**SPECIFICATIONS:**

- **Console Dimensions:** 4.6" x 7.2" x 3.4"  
  (11.7cm x 18.3cm x 8.6cm)
- **Hand piece Dimensions:** 7.35" L x 0.84" W  
  (18.7cm x 2.1cm)
- **Weight:** 2.1 lbs (0.95 Kg)
- **Power Source:** 110V/60Hz, 230V/50Hz
- **Fuses:**
  - 110V: 0.315A/250V Slo-Blo® fuse
  - 230V: 0.160A/250V Slo-Blo® fuse

**NOTE:** The appliance inlet is the mains disconnect means.

**Environmental Conditions:**
- Operating Temperature: 10 to 28°C (50 to 82.4°F)
- Storage Temperature: -20 to 60°C (-4 to 140°F)
- Relative Humidity: 5 to 95% non-condensing
- Altitude: 0 to 3048 meters (0 to 10,000 feet)

**INDICATIONS FOR USE:**
The Calamus Flow Obturation Delivery System is an obturation delivery system and hand piece device that is used for heating and placement of gutta-percha. The Calamus Singles cartridges deliver warm gutta-percha into the canal during root canal therapy.

**CONTRAINDICATIONS:**
- Do not use on patients with a known sensitivity to latex.
- Do not use on patients with a known sensitivity to silver.
- Do not use on patients with a known sensitivity to copper.

**WARNINGS:**
- This product contains dry natural rubber.
- When replacing a cartridge during a procedure, the hand piece cartridge nut and expended cartridge may be hot to the touch.
- Equipment not suitable for use in the presence of a flammable mixture with air or with oxygen or nitrous oxide.
- Do not use near standing water. Dropping the unit into water may cause electric shock.
- This equipment provides ordinary protection against harmful ingress of liquids (IPX0). Do not submerge the handpiece or cartridges in any liquid.

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.
PRECAUTIONS:

• Always unplug the unit before changing fuses or adjusting Voltage Selector.
• Applying excessive downward pressure or not allowing the device to back out of the canal may result in a broken needle.
• Place the cannula gently into the canal. Too much pressure will stop the motor from turning.
• When replacing a cartridge during a procedure, the hand piece cartridge nut and expended cartridge may be hot to the touch.
• The forward portion of the hand piece becomes warm during use. The heat shield (included with the system) may be used optionally to reduce the hand piece surface temperature. If the heat shield is not utilized, avoid contact with the forward portion of the hand piece.
• Do not clean unit with a flammable cleaning solution.

ADVERSE REACTIONS:
Use in patients with a known sensitivity to latex may cause an allergic reaction. Such reaction may result in swollen eyelids, lips or face. It may also cause difficulty in breathing. The patient should be advised to notify you immediately if any of these symptoms occur.

PACKAGE CONTENTS:

• Calamus Flow Obturation Delivery Device
• Remote Power Cord (110V)* . . . . . . . .PN: 840079
• Cartridge Needle Bending Tool . . . . . . . .PN: 461270
• Hand piece Cleaning Brush . . . . . . . . . .PN: 600014
• Replacement Cartridge Nut . . . . . . . . . .PN: 461273-08
• Calamus Singles II - Gutta-Percha Cartridges:
  23 gauge . . . . . . . . . . . . . . . . . . . . . . . . . . .PN: GP-025EP
  20 gauge . . . . . . . . . . . . . . . . . . . . . . . . . . .PN: GP-035EP
• Directions for Use . . . . . . . . . . . . . . . . . . . .PN: 420391
• Hand Piece Heat Shield . . . . . . . . . . . . . .PN: 461493
• Quick Reference Card . . . . . . . . . . . . . .PN: 420416
• DVD . . . . . . . . . . . . . . . . . . . . . . . . . . . .PN: ED-35

* Hospital grade power cord must be used with this device
STEP-BY-STEP INSTRUCTIONS
SETTING UP THE UNIT:

1. Unpack the console and check that the Voltage Selector is set to the proper voltage. Use the 110 setting for 110-120V 60Hz voltages, and the 220 setting for 220-250V 50Hz voltages. To change voltage, replace the fuse to match voltage (see specifications on page 1). Use a flat head screwdriver to turn the Voltage Selector on the back of the console to the proper voltage setting.

2. Remove packaging from hand piece. Wipe down hand piece with a mild disinfecting solution - do not submerge hand piece. A disposable sanitary plastic barrier may by used over the hand piece. Set hand piece in holder on the control console. The forward portion of the hand piece becomes warm during use. The heat shield (included with the system) may be used optionally to reduce hand piece surface temperature. If the heat shield is not utilized, avoid contact with the forward portion of the hand piece. Sterilize the heat shield before first use and between each patient use. See sterilization instructions on page 5.

3. Attach the power cord to the back of the console and plug into a grounded electrical outlet.

4. Remove a Calamus Singles Cartridge from blister pack. Store cartridges at room temperature.

5. Install a cartridge into the hand piece: Unscrew and remove the cartridge nut from the hand piece. Insert a cartridge into the hand piece, needle facing outward. Slip front cap over needle and screw the cap on clockwise lightly - do not tighten. Note: Do not remove hot cartridge.

6. If the cartridge doesn't fit completely into the hand piece, press the Power switch on the front of the console to the 'ON' position, and press the Return button on the console. The plunger must be in neutral position to accept the cartridge.

7. Turn the unit to the 'OFF' position before replacing the cartridge.

8. Gently place the heat shield over the cannula and hand piece as necessary.

9. Use the needle bending tool to place a smooth radius curve on the needle so the needle can extend to within 5 mm of the working length of the canal. Place the needle between the two raised bending posts and gently bend the needle to the desired angle.

10. Place the needle between the two raised bending posts. Gently bend the needle to the desired angle.
**OPERATION:**

After the unit has been set up, you are ready for operation as follows:

1. Press the Power switch on the front of the console to the 'ON' position. (The last used temperature and flow settings are retained in memory).

2. Select either preset button to recall preset temperature and flow rate or manually adjust settings as follows: (Preset values: 180°C, 60% flow rate)
   
a. Press the Temperature Increase or Decrease button to set the desired temperature. (The yellow temperature LED will illuminate for approximately five seconds indicating that the target temperature is being displayed.) While the system’s temperature increases, the numerical LEDs will blink until the target temperature is reached. Once the target temperature is achieved, the LEDs will display a steady reading.
   
b. Press the Flow Rate % Increase or Decrease button to select the desired flow rate. (The yellow Flow Rate LED will illuminate for approximately five seconds indicating that the numerical LEDs are displaying flow rate.) We suggest starting at the preset temperature and flow rate. Adjust from there to your preference.
   
c. To store your new settings, press and hold either Preset button until the Preset LED illuminates (approximately two seconds).

3. Dispense gutta-percha into canal: Press the activation cuff to start the flow of filling material. You will notice a short delay as the plunger engages and pushes gutta-percha to the tip of the needle. Extrude a small amount of gutta-percha from the needle. Wipe the excess gutta-percha from the tip before inserting the needle into the canal. Engage the needle within the root canal in accordance with your preferred technique. Hold the hand piece lightly when placing material to allow the device to readily back out of the canal. As the material is expressed, the indicator will help you estimate how much material remains in the cartridge.

   **Note:** Applying excessive downward pressure or not allowing the device to back out of the canal may result in a broken needle.

4. Standby Mode: After five minutes of inactivity, the device will enter standby mode, indicated by the Numerical LED Window displaying a scrolling dot pattern. The hand piece heat chamber will turn off and slowly cool to room temperature. Press any control to reactivate the device.

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**Numerical LED Window**

- **Temperature LED**
- **Temperature Increase**
- **Flow Rate LED**
- **Flow Rate % Increase**
- **RETURN LED** Indicates plunger return operation is in progress
- **RETURN select.** Press to return cartridge plunger to neutral position in order to replace cartridge

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**Densply Tulsa Dental Specialties**

**CALAMUS® FLOW**
REPLACING A CARTRIDGE:

NOTE: When replacing a Calamus Singles II cartridge during a procedure, the hand piece cartridge nut and expended cartridge are hot to the touch.
1. Select a 20 or 23 gauge cartridge.
2. Retract the delivery plunger by pressing the Return button.
3. Turn the unit off.
4. Allow the hand piece to cool.
5. **CAUTION: Do not remove hot cartridge.**
6. Unscrew and remove the hand piece cartridge nut.
7. Using the included bending tool, remove the cartridge from the hand piece.
8. Dispose of used cartridge in an appropriate biohazard container.
9. Insert a new cartridge, needle out, into the open end of the hand piece.
10. Slip hand piece cartridge nut over needle and screw on clockwise lightly - do not tighten.

OBTURATION TECHNIQUE:
This is one of many technique options. Selection of a preferred technique is at the discretion of the clinician.

DOWNPACK
1. Clean and shape the canal using the instruments and techniques you prefer. It is essential to thoroughly remove bacteria and diseased tissue from the canal before obturation.
2. Fit a tapered master cone in a prepared canal and confirm it is at length using a radiograph.
3. Dry the canal with appropriately sized paper points. Determine the final working length.
4. Trim the master gutta-percha cone back to the foramen, if indicated.
5. Lightly coat the master cone with sealer and gently slide it to length.
6. Sever the placed master cone about 5 mm from the apex. Heat-soften, condense and downpack the master cone in the apical 5 mm of the canal. Use vertical condensation, continuous wave or other hybrid technique to achieve the downpack.

BACKFILL
1. Before backfilling, select appropriately sized pluggers for the procedure.
2. Position the tip of the hot Calamus Singles needle against the downpacked filling material. Press the activation cuff on the hand piece and dispense a few mm of material into the canal.
3. Allow the flow of filling material to lightly back the hand piece out of the canal.
4. Use a small plugger to pack and adapt the injected, heat-softened material into this region of the canal. To offset filling material shrinkage, sustain plugger pressure for 5 seconds as the material cools.
5. Position the tip of the hot Calamus Singles needle against the obturation filling material. Press the activation cuff on the hand piece and dispense another few mm of material into the canal.
6. Use a larger plugger and step its working end circumferentially around the canal to three-dimensionally mold and tightly adapt the filling material into this region of the canal. To offset filling material shrinkage, sustain plugger pressure for 5 seconds as the material cools.
7. At your discretion, continue this backfilling technique (steps 5 and 6) until the canal is completely filled or stop at any point to facilitate placement of a post.
STERILIZATION, DISINFECTION & MAINTENANCE:

Control Console – Clean the exterior of the console by wiping with a soft cloth moistened with a mild detergent or disinfecting solution. The system is designed to allow for a disposable sanitary plastic barrier to be utilized over control console and/or hand piece.

Hand Piece – Wipe off the hand piece with a soft cloth moistened with mild detergent or disinfecting solution. NOTE: When wiping down the hand piece cable, gently wipe from the middle of the cable out toward the hand piece and console. Avoid gripping the cable tightly. DO NOT SUBMERGE the hand piece in any fluid or spray any fluid directly on the hand piece.

Hand Piece Cartridge Nut – Steam autoclave for 10 minutes at 132°C.

Hand Piece Delivery Plunger – Annually: Without a cartridge inserted, press the activation cuff until the gutta-percha indicator moves all the way forward. Then, push the Return button and allow the indicator to completely retract.

Hand Piece Cartridge Heater – If gutta-percha gets into the cartridge heater section of the hand piece, turn on the unit and press the Return button on the console to fully retract the plunger. Allow the heater section to reach operation temperature (180°C). Turn off unit. Insert the included hand piece cleaning brush into the heating chamber. Rotate the brush several times to remove the gutta-percha from the chamber.

Cartridges – Store cartridges at room temperature. Cartridges are intended for single patient use. Dispose of used cartridges in a biohazard container. Do not immerse the cartridges in any liquid.

Heat Shield – Steam autoclave for 15 minutes at 132°C.

TROUBLESHOOTING:
1. Device does not turn on:
   (a) Check that power cord is plugged into device and wall outlet.
   (b) Unplug device and check fuse. If fuse is blown, replace with 0.315A, 250V Slo-Blo® type fuse (0.160A, for 230V).

2. Cannot remove hand piece cartridge nut: (a) Press the Return button to retract the plunger and to relieve pressure on the hand piece front cap.

3. Gutta-percha does not flow through needle: (a) Verify that the needle is not kinked - avoid over bending the cartridge needle.
   (b) Verify that the device has reached operational temperature (numerical LED has stopped blinking). Increase temperature if needed.

4. Delivery plunger does not retract: (a) If, after pushing the Return button, the gutta-percha indicator does not fully retract to the end of the indicator window, push the Return button again.

5. Motor stops turning: (a) If the motor stops turning, the cannula may have been placed too firmly in the canal. Reduce the pressure applied to the cannula and the motor may begin turning again.

SYMBOL DESCRIPTIONS:
WARRANTY

DENTSPLY warrants this product against defects in material or workmanship for a period of one year from date of original invoice. DENTSPLY’s sole obligation under the product warranty is (at its sole option and discretion) to repair or replace any defective component or product in part or whole. DENTSPLY shall be the sole arbiter of such action.

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

Accidental misuse, inappropriate installation, or failure to perform directed maintenance voids the warranty.

DENTSPLY 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.

DENTSPLY makes no warranty other than that stated above, expressed or implied.

Contact DENTSPLY Tulsa Dental Specialties Technical Department at 1-800-662-1202 for repair authorization and shipping instructions.

NOTE: In the interest of serving our customers more efficiently, customers receiving service on non-warranted repairs are expected to accept charges that are less than $250.00 without further notification.