Astralite® AL10-ALE10 Ceiling/Wall models Installation Guide

This **Installation Guide** document forms part of the product **Instructions for Use** and should be referred to in conjunction with the system **Operation & Maintenance Manual** document.

This document is for use by clinicians and maintenance personnel.

Please keep this document in a safe place.

IG-AL10-CEILING-WALL, REVISION B1, 28 NOVEMBER 2022

CONTENTS

1 GENERAL

1.1 SYMBOLS USED

The symbols used in this guide and on the product are explained in the following table.

	Caution		Disposal		Fragile handle with care		Temperature limit
	Follow Instructions for use		Manufacturer		Catalogue number		Humidity limitation
	Consult Instructions for use		Date of manufacture		Serial number		Atmospheric pressure limitation
	CE conformity mark						

Table 1

1.2 ALL RIGHTS RESERVED

1.3 DECLARATION OF CONFORMITY

Brandon Medical Co Ltd. hereby declares that this product – Astralite® – is in compliance with the EU Medical Device Regulation 2017/745.

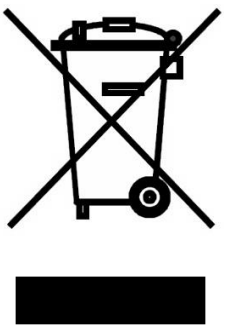
The product is considered a Class 1 medical device according to the rules specified in Annex VIII of EU Medical Device Regulation 2017/745.

Despite any compliance with EMC standards, the device may emit radiation that interferes with adjacent equipment. If this becomes apparent then increase the distance between the two pieces of equipment.

1.4 DISPOSAL INSTRUCTIONS

Do not dispose of the light with normal refuse. Depending on local regulations, dispose of the light at a recycling centre or return it to a dealer with a disposal service.

Equipment must be de-contaminated before disposal or return to dealer.



1.5 GUARANTEE

1.5.1 Terms of the guarantee

Subject to the conditions listed below Brandon Medical Company Ltd. guarantee to provide for the repair of, or at its option replacement of Brandon Medical equipment, or any component thereof (other than consumables), found to be faulty or below standard, as a result of inferior workmanship or materials. This guarantee will be passed to the purchaser through the approved Brandon Medical distributor where equipment is purchased outside of the United Kingdom.

1.5.2 Conditions of the guarantee

- This guarantee shall only apply to defects or faults that are notified to Brandon Medical Company Ltd. or its approved distributor within 12 months of the delivery date.
- This guarantee covers equipment intended for use in hospitals and healthcare establishments only.
- It is a condition of the guarantee that the equipment is maintained as recommended in the instruction manuals provided.
- This guarantee does not cover – and is invalidated by – faults or defects caused by accident, misuse, fair wear and tear, neglect, tampering with the equipment, or any attempt at adjustment or repair other than by Brandon Medical approved service technicians.
- In the unlikely event of the equipment requiring repair, please contact the dealer or supplier from whom it was purchased. Where this is not possible or where the equipment was purchased direct from Brandon Medical Company Ltd., please contact us directly:
    - Tel: +44 (0)113 277 7393
    - Fax:+44(0)113 272 8844
    - E-mail: enquiries@brandon-medical.com
- The cost of any carriage to and from the dealer, supplier, Brandon Medical Company Ltd. or approved service agent shall be borne by the purchaser.
- This guarantee cannot be varied except by written notification by Brandon Medical Company Ltd. authorised by a company director.
- Under no circumstances whatsoever shall Brandon Medical Company Ltd. be liable in respect of consequential loss.
- The guarantee is subject to the equipment in question having been paid for in full.
- This guarantee is offered as an additional benefit to the purchaser’s statutory rights and does not affect these rights in any way.

2 ELECTROMAGNETIC COMPATIBILITY

Medical devices manufactured by Brandon Medical Company Ltd conform to EN60601-1-2:2015 (EMC Directive 2014/30/EU) standard for both immunity and emissions.

Nevertheless, special precautions need to be observed:

Warning: Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

- Refer to further guidance below regarding the EMC environment.

2.1 ELECTROMAGNETIC EMISSIONS GUIDELINES & DECLARATION

Brandon Medical Company Ltd Astralite® is intended for use in the electromagnetic environment specified below. The user of this Brandon Medical Astralite® should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment Guidance
RF emissions CISPR 11	Group 1	The Brandon Medical Company Ltd Astralite® has no RF circuits. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions EN55011	Class B	The Brandon Medical Company Ltd Astralite® is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IRC 61000-3-3	Complies	

Table 2

The medical devices should not be used adjacent to or stacked with other equipment. In case that adjacent or stacked use is necessary, the medical device should be observed to verify normal operation in the configuration in which it will be used.

2.1.1 Electromagnetic Immunity Guidelines & Declaration

Brandon Medical Company Ltd Astralite® is intended for operation in an electromagnetic environment such as the one specified below. The user must ensure that it is operated in such an environment.

Immunity Test	IEC60601 Test Level	Compliance Level	Electromagnetic environment guidance
Electrostatic discharge (ESD) EN 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floor should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Fast transients/ bursts EN 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial and/or hospital environment.
Surge EN 61000-4-5	±1 kV line to line ±2 kV line to earth	±1 kV line to line ±2 kV line to earth	Mains power quality should be that of a typical commercial and/or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply EN 61000-4-11	<5 % UT (>95 % dip in UT) for 0.5 cycle	<5 % UT (>95 % dip in UT) for 0.5 cycle	Mains power quality should be that of a typical commercial and/or hospital environment. If the user of the Astralite® requires continued operation during power mains interruption, it is recommended that the Astralite® be powered from an uninterruptible power supply or battery.
	40 % UT (60 % dip in UT) for 5 cycles 70 % UT	40 % UT (60 % dip in UT) for 5 cycles 70 % UT	
	(30 % dip in UT) for 25 cycles <5 % UT	(30 % dip in UT) for 25 cycles <5 % UT	
	(95 % dip in UT) for 5 sec.	(95 % dip in UT) for 5 sec.	
Power frequency (50/60Hz) magnetic field EN 61000-4-8	30 A/m	N/A	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: UT is the a.c. mains voltage prior to application of the test level.			

Table 3

2.1.2 Electromagnetic Immunity Guidelines & Declaration

Brandon Medical Astralite® is intended for use in the electromagnetic environment specified below. The customers or the users of this Astralite® should assure that it is used in such environment.

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment guidance
Conducted RF EN 61000-4-6	3 Vrms 150 kHz ~ 80 MHz 6Vrms in ISM bands between 0.15MHz and 80MHz The ISM (Industrial, scientific and medical) bands between 0.15MHz and 80MHz are 6.765MHz to 6.795MHz; 13.553MHz to 13.567MHz; 26.957MHz to 27.283MHz; and 40.66MHz to 40.70MHz	3 Vrms 150 kHz ~ 80 MHz 6Vrms in ISM bands between 0.15MHz and 80MHz The ISM (Industrial, scientific and medical) bands between 0.15MHz and 80MHz are 6.765MHz to 6.795MHz; 13.553MHz to 13.567MHz; 26.957MHz to 27.283MHz; and 40.66MHz to 40.70MHz	Portable and mobile RF communications equipment should be used no closer than the recommended separation distance, calculated from the equation appropriate to the frequency of the transmitter, to any part of the equipment including cables. Recommend separation distance d = [3.5/V1]√P d = [3.5/V1]√P 80 MHz to 800 MHz d = [3.5/V1]√P 800 MHz to 2.7 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters(m). Field strengths from fixed RF transmitters as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF EN 61000-4-3: 2006+A1:2008 +A2:2010	3 V/m 80 MHz to 2.7 GHz	3 V/m 80 MHz to 2.7 GHz	
Proximity fields from RF wireless communications equipment IEC 61000-4-3	As detailed below and in section 8.10 of standard. **Applies to system** Test performed at any one voltage and any one frequency (c.f. Table 1 of EN60601-1-2:2015).		

Continued…

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum Power (W)	Distance (m)	Immunity Test Level (V/m)
385	380-390	TETRA	PM 18Hz	1.8	0.3	27
450	430-470	GMRS 460 FRS460	FM ±5kHz deviation 1kHz sinewave	2	0.3	28
710 745 780	704-787	LTE Band 13, 17	PM 217Hz	0.2	0.3	9
810 870 930	800-960	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE Band 5	PM 18Hz	2	0.3	28
1720 1845 1970	1700-1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	2	0.3	28
2450	2400-2750	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse Modulation, 217 Hz	2	0.3	28
5240	5100-5800	WLAN 802.11 a/n	Pulse Modulation, 217 Hz	0.2	0.3	9

Note1: At 80 MHz and 800 MHz, the higher frequency range applies.
Note2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/ cordless) telephones and land mobile radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Brandon Medical Astralite® is used exceeds the applicable RF compliance level above, the Astralite® should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Astralite®.
[b] Over the frequency range 150 kHz to 80MHz, field strengths should be less than 3 V/m.

Table 4

2.1.3 Recommended separation distance between portable and mobile RF communications equipment & the Astralite®

Brandon Medical Astralite® is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customers or the users of Astralite® can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Astralite®.
Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Astralite®, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Table 5

3 SAFETY

3.1 INTENDED USE

The Astralite® is a luminaire intended for use in a professional healthcare facility environment. Note that the professional healthcare facility environment does not include all hospital locations and is not intended for use in areas with sensitive equipment or sources of intense Electromagnetic Disturbances.

The Astralite luminaire is a intended to illuminate a minor surgical/treatment sites to support treatment and diagnosis. The Astralite luminaire is a **Luminaire for diagnosis** as defined in IEC 60601-2-41.

The luminaire is not fail-safe compliant and should not be used as a major surgical luminaire which requires fail-safe compliance when an interruption of the illumination would be a hazardous condition.

(Reference: - IEC60601-2-41)

3.2 USER PROFILE

Medical professional

A medical professional is any person with medical training who works within the field in which they were trained.

Cleaning professional

A person with knowledge and training with national and workplace hygiene requirements.

Electrician

An electrician is trained in the fields of electronics and electrical engineering and is familiar with the relevant standards and regulations.

Qualified professional

A qualified professional who is capable of mounting and dismounting the luminaire with professional training, knowledge and experience of the equipment and knowledge of the local regulations.

3.3 SAFETY INSTRUCTIONS

Please note that certain duties must only be carried out by people with the appropriate training and knowledge of the equipment.

- This installation guide is for use on Brandon Medical equipment only. If there is any other equipment mounted or connected to the system that is not part of Brandon Medical's remit then the corresponding instruction manual should be consulted.
- The luminaire has class I protection and must be connected to the protective earth, if this is not done then there is a potential for electric shock.
- The Operating & maintenance manual will only become applicable after the proper installation and assembly of the equipment in accordance with the installation guide provided.
- Only persons with medical training are permitted to operate the equipment.
- Only trained cleaning personnel are permitted to clean the equipment.
- Please carefully read these instructions for use before using the equipment.
- If problems are encountered that have not been addressed in this installation guide, please contact your supplier in the interest of your own safety.
- The Operating & Maintenance manual should be made available to all users of the equipment.
- Any work carried out on the luminaire must be done so by a qualified person.
- Never place any loads on the lamp head; this may cause damage to the supporting arms.
- Never look directly into the light source; there is a danger of eye damage.
- The contents of this installation guide are subjected to change without notice.
- Do not use in oxygen-enriched atmospheres.
- Do not modify the equipment without authorisation of the manufacturer.
- Modification will result in the warranty being void.

4 TECHNICAL DATA

4.1 MODELS COVERED

Model	Approx. Installed weight, kg
Astralite® Ceiling model (Single)	**15.7**
Astralite® Wall model	**12.7**
Astralite® Tandem	27.6

Table 6 (Including 45mm Stem – Excluding optional first fix items)

4.2 CLASSIFICATION

The classifications are explained in the following table.

Classification	Description
Electrical classification	**Class 1**
Classification according to EU MDR 2017/745	**Class 1**
Lamp head degree of protection from ingress of dust and water	**IP54**
Degree of protection against the presence of flammable anaesthetic mixtures	**Not for use in a flammable atmosphere**
Oxygen-enriched atmospheres	Do not use in oxygen-enriched atmospheres

Table 7

4.3 PACKED WEIGHTS

Item	Packed Size (mm)	Approx Weight kg, packed (net)
Minor (45mm Adjustable) Stem ST	1075x245x275mm	10 (8)
Minor (45mm Adjustable) Stem Stopped ST	1075x245x275mm	10 (8)
Minor (45mm Adjustable) Stem 150W 24V	1075x245x275mm	10 (8)
Minor (45mm Adjustable) Stem 50W 24V	1075x245x275mm	10 (8)
Wall Bracket 50W 24V	250x330x220mm	5.5 (5)
Tandem Bracket	400x400x150mm	4.7 (4.2)
Light Duty Spring Arm	1000x365x115	7 (4.7)
Astralite Lamphead	470x450x220	4 (3)
M10 Anchor ring kit (Ceiling/Tandem)*	360x360 x130mm	6 (5)
Minor Cavity Spacer*	1025x360x85mm	32 (31)

Table 8 (*Optional First Fix Items)

4.4 ENVIRONMENTAL

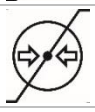
Environmental conditions relating to: Transportation & Storage		Environmental conditions relating to: Operation
-40ºC to 70ºC		15ºC to 30ºC
10% to 95% non-condensing		10% to 80% non-condensing
500hPa to 1060hPa		700hPa to 1060hPa

Table 9

4.5 TECHNICAL INFORMATION

On request, circuit diagrams, component part lists and drawings will be made available to suitably trained service personnel to assist with the maintenance of the equipment.

4.6 SOFTWARE

The equipment contains software located in various parts of the device, where loaded onto a circuit board there will be a label which identifies the release version.

4.7 APPLIED PARTS

The equipment does not contain any applied parts.

4.8 SYSTEM ELEMENTS

Lamp Head

- AL10 70,000 Lux
- ALE10 100,000 Lux

Support structure configuration variations

- CJ, Ceiling mounted (available for single only)
- TJ, Tandem Ceiling
- WJ, Wall mounted (available for single only)

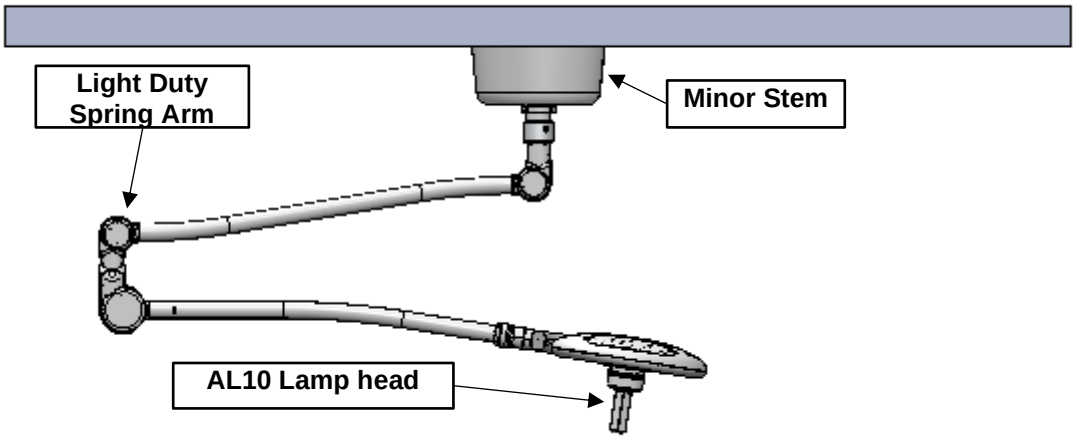


Figure 1 (AL10CJ) Ceiling mount

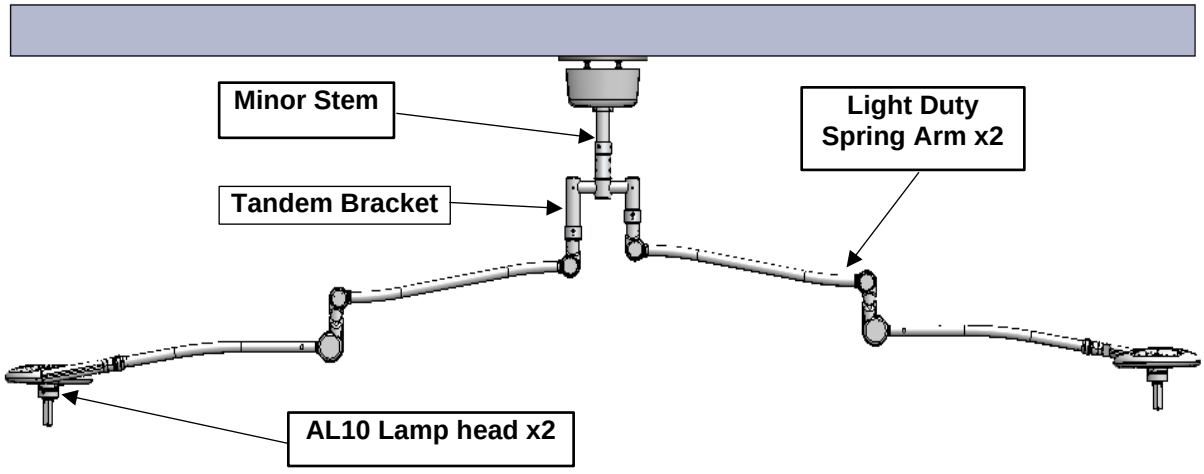


Figure 2 (AL1010TJ) Tandem mount

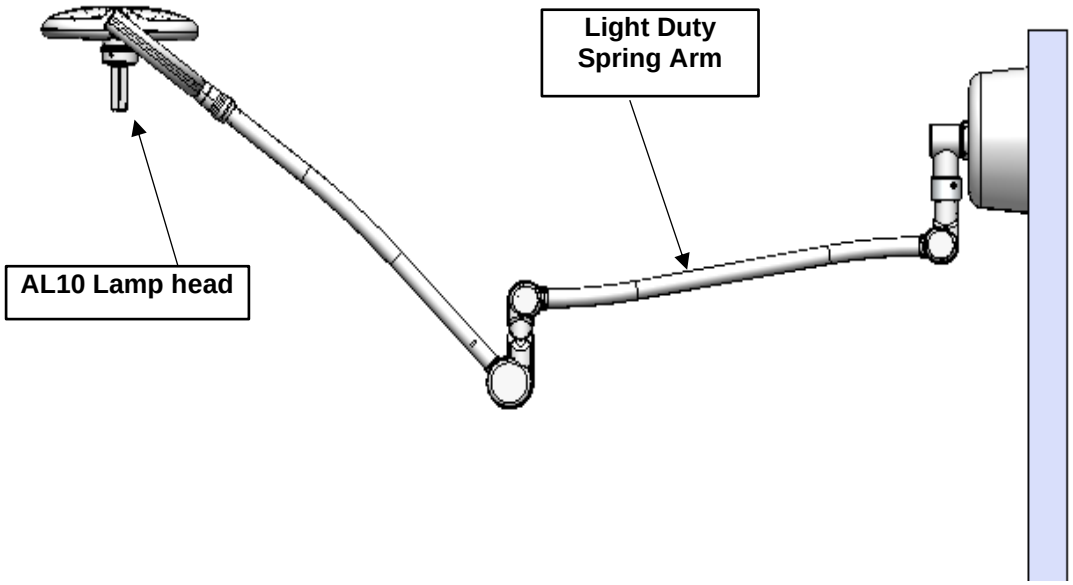
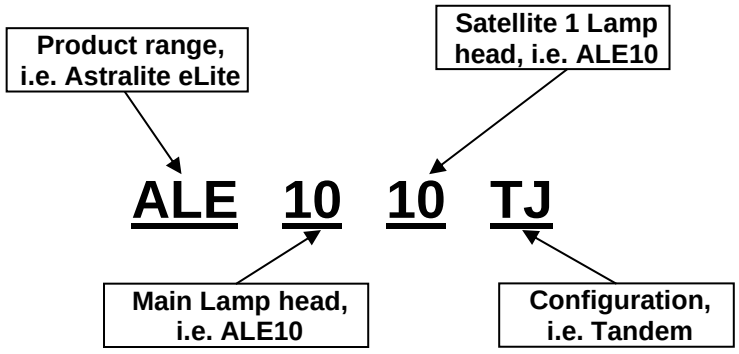


Figure 3 (AL10WJ) Wall mount

4.9 PART NUMBERING



5 ON-SITE REQUIREMENTS

5.1 PLANNING

During the design and planning stage, consideration must be given to all applicable national and local standards and these must be complied with.

The load bearing capacity of the fixing surface must be checked by a structural Engineer and certified as acceptable prior to installation. This information should be available to the installers on request.

5.1.1 Fixing Heights

Fixing heights should be calculated prior to first fix, the stem will then need cutting to length on site.

5.1.2 Tropical Installations

In tropical countries where the humidity levels can be very high, it is possible for condensation to occur inside and outside the section of the stem tube, which is above the false ceiling. In this case Brandon Medical recommends the use of a plug to seal the tube. The power and data cables going to the operating light will be fed through a grommet so they will not be damaged.

- For 45mm Stems use part number 14718

5.2 STORAGE/HANDLING

5.2.1 First-fix Items

First fix items are often delivered sometime prior to installation. These assemblies must not be stored outside, see section 4.4 for acceptable storage conditions.

5.2.2 Lifting

Many of the system components are heavy and may require lifting equipment. Use only certified lifting equipment and ensure operators are trained.

Never attempt to lift heavy components manually.

Never attempt to adjust the spring arm until it is fully assembled and securely mounted with the lamp head in place.

5.2.3 Unpacking

Components should be unpacked in a clean, dry area. Note the serial numbers and ensure that components that are part of the same system remain together.

Any damaged, missing or faulty components should be reported immediately by stating serial number, customer details and a description of the problem.

All packaging should be recycled. Where this is not possible, it should be disposed of in line with local and national waste disposal regulations.

6 ELECTRICAL INSTALLATION (ALL VERSIONS)

Power must be isolated during the entire assembly process. The lamphead must not be fitted unless power is isolated. **Danger of Death.**

Astralite Single Ceiling, Tandem and Wall Systems Standard models must be powered via a 24V DC power supply. These products MUST NOT be connected directly to the mains supply.

Standard models are supplied with a 24V DC integral power supply.

(ST) models are supplied without a power supply - An appropriate external power supply to provide a nominal 24V DC must be fitted to these models.

The positioning of the power supplies and the associated wiring should be carried out before fitting the lamp. The Power Supply Unit (PSU) will generate heat, so consideration must be given to its location and proximity to other heat generating devices. Power supplies must not be stacked.

Check that the electrical requirements as detailed on the serial number label of the lamp correspond with your supply voltage before connecting.

Note, each installation requires two people, one of whom should be a suitably qualified general electrician.

6.1 SUPPLY REQUIREMENTS

A single-phased, fused AC electrical power supply (110 to 250 volts) is required for each of the lamp power supply units. The power supplies to the main lamp and the satellites should be kept separate (one power supply unit per lamp head) so that failure of any one component will only affect one lamp head.

A mains supply isolator shall be used to isolate the live and neutral supply for maintenance work. The isolator shall be rated at a minimum of 13A and be 2 or 4-pole if an emergency DC supply is present.

The cable used to supply the mains to the equipment should be rated for the maximum current for the equipment and the cable used must meet the requirements of IEC 60227or IEC 60245 and shall be ≥ 1mm².

The following is an illustration of the wiring view as supplied for the standard model.

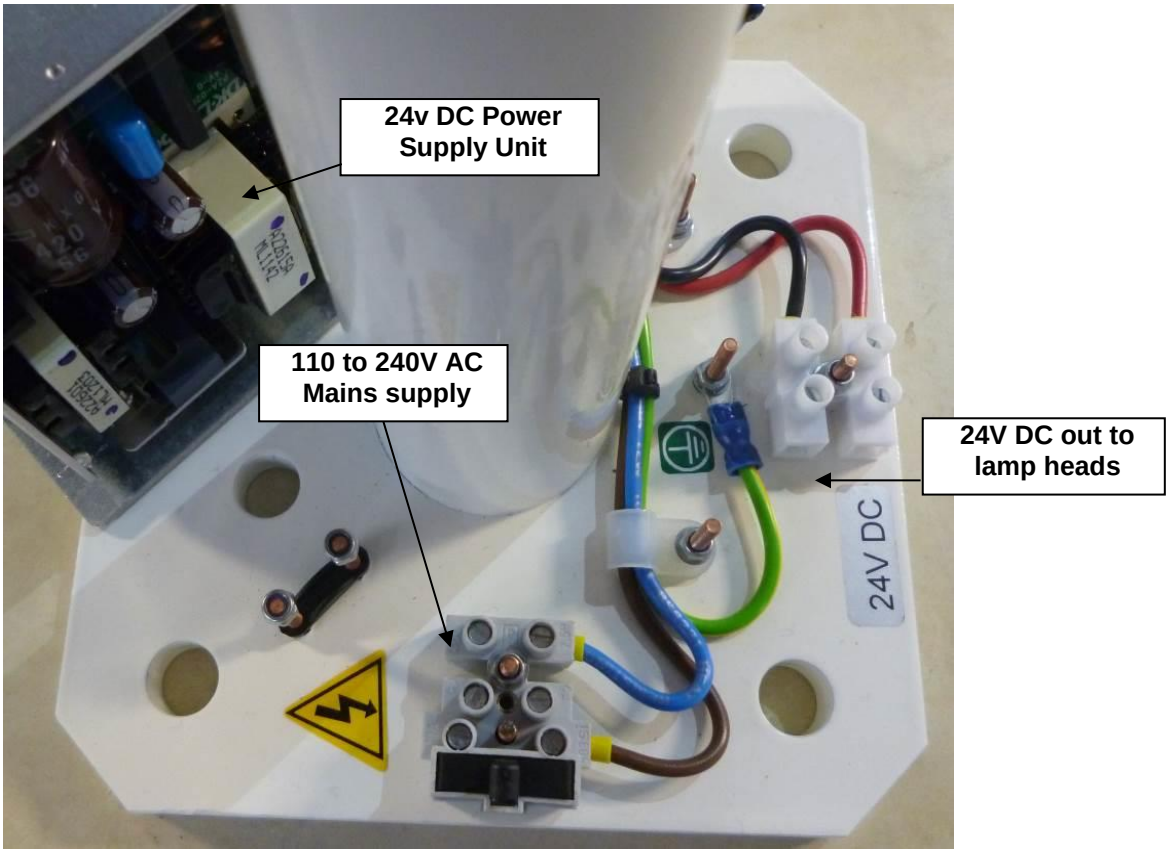


Figure 4

6.1.1 Single PSU Schematic for Tandem (TJ) Models

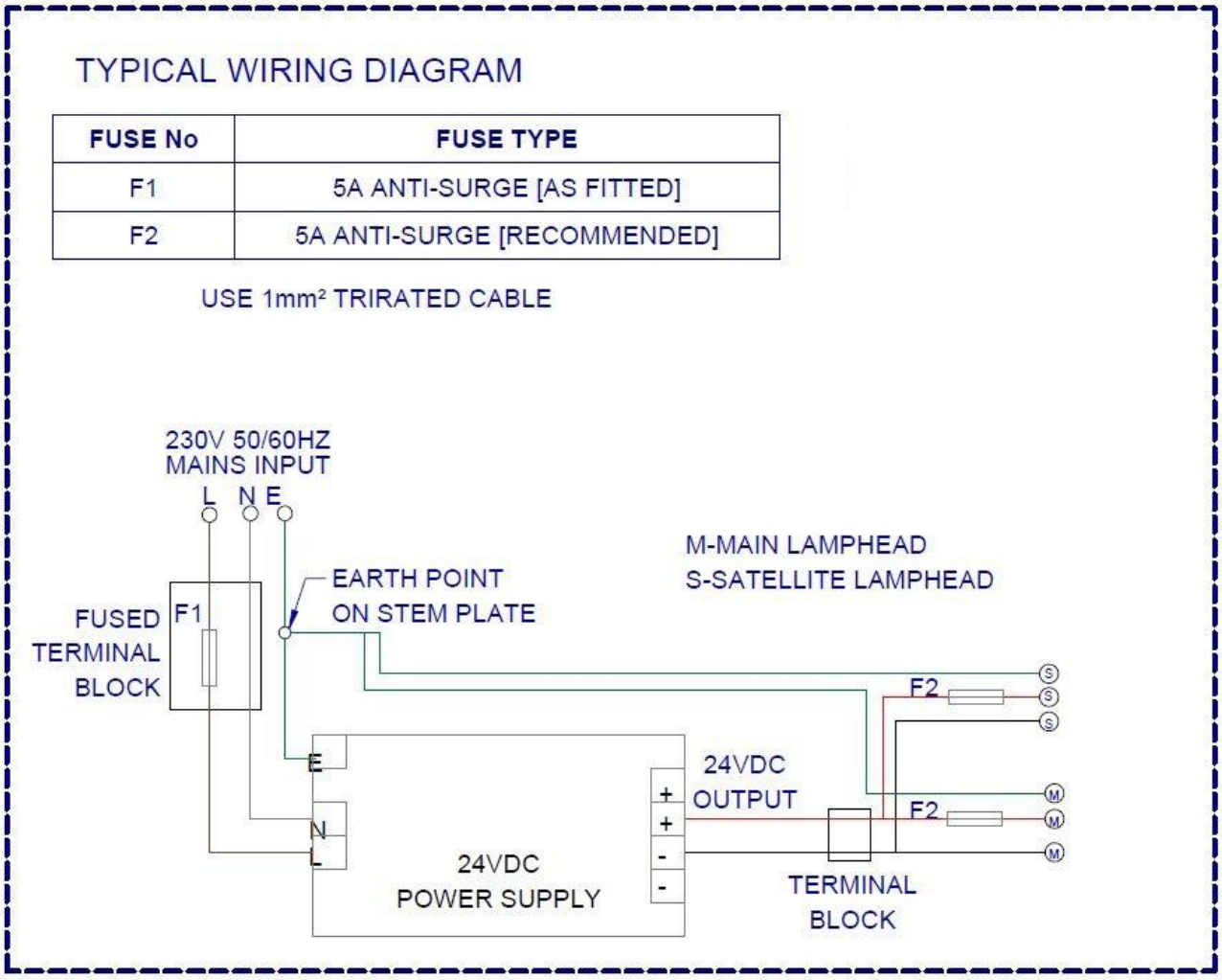


Figure 5

6.1.2 Single PSU Schematic - Single Ceiling (CJ) & Wall (WJ) Models

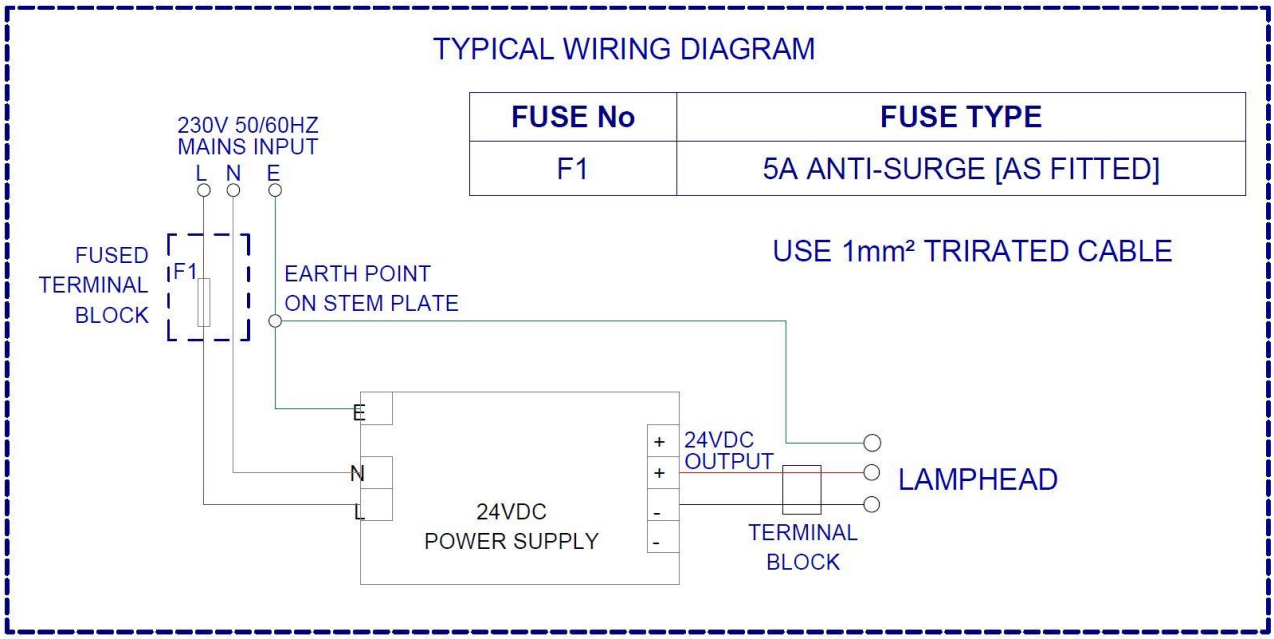
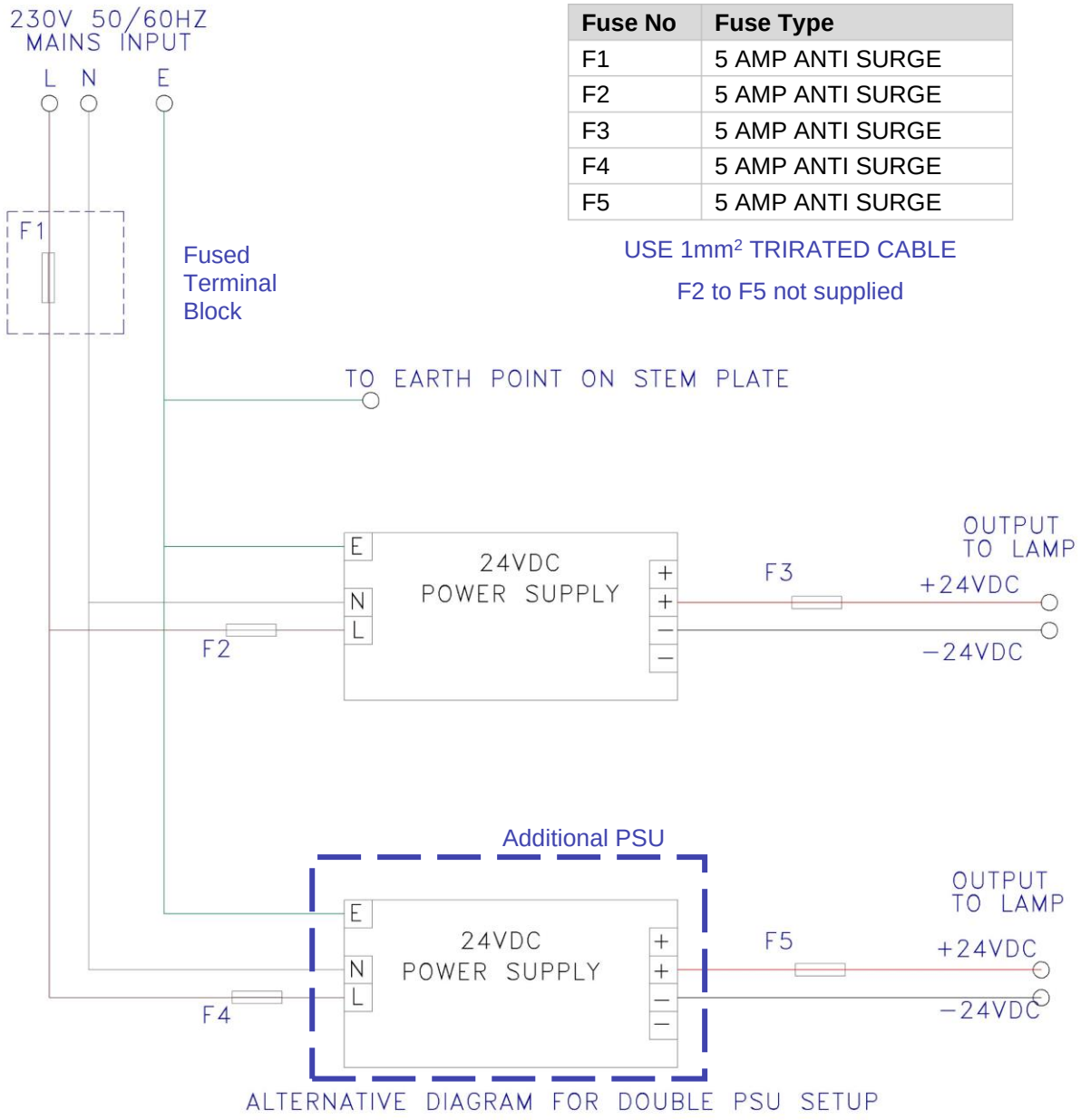


Figure 6

6.1.3 Multiple PSU Schematic



Fuse No	Fuse Type
F1	5 AMP ANTI SURGE
F2	5 AMP ANTI SURGE
F3	5 AMP ANTI SURGE
F4	5 AMP ANTI SURGE
F5	5 AMP ANTI SURGE

Figure 7

For systems with two lampheads where installation requires that each Lamphead has an independent power supply, an additional PSU will be needed – eg Brandon Part Number: ZE150H-1SB

7 MECHANICAL INSTALLATION

7.1 FIRST-FIX INSTALLATION

First fix is often carried out some time before the main system is fitted. An assessment should be made, noting the size of the cavity (if present) and the suitability of the structural ceiling/wall. The installation may require one of the following:

1. **Cavity Spacer**: used for large cavities between the structural ceiling and the false ceiling.
2. **Anchor Ring**: allows for levelling of the stem and attachment directly to the structural ceiling (ie installations without a false ceiling).

7.1.1 Cavity Spacer

The minor cavity spacer can be adjusted for any length between 957mm and 100mm. This is achieved by cutting the drop tubes and their corresponding threaded rods.

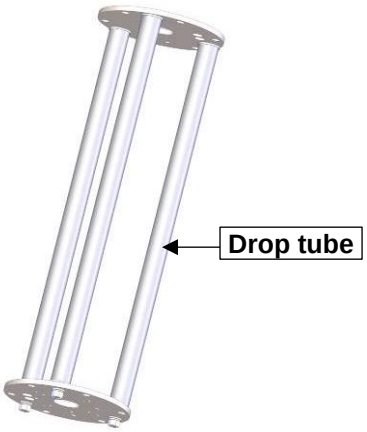


Figure 8

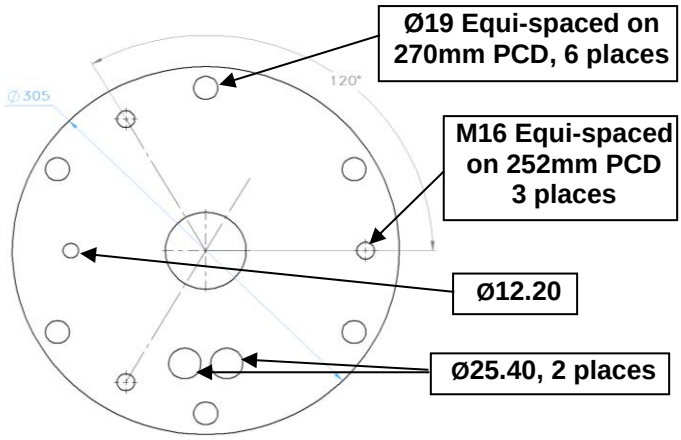


Figure 9 Spacer Top plate (without drop rod holes)

7.1.1.1 Calculating the Spacer Cut Length

- The cavity between the concrete ceiling slab and the false ceiling, should be measured (Cavity length (C).
- The threaded rod and spacer tubes should be cut so that the bottom plate is positioned no more than 50mm above the false ceiling. Take care to make sure the tube ends are cut square. Make sure full thread engagement is achieved with all threaded parts.

Example, given a cavity length of 600mm we see the following:

600 (**C**) - 50 = 550mm (spacer length **B**)

550mm (**B**) **-** (2 x 12.5mm (plate thickness)) = 525mm (tube length **A**)

550mm (**B**) **+** 35mm (min nut clearance) = 585mm (threaded rod length **D**)

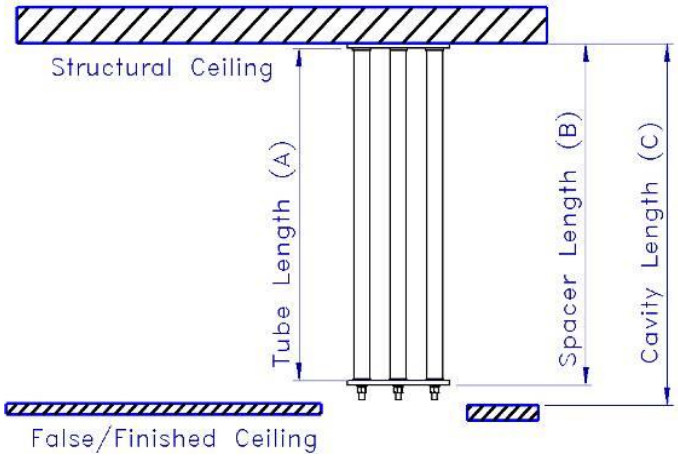


Figure 10

7.1.1.2 Assembling the Cavity Spacer

1. Mount top plate (1) to the structural ceiling/mounting using 6 suitable M16 expanding anchor bolts such as HILTI HST3, (not supplied).
2. Measure the distance from the structural ceiling/mounting to the false or finished ceiling.
3. Cut the threaded rods and spacer tubes to length in order to position the bottom plate at least 50mm above the false or finished ceiling.
4. Fit nut, spring washer, flat washer and cup (Items 4, 8, 7 and 9) to the end of each threaded rod.
5. Screw threaded rod into the top plate.
6. Tighten the nuts (Item 9).

Note, make sure the Threaded rod is screwed the full depth of the threaded hole.

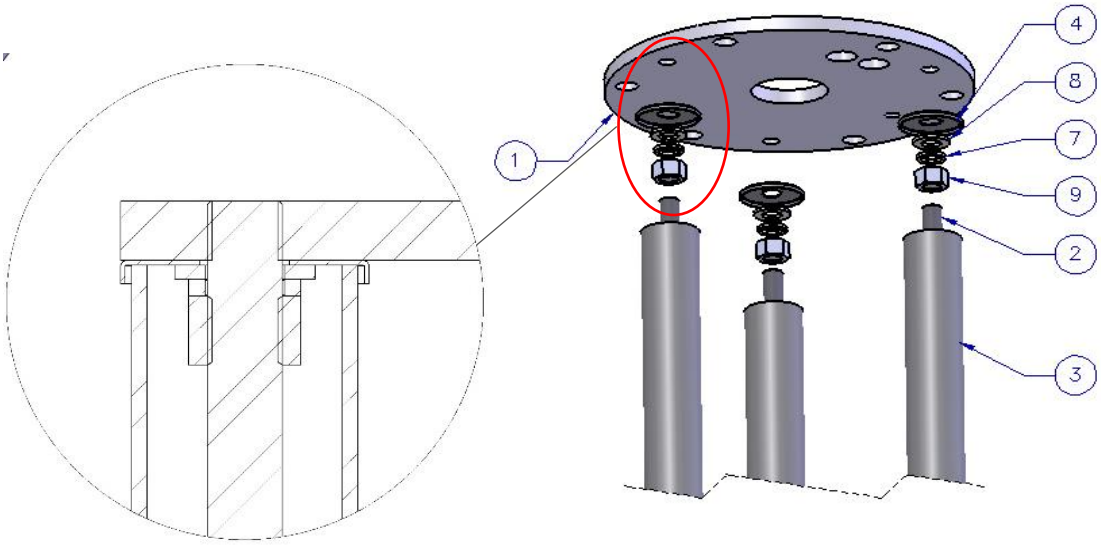


Figure 11

7. Slide one tube over one of the lengths of threaded rod. Position one of the cups on the threaded rod to hold the tube in place with no slack.
8. Fit the bottom plate using the nuts and lock washers. Repeat this until all tubes are fitted.

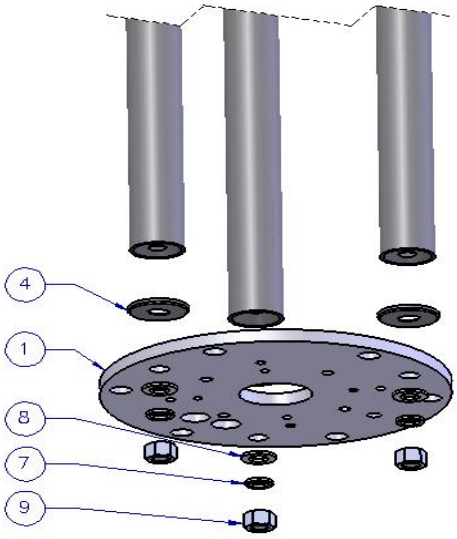


Figure 12

7.1.2 Anchor Ring

The Anchor ring is fixed to the concrete/slab ceiling allowing adjustment to be made and providing rigid support of the stem. The anchor ring required, will depend on the system that is being installed.

7.1.2.1 Ceiling Anchor Ring for 45mm Adjustable Stem

For use with 45mm stem, M10 Ceiling Anchor Ring (13000). See Figure 13 & Figure 14 below.

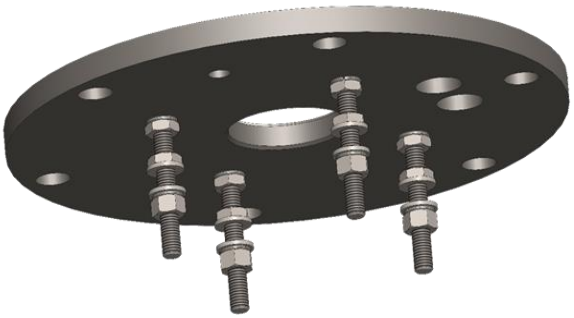


Figure 13

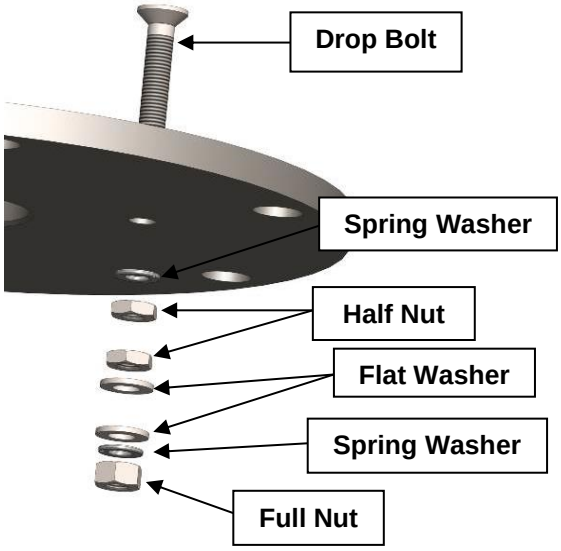


Figure 14

7.2 STRUCTURE INSTALLATION (CEILING MODELS)

7.2.1 Installing the 45mm Adjustable Stem

The Tandem and Single Ceiling Versions use the Minor 45mm Adjustable Stem. See 7.2.2 to 7.2.8 for preparation and installation details.

7.2.2 Setting the Stem Length

The 45mm adjustable stem is supplied at 1m length but can be cut to suit various ceiling heights **(MIN STEM LENGTH 180 mm)**

Refer to relevant sections for Setting the height to calculate the required stem length for the version to be installed. (**Section 7.2.3 to Section 7.2.4**)

7.2.3 Setting the Height (Ceiling Version)

The clearance height shown in the illustration is only a recommendation and relates to general clinical use. In some specialties, e.g. maternity, lights may need to be mounted much lower to cater for certain clinical procedures.

The method for calculating the stem length required is as follows:

Ceiling height (A)

– Lowest point value (B)

– 359 (-50 [if anchor ring is fitted])

= Stem Length (C)

Example: With a total ceiling height of 3000mm and using the recommended lowest fixed-point value of 2000mm without an anchor ring, we find;

A - B - 359 = C

3000 - 2000 - 359 = 641 mm.

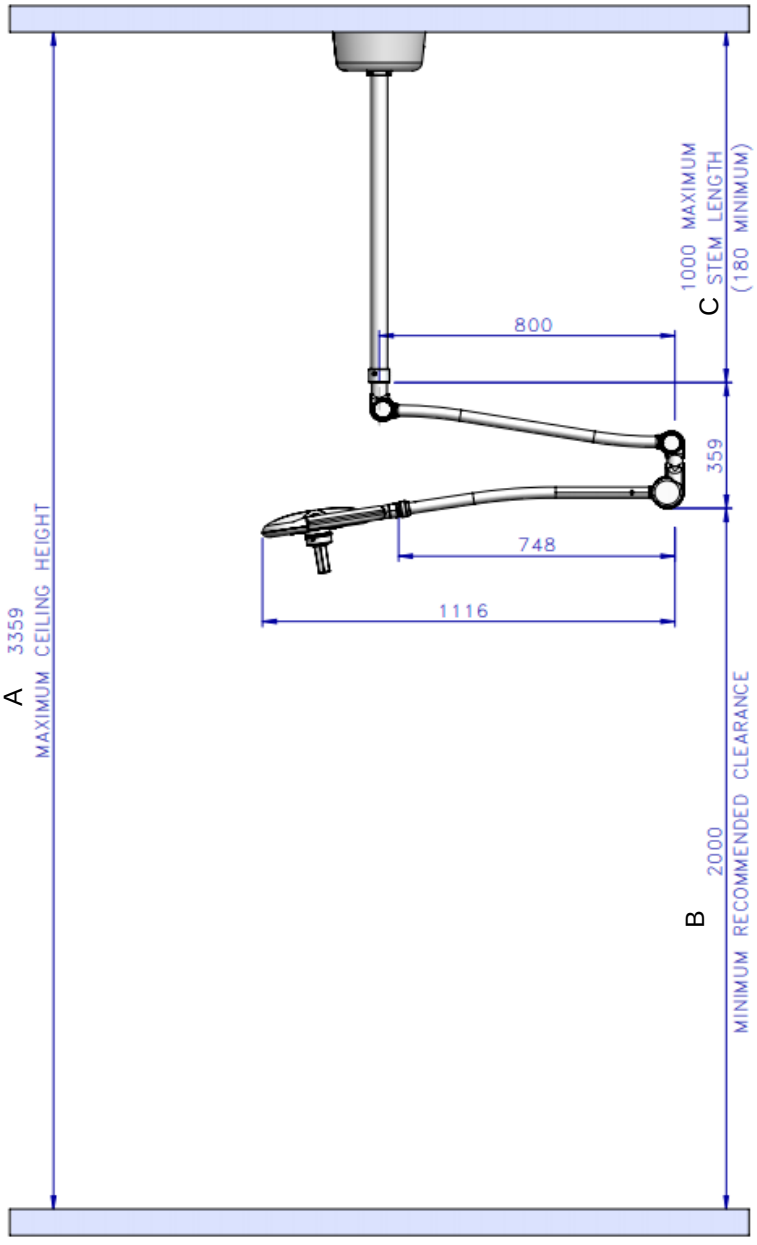


Figure 15

Proceed to Section 7.2.5

7.2.4 Setting the Height (Tandem Version)

The clearance height shown in the illustration is only a recommendation and relates to general clinical use. In some specialties, e.g. maternity, lights may need to be mounted much lower to cater for certain clinical procedures.

The method for calculating the stem required is as follows:

Ceiling Height (A) **-** Lowest point value (B) - 536 – 50 mm (if anchor ring fitted) = Stem Cut Length (C).

Example: With a total ceiling height of 3000mm and using the recommended lowest fixed-point value of 2000mm without an anchor ring, we find;

A - B - 536 = C

3000 **-** 2000 - 536 = 464 mm Stem cut length.

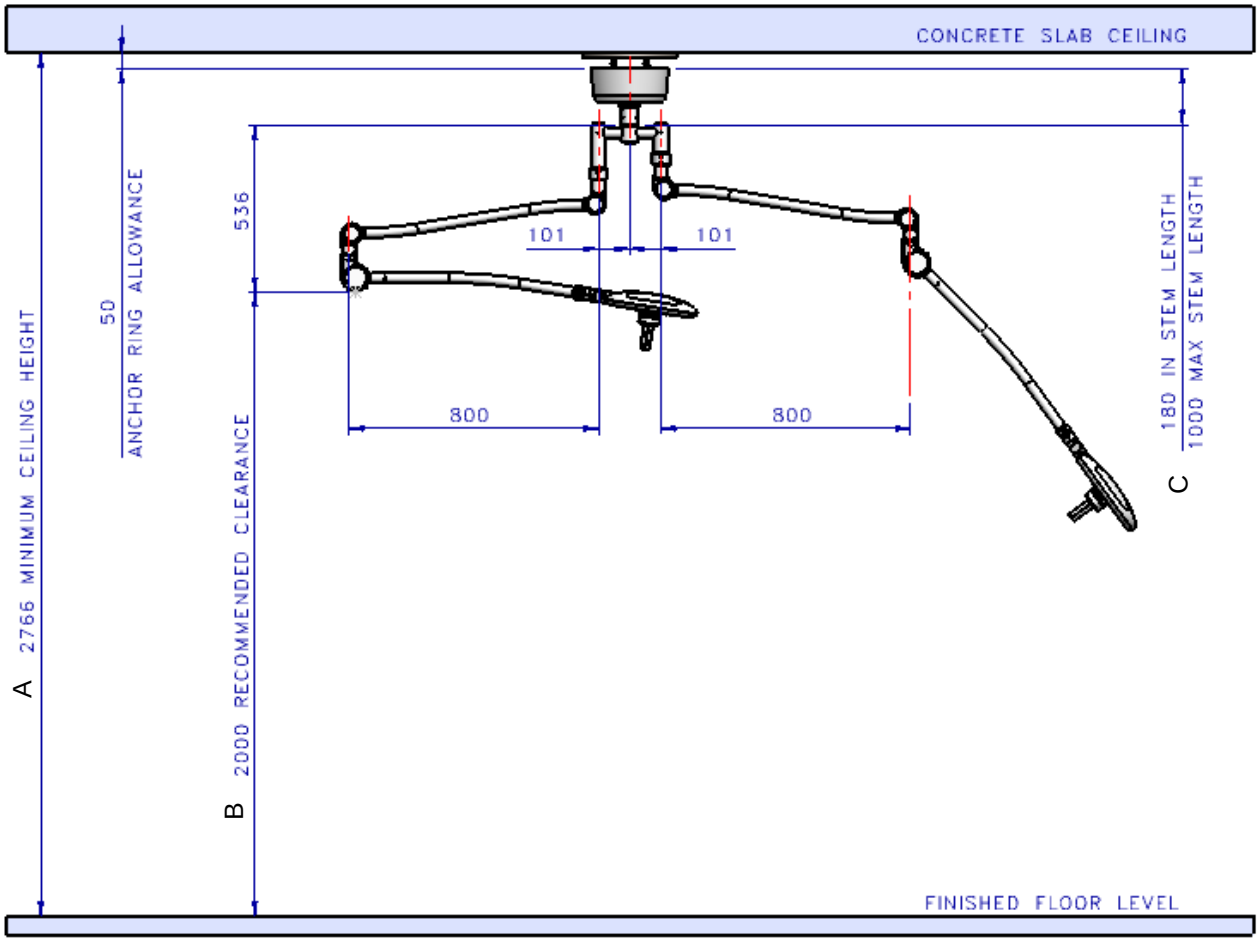


Figure 16

Proceed to Section 7.2.5

7.2.5 Cutting the Stem

Having carefully worked out the appropriate stem length, including all allowances for anchor ring if used, the stem can then be cut.

- Secure the stem firmly without damaging it by using the packaging provided to hold the stem. Cut the stem to size then deburr the cut edges and remove the swarf.

7.2.6 Assembling the Stem

- After cutting to size, place the end cap on the cut end of the stem tube and secure it with the grub screw provided. Mark through the three locating holes (six holes for Tandem bracket).
- Remove the end cap then drill the marked holes using a 5.5 mm drill. De-burr the holes and check alignment with the end cap but do not fasten.

Note, if a tandem bracket is used; the end cap supplied with the bracket will have six holes.

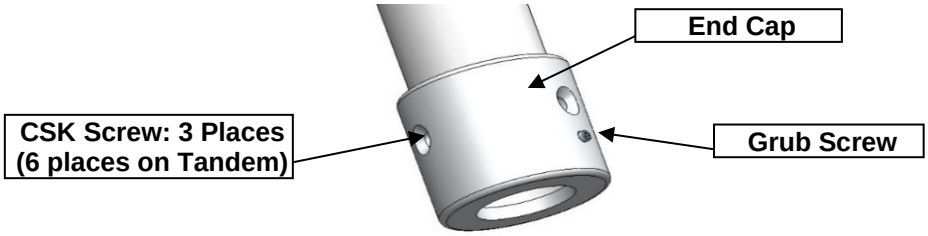


Figure 17

- Feed the cable-free end from the interface through the stem tube. The cable should exit through the small hole at the bottom of the stem. If necessary, cut the cable to suit and then wire into the terminal block labelled 24V DC which is mounted on the stem plate. A ring terminal should be attached to the earth wire and then fastened to the earth stud.

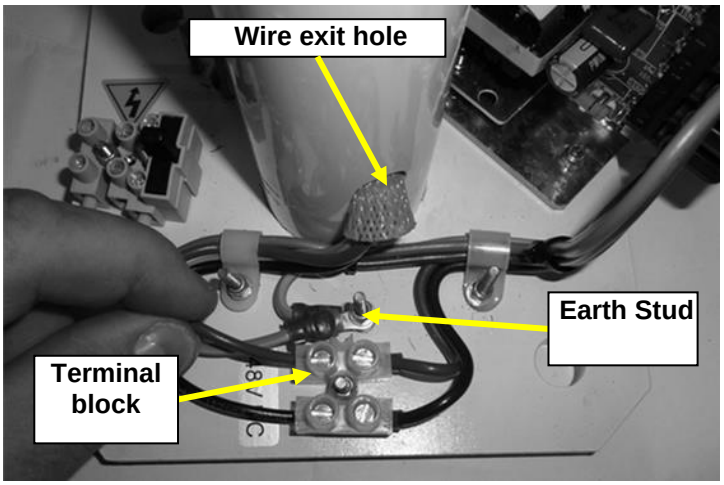


Figure 18

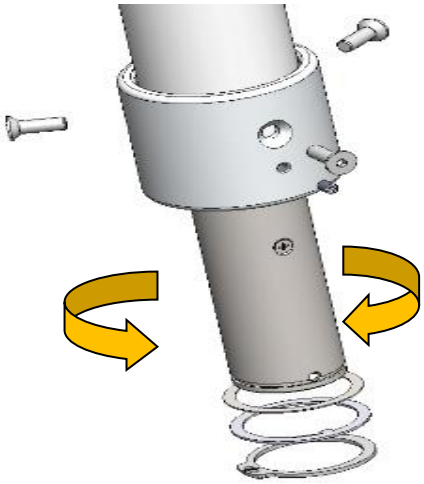


Figure 19

- Replace the end cap, being careful to align the new holes then secure with grub screw. Rotate the interface until all three holes are aligned between the cover, stem and interface. Fix with the CSK screws provided.

Note: Avoid hanging the interface from its cable, which will damage the cable joint.

7.2.7 Mounting the Ceiling Stem

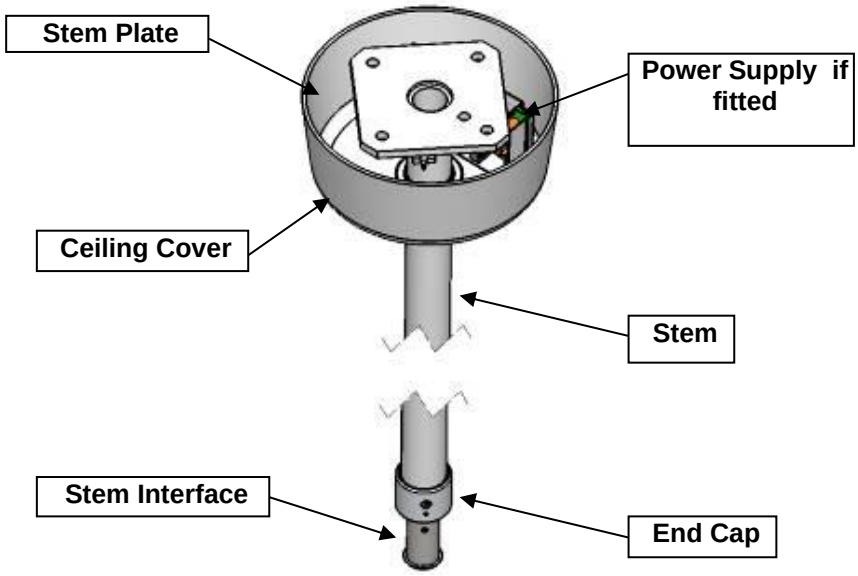


Figure 20 1.1.1 Stem Assembly Elements

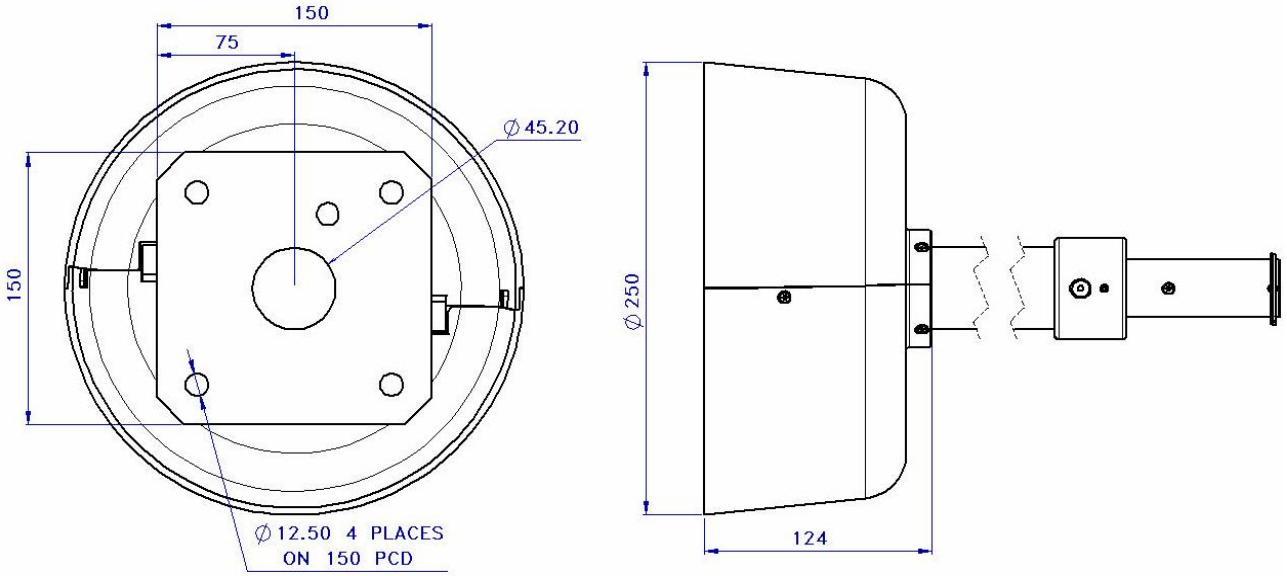


Figure 21

If the ceiling height is very low then the ceiling cover can be replaced by a flat cover disc (HN33866) available from Brandon Medical.

The assembled stem must be securely fastened to the building. It is essential that the mounting is both secure and the stem **absolutely vertical** to ensure safe and trouble-free operation. Where the ceiling is uneven or not level, a ceiling anchor ring should be used. Use of a ceiling anchor ring will reduce floor clearance by 38mm and may require an additional ceiling cover kit.

Note: Refer to Section 7.1.2 for information about the ceiling anchor ring kit.

If a cavity exists between the ceiling and the false ceiling then a spacer kit may be required.

Note: Refer to Section 7.1.1 for information about the spacer kit.

Four M10 anchor bolts should be used to fix the stem assembly to the ceiling/cavity spacer/anchor ring via the stem-plate.

Care must be taken to ensure that the ceiling structure is suitable for the load and that the stem is mounted vertically. If in doubt; the advice of a structural engineer should be sought.

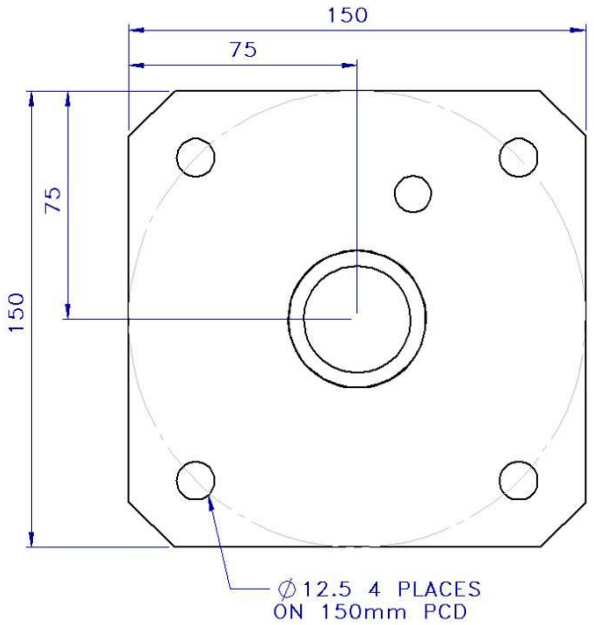


Figure 22 Stem Plate (Ceiling/Tandem Versions)

7.2.8 Adjusting Stem Vertical Alignment

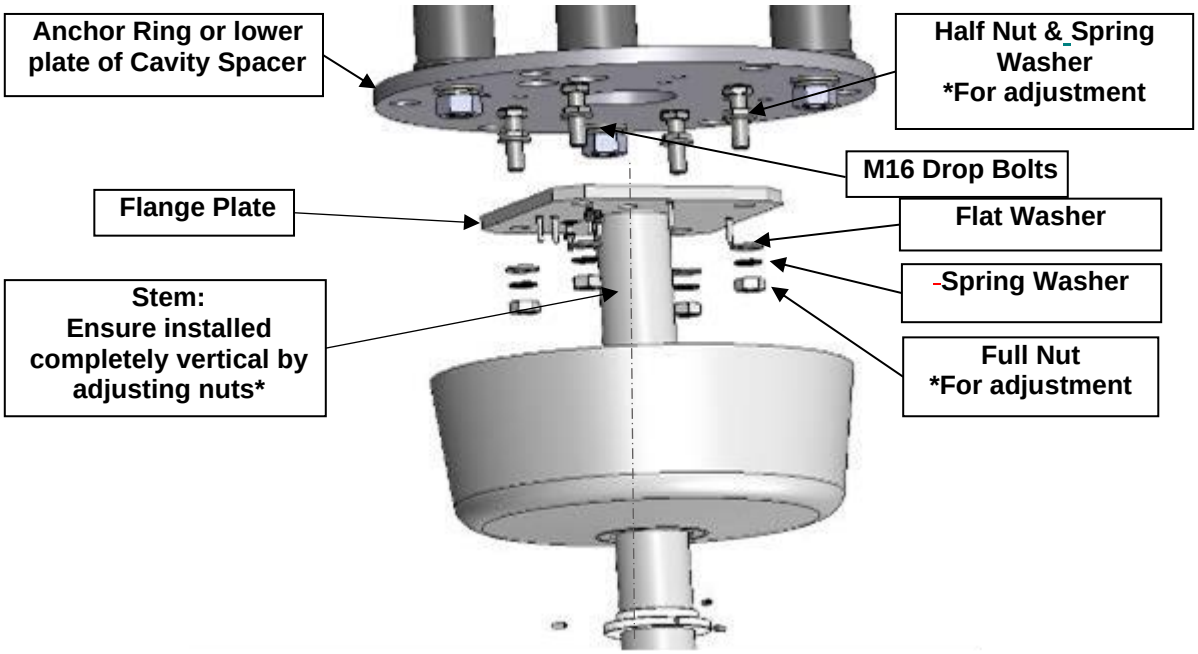


Figure 23

- Place the flange plate on to the drop bolts then attach the flange plate with the nuts and washers following the sequence shown in the image above. Each bolt can be adjusted independently until the Stem is completely vertical.

Proceed to Section 7.4 for Ceiling Version, Section 7.3 for Tandem Version.

7.3 FITTING THE TANDEM BRACKET

- With the Stem now cut to size, slide the End Cap onto the cut end until it is flush, Find the grub screw and tighten until the end cap is secured in position. See fig **22**. Using the End Cap as a template mark through the 6 holes.
- Remove the end cap then drill using a 5.5mm drill. De-burr and check alignment.
- Position the end cap on to the stem with holes aligned.
- Offer up the bracket to the stem then pass the cables through the stem. Carefully insert the Spigot though the end cap into the stem. See fig **23**.
- Align the 6 holes and fix with 6 screws provided. See fig **24**.
- Make the electrical connections on the stem plate to the 24v Power supply unit.

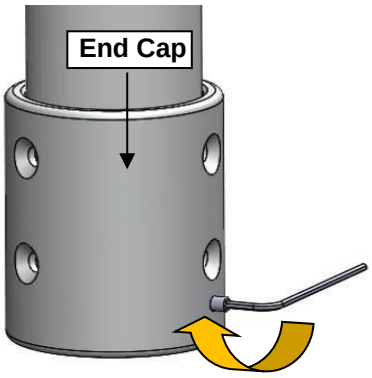


Figure 24

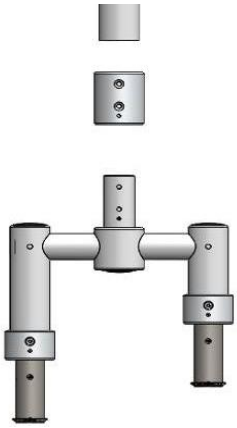


Figure 25

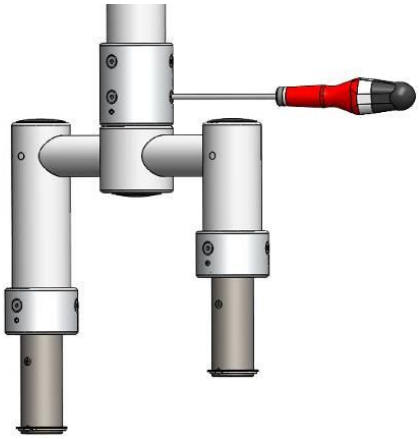


Figure 26

7.4 FITTING THE CEILING COVER

- To fit the cover, place both halves around the stem then carefully but firmly push together. See Figure 27
- Fix the 2 halves in position with 4 fixing screws provided.
- Slide the now assembled cover up to the false ceiling or ceiling slab, or wall, depending on Version Using the 3 grub screws provided, screw into the collar until secure. See Figure 28

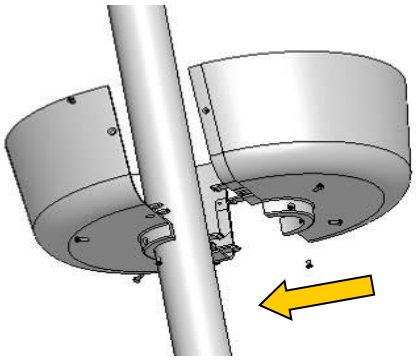


Figure 27

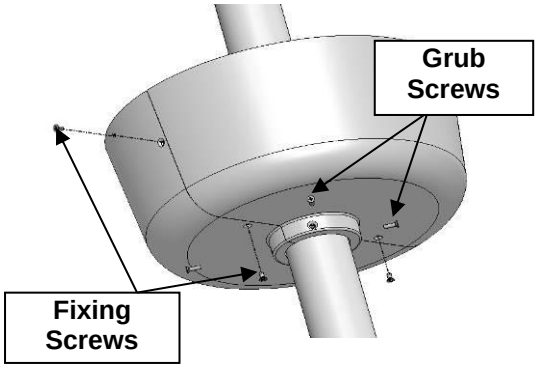


Figure 28

Ensure all screws are securely fastened.

7.5 STRUCTURE INSTALLATION (WALL MODEL)

7.5.1 Setting the Height (Wall Version)

The fixing height of 2060mm shown in the illustration is only a recommendation and relates to general clinical use. In some specialties, e.g. maternity lights may need to be mounted much lower to cater for certain clinical procedures.

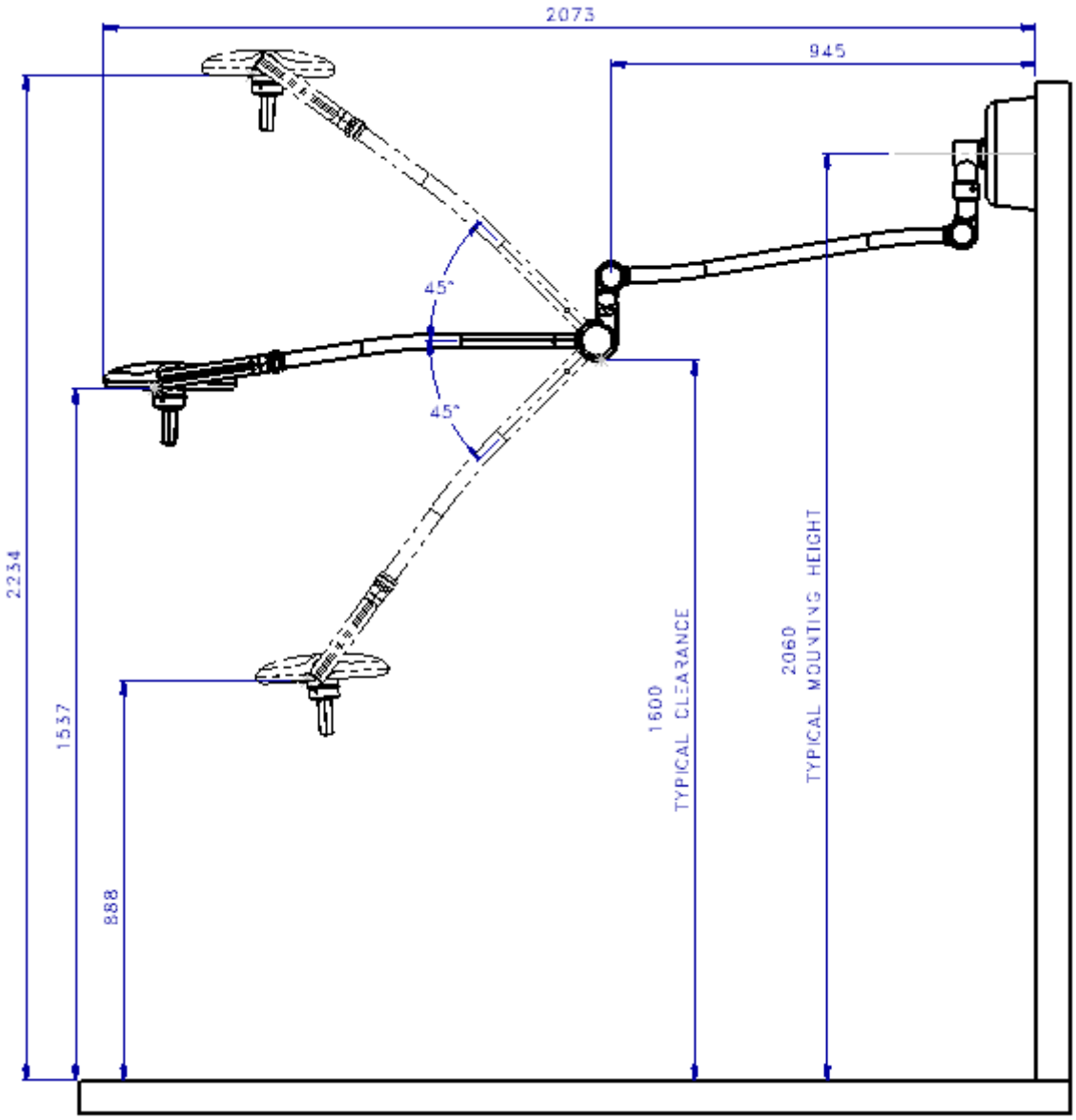


Figure 29

7.5.2 Mounting the Wall Bracket

The wall bracket is supplied with the power supply attached unless an ST version (separate power supply unit) has been selected.

Four M10 anchor bolts should be used to fix the stem plate to the wall. Care must be taken to ensure that the wall structure is suitable for the load and that the stem is mounted horizontally.

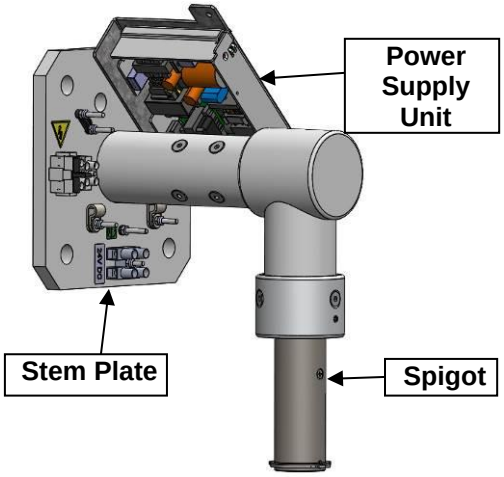


Figure 30

The selection of the correct fixings and the safe mounting of the wall bracket are the responsibility of the installer and advice should be taken from a qualified structural engineer if required.

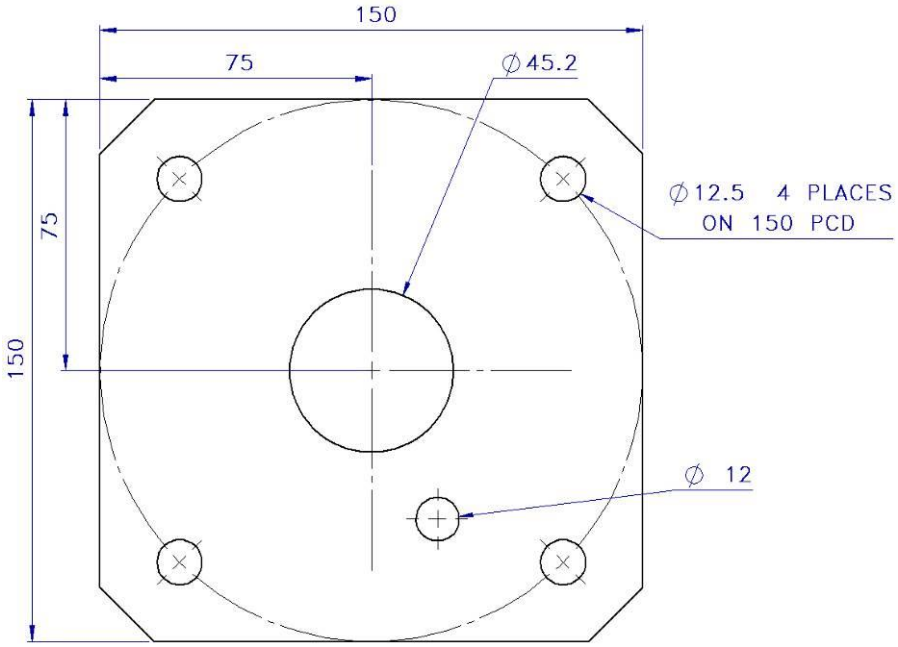


Figure 31 Wall Plate

7.6 INSTALLING THE LIGHT DUTY SWING-SPRING ARM TO 45MM INTERFACE (CJ, TJ & WJ)

- Rotate the round covers to align the indicators and remove the round covers from both sides of the spring arm covers.

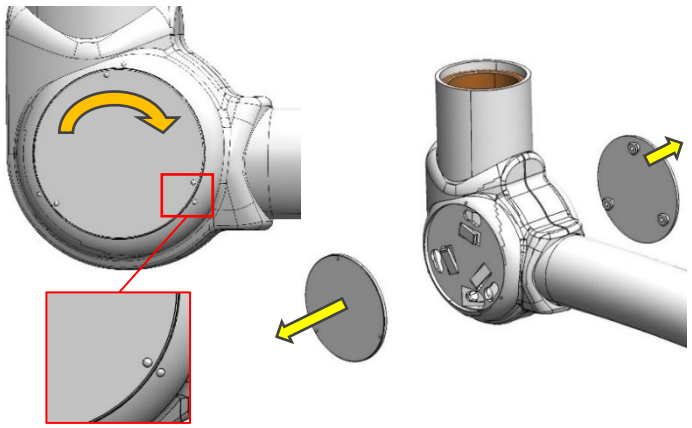


Figure 32

- Remove two screws from the cover and pull the two halves of the cover apart.
  - Remove the plug mount to provide access for mounting. Do not disconnect.

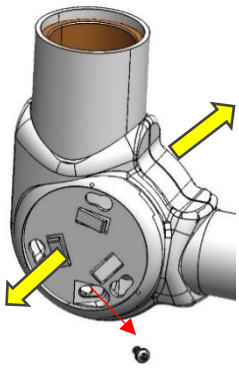


Figure 33

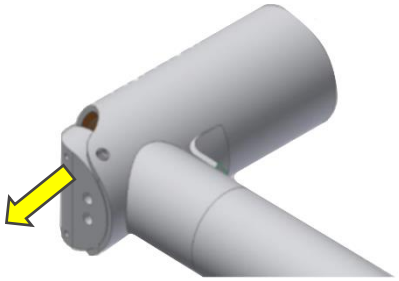


Figure 34

- Position the arm to the ceiling stem spindle (Figure 35) then secure with flat washer then tab washer and finally fit the circlip into the groove using the circlip fitting tool (provided in installation kit).

WARNING

The arm may fall if the circlip is not fully seated into the groove, and the tab washer is in place.

- Carefully refit the plug mount.
- Refit half of the cover and insert the screw. Refit the other half of the cover and insert the screw on that side.

Figure 35

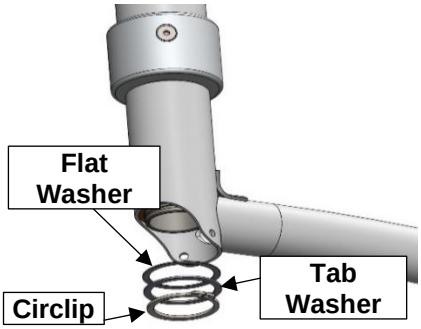


Figure 36

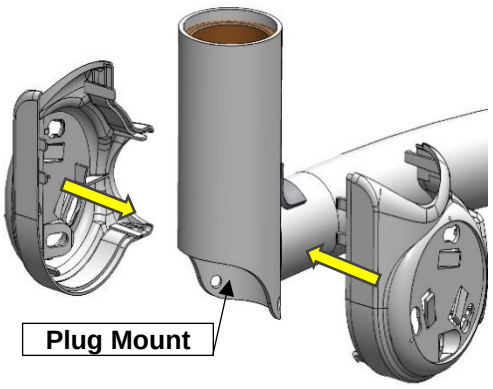


Figure 37

7.7 MOUNTING A LAMPHEAD TO THE LIGHT DUTY SPRING ARM (CJ,TJ,WJ)

⚠ WARNING

- The spring arm MUST be secured in horizontal position while fitting the lamphead – without a lamphead fitted the arm will retract strongly and could cause serious injury. This operation will require 2 people.
- Disconnect the system from the power supply

- Remove and discard the yellow protective cap from the spring-arm.

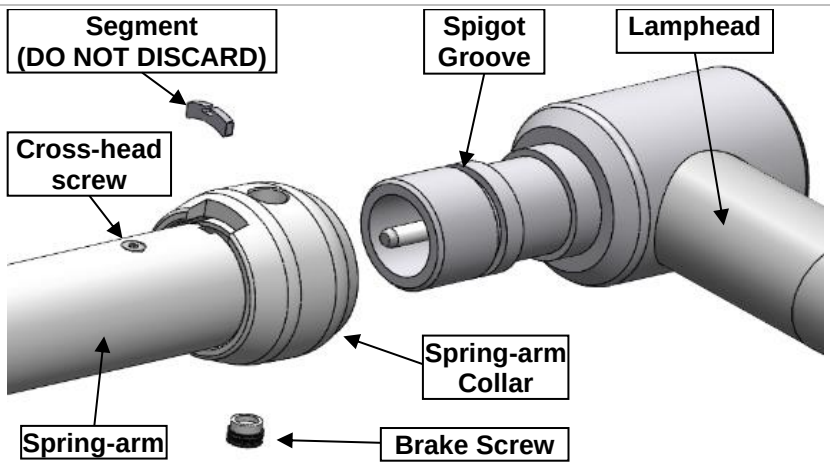


Figure 38

- Unscrew the Brake Screw using 5mm Allen Key - Remove and retain the Brake screw
- Rotate the spring-arm collar until the segment slot is exposed.
- Using a pair of long nosed pliers - remove the segment.
- Carefully insert the lamphead spigot interface into the spring-arm until the spigot groove is visible through the segment slot. See Figure 39.
- Insert the segment. See Figure 40.

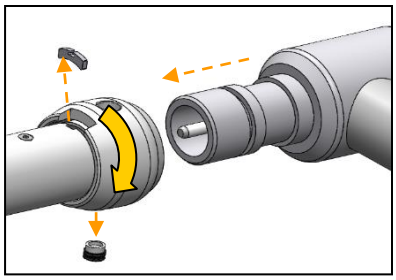


Figure 39

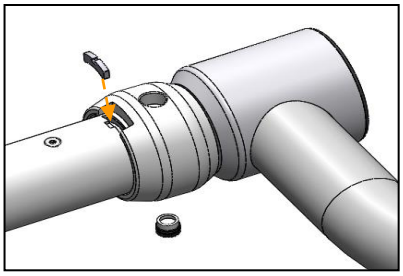


Figure 40

- Rotate the collar 180° to secure the segment.
- Refit the brake screw - Gently screw the brake screw in place until it stops and then tighten approximately another 1/8 of a turn but do not over tighten. See Figure 41. **Note: The lamphead should rotate freely - if it does not, adjust the brake screw.**

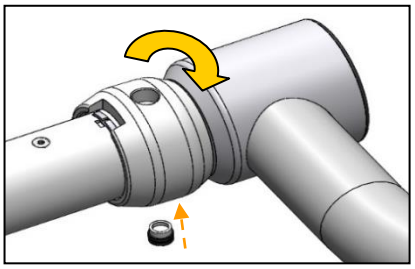


Figure 41

IMPORTANT: There must be a good electrical connection between the lamphead and the spring-arm - If the groove in the lamphead interface and the slot in the spring-arm are not aligned then the electrical socket in the spring-arm will require adjustment as follows:

- Loosen, but DO NOT remove, the cross-head screw on top of the spring-arm. Re-insert the lamphead into the spring-arm as previously described. It should now be possible to fit the segment to secure the lamphead.
- Re-tighten the cross-head screw on the top of the spring-arm.
- Rotate the spring-arm collar 180° and refit the brake screw as previously described.

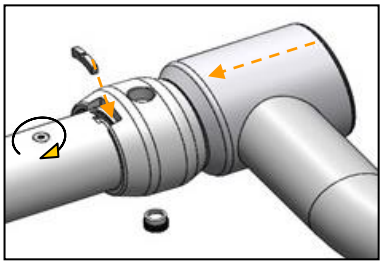


Figure 42

7.7.1 Fitting the Lamphead Handle

This luminaire has two handle options: a standard handle which uses a disposable sterile cover or an optional handle which uses a sterilisable, re-usable cover.

7.7.1.1 Standard Handle Carrier for Single-use Sterile Handle Cover r

Before starting ensure that the grub screw (see Figure 43) is not protruding into the threads. Screw the handle carrier on to the threaded handle mount until tight. Now screw the grub screw in until it is tight. The handle carrier will now be secure. Note on some products the handle carrier may already be fitted.

The standard handle is used in conjunction with a single use sterile handle cover, part number QCC70358, which is available from Brandon Medical Ltd.

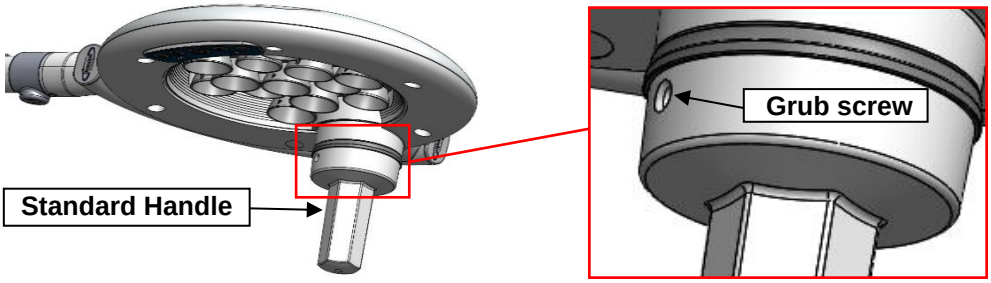


Figure 43

7.7.1.2 Optional Sterilisable Handle (if supplied)

Before starting ensure that the grub screw is not protruding into the threads see Figure 44. Screw the handle carrier on to the threaded handle mount until tight. Now screw the grub screw in until it is tight. The handle carrier will now be secure.

To fit a sterilisable handle cover you only need to push the handle cover over the carrier until an audible click is heard and the handle has locked in position. See Figure 45. below. To release the sterilisable handle cover, simply push the blue release button and the cover can be removed.

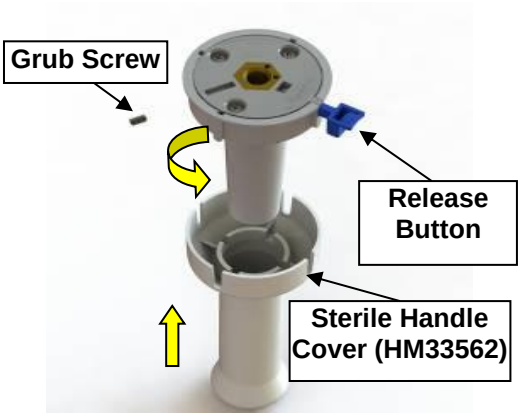


Figure 44

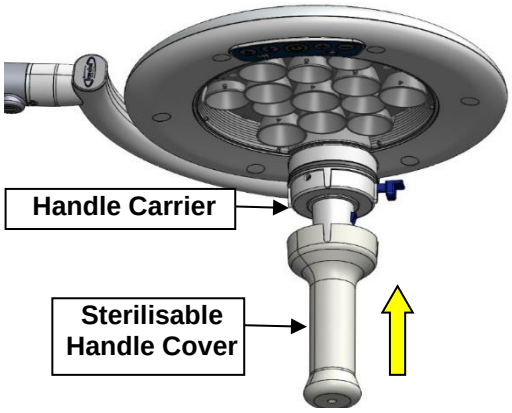


Figure 45

The sterilisable handle as supplied is not sterile. You must sterilise it by autoclave – typically steam sterilisation at 137°C for three minutes.

The handle should not be used or sterilised if there are any signs of degradation for example cracks in the body.

8 MECHANICAL ADJUSTMENT

Before first use the lamp must be balanced. This is achieved by using the spring arm tensioning mechanism, details of which are shown in this section.

8.1 ADJUSTING THE SPRING ARM BALANCE

If the lamp head drifts up or down then the spring arm tension will need adjusting.

WARNING

The end device must be installed when adjusting the arm tension

- Move the spring arm to its highest position and hold in position.
- Insert 6mm Allen key (provided in installation kit) through the window and turn the adjustment screw.
  - Turn Clockwise to increase spring force (+)
  - Turn Anti-Clockwise to decrease spring force (-)

CAUTION

DO NOT turn the screw in the Anti-Clockwise (–) direction too far so that it drops out of the casing - this will result in permanent damage.

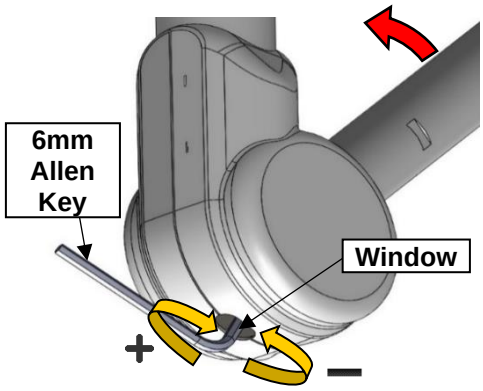


Figure 46

8.2 ADJUSTING THE LAMPHEAD ROTATION

The lamp head should rotate freely - if it does not or is too loose then tension is adjusted using a brake screw located in the collar at the end of the spring arm.

- Insert a 5mm Allen key into the Allen screw in the collar.
  - Turn screw clockwise to increase the friction (tighten the screw)
  - Turn screw anti-clockwise to decrease the friction, (loosen the screw)

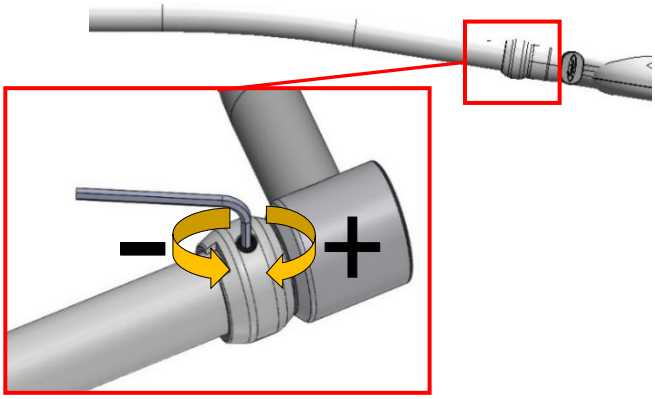


Figure 47

9 INSTALLATION CHECKLIST

Site Data	
Hospital	
Theatre No.	
Product installed	
Serial No.	

Light Intensity Measured at 1Metre	**Specification AL10 70,000 Lux ± 5% ALE10 100,000 Lux ± 5%**
Main lamp	
Satellite 1	

Inspection	**Initial**	**Comments**
Check building mountings are secure		
Check lamp to stem mountings are secure		
Check Front screen is undamaged		
Check all fixing screws and retainers are secure (Segment)		
Replace stop screw (annual service)		
Check operation of all switches and indicators		
Check operation of Intensity, Red Bal & focus control		
Check correct operation of focus mechanism		
Check all articulations move freely		
Check all spring arms are balanced correctly		
Check emergency power system is charging correctly		
Check changeover circuit is working correctly (if fitted)		
Additional notes:		

Maintenance Sign-off	
Signature	
Print name	
Position	
Date	

Table 10

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Intentionally left blank

Document Change History	
Issue No	Date Issued
B1	28 November 2022

BRILLIANT BY DESIGN

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