

CHLITE-A SYSTEM

PART 2a: INSTALLATION

MANUAL



Revision

REV	Date	Prepared by	Checked by	Approved by	Description
01	16.09.2015	TTT	CSC	CSC/PH	First edition
02	23.06.2017	CSC	TS	CSC	Update for torque values
03	04.12.2017	CSC	TS	CSC	New logo and name

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Disclaimer

Stahl Tranberg AS endeavors to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. The user shall be familiar with the contents of the appropriate manuals before attempting to install, operate or work on the equipment.

Stahl Tranberg AS disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

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1. Scope

1.1 Introduction

Thank you for purchasing this product!



Our CHLITE system has been tested thoroughly by a third party (DNV-GL) to ensure that the *system itself and the mounting methods* comply with CAP 437. The testing simulated the loads applied during a helicopter landing and included both lateral and vertical load/pressure to the light modules.

Please follow this manual for installation, maintenance and assurance of a long life of this product. Changes made to the product which do not confirm to the approvals of this equipment, is a safety violation. The manufacturer is under no circumstances responsible for personal injuries, death or any other damage caused by such activities. For your health and safety, always use safety gear suited for the task. Be certain to follow codes, regulations and/or specific procedures that are related to the installation operation and maintenance.

WARNING

Installation, maintenance, overhaul and repair shall only be carried out by appropriate authorized, qualified and trained personnel!

Repair that effects the explosion protection may only be carried out by Stahl Tranberg AS, or a qualified electrician in compliance with respective national regulation. For replacement and repair of the CHLITE only Stahl Tranberg AS spare parts shall be used.

Please see user manual CHLITE Part 1 for more information such as:

- 1.1.1 Terms and definition
- 1.1.2 Abbreviations
- 1.1.3 Icons used in this manual
- 1.1.4 References

1.2 Identification

The 2013 review of CAP437 requires now a mandatory illuminated installation for the TD/PM circle marking and the “H” heliport identification markings of helidecks in offshore installations. In the following, a reference picture of the illuminated system is shown. Please see figure 1 below.



Figure 1 - Helideck Lighting System (for reference only)

1.3 System configuration

For reproducing the overall figure of the “Circle” and “H” according to CAP437 requirements, systems of lighting lines and cable routings are required.

Depending on the size and the type of helideck different configurations are available.
The following description shows the installation of STAHL TRANBERG’s **CHLITE-A** system.

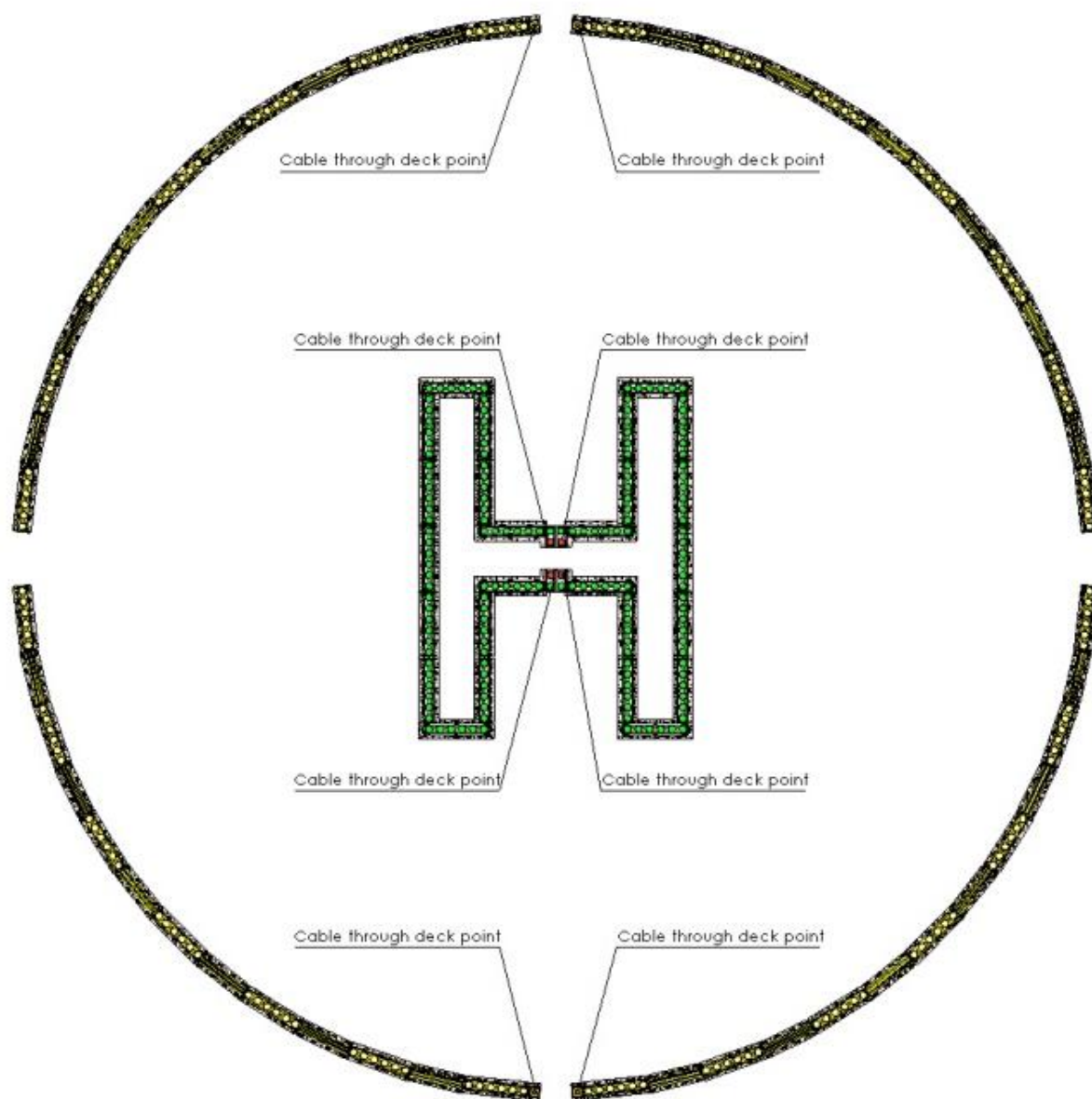


Figure 2 - UNDER Main Deck Cable Routing – System A

2. Part List – CHLITE-A

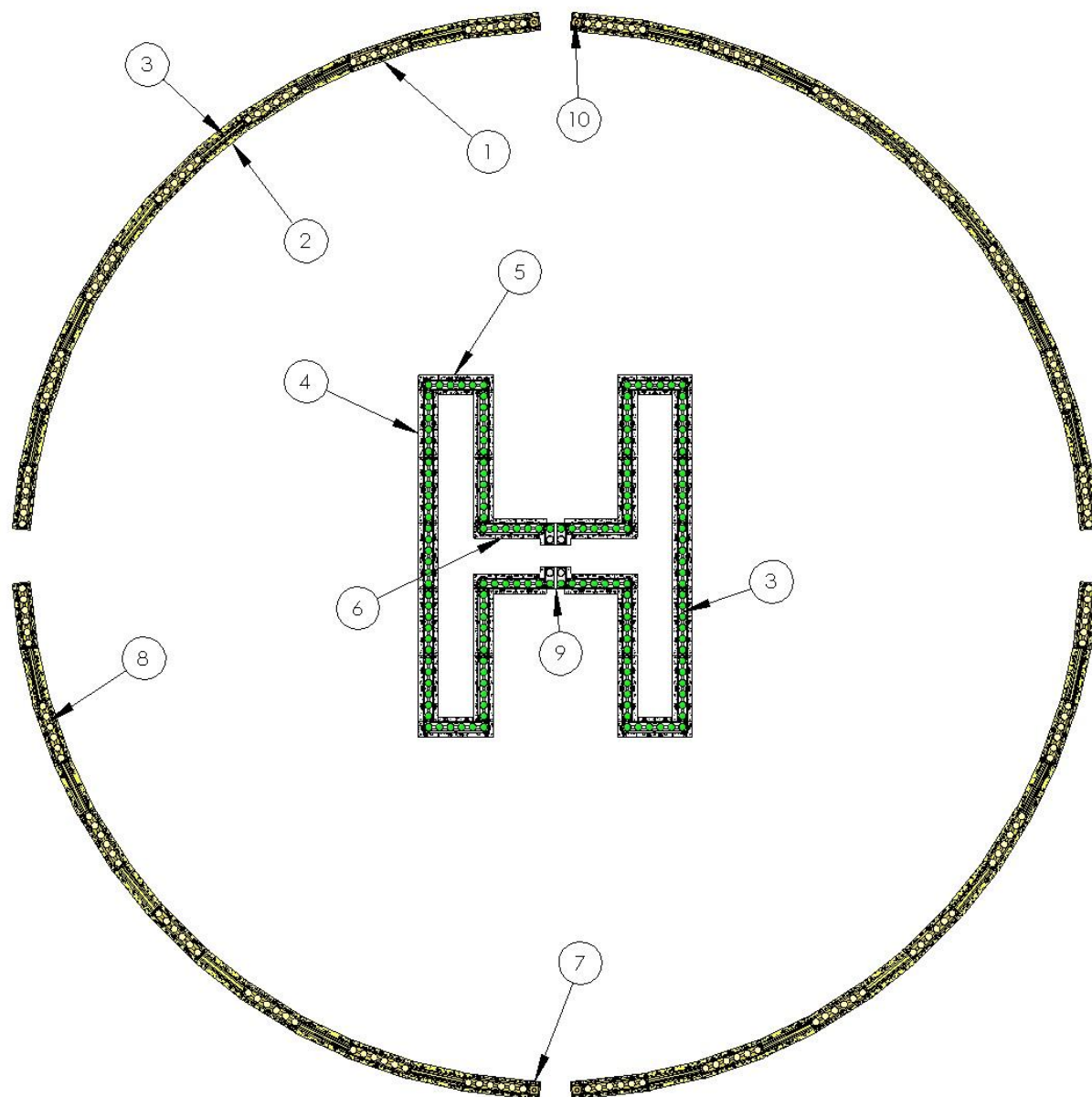
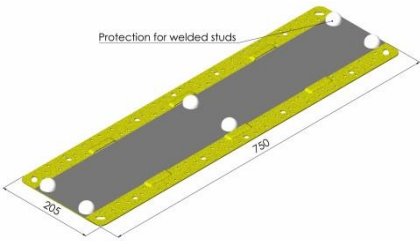
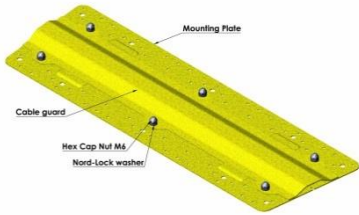
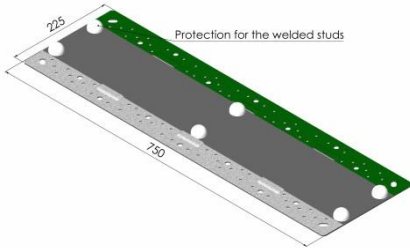
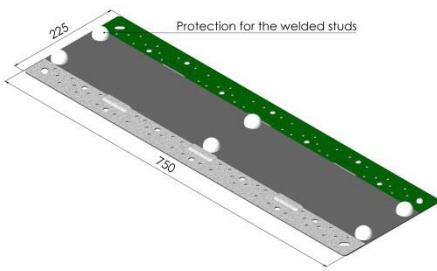
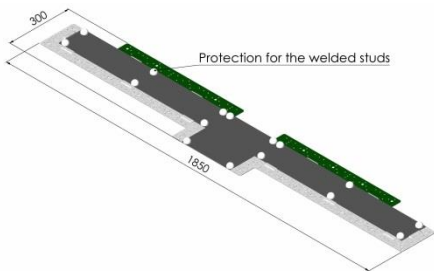
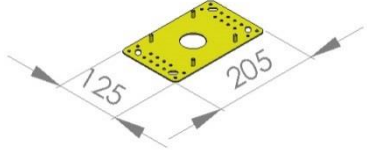
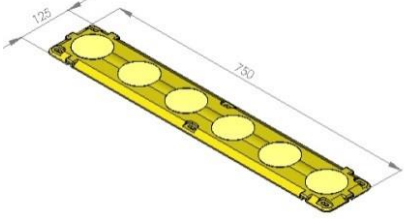
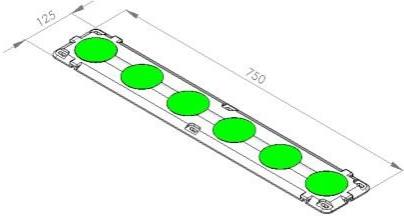
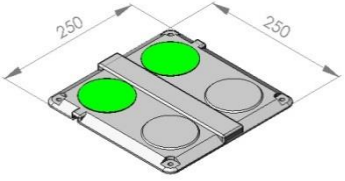
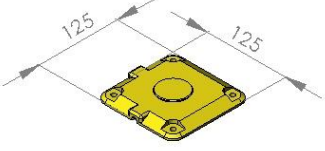
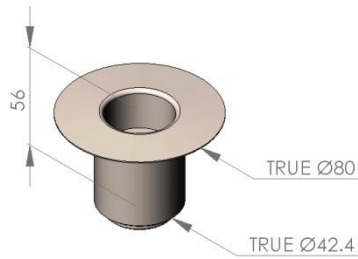
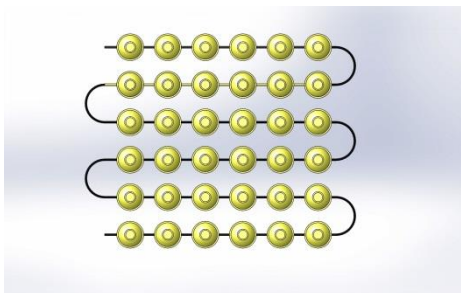
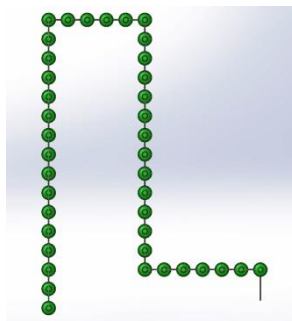
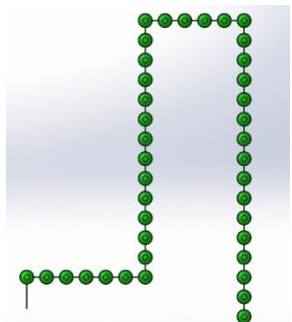
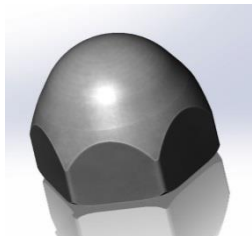


Figure 3 – Items Reference for Part List – System A

Item	Part number	Description	Quantity	Picture
1	99500001	TEF9950 CHLITE Mounting plates Circle lights *The number of plates is depending from the system size	20/24/28*	
2	99500010	TEF 9950 CHLITE Circle Cable Guard *The number of plates and the size of the plates is depending from the system size	16/20/24*	
4	99500002 White/Green 99500003 White/Black	TEF 9950 CHLITE Backingplate H1 green/white (black/white) The colour is depending on the deck colour	18	
5	99500004 White/Green 99500005 White/Black	TEF 9950 CHLITE Backingplate H2 green/white (black/white) The colour is depending on the deck colour	4	
6	99500006 White/Green 99500007 White Black	TEF 9950 CHLITE Backingplate H3 green/white (black/white) The colour is depending on the deck colour	2	

7	99500009	Mounting plate cable bushing circle	4	
8	50260006	Frame 6X1 "Yellow" 2)	28(24/20)	
9	50260007	Frame 6X1 "White"	26	
10	50260008	Frame 2X2 "White"	2	
11	50260009	Frame 1X1 "Yellow" (Closed)	4	

12	50260010	Through Deck Cable Routing Kit	8	
13	50260001 (5 light segments) 50260002 (6 light segments) 50260003 (7 light segments)	Line Light Amber-7(-6/-5) 2)	4	
14	50260004	Line Light 1 Green-A	2	
15	50260005	Line Light 2 Green-A	2	

16	51612003	Washer A4 M6x18mm	350	
17	51011056	Washer Nord-Lock NL6 sp ss	150	
18	51000021	Cap Nut M6 AISI 316	500	

**Depending on the size of the system*

3. Installation

3.1 General Remarks

The product should be stored in the original packing material, in a dry location and within the operational temperature range. Check the condition of the equipment and the contents when unpacking. Please ensure that no loose items are lost. Inspect the exterior of the product for any transport damages and/or other defects.

Any damage done to the equipment during transportation is not the responsibility of Stahl Tranberg AS/Manufacturer.

If the content is not complete or the product does not work as intended, file a claim to the supplier or manufacturer immediately.

Best work conditions are in dry weather, in order to avoid water penetration in the equipment during wiring.

The installation of the lighting system shall be carried out when there is no danger for potential explosive atmosphere on the helideck surface, in order to prevent any risk of ignition deriving from the installation works. Any damages can invalidate the explosion protection.

WARNING
Installation, maintenance, overhaul and repair shall only be carried out by appropriate authorized, qualified and trained personnel!

3.1.1 References

Observe the following information during installation and operation:

Latest issue of the references shall be used unless otherwise agreed.

The installation, operation and maintenance shall be in conformity with the standard norms listed below.

1. CAP 437 (Edition Seven, 01/2013) - Standards for Offshore Helicopter Landing Areas
2. NORSOK Standard C-004 (Edition 2, May 2013) - Helicopter deck on offshore installations
3. NORSOK S-001 Technical Safety
4. NORSOK S-002 Working Environment – Inspection and maintenance access
5. EN 60079-0:2012 – Ex Equipment
6. 94/56/EC – EU Aviation Safety – civil accidents and incidents
7. EASA – European Aviation Safety Agency Regulations
8. ICAO – Annex 14 (Stands on page.4 CHLITE part 1, therefore included)
9. BSL – Bestemmelser for Sivil Luftfart (Regulation for Civil Aviation - Norway)
10. EN 50014:1997 – Electrical apparatus for potentially explosive atmospheres - General requirements
11. FEU – Regulation on electrical equipment
12. NEK IEC 60079-17 - Explosive atmospheres - Part 17: Electrical installations inspection and maintenance
13. Company specification – Project specification
14. NEK 420:2007 – Electrical Installations in hazardous areas with gas and dust
15. IEEE 515-2011 - IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Industrial Applications.

If more information is needed please see other regulations within your country and region.

- National safety regulations
- National installation regulations
- National accident prevention regulations
- Generally recognized technical regulations
- Safety guidelines in these installation instructions
- Appendix A “Mounting Methods” in Part 2, 3 and 4 - Additional instructions for the mounting methods

3.2 Installation of the H Mounting Plates

The installation of the backing plates (Part no.: 4; 5; 6; 12) shall start in the middle of the H. The backing plates are delivered with a protection of the welded studs. It allows a landing of the **mounted** backing plates.

The complete assembled mounting plates for the H are illustrated in figure 4.

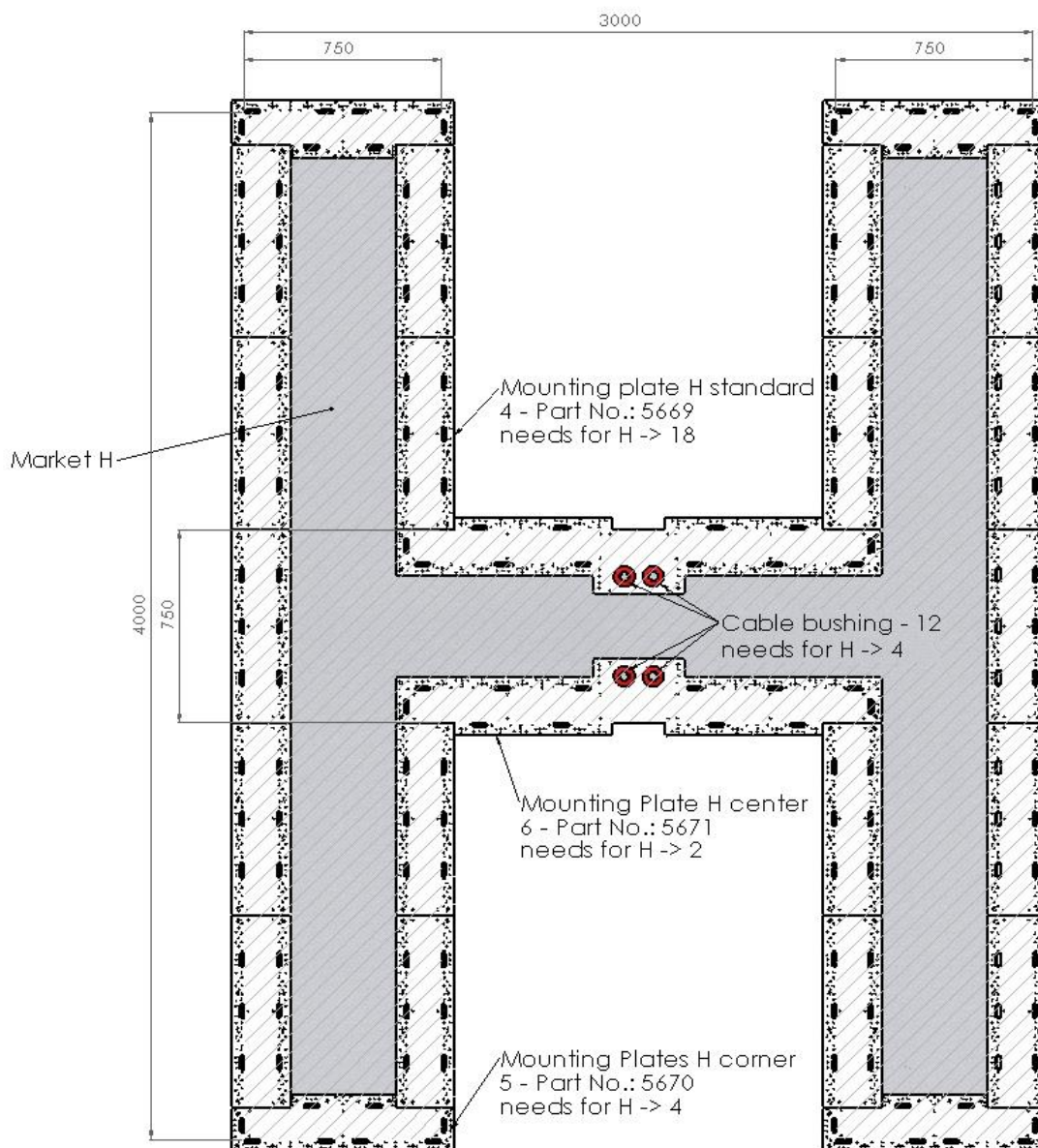


Figure 4 - Assembled Mounting Plates for the H

1. Lay out the parts on the H. Start with one middle part (6) and follow the shape of the painted H to the second middle part. Repeat this on both sides of the H. (Figure 5)

2. Mount the plates to the deck. Appendix A shows you the different certified mounting methods! A complete assembled H is shown in Figure 18.

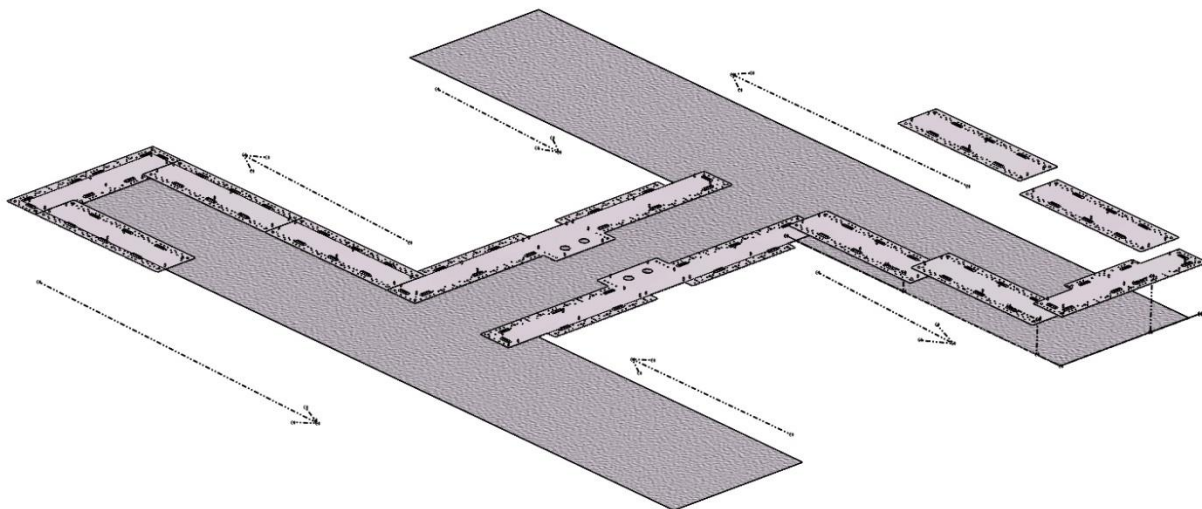


Figure 5 - Installation of the H Mounting Plates

3.3 Install the Cable Bushings (12) on the Mounting Plate H Center

For the installation is needed a hole saw or a drill with a diameter of 44mm.

1. Drill a hole with the size of 44mm
2. Install the THROUGH THE DECK CABLE ROUTING KIT 12 and glue it to the prepared holes (without the ROXTEC cable transit installed) in the correct position.
3. A complete assembled CABLE ROUTING KIT is shown in Figure 7

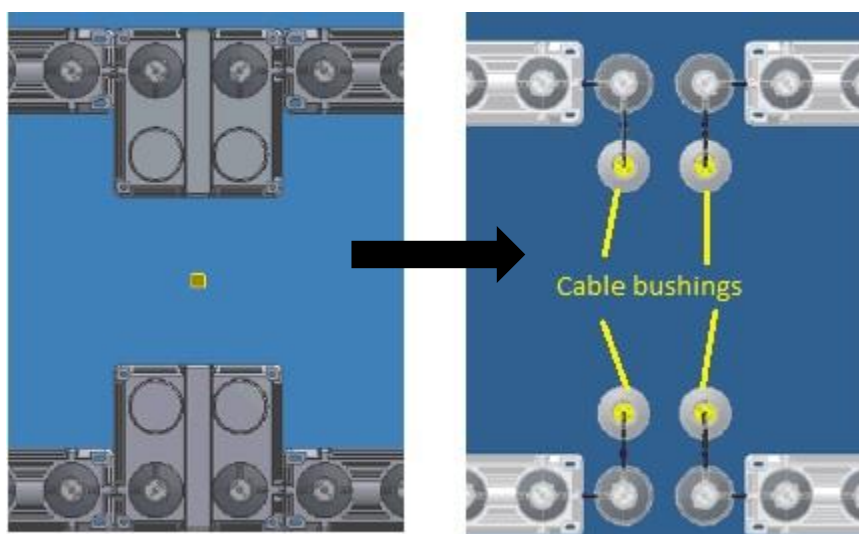


Figure 6 - Positions of the Cable Bushings

4. Installed cable bushing is shown in Figure 7.

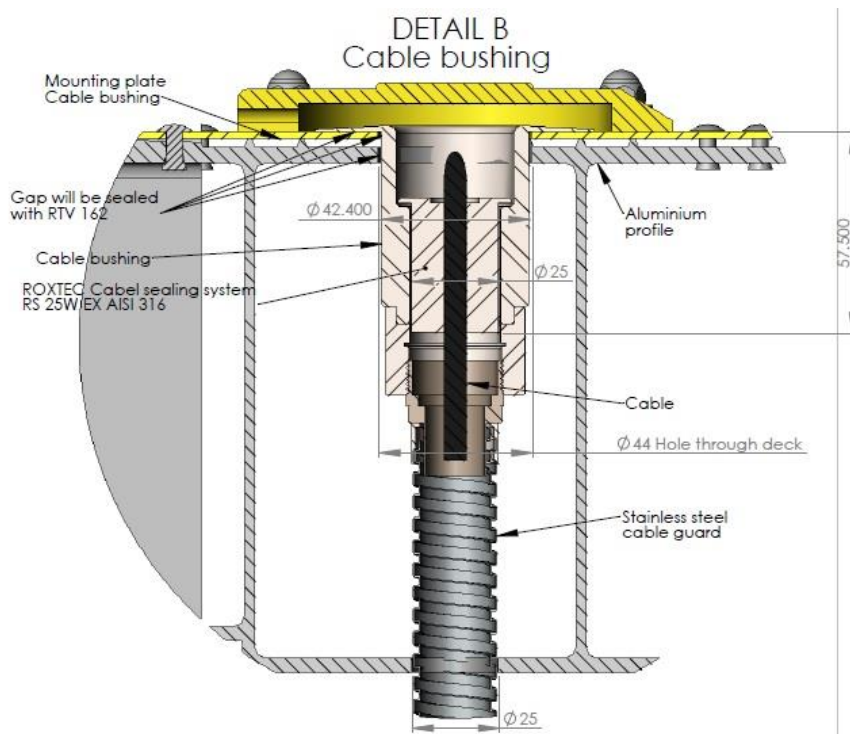


Figure 7 - Cable through Deck Installation

3.4 Installation Circle Mounting Plates

1. Mark the mean diameter of the circle
2. Position a cable guard mounting plate (2) on the market main diameter of the circle. Do not fasten this plate. This plate is only an assistant plate to find the right starting point!
3. Position a Mounting plate circle lights (1) on each side of this plate and fasten it.
4. Remove the assistant plate (2)

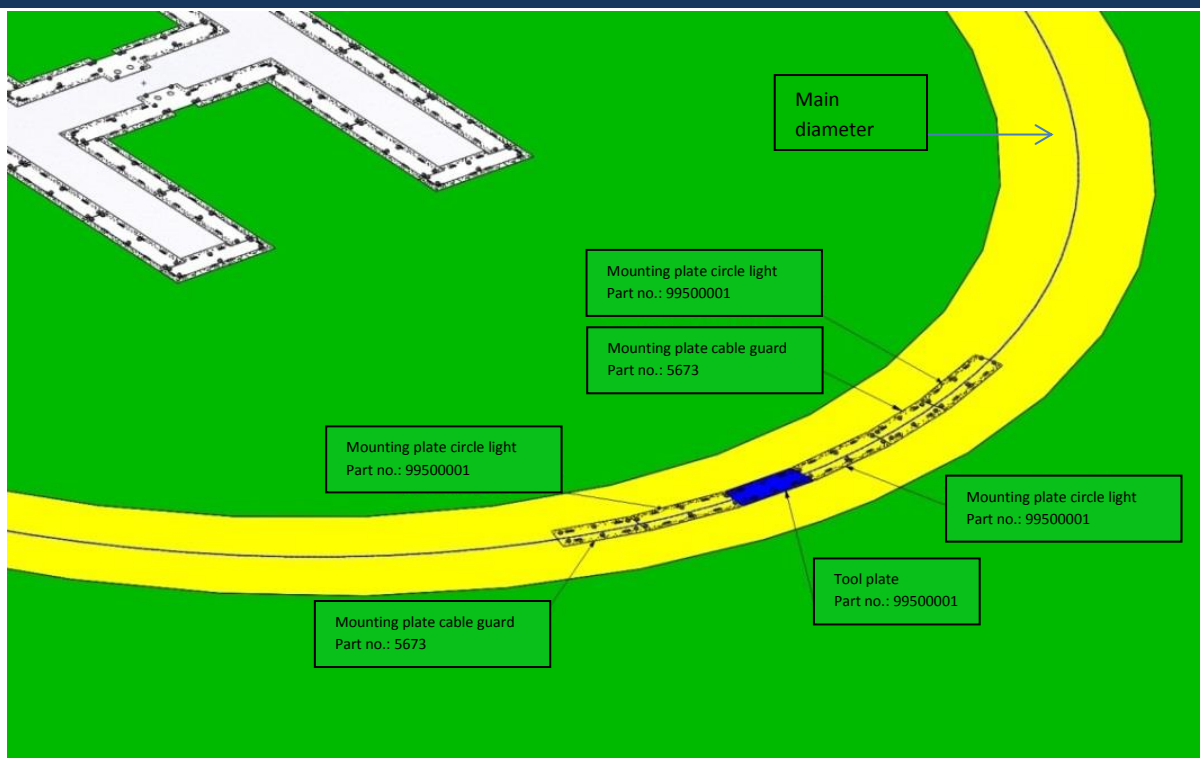


Figure 8 - Mounting Plates Circle Elements - System A

5. Fasten the rest of the plates up to the halve part of the circle. A mounting plate circle lights (1) - A mounting plate cable guard circle (2) - a mounting plate circle light (1) and so on.
6. Start from the opposite side to mount the second half part of the circle plates. (1, 2)
7. Mounting plate cable bushing circle.
8. Fasten the mounting plate's cable bushing circle (7) on the end of the circle quarters. Each quarter of the circle needs one mounting plate for the cable bushing.

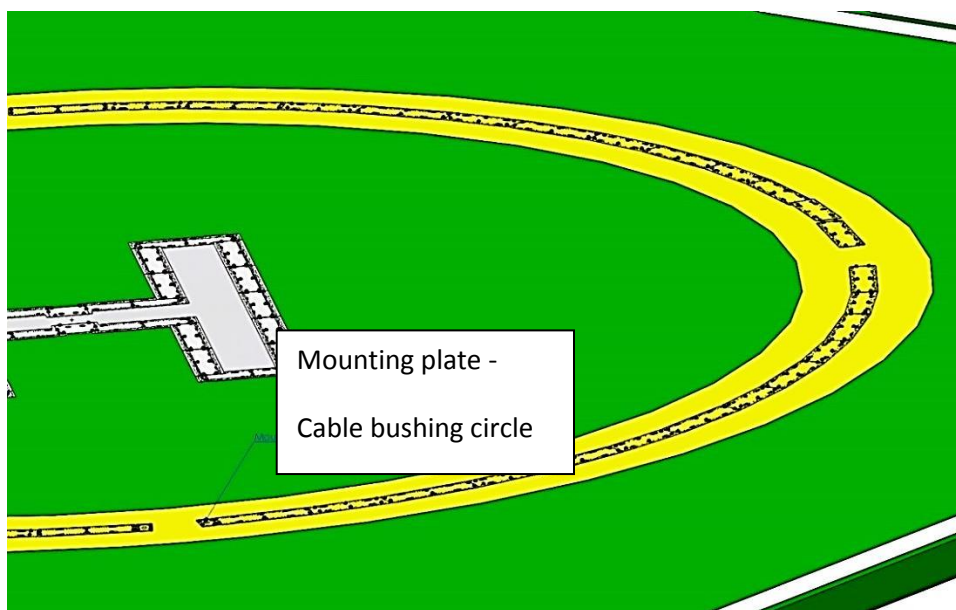


Figure 9 - Mounting Plate, Cable through Deck Bushing

9. Fastening the mounting plates for the cable bushing, mark the center position and drill a hole through the deck ($\varnothing 44\text{mm}$). This hole used under the light installation to go with the cable through deck. (Chapter 3.5)

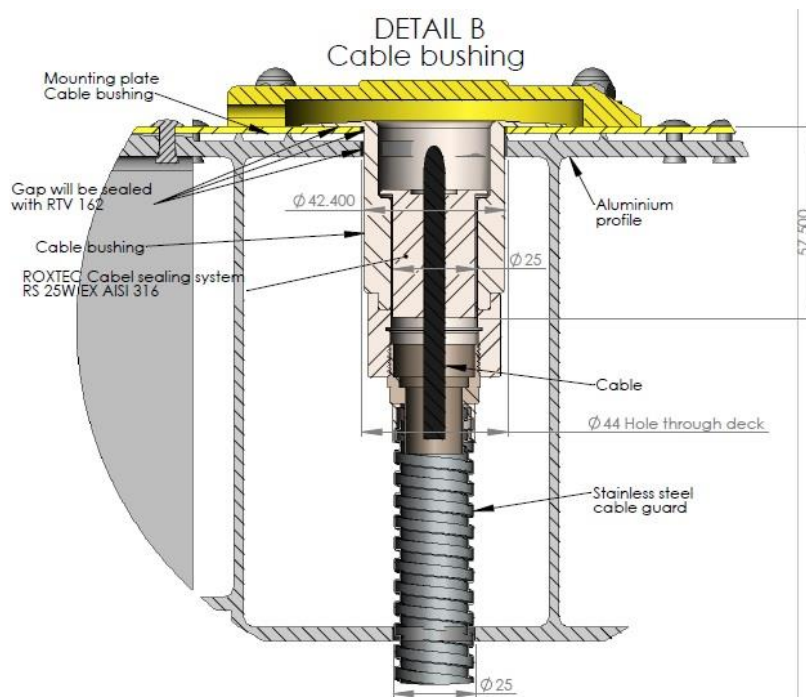


Figure 10 - Cable through Deck Installation

3.5 Rollout the H-Light Elements

1. Remove the protection for the welded studs.
2. Roll out the light assemblies (4 quarters) and place it on the mounting plates. There are two left 14 (L1) and two right lights 15 (L2) assemblies with respect to the geometry.

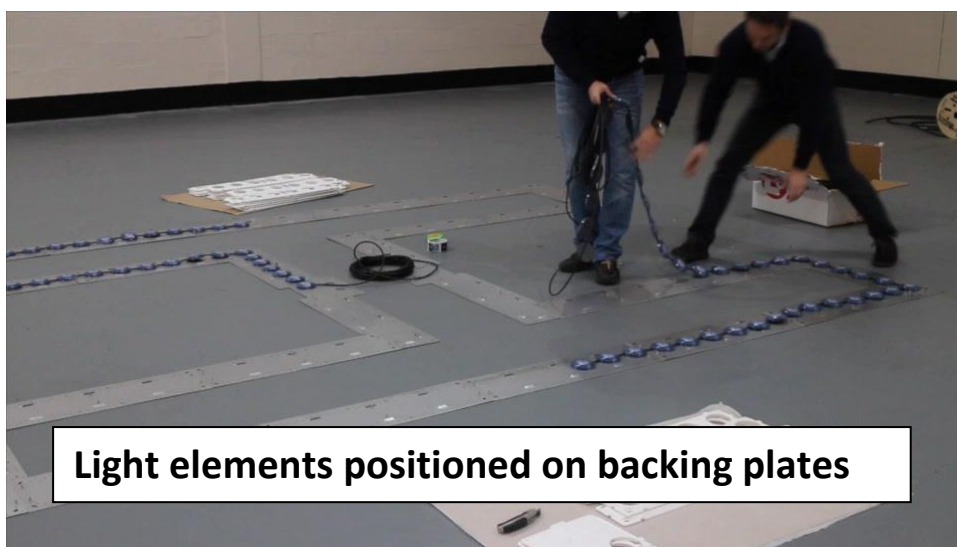


Figure 11 - Roll out H lights

3. Place the white cover plates (9, 10) over the light.

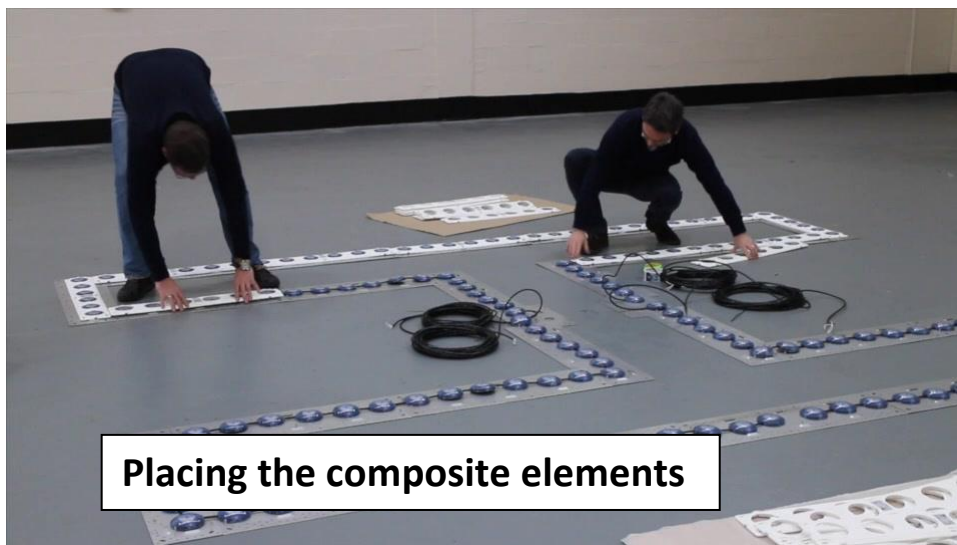


Figure 12 - Mount the H Light with the Composite Cover

4. Fasten the cover plates with 6 (16) washer M6 large diameter and 6 (18) head cup M6 nut with a fastening torque of **5Nm**.

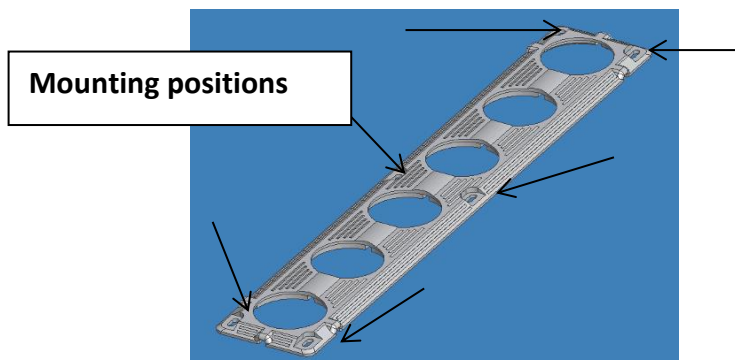


Figure 13 - Mounting Positions

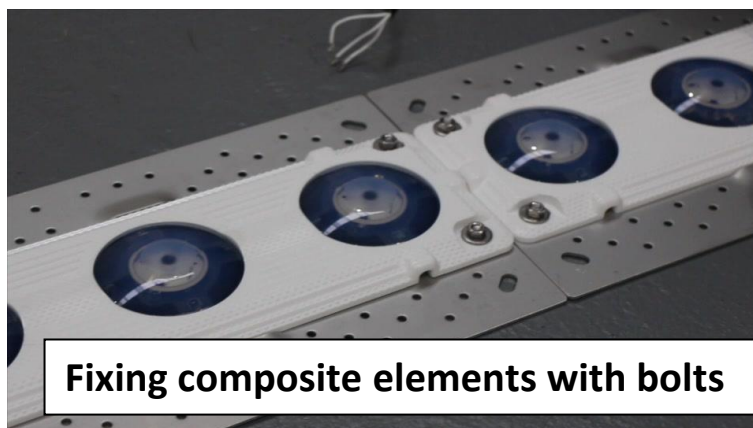


Figure 14 - Fasten the Composite Cover

5. The H is now completely assembled.

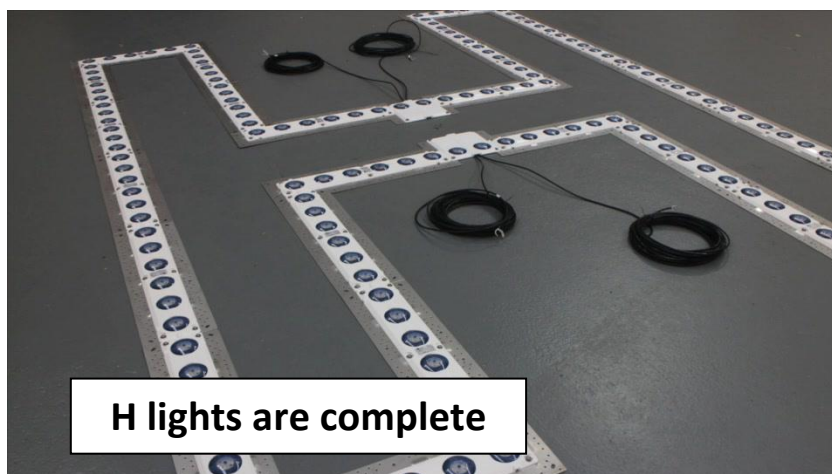


Figure 15 - Assembled H

3.6 Rollout the Circle-Light Elements

1. Remove the protection for the welded studs.
2. Roll out the light assemblies (13) and place it on the mounting plates.

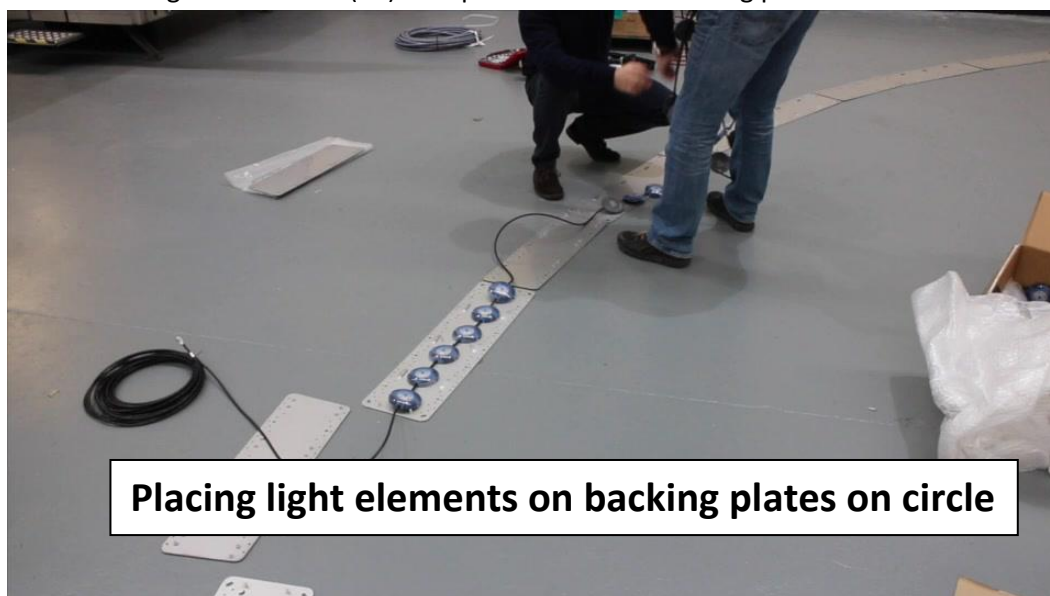


Figure 16 – Placing the Light Elements on the Mounting Plates

3. Fastening the cover plates with 6 washer (16) M6 large diameter and 6 head cup M6 nut (18) with a fastening torque of **5Nm**.
4. Fasten the cover plates with 6 (51612003) washer M6 large diameter (item 3-80) and 6 (51000021) head cup M6 nut (item 3-60) with a fastening torque of 5Nm. ***If the nuts are fixed with thread locker this must be of a low or medium strength (removable) type and***

compatible with polycarbonate (e.g. silicon or polyurethane based) in case of cross-contamination. See figure 17 and 18 for details.

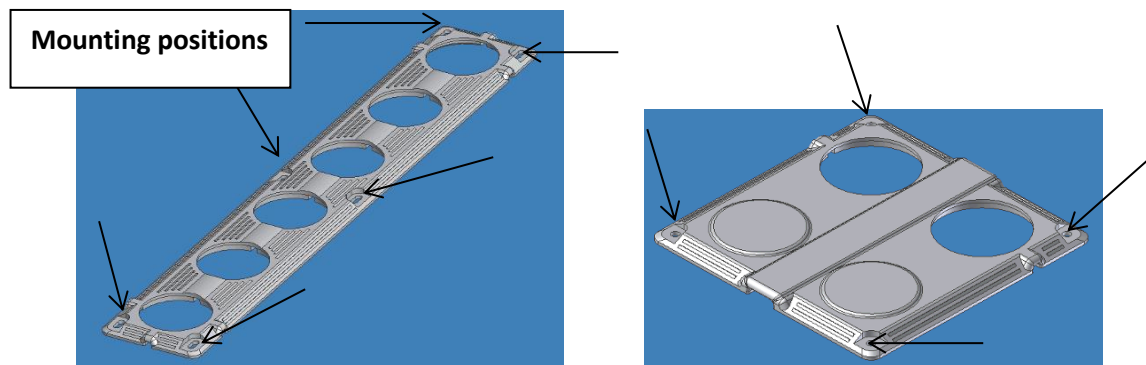


Figure 17 – Mounting Positions

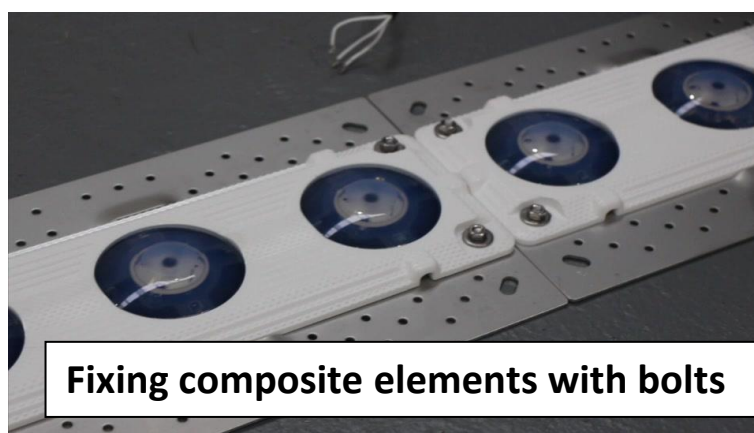


Figure 18 - Fasten the Composite Cover

5. The H is now complete assembled (figure 19).

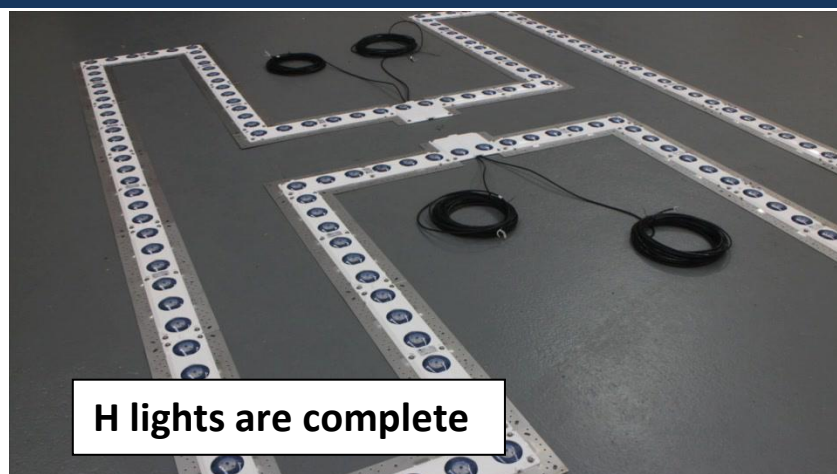


Figure 19 - Assembled H



Figure 17 - Fasten the Composite Elements on the Lights

3.7 Installation of the Cable Guard for the Circle

1. Cover the cable between the circle light elements with the cable guard circle (3) and fasten it with a Nord-Lock washer NL6spss (17) and an M6 head cup nut (18). Torque **8Nm**.

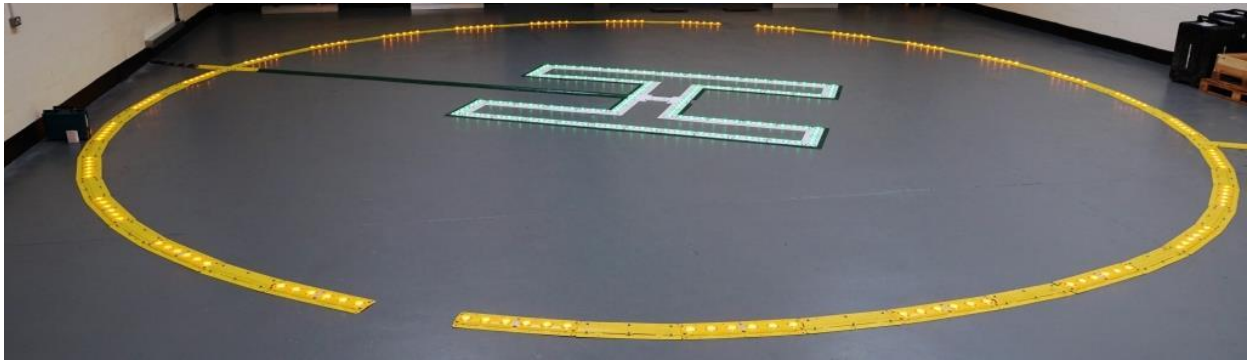


Figure 18 - Assembled Circle

2. The circle is now completely assembled! Please see figure 18 above.

3.8 Cable through Deck Installation H

1. Remove the two mounting plate H 2x2 (10), which protect the 4 through the deck cable routing points of the "H".

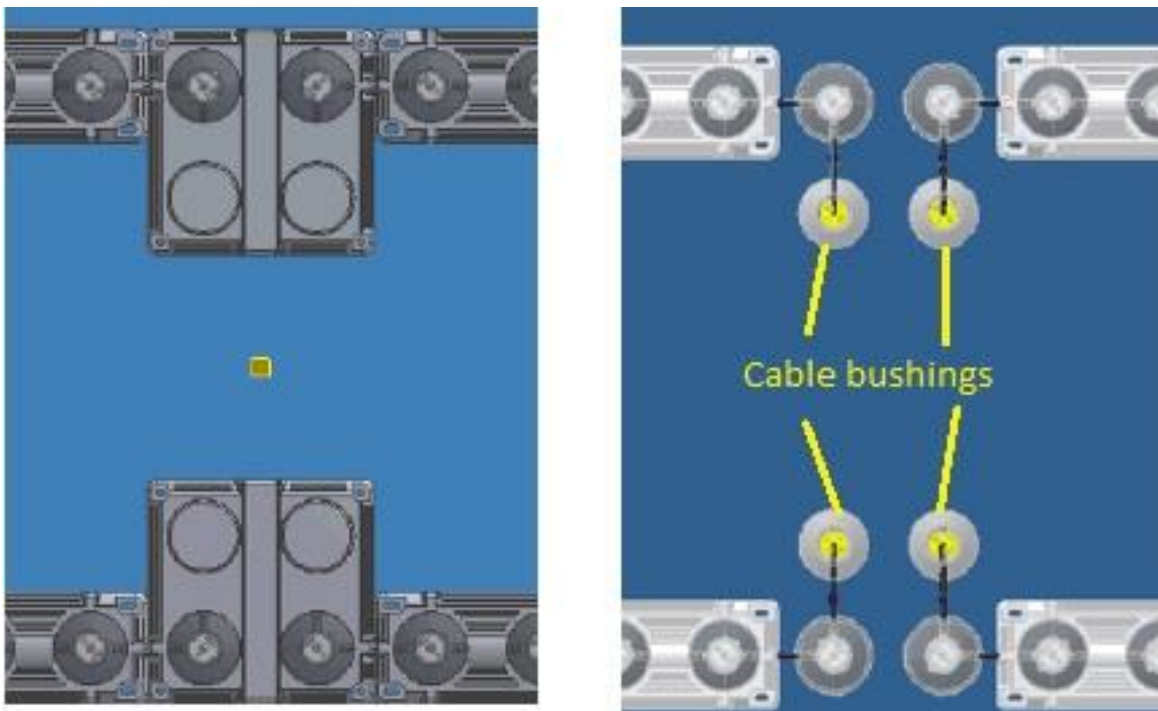


Figure 19 - Position of the Cable Bushings

2. For each quarter of the H System, lay down the suitable LINE LIGHT (14, 15) through the cable bushing under the deck.

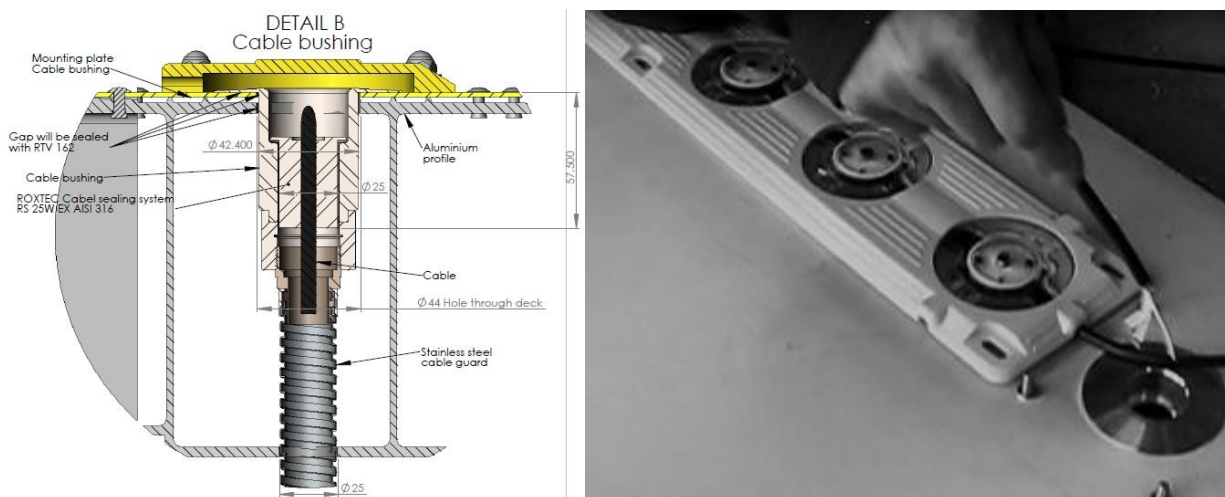


Figure 20 - Cables through Deck Installation

3. For a proper installation of the ROXTEC kit with the suitable tool, follow the Application Notes & Procedure of the product Manufacturer. You shall follow the Application Notes & Procedure

of the product manufacturer for a proper installation of the ROXTEC kit with suitable tool.
Check that all cables of the LINE LIGHT are inserted through the hole before fixing and tighten the ROXTEC KIT. Please see below for some reference pictures.

Just as reference two steps from the installation instructions

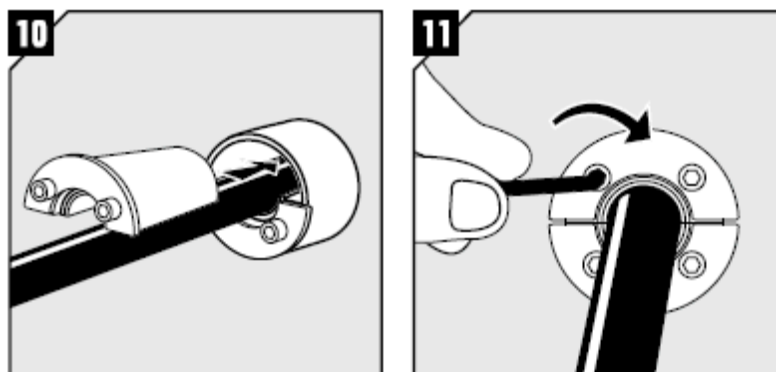


Figure 21 - Reference Pictures from ROXTEC

4. Cover the 4 Cable Entry Point by means with the mounting plate H 2x2 "White" (10). **Check that the cables of the LINE LIGHTS are installed before fixing the FRAMES to avoid damaging the cables.**



Figure 22 - Installed Cable Bushing



Please check also Figure 7 for a correct installation!

3.9 Installation of the cable bushing for the circle

1. Under the yellow 1x1 frame (on the end of the circle quarter segment) install the ROXTEC cable bushing to bring the cable under deck.

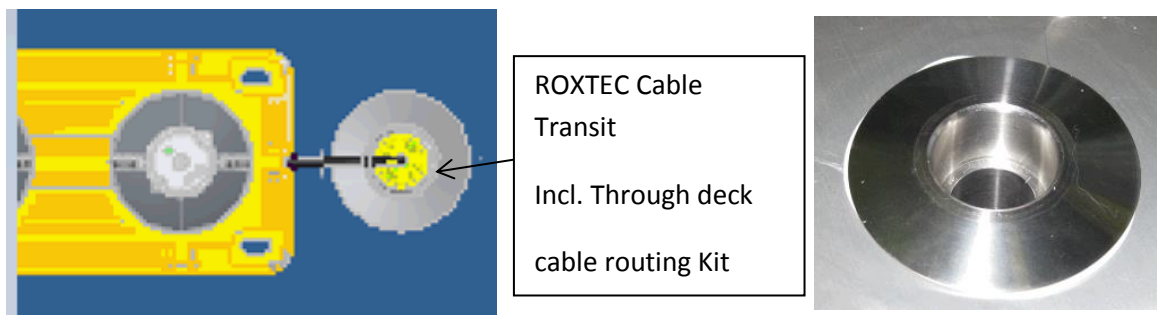


Figure 23 - Position Cables through Deck Circle Lights

2. For each quarter of the H System, lie down the suitable LINE LIGHT through the cable bushing under the deck.



Figure 24 - Cables through Deck Installation

3. For a proper installation of the ROXTEC kit with the suitable tool, follow the Application Notes & Procedure of the product Manufacturer. Check before fixing and tighten the ROXTEC KIT that all cables of the LINE LIGHT are inserted through the hole.

Just as reference - Two steps from the installation instructions

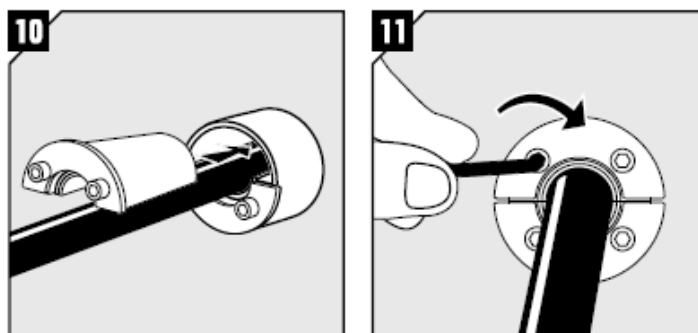


Figure 25 - Reference Pictures from ROXTEC

4. Cover the Cable Entry Point by means of the Protection plate cable bushing "Yellow" (11).
Checks that the cables of the LINE LIGHTS are installed before fixing the FRAMES to avoid damaging the cables.



Figure 26 - Installed Cable Bushing



Please check also Figure 7 for a correct installation!

The installations for all components are now complete. Control the installation safety before you connect the system to the control unit. This will describe separately under 6.1 System connection "Electrical connections" in part 1.

Appendix A – Mounting Methods

A – 1 Blind Rivets for use on aluminum decks

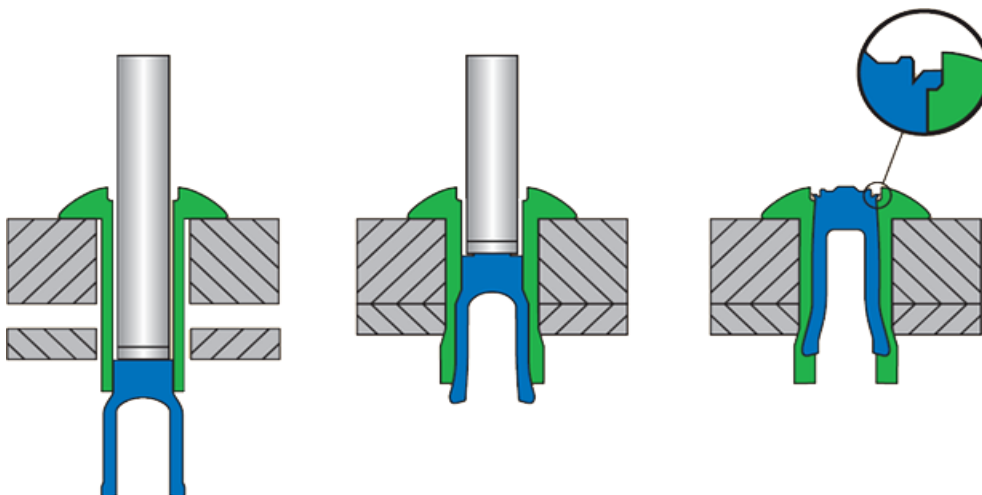


Figure 27 - Blind Rivets Mounting Principal for use on Aluminum Decks

The mounting method blind rivets will be recommended to aluminum helidecks. **Use only water tide blind rivet with diameter of 4.8mm and a minimum shear force of 4500N! The material quality has to be A4.** We recommend the blind rivets from TR Fastenings or AVDEL. Follow the installation instructions of your blind rivets supplier carefully, to guarantee stability of the fastener system.

There are several possibilities to fasten the mounting plates with $\varnothing 4.8$ blind rivets (see figure 27).

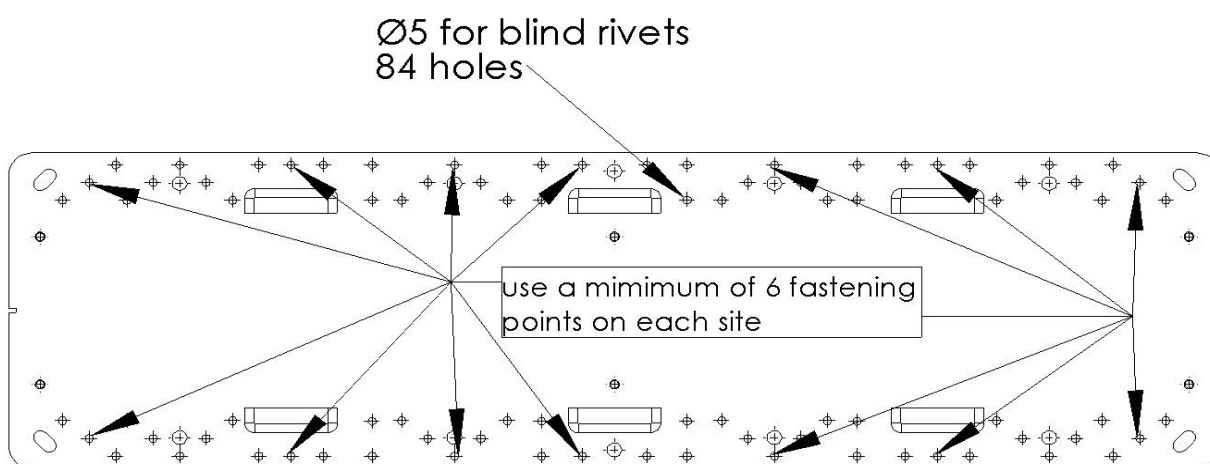


Figure 28 – Mounting Position for Blind Rivets

Use a minimum of 6 blind rivets on each side of the plates, and distribute them evenly!

A – 2 Threaded studs for coated steel decks

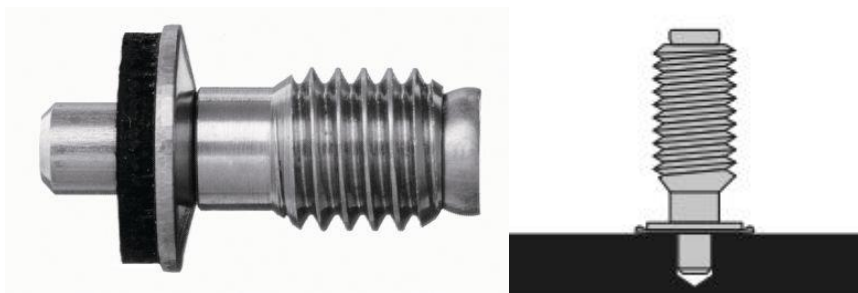


Figure 29 - Threaded Studs for Coated Steel Decks

This method is recommended for base materials steel decks. We recommend the X-BT M8-15-6 SN12-R threaded studs from HILTI. Follow the installation instructions carefully to guarantee the maximum stability of the fastening system. Use at least 12 bolts to fasten each plate on deck. Fasten all plates with the recommended torque of 8Nm. Figure 29 shows all fastening points on a mounting plate.

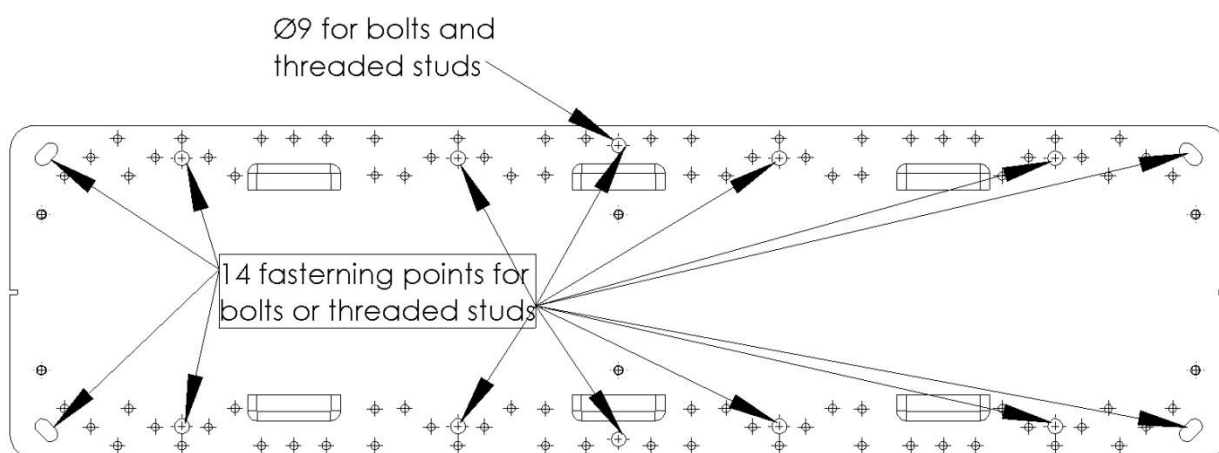
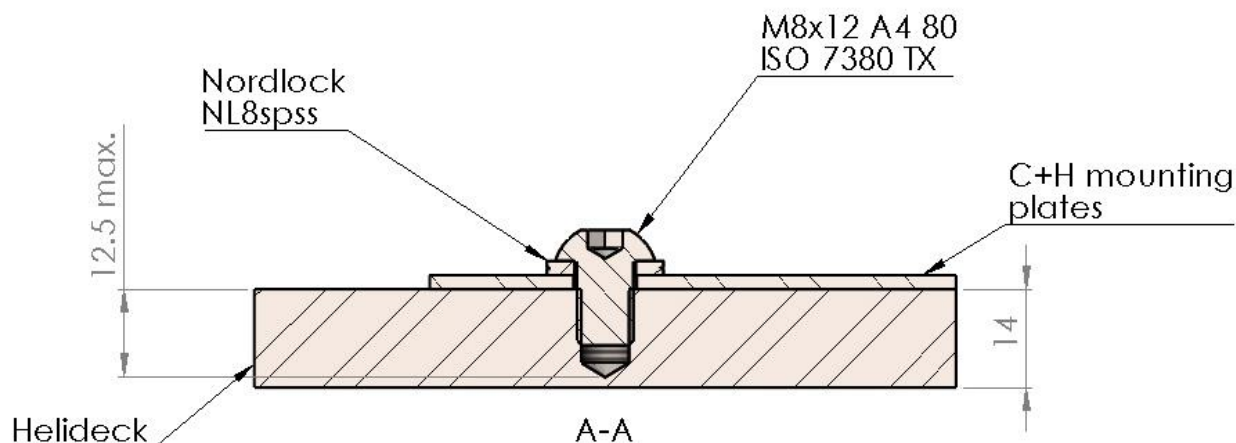


Figure 30 – All Fastening Points on a Mounting Plate

If you need additional fastening points on the mounting plates drill an existing $\varnothing 5$ hole to $\varnothing 9$.

A – 3 M8 Bolts for coated steel decks



fastening torque: 18 Nm
Preload force: 11 kN
Screw property class: 8.8
tensile strength: 800 N/mm²
shear strength: 24,6 kN

--> per screw!

Figure 31 - Bolts for Coated Steel Decks

This method can use on all steel deck. Please check the material quality before you start fastening. A low steel quality results in a raising number of the fasteners bolts for each mounting plate. We recommend the fastening parts as you can see in the figure. Use a minimum of 6 bolts - 3 on each side to install the plates on the helicopter deck.