

## Maintenance Manual

### **Volista**

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**Subject to technical changes.**

The illustrations and technical specifications provided in this manual may, on account of future product developments, differ slightly from the actual product supplied.

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# 1 Introduction

## 1.1 Preface

*Dear Installers:*

- Technician must be trained and accredited by Getinge.
- This document is the property of the Getinge company, and may not be reproduced, in whole or in part, without our permission. This document was produced with the assistance of the company's technical department in France. It may be improved thanks to your remarks, and extended for the different installations you encounter, to produce an up-to-date reference document for servicing.

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**Fax + 33 (0) 2 38 25 88 00**

Given the confidential nature of the information in this document, it is distributed exclusively to customers and installers of Getinge products.

- Make sure that you have the latest versions of these documents. Check with the Getinge network to confirm this is correct.
- Make sure that your subcontractor is qualified for this task and ask for written proof of certification. Perform regular inspections at the subcontractor's premises and verify for your own organisation the compliance of the maintenance performed.
- Getinge may not be held liable for any damage or injury resulting from failure to follow these recommendations.

## 1.2 Liability

### **Modifications to the product**

The product must not be modified in any way without the prior written consent of Getinge.

### **Compatibility with other medical devices**

Only medical devices approved in accordance with IEC 60601-1 or UL 60601-1 should be installed on the system.

The compatible accessories and their technical specifications (e.g., maximum weight, etc.) are detailed in the corresponding chapter.

## 1.3 Other documents relating to this product

- Volista Installation Recommendations (Ref. ARD01786)
- Volista Installation Instructions (Ref. ARD01784)
- Volista Instructions For Use (Ref. ARD01781)
- Volista Repair Instructions (Ref. ARD01782)
- Volista Decommissioning Instructions (Ref. ARD01785)

## 1.4 Symbols used in this manual

### 1.4.1 Cross-references

References to other pages of the manual are identified by the “▶” symbol.

### 1.4.2 Reference numbers

Reference numbers in illustrations and text are shown in a square box 1.

### 1.4.3 Actions and results

Actions to be performed by the user are listed with sequence numbers; the “▶” symbol is used to show the result of an action.

**Example:**

**Prerequisites:**

- The sterilisable handle must be compatible with the product.
1. Fit the handle to the mount.
    - ▶ A click is heard.
  2. Turn the handle until it locks into place with a second click.

### 1.4.4 Menus and buttons


Menu and button names are shown in **bold**.

**Example:**

1. Press the **Save** button.
  - ▶ The changes are saved and the **Favourites** menu is displayed.


### 1.4.5 Hazard levels

The text in safety instructions describes types of risk and how to avoid them. Safety instructions are classified into the following three levels:

Symbol	Hazard level	Meaning
	<b>DANGER!</b>	Indicates a direct and immediate risk that may be fatal or cause very serious injuries potentially leading to death.
	<b>WARNING!</b>	Indicates a potential risk that may cause injuries, health hazards or serious material damage leading to injuries.
	<b>CAUTION!</b>	Indicates a potential risk that may cause material damage.

















Tab. 1: Hazard levels of safety instructions

### 1.4.6 Indications

Symbol	Indication type	Meaning
	<b>NOTICE</b>	Additional assistance or useful information not resulting in the risk of injuries or the risk of material damage.

Tab. 2: Types of indications in the document

### 1.5 Symbols used on the product

	Follow the instructions for use (IEC 60601-1:2012)		DC output
	Follow the instructions for use (IEC 60601-1:2005).		Standby
	Follow the instructions for use (IEC 60601-1:1996).		Do not discard with conventional waste
	Manufacturer + date of manufacture		Medical Device (MD) marking
	Product code		Unique device identification
	Product serial number		CE marking (Europe)
	AC input		UL marking (Canada and United States)
	DC input		UR marking (Canada and United States)

### 1.6 Revision history

- Integration of the WPS power supply
- Adjusting the top stop of the Oasys spring arm
- Overall updating of the Maintenance Instructions
- Addition of the estimated maintenance time
- Integration of VCSII lighting
- Updating of safety alerts
- Integration of the Valia spring arms
- Inspection of safety labels in the maintenance protocol

## 2 Safety instructions



**WARNING!**

**Risk of electric shock**

Anyone not trained in installation, maintenance or decommissioning operations is exposed to the risk of injury or electric shock.

Installation, maintenance and decommissioning of the device or components of the device must be performed by a Getinge technician or a Getinge-trained service technician.



**WARNING!**

**Risk of infection**

A servicing or cleaning operation may result in contamination of the surgical site.

Do not perform servicing or cleaning operations when the patient is present.



**WARNING!**

**Risk of infection**

If no decontamination is carried out on the device before servicing work, there is a risk of infection for anyone handling the device or any of its components.

Make sure that the device is fully decontaminated before any servicing work is conducted.



**WARNING!**

**Risk of burns**

During maintenance operations, certain accessible parts may be hot immediately after use of the device.

Allow the device to cool down before performing any service.



**WARNING!**

**Risk of injury**

Parts (e.g. tools, screws and colts) are liable to fall during a technical procedure.

Please limit your presence under the device during technical procedures, and use the appropriate safety equipment (e.g. safety hat, safety glasses).



**WARNING!**

**Risk of infection**

Lightweight parts from the device may fall onto the surgical site.

Check that all fastenings, covers, cover plates and bumpers on the device are properly in place.



**WARNING!**

**Risk of electric shock or injury**

The use of screws or spare parts other than those supplied by the manufacturer may damage the device.

Use only screws and spare parts supplied by the manufacturer.

**CAUTION!**

**Risk of malfunction of the device**

The use of wireless accessories other than those supplied or specified by the manufacturer can affect the operation and performance of the device.

Use only the wireless accessories specified by Getinge.

---

**CAUTION!**

**Risk of equipment damage**

If adjustments are made incorrectly or not at all, the lighthouse or installed equipment may drift.

Make all adjustments (balance, stop and brakes) during installation and then after all maintenance operations.

---

## 3 Technical specifications

**The technical characteristics can be consulted in:**

- Installation Instructions (<https://swp-linkone.getingegroup.local/>):
- Mechanical systems (Mechanism, Tightening torques), Electrical systems for installation.
- Instructions for Use (<https://eifu.getinge.com/fr/>):
- Optical, Electrical, Mechanical, Video systems of the product in operation.

### 3.1 VPS power supply connection diagrams

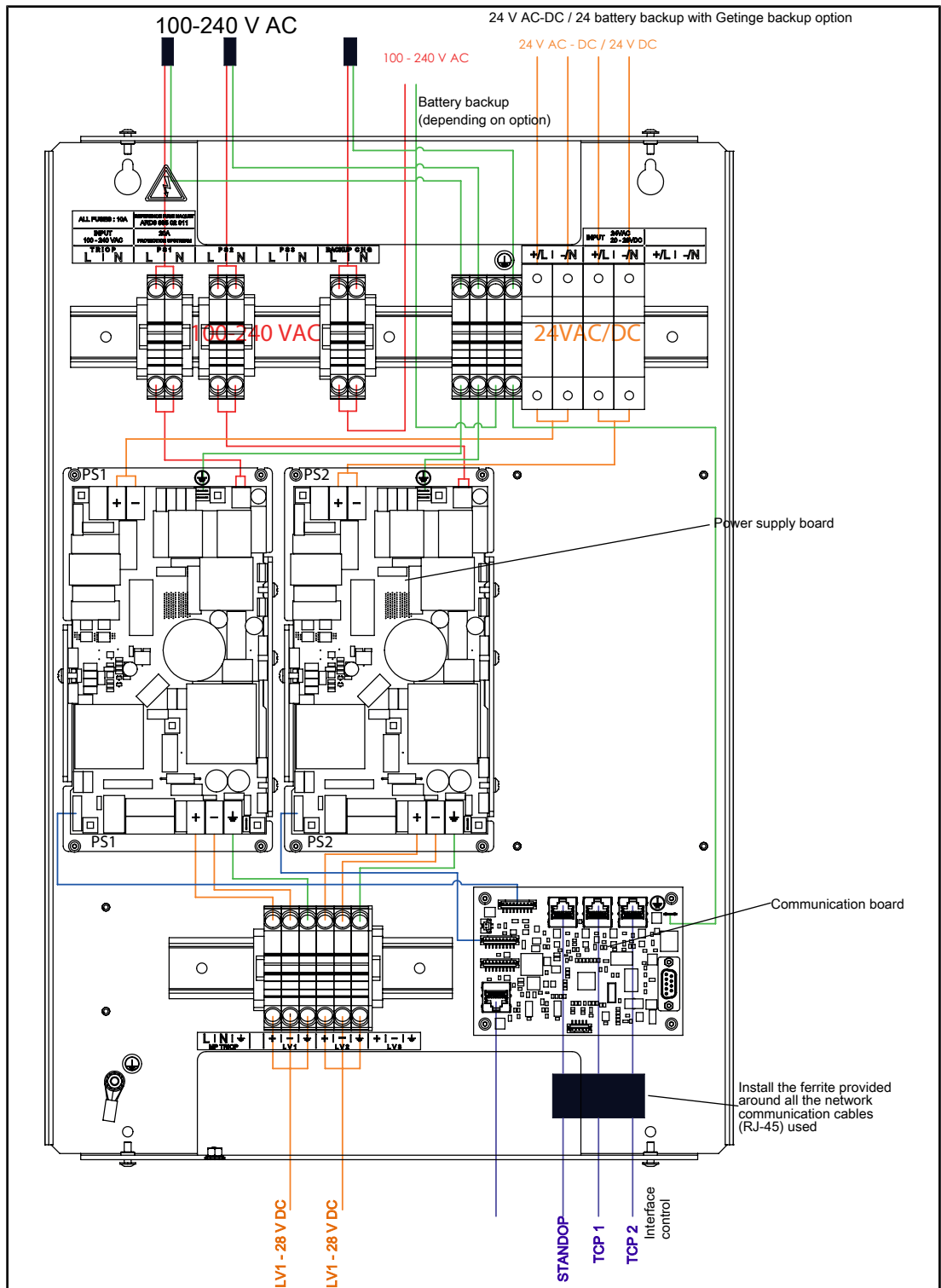


Fig. 1: VPS power supply connection diagram

### 3 Technical specifications

#### VPS power supply connection diagrams

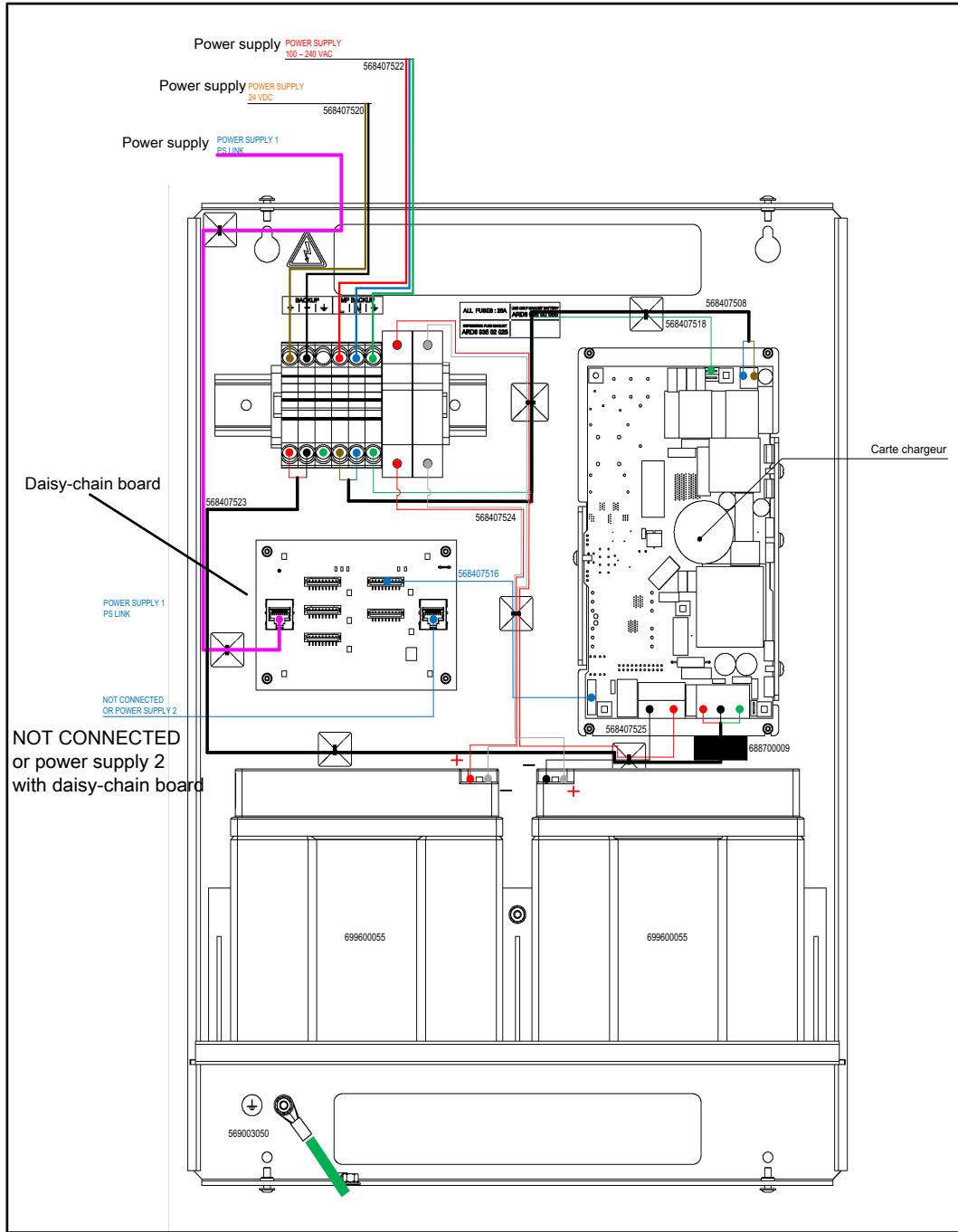


Fig. 2: Maquet Backup connection diagram



### 3.2 EPS power supply connection diagrams

#### Connecting the dual EPS power supply without backup

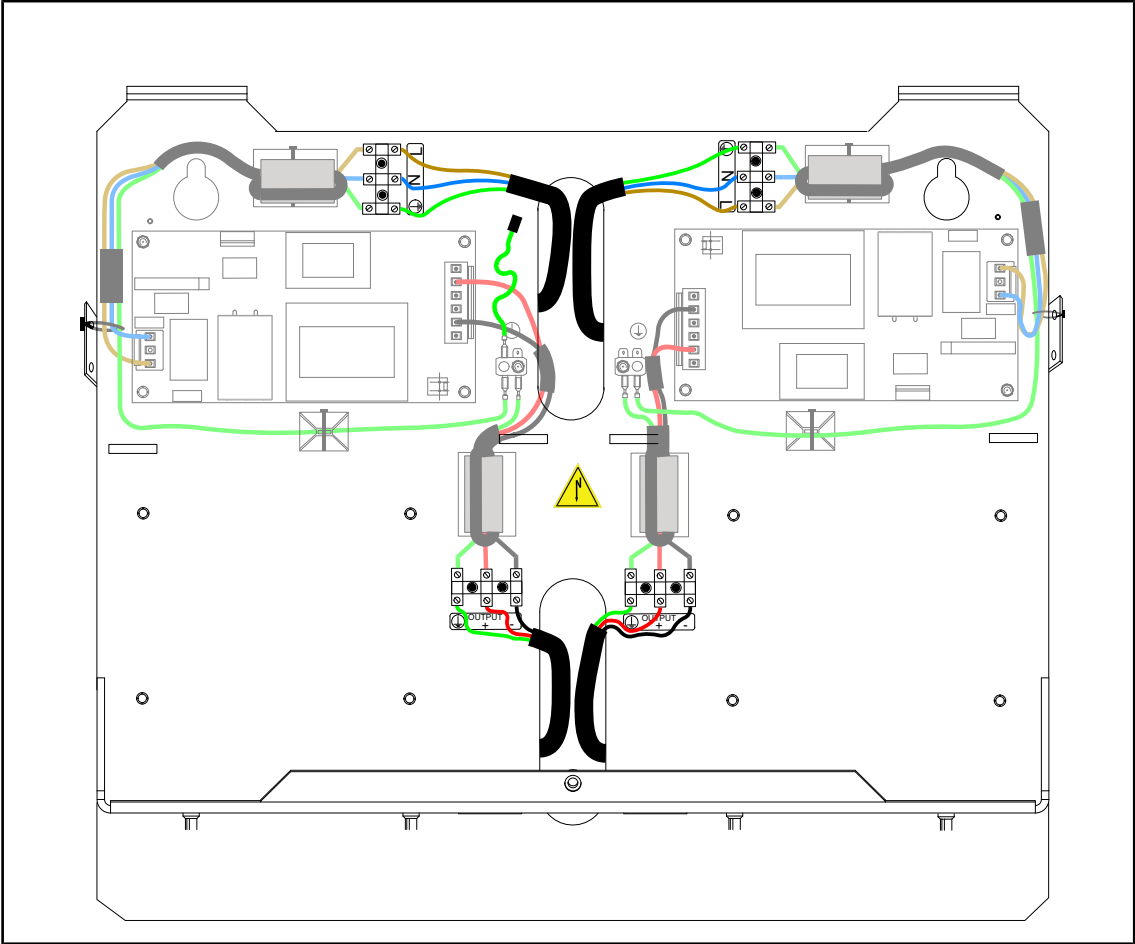


Fig. 3: Connecting the dual EPS power supply without backup

**Connecting the dual EPS power supply with Maquet backup**

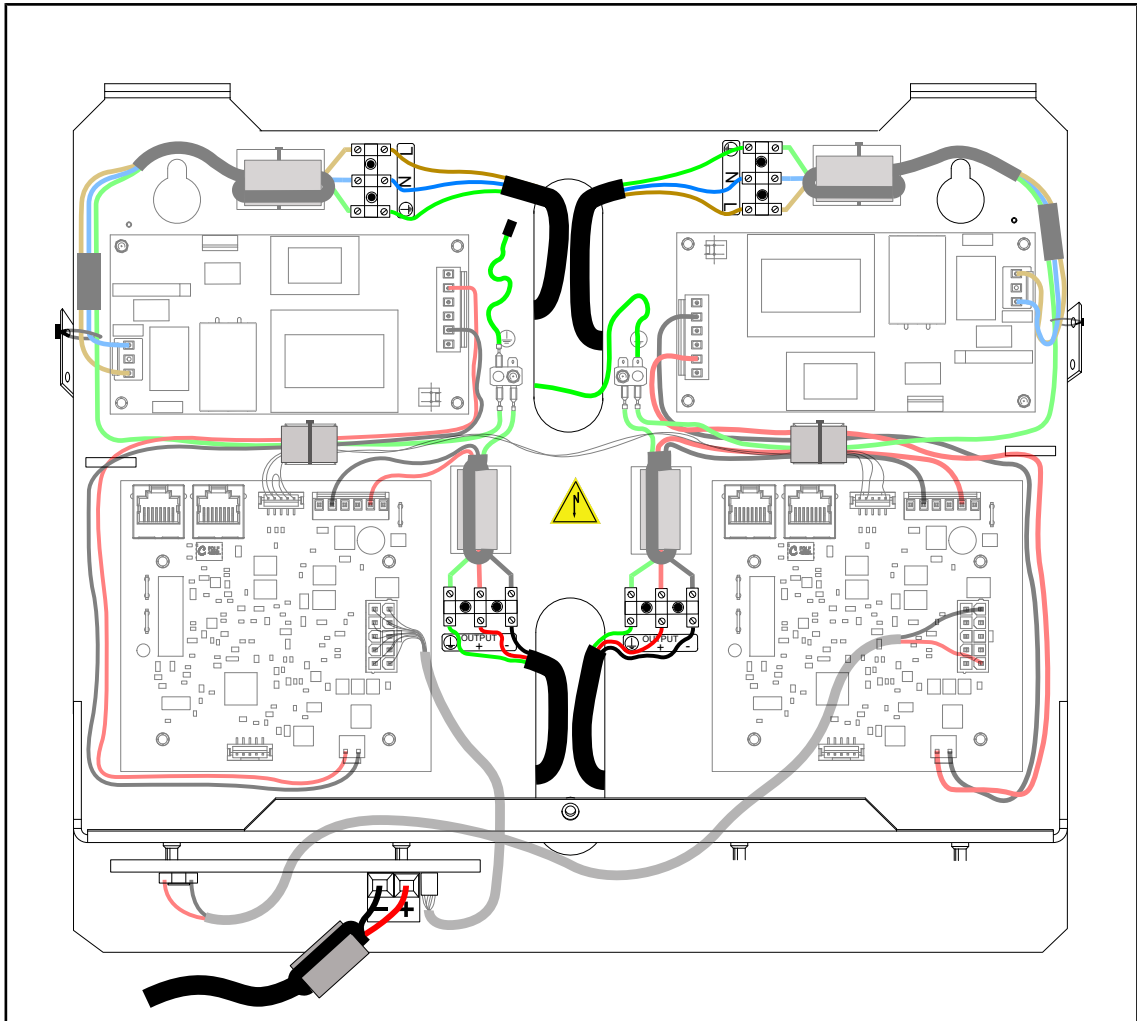


Fig. 4: Connecting the dual EPS power supply with Maquet backup

Connecting the dual EPS power supply with customer backup

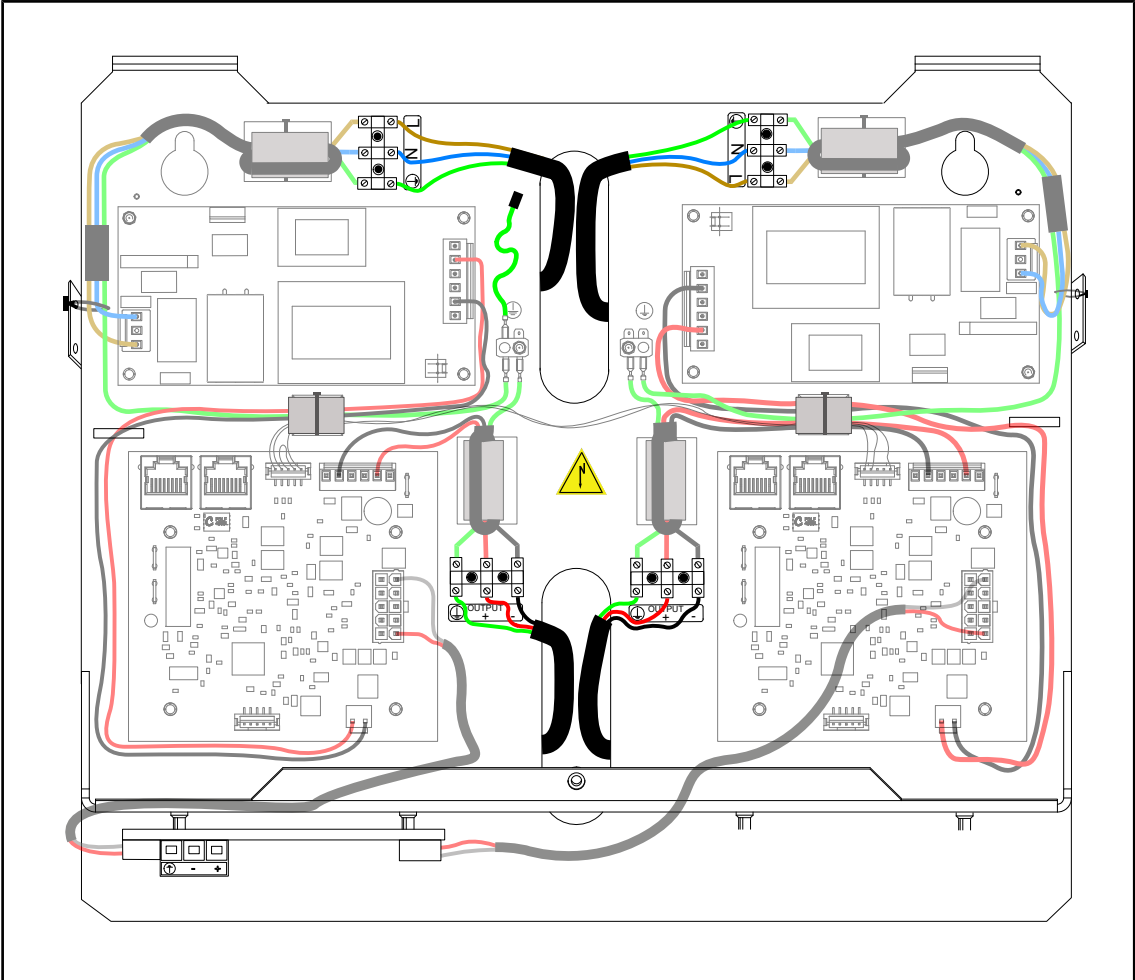


Fig. 5: Connecting the dual EPS power supply with customer backup

### 3 Technical specifications

EPS power supply connection diagrams

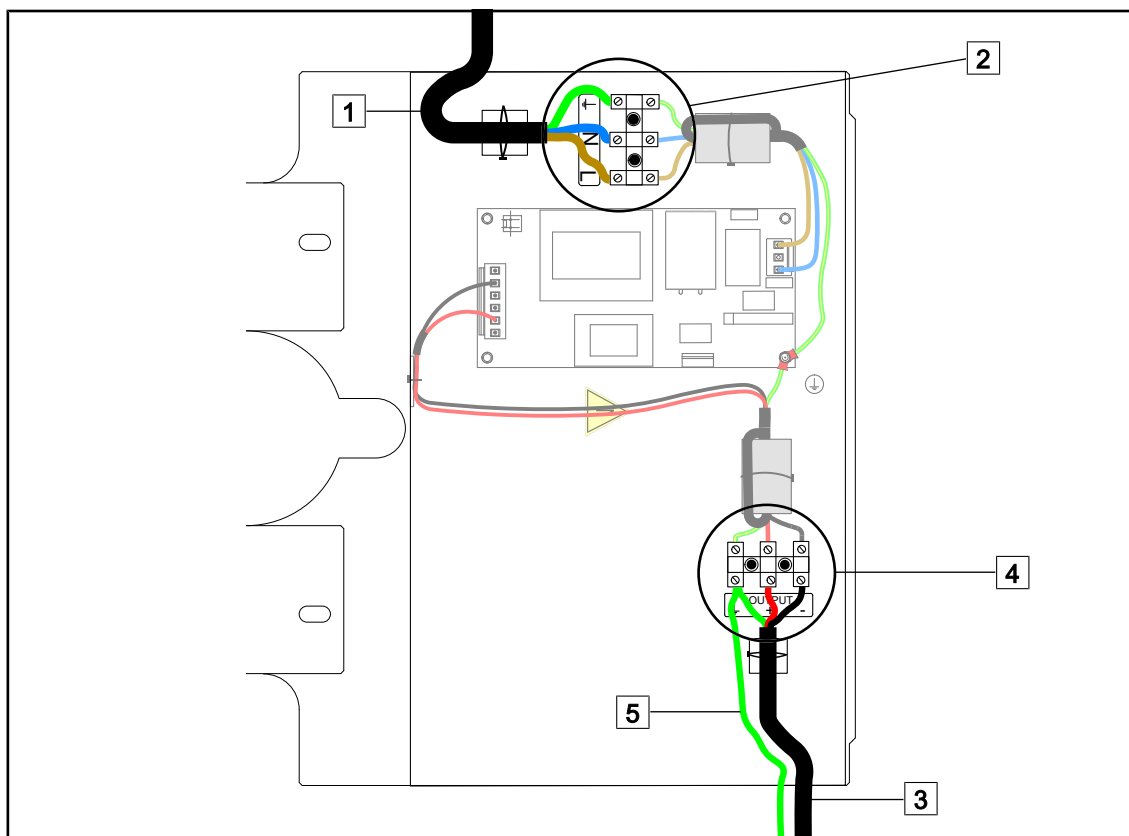


Fig. 6: Connecting the ceiling-mounted EPS

### 3.3 WPS power supply connection diagrams

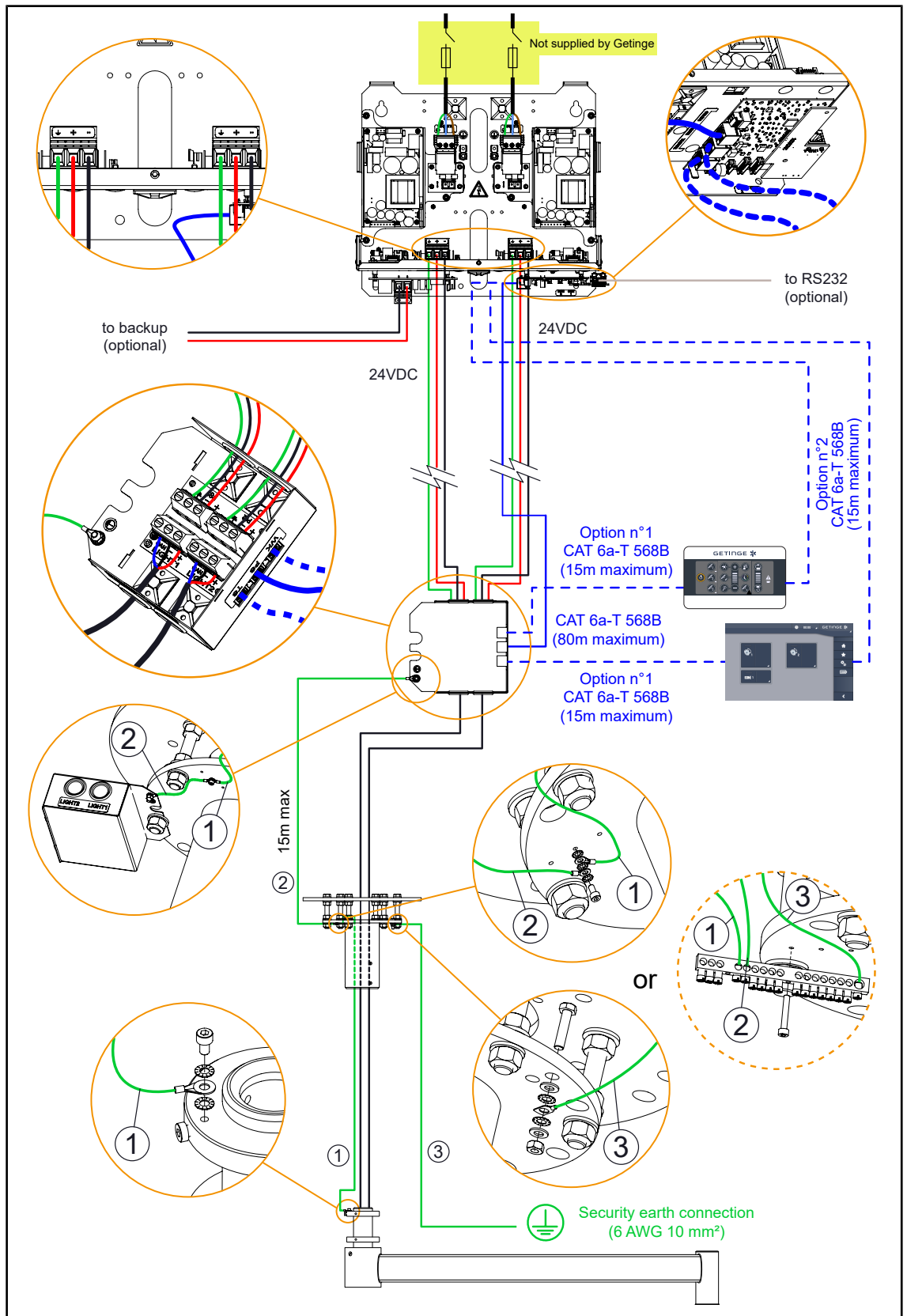


Fig. 7: Overall electrical connection diagram

### 3 Technical specifications

#### WPS power supply connection diagrams

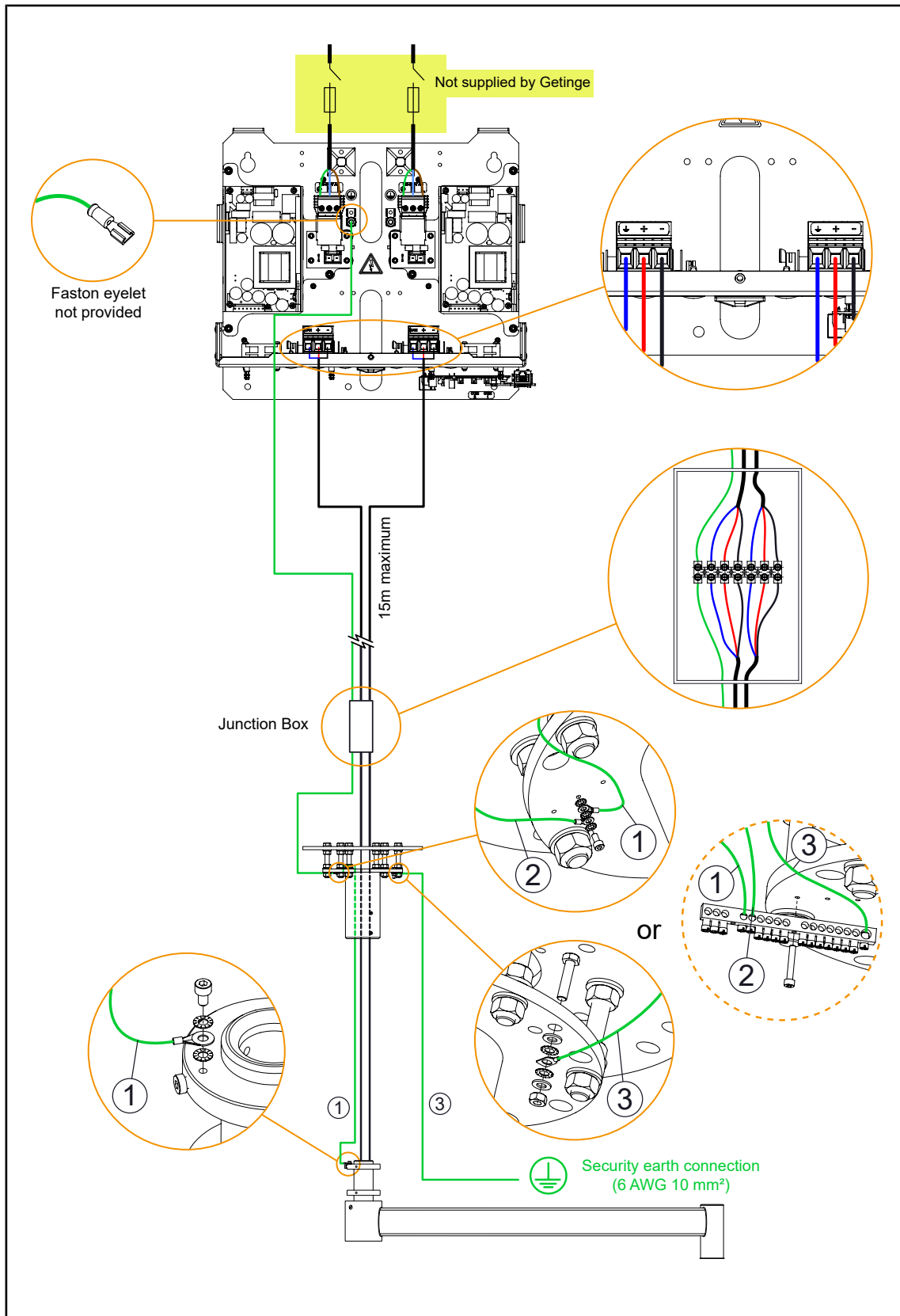


Fig. 8: Electrical diagram for US power supply without termination box

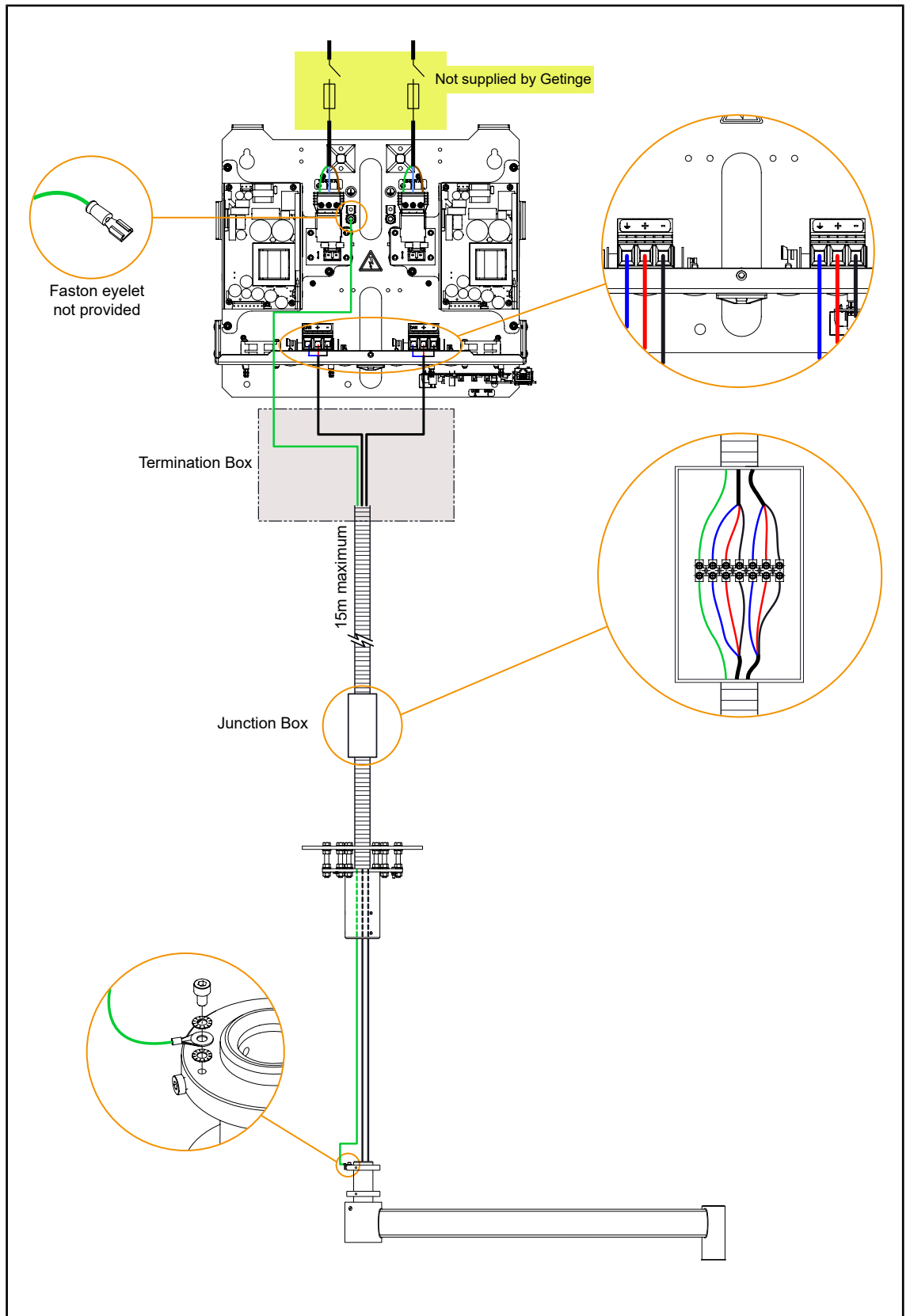


Fig. 9: Electrical connection diagram for US power supply with termination box

# 3

## Technical specifications

### WPS power supply connection diagrams

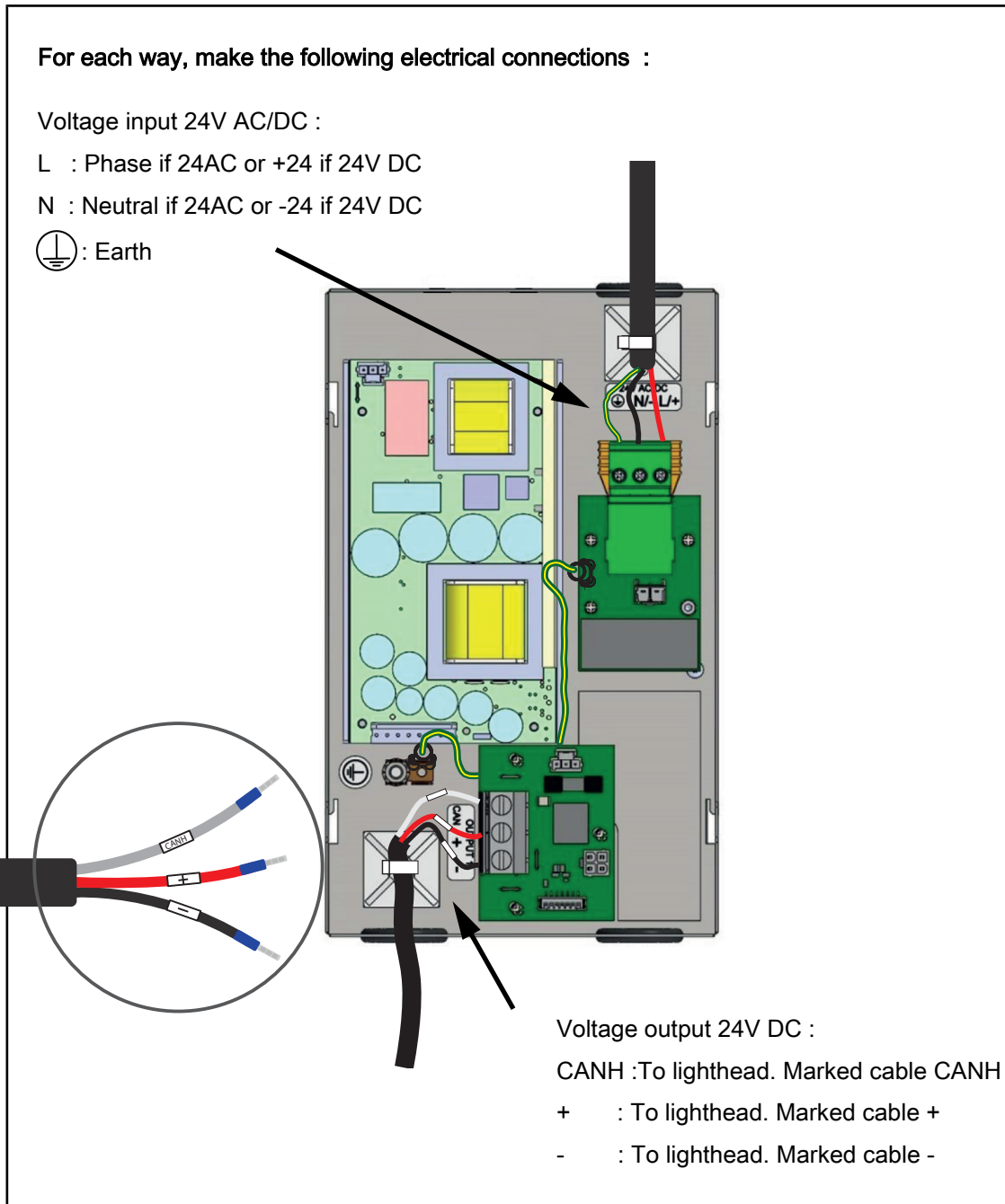


Fig. 10: 24V AC-DC / 24V DC version without remote control



## 4 Maintenance procedures


### 4.1 Tools required for maintenance



#### NOTICE

After-sales service kits are available on the spare parts platform

The LinkOne platform is accessible on the GetingeOnline portal:  
<https://swp-linkone.getingegroup.local/>

Reference	Description
ARD572034999	OPM 039 - LUXMETER + SENSOR
ARD572059999	OPM 051 - METRIX MX MULTIMETER (54-59HD)
N/A	- IEC 62353-compatible electrical insulation and continuity tester -
N/A	2-10 Nm torque wrench 10-50 Nm torque wrench 40-200 N.m torque wrench
ARD687000011	 OPM 085 - INSULATED ANGLED PLIERS
N/A	Set of Allen keys
N/A	Set of Torx wrenches
N/A	Set of open-end wrenches
N/A	Set of flat-bladed screwdrivers
N/A	Set of Philips screwdrivers
N/A	Adjustment rod for OASYS arm
ARD659000011	Grease in can
ARD659000016	Aerosol grease
ARD368904555	VA - TUBE OF GREASE, 5 ML

### 4.2 Periodic maintenance

#### 4.2.1 Periodic replacement cycles

To ensure safety and performance, please follow the recommendations below.

For SB, SA and SAT suspensions

Items	Frequency
All brakes	Every year
Suspension mounting screws (tighten the screws to the recommended tightening torque)	Every 6 years

Items	Frequency
Adapter mounting screws (tighten the screws to the recommended tightening torque)	Every 6 years
Acrobat 2000 or Ondaspace spring-arm snap ring	Every 6 years
Batteries	Every 3 years

### For SAX and SATX suspensions

Items	Frequency
All brakes	Every year
Suspension mounting screws (tighten the screws to the recommended tightening torque)	Every 10 years
Adapter mounting screws (tighten the screws to the recommended tightening torque)	Every 10 years
Valia spring-arm snap ring	Every 10 years
Oasys spring-arm snap ring	Every 10 years
Batteries	Every 3 years

### 4.2.2 Replacing the batteries



#### WARNING!

**Risk of burns**

If unsuitable batteries are used, they may explode due to the emission of gases or liquids.

Always use batteries supplied by Getinge during installation and when replacing defective batteries.



#### WARNING!

**Risk of electric shock or injury**

The use of screws or spare parts other than those supplied by the manufacturer may damage the device.

Use only screws and spare parts supplied by the manufacturer.



#### WARNING!

**Risk of burns**

A metal object falling onto the two poles of the battery simultaneously risks short-circuiting the battery.

Handle the batteries with care to avoid causing a short circuit.



#### WARNING!

**Risk of burns**

Improper storage of batteries after removal may trigger a fire.

The terminals of used batteries must be insulated.

#### 4.2.2.1 On the VPS power supply



### WARNING!

Risk of electric shock

The product on which the technician is to work may still be connected to a power source.

Before performing any maintenance, turn off the device and lock out the electrical supply.

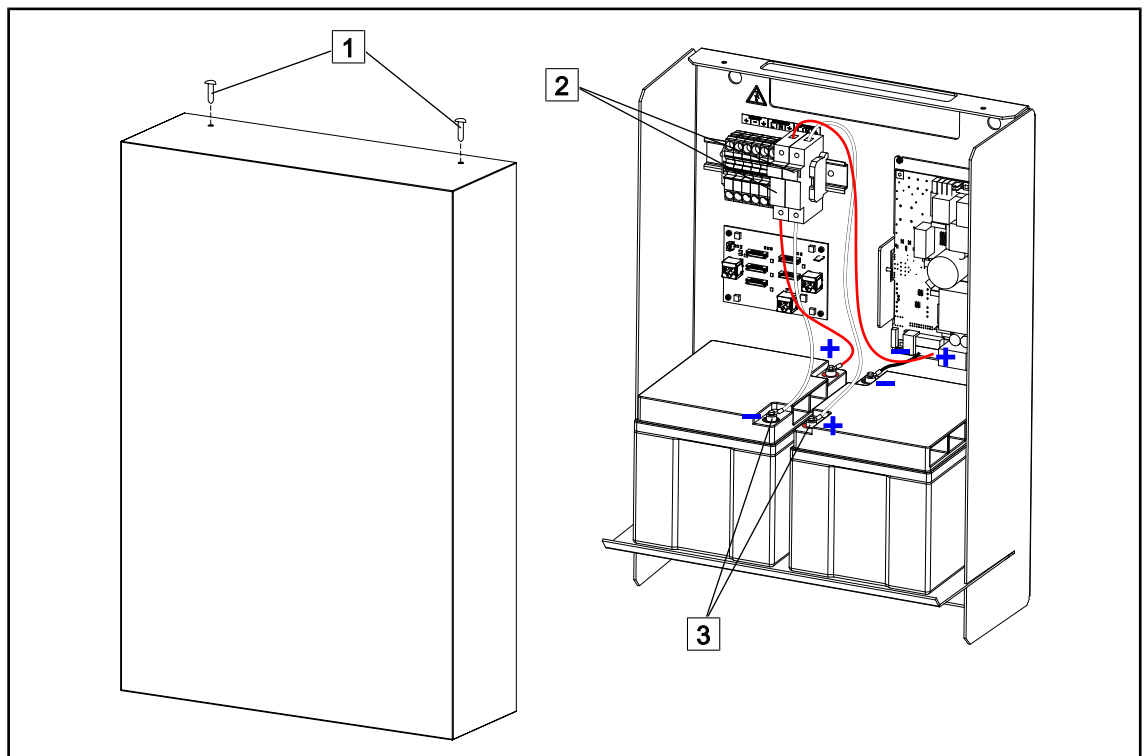


Fig. 11: Replacement of VPS power supply batteries

- Switch off the power supply.
- Open the battery pack cover by removing the mounting screws **1**.
- Open the fuse holders **2**.
- Unscrew the nuts and remove the lugs from the four battery terminals **3**.
- Replace the two batteries.
- Reconnect the cables to the terminals in compliance with the position shown in the illustration.
- Close the fuse holders **2**.
- Close the battery pack cover and screw in the mounting screws **1**.

## 4.2.2.2 On the EPS power supply



### WARNING!

Risk of electric shock

The product on which the technician is to work may still be connected to a power source.

Before performing any maintenance, turn off the device and lock out the electrical supply.



### NOTE

For a **one-hour** battery backup, you will find 2 pairs of red and black wires.

For a **three-hour** battery backup, you will find **4 pairs of red and black wires**.

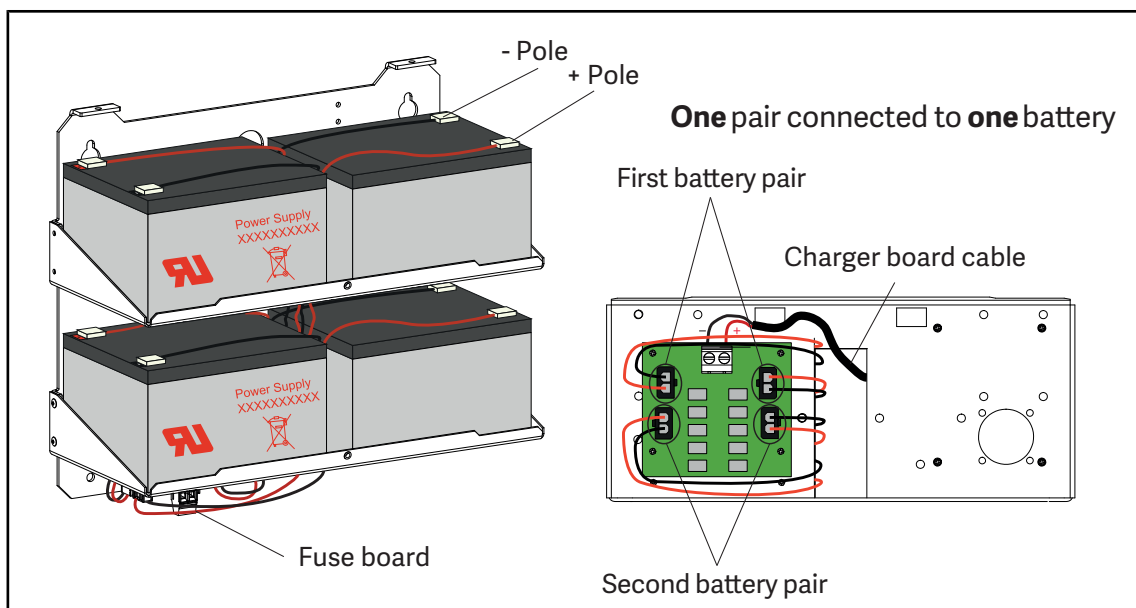


Fig. 12: Replacing the EPS power supply batteries

- Switch off the power supply.
- Unplug the connectors from the fuse board.
- Remove the lugs from the battery terminals
- Replace the batteries.
- Reconnect the lugs on the battery terminals.
  - Each battery has a positive and a negative **terminal**, marked **red and black, respectively**.
  - Each cable pair must be connected to the terminals by matching colours.
  - The **red terminal** is on the “+” side of the battery and connects to the red wire.
  - The **black terminal** is on the “-” side of the battery and connects to the black wire.
- Reconnect the connectors of the fuse board.

### 4.2.2.3 On the WPS power supply



#### WARNING!

Risk of electric shock

The product on which the technician is to work may still be connected to a power source.

Before performing any maintenance, turn off the device and lock out the electrical supply.



#### NOTE

For a **one-hour** battery backup, you will find 2 pairs of red and black wires.

For a **three-hour** battery backup, you will find **4 pairs of red and black wires**.

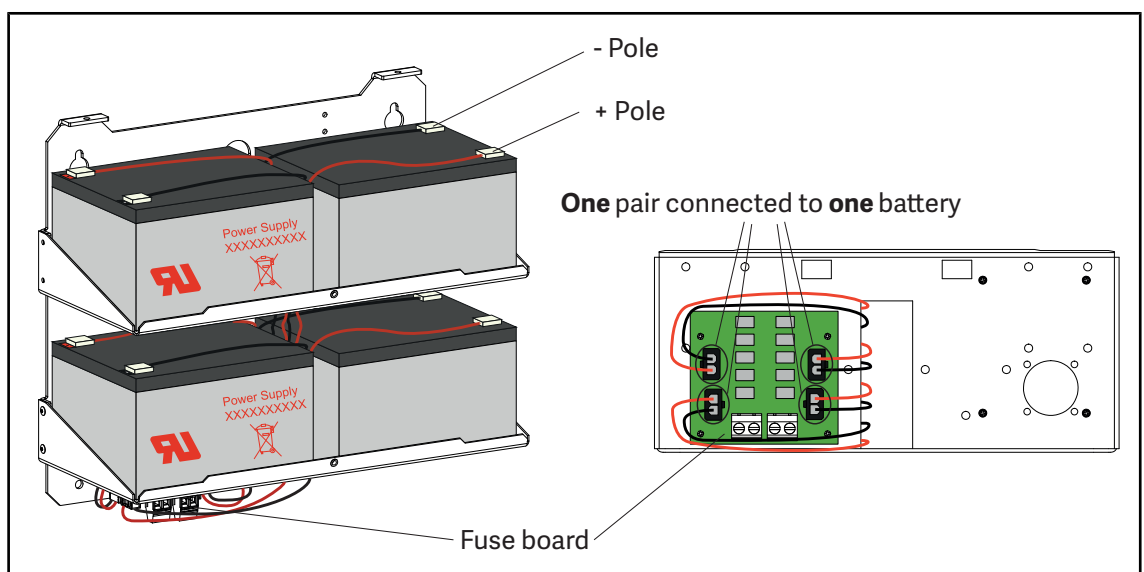


Fig. 13: Replacing the WPS power supply batteries

- Switch off the power supply.
- Unplug the connectors from the fuse board.
- Remove the lugs from the battery terminals
- Replace the batteries.
- Reconnect the lugs on the battery terminals.
  - Each battery has a positive and a negative **terminal**, marked **red and black, respectively**.
  - Each cable pair must be connected to the terminals by matching colours.
  - The **red terminal** is on the “+” side of the battery and connects to the red wire.
  - The **black terminal** is on the “-” side of the battery and connects to the black wire.
- Reconnect the connectors of the fuse board.

## 4.3 Operations to be performed on the touchscreen



Fig. 14: Entry of maintenance date

- At the end of the maintenance, enter the date of maintenance in the touchscreen menu.
- Press the **Getinge logo** [1] twice to display the password entry window.
- Enter the password **8311** on the keyboard [2] then press OK [3].
- On the maintenance page, press **Maintenance Date** [4] then enter the date of the maintenance performed.
- Press Cancel [5] to reinitialise the maintenance and remove the orange key.
- Quit the menu by pressing the **Getinge logo** [1] again.

## 5 Adjustments



### NOTICE

Ensure that the weight of the lighthead is the same whether being raised or lowered and that it is stable in any position.

### 5.1 Lubrication

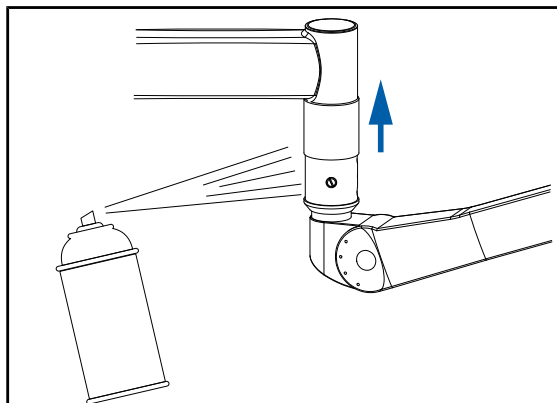


Fig. 15: Suspension lubrication

#### Lubricating the suspension under the slip ring

1. Remove the mounting screw.
2. Raise the screw cover.
3. Spray lubricating grease at the location of the screw cover.

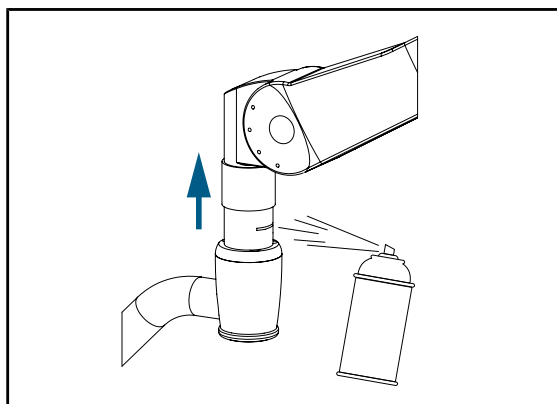


Fig. 16: Spring-arm lubrication

#### Lubricating the spring arm under the slip ring

1. Remove the mounting screw.
2. Raise the screw cover.
3. Spray lubricating grease at the location of the screw cover.

## 5.2 Adjusting the Acrobat 2000 and Ondaspace spring arms

### Adjusting the balance of the SF/DF spring arms

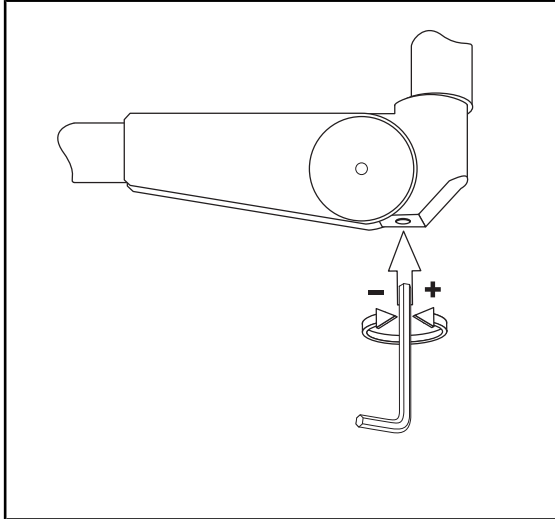


Fig. 17: Adjusting the balance

- For the ONDASPACE range, unscrew the protective cap and insert a size 5 Allen key in the hole.
- Raise the spring arm higher than the horizontal position.
- If the lighthead goes down: unscrew (turn towards the +) to increase the force of the spring arm.
- If the lighthead goes up, Turn screw (turn towards -) to decrease the force of the spring arm.

### Adjusting the top stop on the DF spring arm

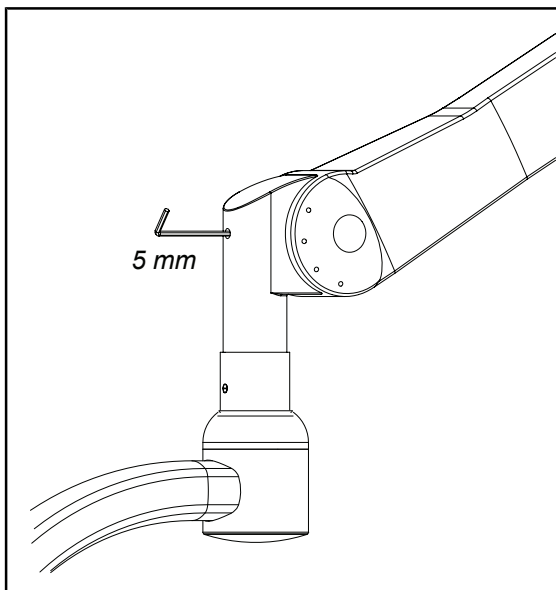


Fig. 18: Stop adjustments

- Tighten to lower the stop.
- Loosen to raise the stop.



### Adjusting the top stop (SF spring arm)

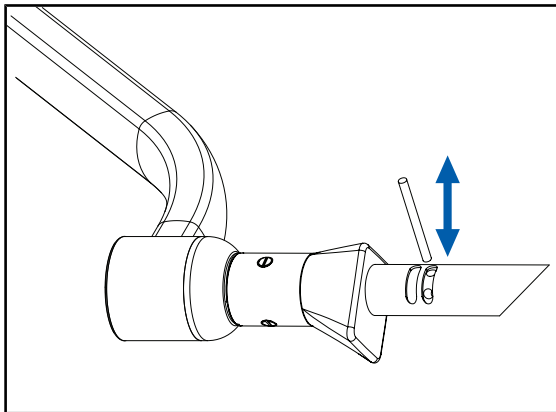


Fig. 19: Ring motion

- Raise the ring using the adjustment rod to lower the stop.
- Lower the ring using the adjustment rod to raise the stop.

## 5.3 Adjusting the Oasys spring arms

### Removing the SF/DF side covers

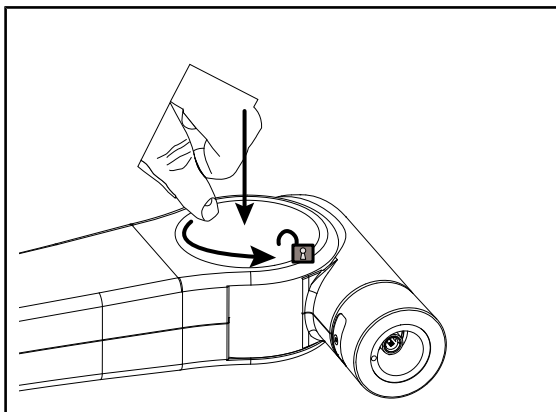


Fig. 20: Removing the round covers

- Remove the round covers, two for the SF version or four for the DF version.
- Press the cover slightly, then turn anti-clockwise until you hear an unlocking "click".
- Remove the round cover.

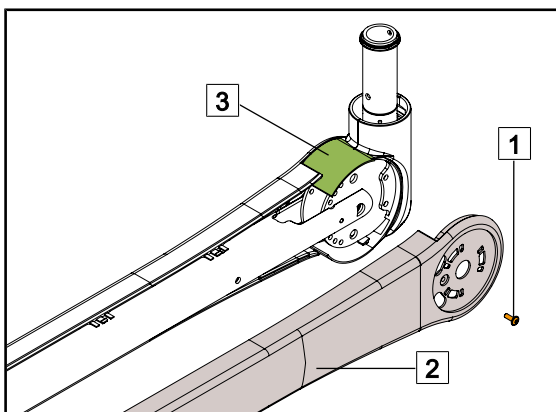


Fig. 21: Removing the spring-arm half-covers

- Using a 2.5 mm Allen key, remove the two mounting screws **1** for the SF version, or the four mounting screws for the DF version.
- Unclip the two half-covers **2**.



#### NOTICE

Be careful not to damage the plastic tabs **3** when removing the covers.

- Move the tabs **3** away and leave them on their base.

### Adjusting the tension in the SF/DF spring arm

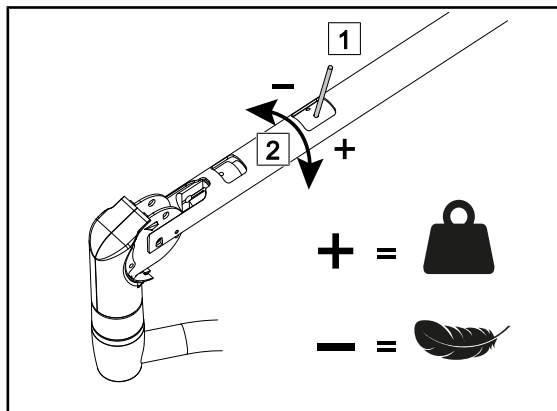


Fig. 22: Adjusting the tension

- Insert the metal rod supplied with the spring arm into the side-hole nut **1**.
- If the spring arm tends to move down, the spring arm tension is insufficient.
  - Rotate the nut so as to increase the tension.
- If the spring arm tends to move up, the spring arm tension is excessive.
  - Rotate the nut so as to decrease the tension.

### Adjusting the alignment of the spring arm (DF version)

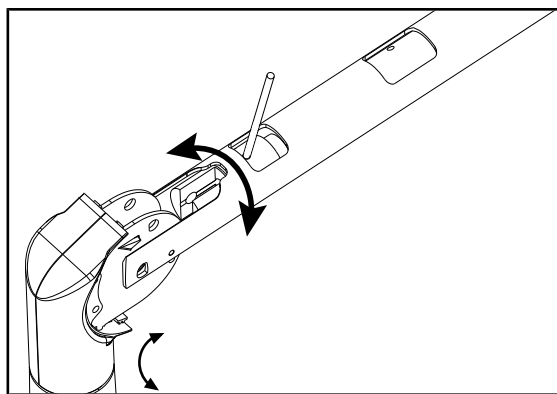


Fig. 23: Alignment

The tilt angle of the spring arm on the light-head side can be adjusted.

- The tension adjustment is carried out using the metal rod supplied with the spring arm.
- Insert the tool into the side-hole nut.
- Rotate the nut counter-clockwise to retract the end of the spring arm, and clockwise to extend it.

### Adjusting the spring arm vertical stops

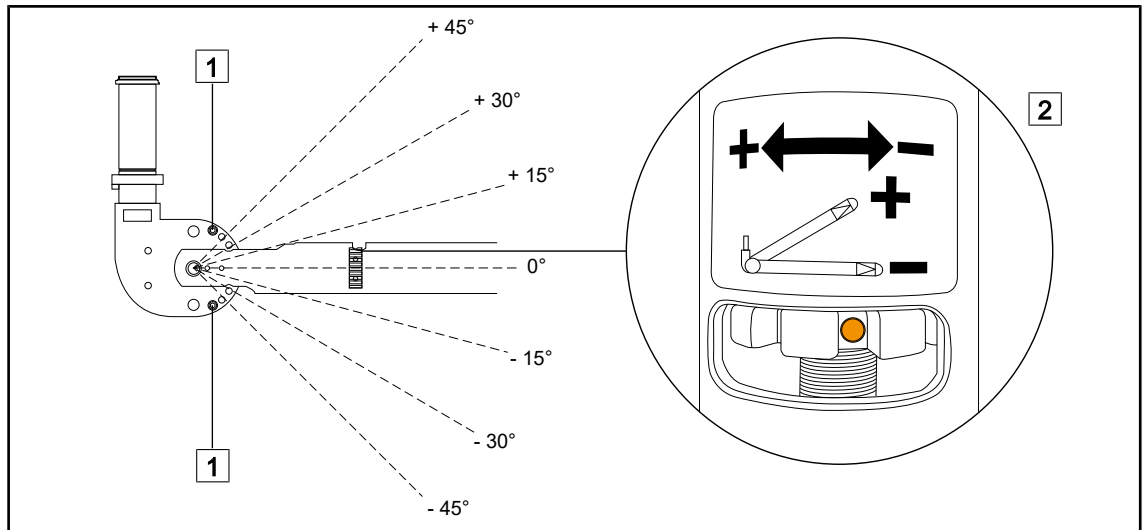


Fig. 24: Adjusting the vertical stops

- Identify the four vertical stop screws **1**.
- Determine the desired angle at which the stops are to be positioned. The angle settings are as follows: 0°, 15°, 30°, and 45° above and below the horizontal position of the spring arm.
- Using a 5 mm Allen key, unscrew the vertical stop screws on both sides to position them in the two holes of the selected angle ranges:
  - from 0° to 30°: tighten each screw so that the base of the screw head abuts against the spring arm without play.
  - for angles +45° and -45°: Remove the four screws.
- The desired amplitude can be fine-tuned using the adjustment knob **2**.

### Fitting the spring-arm covers

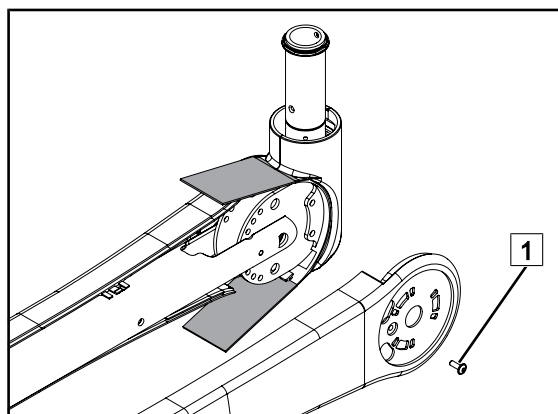


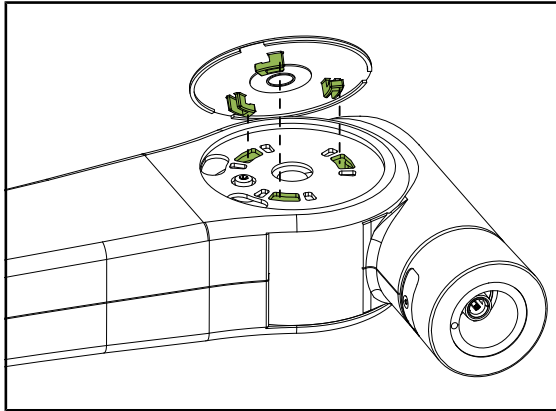
Fig. 25: Re-installation of the half-covers

- Do not insert the tabs into the covers.
  - Leave them outside.
- Carefully refit and clip the half-covers to the spring arm.
- Re-install the mounting screws.
  - Two screws for SF version **1**
  - Four screws for DF version **1**

# 5

## Adjustments

### Adjusting the Oasis spring arms



- Position the round cover so that the three tabs are facing the oblong holes in the side covers.
- Press the cover slightly, then turn clockwise until you hear a locking “click”.
- **Checking that the round covers are securely fastened**

Fig. 26: Fitting the round covers

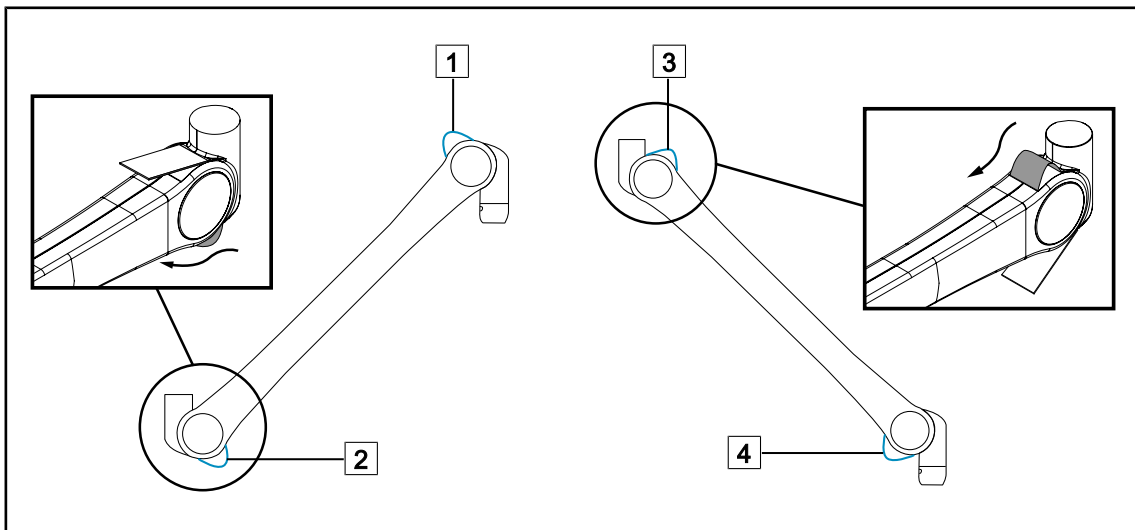


Fig. 27: Mounting the tabs

- Position the spring arm in the raised position.
- Insert tabs **1** and **2** in the side covers, according to the spring arm position.
- Position the spring arm in the lowered position.
- Insert tabs **3** and **4** in the side covers, according to the spring arm position.
- Check that the tabs slide correctly in the side covers.

## 5.4 Adjusting the Valia spring arms

### SF version

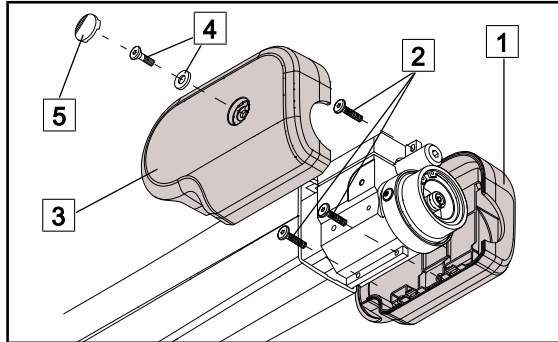


Fig. 28: Removing the front flanges

- Remove the screw cover [5].
- Remove the washer with the M4x10 screw [4].
- Remove the flange [3].
- Unscrew the three PT M3x12 screws [2] then remove the flange [1].

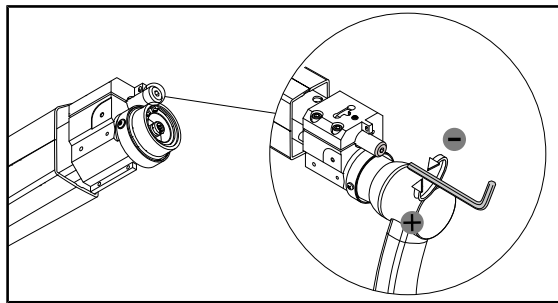


Fig. 29: Adjusting the top stop

- Insert a 5-mm Allen key.
- Tighten to raise the stop to + 20 degrees.
- Tighten to lower the stop to 0 degrees.



### NOTE

**TIP:** To make the adjustment easier, pull the arm slightly downwards to release the adjustment screw

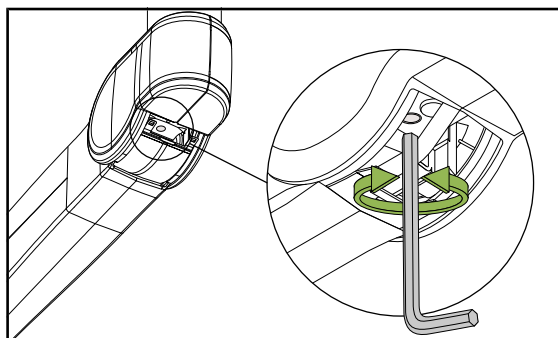


Fig. 30: Adjusting the tension

- Position horizontally and push back the tab halfway to access the adjustment screw.
- Insert a 5-mm Allen key.
- Tighten to decrease the tension.
- Loosen to increase the tension.

**WARNING!****Risk of injury**

If a snap ring is missing or installed incorrectly, a component or part may fall from the device.

Check that all snap rings are properly installed.

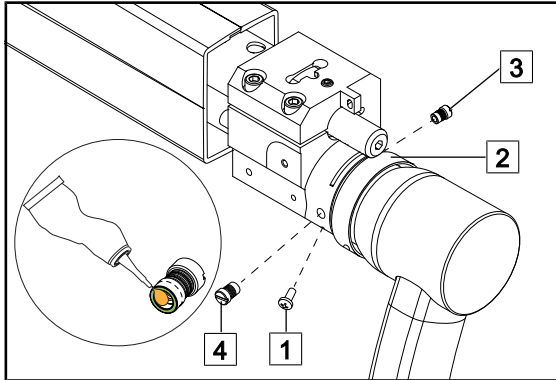


Fig. 31: Adjusting the spring arm brakes

- Remove the M4x10 screw [1] and insert the safety ring [2].
- Remove the brake screw [3], for the LCH 17 spring arm, or both brake screws [3] and [4], for the LCH 19 spring arm.
- Place a drop of paste, supplied with the spring arm, on the wear area of the brake screws.
- Adjust the brake screw [3], for the LCH 17 spring arm, or both brake screws [3] and [4], for the LCH 19 spring arm.
- Check that the snap ring is in place.
- Slide the safety ring [2] back in position then re-install the M4x10 screw [1].

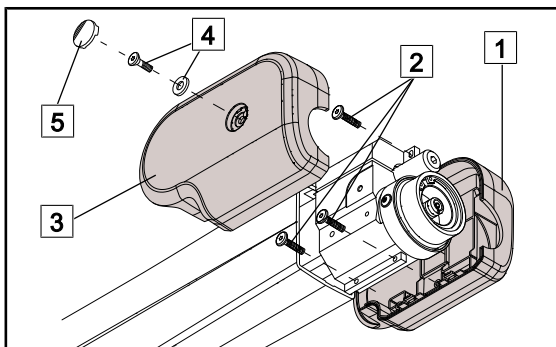


Fig. 32: Refitting the front flanges

- Fit the flange [1], then fit the three M3x12 PT screws [2] until they make contact.
- Fit the flange [3].
- Fit the washer with the M4x10 screw [4]; tighten until it makes contact, without forcing.
- Fit the screw cover [5].

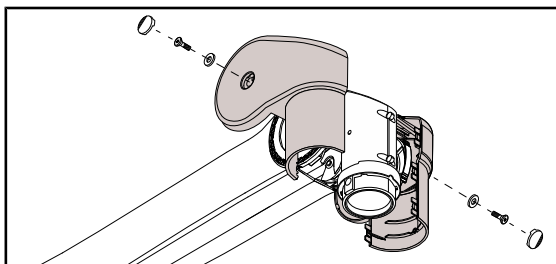
**DF version**

Fig. 33: Removing the front flanges

- Remove the screw covers.
- Unscrew the two M4x10 screws and remove the two washers.
- Unhook the two flanges.

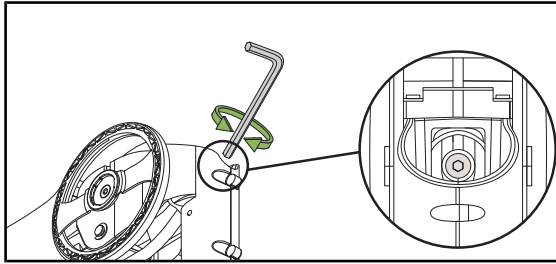


Fig. 34: Adjusting the top stop

- Insert a 5-mm Allen key.
- Tighten to raise the stop.
- Loosen to lower the stop.

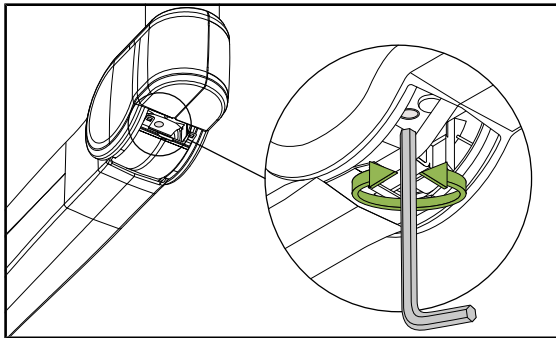


Fig. 35: Adjusting the tension

- Position horizontally and push back the tab halfway to access the adjustment screw.
- Insert a 5-mm Allen key.
- Tighten to decrease the tension.
- Loosen to increase the tension.

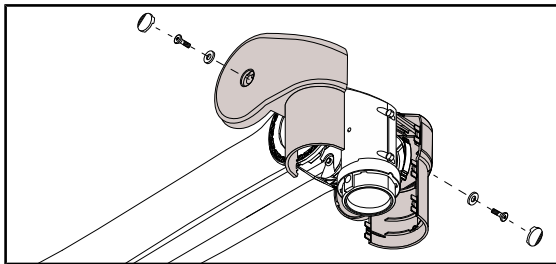


Fig. 36: Fitting the front flanges

- Clip on the two flanges.
- Fit the two washers with the two M4x10 screws; tighten until they make contact.
- Fit the screw covers.

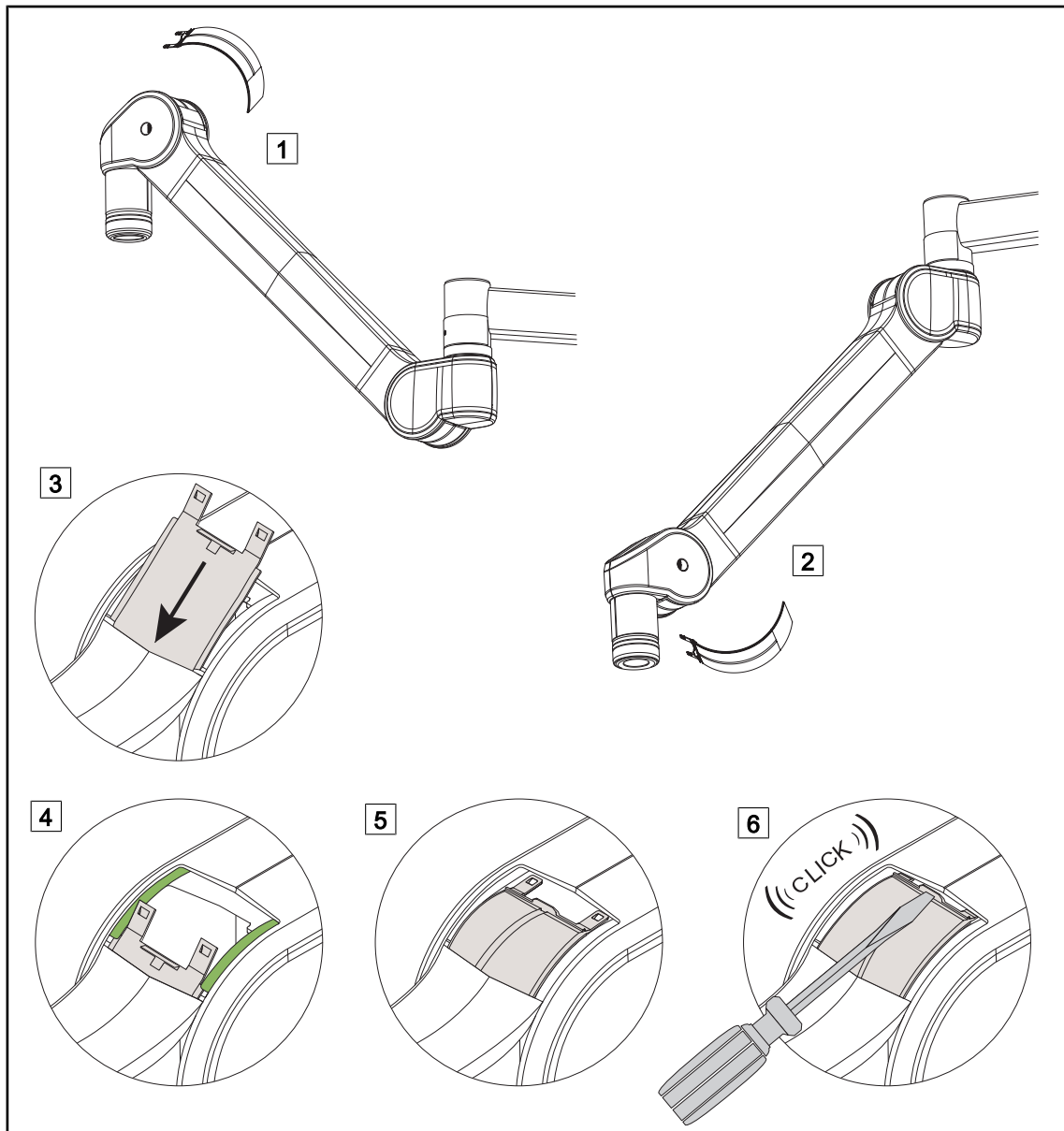


Fig. 37: Install the tabs

- Check that the matt inner surface and shiny outer surface of the tabs are correctly positioned to ensure correct mounting in the grooves.
- Position the spring arm in the high position **1** to insert the first two tabs.
- Insert the tab in the grooves **3**.
- Raise the tab **4** back into its housing.
- Lock the tab by pushing it into its housing using a flat screwdriver, until it clicks **5**.
- Position the spring arm in the low position **2**, then proceed in the same way to install the second tab.
- Move the arm up and down to check that the tabs slide without coming out of their grooves.

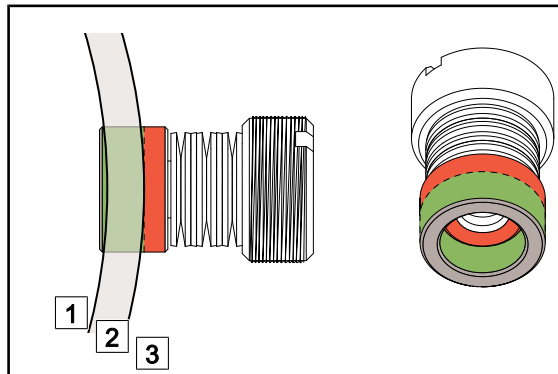


## 5.5 Adjusting the brakes



### NOTICE

It is normal for a newly installed brake to require readjustment after two to six months of use in order to compensate for wear.



- Break-in zone 1
- Useful zone 2
- Wear zone 3

Fig. 38: Brake wear

### Suspension

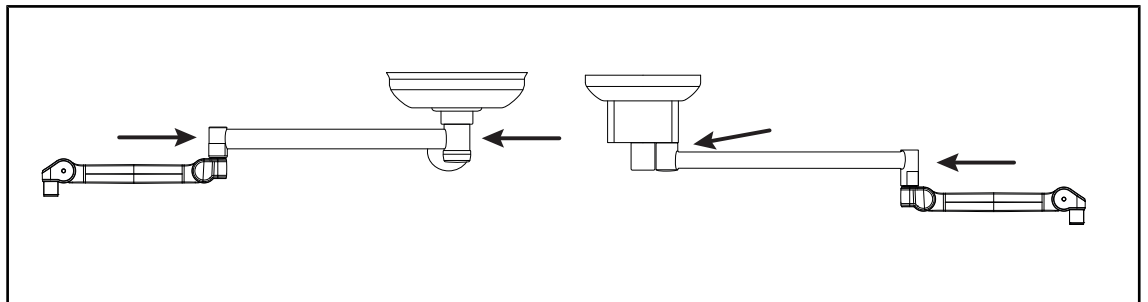
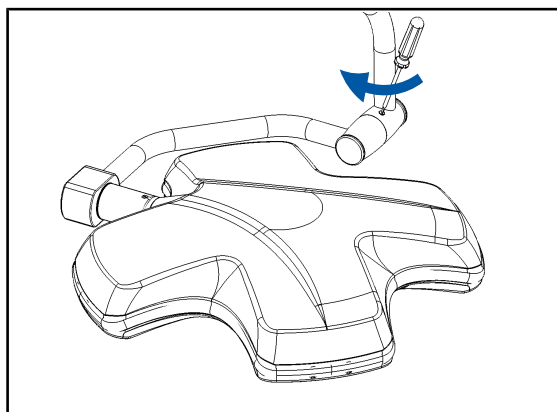


Fig. 39: Suspension brake adjustments

- Tighten screw to increase braking.
- Loosen screw to reduce braking.

### VCSII lighthouse

DF version



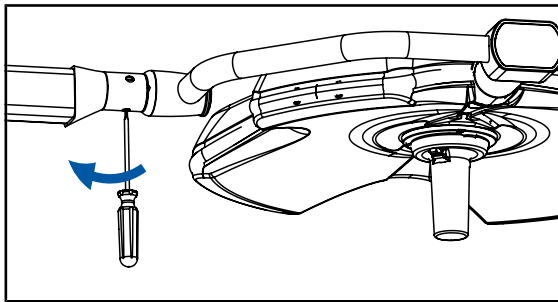
- Adjust the lighthouse brake, located on the intermediate fork:
  - Tighten screw to increase braking.
  - Loosen screw to reduce braking.

Fig. 40: Adjusting the DF lighthouse brake

# 5 Adjustments

## Adjusting the brakes

SF version



- Perform the adjustment of the lighthouse brake located on the spring arm:
  - Tighten screw to increase braking.
  - Loosen screw to reduce braking.

Fig. 41: Adjusting the SF lighthouse brake



### WARNING!

#### Risk of injury

If a snap ring is missing or installed incorrectly, a component or part may fall from the device.

Check that all snap rings are properly installed.

VST lighthouse

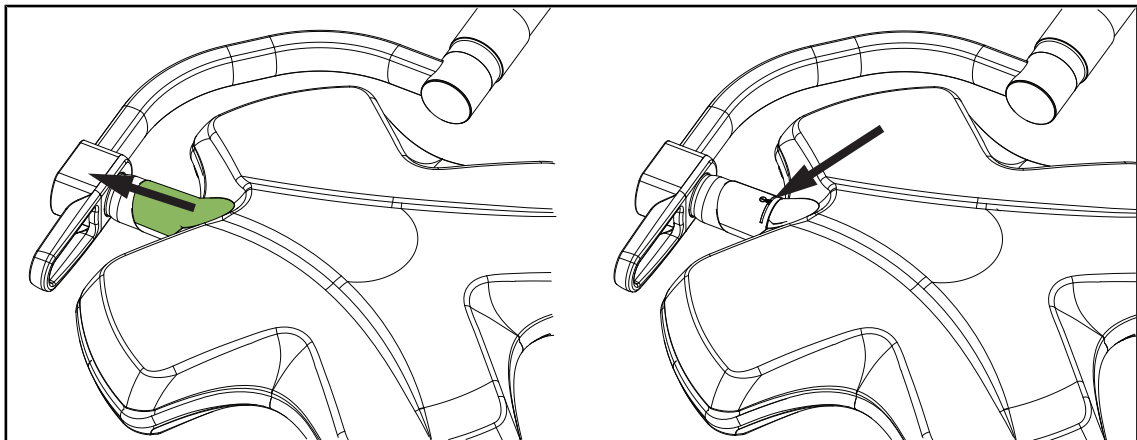


Fig. 42: Adjusting the VST lighthouse brake

- Slide the grey cover to access the brake and the snap ring.
- Check that the snap ring is correctly positioned and adjust the brake if necessary:
  - Tighten screw to increase braking.
  - Loosen screw to reduce braking.
- Re-install the grey cover.

## 6 Inspections

### 6.1 Mechanical inspections

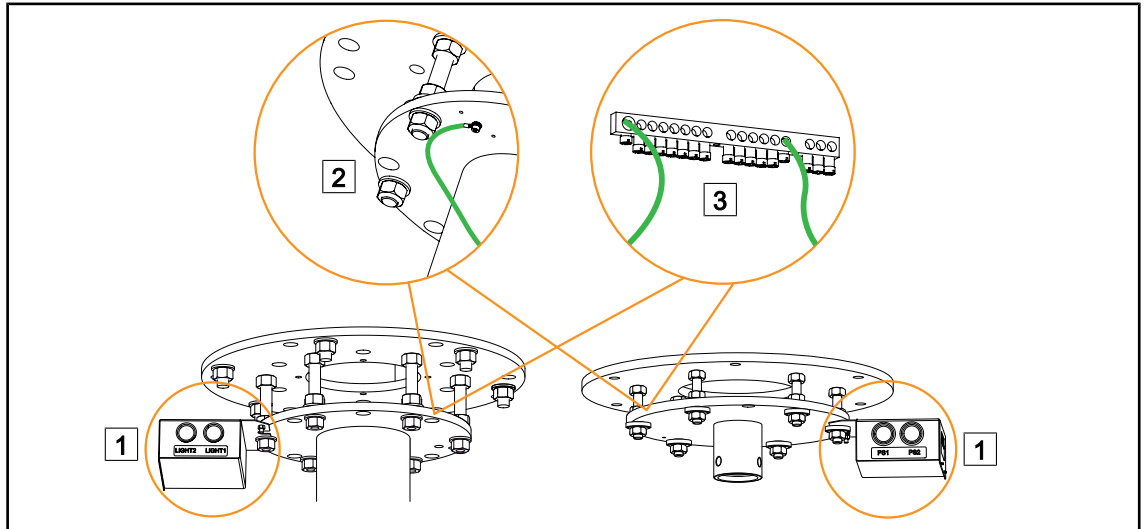


Fig. 43: Anchor point

- Check the tightening of the anchoring and connections on the terminals [2] [3] and the connection boxes [1].
- Check the ground connections [2] or [3].

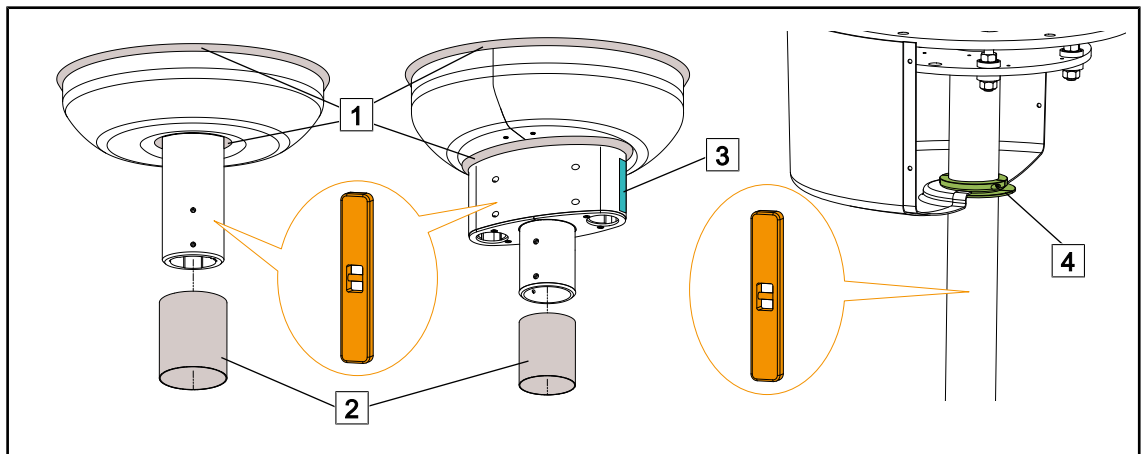


Fig. 44: Suspension tube and ceiling cover

- Check the rigidity of the suspension by shaking the assembly.
- Verify the verticality of the tube.
- SAT and SATX tube: Check the tightening of the screws of the half-plates on shafts 2 and 3.
- SB tube: Check the tightening of the cover split-rings [4].
- Check that the cover and the retention and upper seals [1] are secure.
- Check the resistance of the silicone sleeve [2] and, for the modified SAT tube, the screw cover labels [3] for shaft 2 and 3.

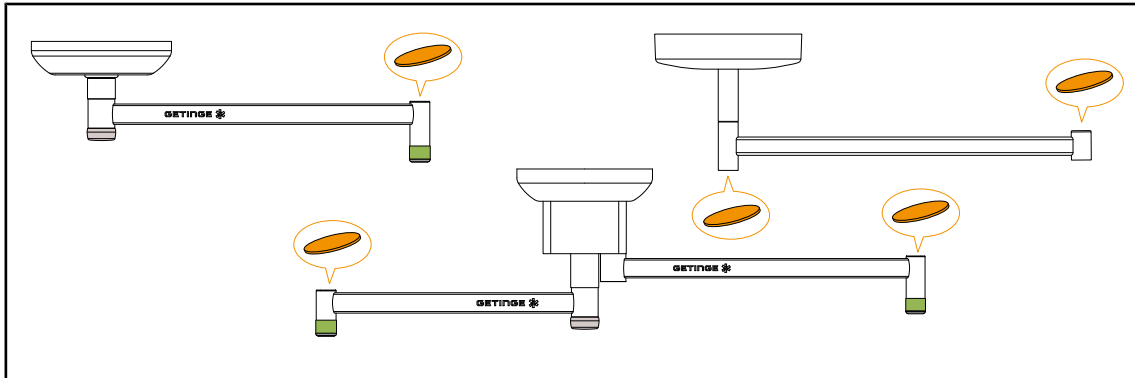


Fig. 45: Suspension arm

- Check the presence of the tube suspension's linking screws and the replacement periodicity. (Do not re-tighten these screws during maintenance as there is a risk of fracture. If screws appear loosened, replace them).
- Check that the adjustment of the brake screws has been performed.
- Check the presence of the safety rings with holding screw.
- Check the presence of the bumpers and caps.



### WARNING!

**Risk of injury**  
The metal half-rings can be sharp.

The metal half-rings on the spring arm should be handled with care to avoid any risk of cuts.

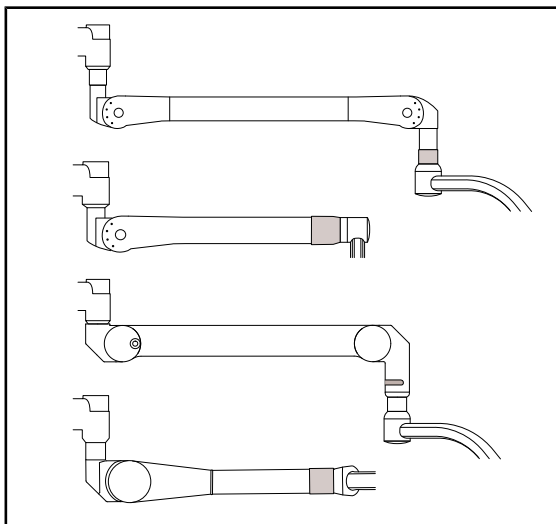


Fig. 46: Acrobat or Ondaspace spring arm

- Check that the top stop is properly adjusted.
- Check the balance.
- AC2000: Check the presence of the snap ring and the replacement periodicity for the DF version, and the presence of the two stop screws for the SF version.
- AC2000 DF and SF: Check the presence of the safety ring with holding screw.
- ONDASPACE SF: Check the presence of the snap ring and the replacement periodicity.
- ONDASPACE SF: Check the presence of the safety ring with holding screw.
- Check the correct installation of the covers, the tightening of the screws for the round covers.
- Check the condition, position and sliding of the tabs.

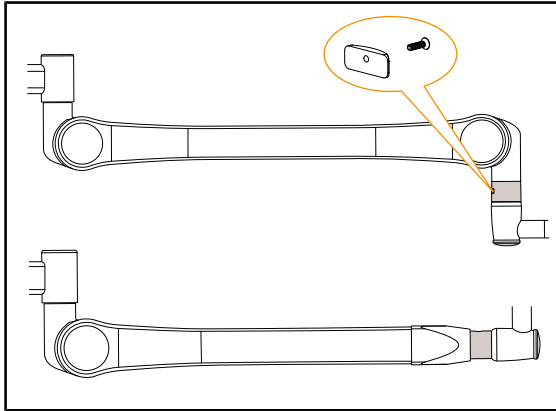


Fig. 47: Oasys spring arm

- Check that the top stop is properly adjusted.
- Check the balance.
- OASYS DF: Check the presence of the snap ring and the replacement periodicity.
- OASYS SF: Check the replacement periodicity of the 2 snap rings.
- OASYS DF: Check the presence of the safety ring and cover with holding screw.
- OASYS SF: Check the presence of the safety ring with holding screw.
- Check the correct installation of the covers, the tightening of the screws for the round covers.
- Check the condition, position and sliding of the tabs.

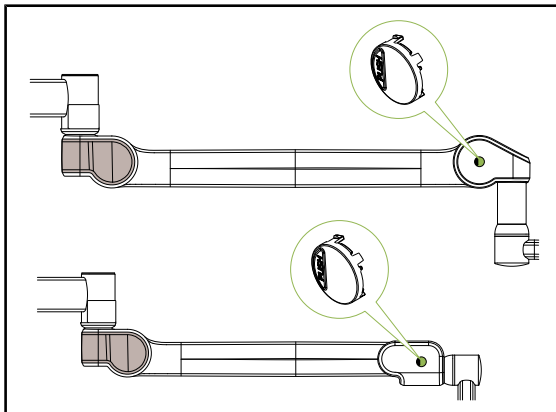


Fig. 48: Valia spring arm

- Check that the top stop is properly adjusted.
- Check the balance.
- VALIA DF: Check the presence of the snap ring and the replacement periodicity.
- VALIA SF: Check the replacement periodicity of the snap ring.
- VALIA: Check the correct installation of the covers, flanges, and the tightening of the screws.
- VALIA: Check the presence of the flange covers and screw covers.
- Check the position and sliding of the tabs.

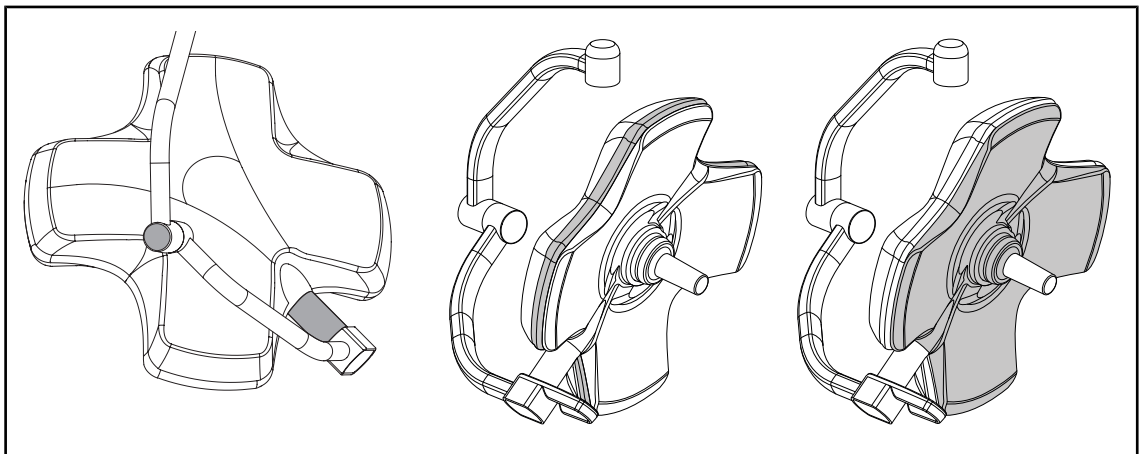


Fig. 49: Lighthouse

- Check that the silicone covers, seals and cover are secure.
- Check that there are no cracks or scratches on the underside.

## 6.2 Electrical inspections

### 6.2.1 Electrical evaluation

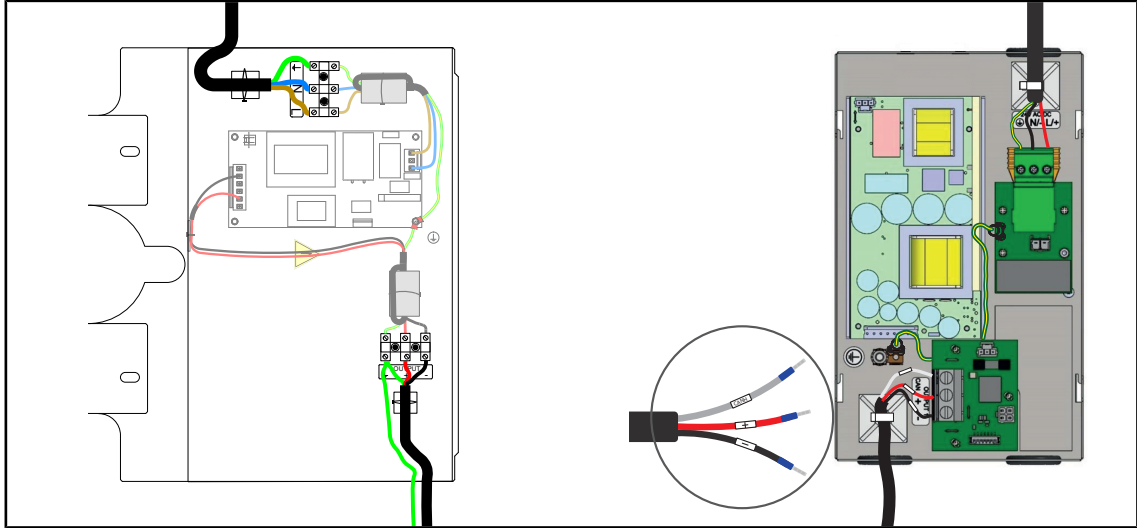


Fig. 50: Ceiling-mounted power supply

- Check the tightening of the connections.
- Check the ground connections.
- Check the general condition of the power supply.

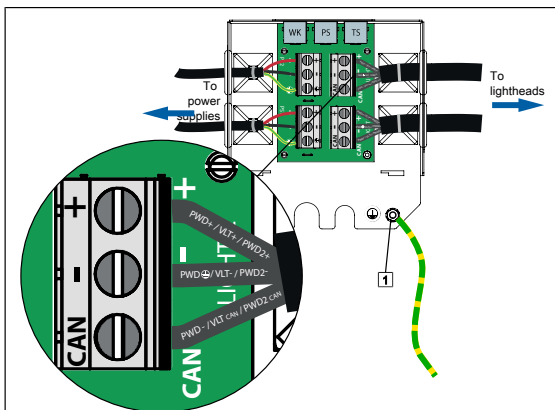


Fig. 51: Connection box

- Check the tightening of the connections.
- Check the ground connections.

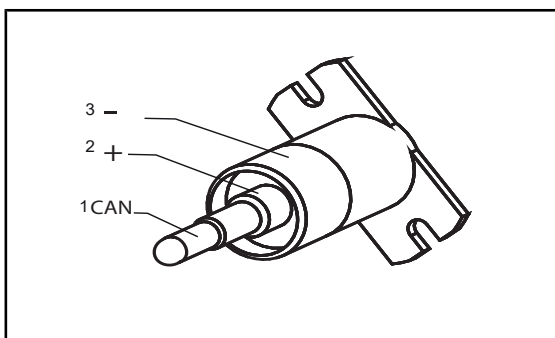


Fig. 52: Identification of the 3-track connector

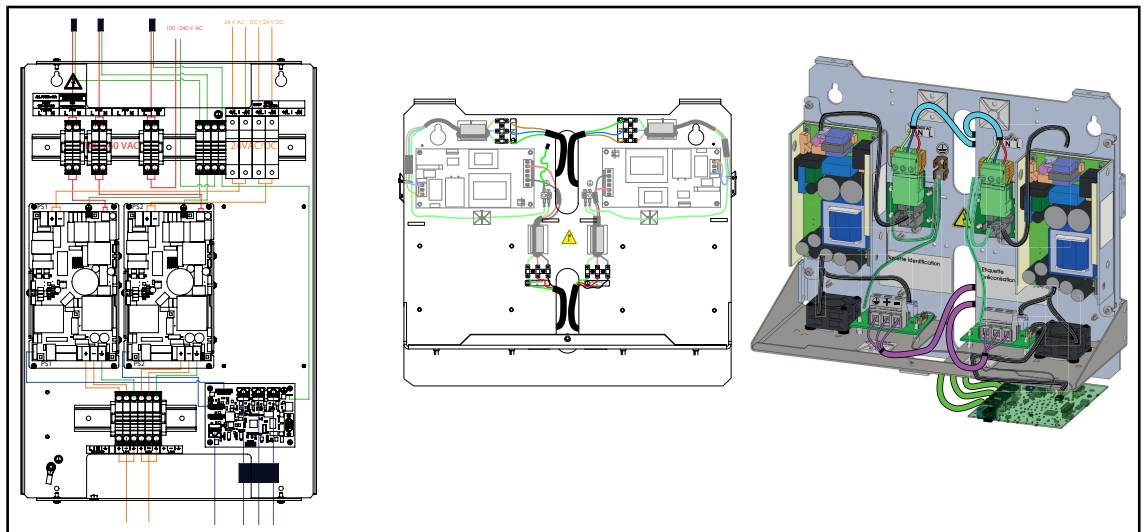


Fig. 53: Wall-mounted power supply

- Check the tightening of the connections.
- Check the ground connections.
- Check the general condition of the power supply.

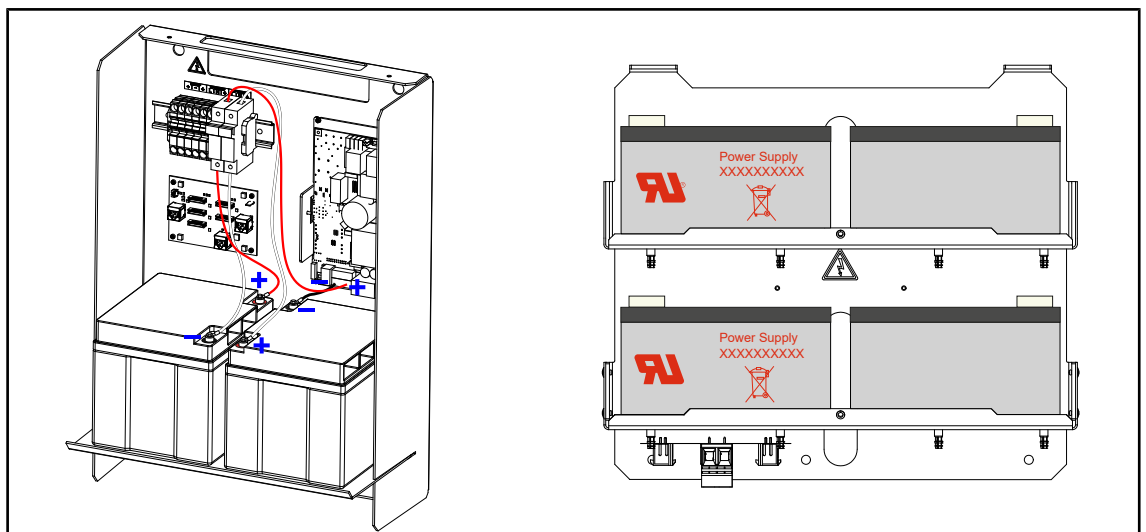


Fig. 54: Backup

- Check the tightening of the connections.
- Check the ground connections.
- Verify the output voltage of the batteries (12 V per battery, difference of voltage between batteries <math><0.1\text{ V}</math>).
- Check the general condition of the backup, the batteries, the absence of swelling, leaks, oxidation.

## 6.2.2 Performing battery tests



### WARNING!

Risk of injury

A battery lifetime test fully discharges the batteries.

Do not perform an operation immediately after a battery lifetime test. Allow time for the batteries to charge.

### 6.2.2.1 From the wall-mounted control keypad (on VCSII only)

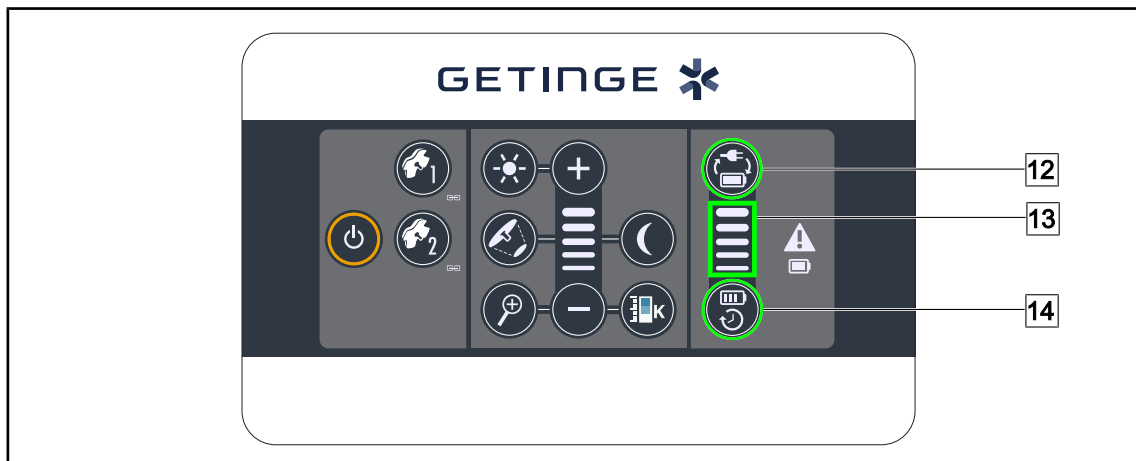


Fig. 55: Battery tests from the wall-mounted keypad

#### Running a battery backup test

1. Turn off the light.
2. Press **Switchover test** 12.
  - If the test is successful, the battery level indicator 13 flashes green. If the test fails, the battery level indicator 13 flashes red.
3. If the test fails, contact the Getinge technical service department.
4. Press **Switchover test** 12 again and hold until the button turns off.
  - The light remains on at Level 3 and the system is ready for use.

#### Running a battery life test (only with a Getinge backup)

1. Turn off the light.
2. Press **Battery lifetime test** 14 and hold until the button is backlit.
  - If the test is successful, the battery level indicator 13 flashes green. If the test fails, the battery level indicator 13 flashes red.
3. If the test fails, contact the Getinge technical service department.
  - The light turns off when the test is complete.
4. Press **Battery lifetime test** 14 again and hold until the button turns off.



### NOTE

The battery life test can be stopped at any time by pressing **Battery life test** 14.



6.2.2.2 From the wall-mounted control keypad (on VCS only)

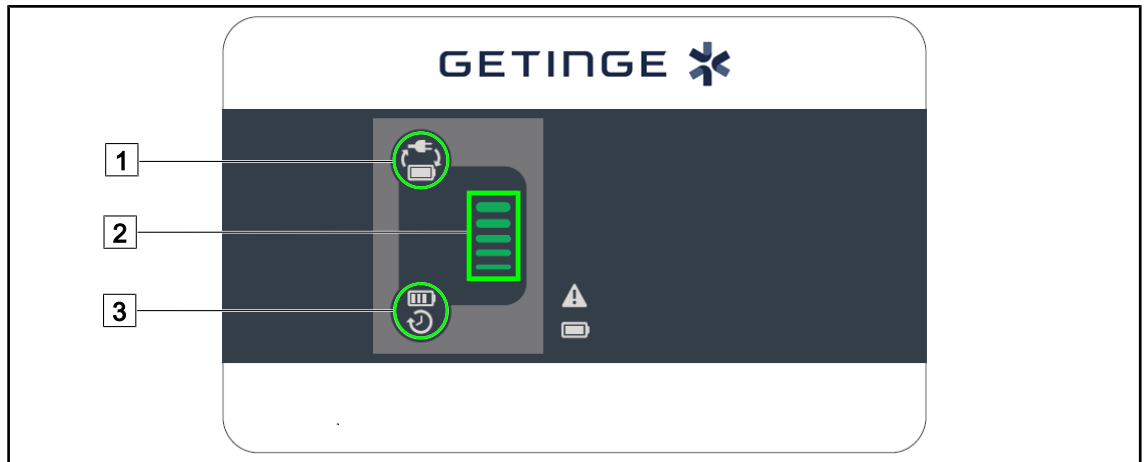


Fig. 56: Battery tests from single the wall-mounted keypad

**Running a battery backup test**

1. Turn off the light.
2. Press **Battery backup test** [1].
  - If the test is successful, the battery level indicator [2] flashes green. If the test fails, the battery level indicator [2] flashes red.
3. If the test fails, contact the Getinge technical service department.
4. Press **Battery backup test** [1] again and hold until the button turns off.
  - The light remains on at Level 3 and the system is ready for use.

**Running a battery life test (only with a Getinge backup)**

1. Turn off the light.
2. Press **Battery lifetime test** [3] and hold until the button is backlit.
  - If the test is successful, the battery level indicator [2] flashes green. If the test fails, the battery level indicator [2] flashes red.
3. If the test fails, contact the Getinge technical service department.
  - The light turns off when the test is complete.
4. Press **Battery lifetime test** [3] again and hold until the button turns off.



**NOTE**

The battery lifetime test can be stopped at any time by pressing **Battery lifetime test** [3].

## 6.2.2.3 From the touchscreen control panel



Fig. 57: Battery test

### Running a battery backup test

1. Turn off the light.
2. Press **Battery Tests** [1] in the menu bar.
  - The battery tests page is displayed.
3. Press **Battery backup test** [2] to start the test.
  - The date of the most recent battery backup test [6] is updated and a green tick is displayed if the test was successful. If the test fails, however, a red cross and a **Maintenance Information** [4] button are displayed.
4. If the test fails, press **Maintenance information** [4] to access the maintenance information page, and then call the Getinge technical service department.

### Running a battery lifetime test (only with a Getinge backup)

1. Turn off the light.
2. Press **Battery Tests** [1] in the menu bar.
  - The battery tests page is displayed.
3. Press **Battery lifetime test** [3] to start the test.
  - The date of the most recent battery lifetime test [7] and the battery lifetime [8] are updated, and a green tick is displayed if the test was successful. If the test fails, however, a red cross and a **Maintenance Information** [4] button are displayed.
4. If the test fails, press **Maintenance information** [4] to access the maintenance information page, and then call the Getinge technical service department.



### NOTE

The battery lifetime test can be stopped at any time by pressing the cross [5].

### 6.2.3 Electrical safety tests



**NOTE**

Electrical safety measurements must be carried out using an IEC 62353-compatible electrical safety tester. The earth resistance should be less than or equal to 300 mΩ.

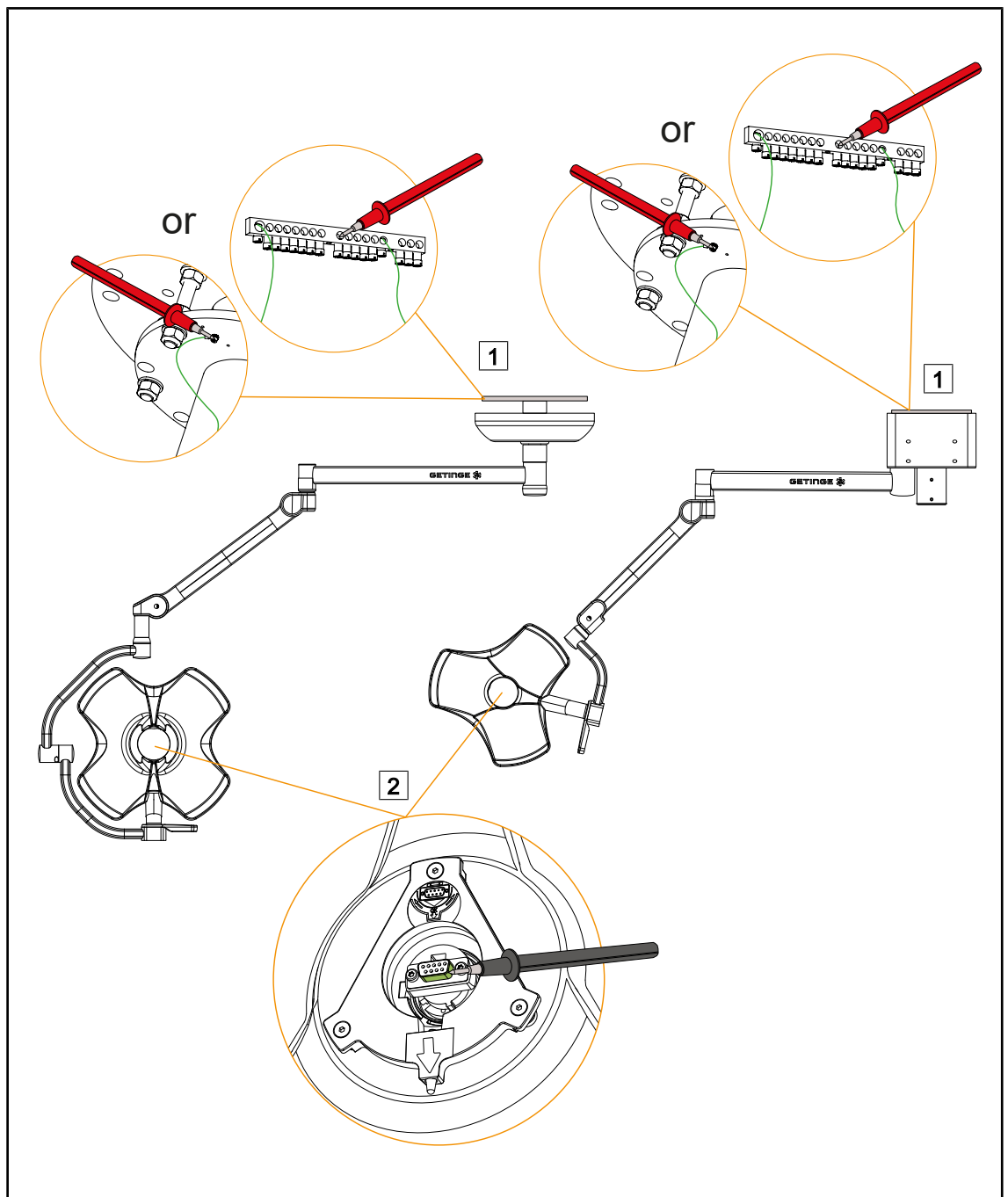


Fig. 58: Electrical safety test

The measurement should be made between the flange [1] and the edge of the connector located in the centre of the lighthead [2].

If any difficulties are encountered, the measurement [2](#) can be taken on the brake screw of the fork.

### 6.3 Functional tests



#### NOTICE

**Protective goggles [Minimum UV Class 2 (EN 170) – Optical Class 1 – Orange shade] are recommended during installation and maintenance work on surgical lights.**

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- All LEDs operate correctly
- Check that all lighthouse keypad functions are working correctly
- Check that all wall-mounted keypad functions are working correctly
- Check that all touchscreen functions are working correctly
- The camera is working properly (video and zoom)
- Switch over to battery mode and back to mains

### 6.4 Recording the inspection

#### See also

- [SW Service Protocol PM OR Lights VOLISTA-F-EN \[ \] 49](#)

# SW service protocol

## Preventive maintenance



# Surgical Lighting

## VOLISTA



### 1. Customer

Address	Contact name	Telephone number	Order number

Installation date	Location (department, room number, etc.)

### 2. Product

Configuration Part No.	Configuration Serial No.	Description
Lighthouse 1 Part No.	Lighthouse 1 Serial No.	Description
Lighthouse 2 Part No.	Lighthouse 2 Serial No.	Description

The work time for all the service operations described in this documentation is estimated be 1 hour per lighthouse/equipment.

### 3. Periodic replacements

To ensure safety and performance, please follow the recommendations below.

SB, TUB, TUB SAT, SA arm, SAT arm and A2000 & ONDASPACE spring arm ranges.

Items	Frequency	Replaced	Not replaced	N/A
All brake screws	Every year			
Suspension mounting screws (Tighten the screws to the recommended tightening torque)	Every 6 years			
Adapter mounting screws (Tighten the screws to the recommended tightening torque)	Every 6 years			
Spring-arm snap rings	Every 6 years			

TUBX, TUBX SATX, SAX arm, SATX arm, and VALIA L+LCH and OASYS spring arm ranges.

Items	Frequency	Replaced	Not replaced	N/A
All brake screws	Every year			
Suspension mounting screws (Tighten the screws to the recommended tightening torque)	Every 10 years			
Adapter mounting screws (Tighten the screws to the recommended tightening torque)	Every 10 years			
Spring-arm snap rings	Every 10 years			

**Batteries**

Items	Frequency	Replaced	Not replaced	N/A
Batteries	Every 3 years			

4. Other components replaced or to be replaced

Part No.	Description	Qty	Replaced	To be replaced

5. Calibrated tooling

Description	Registration No.	Validity date (DD/MMM/YYYY)

6. Lubrication

OK NOK N/A

Lubrication of the lighthouse fork pin and arm shaft with the grease recommended in MAQUET Ref. ARD659000011			
Lubrication of the spring arm and suspension slip rings with the grease recommended by MAQUET, P/N ARD659000016			

7. Mechanical assessment

OK NOK N/A

Anchor point			
Check the tightening of mountings and connectors, terminals and connection boxes.			
Check the ground connections.			
Suspension tube and ceiling cover			
Check the rigidity of the suspension by shaking the assembly.			
Verify the verticality of the tube.			
SAT and SATX tubes: Check the tightening of the half-plate screws for shafts 2 and 3.			
SB tube: Check the tightening of the split rings for cover.			
Check that the cover and retaining and upper seals are secure.			
Check that the silicone sleeve is secure and for the SAT tube the presence of the screw cover labels for shaft 2 and 3.			
Suspension arm			
Check that the suspension linking screws are present on the tube and the periodicity of replacement. (Do not retighten these screws during maintenance as there is a risk of fracture. If the screws are loose, replace them).			
Check that the adjustment of the brake screws has been performed.			
Check that the safety rings are present with holding screws.			
Check that the bumpers and caps are present.			
Spring arm			
Check that the vertical stop is properly adjusted.			
Check balance.			
AC2000: Check that the safety ring is present with holding screws.			
ONDASPACE SF: Check that the safety ring is present with holding screws.			
Check the correct installation of the covers, the tightening of the screws, round covers.			

OASYS DF: Check the presence of the snap ring and the replacement periodicity.			
OASYS SF: Check that the safety ring is present with holding screws.			
OASYS: Check the correct installation of the covers, the tightening of the screws, round covers.			
VALIA: Check the correct installation of the covers, flanges and the tightening of the screws.			
VALIA: Check the presence of the flange covers and screw covers.			
Check the condition, position and sliding of the tabs.			
Lighthouse			
Check that the adjustment of the brake screws has been performed.			
Check that the silicone covers, seals and cover are secure.			
Check that there are no cracks or scratches on the underside.			
Check that the handle mount is secured.			
Configuration			
Check the legibility of all identification and safety markings.			
Check the manoeuvrability of the configuration.			
Check that there is no corrosion or chipped paint.			

## 8. Electrical assessment

**OK**   **NOK**   **N/A**

Ceiling or wall power supply			
Check the tightening of the connections.			
Check the ground connections.			
Check the general condition of the power supply.			
Backup			
Check the tightening of the connections.			
Check the ground connections.			
Verify the output voltage of the batteries. (Record the value)			
Check the general condition of the backup, batteries, absence of swelling, leaks, oxidation.			



## 9. Optical assessment

Illumination	Nominal value (klx)	Measured value (klx)	OK	NOK	N/A
Ec Max VOLISTA 400	91 < Ec < 160				
Ec Max VOLISTA 400	91 < Ec < 160				
Ec Max VOLISTA 600	91 < Ec < 160				
Ec Max VOLISTA 600	91 < Ec < 160				

Measure the light level in the centre, at a distance of 1 metre, in small-field mode (with the dimmer in the maximum position, or in Boost mode).

The IEC 60601-2-41 standard stipulates limits between a minimum of 40,000 lux and a maximum of 160,000 lux. The minimum acceptable value was calculated based on the nominal value - 30%.

## 10. Electrical safety tests (IEC 62353)

Ground resistance	Limit (mΩ)	Value measured (mΩ)	OK	NOK	N/A
Resistance of protection ground 1	≤ 300 mΩ				
Resistance of protection ground 2	≤ 300 mΩ				

If available, test records should be attached to this report for possible future use.

## 11. Functional test

	OK	NOK	N/A
All LEDs operate correctly			
Check that all lighthouse keypad functions are working correctly			
Check that all wall-mounted keypad functions are working correctly			
Check that all touchscreen functions are working correctly			
The camera is working properly (video and zoom)			
Switch to battery mode and back to AC mains mode			

## 12. Cleaning

OK NOK

Degrease and clean the external parts of the configuration		
--	--	--

13. Final assessment

Operational configuration	
Absence of direct risks but faults detected. May be corrected in short term.	
The configuration must not be used until the faults have been corrected.	
The configuration is unsafe. Decommissioning recommended.	

Comments

--

14. Performed by

Name / Title	Date			Signature
	<i>DD</i>	<i>MMM</i>	<i>YYYY</i>	

15. Facility (Required)

Name / Title	Date			Signature
	<i>DD</i>	<i>MMM</i>	<i>YYYY</i>	


**Notes**

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