Quazar

SPL and Driver

Replacement Parts

SPL Supplies

SPL Eyewear

Eyewear # D-213-4600 Each $199.95

SPL800D Lamp Replacement

SPL # D-213-6700 Each $399.95

Carbon Dye 200ml

Carbon Dye # P-213-2500 Each $99.95

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
Please allow 24 hours for processing.

Quazar SPL *produces laser radiation which can be harmful to the eyes. Always wear protective eyewear while operating this equipment. Intense Pulsed Light has the capability to burn the skin if the technician does not closely observe the patient's reaction to the procedure. SPL treatments result 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.*

Handling Precautions: The SPL flash tube can be damaged beyond repair if the handpiece is dropped or bumped sharply. Handle with care.

UL8529001
Printed in UK

Quazar SPL800

Instruction Material for Quazar SPL800
Precision O.E.M. IPL 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.

Hair Removal with Light

The newest procedure to reach the epilation cosmetology market is called Intense Pulsed Light. It's a revolutionary advancement to 'laser' cosmetology (which includes hair removal and more) and is similar to laser epilation in many ways. The radiation emission source; however, is far superior in cost, reliability, fluence (power) and adjustability.

A very powerful flash tube delivers a photon emission 10-20 times larger than a typical epilation laser (in diameter at 120-180 jcm2). This light energy is carefully filtered with precision optics. The heat is removed from the energy with a Schott KG1 Filter, then all wavelengths above 800 are removed with a MgF2 coated lens.

The photons are sent through Ruby, Sapphire or a BK7 Glass condenser (depending on requirements). The end result is a safe, usable, high-density photon emission with performance equal to (or greater than) that of an ordinary laser.

Power Comparison: Standard laser epilators produce CW or Pulsed output power around 20-60 Watts. An SPL typically produces 300-600 Watts. This allows for a much larger treatment diameter, which equates to far greater speed and efficiency for the technician.

One of the greatest benefits of the SPL, over that of the laser, is the difference in cost. The typical 'price per watt' of a standard laser is $1,000-$2,000 whereas the price per watt of an IPL is roughly $100-$200.

Average life expectancy of the flash tube is over one million pulses. This equates to 3-5 years of reliable service, nearly the same as a Long Pulse Diode. The flash tube is easily serviceable when it comes time for replacement and costs around $300-$500 (depending on unit).

The Benefits of SPL over Laser: Larger areas can be treated at one time. A typical man's back would require about 20-30 minutes with a Long Pulse Diode. The SPL800 would do the same job in under 10 minutes.

SPL works on persons who are outside of the acceptable limit for the Fitzpatrick skin pigment grading scale. A type 6 could be treated safely (with skin bleaching).

No hair is vaporized so there is much lower risk of pitting around the hair follicle itself (from intense heat).

SPL gives added benefits as a result of the hair removal treatment. Improved tone, texture, and vitality of the skin is commonly noted.

Client Pre-Qualifications

The best candidate for SPL 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.

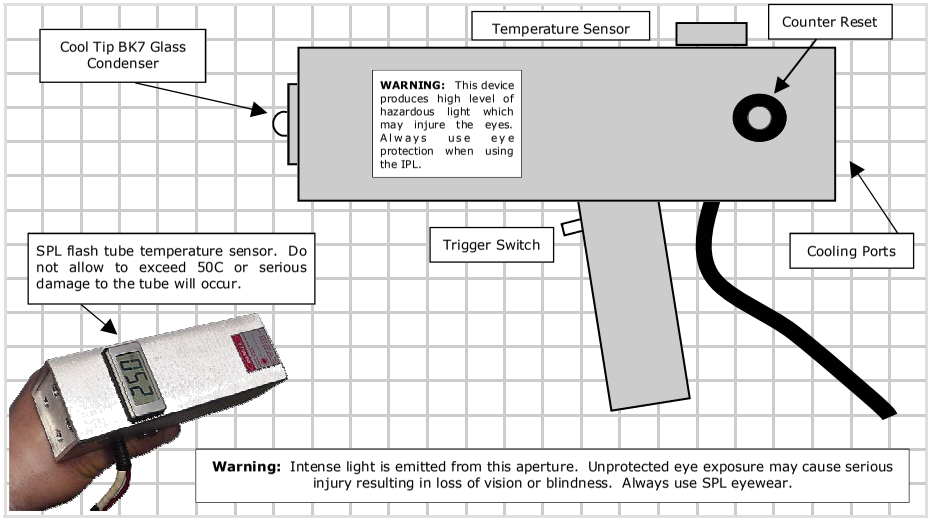
Skin Type I: Never tans, always burns (extremely fair skin, blonde hair, blue/green eyes)
Skin Type II: Occasionally tans, usually burns (fair skin, sandy to brown hair, green/brown eyes)
Skin Type III: Often tans, sometimes burns (medium skin, brown hair, brown eyes)
Skin Type IV: Always tan, never 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 SPL 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. Bjerring P, Cramers M, Egekvist H, Christiansen K, Troilius A. Hair reduction using a new intense pulsed light irradiator and a normal mode ruby laser. J Cutan Laser Ther 2000; 2: 63-71.
2. Kauvar AN. Treatment of pseudofolliculitis with a pulsed infrared laser. Arch Dermatol 2000; 136:1343-6.
3. Eremia 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. Gorgu M, Aslan G, Akoz T, Erdogan B. Comparison of alexandrite laser and electrolysis for hair removal. Dermatol Surg 2000; 26:37-41.
5. Bencini PL, Luci A, Galimberti M, Ferranti G. Long-term epilation with long-pulsed neodimium:YAG laser. Dermatol Surg 1999; 25:175-8.
6. Lloyd JR, Mirkov 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

SPL800 Instrument



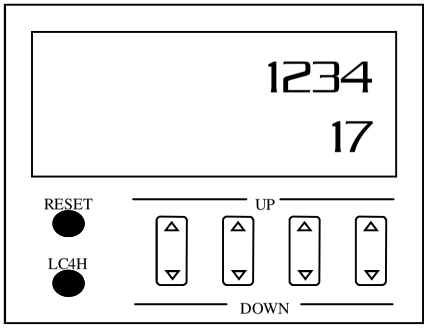
The SPL800 comes with a 220jcm2 adjustable pulse frequency (fixed pulse duration) instrument for superior operator control. Dropping or bumping the instrument may result in irreversible damage to the internal components and would not be covered by warranty. Activating the SPL while the glass condenser is in contact with an object (such as the carbon test sheet) may damage the optics. When testing against the carbon sheet always hold the condenser at least 5mm from the surface.

Trouble Shooting

Should you encounter technical problems with your Quazar SPL 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 is full loss of power.
++Check Fuse: The Quazar unit has a fast-acting fuse mounted on the top panel of your unit to protect the delicate flash tube 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 SPL and will void all warranties.
—Unit hums or makes noises.
++Unit needs servicing.
—SPL output is weak.
++Emitter optic is blocked with carbonized debris (burnt hair etc.). Clean thoroughly with a cotton tipped applicator and alcohol. If the performance of the SPL does not improve after cleaning the head your unit needs servicing by a qualified agent. Contact technical support for assistance.
—No output from the SPL is registered after all trouble-shooting suggestions listed above have been checked.
++Probable flash tube failure. Unit needs servicing.

Light Unit Counter

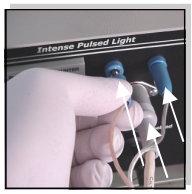


The meter may need re-calibration by adjusting the on-board potentiometer. Two resistors, Ra and Rb may be used in order to alter the full scale reading (F.S.R.) of the meter. LC4H function is for advanced calibration and programming.

Specification	Unit	Jcm2/Sec.	Setting	Reading
Accuracy	%(+1 count)	80	2	
Linearity	count	100	3	
Sample rate	Samples/sec	140	4	
Op. temp	°C	180	5	
Temp. Stbl.	Ppm/°C	220	6	

SPL Startup Procedure

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



Place the blue plugs into the SPL driver unit firmly. These jacks produce high voltage current so the system must be off during plug insertion (key lock in the 'lock off' position). As an added safety measure, do not touch the metal portion of the plug while inserting or removing from the driver (even if you assume the unit is off).

Turn the key lock switch from system status neutral (off) to enabled (figure 1). At this time your SPL hand piece is LIVE. Extreme care must be exercised while handling the SPL. This system produces high levels of potentially hazardous light which could injure unprotected eyes.

Light Meter Programming

Using the Light Unit Table in this instruction manual, set a number which is appropriate for the type of treatment you are performing (in joules per cm2/ second). A setting of 14-17 is ideal for epilation as it will cut off emission at 120jcm2. For tattoo removal, the setting should be 18-23. If you refer to figure 2 it will show where to press to change this value (which is in yellow on your readout). The red number is total energy delivered (measured during treatment).

It is recommended to use the SPL on setting 5 (6 pulses per second: see figure 3) at all times to avoid over treatment (or the Light Meter be set on 17 or less). If you choose to deliver more than 6 pulses per second or 180jcm2/sec. (17-22 units on the meter) there is a risk of burning the epidermis of the client. It is better to deliver less energy per treatment but more treatments overall as the risk of over treatment is reduced.

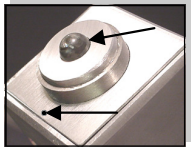
SPL Safety Considerations

SPL must be used on shaved (or waxed) skin. The follicle being targeted is about 1/8 to 1/4 inch *below* the skin (the follicle and papilla). If using carbon dye, remove any excess which may come in contact with the optics using ethyl alcohol.

Lamp Overheating

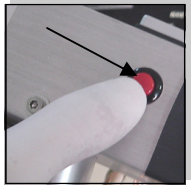
Keep the flash tube temperature at or below 50 degrees Centigrade for optimal performance. Pushing the SPL beyond the limits of performance (operating above 50C) may damage the tube, resulting in loss of intensity, performance and life expectancy of the SPL (which is not covered by your standard warranty).

SPL Optics Maintenance



Clean the condenser optics frequently. For light maintenance use acetone or alcohol on a cotton tip applicator. For more aggressive cleaning use an 'Exacto' blade to scrape any carbonized material from the glass. There is also a tiny sensor just below your optics which must be kept clear (as it is responsible for sending information to your light meter counter).

Light Unit Counter



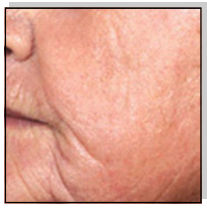
Your SPL800 comes with a convenient pulse counter to track total photon emissions in light units (for conversion to joules, see back page for information). To reset to zero press the red button on the side of the hand piece.

Shipping Damage: The high wattage flash tube in your hand piece is sensitive to shock and may be damaged if the unit is dropped of mishandled. If your system arrives in non-working condition (the hand piece does not produce pulses of light energy when activated) it has likely been damaged during shipping. See 'Lamp Replacement Procedure' for instructions on removal and replacement of the high wattage tube.

SPL Resurfacing

SPL resurfacing is performed using a beam of light energy which vaporizes the upper layers of damaged skin at specific and controlled levels of penetration. The procedure offers many advantages which others do not have. Unlike *Microdermabrasion*, the SPL penetrates deeply into the dermis where promotion of collagen proteins can be stimulated. Chemical peels can be very unpredictable and dangerous while an SPL can be dialed in to deliver precisely the right amount of radiation to produce safe and effective results.

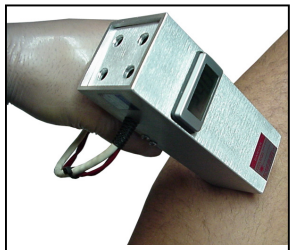
All resurfacing treatments work essentially the same way. First, the outer layers of damaged skin are stripped away. Then, as new cells form during the healing process, a smoother, tighter, younger-looking skin surface appears.



For superficial or medium resurfacing, the SPL can be limited to the epidermis and papillary dermis. For deeper resurfacing, the upper levels of the reticulas dermis can also be removed. Varied penetration allows treatment of specific spots or wrinkles.

It's also important to consider the length of recovery when choosing among skin-resurfacing alternatives. In general, the more aggressive the resurfacing procedure is, the more prolonged the recovery is likely to be. "Light" resurfacing procedures, such as superficial chemical peels or superficial laser resurfacing, offer shorter recovery times. However, these lighter procedures may need to be repeated multiple times to achieve results comparable to those achieved with more aggressive techniques.

General Dermatology



Correct Hand Position for Treatments.

Treatment of additional skin afflictions such as Rosacea, Fine Wrinkles, Sun Damaged Skin, Acne Scars, Scars from CO2-laser resurfacing, Age Spots, Large Pores, Acne Prone Skin.

As the SPL goes over the dermis, vascular spaces with hemoglobin in them absorb the light energy thereby heating the surrounding tissue and stimulating the fibroblasts to produce type 1 collagen and dermal proteins. The treatment rearranges and/or replaces the solar elastosis in the upper dermis, resulting in NEW collagen formation.

What used to be loose, irregular collagen in the dermis is now tighter, refreshed and rejuvenated.

The benefits of each SPL treatment over all other skin rejuvenation procedures include: Low downtime, non-surgical, little pain and discomfort, immediate results after 1 - 2 treatments, affordable, enhances your own collagen growth, produces more dermal proteins and treats all types of skin.

Treatment Procedure: Resurfacing and Wrinkle Reduction

Deliver 7 pulses per second (approximately 130 joules) to each area of 2.5 cm square. Be very systematic and thorough, but resist the temptation to over treat. Applying more than 180 joules may severely burn the skin.

Figure 1 shows normal sagging and wrinkling of the skin which can be expected as humans age. Figure 2 shows excellent improvement on a 47 year old female after 6 treatments.

Always start any SPL treatment with a 5 minute dermal cold pack application. This will substantially reduce patient discomfort and protect the dermis from excessive thermal retention or damage from heat.

Call your patient back in for a follow up in 48 hours. Additional treatments may be applied in 2-4 weeks depending on the level of dermal trauma the patient experience and their rate of healing.

Treatment Procedure: Rosacea

Deliver 6 pps (approximately 120 joules) to each area of 2.5 cm square. Be very systematic and thorough but resist the temptation to over treat. Applying more than 180 joules may severely burn the skin.

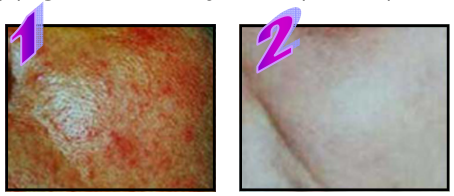
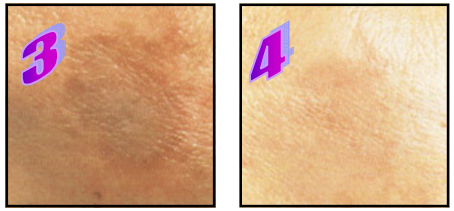


Figure 1 shows severe late stage Rosacea of a 30 year old male. Figure 2 shows the substantial improvement achieved with 20 treatments over 24 months. Spider veins and enlarged capillaries require more treatments overall than most other laser procedures.

Apply 'SPL Capillary Post Treatment Gel' (see back page of pamphlet for ordering information). This formula contains activated phylloquinone, which supports healthy regeneration of new capillaries (reducing the recurrence of future Rosacea) by strengthening the capillary walls.

Treatment Procedure: Age Spots

This condition is caused by melanin deposits in the skin which do not fade. Normal melanin will darken (proliferate) with exposure to sun, but will also fade over 4-6 weeks when the exposure is stopped. It is most common in the elderly but occurs in all ages. SPL treatments are remarkably effective for this affliction.



Deliver 7 pulses per second (approximately 130 joules) to each area of 2.5 cm square. Fading of the age spots (also known as 'liver spots') will be evident after 4-6 weeks.

Figure 3 shows moderate age spot activity on a 46 year old female. Note the improvement in figure 4 showing nearly complete regression of the skin disorder. This patient underwent 3 treatments over 11 weeks.

Apply the 'SPL Post Treatment Aloe' which contains benzocaine. This will speed healing and reduce any discomfort associated with the laser treatment.

Treatment Procedure: Scars and Lesions

This condition can be caused by any trauma to the skin from acne, sun burn, cuts, scrapes and surgical procedures. To reduce the appearance of the scar, it will be necessary to rebuild the collagen proteins in the skin with SPL radiation. This process is extensive (especially in cases where severe scarring exists). It may take 15-20 treatments over 12-24 months to achieve desired results.

Deliver 7 pps (approximately 130 joules) to each area of 2.5 cm square. Remember, applying more than 180 joules may severely burn the skin. Each pulse from the SPL800 on maximum intensity will deliver approximately 40 joules per 2.5 cm2. You must deliver the five pulses in under one second for maximum thermal heat exchange in the tissue.

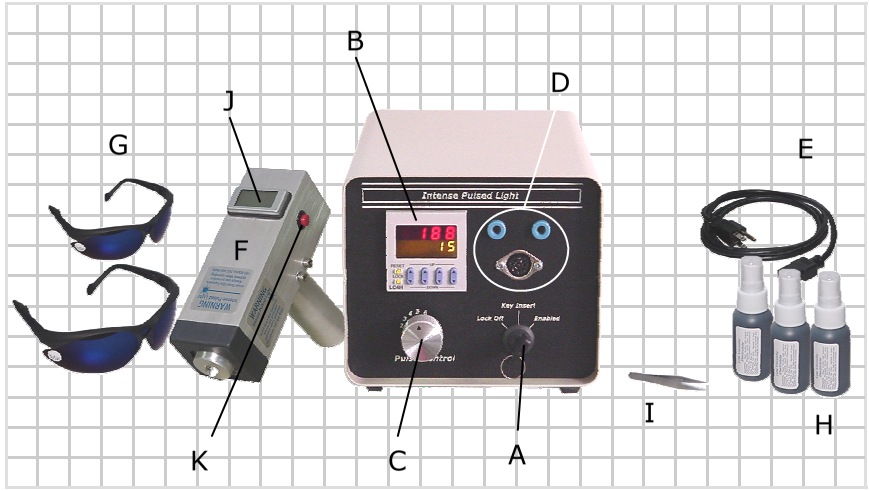
Figure 5 shows a 28 year old female with acne scarring which was left over from teenage puberty. There are very deep pocks, which are the hardest to improve. In figure 6, the appearance of the scars (including the pock) has improved 90%.

Apply the 'SPL Post Treatment Aloe' which contains benzocaine. This will speed healing and reduce any discomfort associated with the laser treatment.

Treatment around the eyes must be done with adequate protection. Exposure to SPL radiation (even through the eye lid) can permanently injure the eyes up to and including blindness.

Photos are for example purposes only and may not indicate results which will be achieved on every patient. Medical SPL treatments for dermatology purposes are rated by 'improvement' and not by 'cure'. Many skin conditions such as Rosacea may return and require future treatments to be controlled. Advise your patient to expect improvement but caution them as to which degree of improvement they will be able to achieve.

SPL800 Control Locations/Feature Descriptions



A. **Key Lockout:** This feature is required by law on all high-power laser and light devices. The first step in the correct sequence to power-up your laser is to turn this clockwise using the special key included in your kit. The light (center LED lamp) will be off when the power system is off and red when the power system is on.

B. **Light Energy Meter and Counter:** This programmable digital readout measures and counts (in light 'units') total energy delivered through the skin. It also can terminate the emission at a pre-set level or simply count light units without controlling total energy.

C. **Pulse Control:** This allows the operator to set the number of laser pulses per second.

D. **SPL Jacks:** An eight-prong coaxial power jack for the SPL hand piece and two blue banana plug receptacles.

E. **Power Cord:** Rated for 60Hz, 120-240 V, 10 Amp with corresponding plug-style for country of destination.

F. **SPL Instrument:** An 800 Watt high intensity pulsed light with thumb switch.

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

H. **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 SPL energy and convert it into heat for the rapid and efficient cauterization of tissue for the permanent destruction of the hair follicle organ.

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

J. **Temperature Readout:** Control feature for the regulation of the flash tube internal temperature. Do not exceed 50C.

K. **Sensor Reset:** This will set the light unit count to zero and re-enable the emission.

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

SPL Tattoo Removal

To begin the process it will be necessary for you to scrub the skin over the tattoo with an abrasive applicator. This is will remove the outer layers of the epidermis which will allow for greater penetration of the SPL radiation.

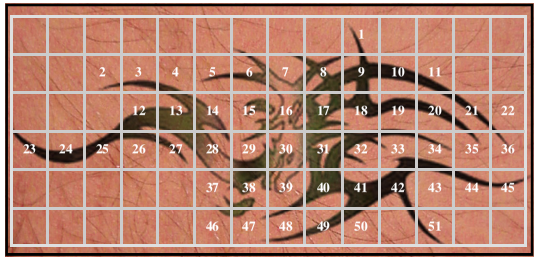
Using a depilatory wax or epilation paper, remove all hair from the tattoo area. Hair growth will block some of the PL radiation from entering the tattoo. Follicles in the skin of the tattoo will also be permanently damaged by the radiation which may not be desirable to your patient.

The Treatment Procedure

Carefully power up your SPL (see page 4). Dial in PPS. Place the glass condenser side down (in contact with the skin) on top of the tattoo.

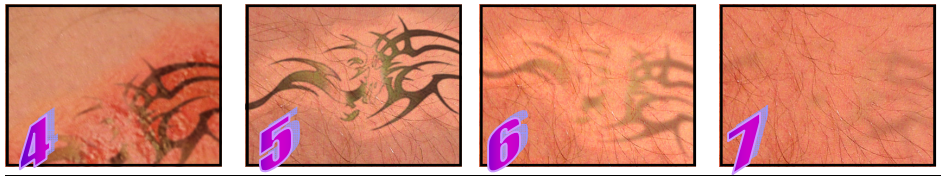
Deliver 7 pulses (approximately 130 joules) to each area of 2.5 cm square (depending on color). Be very systematic and thorough, but resist the temptation to over treat. Applying more than 180 joules per cm2 may severely burn the skin. Black ink can be successfully treated with 100 jcm2. Blue and green normally requires 120 jcm2, and red requires up to 180.

The example tattoo at right would require 427 pulses for a total of roughly 10,000 joules.



Apply the post treatment cooling gel to the tattoo and allow to dry. This is a very important step which should not be omitted. Although the gel does contain the desensitizing compound benzocaine it will be quite common for the patient to feel some burning in the minutes and hours following the procedure. This is quite normal. If the patient requests extra relief, apply a cold pack as needed.

In picture number 4, you can see some of the redness, swelling and scabbing which may show up 1-3 days following treatment. In picture number 5 and 6, you can see some fading of the tattoo, but also a mild form of hypo pigmentation (loss of the patient's natural skin color). This condition is temporary and will subside as the melanin regenerates with natural healing.
In picture number 7, you can see that the tattoo has faded to a point where it is not recognizable. This type of tattoo should require about 6 treatments over 7 months. It is always a good idea to take pictures of your patient's treatment areas to show them the steady improvement. This will help them to stay committed and motivated as the process requires a substantial investment of time.



Patient Group	*Treatment Area*	*Tattoo Clearance (Average)*	*Notes*
2 Patients Black Ink Only	*Arms*	*90% after 3 mos.*	*5 treatment average*
5 Patients Blue and Black Ink	*Torso*	*90% after 3 - 12 mos.*	*8 treatment average*

Intense Pulsed Light Progressively Permanent Hair Removal

The SPL can be considered an excellent replacement for laser hair removal as the results and overall procedure are similar in many ways. It can be noted that SPL treatments are more efficient due to the substantial increase in overall energy being used (which equates to less overall treatment time).

Like laser, SPL will injure the cells which are responsible for hair growth by way of thermolysis (heat in the follicle tissue). This trauma is just below the threshold of injuring other cells (notably skin) around the follicle. SPL works best on clients who have light skin combined with dark hair growth. Should a hair follicle survive the SPL treatment, it will grow back slower and thinner. After a series of treatments the continual 'site specific' localized trauma to the follicle tissue will eventually destroy the hair growth. Once destroyed, a follicle cannot produce another hair.

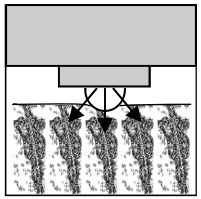
Discomfort and Client Reaction

Remarkably, the sensation felt with an SPL treatment is no more intense than that of a laser (although much more total energy is being delivered to the tissue). The first two pulses from the SPL generally are not felt by the client. The third (if the technician chooses to deliver that many) begins to feel like a snap of a rubber band (as the tissue absorbs and retains the energy). Five or more pulses in less than one second may be uncomfortable for some clients. The use of a topical desensitizing spray or pre-treatment cold pack will alleviate most sensation.

Pre-Treatment Preparation

First spray the area with a lidocaine or benzocaine topical numbing compound. Now place a cold pack over the area intended to be treated for a minimum of 5 minutes prior to treatment. The patient will be able to withstand as many as 7 pulses per 2.5 cm2/second without much sensation. It is generally not necessary to deliver more than 5 pulses for effective hair removal treatment.

SPL Hair Removal Variation 1



This procedure is the most popular among professionals as it requires only shaving prior to the application. It will be necessary to remove all hair above the skin with a razor. Any hair which protrudes above the skin may cause pits in your optics which will reduce the overall efficiency of the device.

Turn your SPL driver to setting 5 pulse (180 jcm2 per second) a place the SPL condenser against the skin in the area where the unwanted hair growth is occurring. Press the trigger switch then release (delivering four total emission equating to 180 jcm2 of energy density) then move the condenser to the next treatment area. The treatment will effectively damage or destroy all anagen follicles in an area of 2.5 cm2. An area 25cm square (about 10 inches) will required 100 pulses spaced evenly for effective hair removal.

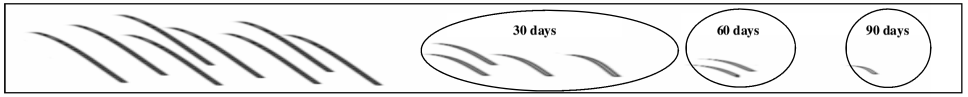
SPL Hair Removal Variation 2: Deep Tissue Trauma With Follicle Extraction with Carbon Dye

Before applying treatment, remove all hair from the area by tweezing or waxing. SPL 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 (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). Perform the standard SPL treatment as outlined in 'SPL Hair Removal Variation 1' as normal. *Don not over treat.* Applying 10 or more pulses in 1 second to the same area may result in a severe burn (leading to blistering).

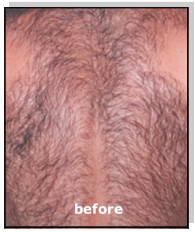
Treatment Efficacy

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. Generally, it is only during the ***early anagen*** phase that it is 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.



Important Considerations for Safe SPL Hair Removal Treatment

Treatment Around or Near the Eyes: Great care must be exercised when working near the eyes. The SPL 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.

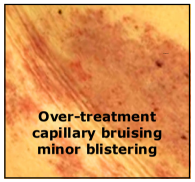


Treatment Around or Near Mucus Membranes: SPL radiation will severely damage the tissues inside the nose and ear canal. Treatment should be avoided in these areas altogether.

Treatment Around or Near the Genitals: SPL hair removal is safe for application to the pubic regions including the reproductive organs of 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 desensitizing spray.

Treatment Around or Near the Areola (nipple): SPL hair removal is safe and effective on hair growth which occurs from the areola of both sexes.

Post-Treatment: The skin surrounding the treatment area will experience short-term erythmia (reddening) which will subside within 12-24 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.



Over Treatment: Each SPL pulse sends a series of photon 'bundles' deep into the skin where it damages the hair follicle tissues. This SPL radiation also will have mild effects on capillaries and skin tissue. If too many SPL pulses are administered the capillary network will begin to break down. This will create a bruise which will take several days to subside. Although the use of lasers to destroy capillaries in the skin is quite common (for spider veins, port wine stains, birth marks etc), it is not the intent of this treatment as outlined for hair removal to damage other tissues. For that reason the technician should carefully test and document how many laser pulses each patient can withstand before capillary breakdown (bruising) occurs.

The general rule of thumb is to patch test the skin with 7 pulses (on full power) then send the patient home. Have them back in the office in 24 hours to observe the reaction. If there is no burning or bruising, administer the full treatment. It is not recommended to deliver more than 10 pulses to one stationary area at a time. If more than 10 pulses are delivered the technician should make a small circular motion with the SPL head to avoid sending all the energy through the exact same entry points.

This SPL can cause serious burns to the skin. All technicians should adopt the 'less is more' philosophy. It is far safer to have the patient come back for additional treatments than to administer too much radiation in one session resulting in tissue trauma and blistering.

Patient #	hair counts			12 week clearance
1 females, 1 males	pre	post	number of treatments	percent
#1: deep tissue with hair	225	11	10	95%
#2: deep tissue with dye	166	1	7	99%

Emitting wavelength	*(100-800 ± 10) nm*	*Classification: Exempt*
Output power	*User-adjustable 0 to 220 Joules*	*Designation: OEM*
Generation modes	*IPL*	*Manufacturer: Quazar Industries, UK*
Beam characteristic	*Flash Lamp*	*Warranty: 1 Year*
Pulse duration	*Manual Adjust*	*Emission Indicator: Yes*
Weight	*15 kg max*	*Key Lock: Yes*
Optics	*Glass*	*Beam Shutter: No*
Dimensions	*170 x 500 x 370 mm*	*21CFR 1040, IEC 825-1:1993: No*

Fluence	*180J/cm2 max*
Energy Instability	*19% maximum*
Safety goggles	*OD 8.0 @ 100-1000nm (minimum) suggested.*
Electrical requirements	*100/120 VAC, 50/60 Hz nominal, 1.0 A max. 220 or 240 VAC, 50/60 Hz nominal, 1.2 A max.*
Ambient operating temperature	*10°C to 30°C*
Ambient storage temperature	*-25°C to 70°C*

Intense Pulsed Light Tattoo Removal

Nearly 1/2 of all people with tattoos eventually want them removed. Until recently these people had no viable (and safe) options available to them. In the mid 1980's lasers had been used experimentally to remove the pigment with encouraging success rates. A newer procedure used an intense pulsed light. Surprisingly, lasers and SPL's do not actually burn the ink out; they fracture it into tiny pieces which are then removed from the skin by your immune system.

On average, professional tattoos require 5-6 treatments, while amateur tattoos may require 3-4 treatments, spaced approximately 2-4 weeks apart. The number of treatments depends on the amount and type of ink used and the depth of the ink in the skin. Occasionally technicians have needed to treat a tattoo 10-20 times.

What should I charge for the procedure? The fee depends on the size of each tattoo, and how many treatments it takes to lighten or remove it to your satisfaction. Each tattoo treatment generally costs $135 for the 1st square inch and $25 for each additional inch. If more than one tattoo is being treated at the same time, you may offer pricing alternatives. A consultation fee of $40-$60 should be assessed for this quote.

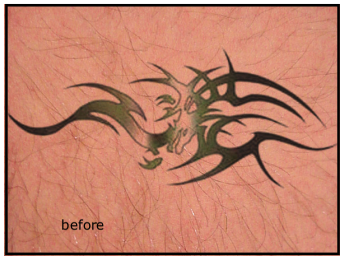
What will the treatment be like? It is less painful to have a tattoo removed than getting it put on. A numbing spray and ice pack should be applied before the procedure. After the procedure the treated area may blister, swell, crust, scab, or bleed slightly. Care for the treated area daily in order to prevent infection and to get the best possible healing results. The tattoo will then gradually fade for 2-4 weeks when it can be treated again. You may see additional fading for as long as several months so you can space the treatments farther apart but not closer than 2 weeks.

Important Considerations for Safe SPL Tattoo Treatment

Treatment on Skin with Hair Growth: One of the major side effects of diode laser tattoo removal is destruction of hair follicles. If your client would like a tattoo removed from an area in which there is 'desirable' hair growth, manually extract all follicles before treatment. The use of an aggressive depilatory wax is best. If the follicle is removed there will be far less damage to the papilla cells which produce growth. The hair follicle unit will regenerate in 4-6 weeks.

Treatment Around or Near the Genitals: SPL tattoo removal is safe for application to the pubic regions including the reproductive organs of 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 desensitizing spray.

Treatment Around or Near the Eyes: Great care must be exercised when working near the eyes. The SPL 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 SPL protective eyewear is recommended.



Post-Treatment: The skin surrounding the treatment area will experience short-term erythmia (reddening) which will subside within 12-24 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.

REFERENCES
Nestor, Mark S., MD, PhD, "Laser Hair Removal: Clinical Results and Practical Applications of Selective Photothermolysis", Skin & Aging, January 1998.
Lask, Gary, MD, Elman, Monica, MD, Slatkine, Michael, PhD, Waldman, Amir, PhD, Rozenberg, Zvi, PhD, "Laser-Assisted Hair Removal by Selective Photothermolysis: Preliminary Results", the American Society for Dermatology Surgery, 1997.

—Black ink absorbs all wavelengths of light and responds very well to SPL treatments.
—Green and Blue ink absorbs 670-890nm light best and responds very well to SPL treatments.
—Red, Orange, and Purple inks absorb 500-700nm light best and responds very well to SPL treatments.
—Turquoise responds variably, depending on the pigments in the ink.
—Flesh tones tend to reflect light and does not respond well to SPL treatments.
—Yellow tends to reflect light and does not respond well to SPL treatments.