iCT motor

Operating Instruction

Dentium

For Dentists By Dentists

Notification

Adopting the real-time display function for values of RPM and torque as well as the application of an ergonomic design, iCT motor guides you to perform an implant surgical procedure more accurately and safely.

Before getting started to use, be fully aware of the Notice and User Manual for the safety of patients as well as users.

Please contact the close sales office of Dentium Co., Ltd. or purchasing store whenever you need help or some troubles happen.

Contents

1. Caution

- iCT Motor should be operated by dentists or authorized specialists.
- Be well aware of the function of each part on the equipment and read this instruction thoroughly before using.
- When exceptional phenomena such as strange noise or abnormal heating occurs while using, turn off the power switch and ask a close sales office of Dentium to check and solve the problem.
- If used with other products except the designated ones, there may be a problem in normal functioning.
- When it's necessary to undergo an inspection or an after service, contact the sales office or manufacturer.
- It may be restricted to get the free of charge after service even within guarantee period when damaged by disassembling or using unguaranteed components or parts.
- Before using, sterilize components or parts to disinfect.
- When you are to connect or replace the handpiece, be sure to check if the motor and related parts have stopper running.
- While a burr(cutting tool) is running, do not separate a locking equipment, the handpiece or a contra-angle from connection parts, and do not touch them by hand. Be careful if the burr runs close to other objects.
- Both dropping or forcing an external shock may cause breakdown or troubles.
- If possible, do not place a similar medical electronic equipment near the iCT motor in order to prevent it from having the electromagnetic interference.
- To avoid risk of electric shock, this equipment must be connected only to the main supply with protective earth.

2. Components

Operating instruction

Stanchion of
cleaning water irrigation

Main body unit
(Pump motor included)

Foot controller

AC power cord

Micromotor
(Cable included)

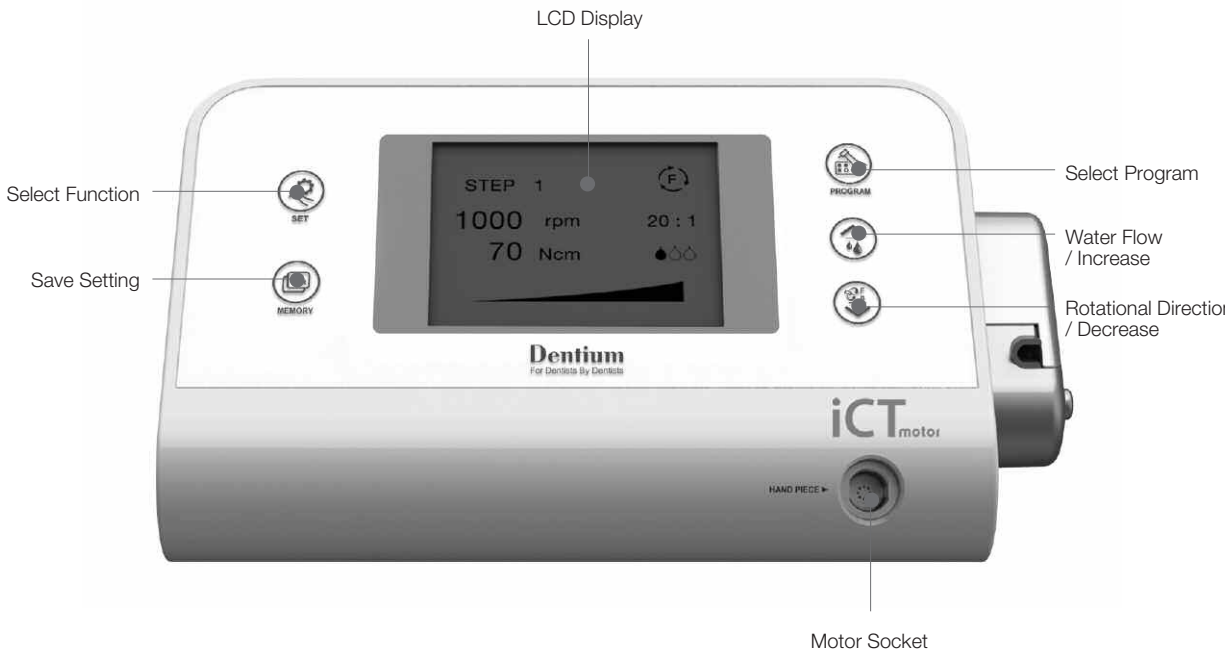
Handpiece rack

3. Technical Specification

Dimension and cable length	Main body : 270 X 185 X 155 mm Power cable : 1.8 m Foot controller : 2.0 m Micromotor cable : 2.0 m
Material Specification	Main body : Plastic Foot controller : Plastic Micromotor : Aluminum alloy
Weight	Main body : 4.0 kg Foot controller : 0.57 Kg Micromotor : 0.4 Kg
Rotational speed / Rotational torque (※ Gear ratio : 20 : 1)	Rotational speed : 20 - 2000 rpm Rotational torque : 5 - 70 N • cm
Gear ratio	32 : 1, 27 : 1, 20 : 1, 1 : 1
Amount of Inlet Water	Level 1 : 60 ㎖ Level 2 : 80 ㎖ Level 3 : 100 ㎖
Input Power Voltage	AC 115 V / 230 V
Frequency	50 - 60 Hz
Ripple Voltage	± 10 % (Maximum)
Fuse	125 V - 4 A / 230 V - 2 A
Operating Environment	Temperature : 10 ~ 40 °C Relative humidity : 80 % (Maximum) Atmosphere pressure : 800 - 1060 hPa
Limited Warranty	1 year

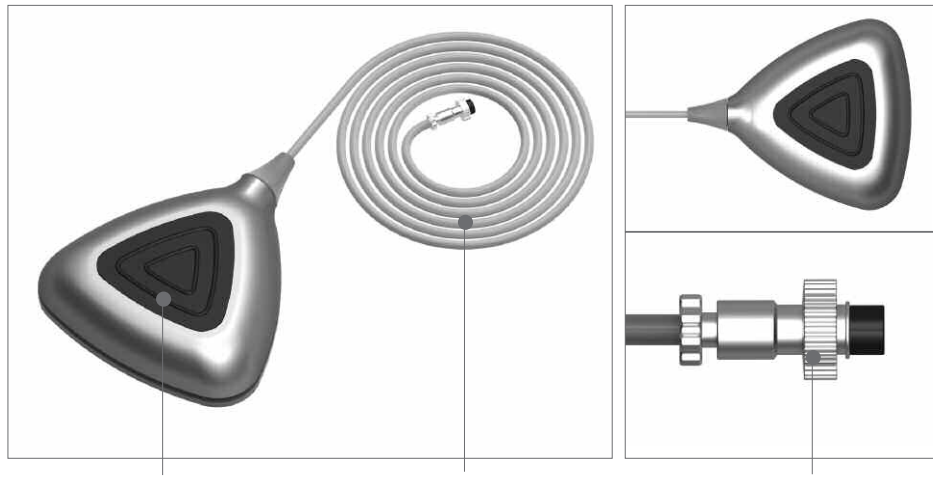
4. Name of Parts

Main Body



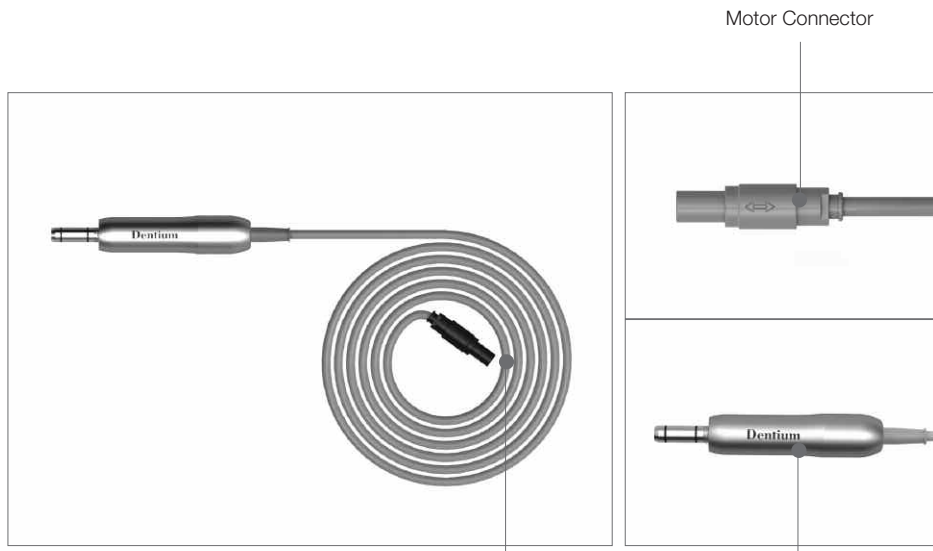
4. Name of Parts

Foot Controller



Foot Switch　　Foot Cable　　Foot Connector

Micromotor



Motor Cable　　Micromotor

5. Product Installation

Installation of Power

The factory default power is set to 230 V (selectable between 115 V and 230 V). Before connecting the power cable, check the red-colored point on the back side of the equipment and then plug in the power connector.

❖ Power Connection

Plug the power connector into the socket placed at the back of the main body unit. [Figure 1 and 1-1]

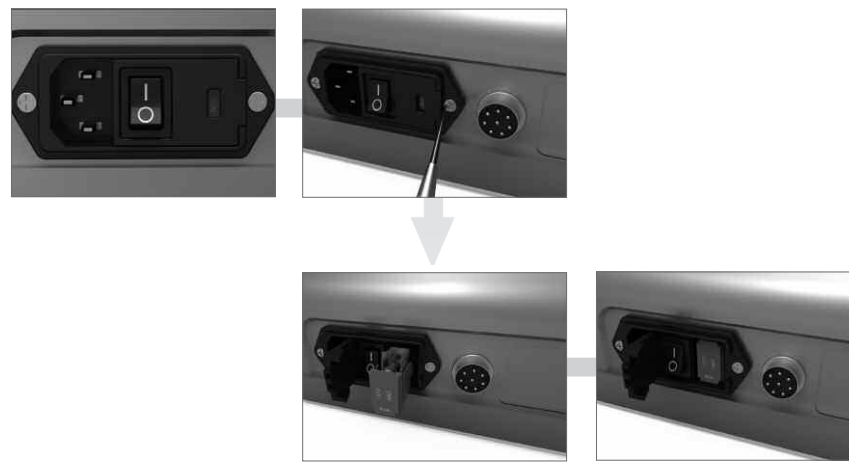
[Figure 1]

[Figure 1-1]

❖ Change of applied voltage

In case of voltage mismatch due to an application environment, change the fuse holder voltage following sequential instruction as follows:

1) Disconnect the power connector.
2) Open the fuse box cover using a plus-shaped screwdriver.
3) Separate the inner fuse holder from the body.
4) Replace the fuse with the suitable voltage (125V - 4A / 230V - 2A) and reconnect the holder. Close the fuse box and confirm the currently supplied voltage value displayed on the LCD window.
5) Check the displayed voltage.
6) Connect the power connector into the socket again.



5. Product Installation

Installation of Cleaning Water

The cleaning water tube used for the implant surgery is a disposable consumables. So, please don't reuse it.

❖ Installation of water-supply stanchion

Place the horizontal part of the stanchion [Figure 2] to the back side on the main body, and then insert the stanchion into the body. [Figure 2-1]

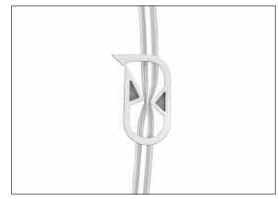
▶ At this moment, the stanchion is displaced in right position from the front view.

[Figure 2]

[Figure 2-1]

❖ Insertion of water-supply tube

1) Turn off the stopper between a tube needle and a water-supply pump. [Figure 3]
2) Stick the needle to the water-supply bottle, perpendicularly. [Figure 3-1]
3) Hang the tube on the previously prepared stanchion.



[Figure 3]

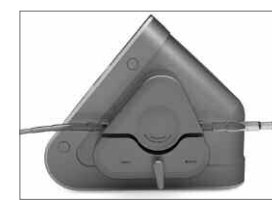
[Figure 3-1]

❖ Installation of water-supply tube

1) Turn the OPEN/CLOSE lever to "OPEN" [Figure 4]
2) Hang the tube (the part of plastic joint) from the inlet to the outlet on the equipment body. [Figure 5]
   ※ The water-supply tube must be put in the center of the roller.
3) Close the cover. [Figure 6]
4) Turn the OPEN/CLOSE lever to "CLOSE"
   ※ Check the tube not to break away from the inlet and outlet guide.

[Figure 4]

[Figure 5]



[Figure 6]

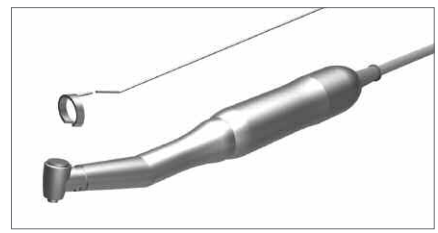
5. Product Installation

Connection of Water-supply Tube to Handpiece

The cleaning water-supply tube is a disposable consumables. So, please don't reuse it. More detailed information can be referred to in the user manual of contra-angle provided by manufacturer.

❖ External cooling

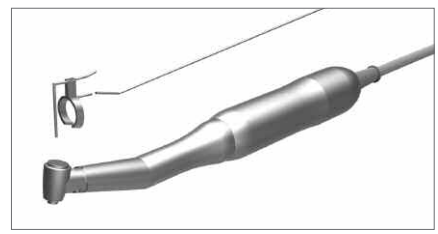
1) Insert the external spray clip over the head neck of the handpiece.
2) Connect the cooling tube (tube made of metal) to a spray clip. [Figure 7]



[Figure 7]

❖ Internal cooling

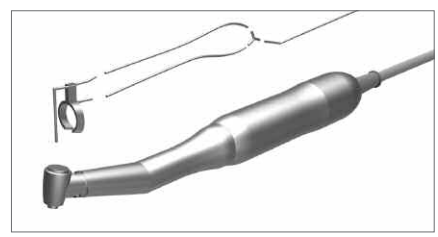
1) Insert the tube of internal cooling burr into the top of the spray clip.
2) Connect the cooling tube to the tube of internal cooling burr. [Figure 8]



[Figure 8]

❖ Double cooling system (External and internal)

1) Insert the Y-shaped manifold into the tube end.
2) Insert the two cooling tubes provided with handpiece into the Y-shaped manifold, respectively. [Figure 9]
3) Connect one of the cooling tubes into the internal cooling metal tube.
4) Connect the other cooling tube into the external cooling metal tube on the handpiece. [Figure 9]



[Figure 9]

5. Product Installation

Connection of Micromotor

Before plugging or unplugging the connector, be sure to turn "OFF" the power of the main body. Make sure that the mark [⇔] is imprinted on the connector and then plug in connector socket.
Wrong connection may cause malfunction or troubles.
The life-time of micromotor and handpiece may rapidly decline by heating up when continuously used. It is recommended that you use the equipment in use-by time as follows:

※ Maximum time of continuous usage (Load time) : 4 minutes,
Rest time: 10 minutes

❖ Motor connection

1) The power of main body must be turned "OFF".
2) Make the mark [⇔] on the connector upward. Press and plug the connector in the
motor socket of the main body. [Figure 10]

※ Insert the connector into the socket until you hear the "clicking" sound.

❖ Motor disconnection

When disconnecting, grasp the joint and pull with a jerk. [Figure 11]

[Figure 10]

[Figure 11]

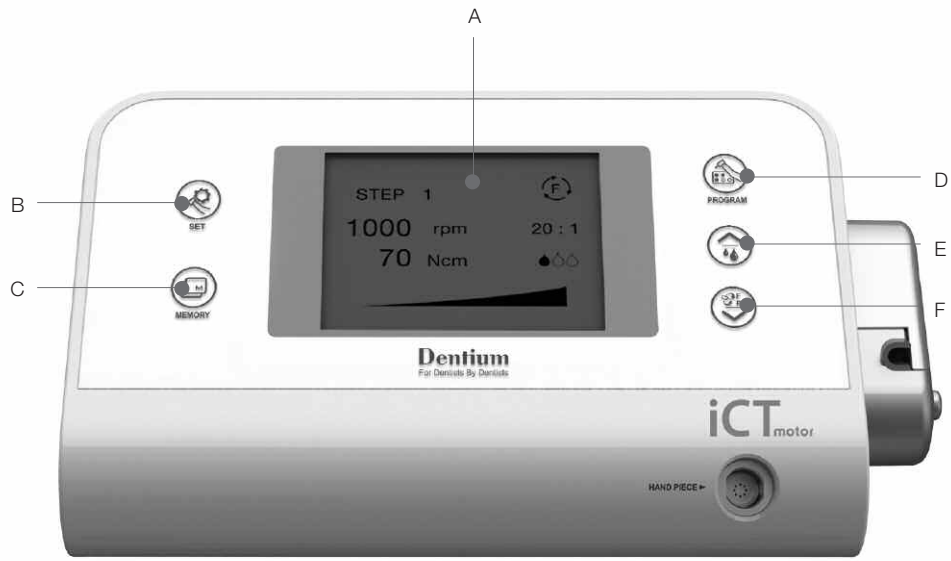
Connection of Foot Controller

Adjust the connector pin's direction and press the cable connecter key into the socket on the equipment body and turn the tightening nut clockwise. [Figure 12]

[Figure 12]

6. How to Operate the Control Panel

Instruction of Control Panel



A) LCD display window : Displays set-up information and real-time processing data.

B) "SET" : Activation key to adjust the set-up data.

C) "MEMORY" : Save current data

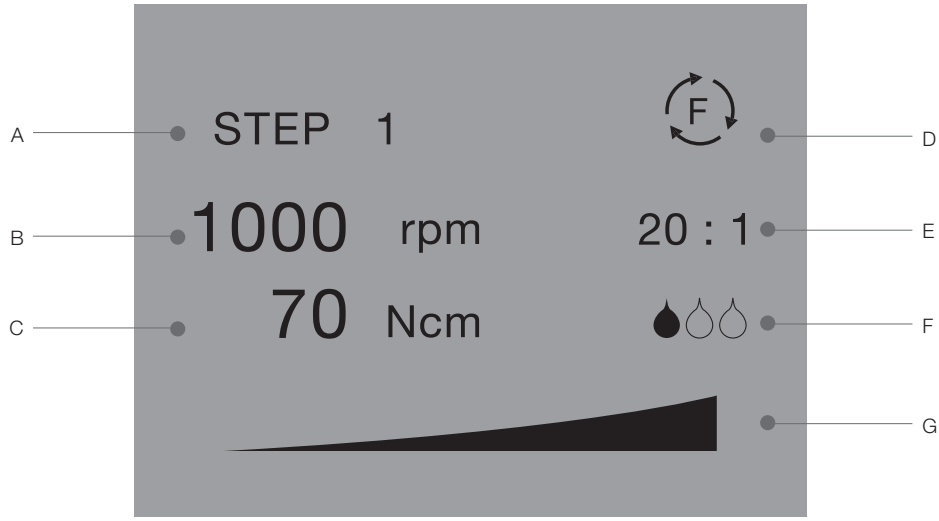
D) "PROGRAM" : Reload the previously saved data for the steps of 0 through 6.

E) On and OFF irrigation
(When activated by the "SET" button, this button increases variable setting values)

F) Adjust the handpiece's rotational direction (CW/CCW)
(When activated by the "SET" button, this button decreases variable setting values)

6. How to Operate the Control Panel

Instruction of LCD Display



A) Displays the current step. (Step 0 through 6)
B) Displays the current RPM.
(It displays a real-time variable value of RPM while the motor runs.)
C) Displays the current torque.
(It displays a real-time variable value of torque while the motor runs.)
D) Displays the rotational direction of the handpiece.
(The letters F and R stand for the direction of CW and CCW)
E) Displays the gear reduction ratio of the handpiece.
F) Displays ON/OFF status of the irrigation pump and the amount of water-supply.
G) Displays the strength ratio versus current speed.

※ The irrigation pump operates only when the motor runs.
※ In case that the motor rotates counterclockwise, it will keep beeping.

6. How to Operate the Control Panel

Turn on the Power

Turn on the power using the "I/O" switch on the back of the main body.

Instruction of the Control Panel

iCT motor lets the user adjust the modes using the "SET" button. To change the modes, the user can just press the "SET" button one more time.

"SET"

- ▶ Whenever the user presses the "SET" button repeatedly, the cursor moves to a corresponding position of the parameter in the order of RPM, torque, rotating direction, gear ratio, the amount of water-supply and again to RPM.
  In each cursor position, the user can adjust those parameter values.
- ▶ To cancel the activation mode, press the "SET" button for more than one second.

"MEMORY"

- ▶ This button lets the user save the setting values, such as RPM, torque, rotational direction, gear ratio, and the amount of water-supply.
- ▶ If saving is completed, it beeps once shortly.

"∧"

The "∧" button has two functions both in activation and inactivation modes according to the "SET" button.

Active mode

- ▶ It is activated by pressing the "SET" button, and it makes the set-up value on a cursor position increased.
- ▶ When pressing the button for more than one second, the parameter value changes rapidly.

Inactive mode

- ▶ In this mode, it only functions ON and OFF for irrigation.

"∨"

The " ∨ " button has two functions of activation and inactivation according to the number of times the "SET" button is pressed.

Active mode

- ▶ It is activated by pressing the "SET" button, and it decreases the set-up value on a cursor position.
- ▶ When pressing the button for more than one second, the parameter value changes rapidly.

Inactive mode

- ▶ In this mode, it only functions to change the rotational direction of the handpiece.

6. How to Operate the Control Panel

"PROGRAM"

Program mode selection

- ▶ The user can select the saved step according to the surgical procedure. As a factory default the steps are as listed in Table 1.
- ▶ The user can reset the step values or come back to the factory default values for the user-friendly pressing.
- ▶ Whenever pressing the "PROGRAM" button repeatedly, the step is orderly changed from 0 through 6.
- ▶ The Step "0" is a special one as a user-friendly set-up value.
- ▶ Pressing the "PROGRAM" button while adjusting the step selection will cancel the selected step.

Step	Ratio	Process	RPM	Torque	Irrigation	Direction
0	0	Spare	0	0	○○○	F
1	20 : 1	Lindemann Guide & First Drill	1000	30 ~ 45	●●●	F
2	20 : 1	Final Drill	1000	30 ~ 45	●●●	F
3	20 : 1	Implant Insertion	20	30 ~ 45	○○○	F
4	20 : 1	Cover & Healing Installation	100	5	●●●	F
5	20 : 1	Removing Implant	20	55	○○○	R
6	0	Spare	0	0	○○○	F

[Table 1]

6. How to Operate the Control Panel

Save and Adjust the Program Mode

❖ Adjustment of RPM

1) Press the "SET" button once to activate the RPM mode.
2) Press "∧" or "∨" button to set the designated value.
3) Press the "MEMORY" button to save the current value. The value is saved in the present step number.

▶ The change unit related to the RPM setting speed is as listed in the Table 2 below.

(Unit : r/min)

Setting speed	Change unit
10 - 50	5
60 - 100	10
200 - 40000	100

[Table 2]

※ The performance of the equipment may be somewhat unstable (±5%) at the value lower than 25 RPM.

❖ Adjustment of torque

1) Press the "SET" button two times to activate the torque mode.
2) Press "∧" or "∨" button to set the designated value.
3) Press the "MEMORY" button to save the currently selected torque. The value is saved in the present step.

▶ The torque value changes by 5N • cm in each step.

❖ Change of the rotating direction

Use of default value (step 0 through 6)

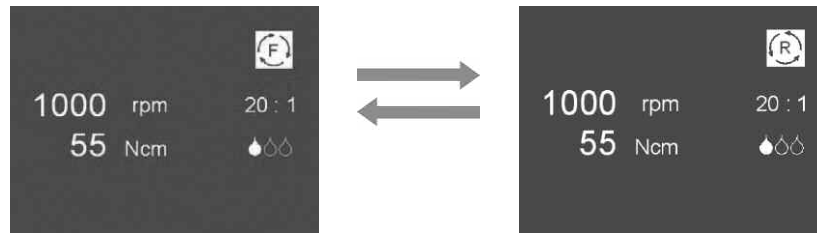
1) Press the "SET" button three times to display the rotational direction.
2) Once pressing either button "∧" or "∨", the rotational direction changes.
3) Press the "MEMORY" button to save the current direction. The value is saved in the present step number.

Use by manual

1) It can be changed by the "∨" button and is alternatively changed each time the button is repeatedly pressed. [Figure 13]

Note : The "F" and "R" stand for CW (clockwise) and CCW (counterclockwise), respectively.

6. How to Operate the Control Panel



[Figure 13]

❖ Adjustment of gear ratio

1) Press the "SET" button for four times to see the gear ratio indicator.
2) Press "∧" or "∨" button to set the designated value and press the "MEMORY" button to save the setting.

▶ According to the change of gear ratio, the available RPM is as listed in the table 3 below, and is also linked with the gear ratio.

(Unit: m/sec)

Gear ratio	Available RPM
20 : 1	20 - 2000
27 : 1	15 - 1400
32 : 1	15 - 1200
1 : 1	400 - 40000

[Table 3]

※ The performance of the equipment may be somewhat unstable (±5%) at the value lower than 5 N • cm.

▶ The kinds of applicable or compatible contra-angles are summarized as listed in the Table 4 below, and follow the instructions of respective manufacturer for the maintenance or detail practical usage.

▶ To use any contra-angle not mentioned in the list below, contract close Dentium sales office or the contra-angle manufacturer.

Manufacturer	Model	Gear ratio
W & H	WI - 75 E/KM	20 : 1

[Table 4]

※ The above manufacturer name may change according to the circumstances of manufacturer.

6. How to Operate the Control Panel

❖ Adjustment of the amount of water-supply (Irrigation)

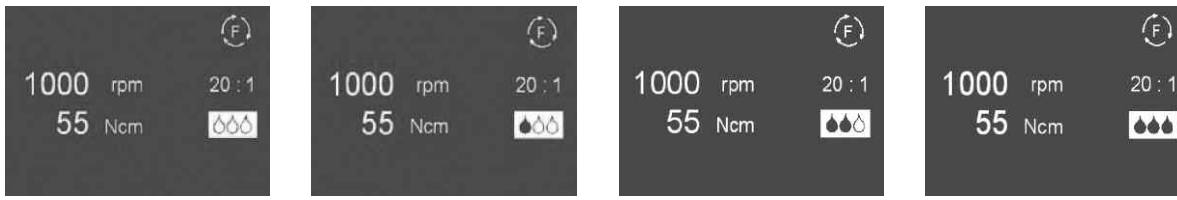
Use by default value (step 0~6)

1) Press the "SET" button for five times to see the amount of water-supply.
2) Pressing "∧" or "∨" button will circularly change the amount of water-supply as shown in Figure 14 below.
3) Press the "MEMORY" button to save the currently selected amount. The present step number will be saved.

Use by manual

The ON/OFF for the use by manual can be changed using "∧" button, and also circularly be repeated as in Figure 14.

▶ The displayed value on the screen shows the saved setting value for the amount of water-supply.
▶ The pump operates only when the handpiece (micromotor) runs. The amount of water-supply will be adjusted in the order of three steps.



[Figure 14]

Foot Controller

When the motor motion gets started and come to access to the 90% of torque setting value, it beeps.
After reaching the setting value, the motion automatically stops within 0.5 second. Step on the foot switch again to operate.

▶ In response to step-on strength, the motor speed shall be adjusted (increase/decrease). The maximum RPM is displayed on the LCD window as a setting value.
▶ While rotating counterclockwise, it will keep beeping.
▶ All the motion changes are supported only by the main body of the equipment for safety reasons.

7. Sterilization and Cleaning

It is strongly reguested to strictly follow the instructions below for appropriate maintenance and management.

- ▶ Sterilize and clean the equipment before operating.
- ▶ Do not use the cleaning solution containing the ingredient of solvent.
- ▶ When sterilizing using high-pressure steam, wrap and seal the equipment in a disinfected transparent vinyl.
- ▶ High-pressure steam sterilization shoule be used only 80% of the maximum capacity of container.
- ▶ The maximum steam temperature of high-pressure is 134 ° C and it is recommended to use for more than 5 minutes.
- ▶ Use the accessory of the high-pressure steam sterilization after sufficiently cooled off.
- ▶ The parts that can be sterilized : Micromotor, handpiece rack and assembled parts connected to the motor. (ex. connector, cable, etc.)

Micromotor

- ▶ Don't bend the motor cable. It may cause the internal damage.
- ▶ Don't use compressed air to clean the micromotor.
- ▶ If performed the high-pressure sterilization without the transparent vinyl, it may be damaged.
- ▶ When sterilizing using the high-pressure steam, be sure to use the equipment after completely cooled at room temperature.

1) When the motor cable or the plug is contaminated by filth, smear a clean fabric with a cleaning solution and wash out the filth.
2) In case the motor part connected to the handpiece needs lubricant treatment, spray on the part for one second by using the exclusive oil-spray of handpiece.
3) To sterilize the motor using the high-pressure steam, wrap it each with the transparent vinyl. (Refer to DN58953)
4) Sterilize using high-pressure steam at the maximum temperature of 135 ° C.
5) In case of using the high-pressure sterilizer that has no vacuum way, be sure to dry the equipment for more than an hour at room temperature. Place the opening of the vinyl bag upward while drying.

Main Body of the Equipment and Foot Controller

1) Don't let the patient touch the foot controller switch.
2) Wash outside of the equipment body only by using 80% of ethylic alcohol or the exclusive cleaning solution for prevention of microbial infection. Wash the front control panel in the same way. Be careful not to let the buttons be damaged by excessive force or sharp object.

8. Troubleshooting

Troubles	Cause	Solution	Page
Equipment not working	Power switch off	Set the power switch "I/O" to "I"	Page 8
	Power not connected	Connect the power cable	
	Voltage mismatched	Check the supplied power voltage	
	Fuse disabled	Replace the fuse	
	"SET" button activated	Press the "SET" button one more time to change the function	Page 14
Motor not working	Power switch off	Set the "I/O" switch to "I"	Page 8
	Foot controller is not connected	Remove and connect the connector	Page 11
	Motor connector is improperly connected	Check the connection of the motor connector	
No flowing of the cooling water	Pump power switch off	Activate the pump function	Page 17
	Tube is improperly connected	Reinstall the irrigation	Page 9
	Tube is damaged or blocked	Replace the tube	
	Water-supply stopper is locked	Unlock or open the stopper	
	Tube leakage	Replace the tube	
Foot controller not operating	The foot controller is not connected	Reconnect the foot controller	Page 11

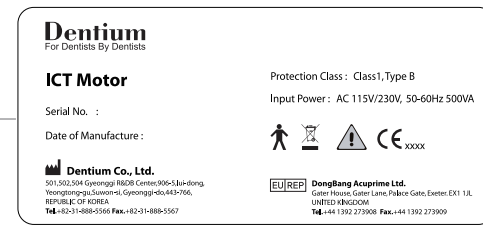
※ If the trouble continues however applied the above instructions, contact the sales office or manufacturer.

9. Labeling Description

Symbol Description

	B type		Caution and warning
	Use a separate collection for electric and electronic equipment		Manufacturer
	Europe agent		CE mark
	Protect earth		Earth

Label-displaying Position



Note

Note

iCT motor

Dentium
For Dentists By Dentists

Specifications are subject to change without prior notice.

IMOI-1008 [Rev.1]

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