




### Connect chart and Install size (Hand-switch)

- |  |                             |
|--|-----------------------------|
| 1、2—~24V,1A                              | 3、4—Outside Power Regulator |
| 5、6—Footswitch                           | 7、8—Solenoid Valve          |
| 12、13、14、15—Handpiece (15 is red, anode) |                             |

### Attention:

Inside power regulator: If the power of scaler is still smaller or stronger after adjusting outside power knob to maximum or minimum, adjust inside power regulator.

The following symbols are used:

-  **Warning/Danger:** Remind you of your safety when working.
-  **Caution:** Remind you to avoid damaging the device -when working.
-  **Importance:** You must follow the instructions described in the operation manual when using the device to finish one or more tasks.

## I . General Description

As an advanced piece of tooth-cleaning equipment manufactured by Guilin GreatSTAR Electronic Equipment Co., Ltd, the *GreatSTAR*<sup>®</sup> Ultrasonic Scaler is indispensable in the prevention and treatment of odontopathy.

It is essential to remain your teeth in a well-cleaned condition. If one's teeth have not been brushed for a long time, or have not been thoroughly brushed, the mineral substances in your sputum, such as calcium ion, will combine with the bacteria deposit to form some hard yellow brown concretion. Due to the firm combination of concretion and dental surface, the concretion cannot be eliminated by daily teeth brushing only. In addition, it can cause inflammation of teethridge, widening of teeth gap, looseness and even exfoliation of teeth. To keep your nonnasality clean, the first is to pay attention to teeth brushing, and the second is to clean your teeth on a regular basis. The *GreatSTAR*<sup>®</sup> Ultrasonic Scaler can effectively remove the teeth concretion. There is no limit on age for teeth cleaning. One should clean his or her teeth in case the presence of concretion. We suggest that you clean your teeth once every six to twelve months.

By using *GreatSTAR*<sup>®</sup> Ultrasonic Scaler, the bacteria spot, tar spot and tea spot adhering to your teeth surface could be removed, making your teeth white, clean and healthy.

Using the *GreatSTAR*<sup>®</sup> Ultrasonic Scaler will not destroy the enamel on the tooth surface, which is the hardest tissue in human body. Different from the common dental drill, the tips of the *GreatSTAR*<sup>®</sup> Ultrasonic Scaler has a smooth surface. The disengagement of concretion from the teeth surface is achieved by vibration instead of rotation, which won't lead to the desquamation or damage of the enamel.

### **【Major function, structure and configuration】**

The Ultrasonic Scaler is composed of main electric circuit, water circuit, ultrasonic transducer, footswitch, and external power supply. It is intended to clean the teeth concretion, tartar, tar spot and tea spot that adhere to the surface of the teeth.

### **【Purpose and application scope】**

The Ultrasonic Scaler can be used for the dental cleaning and treatment. It is an effective device for removing the teeth concretion, tar spot, tea spot, tartar; but it is not suitable for treating tetracycline teeth or yellow and blackish teeth caused by the pathological changes of dentine.

☞ To prevent cross infection, the detachable handpiece can bear autoclave sterilization under temperature as high as 135°C.

☞ handpiece equipped with hand-controlling switch that substitutes the traditional footswitch, which brings more convenience and comfort in operation.

## **II. Main Technical Features**

### **1. Main Technical Parameters**

power input: AC 24V , 1A

Power output: 7~17 (VA) continuously adjustable


Primary tip vibration excursion:  $\geq 50 \mu\text{m}$

Half excursion force:  $\geq 0.5\text{N}$

Working frequency: 27-33 kHz

Handpiece: Piezoelectric ceramic type


## 2. Transport and Storage Conditions

Range of environmental temperature:  $-10^{\circ}\text{C}$    $+40^{\circ}\text{C}$

Range of relative humidity: 10%-95%

Range of atmospheric pressure: 500-1060hPa

## 3. Operating conditions

Range of temperature:  $+10^{\circ}\text{C}$    $+40^{\circ}\text{C}$

Range of relative humidity: 30% - 75%

Range of atmospheric pressure: 700 - 1060hPa

Water temperature of water inlet: No higher than  $25^{\circ}\text{C}$

## III. Installation and Setting


### 1. Inspection Before Installation

Check to ensure the items listed below are in the package of the Scaler: Instruction manual, repair-guarantee card, eligible products certificate and the following main parts,

One main unit	Four tips
One spanner	One potentiometer (Power control)
One handpiece (Fixed, Detachable or Hand-switch, Fig.1)	

### 2. Installation

(1) Installation of handpiece: Securely connect one end of the handpiece that has semicircular socket with the handpiece connector on the main unit (Refer to Fig.3).

 The foot-switch and hand-switch can be selected as appropriate: footswitch and-switch can be working



Fixed Detachable Hand-switch

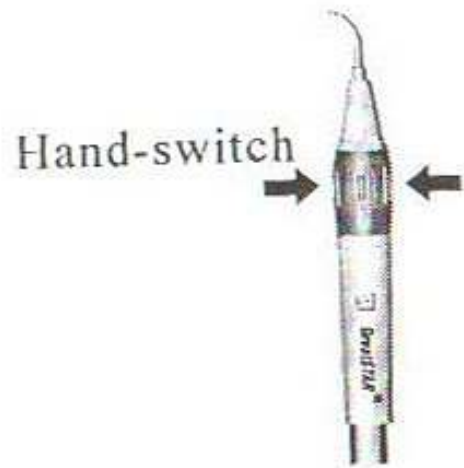


Fig.1 Schematic diagram of handpiece

Fig.2 Schematic diagram of hand-switch handpiece

independently or synchronously.

☞ The Solenoid Valve must be connected to Pin 7-8 of Mainboard, and control by mainboard.

☞ Do not hold the cable to rotate when plugging and unplugging the handpiece. Otherwise the handpiece and the cable may be damaged. (Refer to Fig. 4)

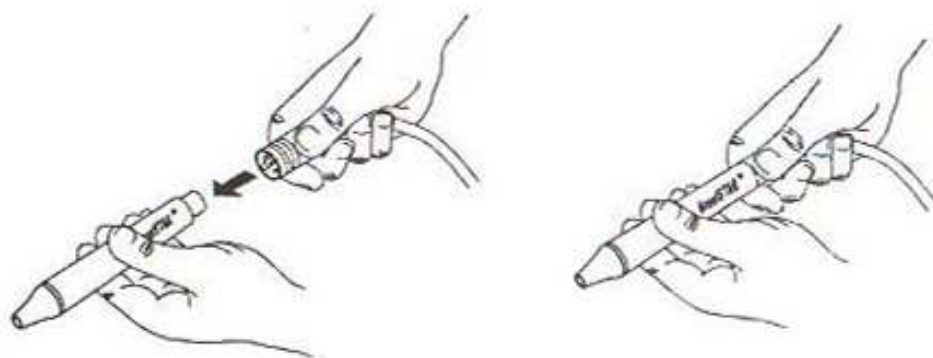


Fig. 3: Schematic Diagram of handpiece Installation

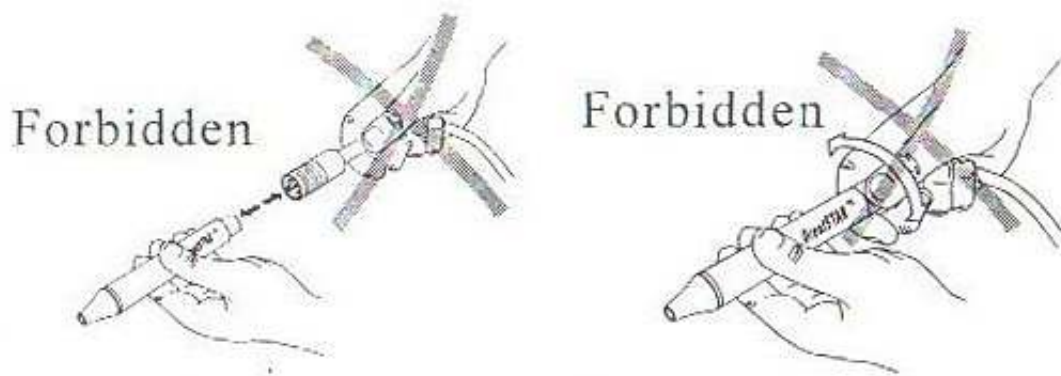


Fig. 4: Notes to installation of handpiece

(2) Fixing the tip: Choose a suitable tip, screw it to handpiece and then tighten it with the spanner. When using the spanner, clockwise forcing is to tighten and counter clockwise forcing is to loosen.(Refer to Fig. 5)

Ⓢ If the tip is not securely fastened, or it gets loosened after long-time using, the power output will get decreased and the vibration pulverization will severely be impaired. If this happens, shut down the unit and fasten the tip with the enclosed spanner.

Ⓢ The wear of tip will result in decreased power output, or even failure of power output. The handpiece may get damaged by overheating. In case the wear of tip exceeds 2mm, it should be replaced with a new one.

Ⓢ (Only for Hand-switch) **When removing and installing the tip, hold the middle part of the handpiece only. To prevent damage caused to the handpiece, it is not allowed to hold the manual switch when removing and installing the tip (Refer to Fig. 6) .**

## **V. Contraindication and Caution**

### **【Contraindication】**

- △ The hemophilia patients are strictly prevented from treating with the scaler
- △ The patient and/or the operator who have a heart pacemaker are strictly prevented from treating with the scaler.

### **【Caution】**

- △ Be cautious when using on patients with heart disease and infants.
- ⊙ Be cautious with patient with severe dentine disease. Sore and ache may be experienced.

## **VI. Storage and Maintenance**

### **1. Storage**

Handle with care. Avoid shock and moisture.

Power off the unit and unplug the power cord when not in use.

Dry the tips and detachable handpiece and store them in the package box when not in use. Do not dip in the sterilization solution for a long time.

### **2. Maintenance**

(1) In case the tip breaks off by accident, or wears out after long-time use, then it needs to be changed.

Change of tip: Select an appropriate tip and fasten it on the handpiece. Fasten it with the enclosed spanner. Rotate the spanner clockwise to fasten and counterclockwise to unfasten. (Refer to Fig. 5).

(2) Change of fuse: In case the fuse gets burned, shut down the power, change a new fuse.

Specification of fuse:  $\Phi 5 \times 20\text{mm}$ , 2A

(3) The detachable handpiece has two O'ring at the plugging part. As the handpiece gets repeatedly plugged

and unplugged, and needs to be sterilized, it is recommended to lubricate the O'ring frequently with the dental lube, to extend the life cycle. Once damaged, the O'ring should immediately be changed.


Specification of O'ring: 1 × 1

## VII. Sterilization

(1) The tip and handpiece should be sterilized before using for the first time, and after each use. They should also be sterilized before using after a long-time storage.

(2) Chemical sterilization: The handpiece, tips and spanner can be chemically sterilized. Clean the tips and handpiece with alcohol, then sterilize with medical disinfectant or disinfecting towel, and rinse with distilled water at last.

① (3) The tips, detachable handpiece, spanner can be sterilized with autoclave under high temperature. The sterilization condition is 134°C, 200 kPa (2 Bar), and 20 minutes.

 Do NOT sterilize with autoclave under high temperature for the Fixed handpiece.

(4) The tube and handpiece cable is sterilized with alcohol or dental disinfected towel.

The handpiece and tip should not dip in the sterilization solution for a long time, to prevent damage.

## VIII. Frequently Asked Questions and Solution

1. After the completion of installation of new device, no water sprays out after stepping on footswitch.

As the water in the unit has been completely emptied out when the unit gets out of the factory, and the handpiece