

HiTec Electronics Upgrade for Nirvana II & Naked (3/15//08)

4/01/07

What you get

We offer you a tried and true Hitec AM radio system as an upgrade for the Nirvana. This radio system has been used for years with the very popular and competitive fleets throughout North America. These instructions are specifically for the Zebra version radio.

Pictures – All pictures are provided on separate sheets so that you can see all the photos together and easier refer to them.

Locations/Directions – All locations/directions referred to in these instructions will be based on the following: Front or Forward – toward the bow of the boat. Rear or back – toward the stern of the boat. Right – to the right or starboard side of the boat. Left – to the left or port side of the boat.

Installation Instructions

Tools and materials needed: #1 Phillips head screwdriver, X-acto knife, Sanding block, CA or other plastic glue, Drill motor and drill bits (1/16" & 5/32"), Dremel tool with sanding drum & cutting head (optional but very helpful).

Remove Megatech electronics (if installed) - You will be replacing every electrical component in the Nirvana, so start by removing all components from the boat. Keep all servo mounting screws and leave the sail servo arm with the sheets run through the roller.

Modifications - There are five modifications to the compartment that are best done up front.

- 1) **Resize battery Holder cradle (Included in Naked)** – Cut out the battery holder support ribs to allow battery holder to fit further right so new receiver can lie flat along left side. **See Picture #4**
- 2) **Receiver Plug/wire hole (Included in Naked)** – Cut hole in left side platform to allow wires plugged into receiver to go down below the platform. **See Picture # 5**
- 3) **Antenna Hole (Included in Naked)** - Drill a 1/16" antenna exit hole in the rear wall of the compartment in line with the inner edge of cockpit seat edge and approx 1/2" down from the lip of the compartment. **See Picture #6**
- 4) **Sail Servo Arm** – Glue the hub into the bottom of the arm by squirting CA

- glue into seam. It is not necessary to remove the springs
- 5) **Replace steering servo Arm** – See instructions below on modifying a new arm and replacing the one supplied with the boat. **See Picture #**

Step 1 - Battery Holder Support (Included in Naked) – In the picture above, note the receiver (black box) is lying along the left side of the compartment. The battery holder has been moved to the right about 3/4". To know how far to cut the ribs, hold the receiver in place, and the battery holder next to it and mark the ribs on the right side. Then you will be cutting along the bottom to leave the support rib, and up the right to allow the battery holder to fit down into place. This is a difficult job to do if you do not have a Dremel tool with a cutting head. Take your time as this is the most difficult modification.

Step 2 – Receive plug/wire hole (Included in Naked) - On the left side of the forward battery support rib, the rib turns up and is attached to the left platform. That connection of the rib to the platform, and at least half of the vertical part of the rib, must be cut away (including a piece of the left platform). If you place the receiver in position and then lift the inside edge so you can see where the plug hole in the receiver will rest, you will understand what needs to be cut away. Look at the pictures below to understand this modification.

Step 3 – Drill the antenna hole as outlined above. **(Included in Naked)**

Step 4 - Sail Servo Arm modification – Use the sail servo arm as is, except that we recommend that you fuse the spline disk in the bottom of the arm to the outer wall of the arm itself. This will eliminate the affects of the enclosed springs.

If the springs fly out when you open, that is not problem. Leave them out and still fuse the hub into the bottom of the arm.

Step 5 – Steering Servo Arm - there is a black plastic arm mounted on the forward end of the steering rod (inside compartment). You will not use this arm but leave installed until you complete the next step. See Photo #10

Look in the bag of arms that came with the sail servo and find the short black arm that has four holes in the arm. Cut off the arm length to match the length of the arm installed. Using the 5/32" drill bit, drill out the new end hole in the new arm and then dress the end of the arm to make it round and smooth. Noting the way the old arm is mounted, replace it with the new arm.

Install the switch - Take the "on-off" plate off the switch. Install the switch from the bottom with the small pigtail (red fitting) facing right. While holding the switch in place, put the "On-Off" plate on top of the platform with "On" to the left. Install the screws. This is not easy with big fingers. Just be patient, as soon as you get one screw tightened putting in the second is easy. See Photo #11

Install Servos – Follow the following procedure when installing servos.

Remove the horns (arms) from the servos. Note that the screw in the steering servo (red horn) is a coarser thread than the one in the sail servo. It is important that you remember which is which when you come to reinstalling the servo arms later in these instructions (but I will remind you).

Seal the bottom seam and screw heads on the bottom of the two servo bodies with silicone seal (some of us use liquid electrical tape). Let dry and continue. See Photo #12

For the sail servo, use the rubber feet, brass liners, and longer screws to mount. Fitting the rubber feet into the servo mount holes takes some doing, but you will get it. Then insert the brass sleeves. See Photos #13, 14

Use the steering servo screws (came in boat) to install the steering servo **without** brass liners or rubber feet.

To install use the long screws to install the sail servo, the short screws that came in boat to install the steering servo. **Both servos must be installed with the offset spline post to the left. See photo #14**

Note: If any of the sail servo screw holes do not hold the screw tight, put a small piece of string in the screw hole, a little CA cement to hold in place and that will allow the screws to bite.

Do not install the servo arms at this point.

Radio check and Arm adjustment

Install batteries in the battery holder for the boat, plug into the matching red plug coming from the right side of the on-off switch and sit the holder on the table outside and left of the boat. Leave the switch in the "Off" position.

Install the batteries in the transmitter. Note they go in alternating directions.

Change direction shunts - While you have the battery compartment open on the transmitter, you will see two small fins sticking up to the left of the batteries. Pull straight up on one and look at it. You will see that it has a socket for two pins

in the bottom. You will note that where you removed it there are three pins. It was originally plugged down over the left two pins. You want to reinstall it over the right two pins. Do the same with the other shunt. This is how you reverse the direction of the action caused by moving the control sticks. Both need to be changed in this installation.

Hook up Receiver – Do not install the receiver in the boat yet, but do plug in three leads. One lead comes from the left side of the switch and has only two wires. With the black wire to the right as you read the faceplate of the receiver, plug it into the slot marked “Bat”. Take the twisted lead from the sail servo, and plug it into “Ch 2”, again with the black wire to the right. Then take the lead from the steering servo and plug into “Ch 1”, again with the black wire to the right.

Check operation and install servo arms – Turn transmitter ON first, then boat.

Steering Servo adjust and install - Check that the steering servo turns clockwise when you move the right stick on the transmitter to the right. Release the spring-loaded steering lever and center the fine tune slider beneath it.

To the rear end of the steering rod is a black fitting (quadrant arm). Orient it so that is to the right of the rudder tube, and the screw is sticking out the back. Position the quadrant arm directly over the rudder post tube and perpendicular to the fore and aft axis of the boat. Holding it in place, fit the steering servo arm (forward end of the rod) down over the post on the steering servo. See Photo #16

Sail Servo adjust and install - Move the left stick on the transmitter up and down and see that the sail servo works. End with stick all the way down, and the fine tune slider next to it all the way down.

Install the sail servo arm on the sail servo so that the end of the arm is as close to touching the left wall of the compartment as possible. Check the movement of the arm to insure that it clears over the steering servo and does not hit the left wall.

Install fine thread screw with washer in the sail servo arm and tighten. Install the coarse thread screw in the steering servo arm and tighten. I recommend filling the top of the screw heads and the area around them with Vaseline® to protect these mild steel screws from rusting.

Now turn off the boat and then the transmitter and continue.

Install Receiver – First move the battery holder over to the right side of the boat (outside), making sure the wire is not tangled with the wires going to the receiver.

Before installing the receiver, thread the antenna wire through the hole drilled in "Modifications" step above from the inside out.

Now turn receiver upside down with the wire sockets to the left, front. Tuck the majority of the wires under the rear platform to the left of the steering servo, and the rest under the left platform as you lay the receiver flat on the left shelf. **To keep the receiver from moving, install a piece of two sided tape on the bottom left of the receiver**

Install Battery Holder – Move the sail servo arm as far as it will go to the right and forward. Stuff as much of the wire to the holder down under the holder preferably off to the side or between the ribs (not on the ribs. Keep the red plug out in the open. After the holder is in place stuff the plug between the end of the holder and the side of the receiver. It should stay snugly in place to keep it high and dry.

Sheet Shield - I highly recommend the installation of a shield under the sail servo arm and above everything else in the compartment. See photo below of one made from a pliable cutting board (thin plastic sheet). Cut it out so it fits close to the compartment wall all the way around, and cut out so it will slip around the shaft of the sail servo and leaving a place open to turn the switch on and off. Trimming with scissors will allow it to fit firmly in place. This installation will protect the sheets from becoming entangled in the items below, and also baffles any water entry off to the sides. We now sell these shields in our Nirvana store if you don't care to make one yourself. See Photo #19

Sponge Installation – Also highly recommended is a small square of sponge installed to the right of the end of the battery holder under the hole in the right side where the sheets enter the compartment. It will stay in place if cut properly. If you have made a shield above, the sponge should be under the shield.

Antenna Mount – New boats (delivery in 2007) have a bowsie installed on the backstay. Lead the antenna from where it exits the compartment along and under the inner edge of the left brown cockpit seat boards. At the rear end of the board, lead it over to the backstay fitting, through the hole and spiral up the backstay to the bowsie. Simply stick the end of the wire through the free hole in the bowsie, and tie a simple knot in the end. Tension the antenna with the bowsie so it is taught along the backstay.

There are more modifications you may consider if you are going to race your boat. You will find articles and pictures on the Tips & Tricks section of the Nirvana website.

If you have questions on any of the above, please feel free to call Steve at 303-670-4670. It is best you are with your boat when you call. ☺