

DENTAL SIMULATION

MODEL: TR-DTS11

INSTRUCTION MANUAL

MENU

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● Attention

PLEASE KINDLY READ THIS MANUAL CAREFULLY BEFORE OPERATION.

Safety information

Before using the unit, please read this operation manual carefully to operate the dental simulation properly, and please keep the manual properly for future reference. In case of special need, please contact our distributor.



Danger!----this means high risk which might cause injury to human or damage to equipment, or important information useful for user and maintenance technician which requires caution.



Warning!----this means medium risk which might cause injury to human or damage to equipment, or important information useful for user and maintenance technician which requires caution.



Attention!----this means mild risk which might cause injury to human or damage to equipment, or important information useful for user and maintenance technician which requires attention.

Warning!

The unit should be connected with a cable of 3X1.5mm² which is protected by a bipolar circuit breaker complying with current electric regulation (250V 10A, with at least 6000A disconnection load, and the spacing between two contacts should be no less than 3mm) to ensure the safety of user, reliability and good performance of the unit.

Warning!

Before use the machine, please lock the caster, in case it will move during operation.

Attention:

Please provide power supply according to the requirement of the unit, and always connect

with a ground wire securely to ensure safe operation.

Warning!

The colors of three conductors (live conductor, earth conductor and null line) should comply with current regulation.

Warning!

Fuse should be replaced with a new one of the required specification, and it is strictly forbidden to use out-of-specification fuse instead.

Warning!

Installation and adjustment should be done by a professional.

Warning!

Before maintenance and repair, drain water and air and then cut off the source of power, water and air; reconnect them before use.

Attention:

Use wet cloth and neutral detergent to clean machine.

Attention:

Please read manufacturer's instruction manual before cleaning and sterilizing the high-speed turbine dental drill hand-piece(high-speed handpiece) and low-speed pneumatic hand-piece(low-speed handpiece); sterilize them using pressure steam of 135OC (2bar) for a duration not shorter than 15 minutes.

Warning!

Please be extremely careful when handling a fiber optic hand-piece to avoid damaging the light-emitting end, and ensure that the head will not contact the mixture remained after treatment; maintain a certain distance or use a transparent matrix band within the first five seconds of treatment.

Any trace left on tool by mixture must be immediately removed; remove fiber optic hand-piece and use a cloth soaked with alcohol to clean it.

Do not point the light ray of fiber optic hand-piece to human eyes as this might cause injury to certain patients such as cataract people. Normally fiber optic will not cause permanent damage but may induce temporary loss of vision.

Attention:

Do not hold the aspiration tube only when trying to remove it.

Warning!

It is strictly forbidden to use abrasive material when cleaning the front cover and reflector of oral lamp.

Warning!

Cleaning and sterilizing materials must be disposed of safely after use.

Warning!

Do not use this unit in a large transformer room and place with great magnetic field.

Warning!

The power supply for dental simulation should be disconnected each time when the unit is used with external device for implantation, to avoid causing human injury by failure or accidentally touching control button.

Warning!

Bur must be removed only when high-speed hand-piece and low-speed hand-piece are fully stopped, or it may damage the clamping head, cause the bur to fall out and cause human injury.

Only high quality bur and bolt of suitable size can be used. Before starting each day's work, please check for damage of clamping head to check that the bur is secured into the handpiece.

Warning!

After replacing the bur of high-speed hand-piece, try to pull the bur outwardly to see if it is secured in place. The diameter of bur should be within 1.59 - 1.60mm (as per ISO 1797 Class 3), and the maximum length should be 25mm (as per ISO 6360-1).

Warning!

The high-speed hand-piece can be used only when bur or repair tool is installed.

Do not press the release button of bur when the dental unit is in use, as the friction force between the button and impeller of pneumatic motor will overheat the head and may cause burn-out. Tissues in patient's mouth (tongue, cheek and lips etc) should be properly

protected(e.g. using mirror and so on) to avoid touching button.

Warning!

Do not touch the bulb of oral lamp directly, and please replace the bulb after it is cooled down with protective gloves worn to avoid burn injury.

Warning!

It is strictly forbidden to touch PC board and electronic components with hand or metal part.

Attention:

If the foot switch slips on the floor, please use a dry cloth to wipe off the dirt on the non-slip rubber pad on the bottom of foot switch.

Warning!

Environmental protection

After training, the students should collect the waste materials and residues and put them in the designated location for medical waste in local hospital on the same day.

Before the expiration of dental unit and accessories' service life, please contact local disease control department to sterilize and reject the product.

Warning!

To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

Warning!

Lug is considered as disconnection device, don't posite the equipment to make it difficult to operate.

Warning!

Do not modify this equipment without authorization of the manufacturer.

Intended use of product: it is to intended to be used by medical school for teaching or training purpose.

● Overall structure

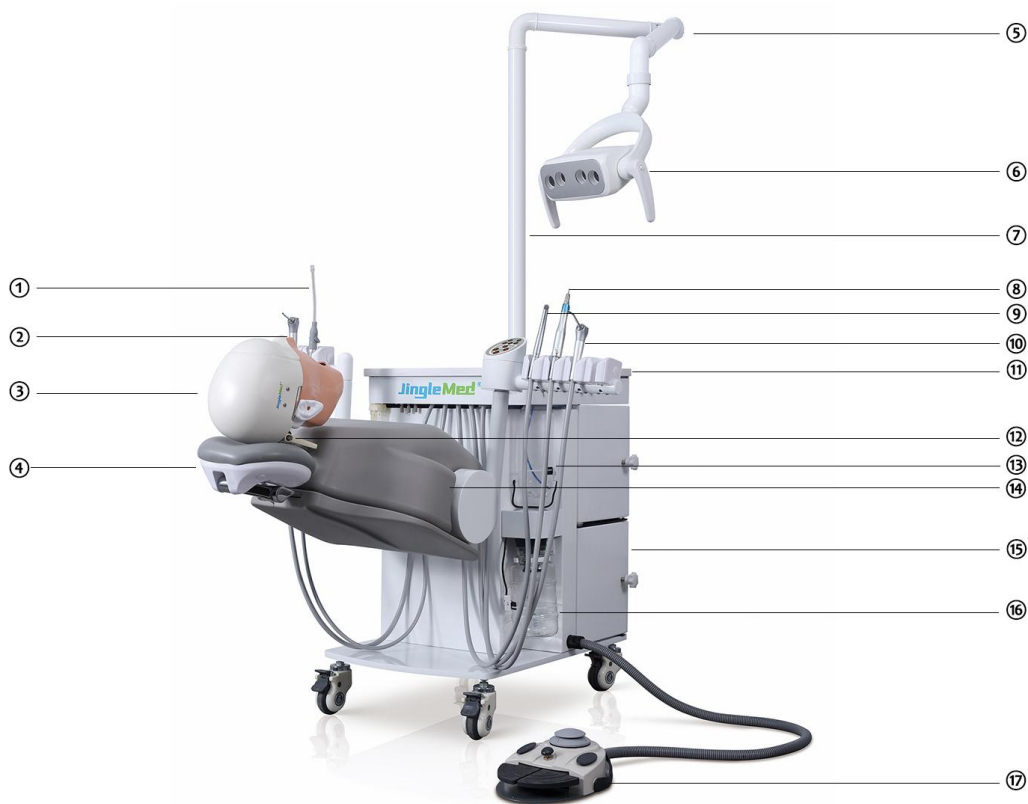


Figure 1

- | | | |
|-----------------|-------------------------|-------------------------------|
| ① Weak suction; | ⑦ Middle arm; | ⑬ Water bottle(600ml); |
| ② Mask; | ⑧ Low speed handpiece; | ⑭ Torso; |
| ③ Head cover; | ⑨ High speed handpiece; | ⑮ Drawer; |
| ④ Head rest; | ⑩ 3-way syringe; | ⑯ Waste water bottle(1000ml); |
| ⑤ Arm; | ⑪ Movable frame; | ⑰ Foot control; |
| ⑥ LED lamp; | ⑫ Ball joint; | |

Standard Component:

| ITEM | QTY | ITEM | QTY | ITEM | QTY |
|--------------|-----|----------------------|------|---------------------|------|
| Weak suction | 1pc | Middle arm | 1pc | Water bottle(600ml) | 1pc |
| Mask | 1pc | Low speed handpiece | 1set | Torso | 1pc |
| Head cover | 1pc | High speed handpiece | 1pc | Drawer | 2pcs |

| | | | | | |
|-----------|-----|---------------|------|----------------|-----|
| Head rest | 1pc | 3-way syringe | 2pcs | Waste water | 1pc |
| Arm | 1pc | Movable frame | 1pc | bottle(1000ml) | |
| LED lamp | 1pc | Ball joint | 1pc | Foot control | 1pc |

● Technical data

Technical data of simulator

- (1) Power supply: AC 220V±10%, 50Hz.
- (2) Input power: 120VA.
- (3) LED lamp: AC 12V 13W.
- (4) Fuse: FR1-20, $\phi 5 \times 20$, 6.0A.
- (5) Handpiece Data: (Inlet air pressure: 250KPA)

| High speed handpiece | | Low speed handpiece | |
|----------------------|-----------------------|---------------------|------------------------|
| Air Pressure | 0.20Mpa-0.30Mpa | Air Pressure | 0.3Mpa-0.35Mpa |
| Rotation | 350,000-400,000rpm | Rotation | 20,000-30,000rpm / min |
| Bur applicable | $\phi 1.595$ -1.600mm | Bur applicable | $\phi 2.335$ -2.355mm |
| Noise | ≤ 70 dB | Noise | ≤ 70 dB |

- (6) Packing information: L100*W85*H97cm.

● Working environment

- (1) An ambient temperature range of -20 to +40.
- (2) A relative humidity range is not more than 80%.
- (3) An atmospheric pressure range of 860 hPa to 1060 hPa.
- (4) Barometric source: Atmospheric pressure > 500KPa, Flow>55L/Min, water pressure: 200Kpa to 400Kpa.

● Transport and storage condition

- (1) An ambient temperature range of -20°C to +40°C.
- (2) A relative humidity is not more than 95%.
- (3) An atmospheric pressure range of 700 hPa to 1160 hPa.
- (4) Non-corrosiveness gas inside.

● Installation procedures

1. Unpacked check

Unpack the packing carton and check if the equipment is sound without any damage. Check if the accessories and spare parts are complete and sound according to the packing list. For any question, please do not hesitate to contact the manufacturer.

2. Dental Simulator Installation

The dental simulator should be installed on even and solid ground and keep the ambient clean, dry, ventilated and cool. Keep away the sunshine.

3. Connection of air compressor

Connect the transparent tube in front of the machine with the air compressor.

Before the connection of pipes, discharge the water and air inside the equipment first, then remove dirt and impurity inside the pipes to prolong the service life of this equipment.

Remove dirt and impurity inside the pipes and prolong the service life of this equipment first, then remove dirt and impurity inside the pipes to prolong the service life of this equipment.

4. Connection of LED lamp

A. Connector 1, connect the LED oral lamp (figure 3, figure 4, figure 5). Connector 2, insert the wire through the middle arm, connect it with the wire in the workbench.(figure

5)

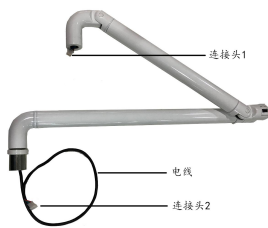


Figure 2



Figure 3

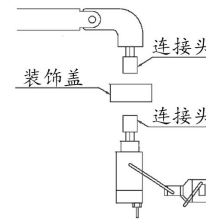


Figure 4



Figure 5

5. Assemble the simulation head model

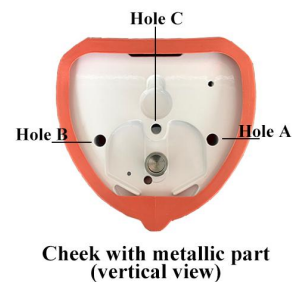
A. Put the metallic part into the cheek, from the up side down. See Figure 6, 7, 8 show.



Figure 6



Figure 7



Cheek with metallic part (vertical view)

Figure 8

B. Match the "Hole B" "Hole A" (figure 4) corresponding to "Metallic part B" "Metallic part A"(figure 9), and "Screw 1" to the "Hole C"(figure 9, 10). Twist the black "Handle" clockwise, then fix. (figure 10)

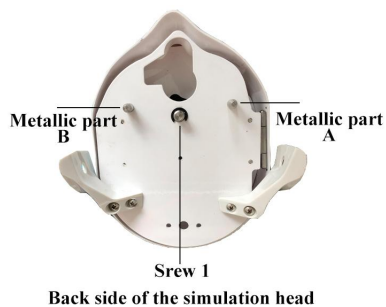


Figure 9



Figure 10

C. Fix the simulation head and simulation body with screw. (Check the circles in figure 11,

12)



Figure 11



Figure 12

- D. Adjust the simulation head. Twist the handle to FRONT, then you can adjust the direction, twist the handle to the BACK (figure 13), settle the simulation head. It's multi-direction.(figure 14)



Figure 13






Figure 14







● Commissioning and operation

1. Power supply connection

The machine is equipped with the single-phase three-pinned socket in advance. Without the connector, the user cannot switch it on until the electrical outlet is connected to the ground wire.

2. Instrument console

- A. “  ” keep press this button, the phantom head will go down.
- B. “  ” keep press this button, the phantom head will go up.
- C. “  ” keep press this button, the phantom head will go forward.

- D. “  ” keep press this button, the phantom head will go back.
- E. “  ” press this button, the machine will be back to the original position.
- F. “  ” press this button, the machine will set the memory position.
- G. “  ” memory position 1.
- H. “  ” memory position 2.
- I. “  ” press this button to turn on the LED lamp.

3. Foot control (Figure 16)

A. Blowing dust valve

Step on ① the left and right pedal button at the same time to supply water and air, the handpiece began to work with water. Step on this button to dry the water inside the system.

B. Pedal button

Step on the left ② and right ④ pedal button at the same time to supply water and air, the handpiece began to work with water. Only step on

the right pedal , the handpiece in a dry working state;

Stop stepping on the left and right pedal, the

Handpiece stop working.

C. Lifting button

Press the button ③ up, and the dental simulation will

move in the direction shown by arrow (upwards). When the required position is reached, release the button and the dental simulation will immediately stop moving(if the button is pressed down and held, the dental simulation will automatically stop when it reaches the extreme position)

D. Lowering button

Press the button ③ down, and the torso of dental simulation will move in the direction shown by arrow (downward). When the required position is reached, release the button

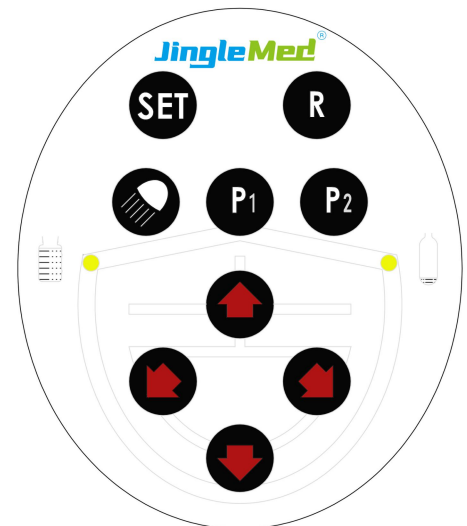


Figure 15



Figure 16

and the dental simulation will immediately stop moving (if the button is pressed down and held, the dental simulation will automatically stop when it reaches the extreme position)

E. Backward-tilting button

Press the button ③ to the left, and the torso of dental simulation will move in the direction shown by arrow (backward). When the required position is reached, release the button and the dental simulation will immediately stop moving (if the button is pressed down and held, the dental simulation will automatically stop when it reaches the extreme position)

F. Forward-tilting button

Press the button ③ to the right, and the backrest of dental simulation will move in the direction shown by arrow (forward). When the required position is reached, release the button and the dental simulation will immediately stop moving (if the button is pressed down and held, the dental simulation will automatically stop when it reaches the extreme position)

4. Water storage bottle

- A. Clean water storage bottle, the clean water use for handpiece and syringe comes from here.
- B. Dirty water storage bottle, the dirty water from the suction will be stored up here.



Figure 17

5. High/ Low speed handpiece

- A. Connect water, air and power supply. Open the general air switch on the side of the movable simulation treatment machine, and check the pressure gauge after open the plastic door . (Figure 18) The value should be 0.5 ~ 0.6 MPa (factory setting). Adjust the filter relief valve if it is required to maintain the said value. Open the plastic door, pull the handle on the top of the filter relief valve up for about 10mm as shown in (Figure 18), turn the handle clockwise to increase the pressure and anticlockwise to

decrease the pressure.

- B. Take the handpiece from the holder, step the pedal switch for operation. Be noted that the pressure indicated on the pressure gauge of the instrument disc is the operating pressure of the handpiece, which should be no more than the rated maximum pressure of the handpiece to protect the handpiece against damage (High speed: 2.0-4.0bar, Low speed: 3.5-4.0bar), see the Figure 19. Adjust the operating pressure of handpiece if it is required by regulating the main control valve under the instrument disc. Turn the handle clockwise to increase the pressure and anticlockwise to decrease the pressure. Adjust carefully and slowly.



Figure 18

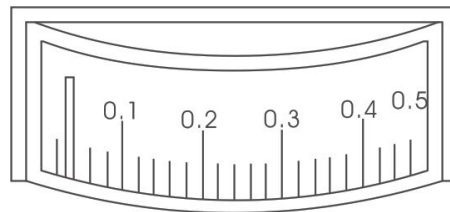


Figure 19

6. Three-way syringe

The left button is for water and the right one is for gas.

See figure 20.

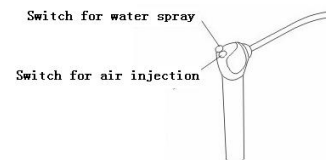


Figure 20

7. Weak suction

Saliva aspirator is provided with this equipment. Take the saliva ejector from the holder to start operation immediately. Water connection is required for low aspiration to guarantee minimum operating pressure required.

8. Clean water bottle

Water for handpiece is directly from the water bottle, therefore the bottle shall be supplied with medical distilled water on time, with water filling described as below: Turn off the air switch beside the water bottle firstly. After all the compressed air in the bottle

discharged, hold the water bottle securely and turn clockwise to take it off. Then fill water in it, turn it on counter-clockwise, until it fixed on the bottle cup tightly (Air tightness must be regarded). Finally turn on the air switch.

9. Waster water bottle

The waste water comes out from the simulation mouth through the saliva aspirator, will go into the waste water storage bottle. (On the left side of the machine without blue tube in it.) Hold the water bottle with both hands, rotate clockwise to take off the water bottle, pour out the waste water and rotate anticlockwise to tighten the bottle (sealed).

● Maintenance

- (1) After adjust the simulation head, ensure it is locked before it is used.
- (2) Regularly cleanse the water filter.
- (3) Power supply is 220VAC.
- (4) Cut the power supply before repair the wearable component and cleanse, maintain the treatment machine.
- (5) Should close the lamp, when it is not used.
- (6) To ensure the neat and tidy of the treatment machine, cleanse the surface of the machine and simulation with hospital use alcohol regularly is suggested.

● Note

- (1) The power cord should be configured as standard and the ground wire should be firmly connected.
- (2) When replacing electronic components, the power must be turned off.
- (3) Before the maintenance and cleaning of the equipment, the power must be turned off.

● Others

1. Transport and storage environment:

- (1) Ambient temperature: -40 ~ + 70 °C.
- (2) Relative humidity: 20% ~ 90%, including condensation.
- (3) Pressure: 86 ~ 106 kPa.
- (4) The rain must be prevented during transportation and gently handled to avoid vibration.
- (5) Treatment of waste water and other materials must comply with local environmental protection regulations.
- (6) Packaging units should be stored in places where the relative humidity does not exceed 80%, where there is no corrosive gas and air circulation.
- (7) The maintenance of the equipment must be performed by professional technicians designated by our company. If the user disassembles and repairs the device by himself, the device may be damaged, and if this happens, our maintenance service will no longer be available.