

Connectors - Fixing and Testing

By Bruno D Puglia
Dec 5, 2005

Esast Coast Amusements
Canton, Ma

I know keeping your equipment on line is important to your bottom line. My Bear notes were written to help you with that end in mind. Take from these notes whatever fits into your order of doing things. Electrical Safety always comes first.

The chances of you being hurt or killed might be one in ten million but remember; that one could kill you. Pull the AC plug first!

Cable connections are an important part of an electronic system and many problems are caused by a poor or no connection. There can be connectors which has a bad solder connection/s to the board, a connector which ends up with a bent male pin and it ends up not going into the connector, a female contact pin within the connector becomes deformed and it does not make a good connection, and so on.

Contacts become dirty making no or poor connections. Many times with a heavy load or even with normal current the connector pins get deformed. When bad shorts occur, like a motor short, we may find copper has burned away and often we end up with a burned contact. You may replace the bad motor and find the

motor will not run because of the burned contact. There are many reasons for connector contact failures. Wire and connector problems may be hard to find so here are some tricks.

One of the tricks I have used for over 40 years to clean contacts and switches is to put Isopropyl dry gas in a squirt bottle. I also use it to clean dip and other switches. Turn off all power first and you must let it dry before restoring the power. Do you have a contact cleaner? Do you have and use a fiber glass cleaning brush to clean contact pins and strips? I keep erasers on the bench and in the toolbox. Do you?

Today there are many cleaning and rejuvenating contact and connector products on the market. You can look for and get the ones that fit your needs. I use those gold gleaning wipes. In fact a few days ago I wiped my four memory sticks in the computer I am using right now. Gold plating are general very thin so you do not want to remove the plating, just clean it.

Many contacts pins have a system for removal so you can remove pins to reshape or replace the bad contact pin. Pin pushers are a must. Some contacts have a little tab that holds the contacts in place. By bending the tab away from the connector edge you can remove the contact. Once a contact is removed you can clean, reshape or replace it with a new one.

When looking at connector problems you find two major concerns with the wires. Wires may appear to be making connection to the contact, but in fact, under the insulation there is no wire connection to the contact. Another problem is shorts which occur between wires or shields. In some cases shorts between shields to other wires, to other shields, or to metal of the machine can cause serious or strange problems. Put some tape over those exposed shields.

A procedure I use to check a cable or connector is to leave it plugged in or to have a matching connector or pins I can insert into the connector then I can check the connection through the connector. At age 71 using a flash light to look into connector does not always work for me so a Bear trick is to have various sizes of paper clips which are inserting into the connector. With a clip size slightly smaller than the connector sizes you can feel a loose connector pin. With the paper clip system you can accurately check many connector pin contact pressures in seconds.

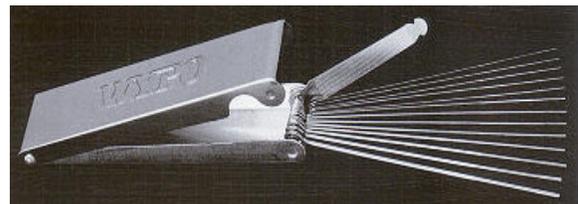
The key of the paper clip system is to use whatever it takes to get the job done! I have used the back end of a drill from a number drill set, small pieces of solid wire, things like resistor leads, capacitor leads, LED leads, photo cell leads, common pins, safety pins or whatever I could find.

Being in the shop I have a lot of single male and female pins which I grab

with a small vise grip and I use them to test connector pin contact pressure. You may want to keep some single pins in your tool box.

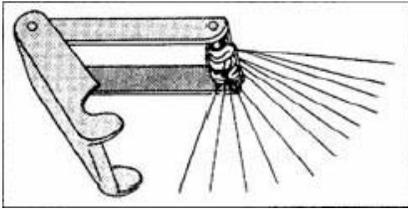
A customer gave me a valuable tool and I do need paper clips, I had never seen this tool before. There are special tip cleaners made to clean the torch tips for welding, cutting, etc. I was given a metal case which has 13 different sizes of stiff wire probes in it. On the back of the case I see WYPO Tip cleaner and a table listing for the 13 wires correlated to drill sizes 77 to 49. It is a very nice assortment. The pin ends are smooth but down the pins they have texture which is used to clean the touch tip.

Does this tool make me a professional connector pin contact pressure tester person? <grin>.



Long tip Cleaner.

There is the Century Tip Cleaner Set at Sears with 12 stainless steel reamers (.018 to .073-inch for tip sizes 0 to 12) in a handy case. Not all Sears's sites carry torch supplies in the store so call first. You can use the Sears web site and the catalog. These tools sell for \$2.57 to \$7.18.



Small Tip Cleaner

You can search the internet to get more information on tip cleaners or try the Yellow Pages for welding or torch supplies. Part of each probe is a file. A Sears # 9 01735 is US Forge tip cleaner part # 00802 that looks like the one in the right hand picture. It is a small 1 ¼" x 3" version and it is priced @ \$3.99. Another small version which you might find in a torch supply store is a Uniweld TCSD standard tip cleaner @ \$6.17. These smaller units are a nice size for your tool box. Short tip cleaner Actually all three look like they were all made by one company and then stamped with different company names. The nice part about these tools is you can start with a small tip and work up to the correct size you need to get the job done.

Tools I use to reshape some contacts are dental tools sharpen to a very fine point or you can buy probes. I generally grind down my meter leads to a point. I also use the tool connected to my meter and I use it to prick into a wire for a test. If you don't have any probes in your tool box then you can use a Bear low cost alternate: Keep a few safety pins in your tool box.

Voltage checks may appear to be ok but there are many conditions where the reading is not legitimate voltage

because it can not supply the required current. Because there can be a leakage path you may read, as an example, 120 VAC with no load connected but when a load is connected and turned on you could end up with anything from almost full voltage down to almost zero (0) volts. A reading of 120 vac can be a false positive. The false positive can occur with any AC or DC voltage. Check out the Bear note :

Voltages_Ripple_False_positives

Where you place the meter leads may also give misleading results. I call these readings false positives.

When doing many test procedures I prefer to use a small light bulbs (5, 12, 24, 117 v [not neon]) over a meter. Then when I measure a voltage there is a load attached. Then when I measure a voltage there is a load attached

I never believe a led is glowing is validation the voltage is actually where it should be.

Another handy tool is a an AC line cord with a push button switch with clip leads which can be used to connect power to a given device like a motor.

May the thingy and/or paper clip be with you!

At some point in time you may want to check out my other Bear notebook articles because they contain a great deal of related material. You will find them on Bruno's Page in <http://www.eastcoastamusements.com/> then: left click on: **Visit his page for service notes and tips.** **OR:** <http://www.eastcoastamusements.com/services.htm> and then click on the BEAR with the flower!!

Note: These files were checked with Acrobat Reader 7.0. Earlier versions **may not** view/print correctly. I know version 5.0 will not work correctly.

If you click on that tile name and if your computer is loaded with the Adobe reader the file this will open up an Adobe window. If you want to save the Bear Notes .pdf file/s from the Bruno page you can right click on the article title and a window will appear on the screen. One of the selections will be Save Target As. Left click on it and a Save As box will appear and you can select where you want to save the .pdf file. You can save the file on your own computer.

You will want to check the East Coast Amusements site for revised or new articles. I do have more titles in the works. Here are some the posted articles.

ROWE 4900 ACCEPTOR ISSUES
ROWE BC-1 BILL CHANGER
THE MAGIC WAND (Dick's - my favorite)!
CONNECTORS - FIXING AND TESTING (another good one)
ROWE BILL CHANGER HOPPER REPAIR
MEASURING VOLTAGES
BUCKET POWER ON ERRORS
ROWE STACKERS
MAG HEAD LOOP SECRETS
DREMEL & ROWE STUFF
FEK MOTOR TEST UNIT
OBA ACCEPTORS
JACKPOTTING, FS, BUCKET POWER ON & CRASHES
BC-8 to BC-35 Bill Changers
CBA_UCBA
Basics_101
BCxx00_bill_changers

If you have trouble printing some Acrobat drawing pdf pages:
Adobe Acrobat printing of some drawn picture pages correctly may require using Acrobat printer setup and setting Print to image on.

Please take note that East Coast Amusements is supplying the Bear Note pages on their web site for you and for me at their expense. I just write and East Coast Amusements does all the rest.

To East Coast Amusements
> THANKS ! Bruno

1F