Quazar

Diode Module and Driver

Replacement Parts

Laser Supplies

Laser Eyewear
Eyewear # D-213-4600 Each $199.99
Laser Module Replacement 4000 mW
4 Watt Laser Module # D-213-6700 Each $599.99
Carbon Dye 50ml Bottle
Carbon Dye # P-213-2500 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
admin@centre-biotechnique-avance.com
Please allow 24 hours for processing.

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Quazar DM 4000

Instruction Material for Quazar DM 4000
Precision O.E.M. Laser Diode Module and Driver Unit

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.

Important Information

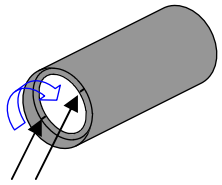
—Read all safety and operating instructions before connecting or using this equipment.
—To protect against electrical shock, do no use this equipment near water. Do not immerse unit, plug transformer while standing in water, or spray with any liquids. As with many electrical appliances, this unit carries a live charge even while unplugged. Do not dismantle this unit (there are hazardous voltages inside).
—Do not place this unit near an open flame or cooking/heating devices (e.g., stoves, heat registers, radiators, etc.).
—If an extension cord is used, it should be appropriately rated for voltage, power, and frequency as indicated on the back of the unit.
—The power cord should be routed so that it is not likely to be walked upon or pinched (especially near the wall outlet, extension receptacle, or where the cord exits the unit).
—To avoid serious damage to the power system and microelectronics, the transformer should be unplugged from the wall outlet when the unit will be unused for long periods of time.

Module Overheat Warning: The DM4000 is designed to operate in constant wave mode with photon emissions lasting no more than 1-2 seconds at time with a 1-2 second 'off cycle' for cooling. Failure to adhere to correct operating procedures will result in overheating. This will permanently damage/destroy the laser diode crystal resulting in loss of intensity and/or performance of the laser and will not be covered by warranty.

Trouble Shooting

Should you encounter technical problems with your Quazar DM4000 Photo Epilator, refer to the following guide for potential problems and their solutions.

—Unit is plugged into the wall, power plug is correctly inserted into the unit but no laser output is being registered when the thumb switch is pressed.
++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 is full loss of power.
—Unit hums or makes noises.
++Unit needs servicing.
—Laser output is weak.
++Unit needs servicing.
—No output from the laser is registered after all trouble-shooting suggestions listed above have been checked.
++Unit needs servicing.
—Laser beam is not focused to a usable point (output is a weak line or oval).
++Your optics need to be adjusted. Normally, the lens is pre-set by the manufacturer to focus at roughly 1/2 inch from the aperture. If the user has altered this setting (turned the optical spanner adjustment) without correct instructions the beam may be unusable until corrected. Turn the lens adjuster with a straight-slot screw driver (see notches at right) to reset beam focus. Turning clockwise will bring the focus out (making the point farther away). Turning counterclockwise will bring the point closer.



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.

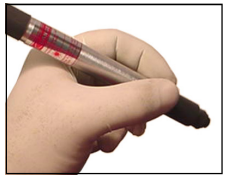
Warranty Extension Certification:

Customer Number Authorization Number

Warranty Extension ( ) years Warranty Type: **A** B C D

The Treatment Procedure

Press the thumb switch and shine the red dot on the highlighted hair follicle. Adjust the distance of the laser head from the tissue to create a pin-point of focus. The optimal beam diameter for maximum intensity is roughly 1 mm.



The follicle will begin to flash as the photon energy reacts with the carbon dye. It is also normal to see some gaseous emissions (vapor and smoke). Make a small circular motion for 1-2 seconds then discontinue the emission. Allow the laser to cool for 1-2 seconds then repeat. Continue until all photon reactivity discontinues (vapor, smoke and flashing). Move on to the next follicle and repeat.

Some patients may find the laser treatment uncomfortable. In these cases the use of a topical anesthetic such as lidocaine (a synthetic amide, C14H22N2O, used chiefly in the form of its hydrochloride as a local anesthetic and antiarrhythmic agent) will reduce discomfort. A mild cryogenic (nitrogen-based) topical spray will also minimize any pain.

Treatment Around or Near the Eyes: Great care must be exercised when working near the eyes. The laser emission is powerful enough to actually penetrate the eyelid and permanently damage the eye. Having the patient close their eyes is not satisfactory protection. The use of a dark-colored damp wash cloth which is folded over four times will deflect the harmful radiation; however, only laser protective eyewear is recommended.

Treatment Around or Near Mucus Membranes: Laser radiation will severely damage the tissues inside the nose and ear canal. Treatment should be avoided in these areas altogether.

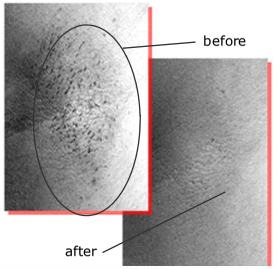
Treatment Around or Near the Genitals: Laser hair removal is safe for application to the pubic regions including the reproductive organs or both sexes. Care must be taken into consideration in these areas due to the increased level of neural sensitivity. The patient may find the process uncomfortable without a topical.

Treatment Around or Near the Areola (nipple): Laser hair removal is safe and effective on hair growth which occurs from the areola of both sexes. Again, care must be taken into consideration in these areas due to the increased level of neural sensitivity.

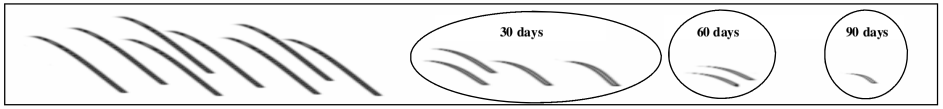
Post-Treatment: The skin surrounding the treatment area may experience short-term erythmia (reddening) which will subside within 12 hours. Should the treatment area show signs of excess scabbing you may wish to reduce the overall treatment time or intensity. The application of a post-treatment cooling and healing gel (such as Aloe) is encouraged to speed healing and reduce sensitivity. Instruct the patient to refrain from applying cosmetics or sunbathing for at least 24 hours.

Treatment Efficacy

Permanent hair removal is a gradual process which takes 90 days or more for complete destruction of the follicle tissues. Each hair must go through its entire growth cycle for it to be effectively treated. Only during the ***early anagen*** phase is it vulnerable to destruction. The following chart will give you an accurate example of what the reduction in growth activity should look like from 30, 60 , and 90 days of treatments.



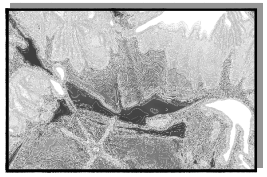
Pointers: Human skin has roughly 1,000 follicles per square inch. Only a small percentage of them are active (anagen) at any given time. For effective treatment, the hair needs to be treated during the anagen phase. It normally takes about 90 days for each follicle to go through the full growth cycle. Should you see hair growth activity in an area which has been completely cleared, it is most likely from a follicle which was dormant at the time of the original treatment. Simply apply treatment to these hairs as they appear.



Patient #	hair counts		6 week clearance
1 females, 3 males	pre	post	percent
1	274	9	97%
2	327	19	94%
3	187	2	99%

Laser 'Electrolysis'

The first laser hair removal treatment was administered, quite by accident, by a technician in the late 1970's. He was repairing a high output 692 nm YAG laser when he unwittingly left his arm in the beam's path for a few seconds. Although his skin was completely unharmed, all the hair in the area had completely burned off. In the years to follow, the area of his arm which was exposed to the laser remained completely ***bald***.



What actually occurred was a "heat exchange" reaction with the pigment (called melanin) deep inside the follicle tissue. Photon energy from the laser had penetrated into the translucent dermis virtually unobstructed. When it reached the pigment naturally contained in the follicle, radiation quickly heated those cells (*melanocytes*) to well over 100 degrees Celsius. Human tissue cannot survive at this temperature; henceforth, the complete destruction of the follicle was virtually instantaneous. The scientific term for this process is called ***thermolysis***.

Laser light with the wavelength of 600 to 900 nm (nanometer) passes through human tissue with very little loss of intensity. The Quazar DM4000 Epilator produces a precise wavelength of 808 nm, which is proven to provide the greatest tissue penetration while limiting the loss of energy to natural pigments found in the skin.

Quazar also utilizes a quasi constant-wave output laser (QCW), which makes it one of the most effective and sophisticated systems in the world. Other systems operate strictly on a 'pulsed-type' output. The problem with pulsed lasers is that follicle tissues are only heated for a very small increment of time (usually less than 1/1,000,000 of a second). Recent clinical studies show that it takes a full one ***second*** for complete carbonization, desiccation and coagulation at 100 degrees Celsius. With Quazar, the beam may be held in position until full destruction is achieved. By carefully regulating the output at 808 nm, the laser will not harm the skin, even after several minutes of constant exposure.

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 1 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. This is achieved by using a cryogenic spray or air-flow accessory. 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
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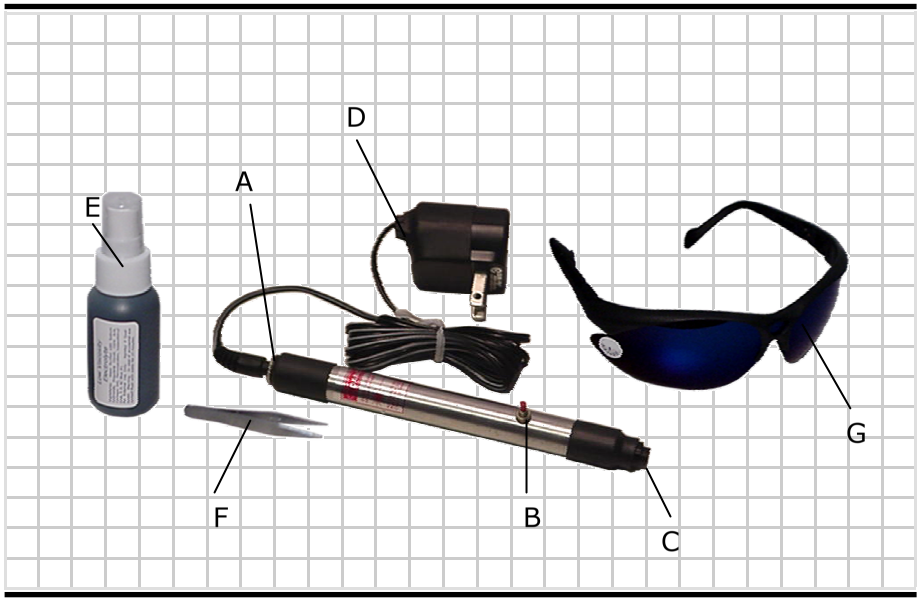
Warnings and Advisories

Quazar DM4000 Epilator 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.

Advisory: 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.

This manual provides a tutorial overview of laser epilation. For more detailed information, please refer to "**Modern Electrolysis, Volume 2, Phototherapy"** by Palamed Press. If you are unsure of the proper use of this device, do not use. The **Quazar DM4000 Epilator** is intended for use by qualified individuals or professionals only.

Control Locations/Feature Descriptions DM4000



A. **Power Disconnect Plug:** This feature is required by law on all high-power laser devices. When storing your DM4000 unit, remove the power plug from the laser module. This is intended to protect accidental exposure of laser radiation to unsuspecting persons and children. The module is incapable of emitting laser light when disconnected from the power source.

B. **Trigger Switch:** This red button on the side of the module will activate the laser output when pressed. The radiation will cease when the thumb switch is released.

C. **Laser Optics:** This is an adjustable lens at the end (output region) of the module. You may set the focal point of the laser from 1/2 inch to infinity by turning the spanner nut on the optics package.

D. **Transformer:** This is a 2.5 volt wall mount DC power source with 600mA of active current. Do not plug your laser module into any other DC source (wall transformer or other). The laser diode inside your module is designed to work on a very specific current. Over voltage of even 0.1 volts will destroy the laser.

E. **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.

F. **High-Precision Tweezers:** Apparatus for the extraction of follicle prior to carbon dye application.

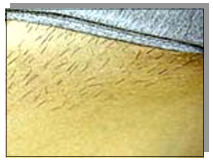
G. **Eyewear:** This is an essential part of the treatment process. Direct or reflective laser radiation can seriously injure the eye. Both the technician and the patient must use the protective eyewear while the laser is enabled. Eyewear is intended for ***accidental*** exposure only. Never stare directly into a laser beam.

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.

Module Overheat Warning: The DM4000 is designed to operate in quasi constant wave mode with photon emissions lasting no more than 1-2 seconds at time with a 1-2 second 'off cycle' for cooling. Failure to adhere to correct operating procedures will result in overheating. This will permanently damage/destruction the laser diode crystal resulting in loss of intensity and/or performance of the laser and will not be covered by warranty.

Pre-Treatment

Before applying treatment, remove all hair from the area by tweezing or waxing. Laser hair removal is most effective when applied to an empty follicle shaft. Human hair simply does not 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.



Isolate the hairs to permanently destroy. It will be necessary to remove them by swiftly plucking (or waxing) in the direction of growth. Pulling slowly generally leaves most of the follicle tissue inside the pore which will block the dye. The hairs may be left in the skin if desired, but results will be improved if they are extracted.

Photo-Reactive Dye Application

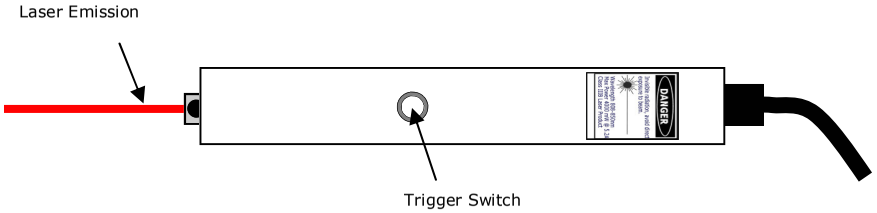

Using a cotton-tipped applicator, completely cover the treatment area with the special dye included in your kit. Massage the dye into the follicle pore with a firm downward circular motion. Repeat 2-3 times to saturate the follicle pore. Use an ***ethyl alcohol*** based wipe (isopropyl alcohol will not dissolve the dye) 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. Carbon dye must be also used if the hair is left in the skin for laser 'shaving'.

Pointer: *If your patient objects to having a depilatory process before the treatment, you may continue without the carbon dye. This alternate procedure is the equivalent of 'laser shaving' (for which long-term permanency is marginal). For best results, the use of a photo-reactive dye is highly recommended.*

Dermal Coolant Application

Place a thin layer of laser dermal coolant spray on the treatment area prior to laser application. This will protect the surface of the skin from burning as well as improve the translucency of the skin (rate at which light can pass). Failure to use the dermal coolant prep may result in unnecessary discomfort for the patient during treatment and increase the likelihood of a surface burn. Should the liquid become dry, it will be necessary to re-apply frequently. The use of a humidifier in dry climates will substantially prolong the duration for which the dermal prep will retain its cooling properties.

The DM4000 comes with a high output 54jcm2 CW 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 1-2 seconds, 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.



Warning: Laser radiation is emitted from this aperture. Unprotected eye exposure may cause serious injury resulting in loss of vision or blindness. Always use laser eyewear.