	Cleaned in the ultrasonic bath is forbidden. Dipped in liquor is forbidden. Torrefied in oven or microwave oven is forbidden.
2 Packing	Pack handpiece & scaler tip & torque wrench in sterilization pouches.	Check the validity period of the pouch given by the manufacturer to determine the shelf life. Use packing which are resistant up to a temperature of 141 °C and in accordance with EN ISO 11607.
3 Sterilization	Steam sterilization at: 135 °C and 0.22MPa during 3 min.	Use fractionated vacuum autoclaves (according to EN 13060, EN 285). Use validated sterilization procedure according to EN ISO 17665-1. Respect maintenance procedure of the autoclave device given by the manufacturer. Use only the listed sterilization procedures.
4 Storage	Keep handpiece & scaler tip & torque wrench in sterilization packing in a dry and clean environment.	Sterility cannot be guaranteed if packing is open, damaged or wet (check the packing before using the instruments).

Note: Don't pull out the scaler tip when the foot switch is stepped on and the machine is producing ultrasonic vibrating.

7 Sterilization

7.1 Sterilizing sealed handpiece

Handpiece can be sterilized by any neutral sterilized liquid for cleaning and sterilizing. Do not sterilize in the high temperature and pressure.

7.2 Sterilizing detachable handpiece

7.2.1 Precautions

a) Please pay attention to the handpiece during the process of operation and sterilization to see whether it is externally broken. No protective oil is allowed to be painted on the handpiece.

b) There are two "O" circles in each handpiece which need to be sterilized, plugged and unplugged repeatedly. For the purpose of extending life time, dental lubricant should be used.

The circles should be replaced once they are broken or over abrasive.

4 Components

Number	Description	Type
01	Main unit	C5/C5S/C6/C7/C7L /C5L/CD1/CD2/CD3
02	Wire and potentiometer	—
03	Cable	—/HC2/HC3/LC3/DC1/DC2/DC3
04	Scaling tip	T1/S1
05	Scaling tip	T2/S2
06	Perio tip	T3/S3
07	Scaling tip	T4/S4
08	Scaling tip	T5/S5
09	Potentiometer knob	—
10	Wrench	TW1/TW2/TW3
11	Handpiece	H1/HS1/H2/H3/L3/L1/D1/D2/D3
12	"O" circle	—
13	Instruction manual	C series
14	Qualified certificate	C5/C5S/C6/C7/C7L /C5L/CD1/CD2/CD3
15	Warranty card	C5/C5S/C6/C7/C7L /C5L/CD1/CD2/CD3
16	Packing list	C5/C5S/C6/C7/C7L /C5L/CD1/CD2/CD3

Product components are subject to the packing list.

5 Technical specifications

5.1 Performance technical specifications

Main unit input	24V~ 50/60Hz 1A
Main unit fuse	250V/T 1.6AL
Output power	3W- 20W
Primary tip vibration excursion	≤ 200 μm
Tip vibration frequency	28kHz±3kHz
Half-excursion force	<2N
Water pressure	0.1MPa~0.5MPa(1bar~5bar)
Weight of main unit	0.40Kg
Operating mode	Continuous operation
Classification 93/42/EEC	Class IIa
Degree of protection against electric shock	B
Degree of protection against harmful ingress of water	Ordinary equipment (IPX0)
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.

5.2 The conditions of working environment:

5.2.1 Environmental temperature:+10℃ to +40℃

5.2.2 Environmental humidity: 0 to 80%

5.2.3 Atmospheric pressure: 700hPa to 1060hPa

6.Usage

6.1 Correctly install the machine on the dental unit according to the wiring diagram (Picture 1).

6.2 Correctly connect handpiece with cable ,select a suitable scaler tip as you need and screw it on the handpiece tightly by the torque wrench(Picture 9-7)

6.3 Turn the power switch to minimum.

6.4 Step on the foot switch to start the machine.

6.5 Vibrating intensity: Adjust the vibration intensity as you need. Generally turn the knob to 4-5 grade. According to patients' different sensitivity and the rigidity of the gingival tartar, adjust the vibration intensity during the clinical treatment.

6.6 Water volume adjustment: Step on the foot switch, and the tip begins to vibrate, and then turn the water control switch to form fine spray to cool down the handpiece and clean the teeth.

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

6.8 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.

6.9 The normal frequency is extremely high. Under the normal working state of scaler tips, a light touch and a certain to-and-fro motion will eliminate the tartar without heating. Overexertion and long-time lingering are forbidden.

6.10 After finishing operation, keep the machines working for 20-30 seconds on the water supply condition in order to clean the handpiece and the scaler tips.

6.11 Disassemble the handpiece, scaler tip and torque wrench for sterilization