

Re: newbie repair equipment advice!

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Hi wonknose,

beware that you may be on the wrong track if you think that getting decent equipment is enough to make you a successful repairman. While it definitely helps, a good understanding of general electronics and common failure modes will help you much more, even if you don't have sophisticated stuff.

I have been learning electronics since 18 years, and started when I was only a child. Of course I had no money at all and had to rely on improvised equipment. A pair of pliers was a treasure. I got my first old oscilloscope when I was 18. Till then I had fixed a couple of devices, ruined many and built a few, most of which didn't work. I copied lots of circuits from books, designed and etched PCBs and drilled the holes for the components by hand with a small 1mm-screwdriver - that for improvised equipment.

Now I've got a fairly good lab with decent equipment. However, when I attempt to repair a device, I have to rely on my soldering skills, experience, instinct and ability to read circuits or at least to guess important circuit functionality from the PCB layout. No equipment can give you that. It's what you learn by doing. And there are lots of tricks to know - read Sam's repair FAQ.

I am not always successful with my repairs, but I don't do this for money anyway. You have to know when to stop before it drives you mad. Some things can't be repaired. And I always have to study and improve my knowledge of electronics, i.e. common circuits and ways they fail. The most important thing I've learnt: 75% of all electrical trouble is due to contact problems. A DVM and contact cleaner and sometimes resoldering is all that's required. And your eyeballing experience, of course.

My advice: Start with simple, inexpensive measuring equipment. Rather invest more in tools, if you want. Don't start with TVs, monitors and tesla transformers. Respect HV. Get broken cassette recorders, radios, stereos, household appliances, switchmode power supplies and try to fix them. Get as many different component types as you can, learn their shapes and the ways they work. Buy cheap assembly kits and put them together. Try to understand how they work. This will really push your learning. Read as much as you can. Learn the concepts to understand the questions and answers in newsgroups like this. Honor Sam's repair FAQ like the Holy Bible!

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If something won't work, keep it on the shelf for another year. Get a decent stock of components and try to find the equipment that you feel comfortable with. Practice is everything!

Last but not least: Always use an isolation transformer when working on AC powered equipment! See for example <http://www.leomeyer.de/leomeyer/electronics/isotrans.htm>.

Best wishes, Leo

wonknose@xxxxxxxxxxx wrote:

Hi everyone.

Sorry If I am asking dumb questions, I am trying to get a leg up on (new to me) technology in the repair field. My background is computer programming but Tesla has been my hero since I was young if that helps any! Currently I am reading through some books to learn this technology area but I do not have enough knowledge yet to know what type of test equipment I will need. So I am asking you for advice.

Questions:

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I am hoping to learn and start repairing things like computer monitors and work up to repairing motherboards, flat-screen monitors (LDC / plasma and related technology), overhead projectors and maybe even digital camcorders. -Am I being overly ambitious?

With my target being learning to repair the above types of devices, what kind of test equipment would I need to invest in?

Please offer your advice on equipment I may be missing in my list and also which signal generator and oscilloscope would be the best fit. Old technology would be fine. Reliable devices I could learn to repair myself would be ideal. I suppose parts being available for these devices would be important as well.

Digital multimeeter and a few VOMs (do I need special probes?)
Perhaps a signal generator
Oscilloscope (which probes?) (what kind of bandwidth and sampling

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would be needed?)
Soldering station

I am thinking of watching ebay and building my test bench as inexpensively as I can preferably with reliable older equipment I can repair or calibrate myself and learn at the same time. - Again, I am so new to the trade as to not know if what I am saying is achievable or if I am saying something that would make the seasoned technician laugh!