



Low Profile Laser

Users Manual

Centralite[®]

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This manual contains the latest information at the time of publication. Diacor, Inc. reserves the right to revise this manual without notice.

WARNING

The Diacor® Centralite® Patient Positioning Light uses the output of a laser as its source of visible light. While every precaution has been taken to make exposure to this light safe, serious injury to the eyes could occur if a person were to stare at the beam of output light. Please study Section 3, Safety Considerations, before installing or operating the Diacor Centralite unit.

Also be advised that a proper installation of the laser patient positioning system requires that the "Power On" indicating light turns on whenever power is applied to the laser light system. This light should be located near the system power switch.



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Figure 1.1 Diacor Centralite Model DLP-1

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SECTION INTRODUCTION

1

A laser isocenter-light system has become as fundamental a tool to the field of radiation oncology as the rotational isocentric treatment machine that it complements. The task of an isocenter light system is simple. An array of laser beams must be converted into sharply focused orthogonal intersecting planes of light that can be adjusted to be coaxial with the radiation-beam central axis in the vertical and horizontal positions. Ideally, this task should be performed with optimal simplicity, low cost, and ease of installation, adjustment, and maintenance—all without compromising position stability.

These requirements form the design criteria of the Diacor, Inc. Centralite family of Patient Positioning Laser Lights and the Model DLP-1 (see figure 1.1). These instruments are reasonably priced, and they are designed specifically to be easy to install and adjust, to maintain their adjustment with excellent stability, and to be repaired quickly at minimum cost.

A complete Centralite system typically includes four units, two mounted on the side walls, one on the ceiling, and one high on the wall facing the base of the treatment couch (the latter is referred to as the sagittal unit). Two orthogonal fan-shaped beams are produced by the side wall and ceiling units. The sagittal unit produces a single fan-shaped beam. With this system, a patient can be repositioned on the couch for daily treatment by reference to skin markings.

The Centralite family of patient positioning laser lights includes models based on solid-state laser diodes (DLL and DLP emit red lines and the DLG emits green lines) series. The side-wall and ceiling units in the DLL and DLP series contain two diode laser assemblies. The DLL-series sagittal unit contains a single diode laser assembly. To produce the desired fan-shaped beam, the beam generated by each diode laser passes through a cylindrical lens that is an integral part of the diode laser assembly.

GENERAL DESCRIPTION

2.1 GENERAL

This section contains a brief description of the Diacor Centralite Model DLP-1 diode laser patient positioning light. This is a manually adjusted low profile side-wall or ceiling laser. The laser assembly used in DLP-1 is the Melles Griot ElectroOptics Model TOLD-9412. The laser assembly operates within the limits established by Federal Regulations for Class II lasers.

The laser assemblies used in the Model DLP-1 units produce a very intense, highly collimated beam of red light that is not harmful unless it is allowed to dwell on the retina of the eye. Nevertheless, a potential hazard exists because the light beam is extremely localized. Therefore, a person who looks into the beam will not experience the natural protective mechanism of a sensation of discomfort typically experienced when staring into a very bright light.

The potential hazard associated with all Class II lasers is minimized in Centralite units because the beams that exit from the laser assemblies are spread into two fan beams, which markedly dissipates beam energy. However, please carefully read the information on laser safety provided in Section 3 before installing or operating your Centralite units.

2.2 DIODE LASER MODEL DLP-1

The major functional elements that make up the beam generation and projection system in Centralite DLP-1 side-wall and ceiling units includes two solid-state diode laser assemblies, a beam steering platform and two beam steering platform adjustment knobs (see figure 2.1). These components are mounted in a compact bracket and enclosed with a white plastic cover.

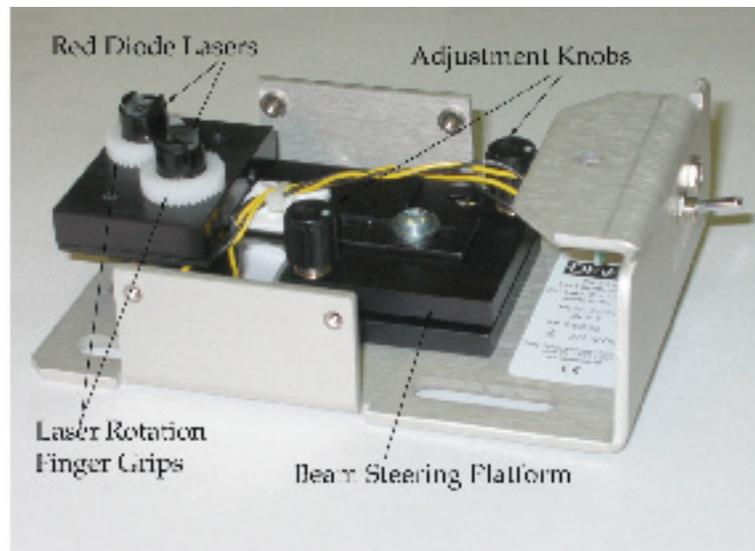


Figure 2.1 Low Profile Laser Elements

2.2.1 Diode Laser Assembly

The Melles Griot diode laser assembly is a self-contained unit that requires no modification for mounting in the Centralite assembly. The Model DLP-1 side wall and ceiling units have two diode laser assemblies, one to generate each of the two orthogonal beams. The diode laser assembly housing contains electronics to power condition the diode laser, the diode laser itself, focusing lenses and a cylindrical lens that converts the collimated beam generated by the laser into a fan-shaped beam.

The two diode laser assemblies in the Model DLP-1 side wall and ceiling units are identical and are mounted so that the beams produced by the two lasers are oriented at 90 degrees to each other. These assemblies are mounted through two holes in a mounting bracket attached to the beam steering platform. A spring-loaded detent presses against the barrel of each diode laser assembly and provided enough force to hold the assembly securely in the orientation to which it has been adjusted.

The holding load generated by the detent is low enough to allow the orientation of the diodes to be adjusted if necessary to make the two beams orthogonal to each other. A small laser rotation finger grip is glued securely to the barrel of the diode laser assembly. Thus, you can adjust the orientation of the diode laser simply by rotating the laser in one direction or the other.



CAUTION

The detent that holds the diode laser in the diode holder is adjusted at the factory to provide the proper force against the diode laser barrel. Do not attempt to adjust this detent. Adjusting the detent too tightly may cause damage to the diode laser assembly.

Note: Beam orthogonality should be adjusted during the initial installation and setup. No further adjustment should be necessary.

2.2.2 Beam Steering Assembly

For accurate patient positioning, it is important that the laser beams always be aimed at an exact point in space called isocenter. To accomplish this, the laser beams must be checked on a regular basis against this known target position, and adjusted if necessary. The function of the beam steering assembly is to make this adjustment as simple and straightforward as possible.

The diode laser assemblies are mounted on a bracket connected to the beam steering platform. The purpose of this platform is to allow precise positioning of the two beams (the vertical beam to be moved from side to side and the horizontal beam to be moved up and down). Orthogonality of the beams is not adjusted by the beam steering assembly, but rather by using the laser rotation finger grips described in section 2.2.1.

In the Model DLP-1, the beam steering assembly includes two adjustment knobs, one for each

laser beam. The adjustment knobs are accessible by removing the plastic cover. When you rotate either adjustment knob, the associated beam is moved either side to side or up or down, as applicable. The adjustment knob closest to the diode assemblies moves the beam plane toward or away from the knob. The other adjustment knob moves the other beam plane to the left or to the right. The two beam adjustments are nearly independent; i.e., adjusting one beam has minimal effect on the other beam. However, when you move one beam, it may be necessary to make a fine positional adjustment of the other beam.

2.2.3 Power Requirements

The DLP-1 laser assembly operates on DC power. An AC-to-DC power converter that plugs directly into an adjacent AC electrical outlet is supplied with each DLP-1 unit. The input cable from this power converter connects to the 5 VDC connector of the Model DLP-1 assembly.

2.3 LASER POWER SWITCH AND RADIATION INDICATOR

The DLP-1 laser has a power ON/OFF switch and a laser radiation emission indicator. The power ON/OFF switch on the Model DLP-1 units is located at one end of the unit. The emission indicator is an LED indicator that projects directly through a hole in the top of the laser assembly cover whenever DC power is applied to the laser assembly.

2.4 MODEL DLP-1 BRACKET AND MOUNTING PLATE

The functional elements that comprise the beam generation and projection system in the Model DLP-1 unit are mounted in a small, anodized aluminum bracket that connects to a mounting plate. The bracket is clear anodized and the mounting plate is coated with chemically resistant polyurethane paint. The assembly is covered by a white molded case. Dimensions of the case and mounting plate are as follows:

Low Profile Diode Laser Units

Case:	5.75 inches long, 4.25 inches wide, and 1.85 inches deep
Mounting plate:	7.5 inches long, 5.5 inches wide and 0.2 inches deep

Vertical adjustment slots are provided in the back plate of the Model DLP-1 bracket, and horizontal adjustment slots are provided in the mounting plate. Once the mounting plate has been installed, the nuts attaching the case to the mounting plate can be loosened to allow both horizontal and vertical positional adjustment of the case. The case and mounting plate have been designed in this manner to permit positional adjustment of the units after they have been installed.

SAFETY CONSIDERATIONS

3.1 GENERAL

To help ensure safe operation of your Centralite system, please read this section carefully and follow the instructions and procedures provided in this manual before installing and operating the units. For most routine uses a sufficient “rule of thumb” is to DO NOT STARE INTO BEAMS, or other sources of bright light emanating from a Centralite unit. When alignment of the patient results in direct papillary impingement, the patient’s eyes should be protected. This consideration is particularly important for the ceiling unit. The following are required precautionary statements for Class II lasers.



WARNING

At all times during installation, operation, or adjustment of a Centralite unit, avoid possible eye exposure to laser or collateral radiation* in excess of the accessible emission limits listed in the Federal Register, Volume 40, No. 148, July 31, 1975: Tables I-A, I-B, I-C, and III.

** Collateral radiation, as defined by the Bureau of Radiologic Health Laser Products Performance Stand, is “any electronic product radiation, except laser radiation, emitted by a laser product as a result of or necessary for the operation of a laser incorporated into that product.*



WARNING

The use of control or adjustments or the performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

3.2 LABELS REQUIRED FOR CENTRALITE UNITS

The labels on the case of the Centralite units comply with Federal regulations for laser products; these labels are shown in figures 3.1.

The labels on all Centralite units are required for compliance with Federal regulations. Do not remove these labels.



Figure 3.1 Centralite Model DLP-1 Labels

3.3 LASER SPECIFICATIONS

Specifications for individual laser assemblies used in the Model DLP-1 unit are provided in the following table:

	Melles Griot 9068-01011 Diode Laser
Input power (WATTS)	0.6
Output power (mW)	0.48
Wavelength (Nm)	650
Beam Diameter (at 1/e ²) (mm)	N/A
Beam Divergence (mrad)	N/A

3.4 DIODE LASER REPLACEMENT

Centralite Model DLP-1 units are not designed to allow the diode laser assemblies to be replaced separately by the user. To replace a defective diode laser assembly, contact Diacor, Inc. and obtain a Return Material Authorization (RMA) number and appropriate packing instructions for return of the beam steering and diode laser assemblies.

3.5 PROTECTIVE EYE WEAR

Protective eye wear is not necessary for typical applications where direct pupillary impingement by the beams is a random momentary event while moving about the room. Under atypical conditions requiring more protracted ocular exposure, protective eye wear or other protective procedures may be required. Consult the user standards of the American National Standards Institute (ANSI), the Laser Institute of American, and/or the Occupational Safety and Health Act (OSHA) for guidance in this area.

3.6 COMPLIANCE

The Centralite units and the Melles Griot 9068-01011 diode laser comply with Title 21 of the United States Government CDRH Performance Standards, Chapter 1, Subchapter J, Section 1040, as applicable. These products are categorized as Class II.

UNPACKING AND INSTALLATION

4.1 GENERAL

All Diacor Centralite units are designed to allow you to unpack and install the units yourself without special tools.

4.2 UNPACKING AND INSPECTION

When you receive your units, inspect all shipping containers for evidence of physical damage before the shipper's agent leaves your premises. If there are any signs of damage, have the shipper's agent present during unpacking. If you observe any dents, scratches, or other evidence of physical damage to the unit(s), note the damage on the shipper's copy of the bill of lading and file a claim against the shipper.

When you order multiple Centralite units for the same installation, every effort is made to ship these units at the same time, unless you specify different arrangements. In addition, any special angle brackets or custom-made standoff platforms ordered for the Centralite units are shipped at the same time as the units. Use of the angle brackets and standoff platform is discussed further in section 4.5.5.

If there are any shortages in your shipment or if any of the units malfunction, notify Diacor immediately to arrange for replacement or repair. Refer to Section 6 for the discussion of replacement or repair of units under warranty. We recommend that you save all packing containers and materials for the Centralite units in case a unit needs to be returned to Diacor for replacement or repair.

4.3 ELECTRICAL CONSIDERATIONS

The Model DLP-1 unit connects to a 100-240 volt, 50-60 Hz USA style outlet. A double-insulated AC-to-DC power converter is supplied with each unit. Output power specifications for the AC-to-DC converter are as follows:

DLP-1- units: 5 VDC at 2.6 amperes

Each power converter includes a 6-foot cord. The power cords for the Model DLP-1 unit are equipped with a special plug that allows the cord to be inserted into the 5 VDC connector on the DLP-1 assembly.

The Model DLP-1 unit projects stable lines instantly upon applications of power. To maximize the life of the laser, we recommend that the units be left on only during normal working periods. Ideally, a separate electrical circuit should be provided for all Centralite units in the same system, and all outlets in that circuit should be controlled through a common switch. Power control from the accelerator gantry and table control pendant also works well.

A minimal warm-up period is required for Model DLP-1 units; the diode laser assembly produces

full output power within seconds after power is applied to the unit.

The Centralite unit is certified to comply with Federal requirements for laser products, including the requirements for a light to indicate the “on” status of the laser and a switch to terminate laser emission. If you install this unit so that it is controlled by your own remote switch, then to maintain compliance with Federal requirements, the remote switch must be capable of turning the laser system “off” and must incorporate an indicator that will shown when the laser is “on.” This arrangement allows the Centralite units to be operated independently of other equipment or lighting circuits in the same room. The lasers should be turned off during any extended period of inactivity such as at night or over weekends.

4.4 CHECKING BASIC OPERATION

We recommend that you check the basic operation of the Model DLP-1 unit before the unit is actually installed. The procedure for performing this check is as follows:

1. Set the power ON/OFF switch to position OFF.
2. Connect the AC-to-DC power converter for the Centralite unit to an appropriate power outlet and connect the cord from the converter to the Centralite unit.
3. Set the power ON/OFF switch to position ON. The laser radiation emission indicator should light, and light beams should be emitted through the apertures in the protective plastic cover. **DO NOT STARE INTO THE BEAMS.**
4. Aim the beams at a light-colored, flat, perpendicular surface several meters away. The beams should form two lines of light that intersect at right angles near their midpoints

4.5 INSTALLATION

The Model DLP-1 unit may be mounted either horizontally or vertically. The units should be mounted to the most stable surface available, preferably a embedded soft metal plate in the concrete wall. If the units are to be installed in a simulator room that has lead-lined studded walls, mounting directly to the sheetrock should provide a sufficiently stable installation. However, it should be expected that more frequent adjustment of the beam-steering controls will be needed under such conditions.

For installations where the structural wall is covered by a sheetrock and frame wall, a custom-made standoff platform can be ordered to enable mounting to the structural wall. The standoff platform is discussed further in section 4.5.4.

The Model DLP-1 unit itself is designed to be used as an alignment tool for determining the mounting locations of any of the units. Tools required for installing a Model DLP-1 system are listed in section 4.5.1. Instructions for installing the system are provided in sections 4.5.2 through 4.5.6.

4.5.1 Tools Required

5/64 inch Allen Head screw driver
7/16 inch open-end wrench and nut driver
Carpenter's level (or equivalent)
Carpenter's square
Plumb line
Water level, transit or laser based leveling and marking system

4.5.2 Determining the Mounting Location for Side-Wall Units

1. Rotate the machine gantry to the horizontal position. Optimally, horizontal should be defined by a water level, which is a long flexible clear plastic tube filled with water, without bubbles, and open on both ends. The level of the water in the two ends of the tube will seek a horizontal plane and the gantry angle can be adjusted so that the field-light central axis crosses the surface of the water in both ends of the tube with one end held near the gantry and the other end held near the wall. A laser self-leveling alignment tool may also be used.
2. Place the laser mounting plate on the wall so that the intersection of the field light is over the small isocenter dimple in the mounting plate. Attach the laser mounting plate to the wall plate with the side edge plumb.
3. Loosely attach the Model DLP-1 to the laser mounting plate so that the laser housing can be adjusted with a small amount of pressure to the housing.
4. Align the intersection of the laser beams from the Model DLP-1 with the central axis of the field light.
5. Place a piece of paper between the laser beams and the field light and move the paper back and forth along the axis of the field light to verify the two planes from the laser and the field light are coplanar.
6. When the alignment is coaxial, move the gantry out of the way.
7. The intersection of the laser beam lines on the opposite wall indicates the point on the wall from which the beam axis should originate after the second Model DLP-1 unit is installed. This also corresponds to the small alignment axis point on the mounting plate (see figure 4.1).

4.5.3 Determining the Mounting Location for the Ceiling Unit

The location for the ceiling-mounted unit is established in a manner analogous to that described for the side-wall units.

1. Rotate the gantry to the overhead vertical position.

2. Hang a plumb line from near the gantry and watch the overlapping shadows on the floor. When the shadow of the plumb line is coincident with the shadow of the crosshairs of the field light, the gantry is in a true vertical position.
3. Place the Model DLP-1 unit on the floor so that the intersection of the laser beam lines is again made coaxial with the field-light central axis in a manner similar to that described for the side-wall units.
4. Rotate the gantry out of the way. The proper mounting position for the ceiling unit is determined from the intersection of the laser lines on the ceiling.

4.5.4 Mounting Plate, Standoff Platform, and Angle Brackets

The standard mounting plate is generally adequate for most installations. However, an optional standoff platform is available for mounting the unit to concrete under sheetrock. Because the standoff platform is custom made for each installation, you should order this platform when you order your Model DLP-1 unit.

When you order a standoff platform, you must specify the distance between the structural wall

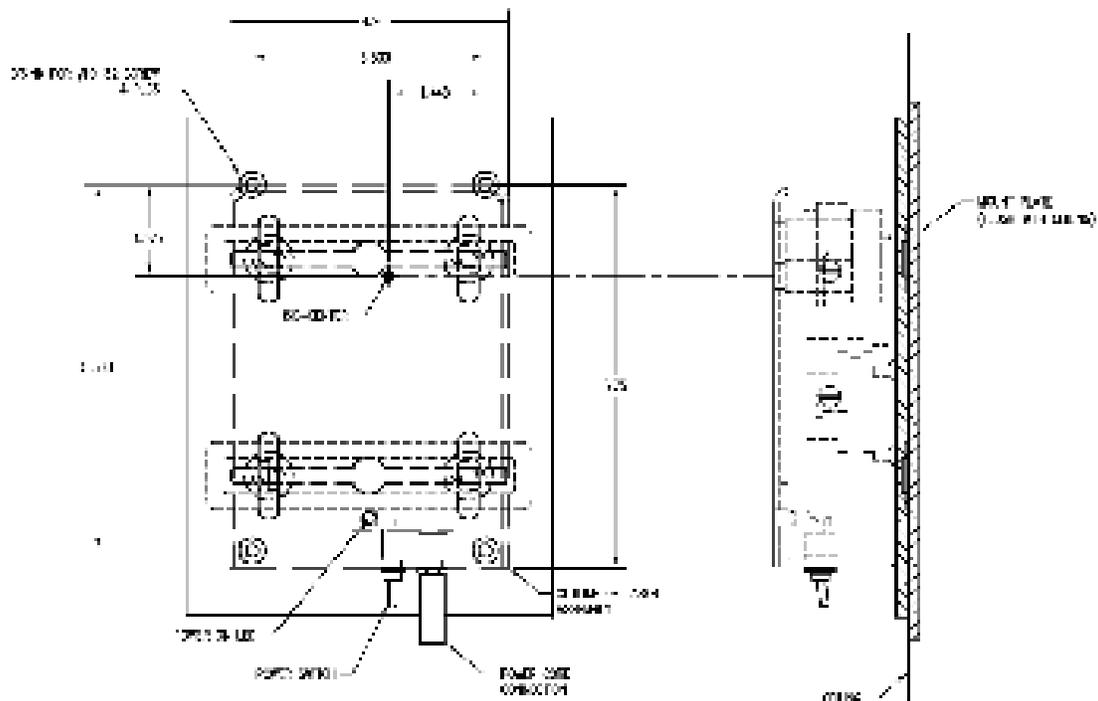


Figure 4.1 Low Profile Model DLP-1 Mounting Plate and Case Dimensions

and the outside surface of the sheetrock (the surface on which the Model DLP-1 unit is to be mounted). This distance determines the depth of the standoff platform.

Adjustable angle brackets also are available for use in installations where the wall is angled with respect to the treatment couch. Vertical adjustment slots are provided in the back plate of the Model DLP-1 bracket and horizontal adjustment slots are provided in the mounting plate (see figure 4.1). After the mounting plate has been installed, the nuts attaching the bracket to the mounting plate can be loosened to allow both horizontal and vertical adjustment of the bracket. The bracket and mounting plate have been designed in this manner to permit fine adjustment of the position of the unit after it has been installed.

4.5.5 Determining the Mounting Location for the Mounting Plate

After you establish the locations of the origins of the laser beam axis, you then determine the locations for the mounting plates and attach the plates to the mounting surfaces. Ceiling units are generally mounted above a false ceiling. If you are using a standoff platform, attach the platform to the wall instead of the mounting plate (the plate connects to the platform). If the walls are not orthogonal with respect to the Centralite system, angle brackets are required.

Except in very unusual circumstances, or unless the room was specifically designed with a non-orthogonal relationship to the machine, the walls are probably sufficiently close to orthogonal that the angle brackets will not be required. The beam steering controls alone will be sufficient to compensate for any deviation from strictly right angle mounting.

If angle brackets are required for any of the units, the brackets must be connected between the Model DLP-1 bracket and the mounting plate. The mounting location of the plate is determined by the relationship between mounting plate, the angle brackets, and the Model DLP-1 unit. For orthogonal relationships, proceed as follows:

1. Each mounting plate has a punch mark on the front surface that corresponds to the position of the laser-beam axis origin. Hold the plate against the wall or ceiling so that the aligning laser beams intersect on this punch mark.
2. Use a carpenters level to make sure the mounting plate is vertical and then mark the position of the mounting plate. For the ceiling light, use the machine field light with the collimator angle set at an orthogonal position to define the angle of the mounting plate.

Note: Where angle brackets are required, proceed as follows using the assembled Model DLP-1 mounting plate unit (if a standoff platform is being used, remove it from the mounting plate):

1. Plug in and turn on the unit to be mounted.
2. Hold the unit in the approximate mounting position and adjust the angle brackets and the mounting plate position so the emitted beams are coaxial with those of the aligning unit (the beam intersections of both units should center in the apertures nearest the beam-steering controls).

3. Use a carpenter's level to adjust the angle of the mounting plate and mark its position.

4.5.6 Attaching the Mounting Plates

The recommended method for attaching the mounting plates to any relatively smooth surface is to drill and tap a steel plate imbedded in the concrete or placed there specifically for installation of devices such as the Model DLP-1 units. Flat-head screws should be used to secure the mounting plate to the steel plate.

Alternatively, masonry anchors may be used if the steel plate is not available. Standoff washers also are used to prevent the mounting plate from bending against surface irregularities when the fasteners are tightened. If no standoff platform is needed and the mounting plate is to be mounted directly, the countersunk screw holes near the corners of the mounting plate may be used for the fasteners. You will need to drill holes in the standoff plate if a standoff is required and masonry anchors are used.



WARNING

Because of the uncertainties of application in specific installations, no guarantee of this method of attachment, or any other method, can be made by Diacor, Inc. Proper attachment of the ceiling laser is particularly important since dislodgment could cause injury to a patient or hospital personnel.

4.5.7 Attaching the Model DLP-1 Unit to the Mounting Plate

The following instructions assume that the Model DLP-1 unit used for determining the mounting location is still in place. If it is not, reposition it.

1. Insert the four special 1/4 inch flat-head mounting bolts in the slots of the mounting plate (two in each of the long slots).
2. Position the Model DLP-1 bracket on the mounting bolts.
3. Place a flat washer, lock washer and nut on each bolt and tighten the bolts finger tight so that the Model DLP-1 unit can still be moved.
4. Position the Model DLP-1 unit so that the aligning laser beams intersect in the aperture nearest the end of the bracket containing the beam-steering controls, and then tighten the mounting bolts to secure the unit in position. The most accurate method is to turn on the laser in the unit being mounted and align it so that the beams from the two units overlap.

SECTION

ADJUSTMENTS

5

5.1 GENERAL

Each Centralite unit is adjusted so that the beams and their intersecting midpoints are orthogonal with respect to the case before the unit is shipped from the factory. As part of the installation process, minor readjustments of the beam steering controls are necessary. However, other adjustments will probably not be necessary, unless changes occur during shipment. The position of the Centralite bracket on the mounting plate also is adjustable. Instructions for positioning the bracket on the mounting plate are provided in Section 4.

5.2 DIODE LASER MODEL DLP-1

Normally, only adjustment of the beam steering controls should be required on a regular basis to maintain precise alignment of the beam locations. Other adjustments such as beam orientation are made at the factory. These adjustments may need to be performed during installation if changes occur during shipment, but should not be required during normal operation.

5.2.1 Beam Steering Controls

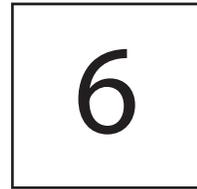
The beam steering controls provide a simple and convenient method of achieving precise positioning of the light planes. The beam steering assembly includes two beam steering adjustment knobs, one for each diode laser assembly (see figure 2.1). These adjustment knobs are available after the plastic cover is removed from the assembly. By rotating an adjustment knob, the associated beam is moved either up or down or side to side, as applicable. The adjustment knob closest to the horizontal beam moves that beam up and down. The other adjustment wheel moves the vertical beam from side to side. The two beam adjustments are nearly independent; that is, adjusting one beam has only a slight effect on the other beam.

5.2.2 Adjusting Beam Orientation

The two diode laser assemblies in the Centralite side-wall and ceiling units are identical and are mounted so that the two resultant beams are oriented at 90 degrees to each other. The two diode laser assemblies are mounted on a mounting bracket that is connected to the beam steering platform. A spring-loaded detent presses against the barrel of each diode laser assembly. This detent provides enough force to hold the laser securely in the position to which it has been adjusted.

The holding load generated by the detent is low enough to allow the orientation of the diode laser to be adjusted as required to make the two beams orthogonal to each other. A small rotational adjustment knob is clamped securely to the barrel of the diode laser assembly. Thus, the diode laser orientation can be adjusted simply by turning the adjustment knob to rotate the diode laser in one direction or the other.

SECTION SERVICING



6.1 GENERAL

This section contains servicing information for the Diacor Centralite Model DLP-1 patient positioning laser.

6.2 LASER ASSEMBLY FAILURE

Diode lasers are susceptible to static electricity and may cease to operate suddenly or may grow dimmer with time. If a failure is suspected, first check the power converter by exchanging it with another unit. If the laser assembly still does not function, replacement of the Diode Laser Assembly is required.

6.3 REMOVING AND REPLACING THE DIODE LASER ASSEMBLY

The Model DLP-1 units are designed to be repaired only at the factory.

6.3.1 Realigning a Replacement Centralite Unit

If the Model DLP-1 bracket has been removed from the mounting plate, follow the directions in Section 4 to reposition the unit so that the beams are properly aligned. If the beam orthogonality also needs to be adjusted, follow the directions in sections 5.2.2.

6.3.2 Realigning the Centralite Unit

Usually, simple adjustment of the beam-steering controls is all that is necessary to realign the unit. If the alignment of the laser beam seems significantly different from a previous alignment, it is possible that the beam steering platform has failed or the unit has been physically moved. Check that the beam steering platform is not loose. Verify that the two plates of the beam steering platform are parallel and separated by approximately 1/4". If these checks are positive, loosen the mounting bolts on the laser bracket and follow the installation procedures provided in Section 4.

6.4 WARRANTY

Diacor warrants the Centralite Model DLP-1 red diode laser assembly for a period of 2 years from the date of shipment.

The Diacor warranty coverage is limited to defective materials or workmanship. The warranty is void if the Centralite unit has been damaged by accident, unreasonable or improper use, neglect, or other causes not arising out of defects in material or workmanship.

6.4.1 Warranty Disclaimers

The express warranty provided herein is in lieu of any and all implied warranties arising out of the sale of the Centralite unit, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Diacor shall not be liable for loss of use of the Centralite unit or other incidental or consequential costs, expenses, or damages incurred by the customer or other user.

6.4.2 Warranty Performance

During the stated warranty period, the Model DLP-1 will be repaired or replaced, at the option of Diacor, Inc., with a new or reconditioned unit when the unit is returned postage prepaid to Diacor, Inc., 2550 Decker Lake Blvd., SUITE 26, Salt Lake City, Utah 84119. Please contact Diacor, 800-342-2679 or 801-467-0050, for a Return Material Authorization (RMA) prior to sending the defective unit. The replacement of a Model DLP-1 unit will not extend the expressed warranty stated herein beyond the original warranty period.



