

The background of the page is a photograph of a Scanstrut self-leveling backstay radar mount installed on a boat. The mount is a cylindrical device with a white top and a silver body, mounted on a stainless steel backstay. The Scanstrut logo is visible on the side of the device. The boat's white hull and blue sky are also visible.

**SCANSTRUT**  
INSTALLATION SOLUTIONS FOR MARINE ELECTRONICS™

# Scanstrut Self-Leveling Backstay Radar Mount

## Installation Description

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## Scanstrut Self-Leveling Backstay Radar Mount System An Installation Description

If you are about to install your Scanstrut Backstay Self-Leveling Radar Mount you should congratulate yourself. You have purchased the finest backstay radar mounting system on the market today. Look it over carefully. You should be very impressed by the quality of the engineering and workmanship that goes into these fine systems. Nothing else on the market even comes close. The system is lightweight, extremely durable, and will provide many years of maintenance free service.

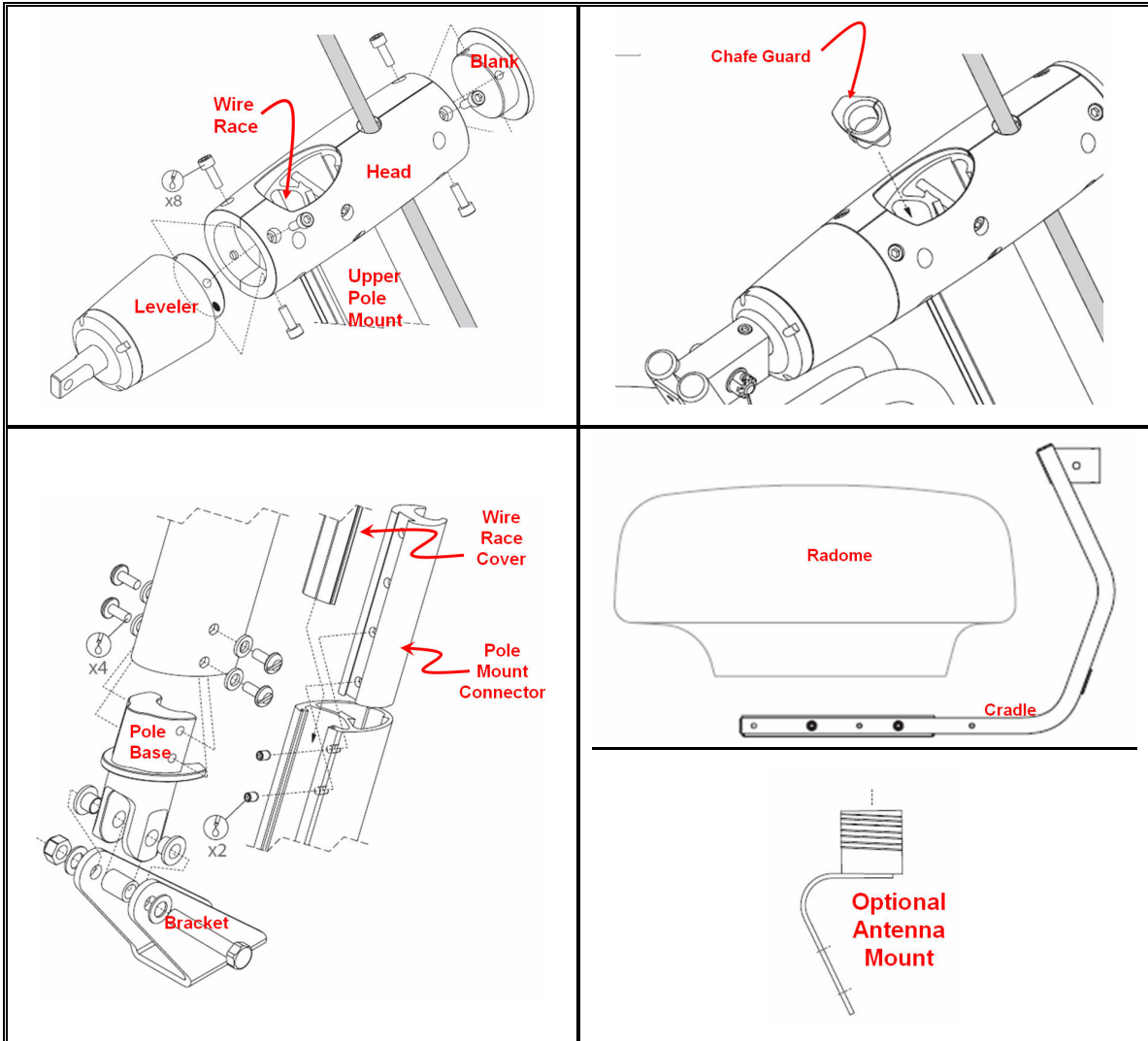
The installation diagram that ships with the Scanstrut Self-Leveling Backstay Radar Mount gives excellent graphics and exploded views of the unit but provides nothing in the way of installation procedure narrative. If you were to follow the numbered graphic panels as an installation procedure the process would end up being much more difficult than necessary. You would have installed the entire radar mounting system but not the radome Cradle or radome which is not installed until step 11 of 13 steps. That means that the Head unit could be some 9 feet or so overhead and hanging off the backstay. Getting up to the top of the backstay mount with the radome and cradle is entirely too difficult. I devised another procedure that works out much better.

The reality is that the installation is quite straightforward and, with a bit of planning, can be accomplished by a single person, with moderate Do-It-Yourselfer skills, in a single day.

These instructions rely on, and refer to, the numbered graphic panels in the *Scanstrut Backstay Self-Leveling Mount Installation Instructions* so keep them handy throughout the installation process.

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## Nomenclature



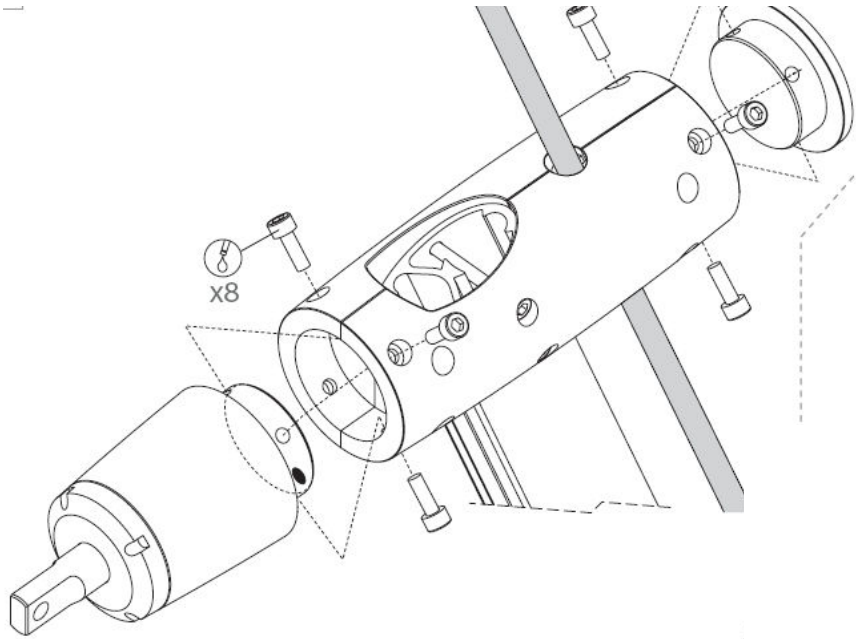
## **PREINSTALLATION PREPARATION:**

Like any other multi-step procedure it is important that you have all the necessary parts and tools collected before you begin. This preparation step can be done at home, in your spare time, prior to getting everything to the boat.

1. *Inventory:* Go through the parts list for your Scanstrut and ensure that all the parts have been shipped with the unit. I have never seen any parts shorted but accidents can happen.
2. *Additional Machine Screws Needed:* Keep in mind that the machine screws which hold the Chainplate Adapter (hereinafter referred to as the Bracket) to the deck or backstay chainplate are not included. Americans will need two 5/16" machine screws of the appropriate length for your installation along with 1 1/4" fender washers and nylock nuts.
3. *Installing the Bracket on the Chainplate:* If you are installing the Bracket on the backstay chainplate you will need to either drill and tap the chainplate or throughbolt the Bracket to the chainplate. Either way this is a very difficult job on average sized cruisers. The job, to be done right, really requires the chainplate be removed from the boat and taken to a machine shop. Making these holes requires a Cobalt bit, a drill press, the proper feed rate (very slow) and lots of cutting oil. For this reason, whenever possible, I attach the Bracket to the deck and the Bracket assembly provides great flexibility for doing this. Naturally, this places the strut forward of the backstay which has no impact on whether the radome mounts forward or aft of the backstay.
4. *Nylon Backstay Bushing:* The Nylon Backstay Bushing shown in Panel #4 is not shown in the parts list depiction. There should be 4 bushings sized 7mm, 8mm, 10mm, and 12mm packaged with the system.
5. *Familiarization:* It is probably a good idea to pre assemble the Head unit at home to familiarize yourself with the procedure. This assembly only requires the 5mm hex wrench.

The Head unit assembly consists of 4 parts: the two halves of the Head unit along with a "Blank" and a "Leveler" unit. The Blank and Leveler unit are installed into the ends of the Head unit as depicted in panel #8 of the Installation Instructions (also see Figure 1).

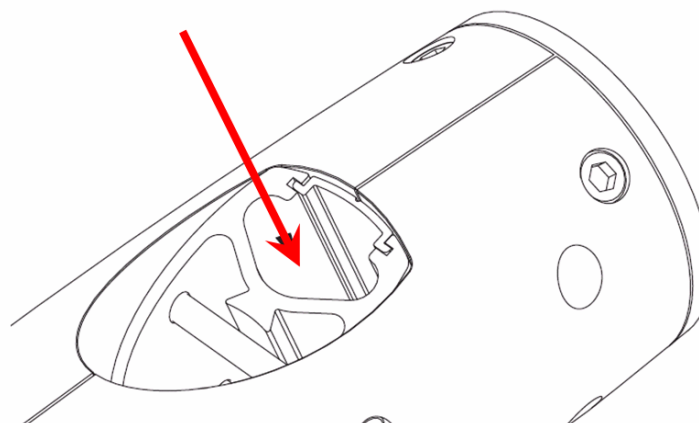
Do not use any thread lock fluid (Loctite) at this point. You are just staging the assembly for permanent installation at a later time. You will be taking it apart again very soon.



**Figure 1: Head Assembly**

I like to preinstall the cap screws into the Blank and Leveler while I am doing the parts inventory so I don't have to search for them when I get ready to do the actual assembly.

6. Optional Antenna Mount: If you are adding an antenna (GPS/VHF/etc.) be sure to have the antenna pre-assembled and ready to install on the optional mount. Permanently install the antenna mount onto the Cradle at this time.
7. Cable Fit: At this point it doesn't hurt to figure out if the cables will pass through the Head assembly and down the cable race of the Pole Mount (see Figure 2).



**Figure 2: Cable Entry**

If you have a large, permanent connector on the end of the radome cable it may not fit. If the cable will not fit, contact the manufacturer of the device the cable is attached to and find out how best to cut and reconnect the cable to eliminate interference creeping in at the splice.

There is an alternative installation method that can keep you from having to cut off a connector but it is a bit cumbersome. I will attempt to describe it later in NOTE 3.

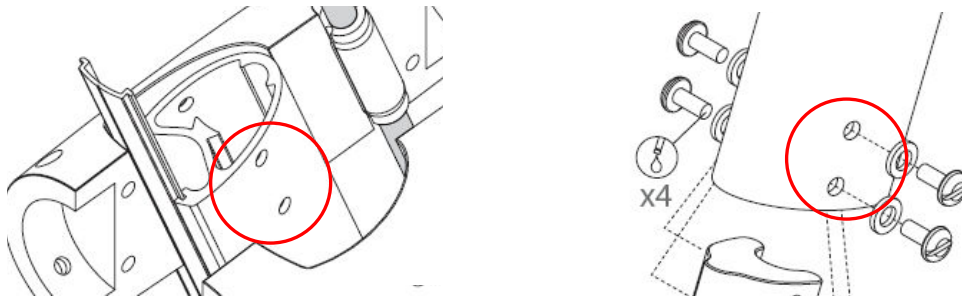
8. Radome Cradle: At this point you can preassemble the radome cradle. Simply follow the diagram in panel #9 but don't tighten down the platform yet. Once the Cradle is loosely assembled set the radome in place and attach it, loosely, to the Cradle platform. Position the cradle platform properly, mark the position on the Cradle, remove the radome, and tighten the platform in the marked position.

### **DRY FITTING ONSITE:**

This is a very important first step and will ensure that all the parts fit properly in the location you intend to install them. This step is done on the boat so that you can determine the right nylon bushing to be installed in the Head unit and the proper placement of the Bracket.

Locate the following:

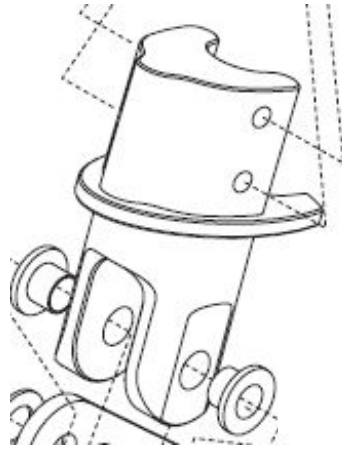
1. Upper Pole Mount: The first thing to do is to figure out which of the mounting pole sections is the upper unit and which is the lower unit. Each of the pole sections has two screw holes at one end (see Figure 3). The pole with the holes spaced closer together is the lower. Naturally, the other pole, the one with the screw holes spaced farther apart, is the upper.



**Figure 3: Upper and Lower Pole Mounts**

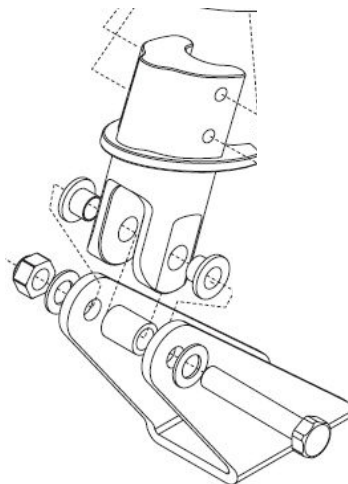
2. Pole Base: Locate the Pole Base shown in Figure 4. The Pole Base is the component that is being assembled in panel #2. Its upper end fits into the Lower Pole Mount and its lower end fits into the Bracket.

Notice that the Pole Base currently being shipped requires only two screws to attach it to the Pole Mount as opposed to four as shown in the diagram.



**Figure 4: Pole Base**

3. Bracket: Locate the Bracket and the M8 X 55 mm bolt and its nut that connects it to the Pole Base (see Figure 5).



**Figure 5: Bracket aka Chain Plate Adapter**

4. Nylon Bushings: Locate the few different sized nylon bushings that were shipped with the unit. As noted earlier they are not shown in the parts list depiction but are clearly depicted in panels #4 and #5.
5. Screws: Locate the two M6 X 50 mm screws that pass through the Head unit at the opening where the pole fits into the Head. Also locate 2 of the 4 M6 X 16 mm screws. (May as well locate all 4 but we are only using 2 right now.)

Dry Fit Assembly Procedure: (*do not use Loctite in this phase*)

**NOTE 1:**

The Scanstrut Selfleveling Backstay Radar Mount is an excellently engineered piece of equipment with very close tolerances. If something doesn't fit well, or seems to be jammed, more likely than not, the pieces are not properly aligned. Never use force to get parts together or apart. If everything is lined up properly the system fits together like the proverbial "Swiss Watch".

1. Head Unit Orientation: First you will need to determine which way the Head unit should be installed? The Head unit is extremely versatile and can accommodate all four mounting options. Don't take visual queues from the stick-on name tags as the orientation for your particular installation may have the tags upside down.

**NOTE 2:**

The name tags can be removed and reattached right-side up. Just be sure to peel them off slowly so as not to allow the backing tape to pull off the tag and remain on the Head unit.

2. Connect Pole Base to Bracket: Take the Pole Base and the Bracket and, using the M8 X 55 mm bolt and nylock nut put the pieces together as shown in panel #2. You can omit the washers, spacer and nylon bushing as you will be disassembling this before long. Only hand tighten the nylock nut until the threads of the bolt just start to engage the nylon. The self locking feature of nylock nuts is reduced by repeated installation and removal so just tighten the nut until it snugs up against the nylon.

First orient the Pole Base so it will mate properly with the Pole Mount. Then orient the Bracket so the Pole Base attachment point is canted aft. You may need to turn this around later but start with this orientation first.

Set this assembly aside but keep it handy.

3. Nylon Bushing: Find the right sized Bushing for your backstay wire size. If you don't know the wire size in millimeters just test till you find the one that looks like it fits well.
4. Test the Bushing: The Bushing should fit snug but allow the Head unit to move freely up and down the backstay. Once you think you have found the right sized bushing, temporarily assemble the Head unit onto the back stay to be sure it fits properly. Be aware that the bushing fits into a channel in the Head unit so that it is captive in the Head unit and will not come out if you slid the Head unit up and down the backstay. Be careful to ensure that the Bushing is fitted properly in the Head unit assembly so you don't crush or distort the Bushing when you assemble the Head unit and that the Head unit halves meet cleanly, without a gap, and without being forced. Assemble the Head unit with the two long screws and two short screws. The two short screws should go on the end of the Head unit that is on the other side of the backstay from the end where you installed the long



screws. This ensures that you have even pressure around the backstay. If everything fits properly, you're in business!

5. Upper Pole Mount: Disassemble the Head unit. Leave the Bushing on the backstay. Assemble the Upper Pole Mount into the Head unit and the Head Unit onto the backstay as shown in panel #5. This is going to take some juggling but resist the temptation to merely loosen the two short screws enough to slide the Upper Pole Mount into its channel in the Head unit. You run the risk of damaging the neoprene cushion in the Upper Pole Mount channel of the Head unit. Don't take the chance.
6. Bracket Placement: Now take the Pole Base/Bracket assembly and insert it into the lower end of the Upper Pole Mount. If pieces are not misaligned they will fit together easily. Jiggling is a time tested technique for getting parts with close tolerances to fit together.

Now set the Bracket in an appropriate attachment location on deck. Observe the angular distance between the top and bottom of the Pole Mount and the backstay. The backstay and the Pole Mount want to be as nearly parallel as possible. The distance between the backstay and the Pole Mount should be 1 ¼" all along the length of the Pole Mount. The trick is to find just the right position for the Bracket which will make the Pole Mount and the backstay parallel.

Getting the right position for the Bracket may require that the Bracket be oriented so that it cants forward as opposed to aft. It is sometimes required that some additional mounting area or L-bracket be added onto the deck at the position of the Bracket. This may take some creativity. Keep in mind that the attachment point needs to be fairly strong. In this regard I have seen some very bad work. I have even seen the attachment point badly out of alignment with the centerline of the vessel. This is done just to save the additional thought, time, and effort to make a proper attachment point. Do the right job. Make the attachment point in line with the backstay, on the centerline, and get the backstay and Pole Mount as close to parallel as possible.

Once you have found the proper mounting location mark the location of the holes for the Bracket attachment bolts. Be sure to take a look under the mounting location to ensure that you will not be drilling into anything you don't want drilled into and that you will be able to get to the nuts to tighten them onto the mounting screws.

Now you're ready for some real work.

## INSTALLATION PROCEDURE:

### Phase 1:

1. Disassemble: Now disassemble everything you assembled in the DRY FIT procedure.
2. Install Bracket: Drill 5/16" holes at the marked locations. Clean the screw threads with Acetone. Apply some sealant around the deck holes and to the threads of the screw near the screw head. Attach the Bracket to the deck in the proper orientation (canted forward, aft, up, or down).
3. Connect the Pole Base to the Bracket: Follow the diagram in panel #2 but don't attach the Lower Pole Mount. The nylon Spacer in some cases is a bit too long to fit into the Bracket. Just rub the end on a piece of 80 grit sand paper until it fits. Be sure to keep the end square as best you can.
4. Head Unit Installation: Now install the Head unit with the Upper Pole Mount as you did in the DRY FIT procedure. This time, be sure to apply a drop of Loctite to the threads near the end of each screw.

Now add the Blank and Leveler unit as depicted in panel #8.

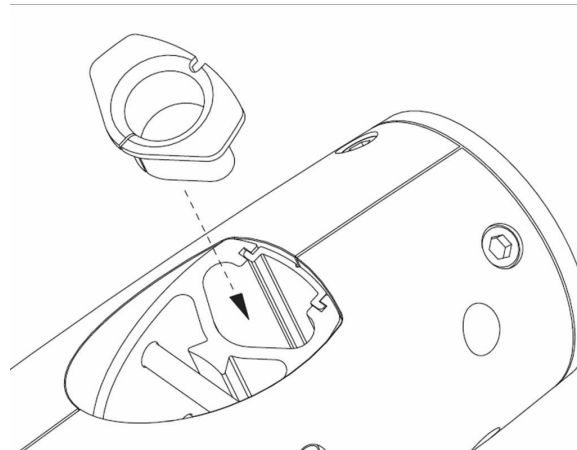
Finally, set the Upper Pole Mount onto the Pole Base and prepare to attach the radome cradle.

5. Attach Radome Cradle: Attach the radome Cradle (sans radome) as depicted in panel #11. Level the cradle with the set screws as shown and don't forget the Loctite.
6. Install Optional Antenna: 'nough said.
7. Install Radome: With the Cradle mounted and level and since you preassembled the platform it should be easy to set the radome onto the platform and bolt it down according to the manufacturers directions. Just make sure the radome is pointing in the right direction.
8. Run Wires: You will have either one or two wires that need to be run through the Head unit and the wire race in the Upper Pole Mount. See picture in Figure 2. First slide in the wire race cover. It will not drop down past the Pole Base. Slide the wires into the race and out the Pole Base. You may need to raise the race cover a few inches to allow the wires to exit the Pole Base. Pull the full length of the wire through the Upper Pole Mount. Be sure to leave sufficient wire at the top of the radome (and optional antenna) to allow the base to swing and not stress or chafe the wires.

**NOTE 3:**

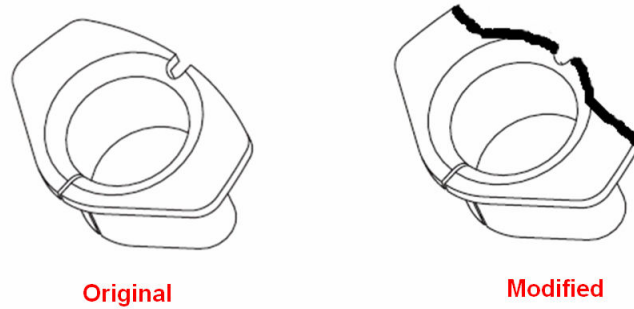
Here is an alternative method in the event you cannot fit a connector through the opening of the wire race channel once the Upper Pole Mount is installed into the Head unit. Assuming it is the radome connector that is too large, have the radome on deck somewhere where it will not get stepped on or knocked over board. Before you assemble the Upper Pole Mount into the Head unit as described in step number 4 above, lay the wire(s) in the wire race of the Upper Pole Mount and slide in the wire race cover. Be sure to have only enough wire in the Pole Mount to allow the connector to protrude from the bottom by maybe a foot or so. Take care not to cause the protruding end of the wire to be abraded or cut by the lower end of the Upper Pole Mount. You might consider some duct tape around the edge to guard against chafe. Then assemble the Head unit onto the Upper Pole Mount and the backstay. The rest of the work will be a little cumbersome because of the wires installed and the radome on deck but it may be better than cutting the connector off and reattaching it. Once you have installed the Cradle and radome, carefully pull the excess wire through the Upper Pole Mount wire race. Proceed as described.

9. Add Chafe Guard: The Chafe Guard is split to allow you to put it around the wires already installed in the wire race.



**Figure 6: Insert Chafe Guard**

The Chafe Guard will need to be modified a bit. The problem is that the Chafe Guard, when properly installed, will not allow the wire race cover to be raised. If you can't raise the wire race cover you will not be able to connect the Lower Pole Mount to the Upper Pole Mount. So, you will need to cut some of the plastic off of the top of the notched edge (not the split edge) of the Chafe Guard. This is crudely depicted in Figure 7.



**Figure 7: Modified Chafe Guard**

This modification can be easily accomplished with a sharp X-Acto type utility knife. If you turn the Chafe Guard over you will be able to follow the proper contour.

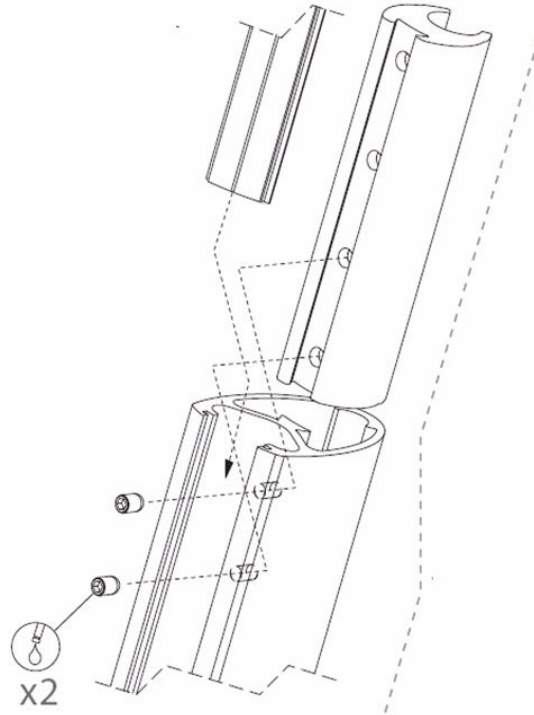
Install the Chafe Guard and ensure that the race cover will slide up and down easily with the Chafe Guard in place.

10. *Final Check:* Check everything. Make sure the wires are secured and run properly through the Upper Pole Mount. You might want to hold the Pole Mount and push the Cradle to each side and observe the wires to ensure they are not stressed. Make sure all screws are installed and tightened. You are about to raise the Upper Pole Mount, Head unit, Cradle, and radome out of reach so you want to make sure that everything is in good order.

Phase 2:

1. Set Up Lower Pole Mount:

- a. Pole Mount Connector: Install the Pole Mount Connector into the Lower Pole Mount as shown in panel #2 and Figure 8.

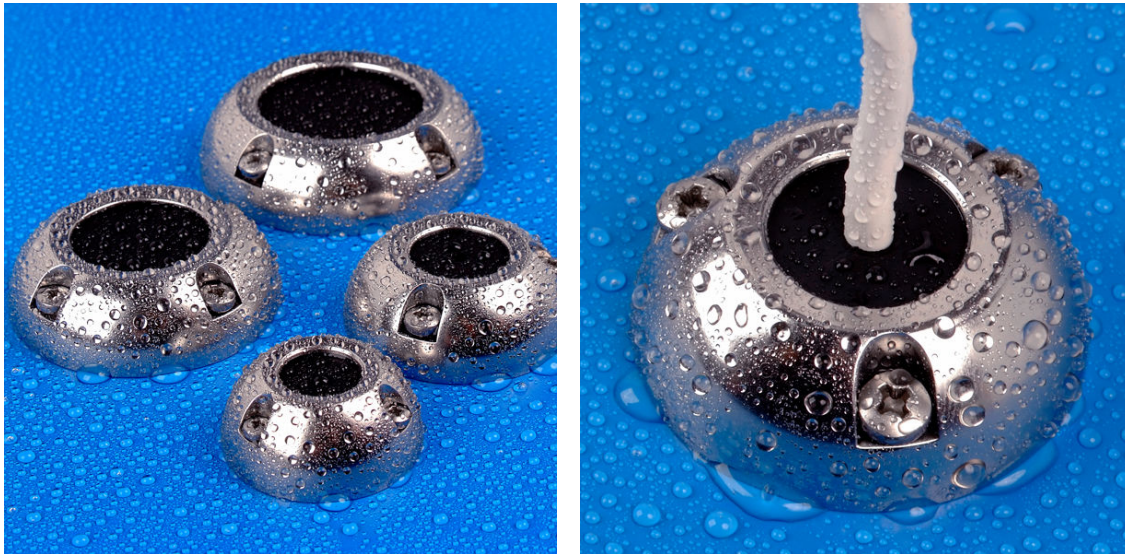


**Figure 8: Pole Mount Connector**

- b. Wire Race Cover: Take the long length of wire exiting the Pole Base and lay it into the wire race of the Lower Pole Mount. You will need to keep a great length of wire (slightly longer than the Pole Mount) running between the Pole Base and the top end of the Lower Pole Mount so that you are able to have the Lower Pole Mount, in an upright position, standing next to the Upper Pole Mount. Now install the wire race cover into the Lower Pole Mount. You may want to use a small piece of Duct Tape to temporarily hold the wire race cover in place.
2. Raise the Upper Pole Mount: The Upper Pole Mount is not attached to the Pole Base so it will be possible to grasp the Upper Pole Mount and, keeping the Pole Mount parallel to the backstay, hoist the entire assembly up the backstay. If you don't get the assembly off-center it should slide up fairly easily. The radome is going to act like a lever and pull the Pole Mount in the direction opposite the radome and Cradle. You will need to secure the Pole Mount so it is not pulled out of alignment. This can be done by taking a light line to both sides of the cockpit and attaching the ends to a winch or a cleat or most anything. There is really not much force being applied here.

3. Install the Lower Pole Mount: With the Upper Pole Mount secured temporarily, place the bottom end of the Lower Pole Mount into the Pole Base and attach it with the appropriate screws. Be careful not to pinch any wires. You will need to lift the Lower Pole Mount into position and pull the excess wire through the Pole Base.
4. Connect the Upper and Lower Pole Mounts: Now you can release the stabilizing lines you added to the Upper Pole Mount and get the Lower Pole Mount into proper alignment. Now slide the Upper Pole Mount down to allow the Pole Mount Connector to slide into its channel in the Upper Pole Mount. While you do this you will have to pull the last bit of wire through the Pole Mount Base. Finally, use the two remaining set screws to attach the Upper Pole Mount to the Pole Mount Connector. Be sure to apply Loctite.
5. Tighten the Pole Mount Base Bolt: It's a wrap! The job is done.

The final step is to wire the radome. I would urge you to use Scanstrut's Deckseals to pass the cable through the deck. They are functional and attractive and will maintain a professional workmanlike appearance.



If there are any questions please feel free to contact me at:

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