

Service Manual

HyLED 600 Series/HyLED 600M
LED Surgical Lights

HyLED 200 Series/HyLED 200M
LED Examination Lights

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1 System Overview

1.1 Main Components

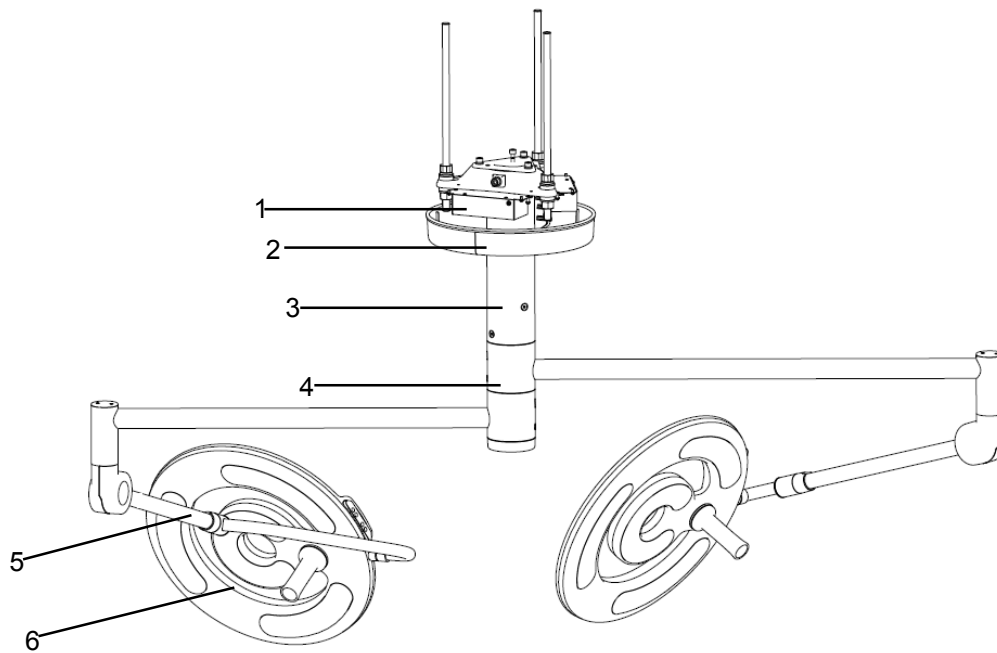


Figure 1-1 HyLED 600/HyLED 600 (ceiling version)

1 Power module

3 Flange tube

5 Spring arm

2 Ceiling cover

4 Swivel arm assembly

6 HyLED 600 lighthead

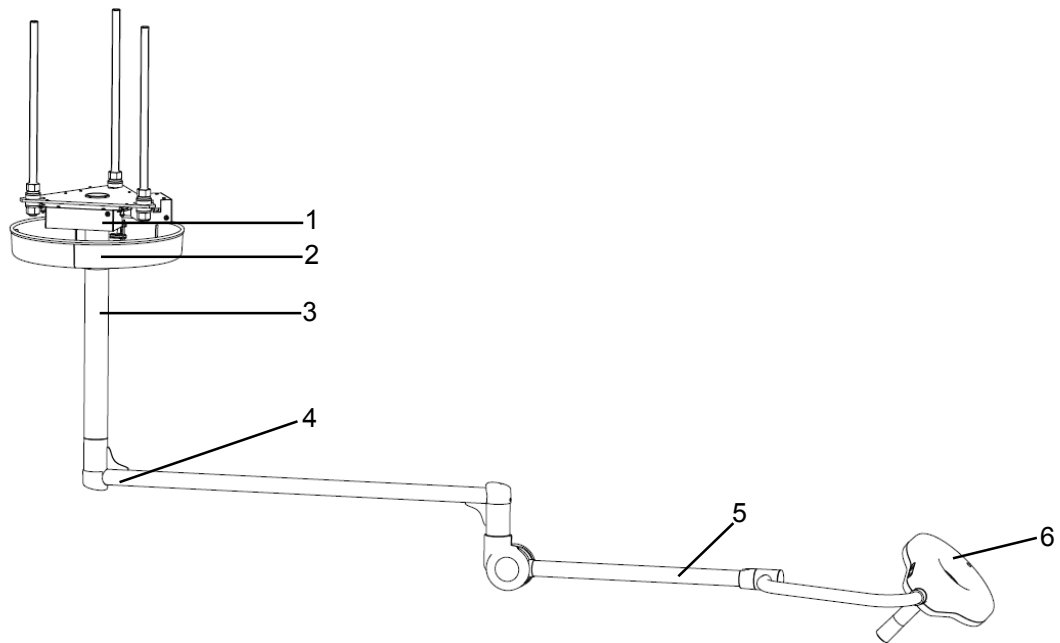


Figure 1-2 HyLED 200 (ceiling version)

1 Power module

3 Flange tube

5 Spring arm

2 Ceiling cover

4 Swivel arm assembly

6 HyLED 200 lighthouse

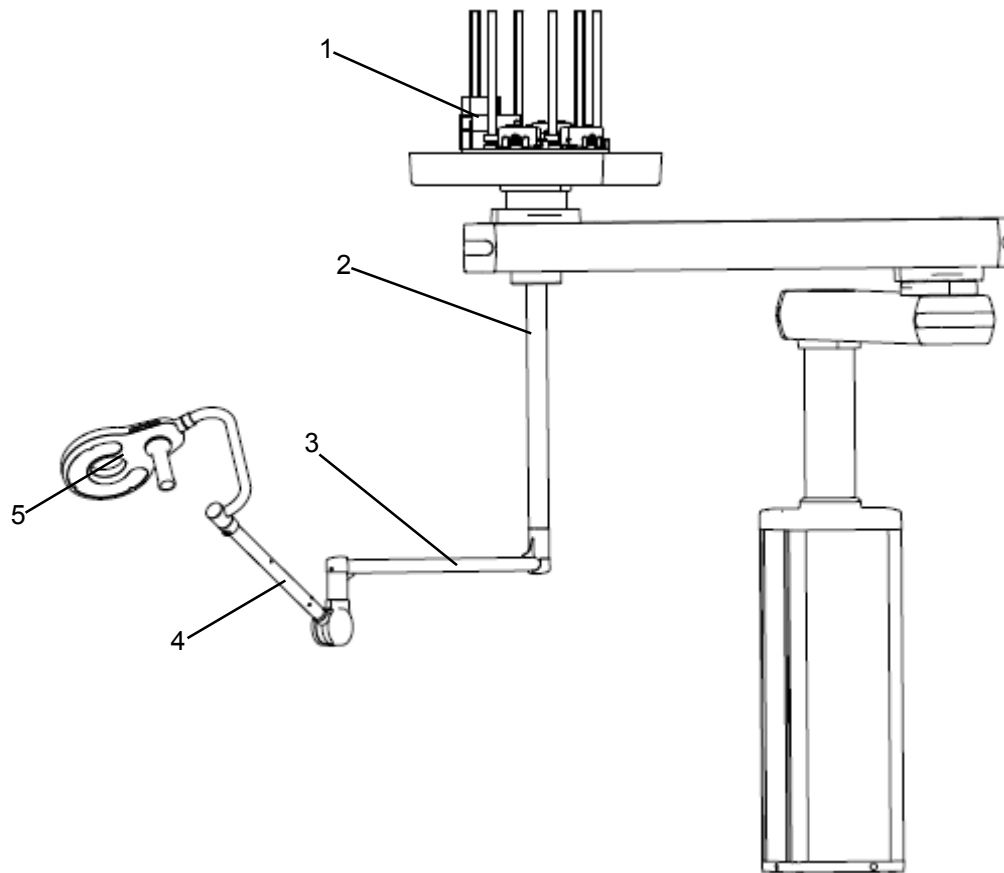


Figure 1-3 HyLED 200 (pendant version)

1 Power module
3 Swivel arm assembly
5 HyLED 200 lighthouse

2 Extension tube
4 Spring arm

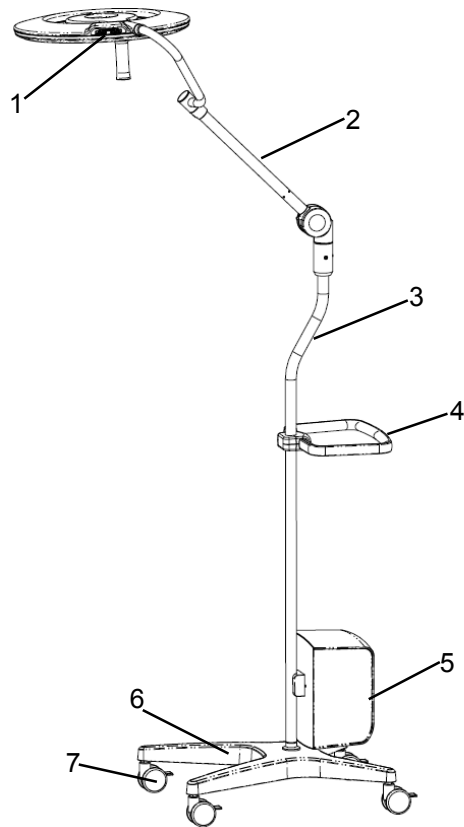


Figure 1-4 HyLED 600M surgical light (mobile version)

1 HyLED 600M lighthead
3 Pole
5 Battery module
7 Castor

2 Spring arm
4 Handle
6 Base

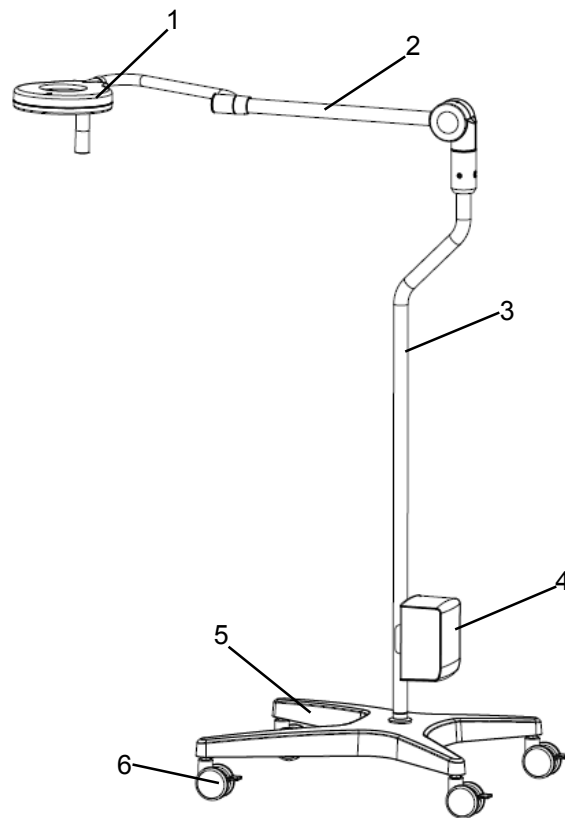


Figure 1-5 HyLED 200M examination light (mobile version)

1 HyLED 200M lighthead

3 Pole

5 Base

2 Spring arm

4 Power module/Battery module (optional)

6 Castor

1.2 Safety

1.2.1 Safety Notes

Table 1-1 Definition of safety notes

Note	Meaning
 WARNING	Read the statement below the symbol. The statement alerts you to an operating hazard that can cause personal injury.
 CAUTION	Read the statement below the symbol. The statement alerts you to possible damage to the device or other property.
NOTE	Read the statement below the symbol. The statement alerts you to information that requires your attention.

1.2.2 Safety Instructions

** WARNING**

- The surgical light or examination light is to be serviced by personnel authorized by Mindray only. Non-authorized remove will compromise product safety and effectiveness and invalidate the warranty.
 - Before maintaining, servicing or removing the surgical light or examination light, make sure the mains supply has been disconnected from the light.
 - Use spare parts and accessories specified by the manufacture only. Otherwise, safety and effectiveness of the light may be compromised.
-

** CAUTION**

- Exercise caution when transporting or moving the device. Do not damage the device.
 - The device is to be maintained or serviced regularly by personnel authorized by Nanjing Mindray.
 - During servicing, make sure that the surgical light or examination light is well protected from mechanical collision.
 - During servicing, do not place anything on the lighthouse or hang anything
-

on the light arms or lighthouse.

- Connector pins with an ESD warning symbol should not be touched and no connections should be made between these connectors without implementing ESD protective measures. Such precautionary procedures may include antistatic clothing and shoes, the touch of a ground stud before and during connecting the pins or the use of electrically isolating and antistatic gloves. All staff involved in the above shall receive instruction in these ESD precautionary procedures.
-

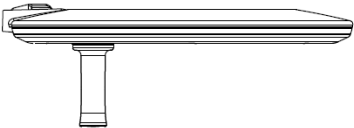
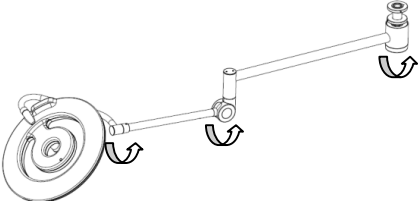
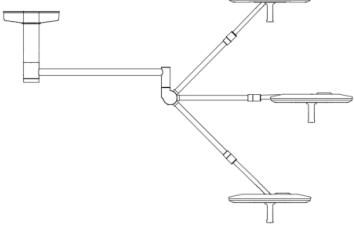
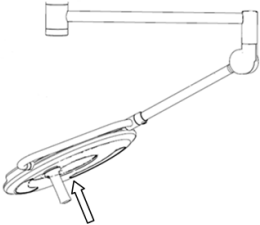
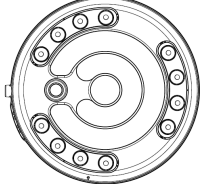
NOTE

- Refer to the operator's manual for more information on operating the light.
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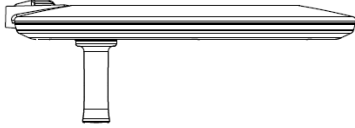
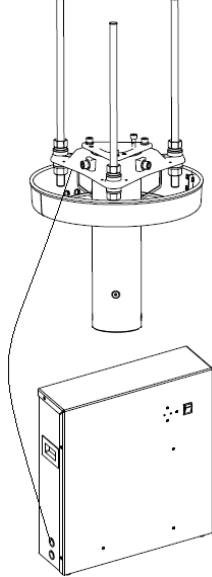
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2 General Maintenance

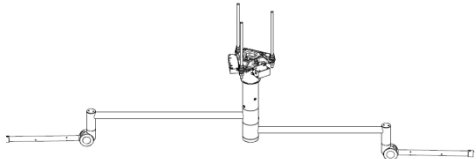
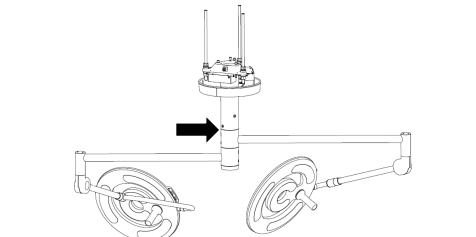
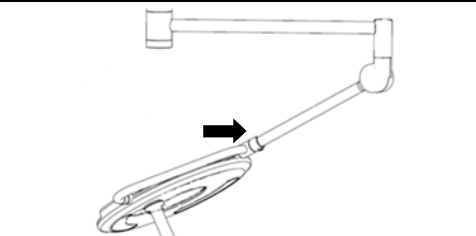
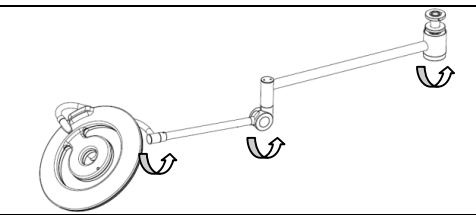
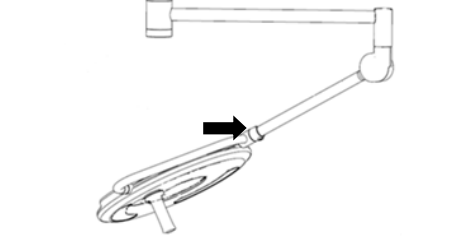
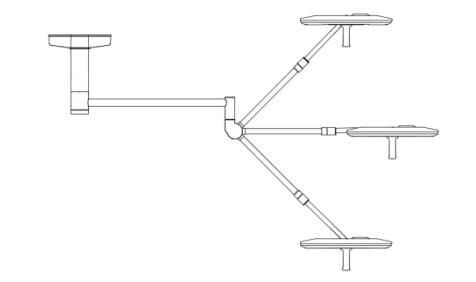
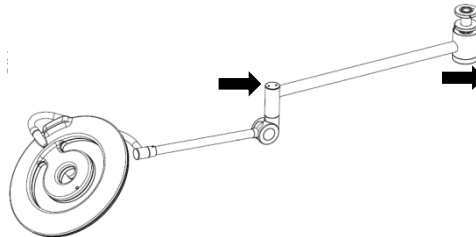
2.1 Daily Checks by User

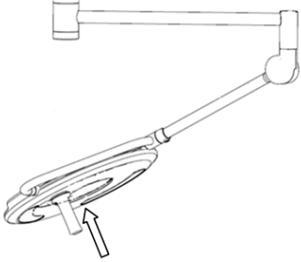
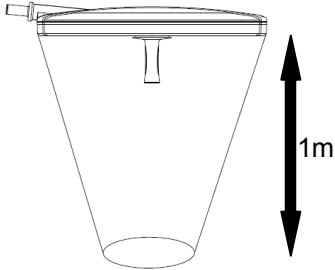
	Check the lightheads and the arms for chipped paint, impact marks and any other damage.
	Check the stability/drift of the swivel arms, the spring arms and the lightheads.
	Check the load capacity of the spring arm. Three checkpoints: bottom, middle, top.
	Check if the sterilizable handle clicks and locks in place correctly; replace it if not.
	Check if the power-on indicator is green when the power supply is connected.
	Check if the LEDs operate correctly.
	Check if the lighthead switches correctly among normal lighting and MIS lighting mode (for HyLED 600/HyLED 600M).
	Check if the backup power module (optional) can switch over.

2.2 Monthly Checks

	<p>Check the lightheads and the arms for chipped paint, impact marks and any other damage.</p>
	<p>Check if the backup power supply (optional) turns on and the light operates correctly if a power cut were to occur.</p>
	<p>Check the battery (optional) service time.</p>

2.3 Annual Checks

	Check the verticality of the flange tube.
	Check if the screws fixing the flange tube and swivel arm assembly are tight and the rubber junction seal is in place.
	Check if the screw fixing the sleeve of the spring arm is tightened.
	Check the stop.
	Remove the lightheads and lubricate the sleeve. Recommended grease: DeoxIT L260Np
	Check whether the spring arm is correctly balanced.
	Check for any loose covers and caps.

	<p>Check the locking mechanism for the sterilizable handle.</p>
	<p>Use a photometer to check the maximum illuminance:</p> <p>HyLED 600/HyLED 600M: about 130,000 lux at 1 metre</p> <p>HyLED 200/HyLED 200M: about 70,000 lux at 1 metre</p>

2.4 Servicing Checklist

No.	Item	Action	Result		
			NA	Pass	Fail
1	Installation check	Check the verticality of the flange tube.			
		Check the rigidity between the flange tube and swivel arm assembly.			
		All the visible screws are tightened.			
		The securing segment of the spring arm is in place.			
		The gimbal joint and lighthouse are correctly positioned.			
		All the end covers are tightened.			
		The sterilizable handle clicks and locks into position.			
2	Handling check	The lighthouse can stay at any desired position.			
		The braking screws are adjusted.			
		The spring arms are balanced.			
		The height stop of the spring arm can be adjusted.			
		Check the rotation stop of the swivel arm, spring arm and gimbal joint.			
3	Electrical check	Check the power supply connections, including all the earth connections.			
		Check the cable clamps.			
		Check the illuminance with the batteries on (optional).	_____ lux at 1 meter		
		Check the illuminance with AC powered.	_____ lux at 1 meter		
		Check earth bonding.	_____ ohm		
		Check the tightening of the 3-pole connector.			
4	Optical check	Check the maximum illuminance.			
5	Operational check	Check the control unit function.			
		The power-on indicator is green when			

General Maintenance

		AC or DC is present.			
		The MIS mode can change over.			
		The backup power supply (optional) can change over.			
6	Visual inspection	Check the cleanliness of the external surfaces of lighthead and arms.			
		Check the cleanliness of the end covers, and the covers are installed in place.			
		No signs of wear on the sterilizable handle			
		No signs of wear on the sealing strip			
		No scratches or cracks on the glass			
		All labels are in place.			

3 FRU List and Diagram

3.1 Flange Tube

3.1.1 FRU (Field Repairable Unit) List

No.	FRU number	Description	Remark
1	115-041446-00	Flange tube for HyLED 200 (400mm)	For HyLED 200 use
2	115-041447-00	Flange tube for HyLED 200 (600mm)	
3	115-041448-00	Flange tube for HyLED 200 (800mm)	
4	115-041449-00	Flange tube for HyLED 200 (1000mm)	
5	115-041451-00	Flange tube for HyLED 600 (400mm)	For HyLED 600 use
6	115-041452-00	Flange tube for HyLED 600 (600mm)	
7	115-041453-00	Flange tube for HyLED 600 (800mm)	
8	115-041454-00	Flange tube for HyLED 600 (1000mm)	
9	115-041450-00	Flange tube for HyLED 600 (1200mm)	

3.1.2 Typical Diagram

3.1.2.1 Flange Tube for HyLED 600

No.	Description	Qty	Remark
1	M16mm threaded bar	3	
2	M16mm hexagon nut	6	
3	Φ16mm plain washer	6	
4	Flange	1	
5	Φ16mm spring washer	3	
6	M8×40mm hexagon socket head cap screw	3	
7	Φ8mm spring washer	3	
8	Φ8mm plain washer	3	
9	Locking piece	1	
10	M10×25mm hexagon socket head cap screw	3	
11	Φ10mm spring washer	3	
12	Φ10mm plain washer	3	
13	Earth bar	1	
14	M4×12mm cross recessed small pan head combination screw	6	
15	Tube (400mm)	1	
16	Rubber junction seal	1	

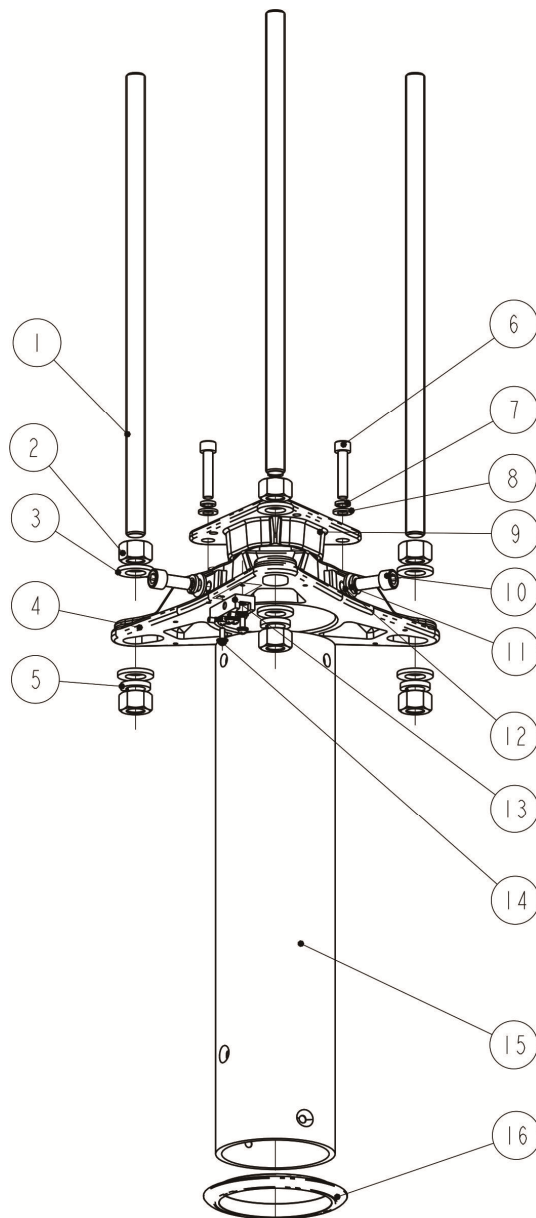


Figure 3-1 Flange tube for HyLED 600

3.1.2.2 Flange Tube for HyLED 600 (with Insulated Sleeve and Washer)

No.	Description	Qty	Remark
1	M16mm threaded bar	3	
2	M16mm hexagon nut	6	
3	Φ16mm plain washer	6	
4	Insulation sleeve	3	
5	Flange	1	
6	Insulation washer	3	
7	Φ16mm spring washer	3	
8	M8×40mm hexagon socket head cap screw	3	
9	Φ8mm spring washer	3	
10	Φ8mm plain washer	3	
11	Locking piece	1	
12	M10×25mm hexagon socket head cap screw	3	
13	Φ10mm spring washer	3	
14	Φ10mm plain washer	3	
15	Earth bar	1	
16	M4×12mm cross recessed small pan head combination screw	6	
17	Tube (400mm)	1	
18	Rubber junction seal	1	

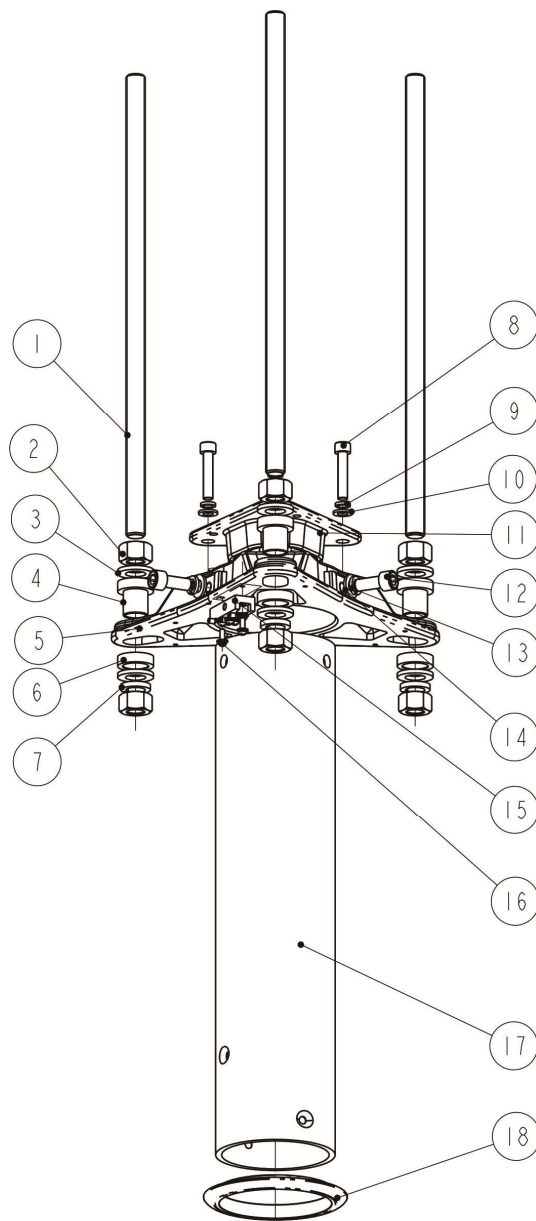


Figure 3-2 Flange tube for HyLED 600

3.1.2.3 Flange Tube for HyLED 200

No.	Description	Qty	Remark
1	M16mm threaded bar	3	
2	M16mm hexagon nut	6	
3	Φ16mm plain washer	6	
4	Earth bar	1	
5	M4×12mm cross recessed small pan head combination screw	7	
6	Flange tube (400mm)	1	
7	Connector in flange tube	1	
8	Rubber junction seal	1	
9	Plain washer	1	
10	Φ32mm circlip	1	
11	Cable clamp	1	
12	Φ16mm spring washer	3	
13	M3×8mm cross recessed countersunk head screw	1	

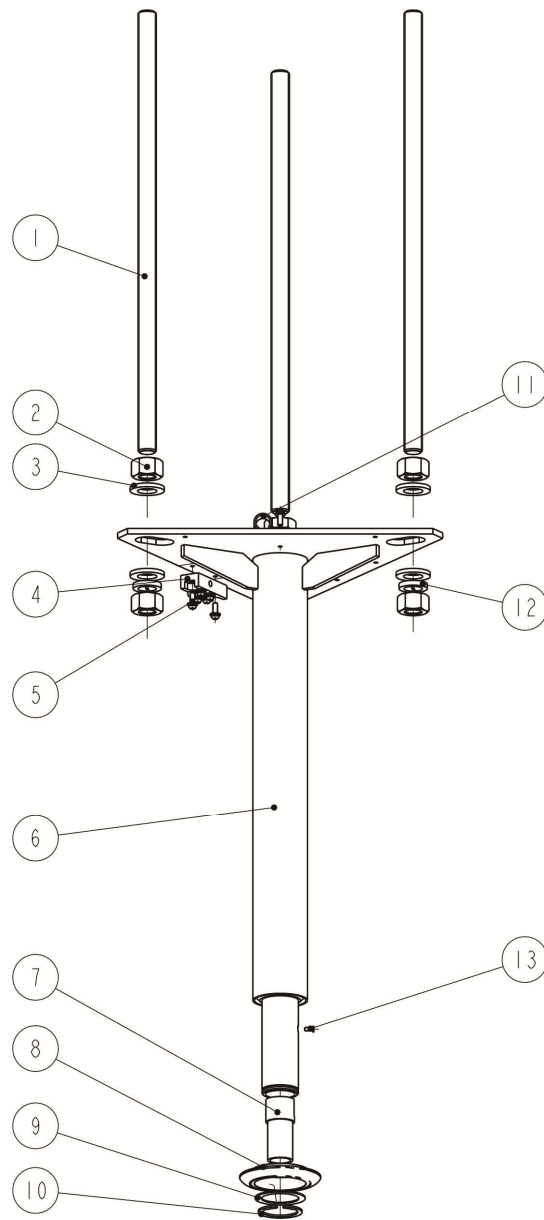


Figure 3-3 Flange tube for HyLED 200

3.1.2.4 Flange Tube for HyLED 200 (with Insulated Sleeve and Washer)

No.	Description	Qty	Remark
1	M16mm threaded bar	3	
2	M16mm hexagon nut	6	
3	Φ16mm plain washer	6	
4	Insulation sleeve	3	
5	Earth bar	1	
6	M4×12mm cross recessed small pan head combination screw	7	
7	Flange tube (400mm)	1	
8	Connector in flange tube	1	
9	Rubber junction seal	1	
10	Plain washer	1	
11	Φ32mm circlip	1	
12	Cable clamp	1	
13	Insulation washer	3	
14	Φ16mm spring washer	3	
15	M3×8mm cross recessed countersunk head screw	1	

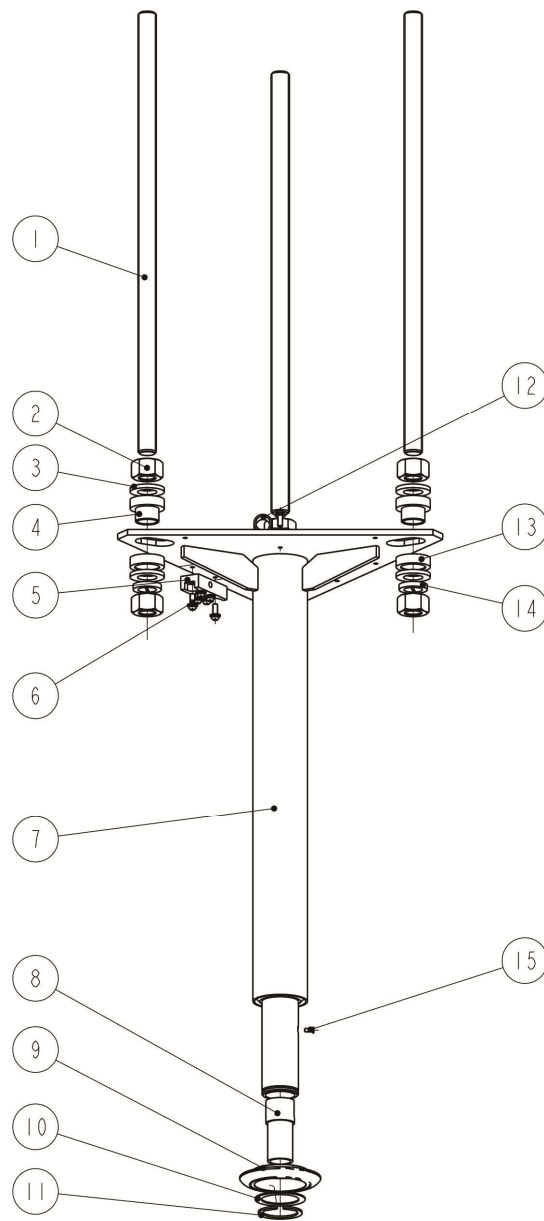


Figure 3-4 Flange tube for HyLED 200

3.2 Swivel Arm Assembly

3.2.1 FRU List

None.

3.2.2 Typical Diagram

3.2.2.1 Swivel Arm Assembly for HyLED 600

No.	Description	Qty	Remark
1	M4×12mm cross recessed small pan head combination screw	1	
2	Cable clamp	1	
3	M6×16mm hexagon socket countersunk head screw	4	
4	Central axis (for 2 arms)	1	
5	M4×8mm hexagon socket head cap screw	2	
6	Φ35mm Circlip	3	
7	Sliding bearing 1	4	
8	Bearing adapter	2	
9	Arm (1000mm)	1	
10	Connector in central axis	2	
11	Bearing adapter 2	2	
12	Plain washer	2	
13	Arm (850mm)	1	
14	Column cover	1	
15	M3×10mm cross recessed pan head combination screw	2	
16	Screw cap	2	
17	M3×20mm cross recessed countersunk head screw	4	
18	End cover for swivel arm	2	
19	3-pole plug	2	

20	Sliding bearing	4	
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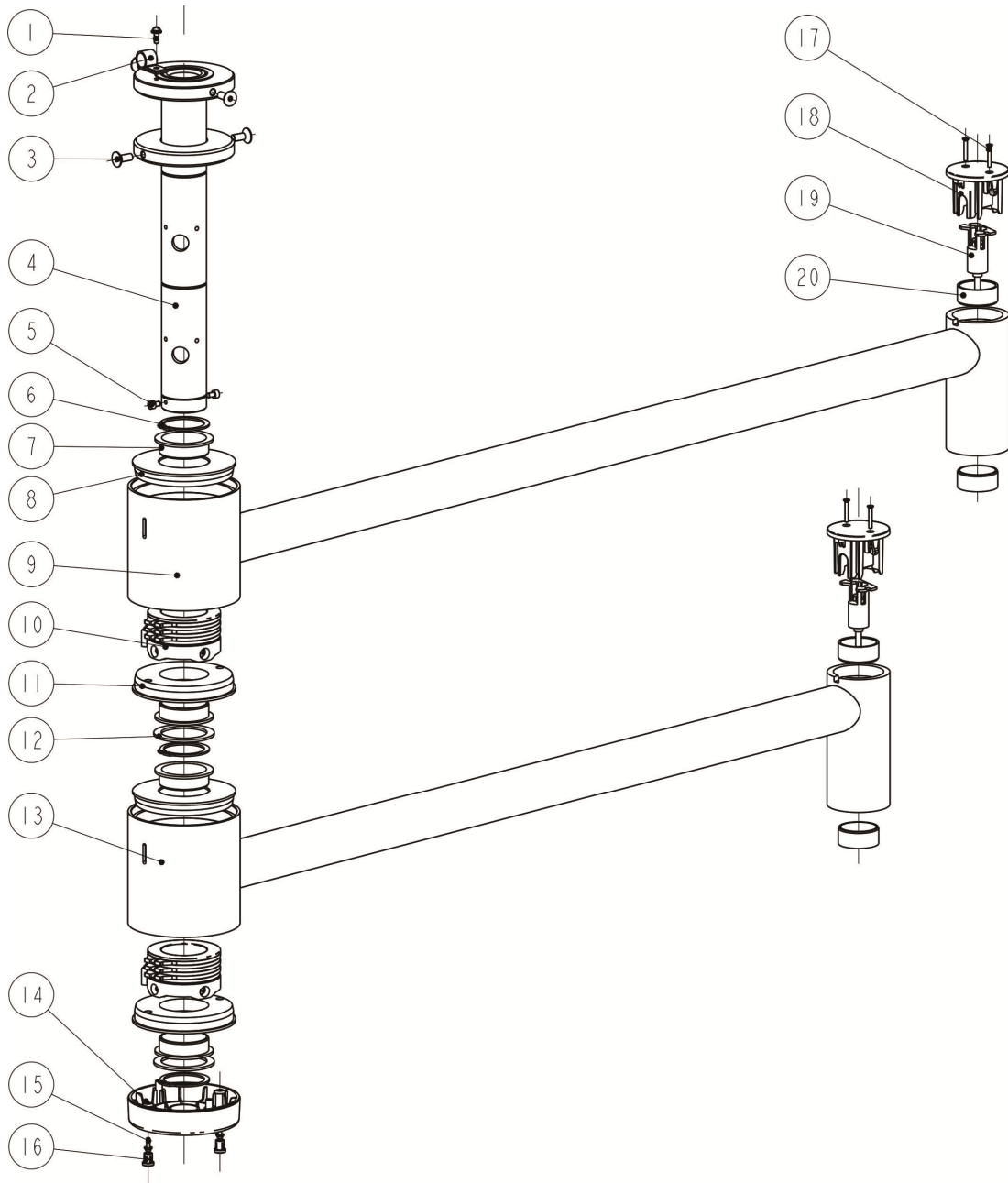
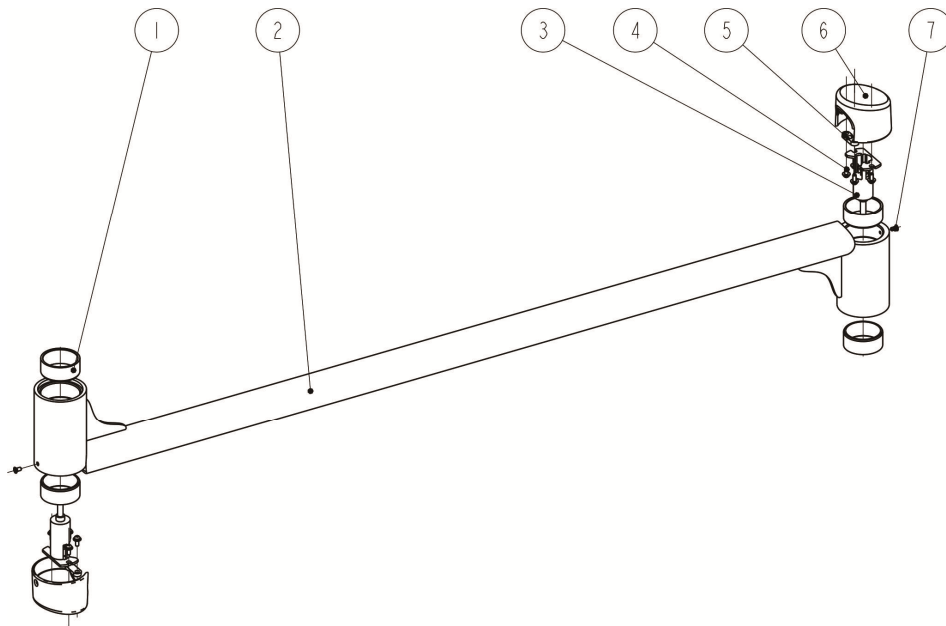


Figure 3-5 Swivel arm assembly for HyLED 600

3.2.2.2 Swivel Arm Assembly for HyLED 200

No.	Description	Qty	Remark
1	Sliding bearing	2	
2	Arm (850mm)	1	
3	3-pole plug	2	
4	M3×8mm cross recessed small pan head combination screw	8	
5	Wire-pressed piece	2	
6	Fixing seat for 3-pole plug	2	
7	M3×6mm cross recessed countersunk head screw	2	

**Figure 3-6 Swivel arm assembly for HyLED 200**

3.3 Spring Arm Assembly

3.3.1 FRU List

No.	FRU number	Description	Remark
1	115-036868-00	Light-duty spring arm-3kg	
2	115-036869-00	Light-duty spring arm-6kg	
3	042-017428-00	Securing segment	
4	044-000892-00	Sleeve	
5	043-007126-00	Left cover	
6	043-007127-00	Right cover	

3.3.2 Typical Diagram

No.	Description	Qty	Remark
1	Φ32mm circlip	1	
2	Plain washer	1	
3	Arm assembly	1	
4	Securing segment	1	FRU
5	Sleeve	1	FRU
6	M3×6mm cross recessed countersunk head screw	1	

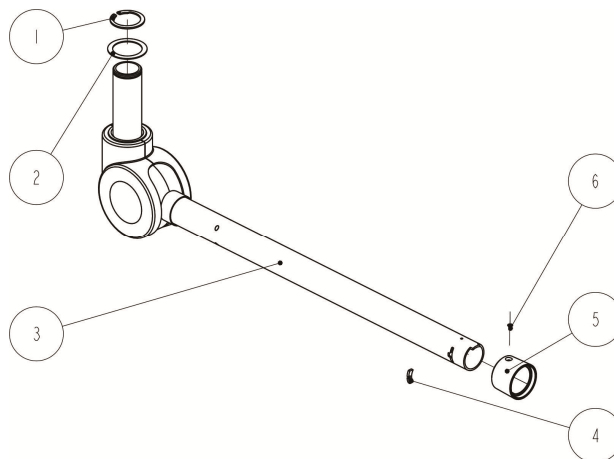


Figure 3-7 Spring arm

3.4 Control Unit

3.4.1 FRU List

No.	FRU number	Description	Remark
1	115-038555-00	Control unit for HyLED 600	
2	115-038556-00	Control unit for HyLED 200	

3.4.2 Typical Diagram

3.4.2.1 Control Unit for HyLED 600

No.	Description	Qty	Remark
1	Support for button control board	1	
2	Button control board for HyLED 600	1	
3	Shading foam	1	
4	Micro-switch cap	1	
5	Φ3mm spring washer	2	
6	Support for micro-switch cap	1	
7	M3×16mm cross recessed small pan head combination screw	2	
8	Sticker	1	

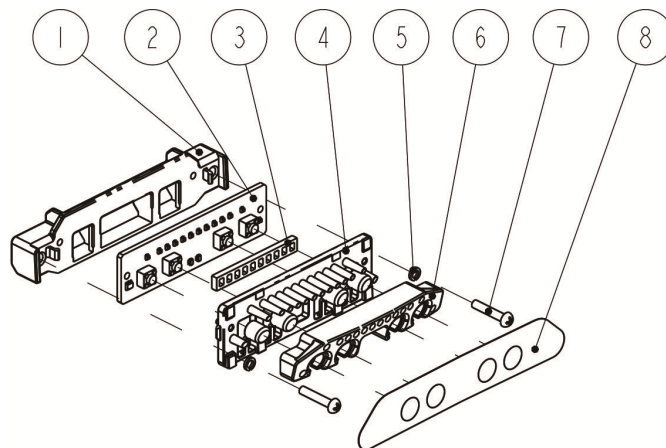
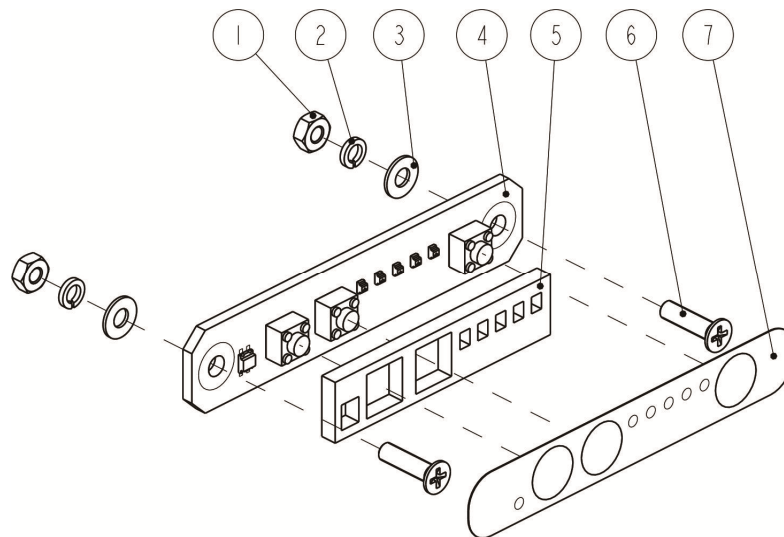


Figure 3-8 Control unit for HyLED 600

3.4.2.2 Control Unit for HyLED 200

No.	Description	Qty	Remark
1	M3 hexagon nut	2	
2	Φ3mm spring washer	2	
3	Φ3mm plain washer	2	
4	Button control board for HyLED 200	1	
5	Shading foam	1	
6	M3×12mm cross recessed countersunk head screw	2	
7	Sticker	1	

**Figure 3-9 Control unit for HyLED 200**

3.5 Lighthouse

3.5.1 FRU List

No.	FRU number	Description	Remark
1	115-038549-00	Lamp frame for HyLED 600	
2	115-038551-00	Lamp frame for HyLED 200	
3	115-039583-00	Drive board for HyLED 600	
4	115-039657-00	Drive board for HyLED 200	
5	115-016332-02	LED unit	
6	049-001153-00	Sealing strip	

3.5.2 Typical Diagram

3.5.2.1 HyLED 600 Lighthouse

No.	Description	Qty	Remark
1	Lamp housing hood	1	
2	M3×8mm cross recessed pan head screw	1	
3	Screw cap	1	
4	Support for button control board	1	
5	Φ22mm circlip	1	
6	Φ22mm circlip	1	
7	Plain washer	1	
8	Button control board for HyLED 600	1	
9	Rotator	1	
10	Stator	1	
11	Sliding bearing	2	
12	Micro-switch cap	1	

FRU List and Diagram

13	Φ3mm spring washer	2	
14	Support for micro-switch cap	1	
15	M3×8mm cross recessed small pan head combination screw	2	
16	Sticker	1	
17	Arm of gimbal joint	1	
18	End cover of gimbal joint	1	
19	M3×8mm cross recessed small pan head combination screw	1	
20	Round pin	1	
21	Plastic bearing	2	
22	Sealing ring	1	
23	Sealing strip	1	FRU
24	Lamp frame	1	FRU
25	Handle core	1	
26	M4×20mm cross recessed countersunk head screw	3	
27	Central handle	1	
28	M4×12mm cross recessed small pan head combination screw	1	
29	Sterilizable handle	1	
30	M4×12mm cross recessed small pan head combination screw	4	
31	Handle seat	1	
32	M3×8mm cross recessed small pan head combination screw	22	
33	Fixing piece for LED unit	22	
34	LED unit	18	FRU
35	M3×8mm cross recessed small pan head combination screw	7	
36	M3×8mm cross recessed small pan head combination screw	7	
37	Screw seat on lamp housing hood	7	
38	Drive board for HyLED 600	1	FRU
39	Magnetic core	1	

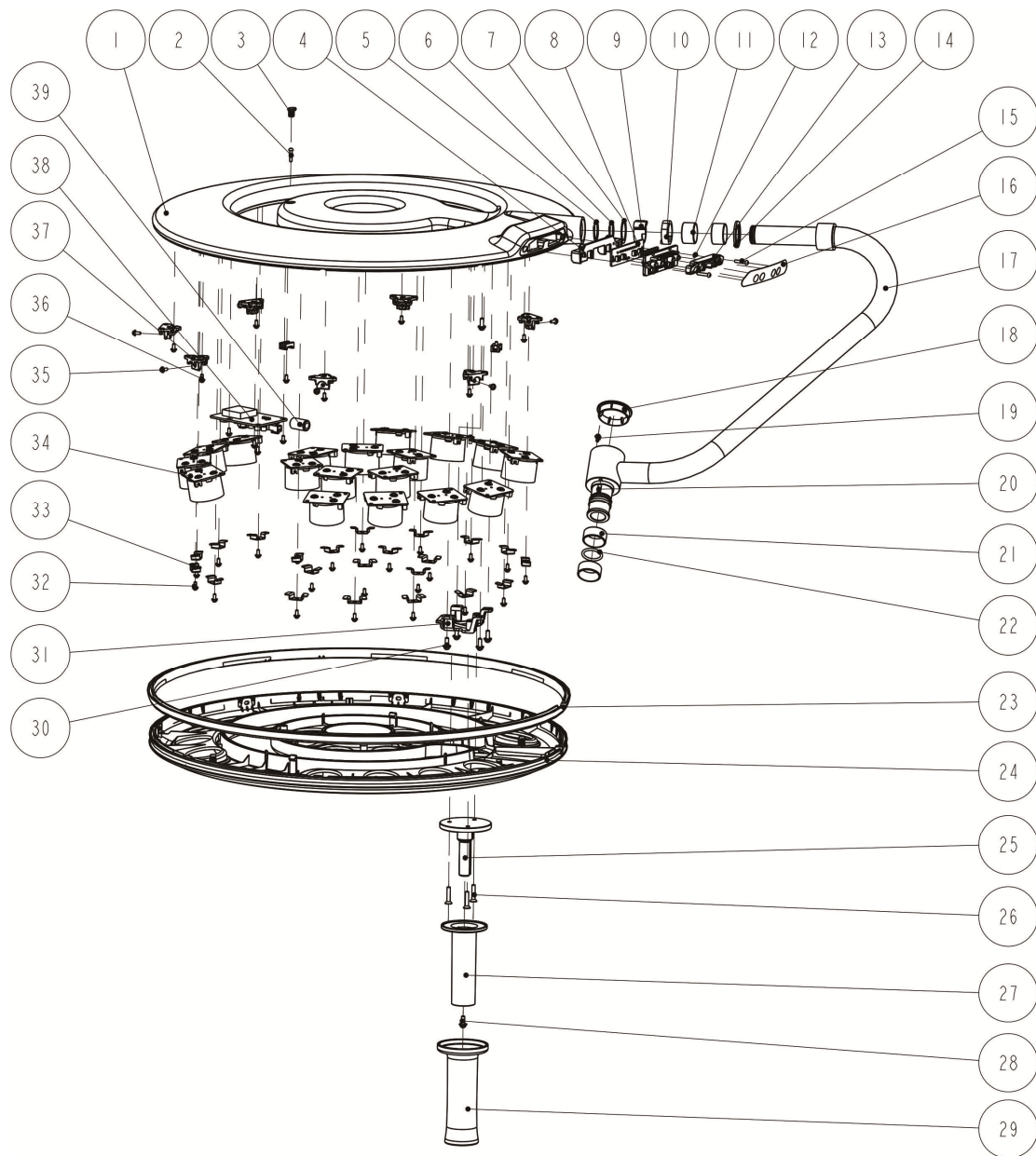


Figure 3-10 HyLED 600 lighthouse

3.5.2.2HyLED 200 Lighthead

No.	Description	Qty	Remark
1	Lamp housing hood	1	
2	M3×8mm cross recessed pan head combination screw	1	
3	Screw cap	1	
4	M3 hexagon nut	2	
5	Φ3mm spring washer	2	
6	Φ3mm plain washer	2	
7	Button control board for HyLED 200	1	
8	Shading foam	1	
9	M3×12mm cross recessed countersunk head screw	2	
10	Sticker	1	
11	End cover of gimbal joint	1	
12	Arm of gimbal joint	1	
13	Round pin	1	
14	Plastic bearing	2	
15	Sealing ring	1	
16	Friction washer	1	
17	Sliding bearing	2	
18	Rotator	1	
19	Plain washer	1	
20	Φ22mm circlip	2	
21	End cover for non-sterilizable handle	1	
22	M4×12mm cross recessed small pan head combination screw	1	
23	Central handle	1	
24	M4×20mm cross recessed countersunk head screw	3	
25	Handle core	1	

26	Lamp frame	1	FRU
27	M4×12mm cross recessed small pan head combination screw	4	
28	Handle seat	1	
29	M3×8mm cross recessed small pan head combination screw	7	
30	Fixing piece for LED unit	7	
31	M3×8mm cross recessed small pan head combination screw	4	
32	Drive board for HyLED 200	1	FRU
33	LED unit	8	FRU
34	Magnetic core	1	

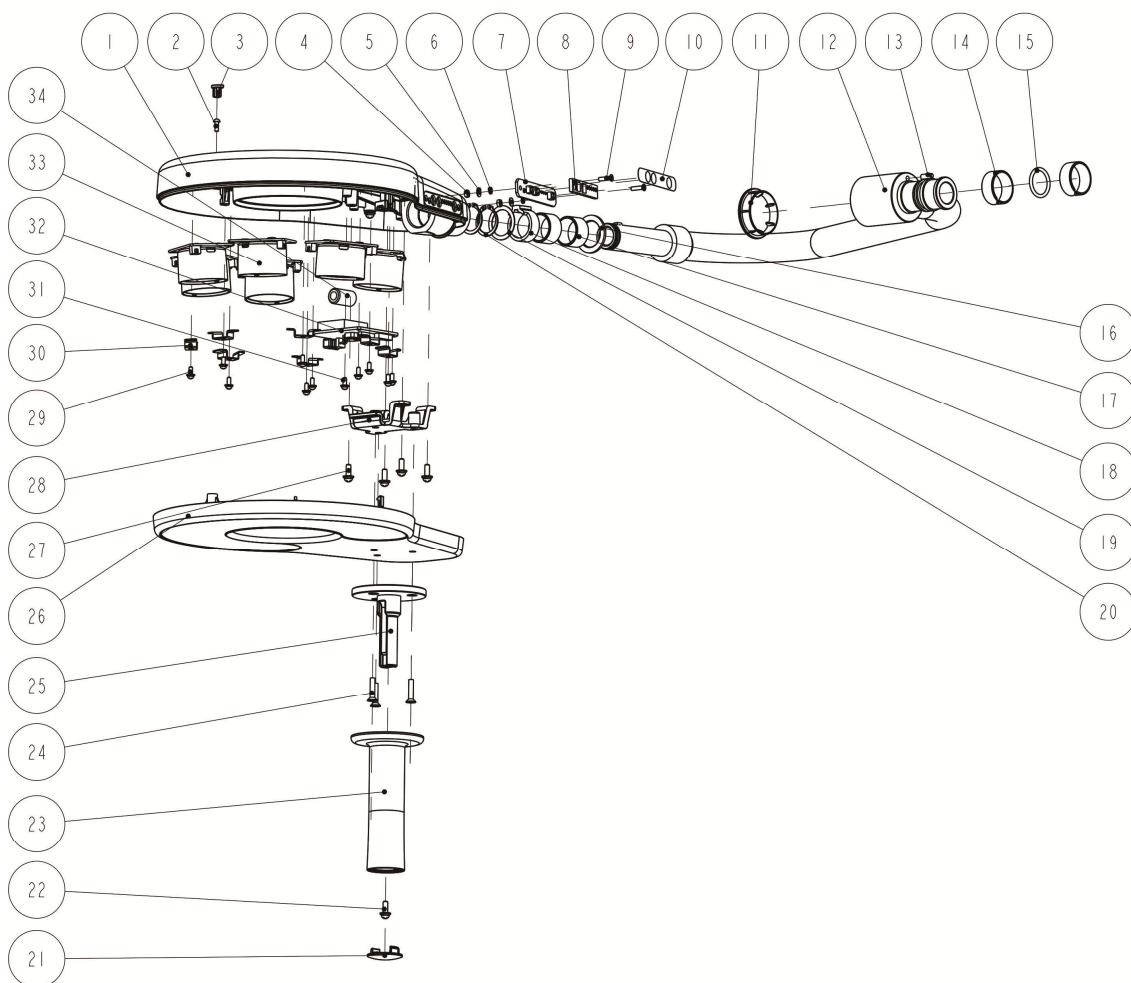


Figure 3-11 HyLED 200 lighthouse

3.6 Sterilizable Handle

3.6.1 FRU List

No.	FRU number	Description	Remark
1	115-038547-00	Sterilizable handle	
2	115-038548-00	Non-sterilizable handle	
3	043-007212-00	Central handle	

3.6.2 Typical Diagram

3.6.2.1 Sterilizable Handle

No.	Description	Qty	Remark
1	Handle core	1	
2	M4×20mm cross recessed countersunk head screw	3	
3	Central handle	1	FRU
4	M4×12mm cross recessed small pan head combination screw	1	
5	Sterilizable handle	1	FRU

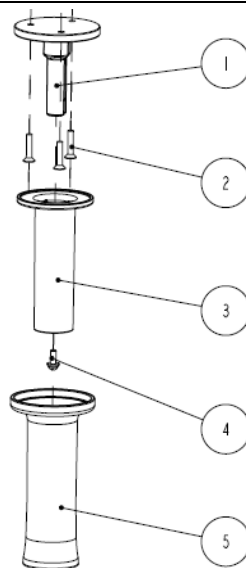
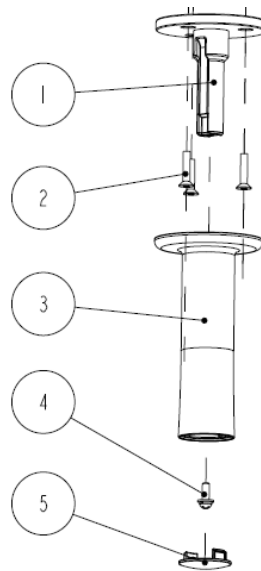


Figure 3-12 Sterilizable handle

3.6.2.2 Non-sterilizable Handle

No.	Description	Qty	Remark
1	Handle core	1	
2	M4×20mm cross recessed countersunk head screw	3	
3	Non-sterilizable handle	1	
4	M4×12mm cross recessed small pan head combination screw	1	
5	End cover for non-sterilizable handle	1	

**Figure 3-13 Non-sterilizable handle**

3.7 Backup Power Module

3.7.1 FRU List

No.	FRU number	Description	Remark
1	051-001408-00	Control board	
2	051-001476-00	Backup power board	
3	051-002502-00	Fuse board	
4	051-001475-00	Power board	
5	051-001477-00	Battery charging board	
6	051-002502-00	Lead-acid battery	

3.7.2 Typical Diagram

No.	Description	Qty	Remark
1	M4×8mm cross recessed countersunk head screw	6	
2	Upper cover	1	
3	Switch	1	
4	Indicator board	1	
5	M3×8mm cross recessed small pan head combination screw	38	
6	Terminal blocks	1	
7	Control board	1	FRU
8	Backup power board	1	FRU
9	Fuse board	1	FRU
10	Power board	1	FRU
11	Battery charging board	1	FRU
12	M4×12mm cross recessed small pan head combination screw	11	
13	Metal bar	1	

14	Lead-acid battery	2	FRU
15	Shock absorber	1	
16	Pull plain-washer	4	
17	Pull spring-washer	4	
18	Plug	4	
19	Pull nut	4	
20	Lower cover	4	
21	Embedded pull	4	
22	Cable fixer	4	
23	Washer for the backup power module	4	
24	M4×12mm cross recessed small pan head combination screw	4	

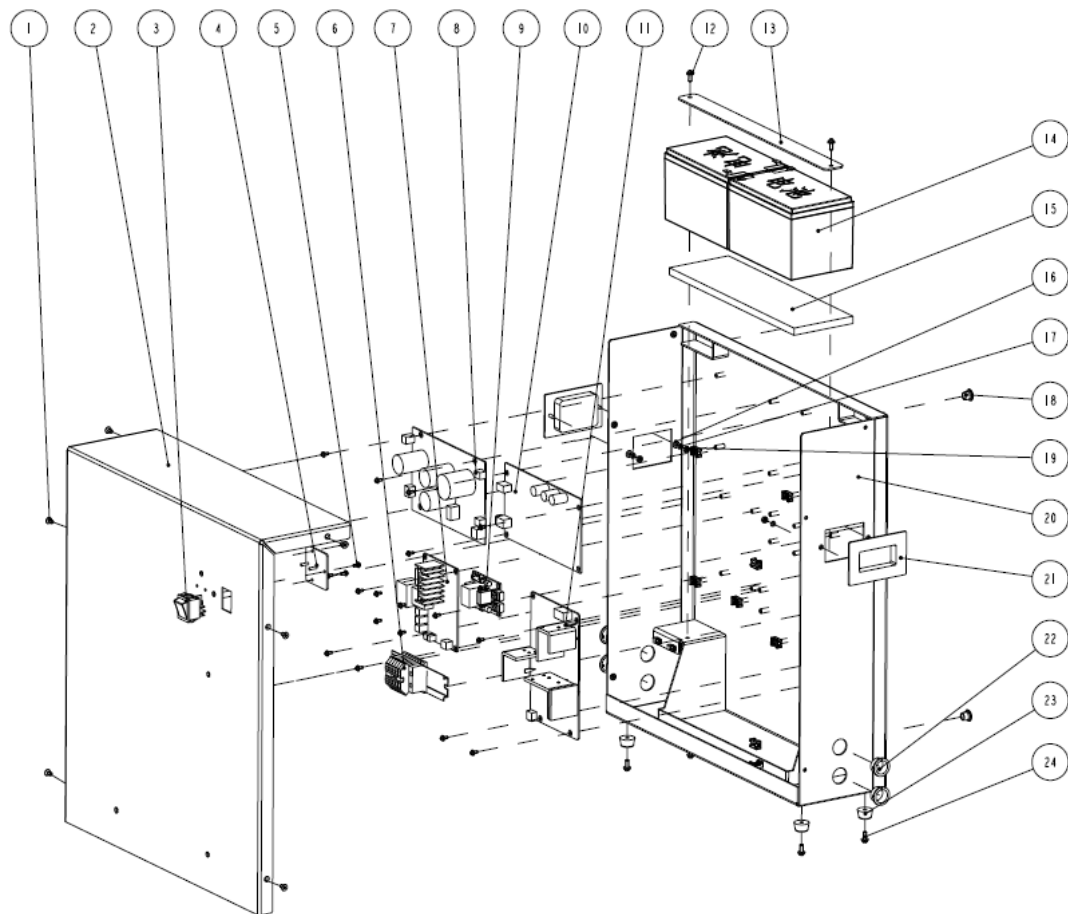


Figure 3-14 Backup power module

3.8 Ceiling Cover

3.8.1 FRU List

No.	FRU number	Description	Remark
1	115-039607-00	Ceiling cover for HyLED 600	
2	115-039608-00	Ceiling cover for HyLED 600 (with holes)	
3	115-039650-00	Ceiling cover for HyLED 600 (with single hole)	
4	115-039609-00	Ceiling cover for HyLED 200	
5	115-039610-00	Ceiling cover for HyLED 200 (with hole)	

3.8.2 Typical Diagram

3.8.2.1 Ceiling Cover for HyLED 600

No.	Description	Qty	Remark
1	Rubber junction seal	1	
2	Ceiling cover-half	2	

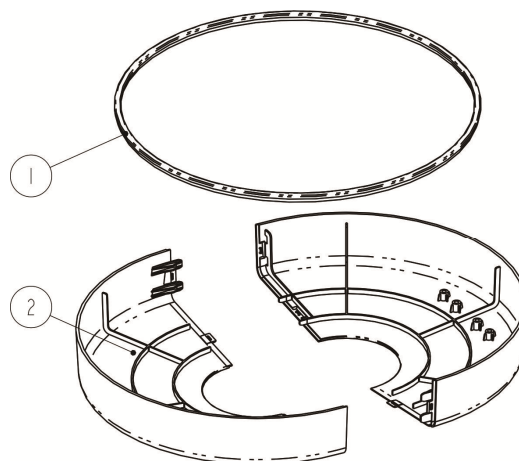


Figure 3-15 Ceiling cover

3.8.2.2 Ceiling Cover for HyLED 600

No.	Description	Qty	Remark
1	Rubber junction seal	1	
2	Silk print for battery indicator	1	
3	Ceiling cover-half	1	

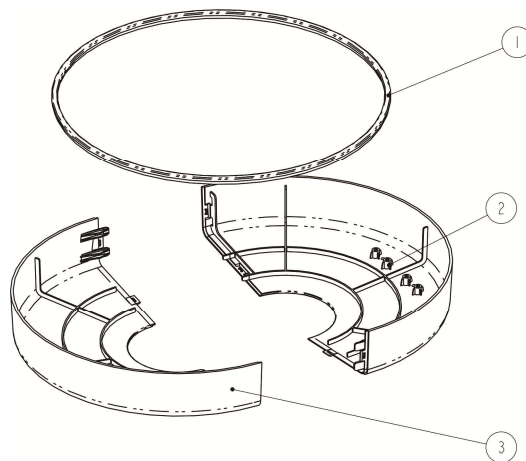


Figure 3-16 Ceiling cover

3.8.2.3 Ceiling Cover for HyLED 200

No.	Description	Qty	Remark
1	Rubber junction seal	1	
2	Ceiling cover-half	2	

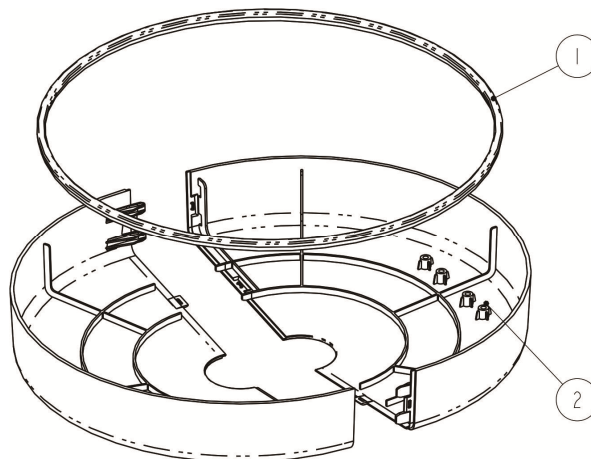
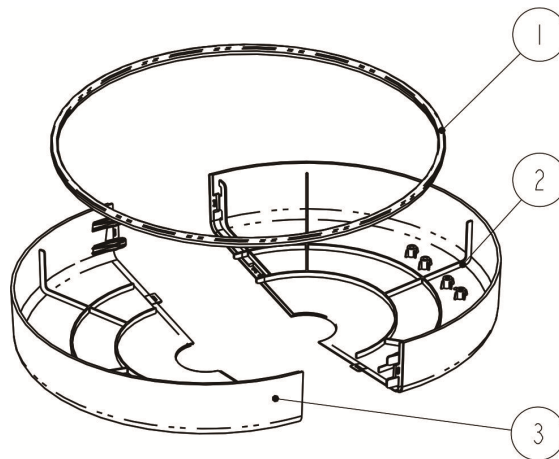


Figure 3-17 Ceiling cover

3.8.2.4 Ceiling Cover for HyLED 200

No.	Description	Qty	Remark
1	Rubber junction seal	1	
2	Ceiling cover-half	1	
3	Silk print for battery indicator	1	

**Figure 3-18 Ceiling cover**

3.9 Mobile LED Surgical Light/Examination Light

3.9.1 FRU List

No.	FRU number	Description	Remark
1	115-039639-00	Spring arm-3kg (for mobile light)	
2	115-039640-00	Spring arm-6kg (for mobile light)	
3	115-038536-00	Power module for mobile light	
4	115-038535-00	Battery module	
5	022-000007-00	Lead-acid battery	
6	051-000256-00	Power board of battery module	
7	051-002499-00	Indicator board	
8	022-000307-00	Power board of power module	

3.9.2 Typical Diagram

3.9.2.1 HyLED 600M Surgical Light

No.	Description	Qty	Remark
1	HyLED 600 lighthouse	1	
2	Spring arm-6kg (for mobile light)	1	FRU
3	Handle	1	
4	Pole	1	
5	Battery module	1	
6	Base	1	

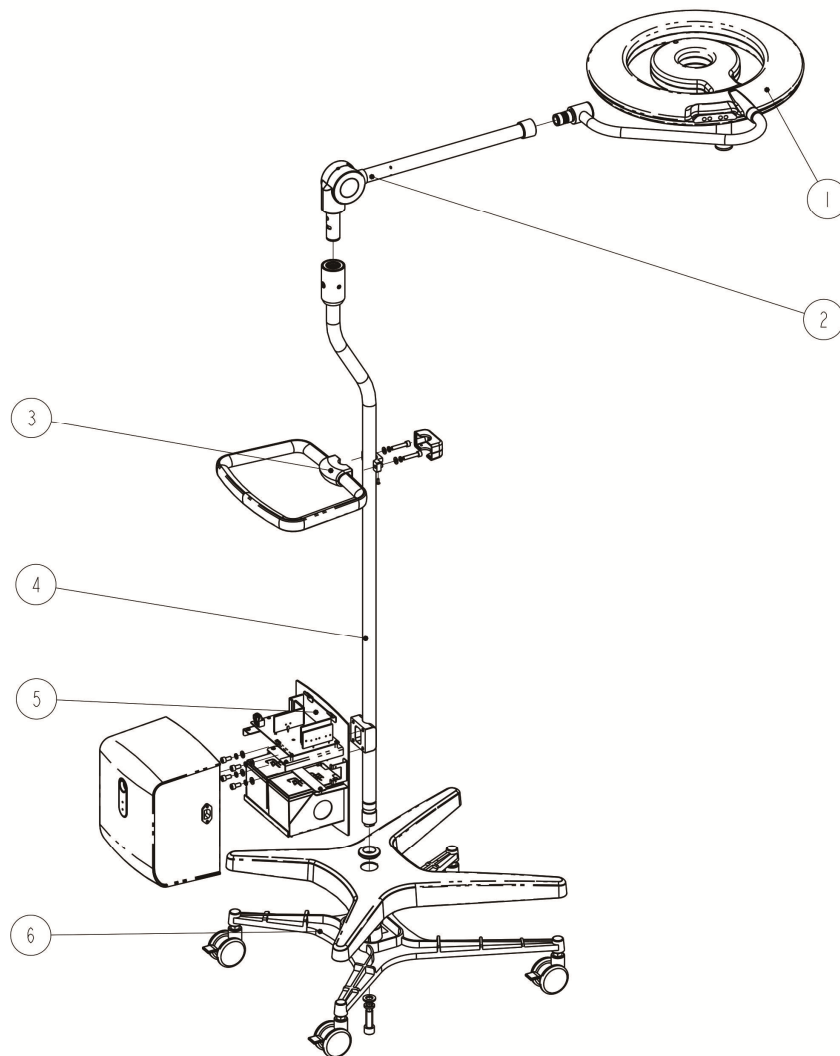
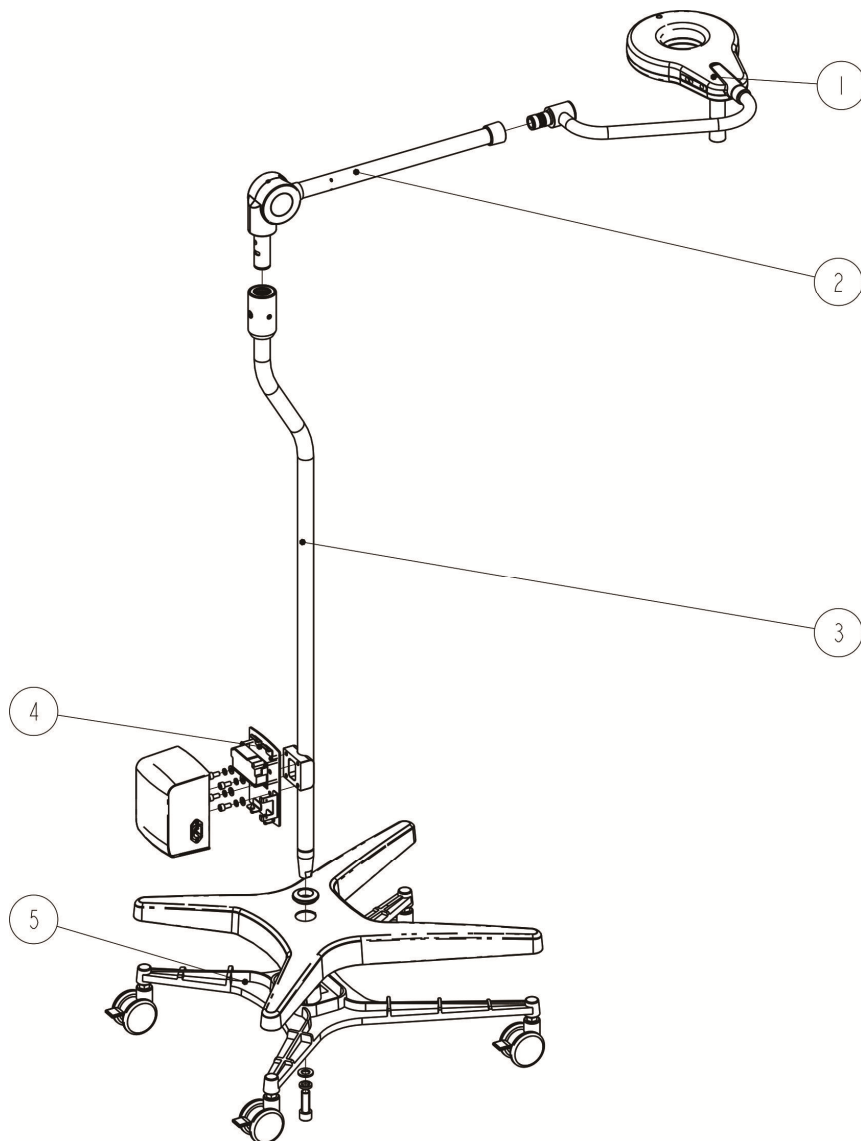


Figure 3-19 HyLED 600M surgical light

3.9.2.2HyLED 200M Examination Light

No.	Description	Qty	Remark
1	HyLED 200 lighthead	1	
2	Spring arm-3kg (for mobile light)	1	FRU
3	Pole	1	
4	Power module	1	
5	Base	1	

**Figure 3-20 HyLED 200M examination light**

3.9.2.3 Power Module of Mobile Light

No.	Description	Qty	Remark
1	Front cover	1	
2	M3×8mm cross recessed small pan head combination screw	4	
3	Power board	1	FRU
4	M8×16mm hexagon socket head cap screw	4	
5	Φ8mm spring washer	4	
6	Φ8mm plain washer	4	
7	M4×8mm cross recessed small pan head combination screw	2	
8	M3×12mm cross recessed countersunk head screw	2	
9	Power connector	1	
10	Φ4mm spring washer	2	
11	M4×16mm hexagon socket head cap screw	2	
12	Back cover	1	

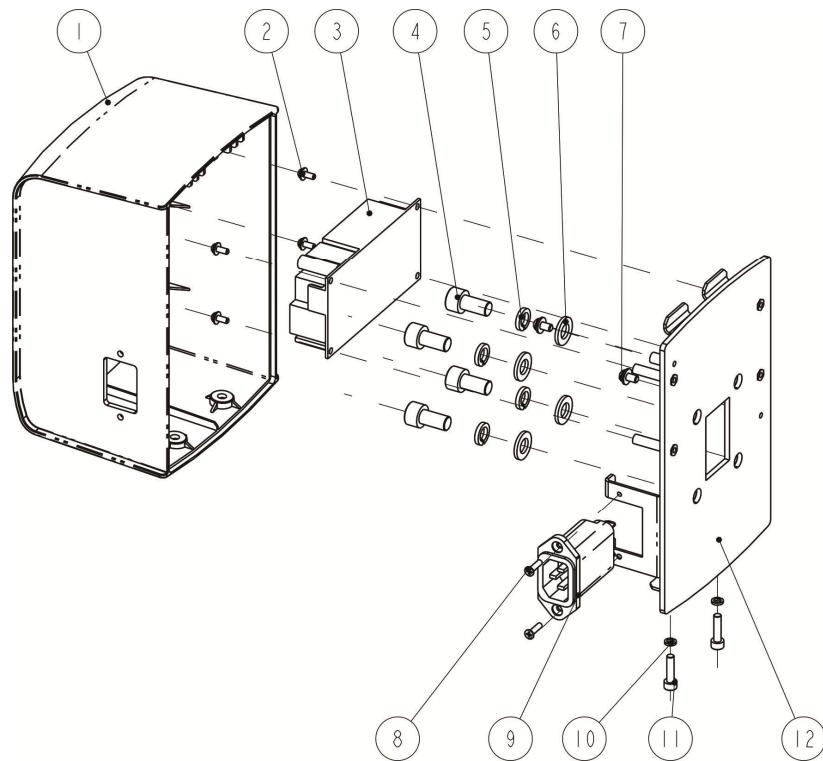


Figure 3-21 Power module of mobile light

3.9.2.4 Battery Module of Mobile Light

No.	Description	Qty	Remark
1	Switch	1	
2	Front cover	1	
3	M8×16mm hexagon socket head cap screw	4	
4	Φ8mm spring washer	4	
5	Φ8mm plain washer	4	
6	Shock absorber	1	
7	Power board	1	FRU
8	M3×8mm cross recesses small pan head combination screw	4	
9	M3×12mm cross recessed countersunk head screw	2	
10	Power connector	1	
11	Indicator board	1	FRU
12	M3×8mm cross recesses small pan head combination screw	3	
13	Lead-acid battery	2	
14	M4×12mm cross recesses small pan head combination screw	2	
15	M4×16mm hexagon socket head cap screw	2	
16	Φ4mm spring washer	2	
17	Metal bar	1	
18	M4×12mm cross recesses small pan head combination screw	2	
19	Back cover	1	

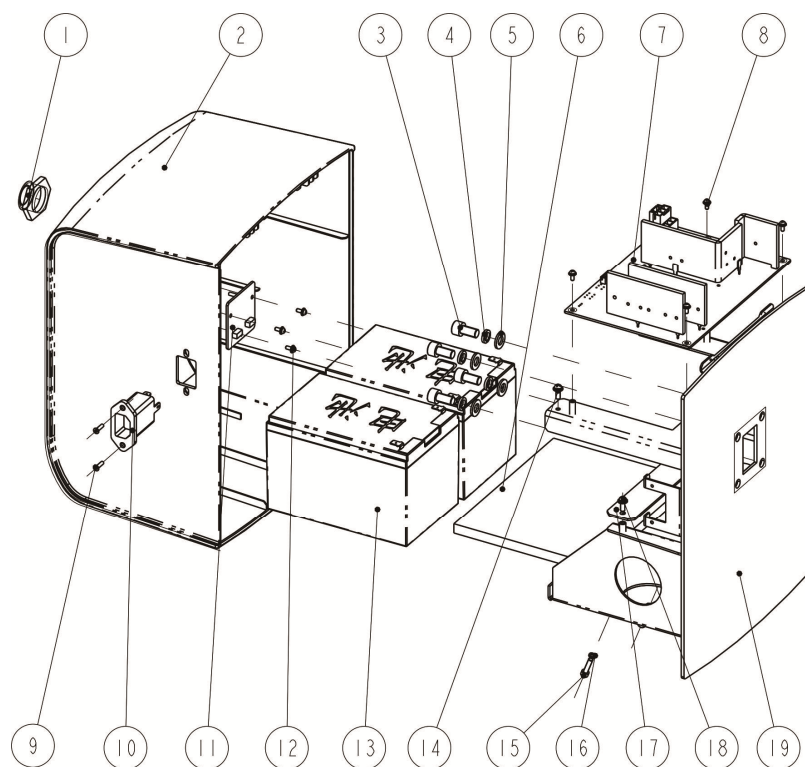


Figure 3-22 Battery module of mobile light

3.10 HyLED 200 (Pendant Version)

3.10.1 FRU List

No.	FRU number	Description	Remark
1	051-002777-00	Indicator board	
2	115-036868-00	Light-duty spring arm-3kg	

3.10.2 Typical Drawing

No.	Description	Qty	Remark
1	Light-duty mechanical arm	1	
2	Securing nut	1	
3	M6×12mm hexagon socket setting screw	1	
4	Installation plate for indicator board	1	
5	M4×12mm cross recessed small pan head combination screw	2	
6	Indicator board	1	FRU
7	M3×8mm cross recessed small pan head combination screw	2	
8	Base of pendant	1	
9	M3×8mm cross recessed countersunk head screw	1	
10	3-pole connector	1	
11	Swivel arm assembly (600mm)	1	
12	Light-duty spring arm-3kg	1	FRU
13	HyLED 200 lighthead	1	

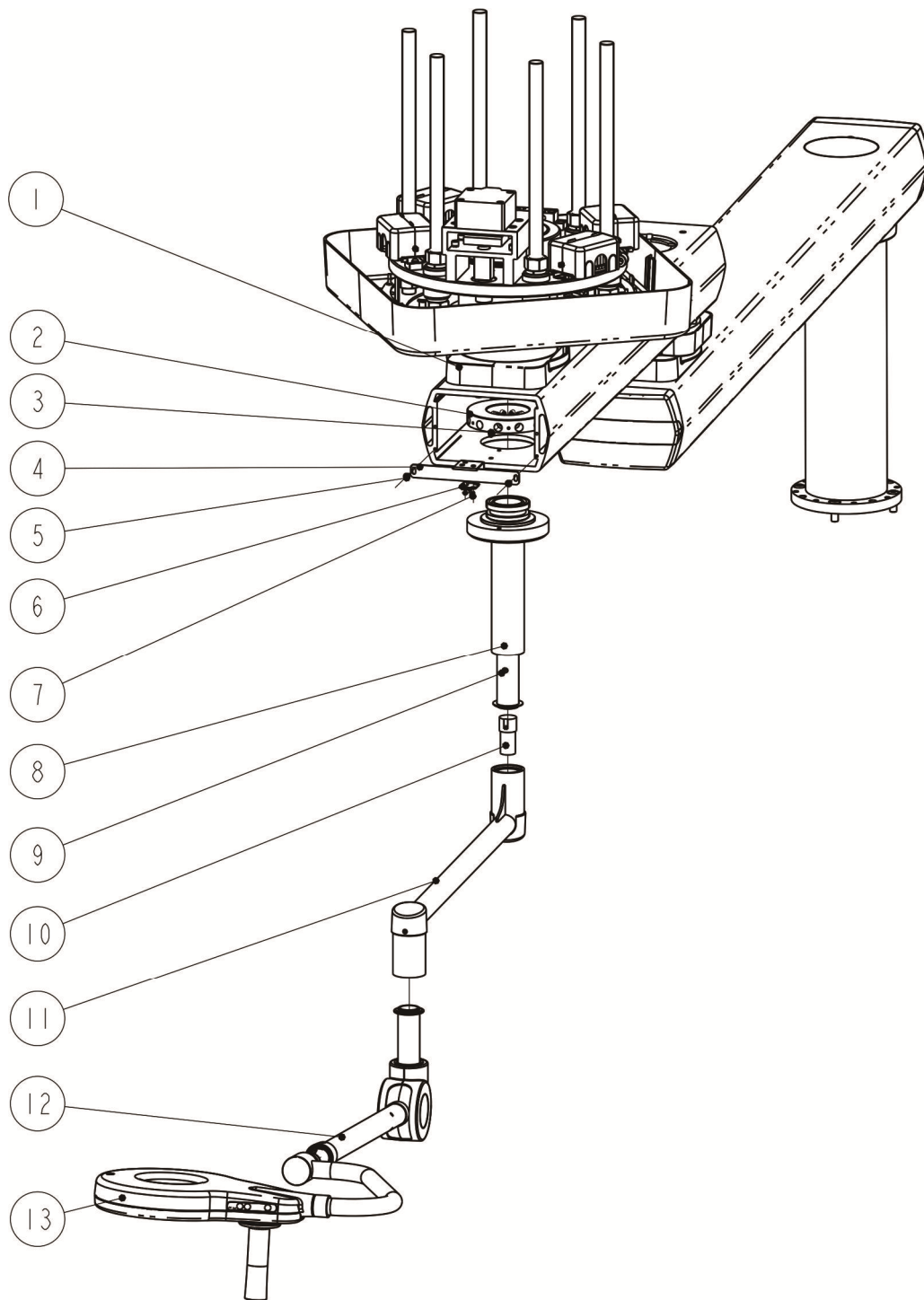


Figure 3-23 HyLED 200 (pendant version)

3.11 Other FRUs

No.	FRU number	Description	Remark
1	115-038531-00	Fuse module	
2	115-038533-00	Power module	
3	115-040789-00	Fuse module (for South Africa use)	
4	115-040790-00	Power module (for South Africa use)	

4 Replacement

WARNING

- Make sure the mains supply has been disconnected before replacing any component.

4.1 Tools

Table 4-1 Tools needed

Tool	Qty	Model/Type
Lift	1	Not specified
Electric saw	1	Not specified
Measuring tape	1	5m
Hammer	1	Not specified
Torque wrench	1	Up to 250Nm
Drill	1	Not specified
Spirit level	1	Magnetic with horizontal and vertical bubbles
Allen key	1 set	2mm/2.5mm/3mm/4mm/5mm/8mm (one for each type)
Open-end wrench	2	24mm
Adjustable wrench	1	0-25mm
Socket wrench	1	5mm/8mm
Flat-bladed screwdriver	1	5mm (longer than 200mm)
Philips screwdriver	1	5mm (longer than 200mm)
Lifting equipment	/	/
Knife	1	Not specified
Tweezers	1	Not specified
Multimeter	1	Not specified
Straight circlip pliers	1	Not specified

4.2 HyLED 600 Replacement

4.2.1 Replacing Lighthead

1. Remove the M3×6mm cross recessed countersunk head screw fixing the sleeve.

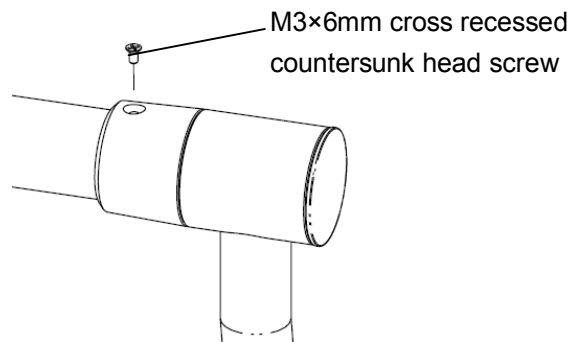


Figure 4-1 Removing the sleeve fixing screw

2. Move the sleeve backwards and then remove the securing segment.

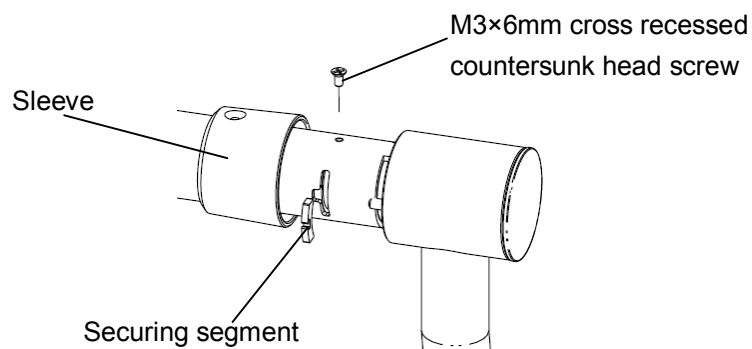


Figure 4-2 Removing the securing segment

3. Disassemble the gimbal joint from the spring arm, and then disconnect the cable connections.

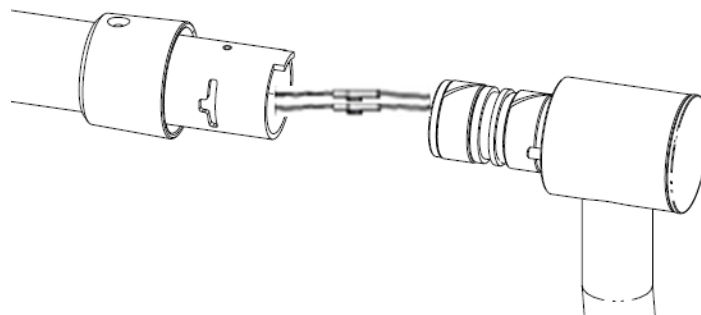


Figure 4-3 Disconnecting the cables

4. Reinstall the lighthead by following the above instructions in reverse order.

4.2.2 Replacing Spring Arm

1. Remove the 2 M3×20mm cross recessed countersunk head screws fixing the end cover of the swivel arm. Remove the end cover and pull the 3-pole connector out.

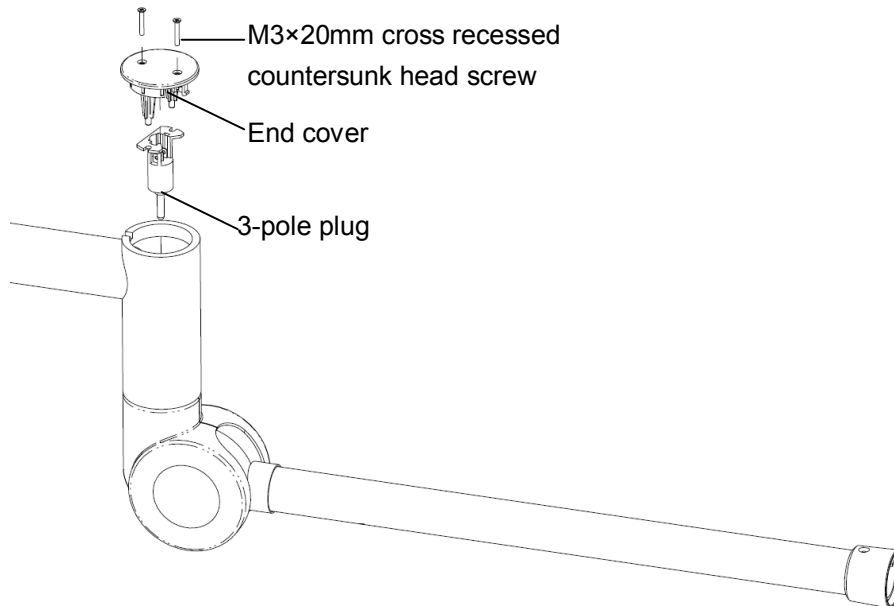


Figure 4-4 Pulling the connector out

2. Use a pair of straight circlip pliers to remove the circlip. Remove the plain washer and then the spring arm. Do not drop the spring arm down.

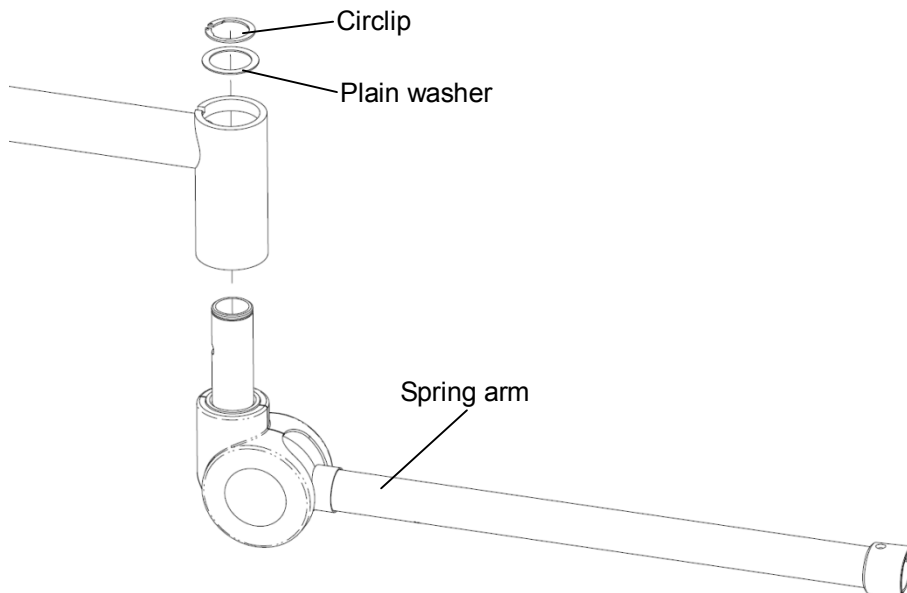


Figure 4-5 Removing the spring arm

3. Reinstall the new spring arm by following the above instructions in reverse order.

4.2.3 Replacing Sterilizable Handle

1. Grab the lighthead with one hand. Grab the handle with the other hand. Press the button at the bottom and pull the handle downward.

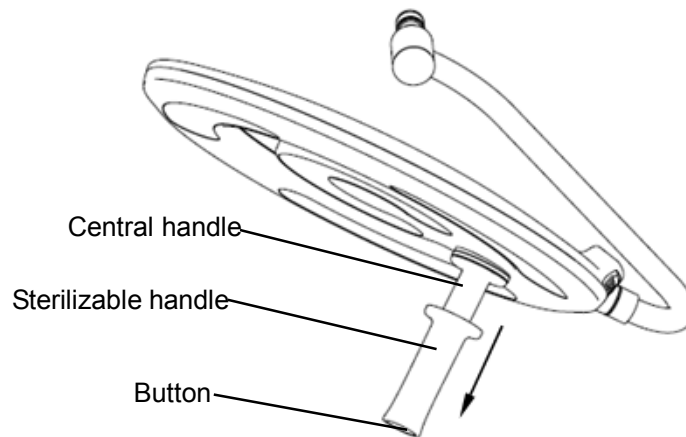


Figure 4-6 Removing the sterilizable handle

2. Slide the new sterilizable handle onto the central handle of the lighthead. Push the sterilizable handle upward until it clicks. Pull the sterilizable handle downward to make sure it is not loose.

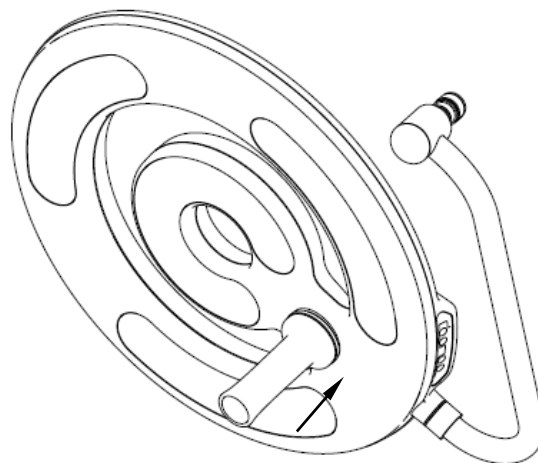


Figure 4-7 Installing a new sterilizable handle

⚠ WARNING

- The sterilizable handle is to be used by sterile personnel only.
 - Be sure to sterilize the sterilizable handle each time before using it.
-

4.2.4 Replacing Lamp Frame

1. Remove the screw cap and M3×14mm cross recessed pan head screw.

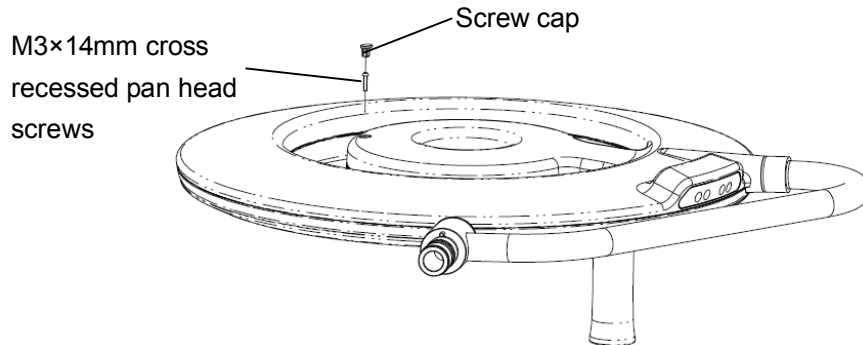


Figure 4-8 Removing the screw

2. Carefully turn over the lighthouse. Remove the sterilizable handle and handle seat.

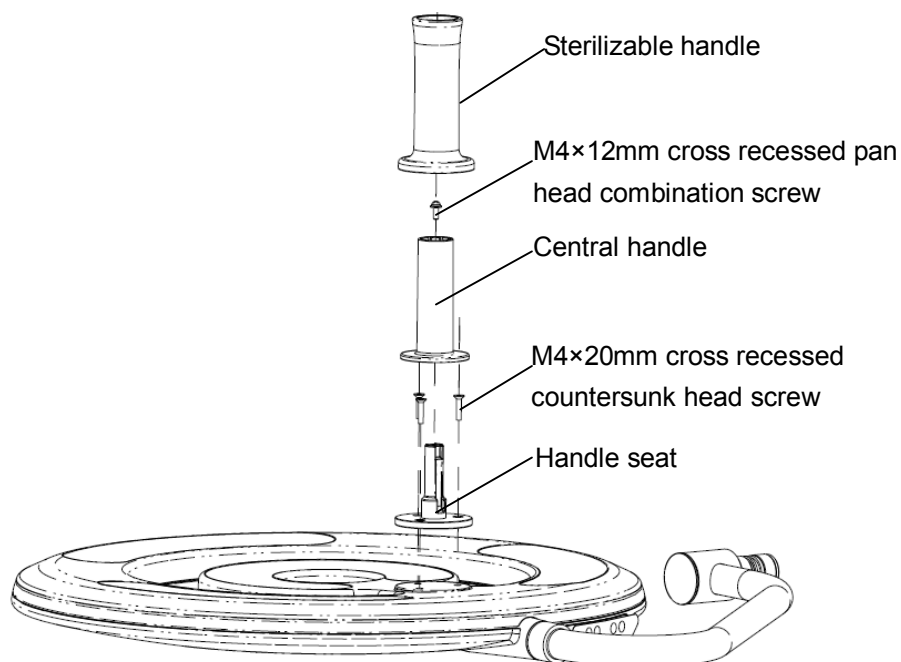


Figure 4-9 Removing the handle seat

3. Slightly split the sealing strip from the lighthouse. Remove the 7 M3×8mm cross recessed pan head combination screws.

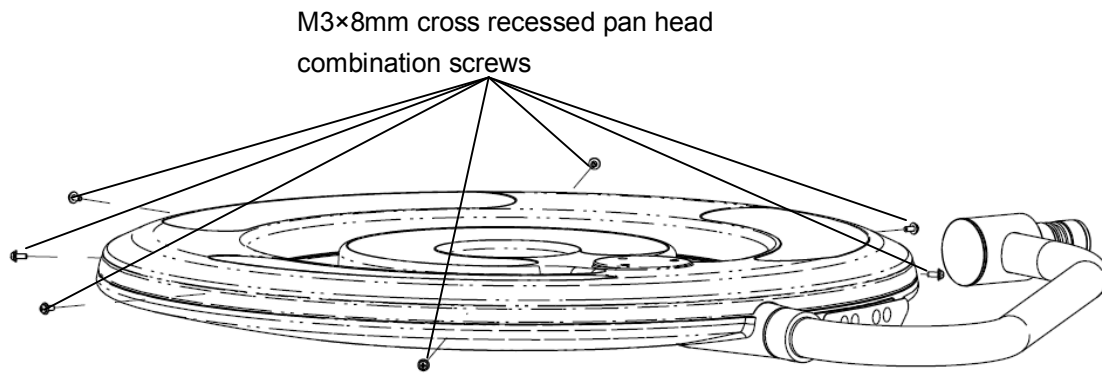


Figure 4-10 Removing the screws

4. Remove the lamp frame and the sealing strip.

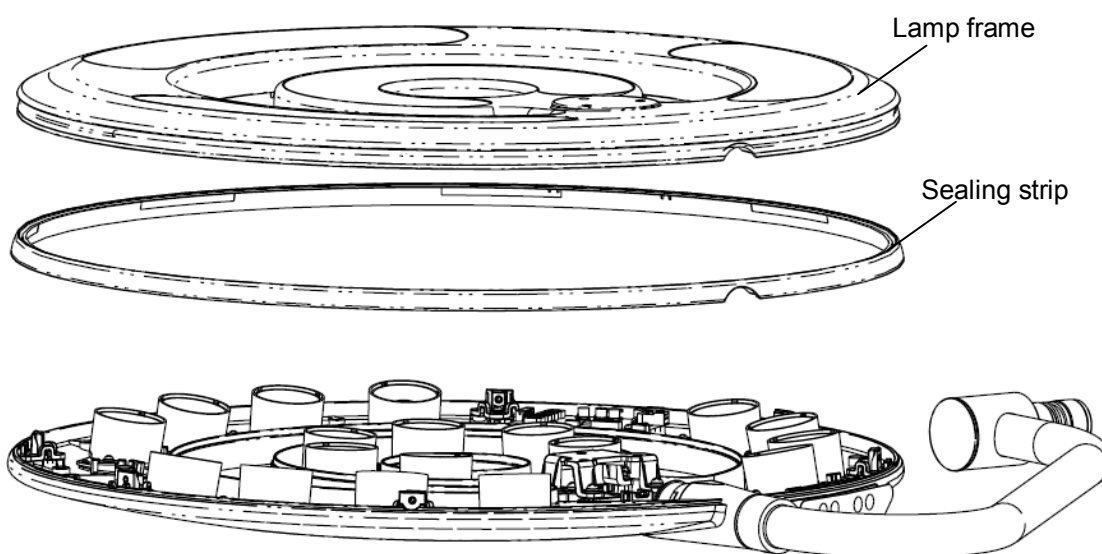


Figure 4-11 Removing the lamp frame and sealing strip

NOTE

- Be sure to keep all the screws and removed components well for later reinstallation.

5. Reinstall a new lamp frame and sterilizable handle by following the above instructions in reverse order.

CAUTION

- During the reinstalling process, be sure to protect the glass from damage. Do not directly touch the glass with your hands. Otherwise, it may become dirty.

NOTE

- Align the sealing strip with the locating slots on the lamp frame before it is fully engaged with the lamp frame. Do not draw the sealing strip excessively. Otherwise, it may deform or be broken.

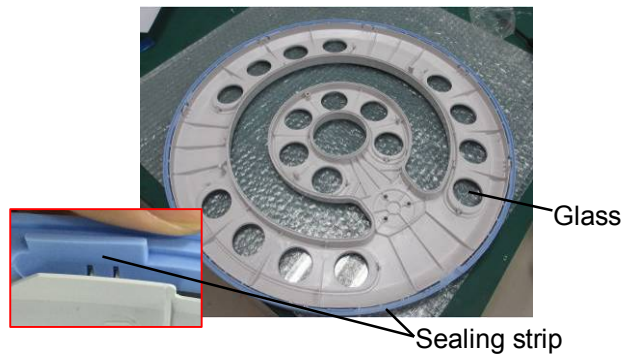


Figure 4-12 Installing the sealing strip

4.2.5 Replacing LED Unit

1. Remove the lamp frame as instructed in 4.2.4 .
2. Disconnect the wires connected to the LED unit. Loosen the 2 M3×8mm cross recessed small pan head combination screws before removing the locking piece.
3. Remove the LED unit.

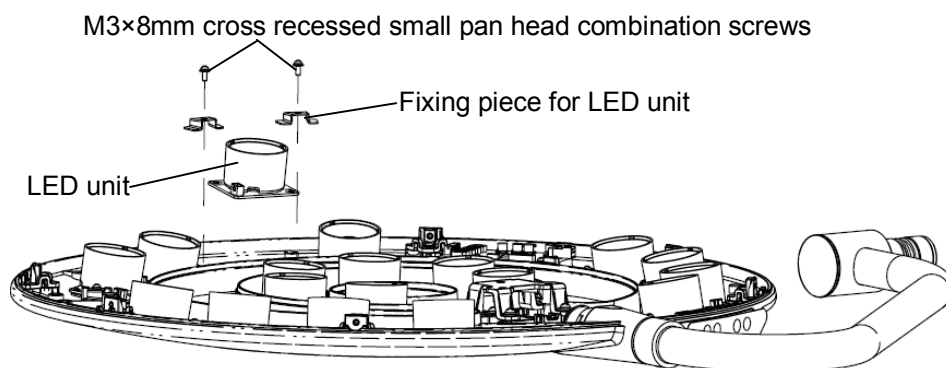


Figure 4-13 Removing the LED unit

4. Reinstall the new LED unit by following the above instructions in reverse order.

NOTE

- Please refer to 6.1.1 for LED unit wiring.

5. Reinstall the lamp frame and handle as instructed in 4.2.4 .

4.2.6 Replacing Drive Board

1. Remove the lamp frame as instructed in 4.2.4 .
2. Disconnect the wires connected to the drive board. Loosen the 4 M3×8mm cross recessed pan head screws before removing the drive board.

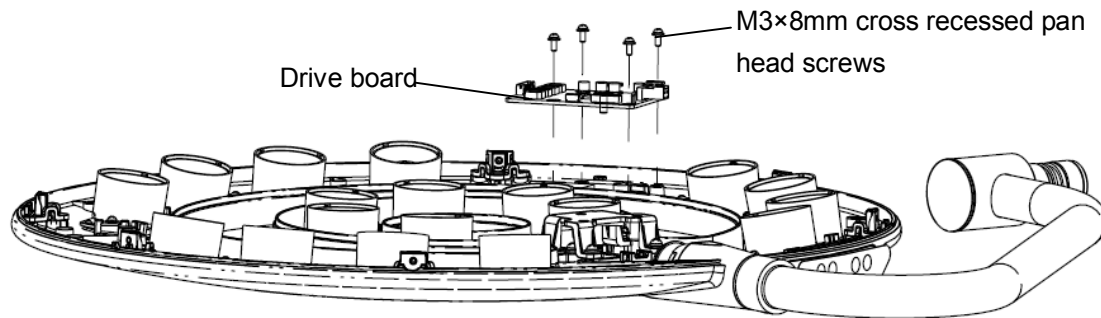


Figure 4-14 Removing the drive board

3. Reinstall a new drive board and the lamp frame by following the above instructions in reverse order.

NOTE

- Please refer to 6.2.1 for the drive board reconnection.
-

4.2.7 Replacing Control Unit

1. Remove the lamp frame as instructed in 4.2.4 .
2. Disconnect the cable connection to the control unit.
3. Remove the sticker of the control unit.
4. Loosen the M3×16mm cross recessed pan head screw.
5. Remove the support for the micro-switch cap, and disassemble other parts together.
6. Replace the control unit or the damaged parts with a new one(s).
7. Reinstall the control unit by following the above instructions in reverse order. The order of the parts is shown in the figure below.

NOTE

- Clean the sticker surface and align the hole positions on the sticker with the counterparts on the support before pasting.

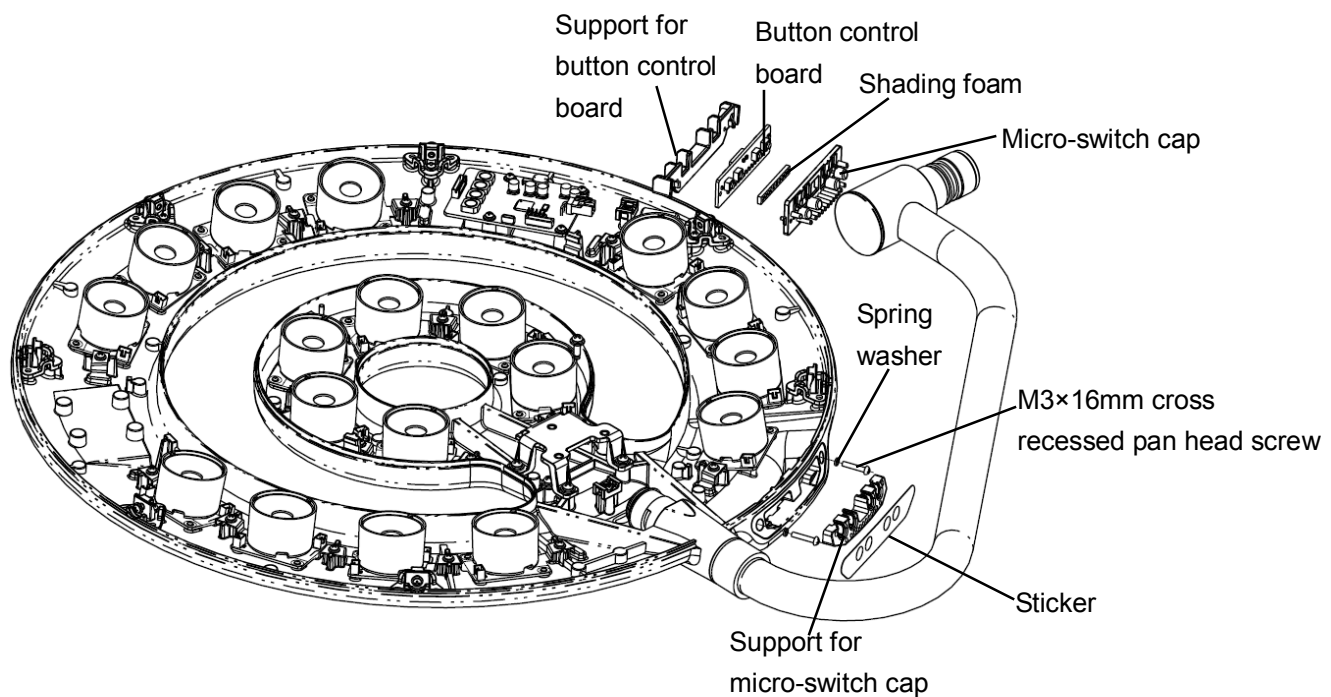


Figure 4-15 Replacing the control unit

4.3 HyLED 200 Lighthead Replacement

4.3.1 Replacing Lighthead

- 1 Remove the M3×6mm cross recessed countersunk head screw fixing the sleeve.

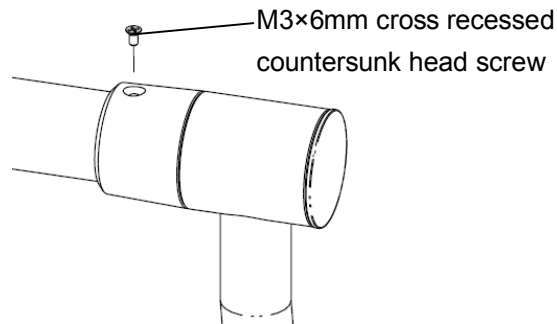


Figure 4-16 Removing the sleeve fixing screw

- 2 Move the sleeve backwards and then remove the securing segment.

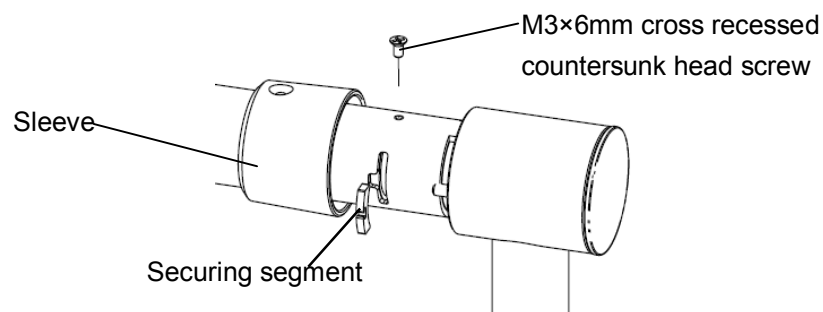


Figure 4-17 Removing the securing segment

- 3 Disassemble the gimbal joint from the spring arm, and then disconnect the cable connections.

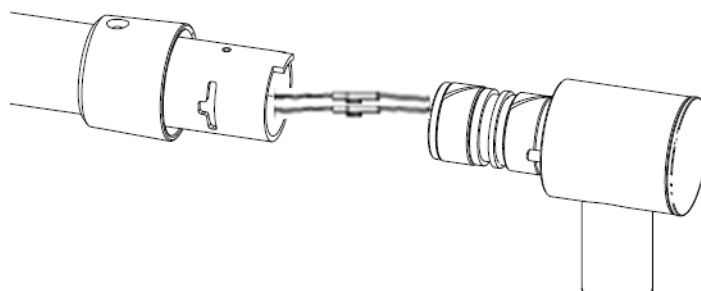


Figure 4-18 Disconnecting the cables

4. Reinstall the lighthead by following the above instructions in reverse order.

4.3.2 Replacing Spring Arm

- 1 Before pulling the 3-pole plug out of the swivel arm, remove the M3×6mm cross recessed countersunk head screw.

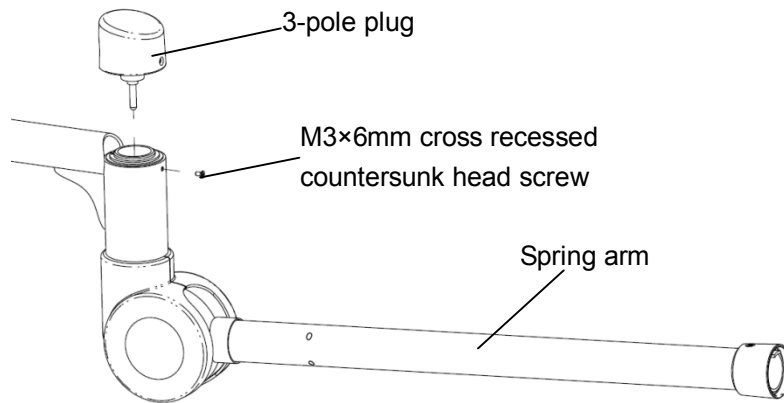


Figure 4-19 Removing the 3-pole plug

- 2 Use a pair of straight circlip pliers to remove the circlip. Remove the plain washer and then the spring arm. Do not drop the spring arm down.

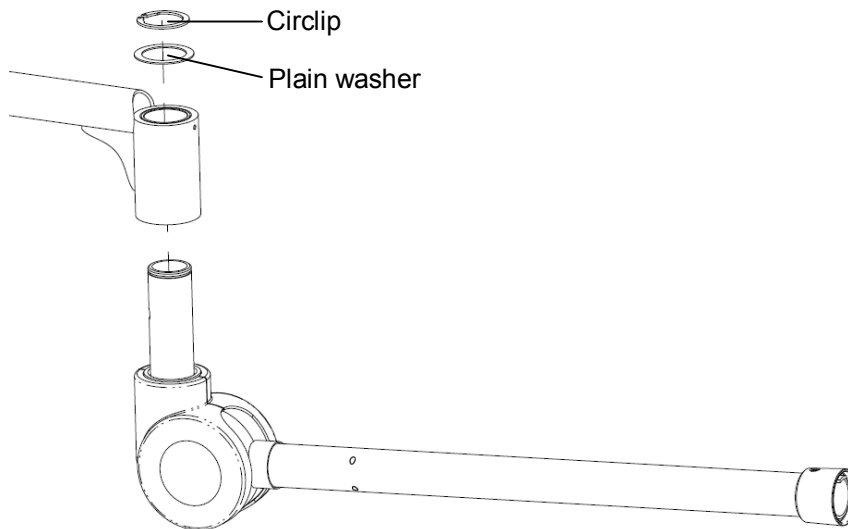


Figure 4-20 Removing the spring arm

- 3 Reinstall the spring arm by following the above instructions in reverse order.

4.3.3 Replacing Non-sterilizable Handle with Sterilizable

Handle

1. Remove the end cover of the non-sterilizable handle from the gap with a flat-bladed screwdriver.
2. Remove the M4×12mm cross recessed pan head combination screw fixing the non-sterilizable handle with a Philips screwdriver. The handle seat will be exposed.

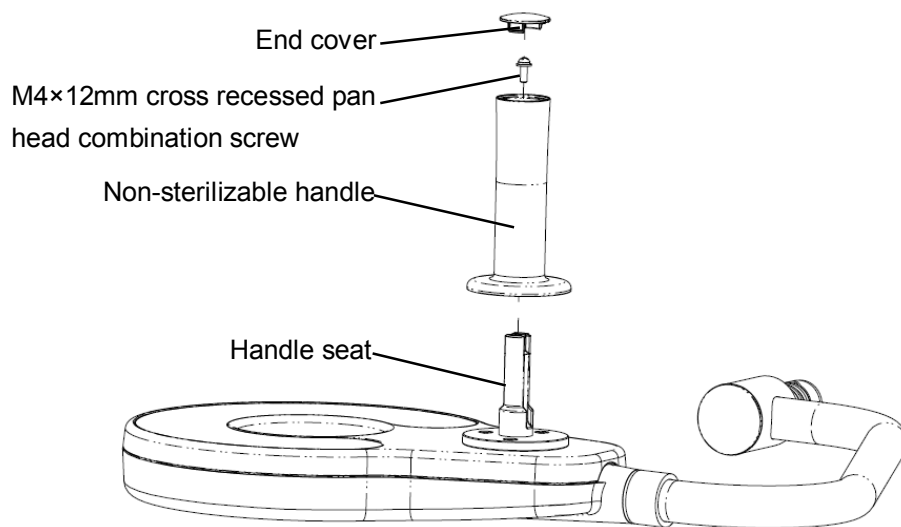


Figure 4-21 Removing the non-sterilizable handle

3. Slide the central handle onto the handle seat and fix it with the removed M4×12mm combination screw.
4. Slide the sterilizable handle onto the central handle of the lighthead. Push the sterilizable handle upward until it clicks. Pull the sterilizable handle downward to make sure it is not loose.

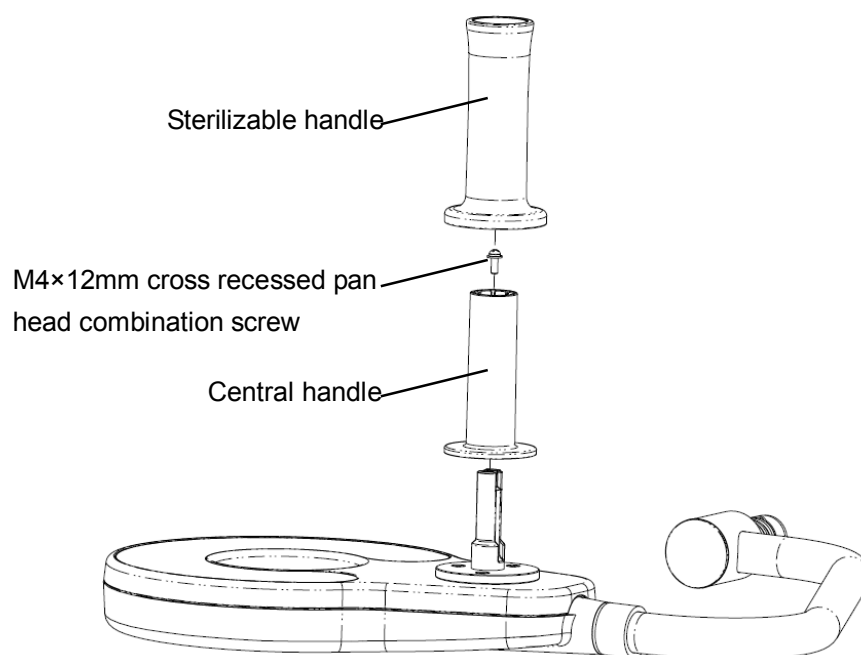


Figure 4-22 Installing the sterilizable handle

⚠ WARNING

- The sterilizable handle is to be used by sterile personnel only.
 - Only the sterilizable handle can be sterilized.
-

4.3.4 Replacing Lamp Frame

1. Remove the screw cap and M3×14mm cross recessed pan head screw.

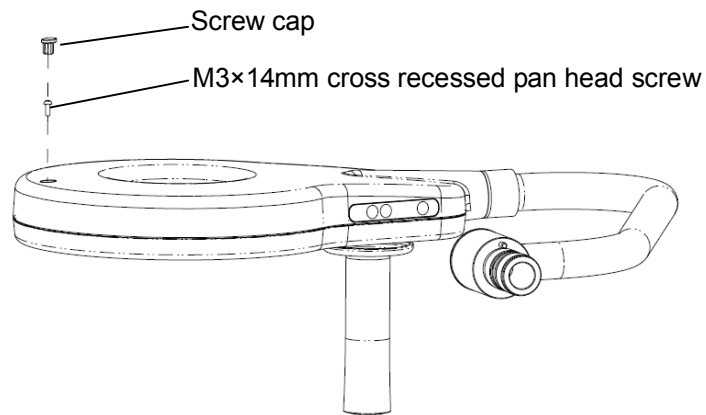


Figure 4-23 Removing the screw

2. Carefully remove the end cover before removing the non-sterilizable handle. Do not damage it.
3. Loosen the M4×12mm combination screw before removing the non-sterilizable handle.
4. Before removing the handle seat, remove the 3 M4×20mm cross recessed countersunk head screws fixing it.

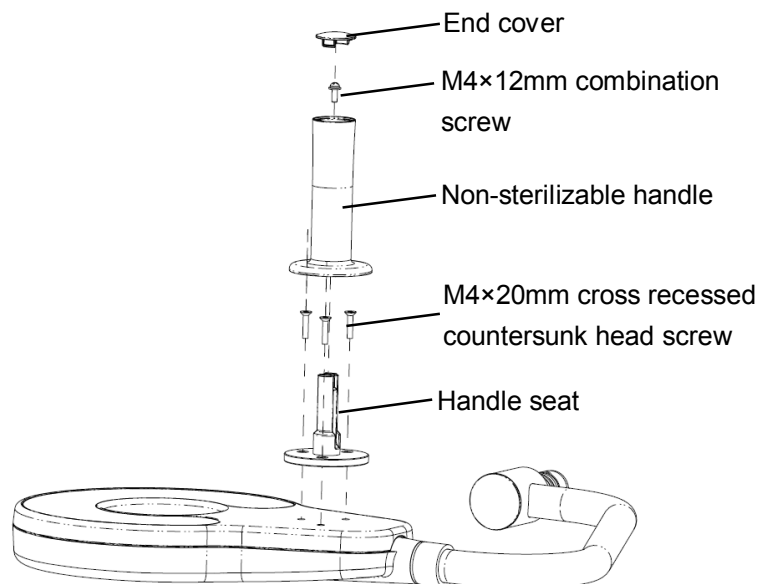


Figure 4-24 Removing the handle seat

5. Carefully remove the lamp frame. The lamp frame is engaged with the lamp housing hood through clips.

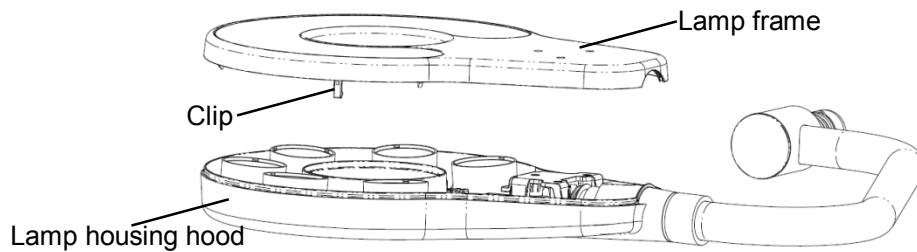


Figure 4-25 Removing the lamp frame

NOTE

- Be sure to keep all the screws and the non-sterilizable handle well for later reinstallation.

-
6. Reinstall the lamp frame by following the above instructions in reverse order.

⚠ CAUTION

- During the reinstalling process, be sure to protect the glass from damage. Do not directly touch the glass with your hands. Otherwise, it may become dirty.
-

4.3.5 Replacing LED Unit

1. Remove the lamp frame as instructed in 4.3.4 .
2. Disconnect the wires connected to the LED unit. Loosen the M3×8mm cross recessed pan head combination screws before removing the fixing piece.
3. Remove the LED unit.

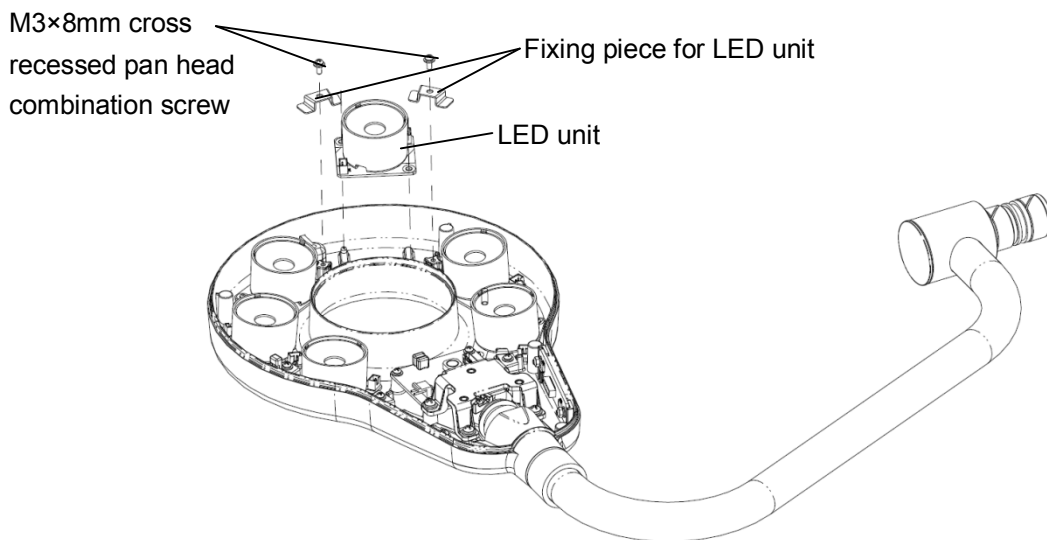


Figure 4-26 Removing the LED unit

4. Reinstall the new LED unit by following the above instructions in reverse order.

NOTE

- Please refer to 6.1.2 for LED unit wiring.
-

5. Reinstall the lamp frame and handle as instructed in 4.3.4 .

4.3.6 Replacing Drive Board

1. Remove the lamp frame as instructed in 4.3.4 .
2. Disconnect the wires connected to the drive board. Loosen the M3×8mm cross recessed pan head screws before removing the drive board.

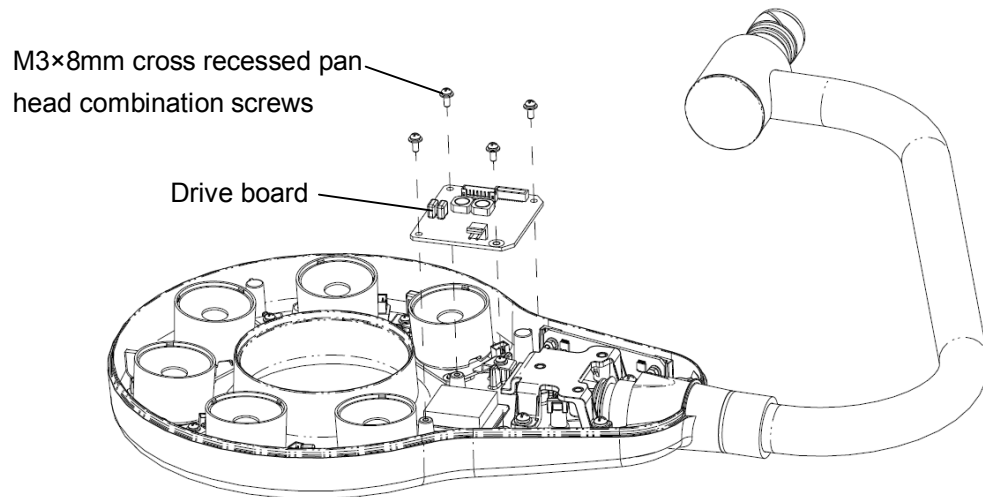


Figure 4-27 Removing the drive board

3. Reinstall a new drive board and the lamp frame by following the above instructions in reverse order.

NOTE

- Please refer to 6.2.2 for the drive board reconnection.
-

4.3.7 Replacing Control Unit

1. Remove the lamp frame as instructed in 4.2.4 .
2. Disconnect the cable connection to the control unit.
3. Remove the sticker of the control unit.
4. Loosen the M3×12mm cross recessed countersunk head screw and disassemble other parts together.
5. Replace the control unit or the damaged parts with a new one(s).
6. Reinstall the control unit by following the above instructions in reverse order. The order of the parts is shown in the figure below.

NOTE

- **Clean the sticker surface and align the hole positions on the sticker with the counterparts on the button control board before pasting.**
-

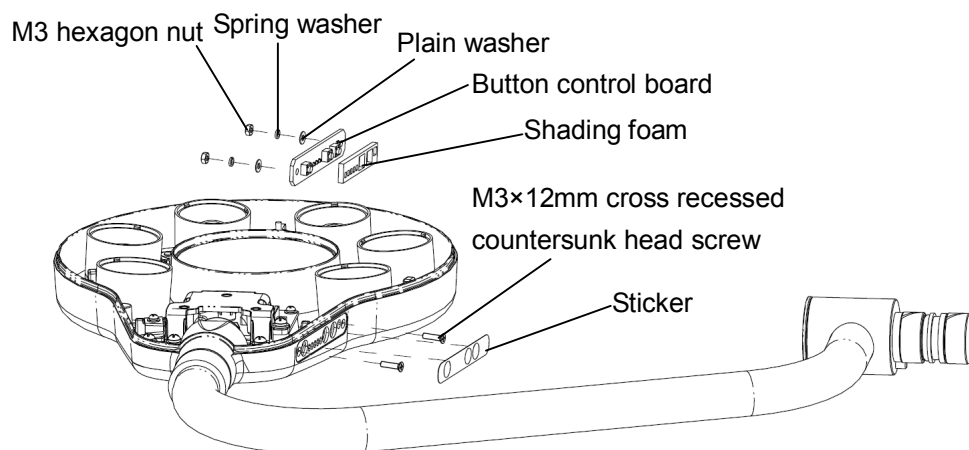


Figure 4-28 Replacing the control unit

4.4 Replacing Power Module/Fuse Module

4.4.1 Replacing Fuse Module

1. Loosen the M4×8mm cross recessed pan head combination screws before removing the upper cover.

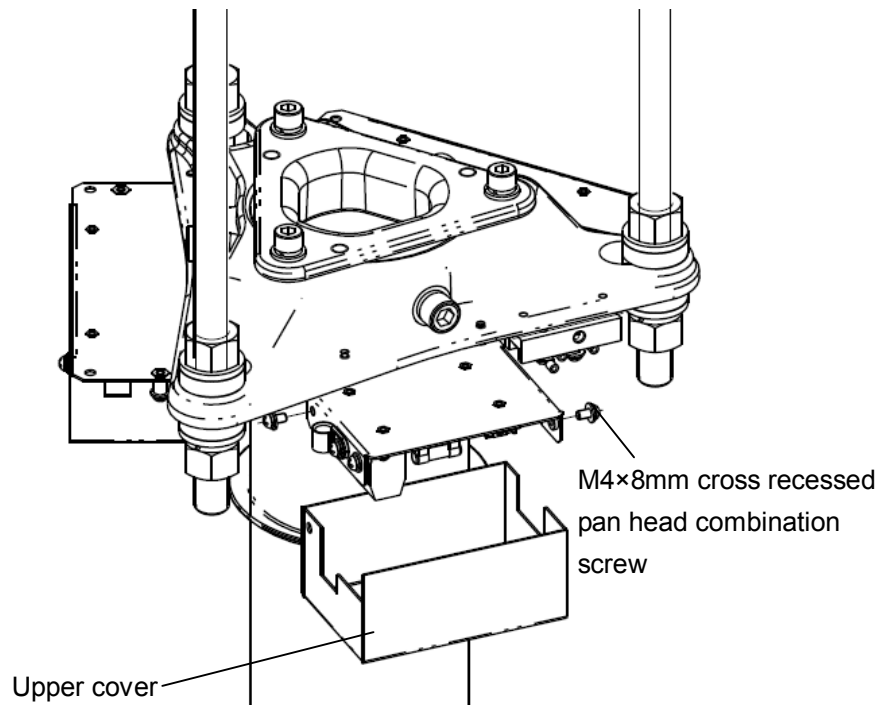


Figure 4-29 Removing the upper cover

2. Loosen the screw on the earth bar fixing the protective earth wire for the fuse module.
3. Loosen the screws fixing the mains supply input wires and carefully disconnect the mains supply.
4. Disconnect the power-input cable to the power module.

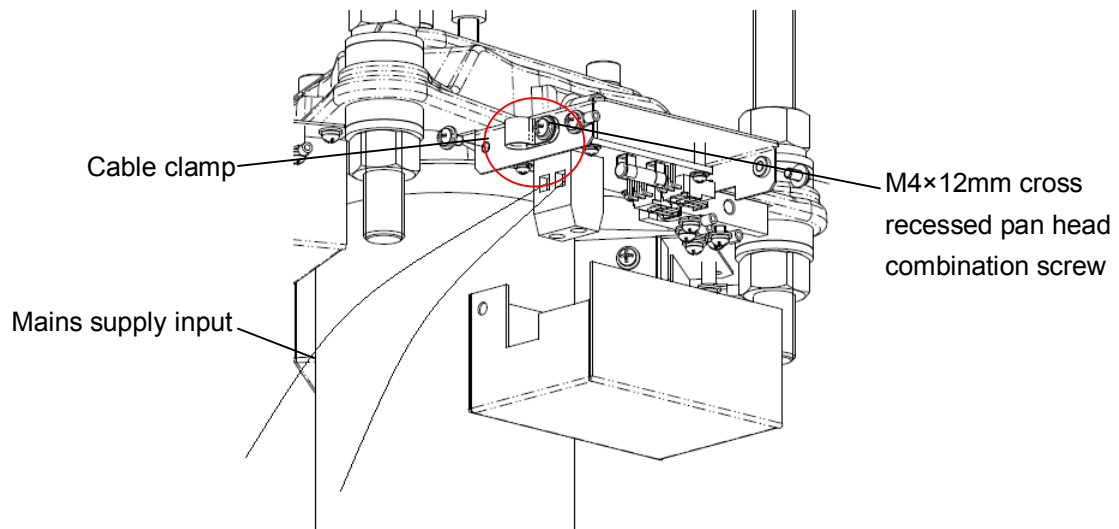


Figure 4-30 Disconnecting the cables/wires

5. Loosen the 2 M4×12mm cross recessed combination screws before removing the fuse module.

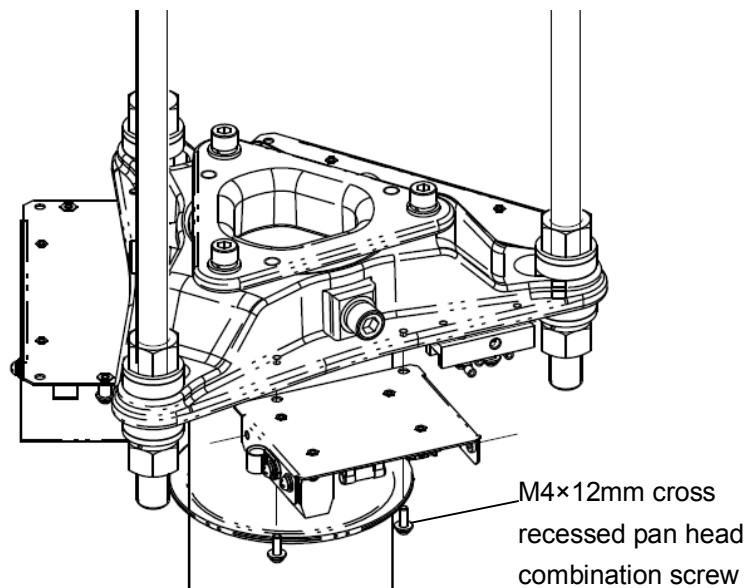


Figure 4-31 Removing the fixing screw

6. Reinstall the fuse module by following the above instructions in reverse order.

NOTE

- Please refer to the installation manual for electrical connections of the fuse module.
-

4.4.2 Replacing Power Module

1. Loosen the screw on the earth bar fixing the protective earth wire for the power module. Disconnect the cables connected to the power module, including the lighthouse power cable from the flange tube and power-input cable from the fuse module.
2. Loosen the 2 M4×12mm cross recessed pan head combination screws before removing the power module.

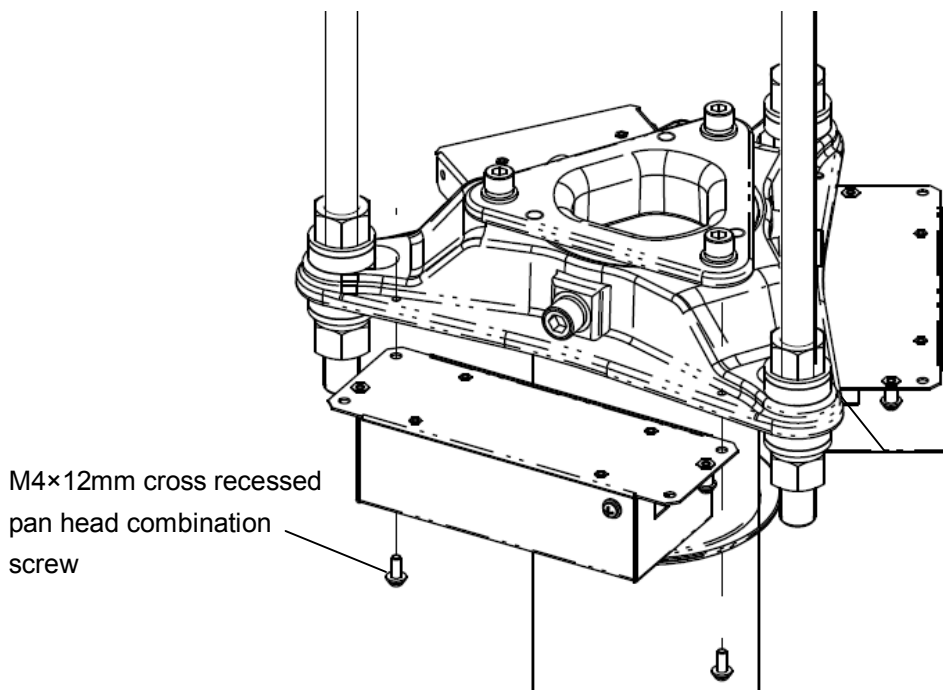


Figure 4-32 Removing the power module

3. Reinstall a new power module by following the above instructions in reverse order.

NOTE

- Please refer to the installation manual for electrical connections of the power module.
-

4.5 Replacing Backup Power Module

4.5.1 Replacing Charging Board

1. Loosen the 6 M4×8mm cross recessed countersunk head screws fixing the covers of backup power module. Open the front cover and disconnect the cables between the front cover and the back cover.

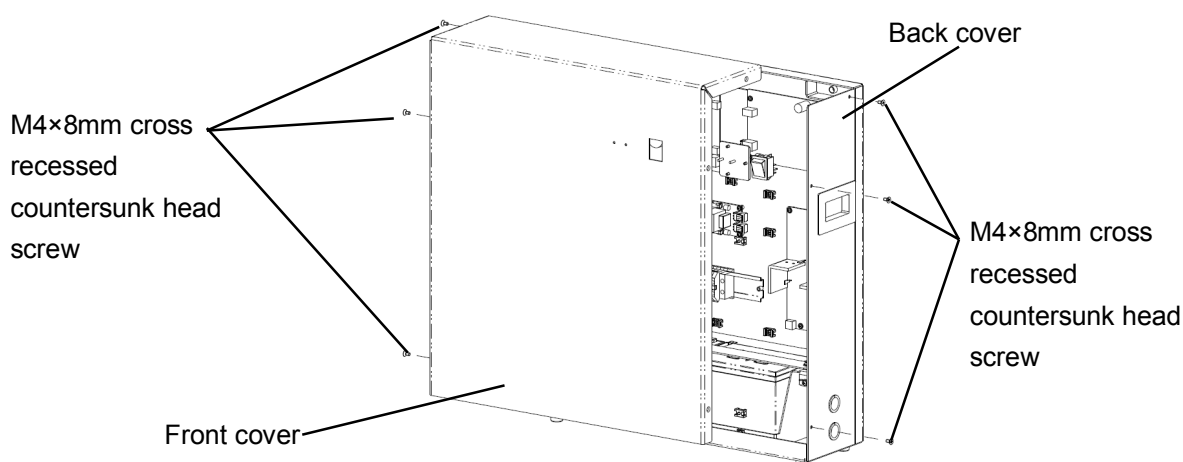


Figure 4-33 Removing the fixing screws

2. Disconnect the cables connected to the charging board. Loosen the 4 M3×8mm cross recessed small pan head combination screws before removing the charging board.

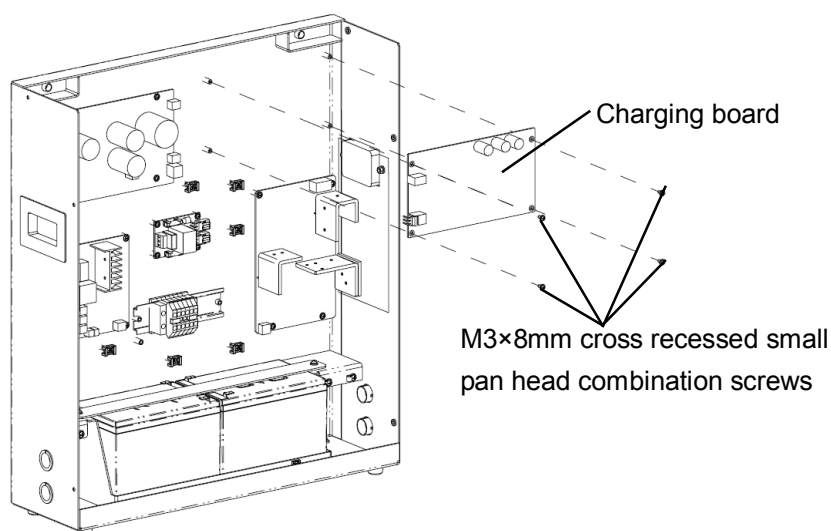


Figure 4-34 Removing the charging board

3. Reinstall the charging board by following the above instructions in reverse order.

4.5.2 Replacing Power Board/Backup Power Board/Fuse

Board/Control Board

1. Replace the power board, backup power board, fuse board and control board as instructed in 4.5.1 .
2. The boards are shown in the figure below.

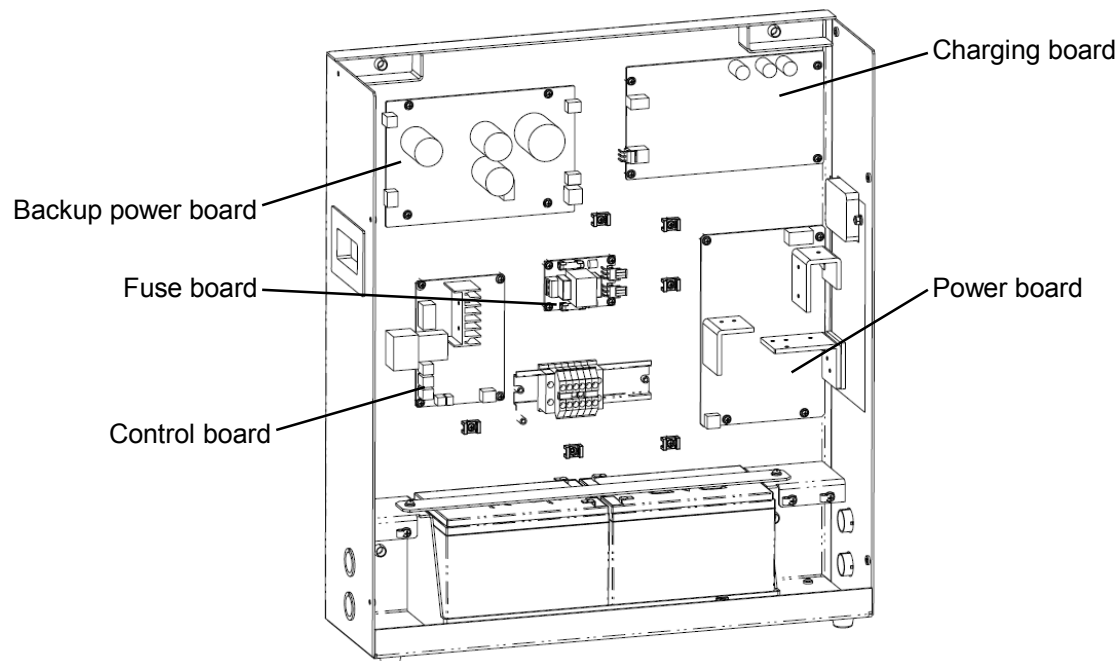


Figure 4-35 Replacing the boards

4.5.3 Replacing Batteries

1. Remove the front cover as instructed in 4.5.1 .
2. Disconnect the battery connection wires and loosen the 2 M4×12mm cross recessed small pan head combination screws before removing the metal bar.

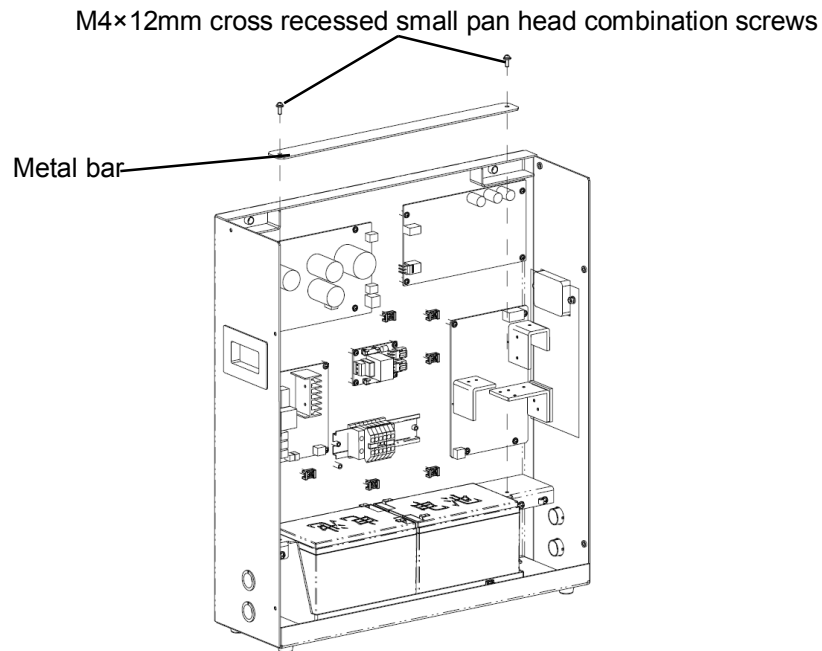


Figure 4-36 Removing the metal bar

3. Remove the batteries and replace them with new ones.

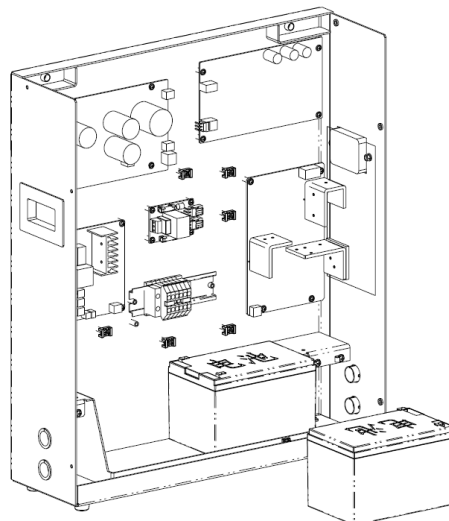


Figure 4-37 Removing the batteries

4. Reconnect the battery connection wires and reinstall the front cover.

4.6 Replacing Mobile LED Surgical Light/Examination Light

⚠ WARNING

- To remove the lighthead, ask an extra helper to pull the spring arm down. Slightly release the spring arm to the limit position after the lighthead is removed. Otherwise, the spring arm may jump up suddenly and cause personal injury.
-

4.6.1 Replacing Lighthead

1. Press the spring arm down. Remove the M3×6mm cross recessed countersunk head screw fixing the sleeve. Move the sleeve towards the spring arm. Remove the securing segment.

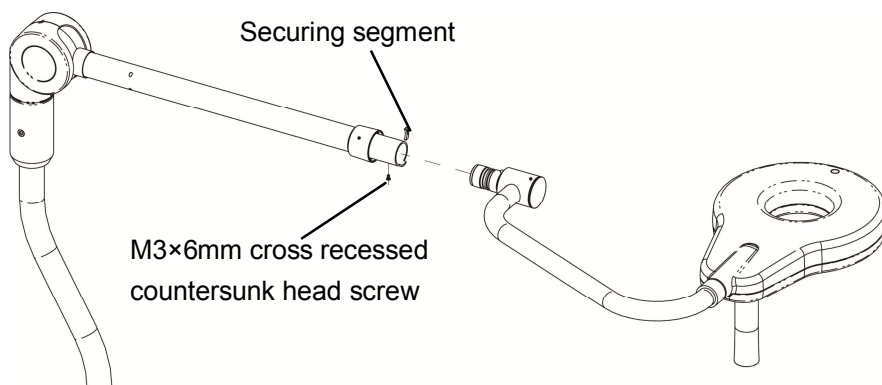


Figure 4-38 Removing the screw

2. Move the lighthead outwards and disconnect the cable connections. Ask an extra helper to hold the spring arm and slightly release the spring arm to the limit position after the lighthead is removed.
3. Press the spring arm down, and reinstall a new lighthead by inserting it into the spring arm, installing the secure segment and fixing the sleeve.

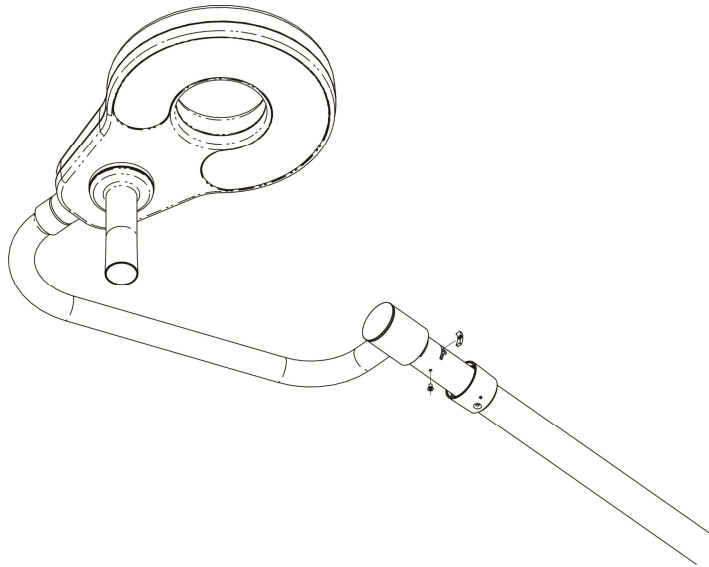


Figure 4-39 Installing the lighthouse

4.6.2 Replacing Spring Arm

1. Remove the lighthead as instructed in 4.6.1 .
2. Remove the braking screws with a 5mm Allen key and stop screw with a 4mm Allen key.
3. Pull the spring arm out of the pole and replace it with a new one. Tighten the stop screw and drive the braking screw and adjust it properly.
4. Reinstall the lighthead.

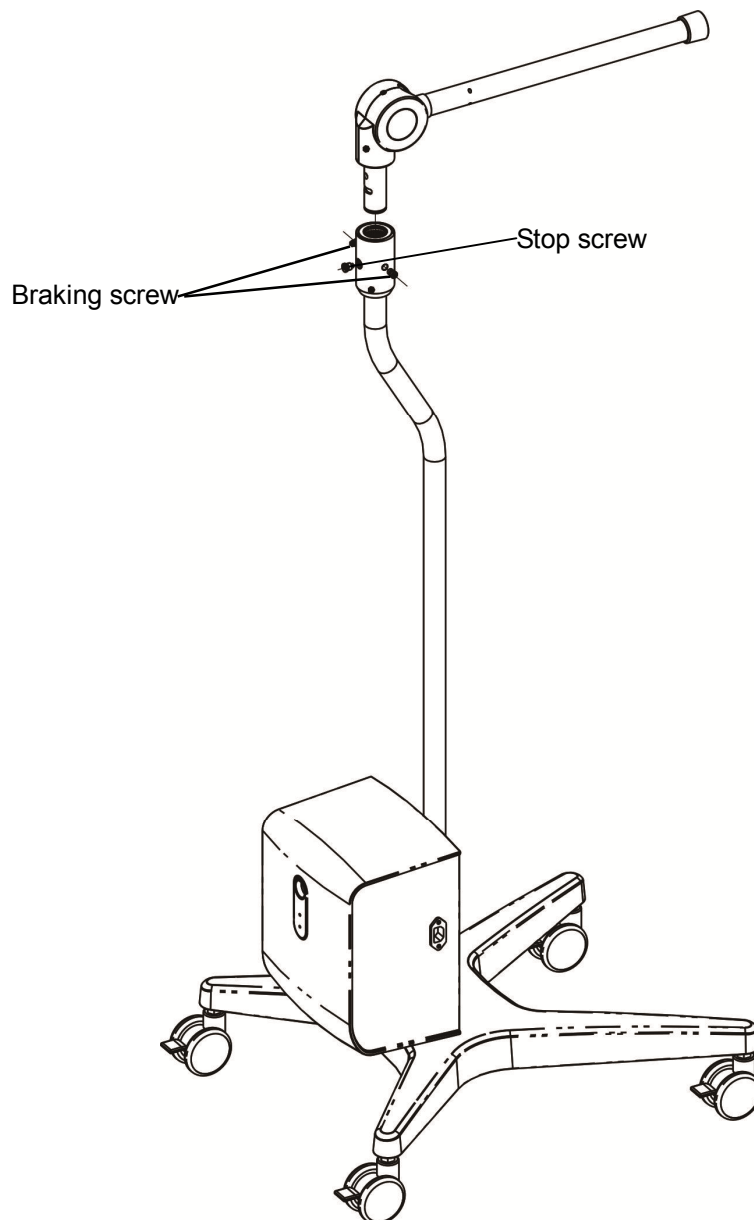


Figure 4-40 Removing the spring arm

4.6.3 Replacing Batteries of Battery Module

1. Switch off the battery module and disconnect it from the mains supply.
2. Remove the M4×16mm hexagon socket head cap screw at the bottom using a 4mm Allen key.

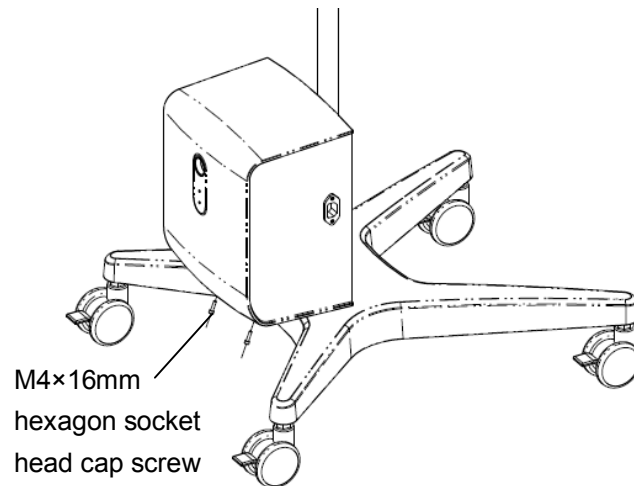


Figure 4-41 Removing the screw

3. Slightly pull the front cover out and disconnect the cable connectors.
4. Disconnect the wires connected to the batteries and loosen the 2 M4×12mm cross recessed pan head combination screws before removing the metal bar.
5. Remove the batteries and replace them with new ones.

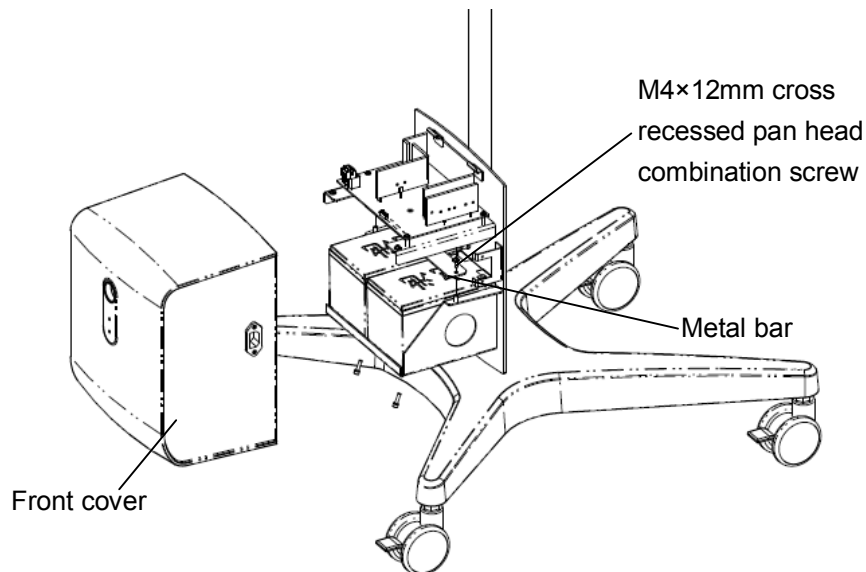


Figure 4-42 Removing the batteries

6. Reconnect the wires and reinstall the front cover.

4.6.4 Replacing Power Board of Power Module

1. Disconnect the power module from the mains supply.
2. Remove the 2 M4×16mm hexagon socket head cap screws at the bottom using a 4mm Allen key.

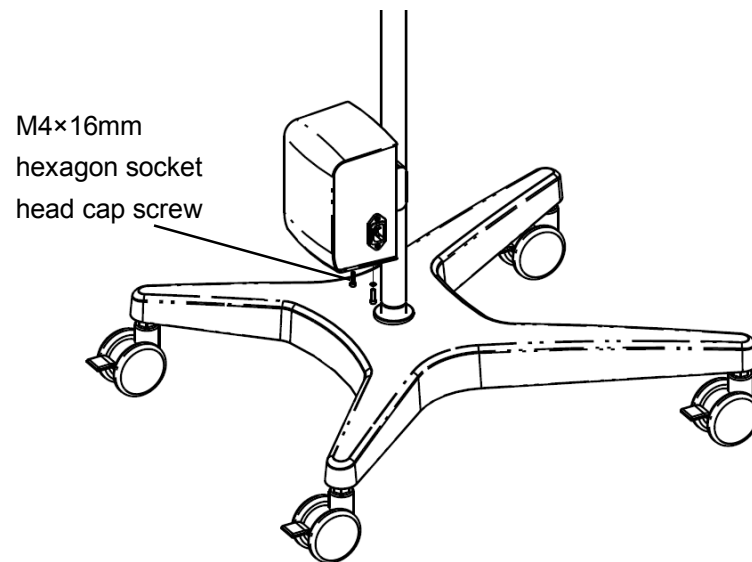


Figure 4-43 Removing the screw

3. Remove the 2 M3×12mm cross recessed countersunk head screws fixing the power connector. Pull the connector out.

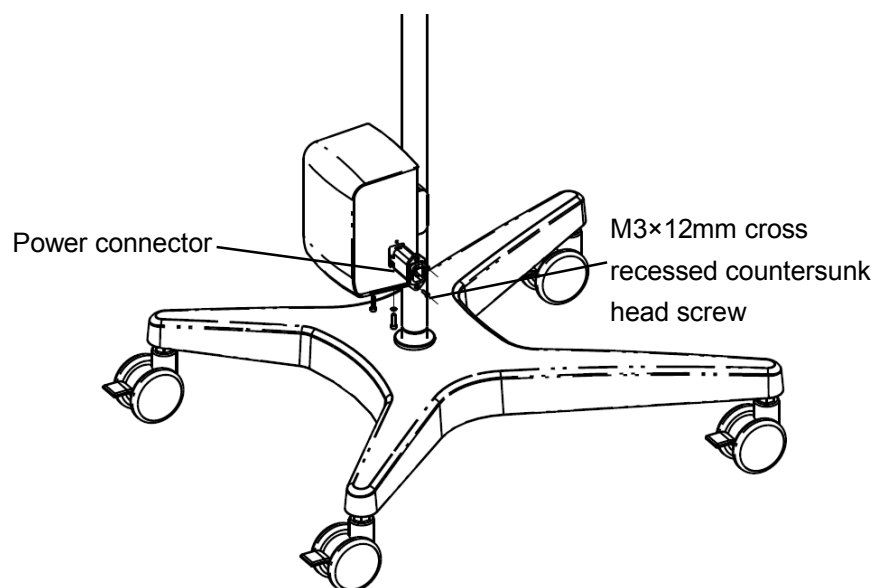


Figure 4-44 Removing the power connector

4. Disconnect the connected cables. Loosen the 4 M3×8mm cross recessed small pan head screws before removing the power board. Replace a new power board.

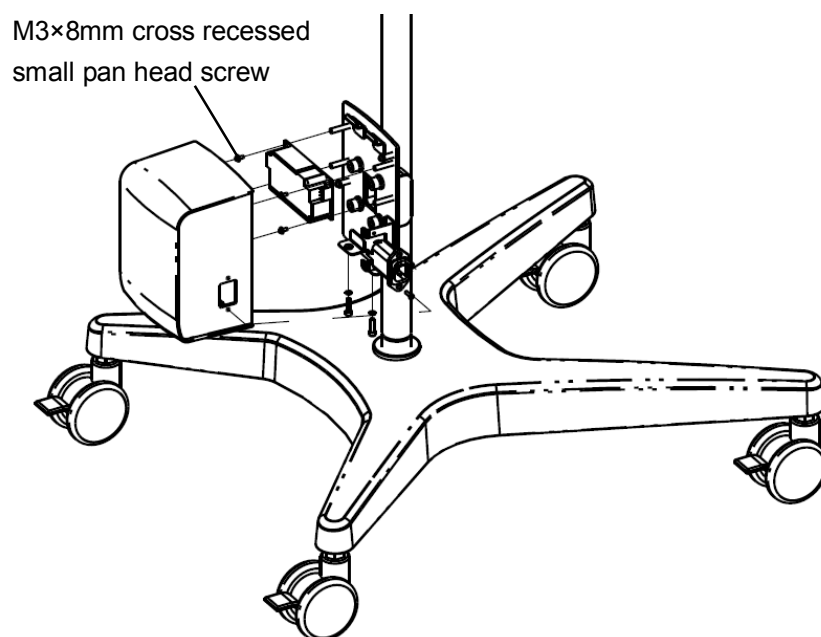


Figure 4-45 Removing the power board

5. Reinstall the power connector and the front cover.

4.7 Replacing Indicator Board (Pendant Version)

1. Remove the 2 M4×12mm cross recessed small pan head combination screws fixing the installation plate.

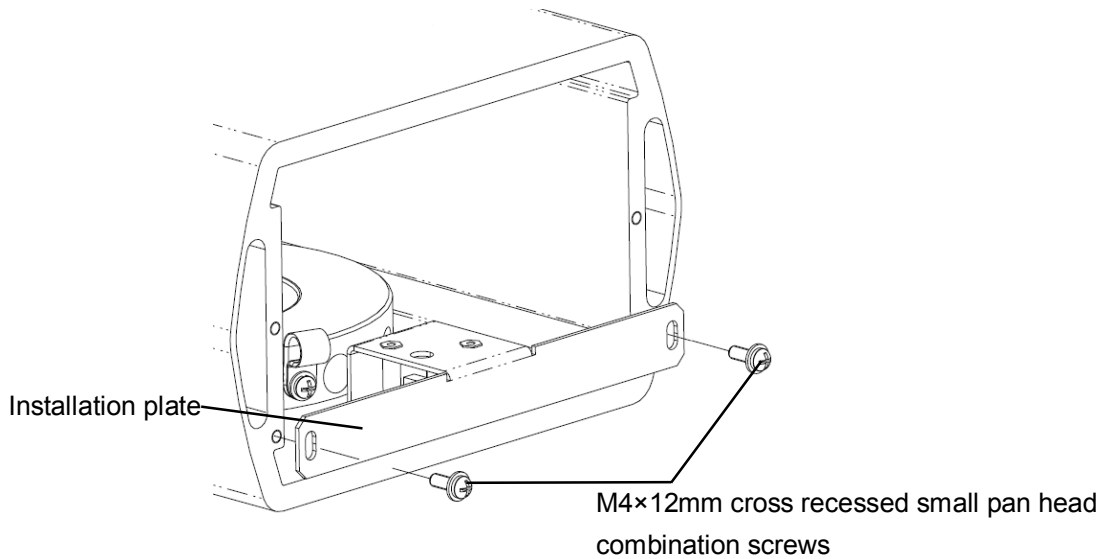


Figure 4-46 Removing the fixing screw

2. Disconnect the connected cables. Carefully remove the installation plate.
3. Remove the 2 M3×8mm cross recessed small pan head combination screws fixing the indicator board.

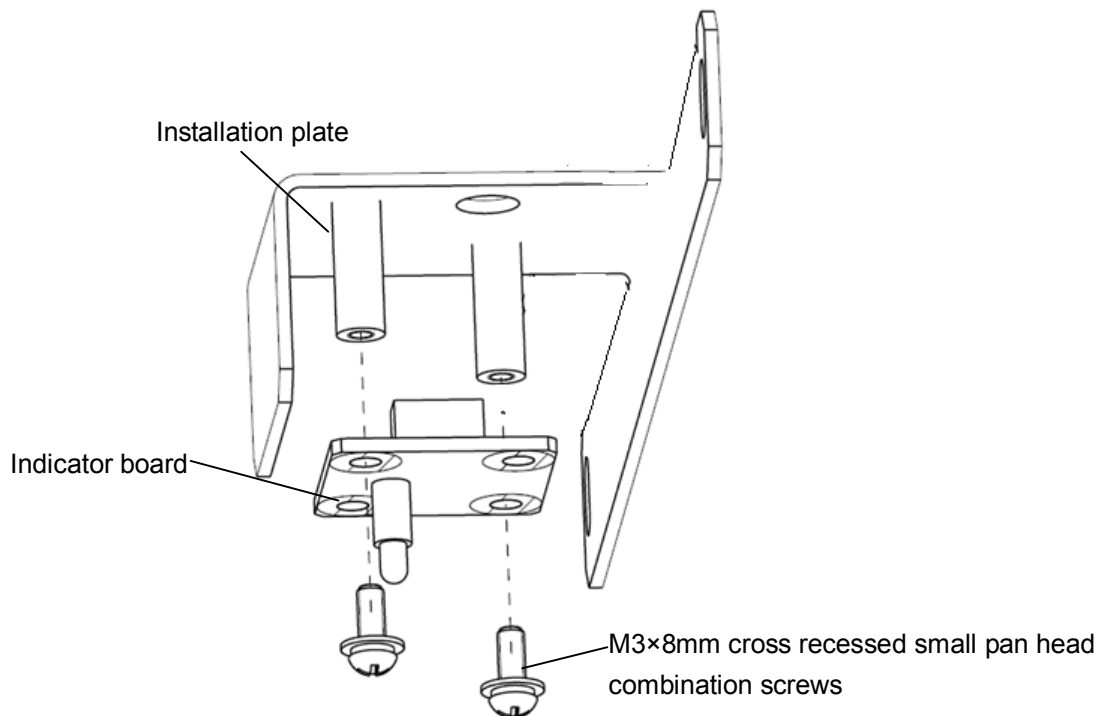


Figure 4-47 Removing the indicator board

4. Reinstall a new indicator board by following the above instructions in reverse order.
5. Reinstall the installation plate and make sure the indicator is engaged into the hole as the figure below shows.

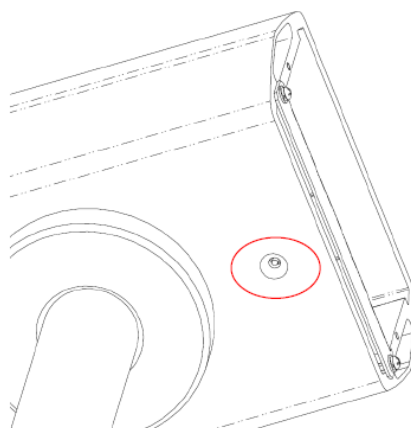


Figure 4-48 Reinstalling the indicator board and installation plate

5 Setting

NOTE

- If the maximum illumination of the lighthouse is lower or higher than the desired illumination, the software illuminance level can be adjusted.

5.1 Software Illuminance Level Setting (HyLED 600/HyLED 600M Lightheads)

1. The control unit of the HyLED 600/HyLED 600M is shown in the figure below.

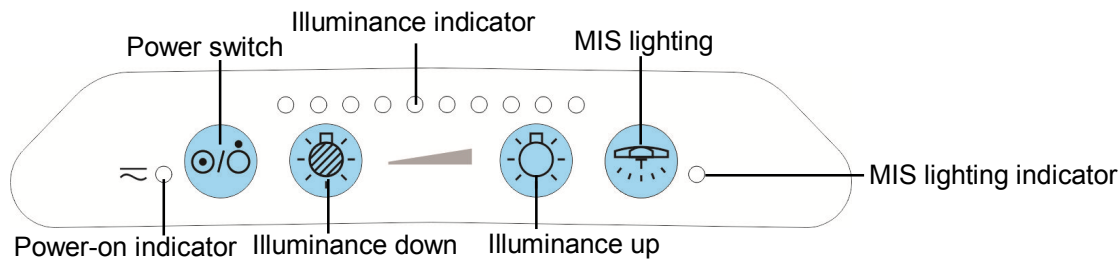


Figure 5-1 HyLED 600/HyLED 600M control unit

2. Press the “Power switch” to turn on the lighthouse and adjust the illuminance to the first level. Press the “Illuminance down” button and hold it for 8 seconds to enter the setting mode. Now, the power-on indicator turns orange.
3. Press the “Illuminance up” to select the software illuminance level. The higher the level is, the higher the illuminance is. Select the level based on actual illuminance value.

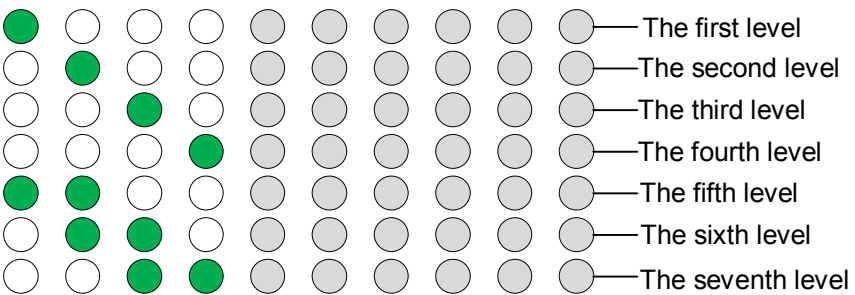


Figure 5-2 Software illuminance level

4. Press the “Illuminance down” quit the setting mode.
5. Shut off the power supply and restart.

5.2 Software Illuminance Level Setting (HyLED 200/HyLED 200M Lightheads)

1. The control unit of the HyLED 200/HyLED 200M is shown in the figure below.

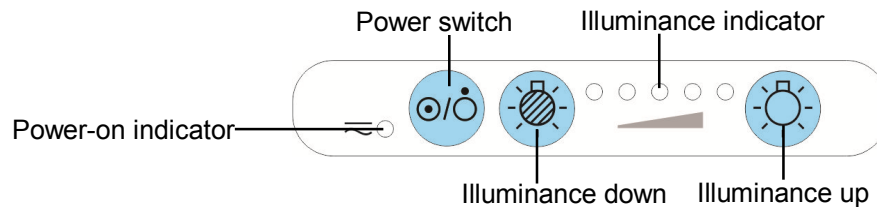


Figure 5-3 HyLED 200/HyLED 200M control unit

2. Press the “Power switch” to turn on the lighthead and adjust the illuminance to the first level. Press the “Illuminance down” button and hold it for 8 seconds to enter the setting mode. Now, the power-on indicator turns orange.
3. Press the “Illuminance up” to select the software illuminance level. The higher the level is, the higher the illuminance is. Select the level based on actual illuminance value.

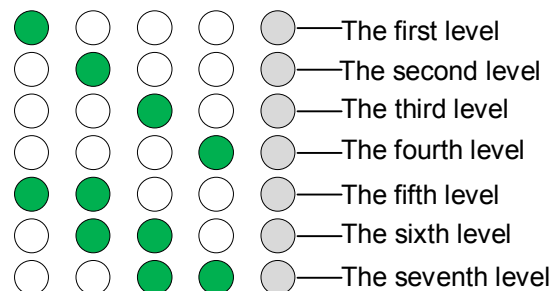


Figure 5-4 Software illuminance level

4. Press the “Illuminance down” quit the setting mode.
5. Shut off the power supply and restart.

6 Lighthouse Internal Wiring

6.1 LED Unit Layout and Wiring

NOTE

- All the LEDs marked with the same number shall be connected together.
- Be sure to tidy all the connection wires. Make sure the wires do not squeeze the surface of the lens.

6.1.1 HyLED 600/HyLED 600M LED Unit Layout and Wiring

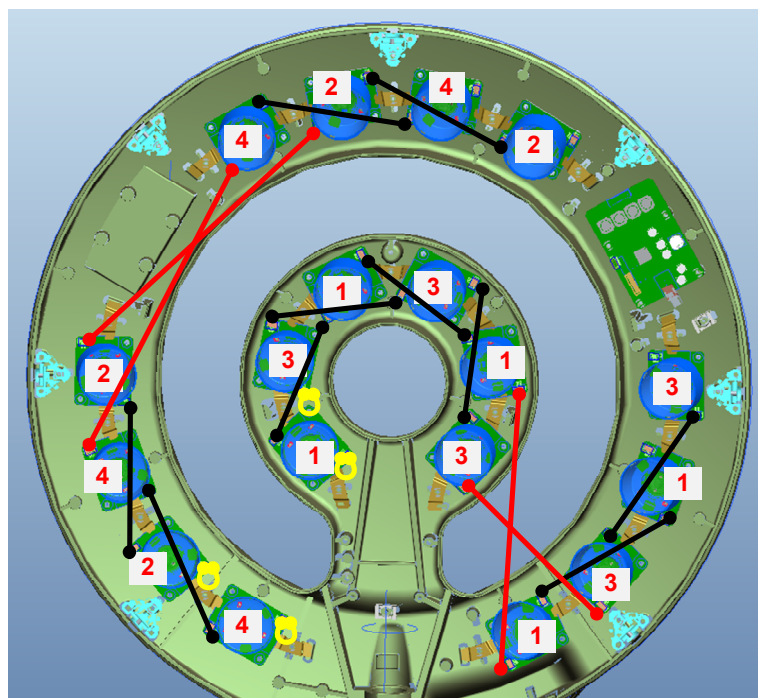


Figure 6-1 HyLED 600/HyLED 600M LED layout and wiring

009-006609-00	Connection wire (120mm)	10 EA	
009-006611-00	Connection wire (350mm)	4 EA	
009-001165-00	Short wire	4 EA	

6.1.2 HyLED 200/HyLED 200M LED Unit Layout and Wiring

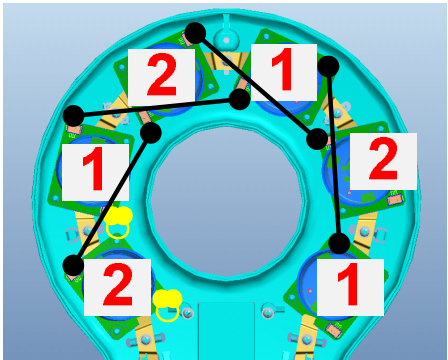


Figure 6-2 HyLED 200/HyLED 200M LED layout and wiring

009-006609-00	Connection wire (120mm)	4 EA	
009-001165-00	Short wire	2 EA	

6.2 LED Drive Board Wiring

6.2.1 HyLED 600/HyLED 600M Drive Board Wiring



Figure 6-3 HyLED 600/HyLED 600M drive board wiring

6.2.2 HyLED 200/HyLED 200M Drive Board Wiring

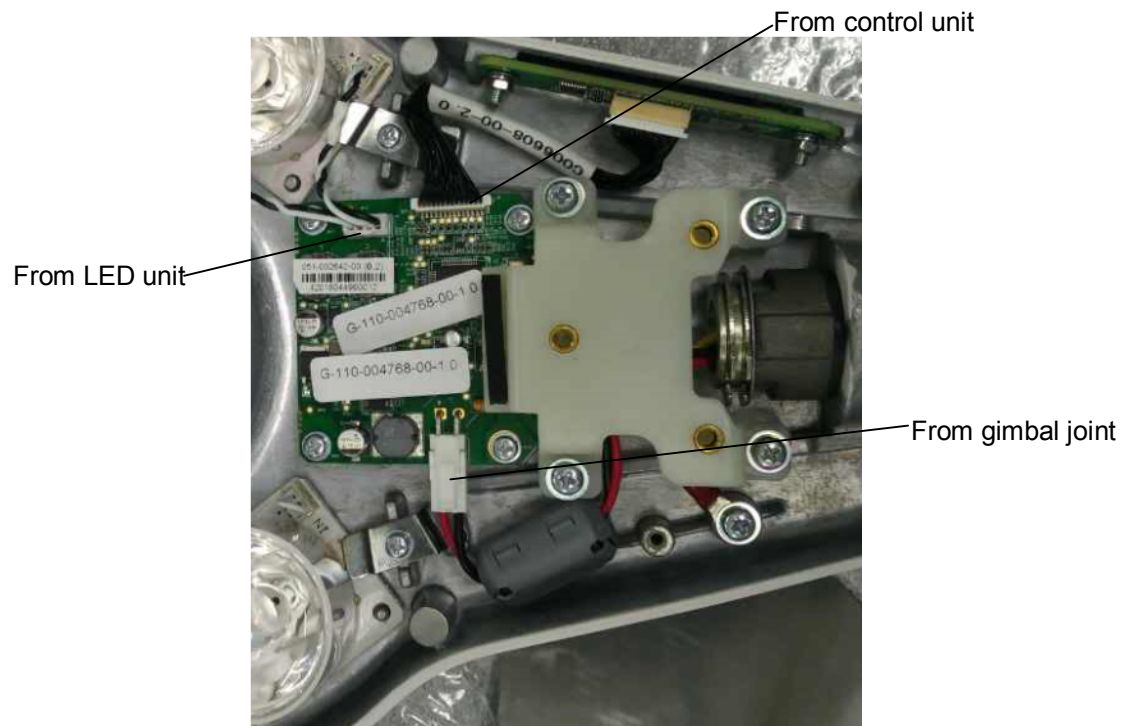


Figure 6-4 HyLED 200/HyLED 200M drive board wiring

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7 Troubleshooting

⚠ WARNING

- Device servicing is to be performed by personnel authorized by Nanjing Mindray only. Unauthorized device servicing may result in personal injury and/or damage to the device or other property.
- Device servicing should be strictly based on technical data supplied by Nanjing Mindray. If you are in need of more technical data, contact the customer service department authorized by Nanjing Mindray.

7.1 Electrical Schematic Diagram

7.1.1 Surgical Light/Examination Light with Common Power Module

Module

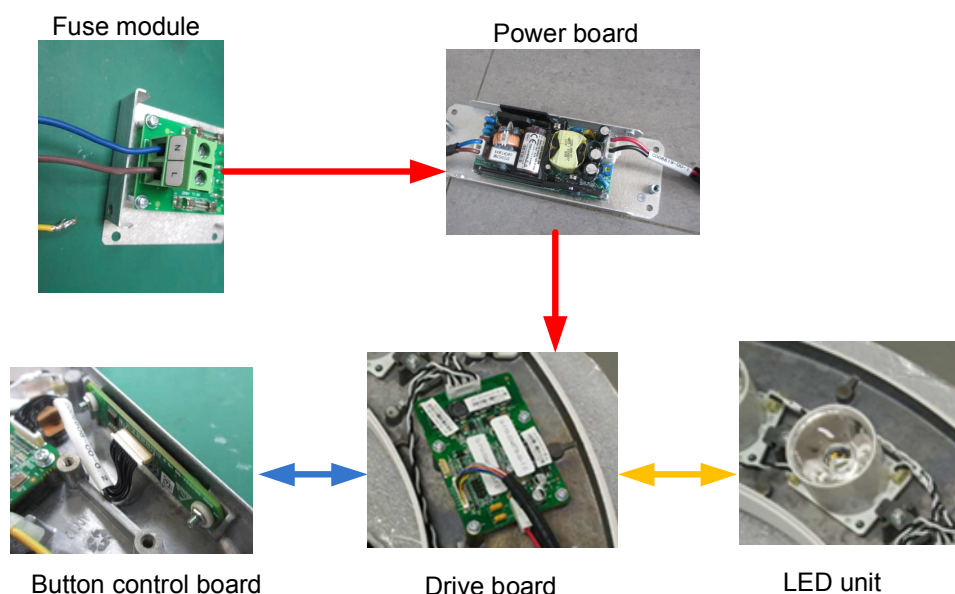


Figure 7-1 Electrical schematic diagram (with common power module)

7.1.2 Surgical Light/Examination Light with Backup Power

Module

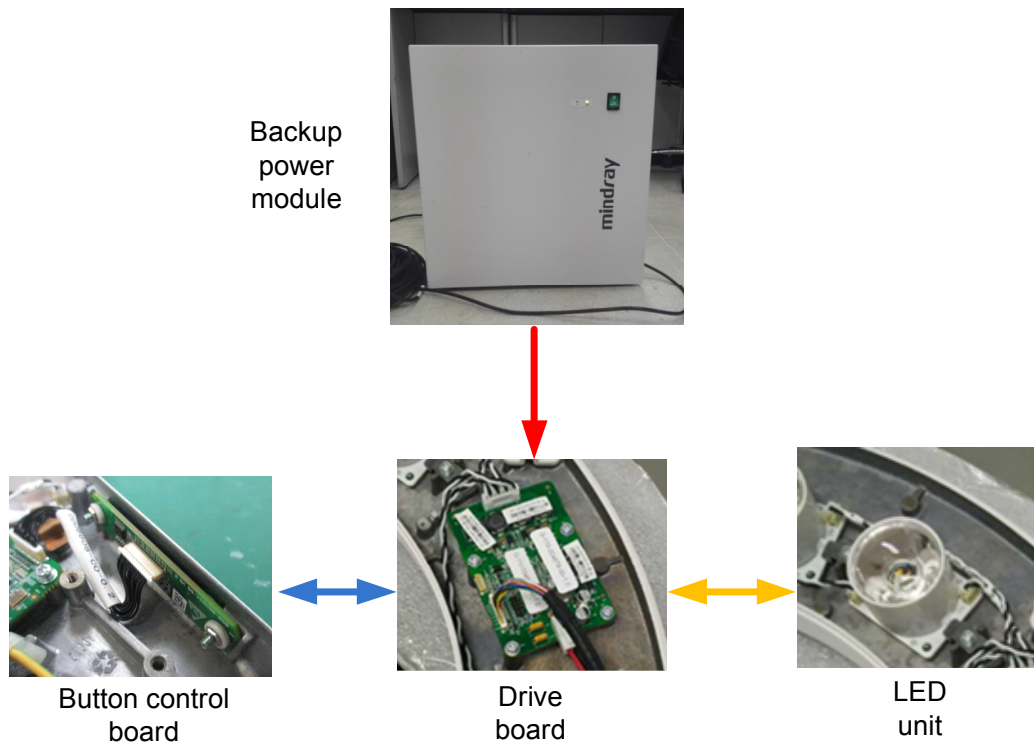


Figure 7-2 Electrical schematic diagram (with backup power module)

7.2 Common Errors

7.2.1 Lighthouse Off and Abnormal Lighting

1. Root cause: the power return circuit breaks down or the input voltage of the drive board is abnormal.
2. Common fault locations: fuse board, power module, connections between power board and drive board
3. Solution:
 - 1) Check if the input voltage of J3 on the drive board is normal. Normally, the voltage is 22-26V. Before checking, remove the lamp frame as instructed in 4.2.4 and 4.3.4 . If abnormal, follow the next step to check. If normal, the drive board may break down.

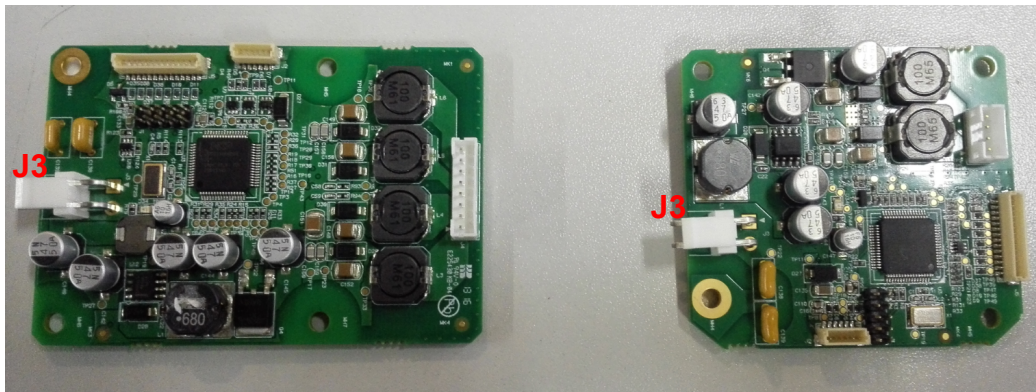


Figure 7-3 Drive board

- 2) Check if AC power supply is normal.

⚠ WARNING

- The input voltage of both the fuse board and power board is high. Excise caution when checking.
-

- a) Disassemble the upper covers from both the fuse module and power module as instructed in 4.4 .
- b) Use the Multimeter AC to test both the input and output voltages of the fuse board and input voltage of the power board. Normally, the voltage is 90-264V. If the output voltage is abnormal, the fuse board may break down. Replace it as instructed in 4.4.1 .

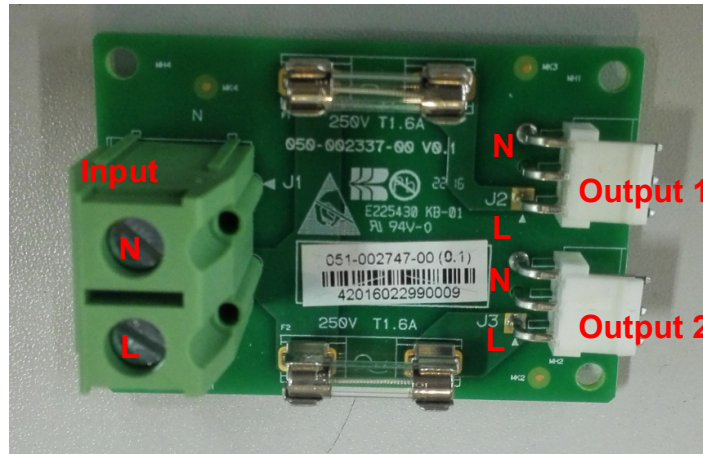


Figure 7-4 Fuse board

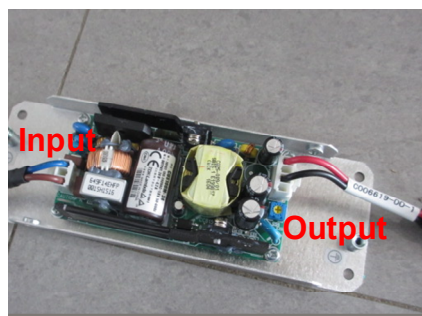


Figure 7-5 Power board

- 3) Check if the power board is normal.
Use the Multimeter DC to test output voltage of the power board. Normally, the voltage is 22-26V.
- 4) Check if the backup power module is normal.
 - a) Use the Multimeter DC to test the output voltage of the backup power module. Normally, the voltage is 22-26V.
 - b) If there is no output voltage, disassemble the backup power module as instructed in 4.5 and then check if the fuse of the fuse board is damaged. Test the continuity of the fuse with the multimeter. If broken, replace the fuse board as instructed in 4.5 .

⚠ WARNING

- The input voltage of both the fuse board and power board is high. Excise caution when checking.
-

- 5) Check if the connections between the power board and drive board are normal.

The electrical diagrams of the connections between the power board and drive board are shown in A.1 and A.2. Normally, the resistance between any two of the red, black, yellow and green wires is more than 10Ω. If conducted, the connections are short-circuited. For the wire with the same color, the total resistance from the power board to the drive board shall be less than 1Ω.

Check the connections with the power off.

- a) Test if any two of the three wires (red, black, yellow and green) in the flange tube, swivel arm assembly, spring arm and gimbal joint respectively are short-circuited.
- b) Test if the connections from the power board to the drive board are broken in the circuit.

NOTE

- **Multimeter Buzzer can be used for easy short or broken circuits test. If the buzzer sounds, it means continuity. If not, there may be short or broken circuits.**
 - **Replace the swivel arm assembly if the cables in the central axis are broken.**
-

7.2.2 Broken LEDs

1. Root cause: the LED unit is broken or the drive board is broken.
2. Common fault locations: LED unit, drive board and connection wires between LED units
3. Solution:
 - 1) Check if the connection wires between the LED units are loose or disconnected.
 - 2) Single LED unit is broken. Replace the damaged LED unit as instructed in 4.2.5 and 4.3.5 .
 - 3) A string of LED units are broken. The drive board breaks down or the broken LEDs cause the breakdown of the return circuit. Use the multimeter to test the input voltage between the black and white wires. Normally, the voltage is 1-22V.
 - If the voltage is abnormal, which means the drive board breaks down, replace the drive board as instructed in 4.2.6 and 4.3.6 .
 - If the voltage is normal, use the multimeter to test the voltage between the black and white wires until the broken LED unit is found.



Figure 7-6 Input voltage of LED unit

7.2.3 Alarm of Control Unit

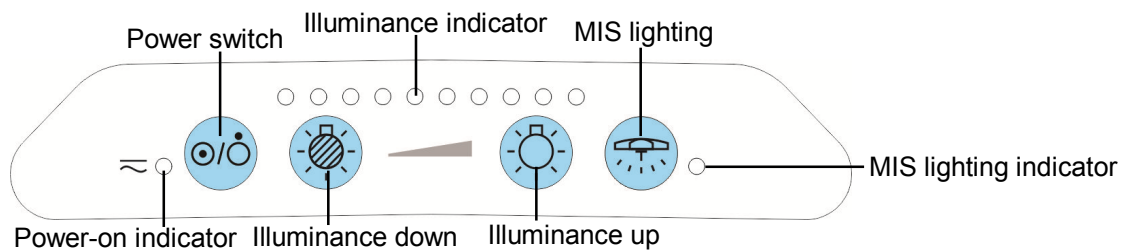


Figure 7-7 HyLED 600/HyLED 600M control unit

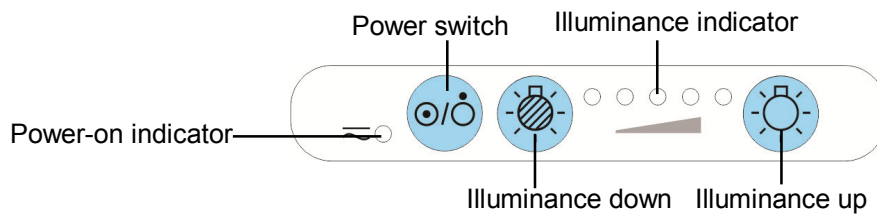


Figure 7-8 HyLED 200/HyLED 200M control unit

Power-on indicator	Illuminance indicator	Lighthouse status	Error type	Solution
Red and flashing	Normal adjustment	Normal working	The voltage is low.	Solve the error as instructed in 7.2.1 .
Red and flashing	Green and flashing	Unstable working	Button control fails. The illuminance and MIS lighting mode cannot be adjusted.	Check if the control unit is properly installed. If improper, the button will have been pressed when the lighthouse is powered. If proper, replace the control unit.

8 Appendices

A Electrical Connection Diagram

A.1 HyLED 600/HyLED 200 with Common Power Module

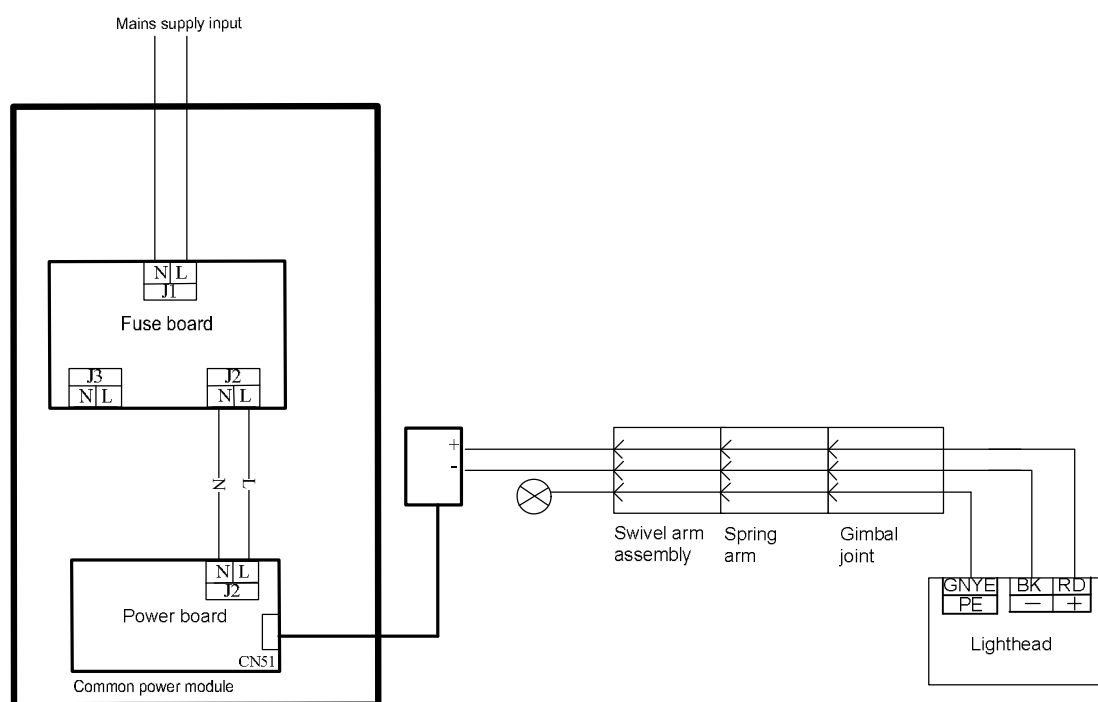


Figure 8-1 HyLED 600/HyLED 200 with common power module

A.2 HyLED 600/HyLED 200 with Backup Power Module

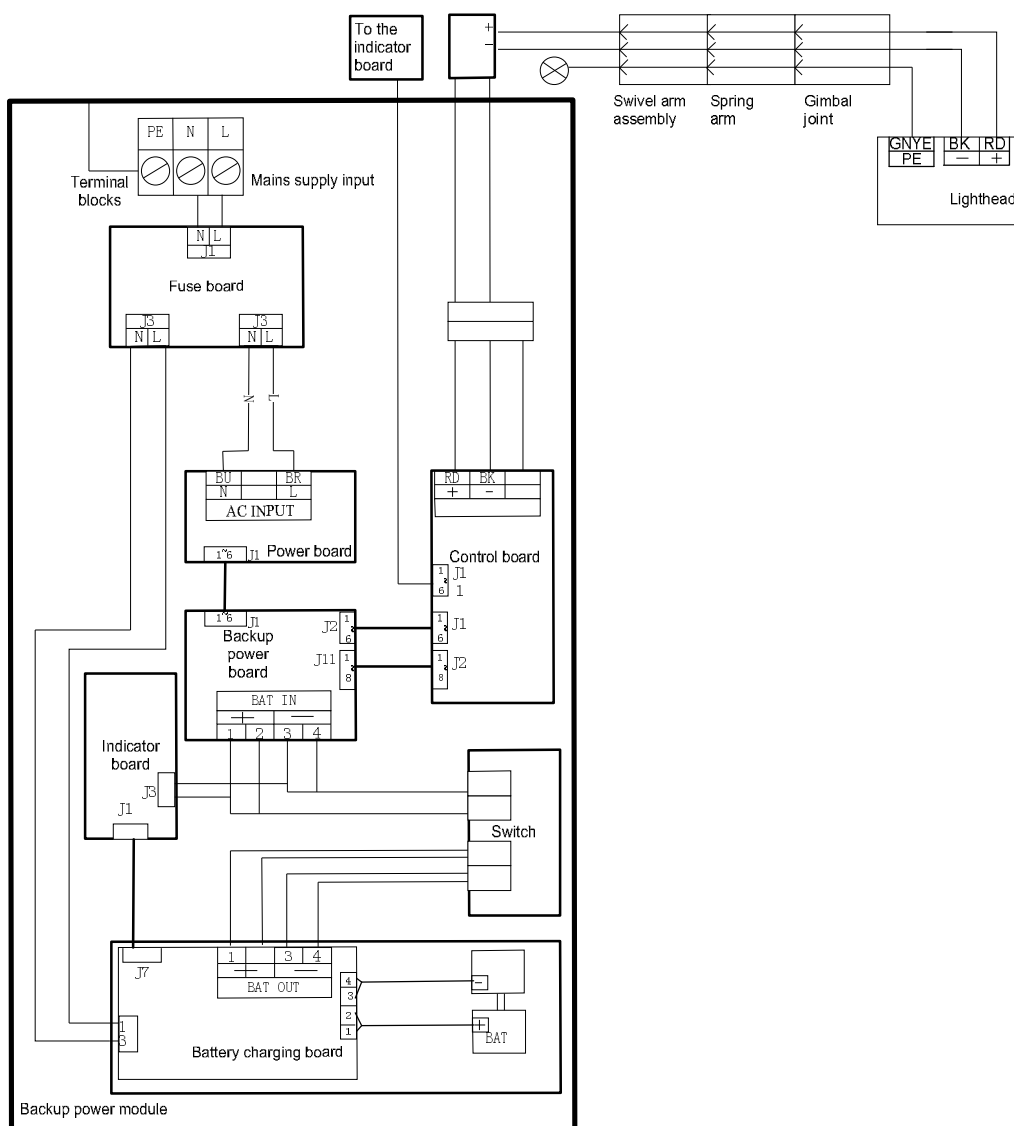


Figure 8-2 HyLED 600/HyLED 200 with backup power module

A.3 DC 24V

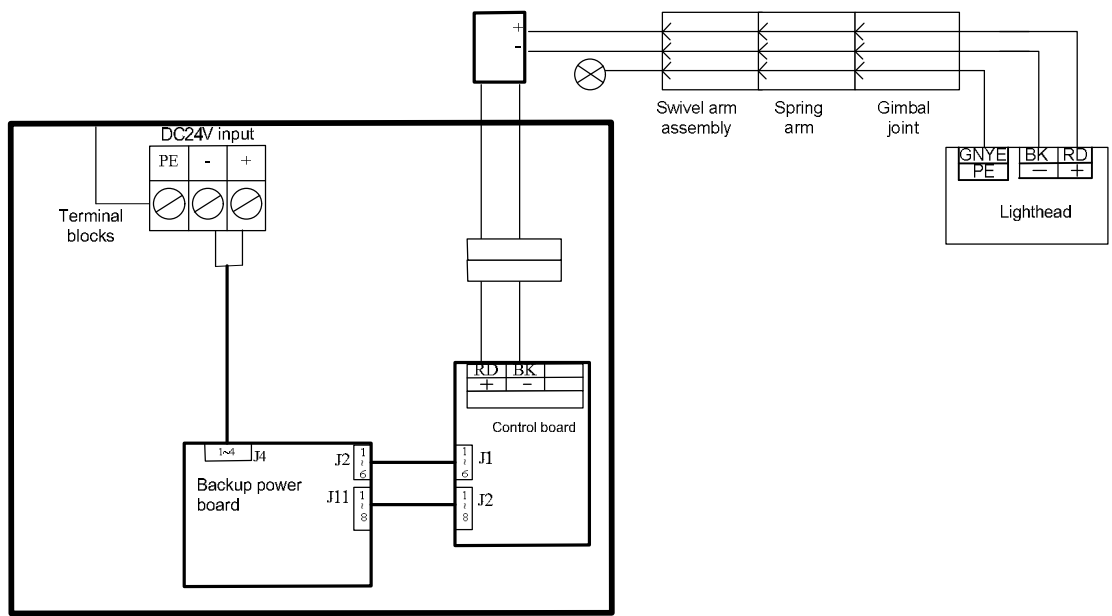


Figure 8-3 DC 24 power supply

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