NEW MEXICO RADIO COLLECTORS CLUB

Special insert in March NMRCC Newsletter

NMRCC RADIO CLINIC BASICS

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BASIC RADIO RESTORATION SESSION

Tools list (Minimum)

- temperature controlled soldering iron set 750°
- solder 'sucker'
- soldering tool
- 60/40 solder

- screw drivers (8); #1 Phillips, #2 Phillips, 1/8", 3/16", ¼" flat blade screwdrivers and ¼" nut driver, 4-40, 6-32, 8-32 tap screw driver
- Alignment tools
- scribe

- magnetic pickup tool
- acid brush for cleaning
- wire strippers
- diagonal cutters, small precision type and mid-sized for big cuts
- long nose pliers, 1 ½" straight, 3 ½" straight, 4" angled
- pliers, mid-sized 8"
- lug crimp tool

Cleaning supplies

- paper towels and rags
- Windex
- canned air
- white lithium grease
- WD-40 for flushing out dirt and old lubricants

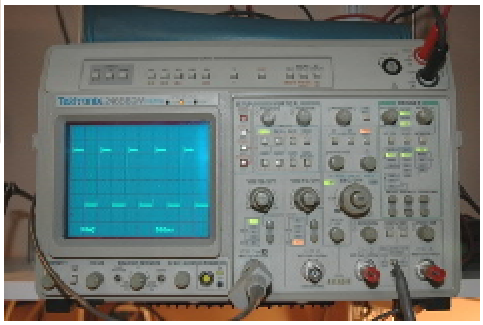
DO NOT USE WD-40 FOR CLEANING CONTROLS OR SWITCHES OR TO LUBRICATE ROTARY SWITCHES

- light lubricating oil, non-gumming

Test Equipment (Minimum)

- digital volt-ohm meter
- analog volt-ohm meter

- Oscilloscope, Tek 2465B-DM



- tube checker, any emission type will do
- RF signal generator, if alignment is going to be done. Check the accuracy of the RF signal generator before doing IF or RF circuit alignment

TEST EQUIPMENT CONTINUED

- tube checker, any emission type will do
- RF signal generator, if alignment is going to be done. Check the accuracy of the RF signal generator before doing IF or RF circuit alignment

replacements for all wax or paper film capacitors, use metalized polyester capacitors

OTHER SUPPORT EQUIPMENT AND PARTS

- large clean work surface
- seating stool
- work lights
- container for all radio parts
- isolation transformer, only needed if you work in bare feet on concrete floors
- AC power outlet strip
- compressed air
- lighted magnifying lens
- paper and pencil
- Garbage can
- Reference books, tube manual, schematic
- PC connected to the internet

Repair Parts needed after removing the Chassis and making a list

- set of tubes, new or good used tubes
- electrolytic filter capacitors
- replacements for all wax or paper film capacitors, use metalized polyester capacitors
- supply of resistors (after testing and inspecting every resistor find replacements)
- pilot lamp or lamps
- correct replacement screws
- replacement grommets
- new replacement polarized AC power cord

BASIC RADIO RESTORATION PROCEDURES

- Start by removing all knobs and clean them well with Windex, tooth brush and paper towel
- remove back
- cut off old line cord flush with the chassis.

don't cut off if the cord is in perfect condition and polarized or if the cord is a resistor type cord (usually thicker and fabric covered)

- remove chassis
- clean case with Windex and paper towels (wood case too, just be careful)
- vacuum or blow chassis clean using a soft brush
- take out all tubes (make a drawing of where you took them from, don't write on the chassis)
- wipe dust dirt off tubes, don't use Windex or any other solvent cleaner on the tubes or the writing will come off
- Check all tubes. (I prefer to replace all tubes with NOS tubes)

when working under the chassis be careful of small gauge wires from coils and transformers

- make a list of **all** filter and foil capacitors in the radio, and replace them all
- measure all resistors and replace those out of tolerance, usually those greater than 20%
- Check volume control with an Ohm meter (either end to wiper), replace if intermittent or open. If the volume control checks okay lubricate with spray white lithium grease only, rotate back and forth a few times.

DO NOT USE WD-40 FOR CLEANING CONTROLS OR SWITCHES OR TO LUBRICATE ROTARY SWITCHES

- replace line cord, with polarized type, make sure the large prong is connected to the chassis or ground bus
- replace any broken or missing pieces of the radio, i.e., dial, pointer, dial lens, torn speaker cone
- replace tubes
- connect radio to AC mains power

do not stand on a concrete floor with bare feet

- turn radio on, adjust volume to 50% rotation
- connect digital voltmeter to ground and first filter section, AAF will have 150VDC and drop to around 110-120VDC as tubes warm up
- tune around the dial and expect to hear many radio stations

IF Transformer Alignment procedure

check radio's IF frequency (190, 265 or 455 kHz.)

- set RF generator to the correct IF frequency
- set RF generator level to around 1,000uV
- connect a 18" clip lead to output and ground leads from RF generator
- wrap clip-lead wire around pentagrid convertor or mixer tube
- tune radio to 1,600kHz. Or high end of the dial
- set radio volume to a moderate level
- adjust RF generator level so that generator modulation is louder than noise level
- adjust last IF trimmer or slug and adjust remaining IF trimmers for maximum audio
- Re-adjust radio audio level and repeat the IF alignment for maximum audio

If you want to be critical, connect the analog voltmeter to the radio's AGC bus, adjust RF level until the AGC voltage just starts to rise and repeat the IF alignment peaking for maximum negative AGC voltage.

The IF alignment can also be done by connecting the analog voltmeter (in the AC voltage range) to the speaker's voice coil terminals and peaking for maximum voltage.

DO NOT USE WD-40 FOR CLEANING CONTROLS OR CLEANING SWITCHES OR TO LUBRICATE ROTARY SWITCHES OR LUBRICATE ANYTHING TO DO WITH ELECTRONIC GEAR

- set RF generator to 1,000kHz, frequency
- set level to around 100uV
- connect the RF generator output and ground leads to antenna coil high and ground
- tune radio to 1,000kHz. and adjust the oscillator trimmer for maximum modulation audio
- adjust RF generator level so that generator modulation is louder than noise level
- adjust antenna trimmer on tuning condenser for maximum audio

this is a basic alignment process, if

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dial tracking is off it's going to get more complicated, so let's stop here

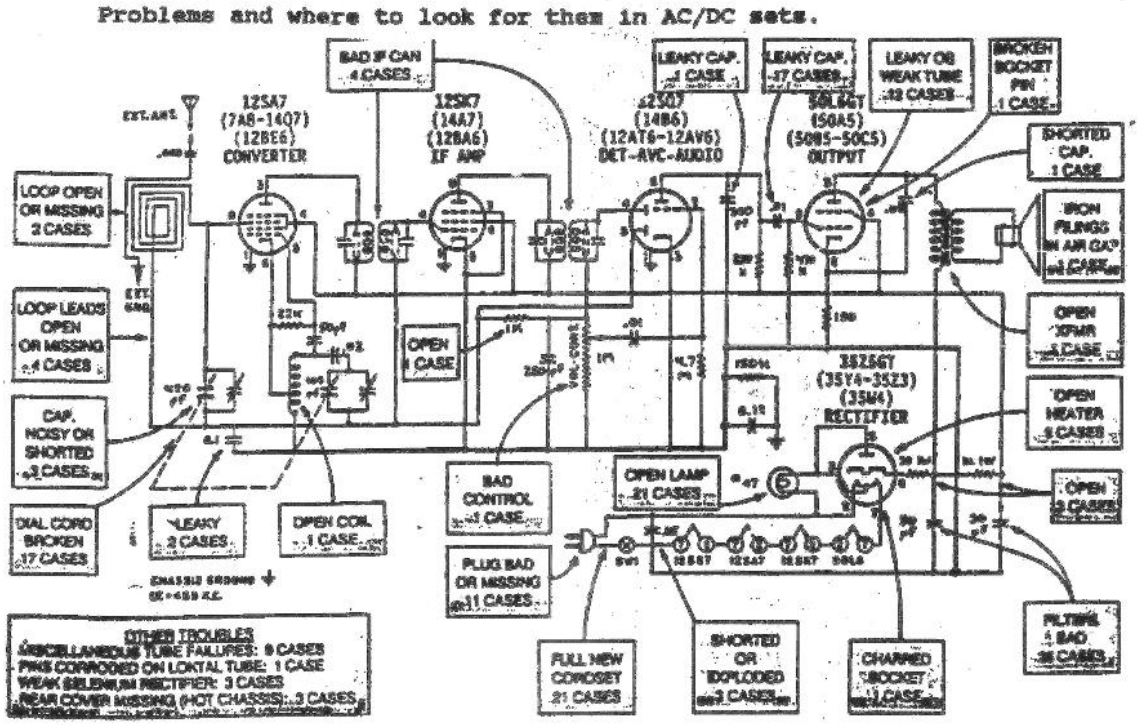
- unplug the radio
- put the radio back in the case
- Replace chassis screws
- Replace knobs
- replace back
- Plug the radio back in and turn it on
- Enjoy listening and showing off your restored radio

DIAGNOSIS FOR AC/DC RECIEVERS

Contributed by Stan Rosenstein

The following chart appeared in a 1950s technical repair manual. Unfortunately, I do not have the reference. I thought other club members would benefit from this information. The schematic shows a typical ac/dc receiver and indicates where problems were found in 64 actual repair jobs.

As one might expect, a few major catagories account for the largest portion of the repairs. Defective filter capacitors were the most common cause of trouble, accounting for 26 cases. Other major troubles, in order of frequency, were: defective cord (21), open pilot light (21), leaking coupling capacitor (17), broken dial cord (17), leaky or weak audio output tube (12), defective or missing plug (11).



FAILURES IN 64 AC-DC RECEIVERS