

## LIMITED WARRANTY

Your Apollo Fiberoptic System has been precision engineered and critically tested. It is the highest quality product available. Each Apollo power supply, transformer and swivel coupler, is warranted against defects in materials and workmanship for a period of one year from date of purchase, excluding bulb.

1. Warranty registration is automatic through our computer as of shipping date and warranty registration cards are not necessary (outside of U.S.A. warranty registration cards may be required by your distributor).
2. The fiberoptic system must be operated and maintained in accordance with procedures outlined in this instruction booklet.
3. The fiberoptic system must not have been subjected to abuse or neglect.
4. The fiberoptic system must not have been repaired or disassembled by anyone other than Lares Research, Inc. (or your authorized distributor outside the U.S.A.)

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*Your cutting edge*

295 Lockheed Ave. • Chico, CA 95973 U.S.A.  
www.laresdental.com

**TOLL FREE HOTLINE FOR ORDERING AND TECHNICAL ASSISTANCE:**

U.S.A. 1-800-347-3289

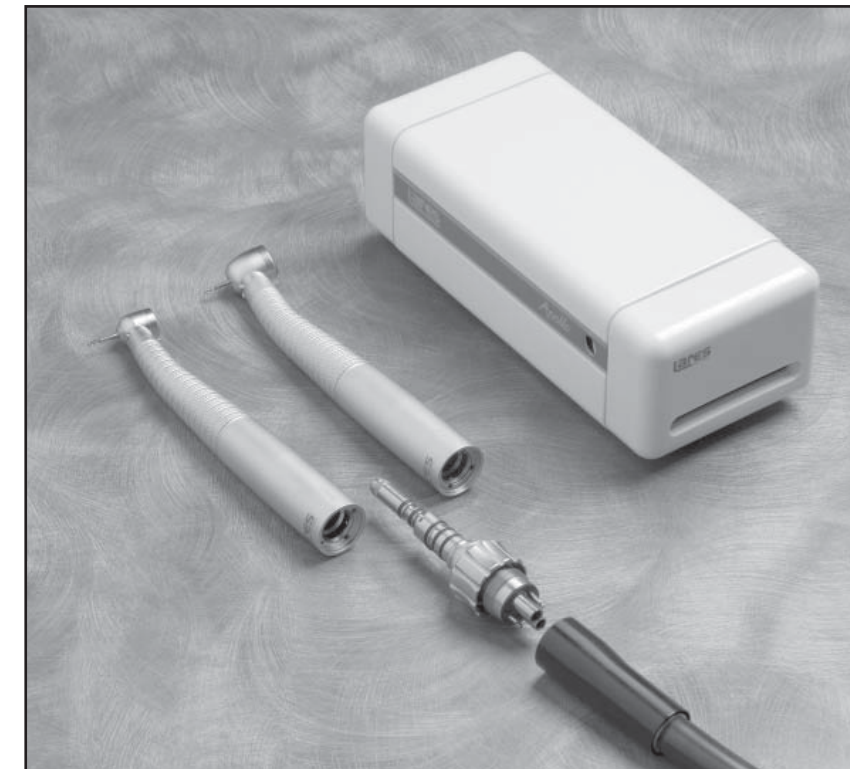
**NON-TOLL FREE WORLDWIDE: 1-530-345-1767**

**FAX: 1-530-345-1870**



*Apollo* **MODELS**

**Handpiece Lighting  
System**



**INSTRUCTION  
BOOKLET**



**Table of Contents**

Installation ..... Page 3  
 Operation..... Page 8  
 Routine Maintenance..... Page 8  
 Cleaning ..... Page 9  
 Specifications ..... Page 9  
 Problem Diagnosis ..... Page 10  
 Repair Services, Replacement Parts and Accessories ..... Page 11  
 Warranty ..... Page 12

**Congratulations - you've chosen the best!**

The uncompromising quality of your new Lares fiberoptic system is the direct result of engineering and manufacturing experience since 1956. We take great professional pride in knowing that our customers will be using the very best!

Your Lares Apollo Handpiece Lighting System is designed to provide cool, bright, white light for up to 4 Lares fiberoptic handpieces. An optional remote light intensity control is available for balancing oral cavity light intensity with outside operatory lighting levels.

Your Apollo fiberoptic system is fast and easy to install. Because of its small size and light weight, the system power supply can be installed inside many dental units or mounted externally. The Apollo lighted handpiece hoses are installed on your dental unit in the same manner as your current handpiece hoses.

Specific instructions relating to the turbine handpieces used with this fiberoptic system are included with each handpiece and should be read carefully before system installation or operation.

**REPAIR SERVICES, REPLACEMENT PARTS AND ACCESSORIES**

**Repair Service:**

For in or out of warranty repair, send your fiberoptic system directly to Lares Research, Attention: Repair Services Department (in U.S.A. only). The address is on the back page. For repair outside the U.S.A. send your system to your authorized Lares distributor. *Be sure* to enclose your completed Service Information Card to speed repair service.

**Replacement Parts and Accessories:**

The following replacement parts and accessories may be ordered directly from Lares Research (in U.S.A. only) or from your authorized Lares distributor outside the U.S.A. Replacement part item #'s for turbine handpieces are listed in the instruction booklets accompanying these products.

<b>Description</b>	<b>Item #</b>
Remote Light Intensity Control .....	10254
Replacement Bulbs for Apollo Fiberoptic Swivel Coupler, box of 3 .....	10271
Swivel Handpiece Air Pressure Gauge .....	10062
Apollo Model S Power Supply Only .....	12615
Apollo Model S Universal Input Converter, 100-240V~, 50-60 Hz .....	12616
Apollo Lighted Handpiece Hoses .....	Contact Lares Research or your Distributor for Proper Hose length and type.

## PROBLEM DIAGNOSIS

The inconvenience of fiberoptic system downtime can often be avoided by following the common sense problem diagnosis and corrective action procedures that follow. If the problem cannot be corrected using these procedures, return the product to Lares Research (or your distributor

outside the U.S.A.) for repair. Do not attempt to perform repair procedures other than those described in this section. Handpiece problem diagnosis procedures may be found in the instruction booklet accompanying each handpiece.

### SYMPTOM - Light source will not activate when handpiece foot control is depressed.

Possible Cause:	Test to Identify Cause:	Corrective Action:
a) Power supply power cord/converter is not plugged completely into power outlet or back of power supply.	Check to see if plug is securely inserted in power outlet and back of power supply.	---
b) Swivel coupler bulb is blown.	Check bulb for loose filament or dark cloudy color.	Replace bulb if blown.
c) Light source air activation tubing is kinked, twisted or has come off barb on power supply or where it joins handpiece hose drive air.	Inspect entire length of air activation tubing to verify the absence of kinks or twists. Check to see that tubing is secure on barb on front of power supply and where it joins handpiece drive air.	Remove any kinks or twists. Secure air activation tubing on power supply and front of hose drive air "T" barb with 3-3/4 inch cable ties.
d) Hose bulb wires are not properly secured in wire terminals in front of power supply.	---	Reinsert bulb wires in power supply terminals to verify proper connection.

### SYMPTOM - Fiberoptic handpiece light output is not sufficiently bright or is discolored.

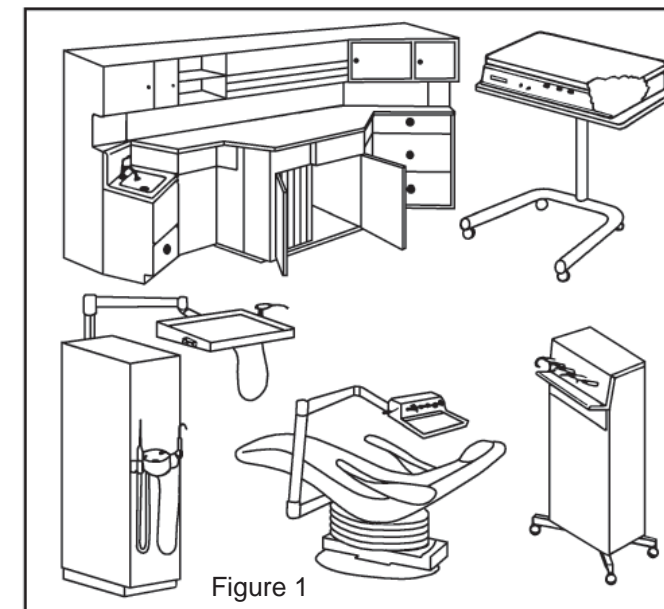
Possible Cause:	Test to Identify Cause:	Corrective Action:
a) Optional light intensity adjustment set too low.	---	Increase light intensity adjustment.
b) Exposed fiberoptic surfaces contaminated.	Clean exposed optic surfaces at front and rear of handpieces, and bulb external surface with alcohol and camel hair brush or cotton swab. CAUTION: BE SURE TO ALLOW 3 MINUTES FOR BULB TO COOL AFTER LAST ILLUMINATION.	Periodically clean exposed optic and bulb surfaces with alcohol to prevent buildup of debris.

## INSTALLATION

Before beginning installation of the system, read through each section of this instruction booklet.

### Determining Power Supply Location and Electrical Requirements:

Use the following guidelines and **Figure 1** to select the best location for the power supply.



appropriate voltage wall electrical outlet or an extension cord will be required. If an extension cord is required, use a 3-wire grounded extension cord only.

- 2) Be sure open ventilation to room air is provided and clear of obstructions by 2" all around. If open room air ventilation is not provided for power supply installations inside dental units or cabinets, add holes, slots or vent openings as needed.
- 3) Be sure that enough space is provided for access and removal of power supply front cover to allow for installation of air activation tubing and hose bulb wires.
- 4) Be sure that location of power supply will not inhibit the normal operation and motion of the dental unit.
- 5) Use Lares Research P/N 12616 Universal Input Converter only.
- 6) Not suitable for use in the presence of electromagnetic or other interference.

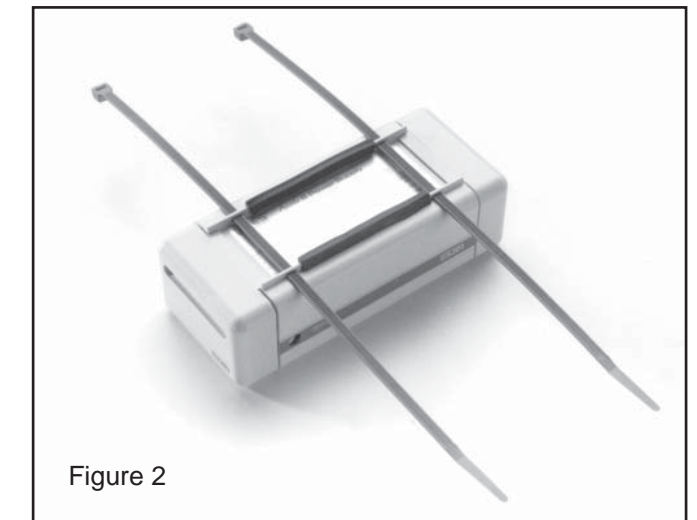
## MOUNTING POWER SUPPLY

All the necessary fittings needed for power supply installation are included with each system.

### Strap Mounting of Power Supply:

Strap mounting is used when locating power supply on a smaller round or square dental unit member such as an arm or post.

- 1) Thread the two 11 inch long cable ties through the strap mounting slots located on the underside of the power supply. **Figure 2.**
- 2) Tighten cable ties around dental unit member securely using needle nose pliers. Test power supply mounting for rigidity. If not rigid, tighten cable ties more securely. Clip off excess cable ties. **Figure 3.**



## Free Standing and Vertical Mounting of Power Supply:

Free standing and vertical mounting is used when locating the power supply on any large horizontal or vertical flat surface including cabinets, shelves, counter tops, and inside dental unit housings or consoles.

- 1) Clean the mounting surface thoroughly with alcohol and a clean rag. Allow to dry.
- 2) Peel away the cover on one side of both velcro adhesive mounting pads and affix to power supply in the positions shown. **Figure 4**. Peel away the remaining covers of the adhesive pads and affix power supply to the desired mounting surface. Apply enough pressure to top of power supply to assure positive contact of adhesive surfaces. Test power supply mounting for rigidity.

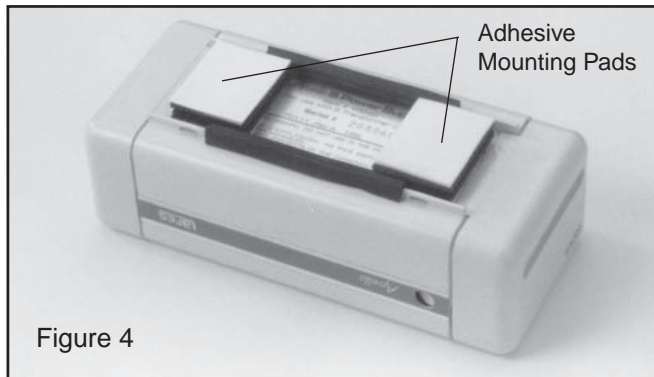


Figure 4

## REMOVING OLD HANDPIECE HOSE

Trace handpiece hose to be replaced inside dental unit to its termination at several small metal barbs. Be sure to note how old handpiece tubing is routed through dental unit. Using a razor blade or sharp knife, slit the tubing ends as needed to remove completely from unit barbs and from dental unit.

NOTE: If old handpiece hose is connected to dental unit utilizing a screw-on type coupler, unscrew from dental unit and slide back spring and coupler nut to expose tubing connections on barbs. Slit tubing with a razor blade or sharp knife and remove from coupler barbs.

## INSTALLING APOLLO HOSE

Before performing installation of Apollo hose verify that the hose tubing length is as long or longer than hose being replaced.

- 1) To ease installation, the individual tubing may be further separated by slitting the external sheath with scissors. Individual tubing may also be shortened after separation. Do not shorten bulb wires.
  - 2) Slip drive air (larger clear), chip/assist air (smaller clear) and water (blue) tubing on their respective dental unit barbs as far as possible. **Figure 5**. If barbs are unmarked, turn on dental unit water switch and depress foot control to identify water barb.
- NOTE: If old hose was connected to dental unit using a screw type coupler, slip the individual hose tubing over the coupler barbs in the same manner as described in #2 above. Then screw the coupler back onto its dental unit connection.
- 3) Secure each tubing on its respective barb with 3-3/4 inch cable ties. **Figure 5**. Tighten with needle nose pliers and clip off excess cable ties.

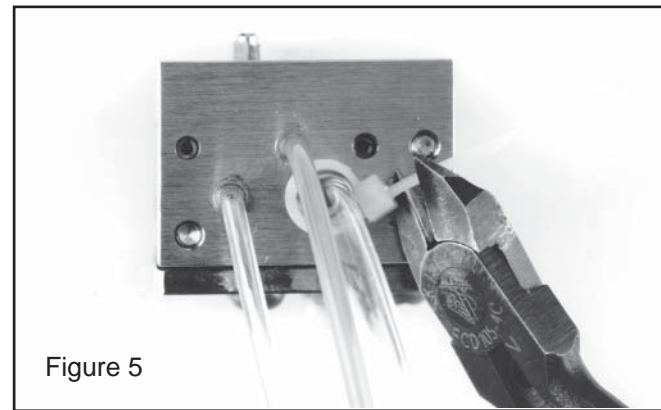


Figure 5

## Installing Air Activation Tubing:

The air activation tubing allows a pressure switching the power supply to sense the presence of handpiece drive air pressure for activation of the handpiece light.

## CLEANING

### Power Supply and Converter:

Exposed power supply and converter surfaces may be wiped clean periodically with a soft cloth dampened with mild soap and water. Do not use harsh solvents.

### SPECIFICATIONS:

**Input:** 9 VDC @ 3.0 Amps — CAUTION: USE ONLY LARES RESEARCH MODEL 12616 UNIVERSAL INPUT CONVERTER

**Output:** Adjustable \*up to 3.8 VDC @ 1.5 Amps

\*Adjustable with optional intensity control (sold separately).

Up to four handpiece hoses can be individually controlled. No more than one handpiece bulb can be powered simultaneously.



## OPERATION

### Handpieces:

Fiberoptic handpiece illumination begins when the normal handpiece foot control is depressed to release drive air to the handpiece. The handpiece light will remain on for 11 seconds after the handpiece foot control is released for post-cut inspection. If pre-cut inspection is desired, the handpiece foot control can be tapped lightly to activate the light for 11 seconds as often as necessary.

### Light Intensity Adjustment:

To adjust the handpiece light intensity with the optional intensity adjustment, first activate the handpiece light by depressing the foot control. Then vary the intensity adjustment knob to obtain the desired handpiece light intensity.



### Safety Precautions:

To assure safe operation of the Apollo Fiberoptic Handpiece System, be sure to read and carefully follow the list of safety precautions below:

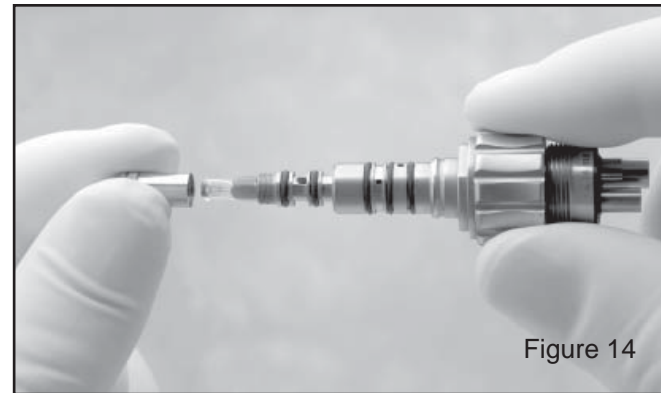
- 1) With handpiece detached from swivel coupler, never touch the bulb or adjacent surface located at the handpiece end of the coupler immediately after handpiece illumination, or burns to hands or fingers could occur. Allow at least 3 minutes after last handpiece illumination before touching bulb or swivel coupler surface adjacent to bulb.
- 2) Never immerse the power supply, transformer or fiberoptic hose in any fluid or liquid or electric shock may occur.
- 3) Never operate handpiece light without handpiece attached to swivel coupler or stare directly into handpiece lights or damage to eyes may occur.

## ROUTINE MAINTENANCE

### Replacing Bulb:

CAUTION - ELECTRICAL SHOCK AND BURN HAZARD. BEFORE REPLACING BULBS, BE SURE THAT SWIVEL COUPLER IS DETACHED FROM HOSE FOR 3 MINUTES.

- 1) Grasp metal sheath covering bulb and rotate counter clockwise (when viewed from end of bulb) to loosen and remove. **Figure 14.**
- 2) Pull bulb straight out to remove from coupler.
- 3) Carefully align bulb pins with holes in coupler bulb socket and fully insert bulb into socket.
- 4) Slide metal bulb sheath over bulb, threaded end first. Rotate clockwise (when viewed from end of bulb) to tighten sheath in coupler.



- 1) Cut drive air tubing (larger clear) approximately one inch from connection on dental unit barb. Slide drive air tubing ends onto larger barbs of air activation "T" fitting as far as possible. **Figure 6.**
- 2) Slide one end of 8' air activation tubing included with hose onto small barb of air activation "T" fitting as far as possible. **Figure 7.** Secure all three tubing connec-

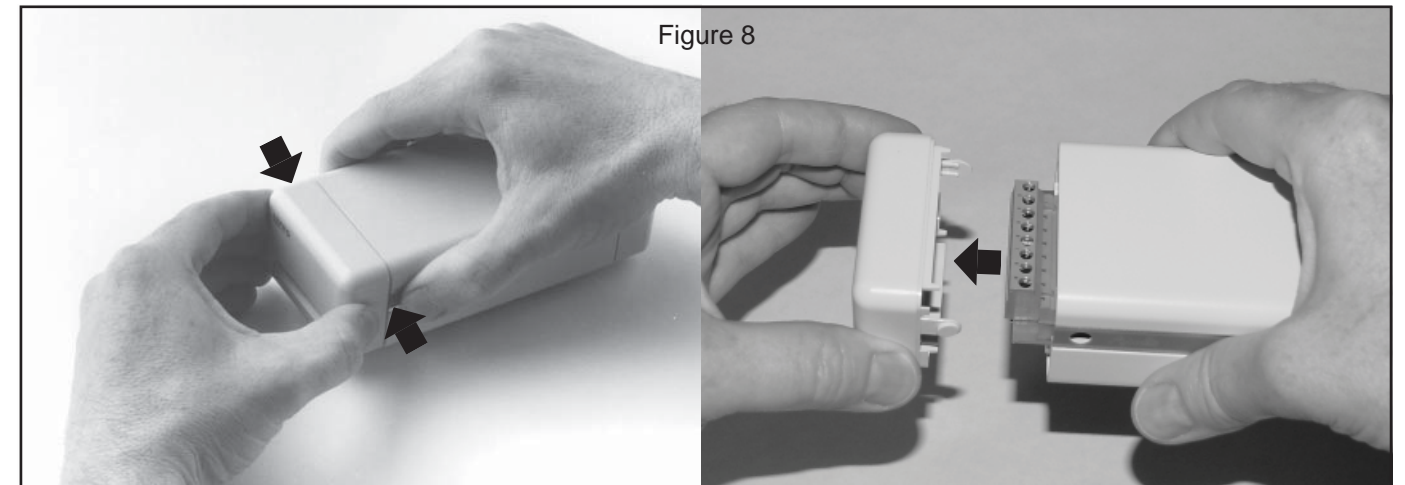


tions on air activation "T" fitting with 3-3/4 inch cable ties. Clip off excess cable ties.

- 3) If more than one handpiece hose will be operated from the same power supply, repeat the above steps for each hose and air activation tubing.

## MAKING CONNECTIONS TO POWER SUPPLY

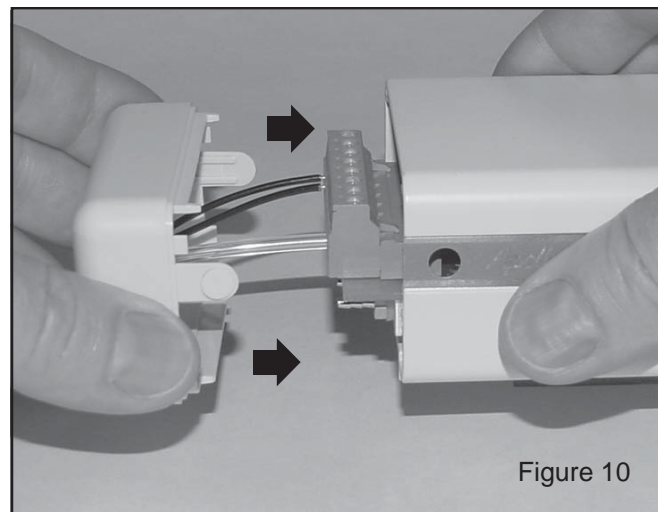
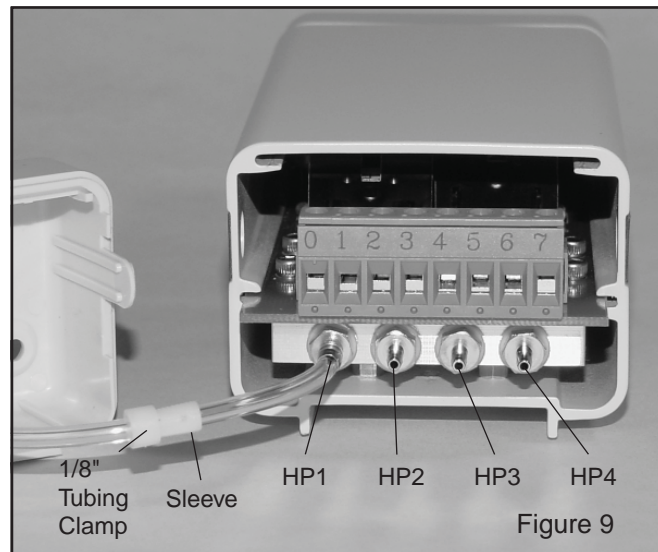
- 1) Route clear air activation tubing already connected to air activation "T" fitting and bulb wires exiting from end of hose along dental unit to power supply. Cut air activation tubing to necessary length, leaving sufficient length for securing to dental unit with adhesive backed "C" clamps without inhibiting normal dental unit motion.
- 2) With thumb and forefinger, simultaneously depress both power supply front cover release buttons. If necessary, use a small, blunt tipped instrument to depress buttons. **Figure 8.** Pull front cover forward and remove from power supply, exposing air activation tubing barbs and wire terminals.
- 3) Insert one end of clear air activation tubing through slot in front cover. Slide one 1/8" tubing clamp 1 inch past one end of the clear air activation tubing. Insert same end of air activation tube as far as possible on handpiece barb HP1 that projects from exposed front face of power supply as far as possible. **Figure 9** Then slide 1/8 inch tubing clamp down over barb as far as possible until collar breaks free from sleeve and slides over sleeve to secure tubing on barb.



- 4) Thread the two bulb wires exiting from end of handpiece hose through slot in front cover. Insert one of the two bulb wires into wire terminal 2, and the second bulb wire into terminal 3 as far as possible. Then tighten screw terminals until wires are securely retained.

**CAUTION: DO NOT CUT OR SHORTEN THE BULB WIRES IN ANY WAY THE BULB WIRES MUST RETAIN THEIR ORIGINAL LENGTH AS SHIPPED FROM FACTORY FOR SYSTEM TO WORK PROPERLY.**

- 5) Repeat steps 3 and 4 above for additional handpiece hoses to be installed with same power supply. Be sure that second handpiece hose air activation tubing is installed on handpiece barb HP2 and that bulb wires are installed in terminals 3 and 4. **Figure 9.** A third



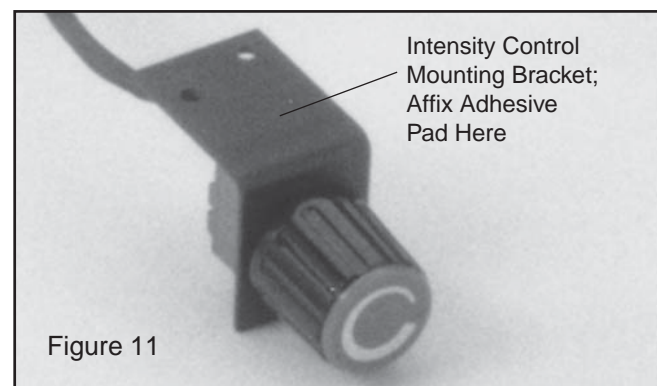
handpiece hose air activation tubing should be installed on handpiece barb HP3 and the bulb wires should be installed in terminals 5 and 6. A fourth handpiece hose air activation tubing should be installed on handpiece barb HP4 and the bulb wires should be installed in terminals 6 and 7.

- 6) If optional light intensity control will be utilized, thread both wires through slot in face of front cover. Insert one wire in terminal "0" and second wire in terminal 1.
- 7) After all air activation tubing and wires have been secured, return front cover to power supply by depressing both release buttons sufficiently to allow insertion into power supply housing. **Figure 10.** When front cover is in proper fully engaged position both release buttons should emerge from holes in side of housing, flush with housing outside surface.

## MOUNTING INTENSITY CONTROL (OPTIONAL)

The light intensity control may be mounted to the dental unit using either a two sided adhesive pad or screws. Both are included with each intensity control.

- 1) Route light intensity control from power supply along dental unit to a location on dental unit easily accessible from normal operating position. Select a mounting surface on the side or underside of the dental unit tray, console, etc., that presents a smooth, flat surface large enough to affix the mounting bracket of the intensity control. **Figure 11.**
- 2) If adhesive mounting is preferred, clean the mounting surface and the intensity control mounting bracket thoroughly with alcohol and a clean rag. (Do not immerse.)



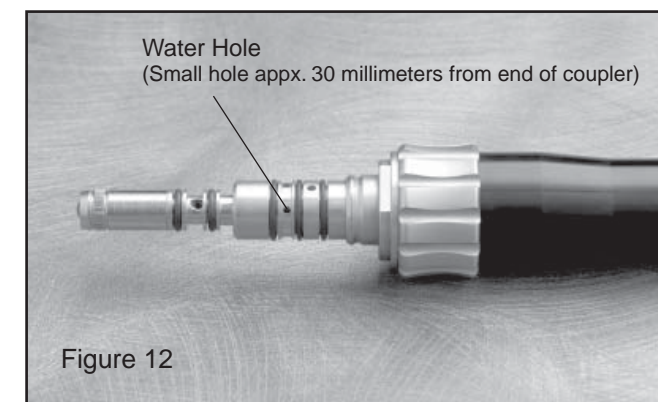
Allow to dry. Then peel away the cover of one side of the adhesive mounting pad and affix to intensity control mounting bracket. Peel away the second cover of the mounting pad and affix mounting bracket to desired mounting surface. Apply enough pressure to assure positive contact of adhesive surfaces.

- 3) If screw mounting is preferred, use the mounting bracket as a template to mark two mounting bracket hole centers with a pencil. Using a grounded electric drill and a 7/64" drill bit (use 3/32" if mounting on wood), drill two mounting holes 1/2" deep or through a panel less than 1/2" thick. **CAUTION: BEFORE DRILLING CAREFULLY CHECK OPPOSITE SIDE OF MOUNTING SURFACE TO VERIFY THAT DRILLING THE TWO HOLES WILL NOT PUNCTURE OR DAMAGE TUBING, COMPONENTS OR VISIBLE AREAS.** Align intensity control with drilled holes and screw both screws into mounting surface until intensity control is secure.

## FINAL CONNECTIONS

**NOTE: IT IS EXTREMELY IMPORTANT FOR BEARING AND SWIVEL COUPLER LIFE AND FOR PROPER SPRAY PATTERN THAT YOU VERIFY CORRECT WATER TUBING CONNECTION AS DESCRIBED IN #1 BELOW.**

- 1) Activate dental unit to verify proper installation of each handpiece hose tubing. Holding handpiece end of hose over sink or cuspidor, depress drive air, chip air (if applicable) and water switches on foot control. Check to see that water exits from proper hole at end of swivel coupler as shown in **Figure 12.** If water does not exit from correct hole, reverse assist/chip air and water tubing connections on barbs of dental unit.



- 2) Remove bulb from swivel coupler (see page 8 Replacing Apollo System Bulbs) and attach a Lares Handpiece Air Pressure Gauge (for item #, see list of accessories and replacement parts at end of this booklet) to end of swivel coupler. Adjust drive air pressure to 32 psi maximum. Reinstall bulb in swivel coupler.

**NOTE: DO NOT RELY ON DENTAL UNIT PRESSURE GAUGES AS THEY ARE OFTEN INACCURATE AND DO NOT ALLOW FOR VARYING PRESSURE DROPS THROUGH DIFFERENT HOSE LENGTHS AND CONFIGURATIONS.**

- 3) Plug power cord into universal input converter and plug into wall outlet. If the wall outlet is not a USA standard grounded, consult the factory for directions. Insert converter round coaxial output plug into Apollo supply as far as possible.

**NOTE: USE ONLY THE LARES RESEARCH MODEL 12616 UNIVERSAL INPUT CONVERTER WITH APOLLO POWER SUPPLY OR DAMAGE TO THE EQUIPMENT MAY RESULT.**

- 4) Secure hose and intensity control wires, air activation tubing and power supply electrical cord on dental unit members with adhesive "C" clamps as needed to make installation aesthetically pleasing. **Figure 13.** Excess hose bulb wire may be bundled and secured to underside of dental unit or inside console.

**CAUTION: DO NOT SHORTEN OR CUT HOSE BULB WIRES UNDER ANY CIRCUMSTANCES OR SYSTEM WILL NOT OPERATE PROPERLY.** Ensure that tubing or cords are not pinched or strained throughout all possible ranges of dental unit motion.

