



ISO 13485: 2016

Foshan City Kaso Medical Equipment Co., Ltd.

Manual of Dental Comprehensive Treatment Machine

KS-DLX301



Catalog

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一. Main Safety features

1. Classification by the types of electric shock prevention: Class I.
2. Classification by the type of electric shock protection: B type application.
3. Classification by the degree of protection against fluid intake: Pedal switch IPX1.
4. Classification by the degree of safety when using flammable anesthesia gas mixed with air or with oxygen or nitrous oxide: non-AP/APG type.
5. Classification by operation mode: intermittent operation.

二. Main technical parameters

Rated voltage and frequency: AC 220V, 50Hz

Input power: 800VA

protective tube: 5*20mm, F5AL250V

Emission capacity: $\geq 50\text{L/min}$

High-speed hand piece: No-load speed 300000-500000 r/min (four holes) Working pressure: 0.22MPa

Low-speed hand piece: No-load Speed $< 20000\text{r/min}$ (four Holes) Working Pressure: 0.30MPa

Oral lamp illumination: no less than 8000lx-20000lx

Radiation heat: $< 350\text{ W/m}^2$ (maximum illumination)

Dental chair load capacity: 140 kg

Strong dental pump: When the pressure is 400 kPa, the pumping rate is more than 1000 ml/min.

Weak dental pump: When the water pressure is 200 kPa, the pumping rate is more than 400 ml/min.

Input air pressure: 0.50-0.6 MPa Flow Rate $\geq 50\text{L/min}$ (Oil-free compressed air)

Input water pressure: 0.2-0.4 MPa Flow rate $\geq 10\text{L/min}$ (water quality indicators such as hardness $\leq 2.14\text{ mmol/l}$ should meet the drinking water standards, and take heed of the laws and regulations of water quality)

Temperature of mouthwash water: $40 \pm 5\text{ }^\circ\text{C}$

Spittoon drainage rate: no less than 4L/min.

Noise: $< 70\text{ dB(A)}$

Pedal switch: IPX1

View-box: LED bulb

Brightness: $\geq 800\text{cd/m}^2$ Operating voltage: AC24V Frequency: 50Hz Rated power consumption: $\leq 25\text{w}$

The color temperature of the light source through the observation screen: no less than 6500K.

The stability of the brightness of the observation screen: less than 2%.

Conditions of use: Environmental illumination $\leq 100\text{lx}$. The screen should be checked for dark spots once a month.

Sizes and types of suitable photographs: oral medical X-ray film (140 x 70 mm)

Overall size: Complete shrinkage: length (1500mm)x width (950mm)x height (1600mm)

Complete extension: length (3200mm)*width (2100mm)*height (1850mm)

The total mass: 200 kg.

Working environment requirements:

Ambient temperature: $5-40\text{ }^\circ\text{C}$ Relative humidity $\leq 80\%$

Specification of filter element: water $< 90\mu\text{m}$, gas $< 25\mu\text{m}$

Water pipeline: polyurethane material, colorless and transparent; Gas pipeline: polyurethane material, blue

The load capacity of the locking device of instrument tray: $\leq 5\text{ Kg}$; Range of up-down movement: $> 300\text{ mm}$; Rotation angle: $> 160^\circ$

When the instrument tray is extended, it should be noted that the maximum distance between the center of the instrument tray and the center of the pillar should be: $\leq 1200\text{mm}$, and the load capacity on the instrument tray should be: $\leq 5\text{kg}$, otherwise it is easy to cause the rollover of dental chair.

The maximum height of the cushion: $\geq 880\text{ mm}$.

The minimum height of the cushion: $\leq 480\text{ mm}$.

The range of backward tilt angel of the headrest: $105^\circ-170^\circ$ Expansion rate of hear rack: 150mm

Maximum backward tilt angle of cushion: $\geq 12^{\circ}$

二. **Range of application:** For the diagnosis and treatment of stomatology department in medical sector.

三. **Structure composition**

The dental treatment machine is composed of a dental chair and a treatment control machine.

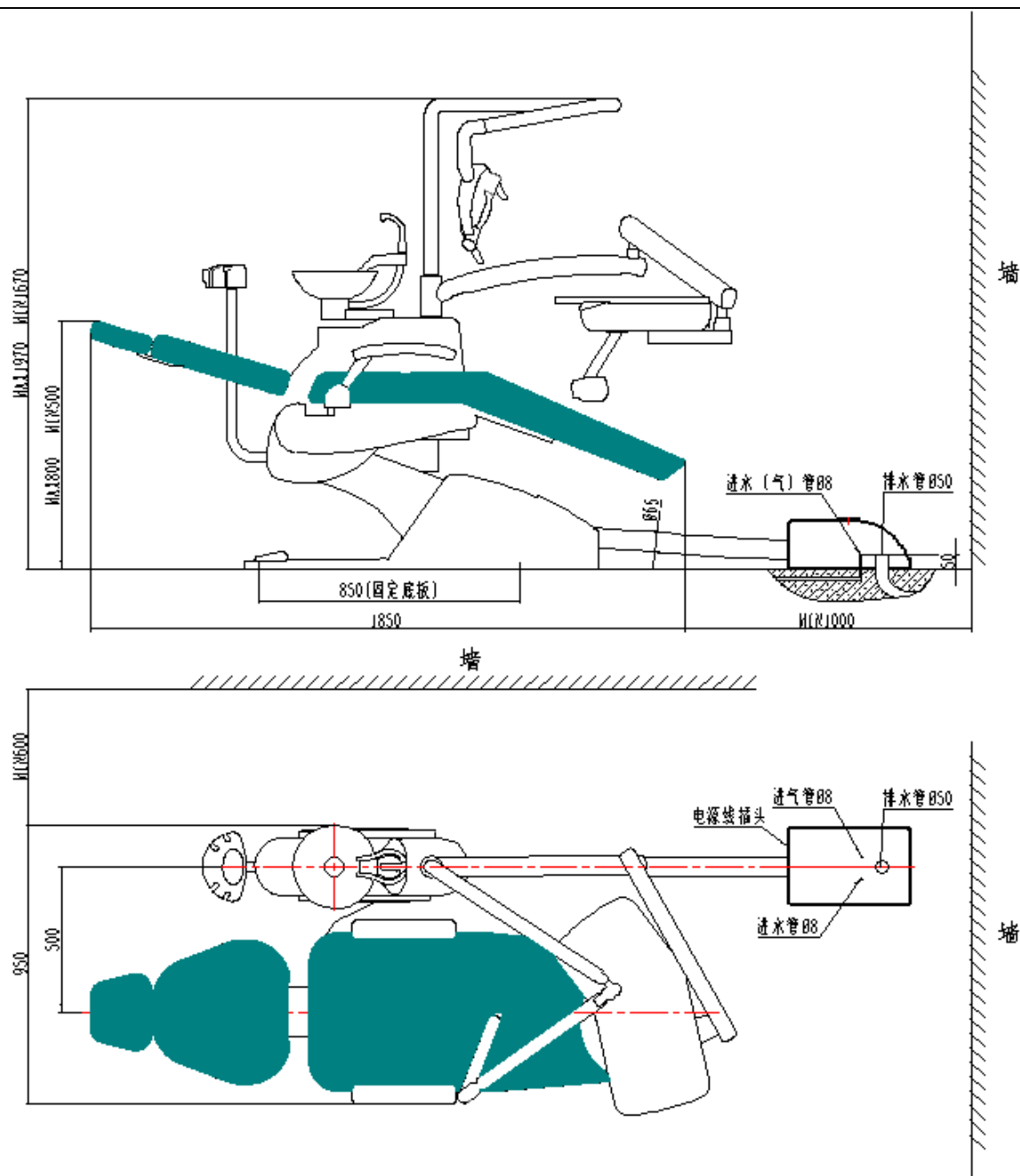
1. The dental chair mainly consists of motor, programmable controller, cushion, backrest and headrest.
2. The control part of the treatment machine mainly includes: vertical box, ground box, spittoon, instrument tray, balance arm of instrument tray, auxiliary control box, oral lamp, balance arm of oral lamp, viewing lamp, three-purpose spray gun, pedal switch and strong or weak dental pump.



1. Main body of dental chair 2, Backrest 3, Headrest 4, Auxiliary control box 5, Spittoon 6, Oral lamp 7, Balance arm of oral lamp 8. Balance arm of apparatus disk 9, Viewing lamp 10, Apparatus disk 11, Hand piece hanger 12, Ground box 13, Pedal switch

一. **Installation & Adjustment**

* Installation



1. According to the general layout of your clinic, illumination, convenience for use and other specific circumstances, determine the installation location of the equipment (see figure above). The working environment requires to be clean, dry, and in good ventilation with shade. The floor contacted by the dental chair should be smooth and firm, and no obstacles will be encountered during the whole lifting process.
2. Take out the floor plate of dental chair, screw six M12 hexagonal adjusting screws in the accessories into the threaded holes around the corner of the floor, adjust the dental chair into a horizontal and stable position, and then cover the floor plate.
3. The standard of this machine is built-in ground box
(optional external ground box, and the connection method is the same
as the built-in ground box), and the water and gas intake joints are in the

built-in ground box. Take out the two $\phi 8 \times 5$ mm pipes in the accessories and connect the water intake and gas intake joints (colorless pipes are water pipes, blue pipes are gas pipes) in the floor box with external water and gas sources, so as to ensure that the connection is firm without leakage. (See the right diagram)

Note: Install a one-way valve on the intake pipe to prevent the back suction of treated water.

1. Insert the headrest rod into the long square hole on the back, and adjust it to a suitable position and loosen it.
2. Insert the three drainage pipes into the $\phi 50$ mm PVC drainage pipe as shown in the diagram, and reset the front cover of the dental chair.
3. Connect the wires in the lamp arm with those in the case rack through decorative rings and lamp post; cover the lamp post with decorative rings on the case rack; connect the lamp arm with the oral lamp and fasten it with screws, as shown in the pictures below.



* Adjustment

After all the installations are completed, it enters the adjusting stage of the machine. Connect the power supply, water source and gas source, so that the equipment is in standby state (the power indicator lights on the control panel of the instrument panel).

1. Open the front shell to observe whether the barometer reading on the air filter pressure-relief valve is 0.6Mpa. If the pressure is too high or too low, it is necessary to adjust the air filter pressure-relief valve to maintain 0.6Mpa. (Specific method is: first pull up the knob on the top of the air filter pressure-relief valve, then rotate the knob. Clockwise rotating increases pressure, while anti-clockwise rotating decreases

pressure).



Air filter pressure-relief valve

2. Pull the pedal-controlled electric switch on the pedal switch to observe whether the lifting movement of the dental chair is normal. The same operation is done to the lifting button of the dental chair on the control panel of the instrument tray and the assistant rack to observe whether the movement of the chair is normal.
3. Turn on the oral lamp to see if the light switch is normal; turn on the viewing lamp to see if it is normally lit.
(See pictures below)



4. Install high-speed and low-speed hand pieces separately to check whether the water and gas functions are normal. The working pressure of high-speed hand piece is about 0.22 Mpa, while that of low-speed hand piece is about 0.32 Mpa. (See picture below)

Note: This dental treatment machine must connect and use a hand piece with anti-suction function.



图

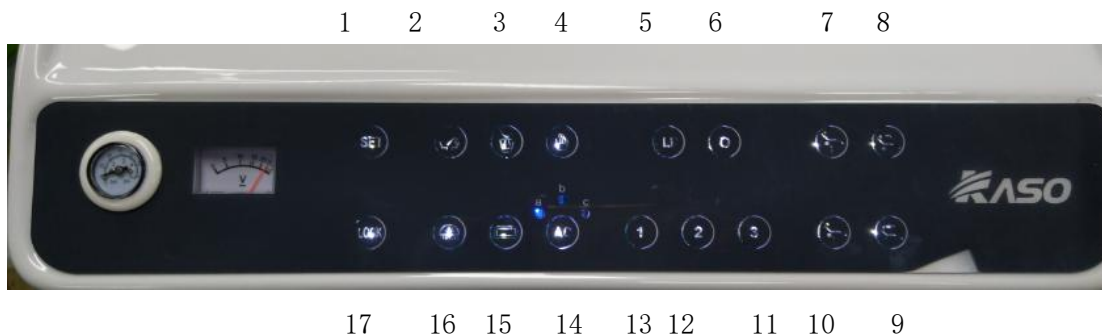
5. Install the heads of three-purpose spray guns, strong and weak dental pumps to check whether their functions are normal. Carefully inspect the dental pumps: adjust the intake pressure as follows: 0.2Mpa-0.4Mpa take a glass of water, pick up the pumping head from the auxiliary hanger, put the pumping head into the water, and observe whether the water suction is smooth (about 300ml after 30 seconds is normal).

Note: 84 disinfection water inhalation method can be applied to disinfect the contact areas with patients and pipelines.

六. Operation Instruction

Turn on the power, water, and air sources of the equipment, adjust the dental comprehensive treatment machine to a suitable position, and put the machine on standby.

1. Three-purpose gun: After removing the three-purpose gun, press the corresponding water (air) button to spray water (air), and press at the same time to spray.
2. Strong and weak saliva suction device: Pull the strong and weak saliva suction device from the shelf to use, and plug it back into the shelf to close it.
3. Main control panel: (The panel is installed on the instrument tray as shown in the figure below)



| NO. | Name | No. | Name |
|-----|--------------------------|-----|--------------------|
| 1 | Setting | 10 | Chair Down-lifting |
| 2 | Flush | 11 | Memory position 3 |
| 3 | Water supply | 12 | Memory position 2 |
| 4 | Heating | 13 | Memory position 1 |
| 5 | Spitting Position | 14 | Memory position |
| 6 | Reset | 15 | View Lamp |
| 7 | Chair Up-lifting | 16 | Oral Lamp |
| 8 | Backrest Forward Leaning | 17 | Lock |

| | | | |
|---|-----------------------|--|--|
| 9 | Backrest Back Tilting | | |
|---|-----------------------|--|--|

Connect the power source, water source and gas source of the equipment, and adjust the dental comprehensive treatment machine to a suitable position, so that the machine is on standby.

1, Three-purpose spray gun: after the gun is taken off, press the corresponding water (gas) button to spray water (gas), and press the atomizing button at the same time.

2. Strong and weak dental pumps: pull strong and weak dental pumps out of shelves and close them when insert them back to shelves .

3. Main control panel: (as shown above, the panel is installed on the instrument tray)

* Set button 1

(1) Water supply and water supply setting

Press the setting button for 5 seconds till the indicator light to enter setting .

Press the water supply button 3 to start feeding water; when the water in the cup reaches the required amount of water, release the water supply button and stop the water supply.

Press the setting button again, the indicator will be off and the setting is completed. The computer has made a new memory. When you use it later, just tap the water supply.

The key will automatically feed the water to the water in the cup. (If the water pressure suddenly changes a lot or when the cup size is changed, please press The steps described re-adjust the amount of water supplied.)

This setting can be saved after power off.

(2) Flush time setting

Press the setting button for 5 seconds to set the indicator light to enter the setting state.

Press the flush button 2, the specific time is as follows:

Press the first time and make a sound.

Press the second time and make two sound.

Press the third time and ring three times.

Press the fourth time and ring four times. (Normally open)

The number of prompts respectively indicates the flush time mode (the time is changed from short to long).

After the setting is completed, press the SET button again, and the setting indicator is off, indicating that the flushing time has been saved. (In the process of watering, press the flush button.

Stopping and stopping).

This setting can be saved after power off.

(3) Restore factory settings

Press and hold the setting button for 15 seconds, the setting indicator lights, and the dental chair starts to move itself after long buzzer sounds. At this time, release the setting button, dental chair will go the highest seat, the front of the backrest and the seat is the lowest. After the last position of the backrest, the buzzer will automatically find the double high and low low.

carry out.

The setting indicator is off, indicating that the memory bit has been saved.

This setting can be saved after power off

(4) Memory setting

Tap this key to enter three different doctor memory positions. During the memory operation, the memory position indicator on the control panel corresponds to the blue display.

The memory bits are set as follows:

A+ (1, 2, 3) is three memory positions

B+ (1, 2, 3) is three memory bits

C+ (1, 2, 3) is three memory bits

Press the setting button lightly for 5 seconds, the setting indicator will light up to enter the setting state. At this time, you can adjust the height of the electric dental chair by pressing the seat up button, seat down button, backrest back button, and backrest forward button. Example: First press the memory position selection key to switch the doctor position, the doctor indicator on the control panel a is always on, lightly press and hold the chair up button and the chair down button, press P1 memory position one after the state is adjusted. The other memory bits can be deduced by analogy. After setting, you can tap the setting button to exit the setting. The indicator light is off, indicating that the memory bit has been saved.

* Flushing spittoon 2

Tap the flush button once to start flushing. The flush icon on the control panel will be displayed in blue until it stops automatically at the preset time.

The color returns to white; during the flushing process, if you press this button again, the flushing stops.

Flushing preset time setting: press and hold the SET button for 4 to 5 seconds, and let go when the setting indicator on the control panel turns blue.

Press the red button in turn, there are four time modes (the setting button has been introduced above)

* Water supply button 3 (with solenoid valve and heating device)

Press the water supply button lightly to start water supply. The water supply icon on the control

panel will be displayed in blue until it stops automatically at the preset time.

The color returns to white; during the water supply process, if you press this button lightly again, the water supply will stop.

Water supply preset time setting: lightly press the setting button for 4 to 5 seconds, let go when the setting indicator on the control panel turns blue, press

Hold down the water supply button, let go after the required time is reached, the setting is completed, and then press the set button to exit.

*** Heating key 4**

Press the heating button lightly, the heater starts to heat, the heating icon on the control panel is displayed in blue, when the temperature reaches the set, the heater stops Stop heating, the color of the icon will return to white; during the heating process, if you press the key lightly, heating will stop.

*** Spitting key 5:**

Press this button lightly, the backrest of the electric dental chair is tilted forward to the extreme position, at the same time the dental lamp is turned off, the flushing is turned on, and the control panel The phlegm position and flush button are displayed in blue. After the spitting is completed, you only need to press this button again, and the back of the electric dental chair will move to the previous treatment position. When it is in place, the dental light will be turned on, the flushing will be turned off, and the dental light button on the control panel will be displayed in blue; press any direction key once to stop it immediately action.

*** Reset button 6:**

Press the reset button lightly, the electric dental chair immediately runs to the initial state, the dental lamp and the film viewing lamp are automatically turned off; the seat is lowered to the lowest Position, the backrest is tilted forward to the extreme position to facilitate the patient to go up and down; press any direction key during operation to stop the movement immediately Made.

*** Seat up key 7:**

Press this key lightly, the electric dental chair will move in the direction indicated by the arrow (up), and the upward icon on the control panel will be displayed in blue. Meet the needs

Position, release this button, the electric dental chair will stop running immediately, and the control panel icon will be displayed in white (if you keep pressing this button, the dental chair

When the chair rises to the limit position, it will stop automatically.).

*** Backrest forward key 8:**

Press and hold this button, the backrest of the electric dental chair will move in the direction indicated by the arrow (front), and the back-up icon on the control panel will be displayed in blue. When the desired position is reached, release this button, the backrest of the electric dental chair will stop running immediately, and the control panel icon will display in white (if you keep pressing Hold this key, the dental chair will stop automatically when the backrest reaches the limit position.)

* Lean back key 9:

Press and hold this button, the backrest of the electric dental chair will move in the direction (rear) shown by the arrow, and the back down icon on the control panel will be displayed in blue.

When the desired position is reached, release this button, the backrest of the electric dental chair will stop running immediately, and the control panel icon will display in white (if you keep pressing Hold this button, the dental chair will stop automatically when the backrest reaches the limit position.)

* Seat down button 10:

Press and hold this button, the electric dental chair will run in the direction indicated by the arrow (down), and the down icon on the control panel will be displayed in blue. achieve

When the desired position is required, release this key, the electric dental chair will stop running immediately, and the control panel icon will be displayed in white (if you keep pressing this key,

The dental chair will stop automatically when it descends to the extreme position.

* Memory keys 11, 12, 13:

Tap the corresponding 3 keys to enter three different doctor memory positions. The memory position indicator on the control panel during memory operation The indicator light corresponds to the blue display.

* Doctor's position key 14:

Tap this key to select back and forth among the three doctor positions "A", "B", and "C".

* Film viewing light button 15

Lightly press the movie viewer button to turn on the movie viewer, and the movie viewer icon on the control panel will be displayed in blue. Tap the button to turn off the movie viewer.

The film light, the color of the icon returns to white.

* Dental light key 16

Tap the dental lamp button to turn on the dental lamp, the dental lamp icon on the control panel will be displayed in blue, and then tap the button to turn it off Dental lamp, the icon color returns to white.

* Lock motor key 17

Lightly press this button, the control panel icon will be displayed in blue, the motor status is the seat up and down buttons, the backrest forward and backward buttons stop operation

Function, lock the motor; press this key again to unlock the motor state, the motor state is the seat up and down button, the backrest is tilted forward and backward Back key to restore operation function.

4、 Water and air switch (see the picture

on the right)

Left: Water switch

Right side: Water purification bottle gas switch

(Located in front of the box)

* Water transfer switch Press the water transfer switch button to use an external water source, pull out the button to use pure water bottle water.

* Water purification bottle gas switch Turn on the water purification bottle gas switch to inflate the water purification bottle with pressure.

5、Assistant control (see picture below)

- | | | | | | |
|---------------------------------|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | 1 control panel (functions the same as the main control panel) |
| 2 Three way syringe holder | | | | | |
| 3 Strong suction seat | | | | | |
| 4 Weak suction seat | | | | | |
| 5 Reserve the light curing base | | | | | |

6、Pure water bottle:

There is a pure water bottle in the box of this equipment, which is used by the three-purpose gun and mobile phone. First switch to the pure water bottle water source through the water switch, then turn off the water bottle control air switch and turn off the water bottle, add about 600ml of pure water to the water bottle, install the water bottle and screw it tightly, turn on the water purification bottle air switch, and then use the gun and mobile phone for three times Use pure water. Turn off the water cup control gas switch, and switch to an external water source through the water switch. At this time, the three-purpose gun and mobile phone use the external water source.

Precautions:

In order to ensure that the control air pressure of the water cup is within the range of 0.18~0.2Mpa, There is a pressure reducing valve in the equipment box, which is reduced when the equipment leaves the factory.

The pressure of the pressure valve has been adjusted. Non-professionals should not adjust this valve. (See picture on the right)

7、Foot controller (see picture below)

- | | |
|----------|-----------------------------|
| 1 | UP-Seat up |
| 2 | BD-lean back |
| 3 | BU- Backrest forward |
| 4 | DN- Seat down |
| 5 | Chip blowing switch |
| 6 | W water supply |
| 7 | A air supply |

8、High and low speed phones:

Pull the high-speed mobile phone out of the shelf, place the water and air switch on the right and step on the pedal, and the phone is in the air supply state; place the water and air switch on the left and step on the pedal, and the

phone is at the same time water supply and air supply. In the spray working state, adjust the corresponding water control valve knob to adjust the spray size of the mobile phone. The water control knob is at the lower right of the instrument panel; when you step on the chip blowing button, the phone only has the chip blowing function. The working gas of the mobile phone is adjusted by the knob of the gas regulating valve, which is located at the bottom of the diaphragm valve just below the instrument tray. The operation method of low-speed mobile phones is the same as that of high-speed mobile phones.

* When adjusting the water regulating valve and the gas regulating valve, the water and gas should be adjusted gradually from small to large to achieve the best atomization effect. Do not start the phone without load or overvoltage, otherwise it will affect the life of the phone. Please do not adjust the working pressure of the worm gear to the maximum, so as not to affect the bearing life.

The instrument panel adopts a full air control system. When any mobile phone is selected, its central control valve will automatically open to provide power air and cooling water. The schematic diagram of each valve switch is as follows:

1 2 3 4 5
6 7 8 9

10 11 12 13

| | | | |
|---|---------------------------------------|----|----------------|
| 4 | Instrument tray handle air lock valve | 11 | Air adjuster 1 |
| 5 | Touch screen | 12 | Air adjuster 2 |
| 6 | Handpiece air adjuster 1 | 13 | Air adjuster 3 |
| 7 | Handpiece air adjuster 2 | | |

Work performance

9.1 Pressure meter

Display the current working pressure of the handpiece;

9.2 Voltmeter

Display the voltage of the current power supply;

9.3 Holder Box

There is a rack valve core in the rack box, and there is an M4 screw on the back to adjust the working pressure of the handpiece.

The working air pressure of the machine decreases to off, and increases counterclockwise.

Non-professionals should not adjust at will;

9.4 Instrument tray handle airlock

Here the switch is in the normally open state, the spring arm is self-locking, and the worktable is fixed at the selected height. When adjusting the height of the workbench, press Switch button, after adjusting the workbench to the selected position, release the button.

9.5 Touch screen

After turning on the power, operate the dental chair function (the specific operation has been described above);

9.6 High-speed mobile phone water regulating valve

6. 7 This is the adjustment of the atomization size of the water for two high-speed mobile phones. When rotating clockwise, the atomization of the cooling water of the mobile phone is reduced to off, and counterclockwise is increased;

9.7 Low-speed handpiece water regulating valve

9 This is the adjustment of the atomization size of the low-speed mobile phone water. When rotating clockwise, the atomization of the mobile phone cooling water is reduced to off, and counterclockwise is increased;

9.8 Atomizer water regulating valve

10 is the adjustment of the atomization size of the cooling water of the light curing machine. When the atomization cooling water is turned clockwise, the atomization cooling water is reduced to off, and it is increased in the counterclockwise direction.

9.9 Return gas cylinder

Collect the return water mist in the mobile phone tube;

9.10 Air control valve

The size of the three sets of mobile phone cooling water is adjusted. When rotating clockwise, the cooling water of the mobile phone is reduced to off, and counterclockwise is increased.

7. Maintenance

1. Air filter pressure reducing valve

In order to ensure the stable, clean and dry gas pressure in the equipment, the pressure reducing valve adopts glass fiber filter paper for air filtering, and an air filtering pressure reducing valve is provided at the air inlet in the external ground box.

- | | | |
|---|----------------------------------|-----------------------------------|
| • | Schematic diagram of air reducer | Schematic diagram of hanger spool |
|---|----------------------------------|-----------------------------------|

Precautions:

A. After the moisture-containing air passes through the filter pressure reducing valve, the filtered moisture will accumulate and settle in the filter cup. Over time, it will affect the filtering effect. Under normal circumstances, there is one of the following conditions to drain the air filter pressure relief valve. (Unscrew the knob at the bottom of the filter cup to discharge)

- * The use time is more than one week;
- * The accumulated water in the filter cup exceeds 3/4 volume (including 3/4);
- * The water in the filter cup changes color.

B. The filter element should be cleaned once a month. Remove the filter element and wash it with an ultrasonic cleaner or a neutral detergent.

2. Water filter

In order to ensure that the water input to the equipment is clean, a PP material filter element is used for filtering, and a water filter is installed in the external ground box.

Precautions:

The filter element of the filter is cleaned once a month (depending on the water quality and frequency of use). Remove the filter element and wash it with an ultrasonic cleaner or a neutral detergent.

3、Spittoon

The spittoon must be cleaned regularly, and the filter should be cleaned once a day to prevent clogging of the drain.

4、Pylon valve

The O-rings of the pylon spool are easy to wear parts and will wear out or age over time. When the pylon

spool can no longer be adjusted, the O-rings need to be replaced.

5、Film viewer

The film viewer is used to view X-ray film. After a long time of use, the lamp tube will be damaged, and it needs to be replaced at this time. The specific method is: first cut off the power, then unscrew the screw on the cover of the film viewer, remove the broken U-shaped energy-saving lamp, replace it with a new U-shaped energy-saving lamp, close the cover and install the screws. When in use, just turn on the side switch of the film viewer screen.

Note: This film viewer lamp uses 24V voltage, and the power supply should be cut off before maintenance; the film viewer is a high-end electronic product, and bumps should be avoided;

The structure design of the film viewer is scientific and compact. Non-professionals should not disassemble and assemble it by themselves; keep the film viewer dry at all times.

6、Dental chair

The dental chair is an intermittent working equipment, and the short-term continuous operation should not exceed 1 minute. The treatment machine should be cleaned and kept tidy every day, and the cushion should be treated with wax spray regularly. Neutral detergent should be used for cleaning, and attention should be paid to whether the detergent damages the surface of the treatment machine during normal use.

7、Three-way syringe

Use a brush to scrub the surface, and then wipe it with medical alcohol. Put it into a high-temperature and high-pressure disinfection oven for disinfection (the temperature of the disinfection oven should be at 135℃), packed in a special sterile bag, and time stamped.

8. Dental lamp

The maintenance of the dental lamp should be carried out at room temperature, and wipe it gently with a soft cloth dampened with clean water. The surface of the lamp film cannot be wiped, only the dust can be blown off with compressor air.

9. Strong (weak) saliva suction device

After each use, a certain amount of clean water should be sucked to ensure the smooth flow of the pipeline.

10. Pure water bottle

Clean the purified water bottle at least once a day.

11. Clean the surface of the body

The cabinet is cleaned with a damp cloth and neutral detergent to ensure that the leather surface is smooth and elastic and not corroded; PU parts and ABS parts are cleaned with a soft cloth dipped in soapy water; metal baking paint parts are cleaned with a soft cloth dipped in soapy water. Wipe with car wax;

八. Troubleshooting

| Failure phenomenon | cause of issue | elimination methods |
|--------------------|----------------|---------------------|
| 1、 Motor is weak | 1、 Poor needle | Recalibration |

| | | |
|--|---|--|
| | 2、 poor bearing | |
| | 3、 Not enough work pressure | Check air pressure |
| 2、 The motor is not turning smoothly | 1、 Poor needle | Test bur |
| | 2、 poor bearing | |
| 3、 Unstable working pressure | 1、 Filter blocking | Clean |
| | 2、 Intake pipe kinking | Inspection pipeline |
| | 3、 Gas source is not turned on | Open gas |
| 4、 Bearing durability is poor | 1、 Poor lubrication | Refer to the handpiece manual |
| | 2、 Poor needle | |
| | 3、 Excessive cutting | |
| | 4、 handpiece is moisture | The filter should be drained once a day |
| 5、 handpiece without fog | 1、 Head pipe blocking | Refer to the handpiece manual |
| | 2、 Improper adjustment of water fine-tuning | |
| | 3、 Foot control water source is not open | Open gas |
| 6、 handpiece water contains bubbles | 1、 High speed head gasket | Refer to the handpiece manual |
| | 2、 Tube rupture | Check replacement |
| 7、 Handpiece water spray is poorly atomized | 1、 High speed head nozzle blocking | Refer to the handpiece manual |
| | 2、 Improper adjustment of water micro-regulator | Readjust the water adjusted valve |
| 8、 handpiece connector leaking | 1、 High speed head gasket | Refer to the handpiece manual |
| | 2、 Excessive water in the air filter | The filter is discharged once a day |
| 9、 The three-way syringe does not produce water | 1、 Clog water pipes | Block the nozzle while pressing the water outlet button to remove debris |
| | 2、 Unconverted water switch | Turn on the water source switch |
| 10、 The three-way syringe contains water when it is jetted | 1、 Excessive water in the air filter | The filter is discharged once a day |
| | 2、 Valve core failure | |
| | 3、 Nozzle is not properly installed | |

| | | |
|--|---|---|
| 11、 Air leak when the handpiece is not working | 1、 The normally open valve of the holder is not adjusted to the normal position | Adjust the normally open valve to the normal position |
| | 2、 The main control valve chip has been broken | Replacement chip |
| 12、 Dental chair does not move | 1、 Power is not activated | Turn on the power |
| | 2、 Fuse damage | Replacement bulb |
| | 3、 Control board program error | Reset control program |
| | 4、 The foot switch does not return air to lock the control box | Check if the foot switch is back |
| 13、 Work light does not work or does not light | 1、 Power is not turned on | Turn on the power |
| | 2、 Lamp damage | Replacement bulb |
| | 3、 Fuse damage | Replacement Fuse |
| 14、 The dental chair lifts or the backrest does not move enough. | 1、 Improper setting of dental chair limit position | Reset limit position |
| 15、 Weak suction does not suck or sucks strong | 1、 The tip is blocked | Cleaning filter |
| | 2、 Normally closed valve is not adjusted to normal position | Adjust the normally closed valve to the normal position |
| | 3、 Normally closed valve spool can not be played | Repair or replacement |
| | 4、 Suction valve can not be opened | Repair the suction valve or replace it |
| | 5、 Pipe folding pipe | Dredge pipe |
| 16、 The water cup is not washed out | 1、 Suction valve can not be opened | Replace the suction valve |
| | 2、 No gas or no water | Check the air and water source |
| | 3、 Button failure | Replacement valve |
| 17、 The water heater is not heated | 1、 No voltage to enter | Check line or switch |
| | 2、 The water heater has been burned | Replace the water heater |
| 18、 handpiece stays too long | 1、 The foot switch is too slow | Repair or replace the foot switch |
| | 2、 Slightly folded pipe | Check and clear |
| 19、 Two of the three handpiece are not working properly, and the other one does not turn or water. | 1、 Normally open valve is not adjusted to normal position | Adjust the normally open valve to the normal position |

| | | |
|---|--|-----------------------|
| | 2、 Normally open valve spool can not afford | Repair or replacement |
| | 3、 The main control valve chip has been broken | Replacement chip |
| 20、 Pick up a handpiece and hang another handpiece at work. | 1、 handpiece holder misplacement | Replacement position |

1、 The equipment nameplate is marked with the following:



Note the accompanying documentation for the device



Type B application part

2、 The outer packaging wooden box is marked with the following:

Avoid heavy pressure Avoid rain Place up Fragile, handle with care Avoid sun exposure

3、 Waterproof rating IPX1

4、 Grounding sign



5、 Check the instructions



J. Contraindications, precautions, warnings, and instructions

- (1) You should read and understand all the contents in the manual before you can operate it;
- (2) Follow all warnings and instructions on the instrument during operation;
- (3) The power socket line should be configured according to the standard, and the grounding wire must be firm;
- (4) Never open the water heater switch when there is no water supply;
- (5) The instrument tray shall not be stacked with heavy objects;
- (6) The air pressure of the treatment machine has been set at the factory, and non-professionals are not allowed to adjust at will;
- (7) The dental chair's action limit is locked, and non-professionals are not allowed to adjust at will;
- (8) The water and gas power main switch should be turned off when leaving work;
- (9) The foot switch must be set to the water in the state of water to discharge water;
- (10) A unit or individual clinic using the device must be equipped with or connected to an amalgam separation device (connected to the drain connector of the device) in the dental waste discharge system;
- (11) During maintenance and repair, the water and electricity source must be drained after draining the water and gas, and the water and electricity source is connected before use;
- (12) Put the handle and nozzle of the three-way syringe into the disinfection bag before disinfection, and then sterilize at 134 ° C (2 bar) with high pressure steam, the disinfection time is not shorter than 3 minutes;

Read the manufacturer's instructions before cleaning and disinfecting high speed turbine drills (high speed handpiece) and low speed pneumatic motors (low speed handpiece);

The outer casing is cleaned with a damp cloth and a neutral detergent to ensure that the leather surface is smooth, elastic and non-corrosive; the PU parts and ABS parts are cleaned with a soft cloth dampened

with soapy water; wipe the metal with a soft cloth dampened with soapy water or with a car spray wax

Baking part

Take special care when handling fiber optic phones to avoid damaging the illuminated end and to ensure that the head does not come into contact with the treated mixture, maintain a certain distance or use a transparent sheet within the first 5 seconds of treatment;

(16) Any traces left on the tool by the mixture must be removed immediately, the fiber optic phone is removed and cleaned with a cloth dipped in alcohol;

(17) Do not aim the light of the fiber-optic phone at the patient's eyes! The light emitted may cause harm to some patients, such as those with cataracts. Generally speaking, fiber does not cause permanent damage, but may induce temporary blindness;

The dental chair has a rated load of 140kg. If it is overloaded, it will not work properly. If it is used together with external equipment for planting work, the dental chair should be disconnected every time.

To avoid personal injury due to malfunction and accidental touch of the control button;

Only remove the stylus after the high-speed handpiece and the low-speed handpiece have completely stopped, otherwise the chuck will be damaged and the bur will fall out and cause personal injury;

(20) Only use high quality burs and bolts of appropriate size;

(21) Check the damage of the chuck before starting work to determine whether the needle is securely stuck in the phone;

(22) After replacing the high-speed handpiece stylus, the stylus should be pulled out to confirm that it is installed in place;

(23) The diameter of the needle should be between 1.59 and 1.60 mm (ISO 1797 Class 3 standard), and the maximum length is 25 mm (ISO 6360-1 standard);

(24) High-speed handpiece can only be used if stylus or repair tools are installed;

(25) Do not press the release button of the bur when the tool is in use. The friction between the button and the air motor impeller may cause the head to overheat and may cause burnout;

The tissue in the patient's mouth (tongue, cheeks, lips, etc.) must be protected by a suitable method (using a mirror, etc.) to avoid touching the button;

(27) Do not touch the light bulb directly with your hand. After the bulb has cooled down, wear protective gloves and replace it to avoid burns.

(28) It is strictly forbidden to touch the PC board and the electronic components of the manufacturer by hand or metal equipment;

(29) Users should regularly maintain and replace aging-resistant accessories (such as dental handpieces);

(30) The screen of the viewing light is made of organic materials. When reading the film, avoid scratching the surface with hard objects such as the nib. Otherwise, the scratches will be difficult to eliminate, which will affect the reading afterwards. It is forbidden to use the viewing light in places where the humidity is lower than the required ambient humidity.

Note: Always turn off the power before servicing. If it is not used for a long time, check the viewing lamp at least once a month.

(31) If you need to construct materials for waterway, please contact us.

K. Transportation and storage environment requirements

a. Ambient temperature range: 5 ° C -40 ° C;

b. Relative humidity range: relative humidity is not more than 80%

c. Atmospheric pressure range: 86KPa ~ 106KPa.

Rainproof during transportation, anti-large vibration, pay attention to light handling.

The packaged equipment is stored in a well-ventilated room with a relative humidity of no more than 80%,no corrosive gases.

Parts List

| No. | Name | Quantity | Replacement cycle | Replacement / use method |
|-----|-----------------------|----------|-----------------------|--|
| 1 | 4mm Allen wrench | 1 | - | For fixing the dental light screw |
| 2 | Φ5×20mm, F5AL250VFuse | 4 | When damaged | Used to replace switching power supply insurance |
| 3 | Leveling screw | 4 | Chassis is not normal | Used to adjust the chassis level |

L. Waste disposal instructions

1. The waste discharge system of the treatment machine is equipped with a solid collector. The collector can intercept any solid waste with a diameter of 2 mm;
2. The treatment body must be disposed of in the waste discharge system in accordance with local environmental protection requirements.
3. Disposal of wastewater and waste must comply with local environmental protection requirements.
4. The dental treatment machine must be equipped with or connected to an amalgam separation device in the waste discharge system (connected to the drain connection of the equipment);
5. Do not dispose of this device as domestic waste!
- 6.The product must be fully treated (cleaned/disinfected/sterilized) before disassembly/disposal.
7. Description of electromagnetic compatibility risks:

The dental integrated treatment machine designed and manufactured by the company meets the requirements of IEC60601-1-2:2001, so that the maintenance can achieve the intended operation of the company's equipment in a compatible electromagnetic environment.

8. Declaration of hazardous substances

| Part Name | Toxic or harmful substances or elements | | | | | |
|---------------------------------|---|------|------|--------|-------|--------|
| | (Pb) | (Hg) | (Cd) | (Cr6+) | (PBB) | (PBDE) |
| Power cord with plug: Plug wire | × | ○ | ○ | ○ | ○ | ○ |
| switch | × | ○ | ○ | ○ | ○ | ○ |
| transformer | × | ○ | ○ | ○ | ○ | ○ |
| Fuse | × | ○ | ○ | ○ | ○ | ○ |
| Over temperature | × | ○ | ○ | ○ | ○ | ○ |
| Motor | × | ○ | ○ | ○ | ○ | ○ |
| PCB | × | ○ | ○ | ○ | ○ | ○ |

o mean Indicates it is toxic

The content of harmful substances in all homogeneous materials of this part is below the limit requirement stipulated in SJ/T 11363-2006 "Limited Requirements for Toxic and Hazardous Substances in Electronic Information Products".

× : Indicates that the content of the toxic and hazardous substance in at least one of the homogeneous materials of the part exceeds the limit requirement specified in SJ/T 11363-2006.

Parts with lead instructions

1. With plug power cord: plug wire / power switch Most connectors metal shell, terminals and other lead, lead and lead.
2. The internal connection point of the transformer uses a high-temperature solder with a lead content of 85% or more.
3. Fuse internal resistance lead
4. Over temperature protector internal resistance lead
5. The internal resistance of the motor contains lead.
6. PCB surface pads contain lead.

M. Electromagnetic compatibility

Notice:

- Dental unit KS-D109 meets the requirements of YY0505 standard electromagnetic compatibility.
- Users should install and use the electromagnetic compatibility information provided in the random file.
- Portable and mobile RF communication equipment may affect the performance of the dental unit, avoiding strong electromagnetic interference when used, such as near cell phones, microwave ovens, etc.
- The instructions for the guide and the manufacturer are detailed in the annex.

- Warning:

- The dental unit KS-D109 should not be used close to or stacked with other equipment. If it must be used close to or stacked, it should be observed that it will function properly in its configuration.
- In addition to the cable sold by the manufacturer of the dental unit KS-D109 as a spare part for internal components, the use of extra-standard accessories and cables may result in an increase in the emission or immunity of the dental unit KS-D109.

Cable information:

| No. | Name | Cable length (m) | Whether to block | Remarks |
|-----|------------------|------------------|------------------|---------|
| 1 | POWER CABLE | 1.5 | NO | |
| 2 | FOOT PEDAL CABLE | 1.5 | NO | |

Annex:

Guide and manufacturer's statement – electromagnetic emissions


| The dental unit KS-DLX301 is expected to be used in the electromagnetic environment specified below, and the purchaser or user should ensure that it is used in this electromagnetic environment: | | |
|---|------------|--|
| Emission test | Compliance | Electromagnetic environment – guide |
| Radio frequency emission GB 4824 | Group 1 | The dental unit KS-DLX301 uses RF energy for its internal function only. Therefore, its RF emissions are low and there is little possibility of interference with nearby electronic equipment. |
| Radio frequency emission GB 4824 | Class B | The dental unit KS-DLX301 is suitable for use in all facilities, including domestic facilities and direct connection to residential low-voltage power supply networks. |
| Harmonic emission GB 17625.1 | Class A | |
| Voltage fluctuation / flicker emission GB 17625.2 | conform | |

| Guide and manufacturer's statement – electromagnetic immunity | | | |
|---|--|--|---|
| The dental unit KS-DLX301 is expected to be used in the electromagnetic environment specified below, and the purchaser or user should ensure that it is used in this electromagnetic environment: | | | |
| Immunity test | IEC 60601 Test level | Compliance level | Electromagnetic environment – guide |
| Electrostatic discharge GB/T 17626.2 | ±6 kV Contact discharge ±8 kV Air discharge | ±6 kV Contact discharge ±8 kV Air discharge | The ground should be wood, concrete or ceramic. If the floor is covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient burst GB/T 17626.4 | ±2kV Power cord | ±2kV Power cord | The network power supply should have the quality used in a typical commercial or hospital environment. |
| Surge GB/T 17626.5 | ±1 kV Wire-to-line ±2 kV Line to ground | ±1 kV Wire-to-line ±2 kV Line to ground | The network power supply should have the quality used in a typical commercial or hospital environment. |
| Voltage dip, short in interruption and volta ge change on the p ower input line GB/T 17626.11 | <5 % UT for 0.5 cycles (on the UT, >95% sag) 40 % UT for 5 cycles (on the UT, 60% sag) 70% UT for 25 cycles (on the UT, a 30% sag) <5 % UT for 5s (on the UT, >95% sag) | <5 % UT for 0.5 cycles (on the UT, >95% sag) 40 % UT for 5 cycles (on the UT, 60% sag) 70% UT for 25 cycles (on the UT, a 30% sag) <5 % UT for 5s (on the UT, >95% sag) | The network power supply should have the quality used in a typical commercial or hospital environment. If the user of the dental unit needs continuous operation during a power outage, it is |

| | | | |
|---|------|-----------|--|
| | | | recommended that the dental unit be powered by an uninterruptible power supply or battery. |
| Power frequency magnetic field (50/60Hz) GB/T 17626.8 | 3A/m | 3A/m,50Hz | The power frequency magnetic field should have the 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. | | | |

Guide and manufacturer's statement – electromagnetic immunity

The dental unit KS-D109 is expected to be used in the electromagnetic environment specified below and the purchaser or user should ensure that it is used in this electromagnetic environment:

| Immunity test | IEC 60601 Test Level | Compliance level | Electromagnetic environment – guide |
|--|--|---------------------|---|
| Radio frequency conduction GB/T 17626.6 | 3 V(effective value) 150 kHz~80 MHz | 3V(effective value) | Portable and mobile RF communications equipment should not be used closer to any part of the dental unit KS-D109, including cables, than the recommended isolation distance. This distance is calculated by a formula corresponding to the transmitter frequency. Recommended isolation distance $d = 1.2\sqrt{P}$ |
| Radio frequency radiation GB/T 17626.3 | 3V/m 80 MHz~2.5 GHz | 3V/m | $d = 1.2\sqrt{P}$ 80 MHz~800 MHz $d = 2.3\sqrt{P}$ 800 MHz~2.5 GHz In the formula: P = in watts (W) based on the transmitter's maximum rated output power provided by the transmitter manufacturer; d —Recommended isolation distance in meters (m). The field strength of a fixed RF transmitter is determined by survey a to the electromagnetic field, and each frequency range b should be lower than the compliance level. Interference may occur near devices marked with the following symbols.  |

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

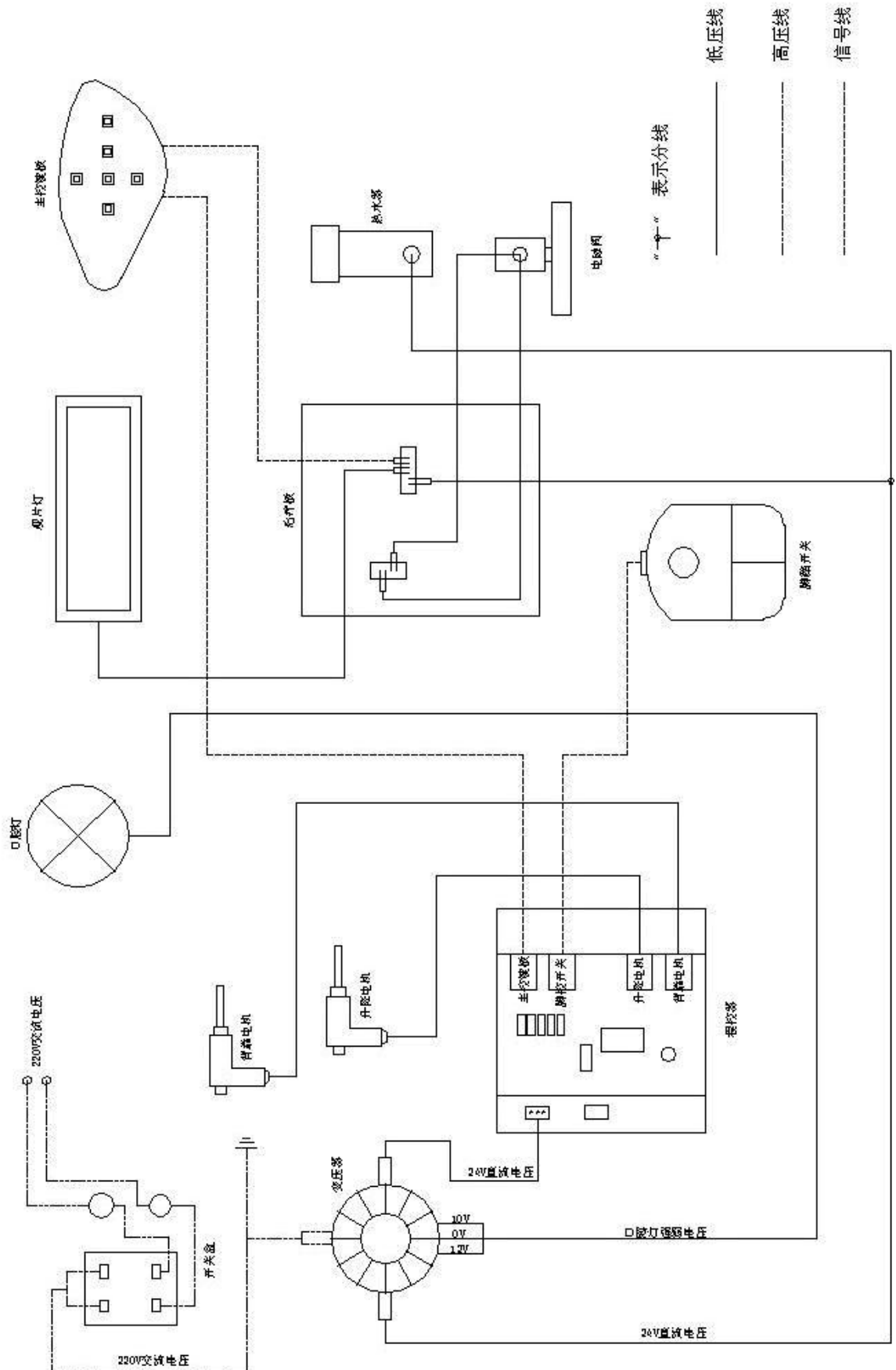
Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by the absorption and reflection of buildings, objects and human bodies.

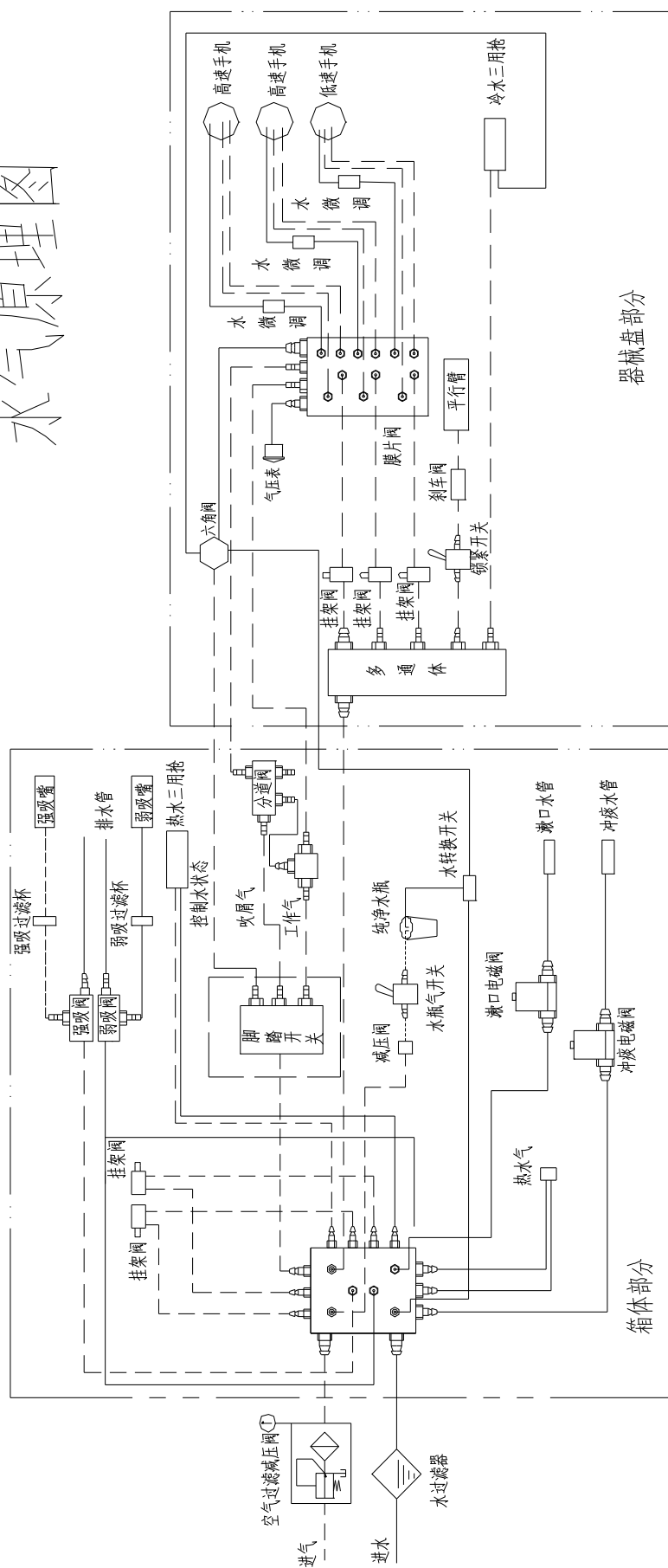
^a Stationary transmitters, such as base stations for wireless (cellular/cordless) telephones and terrestrial mobile radios, amateur radios, AM and FM radio broadcasts, and television broadcasts, are not theoretically predictable in terms of field strength. In order to assess the electromagnetic environment of a fixed RF transmitter, the survey of the electromagnetic field should be considered. If the measured field strength of the dental unit is higher than the applicable RF compliance level above, the dental unit should be observed to verify that it is functioning properly. Additional measures may be necessary if abnormal performance is observed, such as reorienting the direction or position of the dental unit.

^b The field strength should be less than 3V/m over the entire frequency range from 150kHz to 80MHz.

| Recommended isolation distance between portable and mobile RF communication equipment and dental unit | | | |
|--|---|---------------------------------------|--|
| The dental unit KS-DLX301 is expected to be used in an electromagnetic environment where radio frequency disturbances are controlled. Depending on the maximum rated output power of the communication device, the purchaser or user can prevent electromagnetic interference by maintaining the minimum distance between the portable and mobile RF communication device (transmitter) and the dental unit KS-DLX 303 as recommended below. | | | |
| Rated maximum output power of the transmitter W | Corresponding distance /m corresponding to different frequencies of the transmitter | | |
| | 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 |
| <p>For the maximum rated output power of the transmitter 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 the transmission provided by the transmitter manufacturer. Maximum rated output power in watts (W).</p> <p>Note 1: At the 80MHz and 800MHz frequency points, the formula for the higher frequency band is used.</p> <p>Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by the absorption and reflection of buildings, objects and the human body.</p> | | | |

电路原理图





气路 (红色管) -----

水路 (蓝色管) _____

注: 仅供参考, 本公司有权对其组件及管路进行改进

Name Dental Comprehensive Treatment Machine

Model: KS-D109

Technical Requirement Number:

Production License Number:

Product Registration Certificate Number:

Date of production see product label

Product validity: 5 years

Date of the prepared instruction: January 5, 2019

Production/Registration Name: Foshan City Kaso Medical Equipment Co., Ltd.

Production/Registration Address: 4th Floor, No.2Workshop Building, Donghua Industrial Zone,
Shakeng, Luocun, Shishan Town, Nanhai District, Foshan City (Residence Declared)

After-sales service unit: Foshan City Kaso Medical Equipment Co., Ltd.

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