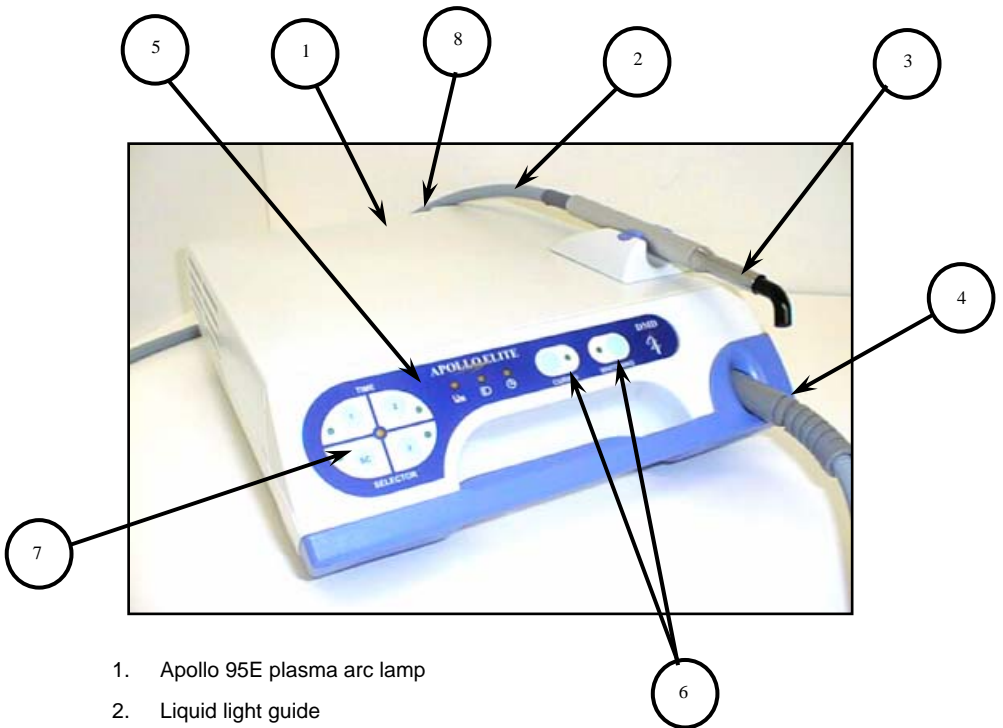




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## Product Presentation



1. Apollo 95E plasma arc lamp
2. Liquid light guide
3. Interchangeable handpiece tip
4. Footswitch Jack
5. Front panel, status indicator
6. Curing or whitening mode selector.
7. Timing selection
8. « ON » and « OFF » switch



## Safety Instructions



**Warning:** Before connecting the Apollo, please carefully read the safety instructions. Safety measures involve the trained users' knowledge and common sense as well as more specific indications mentioned in this manual.

1. This instrument must be used according to the instructions in this manual.
2. This instrument should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your location, consult your Apollo 95E dealer or local power company.
3. The light rays produced by the instrument can be harmful and should never be directed towards the eyes even if the protective glasses are being worn. The light rays are for treatment inside the mouth only.
4. Condensation inside the Apollo 95E can be dangerous. If the instrument is transported from a cold area to a warm area, allow adequate time to attain the new room temperature.
5. Lamp should only be replaced by factory trained personnel.
6. Do not use the instrument near a flammable liquid, anaesthetic, or oxygen.
7. Do not introduce metal objects into the instrument. Do not overload wall outlets as this can result in a risk of fire or electric shock.
8. Do not use near any heat source. Do not use solvent or flammable products on this instrument as this could cause damage.
9. Do not use any liquid or detergent on the instrument for cleaning or any other purpose as this could cause a short circuit.
10. Any person who has been advised to operate small electrical instruments with care must apply the same caution when using the Apollo 95E.
11. Any instrument used for polymerization or whitening, including the Apollo 95E, must not be used on or by any person who presents or has presented in the past, photo biological reactions (including urticaria solaris or protoporphyrie erythropetique). Or any person under medical

treatment with photosensitive medicine (including methoxypsorales or dimethylchlortetracycline).

12. Any person who has previously suffered from a retina or crystalline ailment or who has undergone eye surgery including treatment of cataracts, should consult an eye specialist before using the instrument or before undergoing treatment with the instrument. Carelessness could lead to an incidence due to the light intensity. It is highly recommended to use protective ultra violet and light-filtering glasses at all times.
13. Any variation in the voltage of the power supply or in the electromagnetic field, could cause the lamp to come on automatically, or interfere with it's functioning.
14. Before each use verify that the light power is sufficient for a complete polymerization. We recommend that you proceed as described in the chapter 'Caring for the Apollo 95E".
15. The instrument has EN 60601-1-2 approval for both Emission (electric field rays, and supply voltage interference) and Immunity (electric field rays, intermittent bursts on the supply, electrostatic discharges and supply shock waves).
16. Slots in the bottom and the back of the instrument are provided for ventilation, and to ensure reliable operation of the instrument, as well as protecting it from overheating. These openings must not be blocked or covered, and the unit must be placed in an area with adequate ventilation.
17. This instrument is equipped with a polarized alternating current line plug ( a plug which has one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. Do not modify the plug, this may defeat the safety purpose of the polarized plug.
18. Other than to replace the fuse, do not attempt to service this instrument yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. Always switch off the power before connecting or disconnecting the foot switch.
20. Do not operate the unit with the fiber optic cable disconnected.
21. Remove the instrument from the wall outlet and refer servicing to qualified service personnel under the following conditions.
  - When the power supply cord is damaged.
  - If liquid has been spilled, or objects have fallen into the instrument.
  - If the instrument has been dropped.

- When the instrument exhibits a distinct change in performance, this may indicate a need for service.
- 22. Caution: Federal (USA) law restricts this device to sale by or on the order of a dentist or any other practitioner licensed by the law of the State in which they practice to use or order the use of the device.
- 23. Whenever you are stacking or transporting your instrument please ensure that the temperature is between 0°C and 70°C and that the humidity is between 10% and 100%.
- 24. Be sure to insert the tip onto the handpiece before using the Apollo 95E.
- 25. The Apollo 95E has been manufactured with respect to electric shock, fire and mechanical hazards only in according with UL 2601-1/CAN/CSA C22.2 No. 601-1.

## Product Description

The Apollo 95E produces visible light for the polymerization of dental materials and for tooth whitening. It consists of a handpiece with a light guide that delivers the light to the intraoral area of interest. The Apollo 95E Supply Unit contains a high intensity light source, power supply, and control electronics. The light emanates from the tip of the handpiece via a flexible light guide cable connected to the supply unit. An activation switch connected to the supply unit is used to initiate the delivery of light.

The front control panel controls which mode the instrument is in: Curing or Tooth Whitening. When the unit is in the Curing mode the user can select the exposure time options of 1, 2, or 3 seconds, or SC for 2 seconds at low intensity followed by 4 seconds at high intensity.

The unit is supplied with one removable 8-mm diameter curved tip for curing and one removable 8-mm straight tip for whitening. These tips may be disinfected or sterilized between uses.

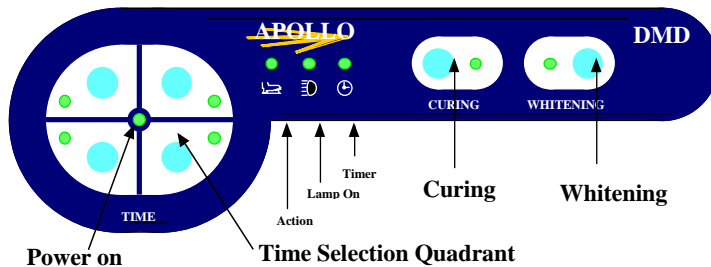
The Apollo 95E can be installed in a mobile cart or wall mounted.

## Installation

1. Please make sure the following items are in the shipping package and found in good condition:
  - The Apollo 95E console
  - The optical liquid guide
  - The 8mm handpiece (curved and straight)
  - The activation switch
  - The AC power cable
  - The user's manual



If there is a defect, the instrument will beep rapidly. The whitening and curing control lights will flash simultaneously.



Variation in line voltage has no effect on the lamp intensity. The exposition time can be selected for 1 second, 2 seconds, 3 seconds or SC (step curing: 2 seconds at half power, followed by 4 seconds at full power).

The next cycle is activated by pressing the foot switch:

- The activation switch indicator (action) comes on when the foot switch is pressed
- The lamp indicator (lamp on) comes on during the time the lamp is on
- The timing indicator (timer) comes on indicating time out for cooling

**The lamp output can be interrupted at any time by simply pressing the foot switch a second time.**

## Operation

1. Turn the instrument on using the switch on the back of the instrument
2. Select the mode
  - curing (hardening of dental composites)
  - whitening
3. Select the time for curing
  - to 2 seconds per mm for light colored composites
  - to 3 seconds per mm for darker composite

**Note 1:** It is advised to choose 1 or 2 seconds and expose the composite zone twice or to vary the exposure angle slightly.

**Note 2:** After 2 seconds of exposure it is advised to increase the distance between the lamp and the composite to 5mm.

4. When using SC (step curing: 2 seconds at half power, followed by 4 seconds at full power) it is recommended to keep the handpiece close to the composite.
5. Press the foot switch to light the lamp. You will hear a beep sound. (You can also use the foot switch to turn the lamp off before the time is up).
6. When the timer times out there is another beep.

**Note 1:** You can leave the instrument on all day.

**Note 2:** Do not touch the composite with the fiber end, as this would cause considerable damage to the fiber and decrease it's efficiency.

7. When curing a large cavity preparation, where the cusp to pulpal floor distance approximates 7mm, (.27 inches) it is advisable to use one half the recommended curing layer thickness on the first layer. The reduced volume of composite will produce a lower exothermic reaction available for pulpal absorption.

**NOTE:** *A change in probe size or distance to sample may require volume and or energy adjustments.*

## Various Curing Parameters Illustrated

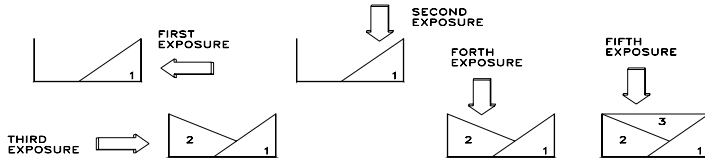
Chart 1

Conventional Time	APOLLO 95E Time
45 Sec	3 Sec
30 Sec	2 Sec
15 Sec	1 Sec

8. Polymerization curing cycles may vary from one manufacturer of restorative material to another. Chart 1 lists recommended exposure time conversions. These settings are only approximate and compare to a recommended curing time typically based on a conventional curing light with a power density of 500mW/sq.cm. (200mW) and an 8mm probe.
9. **NOTE:** *It is strongly recommended to verify the curing ability of any specific material. Expressing a 3.0mm thick sample of material on a mixing pad can do this. Expose the sample with the desired Energy setting; the underside of the sample should be hard when scratched with an explorer.*
10. Curing techniques will vary from operator to operator. In general, it is related to the amount of energy needed and the technique of placement.
11. *For example:* In addition to curing the occlusal, you may cure a three-layer composite by curing through the tooth. This may initiate bonding along a lingual or buccal wall. You may also choose to cure the composite with one exposure per layer from the occlusal.

**Shown below is a drawing illustrating curing techniques.**

Class 1 cavity preparation 4mm depth, and a composite with a recommended curing time of 3 seconds.



10. Oral safety parameters for pulpal temperature elevation should be calculated by the sum of the exposure energy per layer.

## Standard Whitening Instructions

**Note:** The Apollo is available with 2 modes of operation; one marked “Curing” and the other marked “Whitening” either mode may be used for the whitening application depending on the whitening materials manufacturers’ directions for use and the desired results for the application. The “Whitening” , a 3 second power output mode is activated by the activation switch, depressing it once turns the Apollo 95E on and depressing it a second time turns it off.

The Apollo 95E is provided with 2 tips. The Whitening Tip is the clear straight tip. **If sensitivity develops it is recommended you switch to the curing tip to finish the procedure.**

### **Application:**

**Note:** Observe all Apollo 95E safety precautions and the manufacturer’s cautions for use of the Whitening chemistry.

1. Attach the whitening tip to the handpiece.
2. Select the whitening mode.
3. Follow directions provided by the manufacturer of the whitening materials.

## Automated Whitening Instructions

**Note:** The Apollo is available with 2 modes of operation; one marked “Curing” and the other marked “Whitening”. Selecting “Whitening” mode activates the automated whitening cycles. The cycle starts when pressing the activation switch and last about 12 minutes. A typical whitening procedure should use 3 cycles. The light output pattern is as follows: 2 minutes ON, 2 minutes OFF, 2 minutes ON, 2 minutes OFF, 2 minutes ON and 2 minutes OFF.

The Automated Whitening Apollo 95E comes with a stand and a multi-arch whitening tip.

1. Remove curing tip from handpiece.
2. Attach the Multi-Arch to the handpiece.
3. Position the multi-arch just above the activation switch and tighten the plastic screw.
4. Follow instructions provided by the manufacturer of the Whitening materials to apply the 1<sup>st</sup> pass of whitening gel onto patient’s teeth.
5. Place the handpiece onto the holder and stand.
6. Position the multi-arch tip about 0.25 – 0.50 inch from patient’s teeth.
7. Select the “Whitening” mode.
8. Activate the automated whitening cycle by pressing the activation switch on handpiece.
9. The whitening cycle will stop at 12 minutes.
10. Apply the 2<sup>nd</sup> pass of whitening gel on patient’s teeth.
11. Repeat the whitening cycles for 2 more time to complete the procedure.

## Orthodontic Bonding Instructions

1. Turn the Apollo 95E light on using the switch on the back.
2. Select the **Curing Mode**
3. Select the **Time** for curing
  - seconds recommended for ceramic and metal brackets
  - seconds recommended for bands
4. **Bonding Brackets:**  
Ceramic brackets require a total curing time of 2 seconds and metal brackets require a total curing time of 4 seconds.

Ceramic brackets using APC™ appliances or Transbond™ Adhesive

- Hold the light guide perpendicular to the ceramic appliance surface at a distance of 2-3 mm and **cure the light cure adhesive for 2 seconds.**

Metal brackets using APC™ Appliances or Transbond™ Adhesive

- Hold the light guide 2-3 mm away from the adhesive-bracket interface on the mesial and distal edges. **Expose the light cure adhesive for 2 seconds on the mesial adhesive-bracket interface and for 2 seconds on the distal adhesive-bracket interface, for a total of 4 seconds.**
- A technique tip for metal brackets for faster curing is to place the light guide interproximal to two brackets and cure for 2 seconds. This would cure the mesial of one bracket and the distal of another bracket at the same time. However, to fully cure the adhesive under the bracket, both the mesial and distal sides of each bracket must be exposed to the light.

5. **Banding Appliances:**  
Orthodontic bands require a total curing time of 6 seconds.

Bands using Unitek™ Multi-Cure Glass Ionomer Orthodontic Band Cement or Transbond™ Plus Light Cure Band Adhesive.

- Hold the light guide 2-3 mm above the mesial adhesive-band interface on the occlusal surface of the tooth and **cure the light cure adhesive for 3 seconds.** Repeat by placing the light guide 2-3 mm above the distal adhesive-band interface on the occlusal surface of the tooth and **cure for 3 seconds.**

## Sterilization of the Apollo 95E tips

To obtain a sterility assurance level of  $10^{-6}$  using a gravity steam sterilizer, an exposure time of 15 minutes at a minimum temperature of 132°C is required. The minimum dry time is '0' minutes, and the use of a sterilization pouch to hold the tips is required.





## Specifications

Model:	Apollo 95 E
Power supply voltage:	100 to 240 Volts AC
Frequency:	50 - 60 Hz
Power:	6.3A
Fuse:	MDL7
Wavelength of light emission	
Curing Mode:	460 – 490NM
Whitening Mode:	400 – 500 NM
Light power (average value)	
Curing mode:	1.600 W / cm2 (TYP)
Whitening mode:	2.900 W / cm2 (TYP)
Dimensions:	Length: 300 mm Width: 240 mm Height: 100 mm
Liquid optical fiber	Length 1800 mm
Weight:	5500 g
Operating Environment	Maximum one activation every 30 seconds
Operating Temperature	5°C to 35°C
Operating Humidity	20% to 80% (non-condensing)
Storage Temperature	0°C to 70°C
Storage Humidity	10% to 100% (non-condensing)
Atmospheric Pressure	500hPa and 1060hPa
Protection against electric shock (5.1, 5.2)	Ordinary Type BF applied part: Light Guide
Protection against harmful ingress of water (5.3)	Ordinary
Approves:	
Europe	CE, EN60601, IEC-601-1
North America	UL, CSA

Manufacturer: DenMed Technologies, Inc.  
1531 W. Orangewood Ave.  
Orange, CA 92868



(Curing Light)

With respect to electric shock, fire and  
Mechanical hazards only  
In accordance with UL2601-1/CAN/CSA  
C22.2 No. 601-1

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