

Checking out the XCOM Harness

We receive many e-mails and phone calls from customers who have difficulties making and testing wiring harnesses to suit the XCOM range of avionics. Issues experienced vary from overheated switches and connectors to incorrect wiring so we have developed this simple guide which will assist you to test your harness and avoid the expensive lesson to be learnt from a damaged radio.

For tips on manufacturing your wiring harness, please refer to our guide titled 'How to make a Harness'.

To test your wiring harness you will need a Multimeter with an Ω (Ohm) setting and a small piece of wire, solder or a paper clip.

To check your wiring harness connections and wiring for continuity we need to check each individual pin on the DB15 connector (shown below) against its terminating point at the end of the wiring harness. All of our documentation and wiring diagrams refer to connecting to the back of the DB15 plug and in the top part of the photograph below it is easy to see the plug with individual numbers on each terminal post.

In the bottom part of the photograph the plug is reversed, also showing each pin location. Notice that the number locations are reversed, counting from left to right when viewing the back of the plug and right to left when viewing the front (a straightforward fact but which catches out most inexperienced users). The majority of DB15 connectors manufactured have numbers beside each terminal post.



DB15 Solder Connector - XCOM Avionics

A typical DB15 solder connector. The top photograph shows the solder fittings on the rear of the plug which is where you connect the wires for your wiring harness.

The bottom photograph shows the front of the plug which connects into the XCOM radio.

Arm yourself with a Multimeter set to the Ω (ohms) setting. Some multimeters actually have a beeping sound when the circuit is closed which makes the job much easier. If your multimeter is equipped with this feature please enable it.

By touching both of the multimeter probes together you create a 'closed circuit' which is indicated by a zero (0) ohms reading. This is the same result you need to achieve when checking the wiring harness.

Often it is easier to check your harness through the front of the DB15 connection by winding a piece of solder, a paper clip or similar wire around the probe of the multimeter and sticking it in to the front of the DB15 connector to make contact with the correct terminal. This method is much easier than opening the plug and doing it from behind.



Before we get too serious, take a moment to study the microphone and headset jack pictures below.

When we are talking about the headset jack we will refer to the terminal as being the tip location and the earth as being the ring location at the base of the terminal jack.

When we are talking about the microphone jack we will refer to the tip terminal being be terminal in contact with the tip of the microphone plug, the intermediate terminal being the location contacting the centre of the microphone plug and the earth as being the ring location at the base of the terminal jack.



Headset jack has one terminal and earth



Microphone jack has two terminals and earth

Now for the fun part - tracing each wire from the correct terminal post in the DB15 to the end of the harness location.

Testing is easiest to accomplish before the harness is installed in the aircraft but our experience has shown that it is also best to retest after installation so as to identify any broken connections, aircraft earths or other installation issues.

Ensure that nothing is plugged into the harness during testing. This includes unplugging headsets, radios, intercom, music source, etc.

Starting at terminal position one, slide your multimeter probe, with a piece of solder or wire attached, approximately 5 to 8mm into the DB15 plug to make sure it connects solidly with the terminal inside. Using the other multimeter probe go to intermediate terminal on the far end of the pilot microphone socket and check for continuity.

Repeat this process for each pin and termination point as detailed in the table below and check off each item if it tests correctly.

If any item fails the test, mark it as such and then correct at the end of the test process.

How to check out the XCOM wiring harness

Pin number	Description of harness check location	Check completed
1	Pin number 1 should connect to the intermediate terminal on the pilot microphone jack	<input type="checkbox"/>
2	Pin number 2 should connect to the music input socket	<input type="checkbox"/>
3	Pin numbers 3 should connect to the intermediate terminal on the co-pilot microphone jack	<input type="checkbox"/>
4	Pin number 4 should connect to the negative location on the speaker	<input type="checkbox"/>
5	Pin number 5 should connect to the intercom on/off/pilot isolate switch in the intercom on position	<input type="checkbox"/>
6	Pin numbers 6 should connect to the tip terminal on the co-pilot microphone jack and also to one side of the copilot push to talk switch	<input type="checkbox"/>
7	Pin number 7 should connect to the tip terminal on the pilot microphone jack and also to one side of the pilot push to talk switch	<input type="checkbox"/>
8	Pin number 8 should connect to the backlight switch	<input type="checkbox"/>
9	Pin number 9 should connect to the positive side of your power supply +12V	<input type="checkbox"/>
10	Pin number 10 should connect to the positive side of your power supply +12V	<input type="checkbox"/>
11	Pin number 11 should connect to the intercom on/off/pilot isolate switch in the pilot isolate position	<input type="checkbox"/>
12	Pin number 12 should connect to the ground	<input type="checkbox"/>
13	Pin number 13 should connect to the tip terminal on the co-pilot headphones	<input type="checkbox"/>
14	Pin number 14 should connect to the tip terminal on the pilot headphones	<input type="checkbox"/>
15	Pin number 15 should connect to the positive location on the speaker	<input type="checkbox"/>
<p>Grounding locations which need to be checked. Locate the multimeter probe with solder into pin position 12 and check for grounding in the following locations</p>		
	Ring location on the pilot headphone jack	<input type="checkbox"/>
	Ring location on the pilot microphone jack	<input type="checkbox"/>
	Ring location on the copilot headphone jack	<input type="checkbox"/>
	Ring location on the copilot microphone Jack	<input type="checkbox"/>
	Ground location on the backlight switch	<input type="checkbox"/>
	Ground location on the intercom on/off/pilot isolate switch	<input type="checkbox"/>
	Ground location on the pilot push to talk switch	<input type="checkbox"/>
	Ground location on the copilot push to talk switch	<input type="checkbox"/>
	Ground location on the music input if fitted	<input type="checkbox"/>