

# Installing an Audiovox Cruise Control on an FJR1300

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On 03/12/03 Arlen Bloom (aka **Amain**) from the [FJROwners online forum](#) provided the following text and photos describing how he added an [Audiovox](#) cruise control to his FJR1300.

While a throttle lock or palm rest is a sufficient solution to a cramped throttle hand for many, some riders are looking for the ultimate solution that also adds the luxurious comfort of an automotive cruise control. Audiovox offers an affordable product that fits the bill nicely. It is way less than impossible to install and the end result has put mile-wide grins on the faces of many riders willing to invest a little time. The pictures and commentary here will make this a weekend project for you that will have you cruising down the road with your right hand in your pocket and you will wonder why you waited so long to make this modification. So let's get started!

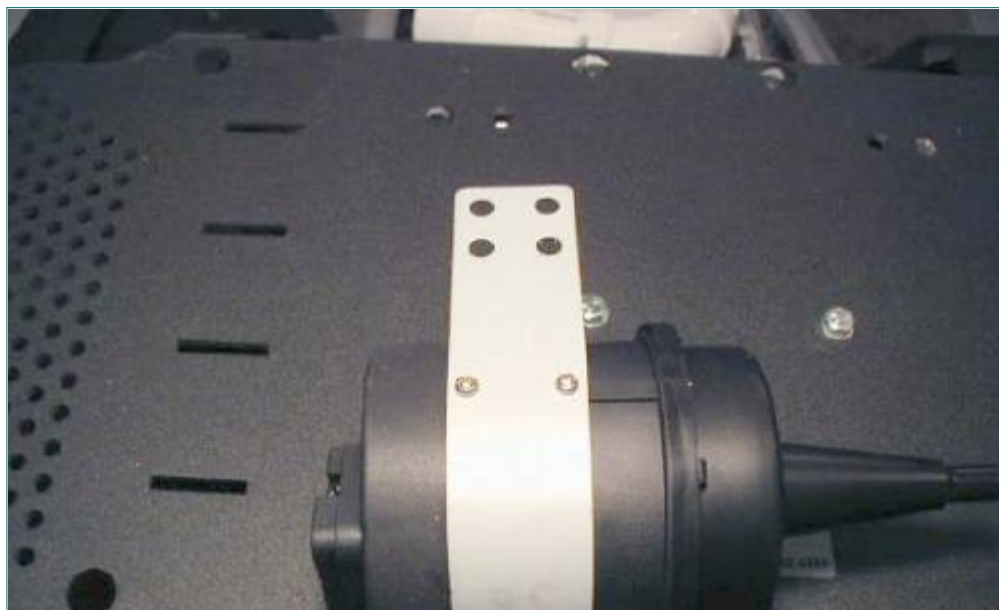
**SAFETY WARNING:** This modification, if improperly done, can be life-threatening. If you know how hard the FJR can accelerate, you know that you only want it doing that when you intend it to. If you are not extremely careful in performing this modification, the throttle could inadvertently open at an inappropriate time, potentially resulting in a crash and/or injuries.

## What's In The Box

The [Audiovox CCS-100](#) comes with an instruction booklet that is less than user friendly and lots of miscellaneous parts you won't use because the kit is designed for installation in a car instead of a motorcycle. It also includes a servomotor which will control the throttle operation, a compact control pad which mounts to the handlebar or fairing to manually control the servo motor, and all the vacuum hoses and wiring to connect the parts to make an automatic cruise control.

Let's get this show on the road and prepare the bike for this installation by removing the right side cover and gas tank. Undoing all those hoses and wires attached to the gas tank isn't as scary as it looks and makes it much easier to see the throttle assembly area where the most tedious part of the installation takes place. In fact, you will also want to remove the fuel rail to create even greater access to the throttle assembly. It is not necessary to drain the gas tank before removal.

## Installing the Servo Motor





Take the servomotor pictured above and set it on an open work surface, as we need to make a few changes to it.



On the end opposite the long servo cable, unscrew the small plastic cover.

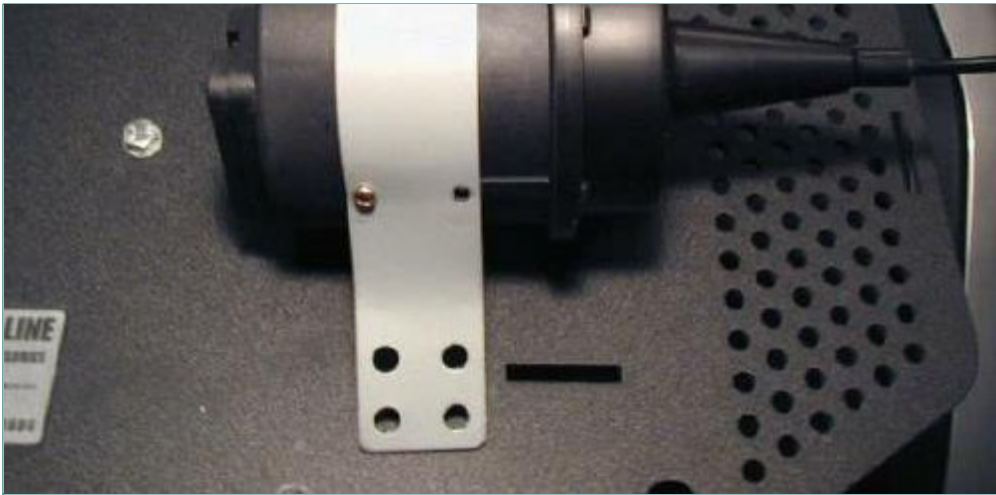
Look inside at the printed circuit board and notice a small black square of plastic that serves as a configuration jumper. It can be found at one end of the 7-position switch pack. Take the jumper off its 2 pins and turn it 90 degrees and place it back on either pin. This tells the unit it is being installed in a vehicle with a manual transmission.

Let's program the switch pack.

- To set the Pulses Per Minute for the necessary manual transmission rate of 4000, set **Switch 1 to ON** and **Switch 2 to OFF**.
- Set the Speed Signal for Tach Only by moving **Switch 3 to OFF**.
- Set the Sensitivity to LOW for light vehicles with high horsepower by moving **Switch 4 to ON** and **Switch 5 to OFF**.
- When using the included Control Pad, set **Switch 6 to OFF**.
- Tach Source Select is for a coil connection; set **Switch 7 to ON**.

Now find the large wiring harness and attach it to the keyed 10-pin connector. Lay the wires flat before replacing the plastic cover which will weatherproof the switch pack and harness connection.

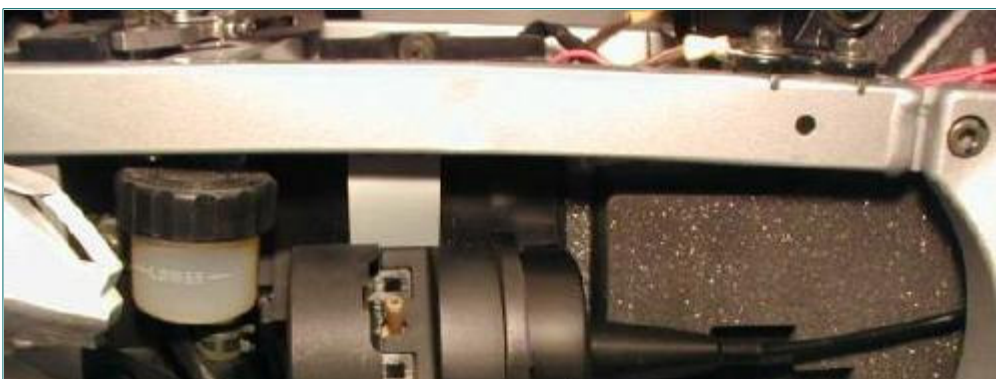




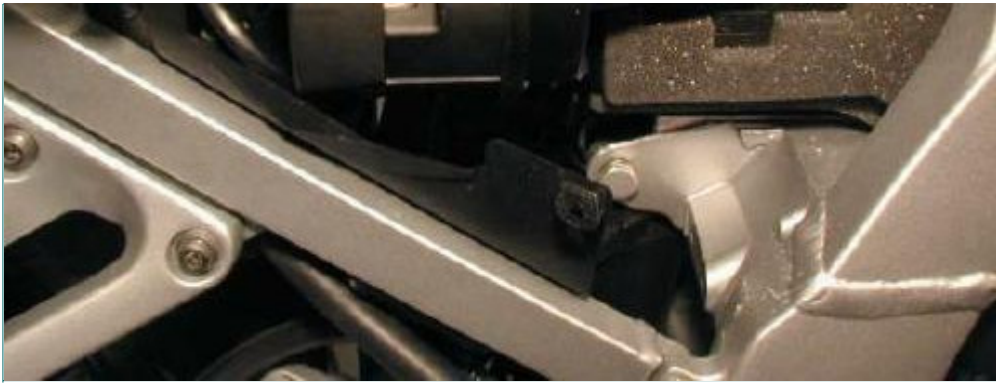
The metal strap on the servomotor will be used to mount the servo to the bike, but it needs to be removed and re-attached so it points in the opposite direction as shown above.



By holding the unit in position under the right side cover and putting the bracket between the tool tray (remove the 10mm mounting bolt) and the frame, you can decide where and how much the bracket should be bent to facilitate an installation which will not interfere with the side cover when it is reinstalled.







Now mount the servo via the bracket by slipping it between the plastic tool tray and the frame and reinstalling the 10mm bolt in the tool tray. The servo cable should be routed forward behind the frame and up into the engine compartment under the gas tank.

### **Vacuum Canister**



To make the cruise control operate more smoothly when going up and down hills and eliminate surging, it is desirable to add an extension vacuum canister to increase the vacuum capacity of the unit. The actual configuration here is pretty subjective, but this particular setup will work and is shaped to fit in the small space left around the servo.





You will need the following parts not included in the kit:

- 1&1/2" PVC end cap
- 4" length of 1&1/2" PVC pipe (I used the more expensive Spa Hose, but plain pipe is fine.)
- 1&1/2" PVC 90degree Elbow
- 1&1/2" PVC to 3/8" threaded fitting
- PVC pipe adhesive
- Teflon pipe thread tape
- 3/8" male to 1/4" female brass fitting
- 1/4" male to 3/16" rubber hose brass fitting



Sand all PVC mating surfaces with coarse sandpaper and glue it all together with a coating of adhesive. After assembling each glued joint, give it a 1/4 turn twist to make a more positive seal. Use the Teflon tape to make a couple rounds of each brass fitting thread and wrench the fittings together until they are snug.

The vacuum canister can now be tie-wrapped below and behind the servomotor (using any method you are comfortable with) and is ready to have the vacuum hoses connected.

## Vacuum Hose Connections

Now make a run to your local auto parts store to buy a couple of vacuum fittings. You will need a



3/16" x 3/16" 90degree plastic vacuum hose fitting and a Two Port Check Valve that also has 3/16" hose connections.

Cut a short piece of the 3/16" rubber hose included in the kit just long enough to attach the 90degree fitting to the hose nipple on the servomotor and make the connection.

Cut two pieces of hose long enough to facilitate the connection of the servo and the vacuum canister to the two hose nipples on one end of the Two Port Check Valve. Make the connections, then use the remaining length of hose to route along the servo cable to the engine compartment below the gas tank. Use a small tie-wrap on each hose connection for a good seal and to secure the hose.

Connect the vacuum hose you ran into the engine compartment to one of the vacuum ports that is used in the throttlebody synchronization procedure and plugged with a rubber cap.

## Throttle Connection



This will be the most difficult part of the whole installation, but you can do it and life will go on. After removing the gas tank, this is what you should see. The throttle cable comes from the front of the bike.





You can see here between the two throttle cables that the throttle return spring is coiled around the throttle assembly. Looking at your throttle, you can see the hooked end of the spring caught on a small tang on the throttle. If you unhook the spring like I did, you will find the throttle grip will have a bit less return pressure and your hand will cramp less. I'm guessing that it will also be less pressure on the servomotor and will prolong its life, too. Note that there are still two smaller return springs still connected, one on each end of the throttle rod. This allows the throttle to still have a positive return.



This picture is a view with the left side of the throttle assembly at the top, right at the bottom. Drill a 5/32" hole in the large tang on the throttle and attach a bead chain eyelet connector (kit part #25) with the slotted head shoulder bolt with lock washer and hex nut (kit part #34). This will allow you to snap on a length of bead chain (I used 7 beads.) Sorry the focus isn't too good here. The blue spot is the drop of LockTite I put on the little hex nut.







This picture is in slightly better focus for you and you can see that the bolt was inserted from the left side and the tang is the throttle stop that bottoms out on the stud below the hex nut. The screwdriver probing from the bottom is actually pointing to the small tang the return spring was hooked on.



After routing the servo cable around and under the frame to end up with the end parallel with the existing throttle cables, use the parallel throttle cable clamps (kit part #18) to attach the servo cable to the lower throttle cable. You will be adjusting this as necessary to your own installation, and I also added a short length of rubber hose to take some stress off the cable where it comes out of its sleeve. This will make sense when you assemble yours and actuate the throttle. Note that the fuel rail has been removed to make the throttle assembly easier to get at. Don't drop anything down the holes, it will really tick you off.







This is a great picture (thank you very much) of the whole bead chain link from servo cable to throttle tang. Use a bead chain coupling (kit part #24) to connect the bead chain to the end of the servo cable. Squeeze the connector together with pliers so it will not come undone. They include a little plastic sleeve in the kit to slide over the connection, but it would get caught on things when I actuated the throttle so I left it off. **Make very sure that your linkage does not bind or catch when you operate the throttle!**

### Control Pad Mounting



I mounted my control pad on the handle bar using the unused 10mm mirror mount. I made a very solid bracket using two 4" lengths of adjustable bookshelf support. It's even black and I won't have to paint it!





Weatherproof the control pad by taking it apart and removing the membrane switches from the housing. Smear some silicone adhesive around the holes in the housing and replace the membrane. Snap the control pad back together then smear some more silicone around the seam on the back and gob a liberal amount around the wires where they come out the back. Looks waterproof to me.

Bolt the 2 bracket pieces together with a 1" 10-24 machine screw and put a nylock nut on it. Drill a 7/16" hole down through the edge of the bracket for the 10mm mounting bolt. Bolt length will vary depending on what else you have mounted with this bolt. I also have heated grips and a GPS mounted here. The large hole you see here allows the wires to poke through and the control pad will adhere flat to the bracket.



Here the control pad is mounted to the bracket with the included 3M tape and the wires are routed through the bracket and out the end. I put some heat shrink tube on the wires and the machine screw to prevent chafing.







Here is the final mounting position and it looks good as well as being reachable from the left grip. You also see the PTT switch for my Chatterbox communicator.



This picture is pretty cluttered, but the mounted control pad doesn't look too bad from the front. Replacing the shiny nylock nut with a black dome nut might be an improvement, though.

## Wiring







With all the mechanical hardware in place, let's get this thing wired up and get ready to cruise! Start with the wire harness that connects to the servomotor. We can improve on the configuration of the harness by routing some wires and rebundling the harness. Take the Red and Purple wires and place about the last 6 inches near the brown plug underneath the servo.

This plug has the Brown and Yellow wires that go to the brake light. Use black vinyl tape to tie the Red and Purple wires to the harness and the excess will be doubled back along the harness and stored inside the convoluted harness protector. I would rather store the extra wire than cut it off and need more at a later time. Connect the Red wire to the Brown wire at the brown plug and connect the Purple wire to the Yellow wire at the brown plug.

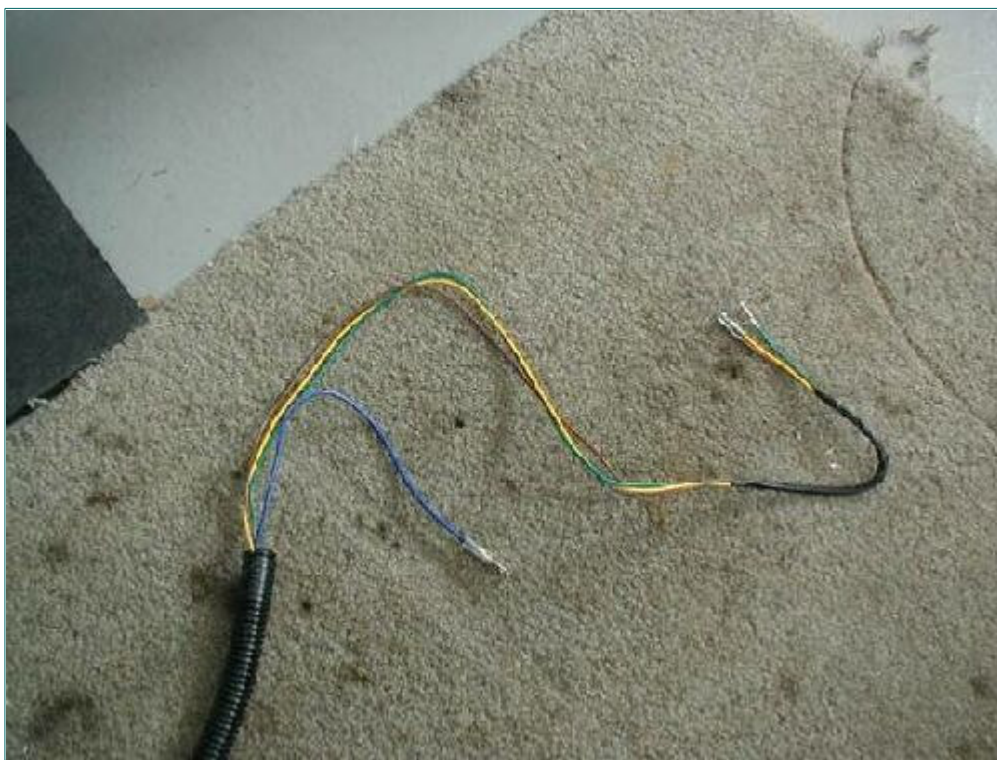


Find the Black and Gray wires that are harnessed together. These won't be used so double them back along the harness, tape them to the other wires in a couple spots, then stuff the wires into the convoluted harness protector from the kit.





Leave the red label that says "Noise Suppressor - Do Not Remove" sticking out of the harness protector just in case the diode should need to be replaced someday. It will be easier to find.



The Blue wire above will go to the coil found between the battery and the frame. The Yellow, Green and Brown wires will go to the Control Pad.



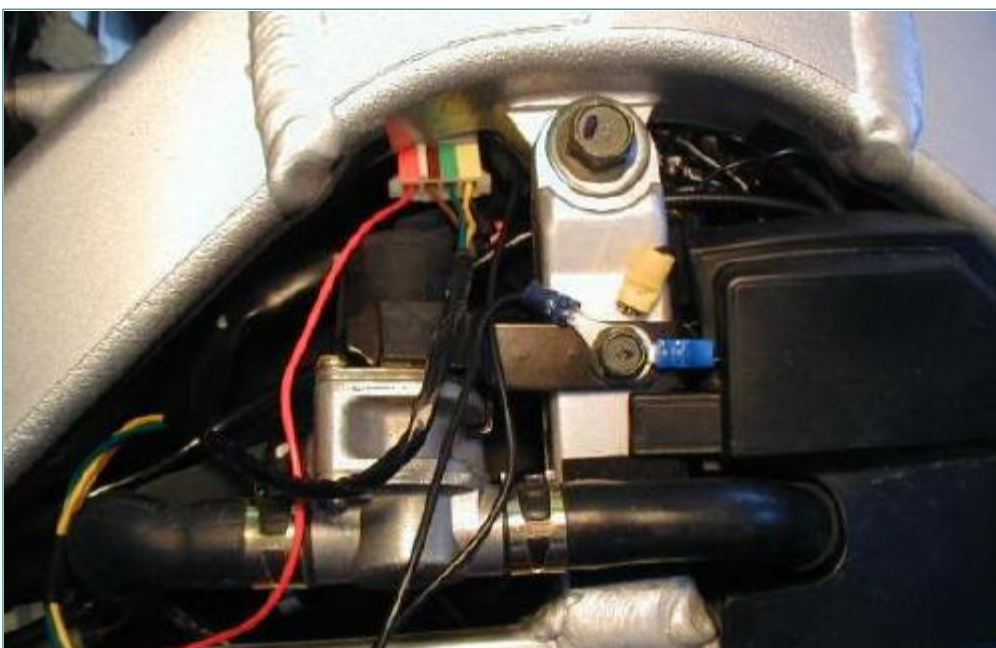




Knowing that, route the protected harness forward from the servo, behind the frame, and up into the engine compartment under the gas tank. I looped the extra length around the top of the engine.



Fasten the Female T-Tap included in the kit to the wire on the coil that is Gray with red markers (the wire on the right) and plugin the Blue wire. This will provide your Tach signal.







After installing the plastic plug on the end of the Control Pad wires, route them through the frame to connect the Control Pad. The Black ground wire from the Control Pad is terminated under the bolt in the center of this picture. The Gray wire will be connected to the Blue wire on the left turn signal harness.



The Red wire goes to Switched 12volt power for the Control Pad electronics and is fused, so locate it where it is accessible.

## Test Cruise

Congratulations! Your cruise control is installed and after replacing all the body plastic and picking up the tools, you are ready for a test ride. Everything should work fine the first time out but if it doesn't, go back and check your wire and hose connections and fuses. **Above all, make sure your throttle linkage does not catch or bind.** When testing your cruise, be ready to hit the Kill switch to prevent injury should something go horribly wrong. Follow all the instructions included with the kit to supplement these.

Happy Cruisin' !!

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