

**COMPUTER CONTROLLED
INTEGRAL DENTAL UNIT**

MODEL M200

MANUAL

Please read the manual carefully before operation

INTEGRAL DENTAL UNIT OPERATION INSTRUCTION

PREFACE

Before using this product, please read this manual carefully and keep it properly for further reference. When using, must strictly comply with the operation procedures and correct maintenance.

The paragraphs marked with "Warning" and "Caution" should be read and implemented carefully to avoid damage or injury to equipment, operators and patients.

If the equipment fails in use, please contact local dealer or our company in time.

WARNING INSTRUCTIONS

- ◆ Please read and understand all contents in the user manual before operation.
- ◆ All the above warnings and instructions should be followed during operation.
- ◆ Make sure the whole machine is well grounded.
- ◆ The power socket cable should be configured as standard and the ground wire must be secure. This machine must not be connected to other mobile devices.
- ◆ Remember not to turn on the water heater switch when there is no water supply
- ◆ The pressure of the treatment equipment is set at the factory, and non-professionals are not allowed to adjust at will.
- ◆ The dental unit's action limit is locked, and non-professionals are not allowed to adjust at will.
- ◆ Turn off the water, gas and power main switch when off work.
- ◆ The foot pedal must be turned to the water state to discharge water from the handpiece. (Only for four-hole handpiece tube)
- ◆ It is strictly forbidden to touch the PC board and the manufacturer's electronic components with hands or metal instruments.
- ◆ Users should regularly maintain and replace accessories that are prone to aging (such as dental handpieces, etc.).
- ◆ When using the x-ray film viewer, do not touch the x-ray film viewer with sharp and hard objects, and keep the surface of the x-ray film viewer dry to prevent the x-ray film viewer from being damaged and damp.
- ◆ All electrical parts and connections must be installed by an authorized technician.
- ◆ There should be no objects that can be touched within all the moving range of the equipment.
- ◆ This equipment cannot work in high temperature, high humidity, vibration, flammable, unbalanced or dusty environment.
- ◆ After adjusting the position of the head frame, you must confirm that the head frame is locked before use.
- ◆ When replacing electrical components, the power supply must be switched off.
- ◆ The placement of wastewater and waste must comply with local environmental protection

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requirements.

- ◆ Units or individual clinics using this equipment must be equipped with or connected to an amalgam separation device in the dental unit waste discharge system.
- ◆ Please dispose of the spare parts and the whole machine in accordance with local regulations.
- ◆ The maintenance of this model must be carried out by professional maintenance personnel authorized by the company. Unauthorized disassembly and repair may cause fatal damage to the machine, and the company will no longer enjoy the right to the warranty service provided by the company.

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1. PRODUCT PROFILE

INTEGRAL DENTAL UNIT

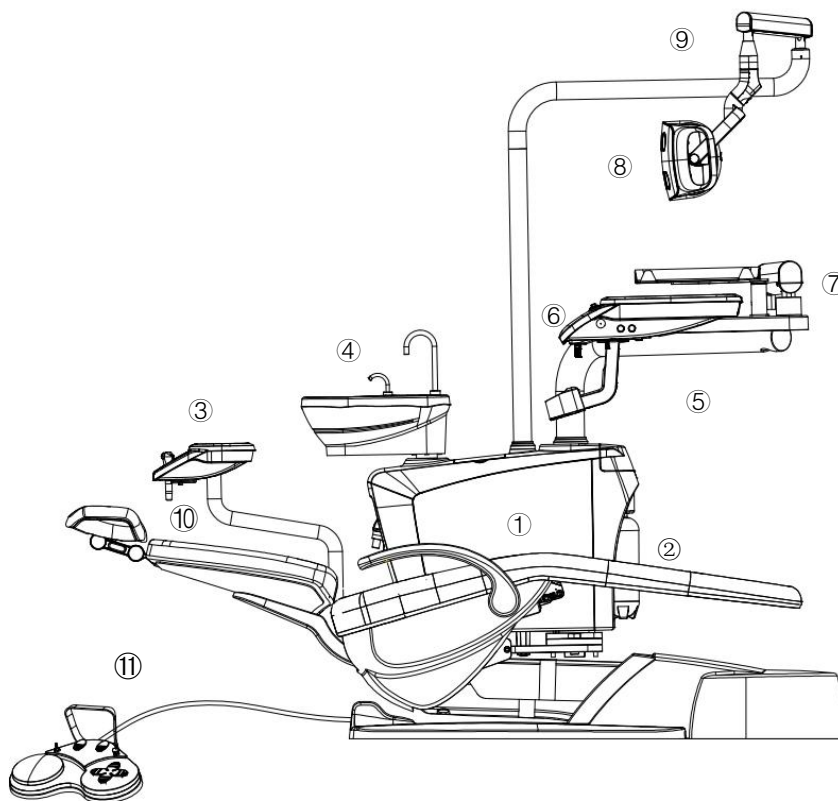


Fig.1 INTEGRAL DENTAL UNIT

Form 1 INTEGRAL DENTAL UNIT

NO.	ITEM	NO.	ITEM
1	Rotary side box	2	Water bottle
3	Assistant tray	4	Ceramic one-piece spittoon
5	Rotary arm	6	Instrument tray
7	Balance arm	8	Operation light
9	Light arm	10	Dental chair
11	Foot pedal		

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Patient Chair

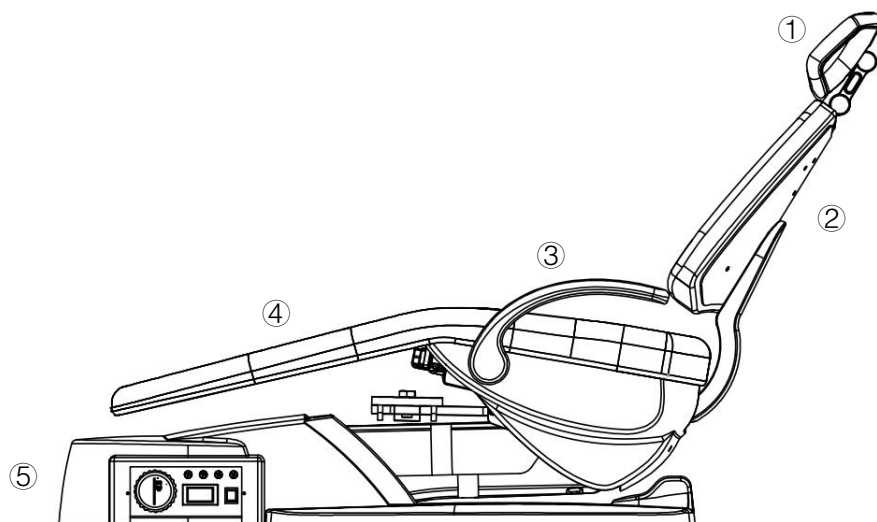


Fig.2 Patient Chair

Fig.2 PATIENT CHAIR

NO.	ITEM	NO.	ITEM
1	Headrest	2	backrest
3	Armrest	4	Seat cushion
5	Built-in floor box		

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INSTRUMENT TRAY

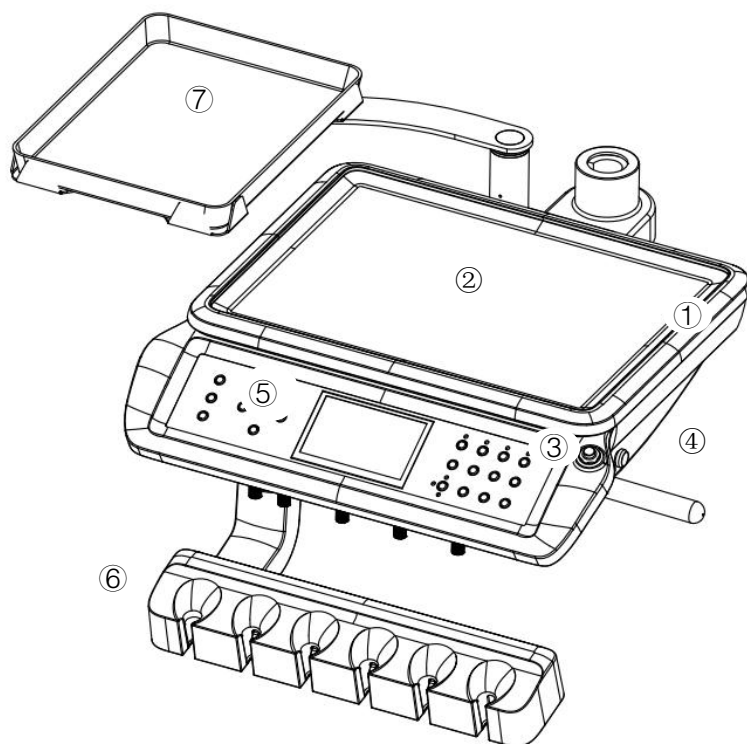


Fig.3 INSTRUMENT TRAY

NO.	ITEM	NO.	ITEM
1	Instrument tray	2	Instrument tray silicone pad
3	Air lock switch	4	Stainless steel handle
5	Main control panel	6	Holder components
7	Stainless steel side plate		

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ASSISTANT TRAY

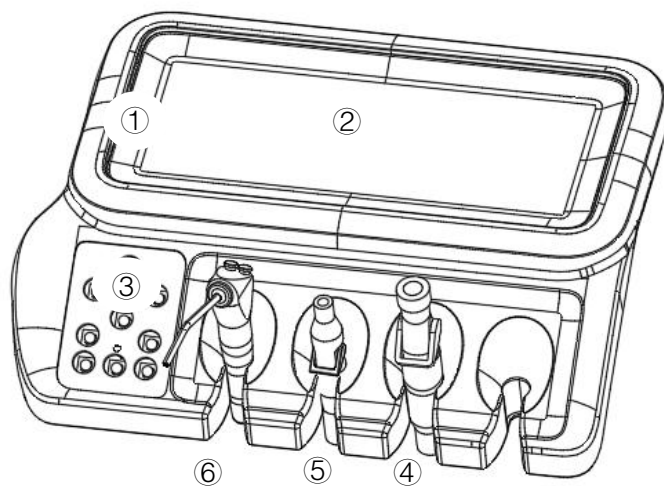


Fig.4 ASSISTANT TRAY

NO.	ITEM	NO.	ITEM
1	Assistant tray	2	Silicone pad
3	Assistant control panel	4	Strong saliva suction
5	Weak saliva suction	6	3-way syringe

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2. PERFORMANCE FEATURE

2.1 CLASSIFICATION

Safety Category	I	Equipment Operation Mode	Intermittent operation, duty ratio 10%, that is, work for 2 minutes and rest for 18 minutes.
Protection Type	Type B	Protection Degree	Foot switch IPX1

TECHNICAL PARAMETERS

The technical parameters of this medical equipment are shown in the table below

Voltage	AC220V	Power Frequency	50/60Hz
Input Power	680VA	Type	Non-AP/APG type
Water Pressure	200kPa~400kPa	Water Flow	≥10L/min
Air Pressure	≥550kPa	Air Flow	≥50L/min
Air Flow Rate Limit	> 80NL/min	Humidity Limit	The dew point under atmospheric pressure is not higher than -20°C
Oil Pollution Limit	Maximum 0.5mg/m ³	Particulate Pollution Limit	1μm~5μm particle size not more than 100/m ³
Air Source Requirements	Does not contain oil, water, bacterial tap water or water source that meets GB5749-2006 "Sanitary Standards for Drinking Water"	Air filter Aperture	40μm
Water Source Requirements		Water filter Aperture	50μm
Maximum Water Flow For Waste Water Drainage	≥4L/min	Minimum Inclination Of Wastewater Pipeline	30°
Transport Environment Temperature Range	-40°C~+55°C	Relative Transport Temperature Range	≤80%RH

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Atmospheric Pressure Range	500hPa~1060hPa	Attention Should Be Paid During Transportation And Storage	“Keep upright”, “Keep dry”
Strong saliva suction	When the air pressure is 400kPa, the pumping rate is $\geq 1\text{L/min}$, and the vacuum degree is $\geq 25\text{kPa}$	Weak saliva Suction	When the water pressure is 200kPa, the pumping rate is $\geq 400\text{ml/min}$, and the vacuum degree is $\geq 10\text{kPa}$
Thermostat Heater	AC24V 80W; Level 1 protection: 45°C Level 2 protection: 70°C	LED Operation Light	AC 12V~24V
Insulation Resistance	$\geq 2\text{M}\Omega$	Leakage Current Of The Whole Equipment To The Ground	$\leq 0.5\text{mA}$
Solids collector intercepted solids diameter	$\geq 2\text{mm}$		

2.3 Specifications

The specifications of this medical equipment are shown in the table below

Dental unit weight	MAX 260kg
Dental chair weight	MAX 150kg
Dental light illumination	8000-40000lux
Constant temperature heater temperature	$40^{\circ}\text{C}\pm 5^{\circ}\text{C}$
Backrest range	$2^{\circ}\sim 67^{\circ}$
The extendable length of the headrest	0-150mm

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The maximum height of the dental chair from the ground	700mm
Minimum height of dental chair from the ground	380mm
The machine strong suction($\phi 11.9 \pm 0.1 \text{mm}$)	Strong suction($\phi 12.1 \pm 0.2 \text{mm}$)casing
The machine strong suction($\phi 7.7 \pm 0.1 \text{mm}$)	Strong suction($\phi 6 \pm 0.2 \text{mm}$)casing
The maximum loadable weight of the instrument tray	5kg (evenly distributed)
The maximum load-bearing capacity of the dental chair (the ultimate load of the dental chair in the most unfavorable position)	135kg (100kg)
Product service life 8 years	10 years

2.4 Nameplate

On the dental unit, the identification nameplate of this equipment is affixed, and the basic parameters of the product can be seen on the nameplate.



3.BASIC OPERATION

3.1 Power switch

3.1.1 The location of the power supply is next to the fuse holder of the ground box, refer to Figure 5 below

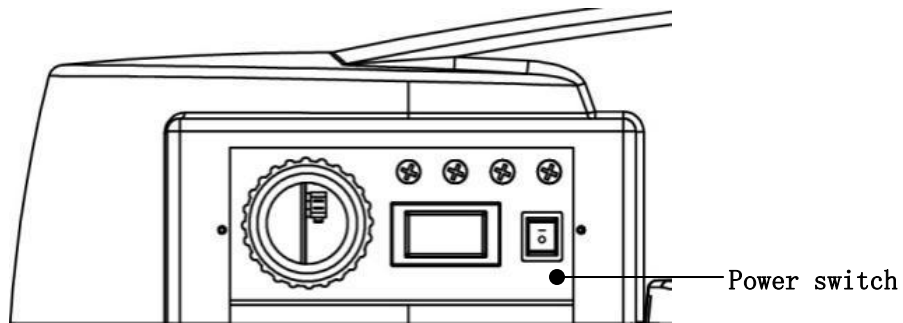


Figure 5 power switch (Built-in floor box)

3.1.2 Floor box fuse, refer to Figure 6

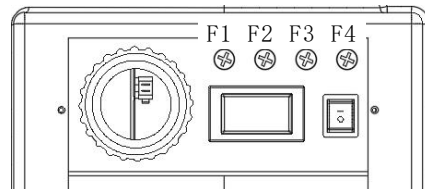


Figure 6 type floor box fuse

F1,F2: 24V output power fuse (F10AL 250V)

F3,F4: Whole machine power input fuse (T6.3AL 250V)

3.2 Treatment chair back

The backrest movement of the treatment chair, see figure 7 below

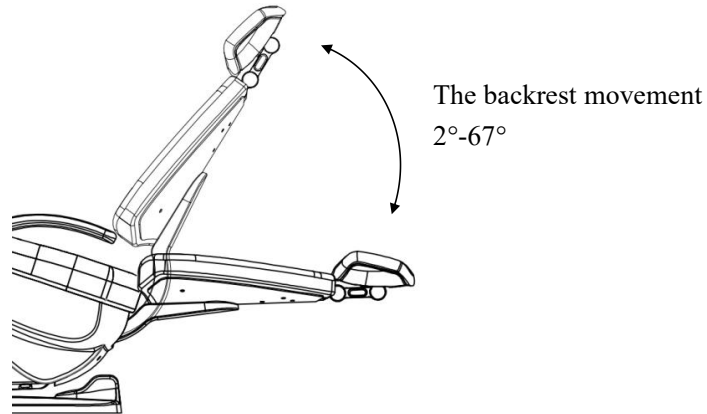


Figure 7 treatment chair backrest

3.3 Treatment chair headrest

To adjust the height and angle of the headrest, you need to press down the locking clip first, adjust the headrest to the appropriate angle and height of the patient, and then loosen the locking clip to lock the headrest., refer to Figure 8 below

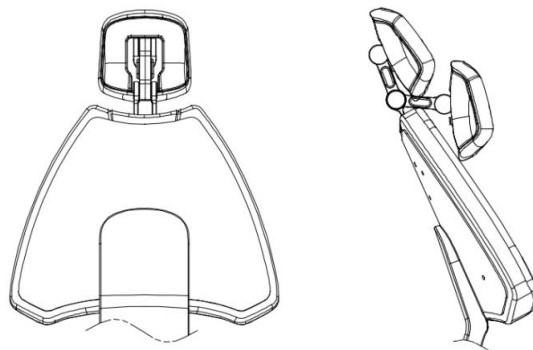


Figure 8 treatment chair headrest

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3.4 Side box

3.4.1 The water supply system can provide purified water or tap water for the dental handpiece device. The system includes a purified water bottle with a capacity of 1000 ml, which is installed outside the box. Refer to Figure 9 below.

Generally, the water supply of the dental handpiece is tap water. If you need to use water from the water storage bottle, you can turn on the switch shown in Figure 9. There is a saliva suction filter in the box, and the saliva suction filter is connected with the strong saliva suction device and the weak saliva suction device, which is used to filter and remove the solids separated from the material.

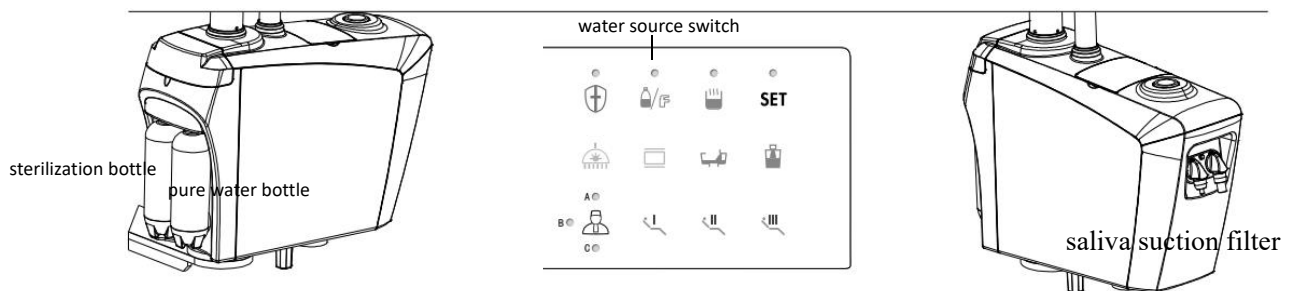


Figure 9 treatment chair box water supply system

3.4.2 The model is a rotatable case, the case can be rotated 90 degrees outwards, which is convenient for four-handed operation and after-sales maintenance. (refer to Figure 10)

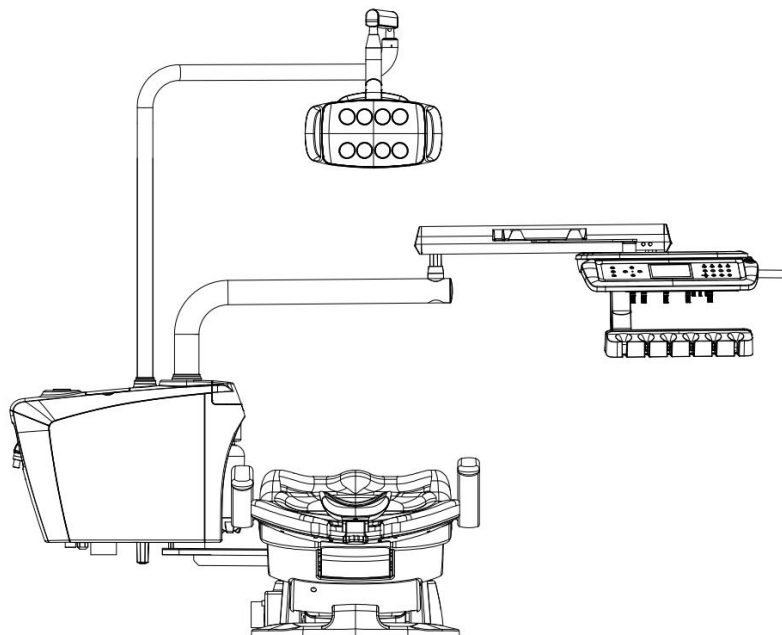


Figure 10 The rotatable box of the dental unit

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3.5 Dental treatment tray

3.5.1 Start of dental handpiece device

The handpiece pre-activates when you lift it from its mount. Depress the foot control to operate the activated handpiece.

3.5.2 Balance arm air lock switch

You can use the balance arm airlock switch to place objects of various weights on the tool tray on the console and maintain the operating position. The thumb actuated airlock switch limits vertical movement but allows the control end to move side to side for horizontal positioning, see Figure 11.

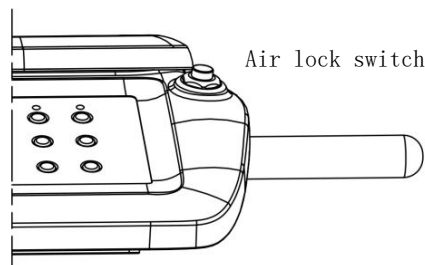
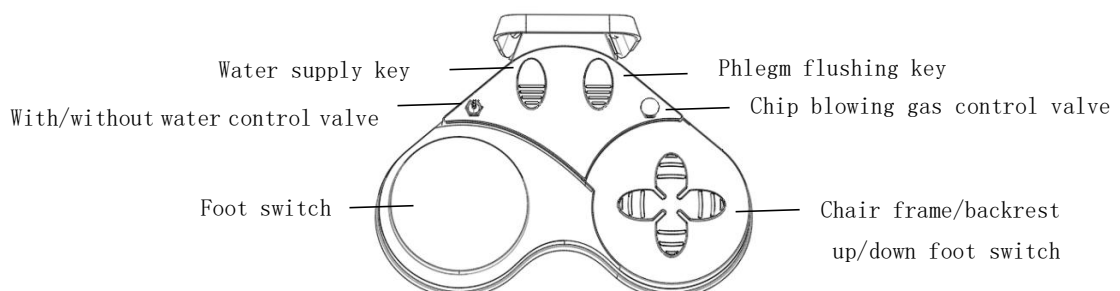


Figure 11

3.5.3 Foot control board

- (1) With/without water control valve: To close the cooling water, please turn the status valve to the left from the position shown in the figure (refer to Figure 12). To open the cooling water, please turn the status valve to the right from the position shown in the figure.
- (2) Chip blowing gas control valve: remove the dental handpiece from the hanger, step on the chip blowing gas control valve, and the handpiece can be exhausted.
- (3) Foot control panel: Turn on the cooling water when using the handpiece, remove the dental handpiece from the hanger, and step on the foot control panel to start the dental handpiece.
- (4) Phlegm flushing/water supply button: Press the flushing phlegm/water supply button to dispense water, and it will stop automatically after the set time. (During the water discharge process, step on the button again to stop the water discharge)
- (5) Foot switch: The up, down, left and right keys of the foot switch are the chair frame up movement key, the chair frame down movement key, the back movement key and the back movement forward key respectively.

Figure 12



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3.6 Dental assistant rack

The standard components of the dental assistant rack include strong saliva suction device, weak saliva suction device, 3 ways syringe and assistant control panel.

3.7 Spittoon

You can press the flushing  or water supply  button on the main control button panel or the sub-control button panel to realize the flushing or water supply function of the spittoon. The factory default for spittoon flushing is automatic flushing for 30 seconds, and the factory default for water supply is automatic water supply for 100ml. Both the spittoon flush and water supply functions can be reset.

4.CONTROL PANEL

4.1 Main control panel

The main control panel of the M200 model can control functions such as dental chair, spittoon, water bottle, dental light, film viewing light and disinfection. See Figure 13.

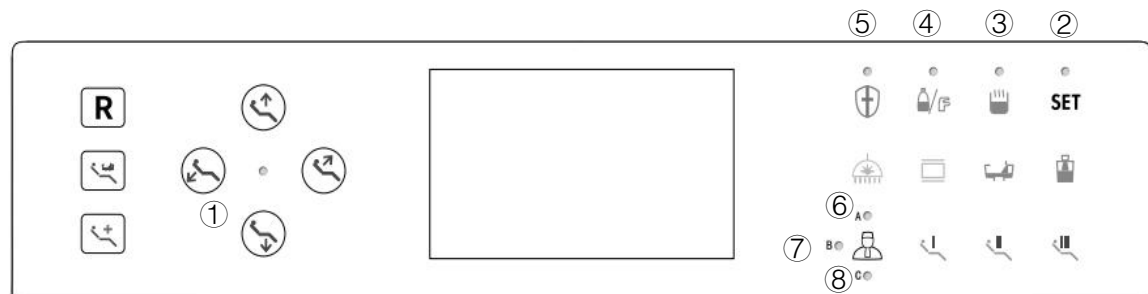


Figure 13. Main control

1. Main control power indicator light
2. Set the indicator light
3. Heating indicator light
4. Water source sensor indicator light
5. Disinfection indicator light
- 6.A doctor working indicator light
- 7.B doctor work indicator light
- 8.C doctor work indicator light
9. Sub-control panel indicator light
10. Heating indicator light

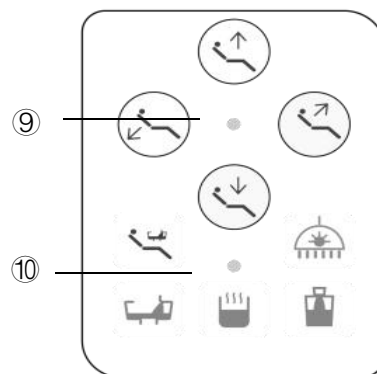


Figure 14 Assistant control

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4.2 Assistant Control Panel

The sub-control panel of the M200 model can control the dental chair, spittoon, water heater and dental light functions. See Figure 14.

4.3 System Status

On the control panel, which indicator light is on, it means that the indicator light is in normal working status, and you can operate normally. See Figure 13.

4.4 Function Symbol

The dental chair functions can be manually operated by using the dental chair direction buttons on the main and assistant control panel. The icons and the corresponding operations for each icon are listed below.

Item	Symbol	Function	Item	Symbol	Function
A		Dental chair backrest up movement button	K	SET	Set key
B		Dental chair backrest down movement button	L		Dental light key
C		Dental Chair Up Movement Button	M		Viewing light key
D		Dental chair downward movement button	N		Phlegm flushing key
E		Dental chair postoperative reset button	O		Mouthwash key
F		Dental chair postoperative reset button	P		Doctor key
G		Treatment chair position key	Q		Memory position I
H		Disinfection key	R		Memory position II
I		Water source switch	S		Memory position III
J		Water Heater key			

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A Dental chair backrest up movement button

Keep pressing the button and the dental chair back will move upwards. When you reach the desired position, stop pressing the button and the chair back will stop moving immediately.

B Dental chair backrest down movement button

Keep pressing the button and the dental chair back will move down. When you reach the desired position, stop pressing the button and the chair back will stop moving immediately.

C Dental Chair Up Movement Button

Keep pressing this button and the dental chair will move up. When you reach the desired position, stop pressing the button and the dental chair will stop moving immediately.

D Dental chair downward movement button

Keep pressing the button and the dental chair will move down. When you reach the desired position, stop pressing the button and the dental chair will stop moving immediately.

E Dental chair postoperative reset button

Press this button and the seat and backrest will automatically reach the preset seat position. (Preset seat position: the backrest is at the highest limit position, and the seat is in the lowest limit position).

F Dental chair spitting chair button

Press this button, the backrest will automatically reach the highest limit position, the seat will not move, the oral light will be turned off, and the phlegm will be turned on to facilitate the patient to spit. At this position, press this button again, the backrest will return to the original treatment position, the dental light will return to the state before pressing this button for the first time, and it will automatically turn off after flushing the phlegm for the set time.

G Treatment chair position key

Press this button once, the seat will rise to the highest position, and the backrest will be reclined to the limit position.

H Disinfection key

Press this button, the system enters the automatic disinfection interface, press this button again to enter the system self-checking state, check whether the water volume of the disinfection water and pure water is sufficient, if there is a shortage of water, the system will automatically sound a prompt tone (pure water prompt tone 3 sounds, disinfection water prompt tone 4 sounds) and a prompt message pops up on the screen. Press this button again for 5 seconds to enter the 25-minute disinfection mode, and the system will automatically shut down after 5 minutes of disinfection.

- * Before confirming the automatic disinfection, please make sure that all handpiece tubes, strong and weak suction, and scalers are inserted into the disinfection cover panel.

- * Please use a mild acid hypochlorous acid disinfectant with a concentration of 60-70mg/L for disinfection.

I Water source switch

Press this button once to automatically switch the water source. If there is a shortage of water, the system will automatically send out a prompt tone (3 sounds) and a prompt message will pop up on the screen. After filling the water, press this key to confirm (exit the prompt message).

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J Side Box Water Heater

Press the heating button once, and the indicator light on the control panel flashes, indicating that the water heater is in the heating state. When the water temperature reaches the set value, the indicator light will be on for a long time. When the water temperature is lower than the set temperature, it will automatically reheat. Press the button again to activate the heating function closure. See Figure 13.

K Set key

Press and hold the setting key for 3 seconds to enter the setting interface, and then select the function key to be set to perform the corresponding settings. Press and hold for 5 seconds to restore factory settings. For the setting method of related function keys, please refer to the spittoon flushing/water supply setting and dental chair memory position setting.

L Dental light key

Press once to turn on the light and press again to turn off the light.

M Viewing light key

Click to turn on the viewing light and click to turn off the viewing light.

N Phlegm key

Press this button to start flushing automatically according to the set time, and press this button during flushing to stop flushing.

The specific settings are as follows:

Press and hold the "SET" button on the main control panel of the instrument panel for 3 seconds to enter the setting interface and press . When the indicator light is on, press the phlegm flushing button to set.

Press it once, the screen will display I, the flushing time is 30 seconds, and the buzzer will sound once;

Press twice, the screen will display II, the sputum flushing time is 60 seconds, and the buzzer will sound twice;

Press it three times, the screen will display III, the sputum flushing time is 3 minutes, and the buzzer will sound three times;

Press four times, the screen will display IV, the sputum flushing time is normally open, and the buzzer will sound four times.

After the setting is completed, press the setting key again, the indicator light will be off, and the setting is completed. The computer automatically records the new setting data, and when using it later, only to lightly press the flush button, it will automatically flush until the set time stops.

O Mouthwash key

Press this key and the system starts to supply water automatically according to the set water output. Press this key during the water supply process to stop water supply. The specific settings are as follows:

Press and hold the "SET" button on the main control panel of the instrument panel for 3 seconds to enter the setting interface and press  see the indicator light is on.

Put an empty cup at the mouth of the mouthwash, press and hold the "mouthwash" button on the main control panel, and the water will flow out until it meets your requirements.

When the required water volume is released, the water will stop, and then press the "SET" button on the main control panel, the indicator light will turn off, the above process will be automatically recorded by the computer. The new setting data is completed, and the

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setting is completed.

P Doctor key Q I memory position R II memory position S III memory position

The treatment machine provides three doctor positions "A", "B" and "C", and each doctor position can be preset with three memory positions of "I", "II" and "III".

The specific setting method is as follows:

Press and hold the "SET" button on the main control panel of the instrument panel for 3 seconds to enter the setting interface, and then press  to select the doctor's position through  four movements move the button to the desired position, select the corresponding memory position, and then press the "SET" button on the main control panel, the indicator light will turn off, and the above process will be automatically recorded by the computer. The new setting data, the setting is completed.

5. INSTRUMENT TRAY ADJUSTMENT

5.1 Handpiece adjustment

The M200 model provides and regulates air and water for the operation of dental handpiece equipment. You can adjust the cooling water, chip blowing air and working air pressure of the dental treatment tool tray. Refer to Figure 15 below

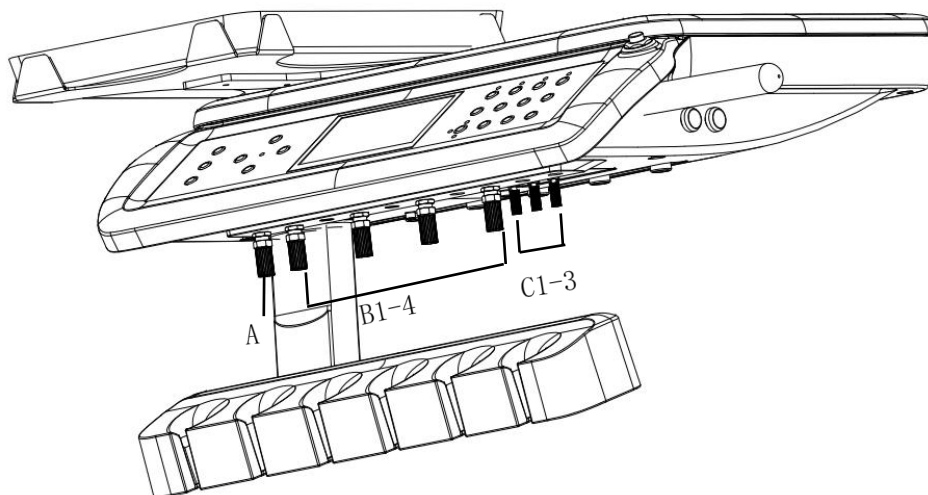


Figure 15

A: Chip blowing air adjustment

B: Cooling water adjustment

C: Handpiece working air adjustment

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5.2 Chip blowing air adjustment

The cooling air flow controller can adjust the cooling air flow to all dental handpieces. Manually turn the knob to complete the adjustment.

To adjust the cooling air:

Step 1: Remove the dental handpiece from the hanger.

Step 2: Locate the chip blowing air controller.

Step 3: Step on the foot control to activate the dental handpiece.

Step 4: Adjust the blowing chip air, and take the ideal atomization state as the standard (Figure 12)

Step 5: To adjust the chip blowing air flow: Turn the control clockwise to reduce the flow. Turn the control counterclockwise to increase flow.

5.3 Cooling water adjustment

The system includes cooling water flow control for each dental handpiece, which can be adjusted manually by turning the knob.

Step 1: Remove the dental handpiece from the holder。

Step 2: Find the cooling water flow controller。

Step 3: Turn on the cooling water (on the foot control panel, open the water/no water state valve)。

Step 4: Step on the foot control to activate the dental handpiece。

Step 5: To adjust the cooling water flow: Turn the control clockwise to reduce the flow. Turn the control counterclockwise to increase flow.

5.4 Handpiece adjustment

Tip: Please adjust the working pressure of the handpiece to meet the specifications of the handpiece manufacturer regarding the working pressure. Please refer to your handpiece usage documents to understand the specifications for the working pressure of your handpiece。

6. INSTALLATION

6.1.1 The consulting room should be clean, dry, ventilated, and kept in a good working environment. And ensure that the floor of the dental chair must be in contact with a level and solid ground.

6.1.2 The size of the treatment machine (length×width×height) is 2000mm×1600mm×2100mm, and its range of motion is 2500mm×1800mm×2300mm. The space for doctors' diagnosis and treatment should be no less than 3500mm×3000mm×2800mm. See the construction reference drawing for specific dimensions.

6.1.3 Below the ground at the location of the ground box, there must be water, gas, and electrical input and output connections for the machine, which are distributed in the range of 180×160mm. The water inlet pipe and the air inlet pipe are PU pipes of $\Phi 8 \times 5$, and the drain pipes are rubber hoses of $\Phi 16$ mm. See the construction reference drawing for specific dimensions.

M200 Installation Layout Construction Drawing

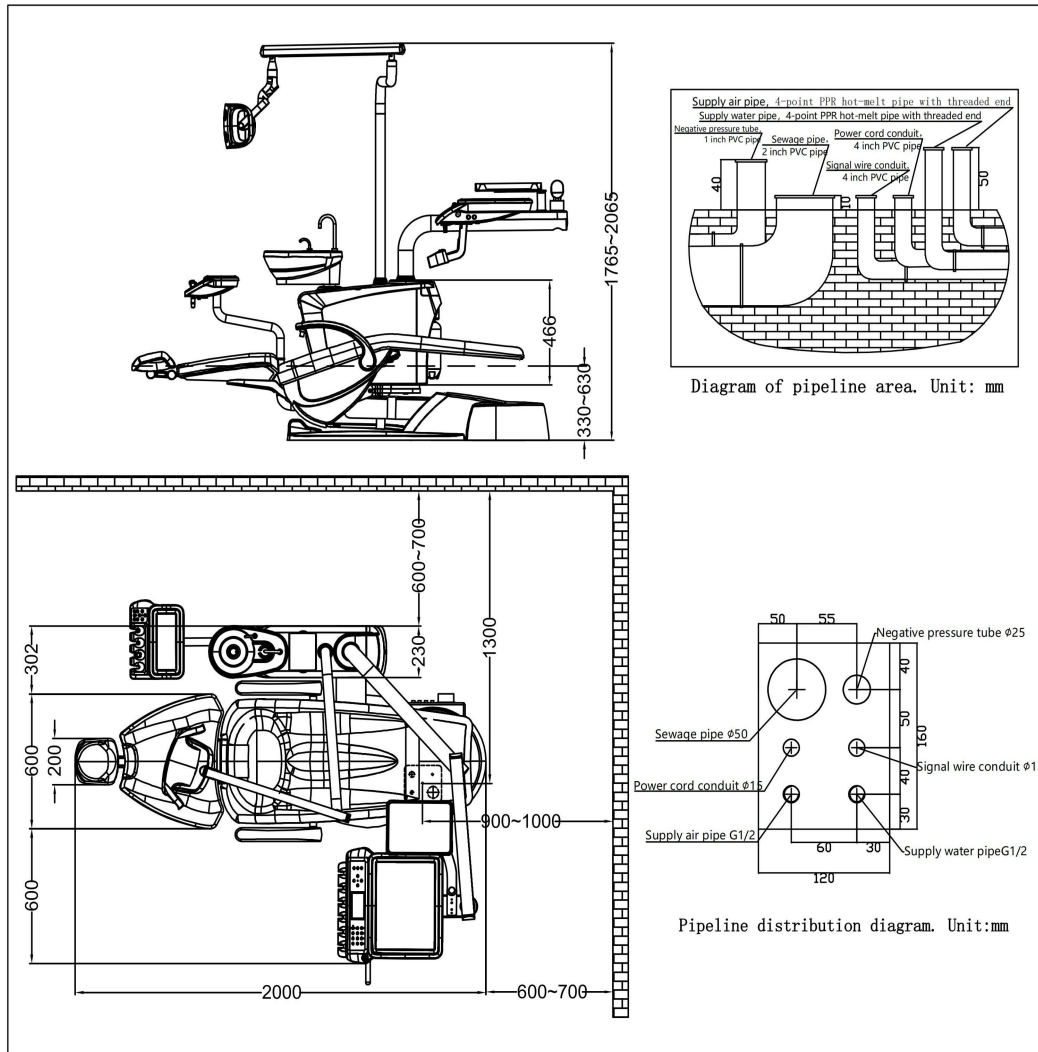


Figure 16

6.2 Open box to check

Open the outer packing box and check whether the whole machine is intact. And check whether the accessories and spare parts are complete and in good condition according to the contents of the packing list. If you have any doubts, please check with the distributor or our company immediately.

6.3 installation

6.3.1 First put the dental chair in place according to the predetermined position. The design of this machine has taken into account the stability of the whole machine, so it is not necessary to install the anchor bolts. However, the ground contacting the bottom plate of the dental chair must be a level and solid ground to prevent accidents caused by uneven ground.

6.3.2 If the whole machine can be rotated or tilted due to uneven ground, screw the six M10 inner hexagonal flat-end set screws in the accessories into the six M12 threaded holes on the bottom of

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the dental chair and make them completely contact the ground . During the adjustment, the level of the whole machine should be maintained and as many contact points as possible should be ensured to ensure the stability of the whole machine.

6.4 Operating light installation (Read the dental light instructions carefully before installation)

6.4.1 Pass the wire connecting the lamp arm into the lamp post first, and then connect the two. Then connect the wire connector on the lamp arm with the connector located in the column of the treatment cabinet, and put it into the column, then insert the lamp column on the column, and install the lamp arm in place. (Caution: Do not damage the wires).

6.4.2 Pass the lamp holder wire insert through the decorative jacket and connect it with the lamp arm wire insert, insert the holder handle into the lamp arm hole, and fix it with the screws in the accessory (Figure 17).

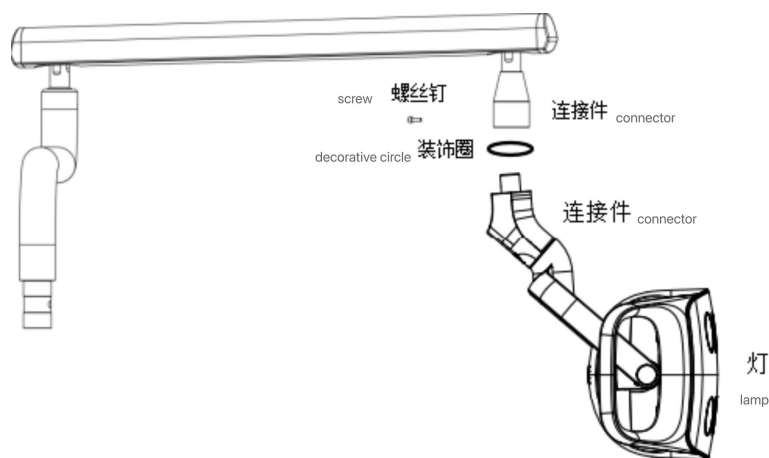


Figure 17

6.5 Floor box installation

Screw the two $G1/2'' \times \Phi 8$ pipe joints in the accessories of this machine into the water inlet pipe (blue) and the air inlet pipe (transparent) for use. When connecting, pay attention to sealing to ensure no air or water leakage. Open the floor box cover , Install the floor box to a position level with the ground (for smooth drainage of the whole machine) and not higher than the ground. This position should ensure that the dental chair is connected between the treatment machine chassis and the floor box during the up and down movement of the dental chair. The bellows does not bend.

6.6 Pipe installing

Before connecting the pipeline to the treatment machine, the dirt and impurities in the pipeline must be removed to extend the service life of the machine. Connect the $\Phi 8 \times 1.5$ PU pipe in the machine to the water source and the air source, and pay attention to sealing. In addition, insert the white plastic drain connector into the drain pipe port, connect the drain pipe, and pay attention to it firmly and tightly.

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6.7 Power connection

This machine is equipped with a single-phase three-pin socket before leaving the factory. If the user has not prepared a grounding device, it must be grounded at the power socket before it can be powered on.

6.8 Handpiece installation

Connect the handpiece according to the requirements of the instruction manual of each handpiece, and be careful not to start the handpiece with no-load idling or overvoltage for a long time. (It is up to the purchaser or the user to purchase the dental handpiece suitable for this connector)

7. REPAIR AND MAINTENANCE



Please note! Please turn off the power of the dental unit before performing maintenance and surface cleaning or disinfection. For daily maintenance, the equipment should be kept clean, the pipeline should be unblocked, the leakage phenomenon should be eliminated, and the rotating parts should be filled with lubricating oil at the right time to keep the equipment working in good condition.

7.1 Cleaning and disinfection:

It is recommended to use household cleaners for the outer surface of the equipment (such as plastic casing, metal outer surface, film viewing lamp surface, etc.), and it is recommended to use 75% medical alcohol solution for disinfection of frequently touched parts. (It is recommended to do it once every two weeks).

7.1.1 Cleaning and maintenance methods:

7.1.1.1 The outer surface is thoroughly wiped with detergent or surfactant, and then rinsed with clean water. This cleaning process can remove a large number of microorganisms on the surface.

7.1.1.2 The spittoon should be brushed frequently with a soft brush to keep the spittoon clean and tidy.

7.1.1.3 The lens of the operation light should be cleaned with lens tissue or absorbent cotton, not alcohol cotton or other solvents.

7.1.1.4 Drugs and chemicals generally used in dental hospitals are likely to damage the paint and plastic parts of the equipment surface. Therefore, it is recommended to use isolation supplies as much as possible.

7.1.1.5 Drainage of air filter pressure reducing valve: Press the drain button at the front of the air filter to release the switch button, and the water in the cup can be drained.

7.1.1.6 Water filtration cleaning at the dental unit: When cleaning, remove the mounting screws, remove the nut at the bottom of the cup body, then unscrew the cup body, take out the filter canister, clean all parts, and install and tighten them in sequence after cleaning. Guaranteed sealing reliability can be used. (User-configured filter cleaning is the

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same as above).

7.1.1.7 Cleaning of strong suction and weak suction filters: Disconnect the filter plug left-handed, take out the filter screen, pour the dirt into the garbage collection bag and dispose of it, clean the filter screen and the inner wall of the cup, then put the filter screen into the cup body, and install the filter plug in place by turning it to the right.

7.1.1.8 Cleaning of the gas return bottle at the bottom of the instrument tray: Unscrew the bottle body, clean it with detergent, and then screw the bottle body in the opposite direction on the joint before use.

7.1.2 Disinfection and sterilization method:

7.1.2.1 It is recommended that the tip and handle of the three-way syringe be put into a sterilization bag before sterilization, and then sterilized by high-temperature (maximum temperature 134°C) high-pressure steam (pressure 205.8kPa), and the sterilization time is not less than 3 minutes.

7.1.2.2 It is recommended to use glutaraldehyde disinfectant for disinfection of strong suction head and weak suction head.

7.1.2.3 Please read the manufacturer's instructions before cleaning and disinfecting the high-speed turbo drill handpiece (high-speed handpiece) and low-speed air motor (low-speed handpiece).

7.1.2.4 The disinfection model of this machine comes with an internal pipe disinfection system. This system must use a slightly acid hypochlorous acid disinfectant with a pH value of 6.5-7 and an effective chlorine content of 60~70mg/L recommended by our company. Acid has the effect of photolysis, so in order to ensure the quality and effect of disinfection, it is recommended to prepare disinfectant before disinfection and prepare an appropriate amount for one use. At the same time, the cleaning water source during disinfection should meet the water source that meets GB5749-2006 "Drinking Water Sanitation Standard", At the same time, it should be disinfected regularly according to the actual use. Note: 84 disinfectant, peracetic acid, hydrogen peroxide, alcohol and other disinfectants cannot be used for internal pipe disinfection.

Note: ★ Please use soft and disposable paper or sterilized gauze when cleaning and disinfecting.

7.2 Water system

7.2.1 To ensure the normal use of the equipment, a filter is installed at the inlet end of the equipment to block the impurities in the water so that it does not enter the equipment, but for a long time, the sewage will block the filter element and affect the flow of water. Clean or replace the filter element to ensure a normal function.

7.2.2 Under normal circumstances, one of the following conditions should be cleaned or replaced.

7.2.2.1 The use time is more than one year;

7.2.2.2 The pressure loss of the filter element is above 0.1MPa;

7.2.2.3 The filter element is contaminated;

7.2.2.4 The effluent becomes cloudy;

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7.2.3 The equipment has been equipped with sampling points for input water. The sampling ports are shown in Figure 18:

- 1 Input water supplied by domestic drinking water
- 2 Input water connection port
- 3 Water Particulate Filter
- 4 Input water sampling connection port

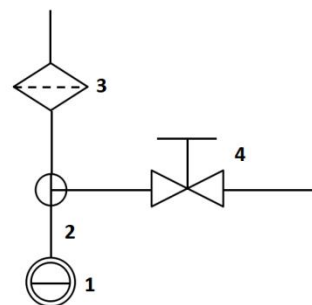


Figure 18

7.3 Air system

7.3.1 In order to ensure clean and dry air of stable pressure input in this unit, air filtering reducing valve is installed at the inlet of the floor box to control the air pressure not to exceed its set value and also eliminating the impurities and moisture in the filtering air to some extent. The water content filtered will be condensed in the filter cup and shall be discharged after long time filtering to ensure satisfactory filtering effects.

7.3.2 Water discharging of the reducing valve must be performed if any of the following occurs:

- 7.3.2.1 Already used for more than a week;
- 7.3.2.2 Water in the filter cup reaches three-fourth of the total volume;
- 7.3.2.3 Water color changed in the filter cup (not clear any more).

7.4 The motor of the dental chair should not be started and reversed frequently, so as not to affect the life of the motor.

7.5 It is recommended that the professional maintenance personnel of the hospital conduct a safety inspection of electrical appliances every six months, and specifically check whether the leakage current and the protective grounding connection meet the requirements.

8. COMMON FAULTS AND TROUBLESHOOTING

Problem	Cause	Solution
Handpiece water non-stop	The outlet valve is defective.	Refer to the handpiece manual.
Handpiece water contains bubbles	1. High speed machine tip gasket is bad 2. Pipe rupture	a. Reference handpiece instruction manual b. Check, replace
Water atomization non-function	1 high speed head nozzle blockage 2 water fine-tuning is improperly adjusted	a. Contact handpiece supplier b. Re-adjust the water trim valve

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Handpiece no water come out	1 water pressure is too low 2 water valve is not open 3 The water switch on the 3-pin switch is not open 4 water source switch is not open 5 tap water and pure water transfer switch 6 pure water cup without pressure	a adjust water pressure b open the water switch c turn on the water source switch d turn on the water switch e adjustment switch f adjust control air switch
Handpiece power is too weak	1 bad burs, poor bearing 2 pressure is not enough	a contact supplier b check air pressure
Air leak when the handpiece is not working	Valve is loose	Adjust the position of the rack valves
Unstable working pressure	1 filter blocked 2 intake pipe twisted knot pipe	a cleaning b check pipe
Rushing water is not smooth	Solenoid valve is blocked	Solenoid valve need cleaning
Sucking power is weak	1 filter blockage 2 water pressure or air pressure is not enough	a cleaning filter b adjust pressure
Three-way syringe no water	1 water pipe blocked 2 water control button is not properly adjusted	a Block the nozzle and press the water and air button at the same time b readjust
Three-way syringe air with water	1 air filter too much water 2 valve core failure 3 nozzle installation is not correct	a timely drainage b check replacement c reinstall

If the equipment still does not work properly after the above inspection and treatment, please contact the dealer or our after-sales service personnel, and inform the product model, factory number and fault details.

Note: This manual is used in conjunction with standard products. For special order products, please refer to the relevant attachment page of this manual.

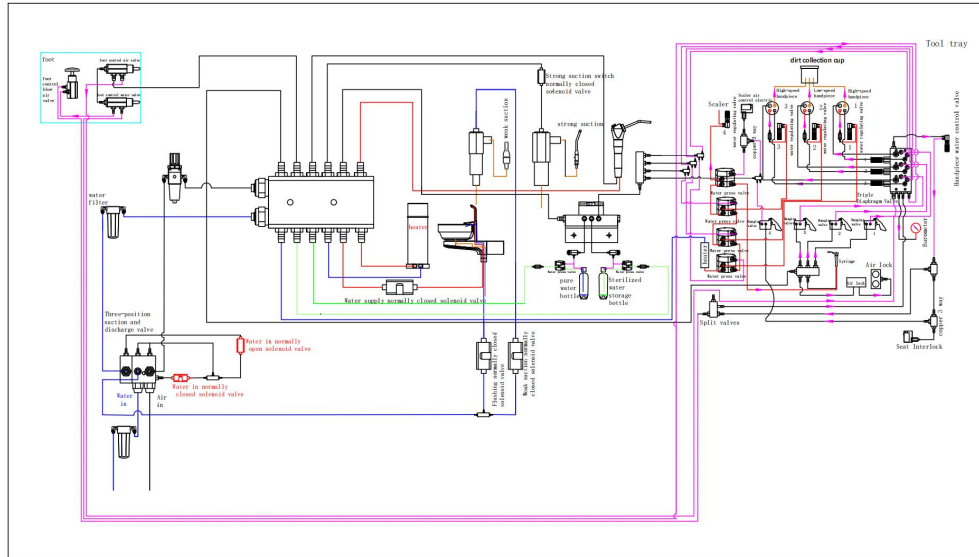
INTEGRAL DENTAL UNIT OPERATION INSTRUCTION

9.PACKING LIST

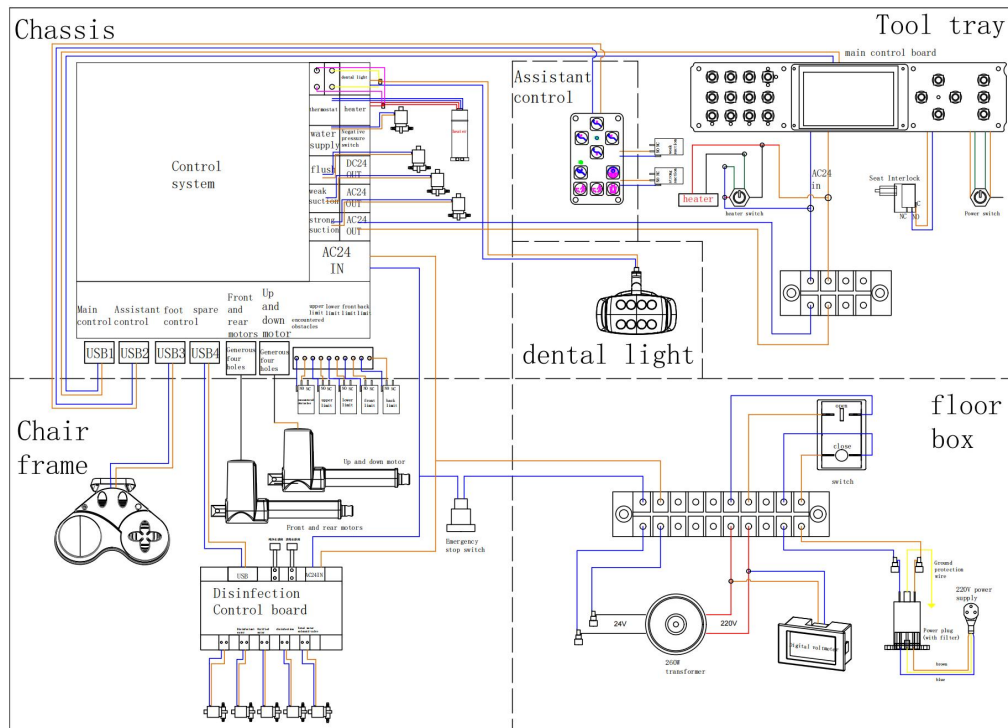
Item	Name	QTY
1	Dental Unit	1
2	Dental light	1
3	Lamp arm	1
4	Headrest	1
5	Accessory box	1
6	Dental stool	1
7	Nurse stool	1
8	Manual	1
9	Warranty Card	1
10	Certificate	1

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10. WATER AND AIR SCHEMATIC



11.ELECTRICAL WIRING DIAGRAM



12. SAFETY WARNING

12.1 Warning sign

Please observe the warnings and safety instructions, so as to avoid personal injury or property damage. These tips use the following special signs:

 Warning
Personnel Injury Warning May result in a risk of minor to serious injury to personnel.
 Attention
Property damage warning A hazardous condition that may result in damage to this equipment or an item in another operating environment.
Description Operation help tips Application tips and other useful information.

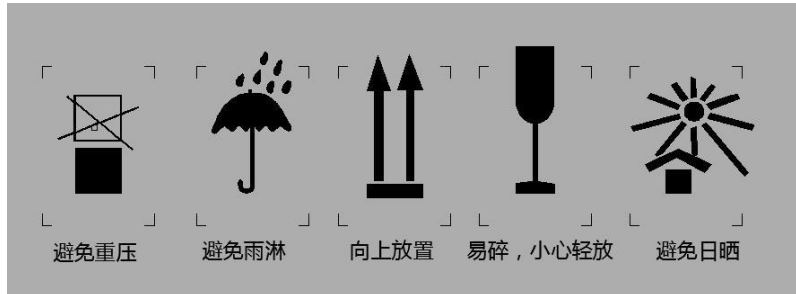
12.2 Tips on the equipment

12.2.1 The equipment nameplate is marked with the following conformity:



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12.2.2 The outer packaging wooden box is marked with the following symbols:



13.PRECAUTIONS

13.1 Equipment quality: To ensure patient safety, only drinking water and dry, oil-free medical gases can be supplied to the equipment. To ensure that the water quality in this equipment meets medical requirements and national statutory requirements, users must be responsible for water quality and regularly check water quality.

13.2 Patient chair: The maximum load of the patient chair is 135kg. The patient's limbs must be placed on the seat cushion.

13.3 Vent: The vents of the equipment must not be blocked, otherwise it will affect the air circulation. It may cause the equipment to overheat. Do not spray liquid such as disinfectant into the vents, so as to avoid malfunction of the equipment.

13.4 Electromagnetic compatibility: Electromagnetic compatibility: Portable and mobile high-frequency communication tools can affect medical electronics. Therefore, mobile communication tools such as handpieces should not be used in clinics and hospital areas. If using an external high-frequency surgical device, do not place it on the hanging of this device.

13.6 The port of the amalgam separator has been reserved in the design of this product, and the user must configure the amalgam separator at the terminal of the wastewater discharge system of the dental chair by himself.

13.7 The machine has reserved interfaces for adding functional accessories such as

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dental low-voltage electric motor, low-speed air motor handpiece, light curing machine, high-speed gas turbine handpiece, pneumatic scaler, ultrasonic scaler, oral camera, etc.

The selected accessories must be high-quality products that meet the appropriate standards and have the appropriate certifications.

14. EMC DESCRIPTION



Notice

- M200 dental unit complies with the relevant requirements of YY 9706.102-2021 standard electromagnetic compatibility.
- The user should install and use it according to the electromagnetic compatibility information provided by the accompanying documents.
- Portable and mobile RF communication equipment may affect the performance of the M200 dental unit. Avoid strong electromagnetic interference when using it, such as close to handpieces, microwave ovens, etc.;
- The guidelines and manufacturer's declaration are detailed in the attachment.



Warning:

- The M200 dental unit should not be used close to or stacked with other equipment. If it must be used close or stacked, it should be observed to verify that it can operate normally under its used configuration.
- Except for the cables sold by the manufacturer of the M200 dental unit as spare parts for internal components, the use of accessories and cables other than those specified may result in an increase in emission of the M200 dental unit or a decrease in immunity.
- The use of accessories or cables outside the regulations with the M200 dental unit may result in an increase in the emission of the M200 dental unit or a decrease in immunity.
- Cable information are described as follow:

No	Name	Length (m)	Whether to block	Remark
1	power cable	1.8	No	/
2	Trolley connection cable	2.5	NO	/
3	Foot switch cable	1.7	No	/

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APPENDIX:

Guidelines and manufacturer's declaration-electromagnetic emissions		
The M200 dental unit is expected to be used in the following electromagnetic environment. The purchaser or user of the M200 dental unit should ensure that it is used in this electromagnetic environment:		
Test	Compliance	Electromagnetic environment-guide
GB 4824 RF emission	1set	The M200 dental unit uses RF energy only for its internal functions. Therefore, its RF emission is very low and may not cause any interference to nearby electronic equipment. The M200 dental unit is suitable for use in all facilities, including households and directly connected to the residential public low-voltage power supply network for households.
GB 4824 RF emission	class B	
GB 17625.1 Harmonic emission	Class A	
GB 17625.2 Voltage fluctuation/flicker emission	conform	

Guidelines and manufacturer's declaration-electromagnetic immunity			
The M200 dental unit is expected to be used in the following electromagnetic environment. The purchaser or user of the M200 dental unit should ensure that it is used in this electromagnetic environment:			
Immunity test	IEC 60601 test level	Coincidence level	Electromagnetic environment-guide
Electrostatic discharge (ESD) GB/T 17626.2	±6 kV Contact discharge ±8 kV Air discharge	±6 kV Contact discharge ±8 kV Air discharge	The floor should be wood, concrete or ceramic tiles. If the floor is covered with synthetic material, the relative humidity should be at least 30%.

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Electrical fast transient burst GB/T 17626.4	$\pm 2\text{kV}$ To the power cord $\pm 1\text{kV}$ To input/output lines	$\pm 2\text{kV}$ To the power cord	The network power supply should have the quality used in a typical commercial or hospital environment.
surge GB/T 17626.5	$\pm 1\text{ kV}$ differential mode voltage $\pm 2\text{ kV}$ common mode voltage	$\pm 1\text{ kV}$ differential mode voltage $\pm 2\text{ kV}$ common mode voltage	The network power supply should have the quality used in a typical commercial or hospital environment.
Voltage sag, short-term interruption and voltage change on the power input line GB/T 17626.11	$<5\%$ UT for 0.5 circle (On UT, $>95\%$ dip) 40% UT for 5 circle (On UT, 60% dip) 70% UT for 25 circle (On UT, a 30% dip) $<5\%$ UT for 5s (On UT, $>95\%$ dip)	$<5\%$ UT for 0.5 circle (on UT, $>95\%$ dip) 40% UT for 5 circle (on UT, 60% dip) 70% UT for 25 circle (at UT, 30% dip) $<5\%$ UT for 5s (on UT, $>95\%$ dip)	The network power supply should have the quality used in a typical commercial or hospital environment. If the user of the M200 dental unit needs continuous operation during the power interruption, it is recommended that the M200 dental unit use uninterrupted power supply or battery power supply.
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m, 50Hz	The power frequency magnetic field should have the level characteristics of the power frequency magnetic field in a typical place in a typical commercial or hospital environment.
Note: UT refers to the AC network voltage before the test voltage is applied			

Guidelines and manufacturer's declaration-electromagnetic immunity

The M200 dental unit is expected to be used in the following electromagnetic environment. The purchaser or user of the M200 dental unit should ensure that it is used in this electromagnetic environment:

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Immunity test	IEC 60601 test level	Coincidence level	Electromagnetic environment-guide
RF conduction GB/T 17625.6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communication equipment should not be used closer to any part of the M200 dental unit than the recommended isolation distance, including cables. The distance should be calculated by the formula corresponding to the transmitter frequency. Recommended isolation distance $d = 1.2\sqrt{P}$
RF radiation GB/T 17626.3	3 V/m 80 MHz to 2,5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2,5 GHz Among them, P is the maximum output rated power of the transmitter provided by the transmitter manufacturer, in watts (W), and d is the recommended isolation distance, in meters (m). b The field strength of the fixed RF transmitter is determined by surveying the electromagnetic field a, and in each frequency range b should be lower than the compliance level. Interference may occur in the vicinity of equipment marked with the following symbols. 

Note 1: At 80MHz and 800MHz, the higher frequency band formula is used.

Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by absorption and reflection from buildings, objects and human bodies.

a Strong fixed transmitting airports, such as base stations for wireless (cellular/cordless) telephones and ground mobile radios, amateur radio, AM (amplitude modulation) and FM (frequency modulation) radio broadcasting, and television broadcasting, etc. The field strength is theoretically impossible Predict accurately. In order to assess the electromagnetic environment of fixed RF transmitters, a survey of electromagnetic fields should be considered. If the measured field strength of the M200 dental unit is higher than the RF compliance level of the above application, the M200 dental unit should be observed to verify its normal operation. If abnormal performance is observed, supplementary measures may be necessary, such as reorienting or positioning the M200 dental unit.

b In the entire frequency range of 150KHz~80MHz, the field strength should be less than 3 V/m.

Recommended isolation distance between portable and mobile RF communication equipment and M200 dental unit

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The M200 dental unit is expected to be used in an electromagnetic environment where radiated RF disturbances are controlled. According to the maximum output power of the communication equipment, the purchaser or user of the M200 dental unit can prevent electromagnetic interference by maintaining the minimum distance between the portable and mobile RF communication equipment (transmitter) and the M200 dental unit as recommended below.

Rated maximum output power of the transmitter/W	Corresponding to the isolation distance of the transmitter at different frequencies/m		
	150 kHz ~ 80 MHz $d = 1.2\sqrt{P}$	80 MHz ~ 800 MHz $d = 1.2\sqrt{P}$	800 MHz ~ 2,5 GHz $d = 2.3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For the transmitter rated maximum output power not listed in the above table, the recommended isolation distance d, in meters (m), can be determined by the formula in the corresponding transmitter frequency column, where P is provided by the transmitter manufacturer The maximum output rated power of the transmitter, in watts (W).

Note 1: At 80 MHz and 800 MHz, the higher frequency range formula is used.

Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by absorption and reflection from buildings, objects and human bodies.