

Don Lancaster's

RESOURCE BIN

number fifty seven

Useful resources for electronic servicing.

Our usual reminder here that the *Resource Bin* is now a two-way column. You can get tech help, consultant referrals and off-the-wall networking on nearly any electronic, *tinaja* questing, personal publishing, money machine, or computer topic by calling me at (520) 428-4073 weekdays 8-5 Mountain Standard Time.

US callers only, please.

I'm now in the process of setting up my new *Guru's Lair* web site you will find at (where else?) www.tinaja.com This is the place you go for instant tech answers. Among the many files in our library, you will find complete reprint sets for all of the *Resource Bin* and other columns. Plus a brand new [Synergetics Consultant's Newtwork](#) & lots of links to unique web sites.

You will get the best results if you have both [Netscape Gold](#) and [Acrobat Reader 3.0](#) installed. This new reader does utterly amazing things online.

Electronic Repairs

This month, I thought we might do an update on several resources you may find handy for electronic service and repair. Things sure have changed from the days of tube type tv's.

For even if you can find some exact replacement for any supposedly "bad" surface mount chip, chances are you could not even unsolder it. Let alone try to successfully replace it.

Even then, there might be a custom proprietary program blown into their chip. Or that whatever *external* cause that took out the first chip will still be lurking in the shadows.

Trashing your new replacement.

Or that some subtle temperature or pc board flexing problem remains. Or that the real cause of your problem is utterly and totally different than what the customer claims.

Instead, most service opportunities will lie elsewhere. Integrated circuits are by far your most reliable of all the

electronic parts in use today.

Today's servicing consists more of customer hand holding, of providing warranty board swap outs, resolving interface problems, and handling low level mechanical maintenance.

And, of course, simply reading all the docs that came with the machine.

Otherwise known as *RTFM!*

These days, sensitivity training is far more important for service work than a BSEE degree. Sadly, most older electronic gear is flat out not worth repairing. For the time spent finding the problem and trying to locate parts will usually far exceed its value.

This can be especially true of older computers. Any perfectly working 386 era machine these days is worth less than \$99. Besides being one extreme *disservice* to whoever you pawn one of these turkeys off on. Because you will *surely* cause them to lose lots of time and money in the long run.

Nonetheless, service opportunities are there if you look for them. Useful possibilities do include laser printers, microwave ovens, home audio, auto electronics, and VCR's.

NEXT MONTH: Don reviews some basic resources involving batteries.

Provided that you center on solving long term user problems. Instead of blindly swapping out chips. Let us go over some possibilities...

A Few Trade Journals

Obviously, you'll find lots of great parts and servicing info right here in *Nuts & Volts*. But which other more specific mags are out there?

Electronic Servicing appears to be a leading tv repair magazine. While this one is mostly on television and VCR service, it often has limited computer

monitor info in it. The directories are real useful for pinning down sources of replacement modules and such.

Computer Service & Repair is a mag all about home computers. They seem big on diagnostic software.

PC Toolbox is a newsletter on hints, tips, and fixes for PC users. Published by *Dynamic Learning Systems*.

Star Tech Journal is a newsletter on commercial video game repairs. Also try *Playmeter* and *Replay*.

Appliance Tech Talk is a journal for major appliance service pros. Mostly on refrigerators, dishwashers, stoves, microwaves, and such. They also have a good bookshop on service titles. A competitor is *Appliance Service News*.

Pro Service is the newsletter from a group of servicing orgs. *TV-Man Tech Tips* is a labor of love newsletter on tv and computer repairing.

Test & Measurement World is mostly on industrial test equipment. *MSM* is the *Magazine of Service Management*. It targets hard drives and old printers.

Service & Support World is a large tabloid on running help desks. While *PSA News* is yet another tabloid from the *Professional Service Association*.

The latest big deal is *home theater*. In which you might integrate enormous screen tv sets with thousands of watts of outrageous audio. But I personally cannot think of anything that is more mind-numbingly dumb than filling an otherwise fine room with fixed rows of bolted down theater style seats!

Large blocks of you-arrange-it foam with a stack of oversize pillows make infinitely more sense to me.

Especially if you are watching such cross genre classics as *Godzilla versus the Night Nurses*.

If you want to get into this hot new opportunity, four consumer mags do include *Audio Video Interiors*, *Home Theater*, *Pro Audio Review*, and *Retailer*.

The *Transponder* is a newsletter for that cable service industry. Additional

satellite mags include *Cablevision*, *CED* and *Multichannel News*. All published by *Chilton Communications*.

Narda is the house organ of satellite and camcorder retailers. *Service News* is the newspaper for computer repair. Web site is www.serviceneeds.com

Three final useful resources that are not quite magazines: *Phillips Technical Training* offers great heaping bunches of repair books, videos, service aides, manuals, and full libraries.

Sams Photofacts are still published. For televisions, VCR's, monitors, and certain computers. And the *Electronic Industry Telephone Directory* offered by *Harris Publishing* is a must have.

Getting Integrated Circuits

Your major replacement integrated circuit sources are *NTE* and *ECG*. Both offer fat catalogs having extensive part number cross listings. *Radio Shack* also has cross reference directories.

Radio Shack also provides a "secret" replacement parts locator service. Ask about it at their counter.

Thomson Consumer Electronics is big on service items. Start with their free *VCR & Camcorder Source Book*. It has got extensive cross listings.

MCM Electronics or *Parts Express* are both strong on foreign semis and VCR parts. For routine electronic parts, the "usual suspects" list includes *Mouser Electronics* and *Digi-Key*.

Tritronics also stocks foreign semis.

Get free catalogs and online listings from all these sources. And the many others who also advertise in *Electronic Servicing* magazine.

What if that integrated circuit you want is clearly obsolete? Two outfits specialize in stocking long out of date chips: *Rochester Electronics* and all the folks at *Luke Systems*.

Fistells Microelectronics seems to be your sole remaining electronic organ top octave and keyer chip source. But in these days of \$29.95 synthesizers, I don't see why anyone bothers.

If you just gotta have hundreds or thousands of a long gone integrated circuit, the *Sunset Silicon* people offer their custom foundry and engineering services. At a custom price.

Be sure to remember that obsolete integrated circuits all got that way for a real good reason. Nearly any decade old digital part can be replaced with a PIC microprocessor chip.

Getting Other Parts

What if you need to find something more exotic? Such as a hard drive part

or that flyback transformer for some older computer monitor?

Well, both *NTE* and *ECG* do stock some of those more common flybacks, remote controls, modules, and such. But you have to go to the wholesale trade and exchange magazines for all the more exotic stuff.

Your best one here is *Comp-U-Mart*. Their competitors include *Computer Retailing* and *Computer Hotline*. For old line dino mainframe stuff, try the all-ads *Processor*.

Note that advertisers in these mags are mostly wholesale sources. You get very little hand holding. Business gets best done by email or fax.

For orphan computer support, use the *Computer Journal*. I've got a hot link there on www.tinaja.com

One resource for monitor parts and schematics is *International Components*. One wholesale appliance replacement part source is *Global Micro Parts Depot*. *Appliance Parts Company* also has these and air conditioning repair items.

For telephone parts and info, use *The Mart*, *Telecom Gear*, or *Computer Telephony*. By the way, I've still got bunches of low priced phone network interface devices left. These are quite easy to convert into extension phone "line busy" lockouts.

You can call for more details.

Be sure to check all the web online resources. Plugging *monitor + repair* into *Alta Vista* generated over 100,000 web site hits. *microwave + oven + repair* generated 2000 hits. Leading to a lot of really neat stuff.

I've added a new searching service button to my www.tinaja.com The link simultaneously lets you query nearly a hundred top search services.

More on becoming web literate in [RESBN53.PDF](#) or [RESBN54.PDF](#). Also [WEAVEWEB.PDF](#). You will find these on the webmaster library shelf of my www.tinaja.com

Printer Service and Repair

PostScript laser printers offer lots of service opportunities. These beasts are more mechanical than electronic. Many problems can still be fixed with nothing but a Phillips screwdriver or some careful sleuthing.

Profitable areas here include toner cartridge refilling, scheduled general cleaning or preventative maint, cable repair, mechanical service, resolving networking or interface hassles, and custom PostScript programming.

Their original concept behind these printers was to place everything that

new from DON LANCASTER

ACTIVE FILTER COOKBOOK

The sixteenth (!) printing of Don's bible on analog op-amp lowpass, bandpass, and highpass active filters. De-mystified instant designs. **\$28.50**

CMOS AND TTL COOKBOOKS

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INCREDIBLE SECRET MONEY MACHINE II

Updated 2nd edition of Don's classic on setting up your own technical or craft venture. **\$18.50**

LANCASTER CLASSICS LIBRARY

Don's best early stuff at a bargain price. Includes the CMOS Cookbook, The TTL Cookbook, Active Filter Cookbook, PostScript video, Case Against Patents, Incredible Secret Money Machine II, and Hardware Hacker II reprints. **\$119.50**

LOTS OF OTHER GOODIES

Tech Musings V or VI	\$24.50
Ask the Guru I or II or III	\$24.50
Hardware Hacker II, III or IV	\$24.50
Micro Cookbook I	\$19.50
PostScript Beginner Stuff	\$29.50
PostScript Show and Tell	\$29.50
Intro to PostScript Video	\$29.50
PostScript Reference II	\$34.50
PostScript Tutorial/Cookbook	\$22.50
PostScript by Example	\$32.50
Understanding PS Programming	\$29.50
PostScript: A Visual Approach	\$22.50
PostScript Program Design	\$24.50
Thinking in PostScript	\$22.50
LaserWriter Reference	\$19.50
Type 1 Font Format	\$16.50
Acrobat Reference	\$24.50
Whole works (all PostScript)	\$380.00
Technical Insider Secrets	FREE

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For most individuals, patents are virtually certain to result in a net loss of sanity, energy, time, and money. This reprint set shows you Don's tested and proven real-world alternatives. **28.50**

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The reprints from all Don's Midnight Engineering columns. Includes a broad range of real world, proven coverage on small scale technical startup ventures. Stuff you can use right now. **\$24.50**

RESOURCE BIN I

A complete collection of all Don's Nuts & Volts columns to date, including a new index and his master names and numbers list. **\$24.50**

FREE SAMPLES

Check Don's Guru's Lair at <http://www.tinaja.com> for interactive catalogs and online samples of Don's unique products. Searchable reprints and reference resources, too. Tech help, hot links to cool sites, consultants. email: don@tinaja.com

FREE US VOICE HELPLINE VISA/MC

SYNERGETICS
Box 809-NV
Thatcher, AZ 85552
(520) 428-4073

Write in 146 on Reader Service Card.

SOME ELECTRONIC SERVICING RESOURCES

Adobe Systems 1585 Charleston Rd Mountain View CA 94039 (800) 833-6687	Computer Telephony 12 W 21 Street New York NY 10010 (212) 691-8215	The Mart 899 Presidential Ste 110 Richardson TX 75081 (800) 864-1155	Pro Audio Review 5827 Columbia Pike 3rd Fl Falls Church VA 22041 (703) 998-7600	Star Tech Journal PO Box 35 Medford NJ 08055 (609) 654-5544
Appliance Parts Co 2333 N 35th Avenue Phoenix AZ 85009 (800) 293-2726	Digi-Key 701 Brooks Ave S Thief River Falls MN 56701 (800) 344-4539	MCM Electronics 650 Congress Pk Dr Centerville OH 45459 (800) 543-4330	Pro Service 2708 W Berry Street Fort Worth TX 76109 (817) 921-9061	Static Control Comps 3115 H Siler Dr Sanford NC 27331 (800) 488-2424
Appliance Service News PO Box 789 Lombard IL 60148 (708) 932-9550	EITD/Harris 2057-2 Aurora Rd Twinsburg OH 44087 (216) 425-9000	Mouser Electronics 11433 Woodside Ave Santee CA 92071 (800) 346-6873	PSA News 71 Columbia Street Cohoes NY 12047 (518) 237-7777	Sunset Silicon Products 402A Ridgefield Cr Clinton MA 01510 (508) 365-6108
Appliance Tech Talk 9940 W 59th Place Ste 3 Arvada CO 80004 (800) 743-9455	Electronic Servicing PO Box 12487 Overland Park KS 66282 (913) 492-4857	MSM PO Box 12901 Overland Pk KS 66282 (913) 341-1300	Recharger 4218 W Charleston Blvd Las Vegas NV 89102 (702) 438-5557	Synergetics Box 809 Thatcher AZ 85552 (520) 428-4073
Audio Video Interiors 21700 Oxnart Street Ste 1600 Woodland Hills CA 91367 (818) 593-3900	Fistell's Microelectronics 7023 E Colfax Denver CO 80220 (303) 393-6000	Narda 10 E 22nd Street Ste 310 Lombard IL 60148 (708) 953-8950	RePlay 22157 Clarendon St Woodland Hills CA 91365 (818) 347-3820	Tab/McGraw Hill 11 West 19th Street New York NY 10011 (212) 512-2000
Chilton Chilton Way Radnor PA 19089 (610) 964-4000	Global Micro-Parts Depot 11151 Denton Dr Dallas TX 75229 (800) 325-8488	Netscape Gold 501 E Middlefield Rd Mountain View CA 94043 (415) 528-3777	Retailer 1300 S DeKalb Street Shelby NC 28150 (704) 482-9673	Telecom Gear 15400 Knoll Trail Ste 500 Dallas TX 75248 (800) 866-3241
Comp-U-Mart 899 Presidential Ste 110 Richardson TX 75081 (800) 864-1155	Hewlett-Packard PO Box 10301 Palo Alto CA 94303 (415) 857-1501	Parts Express 340 E First St Dayton OH 45402 (513) 222-0173	Rochester Electronics 10 Malcolm Hoyt Dr Newburyport MA 01950 (508) 462-9332	Test & Meas World 275 Washington Street Newton MA 02158 (617) 558-4671
Computer Hot Line 15400 Knoll Trail Dr #500 Dallas TX 75248 (800) 999-5131	Hewlett-Packard Manuals 19310 Pruneridge Ave Cupertino CA 94014 (800) 752-0900	PC Toolbox Dynamic Learning Systems PO Box 805 Marlboro MA 01752	SAMS PhotoFacts 2647 Waterfront Pkwy Indianapolis IN 46214 (800) 428-7267	Don Thompson 6 Morgan #112 Irvine CA 92718 (714) 855-3838
Computer Journal Box 3900 Citrus Heights, CA 95611 (800) 424-8825	Home Theater 29160 Heathercliff #200 Malibu CA 90265 (301) 589-3100	Philips Tech Training 401 E Oland Johnson Hwy Jefferson City TN 37760 (800) 851-8885	Service & Support World 12416 Hymeadow Drive Austin TX 78750 (512) 331-3900 FAX	Thomson Consum Elect PO Box 597 Woodbury NJ 08096 (609) 853-2346
Computer Reseller 600 Community Dr Manhasset NY 11030 (516) 562-5000	Intn Comps Marketing 1226 third Street #P206 Santa Monica, CA 94041 (800) 748-6232	Play Meter PO Box 24970 New Orleans LA 70184 (504) 488-7003	Service News 38 Lafayette St Yarmouth ME 04096 (207) 846-0600	Tritonics 1952 NW 93rd Avenue Miami FL 33172 (800) 365-8030
Computer Svce & Repair 5931 S Middlefield #102 Littleton CO 80123 (303) 797-8522	Luke Systems Intl 27827 Via Amistosa Ste 101 Agoura Hills CA 91301 (818) 991-9373	Pre-Owned Electronics 205 Burlington Road Bedford MA (800) 274-5343	Shreve Systems 3804 Karen Dr Bossier City LA 71112 (800) 227-3971	TV-MAN Tech Tips 7040 W Palmetto Park Boca Raton FL 33433 (407) 750-9922

was likely to go wrong into one way overpriced "throwaway" cartridge.

Enough toner for a few thousand pages, a photosensitive drum, a spent toner tank, and a charging assembly.

Myself and several others quickly discovered that these cartridges were an easily recycled gold mine.

By getting rid of the spent toner, adding new toner, and changing the drum, the carts could be reused six or more times. Potentially reducing the end user costs from 5 cents per page down to 0.1 cents per page.

Making my BOD, or *Book-on-demand* printing, economically possible.

Naturally, a major war started up between the printer companies and the rechargers. Including some really vile ecopornography scams.

Whose bald faced mission was to destroy the carts before the rechargers could grab them. Thankfully, much of this nonsense is long gone, and most newer carts are easily refilled.

Your key resource here is *Recharger* magazine. Who have many hundreds of ads for sources of refilling products and supplies. And useful tech articles. Of their advertisers, I currently prefer *Static Control Components*.

Don Thompson has far and away the

best laser printer training. Through his great *Laser Printer Servicing* book, his machine specific video collection, and ongoing hands-on seminars. Now offered world wide.

Don also stocks individual parts for older generations of laser printers. Along with specialized and profitable rebuilding kits for high disaster areas. Such as fusers and power supplies.

The best service manuals do come from *Hewlett Packard Manuals*. While pricey, they give you everything you need to solve printer problems.

Because a *Canon* engine is a *Canon* engine, these same manuals are quite

useful for repairing Apple, QMS, and several second-tier suppliers.

By the way, the recycling industry is highly competitive. You'll do by far the best with *local* customers that you can one-on-one personally work with. The complex cart resealing and costly shipping might easily be avoided by hand delivering your products when and as needed. Use the same delivery radius as a pizza restaurant.

The best printers to bet on are those which use both a Canon engine and genuine Adobe PostScript II. Of these, *Hewlett Packard* is by far your best and most popular source.

Their 5M+ is one good mid-range choice. The 5SiMX is an outstanding high end offering. It offers just about everything you need for serious BOD work. Including the ability to print 11x17 covers, full two side duplexing, and the companion hard disk. Along with snap-in, snap-out maint.

This is the first printer to ever meet all of my BOD goals.

One really enormous and a largely unexplored new opportunity: H-P has been slow to pick up on how crucially important a hard drive is for support of any PostScript printer.

Both Apple and QMS have known for years that hard drives speed up your results and ridiculously reduce your network traffic. Besides allowing zillions of fonts and letting you run unattended BOD production. Plus all sorts of new PostScript-as-language use opportunities.

At any rate, HP very belatedly did provide a hard disk slot on the 5SiMX. Just in time for their entire hard disk operation to go belly up.

With a simple adaptor plate and a cable, these printers accept standard smaller *Seagate* drives. Further details on this development in [MUSE105.PDF](#) on my www.tinaja.com

Of the older printers, those based on the Canon SX engine are still very much sellable. Particularly an Apple LaserWriter SC, NT, NTX, or F. These

can be upgraded to a LaserWriter G by sliding in a new motherboard.

Two firms dealing with printers of this era are *Pre-owned Electronics* and *Shreve Systems*. Again, *Don Thompson* stocks parts for these machines.

Note that any laser printer is totally useless if it is unable to speak genuine Adobe PostScript level 2.

To learn more about PostScript, try those Adobe *red* and *blue* books. And otherwise known as their *PostScript Reference Manual* and their *PostScript Tutorial*. Certain of my own products, such as my *PostScript Beginner Stuff* and my *Book-on-demand Publishing Kit* should also be useful. Details per my nearby *Synergetics* ad. I also have lots of PostScript info on www.tinaja.com

Uh, I want to be the first one on my block to use my 5SiMX as a precision hot tub controller.

Whenever you use PostScript as a general purpose computer language, most any "broken" printer easily can become the high end smarts for a new flutterwumper. Such as a Santa Claus machine, a printed circuit drill, an animation stand, embroidery machine, sign router, or whatever. More details can be located on the flutterwumper shelf of www.tinaja.com

What about cheaper printers? There are some limited service opportunities in the low end inkjets and others.

Some of this work centers on inkjet refills and on printhead replacements. Again, *Recharger* is a superb mag. One fairly good book is Stephen Bigelow's *Troubleshooting & Repairing Computer Printers*. From *McGraw-Hill*.

Other possibilities include doing Sherwin Williams overhauls on older printers bought for \$5 at auctions and resold for \$50.

Your usual strategy here is to buy a dozen printers and end up with ten good ones. But note that there is little demand for printers that are two or three generations old. The noise is too high, the speed slow, and the output quality simply not there.

This Month's Contest

For our three contests this month: Just tell me about any new electronic servicing resources I do not already know about. Or tell me your favorite service story. Humor or horror. The all time one I liked the best was the tv repairman who had a customer that was unreasonably complaining. So he put their set into a slow vertical roll and then told them to carefully pick out the picture they wanted!

Or better yet, suppose there was a fresh remake of *Godzilla versus the Night Nurses*. Well, we already know all about the tapioca pudding scene. I mean we're talking a *large* bowl here. But show me some new scenes you'd like to see included. Plus dialog.

There will be a largish pile of my new *Incredible Secret Money Machine II* books going to the dozen or so better entries, plus an all-expense-paid (FOB Thatcher, AZ) [tinaja quest](#) for two that will go to the very best of all.

Send all your *written* entries to me here at *Synergetics*, rather than to *Nuts & Volts* editorial.

Let's hear from you. ♦

Microcomputer pioneer and guru Don Lancaster

is the author of 33 books and countless tech articles. Don maintains his no-charge US tech helpline found at (520) 428-4073, besides offering all of his own books, reprints, and consulting services. Don also has two free catalogs full of his resource secrets waiting for you. Your best calling times are 8-5 on weekdays, Mountain Standard Time.

Funding and time constraints restrict this helpline service to US callers only.

Don is in the process of setting up his Guru's Lair at <http://www.tinaja.com>

Full reprints and preprints of all Don's columns and ongoing tech support appear here. You can reach Don at Synergetics, Box 809, Thatcher, AZ 85552. Or send any messages to his US Internet address of don@tinaja.com