

# OPERATION AND MAINTENANCE INSTRUCTION MANUAL

## AEU-7000E-70V & AEU-7000E Implant/Endodontic Dental Systems



**Aseptic**

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INDICATIONS FOR USE:

The AEU-7000E-70V & AEU-7000E are drive systems for instruments and tools used in dentistry for implant/surgical procedures and endodontic procedures. The systems include an irrigation supply and a wide range of user controls designed to provide precision drilling during osteotomy preparation and implant placement, or endodontic therapy.



CLASSIFICATIONS:

- Class I Equipment
- Type BF Equipment
- Ordinary Equipment - degree of protection against ingress of water
- Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.




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CLASSIFIED



41EJ

MEDICAL ELECTRIC EQUIPMENT  
WITH RESPECT TO ELECTRIC  
SHOCK, FIRE AND MECHANICAL  
HAZARDS ONLY IN ACCORDANCE  
WITH UL 60601-1 (First Edition) and  
CAN/CSA C22.2 No. 601.1-M90

RX: FEDERAL LAW RESTRICTS THIS DEVICE TO  
SALE BY OR ON THE ORDER OF A DENTIST

INFORMATION CONCERNING THE ACCURACY AND  
PRECISION OF THIS PRODUCT MAY BE OBTAINED  
UPON REQUEST BY CONTACTING ASEPTICO AT THE  
ADDRESS SHOWN ON THIS PAGE.

This device has been tested and found to comply with the emissions requirements of IEC 60601-1-2:2001-09. These requirements provide reasonable protection against harmful electromagnetic interference in a typical medical installation. However, high levels of radio-frequency (RF) emissions from electrical devices, such as cellular phones, may disrupt the performance of this device. To mitigate disruptive electromagnetic interference, position this device away from RF transmitters and other sources of electromagnetic energy.

Your new Aseptico AEU-7000E-70V & AEU-7000E Systems are two of the finest dual-function implant/endodontic motor systems available to the dental profession. The systems combine a powerful brushless 40,000 RPM motor with a wide range of handpiece ratios and precision torque controls to make the perfect dental systems for both implant and endodontic applications. The AEU-7000E-70V is equipped with a multi-function foot control and the AEU-7000E comes with a basic On/Off foot switch.

## *Congratulations!*

This System is engineered to provide many years of reliable service. Please read the instructions provided in this manual to receive the best and longest service from your Aseptico equipment.

Separate manuals may be provided to cover the operation and maintenance of handpieces or other accessories for your unit.

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### **PACKAGE CONTENTS:**

- Electronic Control Console, P/N 120330
- AE-230M-40 Autoclavable 40K Brushless Micromotor
- Autoclavable Motor Holder, P/N 461561, with Attaching Bracket, P/N 461562
- AE-70V2 Variable Speed Foot Control (AEU-7000E-70V only)
- AE-7PM On/Off Foot Control (AEU-7000E only)
- Dynamometer Adapter, P/N 461558
- AE-23 Autoclavable Irrigation Tubing Set
- AE-23-PUMP Peristaltic Pump Tubing Set (10 Pieces)
- AHP-07K Cannula Clip Set w/ Y-connector
- Irrigation Bag Hanger Rod, P/N 461541
- Power Cord

### **PURCHASED SEPARATELY:**

- AHP-85MB-X or AHP-85MB-CX 20:1 Reduction Contra-Angle Handpiece
- AHP-64 1:1 Straight Handpiece
- AHP-77W 1:2 Speed Increasing Handpiece
- AHP-65TI 1:3 Speed Increasing Handpiece
- AHP-88MN 8:1 Reduction Latch-Head Contra Angle Handpiece
- AHP-88MNP 8:1 Reduction Push-Button Head Contra Angle Handpiece
- Replacement AE-23 Autoclavable Irrigation Tubing Set
- Replacement AE-23-PUMP Peristaltic Pump Tubing (10 Pieces)
- Replacement AE-23-BOT Autoclavable Irrigation Tubing Set for Bottles
- MC-7000E Memory Card

To prevent injury to people and damage to property, please heed relevant warnings and remarks. They are marked as follows:

**WARNING:** Serious injury or death may result if ignored.

**CAUTION:** Damage to property or the environment may result if ignored.

**NOTE:** Important additional information and hints.



## **SAFETY PRECAUTIONS:**

Aseptico accepts no liability for direct or consequential injury or damage resulting from improper use, arising in particular through the non-observance of the operating instructions, or improper preparation and maintenance of this product.

**WARNING:** The Systems are supplied Non-Sterile! Before first use, and before each patient use thereafter, sterilize specified components as recommended in the Sterilization and Maintenance section.

**WARNING:** Use for intended purposes only. Failure to observe the operating instructions may result in the patient or user suffering serious injury or the the product being damaged, possibly beyond repair. Before using this product, make sure that you have studied and understood the operating instructions.

**CAUTION:** Federal law restricts this device to sale by or on the order of a dentist.

**CAUTION:** Use of other dental accessories or sub-assemblies from third-party manufacturers is the sole responsibility of the user.

**CAUTION:** All repairs are to be performed by authorized Aseptico service personnel only.

**WARNING:** Always follow these guidelines when operating the unit:

- Never touch drills, burs, files, or other handpiece tips when they are still rotating.
- Handpieces should only be attached when the motor has stopped running.

**WARNING:** Do not install where there is a risk of an explosion. The Systems are not intended for operation in the presence of flammable anesthetics or gases.

**WARNING:** In order to ensure the accuracy of torque and speed it is recommended that calibration be performed for each change of handpiece used for torque controlled operations, or daily if the same handpiece is used.

**WARNING:** All handpieces have inherent inefficiencies that can lead to torque variations. To ensure torque accuracy, it is essential to routinely calibrate a handpiece daily, even if using the same handpiece, or whenever a handpiece is changed. If further verification of torque accuracy is desired, then it is suggested that a torque wrench be used.

- WARNING:** Always comply with the handpiece and implant/file manufacturers' instructions regarding maximum speeds, torques, forward and reverse directions, and use of all instrumentation, drills, burs, etc., used in endodontics, implantology, and other oral surgery applications.
- CAUTION:** The irrigation supply system is designed for use with a saline solution or sterile water. For implants, use only suitable irrigants as recommended by the manufacturer's instructions.
- CAUTION:** Connect mains power cable to a properly grounded outlet only.
- CAUTION:** The motor is sensitive to shock and may be damaged if dropped or impacted against a hard surface.
- WARNING:** Do not disassemble or alter the System motor, console, or foot switch.
- CAUTION:** Use only appliance cord Type C13, 10A per IEC / EN 60320-1. Note: North America, Denmark, Australia, and New Zealand may require hospital grade plugs. Consult local codes.
- WARNING:** Never use damaged or worn files as they may separate in the root canal.
- WARNING:** Do not use this device in conjunction with an electric scalpel or on patients with pacemakers.
- CAUTION:** Never connect or disconnect the bag spike to the irrigation bag over the console. Water spilled onto the console can damage the unit.
- CAUTION:** It is recommended to always have the patient wear a rubber dam during endodontic procedures.
- CAUTION:** Not every implant contra angle is rated up to 80 Ncm of torque. Before using this motor, contact your handpiece supplier to verify the appropriate torque range of the implant contra angle(s) you intend to use on this device. Do not adjust the torque above the supplier-recommended rating or there is a risk of damage to the internal parts of your handpiece (which is not covered under warranty). Aseptico recommends and distributes AHP-85MB-series 20:1 handpieces, which are rated up to 80Ncm.

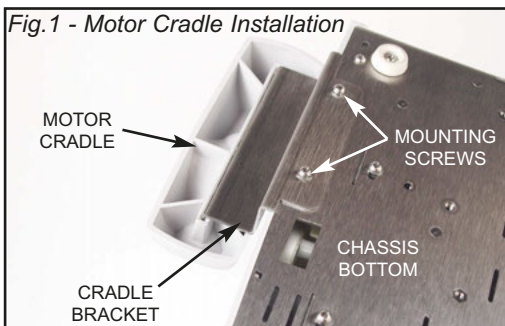
## SETTING UP THE UNIT:

1. Unpack the Console.
2. The autoclavable Motor Cradle can be attached to either side of the Console or placed flat on any adjacent tabletop surface or tray. To install the Cradle, mount the Cradle Bracket into the holes provided on the bottom of the Chassis with the two screws provided (see Figure 1). Align the slot on the bottom of the Cradle with the mounting rail on the Bracket and snap into place.
3. Attach the remote power cord to the back of the console (see Figure 2) and plug into a hospital-grade grounded electrical receptacle.

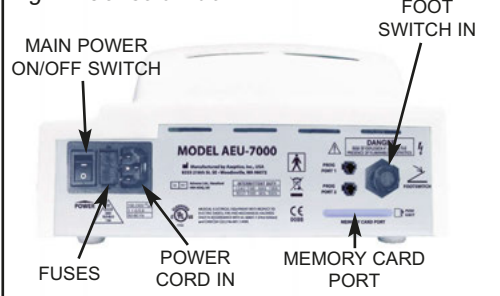
Confirm that the type of cord plug cap is correct for the country of usage and carries the proper certification markings.

4. Connect the AE-230M-40 Motor/Cord to the receptacle on the lower right front of the console (Figure 3) by aligning the red dot on the cord connector with the arrow at the top of the receptacle, then gently pushing the connector straight in to lock into place. Remove cord by pushing inward slightly on the strain relief, then grasping connector body near the red dot and pulling the connector straight out of receptacle.

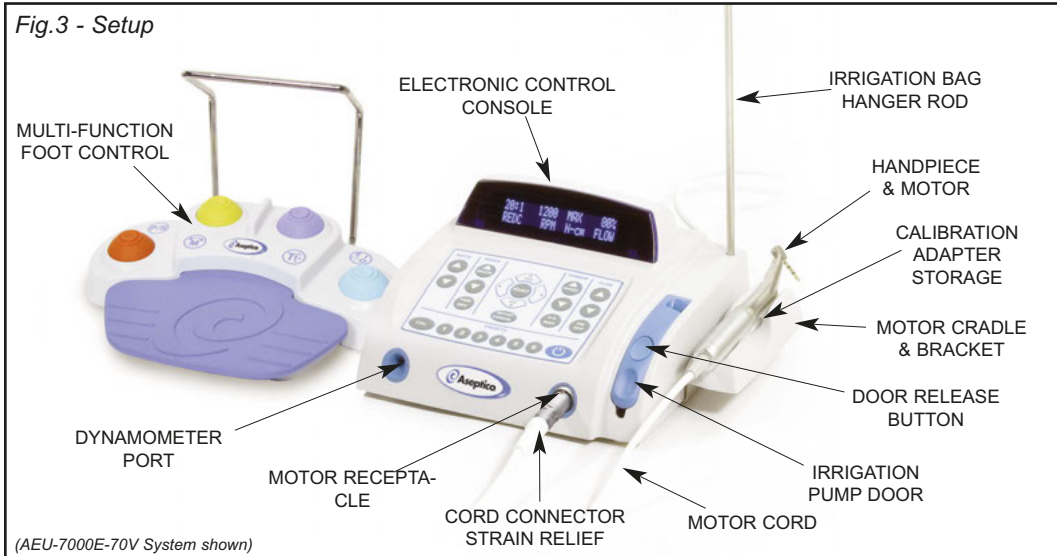
*Fig.1 - Motor Cradle Installation*



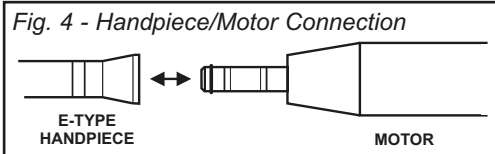
*Fig.2 - Console Back*



*Fig.3 - Setup*



5. Attach the appropriate "E-Type" handpiece to the motor as shown in Figure 4.



6. Insert bag hanger rod into socket on the top of the unit. Note keyway in slot.
7. Attach the supplied foot control to the connector on the back of unit marked "Footswitch" (see Figure 2). Refer to page 22 for foot control descriptions and operation.
8. Install irrigation tubing set into pump door as described below (see Figure 5):

**CAUTION:** Never connect or disconnect the bag spike to the irrigation bag over the console. Water spilled onto the console can damage the unit.

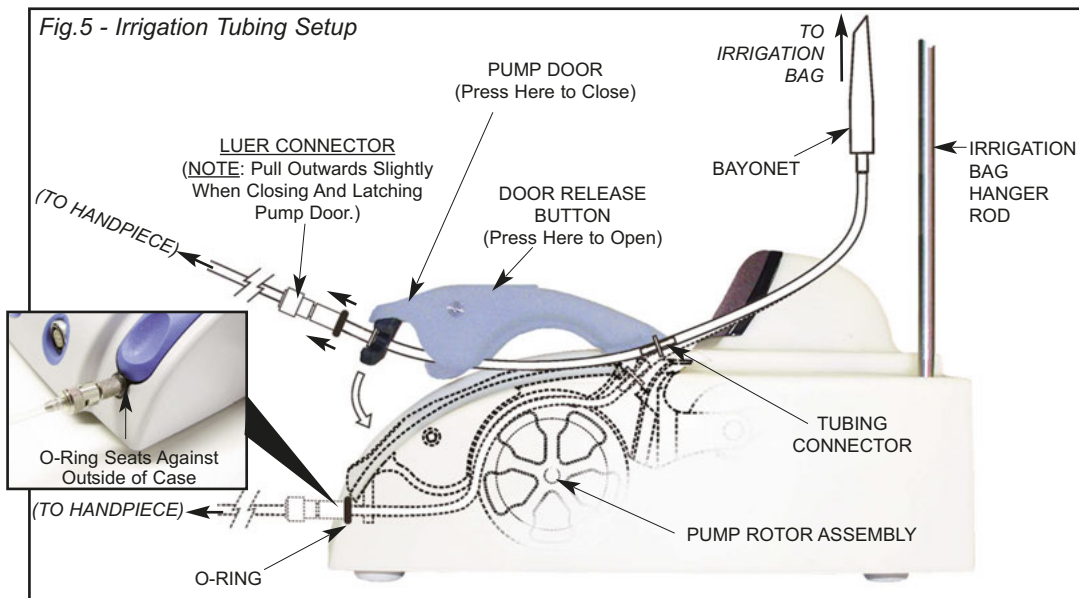
- a. Open pump door by pressing on door release button.

- b. Install Pump Tubing Assembly into pump door as shown in Figure 5. Install tubing connector into the slot located on the back end of pump door. Then, pull the Luer connector toward the front end of door and slide connector into the slot located on the front of the pump door.

- c. Grasp Luer connector and gently pull outwards, then close and latch the pump door. Slowly release tension on the Luer connector and allow the O-Ring to seat against the outside of the case as shown in Figure 5. Ensure that the tubing is not pinched.

- d. Route the remaining length of tubing to the handpiece and connect to the irrigation accessory tubing provided with the handpiece. Secure the tubing to the motor cord with clip set provided.

- e. Remove the protective cover from the irrigation bag and insert the bayonet into the I.V. port. Hang the bag from the hanger rod.





## CONTROL PANEL FUNCTIONS:

### 1. Main Power Switch:

Located on back of console (see Figure 2). Controls main power On/Off to the console. The System will initialize with Implant Preset-1 active when: unit is first turned On; after factory settings are recalled; or, after reprogramming the unit with memory card.

### 2 Control Panel 'Standby' Button:

*Turns control panel on and off. Reactivates System from Sleep Mode.*



a. Press the Standby button to turn console key pad and display On or Off. When console is turned On, display should light up and show the default startup screen. If the console was turned Off using the Standby button, or if the unit has entered Sleep Mode, press the Standby button again or

press the foot pedal to wake up the System and return it to the last state used.

### 3 Mode Select Button:

Selects **Implant** or **Endodontic** modes of operation. Also used during Setup to SELECT menu options.



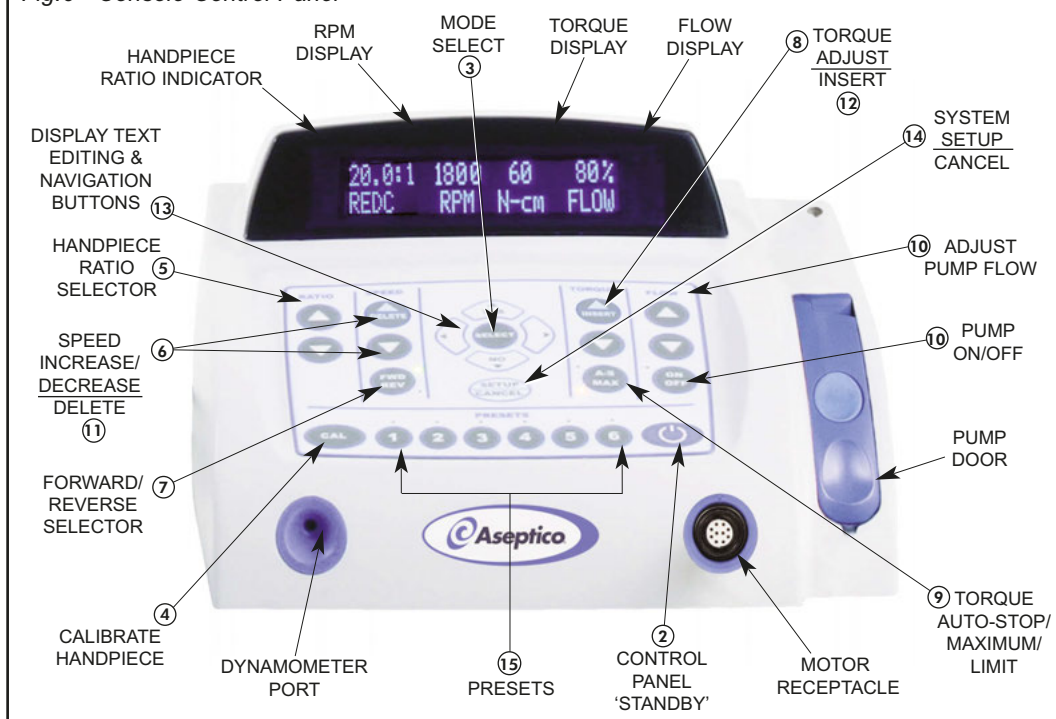
a. Press SELECT button. The System will toggle between **Implant** or **Endodontic** modes and briefly display a message announcing the change. Button also used to SELECT features/functions during Setup.

### 4 Calibration (CAL):

Activates the Integrated Calibration and Dynamometer Program. Allows user to calibrate the System to match the characteristics of the handpiece being used.



Fig.6 - Console Control Panel





## 5 Handpiece Ratio Selector:

Allows user to select ratio of handpiece. Ensures accurate display of speed and torque levels.



a. Press the handpiece Ratio selector Up/Down buttons until the Handpiece Ratio Indicator matches the ratio indicated on the handpiece being used. The available ratios are 20:1, 1:1, 1:2, 1:3 and 1:5 in the **Implant** mode, and 8:1, 1:1, 1:2, 1:3 and 1:5 in the **Endo** mode. The relative speed ranges with a 40K motor are shown in Figure 7.

Fig.7

SPEED RANGES		
20:1	15 - 2,000	RPM
8:1*	38 - 5,000	RPM
1:1**	300 - 40,000	RPM
1:2	2,000 - 80,000	RPM
1:3	3,000 - 120,000	RPM
1:5	5,000 - 200,000	RPM

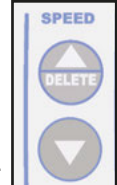
\* 38 - 1,300 RPM if Endo ASR active.  
 \*\* 300 - 10,000 RPM if Endo ASR active, and 1,000 - 40,000 in Implant Mode.

**Note:** Prior to calibrating a handpiece on the System, the user must preselect the ratio of the handpiece via the Ratio Up/Down buttons. The System can then perform a "Free-Run" calibration on both increaser and reduction handpieces, then a dynamometer ("Dyno") calibration on reduction handpieces only, with ratios of 4:1 to 16:1 in **Endo**, and 16:1 to 32:1 in **Implant**. The "Dyno" calibration includes a ratio and torque test. After completing the "Dyno" calibration on a reduction handpiece, the System will automatically set the precise handpiece ratio found during these calibration measurements. For example, after calibrating a 20:1 handpiece and saving the results, the display will add a decimal to the ratio indicator (ex:

"20:1", to "20.7:1"), indicating the precise ratio measured. This also serves as an indicator that the handpiece has been calibrated.

## 6 Speed:

Allows user to select desired speed (RPM) for motor/handpiece.



a. Press the Speed Up button to increase speed or the Speed Down button to decrease speed.

**Note:** For display accuracy, the Ratio Selector must exactly match the ratio of the handpiece being used. The System will do this automatically after calibration. In some cases after calibration, the ratio displayed will differ from the handpiece rating, indicating the handpiece's actual characteristics.

## 7 Forward/Reverse (FWD/REV):

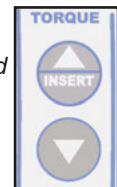
Sets the rotational direction of the handpiece.



a. The green LED next to the FWD/REV button illuminates when forward rotation is selected. The amber LED indicates reverse rotation. When the Reverse Tone feature is activated (ref. Setup Option No. 3, page 20), an audible beep will also indicate reverse rotation.

## 8 Torque Adjustment:

Allows the user to select torque limits in Newton•centimeter increments in **Implant** Mode, and gram-centimeter in **Endo** Mode.



a. Press the Torque Adjustment Up/Down buttons until the desired torque level is indicated on the Display. **Note:** This feature is not available when in "MAX" Mode - see paragraph ⑨, page 8 for details.

## CONTROL PANEL FUNCTIONS - Cont'd:

### 9 Torque Modes (A-S / MAX):

*Allows the user to select from one of three torque control modes: Auto-Stop (**Implant Mode**) or Auto-Stop-Reverse (**Endo Mode**), Maximum, or Torque Limiting.*



#### a. Auto-Stop Torque Mode (**Implant Mode Only**)

- The user can specify an Auto-Stop torque mode when in **Implant Mode** by depressing the Auto Stop ("A-S/MAX") button until the green LED illuminates, then selecting the desired torque level via the Torque Up/Down buttons. The handpiece will stop operating one second after the Auto-Stop torque limit is reached. During System setup (ref. page 20), warning tones can be enabled to sound when the actual torque level reaches 75% and 100% of the specified Auto-Stop limit.

#### b. Auto-Stop-Reverse Torque Mode (**Endo Mode Only**)

- The user can specify an Auto-Stop-Reverse torque mode when in **Endodontic Mode** by depressing the ("A-S/MAX") button until the green LED illuminates, then selecting the desired torque level via the Torque Up/Down buttons. The System will automatically alternate between forward and reverse rotation in an attempt to free the instrument. Whenever the System is operating in this mode, "ASR" will be indicated on the Display directly below the Ratio Indicator. During System setup (ref. page 20), warning tones can be enabled to sound when the ASR torque limit is reached.

c. **MAX Torque Mode** - Depressing the MAX ("A-S/MAX") button until the amber LED illuminates will set the torque to its maximum level. The handpiece will only operate up to this specified torque level.

No incremental adjustments are allowed when in "MAX" mode.

**NOTE:** MAX Mode is only available with 1:1 and reduction handpieces.

d. **Torque Limit Mode** - Depressing the Torque Modes Button (A-S/MAX) until neither LED is lit will limit torque to the value set via the torque Up/Down buttons. The handpiece will slow down when a load greater than the torque limit is applied. Once the load is removed, the handpiece will return to target speed. The Torque Limit Mode is the only Mode available for increaser handpieces.

### 10 Irrigation Pump Controls (FLOW):

*Allows user to turn pump On/Off and select Flow rate.*



a. Depress the pump On/Off button to activate/deactivate the pump. The green LED will illuminate when activated.

b. Flow rate can be adjusted in 10% increments, from 10% to 100%, by pressing the Flow Up/Down buttons.

c. Irrigant will flow when the footswitch is depressed.

**Note:** The irrigation pump can provide irrigant to the handpiece at a maximum flow rate of 140 ml/min.

### 11 DELETE:

*Allows user to delete specific characters when editing the Preset button settings on the display.*



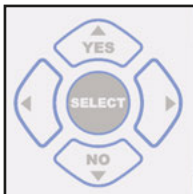
**⑫ INSERT:**

Allows user to enter a blank space into characters when editing the Preset button settings on the display.



**⑬ Display Edit & Navigation:**

Allows user to navigate through text characters when modifying presets. SELECT button saves reconfigured settings. YES/NO buttons allow user to interact with visual prompts on the display (refer to advanced editing functions on pages 13 and 15 for more information).



**⑭ SETUP / CANCEL:**

**SETUP** enables the System's setup menu. Allows the user to select/configure setup options via prompts from the display (see "System Setup" Section on page 20 for complete setup instructions).



**CANCEL** exits the menu item without changing setup settings (= Escape).

**⑮ PRESETS 1 - 6:** (Note: Green LEDs indicate active Preset.)

Allows the user to store and



quickly access up to 6 different **Implant** or **Endodontic** configurations. Each preset can be reprogrammed by the user with different **Implant/Endo** operating parameters and File Series (**Endo Mode** only). When a preset button is pressed, its "Label" (name and settings) are automatically displayed. Green LEDs indicate which preset is active.

a. For **Implant** applications, Preset buttons 1 - 6 are preprogrammed at the factory for

the following procedures:

**Preset 1 - Site Preparation**

**Preset 2 - Pilot Drill**

**Preset 3 - Finish Drill / Reamer**

**Preset 4 - Tap Forward**

**Preset 5 - Reverse Tap**

**Preset 6 - Install Implant / Abutment**

**NOTE:** Refer to **Implant Preset Section** on page 13, and Chart 1 on page 14, for complete Preset editing instructions and operating parameters.

b. For **Endodontic** applications, Preset buttons 1 - 6 are preprogrammed with the following DENTSPLY Tulsa Dental Specialties File Series\*:

**Preset 1:** Pathfile® Files

**Preset 2:** ProTaper Next™ Files

**Preset 3:** ProTaper® Universal Files

**Preset 4:** VORTEX® 04 & 06 Taper Files

**Preset 5:** GT® Series 20, 30, 40 Files

**Preset 6:** GT® Series X™ (4) Files

Press desired Preset button once to select. (**NOTE:** The message "Loading Default Series" will appear briefly whenever any **Endo** Preset is accessed for the first time, or after factory defaults have been restored.) Then press the button repeatedly to cycle through all the files in Files Series. Use Up/Down arrow buttons to view operating parameters for the specific File displayed.

**NOTE:** Refer to **Endo Preset Section** on page 15 for complete Preset editing instructions. See Charts 2 and 3, pages 18 & 19, for File Presets and File Library.

**IMPORTANT:** The above default Preset settings will be restored whenever the unit's factory default settings are recalled or when the unit has been reprogrammed with new software. All user customized presets will be lost.

\* The File Series listed above are registered trademarks of DENTSPLY Tulsa Dental Specialties.

## OPERATION:

**GETTING STARTED:** After the unit has been set up and the user has become familiar with the System's control panel functions, there are two different modes that can be used to begin operation:

- **Manual Mode** - By default, the unit is always in manual mode. At any time, the user can adjust the torque, speed, irrigation flow, and other parameters, using the control panel keypad. *Refer to Manual Mode instructions on this page.*
- **Preset Mode** - The System provides six preset memory locations that can be used to quickly retrieve preferred operating settings. Recalling these Presets saves time when preparing for different **Implant** and **Endodontic** procedures. *Refer to **Implant Presets** on page 13, and **Endo Presets** on page 15.*

### Start-Up:

1. Turn the main power switch on the back of console to the 'ON' position. The display on the console will turn on and the default Start-Up Screen will be displayed for a few seconds. The Start-Up Screen displays the current software version of the unit. (This version number will change with each software upgrade.) Following the Start-Up Screen display, the settings for Preset 1 will initialize and display when: the main power to the console is turned 'ON' for the first time; the factory settings are recalled; or, the software is updated. Otherwise, the settings that were last used will initialize.

Depressing the blue Standby button on the keypad will enable/disable the "Standby" mode, which turns the display On/Off and places the unit into a temporary "Power Save" mode. Pressing the Standby button a second time or pressing the foot pedal will reactivate the display.

When the Sleep Mode timer is enabled (see System Setup Options on Page 21),

pressing the Standby button will return the System to the last state used. **NOTE:** The unit is in Sleep Mode when the Preset LEDs blink consecutively.

### Manual Mode:

1. Select the handpiece ratio that matches the handpiece being used. *For more information, refer to paragraph ⑤, page 7.*
2. Insert a file, bur, drill, or calibration adapter into the handpiece.
3. Calibrate the attached handpiece to ensure exact measurements. *Refer to paragraph 9, page 11 for complete calibration instructions.*
4. Set the desired speed (RPM) for the handpiece using the "SPEED" control buttons.
5. Set the desired torque for the handpiece using the "TORQUE" control buttons:

**a. Auto-Stop and Auto-Stop Reverse Torque Modes** - When in **Implant Mode**, the user can specify an Auto-Stop torque limit by depressing the Auto-Stop button ("A-S/MAX") until the green LED illuminates, then selecting the desired torque level. The handpiece will stop operating one second after the user reaches the Auto-Stop torque limit. The handpiece will resume operation once the foot switch is released and reapplied.

When in **Endo Mode**, the user can specify an Auto-Stop-Reverse torque mode by depressing the ("A-S/MAX") button until the green LED illuminates, then selecting the desired torque level via the Torque Up/Down buttons. The System will automatically alternate between forward and reverse rotation in an attempt to free the instrument. Whenever the System is operating in this mode, "ASR" will be indicated on the Display directly below the Ratio Indicator.

Optional torque warning tones can be enabled during System Setup (ref. Setup instructions in paragraph 2, page 20) which warn the user when the handpiece torque

level reaches 75% and 100% of the Auto-Stop limit. Auto-Stop is the suggested mode when tapping and threading implants.

**b. MAX Torque Mode** - Depressing the MAX ("A-S/ MAX") button until the amber LED illuminates will set the torque limit to its maximum level. The handpiece will only operate up to this manufacturer-specified torque level. The handpiece will stop and then restart once the load is removed.

**CAUTION:** Because of the unrestrained torque characteristics inherent in MAX Torque Mode operation, it is recommended that MAX Mode be used only when doing an osteotomy. It is also recommended that the user perform a complete calibration of the handpiece before operating in MAX Mode and/or adhere to the torque recommendations of the handpiece manufacturer.

**c. Torque Limit Mode** - Depressing the Torque Modes ("A-S/MAX") button until neither the green nor amber LED is lit will enable Torque Limiting. In this mode, the handpiece will only operate up to the torque limit set via the Torque Up/Down buttons. The handpiece will slow down when a load greater than the torque limit is applied. Once the load is removed, the handpiece will return to target speed. This is the only Torque Mode available for increaser handpieces.

6. Turn irrigation pump 'ON' (green LED illuminates) and select the irrigation flow rate for the handpiece using the "FLOW" Up/Down buttons.
7. Select the desired forward or reverse direction for the handpiece using the "FWD/REV" button (green/amber LED will illuminate).
8. Depress footswitch to activate the motor/

handpiece and irrigation pump. Releasing the footswitch will stop the motor/handpiece and pump.

9. **Calibration of Handpiece** - Because variations in handpiece efficiency can cause inaccuracies in torque, it is essential to routinely calibrate the handpiece/motor. This will maintain optimal performance from the System. It is recommended to calibrate the System daily, even if using the same handpiece, or whenever a handpiece is changed.

Handpiece calibration consists of either a one-part or two-part procedure, depending on which type handpiece is used:

**Part-1: "Free Run" Calibration -**

Performed on both increaser and reduction type handpieces.

**Part-2: Dynamometer "Dyno"**

**Calibration** - Performed only on reduction type handpieces (4:1 to 32:1 ratios). This procedure includes the "Free Run" Calibration above, plus a Ratio and Torque "Dyno" test.

**Part-1 Free Run Calibration:**

Follow steps **a.** - **c.** below to perform the Part-1 Free Run calibration procedure:

**a.** Preselect ratio of the handpiece, using the Ratio Up/Down buttons on the console keypad. **IMPORTANT:** This step must be performed prior to calibrating each handpiece. **NOTE:** The System supports reduction handpieces with ratios ranging from 4:1 to 32:1. Prior to calibrating any reduction handpieces within this range, preselect the 20:1 (**Implant Mode**), or 8:1 (**Endo Mode**), ratio setting.

**b.** Insert a file, bur, drill, or the calibration adapter (for reduction handpieces only) into the handpiece, as shown in Figure 8.

## OPERATION - Cont'd:



c. Press and release the Calibration (CAL) button to activate the integrated “Free Run” Calibration program. Follow the prompts on the display:

**Add Handpiece To Motor**  
**Press 1> Next 3> Exit**

By pressing Preset Button #1, the System will automatically perform the Free Run Calibration test on either increaser or reduction type handpieces. **NOTE:** Pressing Button #3 at any time during the calibration process will exit the procedure, however, no calibration settings will be saved into the System.

**Free Run In Progress**  
**Please Wait ...**

If either type of handpiece fails the “Free Run” test, the following message will be displayed:

**Calibration Failed !**  
**Press 1> Retry 3> Exit**

Press Preset Button #1 to retry the test, or Button #3 to exit the test. **NOTE:** Repeated failures during this Free Run stage of the calibration procedure can indicate a damaged or defective handpiece or motor. Exit test and inspect and/or repair handpiece/motor before next use.

If a 1:1 or increaser handpiece passes the Free Run calibration test, the following message will be displayed:

**Calibration Successful !**  
**The Result is Saved**

**NOTE:** This concludes Part-1 Calibration testing (1:1 and increaser handpieces only).

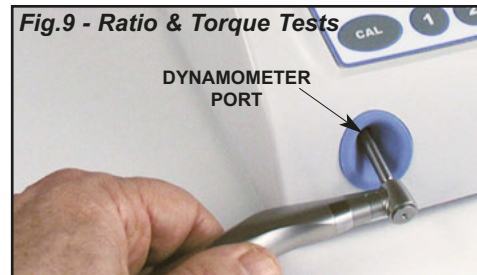
### Part-2 Calibration Procedure:

If a reduction handpiece passes the “Free Run” calibration test above, the System automatically advances to the Part-2 “Dyno” calibration procedure. The following message will be displayed:

**Put Handpiece Into Dyno**  
**Press 1> Next 3> Exit**

Follow steps d, e, f, to perform Part-2 of the calibration procedure:

d. Continue to follow the prompts, performing the ratio and torque tests with the handpiece plugged into the dynamometer port as shown in Figure 9.



**Ratio Test In Progress**  
**Please Wait ...**

**Torque Test In Progress**  
**Please Wait ...**

**Note:** If the handpiece is not properly connected to the dynamometer, the screen will display the following message:

**Dynamometer Error !**  
**Press: 1> Retry 3> Exit**

e. After a successful calibration of a reduction handpiece, the screen will display the following example message:

**Ratio = 20.07 Eff = 86%**  
**Press 2> Save 3> Exit**

f. Press Preset Button #2 to save results. This will save the exact ratio found by the calibration measurements into the settings for that reduction handpiece.



## OPERATION - IMPLANT Presets:



The six preset memory buttons are preprogrammed at the factory with the default **Implant Presets** shown in Chart 1, page 14.

### 10. Activating the Preset:

a. Press the desired preset button and the display will indicate the "Label" (name) and preset number as shown in the example below:

**SITE PREPARATION**  
Preset 1

b. The display will then show the System operating parameters for that preset. The LED located above the preset button will illuminate, indicating which preset is activated and ready to use.

**Note:** If a Preset is activated and its settings are changed in any way, the Preset's LED will turn off, signifying that the unit has switched back to the Manual Mode of operation.

### 11. Editing Implant Presets:

All six preset memory buttons can be edited by the user with new settings, at any time. These new settings will overwrite the existing settings, including factory defaults. In addition, the "Labels" (names) for each of the presets can be edited by the user for easy identification.

**Note:** At any time during the following editing process, the CANCEL button can be pressed to return to the operation screen without saving changes.

#### Step 1:

Adjust each of the Ratio, Speed, Torque, Flow, Rotation Direction, and Pump On/Off settings to the desired values via the control panel buttons (refer to descriptions on pages 6 - 9).

#### Step 2:

Press and hold any of the Preset buttons 1 through 6, to save the new, modified settings into that particular button.

#### Step 3:

A display prompt then asks the user:

**Preset - (X)**  
**Save Settings? YES/NO**

Press the 'Yes' Button to confirm the save.



#### Step 4:

A display prompt then asks the user:

**Preset - (X)**  
**Edit Label? YES/NO**

Press the 'Yes' Button to edit the Label.



An editing "Help" message displays briefly:

**Preset - (X)**  
**Edit Label With Arrows**

#### Step 5:

Use the Left or Right arrow buttons to move the display cursor left/right under the top line of text characters.



Position the cursor under the specific character that needs to be changed:

**"NAME X"**  
**Press SELECT To Save**

#### Step 6:

Use the Up or Down ("Yes" or "No") arrow buttons to change the character to the desired letter, symbol, or numerical value:

**"NAME Y"**  
**Press SELECT To Save**



Repeat Steps 5 & 6 above for all remaining text characters that require edits.



## OPERATION - IMPLANT Presets - Cont'd:

**Note:** To enter a blank space into the text line, place the cursor under the character and press the INSERT button.



**Note:** To delete a character in the text line, place the cursor under the character and press the DELETE button.



### **Step 7:**

Press SELECT button to save Label name.



The display will confirm saving the new Label then automatically display the new settings so their values can be confirmed:

(New Label Name)  
Preset (X) - Label Saved

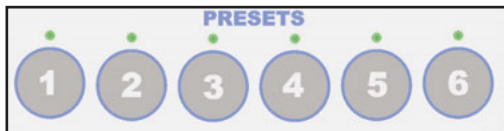
Check new settings for accuracy.

**Important:** When the factory default settings are restored or recalled, or when the unit has been reprogrammed with new software, any previous user-defined settings will be overwritten.

## Chart 1 - Implant Default Presets

PRESET	NAME (Label)	RATIO	SPEED	DIRECTION	TORQUE	FLOW
1	Site Preparation	1:2	60,000	FWD	4.95 N•cm, Torque Limit	100%
2	Pilot Drill	20:1	1,200	FWD	MAX	80%
3	Finish Drill / Reamer	20:1	800	FWD	MAX	80%
4	Tap Forward	20:1	15	FWD	25 N•cm, Auto Stop	30%
5	Tap Reverse	20:1	35	REV	35 N•cm, Auto Stop	Off
6	Install Implant / Abutment	20:1	15	FWD	32 N•cm, Auto Stop	Off

## OPERATION - ENDODONTIC Presets:



The six preset memory buttons are preprogrammed at the factory with the default **Endodontic** File Presets shown in Chart 2, page 18.

### 12. Activating the Preset:

- a. Press the desired preset button and the display will indicate the File Series and "Label" (name) of the first File in that Series. Preset #1 example:

**PATHFILE ALL**  
**PATHFILE ALL FILES**

**Note:** The following message will appear briefly whenever any **Endo** Preset is accessed for the first time, or after factory defaults have been restored:

**Loading Default Series**  
**Please Wait...**

- b. The LED located above the selected preset button will illuminate, indicating which preset is activated.
- c. Press the Preset button repeatedly to cycle through the individual Files in its Series. When the desired File is displayed, its operating parameters are activated and ready to use.
- d. To view the operating parameters for the selected File, press the Navigation Up/Down Buttons to scroll to the handpiece ratio, RPM, torque, auto-stop, and pump settings. Example:

**8:1 500 700 OFF**  
**ASR RPM g-cm FLOW**



### 13. Editing Endodontic Presets:

All six preset memory buttons can be modified by the user with new files and operating parameters at any time. These new settings will overwrite the existing settings, including factory defaults. In addition, the new Preset Files' names can be edited by the user for easy identification. Different File Series from the File Library (refer to Chart 3, page 19) may also be loaded into the Preset.

**Note:** If a Preset is activated and its settings are changed in any way, the Preset's LED will turn off, signifying that the unit has switched back to the Manual Mode of operation.

#### a. Saving Current Settings

**Note:** At any time during the following editing process, the CANCEL button can be pressed to return to the operation screen.

#### Step 1:

Using the control panel buttons (refer to descriptions on pages 6 - 9), adjust each of the Ratio, Speed, Torque, Flow, and Pump On/Off settings to the desired values. Example (Preset #1):

**8:1 1000 600 OFF**  
**ASR RPM g-cm FLOW**

#### Step 2:

Press and hold any of the six Preset buttons to save the new, modified settings into that particular button.

#### Step 3:

A prompt instructs the user to use the UP/Down arrow buttons to view choices, then press SELECT or CANCEL. Example:

**Use ▲▼ To View Choices, Then..**  
**Save Current Settings**

## OPERATION - ENDODONTIC Presets, Cont'd:

### Step 4:

Press **SELECT** button to save settings or **CANCEL** out of the menu.



### Step 5:

A new Preset entitled "User Defined Preset" warns the user that this Step will overwrite the current Preset, then asks the user to continue (**SELECT**), or **CANCEL**:

**User Defined Preset**  
**(Scrolling "Warning" Message)**

### Step 6:

Press **SELECT** button to Continue.



### Step 7:

A display prompt then asks the user:

**Preset - (X)**  
**Edit Label? YES/NO**

Press the 'Yes' Button to edit the Label.



An editing "Help" message displays briefly:

**Preset - (X)**  
**Edit Label With Arrows**

### Step 8:

Immediately after the "Help" message, the current File name is displayed. Use the Left or Right arrow buttons to move the display cursor left/right under the top line of text. Position the cursor under the specific character that needs to be changed. Example:



**"FILE NAME XYZ"**  
**Press SELECT To Save**

### Step 9:

Use the Up or Down ("Yes" or "No") arrow buttons to change the character to the desired letter, symbol, or numerical value.



Example:

**"FILE NAME YYZ"**  
**Press SELECT To Save**

Repeat Steps 8 & 9 for all remaining text characters that require edits.

**Note:** To enter a blank space into the text line, place the cursor under the character and press the **INSERT** button.



**Note:** To delete a character in the text line, place the cursor under the character and press the **DELETE** button.



### Step 10:

Press **SELECT** button to save new name.

### Step 11:

A "Help" message confirms the save:

**User Defined Preset**  
**Setting Saved**

Immediately after the "Help" message, the new File name is displayed and ready to use:

**User Defined Preset**  
**"NEW FILE NAME"**

## b. Load File Series

**Note:** At any time during the following loading process, the **CANCEL** button can be pressed to return to the operation screen.

### Step 1:

Press and hold the particular Preset button that a new File Series is to be loaded into. The following prompt appears:

**Use ▲▼ To View Choices, Then..**  
**Save Current Settings**

The scrolling “Help” message instructs the user to press the Up/Down arrow buttons to view two different menu choices:

**Save Current Settings**  
or  
**Load File Series**



**IMPORTANT:** Whenever the unit’s factory default settings are recalled, or when the unit has been reprogrammed with new software, the default File Series will be restored to all the Preset buttons. All user customized File Series Presets will be lost.

### **Step 2:**

Scroll down to the “Load File Series” choice and press **SELECT** button.



### **Step 3:**

A prompt instructs the user to use the UP/Down arrow buttons to scroll to the new File Series that is to be loaded, or **CANCEL** out of the menu. Example (first Series in File Library):

**SELECT Series Or CANCEL**  
**PATHFILE ALL**      ▲▼

Scroll through the entire File Library Series (shown in Chart 3, page 19) until the desired Series appears.

### **Step 4:**

Press **SELECT** button to load Series into Preset.

A “Wait” message appears briefly, while the File Series is loaded.

**SELECT Series Or CANCEL**  
**Please Wait...**

The newly loaded File Series and File names are then displayed. Example (first File Series and File from Library):

**PATHFILE ALL**  
**PATHFILE ALL FILES**

The new File Series is now loaded and ready to use.

**NOTE:** Refer to Charts 2 and 3, on pages 18 and 19, for File Presets and the entire File Library.

## OPERATION- *Chart 2 ENDODONTIC Default File Presets*

<b>Preset Button 1: PathFile</b>	
DENTSPLY Tulsa Dental Specialties PathFile® All Files	
File #1:	PathFile (All Files)
<b>Preset Button 2: ProTaper Next</b>	
DENTSPLY Tulsa Dental Specialties ProTaper Next™ Files	
File #1:	ProTaper Next High All
File #2:	ProTaper Next Low All
<b>Preset Button 3: ProTaper Universal</b>	
DENTSPLY Tulsa Dental Specialties ProTaper® Universal Files	
File #1:	ProTaper Universal S1 & SX
File #2:	ProTaper Universal S2 & F1
File #3:	ProTaper Universal F2, F3, F4, F5
File #4:	ProTaper Universal Retreatment D1 & D2
File #5:	ProTaper Universal Retreatment D3
<b>Preset Button 4: Vortex 04 &amp; 06</b>	
DENTSPLY Tulsa Dental Specialties Vortex® 04 & 06 Taper Files	
File #1:	Vortex Orifice (All)
File #2:	Vortex 04, .35 through .50 taper
File #3:	Vortex 04, .25 and .30 taper
File #4:	Vortex 04, .15 and .20 taper
File #5:	Vortex 06, .35 through .50 taper
File #6:	Vortex 06, .25 and .30 taper
File #7:	Vortex 06, .15 & 20 taper
<b>Preset Button 5: GT 20 30 40</b>	
DENTSPLY Tulsa Dental Specialties GT® Series 20, 30, 40 Files	
File #1:	Accessory 90, 70, 50, 35/.12 taper
File #2:	GT Yellow 20 Series, .10 and .08 taper
File #3:	GT Yellow 20 Series, .06 and .04 taper
File #4:	GT Blue 30 Series, .10 and .08 taper
File #5:	GT Blue 30 Series, .06 and .04 taper
File #6:	GT Black 40 Series, .10 and .08 taper
File #7:	GT Black 40 Series, .06 and .04 taper
<b>Preset Button 6: GTX 4</b>	
DENTSPLY Tulsa Dental Specialties GT® Series X™ (4) Files	
File #1:	SERIES X 20 .04 Taper & .06 Taper
File #2:	SERIES X 30 .04 Taper & .06 Taper
File #3:	SERIES X 40 .04 Taper & .06 Taper
File #4:	SERIES X 30 .08 Taper SERIES X 40 .08 Taper

### IMPORTANT

The console will drive the files as close to the library requested speed and torque as the handpiece parameters will allow.

*NOTE: The File Series listed in Chart 2 are registered trademarks of DENTSPLY Tulsa Dental Specialties.*

Chart 3 - ENDODONTIC File Library Settings

[1] PATHFILE® ALL			
File Size	Speed (RPM)	Torque (g-cm)	
PATHFILE (ALL FILES)	300	120	
PATHFILE® INDIV FILES			
File Size	Speed (RPM)	Torque (g-cm)	
PATHFILE SIZE 19	300	120	
PATHFILE SIZE 16	300	120	
PATHFILE SIZE 13	300	120	
[2] PROTAPER NEXT®			
File Size	Speed (RPM)	Torque (g-cm)	
PT NEXT HIGH ALL	300	520	
PT NEXT LOW ALL	300	200	
PROTAPER® UNIVERSAL			
File Size	Speed (RPM)	Torque (g-cm)	
PROTAPER S1 & SX	300	520	
PROTAPER S2 & F1	300	150	
PROTAPER F2, F3, F4, F5	300	312	
PROTAPER D1 & D2	500	312	
PROTAPER D3	500	150	
PROTAPER® UNIVERSAL I			
File Size	Speed (RPM)	Torque (g-cm)	
PROTAPER S1 & SX	300	520	
PROTAPER S2 & F1	300	150	
PROTAPER F2, F3, F4, F5	300	312	
PROTAPER® RETREAT			
File Size	Speed (RPM)	Torque (g-cm)	
PROTAPER D1	500	312	
PROTAPER D2	500	312	
PROTAPER D3	500	150	
VORTEX® 04/06 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
VORTEX ORIFICE (ALL)	500	520	
VORTEX 04/35-04/50	500	132	
VORTEX 04/25 & 04/30	500	104	
VORTEX 04/15 & 04/20	500	75	
VORTEX 06/35-06/50	500	368	
VORTEX 06/25 & 06/30	500	290	
VORTEX 06/15 & 06/20	500	195	
VORTEX® ORIFICE OPEN			
File Size	Speed (RPM)	Torque (g-cm)	
VORTEX ORIFICE (ALL)	500	520	
VORTEX® 04 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
VORTEX 04/35-04/50	500	132	
VORTEX 04/25 & 04/30	500	104	
VORTEX 04/15 & 04/20	500	75	

VORTEX® 06 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
VORTEX 06/35-06/50	500	368	
VORTEX 06/25 & 06/30	500	290	
VORTEX 06/15 & 06/20	500	195	
GT® SERIES 20, 30, 40			
File Size	Speed (RPM)	Torque (g-cm)	
ACC 90, 70, 50, 35/12	500	700	
GT YEL 20/10 & 20/08	300	312	
GT YEL 20/06 & 20/04	300	174	
GT BLU 30/10 & 30/08	300	347	
GT BLU 30/06 & 30/04	300	208	
GT BLK 40/10 & 40/08	300	405	
GT BLK 40/06 & 40/04	300	230	
GT® Acc. & 20 SERIES YELLOW			
File Size	Speed (RPM)	Torque (g-cm)	
ACC 90, 70, 50, 35/12	500	700	
GT YEL 20/10 & 20/08	300	312	
GT YEL 20/06 & 20/04	300	174	
GT® Acc. & 30 SERIES BLUE			
File Size	Speed (RPM)	Torque (g-cm)	
ACC 90, 70, 50, 35/12	500	700	
GT BLU 30/10 & 30/08	300	347	
GT BLU 30/06 & 30/04	300	208	
GT® Acc. & 40 SERIES BLACK			
File Size	Speed (RPM)	Torque (g-cm)	
ACC 90, 70, 50, 35/12	500	700	
GT BLK 40/10 & 40/08	300	405	
GT BLK 40/06 & 40/04	300	230	
GT SERIES X® (3)			
File Size	Speed (RPM)	Torque (g-cm)	
GT-X 20/04 & 20/06	300	175	
GT-X 30&40 /04 & /06	300	210	
GT-X 30/08 & 40/08	300	350	
GT SERIES X® (4)			
File Size	Speed (RPM)	Torque (g-cm)	
SERIES X 20/04 20/06	300	175	
SERIES X 30/04 30/06	300	210	
SERIES X 40/04 40/06	300	210	
SERIES X 30/08 40/08	300	350	
GT®/PROFILE .04			
File Size	Speed (RPM)	Torque (g-cm)	
ACC 90, 70, 50, 35/12	500	700	
GT 20/10 & GT 20/08	300	312	
GT 20/06 & PF 35/04	300	132	
PF 30/04 & PF 25/04	300	104	
PF 20/04	300	75	

[3] PROFILE® S29® 04 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
PF S29 04 SIZE 7 & 6	300	132	
PF S29 04 SIZE 5 & 4	300	104	
PF S29 04 SIZE 3 & 2	300	75	
[3] PROFILE® S29® 06 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
PF S29 06 SIZE 7 & 6	300	368	
PF S29 06 SIZE 5 & 4	300	290	
PF S29 06 SIZE 3 & 2	300	195	
PROFILE® ORIFICE OPEN			
File Size	Speed (RPM)	Torque (g-cm)	
PF OO SIZE 6 & 5	300	510	
PF OO SIZE 4 & 3	300	400	
PF OO SIZE 2 & 1	300	256	
PROFILE® ISO 04 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
PF ISO 40/04 & 35/04	300	132	
PF ISO 30/04 & 25/04	300	104	
PF ISO 20/04 & 15/04	300	75	
PROFILE® ISO 06 TAPER			
File Size	Speed (RPM)	Torque (g-cm)	
PF ISO 40/06 & 35/06	300	368	
PF ISO 30/06 & 25/06	300	290	
PF ISO 20/06 & 15/06	300	195	
ITR EMULATION SERIES			
File Size	Speed (RPM)	Torque (g-cm)	
ACC	500	1000	
MAX	300	625	
CORONAL	300	250	
MID	300	150	
APICAL	300	70	
[4] LEXICON® GATES V.1.20			
File Size	Speed (RPM)	Torque (g-cm)	
LEXICON GATES #6	3000	1000	
LEXICON GATES #5	3000	750	
LEXICON GATES #4	3000	700	
LEXICON GATES #3	3000	400	
LEXICON GATES #2	3000	240	
LEXICON GATES #1	3000	150	
[4] PRO-POST® DRILLS			
File Size	Speed (RPM)	Torque (g-cm)	
PRO-POST DRILLS	2000	1000	
TF®			
File Size	Speed (RPM)	Torque (g-cm)	
TF	500	400	

K3/K3™ XF			
File Size	Speed (RPM)	Torque (g-cm)	
K3/K3XF	360	300	
MTWO®1			
File Size	Speed (RPM)	Torque (g-cm)	
MTWO 10/04 PURPLE	280	120	
MTWO 15/05 WHITE	280	130	
MTWO 20/06 YELLOW	280	210	
MTWO 25/06 RED	280	230	
MTWO 30/05 BLUE	280	120	
MTWO 35/04 GREEN	280	120	
MTWO 40/04 BLACK	280	160	
MTWO 45/04 WHITE	280	160	
MTWO 50/04 YELLOW	280	200	
MTWO 60/04 BLUE	280	300	
MTWO®2			
File Size	Speed (RPM)	Torque (g-cm)	
MTWO 10/04 PURPLE	280	120	
MTWO 15/05 WHITE	280	130	
MTWO 20/06 YELLOW	280	210	
MTWO 25/06 RED	280	230	
MTWO 30/06 BLUE	280	120	
MTWO 35/06 GREEN	280	100	
MTWO 40/06 BLACK	280	170	
MTWO 25/07 RED	280	200	
MTWO® RETREATMENT			
File Size	Speed (RPM)	Torque (g-cm)	
MTWO R15/05 WHITE	280	30	
MTWO R25/05 RED	280	120	

[1] PathFile® torque is set at user's preference.  
[2] Recommended torque is between 200–520 g-cm.

[3] "S29" represents SERIES 29®.  
[4] Lexicon® Gates and Pro-Post® Drills are not compatible with 16:1 reduction handpieces, which have a maximum speed of 1800 RPM.

## SYSTEM SETUP

The **SETUP** Program allows the user to select/configure setup options via display prompts. The option selections and corresponding instructions are shown below:



SETUP OPTIONS - Implant & Endo	
Description	
1. Recall Factory Setup	
2. Torque Warning Tone	
3. Reverse Warning Tone	
4. Auto Stop Mode	◀ <b>Endodontic Mode Only</b>
5. Sleep Mode	
6. Variable Speed Pedal	
7. Save Your Settings	

1. Press and hold the SETUP/CANCEL button to enter SETUP Mode. The following prompt will be displayed:

**Recall Factory Setup?**  
Press: YES / NO / CANCEL

- a. Press "Yes" to recall the factory setup menu. The following prompt will display:

**Are You Sure?**  
Press: YES / NO / CANCEL

- b. To return the System preset buttons to their factory default settings, press YES.

**Important:** Any customized presets will be lost when factory settings are recalled.

- c. To continue with System Setup (and keep all customized settings), press NO.
- d. A brief message announces which Setup Mode, **Implant** or **Endo**, is being activated.

**Setup Only For**  
**Implant (or Endo) Mode**

2. The user is prompted next to enable the Torque Warning Tone feature. This feature

warns the user with an audible signal when a specified Torque Limit is reached. Warning signals are provided differently, depending upon which operating mode is activated. When in **Implant** Mode, a separate signal is emitted when the torque reaches each of the two major thresholds:

- 1.) 75% of specified Torque Limit - Emits a fast beeping signal.
- 2.) 100% of specified Torque Limit - Emits a slow beeping signal.

When in **Endo** Mode, a single signal is emitted when the torque reaches the specified limit:

- 1.) 100% of specified Torque Limit - Emits a fast beeping signal.

The following prompt will display:

**Torque Warning Tone?**  
Press: YES / NO / CANCEL

- a. To enable the Warning Tone, press Yes.
  - b. To disable the Warning Tone, press No.
3. The next prompt provides a Reverse Warning Tone that alerts the user whenever the handpiece is rotating in the reverse (counterclockwise) direction:

**Reverse Warning Tone?**  
Press: YES / NO / CANCEL

- a. To enable the Reverse Tone, press Yes.
- b. To disable the Reverse Tone, press No.

**NOTE:** The Reverse Warning Tone emits a beeping signal with a slow 1/2-second cadence that is easily distinguishable from the two Torque Warning Tones in Step #2 above.

**IMPORTANT:** If both Torque and Reverse Warning Tone options are enabled and activated at the same time (e.g., user reaches 75% of torque while running in reverse), the Torque warning tones will override the Reverse warning — only the Torque signal will be heard.



#### 4. Auto Stop Mode (for Endo Mode Only):

When the Auto Stop Reverse (ASR) feature is enabled, rotation of the handpiece will automatically stop and reverse when the selected torque limit is reached. Do not release the foot pedal when this occurs. Keep the foot pedal activated and the Endo System will automatically alternate between forward and reverse rotation in an attempt to free the instrument.

When the Auto Stop Manual (ASM) feature is enabled, forward rotation of the handpiece will automatically stop when the selected torque limit is reached. Upon releasing and then reapplying pressure to the foot control, the handpiece will rotate in the reverse direction. The handpiece will continue to rotate in reverse until the foot control is released once again. If pressure is then reapplied to the foot control, the handpiece will return to forward rotation. The following prompt will display:

**Auto Stop Mode:**  
**1=ASR 2=ASM / CANCEL**

- a. To enable Auto-Stop Reverse (ASR), press Preset Button #1 .
  - b. To enable Auto-Stop Manual (ASM), and disable ASR, press Preset Button #2.
5. The next prompt provides a choice of two different time delays before the System enters Sleep Mode, wherein the Display and Keypad time out and become inactive:

**Sleep Mode**  
**1=15 2=30 3=Off / CANCEL**

- a. To enable a 15-minute delay, press Preset Button #1.

- b. To enable a 30-minute delay, press Preset Button #2.

- c. To disable Sleep Mode (Display stays on), press Preset Button #3.

**NOTE:** The system default is the 30-minute delay.

6. This prompt allows the user to choose whether the Variable Speed Foot Control operates in Variable Mode ('0' to 'set' speed), or in On/Off Mode (runs only at 'set' speed):

**Variable Pedal Mode**  
**1=Var 2=On/Off / CANCEL**

- a. To enable Variable ("Var") Mode, press Preset Button #1.
- b. To enable "On/Off" Mode, press Preset Button #2.

**NOTE:** The system defaults are Variable when in **Implant** Mode, and On/Off when in **Endo** Mode.

7. This final prompt asks if the new settings are to be saved:

**Save Your Settings ?**  
**Press: YES / NO**

- a. To save new settings, press YES.
- b. To discard your new settings and keep the previous settings, press NO.

**NOTE:** The System will automatically Exit the "SETUP" menu at the completion of this Step.

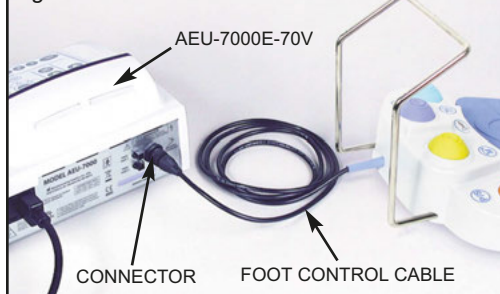
## VARIABLE-SPEED FOOT CONTROL OPERATION

The AE-70V2 Variable-Speed Foot Control comes as standard equipment on the AEU-7000E-70V System and as an option on the AEU-7000E System. The AE-70V2 can control motor speed, direction, torque, and turn the pump On/Off. It can select **Implant** or **Endodontic** presets and individual **Endo** files.

### Installation:

1. Attach the Foot Control cable to the connector on the back of the Console (see Figure 10). Note keyway on connector. Turn locking sleeve clockwise to secure cable to connector. The AEU-7000E-70V will automatically detect the Foot Control and allow dual functionality through either the Foot Control or key pad.

Fig.10 - Foot Control Connection



### Foot Pad Functions (See Figure 11):



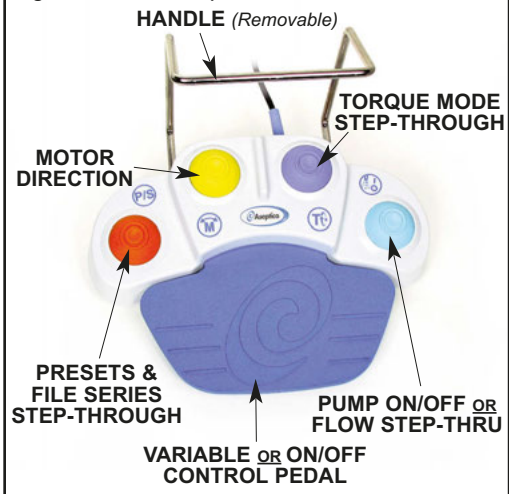

2. The 'M' pad (Yellow) performs the same function as the Motor direction button on the console. Each press of the pad changes the direction of Motor rotation. When the Motor is in reverse, the reverse warning tone will sound if this option is selected in the SETUP options. 
3. The 'T' pad (Lavender) increases the current torque setting each time the pad is pressed, up to a maximum five times 

Fig.11 - Variable-Speed Foot Control



consecutively. When the pad is pressed the sixth time, the unit will cycle the torque back down to its first (lowest) setting. For example, in **Endo Mode**, repeated pressing of the pad will increase the torque from 40 g-cm, through the 60, 80, 100, 120, and 140 g-cm settings, then automatically recycle back to 40 when the pad is pressed the sixth time. (NOTE: In **Endo Mode**, torque is measured in g-cm; in **Implant Mode**, it is measured in N•cm. Actual incremental values are dependant upon handpiece used.)

4. The 'P/S' pad (Orange) cycles through System Presets 1 - 6 when in **Implant Mode**. Each press of the pad selects the next Preset. 

In **Endodontic Mode**, the 'P/S' pad can cycle through the System Presets 1 - 6 and cycle through a Preset's individual files. To cycle through the Presets, press and hold the pad for two seconds (2 beeps will be heard). Each time the pad is pressed and held for two seconds, the unit switches to (selects) the next Preset. Then, to step through the selected Preset's individual

files, press and then quickly release the pad repeatedly.

**Note:** The following message will appear briefly whenever any **Endo** Preset is accessed for the first time, or after factory defaults have been restored:

**Loading Default Series**  
**Please Wait...**

5. The **Pump On/Off** pad (Teal) turns the pump On and Off, just like the console button. Press and release the pad to turn the pump On or Off (a beep will sound). To adjust pump flow, use either the Variable-Speed Foot Control or the Up/Down Control Panel Buttons. When adjusting flow with the Foot Control, press and hold Teal pad to cycle through the Flow settings in 10% increments, from 10% to 100%. A beep will sound with each incremental change.



6. The center **Variable Pedal** (Blue) can be operated in either the 'Variable' or 'On/Off' modes, depending on which option is selected during Setup (refer to Option 6, page 21).
- a. Variable Mode** - Motor speed is proportional to how far the pedal is depressed. Depress pedal slowly to gradually increase speed; release slowly to gradually decrease speed. **NOTE:** Variable is the default when operating the pedal in **Implant Mode**.
- b. ON/OFF Mode** - The motor runs only at 'set' speed. Foot pedal will switch the motor 'On/Off' when depressed/ released approximately halfway. **NOTE:** On/Off is the default when operating the pedal in **Endo Mode**.

**NOTE:** The **Variable Pedal** can also be used to reactivate the System from Standby mode. Press the pedal briefly to wake up the System and return it to the last state used.

## **Handle Installation/Removal:**

7. The Foot Switch Handle may be installed to allow the user to reposition or move the Foot Control more easily.
- a.** Grasp vertical guide rods and carefully push handle straight into Switch base (see Figure 12). To remove, pull rods straight out.

*Fig.12 - Handle Installation/Removal*



## **AE-7PM FOOT CONTROL**

*(AEU-7000E only)*

*Fig.13*

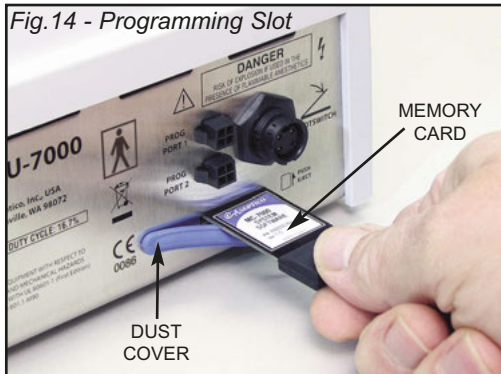


The AE-7PM Foot Control is provided as standard equipment on the AEU-7000E System. The AE-7PM is used to turn the motor and pump (when activated) On/Off. The AE-70V2 Variable-Speed Foot Control is available on the AEU-7000E System as an option.

### **AE-7PM Installation:**

Attach the Foot Control cable to the connector on the back of the Console. Note keyway on connector. Turn locking sleeve clockwise to secure cable to connector.

## REPROGRAMMING THE UNIT



The System has the ability to load software updates and enhance the functionality of the System. A card slot, labeled "Memory Card Port", is provided on the back of the unit (see Figure 14). This Port accepts memory cards very similar to those used in common consumer devices. These cards, available from Aseptico, enable a user to update software or replace existing software that might have been accidentally erased or corrupted. Contact Aseptico for more information on card usage and availability. To reprogram a unit, follow the Steps below:

### **Programming Steps:**

1. Turn 'Off' the Main Power Switch on the back panel.
2. Grasp the right-hand end of the rubber dust cover for the Memory Card Port and pry open the cover to expose the card slot.
3. Insert the new memory card in the slot with label facing upward (card terminals should face downward). Carefully and slowly press card inward until a 'click' is felt. Release card.
4. Turn the Main Power Switch (on the back panel) 'On'.

5. The Display will show the following message:

**Memory Card Detected.  
Re-program? (YES / NO)**

- Press the 'Yes' key on the Control Panel.

6. The Display will then show the following message:

**Presets Will Be Erased!  
Continue? (YES / NO)**

- Press the 'Yes' key on the Control Panel.

7. The Display will show the following message:

**Programming...**

- A status bar will indicate the progress of the programming.

8. When the programming is complete, the Display will show the following message:

**Programming Successful.  
Eject Card.**

- Press the card inward slightly, then release it to eject it. When the card is ejected, the System will reset with normal power-up screen displayed.

9. Remove the memory card and store it in a safe place. Close the rubber dust cover on the Memory Card Port.

In the event that the programming procedure is interrupted, the unit will display the following message:

**Programming Failed**

Then:

**Console Software Error.  
Re-program unit.**

Re-start the programming procedure from Step #1 (Remember to turn main power 'Off' before reprogramming).

## STERILIZATION:



**WARNING** - Sterilize the motor between each patient use.

**WARNING** - Use of a sterilization method or temperatures other than what are prescribed may damage the motor or present a risk of cross-contamination between patients.

**CAUTION** - Do not soak or submerge the motor in any liquid.

### STERILIZATION PROCEDURE:

#### Pre-clean

- 1) Brush off any visible signs of debris from the motor and cord.
- 2) Thoroughly clean the device with a moist cloth or towel to remove any remaining signs of debris.

#### Sterilize

- 3) Select one of the three following sterilization methods (A. B. or C.):

**Wrapped Sterilization** – Place in an appropriately sized sterilization pouch and seal it.

**A. Standard autoclaving (Gravity displacement method)**  
**Time:** 15 min  
**Temperature:** 132° C (270° F)  
**Dry time:** 30 minutes

**B. Pre-vacuum (dynamic-air-removal)**  
**Time:** 4 minutes  
**Temperature:** 132° C (270° F)  
**Dry time:** 40 minutes

**Flash Sterilization** – For immediate use only.

**C. Unwrapped standard autoclaving (Gravity displacement method)**  
**Time:** 10 minutes  
**Temperature:** 132° C (270° F)  
No dry time is required for flash sterilization.

#### Motor & Cord Assembly:

The entire AE-230M-40 motor and cord assembly is fully autoclavable. Loosely coil the motor cord when autoclaving. Avoid sharply bending the cord when autoclaving.



**NOTE:** Call Aseptico Inc. at 1-800-426-5913 for any questions or clarifications on this sterilization procedure.

## MAINTENANCE & CLEANING:

**HANDPIECES** - Thorough cleaning and lubrication of handpieces after each use and before sterilization is very important to ensure proper operation and service life of the handpiece. Follow the instructions provided with the handpiece for complete maintenance instructions.

**MOTOR - IMPORTANT!** Protect motor from excess oil draining from handpiece. After lubricating and before autoclaving, stand handpiece by its base on a paper towel and allow excess oil to drain (see Figure 16).

Fig. 16



### WARNING

- Do not attempt to disassemble the motor or motor connector.
- Do not oil or lubricate the motor.
- Do not attach a handpiece to the motor while the motor is running.
- Do not bend motor cord sharply.
- The motor is sensitive to shock. Do not drop or impact motor against a hard surface.

Failure to comply with any of the above instructions may void your warranty.

**CONSOLE** - The exterior of the console may be cleaned by wiping with a soft cloth moistened with a mild detergent or a 1:10 bleach solution (1 part household bleach to 10 parts water). **IMPORTANT:** Use of other cleaning or disinfecting solutions may damage the console and may void the warranty.

**SILICONE WATER LINES** - The silicone water lines used for the pump are fully autoclavable:

**Pre-Cleaning:** Before sterilization, run clean water through the tubing for 30 seconds to expel any stagnant water. **NOTE:** Do not use disinfectants on the tubing set. Bacteria and viruses will be neutralized during sterilization.

**Sterilization:** Sterilize tubing at 132° C (270° F) for 10 minutes.

**FOOT CONTROL** - The exterior of the foot control may be cleaned by wiping with a soft cloth moistened with mild detergent or disinfecting solution. When cleaning, remove handle from foot control and wipe clean with disinfectant, then reinstall handle.

## SPECIFICATIONS:

Console Dimensions: 9.98"W x 9.42"L x 5.10"H  
(25.3 cm x 23.9 cm x 12.9 cm)

Console Weight: 7.3 lbs (3.3kg)

Power: 100-240V ~  
1.1 - 0.5 A  
50-60 HZ

Fuses: 1.6A, 250V, Slo Blow Type

Duty Cycle: 16.7%

NOTE: The appliance inlet is the  
mains disconnect means.

Environmental Conditions:

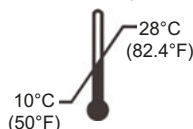
Operating Temperature 10 to 28°C (50 to 82.4°F)

Transportation & Storage Temperature -20 to 60°C  
(-4 to 140°F)

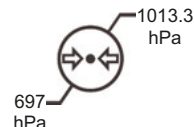
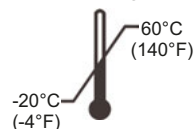
Relative Humidity 10 to 90% non-condensing

Altitude 0 to 3048 meters (0 to 10,000 feet)

OPERATING  
TEMPERATURE




TRANSPORT &  
STORAGE  
TEMPERATURE



## TROUBLESHOOTING:


Problem:	Correction:
Console does not light when on:	<ul style="list-style-type: none"> <li>• Check console to power connection.</li> <li>• If Preset LEDs are blinking, press Standby button on Control Panel to exit Sleep Mode.</li> <li>• Check fuse. If blown, replace with 1.6A/250V slo-blow fuse.</li> </ul>
Console lights when turned on, but handpiece does not turn:	<ul style="list-style-type: none"> <li>• Check motor plug connection.</li> <li>• Check foot switch connection.</li> <li>• Depress foot switch.</li> <li>• Increase RPM.</li> <li>• Increase Torque setting</li> <li>• Check that bur/file/drill is properly seated in the handpiece and the collet is closed.</li> </ul>
No water flow from pump to handpiece:	<ul style="list-style-type: none"> <li>• Check that pump is on and flow level is sufficient.</li> <li>• Check that water container seal is completely punctured.</li> <li>• Make sure the irrigation tubing is properly installed in pump door and flow is in the correct direction.</li> </ul>
Motor slowing down or sluggish:	<ul style="list-style-type: none"> <li>• Check for dirty, under-lubricated handpiece.</li> <li>• Check if handpiece lubricant is draining into motor. After lubricating and before autoclaving, stand handpiece on its base to let excess lubricant drain out.</li> </ul>
Improper display:	<ul style="list-style-type: none"> <li>• Verify that ratio setting matches handpiece ratio. Use Calibration function.</li> <li>• Turn power switch off, wait 5 seconds, then turn back on to reset.</li> </ul>
Irrigation Tube Leaks:	<ul style="list-style-type: none"> <li>• Replace worn tube section located under the pump door with a new section from the extra tube set provided with this system.</li> </ul>
Cannot remove motor/cord from unit:	<ul style="list-style-type: none"> <li>• Grasp the strain relief directly behind the cord connector and gently push inward. Then, grasp the connector body near the red dot and pull the connector straight out of the motor receptacle.</li> </ul>

## CHANGING THE FUSE:



**WARNING**

Turn the power off and unplug the unit before following the steps below.



**NOTE:** The AEU-7000E-70V & AEU-7000E feature auto-sensing, global voltage compatibility. The fuse indicated is correct for 100V-240V 50/60 Hz line voltage.

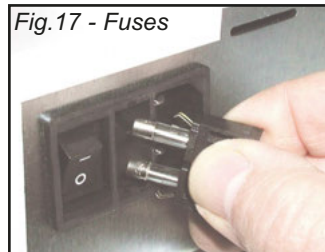
1. Remove the Fuse Holder from the Power Inlet connector (see Figure 17).

2. Replace the fuses in the Fuse holder.

**Replacement Fuses:**

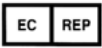


















1.6A, 250V slo-blow fuse  
(Fuse size: 5 x 20mm)

3. Reinstall the Fuse Holder.





## SYMBOL DEFINITIONS:

	Attention, consult accompanying documents		Authorized European Representative
	Type BF Equipment		Standby Switch
	Footswitch		Dangerous Voltage
	Do Not Throw Into Trash		Alternating current
	Manufacturer		Protection Against Dripping Water
	Fuse Rating		Protective Earth (Ground)
	Motor Direction		Preset Step Through
	Torque Step Through		Pump On/Off
	Temperature Limitation		Atmospheric Pressure Limitation
	Humidity Limitation		Part Number
	Sterilize At 132°C (270°F)		Serial Number

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## WARRANTY

Aseptico warrants these products against defects in material or workmanship for a period of two (2) years, from date of original invoice. Some handpieces are warranted for one year under the same conditions. Other handpieces and expendable components, such as air turbines and light bulbs, are covered by shorter warranty periods, or have no warranty. Aseptico's sole obligation under product warranty is (at its sole option and discretion) to repair or replace any defective component or product in part or whole. Aseptico shall be the sole arbiter of such action.

In the event of alleged defect under warranty, the purchaser is to notify Aseptico's Customer Service Department promptly. Customer Service will provide instructions, usually directing that the product be returned for service. Shipment to Aseptico and the cost thereof is always the responsibility of the purchaser.

Accidental misuse, inappropriate installation, or failure to perform directed maintenance voids the warranty. Deliberately defacing, modifying, or removing the serial number voids the warranty.

Aseptico does not assume, under this warranty, any risks or liabilities arising from the clinical use of its products, whether or not such use involves coincidental utilization of products manufactured by others.



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