DCI
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# *COMBINATION LIGHT SOURCE and L.E.D. CURING SYSTEM*

## LIGHT SOURCE SYSTEM INSTALLATION METHOD

The combination light source and curing light system is capable of providing power for up to 4 handpiece light sources with an additional circuit for high intensity LED curing capability. The system is designed to be installed into the dental unit to provide a clean, aesthetic visual appearance. For this reason, it is highly recommended that a qualified service technician be consulted for proper installation of light sources and the LED curing light.

## LIGHT SOURCE TUBING INSTALLATION

Handpiece light source tubings are available in various styles and colors to be compatible with dental unit colors and desired handpiece connections. Be certain that the style of tubing is appropriate for the particular application. The LED curing light tubing incorporates a special connector designed exclusively for the curing probe assembly and cannot be utilized for any other electrical purpose.

Replace the entire existing handpiece tubings with the appropriate light source tubings that are compatible with the particular handpieces being used. During replacement, take care not to cut or shorten the electrical wires. The supplied length of wire must be retained so that the proper lamp voltage is maintained. After replacement is completed, install the 1/8 x 1/8 x 1/16 plastic tee and air sensing tube assemblies into the drive-air lines of each tubing installed at an appropriate position on each tubing not more than 12" from the desired location of the power pack.

Choose one of the tee air sensing tubes. If this particular tubing is for handpiece position "#1" on the dental unit, then plug the tee air tube onto the power pack barbed fitting "TUBING 1" as shown in the diagram. Another illumination tubing may be installed for "TUBING 2" in the exact same manner. If the power pack is to be used with additional handpiece light sources, then tubings 3 and 4 can be installed in the same manner.

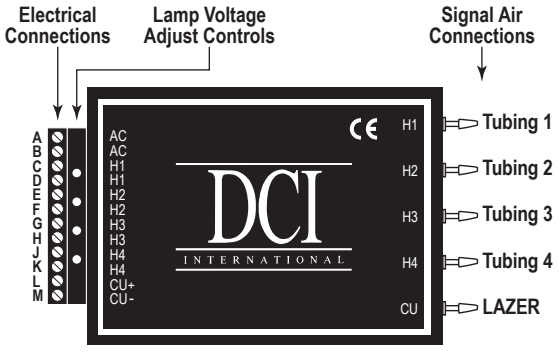
Attach the tubing wires to the power pack terminals corresponding to the tee air tube connection. The polarity of the light source wire connections is not important. However, the wires are color coded white and black to indicate positive and negative, respectively, and it is good practice to attach the wires white-black, white-black. Please note that tubing wire polarity is important when installing the LED light curing tubing, see below. Plug the wall power supply into an outlet of appropriate voltage and attach the output wires to the power pack terminals as shown in the diagram. **DO NOT USE** any other wall power supply than the one supplied. To do so would most likely result in immediate system failure.

## LED CURING LIGHT TUBING INSTALLATION

Attach the LED curing probe to the special tubing designated for this purpose. No special adjustments to the power pack need to be accomplished since the necessary operating parameters are pre-set at the factory.

The LED emitter inside the curing probe does not emit heat, however, the device itself operates at elevated temperatures and must be cooled by the drive air to avoid premature failure of the emitter. The curing light is activated by drive air and will not operate without adequate pressure. Although normal handpiece drive air set pressures are more than adequate for curing light operation, it is recommended that the drive air pressure for the curing light tubing be reduced to approximately 20 psi.

The LED curing light probe will now activate when the handpiece foot control is depressed. An audible tone will sound every 10 seconds and the probe can be de-activated at any time by releasing the foot control.




## ISO-C HANDPIECE INSTALLATION

This installation process is used for connection to any brand handpiece utilizing the standard ISO-C 6-pin style connection. Insert the appropriate ISO-C handpiece adaptor into the end of the ISO-C tubing assembly and securely tighten the tubing connector sleeve. Connect the handpiece to the adaptor following the manufacturer's instructions.

Generally, each brand ISO-C handpiece will have an exact operating voltage specification that must be precisely set using a digital multi-meter (DMM). The voltage adjustment controls are located on the topside of the power pack directly under the four small adjustment holes. ALL handpiece light source circuits **MUST** be adjusted to the correct operating voltage to avoid premature lamp failure.

**IMPORTANT:** Voltage set levels seriously affect the lamp operation, especially longevity. NEVER USE THESE CONTROLS TO ADJUST LAMP INTENSITY.

For all brands of handpieces, the operating voltage of the lamp must be set to the value recommended by the manufacturer. Turn the voltage adjust controls fully DOWN (CCW). Gain access to the lamp connections and attach a digital multi-meter (DMM) capable of measuring 3.00 to 4.20 volts DC. Activate the handpiece line, which should turn on the lamp for 10 seconds. Using a mini flat blade or phillips screwdriver, SLOWLY turn the appropriate voltage adjust control up (CW) until the meter reads the voltage recommended. Repeat this procedure for any other power pack positions in use.

If direct attachment of the DMM to the lamp is mechanically difficult, then connection can be made at the power pack. This method MUST compensate for the electrical resistance of the tubing wires. The normal length of tubings is 5ft. with an extra 8 to 10 inches of wire out of the end of the tubing. DO NOT shorten the wires as this would change the electrical resistance. Attach the DMM directly to the appropriate power pack terminal strip connections. With the lamp operating, set the voltage 0.25 **HIGHER** than specified. By setting the voltage a little higher, this will compensate for the voltage loss in the tubing wires.

## ISO-B HANDPIECE INSTALLATION

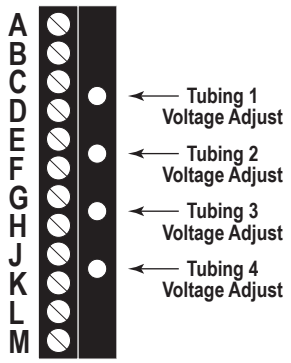
This installation process is used for connection to any brand handpiece utilizing the standard ISO-B 5-hole style connection. Slide the light source tubing connector nut back to expose the lamp module receptacle. Plug in the supplied ISO-B 5-hole lamp module. Be sure the module is correctly aligned. Plug the handpiece into the lamp module carefully aligning all air and water tubes. Slide the connector nut over the lamp module and tighten securely to the handpiece.

The light source power pack is **NOT** preset at the correct operating voltage when using the supplied 5-hole lamp module. The operating voltage of the lamp **MUST** be set to the correct voltage. Using one of the procedures explained above for ISO-C handpiece installation, set the ISO-B lamp module operating voltage to 3.35 VDC as read on the digital multimeter at the lamp connections. If measuring at the power pack, set the voltage to 3.60 VDC.

## LED CURING LIGHT INSTALLATION

The table below is used for connections to the power pack. All tubing installations are the same as described above except the LED curing tubing is a special configuration and does not require setting of any electrical parameters. After installing the tubing in the desired location on the dental unit, connect the wires as shown in the diagram below. Note the polarity of the curing light wires. WHITE is positive and BLACK is negative. Reversing the connection polarity will result in non-operation of the curing light. The curing light **REQUIRES** cooling air when in use and the recommended air pressure setting should be 15-20 psi.

**A - 9v wall mount power supply**
**B - 9v wall mount power supply**
**C - Handpiece tubing 1(wht)**
**D - Handpiece tubing 1(blk)**
**E - Handpiece tubing 2(wht)**
**F - Handpiece tubing 2(blk)**
**G - Handpiece tubing 3(wht)**
**H - Handpiece tubing 3(blk)**
**J - Handpiece tubing 4(wht)**
**K - Handpiece tubing 4(blk)**
**L - LED curing light tubing (+)(wht)**
**M - LED curing light tubing (-)(blk)**



# L.E.D. Curing Light
# Alternative Installation

### Alternative Air Supply Installation

The LED curing light probe **MUST** be connected to an air supply as described previously. However, occasionally the dental delivery unit does not have a spare tubing distribution mechanism or it is not desirable to utilize one of the existing handpiece lines for LED curing installation. In these cases it is necessary to install the LED curing tubing by utilizing an additional handpiece hanger and connecting the system in a slightly different configuration.

### Auxilliary Handpiece Hanger

To effectively install LED curing using the alternative method, it is necessary to obtain a handpiece hanger that is compatible with the dental unit both in mounting style and color. In addition, the handpiece hanger must have a "positive" operation mechanism. That is, when any device in the handpiece hanger is removed, air is permitted to flow through the shutoff valve. This will permit the LED curing probe to be supplied cooling air in operation.

### Air Routing Connections

Normally, when installing handpiece tubings, the dental unit distribution blocks control air supplied to devices. However, in this installation scenario a distribution block is not utilized. Therefore, cooling air to the LED curing probe is supplied by the foot control and ON/OFF control of this air is determined by the handpiece hanger air shutoff valve.

Following the diagram provided below, tee into the OUTPUT line from the foot control using a 1/8"x1/8"x1/16" plastic reduction tee. Route 1/16" tubing to the INPUT side of the auxilliary handpiece hanger shutoff valve. The OUTPUT side of the valve should be routed to both the LED curing tubing DRIVE air and also to the #5 position barb fitting on the power pack.

### Operation

When the LED curing probe is removed from the hanger and the foot control is depressed, cooling air will flow through the hanger shutoff valve and into the LED curing tubing drive air. Exhaust air will exit via the tubing exhaust line. At the same time, the power pack will be signalled by this air and subsequently turn on the curing light. If the foot control is kept depressed, the curing light will remain on and an audible tone will sound every 10 seconds. The curing light can be turned off at any time by releasing the foot control.

### Cooling Air Flow

The LED light curing probe does not require much air to be cooled properly. The hanger shutoff valve as well as the 1/16" tubing should provide adequate air flow restriction to reduce the pressure to the probe to an acceptable level. If further restriction is desired, a suitable restrictive orifice can be inserted to gain the desired level of flow.