# Maxso® E800B

Electric Micromotor System (Built-in)

**Instruction for Use**


Beyes

*The Next Standard*

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## 1. Introduction

Brushless electric micromotor system for driving dental handpieces for dental surgery at a constant torque and consistent speed at high load. Mainly used for dental aesthetics restoration, crown preparation, and can be used for all high-speed and low-speed handpiece applications.

**Cautions for safe handling and operation**

Read these safety precautions first before using this product .
These instructions will show you how to operate this product safely and prevent injury to yourself or others. They are classified by the degree and/or severity of danger. All cautions regarding safety should be observed.

**Caution:**

1. To prevent electric shock: Do not pull or plug in the power cord with wet hands.
2. To prevent electric shock: Prevent water from getting on to the control box.
3. Keep away from explosives and flammable materials.
4. Do not use this dental electric motor for patients who are anesthetized with nitrous oxide.

**Warning:**

1. This dental electric motor may malfunction when used in an environment where electromagnetic interference occurs. This dental electric motor cannot be installed near devices that release magnetic waves. When using an ultrasonic vibrating device or an electrode knife in the vicinity, make sure the switch on the dental electric motor control panel is turned off.
2. Maxso E800P requires special precautions for EMC and needs to be installed and put into use according to the EMC environment.
3. Device with electromagnetic transmission will affect the normal operation of Maxso E800P. Please do not run both devices at the same time.
4. Do not use it in operating rooms that contain a mixture of potentially flammable gas.
5. To avoid personal injury or damage to the dental electric motor, make sure that the motor handpiece (hereinafter referred to as the motor) has completely stopped when connecting or disconnecting the handpiece.
6. A severe impact, such as a drop from high position, can result in damage to the dental electric motor.
7. Do not try to disassemble the control panel or motor.
8. After use, please immediately clean, lubricate and disinfect the dental handpiece (hereinafter referred to as the handpiece).
9. Do not lubricate the motor. The lubricant can cause overheating and damage the motor.
10. Do not use a solution with dissolving ability to clean the control panel.
11. Do not remove the motor cable from the motor.
12. After each operation, turn off the power supply.

**1.2 Intended use**
Provide driving force for dental handpieces for the purpose of dental surgery.

**1.3 Model**
Maxso E800B

**1.4 Contraindications**
Beyes Dental Inc. will not be liable for any direct or indirect damages and losses under the following conditions:

- The device is used to the unmentioned usages or the usages outside the scope of applications.
- The operator did not use the device with the method in accordance with the procedures and requirements stipulated in the Instruction Manual.
- The wiring system of the room where the device is used does not meet the requirements of appropriate standard and other proper requirements.
- Assembling, operating, and repairing the equipment without the authorization of Beyes Dental Inc.
- The environmental conditions in which the equipment is located or stored do not meet the requirements mentioned in the section on technical requirements.

**1.5 Safety requirements**
Beyes Dental Inc. will not be liable for any direct or indirect damages and losses under the following conditions:

- The device is used to the unmentioned usages or the usages outside the scope of application.
- The operator did not use the device with the method in accordance with the procedures and requirements stipulated in the Instruction Manual.
- The wiring system of the room where the device is used does not meet the requirements of appropriate standard and other proper requirements.
- Assembling, operating, and repairing the equipment without the authorization of the Beyes.
- The environmental conditions in which the equipment is located or stored do not meet the requirements mentioned in the section on technical requirements.

## 2. Basic technical parameters

**2.1 Specification of main unit**
Model: Maxso E800B
Size:165.5mm x 129.7mm x 77.6mm
Power supply input: 24V~ 50Hz/60Hz 100VA
Spray water source: Water flow > 50ml/min (water pressure: 2 bar~5 bar) Spray
Air source: Airflow > 1.5L/min (air pressure: 2.5 bar~5 bar)
Cooling airflow: Airflow <40L/min



(recommended working pressure is 2.5-5 bar)

**2.2 Motor specification**
Model: E800 MC
Rotation speed: 2000-40000 rpm;
Voltage input: DC 24V
Size: φ22×76.7mm
Tail cord length: 1.8m

**2.3 Use environment**
2.3.1 Ambient temperature: +5°C~ +40°C
2.3.2 Relative humidity: 30% ~ 75%
2.3.3 Atmospheric pressure: 70kPa ~ 106kPa

**2.4 Device safety classification**
2.4.1 Type of protection against electric shock: Class II equipment
2.4.2 Degree of protection against electric shock: B type applied part
2.4.3 Degree of protection against harmful ingress of water: Ordinary equipment (IPX0). Not waterproof.
2.4.4 Classified by operation mode: Intermittent operating device. (continuous operation for 3min, need to stop for 2min).
2.4.5 Degree of safety application in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide: Equipment cannot be used in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.

## 3. Product performance structure and composition

⚠ **3.1 Safety requirements during installation**

**Danger:** Equipment is installed on the premise that the installation must comply with appropriate standards and associated electric safety requirements.
**Danger:** Never install the unit in an explosive atmosphere and do not operate in areas with flammable gases (anesthetic mixtures, oxygen, etc.).
**Danger:** The installation site should be protected from shocks and splashes of water or other liquids.
**Danger:** Do not install the unit near or above the heat source. It must be installed in a place where the surrounding air is sufficiently circulated. There is enough space around it, especially for the exhaust fan and the back position.
**Warning:** Do not place the parts directly under sunlight or ultraviolet light.
**Warning:** This equipment is movable, but please handles with care.
**Warning:** Make sure the connection parts are dry before connecting the wires to the unit. If necessary, blow to dry it with an air gun.

**3.2 See the packing list for the machine configuration.**

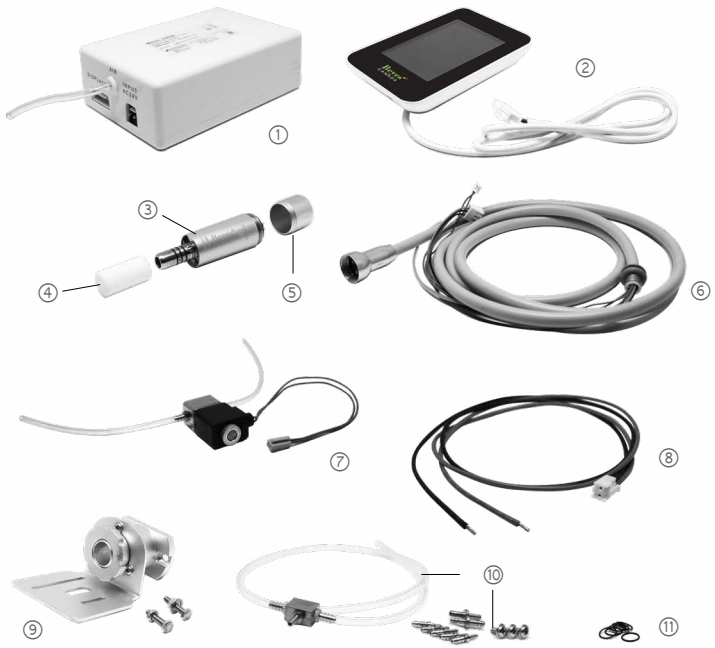



Figure 1

Figure 1. Maxso E800B Built-In Electric Handpiece System

① Maxso E800B Main Unit
② Maxso E800B Panel
③ Maxso E800 MC Motor, Brushless, Autoclavable
④ Maxso E800MC Motor Output End Plastic Sheath
⑤ Maxso E800MC Motor Input End Aluminum Sheath
⑥ Maxso E800 Built-In Type Motor Tubing Replacement
⑦ Solenoid Valve for P6 & P9 & E800B
⑧ Maxso E800B 24V Input wire
⑨ Maxso E800B Panel Holder
⑩ Maxso E800B Install water/air Barb Fitting Kits (7 Barb to Barb, 1 Tee)
⑪ Maxso E800MC Motor O-ring kit



**3.3 Front View of the Main Unit**

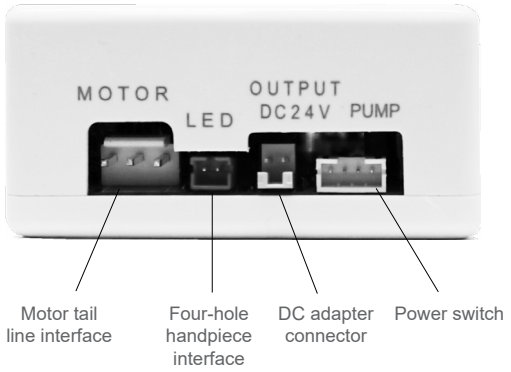



Figure 2

**3.4 Rear view of the main unit**

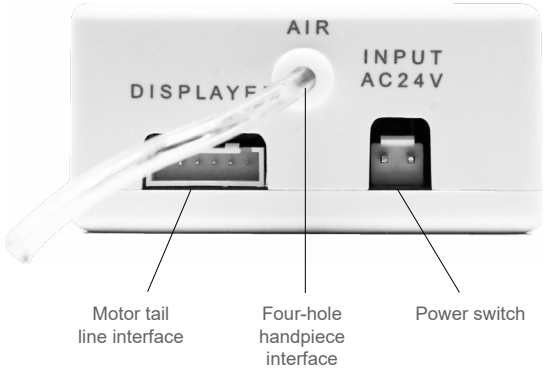



Figure 3

**3.5 Schematic diagram of motor installation**

### 3.4 Rear view of the main unit

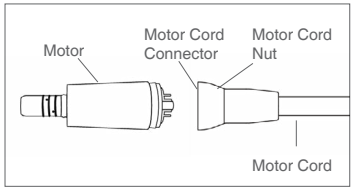



Figure 4-1

3.5.1 Connecting/ Disconnecting the motor and the motor cord
A. Align and insert the motor pin firmly into the pin holes of the motor cord connector and fasten the motor cord nut securely.
B. To remove the motor cord from the motor, unscrew and detach the motor cord nut, and gently pull out the motor cord connector.

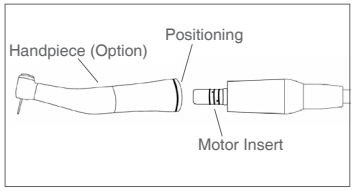



Figure 4-2

3.5.2 Connecting/Disconnecting the motor and handpiece
A. To insert the E-Type handpiece into the motor, align the hand piece and motor, then turn until you hear a click (positioning pins are aligned)
B. To remove the handpiece, simply pull the hand piece from the motor.

### 3.6 Installation steps

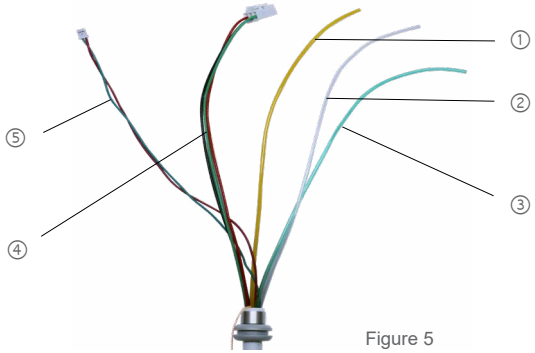



Figure 5



3.6.1 Pipeline connection:
When connecting lines, make sure that there are no air or water leaks in the lines.
1. Pipeline connection of tail circuit:
① Yellow air tube: Connected with dental chair chip/spray air;
② Transparent water tube: Connected with dental chair waterline;
③ Green air pipe: Connected with dental chair driving air;
④ Motor control line;
⑤ Moter LED power line.
2. Connection of tee joints:

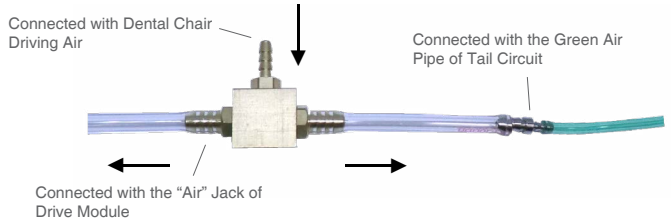



Figure 6

The air inlet of the tee joint is connected to the driving air of the dental chair, one of the air outlets is connected to the tail circuit to obtain the green tube, and the other air outlet is connected to the air interface of the driving module.
3. Connection of solenoid valve:

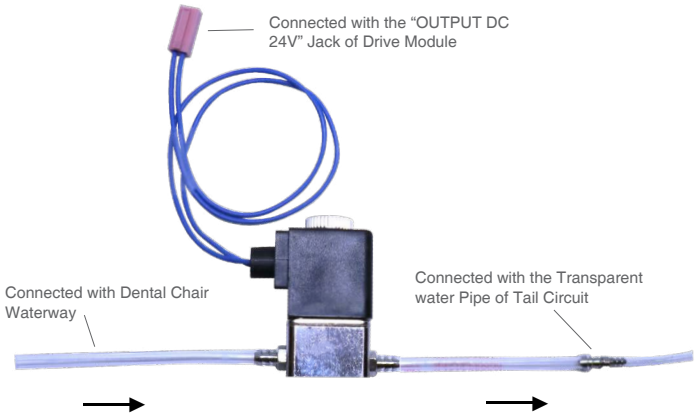



Figure 7

The two-core cable of the solenoid valve is connected to the "OUTPUT DC 24V" interface of the drive module, the input interface is connected to the waterline of the dental chair, and the output interface is connected to the transparent water pipe of the tail circuit.
3.6.2 Connection of drive module:
The interfaces are explained as follows:
1. MOTOR: Three-core motor control line connected with tail circuit;
2. LED: two-core LED control line interface connected with tail circuit;
3. OUTPUT DC 24V: Two-core cable connecting solenoid valve;
4. DISPLAYER: the control line connected to the display;
5. AIR: Connect the foot control air inlet pipe of the dental chair with the tee joint;
6. INPUT AC 24V: Connect the AC 24V power interface of dental chair.

## 4. Main unit interface

### 4.1 Main interface

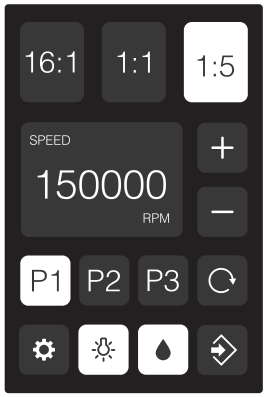



Figure 8



### 4.2 Setting interface

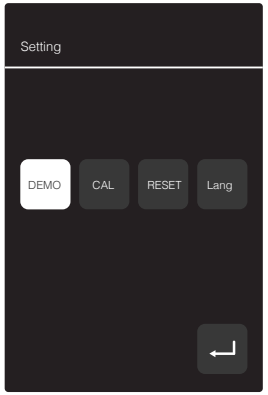



Figure 9

### 4.3 Manual mode interface

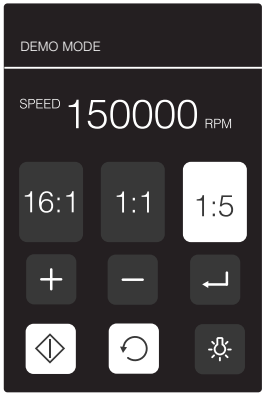



Figure 10

### 4.4 Interface of calibration mode

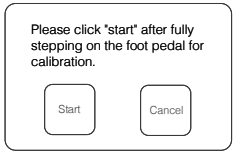



Figure 11

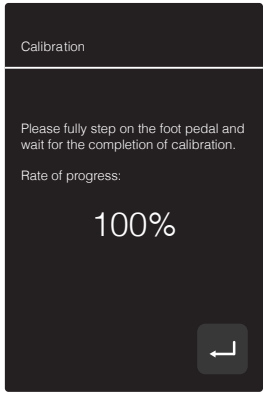



Figure 12

Enter the setting interface, click the calibration mode touch button, enter the air pressure calibration interface, click “Start”, and the interface will pop up as shown in Figure 9. Fully press down on the foot pedal until it displays 100%, and then release the pedal. The calibration screen should show it is successful.

### 4.5 Restore the factory setting

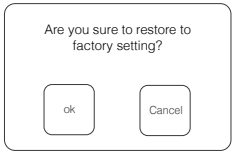



Figure 13



Enter the setting interface, and click the restore factory settings touch button to enter the restore factory settings interface for confirmation. In confirming interface, click OK, the interface shown in Figure 10 will pop up. Select “OK” to restore to original factory settings parameters or select “Cancel” to quit restoring factory settings.

### 4.6 Language selecting interface

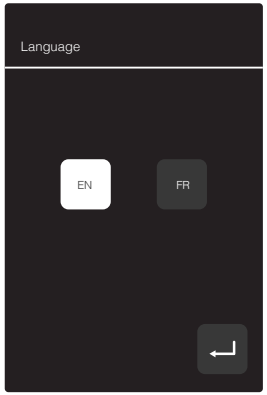



Figure 14

Enter the setting interface, click the language selection touch button so that the interface shown in Figure 11 will pop up, and select the desired language. When you click “OK”, the corresponding language selected will save. When you select “Cancel”, the original language setting would be maintained.

## 5. Function and operation

5.1 Install the product correctly according to the product installation steps, and the operator should face the screen.

5.2 Turn on the power switch on the main unit, the screen will display and enter the main control interface (Figure 15).


Figure 15

5.3 The electric motor operation is controlled by the foot pedal of the dental chair.

5.4 Make sure that the pedal control calibration is performed before using the unit for the first time.


Figure 16



5.5 Icon description

| Icon | Name | Function |
|---|---|---|
| P1 P2 P3 | Mode | Select the preset fixed speed. (P1/P2/P3) |
| 16:1 1:1 1:5 | Speed ratio | Select the speed of contra angle (16:1/1:1/1:5) |
| + | Speed adjustment | Increase speed |
| − | Speed adjustment | Decrease speed |
| | Store | Store the set parameters |
| | Forward/Reverse rotation | Control the forward and reverse rotation of motor |
| SPEED 150000 RPM | Speed | Display the set operating speed |
| | Setting | Enter the setting interface |
| DEMO | Manual mode | Enter manual mode adjusting interface |
| CAL | Calibration | Enter calibration interface |
| RESET | Restore factory setting | Restore the system to factory setting |
| LANG | Language selection | Enter language setting interface |
| | Exit | Exit the submenu setting mode |
| | Start | Start to activate the motor |
| | Stop | Stop the motor |
| | LED | Turn on/off the motor LED |
| 150000 RPM | Speed adjustment | Set the speed using the Speed Adjustment Key (+/-). |

**5.6 Basic function adjustment on main unit controlling interface**

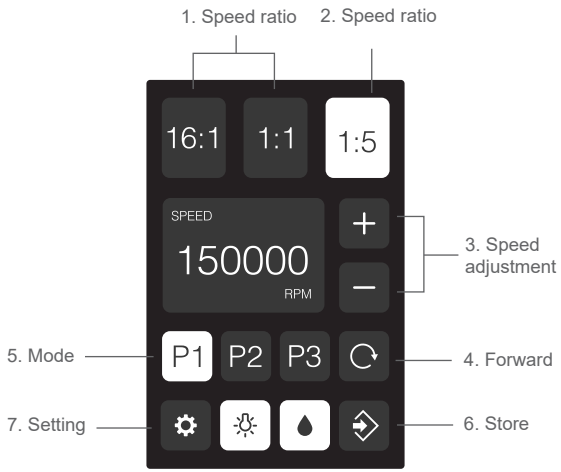



Figure 17

5.6.1 Select speed ratio by touching key “1”. The color of the key will change when touching the key.
5.6.2 Control the ON and OFF of LED through key “2”.
5.6.3 Adjust the speed of the motor by using key “3”. Increase or decrease speed with key “+” and “-”.
5.6.4 Set forward rotation or reverse rotation by using key “4”.
5.6.5 Set the working speed of corresponding mode by touching key “5”.
5.6.6 Store the set speed ratio, speed, mode, forward rotation/reverse rotation, and the ON/OFF of LED by touching key “6”.
5.6.7 Enter setting interface by touching key “7”.

**5.7 Basic function adjustment in setting interface**



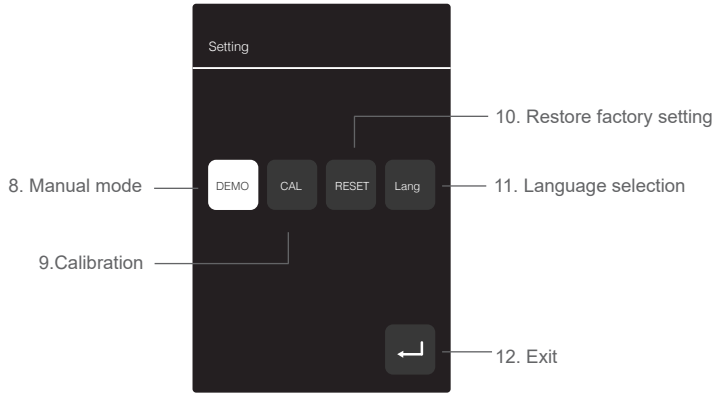



Figure 18

5.7.1 In setting interface, touch key “8” Manual Mode key to enter demo mode interface. Under the demo mode state, the motor rotation can be directly controlled without foot pedal. Touch Speed Ratio key to select corresponding speed ratio. Touch Speed key to adjust the speed. Touch Start key, Stop key, Forward/Reverse Rotation key, and LED key to control the output of motor. Touch the Exit key to exit the demo mode interface.
5.7.2 In setting interface, touch key “9” Calibration key, touch Start key, and the interface shown in Figure 8, 9 will pop up. Fully step on the foot pedal until the screen displays 100%, and release the foot pedal to finish the calibration.
5.7.3 In setting interface, touch key “10” Restore Factory Setting key, click OK to enter interface shown in Figure 10, and decide whether to restore the factory setting by clicking “OK” or “Cancel” key.
5.7.4 In setting interface, touch key “11” to enter interface shown in Figure 7 for language selection.
5.7.5 In the setting interface, touch key “12” to exit submenu setting mode.

## 6. Safety precautions

⚠ **Cautions:**

6.1 For repairs and purchase of spare parts, please contact our authorized dealers.
6.2 The accuracy of the speed monitoring depends on the high precision performance of the handpiece installed on the micro motor.
To ensure the accuracy of the display speed, please use Beyes electric handpieces with the motor.

6.3 Read this operating manual before use and fully understand the functions of each part.
6.4 Check the operating status of the dental electric motor before use to confirm that there is no abnormality.
6.5 Test the dental electric motor before use to ensure accurate operation.
6.6 If the dental electric motor is permanently malfunctioning (excessive vibration, noise and heat generation, etc.), please immediately close it and return it to the authorized dealer.
6.7 Clean the control panel with a damp cloth and turn off the power before cleaning.

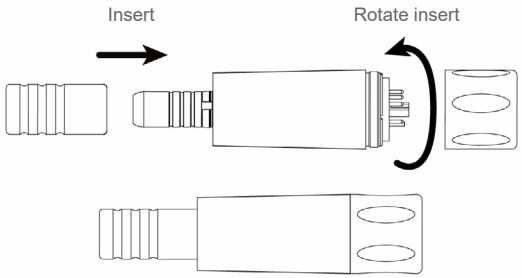
## 7. Cleaning, disinfection and sterilization

**7.1 Cleaning**
Cleaning the motor surface with a water-absorbent cloth to remove any liquid residue from the motor surface and wipe it back and forth 5 times.

**7.2 Disinfection**
Use a chlorine-free disinfectant to wipe the motor. It is recommended to use Cavicide disinfectant or 75% alcohol, but do not soak the motor in the disinfectant.

**7.3 Drying**
Drying should be conducted after cleaning and disinfection. It is recommended to use compressed air to dry.

**7.4 Sterilization**
Before sterilization, first remove the motor, install a sterile plug and a sterile aluminum sleeve, place the motor in a high pressure steam sterilization bag, and seal it. And then sterilize it under the temperature and pressure of 134°C (273 ° F) and 2.0 bar ~ 2.3 bar (0.20MPa ~ 0.23MPa) ) for not less than 4 minutes. Drying is needed after sterilization, The sterilization of the dental contra-angle handpiece is detailed in the instruction manual of the contra-angle handpiece.



The installation is complete



⚠ **Warning:**

1. Install disinfection plug and disinfection aluminum sleeve at the motor interface before sterilization. The installation method is shown above.
2. Before sterilization, the motor cord should be removed.
3. Do not lubricate the inside of the motor.
4. The motor can be sterilized repeatedly for at least 250 cycles of sterilization.
5. Sterilize the motor only. Do not autoclave (or any high temperature sterilization) control box, AC adaptor, or motor cord.

## 8. Troubleshooting

| Fault | Cause | Solution |
|---|---|---|
| Error 01 | The input voltage is too high or too low. | Check the circuit connection |
| Error 02 | Motor abnormality | Check whether the motor is well connected or replace the motor. |

If the problem still cannot be solved, please contact our local distributor or our company.

**Note:** The user must use the original accessories. Please contact our local dealer or the company for purchase. It is forbidden to use related accessories of other brands, so as to avoid damage to the electric motor or other dangers.

## 9. Storage and transport

9.1 The device should be handled carefully and lightly. Be sure that it is far from the vibration, and installed or kept in a cool, dry, and ventilated place.
9.2 Do not store the machine together with articles that is poisonous, combustible, caustic, or explosive.
9.3 This machine should be stored in a room where the relative humidity is10%~93%, atmospheric pressure is 70kPa~106kPa, and the temperature is -20°C~+55°C.
9.4 Excessive impact and shake should be prevented during transport. Lay it carefully and lightly.
9.5 Do not put it together with dangerous goods during transport.
9.6 Avoid being exposed to sun, rain, and snow during transport.

## 10. After-sales service

Beyes Dental Canada Inc. is responsible for repairs under the warranty period

if the device cannot work normally due to a quality defect. The device must be registered with Warranty Card from the date of invoice to the original user. Please refer to the Warranty Card for details of warranty.

## 11. Environment protection

| Part | Toxic or harmful substances or elements | | | | | |
|---|---|---|---|---|---|---|
| | (Pb) | (Hg) | (Cd) | (Cr6+) | (PBB) | (PBDE) |
| Main unit | ○ | ○ | ○ | ○ | ○ | ○ |
| Motor handpiece | ○ | ○ | ○ | ○ | ○ | ○ |
| Dental contra-angle | ○ | ○ | ○ | ○ | ○ | ○ |
| Mechanical elements, including bolts, nuts, washers, etc. | ○ | ○ | ○ | ○ | ○ | ○ |

○: Indicates that the content of the toxic substance in all homogeneous materials of the part is below the limit requirement stipulated in SJ/T-11363-2006 Limit Requirements for Toxic and Hazardous Substances in Electronic Information Products.
×: indicates that the content of the toxic substance in at least one of the homogeneous materials of the part exceeds the limit requirement specified in SJ/T-11363-2006. (This product meets EU RoHS environmental protection requirements; there is currently no mature technology in the world to replace or reduce the content of lead in electronic ceramics, optical glass, steel and copper alloy.) According to the Administrative Measures on the Restriction of the Use of Hazardous Substances in Electric and Electronic Products and the Regulations on the Management of the Recycling of Waste Electric and Electronic Products and related standards, please observe the safety and precautions of the products, and after use, please recycle or dispose this product after according to the methods in local laws and regulations.

## 12. Symbol instruction




Date of manufacture


Manufacturer


Type BF applied part


Class II equipment


Used indoor only


Follow Instructions for Use

Humidity limitation

Temperature limitation

Atmospheric pressure for storage

Can be autoclaved

Ordinary equipment


Appliance compliance WEEE directive


Cautions


Warning

## 13. EMC-Declaration of conformity

The device has been tested and homologated in accordance with EN 60601-1-2 for EMC. This does not guarantee in any way that this device will not be affected by electromagnetic interference Avoid using the device in high electromagnetic environment.
The Maxso® E800B Electric Micromotor System (Built-in) is suitable for Professional healthcare facility environment and so on.

**Warning:**
Don't near active HF surgical equipment and the RF shielded room of a Maxso® E800B Electric Micromotor System (Built-in) for magnetic resonance imaging, where the intensity of EM disturbances is high.

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

**Warning:**
Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

⚠ **Warning:**

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

NOTE The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

**If Any:** a list of all cables and maximum lengths of cables (if applicable), transducers and other ACCESSORIES that are replaceable by the RESPONSIBLE ORGANIZATION and that are likely to affect compliance of the ME EQUIPMENT or ME SYSTEM with the requirements of Clause 7 (EMISSIONS) and Clause 8 (IMMUNITY). ACCESSORIES may be specified either generically (e.g. shielded cable, load impedance) or specifically (e.g. by MANUFACTURER and EQUIPMENT OR TYPE REFERENCE).

**If Any:** the performance of the ME EQUIPMENT or ME SYSTEM that was determined to be ESSENTIAL PERFORMANCE and a description of whatthe OPERATOR can expect if the ESSENTIAL PERFORMANCE is lost or degraded due to EM DISTURBANCES (the defined term "ESSENTIAL PERFORMANCE" need not be used).

1. All necessary instructions for maintaining BASIC SAFETY and ESSENTIAL PERFORMANCE with regard to electromagnetic disturbances for the excepted service life.
2. Dental Electric Motor do not contain magnetically sensitive electronic components and circuitry.
3. Guidance and manufacturer's declaration -electromagnetic emissions and Immunity.

Technical Description Concerning Electromagnetic Emission

Table 1: Declaration - electromagnetic emissions

| **Guidance and manufacturer's declaration - electromagnetic emissions** | |
|---|---|
| **Emissions test** | **Compliance** |
| RF emissions CISPR 11 | Group 1 |
| RF emissions CISPR 11 | Class B |
| Harmonic emissions IEC 61000-3-2 | Class A |
| Voltage fluctuations/flicker emissions IEC 61000-3-3 | Complies |



Table 2: Guidance and manufacturer's declaration - electromagnetic Immunity

| **Guidance and manufacturer's declaration - electromagnetic Immunity** | | |
|---|---|---|
| **Immunity Test** | **IEC 60601-1-2 Test level** | **Compliance level** |
| Electrostatic discharge (ESD) IEC 61000-4-2 | ±8 kV contact<br>±2 kV, ±4 kV, ±8 kV, ±15 kV air | ±8 kV contact<br>±2 kV, ±4 kV, ±8 kV, ±15 kV air |
| Electrical fast transient/burst IEC 61000-4-4 | Power supply lines: ±2 kV input/ output lines: ±1 kV 100 kHz repetition frequency | Power supply lines: ±2 kV input/ output lines: ±1 kV 100 kHz repetition frequency |
| Surge IEC 61000-4-5 | line(s) to line(s): ±0.5, ±1 kV<br>line(s) to earth: ±0.5, ±1, ±2 kV | line(s) to line(s): ±0.5, ±1 kV |
| Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | 0% 0.5 cycle<br>At 0º, 45 º, 90 º, 135 º, 180 º, 225 º, 270 º and 315 º<br>0% 1 cycle And<br>70% 25/30 cycles Single phase: at 0<br>0% 250 cycle | Electrostatic discharge (ESD) IEC 61000-4-2 |
| Power frequency magnetic field IEC 61000-4-8 | 30 A/m<br>50Hz/60Hz | 30 A/m<br>50Hz/60Hz |
| Conducted RF IEC61000-4-6 | line(s) to line(s): ±0.5, ±1 kV<br>line(s) to earth: ±0.5, ±1, ±2 kV | 150KHz to 80MHz: 3Vrms<br>6Vrms (in ISM bands) 80% Am at 1kHz |
| Radiated RF IEC61000-4-3 | 3 V/m<br>80 MHz – 2,7 GHz<br>80 % AM at 1 kHz | 3 V/m<br>80 MHz – 2,7 GHz<br>80 % AM at 1 kHz |
| Proximity magnetic fields IEC 61000-4-39 | 30 kHz: 8A/m<br>134.2 kHz: 65A/m<br>13.56 MHz: 7.5A/m | Not application |
| **NOTE** UT is the a.c. mains voltage prior to application of the test level. | | |

Table 3: Guidance and manufacturer's declaration - electromagnetic Immunity

| Guidance and manufacturer's declaration - electromagnetic Immunity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Test Frequency (MHz) | Band (MHz) | Service | Modulation | Maximum Power(W) | Distance (m) | IEC 60601 -1-2 Test level (V/m) | Compliance level (V/m) |
| Radiated RF IEC61000-4-3 (Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment) | 385 | 380 – 390 | TETRA 400 | Pulse modulation 18 Hz | 1,8 | 0,3 | 27 | 27 |
| | 450 | 430 – 470 | GMRS 460, FRS 460 | FM ± 5 kHz deviation 1 kHz sine | 2 | 0,3 | 28 | 28 |
| | 710 | 704 – 787 | LTE Band 13, 17 | Pulse modulation 217 Hz | 0,2 | 0,3 | 9 | 9 |
| | 745 | | | | | | | |
| | 780 | | | | | | | |
| | 810 | 800 – 960 | GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5 | Pulse modulation 18 Hz | 2 | 0,3 | 28 | 28 |
| | 870 | | | | | | | |
| | 930 | | | | | | | |
| | 1720 | 1700 – 1990 | GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS | Pulse modulation 217 Hz | 2 | 0,3 | 28 | 28 |
| | 1845 | | | | | | | |
| | 1970 | | | | | | | |
| | 2450 | 2400 – 2570 | Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7 | Pulse modulation 217 Hz | 2 | 0,3 | 28 | 28 |
| | 5240 | 5100 – 5800 | WLAN 802.11 a/n | Pulse modulation 217 Hz | 0,2 | 0,3 | 9 | 9 |
| | 5500 | | | | | | | |
| | 5785 | | | | | | | |



Table 4: Guidance and manufacturer's declaration - electromagnetic Immunity

| Guidance and manufacturer's declaration - electromagnetic Immunity | | |
|---|---|---|
| **Test frequency** | **Modulation** | **IMMUNITY TEST LEVEL (A/m)** |
| 30 kHz | CW | 8 |
| 134,2 kHz | Pulse modulation 2,1 kHz | 65[b] |
| 13,56 MHz | Pulse modulation 50 kHz | 7,5[b] |
| a) The carrier shall be modulated using a 50% duty cycle square wave signal.<br>b) r.m.s., before modulation is applied. | | |

## 14. Beyes Limited Warranty Statement

From purchase date, based on warranty registration, we will repair this equipment free of charge if there are any quality issues experienced. Please refer to the warranty card for the warranty period.

**14.1 SCOPE OF WARRANTY**
BEYES Dental Canada Inc. warrants to the original retail purchaser that it will be at BEYES option to repair or replace components of the dental products manufactured by BEYES (except for components not warranted under 'Exclusions') that are defective in material or workmanship under normal use and service. BEYES' obligation under this limited warranty is limited to the repair or replacement of the applicable components. This limited warranty shall only apply to defects that are reported to BEYES within the applicable warranty period and which, upon examination by Beyes, prove to be defective. This warranty extends only to the first retail purchaser of a product and is not transferable or assignable. Replacement components or products may be used and/or refurbished components or products, provided they are of like quality and specifications as new components or products.

**14.2 APPLICABLE WARRANTY PERIOD**
The applicable warranty period, measured from the date of invoice to the original user, shall be warranted for a period of 25 months.

**14.3 EXCLUSIONS**
This limited warranty does not cover and BEYES shall not be liable for the following;
1. Defects, damage or other conditions caused, in whole or in part, by misuse, abuse, negligence, alteration, accident, freight damage, negligent storage, tampering or failure to seek and obtain repair or replacement in a timely manner;
2. Products which are not installed, used, and properly cleaned and maintained as required or recommended in the BEYES 'Installation' and/or 'Installation/ Operation Manual' for the applicable product, including the specified structural and operational environment conditions and electrical power requirements;
3. Products considered to be of a consumable or sterile nature;
4. Accessories or parts not manufactured by BEYES;
5. Charges by anyone for adjustments, repairs, replacement parts, installation or other work performed upon or in connection with such products which are not expressly authorized in writing in advance by BEYES;
6. Costs and expenses of routine maintenance and cleaning;
7. Representations and warranties made by any person or entity other than BEYES;
8. Matching of color, grain or texture except to commercially acceptable standards;
9. Changes in color caused by natural or artificial light;
10. Custom manufactured products;
11. Alterations or modifications to the product by any person or entity other than BEYES;
12. Products that would otherwise by covered under Sections 1 and 2 of this limited warranty, but are acquired: (i) from a person or entity that is not BEYES or one of its authorized dealers; or (ii) from a BEYES dealer that is not authorized to sell the product at issue in the geographic territory where the purchaser is located, or is not authorized to sell the product at issue within the medical, animal health or dental market, as the case may be, in which purchaser intends to use the product.

**14.4 EXCLUSIVE REMEDY; CONSEQUENTIAL DAMAGES DISCLAIMER**
Beyes' obligation under this limited warranty is the repair or replacement of defective parts. Beyes shall not be liable for and hereby disclaims any direct, special, indirect, incidental, exemplary or consequential damages or delays, including, but not limited to, damages for loss of profits or income, loss of use, downtime, cover and employee or independent contractor wages, payments and benefits.

**14.5 WARRANTY DISCLAIMER**
This limited warranty is beyes only warranty and is in lieu of all other warranties, express or implied. Beyes makes no implied warranties of any kind including any implied warranties of merchantability or fitness for a particular purpose. This warranty is limited to the repair or replacement of defective parts.

**14.6 STATUE OF LIMITATIONS**
No actions may be brought against beyes for breach of this limited warranty, or implied warranty, if any, or for any other claims arising out of or relating to the products, more than ninety (90) days following expiration of the limited warranty period.

Beyes®

*The Next Standard*

Federal law restricts this device to sale by or on the order of a dentist, physician, or any other practitioner licensed by the law of the states in which he or she practices to use or order the use of this device.

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