

Model 5RM Installation Guide

the halō™

READ THOROUGHLY AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

Incorrect or improper installation, or maintenance, including, but not limited to, any of the following actions by the customer or agent of the customer will constitute a breach of and will void all warranties:

- Failure to follow the requisite installation procedures specified in this Installation Guide
- Failure to follow all relevant codes and ordinances, including, but not limited to applicable national and local electrical codes, and state and local building codes
- Failure to follow electrical engineering industry standards regarding the approved method of installing electrical equipment
- Failure to follow structural engineering industry standards regarding the method of installing overhead equipment such as the halo
- Removing or modifying any components provided with the halō



WARNING

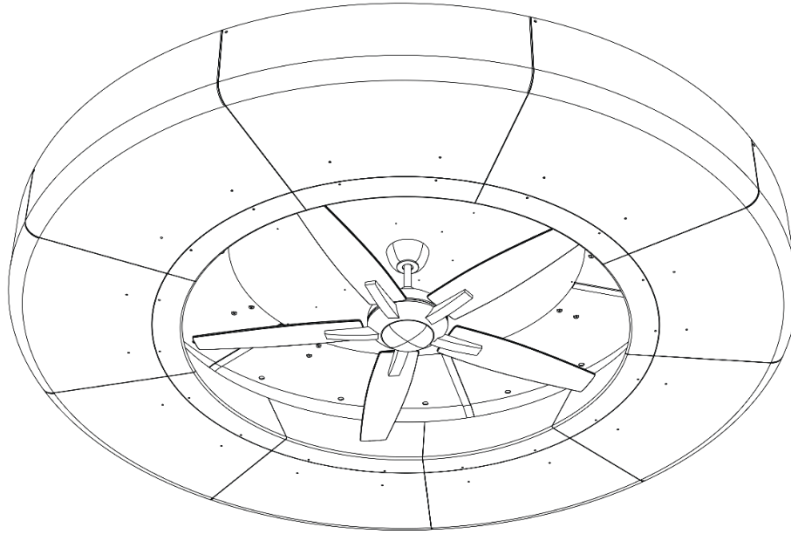
Please read and observe the following warnings and cautions to reduce the risk of fire, electric shock, or injury to persons and property:

- **WARNING:** This installation guide does not cover instructions for the ceiling fan. Refer to separate instructions and manuals for the supplied ceiling fan. To reduce the risk of fire, electric shock, and injury to persons, the halō™ Model 5R/M must be installed with a Minka-Aire Dyno XL 60 in. fan (Model #: F1001). Other ceiling fans cannot be substituted.
- **WARNING:** Install such that minimum distance from floor to fan blades is 8.6 feet.
- **WARNING:** Do not paint any internal surfaces of the halō.
- **WARNING:** Only replace lamps with non-ozone generating OSRAM HNS L (2G11) 36W or 55W bulbs, or equivalent, obtained from LUV Systems, Inc. or from a LUV Systems, Inc. authorized supplier.
- **WARNING:** Disconnect power to the installation locations before installing the halō
- **WARNING:** Only connect power to the halō after all cowling pieces are securely and correctly installed with no light gaps
- **WARNING:** Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- **WARNING:** Incorrect assembly can cause electric shock, fire, injury to persons, damage to property, and/or damage to the halō
- **WARNING:** Installation must be in accordance with the requirements set forth by the National Electrical Code (NEC), ANSI/NFPA 70, and all national and local code

- **WARNING:** the halō should not be installed unless the structure on which it is to be mounted has been verified to be of secure/stable construction and verified to be capable of supporting the load of the halō. A certified structural engineer should verify the structure and installation location is adequate prior to installation. Verifying the stability and suitability of the mounting structure is the sole responsibility of the customer and/or end user. LUV Systems, Inc. hereby expressly disclaims any liability arising therefrom, or arising from the use of any materials or hardware other than those provided with the halō
- **WARNING:** Do not substitute parts provided with the halō with any others unless provided by LUV Systems
- **WARNING:** Do not add additional components to the halō not specified in this Installation Guide
- **WARNING:** Do not remove or modify any of the components provided with the halō unless instructed to do so by this Installation Guide
- **WARNING:** Ensure there are no persons below the halō during installation
- **WARNING:** the halō must be installed per the following National Fire Protection Association (NFPA) guidelines
- **WARNING:** Check for and avoid affecting hidden utilities such as but not limited to electrical wiring, gas lines before drilling into, cutting or modifying the wall or ceiling during the installation of the halō
- **WARNING:** Caution must be employed with lifting or raising the halō due to its weight. A suitable means for lifting the weight of the halō such as a scissor lift, and at least two installation personnel will be required
- **WARNING:** The installation of the halō requires the use of tools not supplied with the unit. Follow the safety procedures found in the owner's manual for each of these tools and do not use them for purposes other than those intended by LUV Systems
- **WARNING:** If unusual mechanical oscillations and/or audible noise are observed, immediately stop using the halō and contact LUV Systems, the certified service agent, or suitably qualified persons.
- **WARNING:** Do not use broken, torn or otherwise damaged components with the halō. Return to an authorized service facility for examination and/or repair all damaged components
- **WARNING:** There is a risk of fire, electric shock, or injury to persons during cleaning and user maintenance. Disconnect the unit from the power supply before servicing or cleaning the halō
- **WARNING:** Before servicing or cleaning the unit, switch power off at the service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel

- **WARNING:** When service or maintenance of the halō requires the removal or disconnection of components including safety-related ones, the components are to be reinstalled or remounted as previously installed before the power is reinstated to the halō
- **WARNING:** Use this unit only in the manner intended by the manufacturer. If you have questions, contact LUV Systems
- **WARNING:** The information contained in this document is merely a guide for proper installation. LUV Systems cannot assume responsibility for the compliance or non-compliance to any code, national, local, or otherwise for the proper installation of the halō
- **WARNING:** The length of the external earth conductor should be such that should failure of the suspension system occur, the current-carrying conductors are taut before the protective earth conductor. Should failure of the suspension system occur, the support of the halō must not rely on the protective earth conductor
- **WARNING:** The halō suspension system shall be examined at regular intervals, at least once every three months

Isometric View



Quarter view of the halo

Electrical Specifications

Input power: 110-125 V, 50/60 Hz, 1 Φ , 15 A breaker

Wiring: Single Phase (L N PE) from breaker to halo Junction Box via wall switch

Full Load Amps (RMS): 5.4

Mechanical Specifications

Assembled Weight: 350 lbs

Outer Diameter: 9 ft.

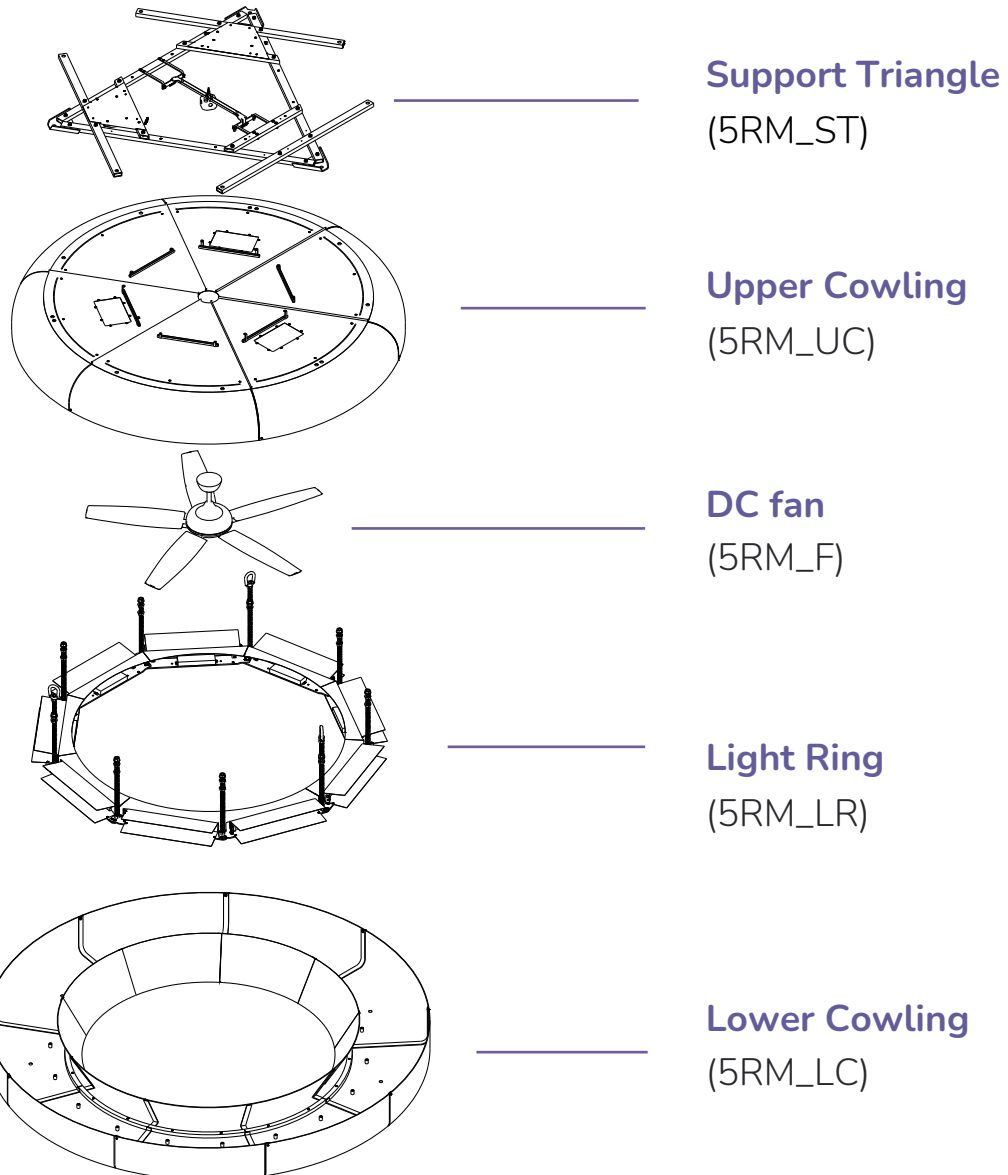
Minimum distance from floor to superstructure: 8.6 ft.

Tools Required

- An open space approximately 10 x 10 ft, ideally beneath the installation area.
- Alignment laser
- Level

Assembly

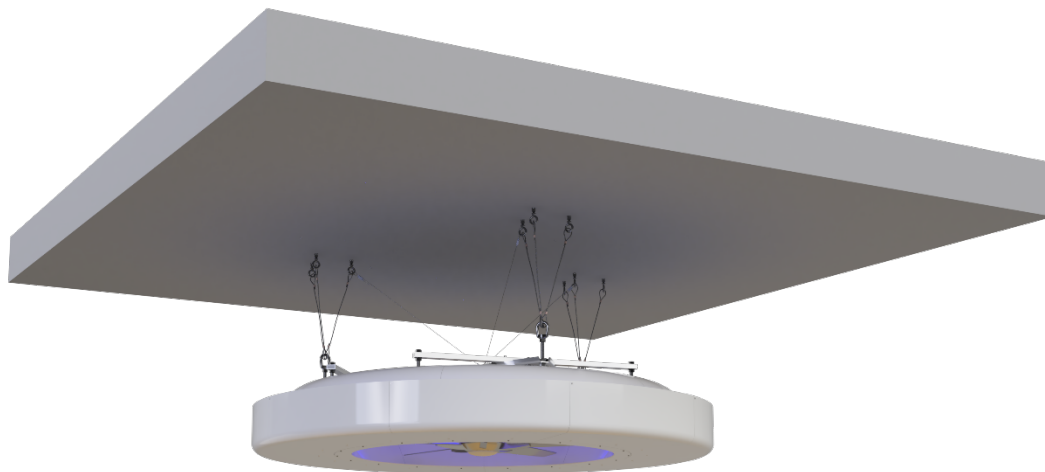
the halo consists of five major assembly sections shown below.



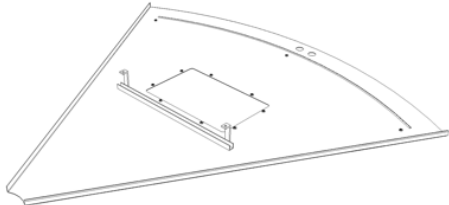
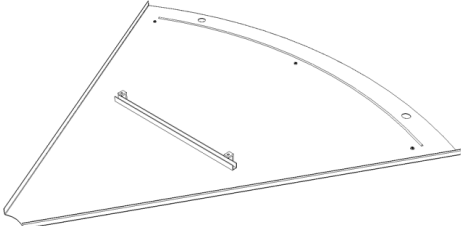
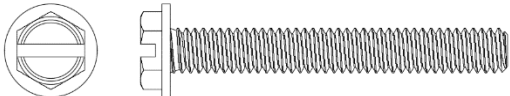
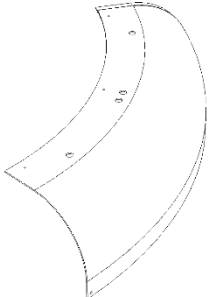
A separate kit is used to lift and attach the halo to the superstructure. The following lifting kits are available.

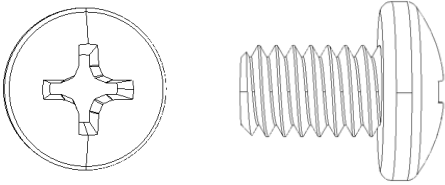
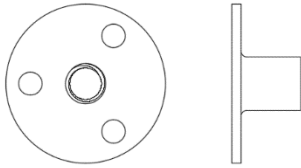
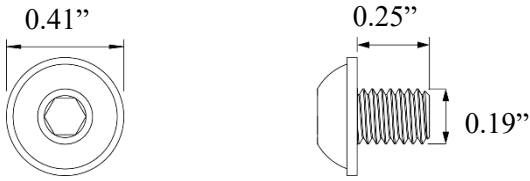
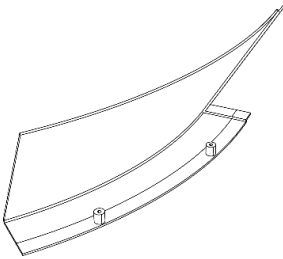
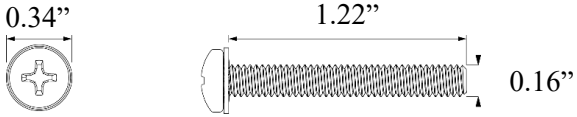
Superstructure Type	Attachment kit
Concrete	5RM_SS1
Steel Framing	5RM_SS2
Wood Joists	5RM_SS3

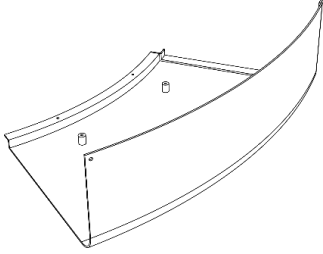
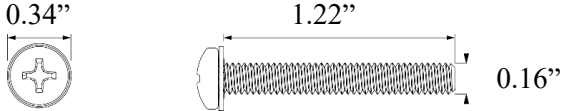
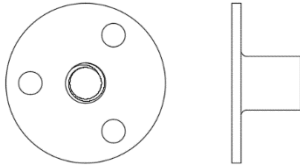
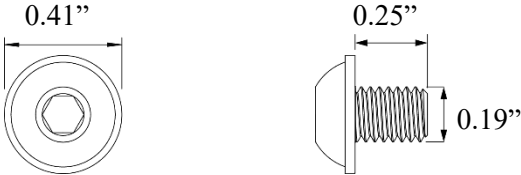
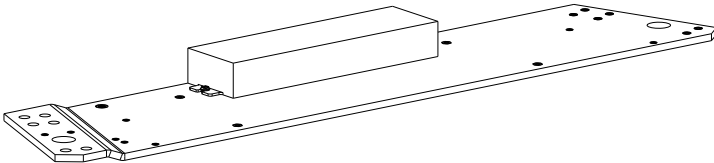
Please see the *Structural Calculations for the halo – Model 5R/M* and consult a Structural Engineer for recommended methods of attaching the halo to these superstructure types.

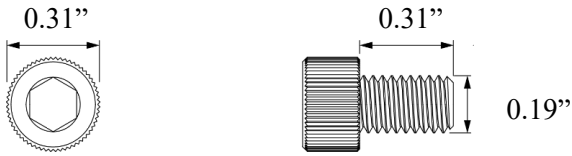
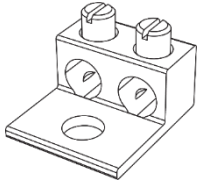

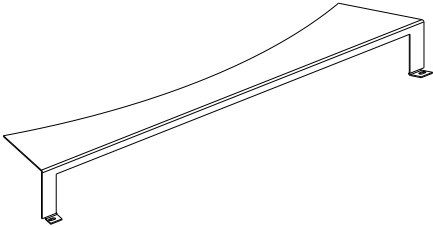
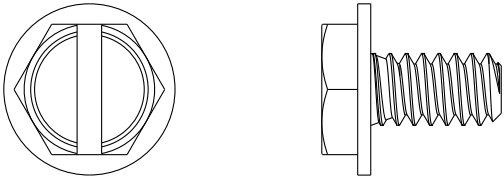


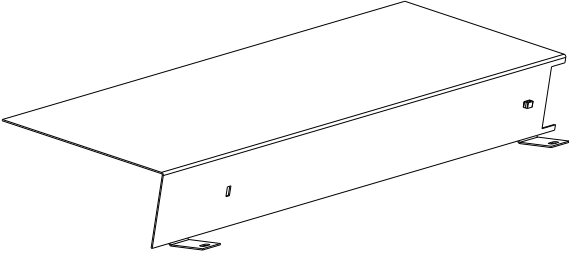
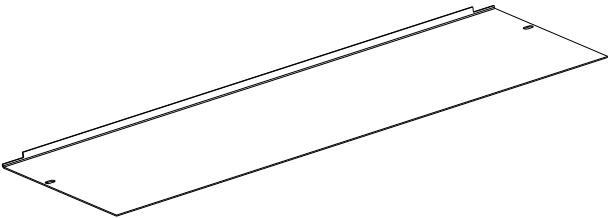
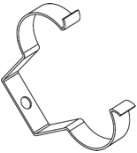
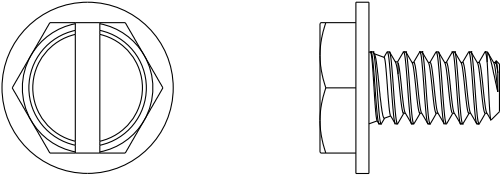
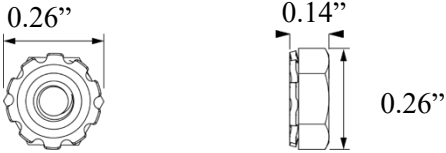
Included Parts

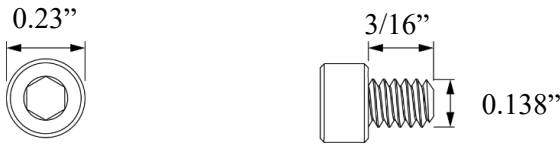
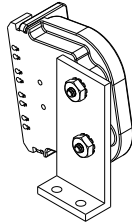
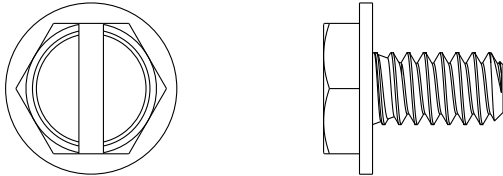
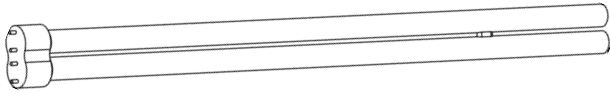
Part	Image	Quantity
<p>Disc (5RM_UC_SD_KIT)</p>	<p>5RM_UC_SD A</p> 	<p>3</p>
	<p>5RM_UC_SD B</p> 	<p>3</p>
	<p>5RM_ST_H4 (8-32 1¼" Flanged Hex Head)</p> 	<p>12</p>
<p>Upper Cowling Kit (5RM_UC_S_KIT)</p>	<p>5RM_UC_S</p> 	<p>6</p>



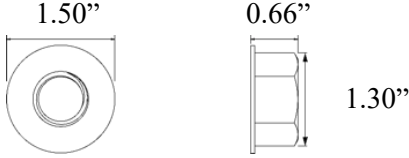
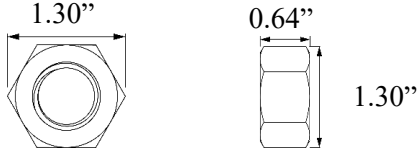
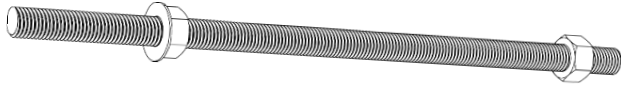
	<p>5RM_UC_S_H1 (8-32, 1/4" Phillips Screw)</p> 	<p>24</p>
	<p>5RM_UC_S_H2 (10-32, 9/32" Screw Mount Nut)</p> 	<p>6</p>
	<p>5RM_UC_S_H3 (10-32, 1/4" Button Head Screw)</p> 	<p>6</p>
<p>Lower Cowling S1 KIT (5RM_LC_S1_KIT)</p>	<p>5RM_LC_S1</p> 	<p>9</p>
	<p>5RM_LC_S1_H1 (8-32, 1 1/4" Phillips Screw)</p> 	<p>18</p>

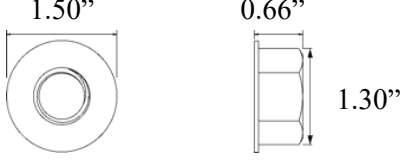
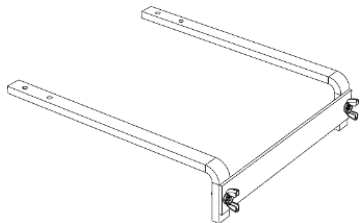
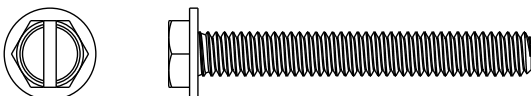
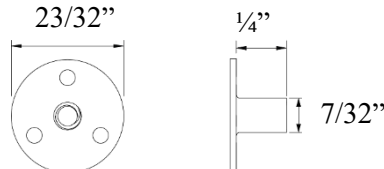
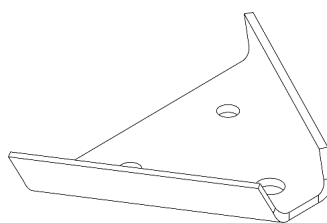
<p>Lower Cowling S2 KIT (5RM_LC_S2_KIT)</p>	<p>5RM_LC_S2</p> 	<p>9</p>
	<p>5RM_LC_S2_H1 (8-32, 1/4" Phillips Screw)</p> 	<p>18</p>
	<p>5RM_LC_S2_H2 (10-32, 9/32" Screw Mount Nut)</p> 	<p>9</p>
	<p>5RM_LC_S2_H3 (10-32, 1/4" Button Head Screw)</p> 	<p>9</p>
<p>Light Ring Segment Assembly (5RM_LR_SA_KIT)</p>	<p>5RM_LR_SA_ASM</p> 	<p>9</p>

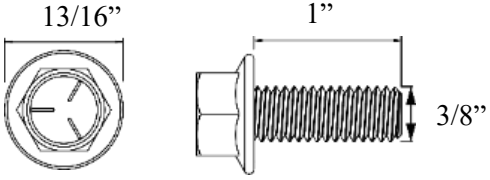
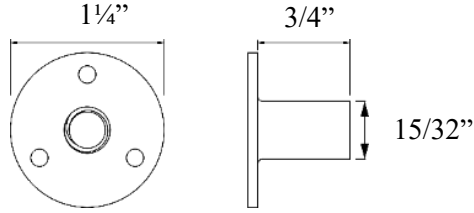

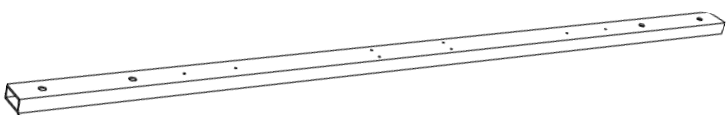
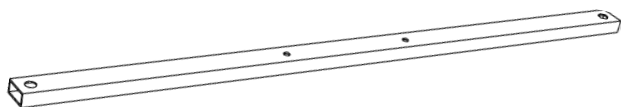
	<p>5RM_LR_SA_H2 (10-32 Socket Head Screw)</p> 	<p>54</p>
	<p>5RM_LR_SA_H7</p> 	<p>1</p>
	<p>5RM_LR_SA_H8 (1/4"-20, 5/16" Hex Head Screw)</p> 	<p>1</p>
<p>Light Ring UV Shield KIT (5RM_LR_SA_US_KIT)</p>	<p>5RM_LR_SA_US</p> 	<p>9</p>
	<p>5RM_LR_SA_H1 (6-32, 1/4" Hex Head Screw)</p> 	<p>18</p>

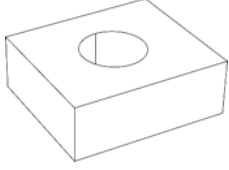
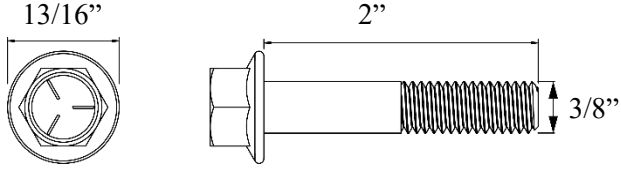
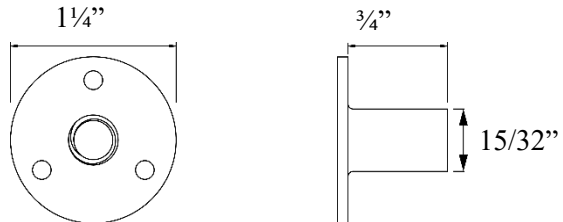
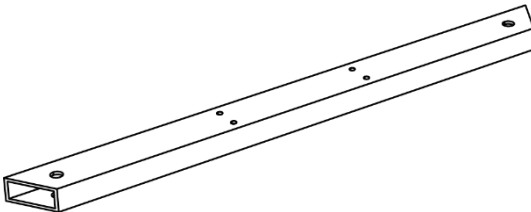
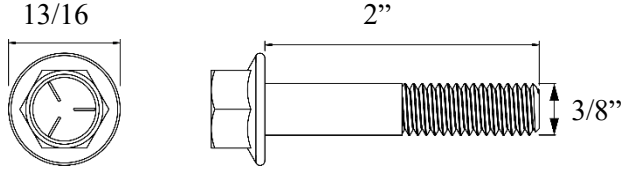
<p>Light Ring UV Reflector Kit (5RM_LR_SA_LF_UR_KIT)</p>	<p>5RM_LR_SA_LF_R1_ASM</p> 	<p>9</p>
	<p>5RM_LR_SA_LF_R2</p> 	<p>9</p>
	<p>5RM_LR_SA_LF_LC</p> 	<p>9</p>
	<p>5RM_LR_SA_H1 (6-32, 1/4" Hex Head Screw)</p> 	<p>36</p>
	<p>5RM_LR_SA_LF_H2 (6-32 Lock Nut)</p> 	<p>9</p>

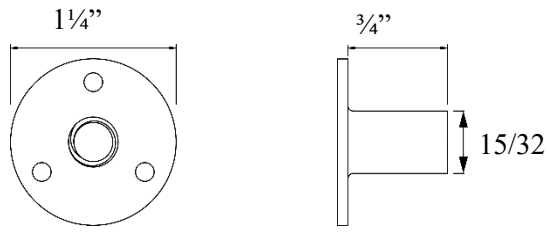
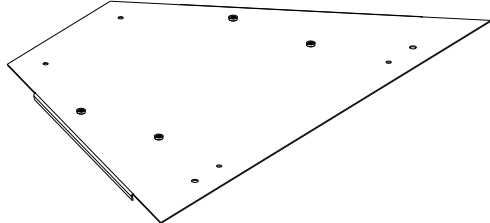
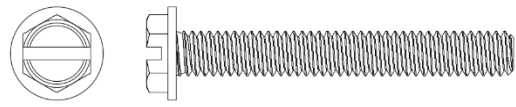
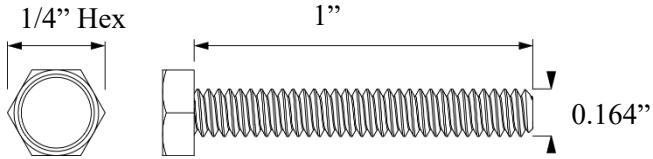
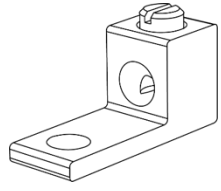
	<p>5RM_LR_SA_LF_H3 (6-32, 3/16" Socket Head Screw)</p> 	<p>9</p>
	<p>5RM_LR_SA_LF_H4 (Zip Tie Strap)</p>	<p>9</p>
<p>Light Ring End Cap Kit (5RM_LR_SA_LF_EC_KIT)</p>	<p>5RM_LR_SA_LF_EC_ASM</p> 	<p>9</p>
	<p>5RM_LR_SA_H1 (6-32, 1/4" Hex Head Screw)</p> 	<p>18</p>
<p>Light Ring Lamp Kit (5RM_LR_SA_LF_UL_KIT)</p>	<p>5RM_LR_SA_LF_UL</p> 	<p>10</p>

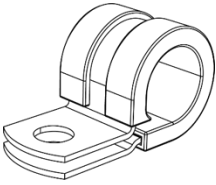
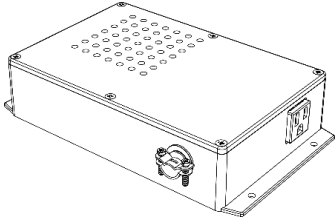
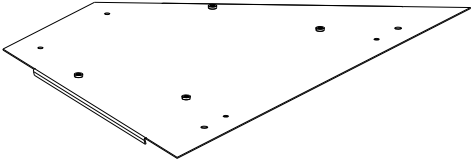
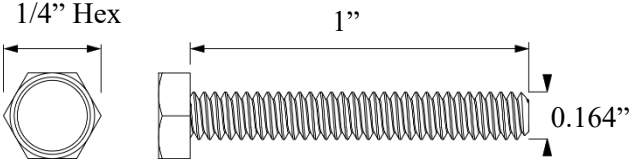
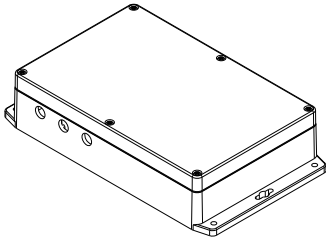
<p>Light Ring Lifting Assembly Kit (5RM_LR_LA_KIT)</p>	<p>5RM_LR_LA_ASM</p> 	<p>3</p>
	<p>5RM_LR_LA_H1</p> 	<p>3</p>
	<p>5RM_LR_LA_H3 (3/4"-10 Flange Nut)</p> 	<p>9</p>
	<p>5RM_LR_LA_H4 (3/4"-10 Lock Nut)</p> 	<p>3</p>
<p>Light Ring Positioning Assembly Kit (5RM_LR_PA_KIT)</p>	<p>5RM_LR_PA_ASM</p> 	<p>6</p>

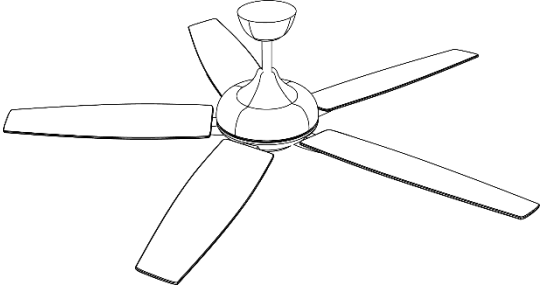
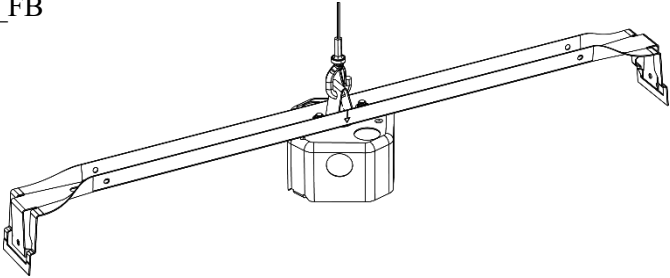
	<p>5RM_LR_PA_H2 (3/4"-10 Flange Nut)</p> 	<p>18</p>
<p>Support Triangle Fan Bracket KIT (5RM_ST_FB_KIT)</p>	<p>5RM_ST_FB_ASM</p> 	<p>2</p>
	<p>5RM_ST_H4 (8-32, 1/4" Hex Head Screw)</p> 	<p>8</p>
	<p>5RM_ST_H1 (8-32, 1/4" Screw Mount Nut)</p> 	<p>8</p>
<p>Support Triangle Corner Bracket Kit (5RM_ST_CB_KIT)</p>	<p>5RM_ST_CB</p> 	<p>3</p>

	<p>5RM_ST_H2 (3/8"-16, 1" Hex Head Screw)</p> 	<p>6</p>
	<p>5RM_ST_H6 (3/8"-16, 3/4" Screw Mount nut)</p> 	<p>6</p>
<p>Support Triangle T1 Kit (5RM_ST_T1_KIT)</p>	<p>5RM_ST_T1_ASM</p> 	<p>2</p>
<p>Support Triangle T2 Kit (5RM_ST_T2_KIT)</p>	<p>5RM_ST_T2_ASM</p> 	<p>1</p>
<p>Support Triangle T3 Kit (5RM_ST_T3_KIT)</p>	<p>5RM_ST_T3_ASM</p> 	<p>3</p>

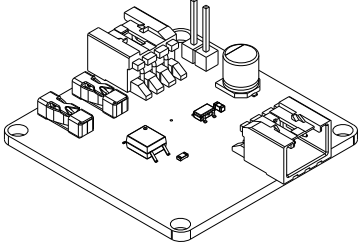
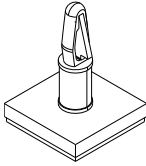
	<p>5RM_ST_EC</p> 	<p>6</p>
	<p>5RM_ST_H3 (3/8"-16, 2" Hex Head Screw)</p> 	<p>6</p>
	<p>5RM_ST_H6 (3/8"-16, 3/4" Screw Mount Nut)</p> 	<p>6</p>
<p>Support Triangle T4 Kit (5RM_ST_T4_KIT)</p>	<p>5RM_ST_T4_ASM</p> 	<p>3</p>
	<p>5RM_ST_H3 (3/8"-16, 2" Hex Head Screw)</p> 	<p>6</p>

	<p>5RM_ST_H6 (3/8"-16, 3/4" Screw Mount Nut)</p> 	<p>6</p>
<p>Support Triangle Junction Plate Kit (5RM_ST_JP_KIT)</p>	<p>5RM_ST_JP_ASM</p> 	<p>1</p>
	<p>5RM_ST_H4 (8-32, 1 1/4" Hex Head Screw)</p> 	<p>2</p>
	<p>5RM_ST_H10 (8-32, 1" Hex Head Screw)</p> 	<p>4</p>
	<p>5RM_ST_H8</p> 	<p>1</p>

	<p>5RM_ST_H9</p> 	<p>1</p>
	<p>5RM_CS_JBX_ASM</p> 	<p>1</p>
<p>Support Triangle Control Plate Kit (5RM_ST_CP_KIT)</p>	<p>5RM_ST_CP_ASM</p> 	<p>1</p>
	<p>5RM_ST_H10 (8-32, 1" Hex Head Screw)</p> 	<p>4</p>
	<p>5RM_CS_CBX_ASM</p> 	<p>1</p>

<p>Fan Kit (5RM_F_KIT)</p>	<p>5RM_F</p> 	<p>1</p>
<p>Fan Bracket Kit (5RM_FB_KIT)</p>	<p>5RM_FB</p> 	<p>1</p>
<p>Control System Kit (5RM_CS_KIT)</p>	<p>5RM_CA1 10 ft. 3 wire MC power cable</p>	<p>1</p>
	<p>5RM_CA2 36 in. 3 wire power cable</p>	<p>1</p>
	<p>5RM_CA5 43 in. 3 wire power cable with one power connector</p>	<p>1</p>

	<p>5RM_CA6</p> <p>25½” 3 wire power cable with power connectors on both ends</p>	<p>9</p>
	<p>5RM_CA7</p> <p>Set of 2 red and 2 blue solid core wires</p>	<p>9</p>
	<p>5RM_CA8</p> <p>48 in. 3 wire communication cable</p>	<p>1</p>
	<p>5RM_CA9</p> <p>24 in. 3 wire communication cable</p>	<p>8</p>
	<p>5RM_CA10</p> <p>9 in. 2 wire stripped communication cable</p>	<p>9</p>

	<p>5RM_CA11</p> <p>50 mm. 7 wire communication cable</p>	<p>1</p>
	<p>5RM_CA16</p> <p>55 in. 2 wire communications cable</p>	<p>1</p>
	<p>5RM_CS_FB (Fault Board)</p> 	<p>9</p>
	<p>5RM_CS_FB_H1</p> 	<p>18</p>
	<p>5RM_CS_CB_H15</p> <p>DC Splitter Cable</p>	<p>1</p>

	<p>5RM_CS_CB_H16</p> <p>10 V ACDC wall power supply</p>	<p>1</p>
	<p>5RM_CS_CB_H17</p> <p>15 ft. USB A B (Printer) Cable</p>	<p>1</p>

Assembly Steps

STEP 1: Assembly of Individual Light Ring Segments

KITs used:

Light Ring UV Reflector Kit (5RM_LR_SA_LF_UR_KIT)

Light Ring Segment Assembly (5RM_LR_SA_KIT)

Light Ring End Cap Kit (5RM_LR_SA_LF_EC_KIT)

Control System Kit (5RM_CS_KIT)

Tools required:

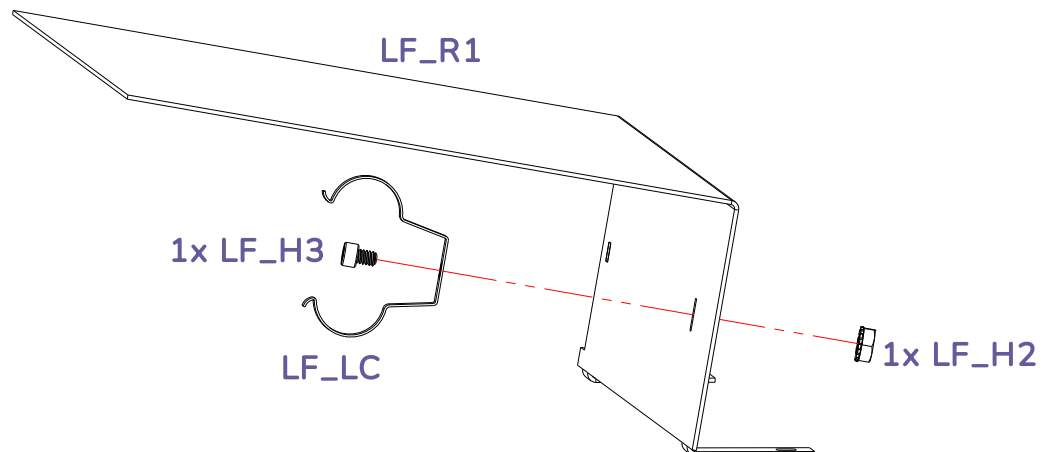
7/64" hex driver

1/4" socket hex wrench

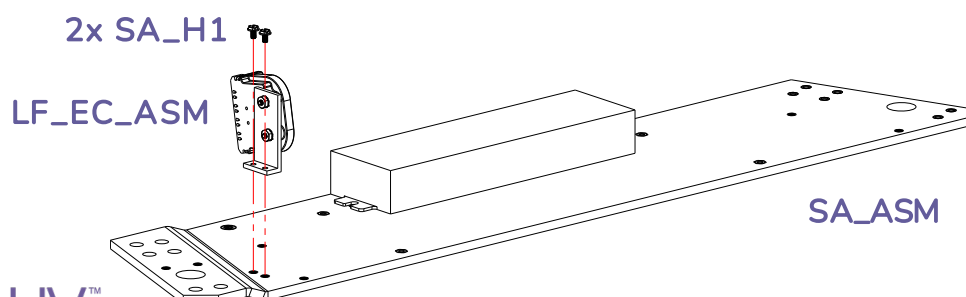
Oil-free gloves (for handling the UV reflectors)

⚠ Use oil-free gloves to handle the UV reflector parts (LF_R1, LF_R2)

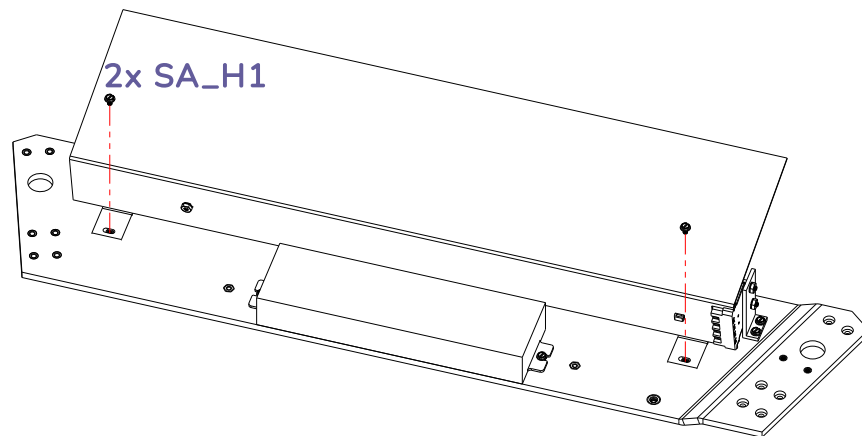
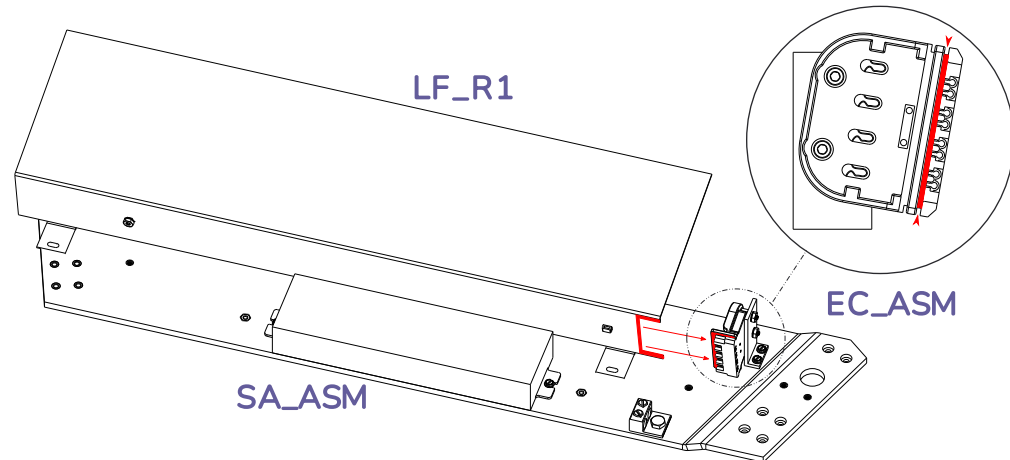
- a. Assemble one UV lamp clip (LF_LC) onto one UV reflector (LF_R1) using one hex head screw (LF_H3) and one lock nut (LF_H2) from the LF_UR_KIT. Repeat for 9 sets.



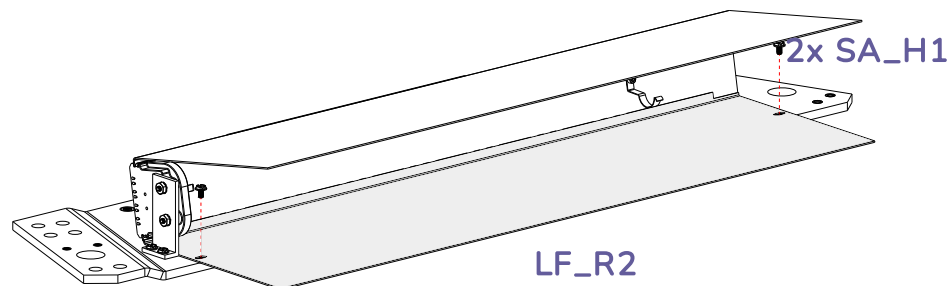
- b. Mount one end cap assembly (LF_EC_ASM) to one Segment Assembly (SA_ASM) using two hex head screws (SA_H1) found in the EC_KIT. Repeat for 9 sets.



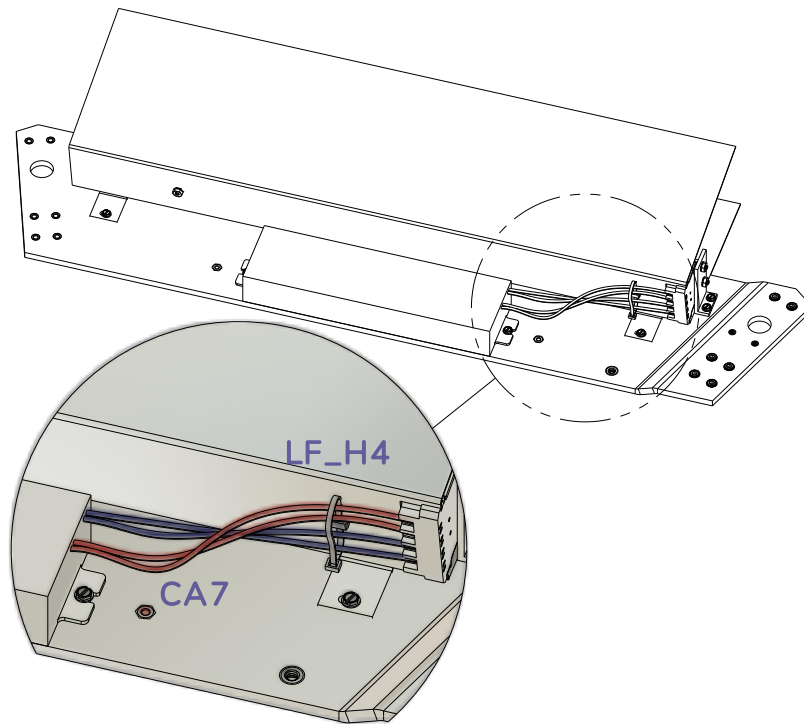
- c. Mount the reflector assembly from (a) above to the Segment Assembly (SA_ASM) from (b), sliding the reflector into the lower end cap slot. Secure the reflector assembly using two hex head screws (SA_H1) found in the LF_UR_KIT.



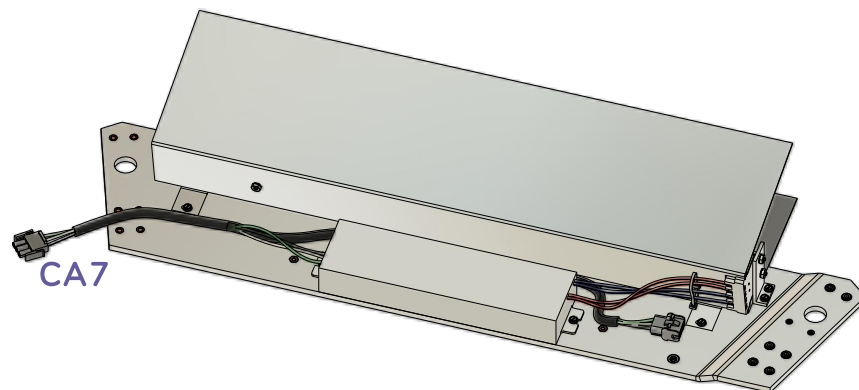
- d. Mount the R2 reflector from LF_UR_KIT on the Segment Assembly, matte black surface facing up, using two hex head screws (SA_H1) found in the LF_UR_KIT. Repeat for 9 sets.

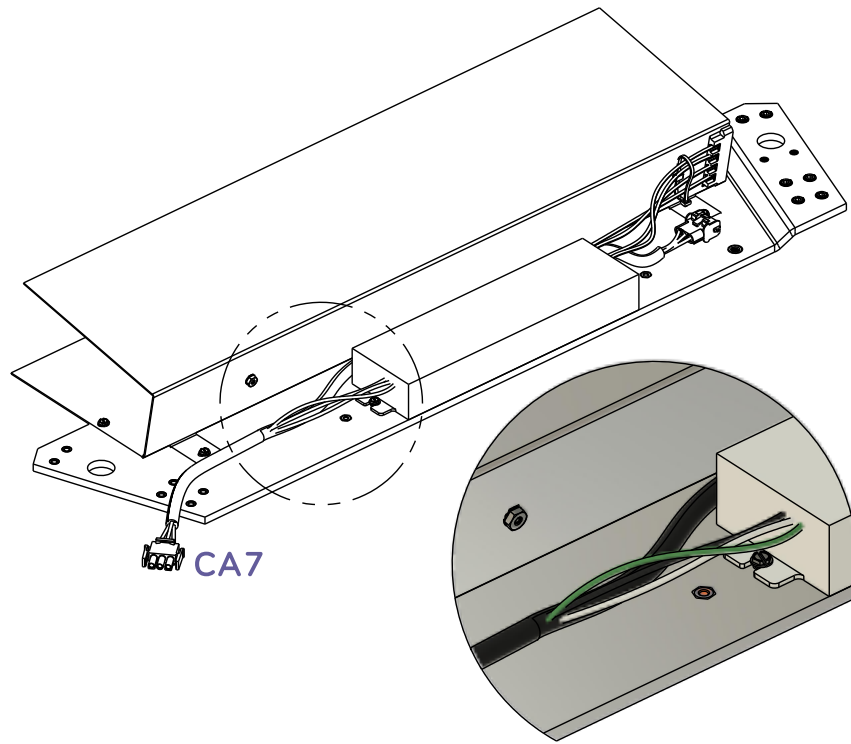


- e. Using the cable assembly CA7, connect the ballast to its corresponding lamp socket. Using the zip/cable tie LF_H4, secure CA7 onto LF_R1. Tug each end of every CA7 wire to ensure the wires are securely inserted. Repeat for the 9 sets.

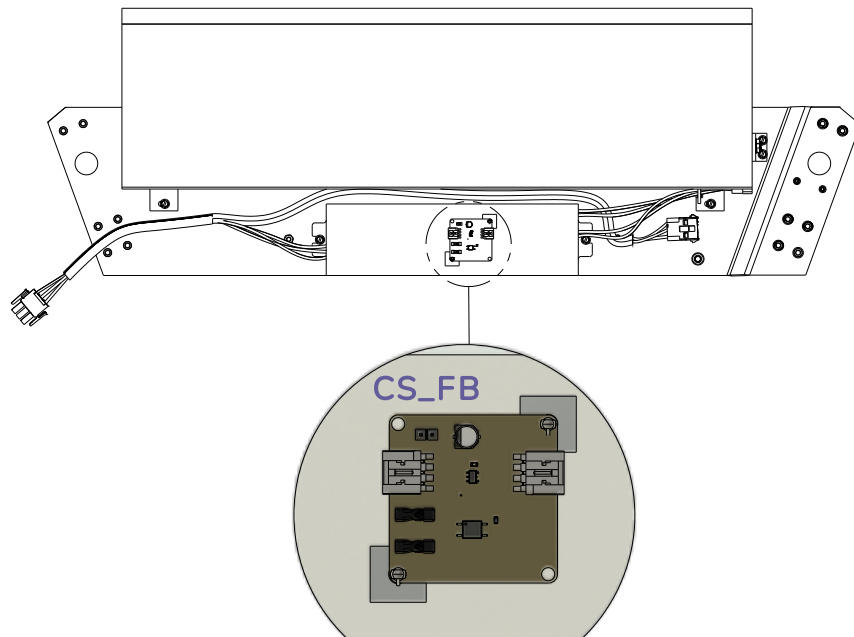
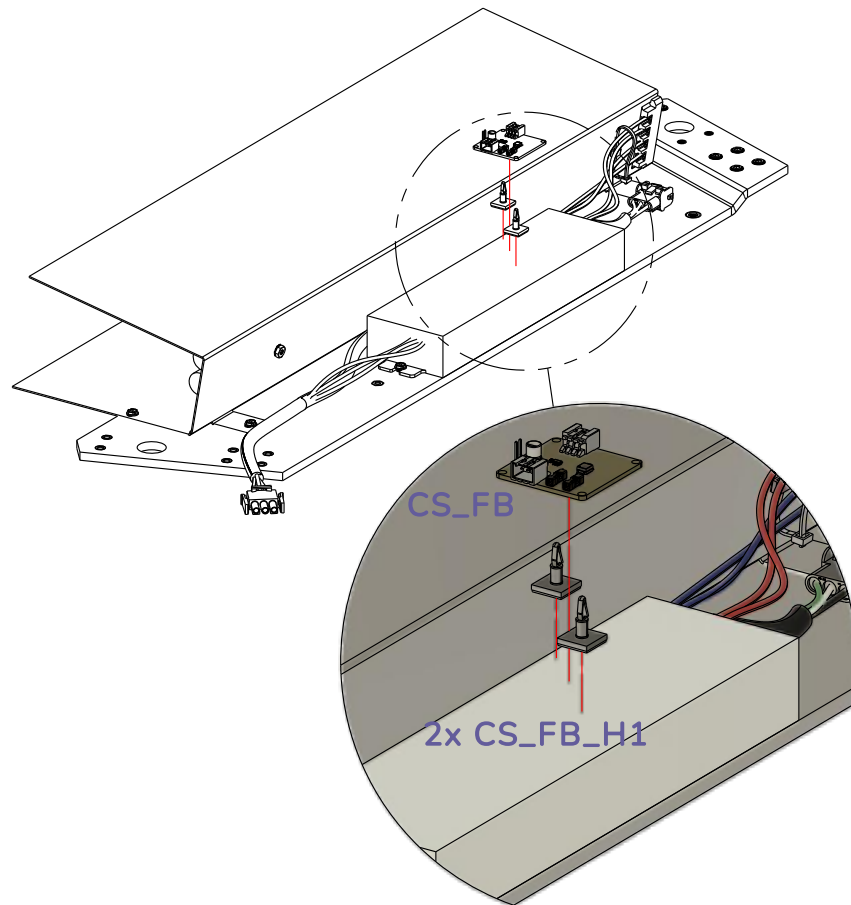


- f. Install the cable assembly CA6, connecting the loose stripped wires to the corresponding Live (Black), Neutral (White) and Protective Earth (Green) ports on the ballast. Repeat for 9 sets.

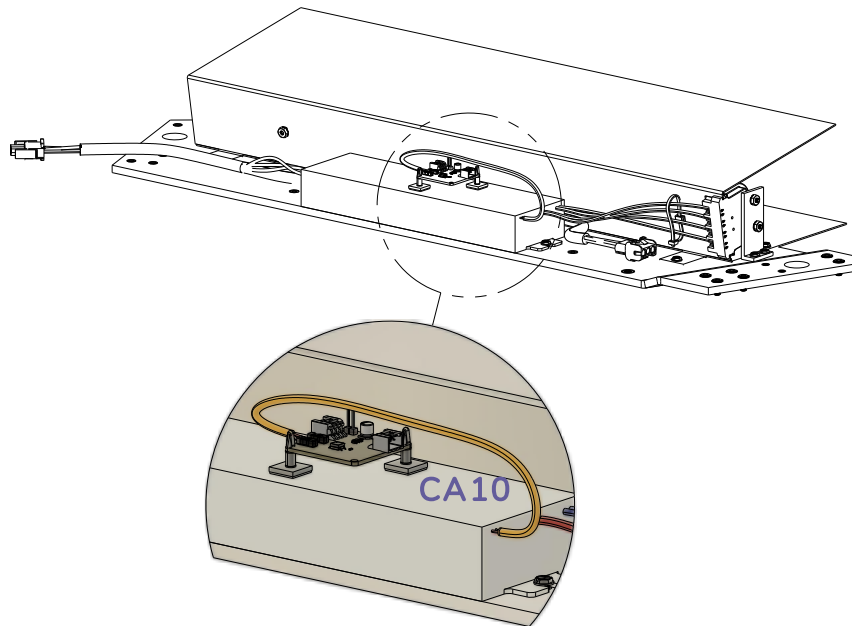
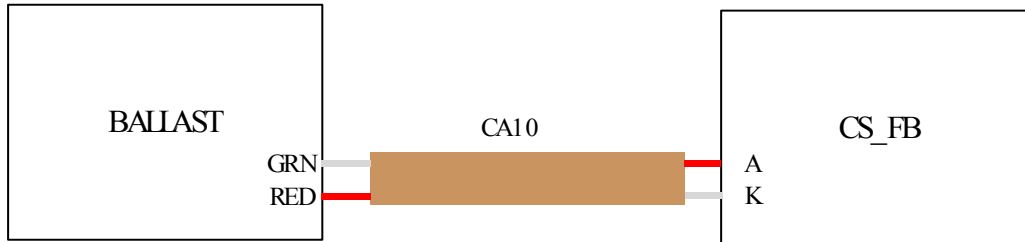




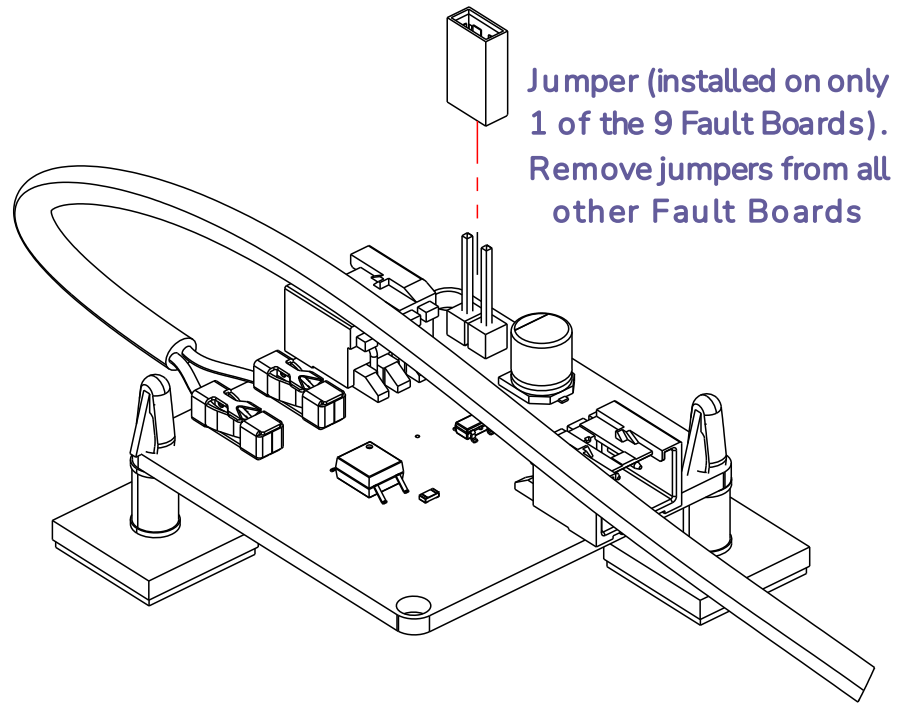
- g. Install a Fault Board (CS_FB) on top of the ballast using two adhesive backed standoffs (CS_FB_H1). Orient the Board as shown below. Repeat for 9 sets.



- h. Install cable assembly CA10 as well. The red wire is inserted into the RED port of the ballast on one end and to “A” of CS_FB on the other. The white wire is inserted into the GRN port of the ballast on one end and to “K” of CS_FB on the other. Repeat for all 9 sets.



- i. On only 1 of the 9 sets (this Segment Assembly will be indexed #9 in Step 2 below), install the jumper on the Fault Board (CS_FB) as shown below.



STEP 2: Assembly of Light Ring

KITs used:

Light Ring Segment Assembly (5RM_LR_SA_KIT)
Light Ring UV Reflector Kit (5RM_LR_SA_LF_UR_KIT)
Light Ring UV Shield Kit (5RM_LR_SA_US_KIT)
Control System Kit (5RM_CS_KIT)

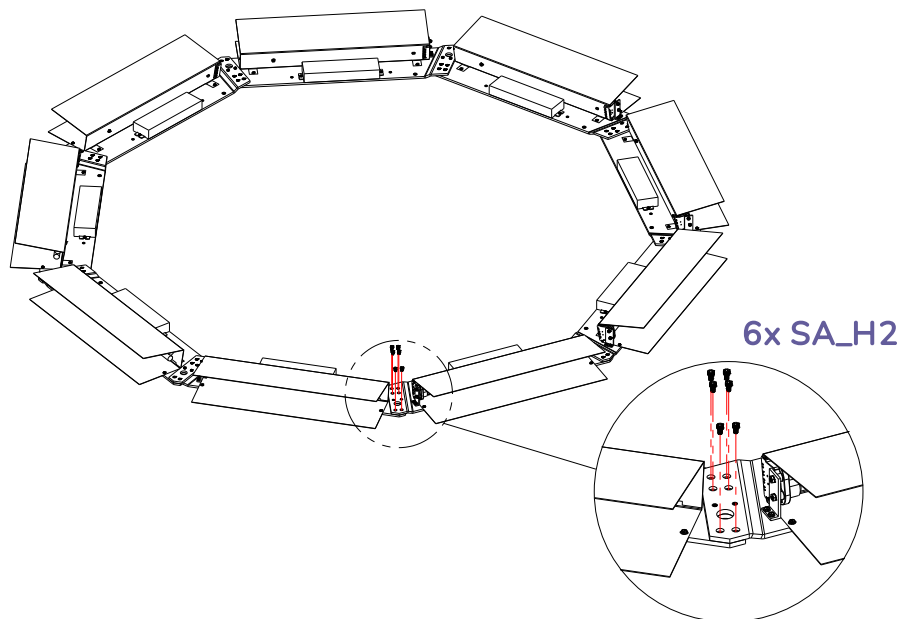
Tools required:

5/32" hex driver
Oil-free gloves (for handling the UV reflectors)



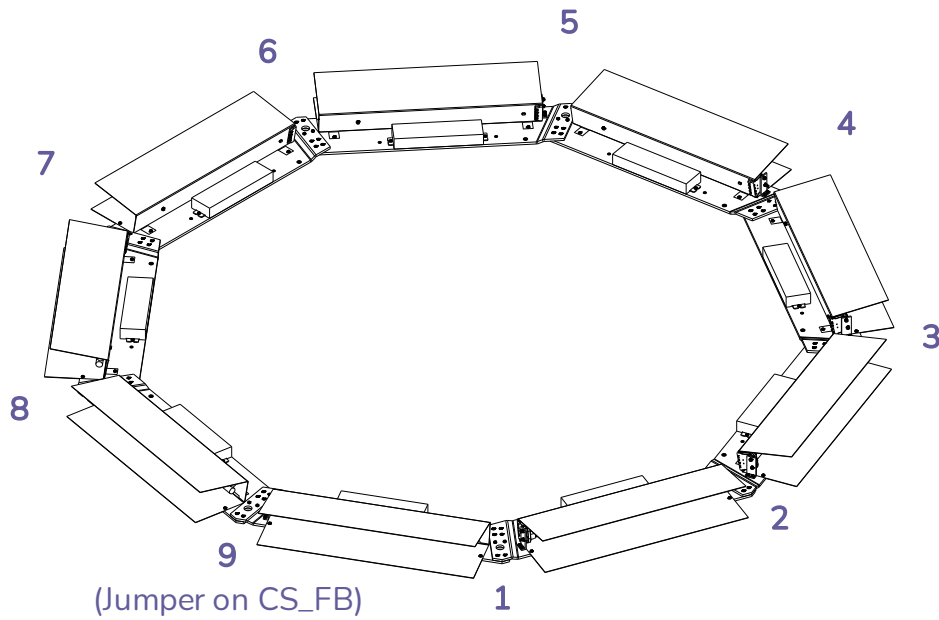
The diagrams in this section may be simplified, omitting unrelated details such as cable assemblies and boards.

- a. Lay out the 9 sets from STEP 1 on a flat surface to form a nonagon (9-sided polygon), lapping one Segment Assembly over the other. Verify that each Segment Assembly is aligned with the next overlapping one. Connect each Segment Assembly to the next with six 10-32 socket head screws (SA_H2) found in the Segment Assembly Kit (SA_KIT). Repeat to secure the remaining eight lap joints.

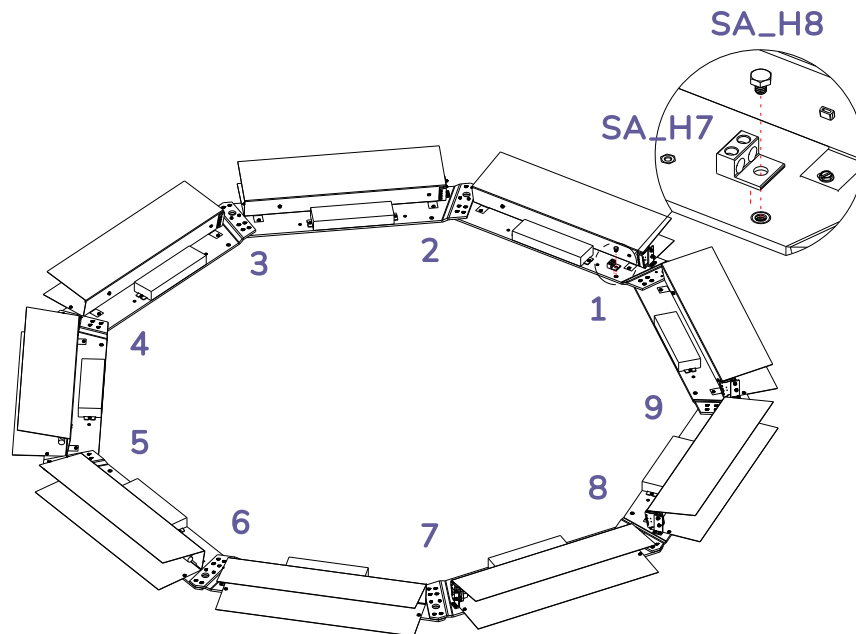


- b. At this point, it is useful to mark or annotate each segment from 1-9 so the control system and electrical cables can be properly installed. Segment Assembly

#9 has the Jumper installed on the Fault Board (CS_FB) – Refer to Step 1 (i).
 Electrical power will be routed into Segment Assembly #1.

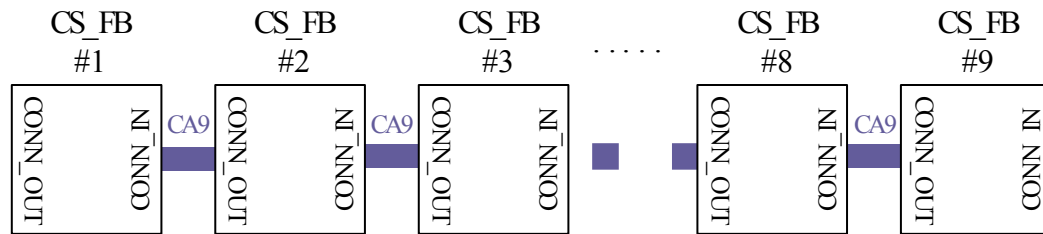


- c. Assemble the earthing lug (SA_H7) into Segment Assembly #1 using the hex head screw (SA_H8).

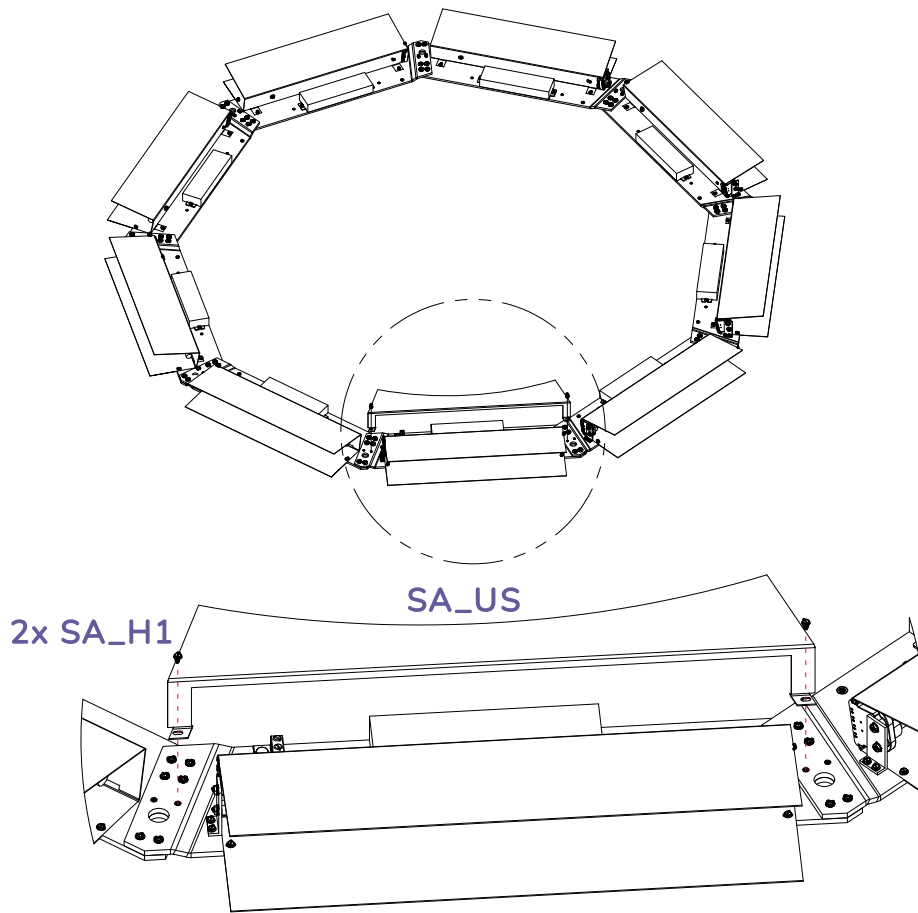


⚠ Verify that only CS_FB on Segment Assembly #9 has a jumper attached per STEP 1 (i). All other CS_FB should not have jumpers installed.

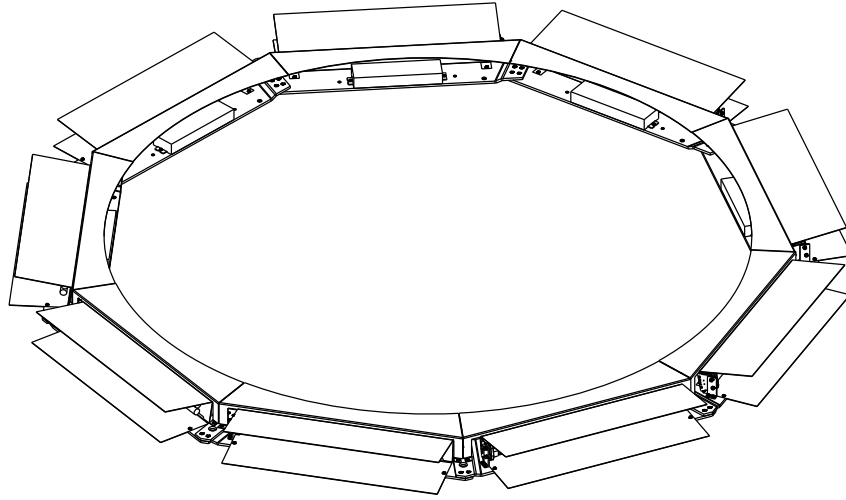
d. Connect Fault Board (CS_FB) on #1 to the Fault Board on #2 using a CS_CA9 cable assembly from CS_KIT. Connect #2 to #3 with another CS_CA9. Repeat this for #3 - #4, #4 - #5, #5 - #6, #6 - #7, #7 - #8, and #8 - #9. This step uses 8 CS_CA9 cable assemblies.



e. Install a UV Shield (SA_US) onto each Segment Assembly using two hex head screws (SA_H1) found in the US_KIT.



The Light Ring with all UV Shields installed is shown below.



STEP 3: Attachment of Lifting Assemblies and Positioning Assemblies

KITs used:

Light Ring Lifting Assembly Kit (5RM_LR_LA_KIT)

Light Ring Positioning Assembly Kit (5RM_LR_PA_KIT)

Tools required:

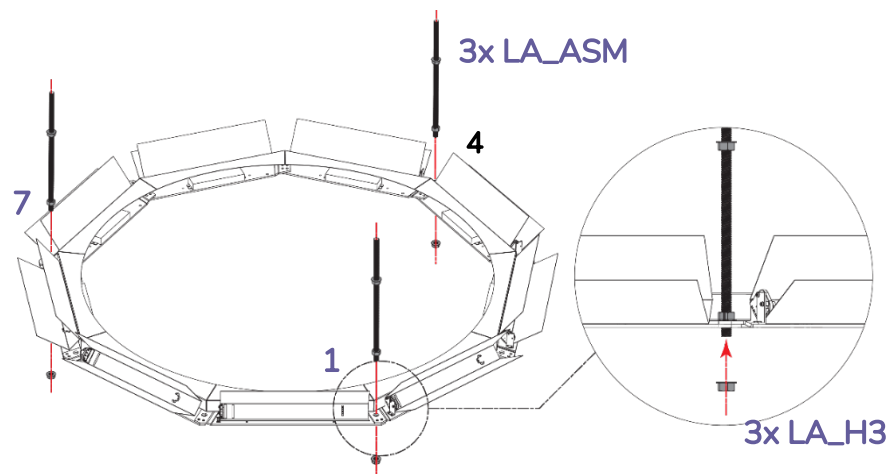
Two 1 1/8" wrenches



The diagrams in this section may be simplified omitting unrelated details such as cable assemblies and boards.

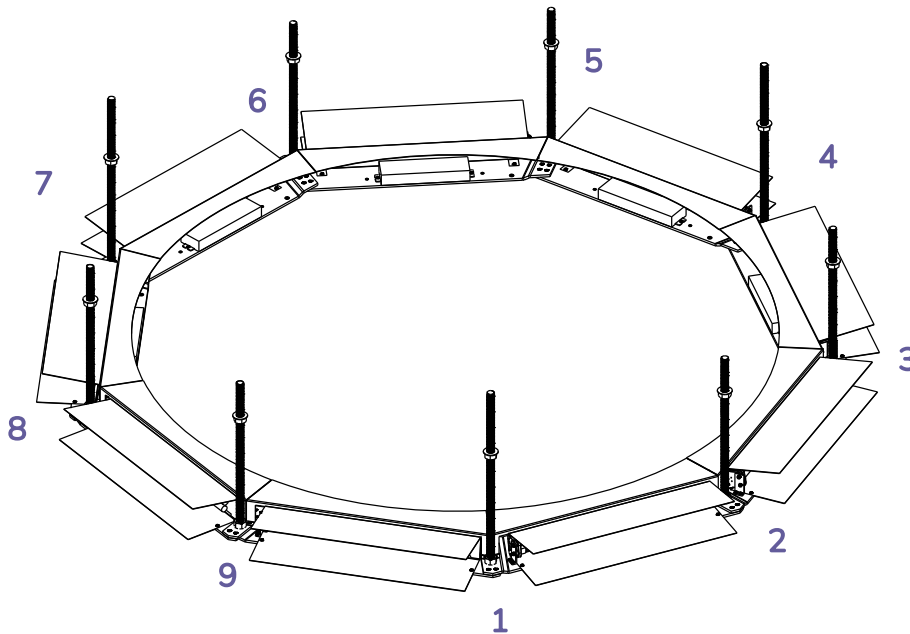
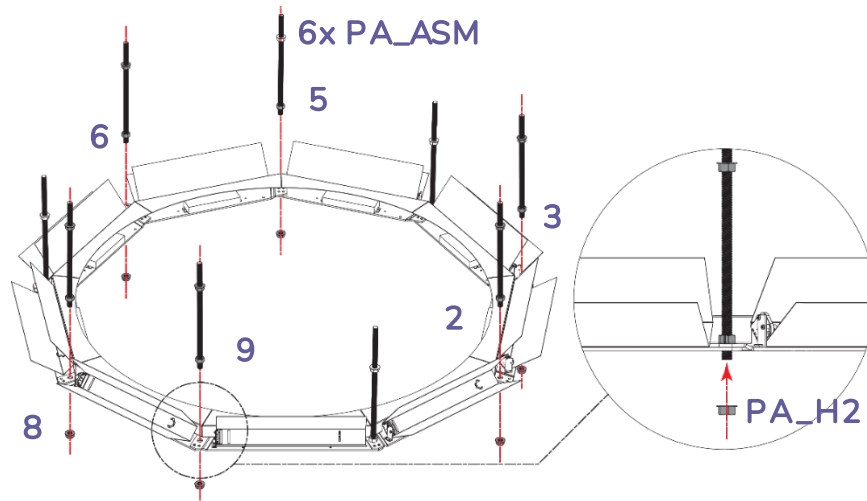
In this step, three Lifting Assemblies are installed to lift and attach the halo to the superstructure. Six Positioning Assemblies are installed to hold the Upper Cowling in place. The three Lifting Assemblies will be assembled at positions 1, 4 and 7. The six Positioning Assemblies will be installed at the remaining positions.

- a. Insert the Lifting Assemblies (LA_ASM) into the Light Ring holes at Segment Assemblies #1, #4 and #7. Screw one flanged lock nut (LA_H3) from the Lifting Assembly Kit into the bottom of each Lifting Assembly. The inserted flanged nut once tightened in place should be flush with the bottom of the Lifting Assembly rod.

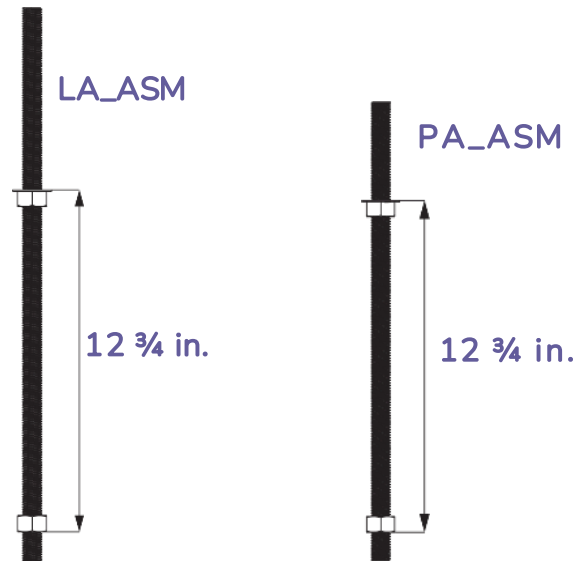


If the flanged nut is not flush with the bottom of the Lifting Assembly, adjust the position of the lock nut above the Light Ring and the flanged nut below until the flanged nut and rod bottom planes are flush.

- b. Insert the Positioning Assemblies (PA_ASM) into the Light Ring holes at Segment Assemblies #2, #3, #5, #6, #8, and #9. Screw one flanged lock nut (PA_H2) from the Positioning Assembly Kit into the bottom of each Positioning Assembly. The inserted flanged nut once tightened in place should be flush with the bottom of the Positioning Assembly rod.



 If the nuts on the Lifting Assembly or Positioning Assembly shift, re-adjust their positions per the diagram below.



STEP 4: Assembly of the Upper Cowling

KITs used:

Upper Cowling Sector Kit (5RM_UC_S_KIT)

Upper Cowling Sector Disc Kit (5RM_UC_SD_KIT)

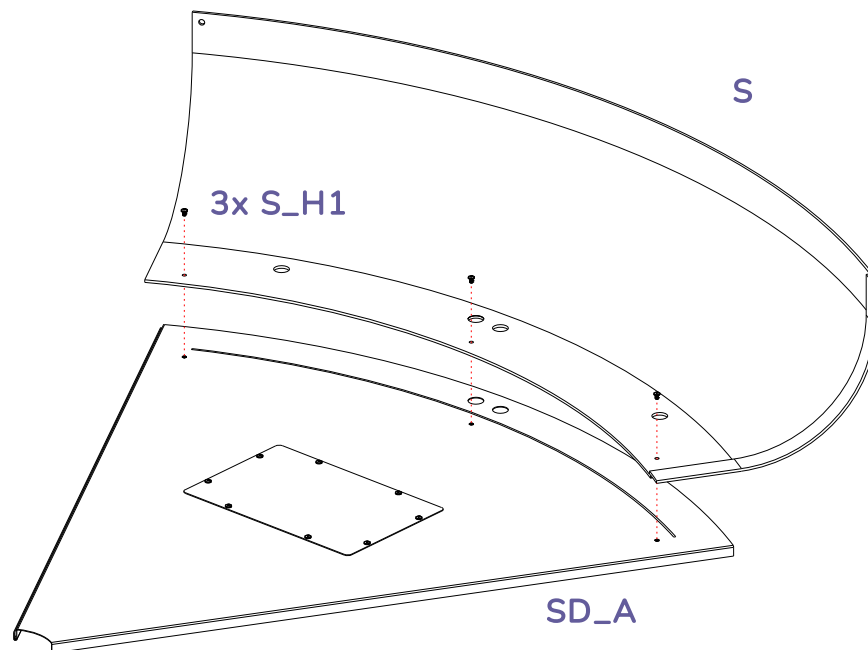
Tools required:

Phillips No. 2 driver

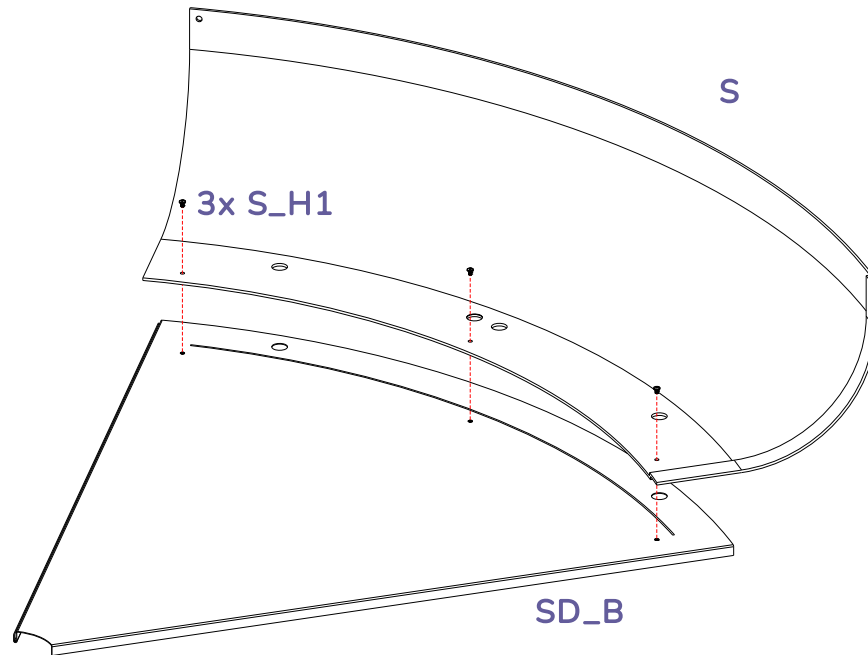
1/8 in. hex driver

⚠ Use oil-free gloves to handle the cowling pieces (UC_S)

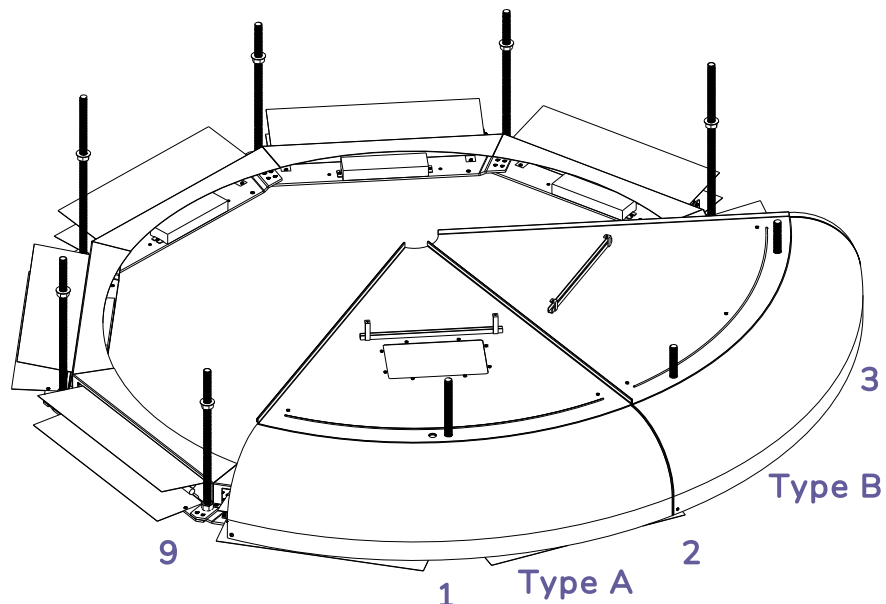
- a. Mount one Sector (S) onto one Sector Disc Type A (SD_A) using three phillips head screws (S_H1). Repeat for 3 sets.



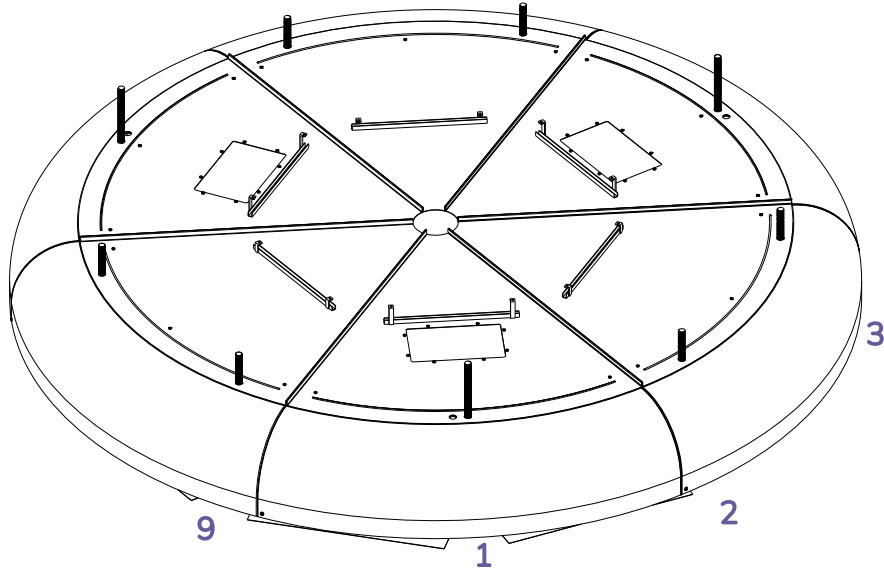
- b. Mount one Sector (S) onto one Sector Disc Type B (SD_B) using three phillips head screws (S_H1). Repeat for 3 sets.



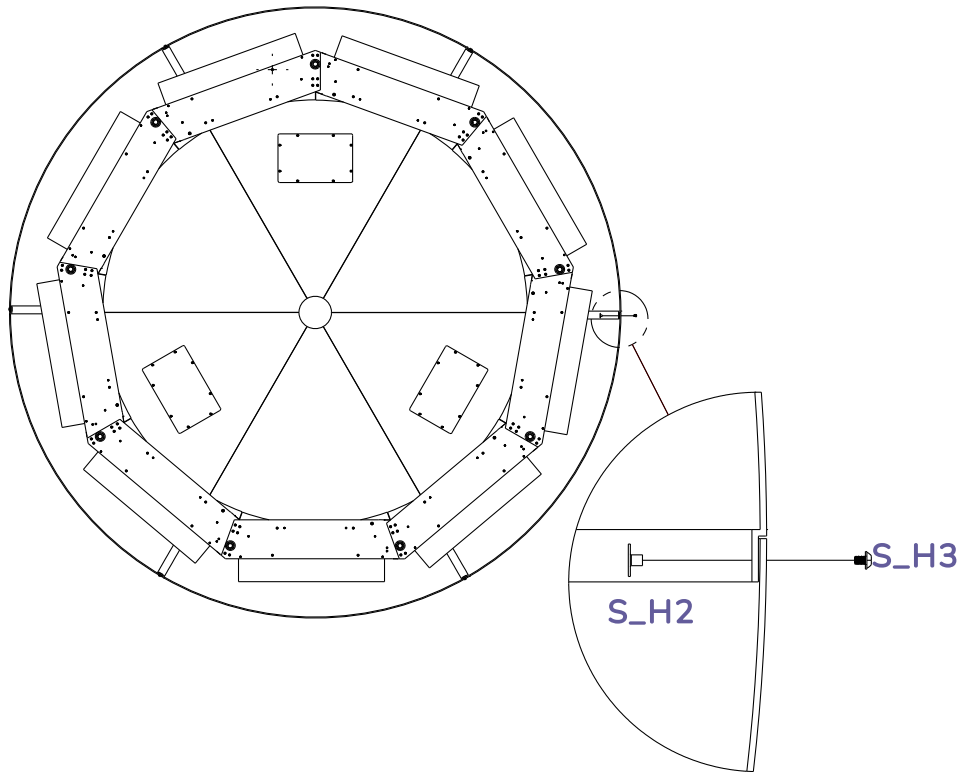
- c. Place one assembled Type A Sector over the Light Ring, feeding the sector through the Lifting Assembly of Segment Assembly #1. Place one assembled Type B sector over the Light Ring, feeding the sector through the Positioning Assemblies at Segment Assembly #2 and #3



- d. Repeat the steps installing the remaining Sectors, alternating a Type A Sector with a Type B Sector.



- e. Affix each cowling sector to the next with one screw mount nut (S_H2) and one hex head screw (S_H3).



STEP 5: Assembly of the Support Triangle Frame

KITs used:

Support Triangle Corner Bracket Kit (5RM_ST_CB_KIT)

Support Triangle T1 Kit (5RM_ST_T1_KIT)

Support Triangle T2 Kit (5RM_ST_T2_KIT)

Support Triangle T3 Kit (5RM_ST_T3_KIT)

Support Triangle T4 Kit (5RM_ST_T4_KIT)

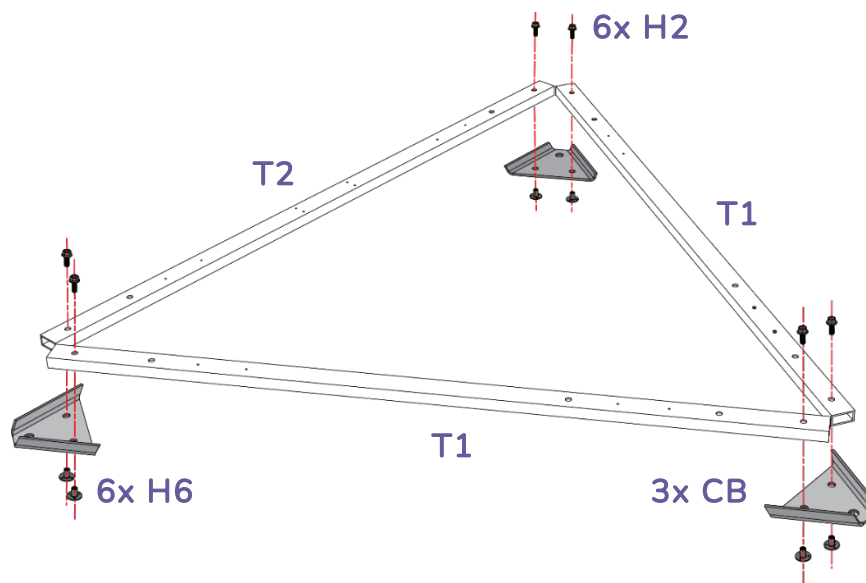
Support Triangle FB Kit (5RM_ST_FB_KIT)

Tools required:

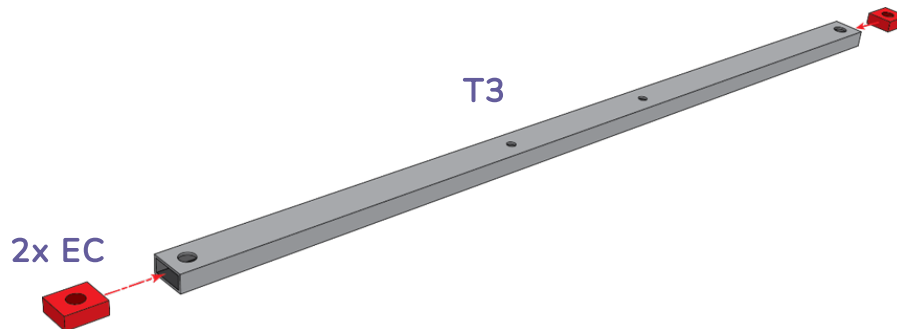
9/16" socket hex wrench

1/4" socket hex wrench

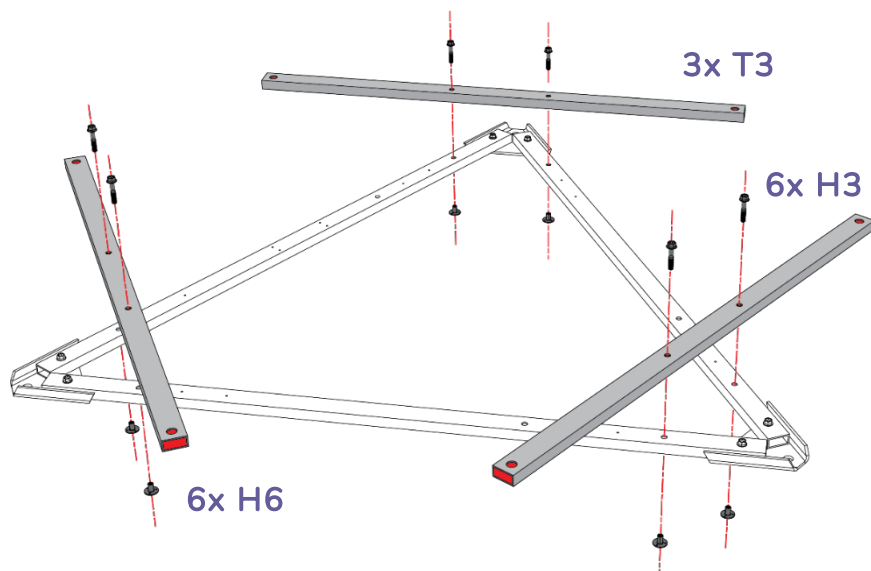
- Lay out the two T1 members and the single T2 member in a triangle. Position one Corner Bracket (CB) at each vertex of the triangle. Assemble the triangular frame using six hex head screws (H2) and six flanged screw nuts (H6) from the CB_KIT.



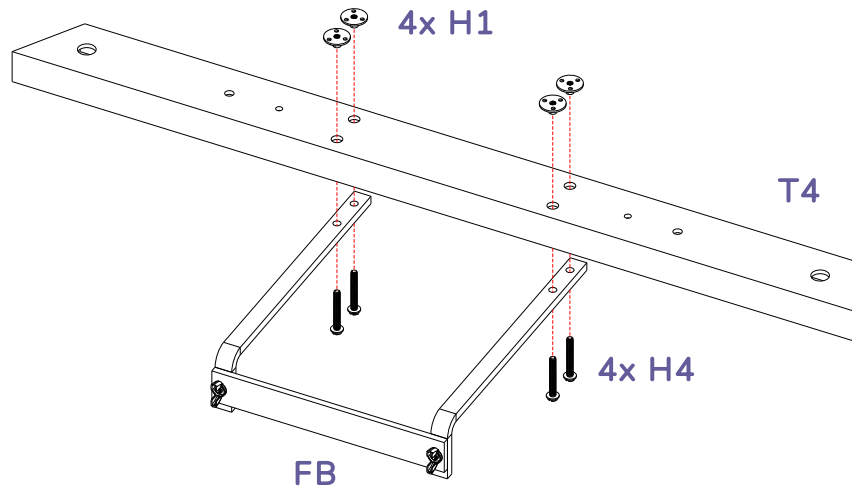
- b. Insert the six End Caps (EC) into the ends of the three T3 cross members so that the holes on each End Cap lines up with the hole in the member.



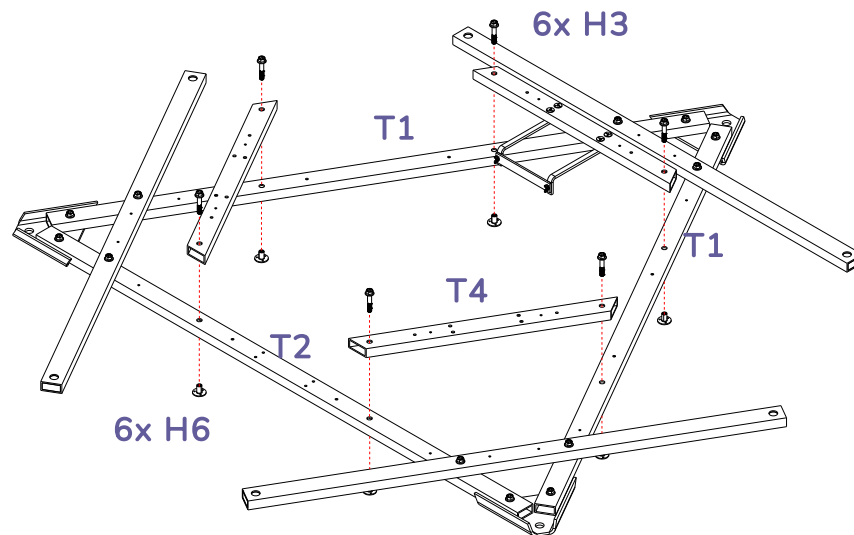
- c. Affix each T3 cross member across a vertex of the triangular frame using two hex head screws (H3) and two flanged screw nuts (H6) from the T3_KIT.



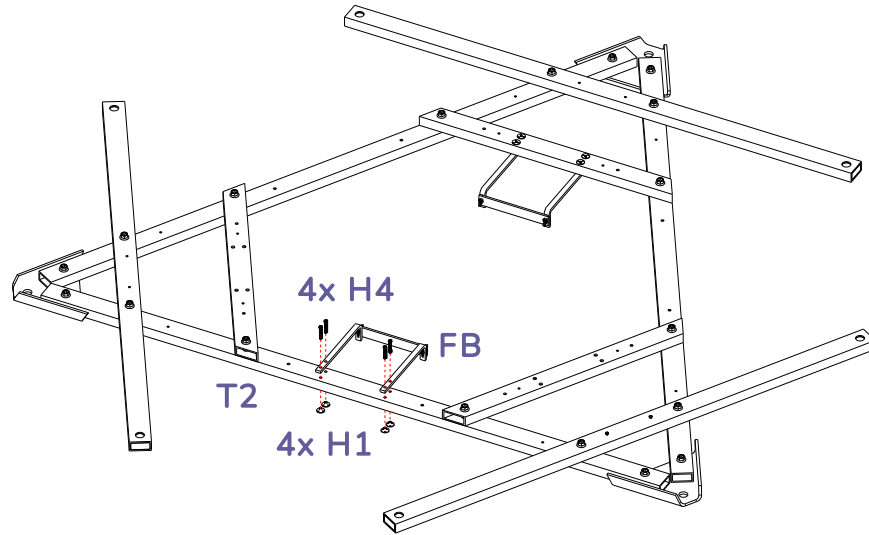
- d. Assemble one Fan Bracket (FB) onto one T4 member using four flanged screw nuts (H1) and four hex head screws (H4).



- e. Install the T4 and FB assembly onto the triangular frame between the tow T1 members using hex head screws H3 and screw mount nuts H6 from the T4_KIT. Install the other two T4 members similarly.



- f. Install the second Fan Bracket (FB) onto the member T2 using four flanged screw nuts (H1) and four hex head screws (H4).



STEP 6: Assembly of the Junction and Control Boxes

KITs used:

Support Triangle Junction Plate Kit (5RM_ST_JP_KIT)

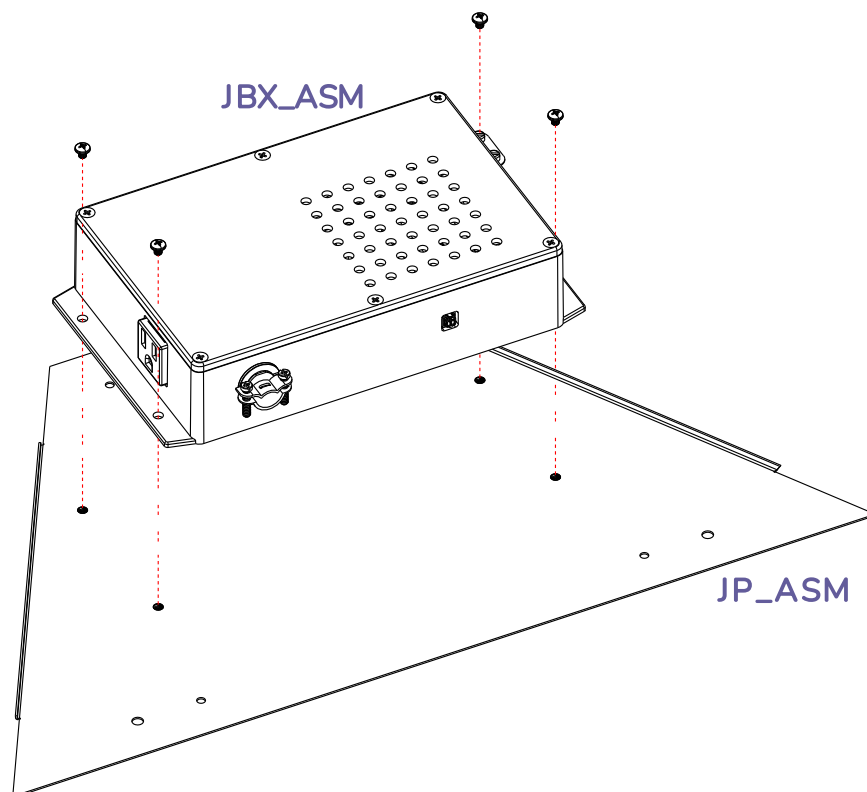
Support Triangle Control Plate Kit (5RM_ST_CP_KIT)

Control System Kit (5RM_CS_KIT)

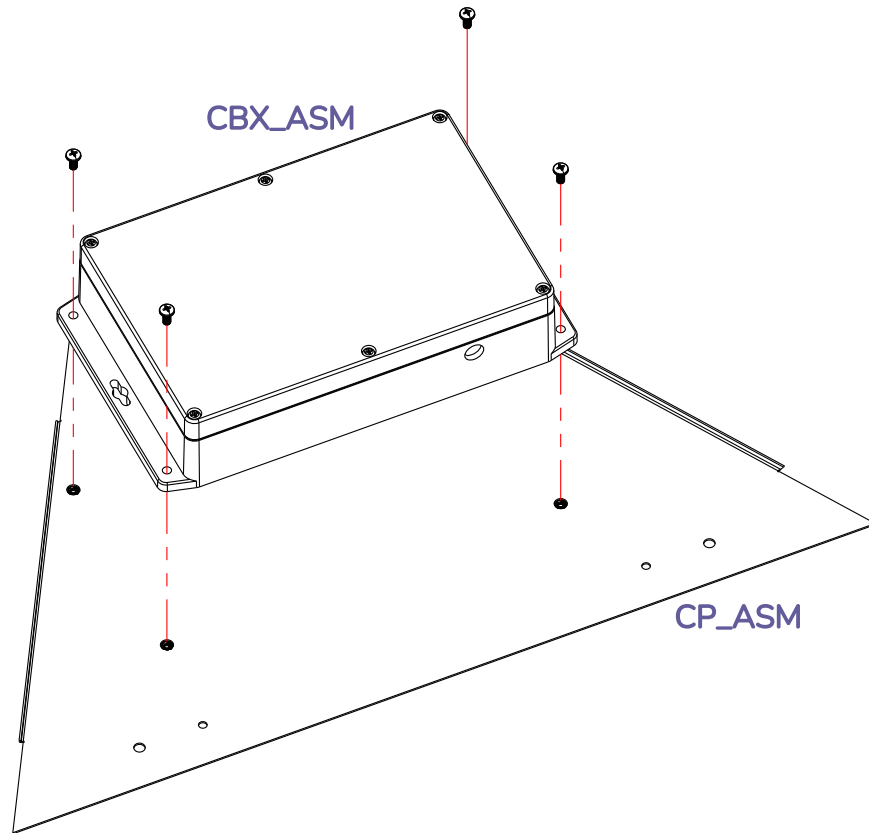
Tools required:

Phillips No. 2 driver

- a. Unscrew the four phillips head screws from the Junction Plate (JP_ASM). Affix the Junction Box Assembly (JBX_ASM) onto the Junction Plate with the four phillips screws.



- b. Unscrew the four phillips head screws from the Control Plate (CP_ASM). Affix the Control Box Assembly (CBX_ASM) onto the Control Plate with the four phillips screws.



STEP 7: Wiring of the Junction and Control Boxes

KITs used:

Support Triangle Junction Plate Kit (5RM_ST_JP_KIT)

Support Triangle Control Plate Kit (5RM_ST_CP_KIT)


Control System Kit (5RM_CS_KIT)

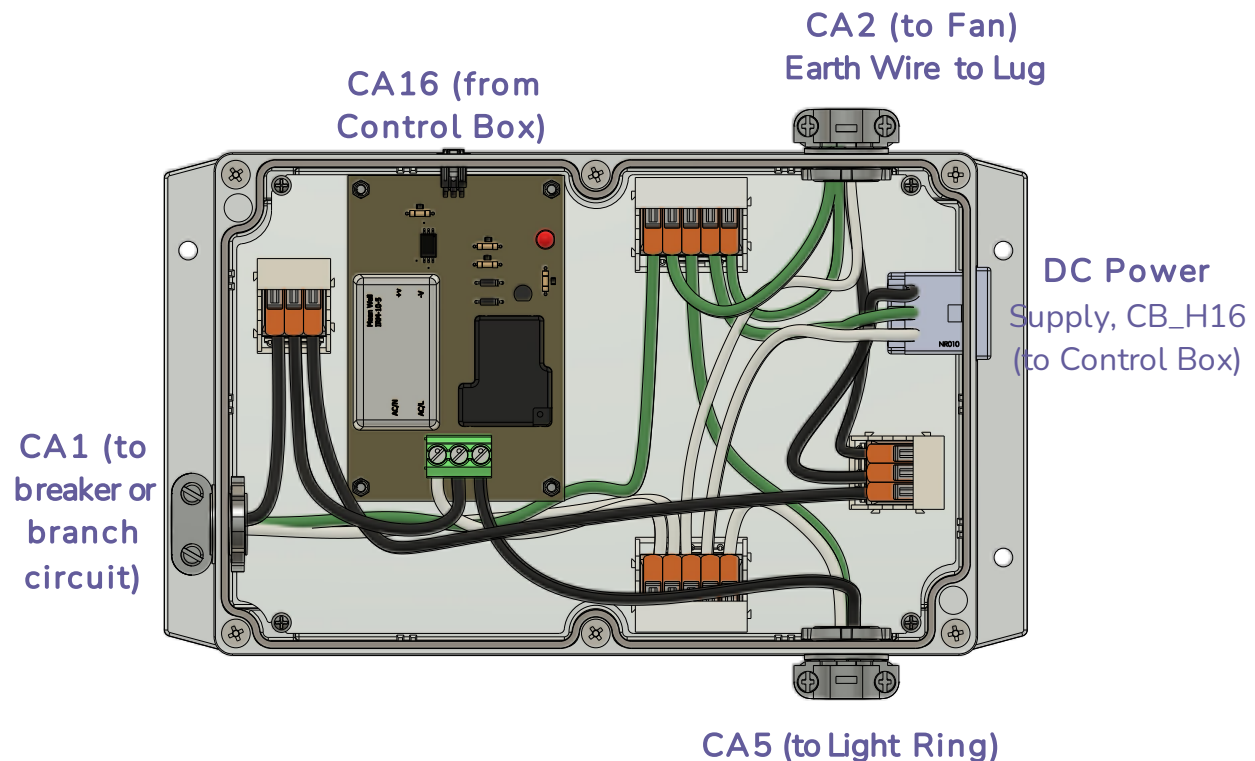
Tools required:

Phillips No. 2 driver

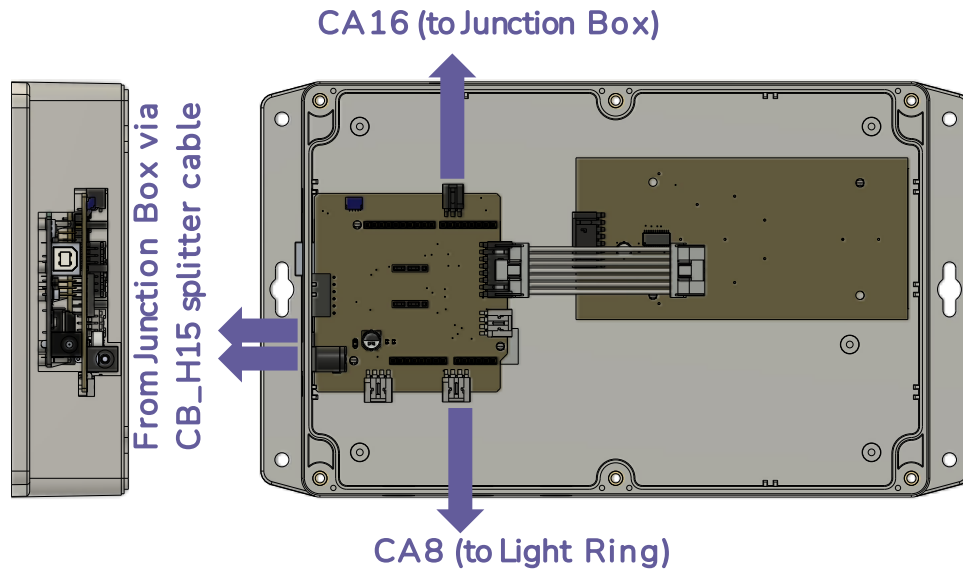
¼" socket hex wrench

- a. Unscrew the lid of the Junction Box (JBX_ASM). Connect Cable Assemblies CA1, CA2, CA5 and the DC power supply (CB_H16) as shown in the diagram below. Replace the lid.

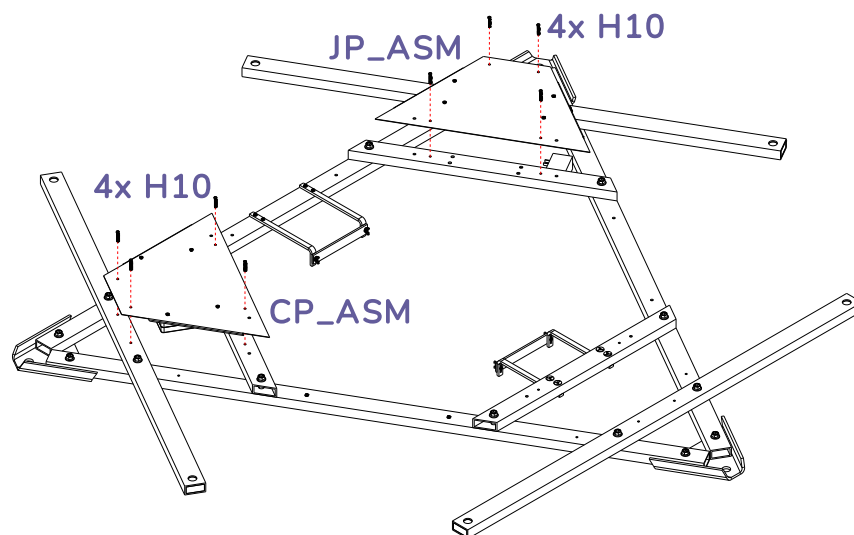
 CA5 needs to be fed in from the Light Ring, through the hole on the Upper Cowling adjacent to the Lifting Assembly #1 before it is wired into the Junction Box.



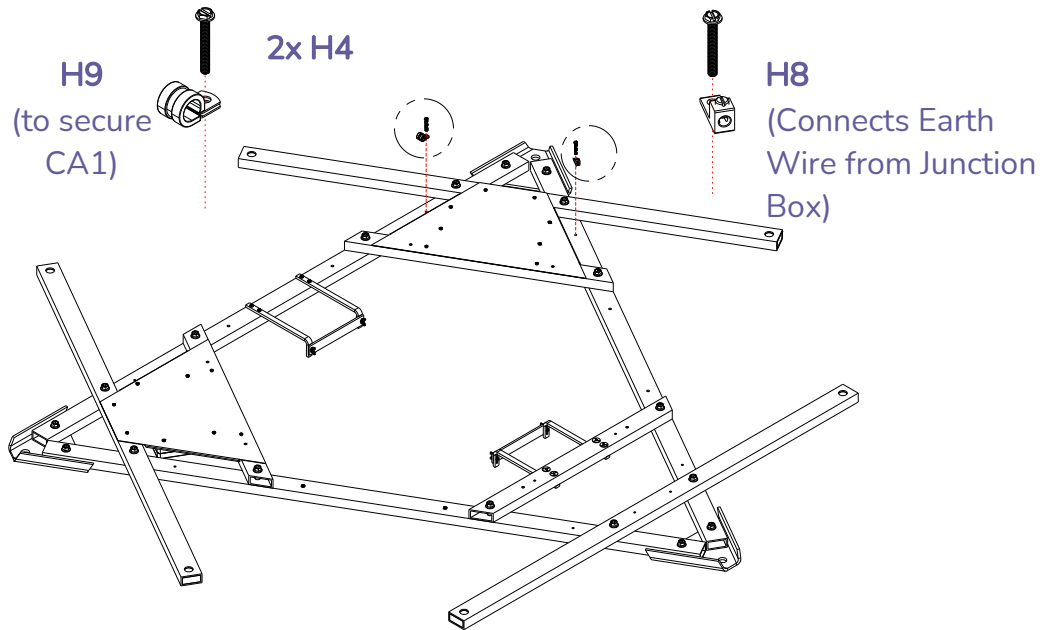
- b. Unscrew the lid of the Control Box (CBX_ASM). Connect the Cable Assemblies CA8, CA16 and the DC splitter cable (CB_H15) to the Control Box as shown below.



- c. Assemble the Junction Plate Assembly (JP_ASM) and Control Plate Assembly (CP_ASM) onto the Support Triangle on either side of the Fan Bracket (FB) using four hex head screws (H10) found in JP_KIT and CP_KIT respectively. You may need to unplug cable assemblies from the Control Box for better routing.



- d. Assemble the earth lug (H8) and cord grip (H9) using two hex head screws (H4) provided in JP_KIT. Secure CA1 using the cord grip. Screw the free end of the Earth Wire coming from the Junction Box into the earth lug.



STEP 8: Mounting the Support Triangle

KITs used:

Light Ring Lifting Assembly Kit (5RM_LR_LA_KIT)
Light Ring Positioning Assembly Kit (5RM_LR_PA_KIT)
Upper Cowling Sheet Disc Kit (5RM_UC_SD_KIT)
Control System Kit (5RM_CS_KIT)
Fan Kit (5RM_F_KIT)

Tools required:

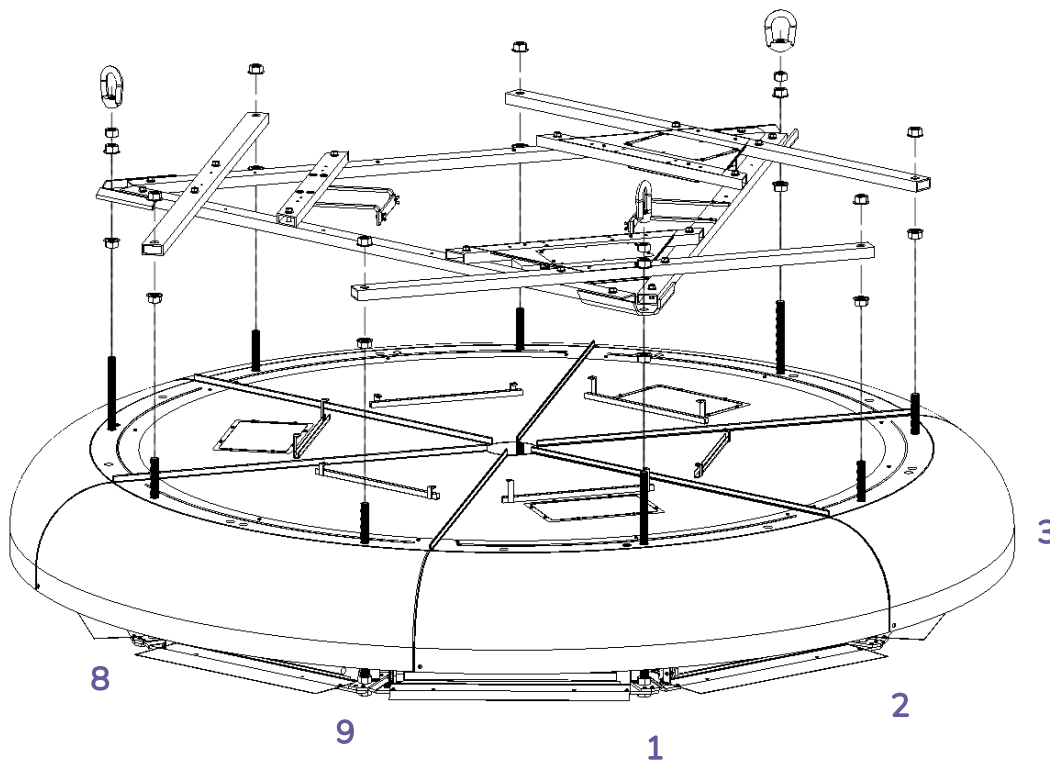
Two 1-1/8" hex wrenches
1/4" socket hex wrench

- a. Fasten one LA_H3 flanged nut onto each Lifting Assembly, flange up. The bottom plane of the nut should be 1/4 in. above the cowling surface.
- b. Start by fastening one flanged hex nuts (PA_H2) onto each exposed Positioning Assembly leaving approximately 1 in. gap between the bottom of the nut and the Upper Cowling Sector surface.
- c. Lift the assembled Support Triangle into place above the Light Ring, rotating the Support Triangle until the Lifting Assemblies are aligned with the vertices of the Support Triangle. The vertex containing the Junction Plate Assembly should be positioned over Segment Assembly #1.
- d. Lower the Support Triangle onto the Light Ring until the bottom surfaces of its Corner Brackets are in contact the uppermost flanged nuts of the Lifting Assemblies.
- e. Use a level to check for any tilt in the Support Triangle. Adjust the position of the flanged nuts on the Lifting Assemblies to remove any tilt.
- f. Raise the flanged nuts on the Positioning Assemblies so they contact the bottom surfaces of the Support Triangle T3 cross-members.
- g. Secure the Support Triangle in place by fastening a flanged nut from the Lifting Assembly Kit (LA_H4) onto each Lifting Assembly so that the flange contacts the upper surface of the respective Support Triangle Corner Bracket
- h. Fasten the flanged nuts from the Positioning Assembly Kit (PA_H2) onto the Positioning Assemblies so that the flange contacts the upper surface of the Support Triangle T3 cross members. The Positioning Assembly rod surface should be flush or close-to-flush with the top surface of the fastened flanged nut.

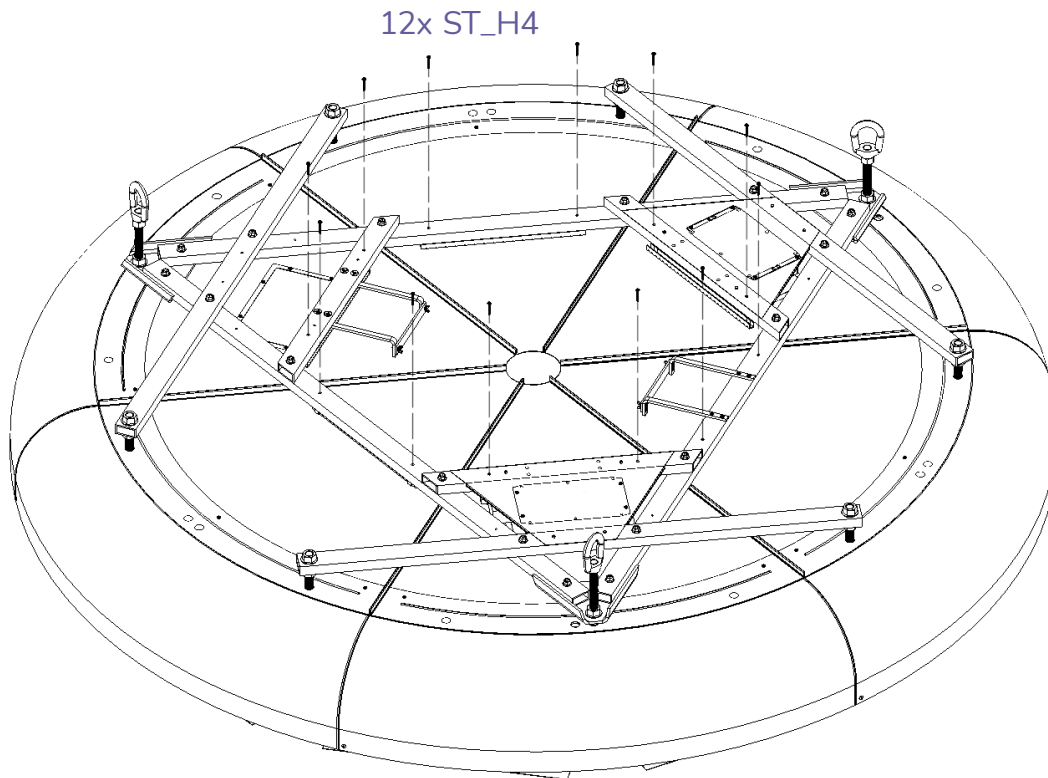
If not, the Support Triangle may have to be lowered slightly to fully insert the flanged nut into the Positioning Assembly. If adjusting the Support Triangle, make sure to use a level to ensure there is no tilt.

- i. Tighten all the flanged nuts onto their contacting surfaces so that the Support Triangle is securely positioned on the Light Ring
- j. Fasten one hex nut (LA_H4) and one eye nut (LA_H1) from the Lifting Assembly Kit onto each Lifting Assembly. The bottom surface of the eye hook should be flush with the top surface of the Lifting Assembly rod. Tighten the lock nut. The distance between the lock nut and the bottom of the nearest flanged nut should be approximately 4.3 in. if installed correctly.

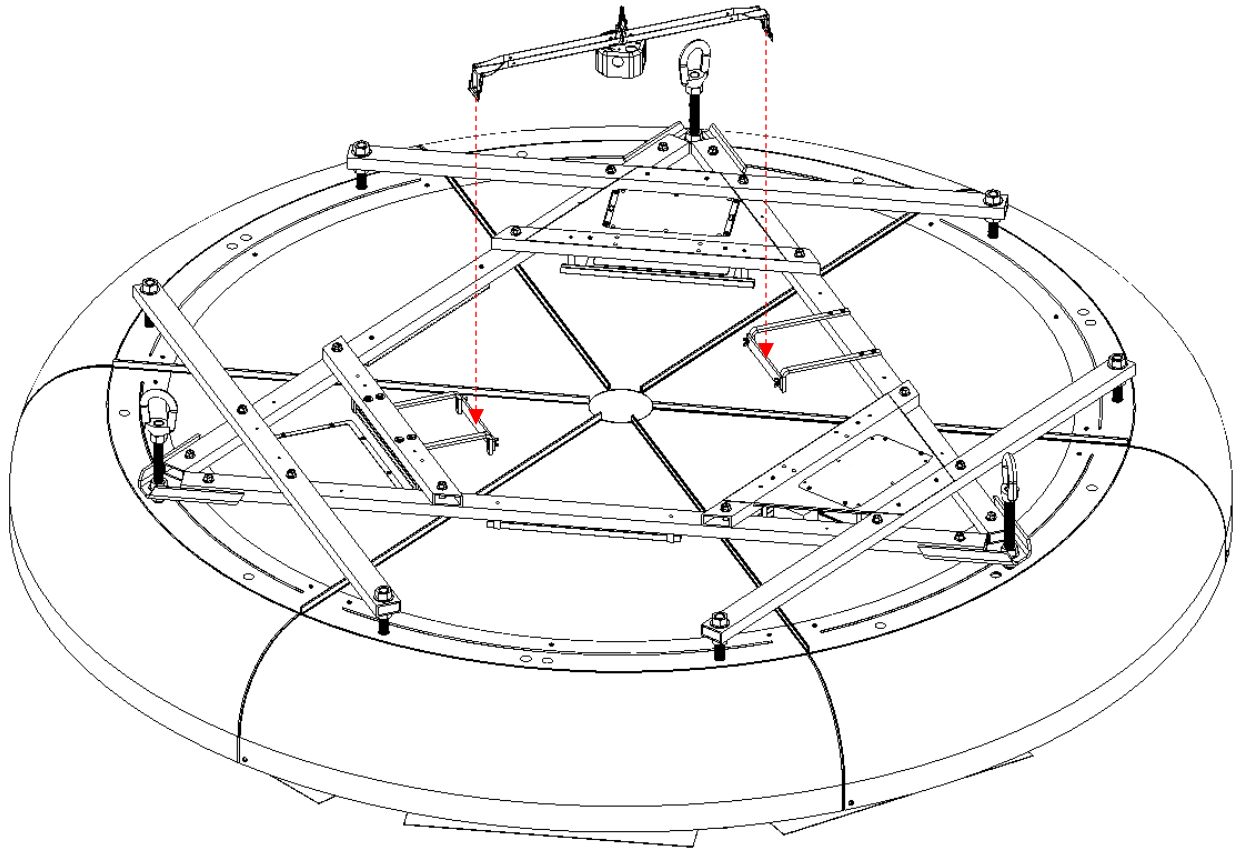
 The Support Triangle vertex containing the Junction Plate Assembly should be positioned at Segment Assembly #1.



- k. Fasten the Upper Cowling Sector Disks to the Support triangle using twelve hex head screws (ST_H4) found in UC_SD_KIT.



- l. Mount the Fan Bracket (FB) onto the Support Triangle Fan Brackets (ST_FB). Secure the Fan Bracket with thread-forming sheet metal screws to prevent sliding of the Fan Bracket. Align the Fan Bracket electrical box so that it is flush with the sheet disc plane.



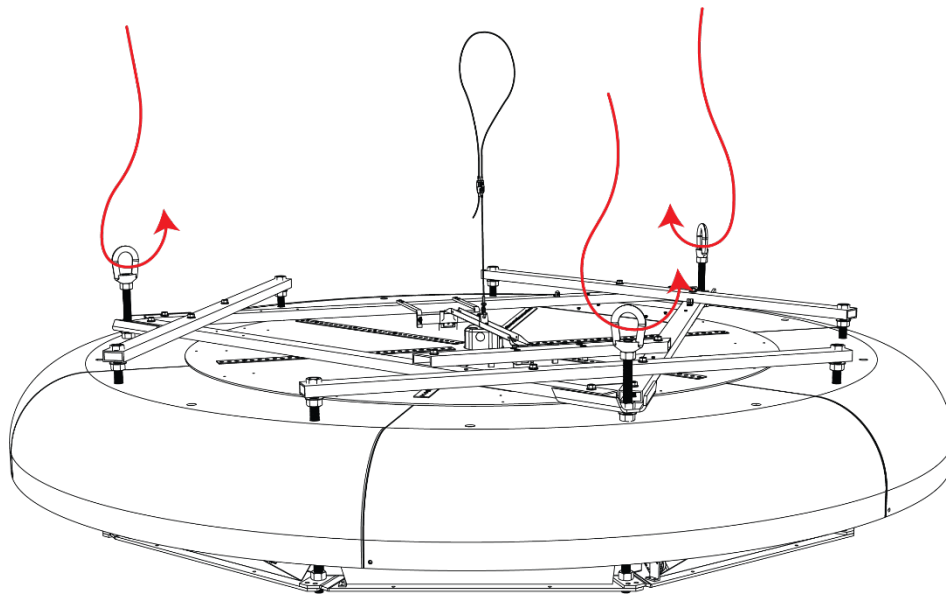
STEP 9: Attachment of the halo to the Superstructure

The halo is attached to the superstructure with aircraft cable (wire rope). Each eye nut will have three aircraft wire loops extending equilaterally to the superstructure forming an upside down tetrahedron. This attachment method ensures stability of the halo under seismic loads.

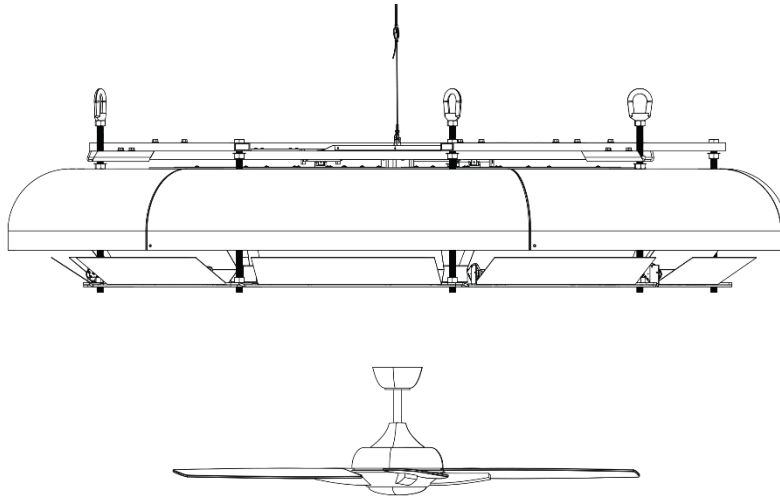
Additionally, the Fan Bracket (FB) is tethered to the superstructure with one or two aircraft cables so that the weight of the fan (yet to be installed) is supported by the superstructure and not the Support Triangle.

Attachment instructions vary depending on the construction of the superstructure.

With the halo lifted into place and the aircraft cable attached to the Fan Bracket taugth, the halo can be connected to the AC and the Fan can then be installed.



STEP 10: Installing the Fan



STEP 11: Installing the UV-C Lamps

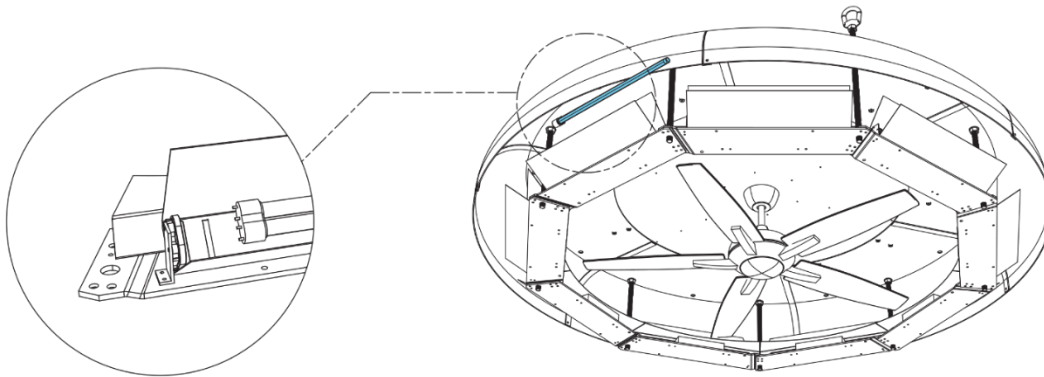
KITs used:

UV Lamps Kit (5RM_LR_SA_LF_UL_KIT)

Tools required:

Oil-free gloves

⚠ Use oil-free gloves to handle the UV lamps



STEP 12: Installing the Lower Cowling

KITs used:

Lower Cowling Sector 1 KIT (5RM_LC_S1_KIT)

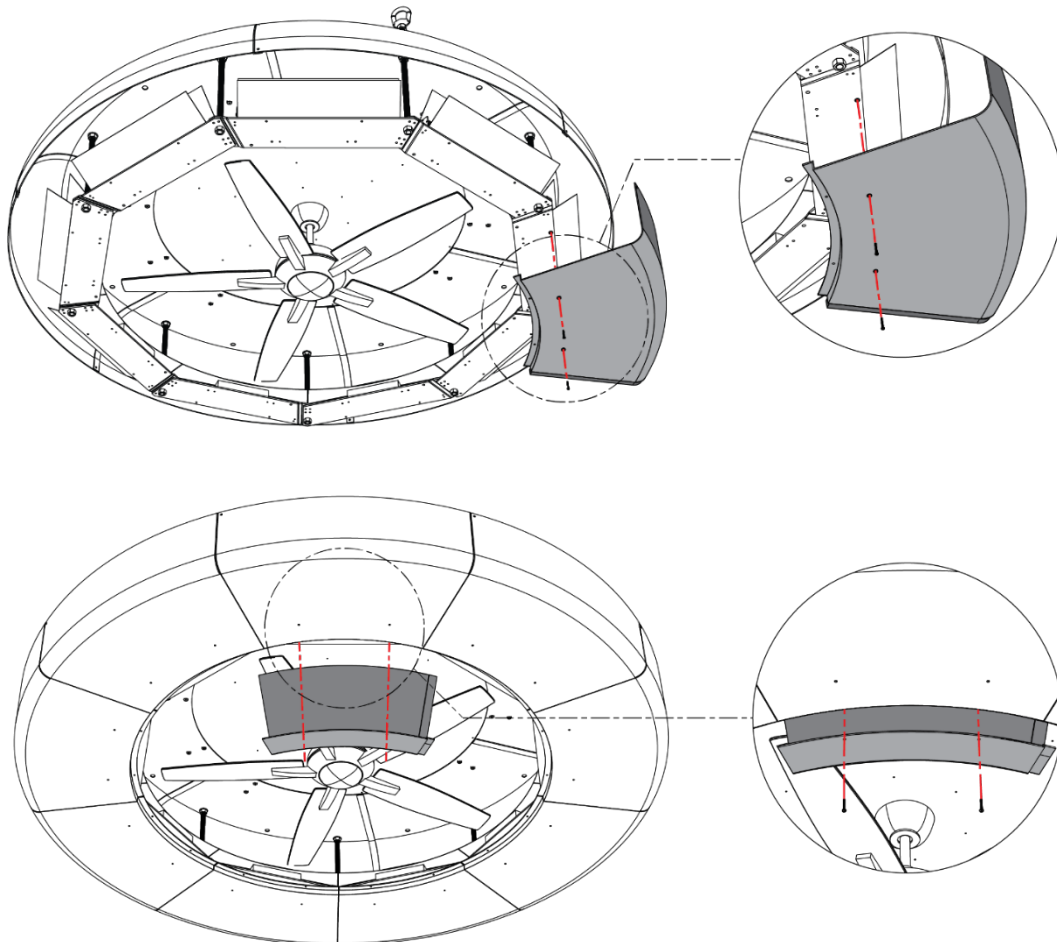
Lower Cowling Sector 2 KIT (5RM_LC_S2_KIT)

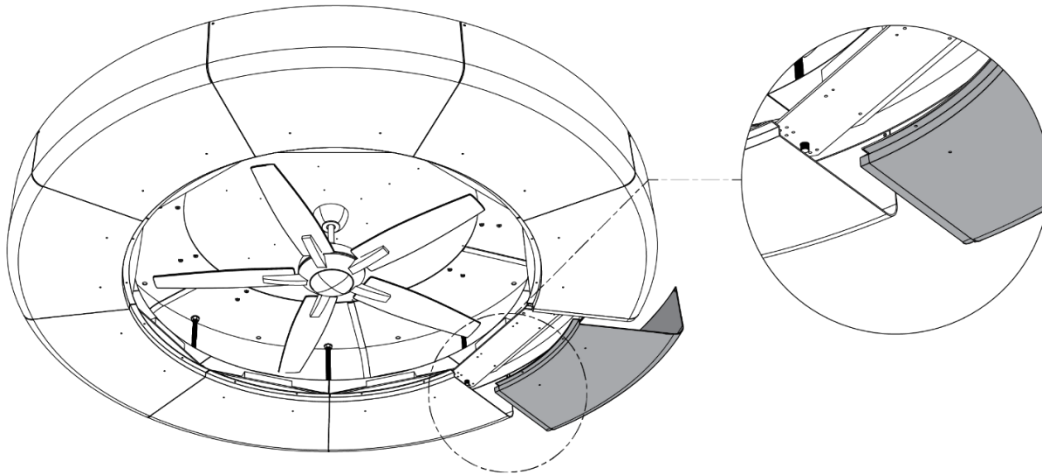
Tools required:

Phillips No. 2 driver

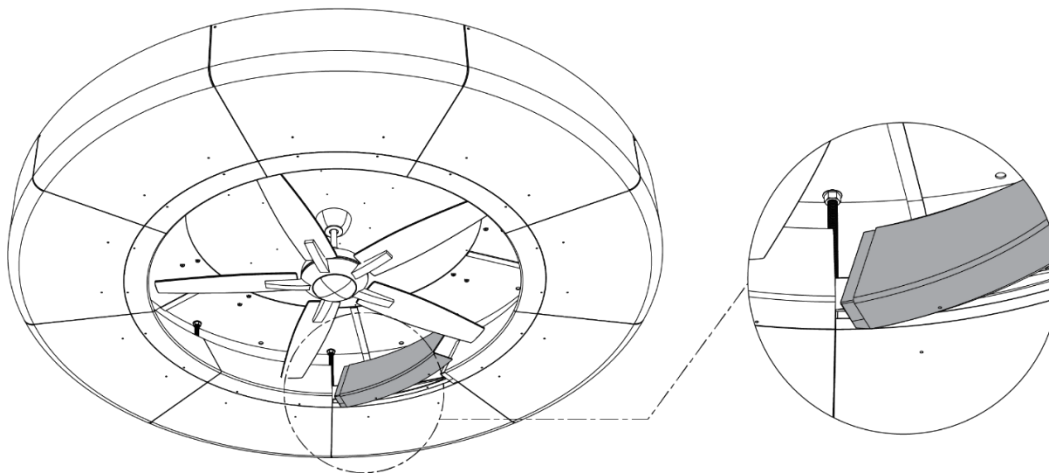
Oil-free gloves

 Use oil-free gloves to handle the cowling





Affix adjacent LC_S2 pieces with one screw mount nut (S2_H2) and one hex head screw (S2_H3).



STEP 13: Pairing the Control System and the Fan

KITs used:

Control System Kit (5RM_CS_KIT)

Tools required:

Phillips No. 2 driver

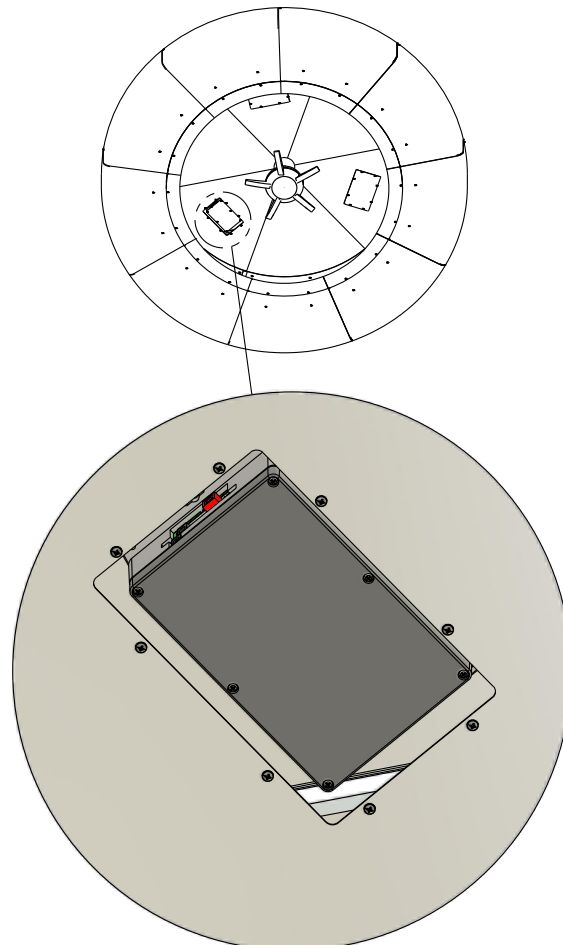
Windows 10 or later PC

Model_5RM_Setup.hex

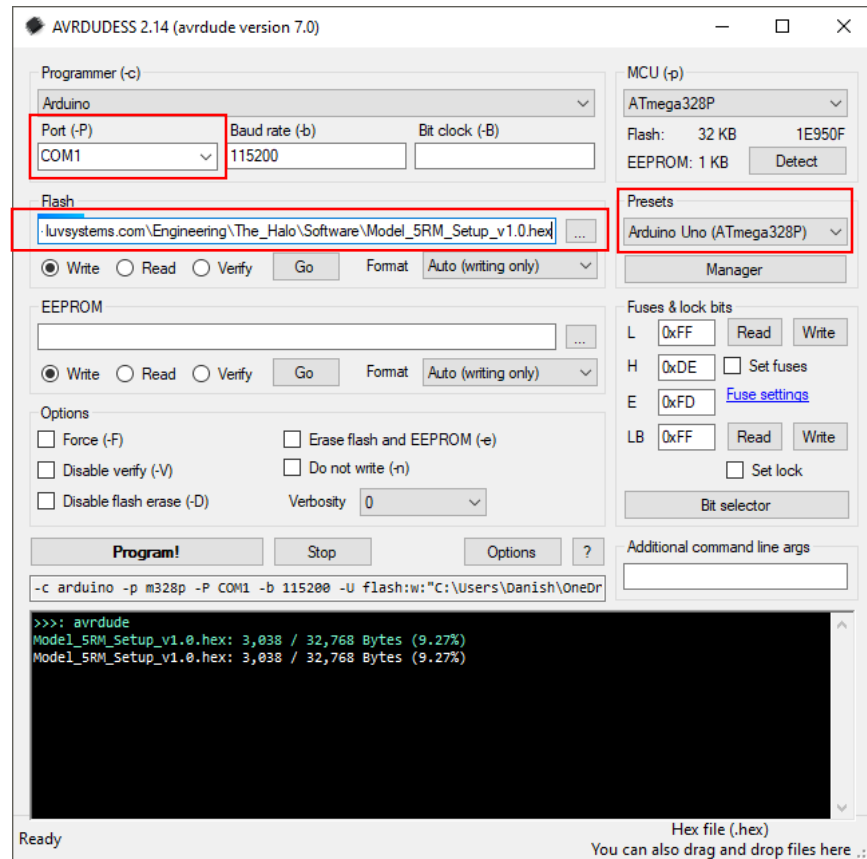
[AVRDUDESS](#) (the source code and link can be retrieved from the [GitHub Repository](#))

 Make sure power to the halo is turned off before accessing the Control Box. Keep the power off unless indicated below.

- a. Turn off power to the halo.
- b. Unscrew the panel to access the Control Box.



- c. Plug in the Type B end of the USB A B cable to the Control Box, and the Type A end into the PC.
- d. Launch the AVRDUDESS programming utility
- e. Select *Arduino Uno (ATmega328P)* from the Presets section, select the *Model_5RM_Setup.hex* file under the *Flash* section, and the correct COM port from the *Port (-P)* pull down menu.



- f. Select *Program!* A successful program will yield a *avrdude.exe done. Thank you.* Message.
- g. Remove the programming cable and ensure nothing is impeding the motion of the fan blades.
- h. Turn on the power to the halo
- i. The Control System will pair with the fan and the fan light will blink twice indicating a successful pairing. Next, the fan will rotate in one direction for 60s before reversing and rotating in the other direction for 60s. When the direction of rotation matches the upflow mode, turn off the power.

STEP 14: Programming the 5RM Firmware

KITs used:

Control System Kit (5RM_CS_KIT)

Tools required:

Phillips No. 2 driver

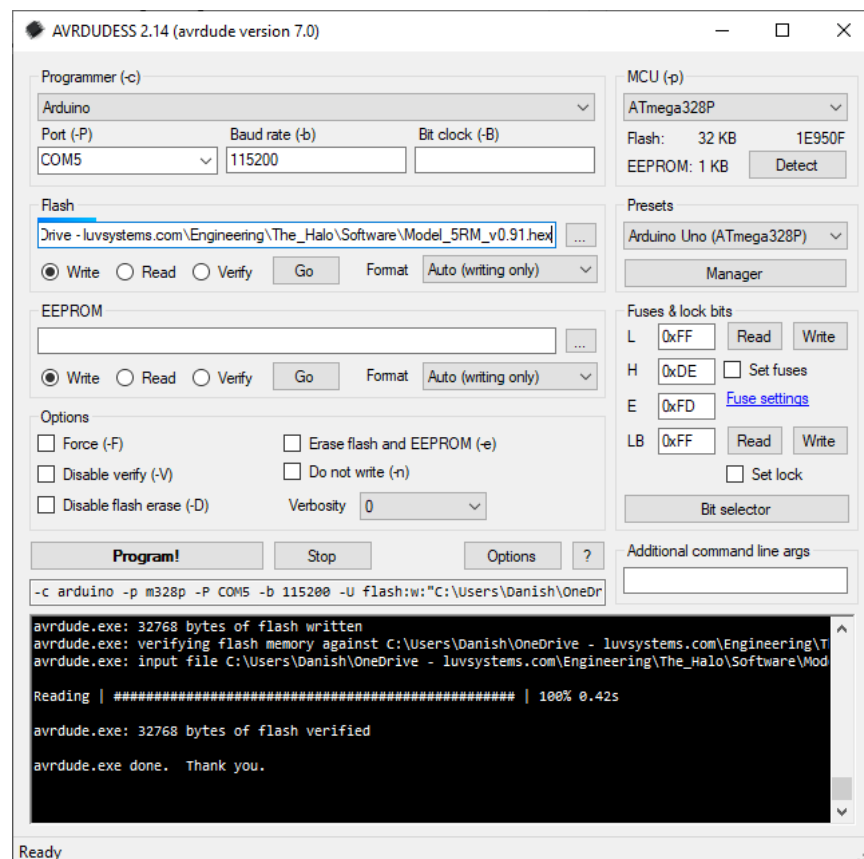
Windows 10 or later PC

Model_5RM.hex

[AVRDUDESS](#) (the source code and link can be retrieved from the [GitHub Repository](#))

 Make sure power to the halo is turned off before accessing the Control Box. Keep the power off unless indicated below.

- a. Turn off power to the halo.
- b. Plug in the Type B end of the USB A B cable to the Control Box, and the Type A end into the PC.
- c. Launch the AVRDUDESS programming utility



- d. Select *Arduino Uno (ATmega328P)* from the Presets section, select the *Model_5RM.hex* file under the *Flash* section, and the correct COM port from the *Port (-P)* pull down menu.
- e. Select *Program!* A successful program will yield a *avrdude.exe done. Thank you.* Message.
- f. Remove the programming cable and ensure nothing is impeding the motion of the fan blades.
- g. Replace the panel.



Before turning on the power, make sure the entire Cowling is in place and the halo is elevated to its final position with no one working on the unit.

- h. Turn on the power to the halo
- i. The halo is now operational.
- j. If there is a fault such as a missing or improperly fitted bulb, the fan lamp will pulse on every 5 seconds. Turn off the unit and call an authorized repair technician.