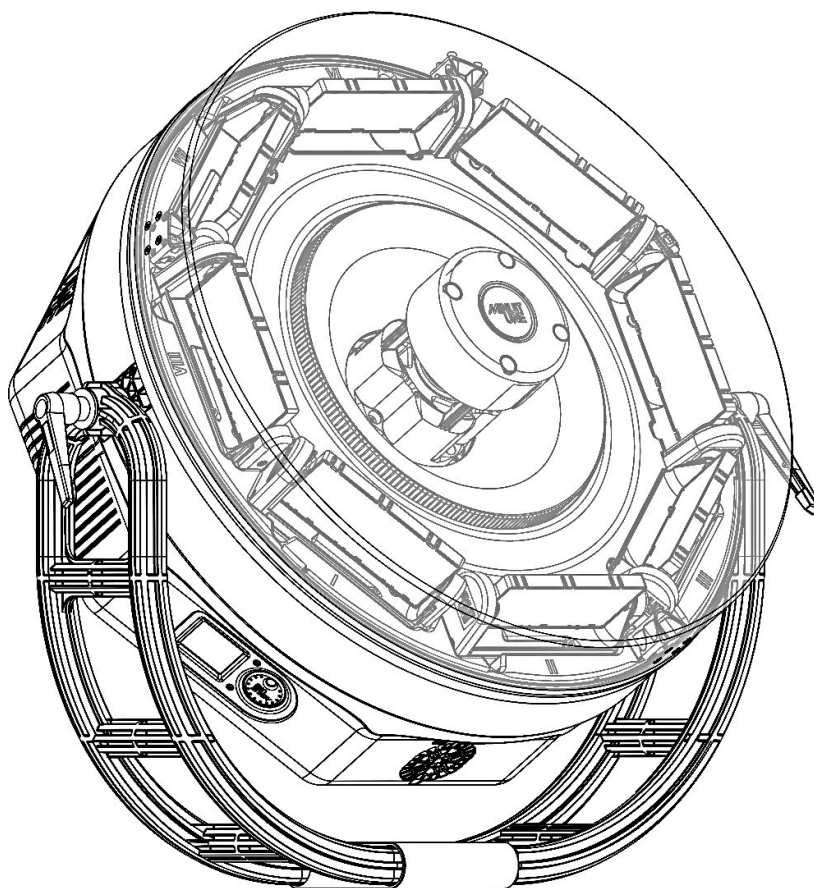


MINUIT<sup>®</sup>  
UNE

## SERVICE MANUAL

IVL<sup>™</sup> Photon by MINUIT<sup>®</sup>  
UNE



Make the ordinary, extraordinary.

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Revision of this manual: AC

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# Important Safety Information

**This service Manual contains instruction about how to service Minuit Une’s IVL Photon product.**

**Service work must comply with local regulations and accepted codes of good practice.**

**Any person in charge of servicing this product shall have receive a service training by Minuit Une and/or by an official training center recognized by Minuit Une.**

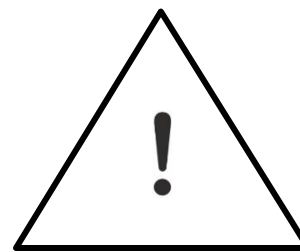
**Read and understand all safety information and procedure in this service manual, and in the IVL Photon’s user manual before servicing or cleaning this product.**

**Failure to respect service procedure may cause damage that is not covered by product warranties.**

**Any procedure or work on the product which is not described in this manual is not covered by product warranties.**

**Always turn off and disconnect the product from power before removing the plexiglas shape or opening the product, or performing procedures of service.**

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use the attachment/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled, or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Changes or modifications not expressly approved by Minuit Une could void the user's authority to operate the equipment.
16. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference



when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

17. The normal function of the product may be distributed by strong electromagnetic interference. If so, simply reset the product to resume normal operation by following the instruction manual.

## Risk Levels and Alert Symbols

Safety warnings, safety alert symbols, and signal words in these instructions indicate different risk levels.

**DANGER** indicates an imminent hazardous situation which, if not avoided, **will result** in death or serious injury.

**WARNING** indicates a potentially hazardous situation which, if not avoided, **may result** in death or serious injury.

**CAUTION** indicates a potentially hazardous situation which, if not avoided, **may result** in minor or moderate injury.

**NOTICE** explains practices not related to physical injury. No safety alert symbol appears with this signal word.

## Vital Precautions

### DANGER!

**High voltage! Risk of blindness, electric shock and fire.**

Read and understand all safety information and operation instructions before you operate or install the product or the system.

Not observing the safety information or general rules of safety may cause injury, blindness, burn hazards, electric shock, fall and death to yourself and others or damage to equipment.

Use solely and exclusively as described in the instructions.

Using the product in any other ways than specified in this manual is not permitted and can damage the product and lead to associated risks such as short-circuit, fire, electric shock, etc.

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Always electrically earth the fixture. Only use TN or TT one phase power supplies and a power plug according to IEC 60309-1 or a similar national standard.

Always use a power cord connected to a socket-outlet with earthing connection.

Always check that the local AC power matches the voltage and frequency range printed on the type label of the product before use.

Never use the cables for transportation. Never hang the product from its cables.

In case of visible or suspected damage to cables or housings, the product must not be operated any longer.

The product is not to be operated without the transparent globe in place or if the transparent globe is in any way damaged.

The laser is never to be operated if the unit is defective or if the cover, or the Acrylic shape or seal is damaged.

Do not bypass or remove any safety feature of the product.

Any procedure or work on the product which is not described in this manual is not covered by product warranties.

Refer servicing to qualified service personal.

Any person in charge of servicing this product shall first receive service training by Minuit Une and/or by an official training center recognized by Minuit Une.

Any person in charge of servicing this product shall have read and understood all safety information and procedures in this user manual, and in the IVL Photon's service manual.

To obtain information about service training, service manual or about the closest training service center in your area, please contact Minuit Une.

## General Safety Information

### WARNING!

#### **Risk of electric shock and fire.**

Socket outlets or external power switches used to supply the product with power must be located near the product and easily accessible to be able to isolate the product from power immediately. The power cable must be equipped with a Neutral Powercon TRUE1 NAC3FX-W-TOP cable connector. You can install a suitable power plug on the power cord. Always use a power plug according to IEC 60309-1 or a similar national standard.

Disconnect the product from AC power before moving it or cleaning it.

To link several products to one power chain, please observe:

- This fixture has a maximal power consumption of 200W (for one unit)
- Always use an AWG 14 power input cable and AWG 14 power throughput cables.
- Never link more than 10 products to a power chain when using these cables.

Ensure that the airflow around the product is free and unobstructed.

Provide a minimum clearance of 0,3 m (1 in.) around fans and air vents.

No flame source, like a candlelight, should be placed on or nearby the product.

This product is intended to be used in temperate climate.

Do not operate the product if the ambient temperature is above 40°C (104°F) or below 0°C (32°F).

### WARNING!

#### **Humidity, Condensation and Moisture.**

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not use the product for 2h when it was exposed to big temperature differences as condensed moisture may damage the product electrically when switched on.

Never expose the product to dripping water or water splashes.

Never place an object filled with liquid (e.g. a vase or a bottle filled with liquid) on the product.

Do not bend the power cable directly after the connector. Water could immerse and cause short circuits and damage the connector.

### WARNING!

#### **Risk of injury and damage through falls.**

Always install the product as described in this manual.

Always follow the safety information when suspending the product. Always use a secondary attachment as described in this manual to prevent falls if the primary attachment fails.

Block access area during installation of the product due to risk of injury through fall.

Always work on a stable platform.

## Important Laser Information

### CAUTION!

**Class 3R laser product according to IEC 60825-1:2014**

**Avoid direct eye exposure.**

Do not look at laser devices with magnifiers, telescopes, binoculars or similar optical instruments that may concentrate the light output.

Please refer to ANSI Z136.1 "Standard for Safe Use of Lasers" for guidance on safe use. This publication is available from Laser Institute of America.

Extended source considered for laser Classification

**Note that the national and local recommendations, regulations, standards and codes of practice in laser show are different from a country to another.**

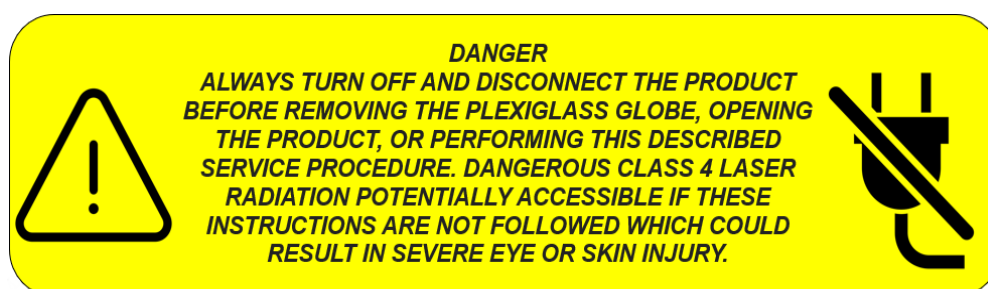
**Please contact your provider or Minuit Une's legal service if you have any inquiries**

Procedures that could allow access to Class 4 levels of radiation include the following:

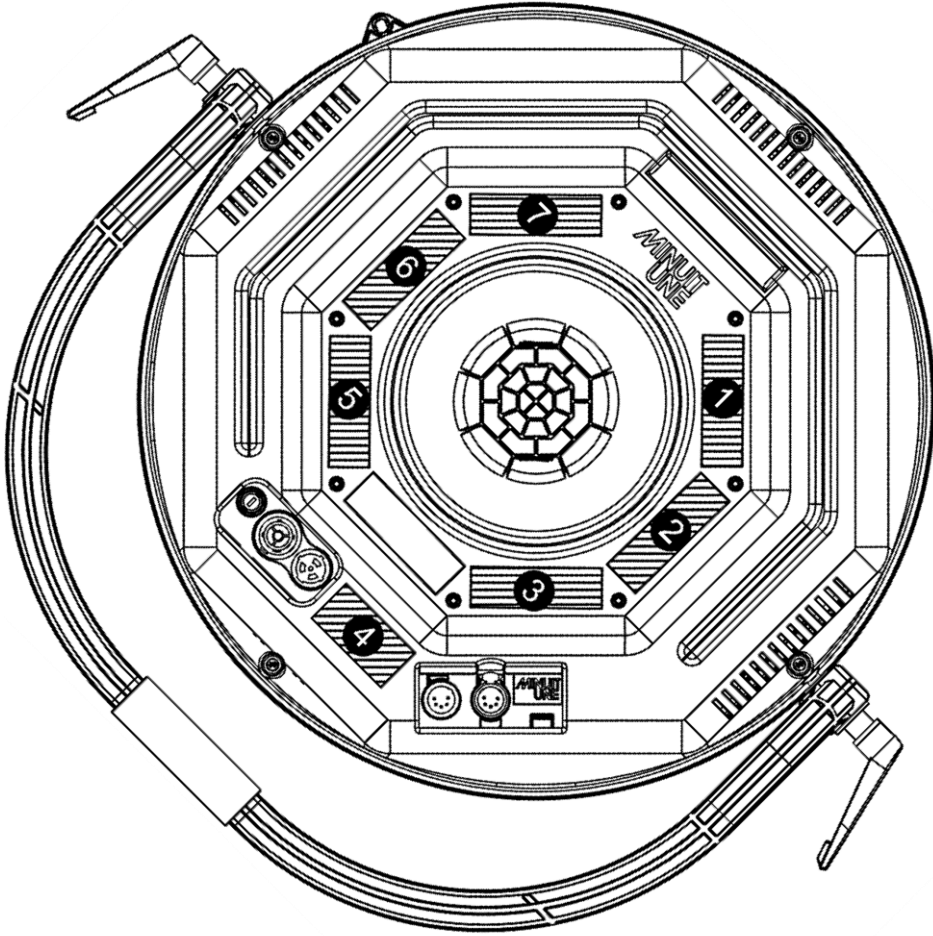
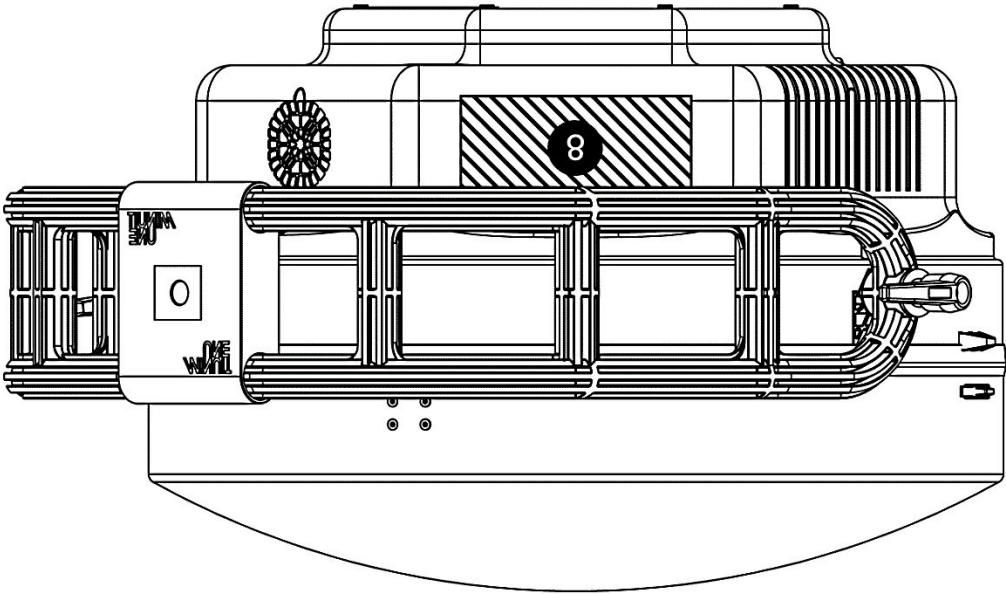
(All the procedure which can be done with the transparent globe removed)

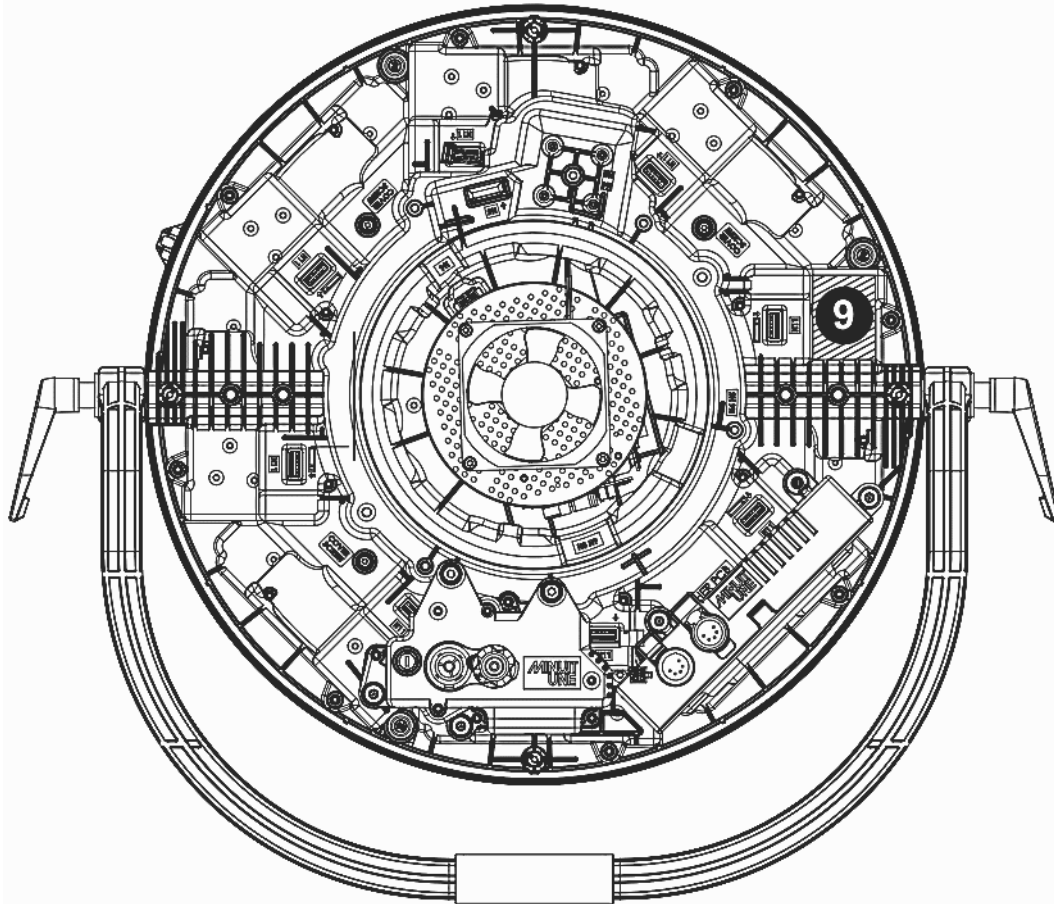
- REP5:REPLACING MT1-001068- INTERNAL-TOP-COVER
- REP6:REPLACING MT1-000935- LATERAL-BELT-ACTUATOR-ASSEMBLY (TILT MODULE)
- REP7:ADDRESSING MT1-000935 TILT MODULE
- REP8:REPLACING MT1-002672-MOOVING-CORE
- REP9:REPLACING MT1-000404-CENTRAL-TOWER-ASSEMBLY (SCANNING SYSTEM)
- CAL1:SET UP PLATE CALIBRATION
- CLE1:GLOBE CLEANING
- CLE2:MT1-000935 TILT CLEANING
- CLE3:MT1-000404- SCANNING SYSTEM CLEANING

To avoid increasing accessible emission level of radiation during the procedure listed above, you should always turn off and disconnect the product from power before removing the plexiglas globe or opening the product. This will be regularly recalled in this manual with the following label:



Labelling diagram





**1: Serial number label**



**2: FCC LABEL**



THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

CET APPAREIL EST CONFORME A LA PARTIE 15 DE LA NORME FCC POUR LES ETATS-UNIS AINSI QU'A LA NORME CANADIENNE ICES/NMB-003. L'UTILISATION DE CET APPAREIL (1) NE DOIT PAS PROVOQUER D'INTERFERENCE ET (2) TOLERE LES INTERFERENCES EXTERNES, Y COMPRIS CELLES POUVANT PROVOQUER UN FONCTIONNEMENT ANORMAL DE L'APPAREIL.

### 3: SHOCK&FIRE LABEL

**WARNING:** SHOCK HAZARD - DO NOT OPEN.  
**AVERTISSEMENT:** RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR.  
**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.  
**AVERTISSEMENT:** NE PAS EXPOSER CE MATERIEL A LA PLUIE OU L'HUMIDITE AFIN DE REDUIRE LE RISQUE D'INFLAMMATION OU BIEN DE CHOC ELECTRIQUE.

### 4: RATING LABEL

(1 unit : 200 W max)  

Input	Output	Fuse
100 - 240 V~ 50/60 Hz 2 000 W max	100 - 240 V~ 1 800 W max	T6.3AH250V

### 5: FDA LABEL

THIS PRODUCT COMPLIES WITH FDA PERFORMANCE STANDARDS FOR LASER PRODUCTS EXCEPT FOR CONFORMANCE WITH IEC 60825-1 ED. 3., AS DESCRIBED IN LASER NOTICE NO. 56, DATED MAY 8, 2019.

### 6: MARKING LABEL



## 7: MANUFACTURER LABEL

BRAND/MARQUE: **MINUIT ONE**  
 MODEL/MODÈLE: **IVL™ PHOTON**  
 READ CAREFULLY THE MANUAL AND INSTRUCTIONS BEFORE OPERATING THIS PRODUCT.  
 LISEZ ATTENTIVEMENT LE MANUEL ET LES INSTRUCTIONS AVANT D'UTILISER CE PRODUIT.  
 MINUIT ONE IS A BRAND OWNED BY ARTEFFECT SAS.  
 MINUIT ONE EST UNE MARQUE APPARTENANT À ARTEFFECT SAS.  
 104 AVENUE DE LA RÉSISTANCE 93100 MONTREUIL - FRANCE.  
 US Pat. No. US 9,618,173 B2 **MADE IN FRANCE**

## 8: LASER LABEL



## 9: PROTECTIVE HOUSING LABEL

**DANGER**  
**CLASS 4 LASER LIGHT WHEN OPEN**  
**AVOID EYE OR SKIN EXPOSURE**  
**TO DIRECT OR SCATTERED**  
**RADIATION**

## Before using the product

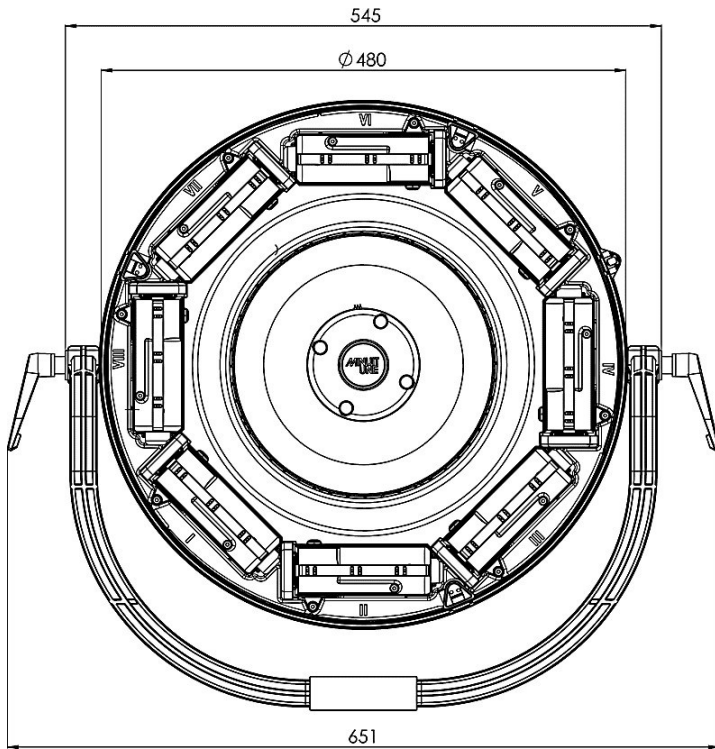
1. Read the “Important Safety Information” on page 6 before doing anything with the product.
2. Unless explicitly stated by Minit Une, do not dismantle the modules, as **this will invalidate the warranty.**
3. Damages resulting from improper handling of the product, insufficient cleaning, or from transportation arranged by the customer, **are not covered by the warranty of the product.**
4. Unpack and ensure that there is no transportation damage before using the product. Do not attempt to operate a damaged product.
5. Check that no part shipped with the product is missing. The product is shipped with:
  - A Neutrik Powercon TRUE1 connector NAC3FX-W-top
  - A page with a QR code to download the user manual.
6. Install the neutrik powercon TRUE1 connector on an AWG 14 power cable with a power plug according to your local electrical regulation
7. Ensure that the voltage and frequency of the power supply match the power requirements of the product.
8. This product is intended to be used in haze environment for maximizing effect. The use of haze machines with neutral fluid like MDG ATMe is recommended to maximize lifetime of the product. On the contrary the use of oil-based smoke machine is to avoid and will cause damage to the product on long term. **Warranty will be void if excess oil is found in the product due to insufficient cleaning.**

Note that whenever AC power is applied to the product, it will reset all effects and functions to their home positions. A reset usually takes approximately 10 seconds

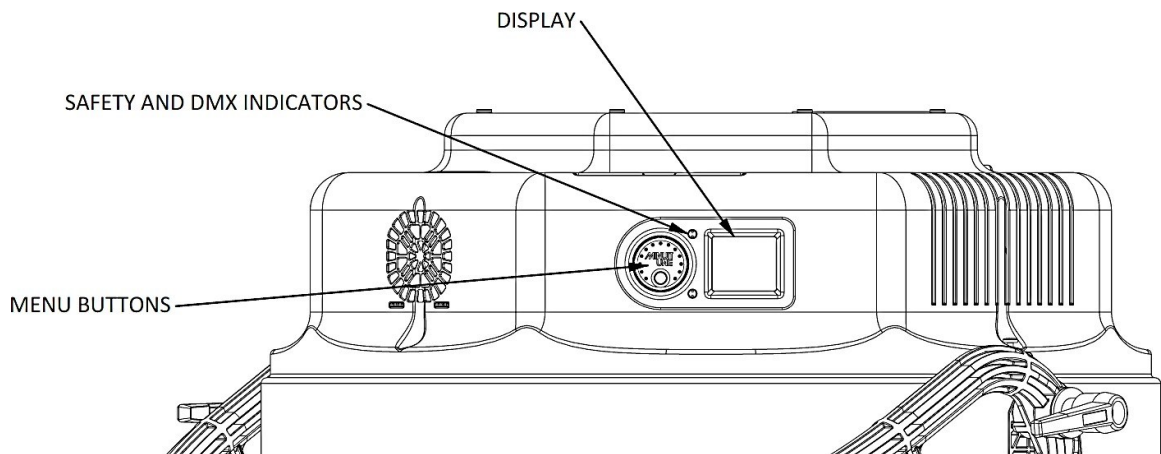
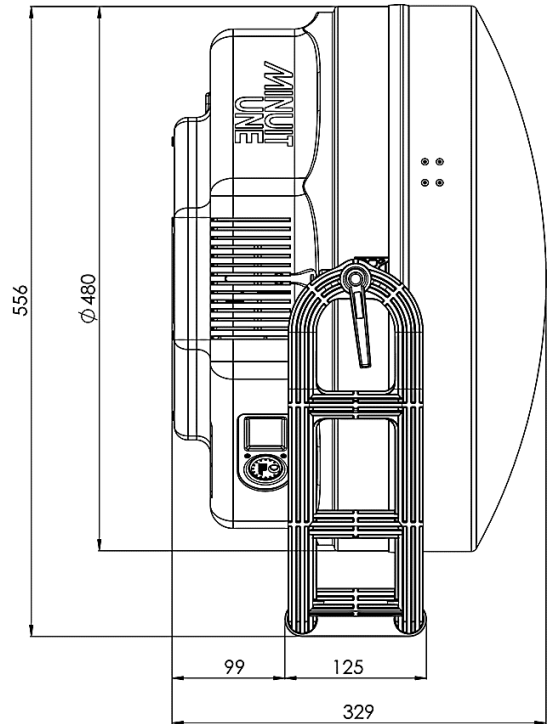
# Overview

## IVL Photon and Base Dimensions

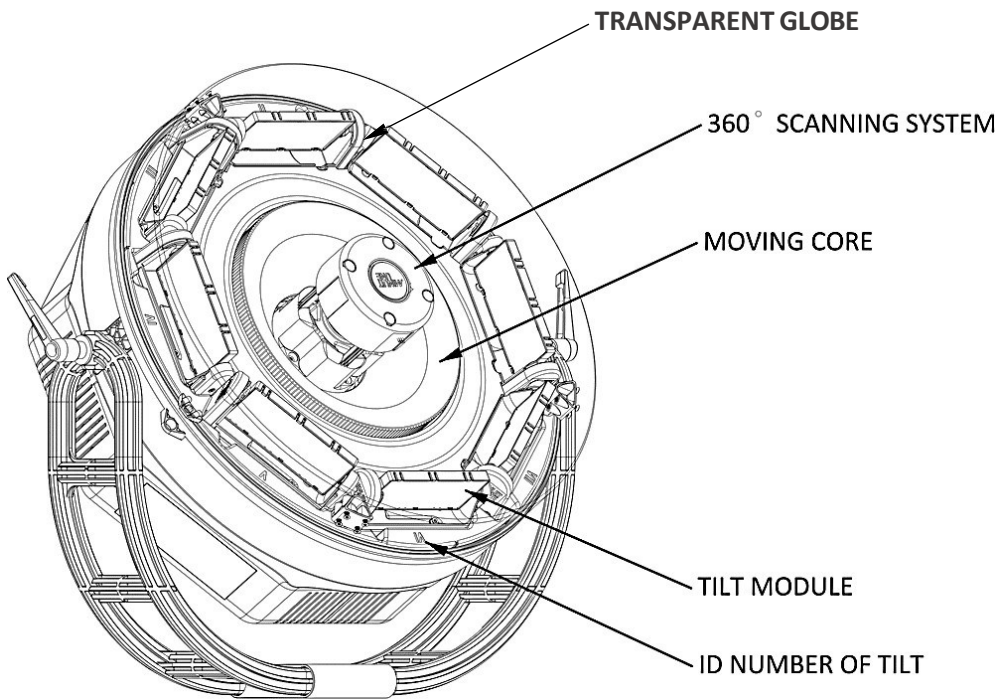
All dimensions are given in millimeters.



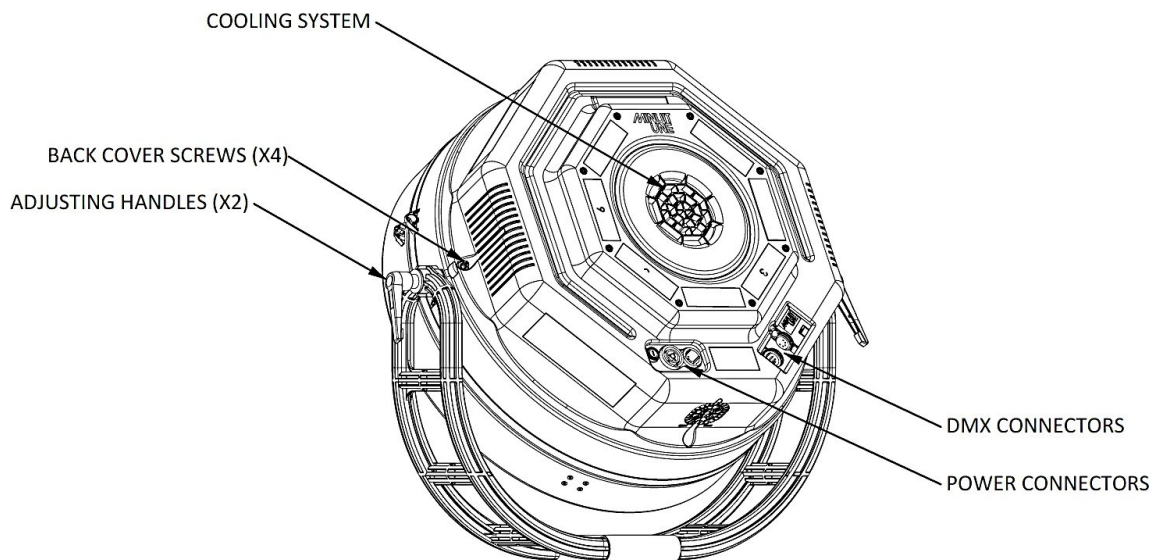
**Side View**



## Front View



## Bottom View



## Spare Part list:








PART NUMBER	DESCRIPTION	IMAGE	SECTION
MT1-001057	MAIN-HOUSING-LATERAL-SEAL		
MT1-000798	SCREW-M4-12-TORX		
MT1-001699	SCREW-M4-8-TORX		
MT1-000705	POWER-SUPPLY-ASSEMBLY		
MT1-000139	MOTHER-PCB-ASSEMBLY		
MT1-000614	CENTRAL-TOWER-SEAL		
MT1-001991	CONTACT-WASHER-M4-Z		
MT1-000903	SCREW-M6-45-TORX		
MT1-000464	WEAR-PLATE		
MT1-002052	SCREW-M3-6-TORX		
MT1-002184	BOTTOM-HOUSING-AND-LABEL		
MT1-000820	LASER-FILTER		
MT1-000818	POWER-SUPPLY-FILTER		
MT1-000816	POWER-SUPPLY-FILTER-HOLDER		
MT1-000819	LASER-FILTER-HOLDER		
MT1-000666	HARNESS-H5-MR-12W		
MT1-001068	INTERNAL-TOP-COVER-AND-INSERT		
MT1-001096	CONTACT-WASHER-M6-Z		
MT1-000588	HOOP-HANDLE		
MT1-000586	HOOP-SHIM		
MT1-000922	MAIN-HOUSING-AND-INSERTS		
MT1-001520	HOOP-FIXTURE		
MT1-001550	WASHER-M10-L		

MT1-002288	SCREW-M6-20-TORX		
MT1-002672	MOOVING-CORE		
MT1-001921	H2-2-HARNESS-FAN		
MT1-001256	SCREW-M4-60-HEX		
MT1-000935	LATERAL-BELT-ACTUATOR-ASSEMBLY		
MT1-000672	HARNESS-H11-M4S-10W		
MT1-001037	CONNECTOR-SEAL		
MT1-001714	GLOBE-ASSEMBLY		
MT1-000665	HARNESS-H4-MC-6W		
MT1-000404	CENTRAL-TOWER-ASSEMBLY		
MT1-001600	CENTRAL-TOP-TOWER-SCREW-MASK		
MT1-001094	SCREW-M4-16-TORX		
MT1-002514	SCREW-M4-110		

## Tools and accessories

Here are the different tools and accessories necessary to service the product.

All these tools and accessories are not provided with the product.

Tool	Image	Section
Cruciform (Phillips) screwdriver PH1/PH2		
Removable bit / Torx screwdriver T10		
Removable bit / Torx screwdriver T20		
Removable bit / Torx screwdriver T30		
Removable bit / hexagonal H5		
Removable bit / hexagonal H2.5		
Free ESD kit – Antistatic mat	<ol style="list-style-type: none"> <li>1. Connect the mat to an earthing contact.</li> <li>2. Connect yourself to the mat by the strap (the green cable on the picture beside).</li> </ol> 	

## Fixture menu and connectors

<p>The LCD Display shows fixture and menu information. The control knob next to the screen allows you to navigate in the menu.</p>		<p><b>Tools needed:</b></p> <p>-TrueCon1 cable</p>
		<p><b>CAUTION!</b></p> <p>Class 3R laser procedure. Avoid direct eye exposure.</p>
Screen ref	Description	Image
Screen 1	<p><b>Standby screen</b> You can see on this standby screen:</p> <ul style="list-style-type: none"> <li>• The DMX mode (mode 1)</li> <li>• The DMX address (address 1)</li> <li>• The laser temperature (which is fixed to 30°)</li> </ul>	
Screen 2	<p><b>Main menu</b> If you press the knob, you reach the main menu</p>	
Screen 3	<p><b>DMX mode</b> In DMX mode you can update the DMX mode of the product. You have two modes available:</p> <ul style="list-style-type: none"> <li>• Mode 1. Which is the standard mode available to program the product.</li> <li>• DMX debug. Which is a really simplified mode for service people to debug the product in case of problem.</li> </ul>	
Screen 4	<p><b>DMX address</b> In DMX address you can update the DMX address of the product:</p> <p>To select the DMX address you want, select each digit by turning the knob and click on it to pass to the next digit.</p>	

<p><b>Screen 5</b></p>	<p><b>Maintenance menu</b> Clicking on maintenance in the main menu will open the maintenance menu:</p>	
<p><b>Screen 6</b></p>	<p><b>Calibration</b> In calibration you will find procedure to re-calibrate the product:</p>	
<p><b>Screen 7</b></p>	<p><b>Autorun</b> In autorun you will find a pre-set function to test the product.  In the event of replacing a module of the product, run the corresponding test to ensure that the product operates correctly.</p>	
<p><b>Screen 8</b></p>	<p><b>DMX viewer</b> In dmx viewer you can display all the realtime dmx data received by the product:</p>	

<p><b>Screen 9</b></p>	<p><b>Temperature</b>          The live temperature of the Laser, mother board and Ring PCB are displayed in white.          The maximal recorded temperatures are displayed in yellow.</p>	
<p><b>Screen 10</b></p>	<p><b>About</b>          In “about” you can display:</p> <ul style="list-style-type: none"> <li>• software information</li> <li>• maximal laser temperature recorded since day 1.</li> <li>• lifetime of the product.</li> </ul> <p>Clicking once again will display the module’s software versions.</p>	
<p><b>Screen 11</b></p>	<p><b>Lifetime, and errors</b>          Those menus are still under development.</p> <p><b>Flip screen</b>          In screen menu, you can revert the screen menu.</p> <p><b>Reset menu</b>          Clicking on reset allows you to do a manual reset of the product.</p>	
<p><b>Screen 12</b></p>	<p><b>Indicator LEDs:</b></p> <p>Safety indicator (RED, up to the left from display) lights up when the scanning speed reaches 330Hz.</p> <p>DMX interlock indicator (GREEN, down to the left from display) lights up green when a valid DMX signal is detected at the DMX input.</p>	

## MAINTENANCE

This product does not require any regular scheduled maintenance to keep the product in compliance.

## TROUBLESHOOTING

In this section we will go over the potential issues you could observe on an operational product.

Never attempt to repair this product if you don't see your problem with this troubleshooting and contact us for assistance.

Never attempt to repair the product yourself if the solution says a laser operation is needed and contact us for assistance.

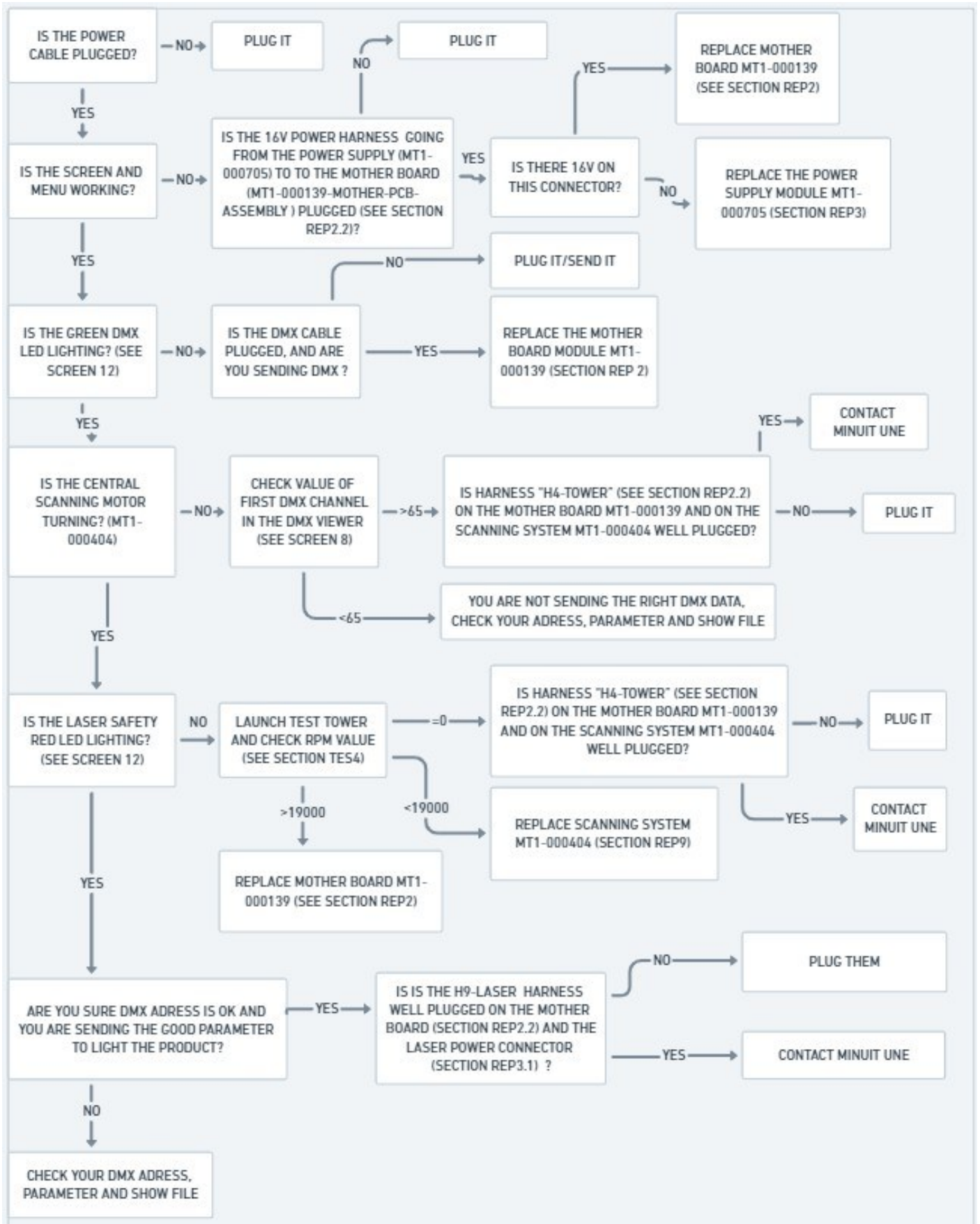
If you don't succeed in repairing the product following this troubleshooting, or if you have any question concerning the different procedure, contact us for assistance.

To continuously improve our customer service and our product, if you manage to repair the product following this troubleshooting, we also invite you to communicate with us the reference of the issue you have encountered.

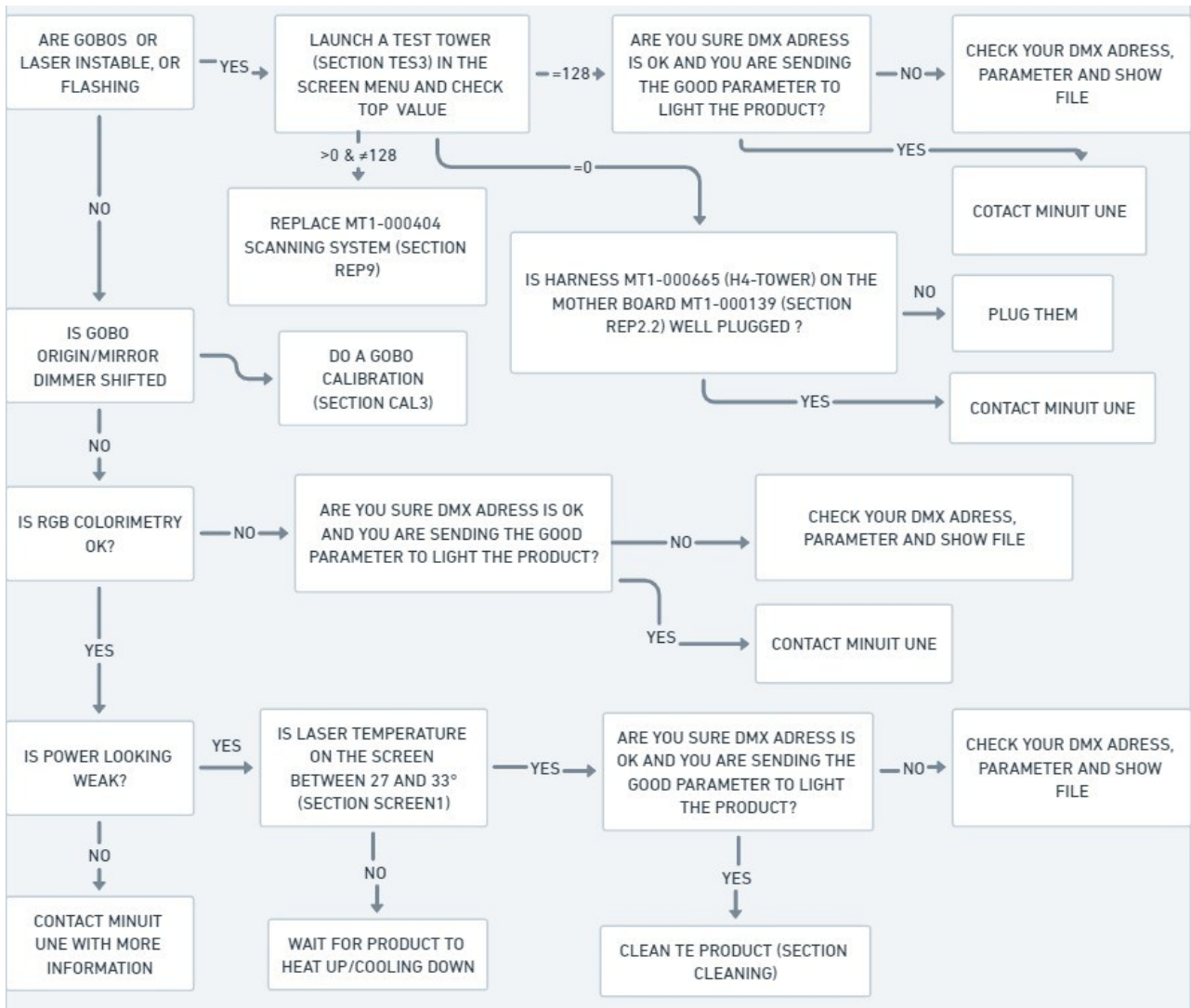


When contacting our customer service, please fill in the Service Return Form which is available in annex of this service manual or in the download section of the Minuit Une website and attach photo and/or video to explain the problem.

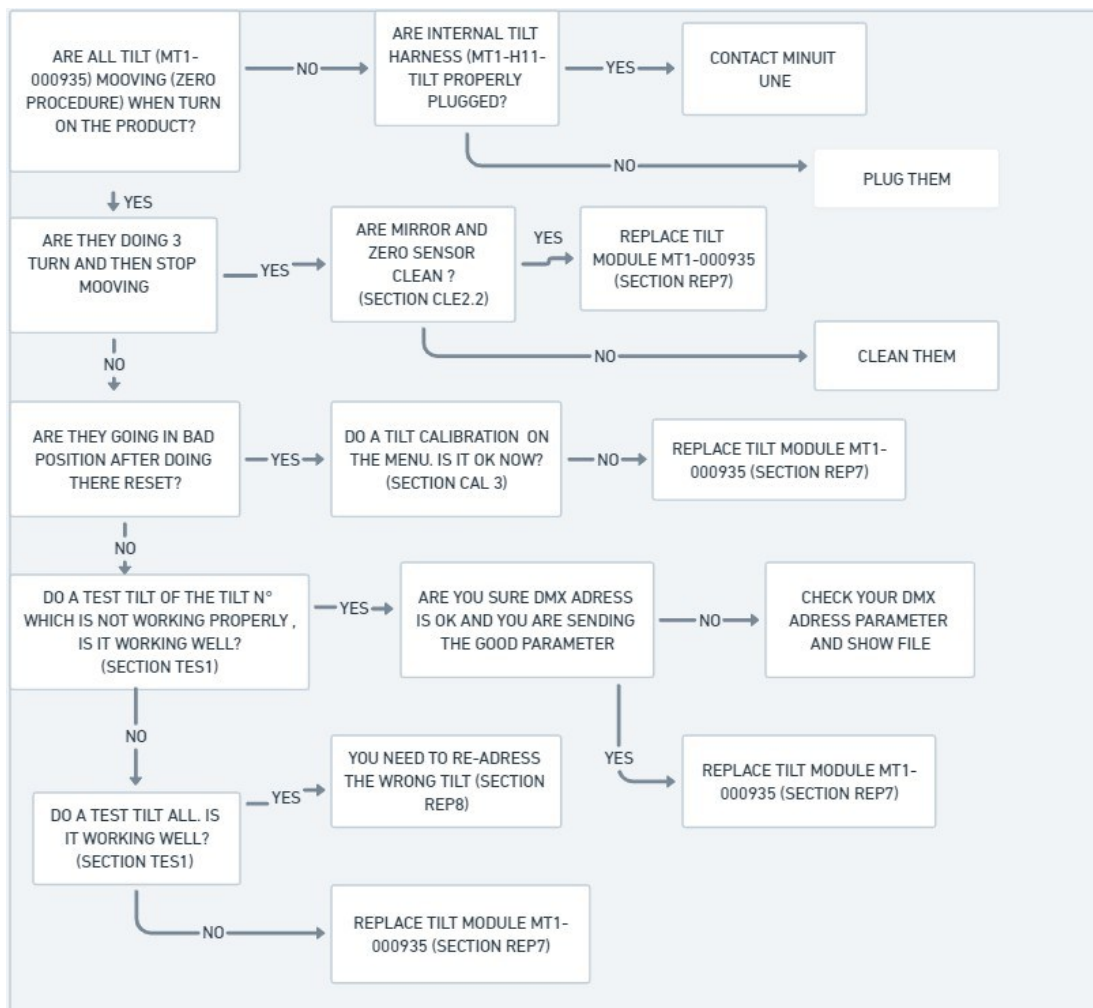
# PRODUCT IS NOT EMITING LIGHT OUTPUT



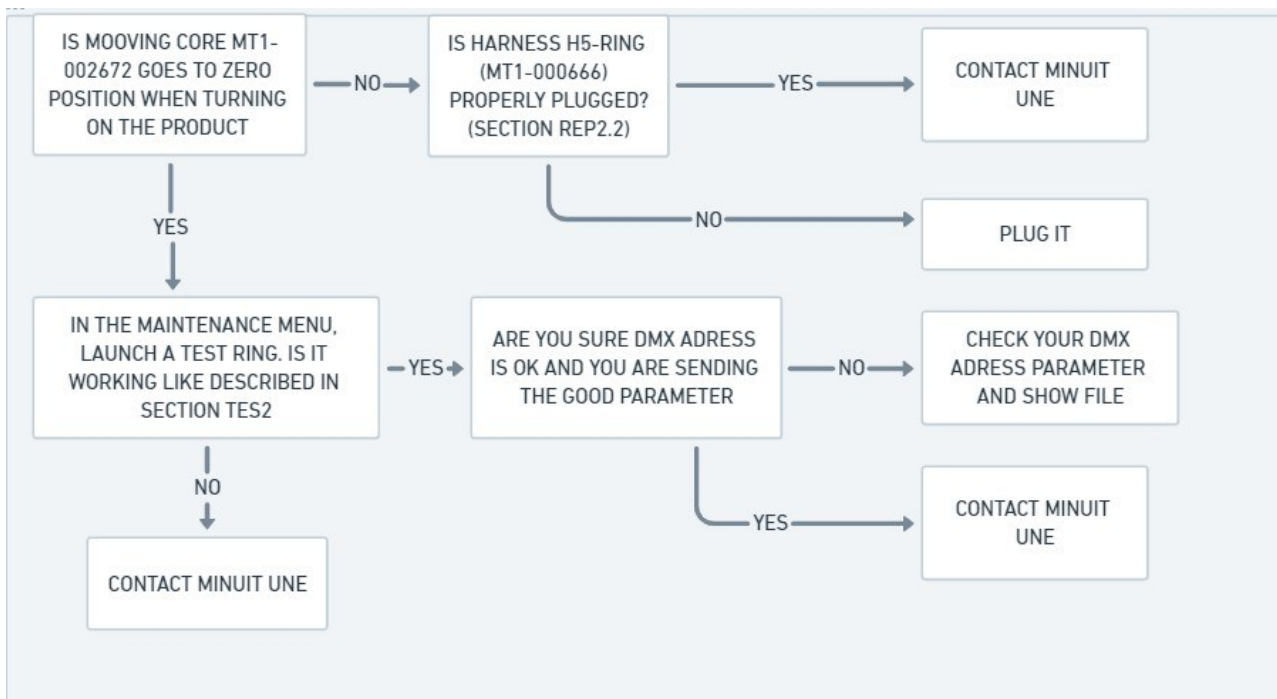
# PRODUCT IS EMITTING UNUSUAL/ABNORMAL LIGHT



## TILT PROBLEM



## RING PROBLEM



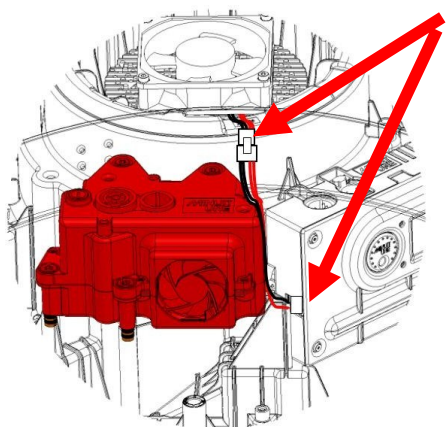
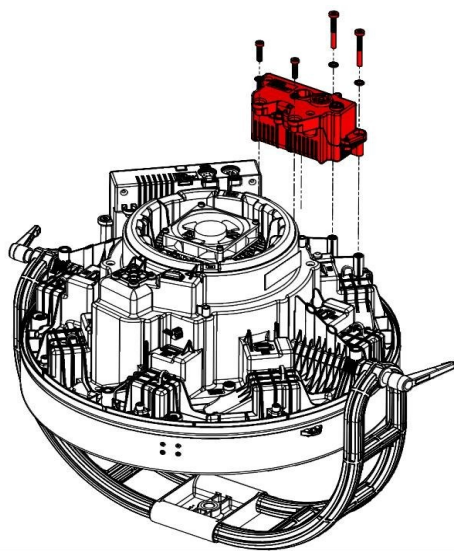
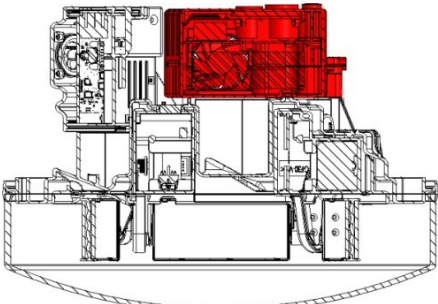




# SERVICE OPERATION

## REPLACING OPERATION

<p>REP 1: REPLACING MT1-002184-BOTTOM-HOUSING-AND-LABEL</p>	<p><b>Tools needed:</b></p>	<p>PH2 screwdriver</p>	
<div style="background-color: yellow; padding: 10px; border: 1px solid black;"> <p style="text-align: center; margin: 0;"><b>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE BOTTOM HOUSING, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE.</b></p> </div>			
	<p>Instructions</p>	<p>Diagram</p>	
<p><b>1.1</b></p>	<p>Unscrew the 4 quarter turn screws like shown in the diagram by a quarter turn.</p>		
<p><b>1.2</b></p>	<p>Lift the back panel MT1-000817 and remove it.</p> <p>It should slide without effort or resistance.</p> <p>When putting it back in place, make sure the cables, the fan MT1-001921, and the fan filter MT1-000820 are well positioned and not get stuck under the cover.</p>		

<p><b>REP 2:</b> <b>REPLACING MT1-000139-MOTHER-PCB-ASSEMBLY</b></p>	<p><b>Tools needed:</b></p>	<p>TORX T30 screwdriver</p>
<div style="background-color: yellow; padding: 5px; border: 1px solid black;"> <p style="font-size: small; margin: 0;">ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE BOTTOM HOUSING, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE.</p> </div>		
	<p>Instructions</p>	<p>Diagram</p>
<p><b>2.1</b></p> <p>Your first need to remove the MT1-002184-BOTTOM-HOUSING-AND-LABEL (<b>REP 1:</b>)</p> <p>Then, unscrew the 2 screws MT1-000903 using a TORX T30 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the screws and washers.</p>		
<p><b>2.2</b></p> <p>Gently unplug all the connectors from the motherboard MT1-000139- MOTHER-PCB-ASSEMBLY following the opposite diagram.</p> <p>When plugging them back, be careful with their direction and coded pin.</p>		<p style="text-align: center;">Back view</p>
<p><b>2.3</b></p> <p>When fixing the motherboard MT1-000139 back in its place, make sure that it is resting on its fixation point and that no cables are squeezed underneath.</p> <p>Don't forget the washer, and tighten screws with a torque of 4 Nm.</p> <p>After assembling the back of the fixture you must do a full SW update (See section <b>SOF1:</b>) and do an e-gobo calibration (see section <b>CAL3:</b>)</p>		

<b>REP 3:</b> <b>REPLACING MT1-000705-POWER-SUPPLY-ASSEMBLY</b>		<b>Tools needed:</b>	TORX T30 screwdriver
		 <p> <i>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE BOTTOM HOUSING, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE.</i> </p> 	
	Instructions	Diagram	
<b>3.1</b>	<p>Your first need to remove the MT1-002184-BOTTOM-HOUSING-AND-LABEL (REP 1:)</p> <p>Gently unplug the 2 connectors from the power supply MT1-000705 following the diagram. Be careful with their direction.</p>		
<b>3.2</b>	<p>Unscrew the 2 screws MT1-002288 and the 2 screws MT1-000903 using a TORX T30 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the screws and washers MT1-001096.</p>		
<b>3.3</b>	<p>When fixing the power supply MT1-000705 unit module back in its place, make sure that it is resting on its fixation points and that the 2 connectors are plugged.</p> <p>Don't forget the washer, and tighten screws with a torque of 4 Nm.</p>		

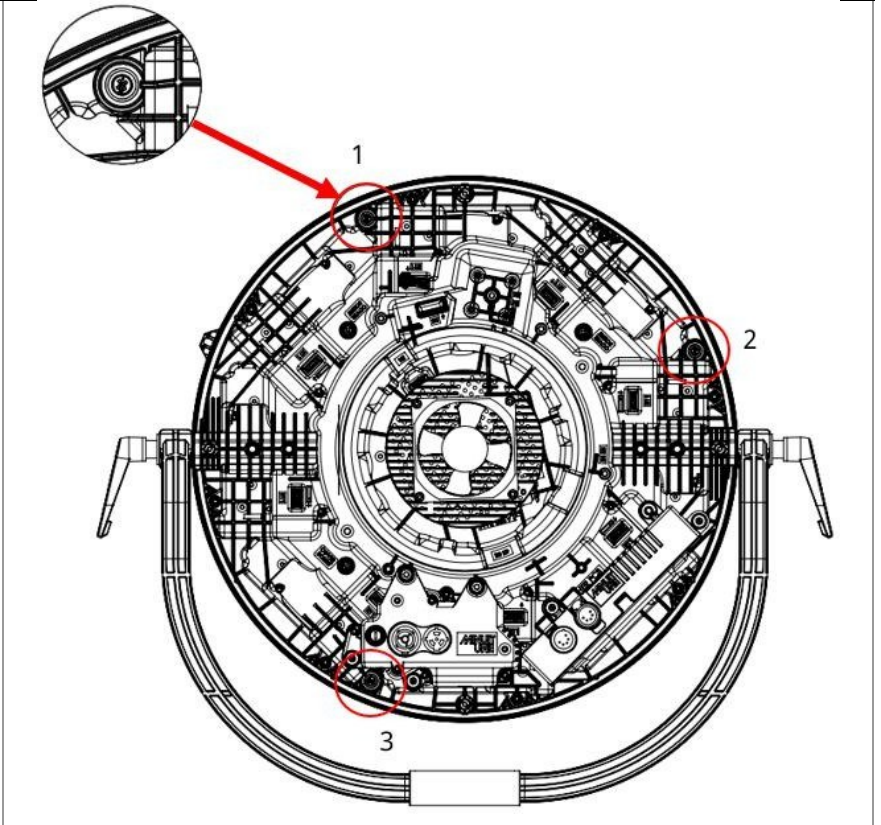
<p><b>REP4:</b> <b>REPLACING MT1-001714-GLOBE-ASSEMBLY</b></p>	<p><b>Tools needed:</b></p> <ul style="list-style-type: none"> <li>- PH2 screwdriver</li> <li>- A microfiber cloth</li> <li>- A non-alcoholic glass cleaner</li> </ul>
	<p style="text-align: center;"><b>DANGER</b></p> <p style="text-align: center;"><small>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</small></p>  

	Instructions	Diagram
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**4.1**

Your first need to remove the MT1-002184-BOTTOM-HOUSING-AND-LABEL (REP 1:)

Unscrew the 3 quarter turn screws T1-001166 like shown in the diagram.

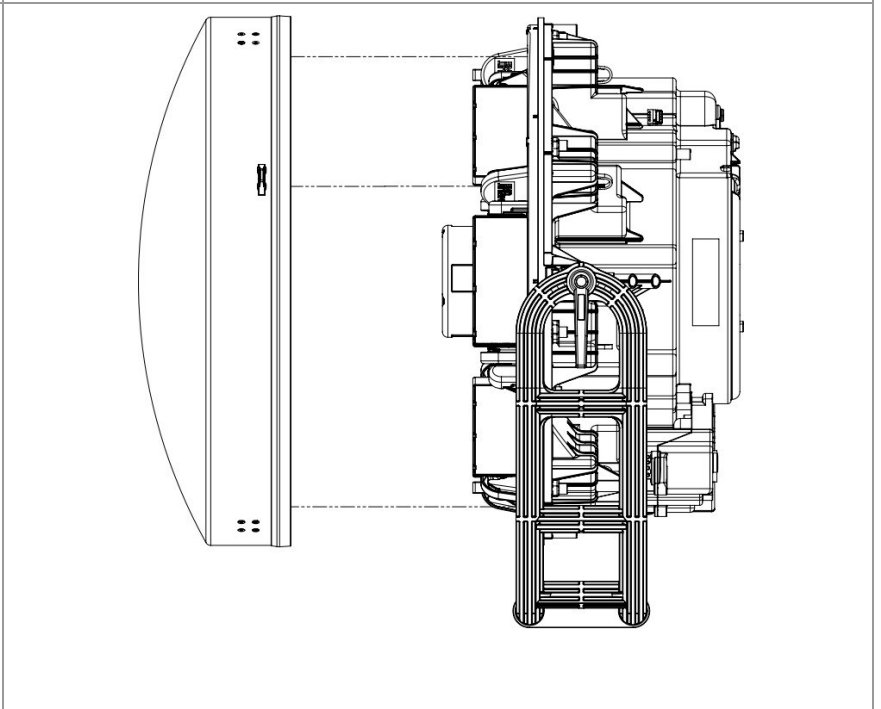


**4.2**



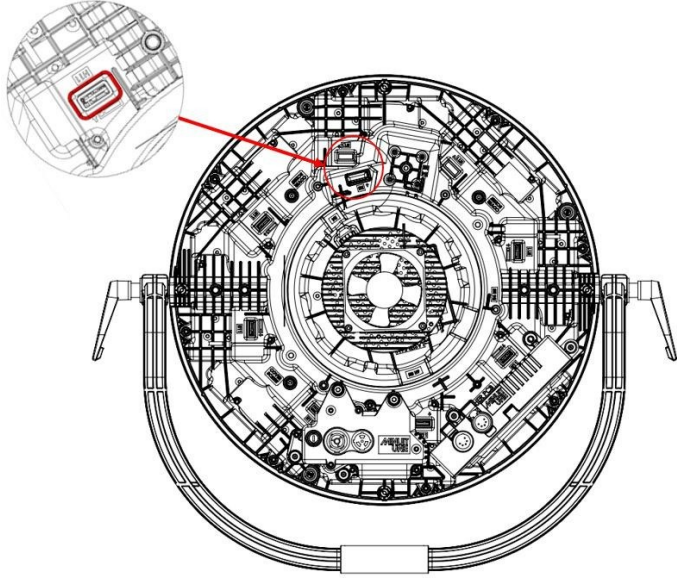
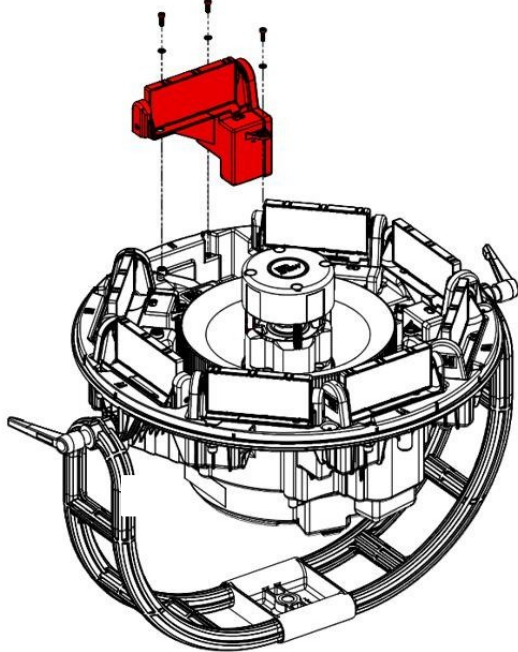
Gently lift the globe MT1-001714 and put it aside on a soft surface.

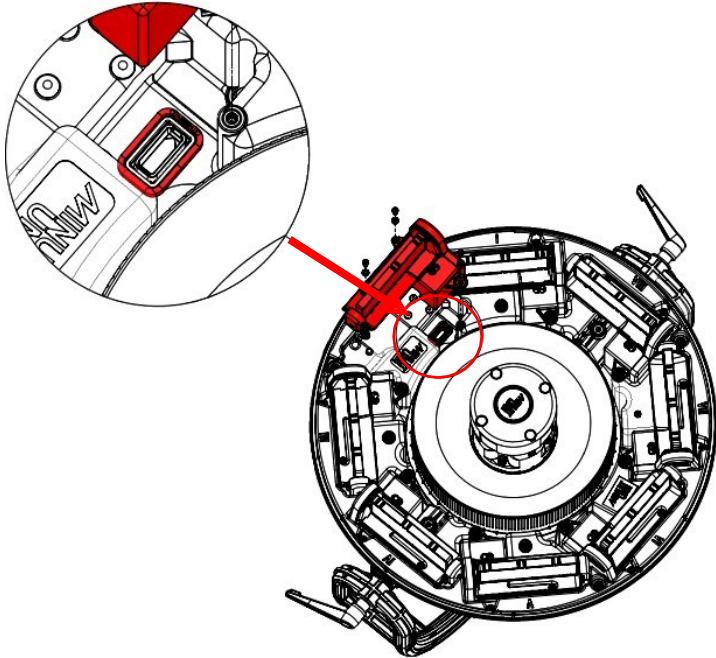
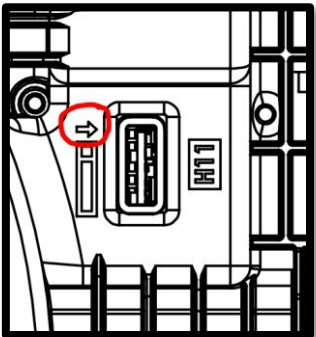
Before putting the globe MT1-001714 back in its position, make sure to clean the tilt mirrors MT1-000935 and the globe MT1-001714 from the inside with a microfiber cloth and a non-alcoholic glass cleaner, to avoid any fingerprints and dust on them.



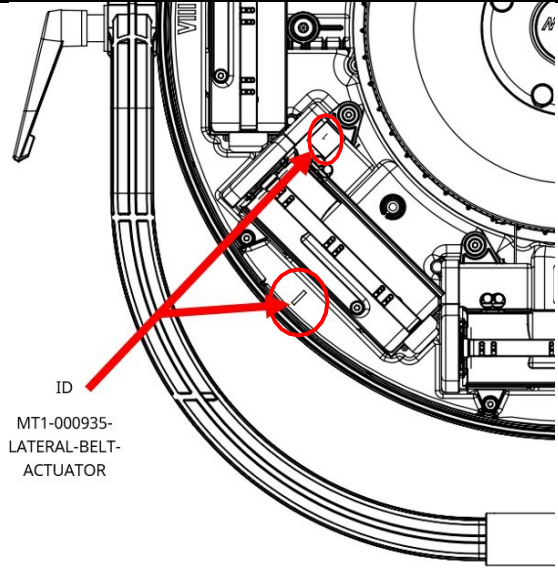
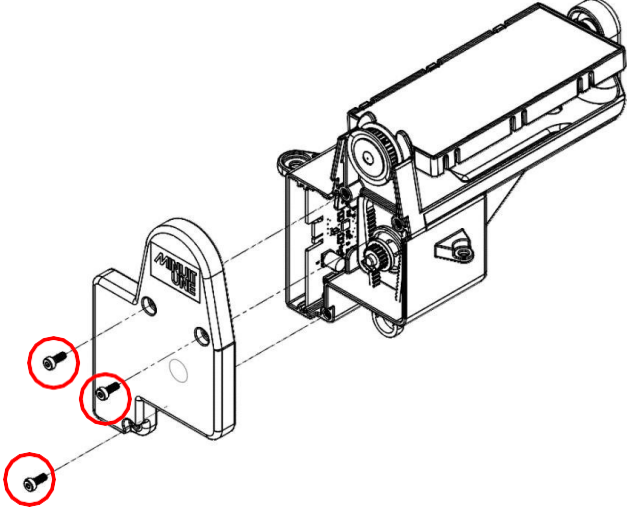
When placing the globe MT1-001714 back in place, make sure that the inserts on the globe are aligned with the screws on the body of the fixture.

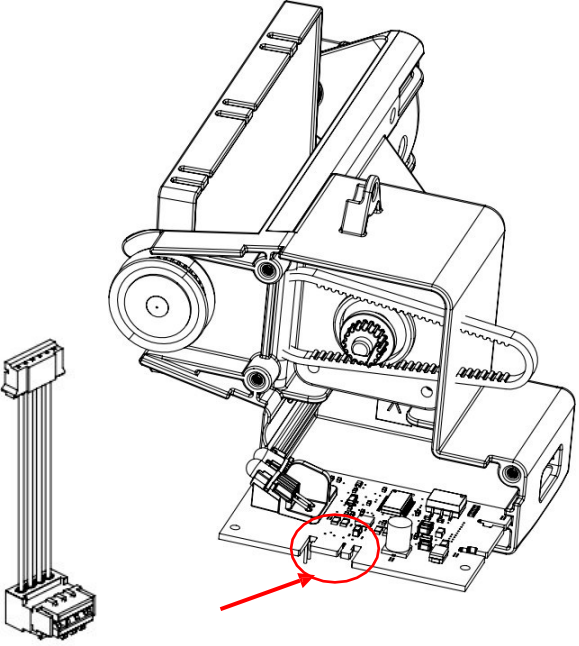
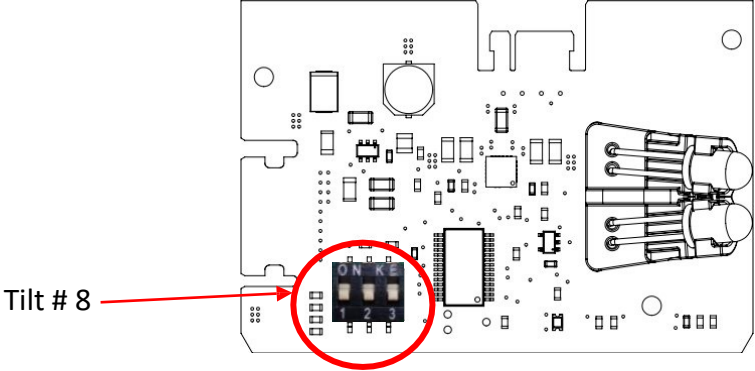
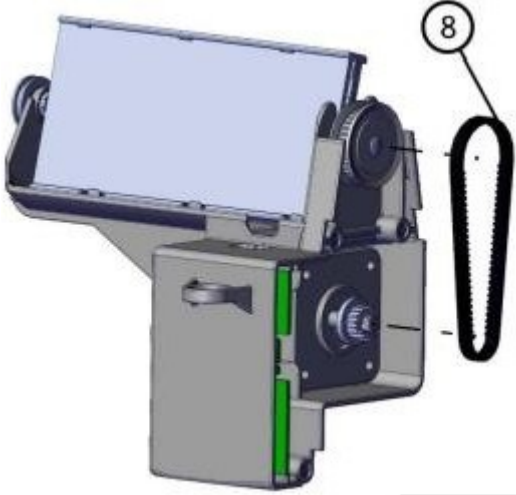




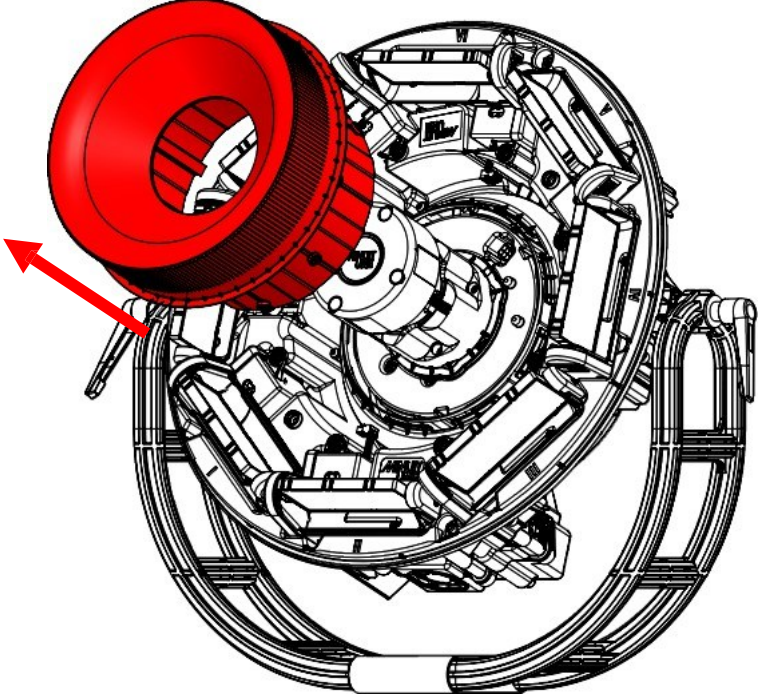
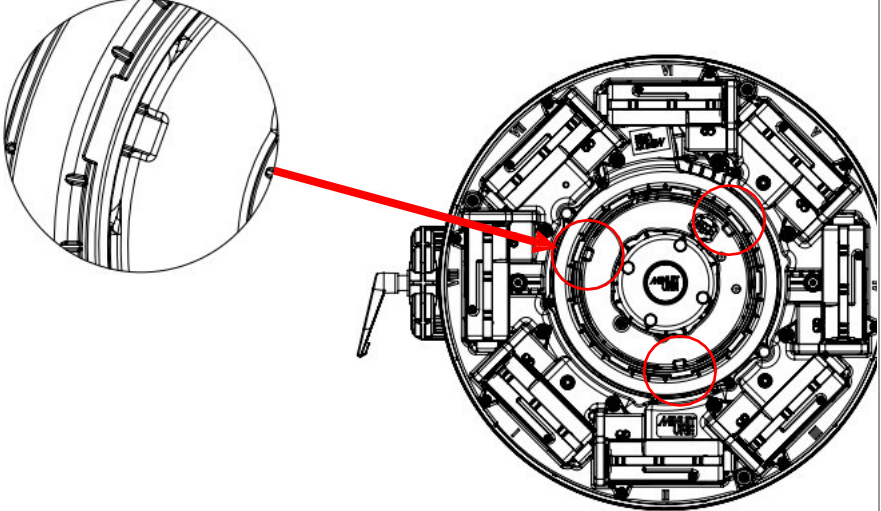
<p><b>REP5:</b> <b>REPLACING MT1-001068- INTERNAL-TOP-COVER</b></p>	<p><b>Tools needed:</b></p>	<p>TORX T20 screwdriver</p>
<div style="background-color: yellow; padding: 5px; border: 1px solid black;"> <p style="text-align: center; font-size: small; margin: 0;"> <b>DANGER</b>            ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.         </p> </div>		
	<p style="text-align: center;">Instructions</p>	<p style="text-align: center;">Diagram</p>
<p><b>5.1</b></p>	<p>You first need to remove the MT1-001714-GLOBE-ASSEMBLY (see section REP4:)</p> <p>Unscrew the 4 screws MT1-000798 and MT1-002514 using a TORX T20 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the screws and washers MT1-001991.</p>	
<p><b>5.2</b></p>	<p>Remove the top cover MT1-001068 like shown in the diagram.</p> <p>When putting the top cover MT1-001068 back in place, manually hold it in its position while screwing the screws (MT1-000798 and MT1-002514) with the washers MT1-001991 from the opposite side.</p> <p>Always start with the scw number “2” on the previous diagram (5.1).</p> <p>Try to put the top cover in the same direction as it was to make it easier screw it back.</p> <p>Some versions of the fixtures have 3 or 4 screws.</p>	

<p><b>REP6:</b> <b>REPLACING MT1-000935- LATERAL-BELT-ACTUATOR-ASSEMBLY (TILT MODULE)</b></p>	<p><b>Tools needed:</b></p>	<p>- TORX T20 screwdriver</p>
<div style="background-color: yellow; padding: 10px; border: 1px solid black;"> <div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> <p><b>DANGER</b></p> <p><i>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</i></p> </div>  </div> </div>		
	<p>Instructions</p>	<p>Diagram</p>
<p>6.1</p> <p>You first need to remove the MT1-001068-INTERNAL-TOP-COVER (see section REP5:)</p> <p>Gently unplug the connector MT1-000672 of the tilt module from the back of the fixture, like shown in the diagram.</p> <p>Make sure not to lose the rubber seal MT1-001057 of the connector when unplugging it.</p> <p>To remove MT1-000935 tilts 1 and 2, the mother board MT1-000139 must be removed first.</p> <p>To remove MT1-000935 tilt 3 the MT1-000705 power supply must be removed first.</p>		
<p>6.2</p> <p>Unscrew the 3 MT1-001699 screws using a TORX T20 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the screws and MT1-001991 washers.</p>		

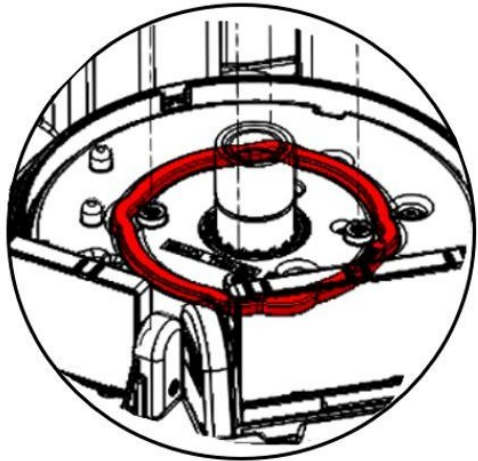
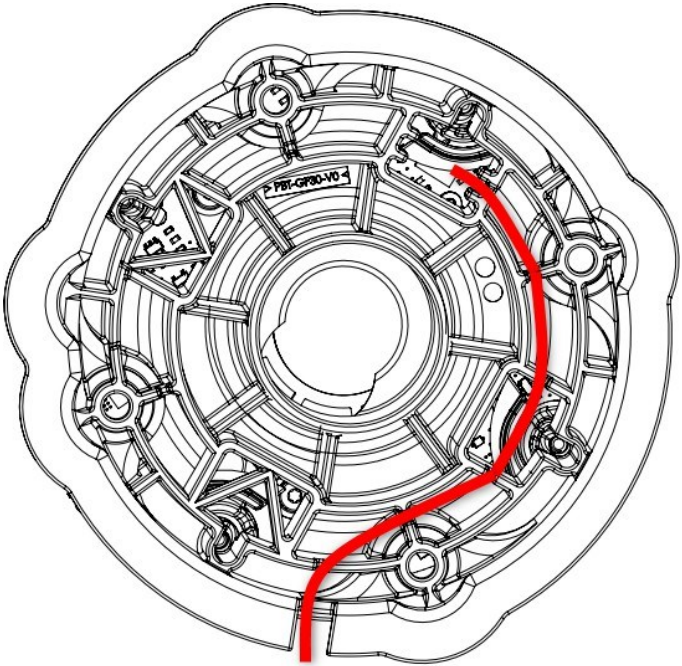
<p>Make sure that the rubber seal MT1-001057 which is shown in the diagram stays in its place on the fixture's body, under the tilt module.</p> <p><b>6.3</b> Before putting back the module, you need to check the TILT address (see section <b>REP7:</b>)</p> <p>When fixing back the module in its place, make sure that it is resting on its fixation point and that the seal is well positioned.</p>	
<p>Plug back the connector, be careful of the direction and of the seal MT1-001037. Like shown on the diagram, an arrow is here to indicate you the direction of the connector (arrow=red wire).</p> <p>Don't forget the washer, and tighten screws with a torque of 1.4 Nm.</p> <p>After assembling back the fixture you must do a full SW update (See section <b>SOF1:</b>) and do a tilt calibration (see section <b>CAL2:</b>).</p>	



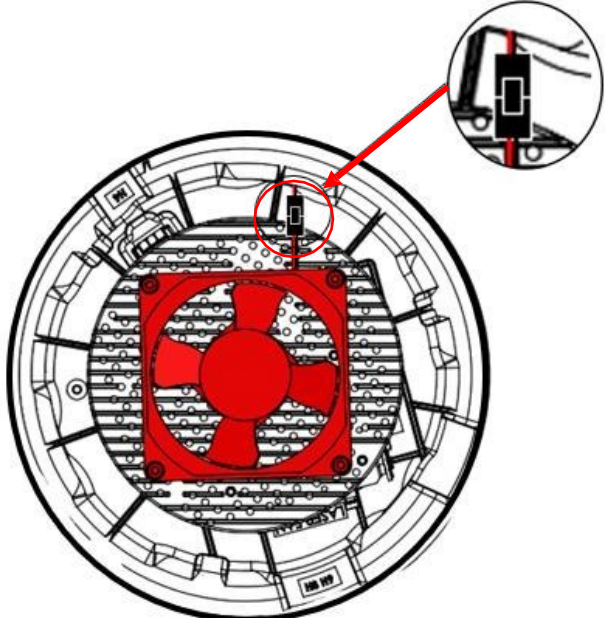
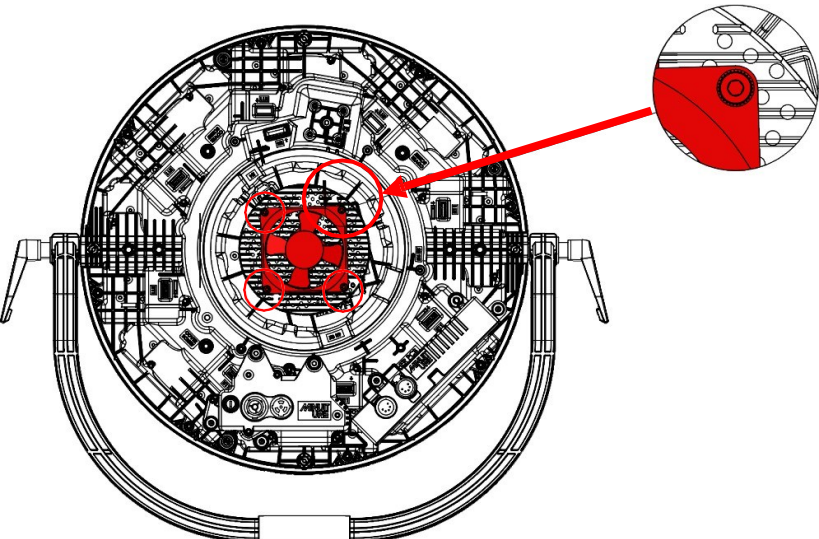
<p><b>REP7: ADDRESSING MT1-000935 TILT MODULE</b></p>	<p><b>Tools needed:</b></p>	<p>- TORX T10 screwdriver</p>
<div style="background-color: yellow; padding: 5px; border: 1px solid black;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center; font-size: 8px;"> <p><b>DANGER</b> ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</p> </div> <div style="text-align: center;">  </div> </div> </div>		
	<p style="text-align: center;">Instructions</p>	<p style="text-align: center;">Diagram</p>
<p><b>7.1</b></p> <p>You first need to remove the MT1-000935 tilt module (see section REP7:)</p> <p>In order to change a tilt module MT1-000935, you will need to address the new module correctly – i.e., if you change tilt module #1, you will need to address the new MT1-000935 tilt module accordingly. Go to step 6B.4.</p> <p>The number of the MT1-000935 tilt module is written on the product like indicated on the diagram.</p>		
<p><b>7.2</b></p> <p>Unscrew the 3 screws MT1-002052 using a TORX T10 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the MT1-002052 screws.</p>		

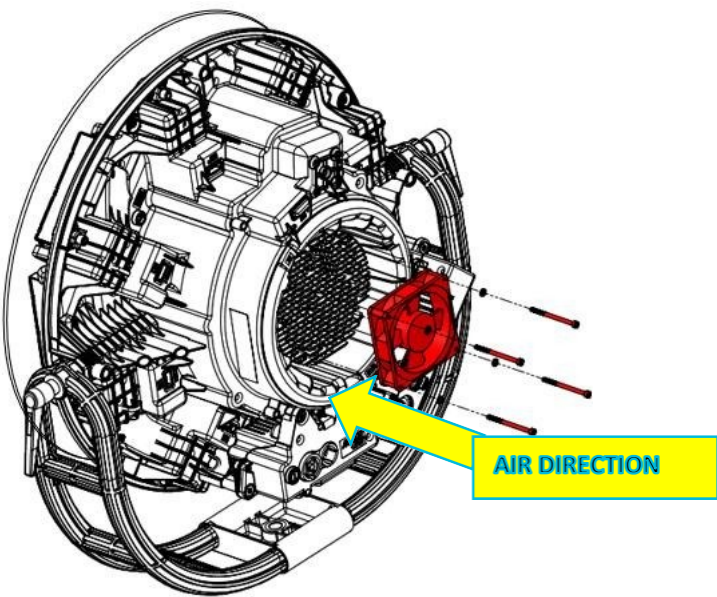
<p><b>7.3</b></p>	<p>Gently unplug the connector from the MT1-000122 PCB card and slide the card out.</p>	
<p><b>7.4</b></p>	<p>Address the MT1-000122 PCB card according to the MT1-000935 tilt module you want to replace. (Switch towards the bottom = 1)</p> <p>111 = 8 110 = 7 101 = 6 100 = 5 011 = 4 010 = 3 001 = 2 000 = 1</p>	
<p><b>7.5</b></p>	<p>When closing back the module, be sure that the belt is well positioned on both pulley, and that the connector is well plugged.</p> <p>Tighten screws with a torque of 0.5 Nm.</p> <p>Do a tilt test (see section TES1:) of the new addressed tilt to check if everything works well.</p>	

<p><b>REP8: REPLACING MT1-002672- MOOVING-CORE (RING)</b></p>	<p><b>Tools needed:</b></p>	<p><b>No tools needed</b></p>
<div style="text-align: center;">  <p><b>DANGER</b> ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</p>  </div>		
	<p><b>Instructions</b></p>	<p><b>Diagram</b></p>
<p><b>8.1</b></p>	<p>You first need to remove the MT1-001068-INTERNAL-TOP-COVER (see section REP5:)</p> <p>Gently lift the MT1-002672 moving core from its position.</p> <p>It should move without any special effort or force.</p>	
<p><b>8.2</b></p>	<p>When putting the MT1-002672 moving core back in its position, make sure it is correctly positioned in front of the 3 slots on the profile and push slowly and steadily into place.</p>	


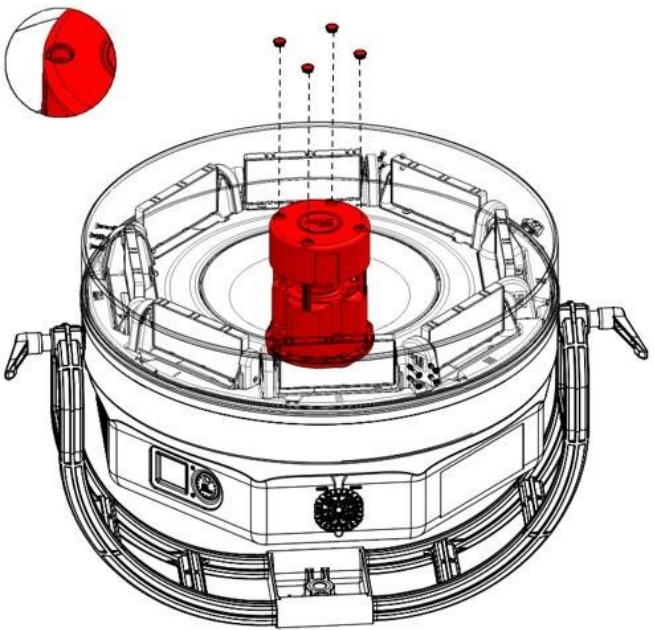
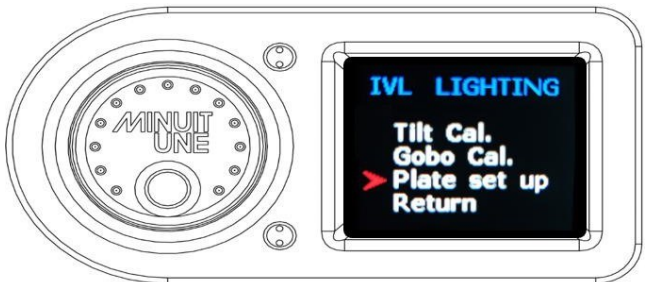
<b>REP9: REPLACING MT1-000404-CENTRAL-TOWER-ASSEMBLY (SCANNING SYSTEM)</b>		<b>Tools needed:</b>	- TORX T20 screwdriver
		<div style="background-color: yellow; padding: 5px; border: 1px solid black;"> <p style="font-size: small; margin: 0;"> <b>DANGER</b>            ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.         </p> </div>	
	<b>Instructions</b>	<b>Diagram</b>	
<b>9.1</b>	<p>You first need to remove the MT1-002672-MOOVING-CORE (see section REP8:REP5:)</p> <p>Unplug the MT1-000671 HARNESS-H10-MC-6W-1 central tower connector which passes through the gap in the body of the fixture.</p> <p>When plugging it back in place, make sure to connect it tightly, until hearing the 'click' and put back the seal in position.</p>		
<b>9.2</b>	<p>Unscrew the 4 screws MT1-001094 using a TORX T20 screwdriver, like shown in the diagram.</p> <p>Make sure not to lose the MT1-001094 screws and MT1-001991 washers.</p>		

<p><b>9.3</b></p>	<p>Note the MT1-000614 rubber seal under the MT1-000404 central tower module.</p> <p>When putting it back in position, make sure to put the seal first in its place, and then place the central tower module on top of it.</p>	
<p><b>9.4</b></p>	<p>When putting back the module, also be careful not to squeeze harness/wiring. They must be well positioned in the slot like on the opposite image.</p> <p>Don't forget the washer, and tighten screws with a torque of 1.4 Nm.</p> <p>After assembling back the fixture you may have to do a set up plate calibration (See section CAL1:).</p>	

<p><b>REP10: REPLACING MT1-001921-FAN</b></p>	<p><b>Tools needed:</b></p>	<p>TORX T20 screwdriver</p>
<div style="background-color: yellow; padding: 10px; border: 1px solid black;">  <p style="text-align: center;"><i>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE BOTTOM HOUSING, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE.</i></p>  </div>		
	<p style="text-align: center;">Instructions</p>	<p style="text-align: center;">Diagram</p>
<p><b>10.1</b></p>	<p>You first need to remove the MT1-002184-BOTTOM-HOUSING-AND-LABEL (REP 1:)</p> <p>Gently unplug the Laser fan connector.</p>	
<p><b>10.2</b></p>	<p>Unscrew the 4 MT1-001256 screws using a TORX T20 screwdriver, like shown on the diagram.</p>	

<p><b>10.3</b></p>	<p>Make sure not to lose the 4 screws and the washers.</p> <p>Be really careful about the air direction when mounting back: FAN must blow on the fixture.</p>	
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# CALIBRATION

<p><b>CAL1:</b> <b>SET UP PLATE CALIBRATION</b></p>	<p><b>Tools needed:</b></p> <ul style="list-style-type: none"> <li>-PH2 screwdriver</li> <li>-hexagonal H 2.5 mm</li> <li>-TrueCon1 cable</li> </ul>	 <div style="border: 1px solid black; padding: 5px;"> <p><b>⚠ DANGER</b></p> <p><b>Class 4 laser radiation.</b></p> <p>Avoid eye or skin exposure to direct or scattered radiation.</p> </div>
	<p>Instructions</p>	<p>Diagram</p>
<p><b>1.1</b></p> <p>The purpose of this procedure is to level the laser light plan by positioning the light plan in the center of each tilt mirror. This is done by adjusting the 4 screws on the MT1-000404 central scanning system "Tower".</p> <p>For this procedure you first need to remove the MT1-001714-GLOBE-ASSEMBLY (see section REP4:) and the 4 screw covers MT1-001600 like shown on the diagram (make sure not to lose them).</p>		
<p><b>1.2</b></p> <p>Plug the power cable and turn the fixture ON.</p> <p>Press the knob near the screen panel of the fixture and go to <b>Maintenance</b> → <b>Calibration</b> → <b>Plate set up</b>.</p>		

1.3

Check whether on average the laser plane is above or below the center / the bearing of each tilt.

If it is above – the adjustment will be done by screwing in.

If it is below – the adjustment will be made by unscrewing.

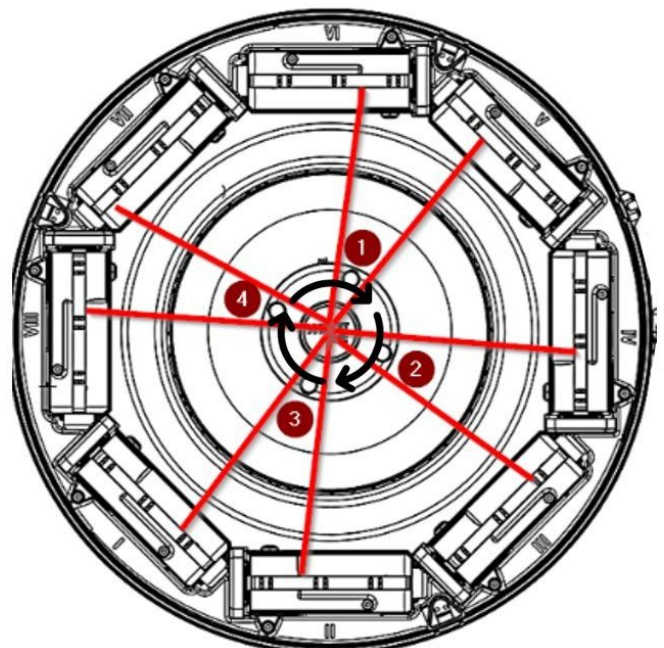
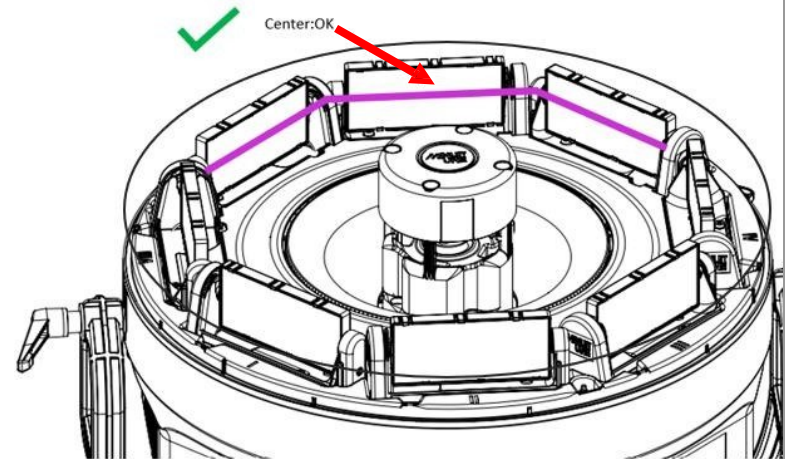
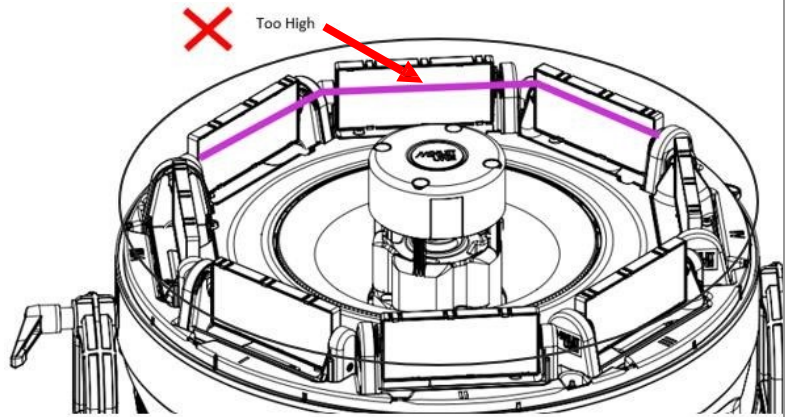
Start screwing/unscrewing the screw in the most off-center corner and adjust the height of the plane until it is centered on the corner of the 2 tilts.

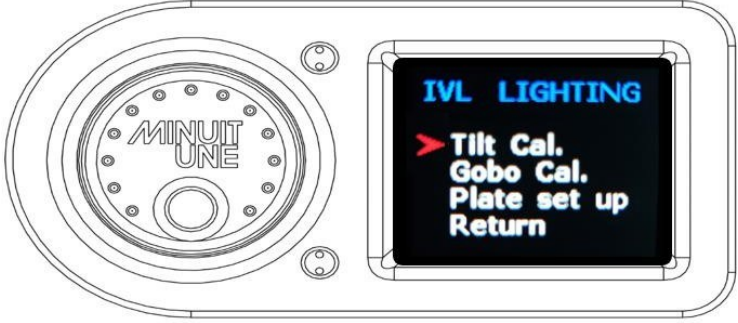
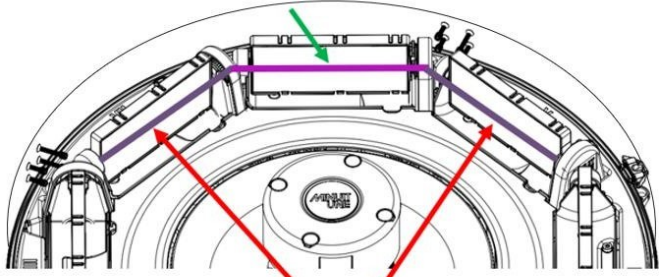
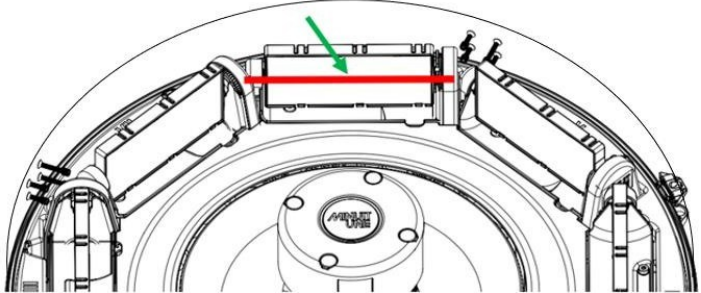
Go to the next screw (**clockwise**) and screw/unscrew until you are centered on the tilts in the corner in question. **Always check that the screw is well flattened, if this is not the case, flatten it even if you are already centered on the tilts.**

Then move on to the next one **always clockwise**.

Continue in this clockwise direction without ever skipping screws or backtracking until all directions of the laser plane are centered on the tilts.

Check one last time that each screw is well flattened and **tightened** at the end of the adjustment and put back the MT1-001600 screw covers on the tower.



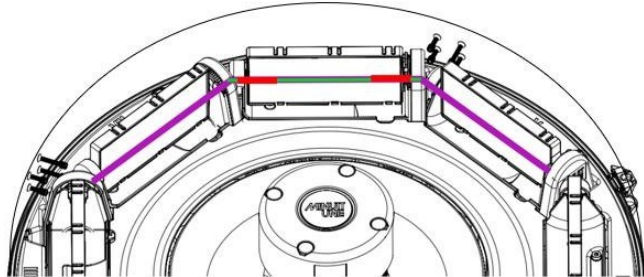
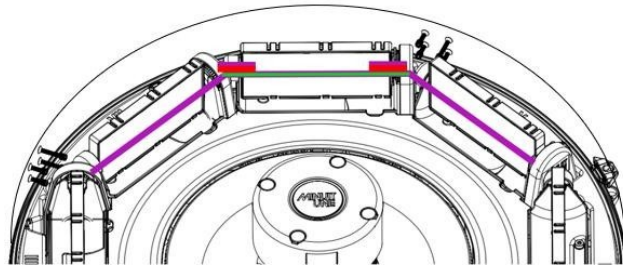
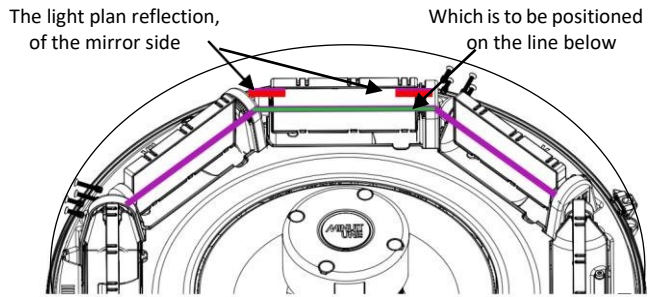
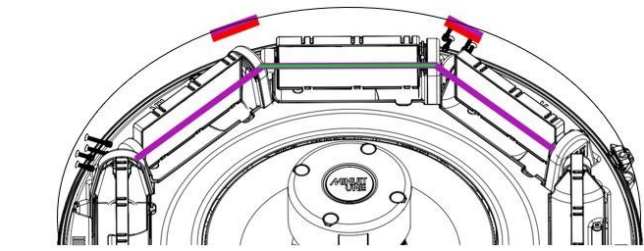
<b>CAL2: TILT CALIBRATION</b>	<b>Tools needed:</b>	TrueCon1 cable	
	<b>⚠ CAUTION!</b> Class 3R laser procedure. Avoid direct eye exposure.		
	Instructions	Diagram	
<b>2.1</b>	<p>The purpose of this calibration is to ensure that each tilt has the same position origin.</p> <p>Make sure that the Globe acrylic shape is in place.</p> <p>Turn on the product and go to <b>Maintenance → Calibration → Tilt Cal.</b></p> <p>You can choose either to calibrate all the tilts or only a tilt n° that you just replaced.</p>		
<b>2.2</b>	<p>Once the calibration has started, tilt #1 will face its mirror side in front of the light source, while all the other tilts will be facing the source with their frost side.</p>	<p>Mirror side (to adjust)</p>  <p>Frost Side</p> <p>Laser plan's reflection</p> 	

**2.3**

Turn the knob to change the angle of the tilt mirror and position its reflection of the light plan on the opposite tilt, like can be seen in the opposite photos. (Use a sheet of paper if you can't clearly see the reflection initially).

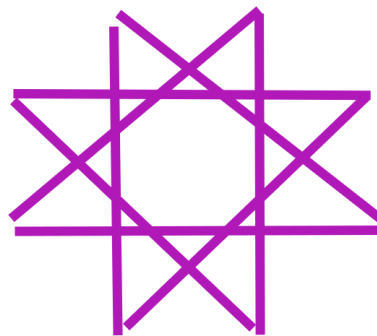
Once the reflection is positioned on the opposite tilt, click on the knob to validate the position. It will then automatically go to the next tilt.

Repeat the operation 8 times in a row for the 8 tilts.

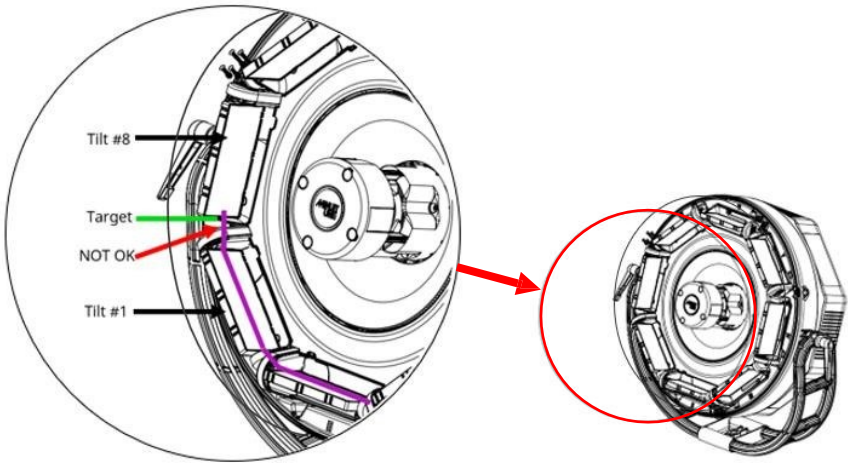
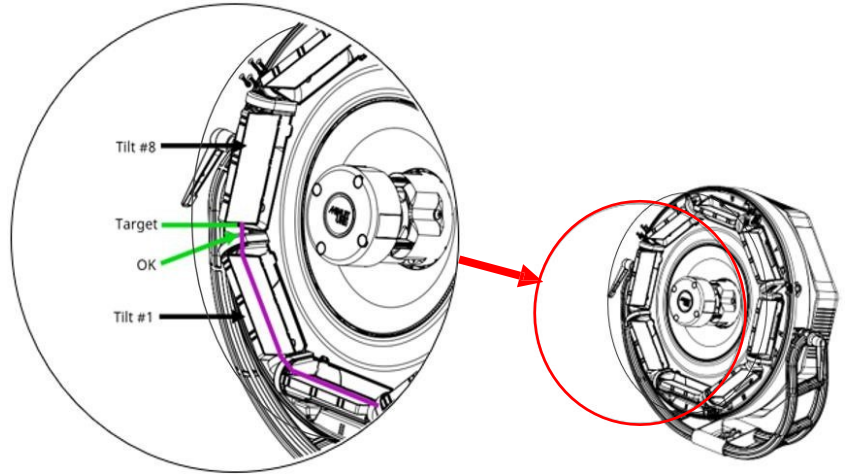


**2.4**

After positioning the last tilt, all tilts go to a position of 45°. Check the pattern on the ceiling – if you have a centered star pattern (like seen on the opposite image), click 'save' on the screen to save and validate the calibration.



<b>CAL3: E-GOBO CALIBRATION</b>		<b>Tools needed:</b> TrueCon1 cable
		<b>CAUTION!</b> Class 3R laser procedure. Avoid direct eye exposure.
	Instructions	Diagram
<b>3.1</b>	<p>The purpose of this calibration is to calibrate the origin of the light plan between Tilt #8 and Tilt #1.</p> <p>Make sure that the Globe acrylic shape is in place.</p> <p>Turn On the product and go to <b>Maintenance → Calibration → Gobo cal.</b></p>	
<b>3.2</b>	<p>The target for positioning the origin is represented by the tilt #8 mirror bearing cover.</p> <p>Once the calibration has started, a portion of the light plane will light up.</p>	



**3.3**

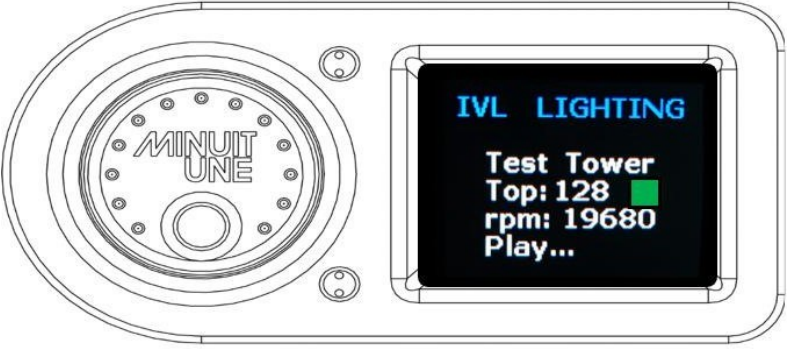
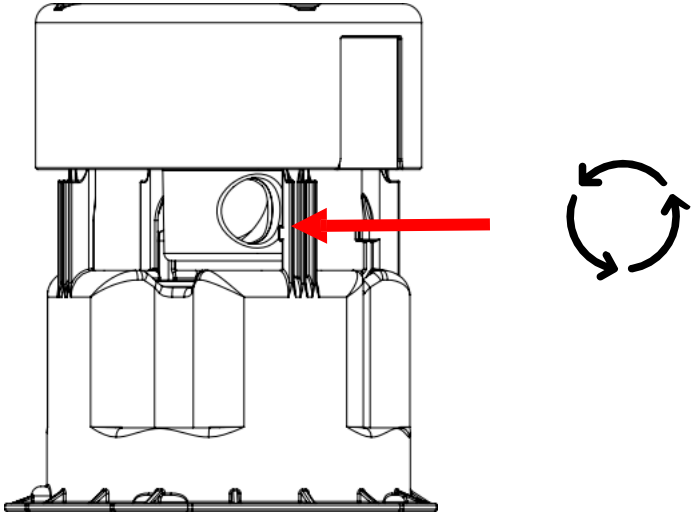
Turn the knob on until the origin of the light plan is positioned between tilt #8 and tilt #1 at the level of the target described above.

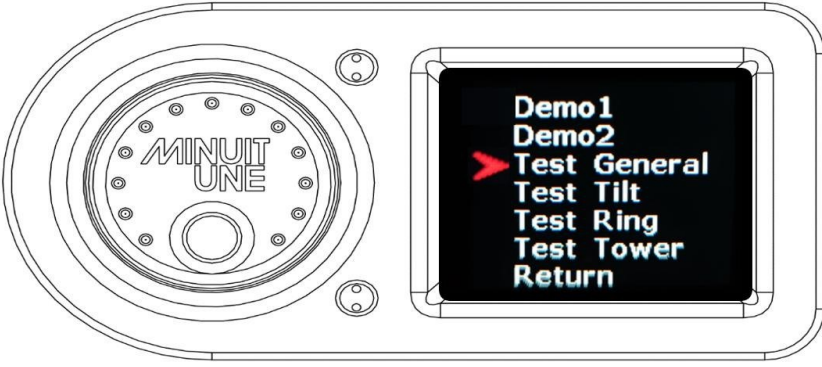
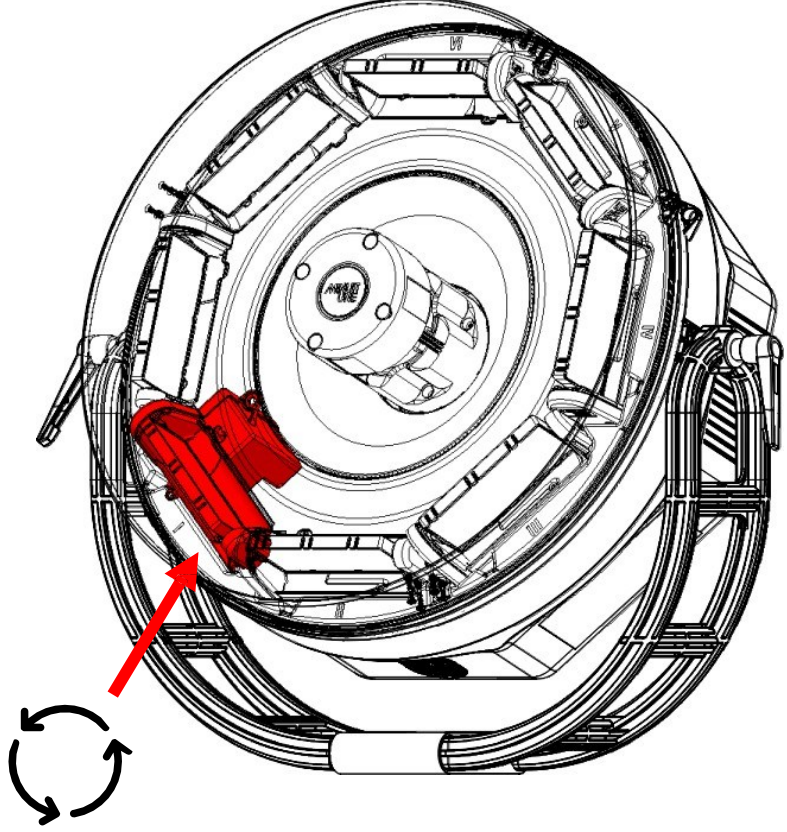
When the position is reached, click on the button to validate, and save the calibration.

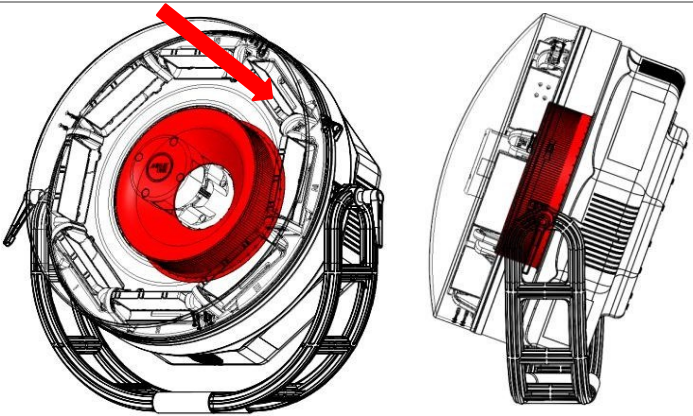
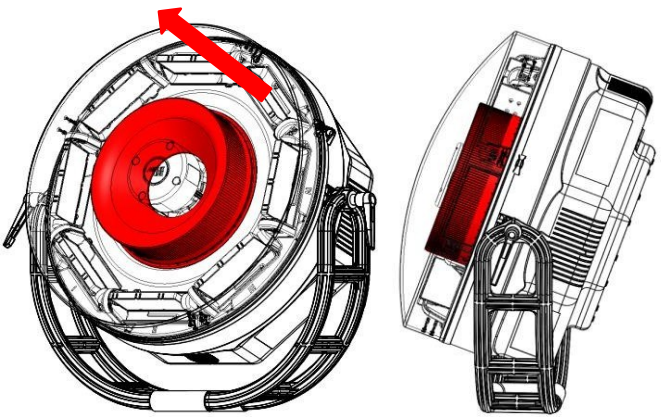
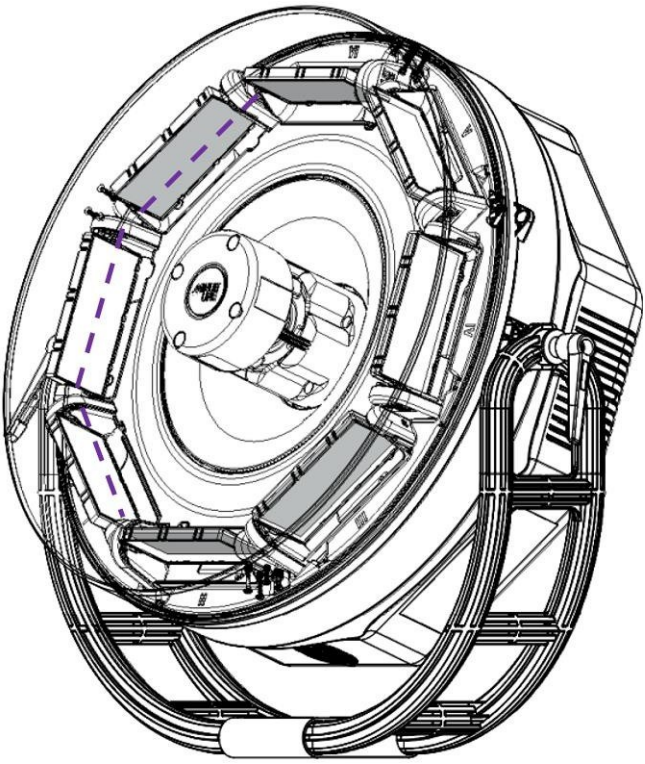
# TESTING

<b>TEST1:</b> <b>TILT TESTING</b>	<b>Tools needed:</b> TrueCon1 cable
<b>CAUTION!</b> Class 3R laser procedure. Avoid direct eye exposure.	
	Diagram
<b>1.1</b> <p>The purpose of this testing is to test the TILT function.</p> <p>Make sure that the Globe acrylic shape ( MT1-001714- GLOBE-ASSEMBLY ) is in place.</p> <p>Turn On the product, go to <b>Maintenance</b> → <b>Autorun</b> → <b>TEST TILT</b>.</p> <p>Select <b>ALL</b> or the number of the TILT( MT1-000935- LATERAL-BELT-ACTUATOR-ASSEMBLY) you want to test.</p>	
<b>1.2</b> <p>Observe the sequence that should look like this:</p> <ol style="list-style-type: none"> <li>1. Reset of the tilt and positioning in <b>A</b>.</li> <li>2. Slow movement until <b>B</b> position (90°).</li> <li>3. Two slow full turn.</li> <li>4. Two fast full turn.</li> </ol> <p>=&gt; Stop in <b>A</b> position.</p> <p>During all this procedure, they should be no blocking and no particular noise or weird movement.</p> <p>Position <b>A</b> at the beginning and at the end of the procedure must be the same.</p>	<div style="text-align: center;"> <p><b>1</b></p> <p><b>A POSITION</b></p> </div> <div style="text-align: center;"> <p><b>2</b></p> <p><b>B POSITION</b></p> </div> <div style="text-align: center;"> <p><b>3+4</b></p> <p><b>A POSITION</b></p> </div>

<p><b>TEST2:</b> <b>RING/MOOVING CORE TESTING</b></p>	<p>Tools needed:</p>	<p>TrueCon1 cable</p>
<p style="text-align: center;"><b>CAUTION!</b></p> <p style="text-align: center;">Class 3R laser procedure. Avoid direct eye exposure.</p>		
	<p>Instructions</p>	<p>Diagram</p>
<p><b>2.1</b></p>	<p>The purpose of this testing is to test the RING function.</p> <p>Make sure that the Globe acrylic shape (MT1-001714- GLOBE-ASSEMBLY ) is in place.</p> <p>Turn On the product, go to Maintenance → Autorun → <b>TEST RING</b>.</p>	
<p><b>2.2</b></p>	<p>Observe the sequence that should look like this:</p> <ol style="list-style-type: none"> <li>1. Ring ( MT1-002672-MOVING-CORE) inside (<b>A POSITION</b>).</li> <li>2. Ring Outside (<b>B POSITION</b>).</li> <li>3. Hold on <b>B POSITION</b>.</li> <li>4. Ring inside (<b>A POSITION</b>).</li> <li>5. Ring Outside (<b>B POSITION</b>)</li> <li>6. Hold on <b>B POSITION</b>.</li> <li>7. Ring inside (<b>A POSITION</b>).</li> <li>8. Ring Outside (<b>B POSITION</b>)</li> <li>9. Ring inside (<b>A POSITION</b>).</li> <li>10. Ring Outside (<b>B POSITION</b>).</li> <li>11. Ring inside (<b>A POSITION</b>).</li> </ol> <p>Position <b>A</b> at the beginning and at the end of the procedure must be the same.</p>	<p style="text-align: center;"><b>A POSITION</b></p> <p style="text-align: center;"><b>B POSITION</b></p>

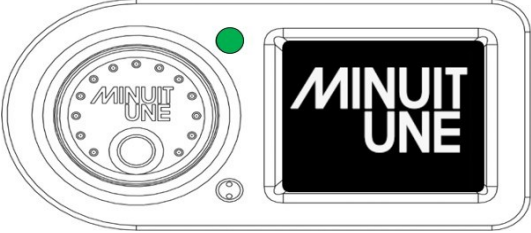
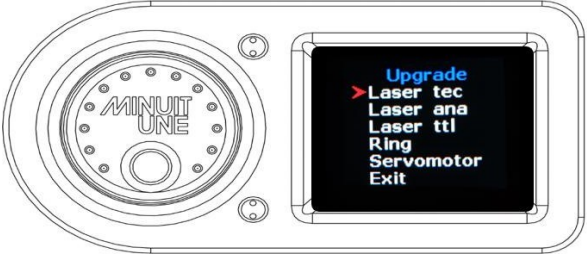
<p><b>TEST3: TOWER/SCANNING SYSTEM TESTING</b></p>	<p>Tools needed:</p>	<p>TrueCon1 cable</p>
<p style="text-align: center;"><b>CAUTION!</b></p> <p style="text-align: center;">Class 3R laser procedure. Avoid direct eye exposure.</p>		
	<p>Instructions</p>	<p>Diagram</p>
<p><b>3.1</b></p>	<p>The purpose of this testing is to test the TOWER function.</p> <p>Make sure that the Globe acrylic shape (MT1-001714- GLOBE-ASSEMBLY ) is in place.</p> <p>Turn On the product, go to <b>Maintenance</b> → <b>Autorun</b> → <b>TEST TOWER</b>.</p>	
<p><b>3.2</b></p>	<p>After launching the <b>TEST TOWER</b>, the motor of the tower must rotate at a speed greater than <b>19000 rpm</b> and the <b>TOP: 128</b> square indicator must be green.</p> <p>During this test, the product must not produce any strange noise or shaking motor.</p>	

<p><b>TEST4: GENERAL TESTING</b></p>	<p><b>Tools needed:</b></p>	<p>TrueCon1 cable</p>
<p style="text-align: center;"><b>CAUTION!</b></p> <p>Class 3R laser procedure. Avoid direct eye exposure.</p>		
	<p>Instructions</p>	<p>Diagram</p>
<p><b>4.1</b></p>	<p>The purpose of this testing is to test the principal functions of the product. Make sure that the Globe acrylic shape (MT1-001714- GLOBE-ASSEMBLY ) is in place. Turn On the product, go to <b>Maintenance</b> → <b>Autorun</b> → <b>TEST GENERAL</b>.</p>	
<p><b>4.2</b></p>	<p>Start of the sequence: Tilt mirror (MT1-000935- LATERAL-BELT-ACTUATOR-ASSEMBLY) number <b>1</b> makes a full tour and so on each Tilt mirror until finished with Tilt mirror <b>8</b>.</p>	

<p><b>4.3</b></p>	<p>The Ring “moving core” does a come and go.</p> <p><b>A POSITION</b> and then <b>B POSITION</b>.</p> <p>Position <b>A</b> at the beginning and at the end of the test.</p>	 <p style="text-align: center;"><b>A POSITION</b></p>  <p style="text-align: center;"><b>B POSITION</b></p>
<p><b>4.4</b></p>	<ol style="list-style-type: none"> <li>1. Tilts set in frost side.</li> <li>2. Gobos are tested from 1 to 256.</li> <li>3. Dimmer/analog is tested turning off the mirrors 1 by 1 from tilt 1 to tilt 8</li> </ol> <p>Afterwards, the sequence is repeated.</p>	

# SOFTWARE UPDATE

<b>SOF1: SOFTWARE UPDATE</b>	<b>Tools needed:</b>	TrueCon1 cable SD CARD
	<div style="background-color: yellow; padding: 5px; display: inline-block;"> <b>CAUTION!</b> </div> Class 3R laser procedure. Avoid direct eye exposure.	
	<b>Instructions</b>	<b>Diagram</b>
<b>1.1</b>	<p>Insert the SD card provided by Minit Une into the top of the motherboard(MT1-000139-MOTHER-PCB-ASSEMBLY).</p> <p>Make sure the SD card is well inserted.</p>	<p style="text-align: center;">SD CARD</p>
<b>1.2</b>	<ol style="list-style-type: none"> <li>1. Press the knob without releasing.</li> <li>2. Turn on the IVL PHOTON. Minit Une logo will not appear.</li> <li>3. Once the green led stops blinking, release the knob.</li> </ol>	
<b>1.3</b>	<ol style="list-style-type: none"> <li>1. Select program and upgrade.</li> <li>3. Exit DMX Upgrade menu and do a reset. Turn off the Product and follow the Modules update procedure below.</li> </ol>	

<p><b>1.4</b></p>	<ol style="list-style-type: none"> <li>1. Make sure the SD card is well inserted and the product is off.</li> <li>4. Turn on the IVL PHOTON.</li> <li>4. As soon as the Minuit Une logo appears on the screen, press the knob without releasing it.</li> <li>5. Once the green led stops blinking, release the knob.</li> </ol>	
<p><b>1.5</b></p>	<ol style="list-style-type: none"> <li>1. Select in the menu the software you want to update (Laser ana, Laser TTL, Ring, Servomotor) and upgrade.</li> <li>2. Exit Upgrade menu and do a reset.</li> </ol>	
<p><b>1.6</b></p>	<p>After DMX and Modules Update verify if the software is well updated. In the main menu go to <b>ABOUT:</b></p> <p>The software version is shown <b>VX.X:</b></p> <p>Then press again to have de software version of the modules:</p>	

# CLEANING



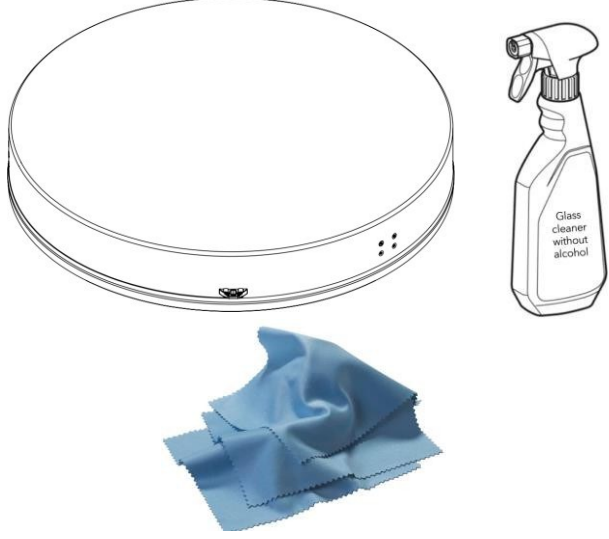
Excessive dust, smoke particles and fog fluid residue may degrade performance, cause overheating and will damage the product.



The product should be cleaned regularly to obtain maximum performance and brightness.

The frequency of cleaning depends on the environmental factor where the product is used. We advise you to do visual check on the Plexiglas shape after each use of the product to determine if cleaning is necessary.

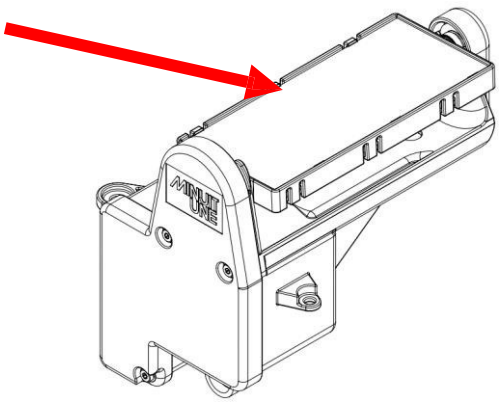
Always clean the product on a well-lit and clean area.

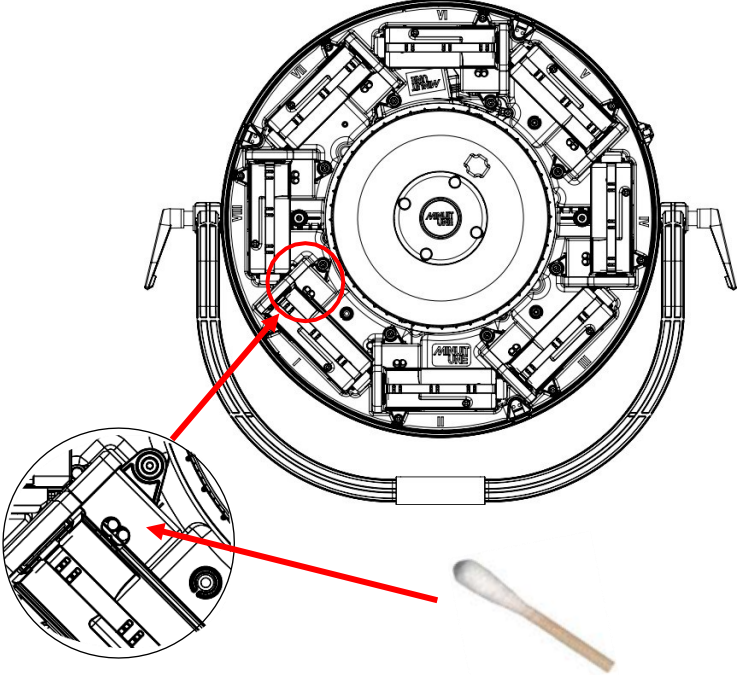
Damage caused by inadequate cleaning or service is not covered by the product warranty.



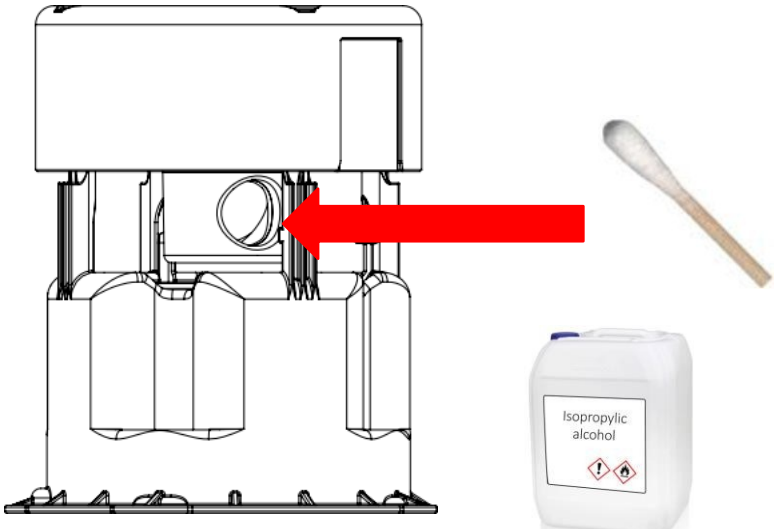
<p><b>CLE1: GLOBE CLEANING</b></p>	<p><b>Tools needed:</b></p>	<ul style="list-style-type: none"> <li>- A microfiber cloth</li> <li>- A non-alcoholic glass cleaner</li> </ul>	
<div style="border: 2px solid black; background-color: yellow; padding: 10px;">  <p style="margin: 0;"><b>DANGER</b> ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</p>  </div>			
	<p>Instructions</p>	<p>Diagram</p>	
<p><b>1.1</b></p>	<p>Clean the external and internal parts of the Globe on a soft support.</p> <p>Always clean the Globe components with a soft wipe and / or standard glass cleaner without alcohol and a lint-free cloth.</p> <p>Do not use products, solvents, or abrasive materials for cleaning Plexiglass.</p>		

<b>CLE2:</b> <b>MT1-000935 TILT CLEANING</b>	<b>Tools needed:</b>	- A microfiber cloth - A non-alcoholic glass cleaner
	<div style="background-color: yellow; padding: 5px;">  <p style="font-size: small; margin: 0;"> <b>DANGER</b>            ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.         </p>  </div>	

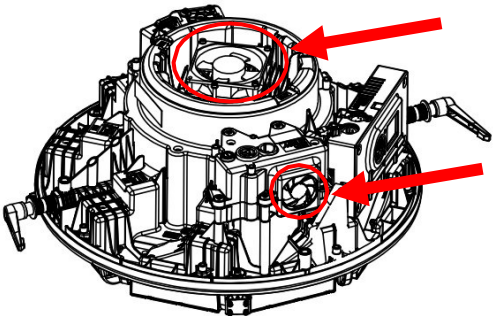
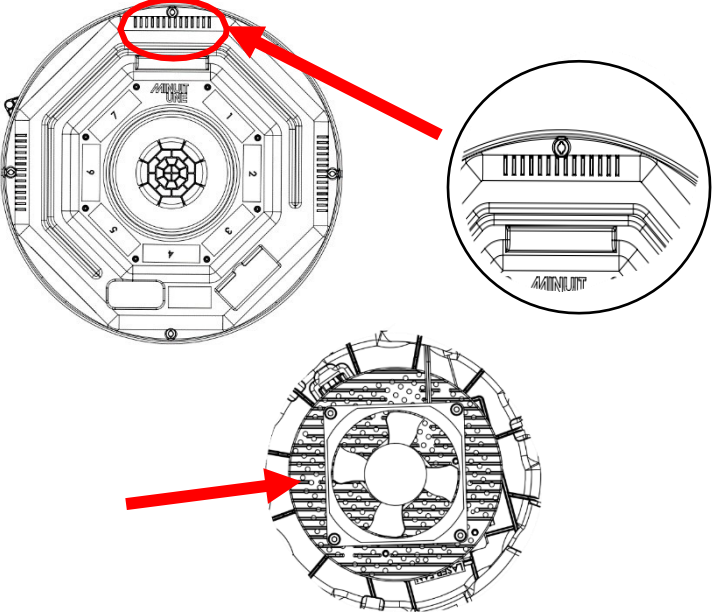
	Instructions	Diagram
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<b>2.1</b>	Always clean TILT mirror with a soft wipe and / or standard glass cleaner.	
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<b>2.2</b>	With a soft cotton swab soaked with glass cleaner, clean the two diodes that are responsible for resetting the TILT.	
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<p><b>CLE3:</b> <b>MT1-000404- SCANNING SYSTEM CLEANING</b></p>	<p><b>Tools needed:</b></p> <ul style="list-style-type: none"> <li>- Cotton swab</li> <li>- Microfiber cloth</li> <li>- Alcool iso</li> </ul>	
<div style="border: 2px solid black; background-color: yellow; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> <p><b>DANGER</b></p> <p><small>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLASS GLOBE, OPENING THE PRODUCT, OR PERFORMING THIS DESCRIBED SERVICE PROCEDURE. DANGEROUS CLASS 4 LASER RADIATION POTENTIALLY ACCESSIBLE IF THESE INSTRUCTIONS ARE NOT FOLLOWED WHICH COULD RESULT IN SEVERE EYE OR SKIN INJURY.</small></p> </div>  </div> </div>		
	<p style="text-align: center;">Instructions</p>	<p style="text-align: center;">Diagram</p>
<p><b>3.1</b></p>	<p>Gently clean the Scanning Mirror and the glass with a soft cotton swab soaked with iso alcohol and / or drag a soft lens tissue or microfiber cloth on the mirror.</p>	

<b>CLE4: FAN AND FILTER CLEANING</b>		<b>Tools needed:</b>	-Cotton swab -Micro fiber cloth
		<div style="background-color: yellow; border: 1px solid black; padding: 5px; text-align: center;"> <b>ALWAYS TURN OFF AND DISCONNECT THE PRODUCT BEFORE REMOVING THE PLEXIGLAS SHAPE, OPENING THE PRODUCT OR PERFORMING PROCEDURES OF SERVICE.</b> </div>	
	Instructions	Diagram	
<b>4.1</b>	<p>If the fan filter and the fan are not cleaned regularly, airflow could be obstructed and will cause overheating which will degrade performance and could cause damage to the product.</p>	<div style="text-align: center;"> <p><b>BE CAREFUL WITH HEATSINK</b> Wait for a cooling down before cleaning.</p> </div>	
<b>4.2</b>	<p>To access MT1-0008206-LASER-FILTER, remove the MT1-002184 bottom housing and unclip MT1-000819- LASER-FILTER-HOLDER.</p> <p>To clean this filter, wash it with warm water.</p> <p>Then, let the filter dry completely. Do not install a damp filter as moisture damages the fixture.</p>		
<b>4.3</b>	<p>To access MT1-000818-POWER-SUPPLY-FILTER remove the MT1-002184 bottom housing and unclip MT1-000816-POWER-SUPPLY-FILTER-HOLDER.</p> <p>To clean this filter, wash it with warm water</p> <p>Then, let the filter dry completely. Do not install a damp filter as moisture damages the fixture.</p>		

<p><b>4.4</b></p>	<p>To access the two fans, remove the MT1-002184 bottom housing</p> <p>Clean the two fans using a bent nose pliers with microfiber cloth or cotton swab.</p>	
<p><b>4.5</b></p>	<p>If there is an accumulation of greasy dust trapped in the slots of the Bottom housing, or in the heatsink, use a cotton swab to remove it before cleaning with microfiber</p>	

# DMX Protocol

## Mode 1

DMX Sheet – Single Mode – September, 21 2021

ch.	Function	Sub-Function	Percent Value	DMX Value	Default Value (%)	Remarks
1	Control	Off	0 > 9	0 > 23	100%	
		Reset motor	10 > 14	24 > 36		
		Reset source	15 > 20	37 > 51		
		Reset full	21 > 25	52 > 64		
		On - fast mode	26 > 49	65 > 125		
		On - normal mode	50 > 100	126 > 255		
2	Shutter (strobe) frequency	Open	0 > 5	0 > 14	0%	
		Closed	6 > 10	15 > 27		
		30 > 1440bpm	11 > 89	28 > 227		
		Open	90 > 100	228 > 255		
3	Shutter - duty cycle	Short > Long	0 > 100	0 > 255	50%	0% - Short bursts of light. 100% - Short bursts of blackout.
<b>E-Gobo / Beam control</b>			<b>%</b>	<b>DMX</b>	<b>Default %</b>	
4	Number of beams (E-GOBO TYPE)	1 Beam	0 > 10.78	0 - 27	0%	
		2 Beams	10.78 > 21.76	28 - 55		
		4 Beams	21.76 > 32.75	56 - 83		
		8 Beams	32.75 > 43.73	84 - 111		
		16 Beams	43.73 > 54.71	112 - 139		
		32 Beams	54.71 > 65.69	140 - 167		
		64 Beams	65.69 > 76.67	168 - 195		
		256 Beams	87.65 > 100	224 - 255		
5	Index/offset (E-GOBO INDEX)	Index 0° > 360°	0 > 100	0 > 255	0%	
6	Index/offset fine (E-GOBO INDEX)	Index 0° > 360°	0 > 100	0 > 65535		
7	Rotation (E-GOBO ROTATION)	STOP ROT - Back to Index position	0 > 4.90	0 - 12	0%	
		Clock-Wise Rot (Fast --> Slow)	4.90 > 48.04	13-122		
		Relative STOP	48.04 > 52.35	123-133		
		Counter-Clock-Wise Rot (Slow --> Fast)	52.35 > 95.10	134-242		
		STOP ROT - Back to Index position	95.10 > 100	243-255		
8	Beam size (E-GOBO SIZE)	0° > 360°	0 > 100	0 > 255	100%	
9	Beam size fine (E-GOBO SIZE)	0° > 360°	0 > 100	0 > 65535		
<b>Moving Core</b>			<b>%</b>	<b>DMX</b>	<b>Default %</b>	
10	Reflector's Position (ZOOM)	0 > 61mm	0 > 100	0 - 255	0%	At 0% - Retracted inside the body of the fixture, doesn't intercept the light plan. At 100% - Moves up, and intercepts the light plan.
11	Reflector's Fine Position (ZOOM)		0 > 100	0 > 65535		
12	Reflector's Speed (ZOOM SPEED)	SLOW > FAST	0 > 100	0 > 255	0%	

		TILT 1	%	DMX	Default %	
13	Tilt 1	-180° > 180°	0 > 100	0 > 255	50%	Physically, Tilt #1 will be where the Screen panel of the fixture is located. Under 0° - Frost side of the tilts. Above 0° - Reflective side of the tilts.
14	Tilt 1 Fine	-180° > 180°	0 > 100	0 > 65535		
15	dimmer 1	Close > Open	0 > 100	0 > 255		
16	red 1	0 > FF	0 > 100	0 > 255		
17	green 1	0 > FF	0 > 100	0 > 255		
18	blue 1	0 > FF	0 > 100	0 > 255		
		TILT 2	%	DMX	Default %	
19	Tilt 2	-180° > 180°	0 > 100	0 > 255	50%	
20	Tilt 2 Fine	-180° > 180°	0 > 100	0 > 65535		
21	dimmer 2	Close > Open	0 > 100	0 > 255		
22	red 2	0 > FF	0 > 100	0 > 255		
23	green 2	0 > FF	0 > 100	0 > 255		
24	blue 2	0 > FF	0 > 100	0 > 255		
		TILT 3	%	DMX	Default %	
25	Tilt 3	-180° > 180°	0 > 100	0 > 255	50%	
26	Tilt 3 Fine	-180° > 180°	0 > 100	0 > 65535		
27	dimmer 3	Close > Open	0 > 100	0 > 255		
28	red 3	0 > FF	0 > 100	0 > 255		
29	green 3	0 > FF	0 > 100	0 > 255		
30	blue 3	0 > FF	0 > 100	0 > 255		
		TILT 4	%	DMX	Default %	
31	Tilt 4	-180° > 180°	0 > 100	0 > 255	50%	
32	Tilt 4 Fine	-180° > 180°	0 > 100	0 > 65535		
33	dimmer 4	Close > Open	0 > 100	0 > 255		
34	red 4	0 > FF	0 > 100	0 > 255		
35	green 4	0 > FF	0 > 100	0 > 255		
36	blue 4	0 > FF	0 > 100	0 > 255		
		TILT 5	%	DMX	Default %	
37	Tilt 5	-180° > 180°	0 > 100	0 > 255	50%	
38	Tilt 5 Fine	-180° > 180°	0 > 100	0 > 65535		
39	dimmer 5	Close > Open	0 > 100	0 > 255		
40	red 5	0 > FF	0 > 100	0 > 255		
41	green 5	0 > FF	0 > 100	0 > 255		
42	blue 5	0 > FF	0 > 100	0 > 255		
		TILT 6	%	DMX	Default %	
43	Tilt 6	-180° > 180°	0 > 100	0 > 255	50%	
44	Tilt 6 Fine	-180° > 180°	0 > 100	0 > 65535		
45	dimmer 6	Close > Open	0 > 100	0 > 255		
46	red 6	0 > FF	0 > 100	0 > 255		
47	green 6	0 > FF	0 > 100	0 > 255		
48	blue 6	0 > FF	0 > 100	0 > 255		
		TILT 7	%	DMX	Default %	
49	Tilt 7	-180° > 180°	0 > 100	0 > 255	50%	
50	Tilt 7 Fine	-180° > 180°	0 > 100	0 > 65535		
51	dimmer 7	Close > Open	0 > 100	0 > 255		
52	red 7	0 > FF	0 > 100	0 > 255		
53	green 7	0 > FF	0 > 100	0 > 255		
54	blue 7	0 > FF	0 > 100	0 > 255		
		TILT 8	%	DMX	Default %	
55	Tilt 8	-180° > 180°	0 > 100	0 > 255	50%	
56	Tilt 8 Fine	-180° > 180°	0 > 100	0 > 65535		
57	dimmer 8	Close > Open	0 > 100	0 > 255		
58	red 8	0 > FF	0 > 100	0 > 255		
59	green 8	0 > FF	0 > 100	0 > 255		
60	blue 8	0 > FF	0 > 100	0 > 255		

## Mode Debug

ch.	Function	Sub-Fonction	Percent Value	DMX Value	Default Value (%)	Remarks
1	Control	Off	0 > 9	0 > 23	100%	
		Reset motor	10>14	24>36		
		Reset source	15>20	37>51		
		Reset full	21 >25	52> 64		
		On - fast mode	26> 49	65 >125		
		On - normal mode	50 > 100	126 > 255		
ch.	Function	E-Gobo / Beam control	%	DMX	Default %	
2	Number of beams (E-GOBO TYPE)	1 Beam	0 > 10.78	0 - 27	0%	
		2 Beam	10.78 > 21.76	28 - 55		
		4 Beam	21.76 > 32.75	56 - 83		
		8 Beam	32.75 > 43.73	84 - 111		
		16 Beam	43.73 > 54.71	112 - 139		
		32 Beam	54.71 > 65.69	140 - 167		
		64 Beam	65.69 > 76.67	168 - 195		
		128 Beam	76.67 > 87.65	196 - 223		
		256 Beam	87.65 > 100	224 - 255		
3	Index/offset (E-GOBO INDEX)	Index 0° > 360°	0 > 100	0 > 255	0%	
4	Rotation (E-GOBO ROTATION)	STOP ROT Back to index position	0 > 4.8	0 - 12	0%	
		Clock-Wise Rot (Fast --> Slow)	4.9 > 48.04	13-122		
		Relative STOP	48.04 > 52.35	123-133		
		Counter Clock Wise Rot (Slow--> Fast)	52.35 > 95.10	134-242		
		STOP ROT Back to index position	95.10 > 100	243-255		
5	Beam Size (E-GOBO SIZE)	0° > 360°	0 > 100	0 > 255		
ch.	Function	Moving Core	%	DMX	Default %	
6	Reflector's Position (ZOOM)	0>61mm	0 > 100	0 - 255	0%	
7	Reflector's Speed (ZOOM SPEED)	SLOW > FAST	0 > 100	0 > 255	0%	
ch.	Function	TILT ALL	%	DMX	Default %	
8	Tilt All	-180° > 180°	0 > 100	0 > 255	50%	
9	dimmer all	Close > Open	0 > 100	0 > 255	0%	
10	red all	0 > FF	0 > 100	0 > 255	100%	
11	green all	0 > FF	0 > 100	0 > 255	100%	
12	blue all	0 > FF	0 > 100	0 > 255	100%	

# Specification

## Measurements and weight

All dimensions are given in millimeters.

Dimensions of the circular housing: 481 x 481 x 327 mm<sup>3</sup>

Total dimensions of the fixture (adjustable yoke included): 649 x 556 x 327 mm<sup>3</sup>

Weight: 16kg

## Housing / Construction

Modular conception: conception subdivided into modules, which can be independently and quickly replaced.

Protection rating: IP20

Menu display: LCD color screen

Low cleaning care: optical parts isolated from haze

## Light Source

Class 3R laser product: extended source

Wavelength: 450nm,520nm,638m

Colors: smooth RGB spectrum

Nominal Beam diameter (1/e) at scanning vertex: 15mm

Beam divergence: >1,5mrad

Nominal Scan rate: 330HZ

Distance from scanning vertex to closest point of human access (NPHA): 241mm

Maximum output: 23,2 μJ

## Central scanning system

Scanning motor: extensive lifetime brushless motor

Scanning angle: 360°

Mirror: R>98%

Safeguard: certified failed-safe

## Mirror output

Mirror side of the tilt: 115 x 50 mm<sup>2</sup>

8 independent mirrors: producing independent 8 light planes

Aperture by mirror: 42° linear aperture by tilt

Operating angle: 180°

Motorization: 8 steps to steps motors – 16 bits non-linear resolution

Movement: very smooth at low speed and extremely reactive

Maximum speed: from mirror to frost side in 0,25sec

## Frost output

Frost side of the tilt: 115 x 50 mm<sup>2</sup> frost filter

8 independent frost filters: producing 8 independent frosted outputs

Aperture by mirror: very wide

Operating angle: 180°

Motorization: 8 steps motors – 16 bits non-linear resolution

Movement: very smooth at low speed and extremely reactive

Maximum speed: from mirror to frost side in 0,25sec

## Moving core output

Central circular frosted reflector: 50 mm high, 240 mm external diameter, 10 mm internal diameter

Length of vertical movement: 6 mm, 16 bits resolution

Speed: up to 60 mm/sec in standard mode / up to 15 mm/sec in fast mode

## DMX

Number of channels: 60

2 options: standard or fast mode

Update: by micro-SD card

Electronical gobos: 9 e-gobos

RGB control: independent RGB control per tilt (x8)

Dimmer control: independent dimmer control per tilt (x8)

Zoom parameter: control of the moving core position

Strobe: control over the frequency of the pulse and the duration of the pulse

## Beam Control (e-gobos)

Number of beams: 1 to 256

Control: intuitive gobo like system

Gobo type: number of beams

Gobo size: width of the beam

Gobo indexation: position of the beam

Gobo rotation: speed and direction of the beam

## Power supply

Power supply unit: 100 to 240 Volts – 50/60Hz

Power: 200 Watt maximum

Cooling system/Thermal

Cooling: thermo electric cooling

Safety: protection against excessive temperatures

Nominal operating temperature of the laser source: 30°C

## Installation

Adjustable mounting yoke: rigging clamps attachment point

Position: on a vertical rigging structure, adjustable mounting yoke horizontal to the ground

Safety: safety cable through the adjustable mounting yoke

## Operating parameters

Maximum ambient temperature: 40°C (104°F)

Minimum ambient temperature: 0°C (32°F)

## Connections

AC power input/output: Neutrik PowerCon True1

DMX data in/out : 5-pin locking XLR

**Standards:**



Safety:

- CB IEC60825-1:2014
- 21CFR 1040
- ANSI Z136.1 "Standard for Safe Use of Lasers"
- CB IEC62368

EMC:

- EN55032 :2015+A11 :2020
- EN55035 :2017+A11 :2020
- EN IEC 61000-3-2 :2019
- EN61000-3-3 :2013+A1 :2019
- 47CFR Part 15 Subpart B, 2020
- ICES-003 :Issue 7
- AS/NZS CISPR32, :2015



 	<p><b>Disposing of this product</b></p> <p>IVL products are supplied in compliance with Directive 2012/19/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), where applicable.</p> <p>Help preserve the environment! Ensure that this product is recycled at the end of its life. Your supplier can give details of local arrangements for the disposal of IVL products.</p>
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# Service Return Form

## Your contact

Company : .....

First Name ..... Last Name .....

Adresse .....

Country .....City .....

Telephone..... Email .....

## Your product

Model:..... Serial Number :.....

Buying date:..... Invoice number:.....

Failure Reference (reference in the Troubleshooting )  
.....

Failure description (please add photo or video to illustrate your problem):  
.....  
.....  
.....

Defective part: .....

## Instructions to follow

- 0) In case of failure, please first contact Minuit Une to find a solution
- 1) If necessary and asked by Minuit Une, send back the defective part correctly packed with this sheet correctly filled in.
- 2) Return fees are at your charge.
- 3) If covered by the warranty, a new part will be sent to you for free.
- 4) If not covered by the warranty, an invoice will be sent to you for the new part and for its shipping.