

# Quazar LD30K

Instruction Material for Quazar LD30K  
Precision O.E.M. Laser Diode Module and Driver Unit

## Quazar

### Diode Module and Driver

#### Replacement Parts

**Laser Supplies**  
**Laser Eyewear**  
Eyewear # D-213-4600 Each \$199.95  
**Laser Handpiece Replacement**  
Laser Module # D-213-6700 Each \$699.95  
**Carbon Dye 200ml**  
Carbon Dye # P-213-2500 Each \$99.95  
**Laser Tattoo Post Treatment Gel**  
Stock # P-216-2500 Each \$49.99  
**Laser Capillary Post Treatment Gel**  
Stock # P-216-2600 Each \$49.99  
**Laser Post Treatment Aloe**  
Stock # P-216-2700 Each \$29.99

Prices are subject to change without notification. To order on-line, go to  
<http://www.centre-biotechnique-avance.com>  
For technical assistance beyond what this manual provides, please e-mail  
[admin1@centre-biotechnique-avance.com](mailto:admin1@centre-biotechnique-avance.com)  
Please allow 24 hours for processing.

**Quazar LD30K** produces laser radiation which can be harmful to the eyes. Always wear protective eyewear while operating this equipment. Laser radiation has the capability to burn the skin if the technician does not closely observe the patient's reaction to the procedure. Laser electrolysis results in full destruction of the hair follicle and is **irreversible**. Always plan ahead before undertaking detail work such as eyebrow shaping or hairline contouring. Patch test a small area (no larger than 1X1 inch square) before full application. Allow 24 hours to determine the patient's reaction before applying full treatment.

**ESD Handling Precautions:** The laser module is extremely sensitive to electrostatic (ESD) discharge. The following steps should be taken to reduce the risk of damage to the diode.

1. Secure the laser accessory to the power system by tightening the exterior shroud (spanner nut) clockwise until it stops. If it is left unsecured, intermittent contact with the leads may produce a damaging power surge.

Always transport (or store) the laser in an ESD protected pouch. Static discharges from the hands can destroy the diode which would not be covered by warranty.

## Quick Setup Guide

Read this guidebook first to set up your  
equipment for use.

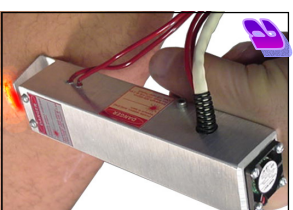


Keep this manual in a convenient place for quick and easy  
reference at all times.

The product names in this guidebook are trademarks or registered trade marks of each specific manufacturer. In the interest of providing superior equipment, Quazar Industries reserves the right to modify or amend equipment specifications without notice or obligation.

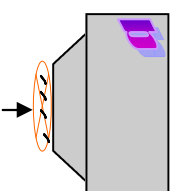
## Always Patch Test Your Client First

Before administering full treatment to any patient you must do a patch test. The best time is during their initial consultation. Apply 3 pulses on setting 5 to a single area (stationary exposure). To apply single pulses set your pulse frequency on 1. If this test burns the patient (distinct swelling and trauma to the skin will show) they are not suitable for laser epilation or laser procedures of any kind. This is generally a condition of persons who have black skin (Fitzpatrick level 5 and 6).



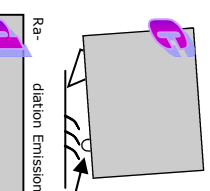
**Treatment Variation 1: Deep Trauma on Shaved Hair**  
With this procedure, the hair is actually shaved by a razor prior to laser application. This leaves the follicle intact, which provides a target for the laser radiation. The skin must be thoroughly cleaned to allow for nearly 100% of the radiation to be sent deeply inside the tissue. If there is dirt, hair, or dead skin, the laser radiation may become blocked, thereby reducing the efficiency of the device.

Place the laser head on the skin as shown in figure 'a' (with the brass focal tip touching the treatment area). Activate the laser on pulse setting 4 (7 pulses per second) while intensity is set at 5. Scan the treatment area at a rate of 1/2 inch per second.

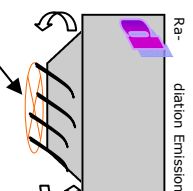


## Laser Treatment Procedure 2: Laser Shaving

To shave the skin with a high power laser, trim the hair to 1/4 inch or so. If the hair is too long it will create debris which will block and obstruct the emission output resulting in loss of photon intensity. Should vaporized hair build up on the laser head, use isopropyl alcohol on a cotton swab to clear.



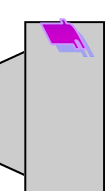
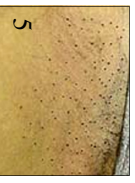
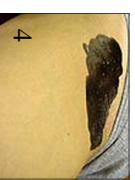
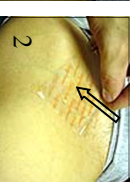
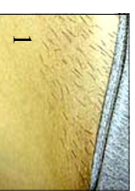
Place the laser head on the skin as shown to the left in figures 'b' and 'c' and 'd'. The brass tip should be in contact with the skin and the hand piece should be at a 85 degree angle to the surface. Activate the laser on pulse setting 4 (7 pulses per second) while intensity is set at 5. Scan the treatment area at a rate of 1/2 inch per second. This procedure works well on coarse dark hair growth. Finer and lighter hair may not completely vaporize from the laser. In these cases, the use of carbon dye on the hair (or a dark hair dye) will improve the heat exchange reaction.



**Treatment Variation 3: Deep Trauma by Carbon Dye**  
Before applying treatment, remove all hair from the area by tweezing or waxing. Refer to pictures 1-5 below for proper technique for waxing and carbon dye application.

Laser hair removal is most effective when applied to an empty follicle shaft. Human hair simply does not normally have enough pigment to allow for sufficient heat exchange to cauterize, desiccate and necrotize the cells which produce hair. To compensate for this lack of 'quantitative' and 'qualitative' photon targets, it will be necessary to place a high-density carbon dye inside the follicle prior to treatment.

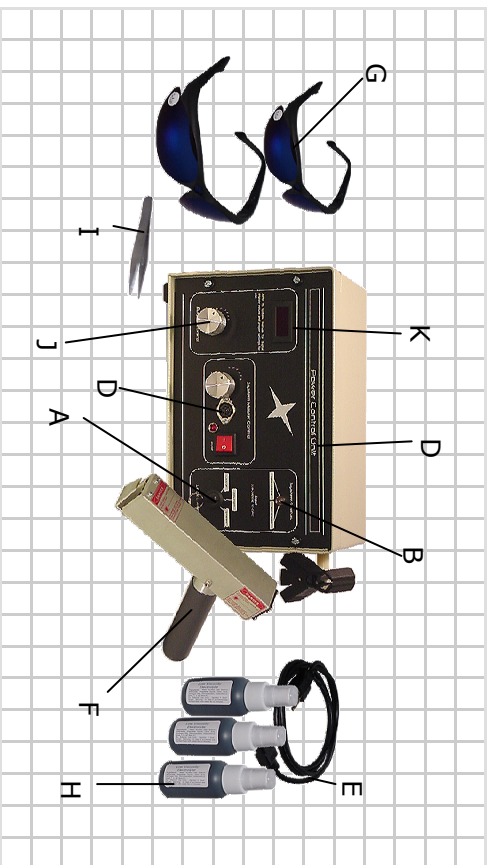
Using a cotton-tipped applicator, completely cover the treatment area with the special dye included in your kit. Massage the dye into the follicle pore with a firm downward circular motion. Repeat 2-



3 times to saturate the follicle pore. Use an **ethyl alcohol** based wipe to lightly clean the excess from the surface of the skin. At this point you will have all desired follicles **visibly highlighted** with a dark spot (as seen above) and are ready to power up your laser for treatment.

Place the laser head on the skin as shown in figure (with the focal arm touching the treatment area). Activate the laser on pulse setting 4 (7 pulses per second) while intensity is set at 5. Scan the treatment area at a rate of 1/2 inch per second. Move the laser and repeat.

## LD30K Control Locations/Feature Descriptions



- Key Lockout:** This feature is required by law on all high-power laser devices. The first step in the correct sequence to power-up your laser is to turn this lock clockwise using the special key included in your kit. The light (center LED lamp) will be green when the power system is off and red when the power system is on.
- System Status LED:** This light will indicate system status (neutral or live). Green is neutral and red is live.
- Pulse Control:** This allows the operator to set the number of laser pulses per second.
- Laser Jack:** An eight-prong coaxial power jack for the diode laser hand piece.
- Power Cord:** Rated for 60Hz, 120-240 V, 10 Amp with corresponding plug-style for country of destination.
- Laser Instrument:** A 2cm single emitter 54jcm2/sec. high intensity pulsed laser with thumb switch.
- Eyewear:** This is an essential part of the treatment process. Direct or reflective laser radiation can seriously injure the eye. Both the technician and the patient must use the protective eyewear while the laser is enabled or activated. Eyewear is intended for **accl-dental** exposure only. Never stare directly into a laser beam.
- Carbon Dye:** This is an 'atomized' form of molecular carbon which easily penetrates deeply into the follicle shaft. The dye adds pigment which gives a receptor for the photon/heat exchange reaction. The carbon atoms will capture the laser energy and convert it into heat for the rapid and efficient cauterization of tissue for the permanent destruction of the hair follicle organ.
- High-Precision Tweezers:** Apparatus for the extraction of follicle prior to carbon dye application.
- Intensity Dial:** Control feature for the regulated output of the laser module. Settings range from 0-5.
- Emission Indicator:** Panel-mount digital display showing available current. Refer to the last page of this pamphlet for conversion to Jcm2.

### Equipment Warranty

We warrant to the original purchaser the equipment manufactured by us to be free from defects in material and workmanship under normal use and service. Our obligation under this warranty shall be limited to the repair or exchange of any part or parts which may prove defective under normal use and service within 12 calendar months from the date of shipment and which our examination shall disclose to our satisfaction to be thus defective. When necessary, purchaser shall apply for a Return Materials Authorization and instructions on proper return procedures from their original sales associate. The laser diode (head) requires special operating precautions which, if defied, may void warranty.

### Warranty Extension Certification:

Customer Number \_\_\_\_\_ Authorization Number \_\_\_\_\_  
 Warranty Extension ( ) years Warranty Type: A B C D

## Laser Startup Procedure

*Put on your laser eyewear before powering up your system. Wear the eye protection throughout the entire procedure.*

- Turn the key lockout switch from system status green (neutral) to system status red (enabled). At this time your digital power readout will show the available power for the operation of the laser. The emission indicator will need to be converted to joules per centimeter squared/seconds by using the table on the last page of this pamphlet.
- Activate the laser pulse (turn to 'enabled'). The red LED will begin to flash which indicated that your laser is 'live'. By pressing the thumb switch on the hand piece you will be delivering pulses of laser radiation. Adjust the pulse frequency to the desired level.
- Set power level for treatment. It is recommended to start out on setting 4 or 5.
- Set your pulse frequency to setting 4 (which is ideal for laser epilation).

### Calibration and Measuring Laser Output Fluence

While in pulse mode, the digital meter may not give accurate readings of power output (the pulses can be too fast to measure). For accurate gauging of power you must convert the digital panel meter numbers to joules. A table with your system's certified calibration is included in this booklet.

### Testing the Laser

With the power setting on 5, place the laser head on the black test sheet included with your instruction material. Press the trigger switch in pulse mode for a brief duration (1 second or less). A series of brilliant laser flashes will be evident which will ignite the test pad producing vapor and smoke. If no reaction occurs, check power setting.

If you have no laser test sheet you may use a clear balloon with a black marking pen. First inflate the balloon then make a round black mark the size of a quarter. When the laser beam strikes the black mark it will cause the balloon to burst. Should either of these tests result in poor performance of the laser your unit is in need of service.

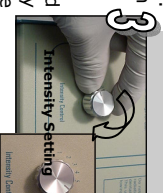
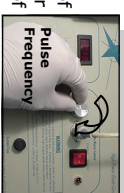
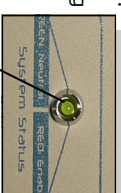
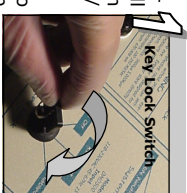
### Pulse Mode 5 and Diode Overheating

While using this laser in pulse mode on settings 1-4, there is little chance of overheating (which could lead to diode failure). However, using high power settings (#5) in LP mode may lead to excessive heat build up. Short bursts of 1 second with a 1 second wait before the next emission are best on setting 5. Pushing the laser beyond the limits of performance will damage the gallium arsenide crystals, resulting in loss of intensity, performance, life expectancy of the laser which would not be covered by warranty.

### Laser Head Maintenance

Clean the laser head and optics frequently. For light maintenance use acetone or alcohol on a cotton tip applicator. For more aggressive cleaning use an 'Exacto' to scrape any carbonized material from the laser head.

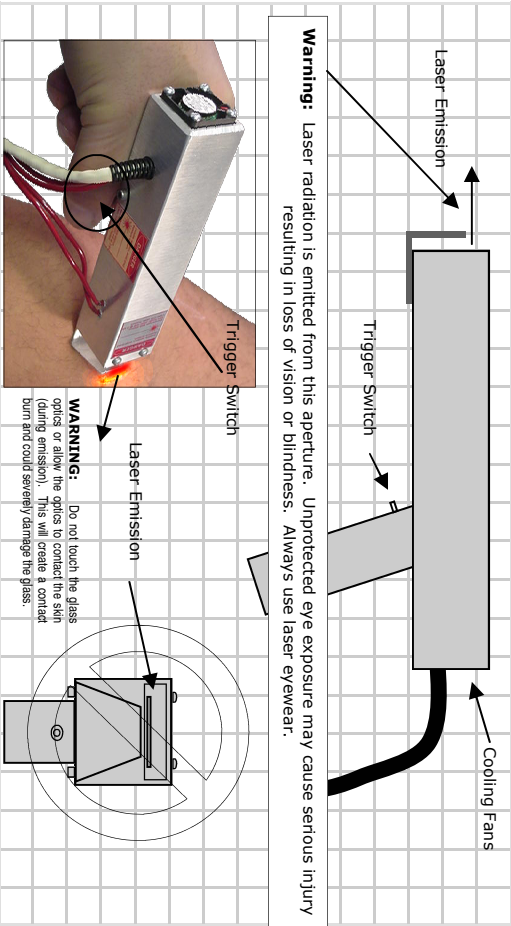
Carbonized debris (residue from vaporized hair) can obstruct the laser treatment by occluding the optics (lens) as well as the articulating arm bracket.



*Always use caution when turning on and/or operating this system. The laser is very powerful and can cause serious eye or skin injury if used incorrectly.*



LD30K QCW Laser Instrument

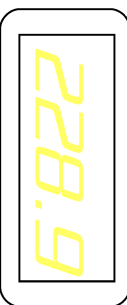


The LD30K comes with a high output 54Jcm2/sec. adjustable pulse frequency (fixed pulse duration) instrument for superior operator control. To prolong the life of your diode laser emitters it is advisable to activate the module in short bursts lasting no more than 1 second, while allowing an equal span of time of cooling between pulses. This will prevent overheating and potential damage to the laser crystals. The gallium arsenide laser diodes (emitters) are located inside the hand piece. Dropping or bumping the instrument may result in irreversible damage to the internal components and would not be covered by warranty. Pinching or bending the fiber optic leads that connect the instrument with the driver unit may also damage the laser.

**WARNING: Do not operate the laser on full power (setting 5) and full pulse (setting 5) for more than 1 second at a time. The diodes will overheat and may burn out. Failure to comply will void warranty.**

Trouble Shooting

- Should you encounter technical problems with your Quazar LD30K Laser system, refer to the following guide for potential problems and their solutions.
- Unit is plugged into the wall, all accessories are correctly inserted into the unit but no laser output is being registered.
  - ++Check all connections. Plug and unplug each one being sure all contacts are sound.
  - ++Check all cords. Due to continual bending and fatigue, wires may fray or break resulting in full loss of power.
  - ++Check fuse: The Quazar unit has a fast-acting fuse mounted inside your unit to protect the delicate laser diode from voltage spikes on-line power surges and electro-static discharge (ESD damage). Replace with 15 amp fast acting type only. Failure to comply with these specifications may result in serious damage to your laser and will void all warranties.
  - Unit clicks or makes noises
  - ++This clicking sound is normal. No service is required.
  - Laser output is weak.
  - ++Emitter output modules are blocked with carbonized debris (burnt hair etc.). Clean thoroughly with a cotton tipped applicator and alcohol. If the performance of the laser does not improve after cleaning the head your unit needs servicing by a qualified agent. Contact technical support for assistance.
  - No output from the laser is registered after all trouble-shooting suggestions listed above have been checked.
  - ++Probable diode failure. Unit needs servicing.
  - Output Meter Jumps Up and Down.
  - ++Pulse frequency is set too high for the digital meter to accurately gauge the draw current. This has no serious repercussions for the performance of the system and should be ignored. The accurate values will be given when the laser is not pulsing (in the enabled position).



Digital LED Emission Meter

The meter may need re-calibration by adjusting the on-board potentiometer. Two resistors, Ra and Rb may be used in order to alter the full scale reading (F.S.K.) of the meter.

Specification	Min	Typ.	Max.	Unit	Reading	Setting	Jcm 2
Accuracy		0.05	0.1	%(+1 count)			
Linearity			+1	count			
Sample rate		3		Samples/sec			
Op. temp	0	50		°C			
Temp. Stbl		150		Ppm/°C			

Laser Hair Removal

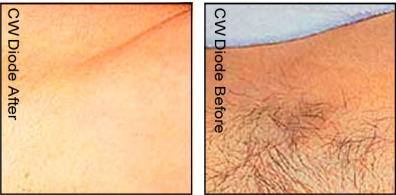
There are currently two standard variations for the permanent removal of unwanted hair by way of laser radiation. The first of which being referred to as laser 'shaving'. The second is 'deep tissue traumatization' which targets living melanocytes or carbon dye in the follicle organ.

Laser shaving has the distinct advantage of showing immediate cosmetic improvement. A new patient may walk into a laser hair removal office covered with unwanted hair then leave hairless and smooth a few hours later. Unfortunately for the patient (who may have spent \$5,000 or more for the visit) 95% of their hair will return in about 6 weeks. Progressive permanency has been established at about 5% per treatment with the marginally inefficient 'laser shaving' method. The average investment of treatments (quantitatively) is 10-12 applications before hair growth is permanently halted (providing they are a good candidate for the procedure, see below).

The limitations for achieving permanent results in a prompt and expedient manner by way of laser shaving are many. Most of the laser radiation is absorbed and blocked by the hair above the skin. The fraction left over will be reflected and absorbed by the skin itself (especially in cases where the patient has high levels of pigment in the dermis). As little as 10% of the original photon output reaches the papilla matrix to produce thermal damage to the live hair follicle itself.

Laser shaving procedures are covered in this instruction booklet and may be used for those patients who prefer that particular method; however, for the purpose of efficacy and speed for permanent results this manual will focus primarily on the deep tissue traumatization method.

With the deep tissue method, a full 98% of the laser energy is passed through the epidermis (no reaction takes place on or above the surface of the skin). Only 2-5% loss of energy per mm of tissue depth occurs, which leaves very high levels of laser radiation at the precise areas to create thermal damage to the follicle. The deep tissue method requires that the hair be shaved prior to treatment. The hair below the skin will remain as a target for the laser energy.



A variation to this procedure requires the follicle organ to be removed from the skin by tweezing or waxing. The empty follicle is then treated with a carbon based dye. The advantages of this 'carbon dye' protocol are substantial. Melanin in human hair is not an efficient receptor for laser energy. Even black hair has only a 20-40% efficiency rating for the conversion of photon energy to heat. Carbon dye has a 99.997% heat exchange conversion ratio. This produces far greater thermal damage to the follicle itself. The next advantage to the carbon dye method is that no hair debris (carbonized hair) is left in the skin. The 'burnt hair' is visible through the skin as a dark spot and is poorly absorbed by the immune system (sometimes taking months to disappear). This can create pimple-like protrusions and, in some cases, infections. The third advantage to using the empty follicle shaft/carbon dye protocol is that laser radiation will not react with blond, red or grey hair growth. There simply is not enough pigment to create heat. By using carbon dye, the entire process becomes controlled, highly efficient, and predictable.

Client Pre-Qualifications

The best candidate for laser hair removal has fair skin with dark terminal hairs. Skin typing for exposure to ultraviolet light can be categorized by the Fitzpatrick classification, developed by Dr. Thomas Fitzpatrick of Harvard Medical School.

**Skin Type I: Never tans, always burns (extremely fair skin, blonde hair, blue/green eyes)**

**Skin Type II: Occasionally tans, usually burns (fair skin, sandy to brown hair, green/brown eyes)**

**Skin Type III: Often tans, sometimes burns (medium skin, brown hair, brown eyes)**

**Skin Type IV: Always tan, never burns (olive skin, brown/black hair, dark brown/black eyes)**

**Skin Type V: (Never burns (dark brown skin, black hair, black eyes)**

**Skin Type VI: (Black skin, black hair, black eyes)**

Types I through 4 are outstanding candidates. Type 5 will have excellent results as well, but care must be taken to assure that the laser will not burn the skin. Type 6 should not undergo laser hair removal unless used in conjunction with skin bleaching due to the high risk of burning and hypo/hyper pigmentation issues.

References

1. Biering P, Gramers M, Egekvist H, Christiansen K, Trolhus A. Hair reduction using a new intense pulsed light irradiator and a normal mode ruby laser. J Clin Laser Ther. 2000; 2: 63-71.

2. Kauvar AN. Treatment of pseudofolliculitis with a pulsed infrared laser. Arch Dermatol 2000; 136:1343-6.

3. Kreiman S, Li C, Newman N. Laser hair removal with alexandrite versus diode laser using four treatment sessions: 1-year results. Dermatol Surg 2001; 27: 925-9.

4. Gorgi M, Aslan G, Akcoz T, Erdogan B. Comparison of alexandrite laser and electrolysis for hair removal. Dermatol Surg. 2000; 26:37-41.

5. Bencini PL, Luo A, Galimberti M, Ferranti G. Long-term epilation with long-pulsed neodymium:YAG laser. Dermatol Surg. 1999; 25:175-8.

6. Lloyd JR, Wilkoy M. Long-term evaluation of the long-pulsed alexandrite laser for the removal of bikini hair at shortened treatment intervals. Dermatol Surg. 2000; 26:633-7