

Antenna Amplifier Switch Plate

First, let's familiarize ourselves with the antenna amplifier switch plate. There are several designs in use on RV's. The switch plate is a power injector for the rooftop antenna. The actual signal amplifier is built into the antenna head on your roof. Winegard's common designs are shown here. Some RV's may not have external connections for Cable or Satellite tv.



The first is a single tv connection and a 12vdc cigarette lighter outlet and seems to be the most use in older and smaller RV's. The second is a single tv connection. The third is designed with Auxillary, Satellite and tv connections. This is the one I'm familiar with as I have had the injector circuit board go bad. You will also notice all 3 have a power button which you push to turn on and a led which indicates when they are on. Below are images of the power injector circuit board and connections on the back. In the circuit diagram you will see there is 2 internal 2-way splitters (components 220 & 230). Component 200 is the antenna/cable switch.

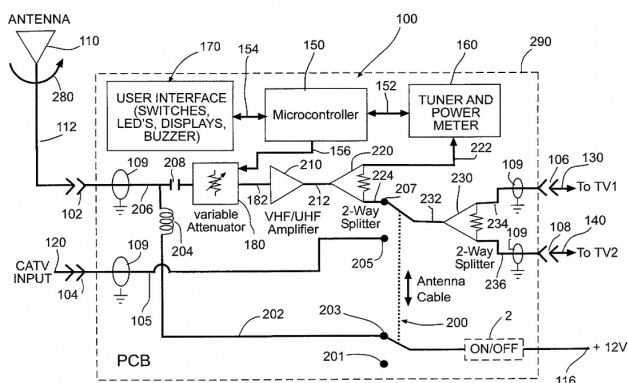
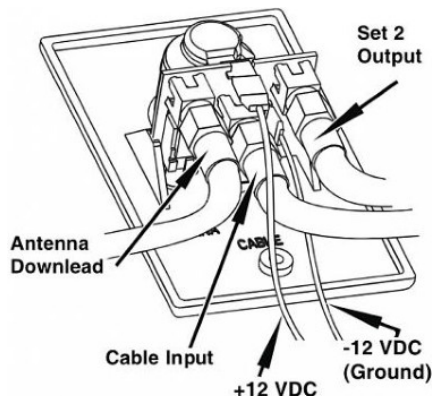
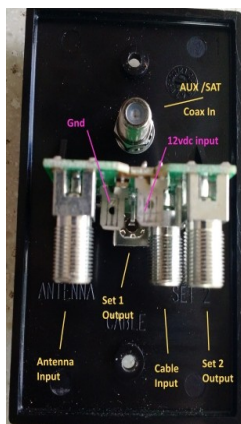


Fig. 2

To watch over-the-air tv you must push the button. When you have park cable tv you don't turn on the switch, but some parks require you to rent a cable tv converter from them.

Testing Coax Cables : Testing the coax cables and connections is pretty straight forward. You will have to remove the switch plate from the wall or gain access to the power injector. Many times you can remove the 2 screws holding the plate to the wall and carefully pull it out. Sometimes you can spot problems by disconnecting the cable and examining the connections. There has been reports of the center lead not long enough to penetrate the female terminal. The center lead should be at least even with the end of the threaded part of the terminal, a slight longer lead, by no more than 1/8" should not be of concern. Another problem that has been reported is the coax is loose and becomes disconnected, either partially or fully, by vibration while traveling.

Many times the center lead in the male F-type connectors are friction fit and can pull out easily without showing any external sign of damage to the coax.

To test the cables you have to disconnect them from the power injector and test them 1 by 1. You can disconnect the coax from the antenna on the roof and test it back to the connection for the power injector. Testing at the exterior antenna hookups can be done without removing them by using the items I cover below.

NOTE: I will point out that the reason I suggest using a 75-ohm Termination Cap (also known as a Termination Resistor) and a Female to Female F-type Coupler is they will give you a more stable reading for a baseline. They also lock down the nuts on the male F-type connectors. I have seen some cheaply made male F-type connectors that lose electrical contact when left loose. When you need to test a second tv antenna connection or the outdoor tv antenna connection you can just screw on the 75-ohm Termination cap. When you are testing long lengths of coax the ohm reading will be slightly higher than your base, but no more than 1 ohm.

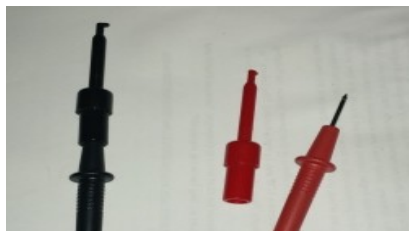
Some people will say all you need to ohm test a coax cable is a jumper to put on one end and your meter on the other. This idea will not help you identify if there is a splitter in the coax you are testing. Depending on the components used inside the splitter, some may pass the ohm test without any change in the ohm reading. Others may act as an open circuit not giving you any ohm reading. I have a 2-way splitter that when I connect 2 termination caps it drops my base ohms from 75.1 ohms to 34.6 ohms. I also have a 4-way splitter that reads .6 ohms whether there is 4 termination caps or none. Besides, it makes me feel better using a termination cap.

Parts needed :

- 1) Multimeter - set to Ohms
- 2) 75-ohm Terminating Cap x2, 1 will do but 2 makes it a little easier.



- 3) Female to Female F-type Coupler x2 (image 2)
- 4) 2x alligator clips or spring clips that fit your meters probes



- 5) short length (about 3 feet) of coax cable with male F-type connectors on each end.

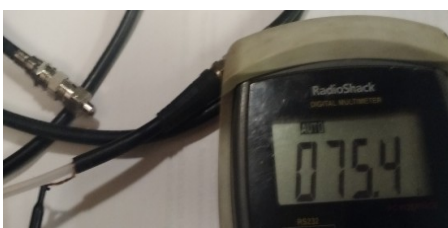
Preparation :

Using 1 of the short pieces of coax with F-type Male connector, strip 1 inch and separate the braided shield, twisting the shielding. Strip 3/4 inch of the center coax lead. Connect one Female to Female F-type Coupler to this so you can connect to your coax and your meters test leads.

Connect one 75-ohm Terminating Cap to a Female to Female F-type Coupler. This is so you can connect to the male fittings on the coax cable to test. If you have just one terminating cap you will have to take this apart as needed.

Testing cables : First thing to do is mark your coax cables so you can identify which goes where when you put things back together.

Using the male F-type coax you cut and stripped earlier, attach a Female to Female F-type Coupler so you have what looks like picture 4. For simplicity, we'll call this the test coax.



Attach a 75-ohm Terminating Cap to your test coax and measure the resistance with your meter. You should see a reading between 74 and 76 ohms. This number will give you a starting point (base).

NOTE : When you are testing long lengths of coax the ohm reading will be slightly higher than your base, but should be no more than 1 ohm.

Remove the coax from your tv and the wall plate and attach the test coax to one end, then attach a 75-ohm Terminating Cap to a Female to Female F-type Coupler and attach it to the other end.

When you need to test a coax going to the 2nd tv or outdoor tv connection you just need to screw a termination cap on the connector the tv coax connects to.

You can test the rooftop antenna coax by going to the rooftop antenna and unfasten the coax from the antenna. and place the 75-ohm Terminating Cap / Female to Female F-type Coupler (picture 6) , connect the test coax on the opposite end and check the ohms with your meter.

Testing the power injector : To test the injector you can disconnect the coax from the antenna on the roof, turn on the amplifiers switch and test for voltage on the coax. If you find voltage on the coax then most likely the coax and injector is good.

There is not much you can do to test the antenna's built-in amplifier other than running a separate coax from the antenna to the tv. Some say they use a known good coax directly from the antenna, running it through a door or window and connecting directly to the tv, bypassing the booster / power injector. Even if you get some sort of signal, you still are not testing the built-in amplifier's operation.