

Quasar eLite HD-LED® Operating & Maintenance Manual

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

This document is for use by clinicians and maintenance personnel.

Please keep this document in a safe place.

OM-QUASAR, ISSUE B2, 26/11/2020



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1 GENERAL

1.1 SYMBOLS USED

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

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

Table 1

1.2 ALL RIGHTS RESERVED

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Whilst every effort is made to ensure the accuracy and completeness of this guide, we do not warrant that the content is error free.

The brand names or product names mentioned or referred to throughout this guide are fully recognised as the trademark or registered trademark of their respective owners.

1.3 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.

1.4 DECLARATION OF CONFORMITY



Brandon Medical Co Ltd hereby declares that this product – Quasar eLite– is in compliance with the EC Directive 93/42/EEC.

The Class 1 medical device specified above conforms to the essential requirements listed in the Annex 1 of the EC Directive 93/42/EEC of 14 June 1993.

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.

1.5 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 SAFETY

2.1 INTENDED USE

The Surgical Luminaire Quasar eLite is intended to illuminate a surgical operating site to support treatment and diagnosis. The luminaire may be used within a surgical luminaire system to provide fail safe operation (Major and System). The luminaire may also be used as a minor surgical luminaire for treatment, but in this mode, will not be fail safe compliant. Note: fail safe compliance is required when an interruption of the illumination would be a hazardous condition and used within an operating room.

(Reference: - IEC60601-2-41)

2.2 USER PROFILE

Medical professional

A medical professional is any person with medical training who works within their 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 of the luminaire with professional training, knowledge and experience of the equipment and knowledge of the local regulations.

2.3 SAFETY INSTRUCTIONS

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



- This Operating & Maintenance manual 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 is class I protection and must be connected to the protective earth, if this is not done then there is a potential for electric shock.
- This Operating & Maintenance manual is only 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 before using the equipment.
- If problems are encountered that have not been addressed in this Operating & maintenance manual, 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 the Operating & Maintenance manual 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.

3 TECHNICAL DATA

3.1 MODELS COVERED

Model	Approx. weight
All Quasar eLite (Qe60/30) ceiling models	variable
All Quasar eLite (Qe6H/3H) ceiling models	variable
All Quasar eLite (Qe60/30) mobile models	variable

Table 2

3.2 CLASSIFICATION

Classification	Description
Electrical classification	Class 1
Classification according to EU Medical Device Directive 93/42/EEC	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 3

3.3 ENVIRONMENTAL

The environmental conditions relating to transportation and storage.

	-40°C to 70°C
	10% to 95% non-condensing
	500hPa to 1060hPa

Table 4

The environmental conditions relating to operating are explained in the following table.

	15°C to 30°C
	10% to 80% non-condensing
	700hPa to 1060hPa

Table 5

3.4 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.

3.5 SOFTWARE

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

3.6 APPLIED PARTS

The equipment does not contain any applied parts.

3.7 SPECIFICATION

3.7.1 Lamphed Specification Information

	Qe60/Qe6H	Qe30/Qe3H		
General	Mark of Conformity	CE		
	Medical Device Classification	1		
	Solid state focusing	Via Central Handle		
	Intensity Control	Lamphead Keypad		
Electrical Data	Lamphead On/Off switch	Lamphead Keypad		
	Shadow-less light technique	Multiple LED elements		
	Removable Sterile Handle	Yes		
	Electrical Classification	I		
	Power Supply Type	ZE150H-1SR	ZE050H-1SR	
	Power Supply (Primary Side 230V)	100-240 VAC 50/60Hz 2.1A		
	Power Input (Primary Side @ 230V)	0.4A/0.1KVA Max		
	Nominal Power Consumption	2.07A/48W	1.7A/41W	
	MCB Rating (Primary Side 230V)	10A Type C		
	MCB Rating (Secondary Side 24V)	6A Type C		
	Inrush Current (Primary Side)	20A Max		
	Safety Compliance	IEC60601		
	EU Conformance (CE)	93/42/EEC		
	Voltage Stabilisation (Electronic)	Yes		
	Permissible ambient temperature range during operation	0 - 40°C		
	Degree of Protection: Light Head	IP54		
	Photometric Data	Maximum Light Intensity (Ec)	160,000 Lux 10%	160,000 Lux 10%
		Number of Light Sources (LED Bulb)	90	39
		Type of Light Source	HD-LED®	
LED Life		>60,000 Hours		
Light Field Diameter (d10 Distance of 1m) Fat Beam Technology		200-420mm	150-320mm	
Light Field Diameter (d50 Distance of 1m) Fat Beam Technology		120-250mm	90-160mm	
Comfort Halo (@ 1m)		2000mm	1500mm	
Beam Uniformity d50/d10 Ratio		0.6		
Nominal Working Distance		1m		
Colour rendering index Ra (CRI) (R1-R8]		95		
Colour Rendering of Saturated Red R9		95		
Adjustable Colour Temperature Range 5 Steps (° Kelvin)		3100-5000		
Electronically Dimmable Range		5-100%		
Endoscopy Setting		5%		
Depth of Illumination (Without Refocusing) L1/L2 @60%		700mm	-	
Depth of Illumination (Without Refocusing) L1/L2 @20%		1300mm	500mm	
Total irradiance (Radiant Energy)		<3.31mW/m².Lux		
Infrared Content		0		
Temperature Increase in Surgeons Head Area		<1°C		
Mechanical Data		Luminous efficacy	58 lm/W	-
	Weight of Lamphed	10.9Kg	4.5Kg	
	Diameter of Lamphed	685mm	480mm	
	Lamphed Yaw (Rotation about end of spring-arm cuff or about mobile column axis)	170° max	360° max	
	Lamphed Roll (Rotation about yoke-arm elbow joint on ceiling mounted system or spring-arm cuff of mobile mounted system)	360° max	360° max	
	Lamphed Pitch (Rotation about Keypad axis)	230° max	290° max	
Anti-microbial Surfaces	Yes	Yes		

Table 6

3.7.2 Mounting System Specification Information

		Ceiling Variants		Mobile Variants				
		Structure		Duo	Qe60 Only		Qe30 Only	
		Std	LC/SC		M_	ME_	MO_	MEL_
General Information	Maximum Total Weight (kg)	171		75	122	137	16	30
	1 st Horizontal Arm Radius (mm)	642-975		800	N/A		N/A	
	2 nd Horizontal Arm Radius (mm)	852-1062		950	N/A		N/A	
	3 rd Horizontal Arm Radius (mm)	957-1167		N/A	N/A		N/A	
	Spring Arm Reach (mm)	914	760	914	1151		1105	847
	Total Arm Reach (mm)	2145 max		1864 max	1151		1105	847
	Rotation About Central Axis of system (max)	360°		360°	21° either side of base centreline	27°		30°
						either side of base centreline		
	Rotation about end of Horizontal Arm (max)	360°		360°	N/A		N/A	
	Spring Arm Angle Up from Horizontal (max)	45°		45°	25°		45°	35°
	Spring Arm Angle Down from Horizontal (max)	50°		50°	40°		45°	48°
	Rotation about end of spring arm (max)	360°		360°	360°		360°	
	Ceiling anchor plate diameter (mm)	305		305	N/A		N/A	
	Ceiling Cowl diameter (mm)	375		360	N/A		N/A	
Lowest fixed point	2100	2000	2100	N/A		N/A		
Column height (approx.)	N/A		N/A	1690		1640	1608	
Electrical Information	Power Supply Location	External SUPPLIED SEPERATELY		External SUPPLIED SEPERATELY	Internal (in base)		Internal (in base)	
	Emergency Power Unit	SUPPLIED SEPARATELY		SUPPLIED SEPARATELY	N/A	Internal	N/A	Internal
	Mains Power Supply Lead	N/A		N/A	C13 type connector to country specific plug			

Table 7

4 OPERATING INSTRUCTIONS

4.1 OPERATING THE LAMPHEAD CONTROLS

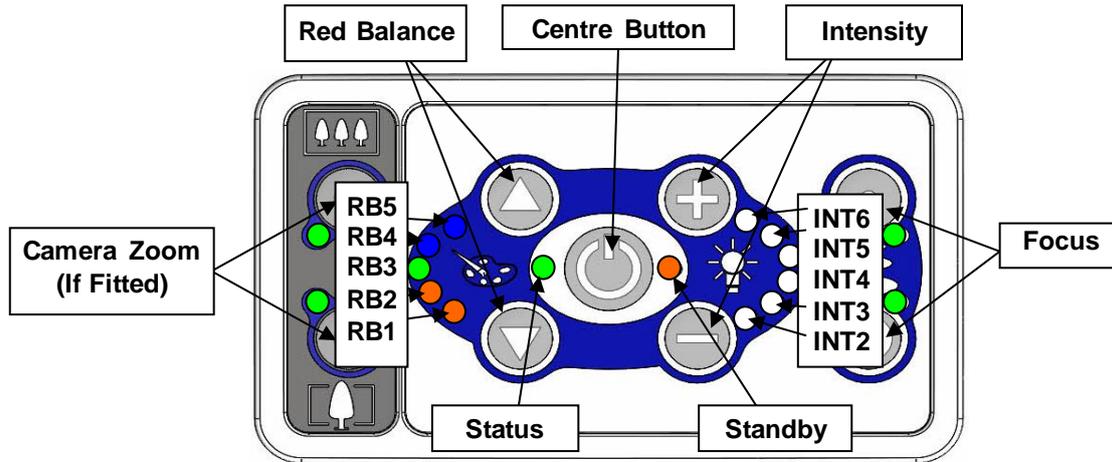


Figure 1

4.1.1 Switching the Lamp On/Off

To turn the lamp on press any button on the keypad. To turn the lamp off, press the centre button.

When the lamp is off, the orange standby LED to the right of the centre button illuminates, indicating standby mode.

4.1.2 Increasing/Decreasing the Red Balance

The % visible red light, i.e. the red balance control, is by factory default set at the midpoint. See Table 8.

- To decrease the colour temperature, press the 'Up' Red Balance button until the required balance is achieved.
- To increase the colour temperature, press the 'Down' Red Balance button until the required balance is achieved.

Note: More red will give a lower colour temperature, less red will give a higher colour temperature.

RB-LED	Red Balance / Colour Temperature
1	Full Red
3	Factory Default
5	No Red

Table 8

4.1.3 Increasing/Decreasing the Light Intensity

The light intensity control is by factory default set to 3, i.e. 3 of the 6 LED's are illuminated.

- To increase the light intensity, press the (+) Intensity button until the required intensity is achieved.
- To decrease the light intensity, press the (-) Intensity button until the required intensity is achieved.

4.1.4 Zooming the Surgical Camera In/Out (if fitted)

- To zoom the camera in, press the lower Zoom button until the required field of vision is achieved.
- To zoom the camera out, press the upper Zoom button until the required field of vision is achieved.

See also Section 4.3 Operating a Camera Remote Control Unit (if fitted – Qe3H and Qe6H)

4.1.5 Using the Focus Controls

Focusing the field of light can be achieved in two ways: by using the key pad or by using the handle.

4.1.6 Keypad

- To increase the field of light, - press the lower Focus button.
- To decrease the field of light, - press the upper Focus button.

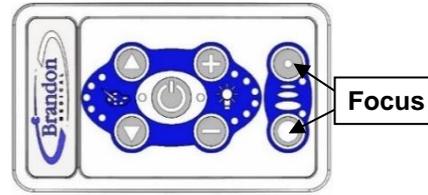


Figure 2

4.1.7 Handle

- To increase the field of light, - turn handle clockwise.
- To decrease the field of light, - turn handle anti-clockwise.

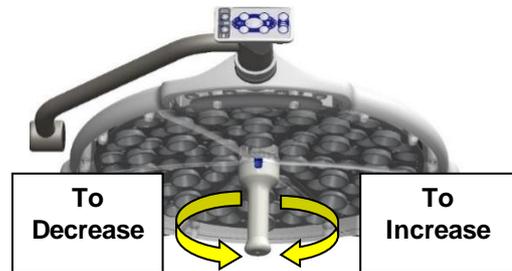


Figure 3

4.1.8 Reset Button

A re-set button is positioned on the rear of the keypad housing. See Figure 4.

In the unlikely event of the lamp head freezing, whilst power is still supplied, the reset button will clear the keypad PCB and restart the lamp head.

This operation does not disconnect the power.

- Using a ball-point pen or similar device, push the reset button momentarily, the keypad should return to the default power on position, usually power on standby. See also section 6.3

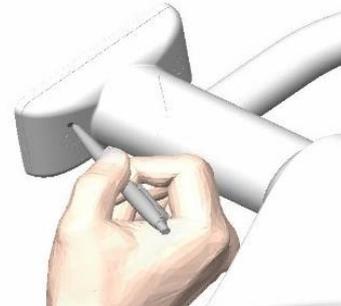


Figure 4

4.2 OPERATING A REMOTE-CONTROL UNIT (IF FITTED)

Two versions of the lamp head remote handset are available: Single and Double.

The double version is shown in the Figure 5 with the controls indicated.

The layout of the remote handset mirrors the Qe60 keypad and should be used in the same way.

Refer to Section 4.1

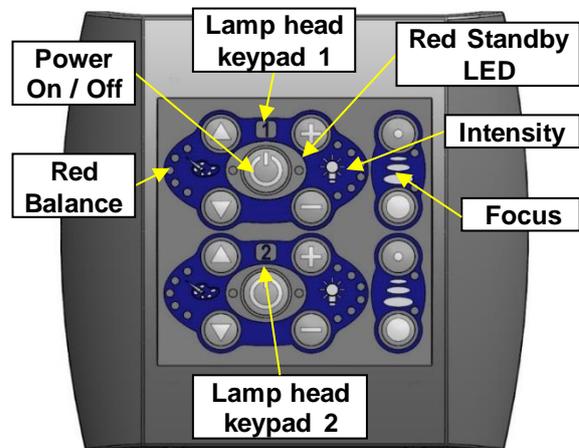


Figure 5

4.3 OPERATING A CAMERA REMOTE CONTROL UNIT (IF FITTED – QE3H AND QE6H)

After installation and pairing, the zoom function can be accessed from either the remote unit or the camera keypad.

To manually control all other functions, the remote unit should be used.

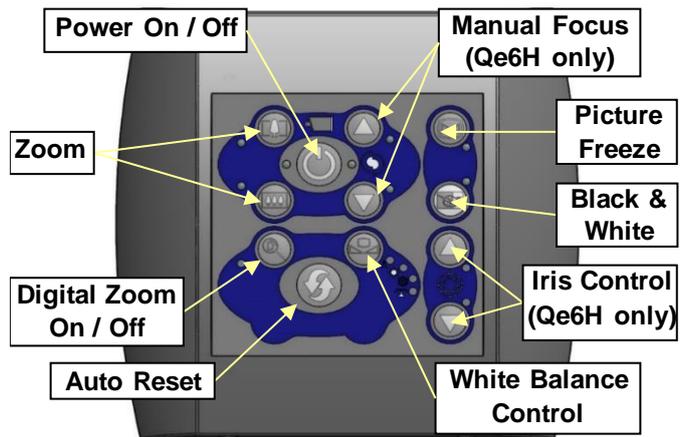


Figure 6

4.3.1 On/Off

The camera cannot be turned off separately, instead the power On/Off button will reset the camera to its default settings.

4.3.2 White Balance

In its basic configuration, the HD600 Quasar eLite camera system is provided with lamp head zoom control and fully automatic white balance.

The remote control allows for 4 different White balance modes:

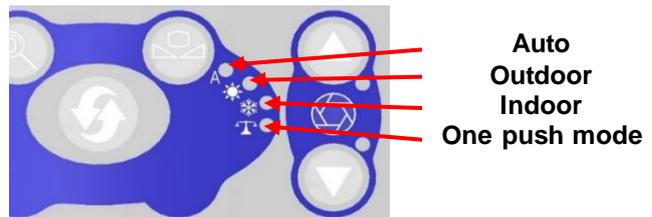


Figure 7

- **Auto:** This mode automatically computes the white balance value output using colour information from the entire screen. It outputs the proper value using the colour temperature radiating from a black subject based on a range of values from 2500K to 7500K. This mode is the initial setting.
- **Indoor:** 3200K base mode best suited for indoor applications
- **Outdoor:** 5800K Base mode best suited for outdoor applications
- **One Push mode:** The ‘One Push White Balance’ mode is a fixed mode that may be automatically readjusted only at the request of the user (One Push Trigger). To use this mode, select one push mode using the white balance control button. The LED should be flashing. Put a piece of white paper in front of the camera so it takes up at least ½ of the display and press the button again. The white balance should now be adjusted and the LED will be steady.

Note: One Push White Balance data is lost when the camera-power is turned off. If the camera-power is turned off, reset One Push White Balance.

4.3.3 Iris

In its basic configuration, the Quasar eLite camera system is provided with lamp head zoom control and fully automatic iris.

4.3.4 Manual Iris Control (Qe6H only)

On the camera remote the Iris buttons can be used to adjust the Iris settings manually.

4.3.5 Focus

In its basic configuration, the Quasar eLite camera system is provided with lamp head zoom control and fully automatic focus.

4.3.6 Manual Focus (Qe6H only)

On the camera remote the focus button can be used to adjust the focus manually.

Note: To obtain the best results from the automatic focus it is recommended you zoom in until the viewed image fills the screen.

4.3.7 Zoom

Zoom makes the subject larger or smaller.

When you press the 'zoom in' button, the subject gets gradually larger or you can press the 'zoom out' button to gradually make the subject smaller.

For Qe6H the system is provided with a 10x optical zoom and a 12x digital zoom (120x total zoom). However, the digital zoom is switched off by default and can only be switched on by the camera remote.

For Qe3H digital zoom is always on and is available in 20 steps.

4.3.8 Auto Mode

The auto mode button returns the Focus and Iris control back to automatic if the user has manually adjusted the Focus or Iris settings.

4.3.9 Black and White

On the camera remote the black and white mode button can be used to switch between a full colour image and a black and white Monochrome Image.

4.3.10 Picture Freeze

On the camera remote the picture freeze button will enable this mode and capture the current image in the field memory of the camera and output this continuously until the mode is disabled.

4.4 OPERATING MOBILE MODELS

4.4.1 Warning Indicators (EL models only)

The mobile EL version has an indicator panel on the top of the battery enclosure. The following symbols in the table below are used to show the status of the luminaire.

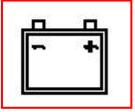
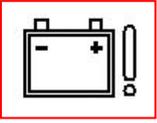
Indicator	Description
	Under normal AC electrical supply (110 to 250 volts) the green indicator will be illuminated.
	If there is a fault with the charger or the batteries are not fully charged, then the red indicator will illuminate. Ensure the lamp is connected to the mains supply, i.e. the green indicator is on, and leave to charge for a minimum of 12 hours and up to a maximum of 24 hours. If the indicator is still illuminated there is a fault with the charging system and you must consult your local service agent or contact Brandon Medical.
	When the mains supply is disconnected then the red indicator will illuminate, showing the batteries are in use. The lamp will continue to operate until the batteries become discharged at which point the batteries will become disconnected and the lamp will not illuminate. The mains supply should be re-established before the lamp will re-illuminate. The batteries will need to be fully recharged.

Table 9

4.4.2 Storage of Qe60 Mobile Models

To store the unit when in regular use; leave the unit connected to an energised mains supply. This will keep the batteries at a ready state and improve battery life.

Note: Failure to keep the batteries connected to an energised mains supply may result in the batteries being discharged.

4.4.3 Storage of Qe30 Mobile Models

To store the unit when not in regular use; ensure that the unit is fully charged then disconnect from the mains supply. Isolate the batteries by pushing and holding the storage switch until the standby LED goes out. The switch is found on the underside of the base, see Figure 9 below.

Note: The standby switch will only reduce the current consumption of the unit and will not isolate the batteries completely. The system which monitors the battery condition will still operate resulting in a small parasitic drain. It is therefore important that even though the standby switch may be used that as soon as possible the unit is reconnected to an appropriate mains power supply.

The unit **cannot** be re-energised until mains power is re-applied.

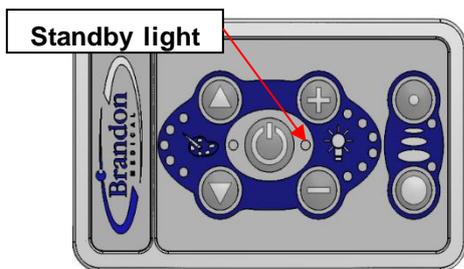


Figure 8

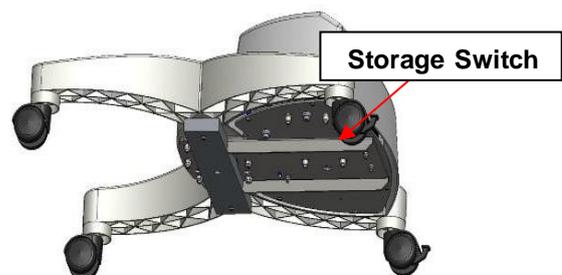


Figure 9

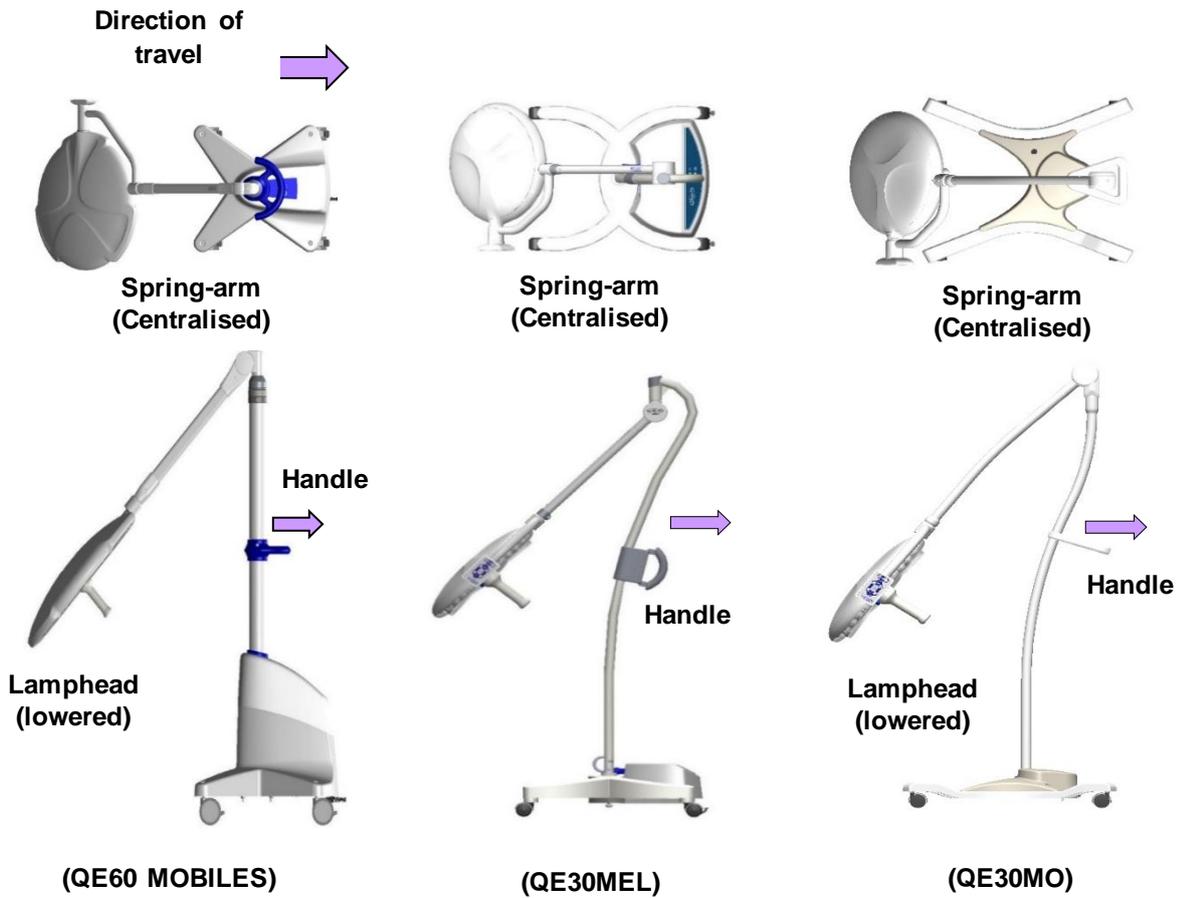
4.4.4 Transporting a Mobile Unit

Before moving the mobile unit:

- Ensure that the spring-arm is positioned centrally along its axis; lower the lamphead and avoid it moving freely. (Monitor the spring-arm and lamphead during transit.)
- Ensure that the power cable is disconnected from the mains outlet and is then neatly stowed.
- Release the brake casters.

Always pull the unit using the handle on the column. Never allow the mobile unit to tilt as it could over balance and topple.

The mobile unit must only be moved on a smooth even surface. Small rises or steps may cause the unit to stop abruptly allowing it to over balance.



5 CLEANING INSTRUCTIONS

Do not clean the lamp heads with alkaline cleaning solutions or bleach, which may damage the plastic material.



Brandon Medical approves the use of the following cleaning solutions on its products:

- Melisepto[®] rapid – pre-prepared spray
- Melisepto[®] HBV – tissues.

These chemicals are manufactured by B Braun Ltd and are available from Brandon Medical. To order these products please contact your local stockist.

Please ensure that the solutions are not applied to warm surfaces and that any excess solution is wiped from the surface and not allowed to dry as this may lead to a build-up of deposits.

Make sure you check the manufacturer's instructions regarding the dilution factors for a particular solution.

You can clean the body of the lamp using proprietary non-alkaline, sterilising solutions as instructed by the manufacturer.

It is the responsibility of the operators' organisation to ensure that they follow their national standards and directives with regards to hygiene and disinfection of the equipment.



5.1.1 Sterilisable Handle

The following notes relate to the sterilisable handle only.

Sterilise by autoclave – typically steam sterilisation at 137°C for three minutes. The handle is designed to be sterilised in excess of 2000 times.



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



6 SETTINGS

6.1 ENTERING THE SETTING MODE

To enter the setting mode, first press and hold the centre button then simultaneously press the lower 'Intensity' button and the lower 'Red Balance' button marked **X** below. The display will then illuminate RB-LED 1, both centre LED's and INT-LED 1.

Note: Menu will time out if no activity for 100 seconds.

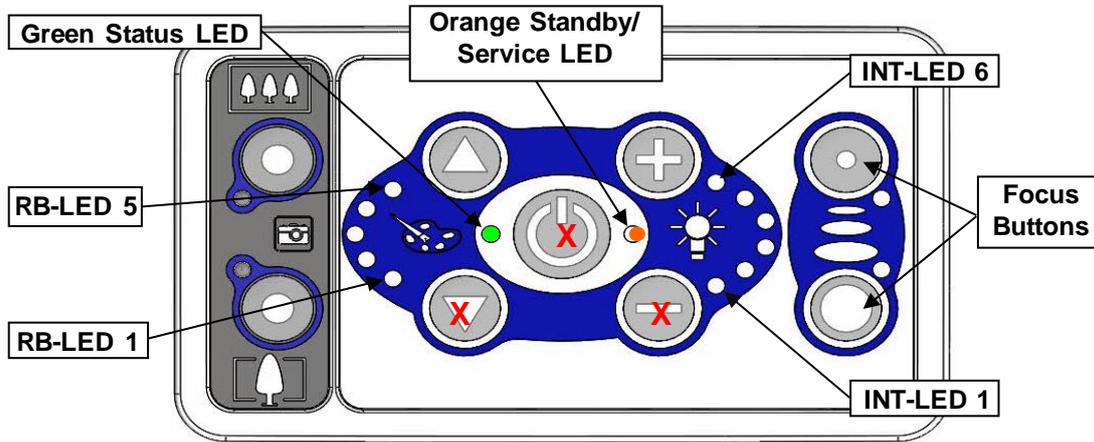


Figure 10

Mode	Red Balance (RB)-LED position	Intensity-LED position
On/Off-Behaviour	RB-LED 1 On	Int-LED1
Intensity after Power-On	RB-LED 2 On	Refer to Table 11
RB after Power-On	RB-LED 3 On	Refer to Table 12
Service Timeout	RB-LED 4 On	Refer to Table 13
Reset Service Timer	RB-Led 5 On	INT-LED1
Pair Lamp	RB-LED 1 RB-Led 2 On	INT-LED1
Un-pair Lamp	RB-LED1 and RB-Led 3 On	INT-LED1
*Camera WDR Mode	RB-LED 2 RB-Led 3 On	INT-LED1
*Camera Output	RB-LED 2 RB-Led 4 On	Refer to Table 14
*Camera Power Mode	RB-LED 2 RB-Led 5 On	INT-LED1

***Qe6H and Qe3H only**

Table 10

6.2 SELECTING THE MODE & SETTING

To select different modes, use up and down Red Balance buttons to move the RB-LED's to the appropriate position. See *Qe6H and Qe3H only

Table 10 above for available modes. To change the value within a particular mode, select the + and - Intensity buttons to select the setting required. Then press either focus buttons to confirm.

Note, the present setting will be indicated by a steady illuminated LED whilst all other settings available will be flashing LED's.

6.3 CHANGING POWER-ON BEHAVIOUR

This sets the lamp to 'Illuminate' or 'Go to standby' when the mains power is first applied to the lamp head.

- Enter the default setting mode. The appropriate mode is entered automatically, because power-on behaviour is the first mode - RB LED 1 is on.

- If INT 1 LED is flashing, ‘power on standby’ is set. To change to ‘power on illuminated’ press either focus button to confirm - the LED will then go solid.
- If INT 1 LED is solid, “power on illuminated” is set. To change to “power on standby” press the (+) INT button - INT 2 LED will flash. Press either focus button to confirm - LED will go solid.

Note: To leave the default setting mode press the centre button.

Note: The factory default setting is Power on standby.

6.4 CHANGING THE DEFAULT INTENSITY AT POWER-UP

This sets the lamp intensity when the lamp is powered.

- Enter the default setting mode. Select the mode by pressing the up-RB button until RB-LED 2 in on.
- Using the INT + and – buttons move up or down to select a value. See Table 11 below. Then press either focus buttons to confirm.

Note: To leave the setting mode press the centre button.

Note: The factory default level for light intensity is 4, i.e. four of the six LED’s are illuminated.

Intensity LED	Intensity after Power-On
1	5 %
2	13 %
3	20 %
4	40 % (Default)
5	65 %
6	100 %

Table 11

6.5 CHANGING THE DEFAULT COLOUR TEMPERATURE AT POWER-UP

This sets the colour temperature of the lamp when first powered up using the on/off button.

Enter the default setting mode. Select the mode by pressing the up-RB button until RB-LED 3 in on. Using the INT + and – buttons move up or down to select a value, see Table 12 below. Then press either focus buttons to confirm.

Note: the factory default level for Red Balance (colour temperature) is 3, i.e. three of the five LED’s will be illuminated.

Note, to leave the default setting mode press the centre button.

RB-LED	Red Balance / Colour Temperature
1	Full Red
2	
3	Factory Default
4	
5	No Red

Table 12

6.6 SETTING THE SERVICE HOUR COUNTER

This sets the number of hours the Light will be on, before the service timeout is indicated.

Enter the default setting mode. Select the mode by pressing the up RB button until RB4 LED is on. Using the INT + and – buttons move up or down to select a value, see Table 13 below. Then press either focus buttons to confirm.

The existing setting will be shown by a solid LED.

Note: the factory default setting is 0 (Service timer Disabled)

Note: To leave the setting mode press the centre button.

INT LED	Service Time (Hours)
1	0 – Disabled (Default)
2	3000
3	6000
4	9000
5	12000
6	16000

Table 13

6.7 RESET THE SERVICE HOUR TIMER

This resets the service time counter back to zero.

Enter the default setting mode. Select the mode by pressing the up RB button until RB5 LED is on. Press the INT + to select reset, INT LED 2 is flashing then press either focus buttons to confirm.

Once cleared the service timeout warning shall no longer appear.

Note: To leave the setting mode press the centre button.

6.8 CHANGING WDR MODE (QE6H ONLY)

This setting enables the Wide Dynamic Mode(WDR) on the camera. This mode changes the setting on the camera which allows a better distribution of the light in the camera image and reduce glare from the light. With the mode enabled the Iris setting is fixed and cannot be adjusted.

- Enter the setting mode. Select the mode by pressing the up-RB button until RB-LED 2 and 3 are on.
- If INT 1 LED is flashing, WDR is enabled. To turn off press either focus button to confirm - the LED will then go solid.
- If INT 1 LED is solid, WDR mode is disabled. To enable press the (+) INT button - INT 2 LED will flash. Press either focus button to confirm - LED will go solid.

Note: To leave the setting mode press the centre button.

Note: The factory default setting is WDR mode disabled.

6.9 CHANGING THE CAMERA OUTPUT RESOLUTION (CAMERA VERSION ONLY)

This changes the output resolution of the camera.

- Enter the default setting mode. Select the mode by pressing the up-RB button until RB-LED 2 and 4 are on.
- Using the INT + and – buttons move up or down to select a value. See Table 14. Then press either focus buttons to confirm.

Note: To leave the setting mode press the centre button.

Note: The factory default level is 1 (1080i60)

Note: On Qe6H a power cycle is required for output to change

Intensity LED	Output
1	1080p60
2	1080i60
3	1080i50
4	1080p50
5	1080p30
6	1080p25

Table 14

6.10 CHANGING CAMERA POWER MODE (CAMERA VERSION ONLY)

This changes the behaviour of the camera power state in respect to the lamp . When enabled the camera will follow the state of the lamp. i.e. Will go to standby when lamp is in Standby.

- Enter the setting mode. Select the mode by pressing the up-RB button until RB-LED 2 and 5 are on.
- If INT 1 LED is flashing, “Camera follow lamp state” is set. To change to ‘Camera always on” press either focus button to confirm - the LED will then go solid.
- If INT 1 LED is solid, Camera always on” is set. To change to “Camera follow lamp state” press the (+) INT button - INT 2 LED will flash. Press either focus button to confirm - LED will go solid.

Note: To leave the default setting mode press the centre button.

Note: The factory default setting is Power on standby.

Note: on Qe6H fitted with the Tamron Camera Block the camera cannot go to standby so will reset when the lamp is in standby.

6.11 REMOTE CONTROL PAIRING

6.11.1 Remote Control (RC) Keypad

The following indication shows the status of each set of controls:

Remote State	Indication
Paired and Connected	Orange Standby LED steady
Remote Paired but unconnected	Green Status LED Flashing
Remote unpaired	Orange Standby LED Flashing

Table 15

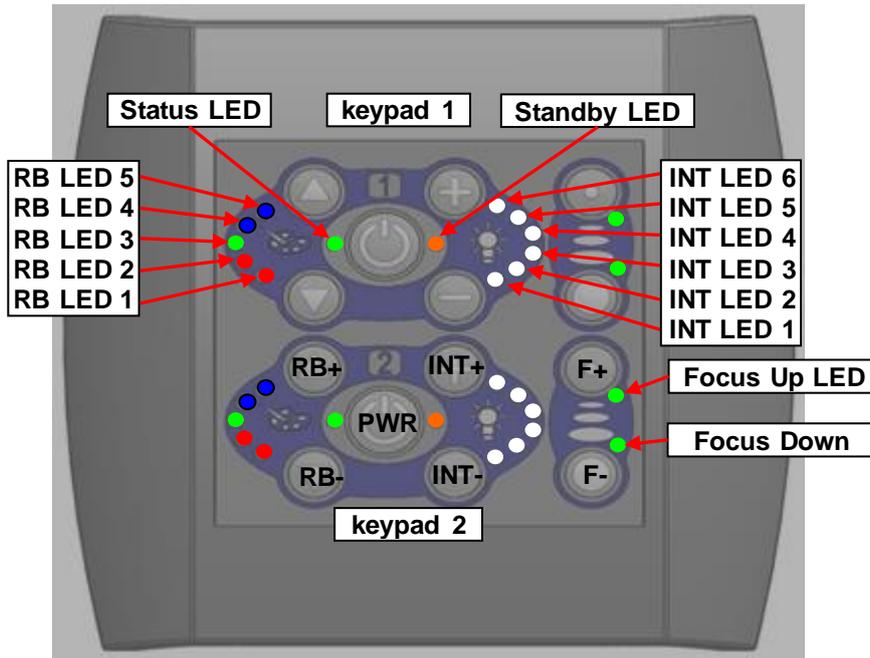


Figure 11 – RC unit (LED and button positions)

6.11.2 Lamphhead (LH) Keypad

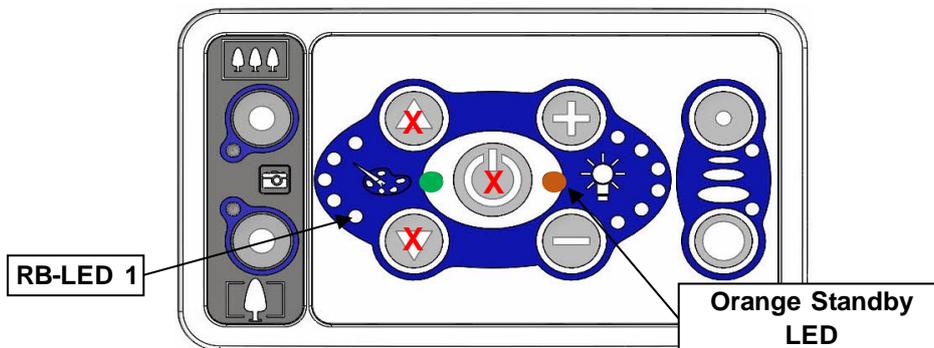


Figure 12 Lamp head (LH) keypad with camera function

6.11.3 Pairing the Lamphed (See also Service Note 80003)

1. Before starting, the lamp head and remote must be off with the standby light illuminated.
2. To enter pair mode, on the Lamphed (LH) Keypad, press and hold the centre button then simultaneously press the upper 'Red Balance' button and the lower 'Red Balance' button marked **X** in Figure 12 above. Both centre LED's will then illuminate and the lower intensity LED (INT-LED 1).

Note: If the LED's are steady then a device is already paired and must be unpaired before continuing.

3. Now press the pairing button on the remote control (RC) keypad until the green status LED and INT-LED 1 come on. They should be flashing if not already paired. See Figure 13 below.



Figure 13

4. Use the INT+ button on the RC 1 keypad to select the device you wish to pair:

LED	Device
Intensity 1	Lamp 1
Intensity 2	Lamp 2
Intensity 3	Lamp 3
Intensity 4	Lamp 4
Intensity 5	Camera Remote

Table 16

5. Push either focus buttons on the LH keypad.
6. After a few seconds it will return to standby, (single orange LED illuminated).
7. If the pairing has been successful the INT-LED and green status LED on the remote shall be illuminated steady.
8. To exit pairing mode, press the power button on the RC keypad 1.

Note: Additional lamp 3 and lamp 4 can only be controlled serially.

6.11.4 Pairing a Camera Remote Control Unit (See also Service Note 80004)

This connects the lamp head camera system with a Camera remote control (RC) unit. The Camera RC unit is paired with the RC keypad 1 and thereby linked to the lamp head.

Note: The RC unit must be paired to LH keypad 1

1. Press the pairing button briefly on the RC unit until the green status LED and the INT-LED1 is illuminated. If the channel is unpaired it will be flashing.
2. Use the INT+ button on LH keypad 1 until the INT-LED 5 is illuminated. Note: Both LED's should be flashing. If a camera remote is already paired the intensity LED will be steady.
3. Press the pairing button briefly on the camera RC unit until only the green status LED illuminates. After a short period, the white balance mode LED will illuminate on the camera handset.
4. If the pairing has been successful the INT-LED 5 and green status LED on the RC keypad will be illuminated steady.
5. To exit pairing mode, on the RC keypad 1 press power button.

6.12 REMOTE CONTROL UN-PAIRING

6.12.1 Un-pairing all Devices

To un-pair all paired devices and reset the network:

1. Ensure that all devices and the RC unit are switched off with the power on standby.
2. Press and hold the RC keypad pairing button for 10 seconds. All LED's will go out momentarily, the status LED and INT-LED 1 will be flashing.
3. To exit pair mode, press RC keypad 1 power button.
4. If 'un-pairing' has been successful both Standby LED's on the RC will be flashing.

6.12.2 Un-pairing the Camera

1. Ensure that all devices and the camera RC unit are switched off with the power on standby.
2. Press and hold the camera RC unit pairing button for 10 seconds until the display goes from a green status LED to standby mode with the standby LED flashing.

7 MECHANICAL ADJUSTMENT

7.1 MAINTENANCE CHECKLIST

Site Data	
Hospital	
Theatre No.	
Product installed	
Serial No.	

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		
Check operation of all switches and indicators		
Check operation of Intensity, Red Bal & focus control		
Check all articulations move freely		
Check all spring arms are balanced correctly		
Check changeover circuit is working correctly		
Re-balance Spring arm if required		
Re-balance Cardanic Arms if required		
Additional notes:		

Maintenance Sign-off	
Signature	
Position	
Date	

Table 17

7.2 ADJUSTING STANDARD BRANDON STRUCTURE (CEILING MOUNTED)

There are two types of Structure adjustment:

- Main Structure Brake Screw
- Bearing Housing Brake screw

7.2.1 Main Structure Brake Screw

Adjust the brake screws to prevent the Arms from drifting or being hard to move.

- Remove the Blue brake screw cover and insert a 7mm Hex key.
- Increase the brake force by adjusting the screw clockwise.
- Decrease the brake force by adjust the screw anti-clockwise.
- When adjusted; replace the cover.

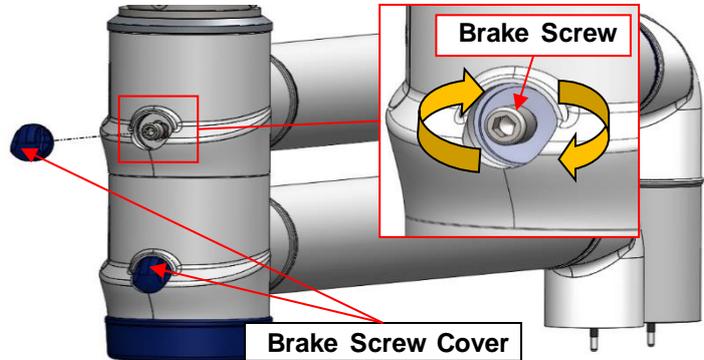


Figure 14

7.2.2 Bearing Housing Brake Screw (Standard models)

Adjust the two brake screws which are located opposite each other on the spring arm bearing housing using a 2.5 mm Hex key.

- Increase the brake force by adjusting the screw clockwise.
- Decrease the brake force by adjusting the screw anti-clockwise.
- Ensure each screw is equally adjusted.

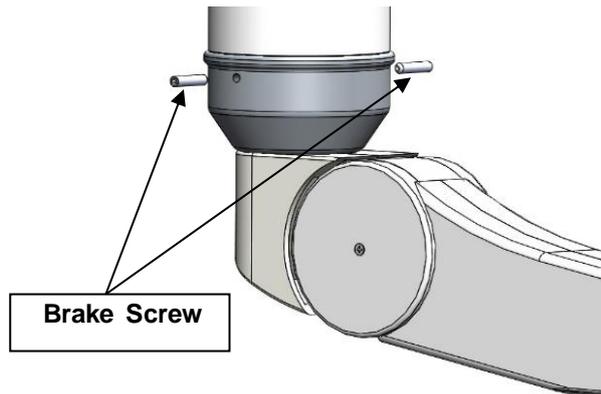


Figure 15

7.2.3 Main Spindle Stop Adjustment (If Fitted)

- Remove and retain three cap head screws and carefully lower the cover clear of the bearing housing.
- Place cover on a clean surface, see Figure 16

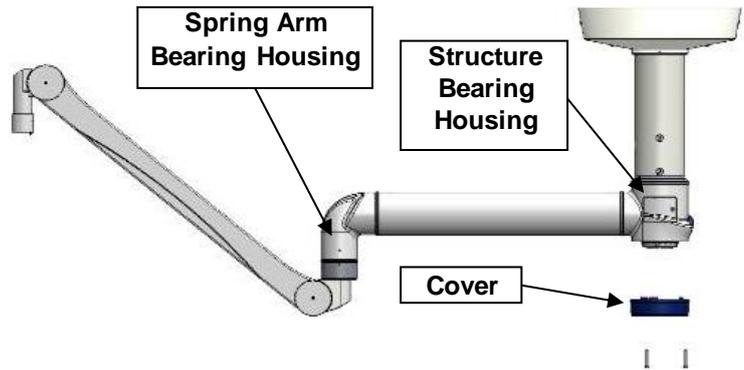


Figure 16

- Remove and retain two counter sunk screws holding the stop segment in place. The segment will drop out.
- Note the position of the stopped spacer relative to the segment.
- Reposition the segment into the appropriate cavity as required.
- Refit the segment in its new position and then tighten the screws.
- Replace the cover using the cap head screws.

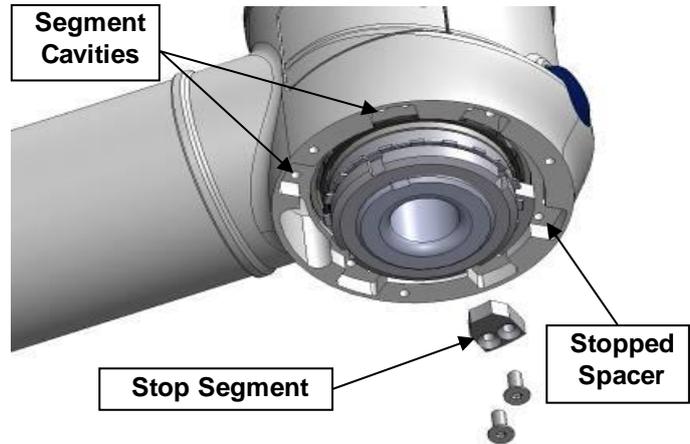


Figure 17

7.2.4 Stopped Spring Arm Adjustment (If Fitted)

- Using a thin flat blade screwdriver prize open the spring arm covers, remove and retain both parts, see Figure 18 below.
- Remove and retain six counter sunk screws from the lower end of the Spring Arm Bearing Housing to free the Stop Ring,
- Rotate the Stop Ring as required until the holes are lined up in the desired position.
- Replace all six screws and tighten.
- Replace spring arm covers.

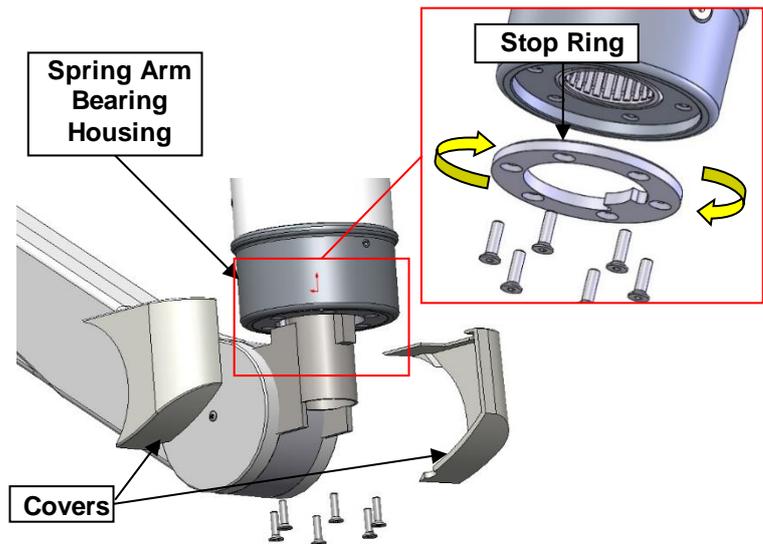


Figure 18

7.2.5 Stopped Monitor Bracket Adjustment (If Fitted)

Note: Care must be taken when adjusting the Monitor Bracket to ensure the monitor cannot become damaged by fouling on the underside of the Spring Arm.

- Remove the retaining screw and slide the cover up, exposing the small segment, see Figure 19.
- Using a pair of suitable pliers and whilst supporting the weight of the Monitor Bracket withdraw the segment. Retain the segment.

Caution: the monitor may have a continuous cable running through which will have to be disconnected at the monitor.

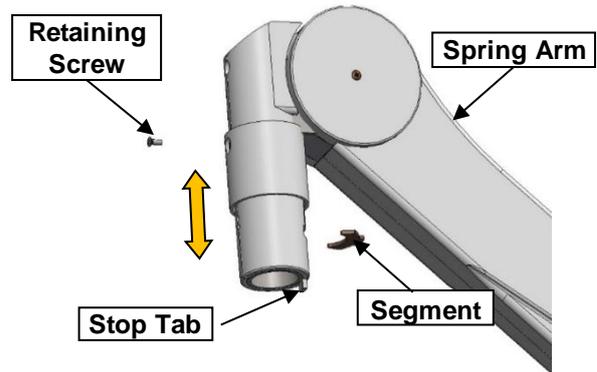


Figure 19

- The Dowel Pins can now be removed and arranged to suit the limit of rotation that is required by inserting pins into the various location holes. See Figure 20.
- With the pins suitably located; push the Monitor Bracket back into the Spring Arm then using a pair of pliers, replace the Segment
- Slide the cover back down over the segment and replace the retaining screw.

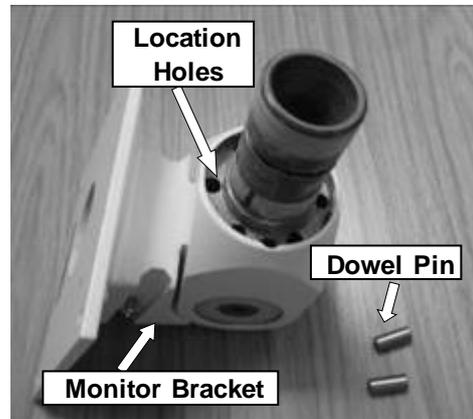


Figure 20

7.3 ADJUSTING THE SPRING-ARM (CEILING & QE60 MOBILE MODELS)

7.3.1 Vertical Height – Spring-arm Angle Adjustment (Standard Ceiling Models)

The adjustment can be found at the front of the spring arm

- Insert a 5 mm Hex key into the access point.
- To reduce the vertical height, rotate the key clockwise.
- To increase the vertical height, rotate the key anti-clockwise.

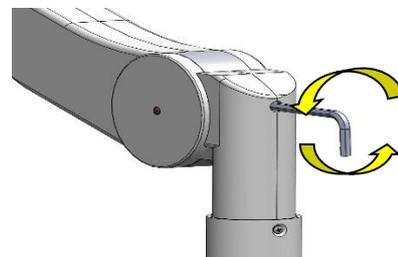


Figure 21

7.3.2 Vertical Height – Spring-arm Angle Adjustment (Low Ceiling & Qe60 Mobile Models)

- Remove and retain x2 retaining screws then using a thin screwdriver gently push and disengage the two outer cover halves then remove. See Figure 22.
- A 4mm Dia x 110mm long rod, supplied with the spring arm, should be inserted into the adjustment hole. See Figure 23
- Turn the adjustment nut inside the arm by moving the rod up and down as required.

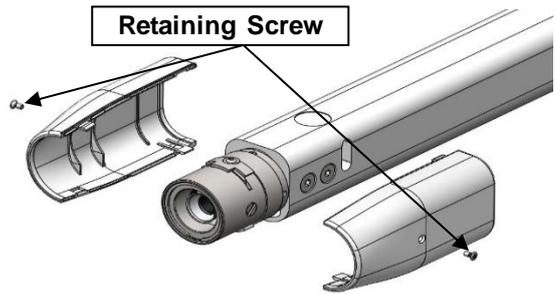


Figure 22

For the Low Ceiling Models

- Move up (anti-clockwise) to raise
- Move down (clockwise-) to lower the height range.

For Qe60 Mobile Models

- Move down (anti-clockwise) to raise
- Move up (clockwise-) to lower the height range.
- When adjusted, replace covers and retaining screws.

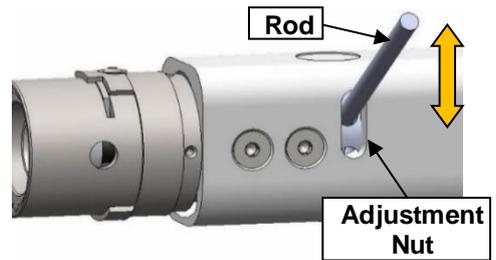


Figure 23

7.3.3 Tension Adjustment – Spring-arm Balance (Standard Ceiling & Qe60 Mobile)

The adjusting screw can be found at the rear of the spring arm.

- Insert a 5mm Hex key into the access point and raise the spring arm until the screw can be easily turned.

For Ceiling Models: See **Figure 24**

- To increase the tension, the screw must be turned left (anti-clockwise).

To decrease the tension the screw must be turned right (clockwise).

Mobile models are the opposite way around.

See **Figure 25**

- Turn anti-clockwise to decrease tension
- Turn Clockwise to increase tension.

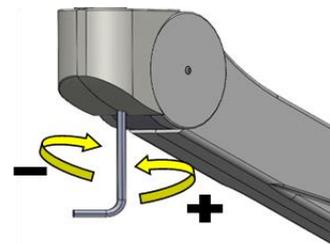


Figure 24 (Ceiling)

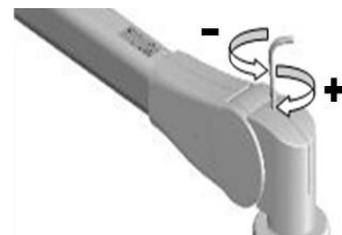
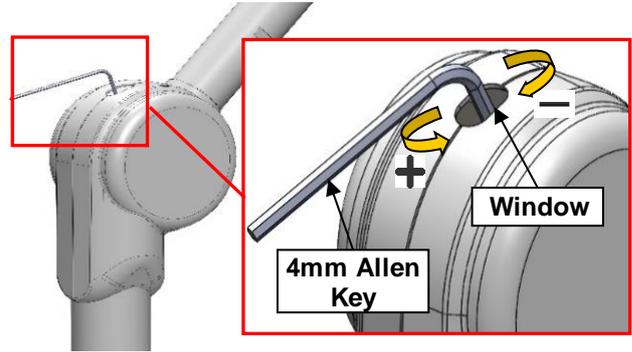


Figure 25 (Mobile)

7.4 ADJUSTING THE SPRING-ARM (QE30 MOBILE MODELS)

7.4.1 Adjusting the Spring-arm Balance (Qe30MO Mobile Unit)

- Move the spring-arm to its upper position. It may need to be held there.
- Insert a 4mm Allen key through the window and turn the adjustment screw
 1. Turn anti-clockwise (+) to increase spring force.
 2. Turn clockwise (-) to decrease spring force.



7.4.2 Adjusting the Spring-arm Balance (Qe30MEL Mobile Unit)

Do not attempt to remove the lamp head as the spring arm could react strongly and may cause serious injury.



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

- Remove the cover as shown below to expose the adjusting screw.
- To increase spring force; rotate the setting screw to the left (+VE), i.e. anti-clockwise.
- To decrease spring force; rotate the setting screw to the right (-VE), i.e. clockwise.

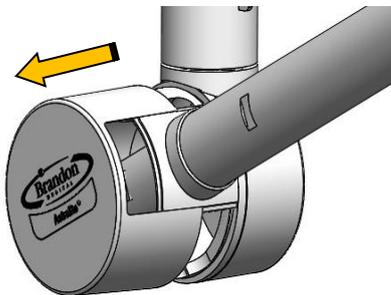


Figure 27

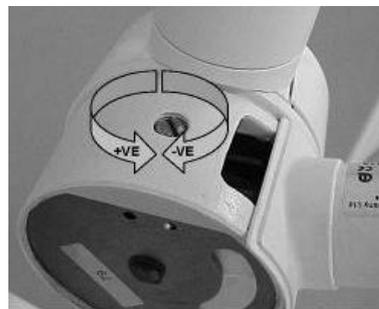


Figure 28

Do NOT turn the screw in the -VE direction too far so that it drops out of the casing as this will result in permanent damage.



7.5 LAMPHEAD ADJUSTMENTS

7.5.1 Adjusting the Lamphead Roll Rotation (Low Ceiling & Mobile)

- Remove and retain x2 retaining screws then using a thin screwdriver gently push and disengage the two outer cover halves then remove.
- To increase the braking force simply insert a flat blade screwdriver into the brake screw and turn the screws alternately in the + direction with the same number of revolutions.

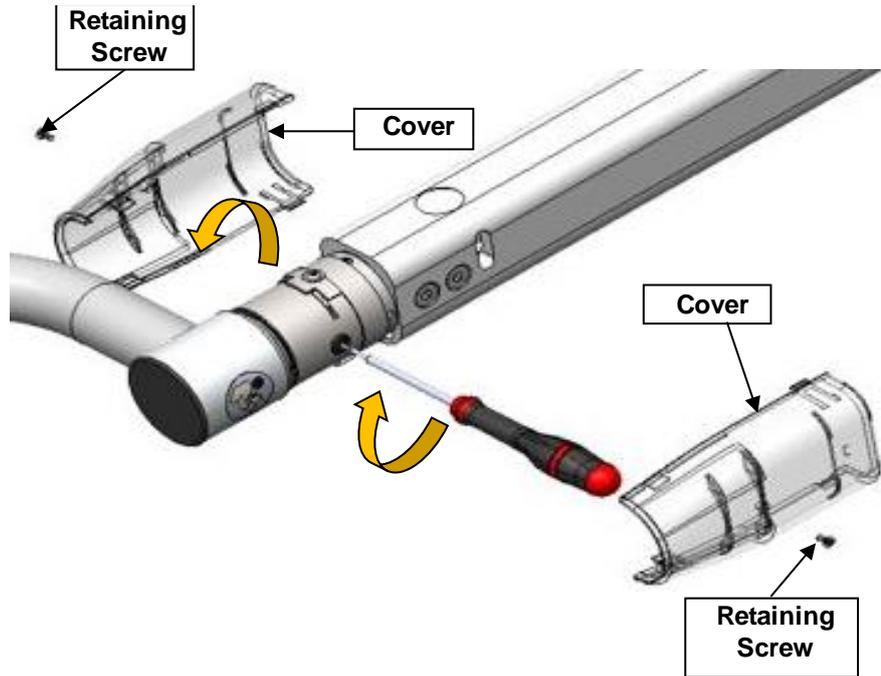


Figure 29

7.5.2 Adjusting the Secondary Arm (Qe60 Standard Models)

There are three screws on the secondary arm; two brake screws and a stop screw. To adjust the friction of the arm joint, the brake screws must be adjusted.

- Using a flat head screw driver, adjust the brake screw by applying a small turn in the clockwise direction to increase friction or anti-clockwise to reduce friction.
- The adjustment range of movement is very small and only a few degrees of turn to the brake screw should be necessary.
- After adjusting the brakes, check the lamp still moves freely without drifting.

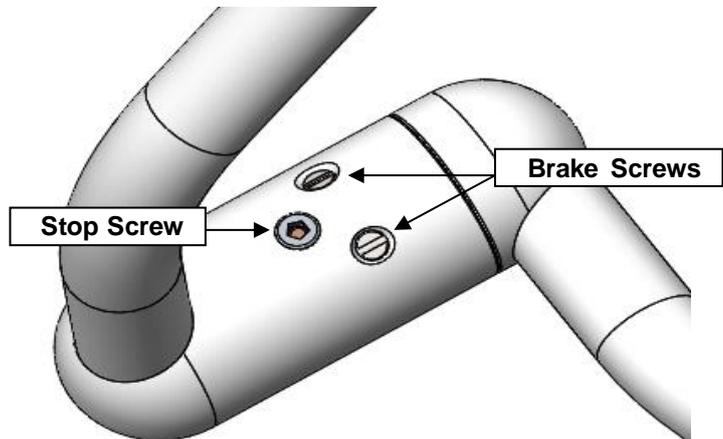


Figure 30

8 FAULT FINDING

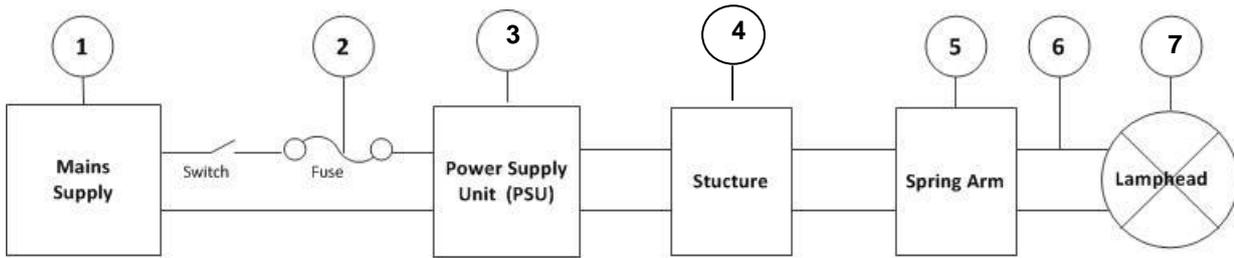


Figure 31 (Typical arrangement)

- 1. Mains power
- 2. In-line Fuse
- 3. DC power supply
- 4. Structure
- 5. Spring arm
- 6. Lamp head connection
- 7. Lamp head

Qe60			
Fault	Display	Possible Diagnosis	Action
Lamp head will not illuminate but power is supplied to the keypad	Standby light flashing	Keypad fuse has been blown.	See Service Note 80002
Keypad not illuminated	off	No power to the lamp head	Check 24V power supply
Lost connection to Lamp remote	Green Status Light flashing	Remote has been powered off or is unpaired	Reconnect power to remote Pair the lamp head. See Service Note 80003
Button not working	Associated LED flashing	Button Stuck on keypad	Free Button
Service timeout	Intensity LED's flashing	Service timer has elapsed - reset	See Instructions for Use
Not responding to lamp remote	Normal state	Lamp head not paired	Pair the lamp head. See Service Note 80003
Lost connection to camera remote	Green Status Light flashing	Remote has been powered off or is unpaired	See Service Note 80004
Petal not illuminating	RB2 LED Flashing	Faulty petal/wire loom loose or damaged.	Inspect wiring
			Replace the Light Petal See Service Note 80001
Light Output low	Standby light flashing	Supply voltage has dropped below 18V	Fix power source
Light not Calibrated	RB1 LED Flashing	Lamp requires re-calibrating	Re-calibrate Focus Pot Adjust Light output See Service Note 80007
Petal Software mismatch	RB3 LED Flashing	Petal not operating as expected	Load latest firmware
Camera not working	Zoom LED's Flashing	No video output Zoom buttons not working	Check camera connections/power
Focus Handle not working	Focus LED's flashing	Faulty Focus Handle/Focus handle not calibrated	Re-calibrate Focus Pot, or replace focus pot.
Lamp not synchronising to lamp remote	Alternating Flash Status and Standby	Remote is out of range. Software versions are not compatible	Move Remote closer to lamp, check software versions

Table 18

Before commencing any maintenance activity, ensure that mains power is isolated from the lamp head.



Do not attempt to remove the lamp head as this could cause serious injury.



The keypad PCB and petal PCB's must not be handled without ESD precautions being taken.



9 COMPONENT PARTS LIST

The spare parts listed below include parts that may wear or are liable to occasional accidental damage, or loss.

9.1 LAMPHEAD

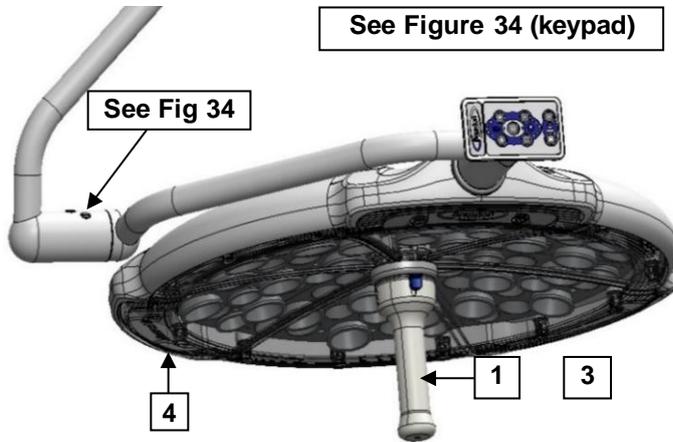


Figure 32 (Qe60/Qe6H)

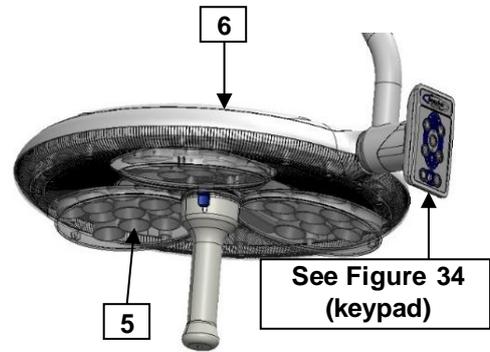


Figure 33 (Qe30/Qe3H)

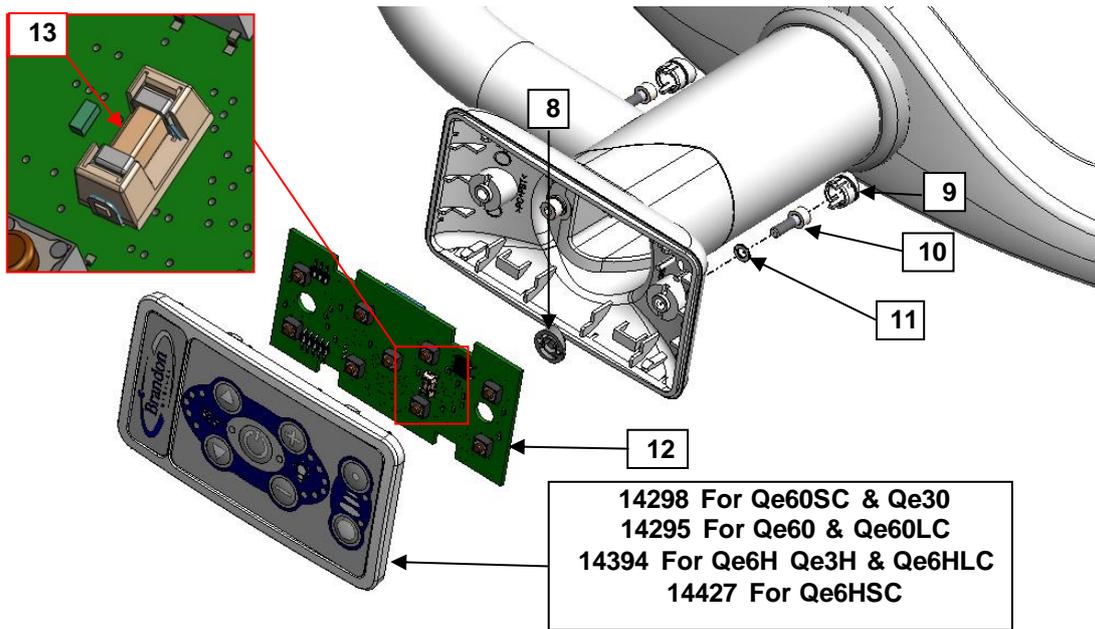


Figure 34 (keypad)

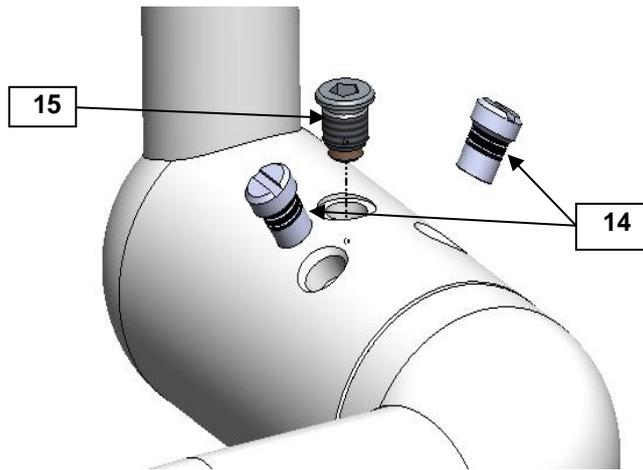


Figure 35 (Qe60 Standard Arm)

Item	Description	QE60/6H	Qe30/3H
1	Sterilisable handle cover moulded	HM33562C	HM33562C
2	Sterile handle carrier (Not Shown)	HWS14141	HWS14141
3	Qe60 Petal replacement kit	HWS14433	-----
4	Qe60 front screen replacement kit	HWS14432	-----
5	Qe30 Petal PCB	-----	BA14398
6	Qe30 Top	-----	HMI34441
7	Segment (not shown)	HO70501	HO70501
8	Keypad housing reset button	HMI34577	HMI34577
9	Keypad housing screw cap	HMI34576	HMI34576
10	M4 x 12 Socket cap head screw	KM4M12MZ	KM4M12MZ
11	M4 Spring washer	WSM4Z	WSM4Z
12	Programmed keypad PCB	BP14536	BP14611
13	Fuse anti-surge 5A	HWS70672	HWS70672
14	Brake screw M10 x 11mm (Pack of 10)	HOS70940	-----
15	Stop screw assembly	13547	-----
16	Suction Cup (not shown)	-----	HW70816
Replacement Camera Modules			
17	Qe6H Camera Petal (Sony)	HWS14818	
18	Qe6H Camera Petal (Tamron)	HWS14974	
19	Qe3H Camera & Housing Module		HWS14817

Table 19

9.2 SUPPORT STRUCTURE

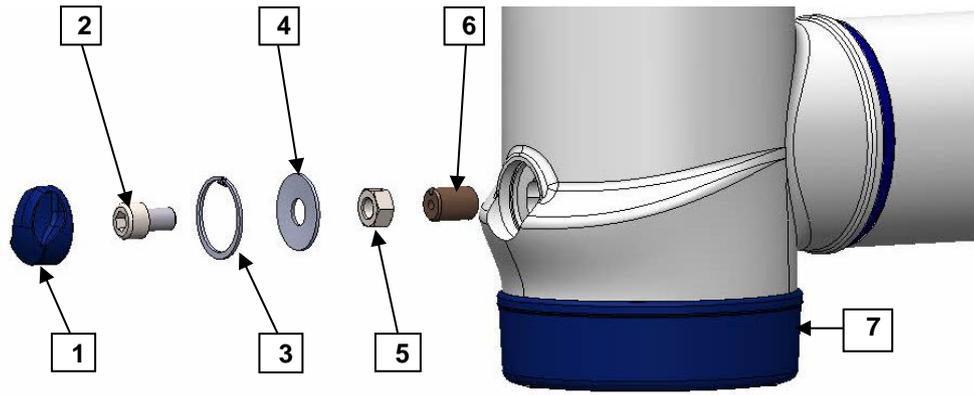


Figure 36

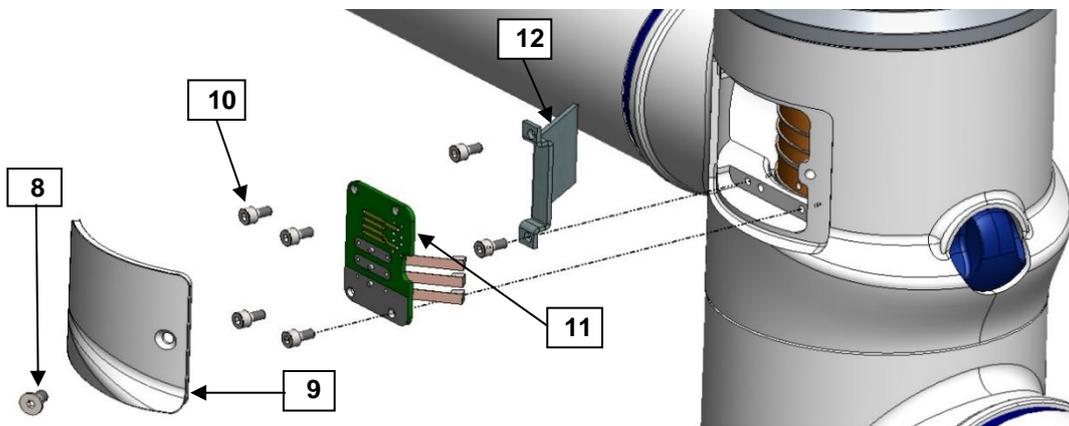


Figure 37

Item	Description	Part Number
1	NS Brake cap	HM33502
2	M10 x 16 Socket cap head screw	KM10M16MZ
3	Internal circlip	NCD1300-0350
4	Disc spring 34 x 12.5 x 1.5	HS34X12.5X1.5
5	M10 Nut	NFM10Z
6	NS Main spindle brake pad	HN33486
7	NS Bottom cap	HM33501
8	M5 x 10 Socket Counter sunk screw	KC5M10MZ
9	NS Brush block cover	HM33497
10	M4 x 8 Socket cap head screw	KM4M8MZ
11	Brush block 3 Power 0 Signal	ERB3POS
12	Slip ring guard	HM33505

Table 20

9.3 STANDARD CEILING SPRING-ARM

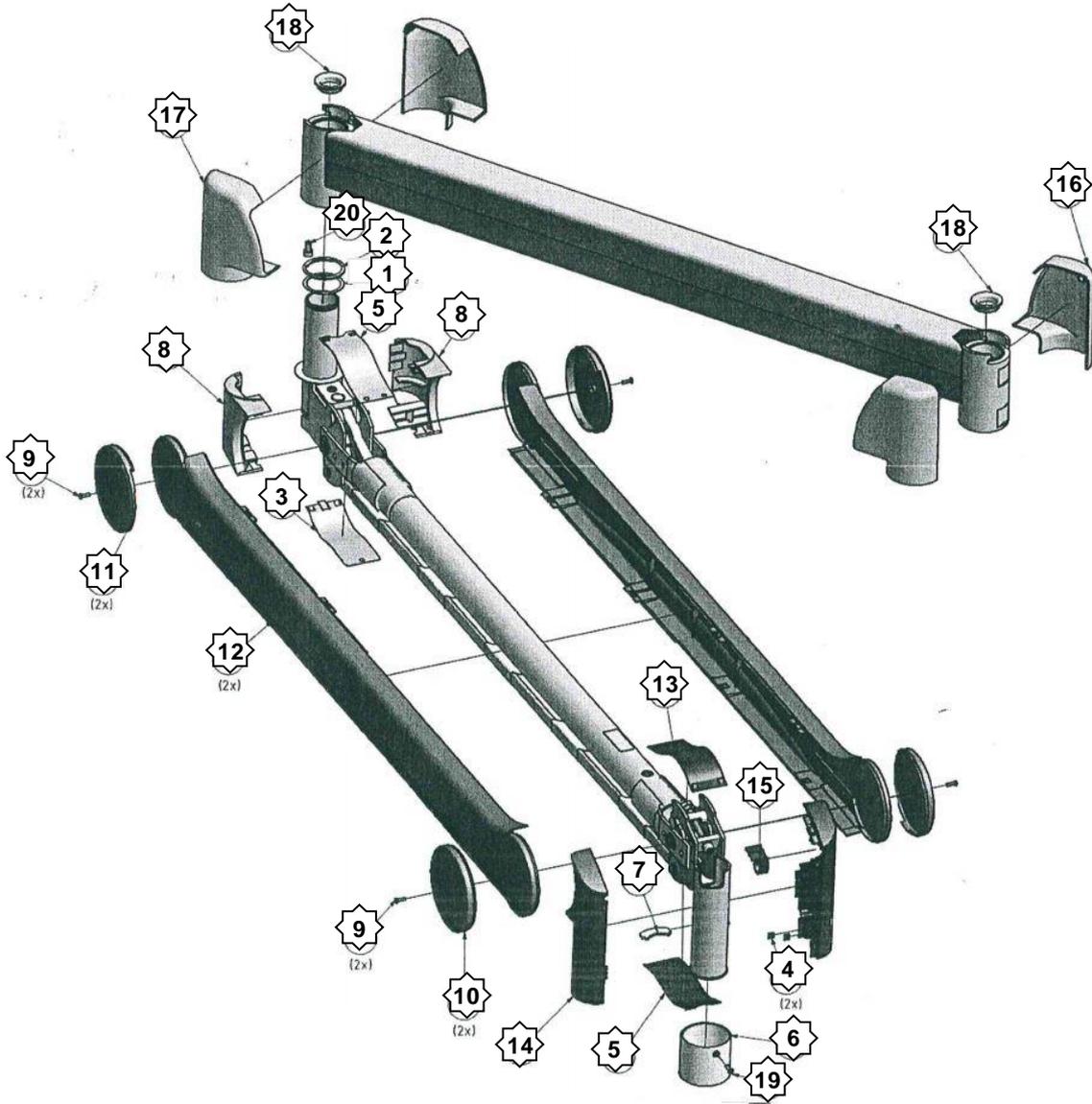


Figure 38

Kit 1 (HOS70071)

Item	Description	Qty
1	Washer	1
2	Circlip 32x1.5mm	1
16	Cover extension	2
17	Cover extension	2
18	Bushing	2
20	CYL Head screw	1

Kit 3 (HOS70073)

Item	Description	Qty
9	CSK screw	4
10	Décor cover,	2
11	Décor cover,	2
12	Cover	2

Kit 5 (HOS70075)

Item	Description	Qty
4	Square nut M3	2
5	Cover strip	1
13	Top cover strip,	1
14	Joint cover (pair)	1
15	Hole cover	1

Kit 2 (HOS70072)

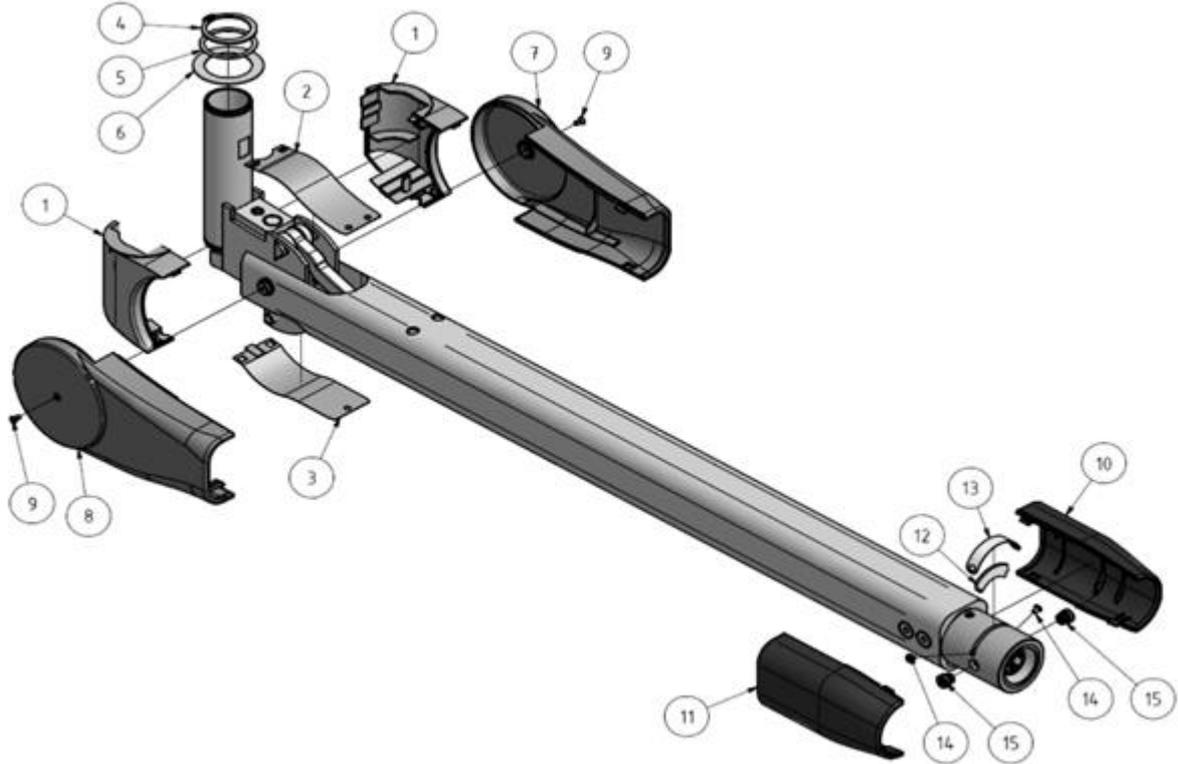
Item	Description	Qty
3	Lower cover	1
5	Cover	1
8	Joint cover (pair)	1

Kit 4 (HOS70074)

Item	Description	Qty
6	Securing sleeve	1
7	Locking segment	1
19	CSK screw M3x6	1

Table 21

9.4 LOW CEILING SPRING ARM



Kit 1 (HOS1931800)

Item	Description	Qty
4	Washer	1
5	Circlip 32x1.5mm	1
6	Washer	2

Kit 3 (HOS1931807)

Item	Description	Qty
7	Cover (rear left)	1
8	Cover (rear right)	1
9	Counter sunk	2

Kit 5 (HOS1931803)

Item	Description	Qty
12	Locking segment	1
13	Securing sleeve	1
14	Lens head screw	2

Kit 2 (HOS1928421)

Item	Description	Qty
1	Joint cover (pair)	1
2	Cover	1
3	Lower cover strip	1

Kit 4 (HOS1931808)

Item	Description	Qty
10	Cover (front left)	1
11	Cover (front right)	1

Kit 6 (HOS1931804)

Item	Description	Qty
15	Brake screw	2

Table 22

9.5 MOBILE UNITS

9.5.1 Qe30 Mobile (standard model)

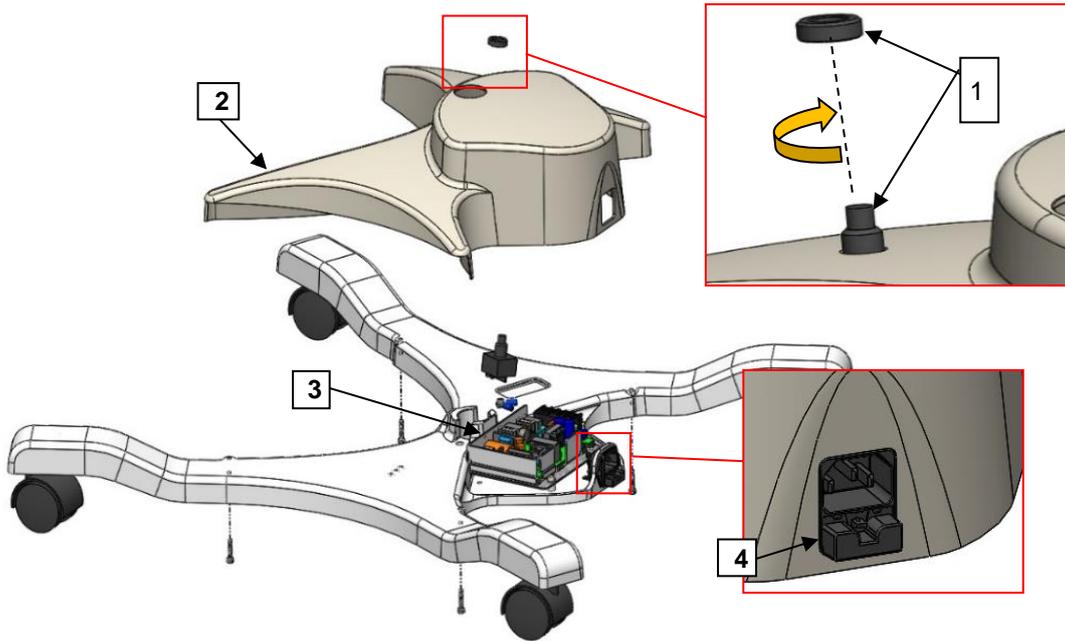


Figure 39

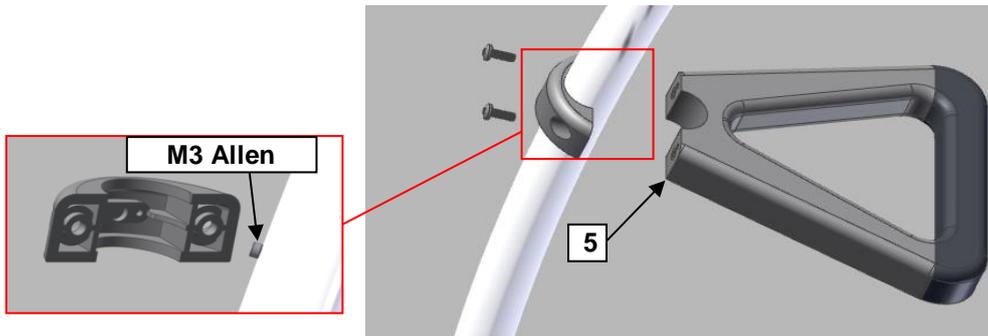


Figure 40

Item	Description	Part Number
1	Foot switch assembly	HHS70514
2	Base cover	HHS70828
3	Power supply unit	ZE05H-1SR
4	Fuse holder	HHS70829
5	Column handle	HHS70513

Table 23

9.5.2 Qe30 Mobile (EL Model)

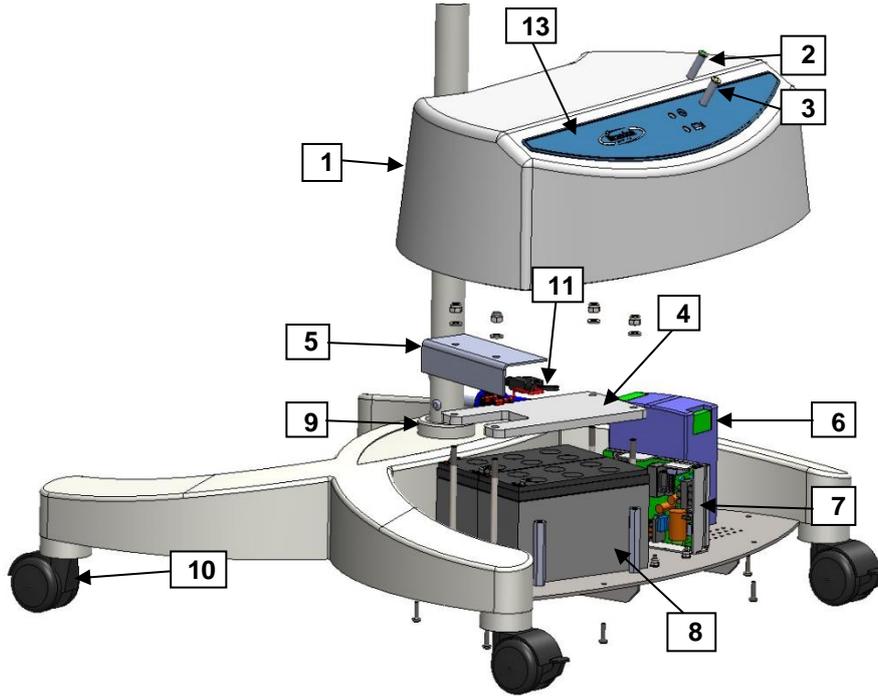


Figure 41

Item	Description	Part Number
1	Top Cover	HM34308
2	Warning indicator (Green)	LD70239
3	Warning indicator (Amber)	LD70241
4	Battery Clamp	OM34552
5	Battery cover	HN34563
6	24VDC ups charger	EPD70528
7	50W 230VDC power supply unit	ZE05H-1SR
8	Battery 12V 7AH	EBL13847-1207
9	Plastic ring 40-32 (Grey)	HO70490
10	Kit of 4 casters	HWS70764
11	Inline fuse holder 30A	FH70442
12	Mini blade fuse 5A (Not Shown)	FF70443
13	Mobile EPU Facia	JL34311

Table 24

9.5.3 Qe60 Mobile (EL model)

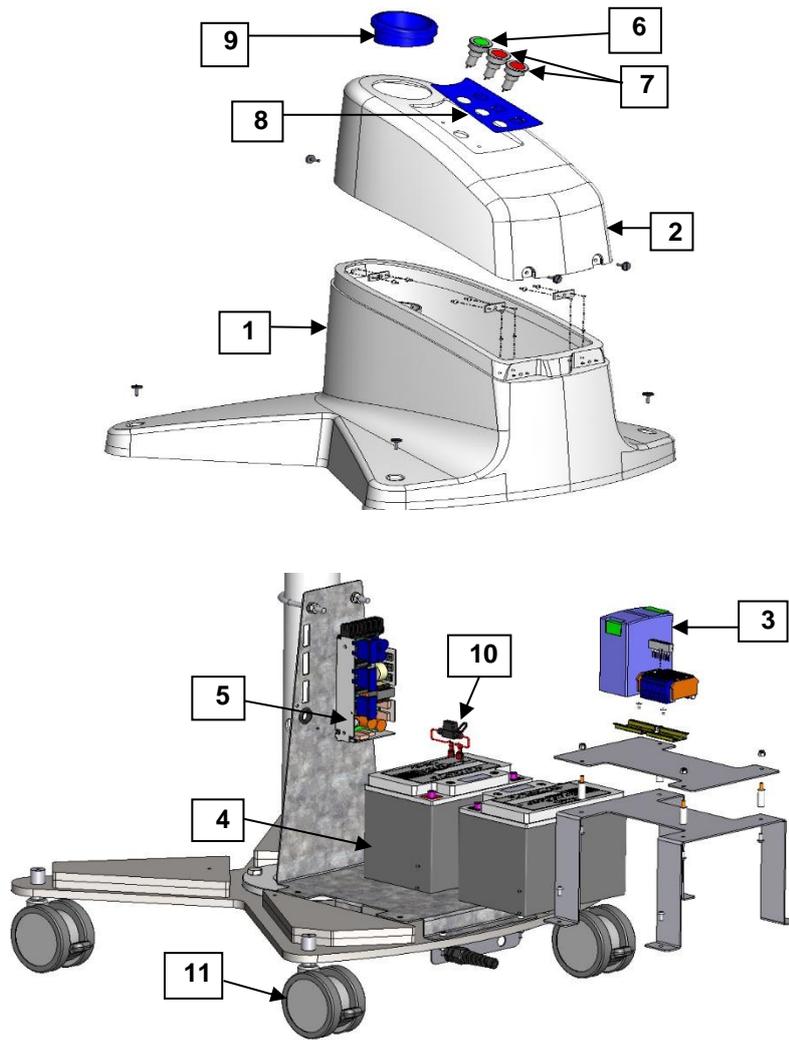


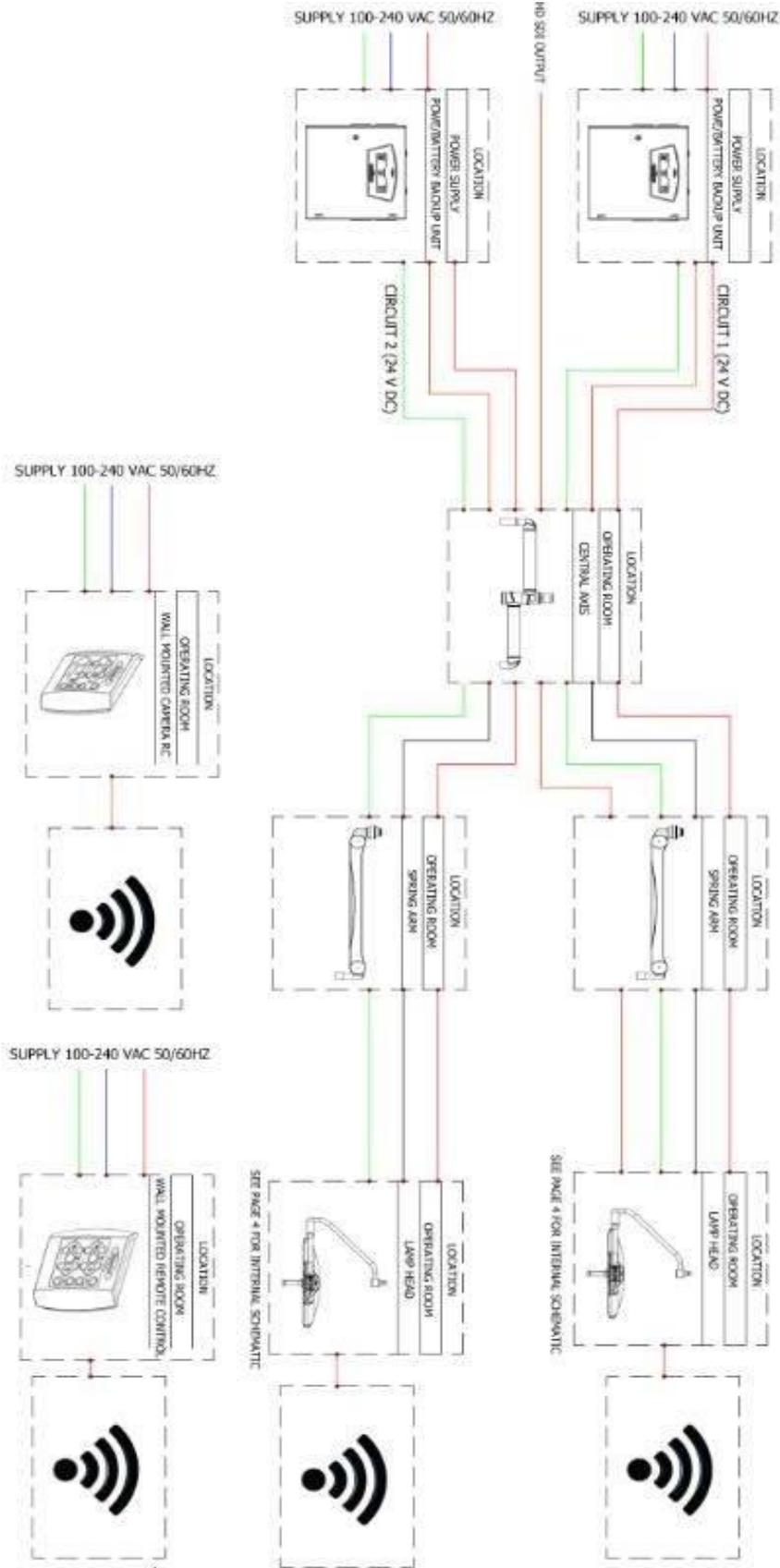
Figure 42

Item	Description	Part Number
1	Major mobile bottom cover	HM33491
2	Major mobile Top cover	HM33490
3	24VDC UPS charger	EPD70528
4	Battery 12V 33AH (2 Qty)	EBL13847-1233
5	150W 24VDC Power supply unit	ZE150H-1SR
6	Warning indicator (Green)	LPF-GRN
7	Warning indicator (Red)	LPF-RED
8	Major mobile facia EL	JL33474
9	Major mobile top cover collar	HM33475
10	Inline fuse holder 30A	FH70442
11	Major mobile caster (Each)	HN33478
12	Mini blade fuse 5A (Not Shown)	FF70443

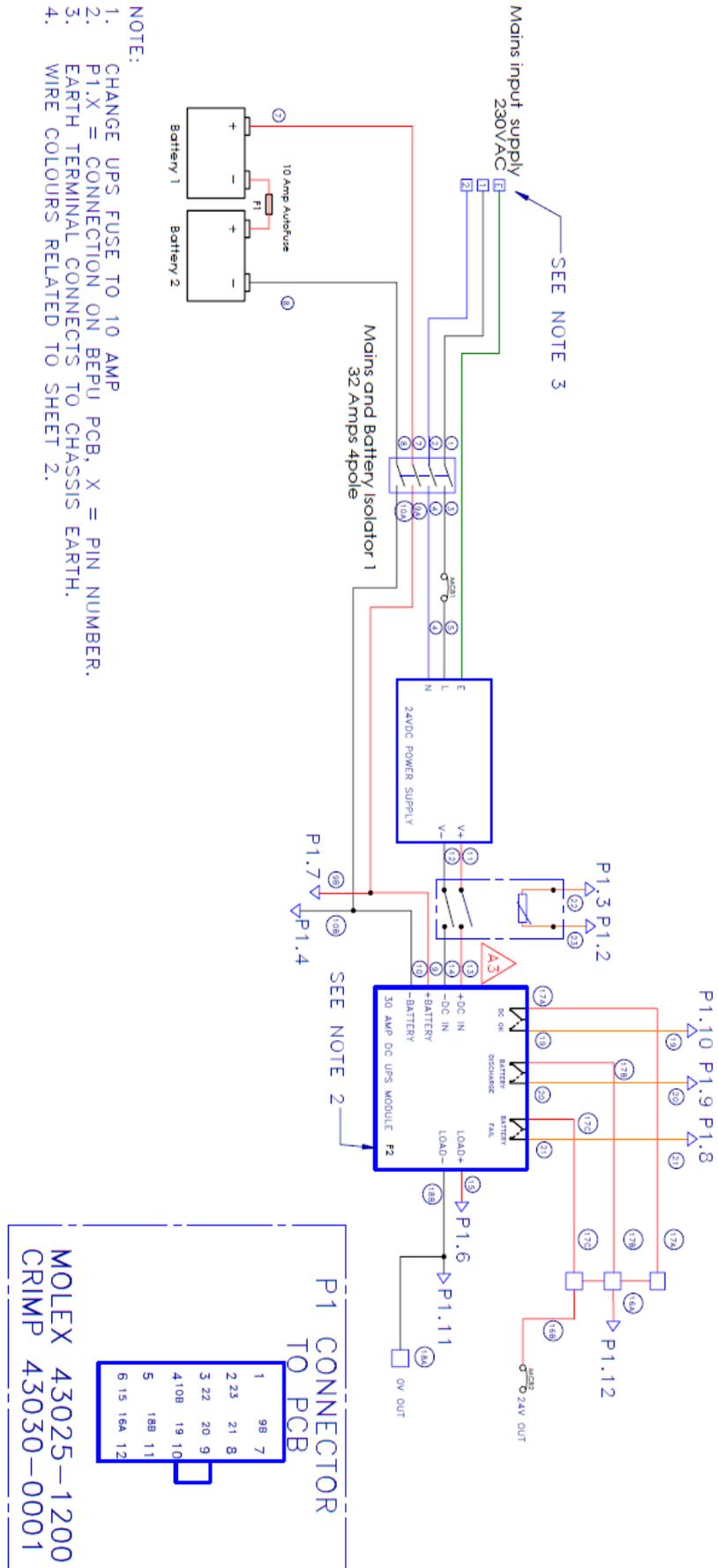
Table 25

10 APPENDIX

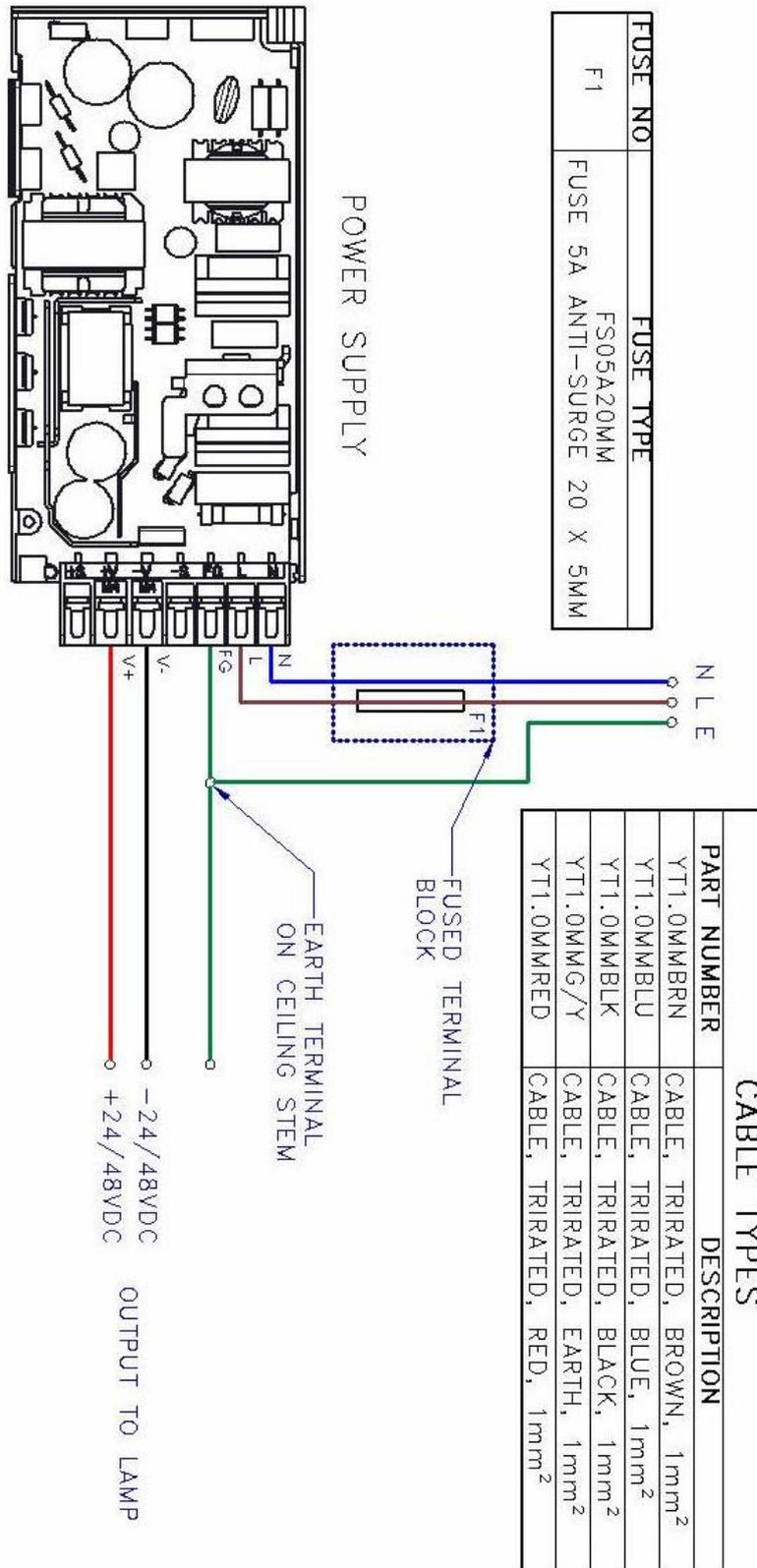
10.1 GENERAL WIRING ARRANGEMENT



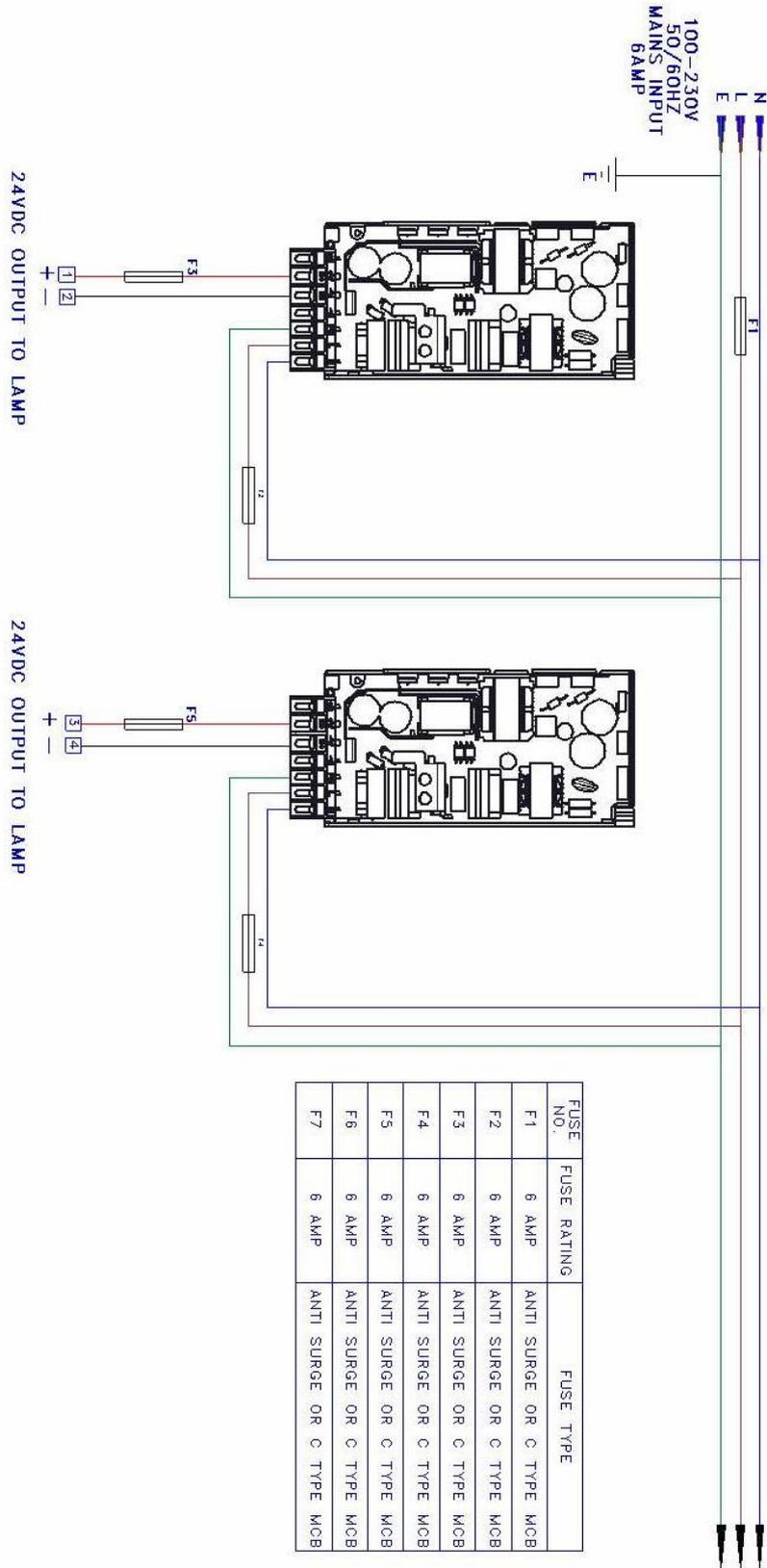
10.2 BRANDON EPU SCHEMATIC



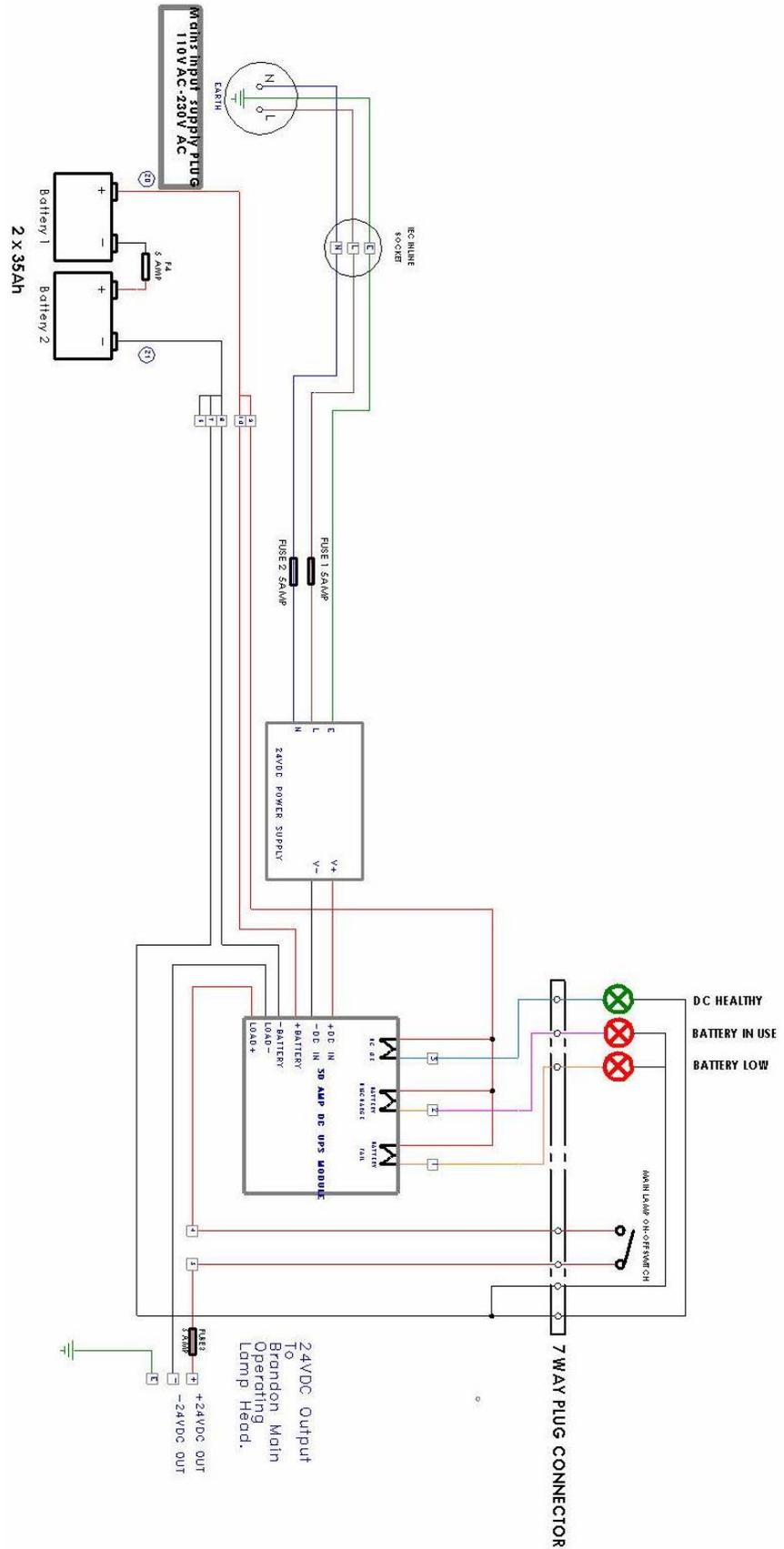
10.3 SINGLE PSU SCHEMATIC



10.4 MULTIPLE PSU SCHEMATIC



10.5 QE60 MOBILE EL SCHEMATIC



Document Change History		
Issue No	Date Issued	Summary of changes
A5-01	23/03/2020	Note added to pg12 section 4.3.1: On /Off button actions
B1	05/05/2020	Section 4.4.3 Storage of Qe30 Mobile Models - "Note: Failure to isolate the batteries using the storage switch may result in the batteries being discharged." REPLACED WITH "Note: The standby switch will only reduce the current consumption of the unit and will not isolate the batteries completely. The system which monitors the battery condition will still operate resulting in a small parasitic drain. It is therefore important that even though the standby switch may be used that as soon as possible the unit is reconnected to an appropriate mains power supply."
B2	01/07/2020	Added new camera settings to section 6, added fault LED indications to section 8 item 18 - Qe6H Camera Petal (Tamron) HWS14974 added to table 18



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