



MotorSurg / MotorSurg(110V)



Dental Implant Unit USER MANUAL

Changzhou Sifary Medical Technology Co., Ltd.

P/N: IFU- 6735005

Version: 02

Issued: 2024.01.08

Size: 197mm X 140mm

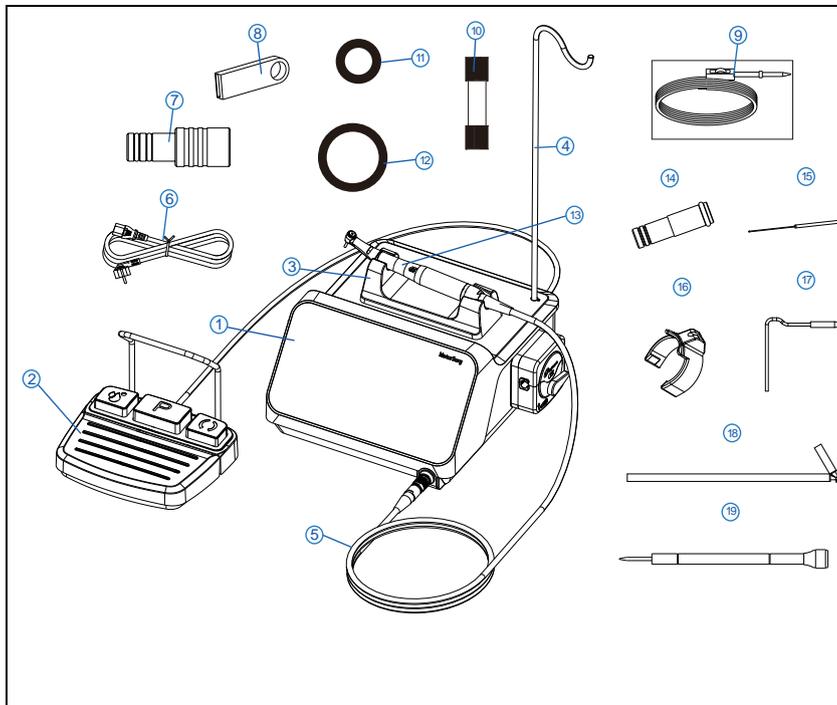
Content

1. Scope of MotorSurg	5
1.1 Parts identification	5
1.2 Components	6
1.3 Power cord	7
1.4 Essential performance	8
2. Symbols used.....	9
3. Before use	11
3.1 Intended purpose.....	11
3.2 Contraindications	11
4. Assemble and disassemble the MotorSurg.....	16
4.1 Main unit connection socket.....	16
4.2 Installation and removal.....	17
5. Use interface	28
5.1 Main unit operation panel and display	28
5.2 Foot pedal.....	30
5.3 Terms and definition.....	30
6. Setting	32
6.1 System setting	32
6.2 Set program mode	42
6.3 Set activities parameters	52
6.4 Setting the output speed.....	58
6.5 Setting the output torque	59
6.6 Set the coolant flow	60
6.7 Set LED light brightness	62
6.8 Set motor rotation direction	63

6.9	Set contra angle gear ratio	63
7.	Operation	65
8.	Cleaning, disinfection and sterilization	67
8.1	Foreword	67
8.2	General recommendations	67
8.3	Autoclavable components	68
8.4	Disinfection components	80
9.	Error warnings	82
10.	Troubleshooting	83
11.	Technical data	86
12.	EMC tables	88
13.	Warranty	97
14.	Statement	98

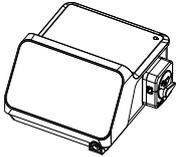
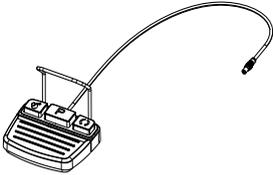
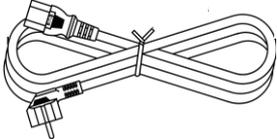
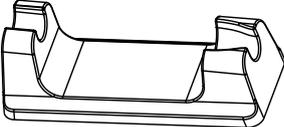
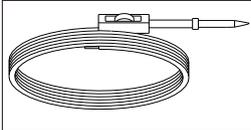
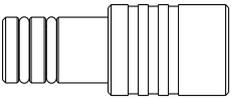
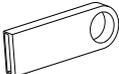
1. Scope of MotorSurg

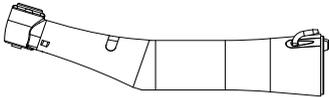
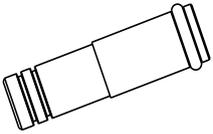
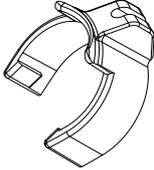
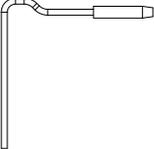
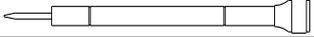
1.1 Parts identification



- ① Main unit; ②Foot pedal with cord; ③Contra angle holder;
 ④Bottle holder; ⑤Motor with cord; ⑥Power cord; ⑦Protection plug; ⑧USB flash drive; ⑨Irrigation tube; ⑩Fuse; ⑪O-ring (protection plug); ⑫ O-ring (motor) ; ⑬Dental contra-angle handpiece; ⑭Spray nozzle; ⑮ Needle; ⑯ Nozzle Holder; ⑰ Internal irrigation nozzle; ⑱ Y connector; ⑲ Screw driver

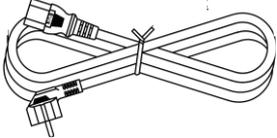
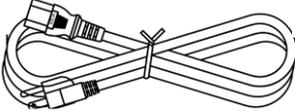
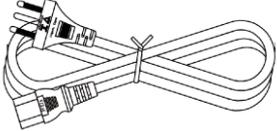
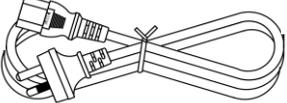
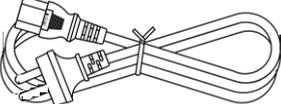
1.2 Components

<p>Main unit (220V/110V) (1pc)</p> 	<p>Foot pedal with cord (1pc)</p> 
<p>Motor with cord (1pc)</p> 	<p>Power cord (1pc)</p> 
<p>Contra angle holder (1pc)</p> 	<p>Irrigation tube (5pcs)</p> 
<p>Protection plug (1pc)</p> 	<p>Fuse (2pcs)</p> 
<p>O-ring (motor) (2 pcs)</p> 	<p>O-ring (protection plug) (2pcs)</p> 
<p>USB flash drive(1pc)</p> 	<p>Bottle holder (1pc)</p> 

<p>Dental Contra-angle Handpiece (1pc)</p> 	<p>Spray Nozzle (1pc)</p> 
<p>Needle (1pc)</p> 	<p>Nozzle Holder (1pc)</p> 
<p>Internal irrigation nozzle (1pc)</p> 	<p>Y connector (1pc)</p> 
<p>Screw driver (1pc)</p> 	<p>/</p>

1.3 Power cord

Following AC power cords are available. Please choose the according AC power cord that meets the local standard.

European standard Power cord (6615006)	
American standard Power cord (6615031)	
British standard Power cord (6615032)	
Australian standard Power cord (6615033)	
Argentine standard Power cord (6416011)	

1.4 Essential performance

MotorSurg has no essential performance

2.Symbols used

	Warning		Medical device
	Caution		Type B applied part
	Serial number		Catalogue number
	Earth (ground)		Class II equipment
	AC current		Consult instructions for use
	Manufacturer		Batch code
	Country of manufacture + Date of manufacture		Keep dry
	Dispose of in accordance with the WEEE directive		Sterilizable in a steam sterilizer (autoclave) at the temperature specified
	Temperature limitation		Atmospheric pressure limitation
	Relative humidity limitation		Foot Pedal

	<p>Manufacturer's LOGO</p>		<p>Use-by-date</p>
	<p>Do not de-sterilize</p>		<p>Sterilized using ethylene oxide</p>
	<p>Do not re-use</p>		<p>Keep away from sunlight</p>
	<p>Do not use if package is damaged and consult instructions for use</p>	<p>20:1L</p>	<p>Transmission ratio 20:1 with light</p>
	<p>Washer-disinfector for thermal disinfection</p>	<p>/</p>	<p>/</p>

3. Before use

3.1 Intended purpose

The MotorSurg is intended for use in dental oral surgery by qualified personnel.

3.2 Contraindications

- 1) The hemophilia patient is forbidden to use this device.
- 2) The patients and doctors with heart pacemaker are forbidden to use this device.
- 3) Heart disease patients and children should be cautious to use this device.
- 4) Patients with oral and maxillo-facial infection, oral mucosal diseases, periopical disease, gingivitis, periodontitis, or mouth neoplasm should be cautious to use this device.
- 5) Patients with allergic constitution and drug allergy history are forbidden to use this device.
- 6) People with mental disorders should be cautious to use this device.
- 7) Patients with severe systemic infection or systemic diseases such as the diseases of heart, liver, kidney, hematopoietic system, digestive system and endocrine system should be cautious to use this device.
- 8) Pregnant women, lactating women, and women have a plan of birth should be cautious to use this device.



Read the following warnings before use:

- This device must only be used in hospital environments, clinics or dental offices by trained and qualified dental personnel.
- Do not use the device beyond its intended purpose.
- To prevent electric shock, do not unplug the AC Power Cord with wet hands, and be sure to prevent water into the Main Unit.
- The device must not be placed in humid surroundings or anywhere where it can come into contact with any type of liquids.
- Do not expose the device to direct or indirect heat sources, and never use or store this device at high temperatures. Pay attention to the specified use and storage conditions. Use or store the device outside of the limits may cause malfunction.
- Do not use the device in the presence of free oxygen, anesthetic gas or combustible materials. The device must be operated and stored in a safe environment.
- The device requires special precautions with regard to electromagnetic compatibility (EMC) and must be installed and operated in strict compliance with the EMC information. In particular, do not use the device in the vicinity of fluorescent lamps, radio transmitters, remote controls and do not use this system near the active Surgical Equipment and the RF shielded room of an ME SYSTEM for magnetic resonance imaging, where the intensity of EM DISTURBANCES is high. Portable

RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the MotorSurg, including cables specified by the manufacturer. Otherwise, degradation of the performance of this device could result.

- Please place the device on a stable platform or on the special cart, and be sure to confirm that the wheel is locked before using this device.
- Never open or repair the device yourself, otherwise, void the warranty.
- If irregularities occur in the device during the treatment, switch it off. Contact the agency.
- Use an electrical outlet that is protective grounding.
- Sever impact, such as dropping, will cause damage to the device.
- Cut off the electrical power after each use.
- Please use qualified surgical instruments and contra angle. It is recommended to use the contra angle provided by Changzhou Sifary Medical Technology Co., Ltd.
- Do not dismount the motor or contra angle during operation, otherwise the contra angle and motor will be damaged.
- Do not disassemble the Main unit / Foot pedal / Motor nor temper with the mechanism.
- Check for vibration, noise and overheating before use and if any abnormalities are found in use, stop using immediately and contact your local dealer.

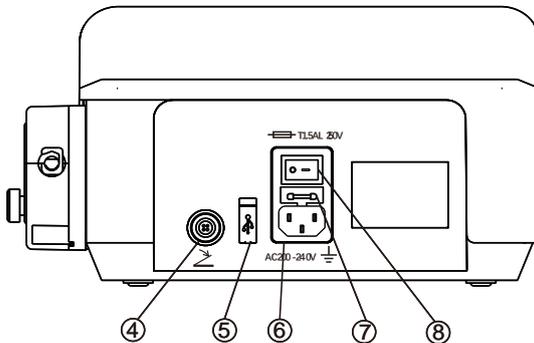
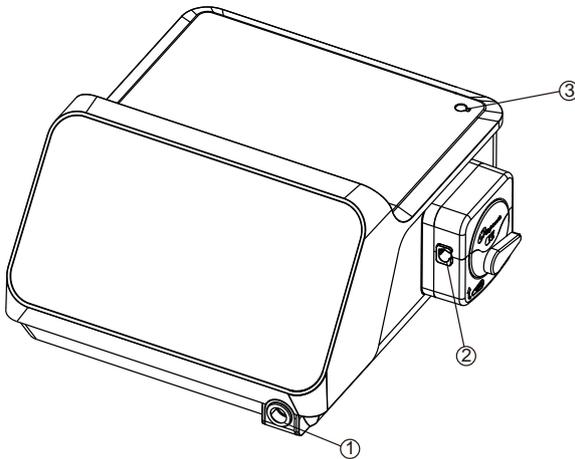
- Gloves are compulsory during the whole operation.
- Do not bend the Irrigation Tube while the irrigation pump is operating. It may cause tube breakage.
- The Main Unit can be cleaned with a moist cloth. Disconnect the power supply before cleaning. The Main Unit and the Foot Pedal cannot be sterilized by any method.
- Do not disconnect the motor from the motor cord.
- The operating mode of the device is intermittent operation, i.e., there will be 8 minutes pause after 2 minutes' operation. The maximum surface temperature might exceed 43° C when using the device for more than 2 minutes continuously. In such cases, stop using the motor till the motor cools down.
- During the operation, when the power is suddenly cut off and resumed, be sure to check the parameters and program steps before continuing the operation.
- Do not use accessories from other companies, otherwise the device may be damaged. Our company will not be responsible for any problems with the use of accessories not of our company.
- Please use the irrigation tube produced by Changzhou Sifary Medical Technology Co., Ltd.
- Do not position the device in a place where it is difficult to disconnect the power cord from the power supply.
- Do not insert or remove a USB flash drive during operation.
- Do not insert any device except the USB flash drive into the U SB port. Otherwise, the Main Unit may be damaged.

- Do not use data stored in USB flash drive for diagnostic purpose.

4. Assemble and disassemble the MotorSurg

Open the package. Make sure the product contains all parts listed on the packing list, if any is missed, please contact your local distributor. Place the Main unit and other components on a stable platform or special surgery cart.

4.1 Main unit connection socket

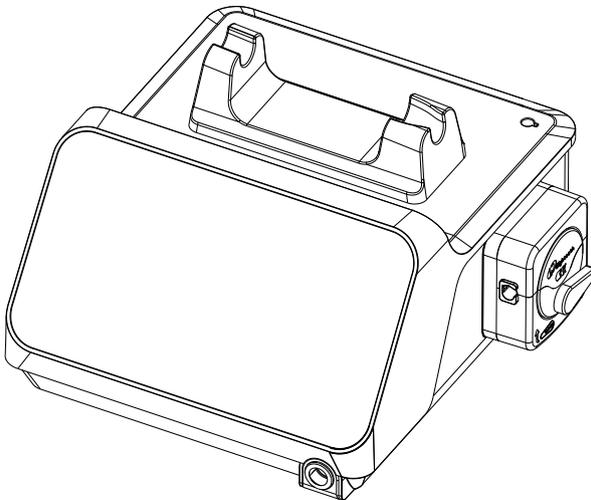


- ① Motor cord connector socket
- ② Irrigation tube installation interface
- ③ Bottle holder
- ④ Foot pedal cord connector socket
- ⑤ USB flash drive socket
- ⑥ AC power cord connector socket
- ⑦ Fuse holder
- ⑧ Main power switch

4.2 Installation and removal

4.2.1 Place the contra angle holder

Place the contra angle holder on the top surface of the main unit or place it on a stable plate as they need.

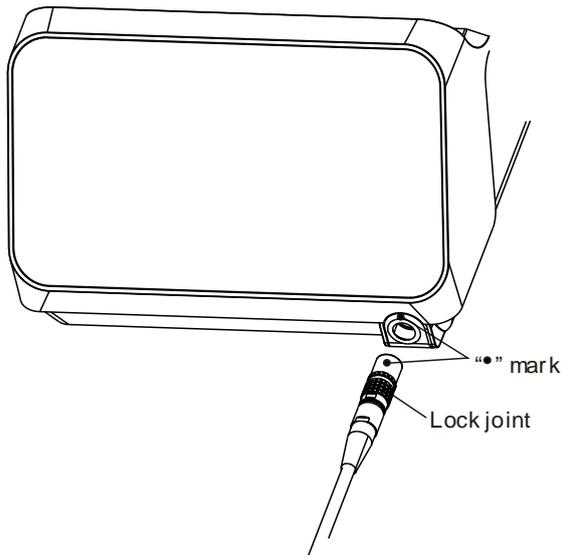


4.2.2 Connect the motor cord

Align the ● mark on the motor cord with ● mark on the motor cord connector socket of the main unit.

Push the base of motor cord plug into the motor cord connector socket until the locking joint “clicks” into place.

Disconnect the motor cord: pull back the lock joint, pull further to disconnect the cord.

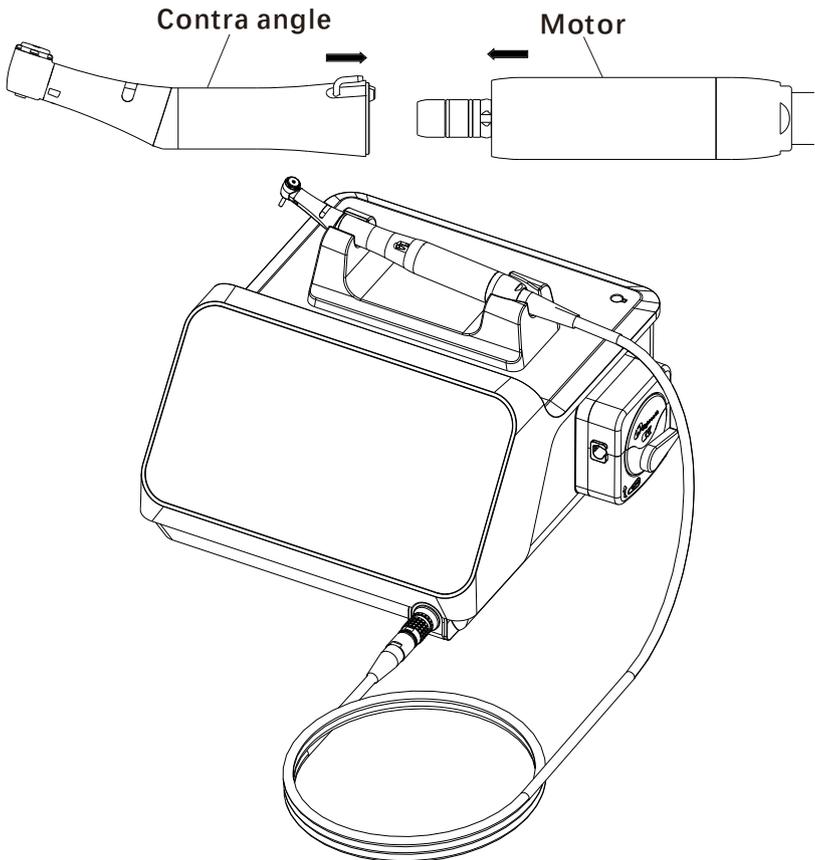


4.2.3 Connect the contra angle

Align the contra angle positioning block and the motor groove, and insert the motor connector directly into the contra angle until it locks into position with a clicking sound.

Put the contra angle on the contra angle holder when it is not in use.

To disconnect the contra angle, parallel pull the contra angle from the motor.



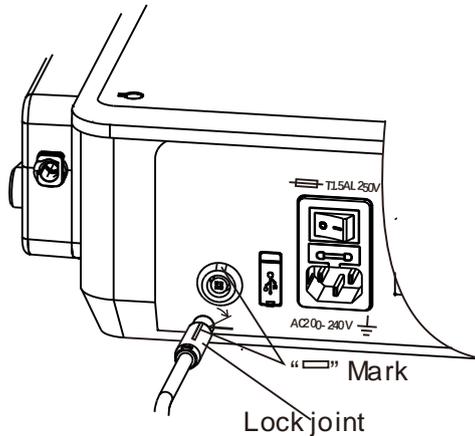
- If the O-ring on the motor connector is severely worn or damaged, please replace it with a new one to protect the motor.
- When assemble the O-ring, first assemble the outer O-ring, and then assemble the inner O-ring in sequence.
- After connecting the contra angle to the motor, gently pull the contra angle to ensure that it is firmly connected.

4.2.4 Connect the Foot pedal cord

Align the  mark on the Foot Pedal Cord with  mark on the foot pedal cord connector socket of the main unit.

Push the base of the foot pedal cord plug into the foot pedal cord connector socket until the locking joint into place, when you hear a “click” sound.

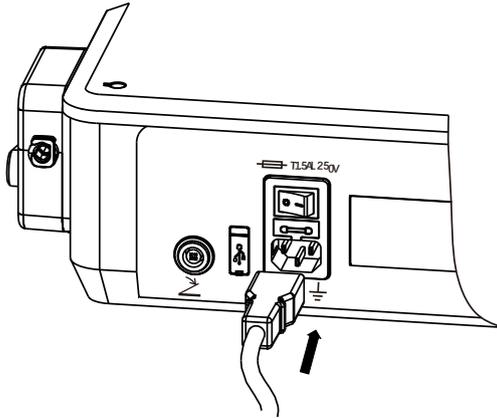
Disconnect the foot pedal cord: pull back the lock joint, pull further to disconnect the cord.



4.2.5 Connect the AC power cord

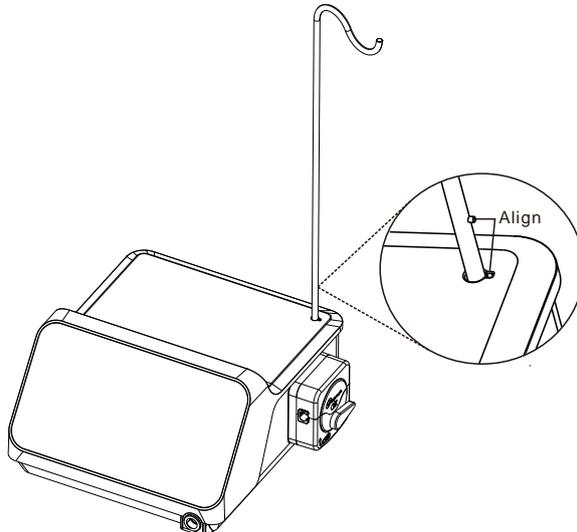
Align and insert the AC power cord into the AC power cord connector socket at the back of the main unit.

Connect the AC power cord plug into a power source that meets the requirements (refer to 11.Technical data).



4.2.6 Install the Bottle holder

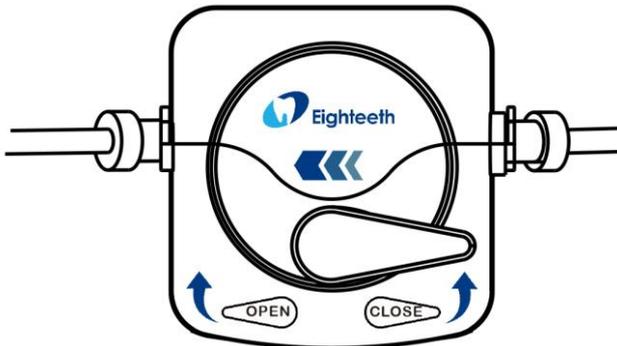
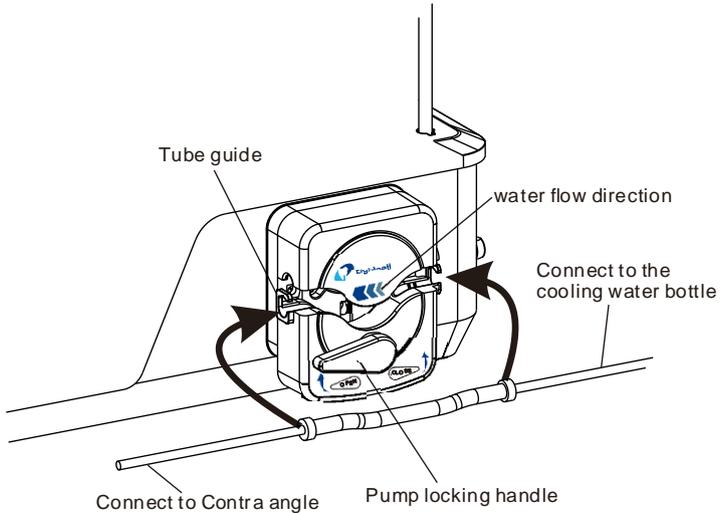
Align and insert the Bottle holder into the location hole on the top of the main unit.



4.2.7 Install the irrigation tube

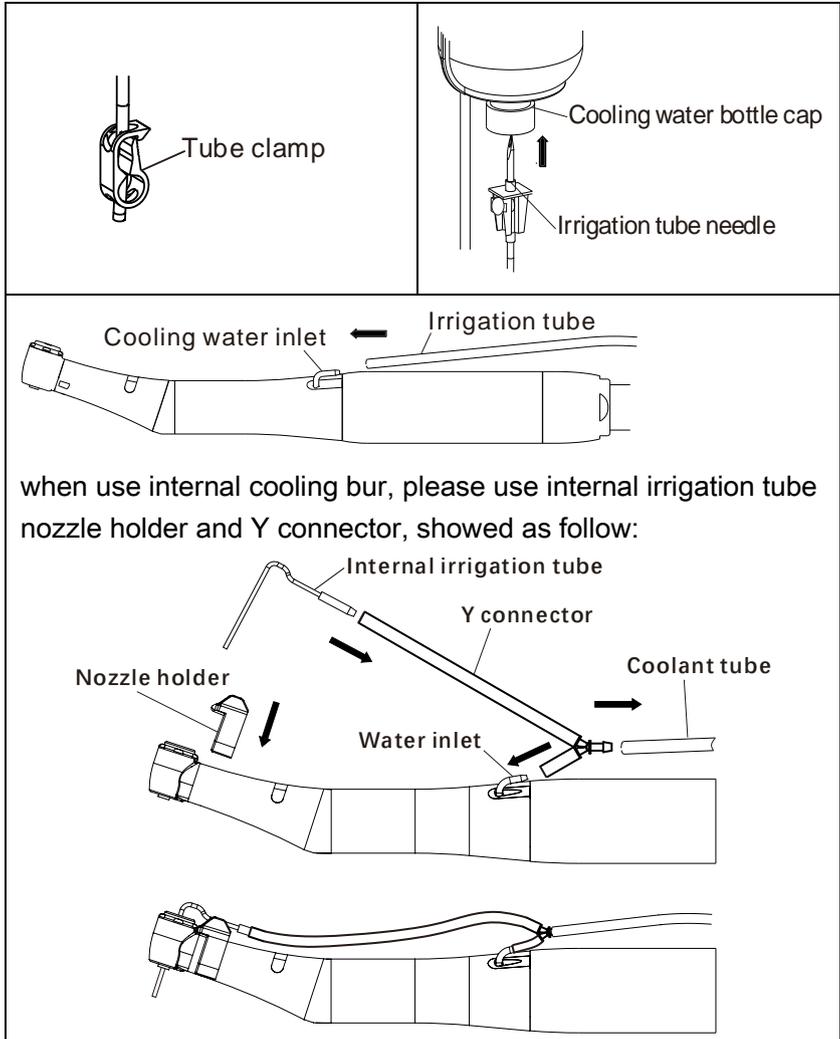
Open the pump by setting the pump locking handle at the “open” position. Please make sure the irrigation tube “Needle” towards the

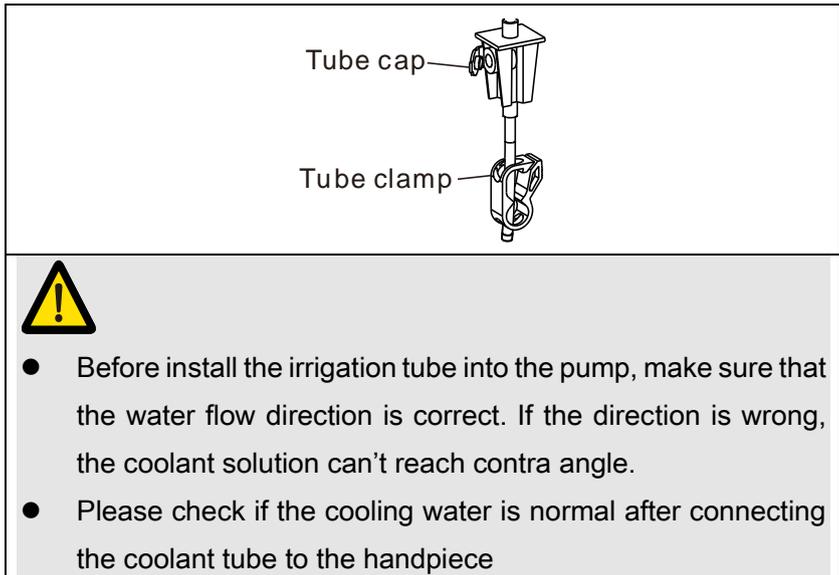
backside of the main unit. Put the tube into the tube guide position, then close the pump by setting the pump locking handle at the “close” position.



- 1) Hang the bottle which is full of coolant solution on the Bottle holder.
- 2) Close the tube clamp between the irrigation tube needle and the pump.

- 3) Insert the irrigation tube needle into the bottle cap.
- 4) Connect the irrigation tube to the contra angle water inlet.
- 5) Open the tube cap to supply air into the bottle.
- 6) Open the tube clamp.





- Before install the irrigation tube into the pump, make sure that the water flow direction is correct. If the direction is wrong, the coolant solution can't reach contra angle.
- Please check if the cooling water is normal after connecting the coolant tube to the handpiece

4.2.8 Install the bur

Insertion :

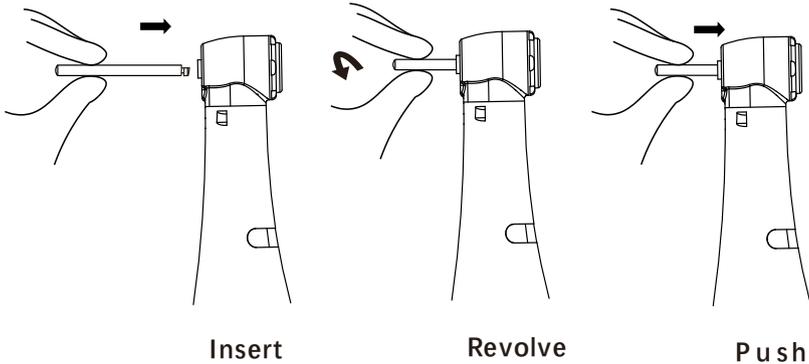
Insert the bur until it hits the block.

Then revolve the bur until it reaches the right place.

Finally push the bur gently to fix the bur. You will hear a “chick”, when it's completely installed.

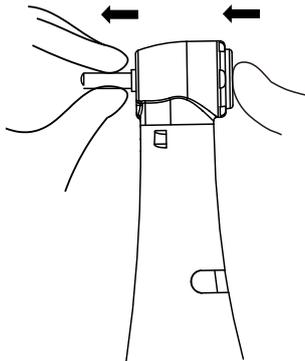
Please pull the bur gently, to check if the bur is fixed firmly.

Refer to the figure below:



Removal :

Depress the push button and remove the bur after the internal chunk is fully released. Refer to the figure below.

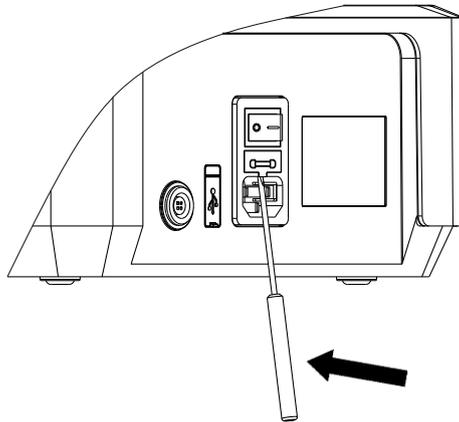


- If the O-ring on the motor connector is severely worn or damaged, please replace it with a new one to protect the motor.
- Never install and remove the bur while the motor is turning.
- After inserting the bur, gently push and pull the bur to check whether the bur fixed firmly.

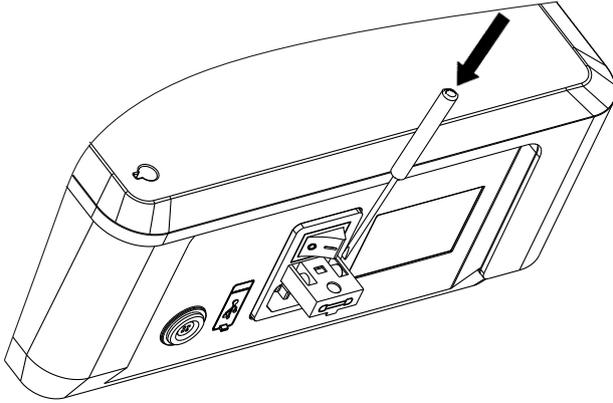
- Do not touch the rotating bur.
- Do not press the back button during treatment.
- Removing the bur after treatment immediately, to avoid injury or infection during placement.
- Never using a needle with a worn rod.

4.2.9 Install the Fuse

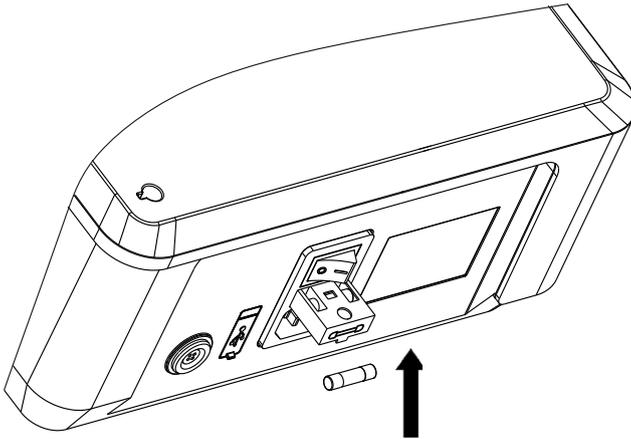
First open the fuse box by a screwdriver.



Next push the fuse out from the fuse box by a screwdriver as shown below,

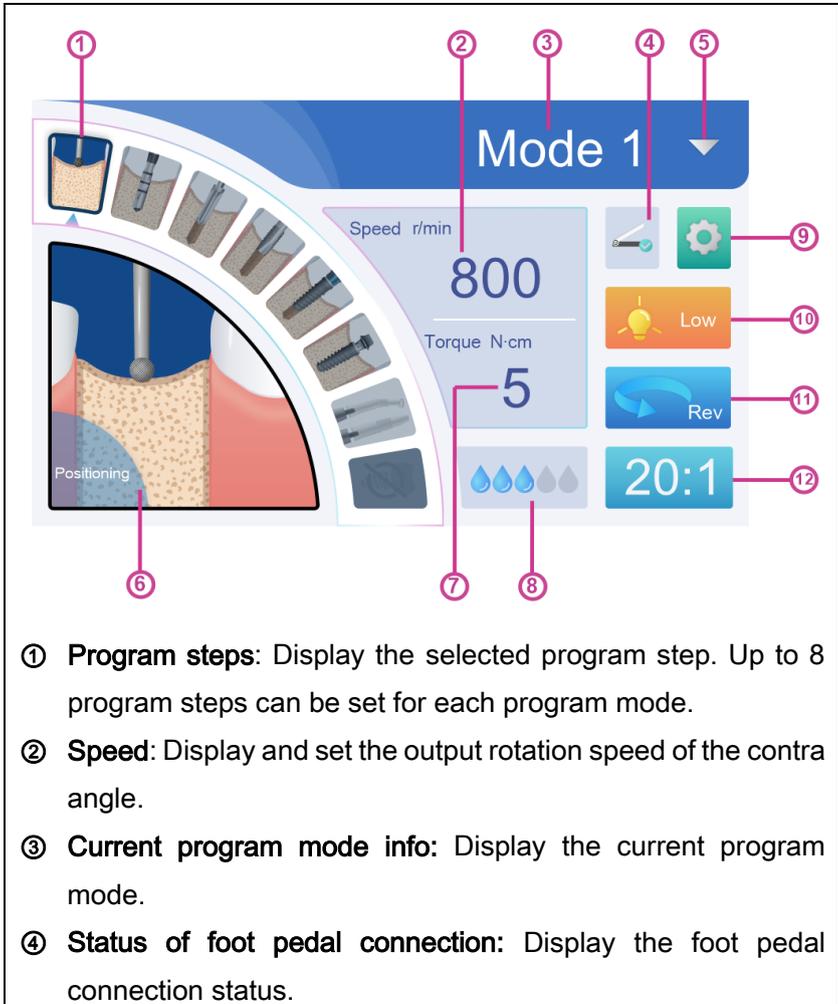


Then install the fuse into the fuse box, and finally push fuse box into the main unit.



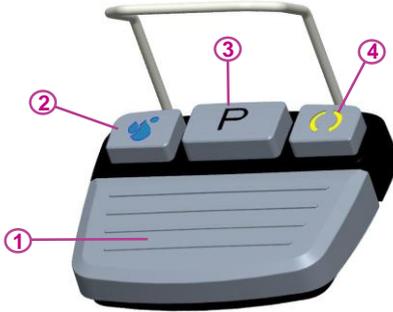
5.Use interface

5.1 Main unit operation panel and display



- ⑤ **Program selecting:** Select the program mode by touching this symbol.
- ⑥ **The activity of the current program step:** Display the operator activity of the current program step. A total of 9 program activities can be set (Position, Pilot drilling, Template drilling, Tapping, Implanting, Capping, Free use, Rinsing, Finished).
- ⑦ **Torque:** Display and set the output torque of the contra angle
- ⑧ **Coolant solution flow:** Display and set the coolant solution flow.
- ⑨ **System setting:** Set the system parameters such as Volume, Light, LUX fade-out time, foot pedal mode etc.
- ⑩ **LED light brightness:** Display and set the light intensity (off, low light, mid light and high light).
- ⑪ **Rotation direction:** Set the motor rotation direction (Fwd and Rev).
- ⑫ **Gear ratio selecting:** Select the gear ratio of the contra angle.

5.2 Foot pedal



- ① **Motor starting button:** User can start the motor by pressing the button, and stop the motor by releasing the button on the foot pedal.
- ② **Pump button:** User can set the coolant solution flow by pressing the pump button on the foot pedal.
- ③ **Program step button:** User can select the next program step by pressing the program step button "P" on the foot pedal.
- ④ **Rotation direction button:** User can set the rotation direction of the motor by pressing the direction button on the foot pedal.

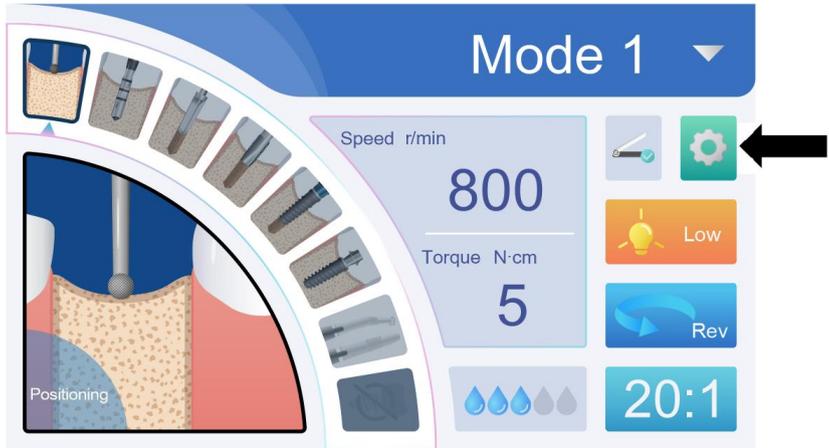
5.3 Terms and definition

FWD	Forward (Clockwise rotation)
REV	Reverse (Counterclockwise rotation)
r/min	Revolutions Per minute

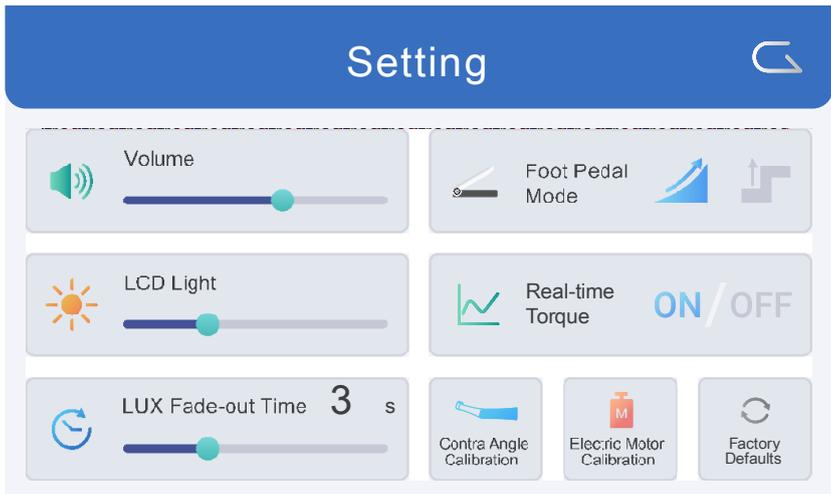
Program mode	Such as Mode 1-Mode 8
Activity	Position, Pilot drilling, Template drilling, Tapping, Implanting, Capping, Rinsing, Free use, Finished

6. Setting

6.1 System setting

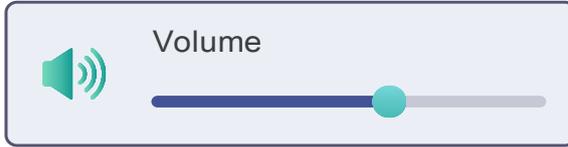


Touch the system setting symbol on the main interface. It will display the system setting window as follows:



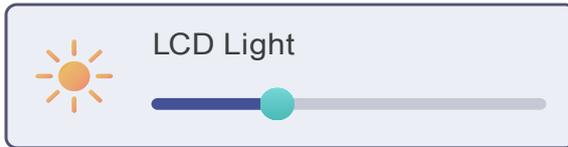
6.1.1 Volume setting

Touch the Volume slider and slide to change the system sound.



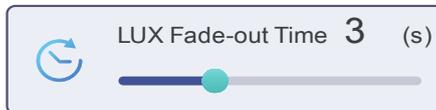
6.1.2 LCD brightness setting

Touch the LCD bright slider and slide to change the LCD brightness.



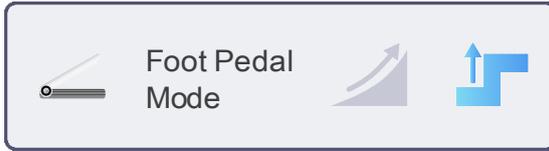
6.1.3 LUX fade-out time setting

Touch the LUX slider and slide to change the LUX fade-out time. For example the setting time is 3s , it means the LED light will turn off automatically, when the motor stop working 3s later.



6.1.4 Foot pedal mode setting

The motor can be triggered in either of the two following modes. Quick start mode: Step on the foot pedal and the motor starts at full set speed.

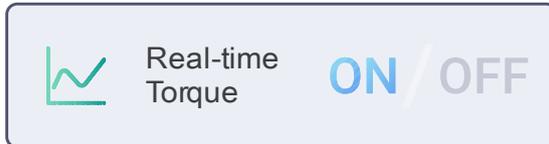


Slow start mode: The motor speed can be adjusted continuously up to the maximal level by the foot pedal.



6.1.5 Real-time torque

MotorSurg can display the output real-time torque curve. It can save and export the output real-time torque curve data by the USB flash drive.

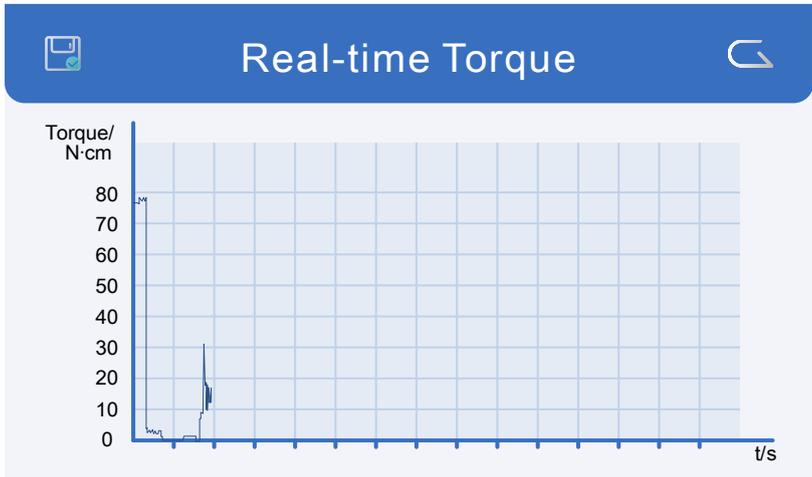


When set the Real-time Torque status ON, the main unit will display the real-time torque curve during the operation steps. A torque curve is shown after each motor stop, just three activities are available: Tapping, Implanting, and Capping.

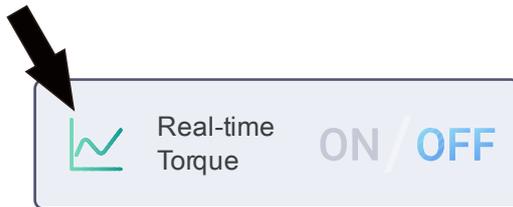


- The torque plot can be closed by pressing one of the buttons on the foot pedal. The updated torque plot is displayed again

after each motor stop (just available for Tapping, Implanting and Capping steps).



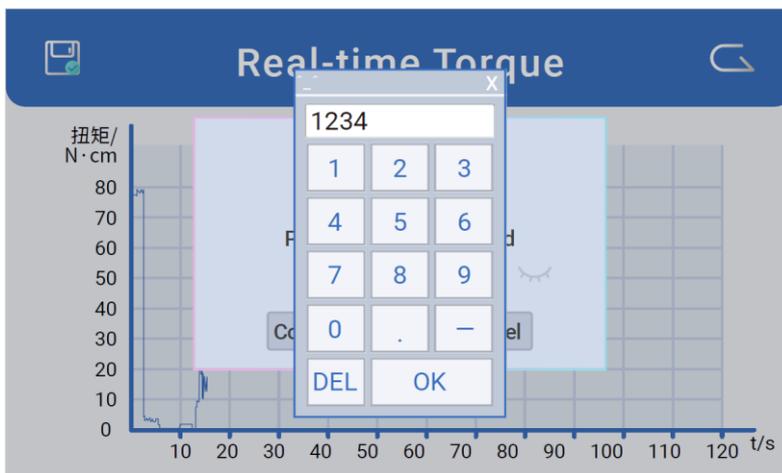
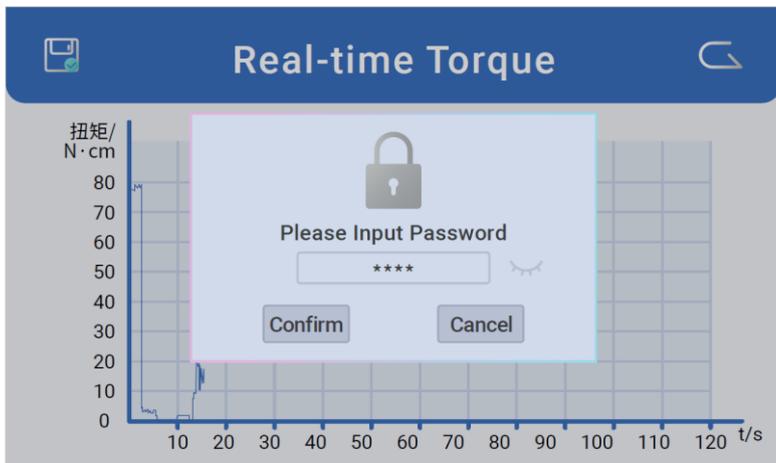
When set the Real-time Torque status OFF, the main unit will not display the real-time torque curve during the operation steps. But the user can check the real-time torque by touching the  at the end of the operation.



User can export the real-time torque: Insert a USB flash drive 2.0 into the USB socket at the back of the main unit, then press the



to save the data in the USB. A password input window will be open, please enter the password “1234” and confirmed.



If no USB is inserted, the save button will be .



- MotorSurg can save real-time torque curve data just for the present operation. If you start a new operation, it will overwrite the previous data.
- Please export the real-time torque curve data with USB after the operation, or you will lost the record.
- Please use the original 2.0 USB flash drive produced by Sifary

6.1.5 Contra angle calibration

The rotation resistance of the contra angle may cause the output torque different from the set torque. The main unit incorporates an automatic function to calibrate the contra angle, so that the output torque is equal to the set torque.



Conducting calibration: Connect the contra angle to the motor, and insert the bar into the contra angle chuck. Then touch the contra angle calibration button, and it will open a window asking whether to start contra angle calibration or not.

Touch “YES” to carry out the action.

Touch “NO” to cancel the action.

It will calibrate automatically till the main unit shows “calibration completed”



- Hold the contra angle firmly or put it in a safe holder during calibration.
- Be sure to carry out a contra angle calibration at the first use.
- As each contra angle has different performance, when you replace a new contra angle, please be sure to carry out a contra angle calibration.

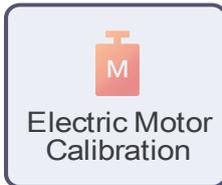
- This equipment is optimized to obtain the highest calibration accuracy at a gear ratio of 20:1. For calibration use only for the 20:1 reduction contra angle.
- Calibration should be performed only on Sifary's contra angle.
- Do not touch the main unit panel or the foot pedal during the calibration, or it may cause calibration failure.



- To ensure continued safe use of contra angle, it is recommended that the contra angle calibration is performed every 50 uses.

6.1.6 Motor calibration

When you replace a new motor, please be sure to carry out a motor calibration, or it may cause motor vibration.



Conducting calibration: Connect the motor cord to the main unit. Then touch the “Electric Motor Calibration” symbol, and it will open a window asking whether to start electric motor calibration or not.



Touch “YES” to carry out the action.

Touch “NO” to cancel the action.

It will calibrate automatically till the main unit shows “calibration completed”



- Hold the motor firmly or put it in a safe holder during calibration.
- As each motor has different performance, when you replace a new motor, please be sure to carry out a motor calibration.
- Calibration should be performed only on Sifary’s motor.
- Do not touch the main unit panel or the foot pedal during the calibration, or it may cause calibration failure.

6.1.7 Factory defaults setting

Factory defaults setting can be used to re-set the main unit to its condition at the time of delivery. All program steps and device settings are re-set to their default values.

Touch the symbol to restore the factory settings.



In the follow window, you will be asked whether to restore to factory settings or not.

Touch "YES" to carry out the action.

Touch "NO" to cancel the action.



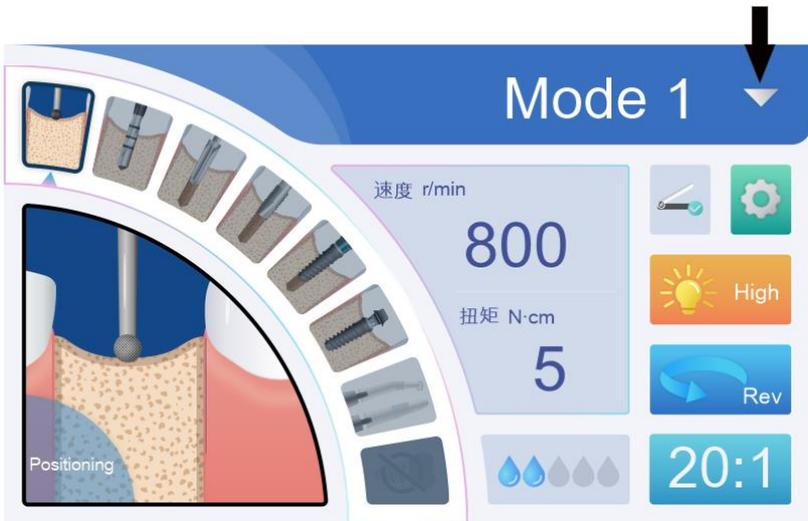
When all are set, user can touch the “” key to get back the main interface.

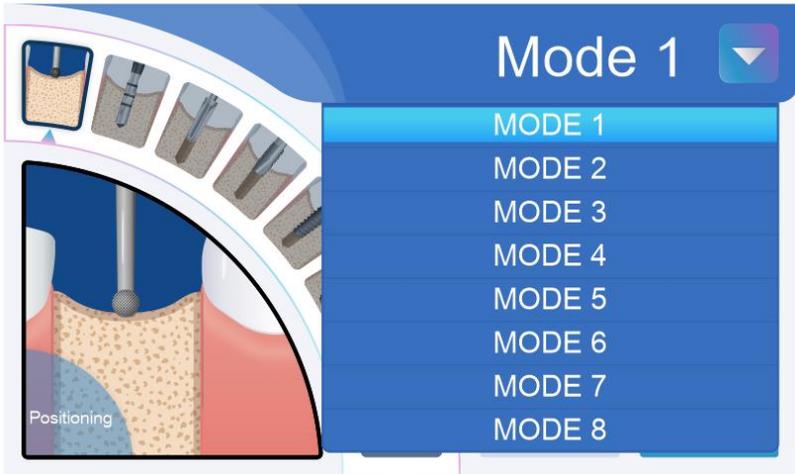
6.2 Set program mode

6.2.1 Editing the program mode display info

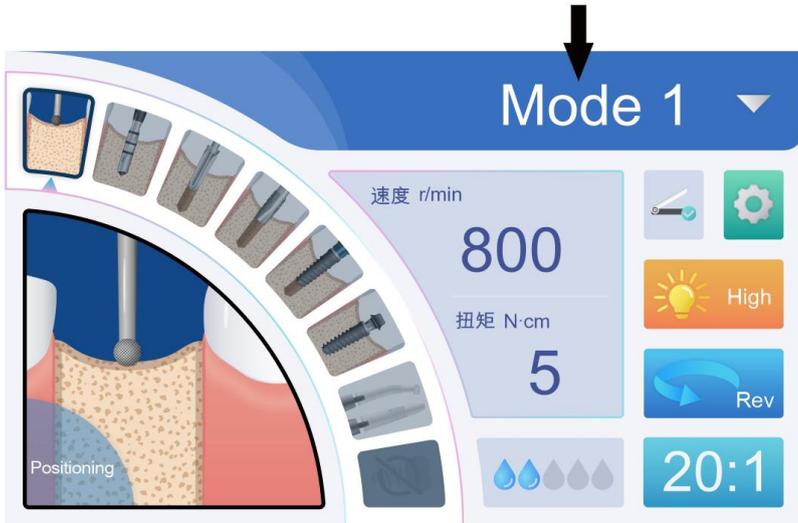
MotorSurg offers 8 programs for the user. These can be assigned to various users or implant systems. Each program includes 8 motor steps.

Touch the  symbol, an overview of the 8 programs is displayed, user can choose any one of the 8 programs.

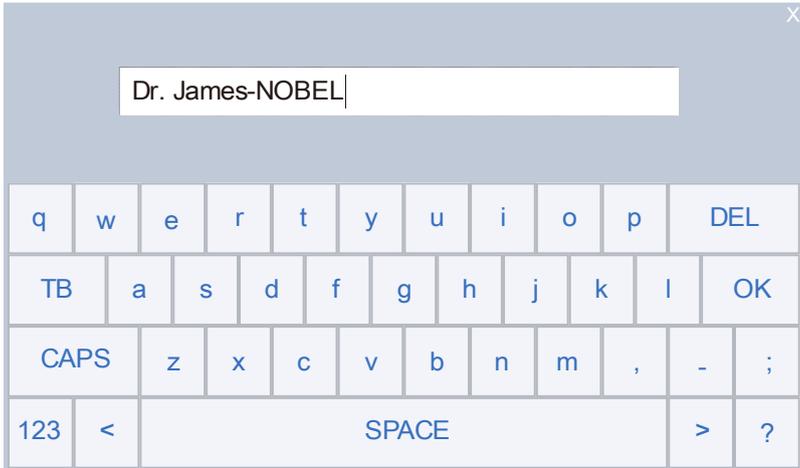




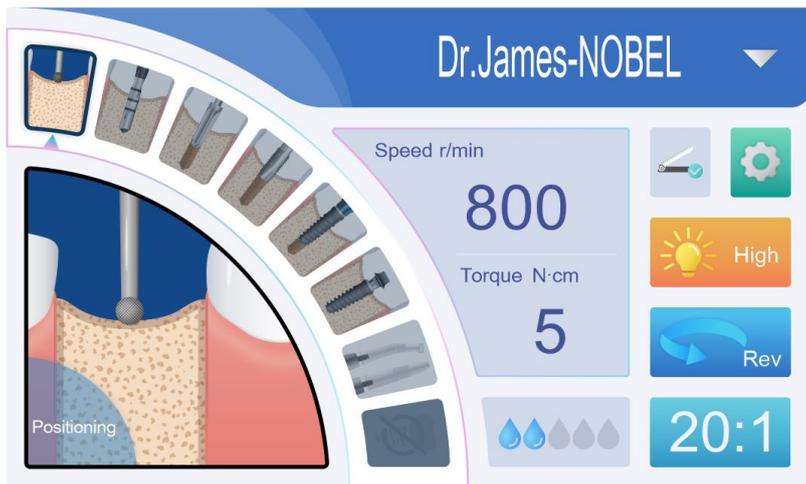
User can set the program display info as they like by touching the program display info area. It will open an info input window.



Touch the program info area (Mode1), it will open an editing window. In the editing window, user can input their name, the implant system or other info as they want.



When the editing is finished, touch the "X" symbol at the top-right corner of the window, to close the editing window. Then the program info area shows ""Dr. James-NOBEL".



- A maximum of 16 characters can be entered for program info editing

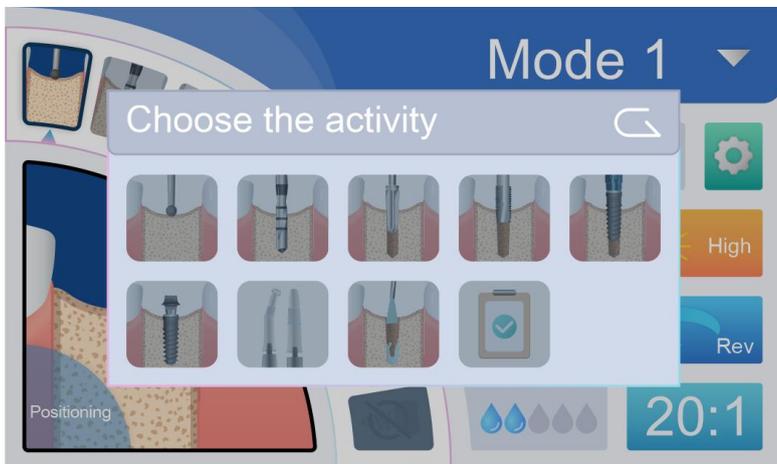
6.2.2 Program step setting

6.2.2.1 Assign program activity

Under the selected program mode (Mode1), user can select the program step as they need, and assign activity for each step.



Select the program step, then touch the activity of current program step, this will open a “choose the activity” window. It shows all activities.

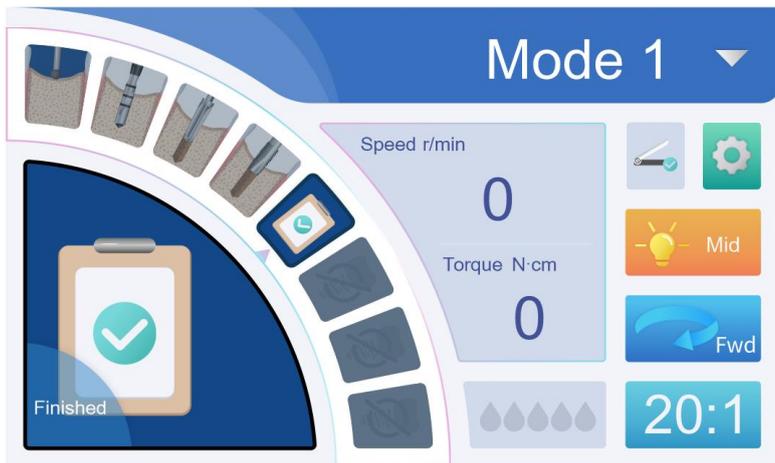


User can select the expected activity for the step. Then touch the “” symbol to close the window.

6.2.2.2 Limiting the program steps

The number of program steps can be limited. Program steps not needed can be deleted from the display. User can set the limiting of program step by selecting the program step and assign the activity “Finished”.

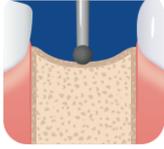
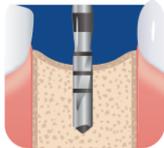
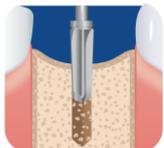
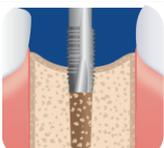
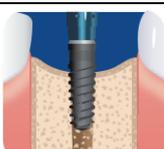
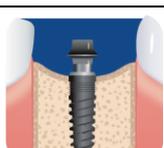
For example, touch the Step 5, then touch the activity of the current program step, and select the “Finished” activity. Under this setting, this program mode just has 5 steps. At the “Finished” step, the speed, torque, and coolant solution flow are “0” and these parameters cannot be set.



- The limiting of program steps just can be set when the program steps are no more than 8.

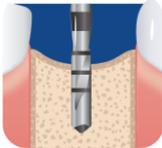
6.2.3 Exemplary program step sequences

Example 1: Factory default setting (Mode1-Mode8)

step	Activity	Symbol
1	Position	
2	Pilot drilling	
3	Template drilling	
4	Tapping	
5	Implanting	
6	Capping	

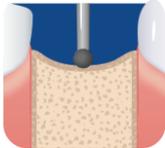
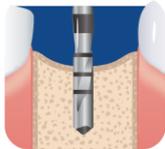
7	Free use	
8	Rinsing	

Example 2:

step	Activity	Symbol
1	Position	
2	Pilot drilling	
3	Template drilling	
4	Rinsing	

5	Implanting	
6	Capping	
7	Finished	

Example 3:

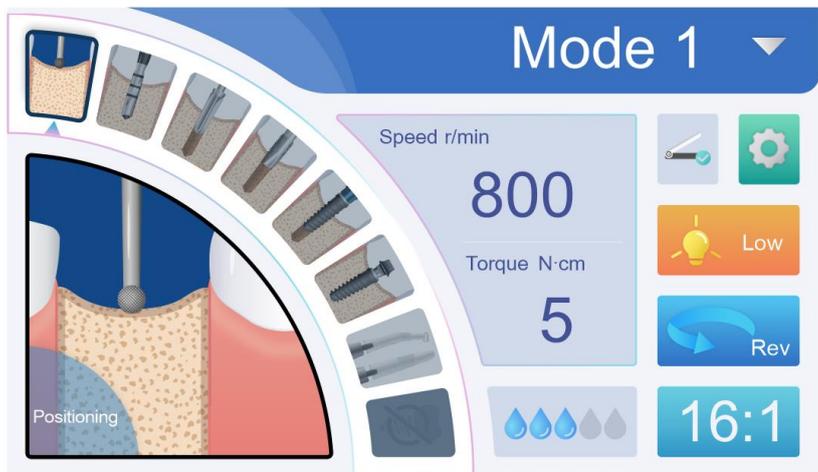
step	Activity	Symbol
1	Position	
2	Pilot drilling	
3	Template drilling	

4	Rinsing	
5	Finished	

6.2.4 Select the program step

User can select the program step by touching the program steps on the main operation panel, or by pressing the program step button (P) at the middle of foot pedal.

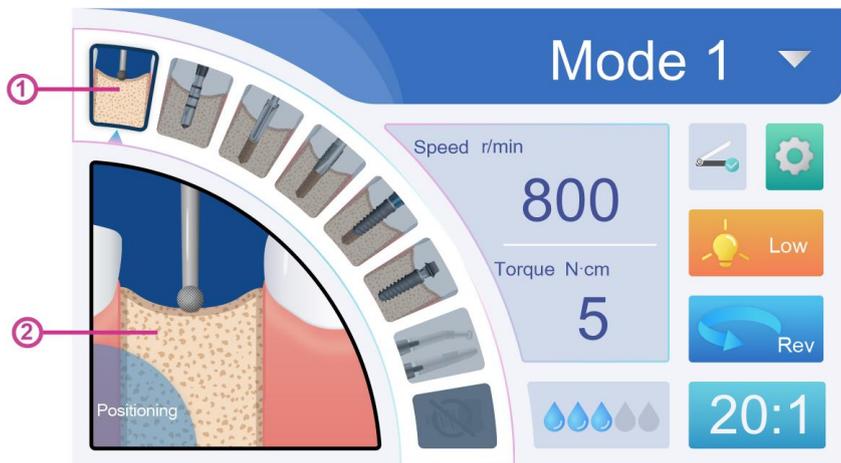
Short press to select the next program step, and long press for 2s to return to the previous step.





6.3 Set activities parameters

MotorSurg is based on program steps and associated activities, and can be operated intuitively through the user interface.

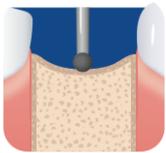


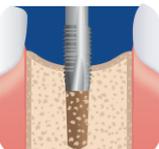
The program step is shown on the display as number ①, and the corresponding activity of the current step is shown on the display as number ②. Each program step can be assigned to any

activity by selecting the corresponding activity. Visualizing the activity is an easy means for checking if the activity set on the device is the same as the current treatment step. Maloperation can thus be largely prevented.

Default values have been set at the factory for the parameters: speed, torque, gear ratio, and coolant flow rate for every activity according to the clinical application. The parameters can be changed only within a reasonable range for the specific activity. In the activity, "Free use", all available values can be set.

6.3.1 The range of program steps (activities) parameters

Activity	Symbol	Speed (r/min)	Torque (N.cm)	Gear ratio	Coolant flow level
Position		200- 2000	5-80	16:1	0-5
		200- 2000	5-80	20:1	
		200- 1200	5-80	27:1	

Pilot drilling		200- 2000	5-80	16:1	0-5
		200- 2000	5-80	20:1	
		200- 1200	5-80	27:1	
Template drilling		200- 2000	5-80	16:1	0-5
		200- 2000	5-80	20:1	
		200- 1200	5-80	27:1	
Tapping		15-50	5-80	16:1	0-5
		10-50	5-80	20:1	
		10-50	5-80	27:1	

Implanting		15-50	5-80	16:1	0-5
		10-50	5-80	20:1	
		10-50	5-80	27:1	
Capping		15-50	5-15	16:1	0-5
		10-50	5-15	20:1	
		10-50	5-15	27:1	
Free use		200-40000	0.2-5.4	1:1	0-5
		15-2000	5-80	16:1	
		10-2000	5-80	20:1	
		10-1200	5-80	27:1	
Rinsing		N/A	N/A	N/A	0-5
Finished		N/A	N/A	N/A	N/A

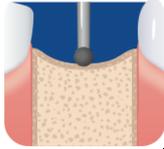
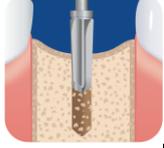
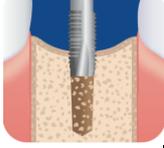
A treatment sequence can consist of 1 to 8 program steps and/or activities. The treatment sequence can be designed individually

through any arrangement of the activities. During the sequence, the foot pedal is used for navigation so that the device does not have to be touched again during the operation.

Changed values are saved automatically and are available for the next use.

6.3.2 Program activities parameters factory settings

The follow program activities parameters are set at the factory:

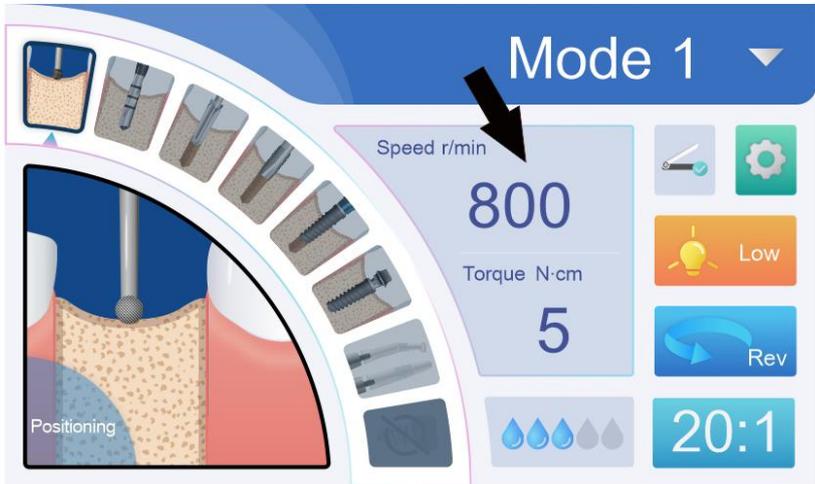
Activity	Symbol	Speed (r/min)	Torque (N.cm)	Gear ratio	Coolant flow level
Position		800	10	20:1	3
Pilot drilling		800	10	20:1	3
Template drilling		500	10	20:1	3
Tapping		20	25	20:1	0

Implanting		20	35	20:1	0
Capping		20	8	20:1	0
Free use		500	10	20:1	3
Rinsing		N/A	N/A	N/A	3
Finished		N/A	N/A	N/A	N/A

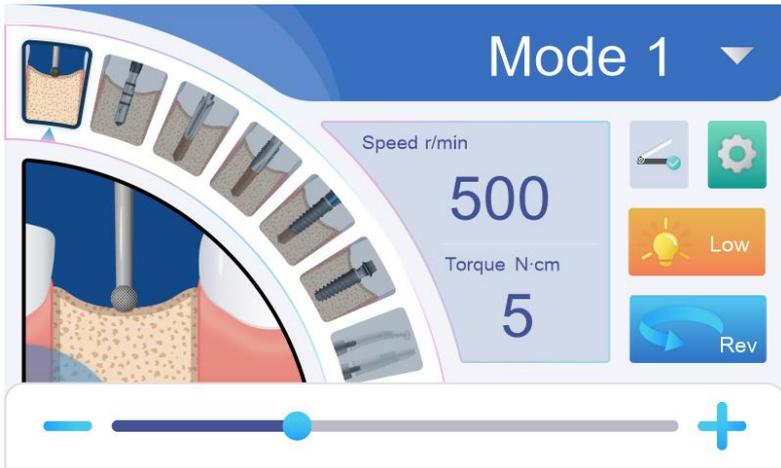
The listed indications are only examples. In order to prevent risks, it is essential to comply with the manufacturer's recommendations concerning implants, contra angles, and tools.

6.4 Setting the output speed

Touch the speed display area “800”.

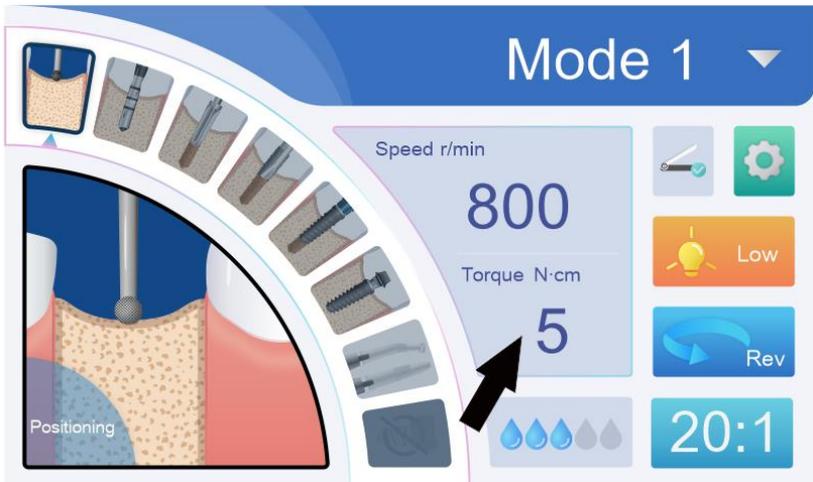


Touch the slider and slide to expected value for quick setting, or you can touch the “-” or “+” for an accurate speed. When the speed selected, touch the speed display area again to get back.



6.5 Setting the output torque

Touch the torque display area "5".

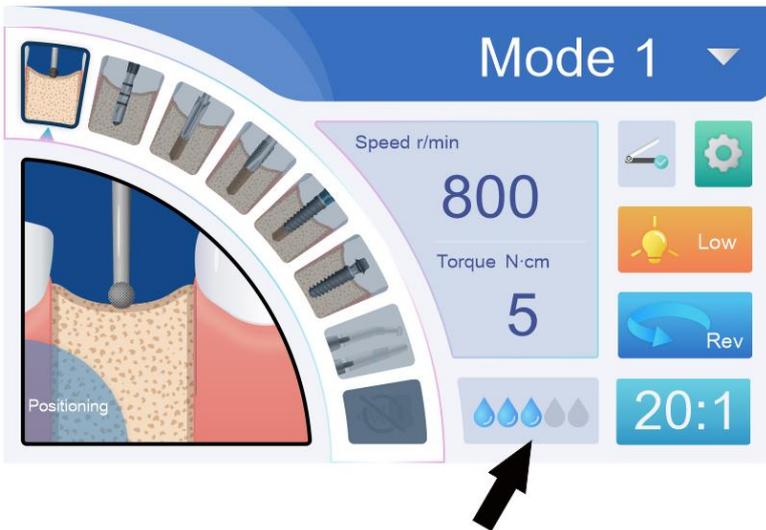


Touch the slider and slide to expected value for quick setting, or you can touch the "-" or "+" for an accurate Torque.



When the torque is selected, touch the torque display area again to get back.

6.6 Set the coolant flow



Touch the coolant flow display to set the coolant flow, or can be set by short pressing the pump button on the left of the foot pedal.



The coolant flow can be set to 5 levels and off.
Off.

Level 1=approx. 30mL/min

Level 2=approx. 50mL/min

Level 3=approx. 75mL/min

Level 4=approx. 100mL/min

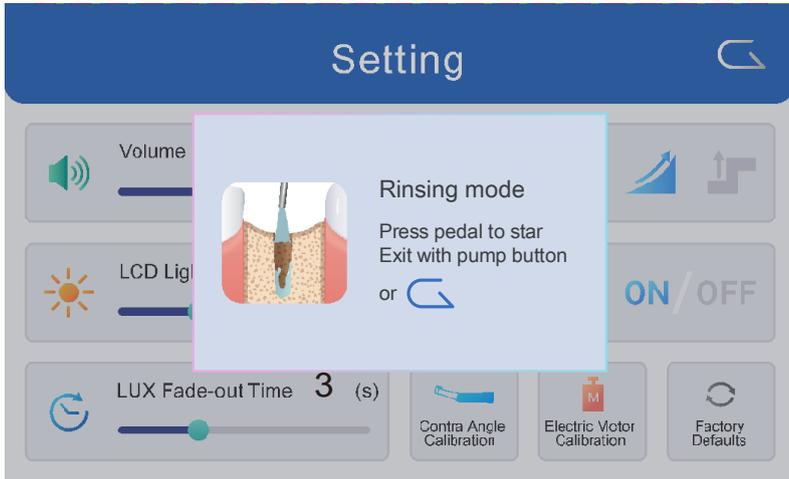
Level 5=approx. 130mL/min



- Set the coolant flow sufficiently high, or it may cause tissue damage.
- The recommended coolant solution is physiological saline.

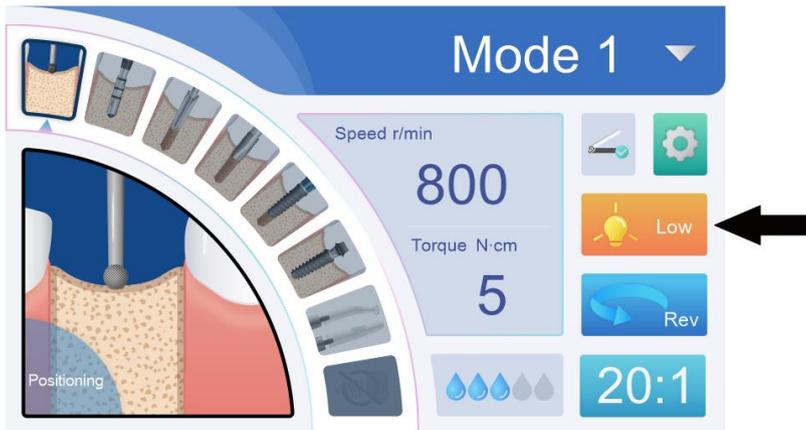
When pressing the coolant flow button on the foot pedal more than 2 seconds, the rinsing mode will be activated. User can press the motor starting button to start the pump, and exit this

rinsing mode by short pressing the pump button on the foot pedal or touch the “” symbol on the operation panel



6.7 Set LED light brightness

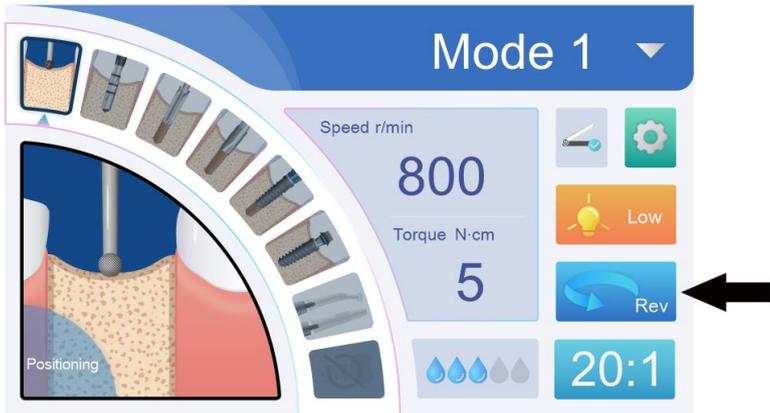
Touch the light to change the LED light brightness (OFF, Low, or High).



6.8 Set motor rotation direction

Touch the direction symbol on the main interface to change the motor rotation direction, or press the rotation direction button on the right of foot pedal.

When the rotating direction is reversing, MotorSurg will produce a “di di” sound, to avoid maloperation.

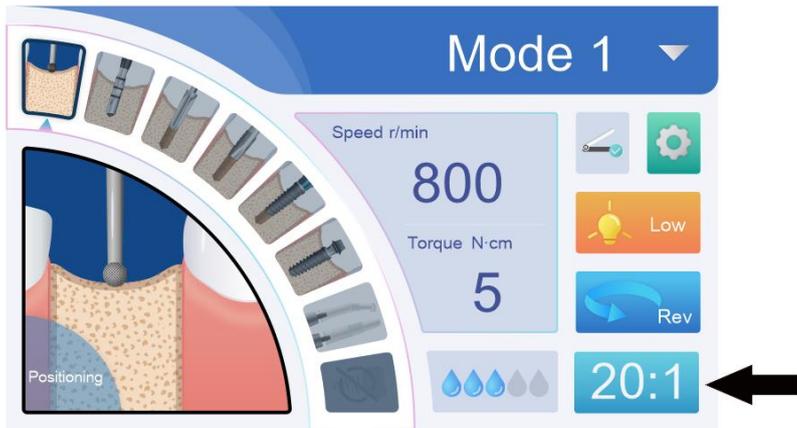


6.9 Set contra angle gear ratio

Touch the gear ratio symbol to set the value as expected. When the user touches the gear ratio symbol, it will open a choosing window. The user can choose the required gear ratio.

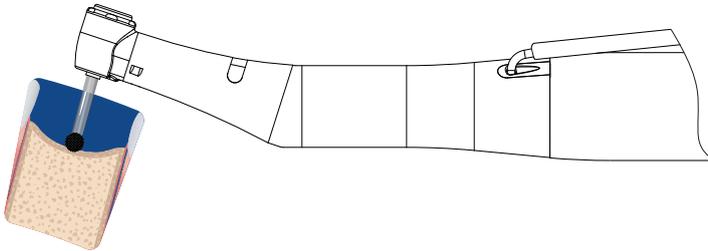
For “Free use” activity, there are 4 gear ratios to be selected: 1:1, 16:1, 20:1, 27:1.

For other activities, there are 3 gear ratios to be selected: 16:1, 20:1, 27:1.



All changed values are saved automatically and are available for the next use.

7. Operation



1. Install the product correctly according to the product installation steps;
2. Turn on the power switch on the back of the main unit and enter the standby state;
3. Under the standby state, select a program mode and set the parameters;
4. Start the implant motor by stepping on the foot pedal.



- Before using the device, please make sure that the foot pedal is placed at a position, where it is easy to be operated. Only the operator can operate the foot pedal.
- Before using the device for the first time, make sure that the foot pedal is connected to the main unit.
- Before any treatment, please try outside the oral cavity to make sure that there is no malfunction of the device.
- Before starting the equipment, please confirm that the gear ratio of the contra angle is the same as the selected gear ratio,

otherwise the output torque is not equal to the set, it will cause treatment failure or harm to the patient.

- Check the contra angle to make sure that the coolant solution flow functions normally. If the coolant solution flow function is abnormal, stop using it.
- If the contra angle or motor temperature rises obviously, please stop using, and contact your distributor.



- When the operation is completed, please release the foot pedal first; then cut off the power; next remove the implanting tools and contra angle, motor cord, foot pedal cord, bottle holder, irrigation tube; finally remove the AC power cord from the power resource.
- Don't throw away the used irrigation tube carelessly. Please deal with them according to the local environmental protection laws and regulation.

8. Cleaning, disinfection and sterilization

8.1 Foreword

For hygiene and sanitary safety purpose, the components (motor with cord, contra angle holder, protection plug, Dental contra-angle handpiece, Y connector, nozzle holder, internal irrigation nozzle) must be cleaned, disinfected and sterilized before each usage to prevent any contamination. This concerns the first use as well as the subsequent uses. Comply with your national guidelines, standards and requirements for cleaning, disinfection and sterilization.

Reprocessing procedures have only limited implications to this dental device. The limitation of the numbers of reprocessing procedures is therefore determined by the function / wear of the device. From the processing side there is no maximum number of allowable reprocessing. The device should no longer be reused in case of signs of material degradation.

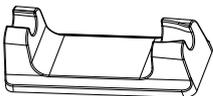
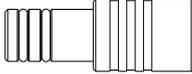
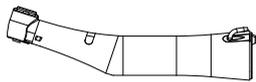
In case of damage, the device should be reprocessed before sending back to the manufacturer for repair.

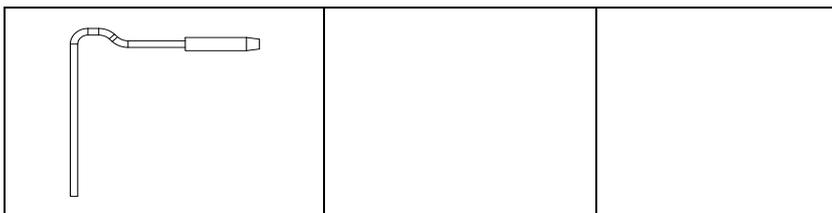
8.2 General recommendations

- The user is responsible for the sterility of the product before the first use and each further usage as well as for the usage of damaged or dirty instruments, where applicable after sterility.
- Clean the products within two hours after each use.

- For your own safety, please wear personal protective equipment (gloves, safety glasses, etc.).
- Use only a disinfecting solution which is approved for its efficacy (VAH/DGHM-listing, CE marking, and FDA approval) and in accordance with the IFU of the disinfecting solution manufacturer.
- The water quality has to be convenient to the local regulations especially for the last rinsing step or with a washer-disinfector.
- Thoroughly clean and wash the components before autoclaving.
- Do not lubricate the motor.
- Do not use bleach or chloride disinfectant materials.

8.3 Autoclavable components

Autoclavable Components		
Motor with cord 	Contra angle holder 	Protection plug 
Dental contra-angle handpiece 	Y connector 	Nozzle holder 
Internal irrigation nozzle 	/	/



Reprocessing instructions

Preparation at the point of use:

Disconnect the motor cord from the main unit. Refer to "Chapter 4.2.2 - Connect the motor cord" of this manual for disassembly instructions. Remove gross contaminations, from the surface of motor with cord, contra angle holder, protection plug, Dental contra-angle handpiece, Y connector, nozzle holder, internal irrigation nozzle with a cloth, which is dipped in cold water (<math><40^{\circ}\text{C}</math>) immediately after use. Don't use a fixating detergent or hot water (>math>>40^{\circ}\text{C}</math>) as this can cause the fixation of residuals which may influence the result of the reprocessing process.



- Do not disconnect the motor from the motor cord.
- Do not submerge the motor with cord
- Do not wipe the motor with any of the following functional water (acidic electrolyzed water, strong alkaline solution, or ozone water), medical agents (glutaral, etc.), or any other special types of water or commercial cleaning liquids. Such liquids may result in metal corrosion and adhesion of the residual medical agents to the components.

- Do not rinse the motor with water, to prevent water from entering the motor.
- Before first use and after each use, make sure to sterilize the above mentioned parts.

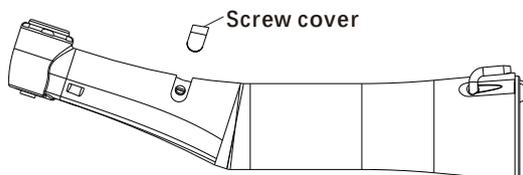
Transportation:

Safe storage and transportation to the reprocessing area to avoid any damage and contaminate on to the environment.

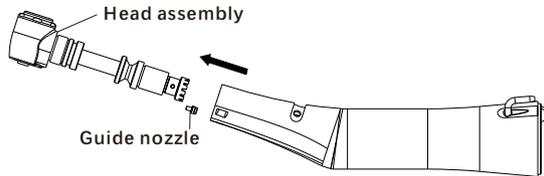
Pre-Cleaning:

Do a manual pre-cleaning.

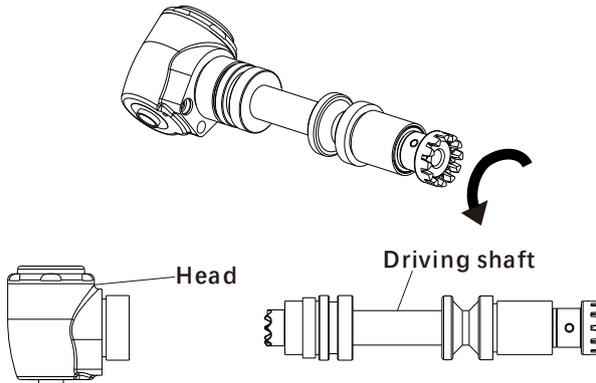
- For motor with cord, contra angle holder, and protection plug, wipe the surface of these parts with a cloth dipped in clean water more than 5 times, until the components are visually clean.
- For dental contra-angle handpiece, Y connector, nozzle holder, and internal irrigation nozzle, see below steps for pre-cleaning:
 - 1) Use a screwdriver to pry open the screw cover, twist the screw counterclockwise.



- 2) Pull out the head assembly and remove the guide nozzle. The guide nozzle should be carefully stored after removal to avoid being lost.



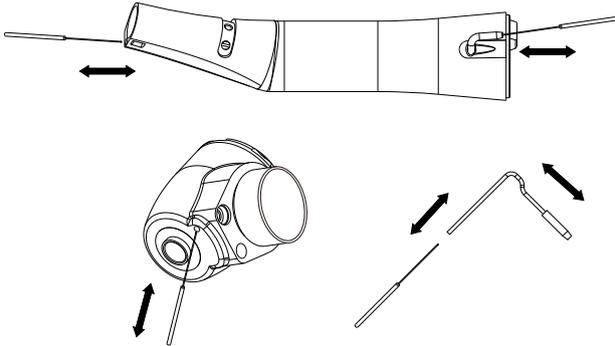
- 3) Revolve the driving shaft counterclockwise and remove it from the head.



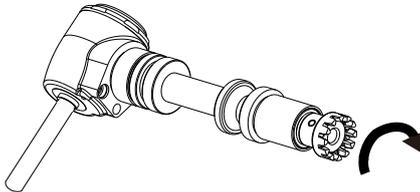
Dredge waterways:

Wash the disassembled parts and accessories with neutral or mild alkaline cleaning liquid ($<40^{\circ}\text{C}$) for at least 15s until there is no stain on the surface, and then rinse the cleaning liquid with clean water.

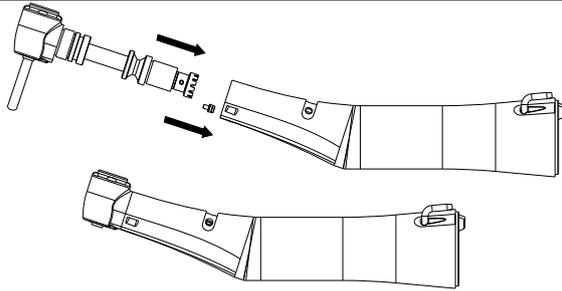
Dredge the waterways and internal irrigation nozzle with needle, and install the handpiece immediately.

**Installation steps:**

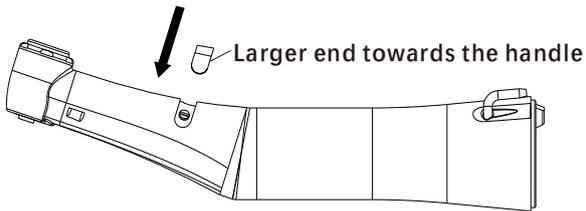
- 1) Assemble the bur to the head (refer to chapter 4.3), rotate the drive shaft clockwise. Please revolve the bur when the shaft is screwed to the bottom, to prevent the gear from sticking.



- 2) Insert the guide nozzle to the handle, then insert the shaft into handle. Please revolve the bur during inserting, to prevent the gear from sticking. Pull the head gently, to be sure no gap between head and handle, and finally remove the bur.



- 3) Twist the screw clockwise, and install the screw cover, please be sure the cover direction is right.



Cleaning:

1. **Manual cleaning for motor with cord, protection plug and contra angle holder**

To prevent water from entering the motor, manual cleaning is recommended. If the water enters the motor, it may cause abnormal noise or vibration, will reduce lifetime of the motor. Wipe the surface of motor with cord, protection plug and contra angle holder for more than 5 times, with a soft cloth

which is dipped in Ethanol (70-80 vol% Ethanol), at least 2 minutes each time.

2. **Auto cleaning for dental contra-angle handpiece, Y connector, nozzle holder, internal irrigation nozzle:**

Carefully put the components into the washer-disinfector on a tray and set the parameters as follows, then start the program:

4 min pre-washing with cold water (<40°C);

emptying

5 min washing with a mild alkaline cleaner at 55°C;

emptying

3 min neutralising with warm water (>40°C);

emptying

5 min intermediate rinsing with warm water (>40°C);

Emptying

The automated cleaning processes have been validated by using 0.5% neodisher MediClean forte (Dr. Weigert).



- Do not rinse the motor with water, to prevent water from entering the motor.
- Do not submerge motor with any liquid.
- Don't use ultrasonic waves to clean dental contra-angle handpiece.

Disinfection:

1. Manual disinfection for motor with cord, protection plug and contra angle holder:

Wipe the surface of the motor (including protection plug and contra angle holder) for 5 times, with a soft cloth which is dipped in Ethanol (70-80 vol% Ethanol), at least 2 minutes each time.

2. Auto disinfection for dental contra-angle handpiece, Y connector, nozzle holder, internal irrigation nozzle:

Automated Thermal Disinfection in washer/disinfector under consideration of national requirements with regard to A0 value (refer to EN ISO 15883).

A disinfection cycle of 5 mins disinfection at 93°C has been validated for the device to achieve an A0 value of 3000.

After cleaning, the parts should be automated disinfected or sterilized immediately. A manual disinfection is not recommended.

Drying:

1. Manual drying for motor with cord, protection plug and contra angle holder:

Do a manual drying. Use a lint free cloth to wipe the surfaces.

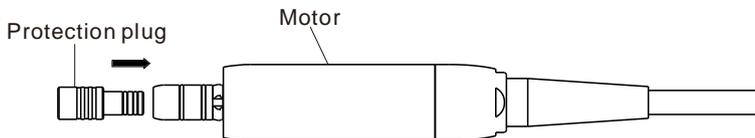
Insufflate cavities of instruments by using sterile compressed air.

2. Auto drying for dental contra-angle handpiece, Y connector, nozzle holder, internal irrigation nozzle:

Drying of outside of instrument through drying cycle of washer/disinfector. If needed, additional manual drying can be performed through lint free towel. Insufflat cavities of instruments by using sterile compressed air.

Protection plug installation:

To prevent the steam from entering the motor, please insert the protection plug into motor connector before sterilization. Refer to the figures below:

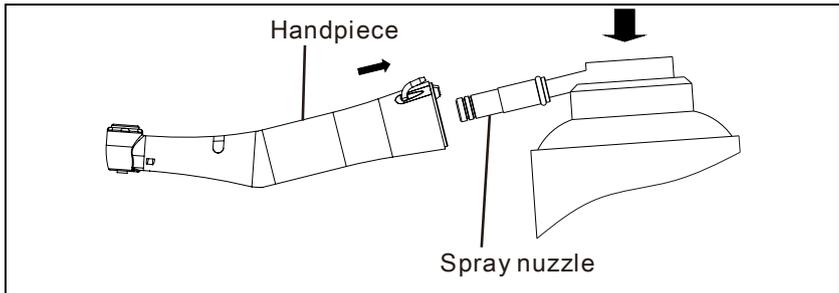


Completed state



- Be sure to insert the plugs into the motor connector before sterilization, or it will reduce the life of motor.

Lubricating: Insert the spray nozzle in rear of the dental contra-angle handpiece, and apply the dental contra-angle handpiece professional lubricant for lubricating and maintenance. Press the lubricant button (for 3-5 seconds) until the lubricant expels from the dental contra-angle handpiece head. Press repeatedly until no black lubricant expels from the dental contra-angle handpiece head. Refer to the figure below:



- Before packaging and autoclaving, the dental contra-angle handpiece must be lubricated according to manufacturer's instruction.

Packaging:

Pack the instruments in an appropriate packaging material for sterilization.



- Check the validity period of pouch given by the manufacturer to determine the shelf life.
- Use pouches which resist to a temperature up to 141°C and in accordance with EN ISO 11607.
- Do not lubricate the motor.
- Make sure that the disinfection plugs are screwed before packaging.

Sterilization:

Sterilization of instruments by applying a fractionated pre-vacuum steam sterilization process (according to EN 285/EN 13060/EN

ISO 17665) under consideration of the respective country requirements.

Minimum requirements: 3 min at 134 °C (in EU: 5 min at 134 °C)

Maximum sterilization temperature: 137°C

Drying time: at least 8min



- Use only approved autoclave devices according to EN 13060 or EN 285.
- Use a validated sterilization procedure according to EN ISO 17665.
- Respect the maintenance procedure of the autoclave device given by the manufacturer.
- Use only this recommended sterilization procedure.
- Control the efficiency (packaging integrity, no humidity, color change of sterilization indicators, physicochemical integrators, digital records of cycle parameters).
- Wait for cooling before touching.

Storage:

Store the sterilized instruments in a dry, clean and dust free environment at modest temperatures, refer to label and User Manual.



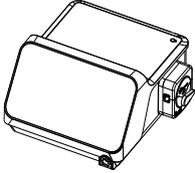
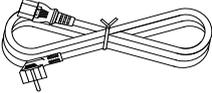
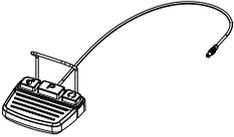
- Sterility cannot be guaranteed if packaging is open, damaged or wet.

Check the packaging and the Motor and Contra angle holder before use (packaging integrity, no humidity and validity period).

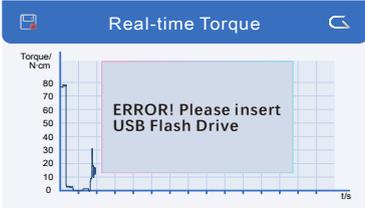


The instructions provided above have been validated by the manufacturer of the medical device as being capable of preparing a medical device for use. It remains the responsibility of the processor to ensure that the processing, as actually performed using equipment, materials and personnel in the processing facility, achieves the desired result. This requires verification and/or validation and routine monitoring of the process. Likewise, any deviation by the processor from the instructions provided should be properly evaluated for effectiveness and potential adverse consequences.

8.4 Disinfection components

Disinfection components	
<p>Main unit</p> 	<p>AC Power cord</p> 
<p>Foot pedal with cord (1pc)</p> 	<p>Bottle holder</p> 
<p>Wipe all the surfaces with a damp cloth lightly moistened until all the surfaces are visually clean, then wipe all the surfaces with a cloth lightly moistened with Ethanol for Disinfection (Ethanol 70 to 80 vol%) at least 2min, repeat for 5 times.</p>	
<p></p> <ul style="list-style-type: none"> ● Do not use disinfectants other than ethanol for disinfection (Ethanol 70 to 80 vol%). ● Do not use excessive ethanol to prevent ethanol from seeping into the parts and damaging the internal parts. ● Disinfect before and after each use. ● Host, AC power cord or foot pedal shall not be sterilized by high temperature steam ● Please be sure no liquid into the host. 	

9. Error warnings

Error warnings	Reasons	Solutions
	The USB Flash Drive is not inserted, when save the real-time torque	Insert the USB Flash Drive
ERROR ! 0x01	The motor is not connected	Connect the motor
ERROR ! 0x02	Data storage failure, parameter Settings cannot be saved	Contact the distributor to replace the control circuit board
ERROR ! 0x04	Motor drive failure	Contact the distributor to replace the Control circuit board
ERROR ! 0x08	Pump drive failure	Contact the distributor to replace the Control circuit board

10. Troubleshooting

When trouble is found, check the following points before contacting your distributor. If none of these are applicable or the trouble is not remedied even after actions have been taken, the product may have failed. Contact your distributor.

Problem	Cause	Solution
Cannot power on	Wrong AC power cord is used.	Please use the original AC power cord.
	The AC power cord is not plugged into the socket.	Please check the connection.
	The socket is not energized.	Please check the connection.
	Blown fuse.	Contact your distributor.
No coolant in the contra angle	No coolant flow is pre-selected. Pump is off.	Pre-select coolant flow.
	Irrigation tube needle is not plugged into the bottle.	Plug the tube needle into the bottle.
	Coolant bottle is empty.	Connect the new coolant bottle.

	Tube clamp is closed.	Open the tube clamp.
	Pump locking is not closed.	Check and close the pump locking.
	Tube is kinked.	Check the tube and remove the kink, if any.
	Coolant solution bottle is not ventilated.	Open the tube cap.
The motor does not rotate	The motor cord is not connected correctly.	Check to make sure the motor cord is connected correctly.
	Contra angle is stuck.	Pull out the contra angle and check whether the motor rotates. If it can rotate normally, please clean or repair the contra angle.
	Problem on the foot pedal	Check whether the foot pedal is connected right.
	The light is not turned on.	Turn on the light.

No light on the dental hanpiece	The contra angle is improperly attached.	Attach the contra angle until hearing the “click” sound.
	LED is defective.	Replace the LED.
	Unsuitable contra angle is used.	Use a suitable contra angle.



Unauthorized modification of the MotorSurg may cause the following hazards:

- The motor can't reverse.
- The main unit can't control the motor.
- Circuit board is damaged.
- LED light can't turn on.

11. Technical data

Manufacturer	Changzhou Sifary Medical Technology Co., Ltd.	
Model	MotorSurg	MotorSurg(110V)
Power supply	~220-240V 50/60Hz	~100-120V 50/60Hz
Input power	110VA	110VA
Fuse	T1.6AL 250V	T3.15AL 250V
Max. Coolant flow	130mL/min (test with no handpiece)	
Speed range	200-40000r/min, $\pm 10\%$	
Torque range	5-80 N·cm	
Handpiece connector type	Comply with ISO 3964:2016 Dentistry- Coupling dimensions for handpiece connectors, Type 4	
Shank type and size	Comply with ISO 1797:2017 requirements for type 1 shank, diameter $\phi 2.35_{-0.016}^0$ mm	
Minimum fitting length of shank	12.25mm	
Gear ratio of handpiece	20:1	
Light	White LED	
Type of protection against electrical shock	Class II	
Applied part	Dental contra-angle handpiece Type B	

Ingress protecting rating	Ordinary equipment (IPX0); Foot pedal (IPX6)
Operating mode	Intermittent operation: ON 2 min. / OFF 8 min.
Operation conditions	Use: in enclosed spaces Ambient temperature: 5°C ~ 40 °C Relative humidity: 30%~ 75% Atmospheric pressure: 70kpa ~106kpa
Transport and storage conditions	Ambient temperature: -20 °C ~ +55 °C Relative humidity: 20% ~ 80 % Atmospheric pressure: 70kPa ~ 106kPa

12. EMC tables

Guidance and manufacturer's declaration - electromagnetic emissions		
The MotorSurg is intended for use in the electromagnetic environment specified below. The customer or the user of the MotorSurg should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment guidance
RF emissions CISPR 11	Group 1	The MotorSurg uses 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 MotorSurg is suitable for use in all establishments, including domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The MotorSurg is intended for use in the electromagnetic environment specified below. The customer or the user of the MotorSurg 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	+/- 8 kV contact +/- 2 kV, +/- 4 kV, +/- 8 kV, +/- 15 kV air	+/- 8 kV contact +/- 2 kV, +/- 4 kV, +/- 8 kV, +/- 15 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 transients/bursts IEC 61000-4-4	±2kV 100kHz repetition frequency	±2kV 100kHz repetition frequency	Mains power quality should be that of a typical commercial or

			hospital environment.
Surge IEC 61000-4-5	Line to line: $\pm 0.5\text{kV}$, $\pm 1\text{kV}$, Line to ground: $\pm 0.5\text{kV}$, $\pm 1\text{kV}$, $\pm 2\text{kV}$	Line to line: $\pm 0.5\text{kV}$, $\pm 1\text{kV}$, Line to ground: $\pm 0.5\text{kV}$, $\pm 1\text{kV}$, $\pm 2\text{kV}$	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips IEC 61000-4-11	0% UT; 0.5 cycle at 0° , 45° , 90° , 135° , 180° , 225° , 270° , and 315° 0% UT; 1 cycle and 70% UT; 25/30 cycles	0% UT; 0.5 cycle at 0° , 45° , 90° , 135° , 180° , 225° , 270° , and 315° 0% UT; 1 cycle and 70% UT; 25/30 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of devices require continued operation during power mains interruptions, it

Voltage interruptions IEC 61000-4-11	sine phase at 0° 0% UT; 250/300 cycle	sine phase at 0° 0% UT; 250/300 cycle	is recommended that devices be powered from an uninterruptible power supply or a battery
Rated Power frequency magnetic field IEC 61000-4-8	30 A/m 50Hz or 60Hz	30 A/m 50Hz or 60Hz	Power frequency magnetic field should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: UT: rated voltage(s); E.g. 25/30 cycles means 25 cycles at 50Hz or 30 cycles at 60Hz			

Guidance and manufacturer's declaration – electromagnetic immunity

The **MotorSurg** is intended for use in the electromagnetic environment specified below. The customer or the user of the **MotorSurg** should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
<p>Conducted disturbances induced by RF fields IEC 61000-4-6</p> <p>Radiated RF EM fields IEC 61000-4-3</p>	<p>3 V</p> <p>0.15 MHz – 80 MHz, 6 V in ISM bands between 0.15 MHz and 80 MHz,</p> <p>80 % AM at 1 kHz</p> <p>3 V/m, 80 MHz – 2,7</p>	<p>3 V</p> <p>0.15 MHz – 80 MHz, 6 V in ISM bands between 0.15 MHz and 80 MHz, 80 % AM at 1 kHz</p> <p>3 V/m, 80 MHz – 2,7 GHz, 80 % AM at 1 kHz</p>	<p>Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the MotorSurg, including cables specified by the manufacturer.</p>

	GHz, 80 % AM at 1 kHz	
--	--------------------------------	--

Proximity fields from RF wireless communications equipment

Nowadays, many RF wireless equipment have being used in various healthcare locations where medical equipment and/or systems are used. When they are used in close proximity to medical equipment and/or systems, the medical equipment and/or systems' basic safety and essential performance may be affected. The **MotorSurg** has been tested with the immunity test level in the below table and meet the related requirements of IEC 60601-1-2:2020. The customer and/or user should help keep a minimum distance 30cm between RF wireless communications equipment and the **MotorSurg**.

Test frequency (MHz)	Band (MHz)	Service	Immunity test level (V/m)
			Professional healthcare facility environment
385	380-390	TETRA 400	Pulse modulation 18Hz, 27V/m
450	430-470	GMRS 460 FRS 460	FM, ± 5 kHz deviation, 1kHz sine, 28V/m
710	704-	LTE Band 13, 17	Pulse modulation 217Hz, 9V/m
745	787		

780			
810	800- 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18Hz, 28V/m
870			
930			
1720	1700- 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217Hz, 28V/m
1845			
1970			
2450	2400- 2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217Hz, 28V/m
5240	5100- 5800	WLAN 802.11 a/n	Pulse modulation 217Hz, 9V/m
5500			
5785			

Guidance and manufacturer's declaration –Proximity magnetic fields

The **MotorSurg** is intended for use in the electromagnetic environment specified below. The customer or the user of the **MotorSurg** should assure that it is used in such an environment.

Proximity magnetic fields	IEC 61000-4-39 test level	Compliance levels	Electromagnetic environment-guidance
Proximity magnetic fields	134.2kHz Pulse modulation 2.1 kHz	65A/m	Power frequency magnetic field should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Proximity magnetic fields	13.56MHz Pulse modulation 50 kHz	7.5A/m	

Cable information:

Cable Name	Cable Length (m)	Shielded or not	Remark
Power cable	1.8	No	/
Motor tail cable	2	YES	/
Foot pedal cable	2.5	No	/



- Use of accessories and cables other than those specified or provided by the manufacturer of **MotorSurg** could result in increased electromagnetic emissions or decreased electromagnetic immunity of **MotorSurg** and result in improper operation.

- Use of **MotorSurg** adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, **MotorSurg** and the other equipment should be observed to verify that they are operating normally.

13. Warranty

- 1) **MotorSurg** is warranted against manufacturing errors and defects in materials, and the warranty period is 12 months starting from the day of delivery to the customer.
- 2) **MotorSurg** should be repaired by the Customer Service Department of Changzhou Sifary Medical Technology Co., Ltd. or maintenance service partners authorized by Changzhou Sifary Medical Technology Co., Ltd. Do not provide circuit diagram, bill of material, legends, calibration rules, and other maintenance materials to other organizations.
- 3) If the quality assurance complaint is reasonable, Changzhou Sifary Medical Technology Co., Ltd. or maintenance service partner authorized by Changzhou Sifary Medical Technology Co., Ltd shall provide repairing service as soon as possible.
- 4) If the damage is proved to be caused by the user's negligence in daily maintenance, warranty is then voided.
- 5) Changzhou Sifary Medical Technology Co., Ltd. reserves the right to analyze and determine the cause of any problems.

14. Statement

Shelf Life

The shelf life of **MotorSurg** series products is 5 years.

To ensure continued safe use of **MotorSurg**. It is recommended that the equipment (motor and main unit) be checked and repaired at the dealer once a year.

Maintenance

MANUFACTURER will provide circuit diagrams, component part lists, descriptions, calibration instructions to assist to SERVICE PERSONNEL in parts repair.

Disposal

The package should be recycled. Metal parts of the device are disposed as scrap metal. Synthetic materials, electrical components, and printed circuit boards are disposed as electrical scrap. Please deal with them according to the local environmental protection laws and regulation.

Rights

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 CHANGZHOU SIFARY MEDICAL TECHNOLOGY CO., LTD. The industrial design, inner structure, etc, have claimed for several patents by SIFARY, any copy or fake product must take legal responsibilities.



Any serious incident should be reported to manufacturer and competent authority.



Changzhou Sifary Medical Technology Co., Ltd.

Add: No. 99, Qingyang Road, Xuejia County, Xinbei District, 213000 Changzhou, Jiangsu, China

Tel: +86-0519-85962691

Fax: +86-0519-85962691

Email: Info@sifary.com

Web: www.sifary.com

All rights reserved.