

Wave Glider

Unpacking and Assembly

Version 1.40

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LIQUID ROBOTICS, INC.
1329 MOFFETT PARK DR.
SUNNYVALE, CA 94089
(650) 493-6300

LRI Part Number: 030-01497

Before Starting

Safety

- **The paint on the Float and Glider is toxic!**
- Use gloves when touching any painted surface
- Use safety glasses at all times

People Required

- Unpacking and assembly requires at least two people
- Use three people if possible

Space Required

- A minimum 5 x 5 meter (16' x 16') area is needed

Unpack and Assembly Time

- If doing this for the first time, allow at least three hours

Location

- Recommend that unpack and assembly be done on-shore

Torque Values

- Use a torque screwdriver for all fasteners
- 4mm Screws: **3 NM** (26 in-lbs)
(Used for wing attach)
- 5mm Screws: **4 NM** (35 in-lbs)
(Used for Tail Fin attach)
(Used on Float top)

Shipping Crate Contents

Wave Glider Shipping Crates

- The Wave Glider is usually shipped in 3 Crates
- The type of crate is stenciled on the outside
- Open in the order specified below

Parts Crate

- Unpack/Assembly Guide
- User Manual
- Tool & Spares Box
- Payload Foam Block
- Glider Frame Blocks (2)
- Launch Stand Parts
- Launch Saddle
- Launch Straps



Glider Crate

- Glider Frame
- Attached Umbilical
- Glider Wings



Float Crate

- Float
- Tail Fin



The Parts Crate

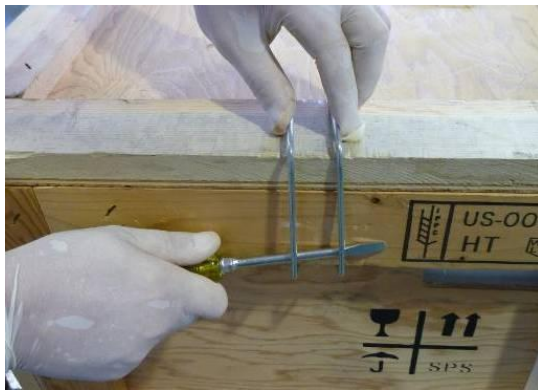
Parts Crate Clips

- The Parts Crate lid is held on with clips around the top
- Save the clips for possible re-packing later

Removing the Crate Lid

Tools: Large flat-head screwdriver or claw hammer

- ☐ Pry clips off with the screwdriver or hammer



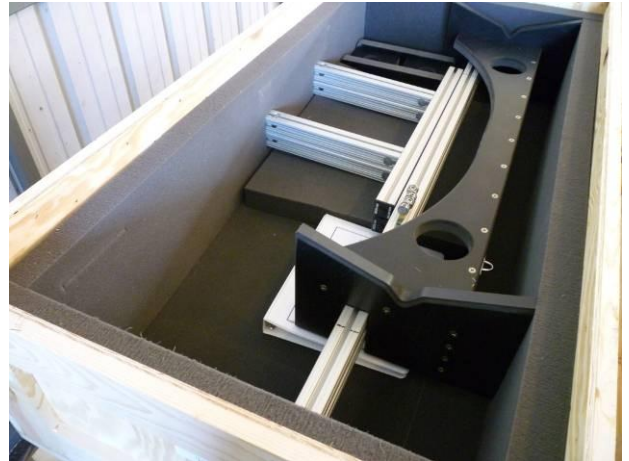
- ☐ Lift up the lid and place it aside
- ☐ Remove and save the top foam piece

- The Parts Crate contents should look like this →



The Parts Crate

- Remove the following:
 - ☐ The Orange Box
 - ☐ The thin black foam sheet
 - ☐ The large blue foam block
- You may need the foam pieces
Do not discard them
- The box should now look like →



- Check for the following (no need to remove yet):
 - ☐ Launch Saddle
 - ☐ Unpack and Assembly Manual
 - ☐ User Manual
 - ☐ Glider Frame Blocks (2)
 - ☐ Launch Stand Parts (4 pieces)

Parts & Tool Box:

- ☐ Locate the Orange Box
- It contains both spare parts and tools (see next page)



- ☐ Open using the black clasp on the left side

Parts & Tool Box

Spares Bag:

- The Spares Bag is on the top tray of the Box
- The plastic bag contains a list of the contents

- ☐ Open bag and remove list
- ☐ Check the bag's contents against the list

- ☐ Lift out the top tray



Supplied Tools:

- At the bottom of the box are tools and supplies
- A list of the contents is included
- ☐ Check the contents against the list



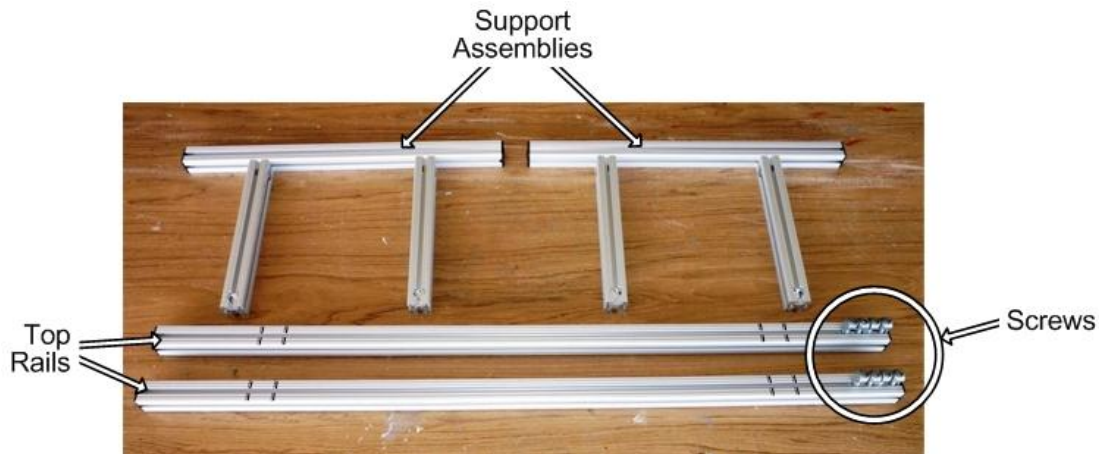
Optional Tools:

- Some tools are not supplied, but are strongly recommended:
- ☐ Torque screwdriver, 4 NM (35 in-lbs) capacity
- ☐ Phillips #2 screwdriver bit
- ☐ Hex 4 mm screwdriver bit

Assembling Launch Stand

Stand Parts

- Two Support Assemblies
- Two Top Rails with 4 screws each



Assembly Prep

Tools: 6 mm T-handle hex wrench

- ☐ Loosen the 4 screws on each Top Rail, so they can slide back and forth
- ☐ Move screws apart, on each side of the black marked lines



Assembling Launch Stand

Assembling Supports to Rails

- ☐ Spread the top rails apart
- ☐ Place supports on top of rails between the marked lines
- If there are no marks, position the supports 6" from the rail ends



- ☐ Slide the screws into the notches on each side of the legs
- You may have to loosen some screws to slide them in



- Do not tighten the screws yet

Assembling Launch Stand

- ☐ Position the support assembly legs between the black lines



- ☐ Hold in the screws with your fingers, and tighten



- ☐ Recheck that all 8 screws are tight



Assembling Launch Stand

Checking Stand

- ☐ Place the stand on the floor and check that it does not wobble
- If it wobbles, re-tighten screws



Stand Location

- For on-shore Wave Glider assembly, place stand on a movable cart
- For on-ship assembly, place stand at the launch location

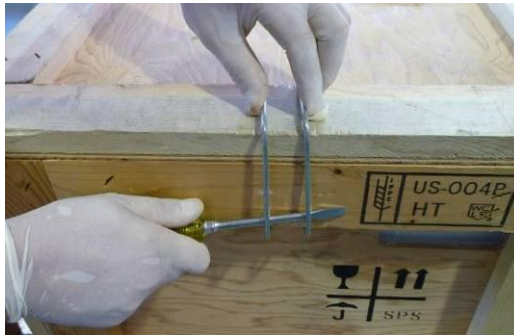


Opening the Glider Crate

Removing the Glider Crate Lid

Tools: Large flat-head screwdriver or claw hammer

- ☐ Pry clips off with the screwdriver or hammer



➤ Save the clips

- ☐ Lift off the crate lid



➤ **Do Not Remove the Glider Yet!**

- ☐ Read the "Attention Note"
- ☐ Remove the Glider wings and place them aside



Removing the Glider

Removing Shipping Screw

Tools: Phillips #2 screwdriver

- Shipping Screw is underneath the wrapped Umbilical
- ☐ Use the screwdriver to remove Shipping Screw and nylon washer



Glider Frame Blocks

- 2 Blocks packed in Parts Crate
- ☐ Place on floor or table with 1 m (3 foot) clearance on each side



Removing the Glider

Mounting Glider Frame on Blocks

➤ **This requires two people**

- Remove Glider Frame from the Crate
- ☐ Mount Glider Frame on the blocks
- ☐ Adjust block positions toward front and back of frame



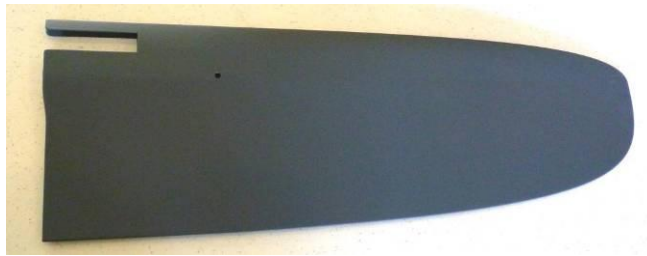
- Do not remove the rubber bands on the rods yet
- Do not remove the screws yet



Attaching Glider Wings

Checking the Wings

- 12 wings packed in the Glider Crate
- All wings have a curved notch at the mounting end



- 2 wings have a slightly larger notch

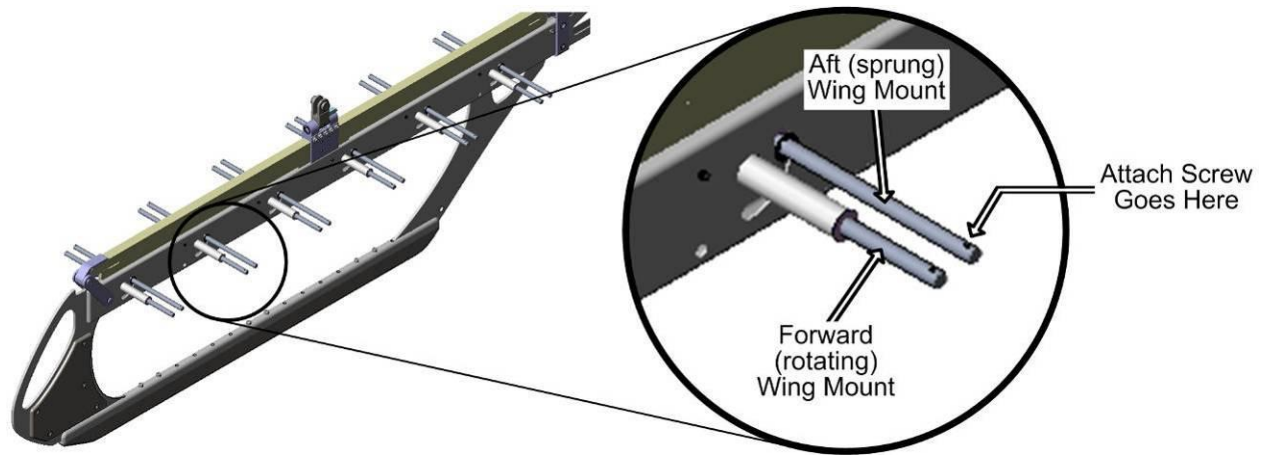


- ☐ Locate the 2 notched wings and set them aside



Wing Mounting Detail

- Each wing slides onto 2 rods
- Each wing held on with one screw on the top



Attaching Glider Wings

Putting on First Wing

Tools: Small Phillips screwdriver

- ☐ Remove both rubber bands and screws
- **Hold both shafts on the opposite side**
- ☐ Slide wing on while holding shafts on other side



- ☐ Line up the screw hole with the hole in the wing
- Insert the small screwdriver into screw hole to rotate the shaft
- **Do not use pliers!**



Attaching Glider Wings

Using Loctite

All the screws used during assembly should be prepared with Loctite. Use just enough Loctite to fill between threads on the bottom half. If the Loctite “beads up”, there is too much.

Shown below are the correct and incorrect amounts.



Correct



Too Much



Way Too Much!

Installing Wing Attach Screw

Tools: Phillips #2 screwdriver & Loctite

- ☐ Add Loctite to screw before inserting
- ☐ Install screw using Phillips #2 screwdriver
- ☐ Torque screw to **3 NM** (26 in-lbs)



Attaching Glider Wings

Adding Wing on Other Side

- Hold wing on the opposite side
- ☐ Slide wing on while holding other wing



- ☐ Add screw on top, using Loctite
- ☐ Torque screw to **3 NM** (26 in-lbs)

Checking the Wings

- ☐ Rotate wings full down and up
- Check that they don't bind



Attaching Glider Wings

Attaching Remaining Wings

- ☐ Attach and check second wing pair
- ☐ Attach and check third wing pair (near Umbilical)
- This is the "large-notch" wing pair

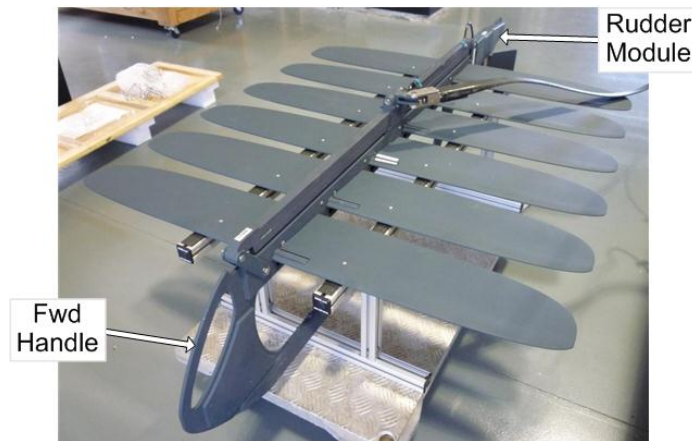


- ☐ Attach and check the fourth wing pair
- ☐ Attach and check the fifth wing pair
- ☐ Attach and check the sixth (aftmost) wing pair

Installing the Saddle

Putting Glider on Launch Stand

- **This requires two people**
- ☐ Move assembled glider onto the Launch Stand
- Lift using the forward handle and the rear rudder module



Mounting Saddle on Glider

- Saddle packed in Parts Crate
- ☐ Move Umbilical to right side of Glider
- ☐ Mount Saddle on Glider
- Metal attach ring should be towards forward end



Float Unpacking and Assembly

Removing the Float Crate Lid

Tools: Large flat-head screwdriver or claw hammer

- ☐ Pry clips off with the screwdriver or hammer claw



- ☐ Lift off the lid and place it aside

Removing the Float

➤ **Two people required (Three people if possible)**

- ☐ Place Glider + Saddle near Float crate
- ☐ Remove any items on top of the Float
- ☐ Lift Float out by the two end handles



Float Unpacking and Assembly

Placing Float on Glider

- **Be careful not to damage the Tail Fin mounting flange**
- Place the float in the groove on the Saddle
- Make sure the Float is facing forward (Lift Ring forward)



- The Float and Glider noses should be about even with each other

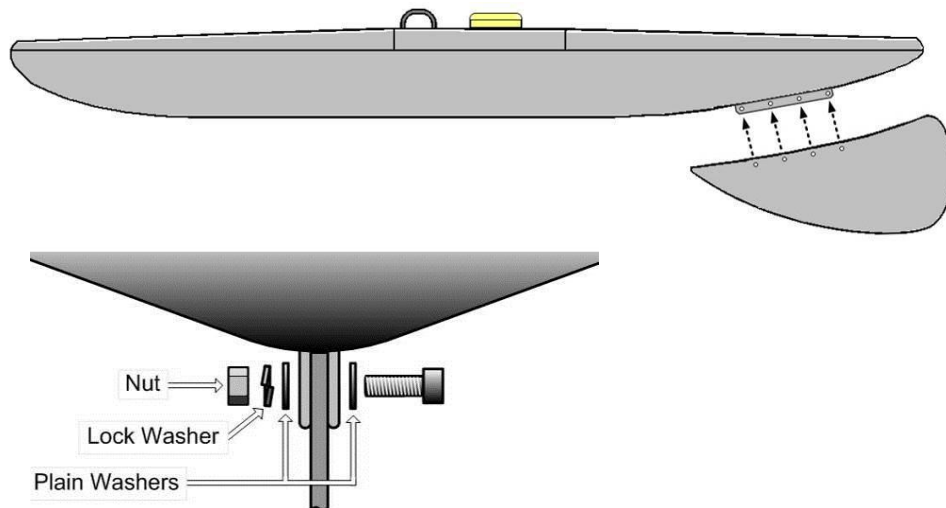


Float Unpacking and Assembly

Tail Fin Assembly

Tools: 4 mm hex T-handle; 8 mm open-end wrench; Loctite

- Tail Fin slides into slot in rear flange
- Uses hex-head screw, a nut and 3 washers in each of four holes



- Attach hardware is stored in the flange holes

Attaching Tail Fin

- ☐ Remove attach hardware from flange
- ☐ Insert Tail Fin into flange
- ☐ Line up screw holes
- ☐ Insert 4 screws with washers
- ☐ Add Loctite to screw threads
- ☐ Add plain washer, lock washer, and nut onto each screw
- ☐ Torque screws to **4.0 NM** (35 in-lb)

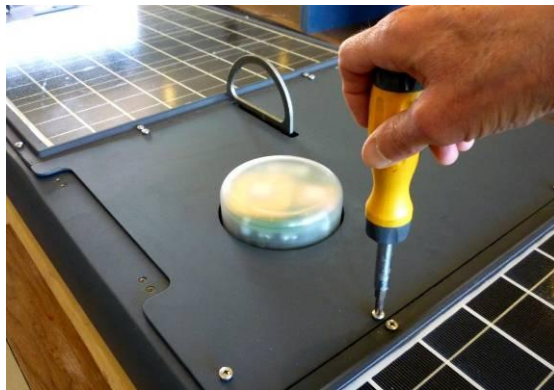


Attaching Umbilical to Float

Removing the Turtledeck

Tools: Phillips #2 screwdriver

- ☐ Remove the six screws



- **Do Not remove any connectors**
- **Do not connect any loose connectors yet**

Locating the Line Terminator

- The "Line Terminator" is used to attach the Umbilical to the Float



Attaching Umbilical to Float

Line Terminator Operation

- When the Umbilical Fitting is not connected to the Float, the metal disk sticks above the black plastic base

Metal Disk



- To connect the Umbilical to the Float, the metal disk has to be raised even higher



- Once the Umbilical Fitting has been connected, the metal disk is flush with the base



Attaching Umbilical to Float

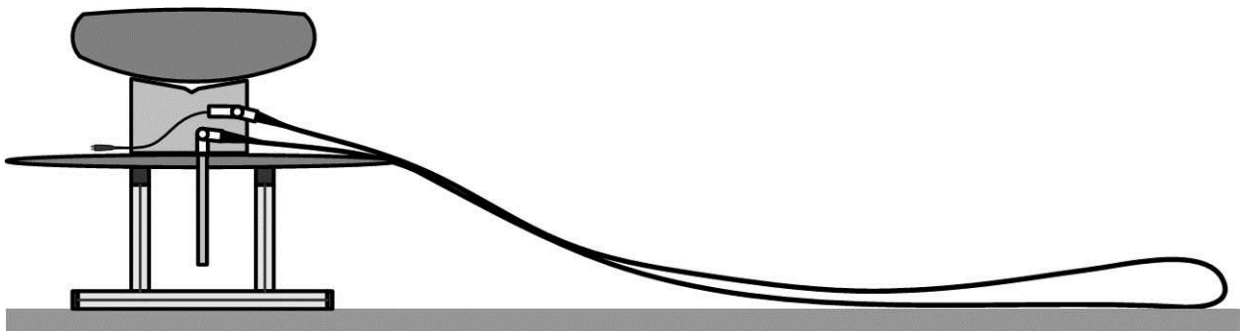
The Float Attach Fitting

- ☐ Unwrap the Umbilical and check the Umbilical-to-Float Attach Fitting
- The fitting connects with the Black plastic cover facing aft



Preparing the Umbilical

- ☐ Unwrap the Umbilical and pull it out to its full length
- ☐ Rotate the Umbilical as necessary to remove any twist
- ☐ Bring the fitting to just underneath the Float



Attaching Umbilical to Float

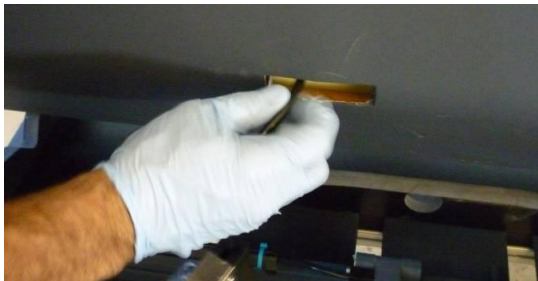
Feeding Through the Cable

➤ **Requires 2 people** (3 people preferred)

- ☐ Rotate the Float in the saddle to access the Umbilical attach hole



- ☐ Feed in the Umbilical electrical cable in from the bottom



- ☐ Pull through the cable on the top side



Attaching Umbilical to Float

Connecting the Fitting

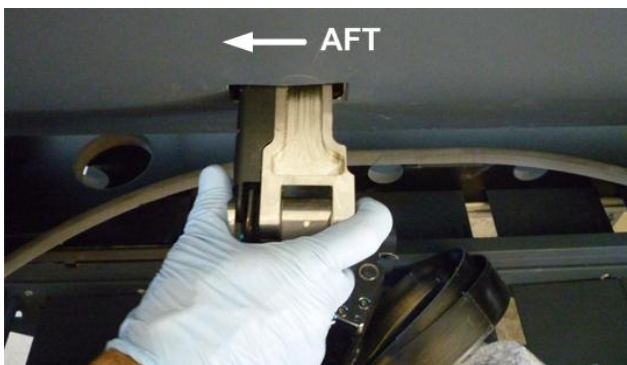
- **Requires 2 people** (one at top of Float, one underneath)

Tools: Large Flat-Head Screwdriver; Mallet

- Person above opens the Line Terminator latch by prying upward with a flat-head screwdriver



- The person under the Float inserts the fitting into the Float attach hole
- Black plastic part of fitting must be aft

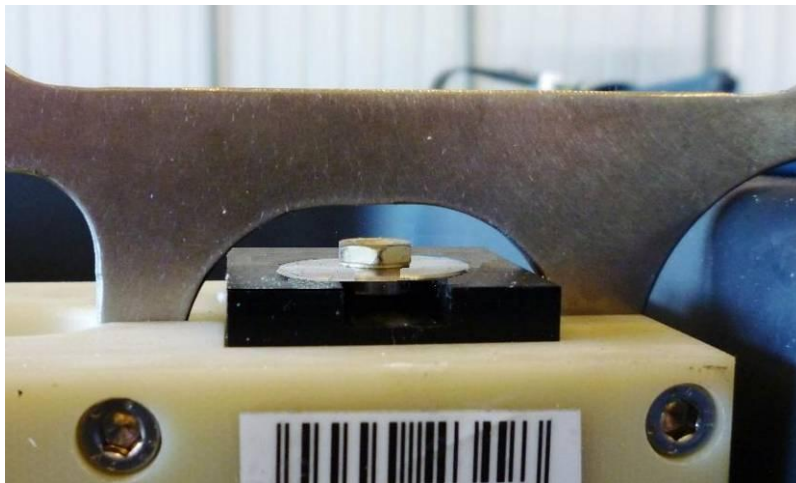


Attaching Umbilical to Float

- ☐ Lock the fitting into place
- This will require hitting the bottom of the fitting with the mallet



- The metal disk should now be flush with the black plastic base



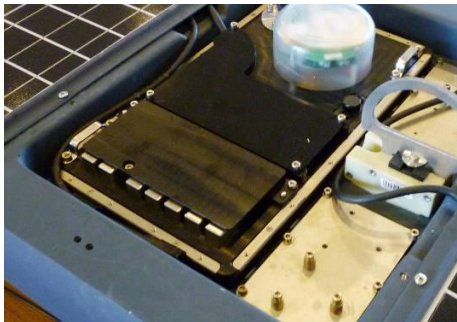
- ☐ Pull down firmly on the Umbilical attachment to confirm that it is locked in place

Closing the C&C Drybox

Connecting Umbilical Cable

Tools: 4 mm hex Wrench; Connector lube

- Cable covers are on top of the C&C drybox
- ☐ Remove both covers with hex wrench



- ☐ Lube the cable pins on the Umbilical connector
- ☐ Attach the Umbilical cable on the top of the C&C Drybox



- The connector is labeled "Umbilical"

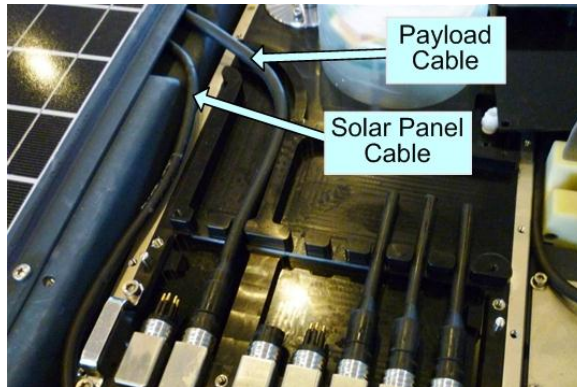
- ☐ Check that dummy plugs are on all unused connectors



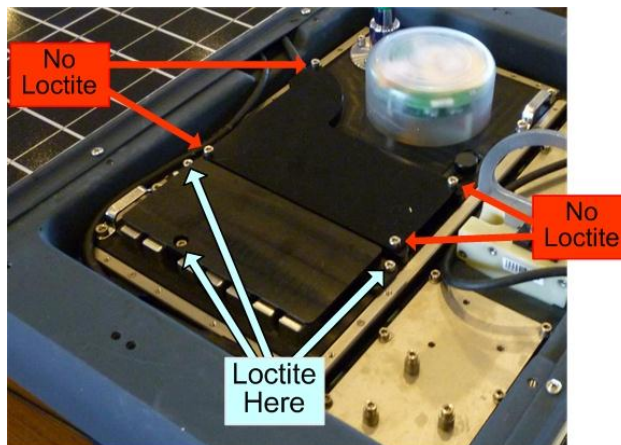
- The Umbilical cable connects to the pinless connector
- The two connectors showing pins are for the Solar Panel cables

Closing the C&C Drybox

- Make sure that the Solar Panel cables don't cross over the Payload cables



- Re-install the machined metal cover with 3 screws
- Use Loctite on the screws

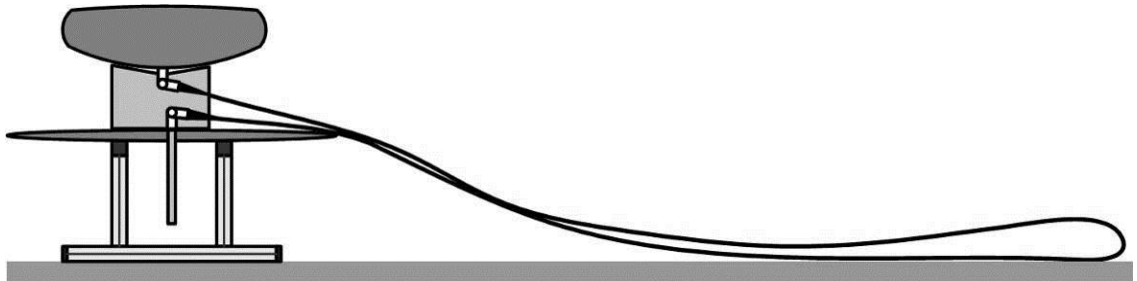


- Re-install the flat plastic cover with 4 screws
- **Do not use Loctite on these screws**

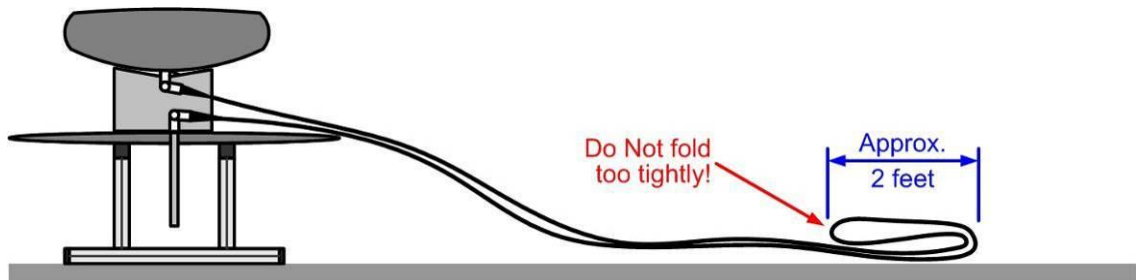
Stowing the Umbilical

Folding the Umbilical

- Extend the Umbilical out to its full length
- Make sure that it is not twisted



- Start folding back the outer two feet



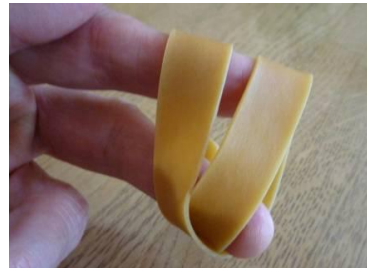
- Continue rolling up the Umbilical



Stowing the Umbilical

Adding Rubber Band

- A large rubber band is in the Parts Crate
- ☐ Double-over the band



- ☐ Wrap the doubled rubber band around the Umbilical



- Don't wrap the rubber band around the Umbilical more than twice

Stowing the Umbilical

- ☐ Place the banded Umbilical on top of wings



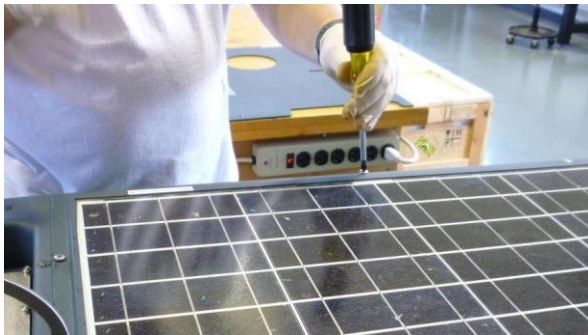
Payload Drybox Installation

- This section only applicable if installing a Payload drybox

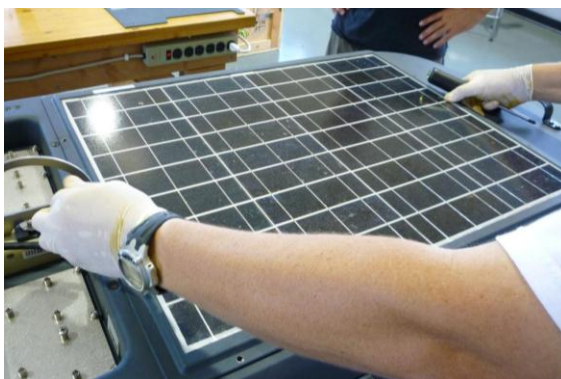
Removing a Solar Panel

Tools: Phillips #2 screwdriver

- **Caution: Bending or forcing a solar panel can damage it**
- ☐ Unplug the solar panel cable from the C&C drybox (if necessary)
- ☐ Remove all the hold-down screws from the solar panel



- ☐ Check that all screws have been removed
- ☐ Lift out the Solar Panel
- Slide out from under lifting eye if necessary
- **If panel does not lift easily, re-check that all screws were removed**



Payload Drybox Installation

Removing Foam

- If there is no payload drybox, you will see two pieces of dark gray foam



- ☐ Remove the larger piece – It is no longer needed
- Leave the smaller piece in place



- ☐ Lift out the block of Blue foam

Payload Drybox Installation

Installing Payload Box

Tools: 4 mm hex Wrench

- ☐ Check that there are no loose parts in the payload bay
- ☐ Place the payload box in the bay
- The payload must rest on the outer flanges
(if not, remove payload and check for an object in the bay)



- ☐ Install 4 payload hold-down screws, hand tight.
- ☐ Torque screws to **4.0 NM** (35 in-lb)
- **DO NOT re-install the large gray foam piece removed earlier**

Re-Installing a Solar Panel

Tools: Phillips #2 screwdriver

- **Do not screw down panel unless all edges are flush with the Float top**



- ☐ Install screws on top of solar panel
- ☐ Torque screws to **3 NM** (26 in-lbs)

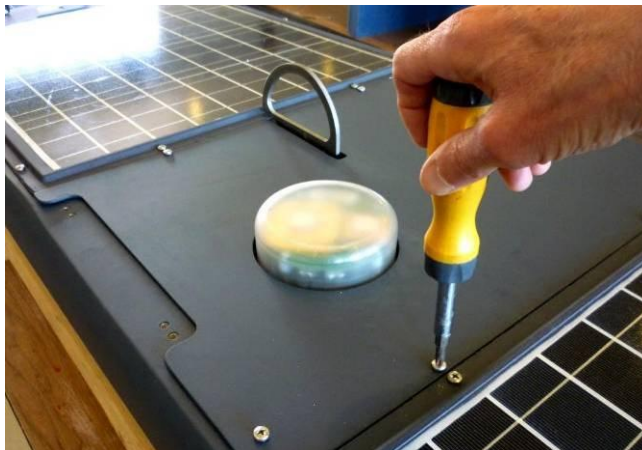
Completing Assembly

Final Checking

- Check the Following:
 - ☐ The Umbilical and Payload connectors are tight
 - ☐ Check that the Solar Panel cables can be connected
 - **Do not connect the Solar Panel cables yet**
 - ☐ Check for no loose screws, tools, etc., in the center bay

Temporarily Re-Installing Turtledeck

- ☐ Add the Turtledeck cover and all hold-down screws
 - You will need to remove the Turtledeck later, thus ...
- Do not tighten the screws down all the way



Installing the AIS Antenna

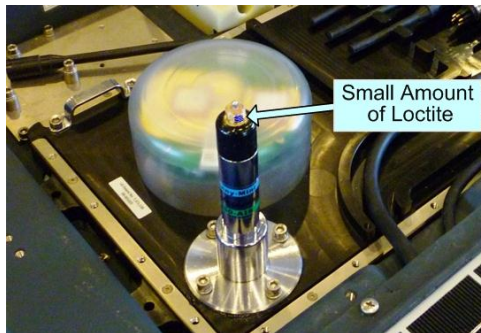
➤ These instructions only applicable if the AIS package is installed

Tools: 12 mm box end wrench ➤ **Do not use an open-end wrench**

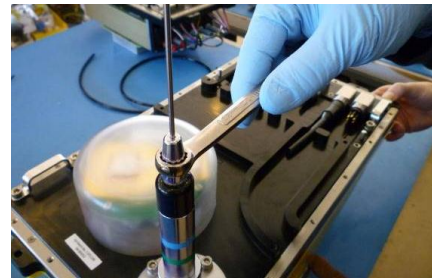
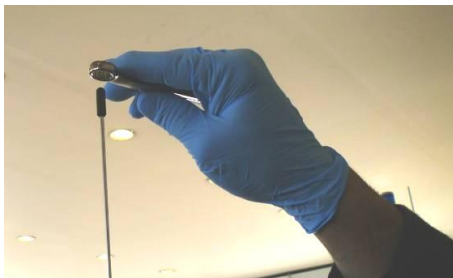
- ☐ Remove the antenna from the cardboard tube



- ☐ Apply a small amount of Loctite to the side threads of the base



- ☐ Hand screw on the antenna
- Be careful not to damage the threads
- ☐ Bring the box-end wrench down from the top



- ☐ Tighten until snug – Do not over-tighten