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The Dreaded Switching Jack Problem

Equipment which can have these problems:

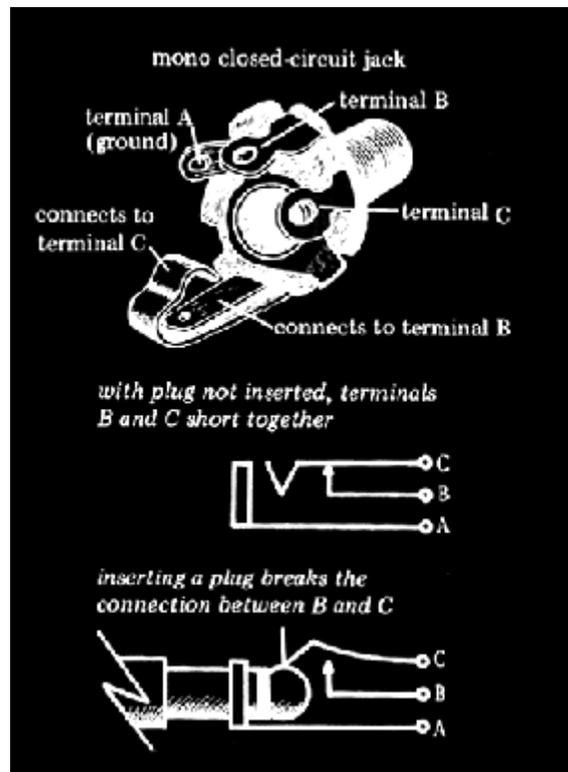
mixers, mixer amps, guitar bass keyboard amps

Shortly after I started repairing audio equipment for a living, I discovered that many of the problems people have are of the "bump it on top and it goes away" sort. This can be a variety of things, but there turns out to be a very easy way to detect the #1 reason this happens, and even fix it as a non-technician in the field. There are three problems we will discuss that all center around the same cause. Their manifestations are:

1. Signal cuts in and out; you can bump it and it goes away or comes back (or the amp used to do this and now doesn't work at all)
2. Signal cuts out and doesn't come back until you turn it up real loud, then it bursts back in and works until the volume is reduced again
3. Amp makes nasty noises, crackling and spitting-usually very loudly, with nothing plugged into the input

When I describe this problem to a customer I inevitably get back a response of "I don't use my FX loop". Please don't stop reading here when I start talking about the FX loop since you will shortly see that lack of use actually contributes to the problem.

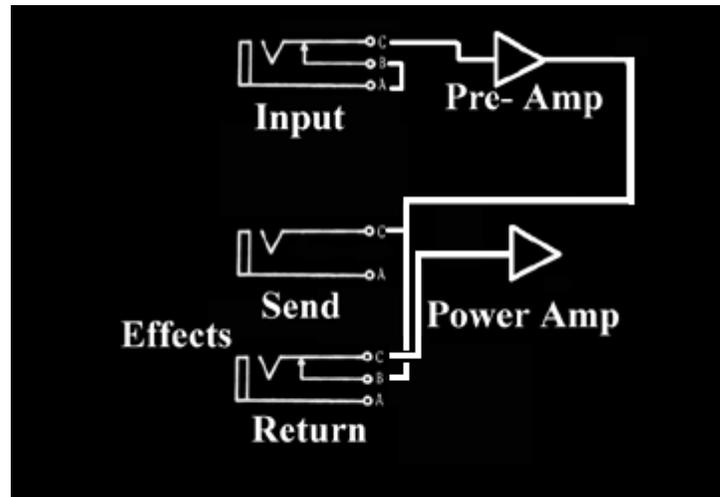
Ok here we go. To understand the switch jack problem first look at a switching 1/4" jack.



Note how the switching actually occurs. This seems to be the part people have trouble with if there are no pictures involved in the explanation.

Now you are ready to understand the actual problems. They take several forms:

1. The FX return jack: found on mixers, mixer amps, and guitar bass keyboard amps (picture of use below). This jack routes the signal from the pre-amp to the power amp (pin b to pin c) unless you plug into the return jack. Then the power amp sees whatever signal is present at pin c. The problem is that over time the switch contacts oxidize (tarnish) creating a very noisy resistor. Sometimes this resistance is high enough to block your signal path.
2. Power amp in jack: same as above but labeled power amp in



The repair:

To repair these problems get a can of high quality tuner wash or contact cleaner. (Caig De-Oxit D5) Spray a bit in the jack - careful now- and work the jack by plugging and unplugging a cord. If this doesn't work or the problem comes back very quickly replace the jack.

Another option is to use a short 1/4" patch cable and route the signal from the send to the return bypassing the switch. This is especially good if you are out on a gig.

The switch can of course be wired for manual use to a switch on the back of the unit. Just use a regular 1/4" jack and do the switching with a single pole single throw toggle switch.

A final option is to rewire the jack so the amp always sees the pre signal (in the diagram wire pin b straight to c. Use this only if you: don't use your loop; are the only person who will be operating the equipment; or are too cheap to buy a new jack

3. Input jack(seen above): Most devices using a 1/4" input jack short the signal to ground when nothing is plugged in. The problem here is that same noisy resistance. This time instead of being in series with the signal it is across the signal path. But, because it is before all the gain stages a little noise gets very LOUD. Clean or replace the jack

4. A special case: mixer inputs. Many times when a channel is out on a mixer it is only out from the XLR in. The reason is that the mixer won't accept a signal from the 1/4" input and the XLR at the same time. This "one or the other" system is implemented through the same type as switched jack. The signal from the XLR will only pass to the channel if the switch is making clean contact

All fixes for the loop types apply here as well

5. Power amp in jack: same as above but labeled power amp in and pre amp out instead of the FX labeling- don't let that fool you.

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