

# DARAY<sup>®</sup>

## Medical



# DL50

## **INSTALLATION AND OPERATING MANUAL**

**FOR WALL, CEILING AND  
UNIT MOUNTED DL50 MODELS**



# DARAY<sup>®</sup>

## Medical

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# 1. INTRODUCTION

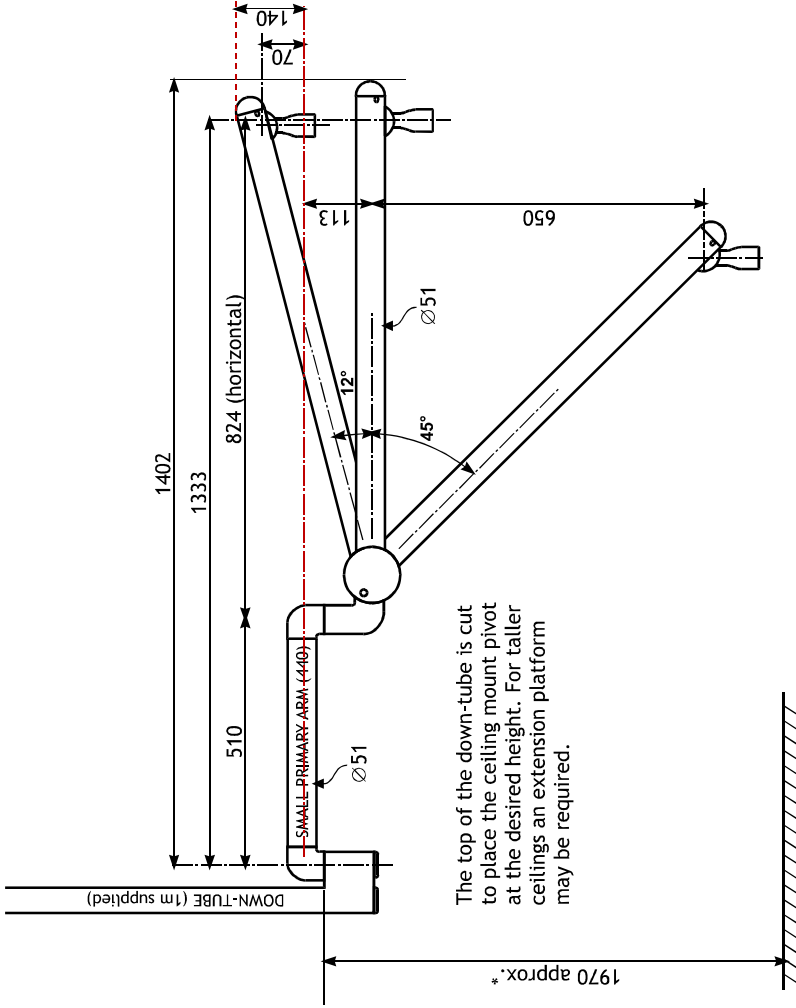
The DL50 is a high performance dental operating light comprising a light-head and a double support arm. The light-head is powered by low voltage, fed through the support arms and derived from a double-insulated mains transformer. The DL50's arm design ensures the light-head can be accurately and stably positioned.

The light-head is fitted with fixed side handles, and the light is single intensity.

The light's outstanding shadow-reduction and colour-rendering properties are achieved by the use of a bespoke, optical reflector. Routine maintenance of the DL50 is easy with cleaning, disinfecting and lamp replacement simple and quick to effect.



# DIMENSIONS (2/2)



The top of the down-tube is cut to place the ceiling mount pivot at the desired height. For taller ceilings an extension platform may be required.

\*Dimension suggestion. For specific applications or environments, the mounting bracket should be installed at a height so that, when fitted, the light-head is as near to the required position as possible.

### 3. ELECTRICAL SUPPLY REQUIREMENTS

The DL50 comprises a low-voltage head and arm assembly.

**WARNING: the dental light arm must only be connected to a 12V supply. No attempt should be made to connect the arm directly to a mains supply as this would result in a hazardous condition.**

Transformers are double-insulated and supplied with a 2 core supply cable.

If the mains supply is not double-insulated, due note must be made of earthing requirements for the various transformer configurations as detailed.

The 230V supply must be independently switched and protected by a 2A fuse (the DL50 requires approx. 85 watts at 230 volts).

## 4. INSTALLATION

**IMPORTANT:** To ensure the smooth movement of the arm, it is essential that the spigot on the primary arm and the mating socket faces are greased before assembly.

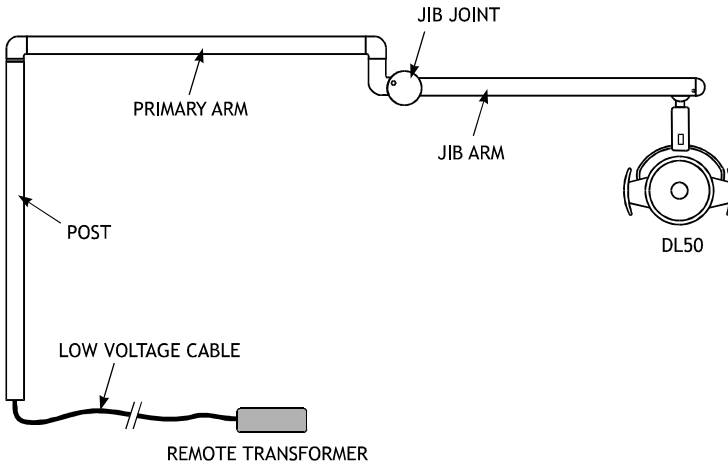
### 4.1 UNIT/CHAIR MOUNT WITH REMOTE TRANSFORMER

Mount the transformer in a suitable position under the chair.

Ensure that the transformer and electrical connections are sited so that they do not come into contact with liquid.

The transformer low voltage cable terminates in a Molex plug. The transformer is supplied with a low voltage cable which has suitable Molex adaptors at either end - one which will connect to the transformer only, the other to the Molex adaptor on the low voltage cable supply of the arm assembly.

Feed the low voltage cable through the support post and any umbilical to the transformer site. Make sure there are no sharp bends or possible contact with surfaces which may rub or cut the cable.



*Fig. 1*

Ensure the post mount is truly vertical. Connect the low voltage cable to the arm assembly. Fit the arm to the post and connect the low voltage lead to the transformer.

For fitting of head unit, see p.11.



## 4.2 CEILING MOUNT INSTALLATION

Check you have the following items:

Ceiling-mount plate assembly and cover	Suspension arm
Down-tube	Light head
Down-tube grub-screw	Grease sachet
Down-tube spigot nylon washer	Power supply module
Down-tube bungs	

Determine where to mount the light.

**WARNING:** please note that this information is provided for guidance only and that a qualified builder or structural engineer should be consulted if you have any doubt about the suitability of the proposed mounting position.

**WARNING:** the light-head operates from a low-voltage supply produced by a transformer in the ceiling mount assembly and fed through the suspension arm. On **NO ACCOUNT** should the arm be connected directly to mains voltages.

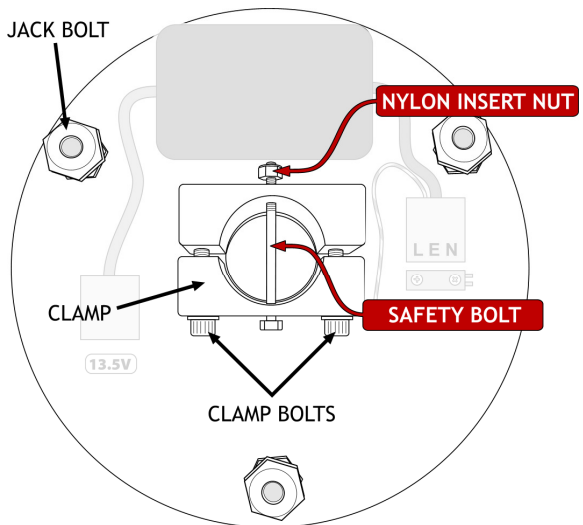
### Fitting the ceiling plate

Remove the clamp bolts, safety bolt/nylon insert nut and the clamp. Keep these parts in a safe place for use later.

Fix the plate to the ceiling with bolts, screws or studs and nuts through the centre of each jack bolt. Do not fully tighten the fasteners at this point.

**Note:** The nuts threaded to the upper end of the 3 jack bolts act as pressure pads. These pressure pads must be seated firmly against the mounting surface.

The jack bolts can then be used to adjust the position of the ceiling plate and down-tube.



## Fitting the Down-tube

A 1 metre length of down-tube is included with all ceiling mount kits, and must be securely fitted in accordance with these instructions.

The down-tube should be cut to length on-site to suit the particular ceiling height and application.

Note when installed the down-tube must leave clearance above the ceiling mount plate to prevent the cable being trapped.

For determining the cut point, we suggest measuring the distance between the ceiling mounting plate, and a point about 1900mm above the floor.

The length of the down-tube should be altered to suit the room dimensions and the particular application for which the light is to be used.

**De-burr as necessary.**

**NOTE:** For suspended ceilings, the ceiling hole trim and retaining band should be placed over the downtube **BEFORE** proceeding.

Loosely refit the clamp and clamp bolts. Fit the down-tube in the clamp and tighten the clamp bolts to firmly hold it in place. Drill a 6mm hole completely through the tube via the guide holes in the clamp and fit the safety bolt and nylon insert lock nut supplied.

**NOTE: TO ENSURE THE USER'S SAFETY, THE SAFETY BOLT AND NYLON INSERT LOCK NUT MUST BE FITTED PROPERLY**

Feed the end of the low-voltage cable assembly through the tube.

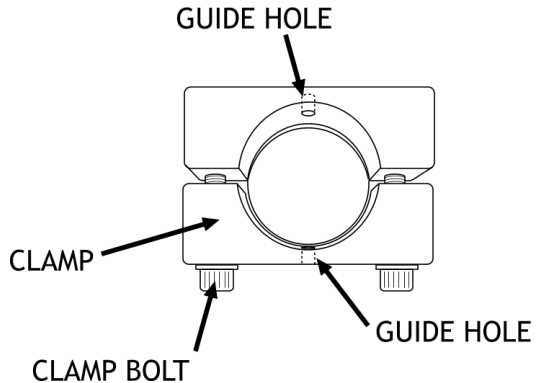
Tighten both clamp screws fully and evenly until the tube is firmly clamped.

Adjust the 3 large bolts such that the down-tube is absolutely vertical. Tighten the fixing bolts or screws to firmly clamp the jack bolts tight against the joist, tighten the thin locknuts and re-check that the down-tube remains vertical, and the mounting plate has no movement. If necessary, repeat the adjustment.

Run the low-voltage cable to the mounted power-supply module, feed it through the grommet on the top of the module and connect it to the 2-way terminal block wired to the low-voltage output from the transformer.

Refit the module to its mounted rear plate.

**NOTE:** For suspended ceilings cut a clearance hole in a ceiling tile, replace the tile and slide the trim up the downtube until it is firmly against ceiling tile, then roll the trim retaining band upward until it holds the trim in position.



**NOTE:** For conventional ceilings fit the cover, holding it in place with the metal ring from the fitting kit.

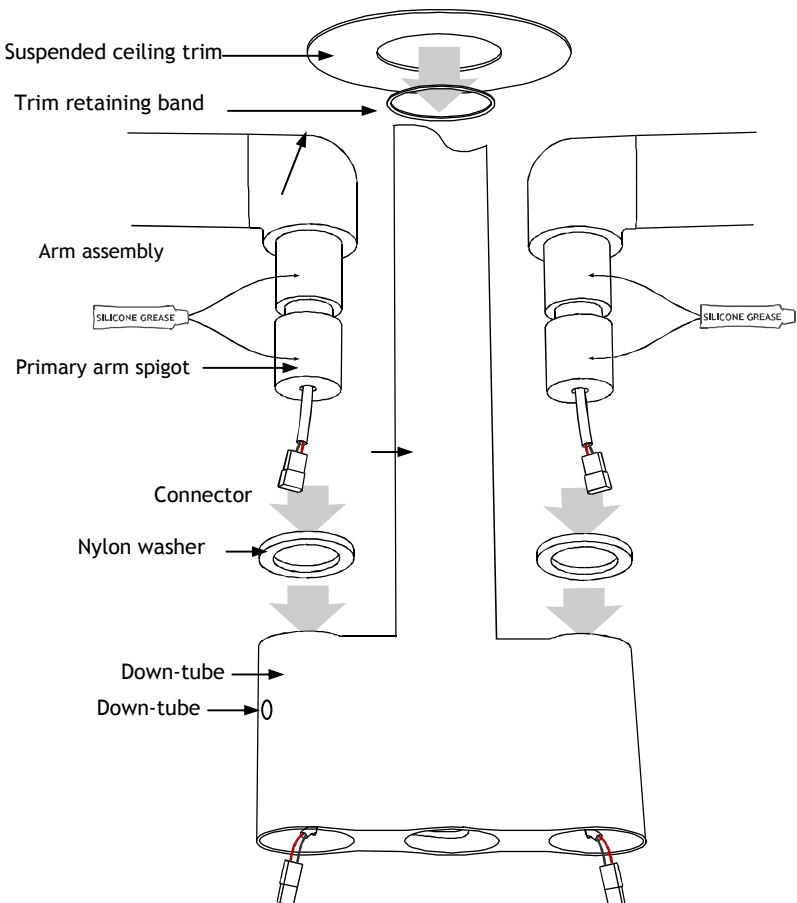
## Install the primary arm



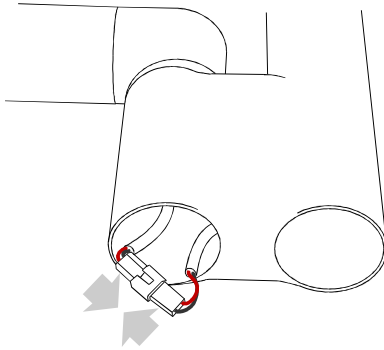
To ensure the smooth rotation of the arm, it is essential that the primary arm spigot is **lightly** lubricated before assembly.  
A sachet of silicon grease is provided.

Place the nylon washer over the primary arm spigot.

Insert the primary arm spigot into the down-tube.

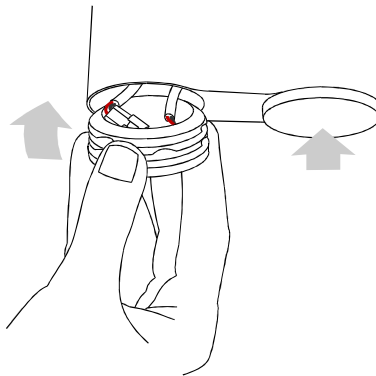


Join the connector from the primary arm to the connector from the down-tube.



Fit the supplied bungs.

**Make sure to sit the joined connectors inside the bung before fitting to prevent the cable from being damaged.**



Fit the light-head (see p.16).

Check everything for tightness and safety.

Check the arm and head for freedom of movement.

If necessary, rebalance the jib arm (see p.17).

Fit the jib-joint cover (see p.18).

## Wiring the ceiling mounted DL50

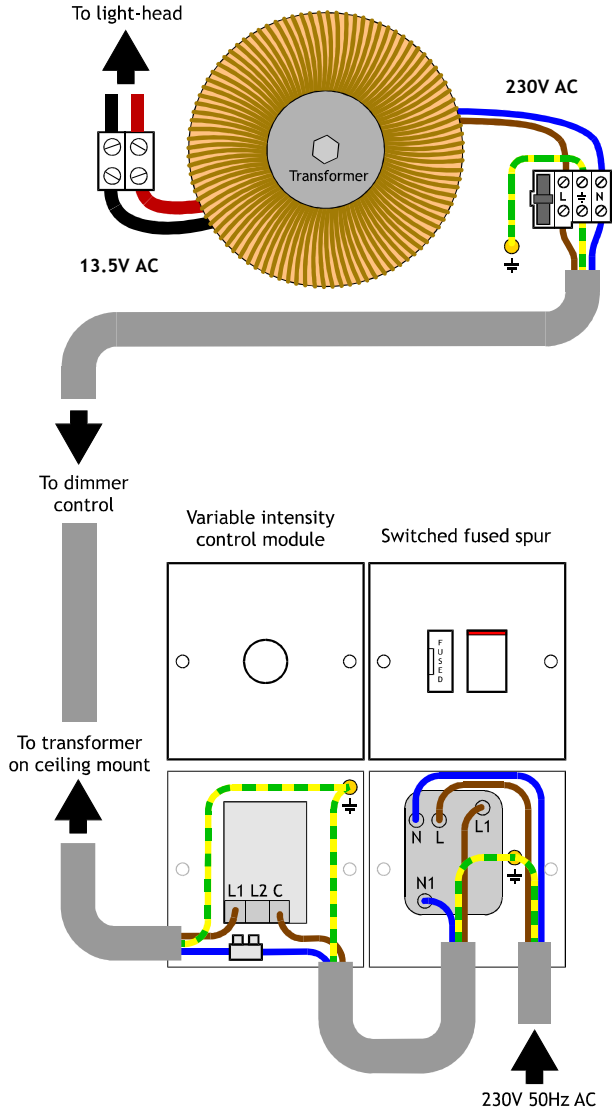
The variable intensity control module should be mounted on a wall at a convenient position for the user.

Provide a suitable, earthed electrical supply to the variable intensity control module via a switched, fused spur.

Run a 1.5mm<sup>2</sup> twin and earth cable to the ceiling plate 230V terminal block.

Provide power to the power-supply module and switch on the green rocker switch which should illuminate.

Turn on the light with the rocker switch on its mounting swivel and check that the light illuminates and that the variable intensity control module works.



*Ceiling mounted DL50 wiring diagram*

## 4.3 Wall mount

Check you have the following items:

1. Wall-mount plate
2. Variable intensity power supply module
3. Light-head
4. Suspension arm

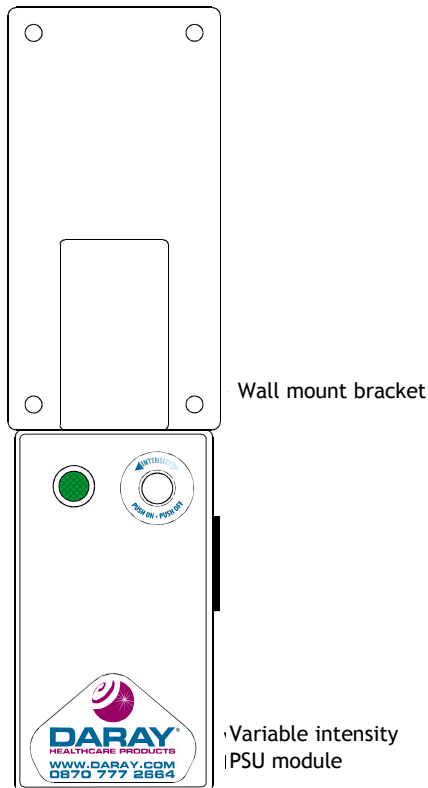
Remove any packaging materials.

Mount the wall mount bracket. The top of the bracket into which the primary arm fits should be 1696 mm above the floor.

**WARNING! If in doubt, consult a building engineer.**

Secure the plate to the wall, ensuring that it is truly vertical.

**WARNING: the light-head operates from a low-voltage supply produced by a transformer in the power-supply module and fed through the suspension arm. On NO ACCOUNT should the arm be connected directly to mains electricity.**



Fit the power-supply module directly under the wall mount bracket.

Remove the rear plate from the power-supply module by slackening the screw in each of the 4 corners.



To ensure the smooth rotation of the arm, **lightly** grease the spigot on the primary arm with the silicone grease provided. Slide the spigot into the bracket on the wall-mount plate, feeding the low-voltage cable from the primary arm through the top of the power-supply module.

Connect the low-voltage cable to the **2-way** terminal block wired to the low-voltage output from the transformer.

The power-supply module requires an earthed mains electrical supply either fed into its rear or into a socket on the side depending on the module supplied.

Connect the incoming mains cable to the **3-way** 'LEN' terminal block in the module.

Fasten the module's earth-bond wire to the rear-plate's earth stud.

Refit the module to its mounted rear plate.

Fit the light-head (see p.16).

Check everything for tightness and safety.

Check the arm and head for freedom of movement.

If necessary, rebalance the jib arm, (see p.17).

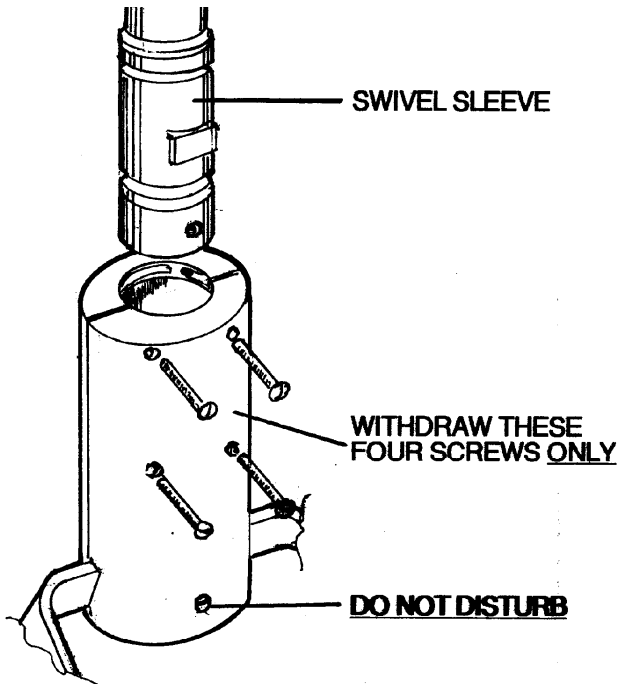
Fit the jib-joint cover (see p.18).

Provide power to the power-supply module and check that the mains indicator illuminates.

Operate the variable intensity control module by pressing it. Rotate to dim. Check that the light-head illuminates and that the intensity control works.

## 4.4 FITTING THE LIGHT HEAD

**NOTE:** The arm will not balance until the head is fitted



Remove four M3 screws, as shown, from the slip ring housing. Make sure the bottom fifth screw is left in place.

**Note:** the four M3 screws may be supplied separately in a plastic bag with the warranty card.

Ease the 2 halves of the slip ring housing open slightly and slide the lamp-head unit up over the swivel sleeve until the top face meets the lower face of the anchor block, ensuring that the flat on the swivel sleeve is positioned as shown.

Replace the four M3 screws so that they engage the slots in the swivel sleeve. Do not over-tighten the screws.

Check everything for tightness and safety.

Check the arm and head for freedom of movement.

Rebalance the jib arm, if necessary, as described above.

Provide power to the power-supply module and switch on the green rocker switch which should illuminate.



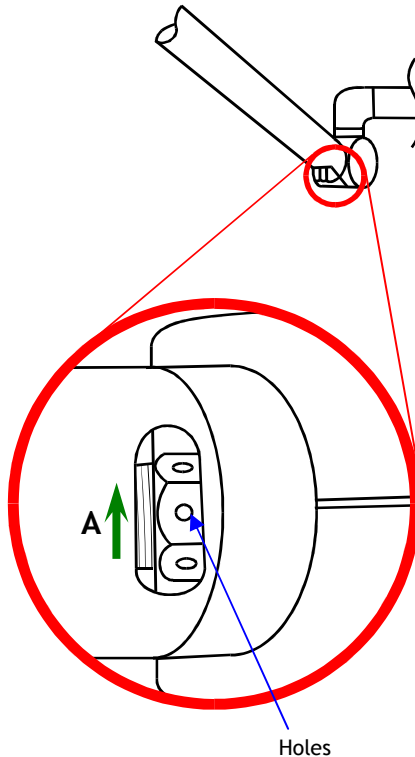
## 4.5 ADJUSTMENT OF ARM BALANCE TO ELIMINATE DRIFT

Insert a small implement (e.g. hex wrench 2mm AF) into one of the holes and turn capstan in the direction of Arrow A until desired balance is obtained.

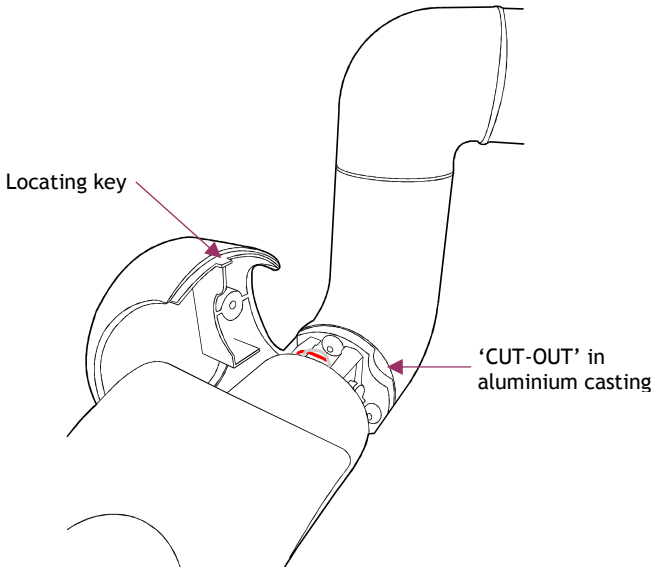
Note: To eliminate rise in the jib at the fully down position turn the capstan in the opposite direction to Arrow A.

To assist in making this adjustment, it may be necessary to remove the arm joint cover: Remove the 2 snap in plugs and the 2 screws, allowing the cover half mouldings to be separated and the moving cover to slide down the jib arm. This provides better access to the slot through which the capstan nut is adjusted.

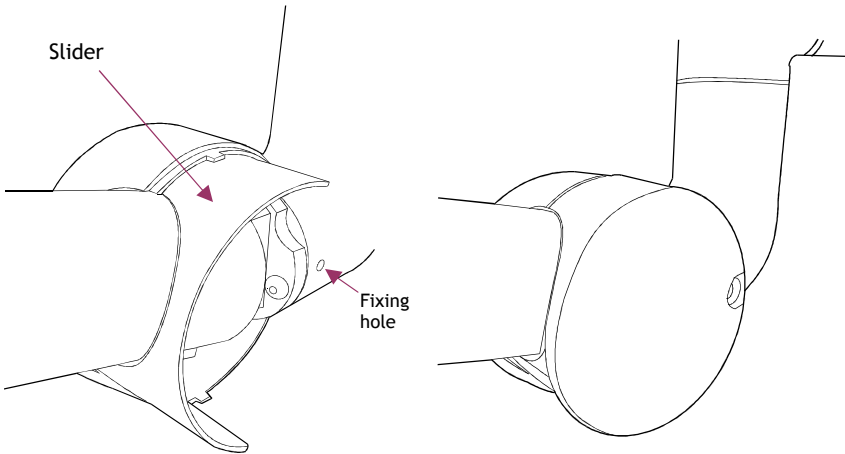
**Note: When re-assembling, ensure that the moving cover is correctly positioned with the 'T' notation on the component at the 'Top'.**



## 4.6 FIT THE ELBOW COVER



1. Covers are marked 'L' and 'R' on their inside faces as viewed from the end of arm. Engage the slider, with its 'T' mark uppermost, into the groove inside the cover.



2. Align holes in cover and painted elbow. 'Nip up' the screw to secure.  
**DO NOT OVERTIGHTEN**
3. Fit opposite cover  
**DO NOT OVERTIGHTEN**
4. Fit a plug in each hole
5. Carefully check the operation of arm and the jib-joint cover.

## 5. PERFORMANCE SPECIFICATION

Output intensity	30,000 lux, min, 3,000 lux typical @700m
Colour temperature	5,000 K min, 5,200K typical
Input voltage	230V or 110/120V, 50/60 Hz
Case colour	RAL 9002

## 6. SERIAL NUMBERS

Each DL50 head and arm is allocated a unique serial number located as follows:

- Under lamp-bar fitted to rear of light-head.
- On the arm.

## 7. PRODUCT LABELLING

The DL50 Dental Head and Arm are labelled as follows:



Arm Label



Head Label

### 8.1 Explanation of Symbols



The light-beam must not be directed at any object closer than 0.5m

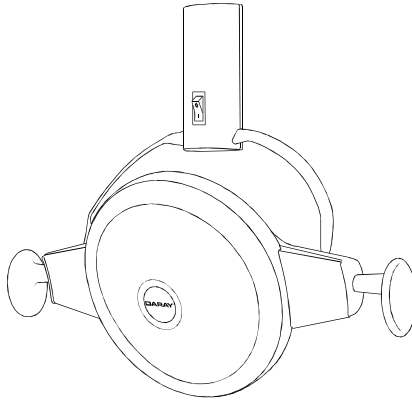


Type 'B' Equipment  
Equipment providing a particular degree of protection against electric shock, particularly regarding allowable leakage current.

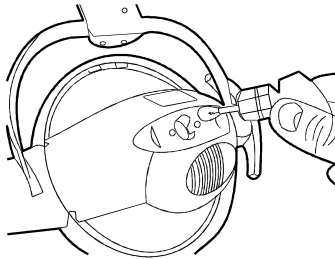
## 8. CONTROLS AND OPERATION

### 8.1 Switching

The DL50's on/off rocker switch is shown below



### 8.2 Changing the Lamp



In the event of lamp failure, turn off the power to the light-head. Replace the lamp-bar in the rear housing as shown above.

**CAUTION: The failed lamp may be extremely hot and should not be handled.**

**DO NOT touch the patient whilst changing the lamp.**

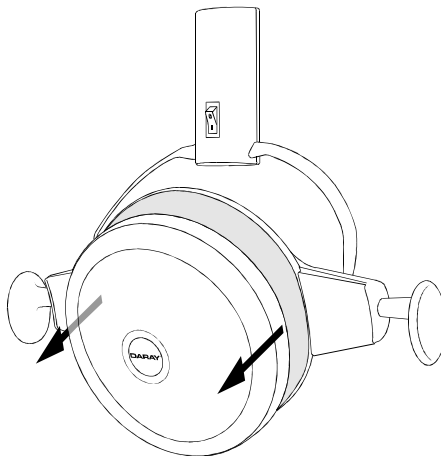
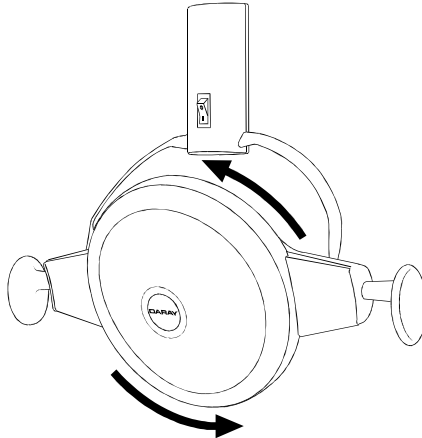
Fit a new lamp-bar into the housing and turn on the power. Dispose of the failed lamp-bar in accordance with any local regulations. Remember to order a replacement.

**WARNING: Only Daray lamp-bars (Part no. DRK5003) should be used as replacements. Failure to comply with this could seriously damage the product, reduce lamp life and may invalidate any warranty.**

## 8.4 Removal of front cover

The front cover is removed for cleaning by carefully rotating it anticlockwise one eighth of a turn and lifting it away from the housing.

To replace the cover, locate its un-notched mounting tag, located between the rollers on the housing. Turn clockwise until it locks (clicks) into position.



**WARNING:** ensure the cover is properly locked into position with the DARAY logo exactly horizontal; failure to do so could cause the cover to fall off during use of the light.

## 9. CLEANING AND DISINFECTING

The following important instructions **MUST** be followed to avoid invalidating the product's warranty.

**WARNING:** Do not use strong chemical cleaning agents such as Dettol to sterilise the light. Do not use any abrasive materials to clean the light.

**CAUTION:** The light is not waterproof, so do not use excessive cleaning fluid amounts.

1. Suitably protect hands.
2. Remove the front cover.
3. Wipe the light using clean tissue or soft towelling. Pay special attention to the switch area.
4. Apply to all surfaces a 1% solution of sodium hypochlorite using a soft cloth.
5. Within 10 minutes, remove the chemical from all surfaces using a damp, soft cloth. The chemical will cause corrosion of metal parts, if it is not thoroughly removed.
6. Apply Isopropanol to the surfaces - this is an alcohol-based fluid which evaporates without leaving any residue and can be obtained as an impregnated-cloth applicator.

## 10.ROUTINE MAINTENANCE

The DL50 is designed and manufactured to stringent quality standards. Observing the following procedures will help to maintain the light's optimum performance.

### Light-head

Routine Inspection and Maintenance	Suggested Intervals
Clean all exterior surfaces	As required (Disinfecting and cleaning directions - see above)
Remove front cover and clean internal surfaces and reflector surface	As required (Disinfecting and cleaning directions - see above)

### Arm

Routine Inspection and Maintenance	Suggested Intervals
On all but ceiling mounted units, lift unit up so spigot is almost clear of bush and re-lubricate if required.	Six Monthly
On ceiling mount units, support arm and remove 3 screws fixing sleeve. Lower until inner sleeve and key can be removed. Slide sleeve up and inspect for lubrication. Re-lubricate spigot and sleeve if required. Re-assemble.	Six Monthly
Check tightness of all 5 fixing screws	Annually
Clean slip-ring tracks	Annually
Check balance of jib over whole range.	One month after installation and then annually. (If unbalanced, follow the procedure, above. If tendency is to fall from fully up, insert key in capstan hole furthest away and with jib fully up move capstan by pulling key towards you. Repeat until no fall at top. Reverse capstan if rise at bottom of jib movement.)

### Ceiling Mount

Routine Inspection and Maintenance	Suggested Intervals	Cleaning Methods and Fault Rectification
Inspect 6 button head socket screws for tightness and check that washers are fitted under head	Six Monthly	Tighten with appropriate Allen key.
Check that down post is rigidly mounted to the ceiling (do not exert undue force).	Annually	If any movement found - immediately advise your full service dealer.

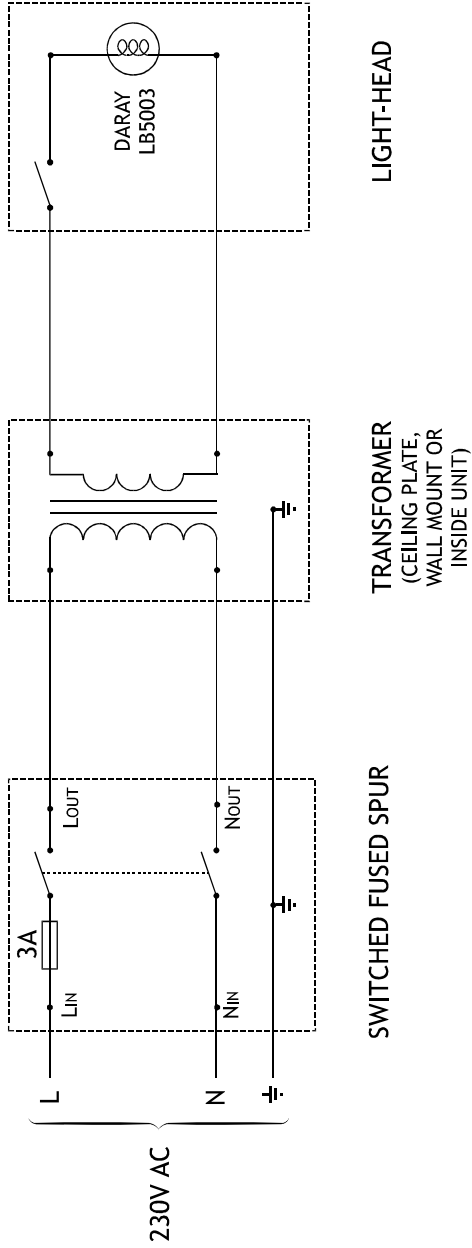
### Wall Mount

Routine Inspection and Maintenance	Suggested Intervals	Cleaning Methods and Fault Rectification
Check for security of fixing to wall	Annually	Investigate any looseness - ensure your building contractor is consulted if looseness found.

It is strongly recommend that an annual service be carried out on the light-head and arm assembly, by suitably qualified service personnel; this would maintain the equipment's optimum qualities and prolong its lifespan.



# 11. WIRING DIAGRAM





## Returns Policy

### **IMPORTANT!**

**Before returning your item, you must call us on 0844 375 9000**

We want you to be completely satisfied with your purchase. If you need to return goods purchased from DARAY Ltd, please read the following information carefully.

The DARAY Ltd returns policy provides guidance on when you can return goods we have supplied, and what you can expect from us once you do.

TYPE OF RETURN	REMEDY
<b>DAMAGED GOODS</b> Goods which are physically damaged on delivery	We must be notified within 24 hours of receipt.
<b>Dead On Arrival (DOA)</b> Goods which do not work	Goods which do not work on arrival or develop a fault within 28 days, we will advance replace the item.
<b>GOODS DEVELOPING A FAULT</b> Goods which have developed a fault within the warranty period.	If the fault develops after 28 days, but within the warranty period, we will initiate the returns procedure.
<b>NON WARRANTY</b> Goods which have developed a fault outside the warranty period.	If a fault develops outside the warranty period, we will initiate the returns procedure charges may be applicable.
<b>OTHER</b> Any situation which is not covered by any of the above.	We will always try to help, but we cannot normally offer a refund.

For additional clarification, please refer to our terms and conditions at [www.daray.co.uk/terms](http://www.daray.co.uk/terms).

In a small number of cases, we may determine that a replacement would not work any better than the original product we supplied. In such cases we will only offer a refund rather than a replacement for qualifying returns.

Replacement bulbs and spare parts ordered on our website or from supplied part codes are not eligible for credit. We will accept returns and exchange for the correct item.

If your purchase an item incorrectly you can return it within 14 days and it can be exchanged for another product of equal or higher value, excluding transportation charges incurred. Goods and packaging must be returned in their original condition. Under no circumstances will goods be accepted for return if they are damaged, have been subjected to improper handling or abuse or have been used.

If you send us goods that do not qualify for return, you will invalidate your claim to any refund, and you will be obliged to compensate DARAY Ltd for the cost of return postage and any other reasonable costs incurred processing the goods.

Your statutory rights are not affected.

# WARRANTY

## TERMS AND CONDITIONS OF WARRANTY

1. To qualify for this warranty you must register on [www.daray.co.uk](http://www.daray.co.uk) or return to Daray Ltd (Daray) the duly completed warranty-registration form accompanying the product.
2. Daray warrants this product (excluding lamp) against faulty material and workmanship during the period of the warranty. The period of warranty is the period stated on your warranty card and commences on the date of purchase of the product. In the event that the product is not in good working order Daray will provide, during the warranty period, a free repair service within the United Kingdom. The warranty is subject to proof of purchase being provided; therefore, you should retain your original receipt.
  - 2.1 The repair service consists of the provision of spare parts and/or replacement products (at Daray's discretion) which will be provided on an exchange basis and will either be new, equivalent to new or reconditioned. All replaced spare parts and products shall become the property of Daray.
  - 2.2 Daray's only obligation under this warranty is the provision of the service as set out above.
  - 2.3 All products are returned to Daray at the customer's cost and risk. Products to be returned should be adequately packed. For the address to send returns to please visit [www.daray.co.uk](http://www.daray.co.uk)
3. Daray's arrangements for providing service provided under this warranty may include the use of sub-contractors.
4. This warranty does not cover damage or defects in the Product caused by or resulting from:
  - Wilful neglect or negligence by anyone other than Daray;
  - Improper use, storage or handling of the product;
  - Use of non-Daray approved parts (such as replacement lamps) not compatible with the Product;
  - Fire, accident or disaster;
  - Use of non-Daray modifications other than in accordance with Daray's instructions;Attachment of fittings and accessories not approved by Daray;  
Repairs, modifications carried out by service personnel not approved by Daray;
  - Damage caused by chemical corrosion from cleaning agents not approved by Daray.
  - Failure to use or install the product in accordance with the manufacturer's instructions.
5. Nothing in this warranty shall have the effect of restricting or excluding the liability of Daray in respect of:
  - a) Death and personal injury caused by the negligence of Daray, or for fraud;
  - b) Under the *Consumer Protection Act 1987* to a person who has suffered damage caused by a defective product or to a dependant or relative of such a person;
  - c) Direct damage to your property caused by the proven negligence of Daray.
6. This agreement does not give any rights other than those expressly set out above and in particular, Daray will not be responsible for any loss of income, profits or contracts or any direct or indirect consequential loss, damage caused to or suffered by the purchaser as a direct result of this agreement.
7. This warranty is offered (subject to these terms and conditions) in addition to, and does not affect your statutory rights.
8. Daray may disclose your details and other personal information to companies within the Daray group including any subsidiary company or sub contractor of Daray for the purposes of performing our obligations hereunder.
9. You must not resell outside the UK any products supplied by Daray and covered by the *Export of Goods (Control) Order 1992* (or any law that replaces it) without obtaining all necessary licences. You also agree not to sell the product in the UK if you know or think that the person buying the product intends to export it without getting the necessary licences. You agree to impose similar conditions to these on anyone you sell the product to.
10. These conditions shall in all respect be governed and construed in accordance with English law and the exclusive jurisdiction of the English courts.



# DARAY<sup>®</sup>

WARRANTY REGISTRATION  
TO VALIDATE YOUR WARRANTY  
PLEASE COMPLETE IN BLOCK CAPITALS  
AND RETURN IN A WINDOWED DL ENVELOPE  
TO OUR FREEPOST ADDRESS

**ALTERNATIVELY REGISTER ONLINE AT [WWW.DARAY.COM](http://WWW.DARAY.COM)**



## 3 YEAR AFTERCARE PLAN

NAME:	
COMPANY:	
EMAIL:	
PHONE:	
FAX:	

ADDRESS:

PURCHASED FROM:

DATE OF PURCHASE:

Freepost Plus RRAS-YGXE-SLBC  
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DE12 6EJ

Occasionally DARAY would like to send you information about our special offers and promotions. If you do not wish to receive such information, please tick here:

Privacy statement: DARAY will not pass on your details to any third party.

PRODUCT:
SERIAL No:





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[info@daray.co.uk](mailto:info@daray.co.uk) · [www.daray.co.uk](http://www.daray.co.uk)