Seeing there's been some interest in this mod I thought it was about time I posted it. I take **no** responsibility for invalidated warranties! If you don't feel you are capable of performing this mod, then don't.

ATS-803A and DX-440 Mod

This mod gets rid of the "chuff" when tuning the radio that becomes very annoying. This Mod also enables the speaker while you are scanning. You will be surprised on how much you have missed. I have done the mod and it is real easy. If you don't like it change it back. I got the mod from a unknown source, so it has not yet been tested. I have heard of no complaint or problems.

The Mod is so easy all you need is a Phillips screwdriver and 5min's. It's that easy. Ok here it is:

1) Remove the batteries from the unit and turn it upside down so the antenna is facing away from you.

2) Remove the six screws and remove the cover (be careful that you don't break the antenna wire)

3) Okay so far so good. Now locate the 8-pin cable.

4) Remove it carefully. Bend the second lead from the left to a 90'.

5) Replace the cable and make sure the lead is not touching anything.

6) Wa la [sic] it's done. Not so bad now huh?

Fine tuning the Sangean 803A.

These instructions describe how I modified my Sangean 803A so that the BFO Pitch acts as a fine (approximately +/- 5kHz) tuning control on all but the FM band. The instructions are as detailed as my brain permits of. The tools required are a small-to-medium Philips or posidrive screwdriver, a small soldering iron, some solder and a means of removing surplus solder (e.g a solder sucker or a few inches of desoldering braid).

1. Make sure that you have a note of any preset frequencies you have programmed into the memories. Turn the radio off. Remove all external connections (e.g. headphones, external power, external aerial) from the radio. Close down and clip down the radio's own whip aerial.

2. Take the radio to a well-lit worksurface. Put something on the worksurface to prevent damage to it or to the radio. Put the radio face-down on the table so that the base of the radio is nearest to you. Remove the battery compartment door and then remove the batteries. Unscrew the six screws which retain the back panel of the case. Five are down recesses in the back panel at the top left, top right, bottom right and bottom-center-right. The sixth is in the left corner of the battery compartment. Try to leave the screws in their respective holes. You can feel when the screws have been unscrewed enough when they don't seem to be coming out anymore! Gently free the back panel from the rest of the radio case but don't try to pull it away from the radio. There is an awkward wire connecting the whip aerial to the rest of the radio! Once the back panel is free, lift it about half an inch, and then swing it back away from you, rotating it anti-clockwise in a way that keeps the left-hand side of the back panel over the radio and hence the aerial wire safe!

3. Set the lid down and examine the circuit board which lies behind the BFO ON/OFF switch. The BFO ON/OFF switch is mounted directly onto this circuitboard and you will see the switch's six solder pads arranged as two rows of three. The row to work on is the row furthest from you. Calling

these, from left to right, 1, 2 and 3, use the solder removing gear to remove all solder from pad 3. This should leave pin 3 visibly isolated from the surrounding circuit board. Next, solder pins 1 and 2 together - probably most easily done by melting the solder on both pins by spreading the soldering iron across the two and then introducing some extra solder to bridge them - the sort of thing we usually do by mistake.

4. That's it. Replace the back, taking care not to catch the awkward wire in the case - or anywhere else. Do up the six screws evenly, i.e. do them up until they are all just starting to resist you, checking that the back panel is fully onto the rest of the case as you go, then give each screw a little bit more of a turn. Don't leave them loose, but don't do them any tighter than that! Its only plastic!

5 Restore batteries and any other items detached in step 1. You now have an 803A+.

I'm sure that I needn't point out that the Establishment would tear you (and your warranty) limb from limb for fiddling inside their creation - particularly as it was particularly short-sighted of them not to have done this themselves - but there, hind-sight is a wonderful thing.

Do remember that the fine tune is always in use on AM, so at its extreme you'll be 5kHz off the indicated frequency. Talking of indicated frequency, you might find that stations appear to be on tune when the BFO control is slightly off its mid-position. Well no synthesiser is dead on frequency -
although my Sangeans are within 200Hz of true. The point is that this fine tune lets you receive stations optimally and this won't always be on the centre frequency. One of the best features of having a fine tune is that a whistle interfering with a station you're tuned directly onto can usually be nulled out by using the fine tune to slip slightly off frequency. Nevertheless, if you want an 803A++, get back into the set and use a proper trimming tool to adjust T111 to bring the radio bang on tune!

John Adams

SANGEAN 803a FAQ (preliminary)

This is a collection of Internet postings concerning the Sangean 803a shortwave radio. It has been edited to focus on useful technical information for users. Inevitably, there is some duplication from one post to another, but I have tried to minimize it. Discussions of purchasing and comparisons of models are omitted. I don't vouch for the accuracy of this material.

Christopher Brewster /cb@cray.com/
October 18, 1994

SANGEAN 803a QUESTIONS AND ANSWERS

CONTENTS

OPERATING THE SET

Subject: Re: DX-440 vs DX-390

You can select the SW bands on the ATS-803a by pressing the SW button. Each time you press SW, the receiver jumps to the next- highest band.

Subject: DX-440 --- Operating Tip

Here is an undocumented way of quickly switching between two frequencies in the shortwave bands. The procedure requires only a single key press instead of the two presses normally required to recall frequencies previously stored in memory.

Here's how to do it:

1. Press the SW key.
2. Enter the frequency of the first station. You can enter any shortwave frequency even though it is not in the band displayed.
3. Press the AM key.
4. Enter the frequency of the second station. You can enter any shortwave frequency even though it is not in the band displayed.
5. To return to the first frequency, press the SW key.
6. To return to the second frequency, press the AM key.

This shortcut lets you toggle between two shortwave stations with a single key press. Incidently, both frequencies are retained in memory so the next time you power up the radio they are still available by simply pressing the SW or AM key.

Subject: Re: DX-440 Doc's needed
To turn off the alarm:

Press TIMER so that STANDBY does not appear on the display.

Subject: Re: DX-390; mods to make it not wrap on band boundaries?
Is it possible to modify a DX-390 so that it won't keep wrapping around and around the two ends of a particular band in 'search' mode?

I'm not familiar with the DX-390, but have the older DX-440. The same problem exists when I use the "SW" button to get to the shortwave frequencies. However, when I get to the shortwave frequency by first pressing "AM", and then keying in a frequency, the scan is continuous.

I see that the DX-390 doesn't have the "AM" button. I suggest you try pressing the "LW" button, and then keying in a shortwave frequency. If my theory is right, the radio should be able to scan from some frequency just above the "LW" band, to 30 MHz, before starting over.
On the other hand, the DX-390 might be "too smart", and not permit you to break the rules!

Subject: Re: SSB on DX-440

I've never quite gotten the hang of tuning in SSB on my DX-440. I look for all these great utility signals, but can never find them. On the rare occassion I do find them, I can never quite tune in the garbled voices. Can anyone please help me? What am i doing wrong? Is there a procedure or steps i should follow in order to gain optimum reception results? Many thanks.

I tune SSB on my DX440 by first adjusting the BFO to the zero-beat setting by tuning WWV, turning on the BFO, and adjusting the BFO setting to the lowest note (no tone). On my DX440, this setting is slightly right of center on the BFO adjustment. Then I find that I can tune to the frequencies listed on this net or other sources, and many times I'll be dead on. At most, the BFO adjustment required will be very slight.

I use the same method while scanning accross a range of frequencies with the BFO turned on.

Subject: SSB and other things

What's the best technique, with a simple receiver like the DX440 or its clones, for tuning in a SSB transmission? I have great difficulty in resolving SSB - is there a trick, or do I need more sophistication than just a BFO control?

One way that I have found for tuning in SSB on the DX-440 is to use headphones and only use the left earpiece. I don't know why this works but it makes tuning SSB on the DX-440 like tuning SSB on my TS-520S (almost :-).

BATTERIES (AND RELATED FLAKY BEHAVIOR)

Subject: Re: Sangean ATS-803a "automatic search" feature :-(

I have one "complaint" about my Sangean ATS-803a that I wonder if others have -- that is periodically it decides on its own to start changing frequencies, usually moving up and away from whatever I'm listening to.

I've had that problem several times before, and was able to find 2 reasons:

(1) static electricity in the immediate area, such as on myself. Then when I touch the radio to adjust the volume, for example, it suddenly starts in scan-mode!

(2) here's a strange one: whenever changing the backup battery, it seems that occasionally the computer chips don't start-up correctly, leaving junk in the various memories. For example, the 120m band might show 9.99 or 11m might show 0.00. What I've done is tune from bottom to top through each of the bands, also checking the channel-memories 0 - 9. Here's what's even stranger: even if you never use a band that might have an odd display, it can still cause trouble! The only time that this approach has not worked is when I couldn't get rid of a "weird" frequency. Then I just pulled the batteries and started again.

My Sangean is an older model bought in 1988. I certainly agree with everyone else who has commented about value for the money!

Subject: Re: Lousy Radio Shack Service

when I turned it off, the "power" light stayed on and the audio amplifier remained connected too, so I could clearly hear the computer hum through the speaker (the hum disappears if I lock the keyboard). Sometimes, the display is unusually dark: in addition to the LCD elements that are lit, you can see the rest of the elements too. But every now and then, the radio works normally.

Sounds like your AA backup batteries may be going dead. Did you read the manual? When the radio acts silly you should remove the old batteries, wait 5 minutes and install good batteries (or reinstall the old ones if you've tested them and found they are still good). This happened to me and I followed the manual and it worked fine.

Subject: Re: Lousy Radio Shack Service

If you didn't already try this, see if the problem goes away if you remove the memory-backup batteries, let the set sit for a while (10 minutes or so) and then put in fresh memory batteries. I also suggest you clean the battery contacts in the set and on the ends of the new batteries. If you already tried this, sorry for the intrusion...

It seems all these radios (Sony 2001, Sangean 803, Sony 2010, etc) act really odd when the memory-backup batteries get weak or make poor contact. At other times, they last for longer than expected and the radio works fine even if the batteries test very weak... It is a puzzling thing. I've had these models do weird and unexpected things, and replacing the memory batteries seemed to always fix the situation. Letting the radio sit unpowered allows the residual charges to drain away and everything "resets" from scratch with the new power-up. (The only radio which hasn't acted odd, and which has *very* old batteries in the memory section, is the ICF-7600D/2002 model. And maybe it will now that I've written these words... :-)

It might be speculated that the vibration the set gets when you take it to the store is enough to momentarily clean the battery contacts and cause it to work OK. Then the inevitable surface

corrosion sets in and the contacts get higher in resistance, and the set again acts up when you have it at home a while... Then you take it back out, it gets vibrated again, and the cycle repeats... Eventually the batteries would weaken enough that the vibration wouldn't be enough to "bring them back", but that may take a long time -- the current drain on those is very slight.

Subject: CPU reset on the Sangean ATS 803A

Every time I change the dang AA batteries on my ATS803A, I go through living hell, here's a slice of it:

1. Remove AA batteries
2. Radio seems dead (no clock) [to be expected, of course]
3. Put new batteries in
4. Nothing happens at all in clock window
5. For i=1 to AGGRAVATION_FACTOR do jiggle batteries to ensure good contact go to 4
6. Finally see all manner of strange LCD on LSD type symbols in display
7. Remove AA cells entirely
8. Plug into AC
9. Nothing Happens
10. For i=1 to AGGRAVATION_FACTOR do curse, and remove adapter cable from radio go to 8
11. Finally clock window lights up with correct info ("0:00")
12. Fix time
13. Switch on radio with AC adapter
14. Insert AA batteries
15. Pull adapter, radio functions beautifully....UNTIL the next time AA's need to be replaced...

It looks like the CPU controlling the radio is not getting reset or something because, it is simply a matter of time before the radio works.

Subject: Re: 803a/440 AA batteries low, D cells not, signal strength down

I have noticed a peculiar problem with my DX-440 lately. The power LED which supposedly shows the energy level of the D-cells is bright. However, it is obvious from the intensity of the background lighting of the display that the AA cells are just about dead. I am experiencing a significant loss of received signal strength, most notably with FM but also on AM. Does anyone know why this might be? I had assumed that the D-cells operated everything except the clock and memories. Perhaps the D-cells only power the speaker and the AAs power everything else?

I have a DX440, too. I found that when it starts flaking out, it's time to replace the D cells. So far every synthesized battery-powered radio I've owned goes into utter weirdness mode when the batteries get low... like for instance the radio stops accepting input from the keys.

Hold the light button down for a few minutes and see if it dies. The LED might be able to go more or less indefinitely on the residual juice in the Ds.

Subject: Re: 803a/440 AA batteries low, D cells not, signal strength down

Haven't you got this all mixed upp? This is from my memory since it was a long time I tampered with my 803a but if i don't remember it wrong, the big ones (the D-cells right?) in reality powers the whole radio, YOU DON'T NEED THE SMALL ONES TO OPERATE THE RADIO but when the voltage drops below a certain level you will loose the containts of the memory (where your stations frequency are stored) and the oscillator (clock) will also stop functioning.

So if you want to switch batteries without needing to reprogramme the clock and radiostations you better have those AA:s. They will feed the oscillator and memory circuits with power if the mainpower (D-cells or external) fails but only at that time. They will therefore last for ever and it may be a good idea to replace them after a couple of years to avoid leaking problems.

Subject: Re: 803a/440 AA batteries low, D cells not, signal strength down

Yes, you are right. I discovered that the power led is not to be trusted. It glowed intensely, but the D-cells were quite dead. Just before I replaced them, the display was slow in the same way your watch is when it is 5 degrees F outside. Replacing the D-cells caused everything to work properly.

Subject: Re: Battery consumption on a Sangean 803A, anyone knows ?

Those large D-batteries are rather expensive, so therefore : for how long do these batteries last (I may use the radio for maybe 1h/day) ? Is it worth the money buying rechargeable batteries ?

I ran mine on an unregulated plug pack for about a week or so. It's not really suitable except for strong stations. I now use an old 12v regulated CB type supply with the output brought down to around 9v. Works a treat, but is expensive if you don't already have a suitable supply handy as I did.

Rechargeable batteries will eventually pay for themselves, but if you only use the radio for 1 hour a day, regular cells will probably be cheaper.

Subject: Re: Battery consumption on a Sangean 803A, anyone knows ?

I last put regular D cell batteries in my DX-440 over 9 months ago. I've been listening to it about 3-4hrs/day for the first three months, not at all for the next three months, and about 1/hr a day for the last three months. And they just keep going and going and going...

Subject: Re: sangean 803a battery life

I have no doubt you may be able to show on paper (CRT) that you come out ahead using NiCds. However, there's a price to pay! It isn't just the cost of batteries. It's also the hassle of taking the NiCds out to charge them.

Although NiCds can be recharged, the individual charge life is usually shorter than the life of Alkaline cells. Realistically, how long does a set of fresh Alkaline cells last, in terms of days/weeks/years? I think I get around a year on a set in my DX-440, but never paid much attention to it. Even at a couple of months per set, I would rather pay the price of Alkalines, than put up with the hassle of recharging NiCds.

In such an application as this, the NiCds will probably deteriorate in a few months, to the point where they spontaneously lose their charge from lack of use, before they are drained as a result of heavy use. Unless you run the radio many hours a day at a loud level, you aren't going to realize the full advantage of NiCd cells.

Subject: Re: Problem with Sangean 803a/DX-440 Receiver

When you press the standby button on top, do you see the word "STANDBY" on the LCD display? Perhaps the LCD indication is not working & you have somehow put yourself in the standby mode. Have you tried deliberately to set the alarm to any other time & does it function? As a last resort before getting serviced, try removing all batteries overnight- I've seen many CMOS chips lock up into some crazy configs due to static, or alpha particles,etc. I've curied 1 calculator and 1 point-and-shoot camera of this by just letting the micro truly drain. Let us know how you make out--I own a

DX-440 also & sometimes when the batteries get low- it starts changing frequency without rotating the knob. (ghosts?)

POWER SUPPLIES

Subject: Re: ZAP! DX-440 Clone service question

I've got a DX-400 clone (Clairtone name) that I was bad to last night:
I plugged in a universal 9V power supply. Unfortunately, the instructions were written badly and I'm afraid that I used the wrong polarity for a few seconds... Its current behavior is to have some lights and some elements of the display on whenever either the adaptor is applied or the batteries are in.

I have a DX-440 and on a couple of different occasions, I've seen behavior like this from mine, especially after big lightning storms. I thought that the radio was damaged by a big power spike.

In fact, after I pulled out the *memory* batteries for a little while, and put them back in, the radio was fine. I also began the grand experiment of trying NiCd rechargeable batteries for both the D-cell main power supply, and the AA-cell memory supply (I like true portability), and I can attest that when the memory batteries get weak, you'll see all manner of truly strange behavior. Sometimes the display will be half-dark, there may or may not be a little static or some clicks from the speaker, and none of the buttons will seem to work, regardless of the setting of the "Lock" switch.

I don't know if this might work for you, but try pulling out **all** of the batteries and AC adaptors, and letting the radio set for a little while, on the order of 15 minutes, to let the RAM randomize itself.

Subject: Re: DX-370 strange behavior

Well I have a Sangean 803A. I use one of the multi voltage power supplies with it. The salesman set it to 6 volts and checked the voltage with a voltmeter. He said that on the 9 volt setting the actual voltage was too high for the 803a.

Another thing that bugs me about these power supplies is that they are very noisy. Lots of harmonics all over the SW bands generated from the power supply.

I discovered something interesting about my radio the other night. I have never been able to receive much on 180m. With the whip antenna fully extended the back ground noise wiped everything out. So i put the antenna right down and low and behold there is lots of stuff there. Dont ask me why i didnt try it before. I always try to keep the rf gain control as low as possible. Mark.

Subject: Re: BAD ADAPTERS

Moral: stay away from cheap selectable-voltage battery eliminators. I've used an 800 mA 9 VDC adaptor from Radio Shack on my DX-440 for 2 years with no trouble whatsoever. It even puts out (relatively clean) nine volts!

Subject: Re: Problem with Sangean 803a/DX-440 Receiver

I own a DX-440 also & sometimes when the batteries get low- it starts changing frequency without rotating the knob.

Mine has done this at times when I was using an AC adapter. I think that it may be caused by dust getting in around the tuning knob. I opened up the radio vacuumed the dust out and it seems to be working fine now.

Subject: Re: Sangean ATS-803a "automatic search" feature :-(

I have one complaint about my Sangean ATS-803a that I wonder if others have -- that is periodically it decides on its own to start changing frequencies, usually moving up and away from whatever I'm listening to.

I solved my problem by changing out the BACKUP batteries. That made a big difference. Could it be that they haven't been changed in a while, or contacts questionable? Try it!

Subject: Re: PS vs battery: performance difference

I just bought a used Sangean 803A as a gift for someone and have been trying it out. I've used it on both the power supply and batteries (which I tested, and they're all good), and for some reason the radio is severely crippled running off batteries. The previous owner says he never noticed a problem but normally used the PS. Can anyone suggest an explanation for the poor performance on batteries?

One possibility is that you're getting a stronger signal into the radio when you plug it into the wall. Remember the the whip "antenna" is only half an antenna. When you run the radio off batteries, the radio's body is the other half. Running from the AC adapter adds your house wiring to your antenna system. House wiring is pretty effective at picking up signals, so this usually increases signal strength quite a bit (of course it also picks up a lot of noise, so knowledgeable weak signal listeners usually try to avoid picking up signal through this route).

A good receiver like the 803A should have adequate sensitivity on most bands using the whip/body antenna and should not need the additional signal from the house wiring. It may be that this receiver has lost sensitivity due to electrostatic damage: Sangean radios appear to be especially prone to this.

FRONT-END OVERLOAD

Subject: Re: Follow up on Sangean 803

When I'm "home" in Seattle, I'm close enough to the local FM transmitters to have troublesome birdies caused by intermod of FM signals with the 30 MHz LO.

When I'm "home" in Virginia, I don't have that problem. I wouldn't describe my Virginia reception as "stellar", but it's good enough to keep me from running over to EEB to buy something else. The self-jamming noise floor is not as low as I would like, but I have little to compare it with in the way of synthesized receivers. (A peek at the schematic suggests that the 803 uses an awful lot of discrete components, which might be part of the problem.)

Subject: Re: DX440 needs alignment ??

I'm making a wild guess here, but since your AM section is working "flawlessly," then I presume your frequency standard for the frequency synthesisor is on target.

Since you are getting the highest signal tuned to the proper frequency, I therefore presume your frequency synthesisor IC is okay. Therefore, I presume your problem is caused by OVERLOADING.

Yes, your RF gain may be down, but modern front-end RF stages are normally run wide open to maintain good signal-to-noise ratio. If my guess is correct, what you need is an ATTENUATOR before the antenna input to your receiver.

The AOR AR-1000 handheld scanner tunes very broadly on the FM band and exhibits distortion products when tuned right on the frequency in an urban area close to FM transmitters. It sometimes has difficulties scanning on the FM band. Switching in the 10 db attenuator cures these ills, at the expense of sensitivity. I suspect the DX-440 of suffering from the same malady. This is with the factory rubber ducky, which I'm sure is pretty much equivolent to the DX-440 whip antenna fully retracted.

Or, it might be something completely different!

Subject: Re: DX-440 Cross-modulation problems...

On small portables, a simple front end pre-selector, like the commercial Grove Mini-Tuner, or ever a simple home made one, will often cure over-mod and cross-mod problems.

Subject: antenna tuners

I have a dx-440. For the last several weeks I have been using some lead wire left in the attic from the last owner as an antenna until I could get one up. It worked pretty well, and I could pull in Australia, Eastern Europe, South America, etc.

This saturday I put up a 100' copper straight wire antenna from the garage to the house. I put in a 3' ground pipe and am grounding directly to it. The antenna is about 15' off the true north/south axis.

The problem:
The DX-440 is swamped with signals! At almost every point on the dial there is a radical mush of overlay signals. Using the rf gain doesn't help much at all. MOst of the am dial is incomprehensible. The LW range has a lot more activity on it, but it seems to all be harmonics of MW.

I can't believe that the twin-lead wire laying in the attic in a pile make a better antenna than a carefully constructed 100' copper straight wire. So, is there some device to help the DX-440 regain some control over the signals...such as an antenna tuner? I would like to build one if there are plans available.

The DX-440 does not have a signal strength meter, just 5 leds. They are lit up over most of the regular bands.

The stations that can elbow other signals out of the way, such as Austrailia, VOA, etc, sounded better before without as much interference.

Subject: RE: antenna tuners

Ahhhh... those would be images, not harmonics. As for the actual problem, it seems to me that you could solve it either by using a preselector of some sort or an attenuator. I think that actually tuning the antenna will worsen the problem... any other opinions on this detail?

However, another solution, which would make your antenna a Beverage (except that it is too short) is to use a 470-ohm resistor to bypass it at the far end. At the end of the wire away from the radio, attach this resistor, and connect it to an additional ground stake.

"I can't believe that the twin-lead wire laying in the attic in a pile make a better antenna than a carefully constructed 100' copper straight wire. So, is there some device to help the DX-440 regain some control over the signals...such as an antenna tuner? I would like to build one if there are plans available."

A simple tuned L-C circuit might help here... couldn't tell you what values the parts should be, though....

Subject: Re: Sangean ATS-803A Accessory: What is it?

Another reason to use the whip is overmodulation. The Dx-440 and 803A do not have any tuned circuits in the front end of the receiver. This means that strong signals, on frequencies other than the one you are listening to, are also input to the electronic circuits used for receiving your signals. These circuits are not linear and this generates harmonics (i.e. "phantom signals") within the receiver. You will sometimes see stations appearing on frequencies that you know they are not broadcasting on.

This effect can be reduced by one of two methods: stop using the external antenna and switch to the whip; or by adjusting the RF gain control. I have also found that partially collapsing the whip often helps in high signal strength areas.

Also, some users of this type of radio have found that an external antenna tuner from Grove or MFJ has helped. This functions as a simple front end tuned circuit and helps to reduce intermod.

ANTENNAS AND STATIC ZAPPING

Subject: Sangean burnout... (loss of reception)

Seeing all these posts about Sangean radios developing poor AM reception has prompted me to tell about my experience with them and how I fixed the problem.

I've had a Radio Shack DX-390 (aka Sangean 818) for close to a year now and have been quite satisfied with its performance. I have the radio hooked up to a 60ft length of wire antenna strung from the side of the house to a tree and can pick up stations from all over the world with no problem.

Here's the catch: a long piece of wire left out in the wind/snow/rain can pick up a **LOT** of static electricity (I know this from experience, unfortunately). I was listening to my radio a couple of weeks ago when the station I was listening to just disappeared. At first I thought that the antenna connection had come loose, but when I touched the connector I found out just how much static had built up in it (ouch!)

I opened up my radio (it's out of warranty, anyway) to see what kind of damage had been done. Luckily, (and with the help of my brother who, unlike me, is quite knowledgeable about electronics) I found that the only thing that had been fried was a Field-Effect Transistor labaled Q1 on the circuit board (this is in a DX-390/Sangean 818 mind you, other models could be different). I replaced this with an MPF102 FET that I bought at Radio Shack for $.99 (Cat. No. 276-2062) and my radio has been working fine ever since.

Hopefully this bit of information could be of use to some of you, but keep in mind that if you open up your radio, you do so at your own risk. I don't recommend even attempting this unless you or someone you know can handle a soldering iron pretty well.

Subject: Re: [Need Help]: External Antenna for ATS 803A

I had an ATS 803 A and I decide to set up an external antenna for it. I followed the direction in Passport to World Band Radio. I bought Radio Shack's Antenna Kit (278-758). It says to connect the ground terminal of the radio to ground, but I could not find out where is the ground terminal on the ATS 803A.

While some people have had trouble with very long external antennas with this radio, the antenna in the kit you describe is about 20 meters and works fine with this radio. Don't worry about the ground terminal, since there is none. If you wish to ground this radio, simply attach a ground wire to the metal foot of the radio, and then attach the wire to a ground rod. Just make sure to disconnect both your external antenna and the ground wire if a storm is coming, since you don't want lightning or (more likely) static to damage your radio.

Also, you should be told that this radio has a place to connect an external antenna, so you don't need the claw clip. I work for Passport, so I know that the claw clip is suggested only for radios that cannot have an antenna directly plugged into them. The receptacle for an antenna plug is on the back of the radio, and it has a switch next to it for one's choice of the external antenna or the radio's own whip antenna. Instead of using a claw clip or alligator clip, get a phono plug (also called an RCA plug) from Radio Shack, and solder it to the lead-in of your antenna instead of using a claw clip. Once you get the antenna plugged in, put the antenna switch on the external setting, and you'll be fine. However, if you're listening to strong stations, you may want to cut back a bit on the RF gain control to avoid overloading, which will give you "ghost" signals from stations other than the one you want to hear. The wire will help with the weaker stuff, though. (By the way, your ATS-803A may have come with a very odd antenna connector, which I found very bothersome. An RCA plug soldered onto your lead-in is cheap and also much easier.)

It is important to disconnect any external antenna if a thunderstorm is on the way. Do the same with your ground wire. Although I live in an area with a lot of summer storms, I haven't had any of my radios fried yet by lightning or static. With a little prevention, you should be fine. Also, one thing to keep in mind with many models of portable SW radios is to be careful when touching the whip antenna in dry or cold weather, since the static from one's body can get into the radio and cause trouble. A simple way to prevent problems is to develop the habit of touching something made of metal before touching the radio; that way, the static charge is taken off your body before you touch the radio.

Marie Lamb
Editorial Contributor, Passport to World Band Radio
(and longtime ATS-803A owner)

Subject: Re: SHORTWAVE

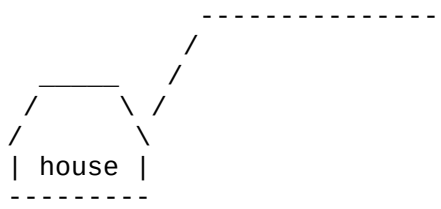
I have a 1992 Radio Shack DX440 Shortwave radio. It was the best when I bought it. However, I need to find a relatively simple way to make a powerful antenna that will allow me to pick up stations.

Get an "RCA phono plug" from Radio Shack. Attach 50' of stranded hookup wire (#18 to #22 guage wire is best from a mechanical standpoint - makes no electrical difference) to the center pin of the phono plug.

You may need to have someone solder this connection for you - I don't know if Radio Shack has a solderless RCS phono plug.

Insert the phono plug into the external antenna phono jack located on the back of the DX440. Move the antenna selector switch located next to the phono jack from "internal" to "external" (my memory may be failing me here
- I think the DX440 has an internal/external switch. If it doesn't, then don't worry about it.)

Run the wire as high and as long as possible. Preferably get it outside, as shortwaves don't penetrate houses very well. An sort-of upside-down "L" shape like this is best:



Ideal would be about 50 feet up and 75 feet long, but make do with what you can easily get, and don't sweat it. Higher is better than longer, up to about 30 to 50 feet or so.

If you have problems with electrical noise from appliances, light dimmers, TV sets, computers, etc, use Radio Shack TV coax cable with an "F-59 to phono plug adapter" to run coax cable from your DX440 to a connection to your antenna outside the house.

Subject: Re: Antenna

An oddity I've discovered, and maybe somebody could clue me in as to why it is so, is that if I put the radio on a radiator (old apartment building with hot water heat) the reception improved dramatically. Only drawback is on cold days the radiators get hot. BTW, my DX440 has a jack for external antenna on the back, though I've never used it.

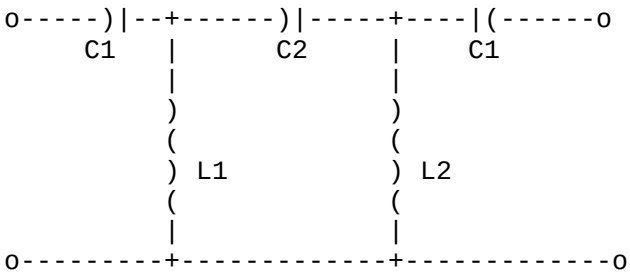
It does this because your whip antenna is inadequate. You are coupling in signals from the centarl heating pipes. You could try putting the radio nearby and attaching a wire between the central heating and the whip. You could also attach the external antenna jack to the radiator.

Subject: Re: DX440 whine removed

I bought a Realistic DX-440 six or seven months ago. I have used it mainly to listen to international news services, but I also like to do some random tuning to see what I can found. One of the problems I have encountered is interference in the low-frequency part of the short wave due to strong medium-wave stations in the area. Is this a common problem with this model, or is it just my set?

Re: Improvements to DX 440 reception with external antenna

The filter that does so much to keep MW out of the SW bands can be found in the ARRL Handbook. ASCII schematic:



The two caps marked C1 are both 1500 pf, any suitable working voltage. C2 is 820 pf. The two inductors L1 and L2 are both 2.7 uH. I had to go to the local branch of Active and buy the capacitors, but the inductors I made by removing the slugs out of two surplus coils and by removing a few turns off them to get them down to a calculated inductance near 2.7 uH.

Connect your antenna and ground to one end of the filter, and the other end connects to the RCA plug for the radio input (ground side of filter to the shell of the plug). I suppose proper RF design would put all this in a shielded box; but mine is right out in the open behind the radio, and seems to do the job. It possibly could be made small enough to fit inside the radio, too.

It works very well, it keeps the AM stuff from cluttering up the whole band - I can even hear a lower noise floor when I put in the filter all the way up on the 20 metre ham band. Of course, it makes the outdoor antenna useless for MW DXing - but I wasn't much interested in that anyway and I can always fall back on the internal whip for that.

One of the posts I saved and then lost suggested building two of these filters and series connecting them for even sharper response; I've been so happy with the very few faint spurious signals I get now that I haven't bothered. The calculated cut-off of this filter is just above the top of the AM band; you may see some loss of signals around 1.8 MHZ, for instance, but everything above that comes in basically with no loss.

Now for long-wave DXing, you'd need the opposite; a low-pass filter with a cutoff just below the AM broadcast band. I've got to play with some of the filters in the ARRL handbook; only trouble is, for these lower frequencies, I'd sooner buy coils than try to wind them.

Subject: Re: Broken RS handheld

Does anyone know if it is possible to order a replacement antenna from RS or are they going to make me send it in to their service department to do somthing I could easily do myself? Also, does RS have service manuals for their products that I can order?

There is a good chance that you can just unscrew the old antenna and screw on a replacement from RS.

You can order service manuals for their products. The sales droid may not know that it is possible but, if you keep asking, you can usually find someone who can help. It might require the store manager calling the regional sales manager for directions.

Subject: R. Suid-Afrika

Excellent advice about running coax from the radio to outside long wire. Well not so long actually, about 18' of copper strung from roof to garage attached to 20' of shielded ethernet cable discarded from the office to a connector block to an RCA jack that plugs into my DX440.

A whole new world has opened up. Last night on 4810 at 0300 UTC I heard a program of American-/Euro-pop introduced in a vaguely Dutch-sounding language. I consulted the addendum to the WRTH 60 meter listings posted here and it gave Radio Suid-Afrika/R. Orion from So. Africa in Afrikaans, which it probably was, considering the other stations listed were Armenia and Vladivostok. The fuller schedule in WRTH said they had English broadcasts, so I will listen again to confirm.

Subject: Re: 803A + Long Wire = POP! Bewarned.

Perhaps the most cost effective solution is to ground the antenna through a high value resistor, perhaps 470 ohms to 10,000 ohms. This will drain the charge while not noticeably degrading reception. The resistor wattage isn't important, 1/4 watt is a common value. A 1000 ohm 1/4 watt resistor might be a good value to ask for.

Basically, static electricity accumulates on the antenna, and it discharges through the FET. The resistor drains the charge, preventing the voltage from building up.

Subject: Re: Grounding ATS-803A

Try cutting a 1/4-wave dipole antenna, if you have enough window area to install the inner 1/2 across. Maybe you can run a wire outside or clamp a connection to the window frame.

If you want to cut out much or most of the noise, I think you might want to try the Palmor external loops. From what I have read, it is desirable to have a tuned loop in a conduit to cancel the line noise. Grounding is not going to help unless you tune your ground wire with something like the MFJ ground tuner. Sometimes grounding is good for RF ground to improve the received signal and/or for DC ground to protect your set's AC from damaging electrical spikes.

Subject: Re: Grounding ATS-803A

You need a copper stake driven into the ground, at least 8 feet, and 20 floors long. Just connect your radio to this with copper braid.

Subject: Static electricity (ATS-803)

I had a problem with static electricity on my EMERSON ATS-803 while on a camping trip. I had strung an external antenna up a tree and static built up and screwed up the CPU inside.

I took it to a local Dealer , who said "I was lucky it wasn't worse" as it turned out it was easy to fix:

Just remove the batteries until all capacitors discharged I haven't had any problems since.

Subject: Re: Diagnosing the Zapped DX-440/ATS-803A

I wanted to follow-up on my posting of yesterday about this. I spent some time fiddling with my DX-440 after I got home and discovered something interesting. I don't think it is zapped; I was able to get some SW stations (I think mainly WYFR in some of their various languages! :-) to light the

full row of S-meter LEDs, and even maintain that with the RF gain reduced, using only the whip antenna. Other stations, like the BBC on various frequencies, would give a full-range indication at times, but were quite variable. HCJB came booming in, but RFPI was barely understandable. RHC was weak, and WWCR and WRNO undetectable, while KTBN was strong.

I then tried attaching an external antenna and doing some other tests. I was switching back and forth between the whip and connecting an external longwire using the rear-panel phono jack and seeing what effect the EXT/INT antenna switch had when I noticed two things that might be of interest -- they simulated the no-sensitivity condition that the zapped radios displayed:

1) If that EXT/INT switch is not making good contact, it can get wedged in a state where neither side is connected, it seems. The radio then appears dead. Smartly flicking it from one side to the other fixes this. I suspect some contact cleaner inside the switch would also help.

2) At one point, after my repeatedly switching antenna inputs and connecting and disconnecting the external longwire, the radio seemed to go completely dead, with nothing but hiss coming out of the audio, even when the display showed it to be tuned to frequencies that had had strong signals a few seconds before. Manipulating that antenna switch did nothing to cure this, but turning the power off and on again fixed this immediately. I found this to be particularly odd -- it seemed the microprocessor needed resetting, but why would varying the RF signal coming in cause it to go into an anomalous state?

Now, I haven't seen the rear panel of a DX-390 or its Sangean equivalent, so I don't know how similar this antenna connection and switch is to the one on that model. But it bears checking out. I really doubt that antenna switch is designed for heavy use; its rear-panel location suggests the designer expected it to be set once and then left alone. So someone who repeatedly changes from internal to external antennas may well wear it out, and a defective or damaged switch could simulate a zapped front end. (Of course, it's probably just as difficult and costly to fix... :-()

Another thing I noticed was that having the external antenna connected fed in so much signal that it wasn't too important that the switch was set to "EXT" -- maybe that is a workaround for those who wish to use a longwire. Perhaps leaving the switch set to "INT" would mean there was no direct electrical connection between the antenna and the RF front-end, which *might* keep a static build-up from zapping an FET, while still allowing the RF to radiate from the antenna end inside the radio to the detection circuitry. Then again, maybe not...

And one last point: At least in my location (South St. Louis city), there appeared to be enough FM signal drenching the area that having the DX-440's whip all the way up meant that I received "FM squawk" as a practically continuous background all over the SW spectrum, and only the presence of a relatively strong SW broadcaster was able to repress that enough to get a listenable result. This might have something to do with the state of the batteries, since I was doing this test with battery power only. I suspect the power available when using an AC adapter (plus the RF signal picked up by the power grid and coupled into the radio) makes a big difference. I get much better reception with my Sony ICF-7600D (a radio with a reputation for low sensitivity) operating on an AC adapter with its shorter whip than I do with the DX-440 and its much longer whip on battery power.

Subject: Re: Diagnosing the Zapped DX-440/ATS-803A

Is there any precise and specific test the user can do to determine if their Sangean ATS-803A or Radio Shack DX-440 (or other Sangean model or RS clone) has had this zapping? There were such tests for diagnosing the zapped FET front-end in the Sony 2010, so it would help if the equivalent for the Sangean line could be posted.

I posted an article a week ago about how I thought my DX-440 had been zapped. Thankfully, when I opened it up, all that had happened was that the wire had become detached from the whip antennna. Phew! All is now happy again!

I would recommend a decent antenna and antenna tuner. The tuner is vital as the front-end of the DX-440/ATS-803A gets easily overloaded with an outdoor antenna and you get signal mixing and a lot of mush. The DX-440 plus the external antenna and tuner got me quite a readable signal from the broadcast by Radio St. Helena on 16th October.

Subject: Re: Apartment Antenna

While comparing a reel antenna with the 100 ft wire I have spread under my carpet... I use a YB-400.

Oops! This is how I destroyed MW reception on my Sangean 818cs, owing I think to static discharge, a phenomenon more likely to occur when running the antenna along the carpet, they say. Also, the danger is higher in winter, they say. I note you said your antenna is grounded (mine was not), and grounding does help, they say. Is there any reason to believe that Grundig radios are less likely than Sangean radios to suffer from static discharge?

Subject: Re: Q: Sangean ATS-803a static-sensitive transistor(s)

The posts mentioned about some transistors in the Sangean ATS-803a that are quite sensitive to static. If I remember correctly, it/they were connected fairly close to the whip antenna's input on the circuit-board.

You bet they are sensitive to static electricity entering from the antenna circuit. One good static electric zap and the sensitivity of the unit went down drastically. Sangean officially does not admit the problem, but it's there. Especially in the winter. That's when there were several posts to this board about the problem.

I don't remember if the exact component that failed was noted in any of the posts, but it is in the FET. I'll check to see if I saved any of those posts. If so, I'll send them to you.

Subject: Re: Q: Sangean ATS-803a static-sensitive transistor(s)

Well, Jim, you asked about the posts son this newsgroup regarding static electricity with Sangean radios from last winter/spring. Here they are: Regarding the problem with static electricity discharge blowing Sangean (Radio Shack) shortwave radios. My own experience is that I have a RS DX-370 (Sangean ATS-800A), which I have had for several years without any problem with static electricity. I also have a Sangean ATS-808 (RS DX-380) which I purchased a year ago. As soon as the weather turned cold, and the static electricity built up in my house, I blew the sensitivity of the radio's AM (MW & SW) section by plugging in an external antenna in the ATS-808 antenna jack. The FM section seemed to be unaffected.

I returned the radio to Sangean, who replaced it under warranty. Two days after receipt of the replacement, I blew that one by hooking up an external antenna again. They sent me a second replacement. I have been very careful with that unit, and have had no problem since. I also have NEVER plugged in an external antenna since I recieved the second replacement.

I have spoken with both the serviceman at Sangean and the Sales Manager. The serviceman acknowledges the problem, and has told management. Management including the sales manager say there is no such problem.

Anyway, there were several posts to this newsgroup last winter regarding this problem. I have saved them so here is a sample of some of those postings. I do not agree or disagree with what was been said. I am only reporting statements from some of the newsgroup postings for you to read. The posts are not necessarily in chronological order.

I have a RS DX-390 (Sangean ATS-818) which was destroyed by static over the weekend when someone who shouldn't have been touching it grabbed the antenna to adjust it without discharging themselves of surplus static. I've read several post the specifics again as to what part inside was actually destroyed, where it is located on the board (ie: what obvious capacitors, resistors, etc... is it close to), and where I can get a new one to replace it.

If DX-390 is similar to DX-400 (DX-400 is Sangean ATS-803), then all you have to do is remove all the radio batteries, including the backup ones for a couple of hours. This will discharge the capacitors in the cpu and reset it. After a few hours, replace the batteries or, better still, put in fresh ones and see if the radio works.

I understand that the problem is that the static electricity zaps the FET in the unit. This has to be replaced. I don't know how that is done, however. Sangean management insists that the problem is only if someone uses an external antenna, and that it will NOT happen through the whip antenna they supply as part of the radio.

You have just confirmed what I and others have told Sangean. I suggest that you write to Sangean in LS attn: Sales Mgr, Sangean USA. This seems to be a major problem for some of us in the parts of the US where static electricity is prevalent in the cold weather.

That would be wonderful, if it works. If what others are saying - that the static electricity zaps the FET - then nothing but replacement of the zapped component will do the job.

I spent some time fiddling with my DX-440 (ATS-803A)..and discovered something interesting.....I tried attaching an external antenna and doing some other tests. I was switching back and forth between the whip and connecting an external longwire using the rear-panel phono jack and seeing what effect the EXT/INT antenna switch had when I noticed two things that might be of interest-- they simulated the no-sensitivity condition that the zapped radios displayed:

1) If that EXT/INT switch is not making good contact, it can get wedged in a state where neither side is connected, it seems. The radio then appears dead. Smartly flicking it from one side to the other fixes this. I suspect some contact cleaner inside the switch would also help.

2) At one point, after my repeatedly switching antenna inputs and connecting a disconnecting the external longwire, the radio seemed to go dead, with nothing but hiss coming out of the audio, even when the display shoed it to be tuned to frequencies that had had strong signals a few seconds before manipulating that antenna switch did nothing to cure this, but turning the power off and on again fixed this immediately. I found this to be particularly odd-- it seemed the microprocessor needed resetting, but why would varying the RF signal coming in cause it to go into an anomalous state?

Now, I haven't seen the rear panel of a DX-390 or its Sangean equivalent (ATS808) so I don't know how similar this antenna connection and switch is to the one on that model. But it bears checking out. I really doubt that antenna switch is designed for heavy use; its rear-panel location suggests the designer expected it to be set once and then left alone. So someone who repeatedly changes from internal to external antennas may well wear it out, and a defective or damaged switch could simulate a zapped front end.

Is there any precise and specific test the user can do to determine if their Sangean ATS-803A or Radio Shack DX-440 (or other Sangean model or RS clone) has had this zapping? There were such tests fro diagnosing the zapped FET front-end in the Sony 2010, so it would help if the equivalent for the Sangean line could be posted.

After reading all these posts, I am beginning to wonder about my DX-440. It still has excellent medium-wave reception.... But maybe the thing is zapped? When the 2010 was zapped, the medium-wave reception was the first thing to go.

When the Sangeans are zapped, will they still get reasonable shortwave reception when using an external antenna, but not with the whip? Or are they totally dead even with a longwire connected to them? What happens to the MW reception on a zapped Sangean? And is FM totally separate, so that FM reception isn't affected at all?

I posted an article a week ago about how I thought my DX-440 had been zapped. Thankfully, when I opened it up, all that had happened was that the wire had become detached from the whip antenna.

It happened to me yesterday. I walked across a carpeted floor while carrying my ATS-803A under my arm. When I reached the other side and touched something, I got a static shock and the Sangean is now definitely not working properly. The sensitivity on FM is hopeless.

Can anyone please help with the FET type and precise location on the Board??? I obviously need to replace the RF pre-amp FET. Alternatively, does anyone know how I can contact Sangean?

I had a problem with static electricity on my Emerson ATS-803 while on a camping trip. I had strung an external antenna up a tree and static built up and screwed up the CPU inside.

I took it to a local Dealer, who said "I was lucky it wasn't worse" as it turned out it was easy to fix. Just remove the batteries until all capacitors discharged I haven't had any problems since.

All this talk of Sangeans getting Zapped has me kind a concerned. I've got a 440 and a 380 and always use a reel antenna inside and outside (strung thru trees). Am I gonna get zapped, too?

Your message mentioned zapping the front end of the Sangean The front end of the Sangean 803A/DX440 has an FET which will blow. It's Q115. Radio Shack used to sell the part which you can use as a replacement, it's MPF102 and sells for 79 cents (US). Hope this is useful.

There have been numerous posts lon this newsnet regarding zapping Sangean FETs with static electricity when using an external antenna. Sangean admits this can happen.

Does anyone have any experiences to report of this happening WITHOUT USE OF AN EXTERNAL ANTENNA?

Has anyone had their radio loose sensitivity when it has been possible to have had a static electric charge go through the radio?

It happened to me, yes it did, I was sitting in my comfy chair with my thinly veiled Sangean (RS DX-390) and the antenna touched the lampstand which happened to be brass and well grounded /******/ZAP/**********>,

Oh fabulous day, a warranty repair. (bought extended warranty from RS""""""""""Thinks: when DX390 is discontinued by the nice Radio Shack people, there will still be a lot of static electricity around.

I have not had any problems with static electricity with my 2010 since I installed diodes in the antenna line, and kept my old air-gap lightening arrestors in line (over the last 6 years or so at least). so the anecdotal evidence from you perspective is pretty good!

I'd imagine there is a large environmental effect to all this. Years of reading the net has suggested to me that people in the US have big problems with static in the colder months when the air gets dry? Here in Australia static is not such a big problem...this may explain why my Sangean ATS-808 is and has been happy for quite some time. It's a rare day in my part of the world you have static trouble.

When the FET blows shortwave reception goes completely dead, even the strongest broadcasts i.e. BBC no longer can be heard at full volume. AM sensitivity goes way down but strong stations still come in. FM does not seem to be affected in any way.

Watch out for static when connecting the antenna I have gotten zapped twice. In the future I plan to only use inductive coupling in the winter months or even year around, the small improvement in reception on the weak stations is just not worth the risk. The whip on the 390 actually does a very good job for the radio in my experience, the advantage provided by the antenna is small. In fact I believe the external antenna connection does not get any attenuation so a strong antenna can actually overload the selectivity of the tune actually making reception worse with the strong broadcasts dominating the bands.

I really like my DX-390. The whip doesn't seem to bring in the stations as well as my DX350 but I ran a 140 foot 22 guage solid copper horizontal antenna to a big tree outside and put an aligator clip to the whip and it REALLY improved my reception.

I wast just notified that an UNGROUNDED longwire antenna attached to the whip of a DX390 with an aligator clip can cause electrostatic DAMAGE to the radio.....Be advised

---

TRUE, I had my Sangean 803A blow an FET one winter storm, heard all this cracking noise, and all of the signals went down, blow the recv FET transistor inside it. I fixed it my self, only a few minutes to do it, but a pain to find the same type of FET.

I bought a Sangean Ant-60 Portable Shortwave Reel Antenna awhile back and haven't used it much. I don't want to plug it into my DX-380 for two reasons. First, it tends to mute MW reception and seond, I've heard some horror stories on the net from 808/380/818 radio owners who experienced reception problems after prolonged plugging and unplugging of this antenna.

My solution is to use the optional mast antenna clip. However, having the plug joined to the clip is rather awkward and too tempting to just use the plug. I've cut the plug from the antenna wire and have done likewise to the female receptacle on the Mast clip wire. What I now have are two bare wires that I want to join together so I can then use the Mast clip and clip to my SW mast antenna.

I HAVE DETERMINED BY SAD EXPERIENCE THAT USING THE ANTENNA CLIP INSTEAD OF THE PLUG WILL NOT PROTECT YOUR RADIO.

After the external randon-wire antenna ruined MW reception on my Sangean 818cs, I thought the plug was the problem. While waiting for a replacement radio from the very gragious Grove Enterprises, I used my somewhat older Sangean 808 with that same antenna, this time confidently fastening the antenna to the built-in whip with an alligator clip instead of using the plug. Now MW reception is ruined on the 808 as well, and that one it beyond warranty.

Apparently, the problem was never the plug but rather some evil things called "electrostatic damage". Maybe this is why they tell you to connect the antenna or the radio to a "good ground", whatever the hell that is anyway.

The upshot for all us non-nerd radiophiles: Be wary of all the "experts" who encourage us to use external antennas, yet who say nothing about electrostatic damage.

I am going to miss using the external antenna. It was a clear improvement over the built-in whip. For those who may have missed previous episodes of this saga, my external antenna is an 80-foot fire tacked to the baseboards around the living room,. the dining room, and half the bedroom.

Here are some ideas I am considering. I hope to see your comments on these ideas, as I am fairly in the dark on all matters electrical.

- I should probably run the antenna along the edges of the ceiling, rather than along the edges of the floor. Someone suggested it would be best not to have the antenna fitted snugly along the edges of my wall-to-wall carpet.

- Maybe I should put a capacitor or some such gizmo between the antenna and the radio.

- Maybe I should go on avoiding the antenna jack and use the alligator clip on the built-in whip.

- To indicate how desparate I am for information on this matter, I often listed with headphone with a 20-foot extension cord. As I wander around I occasionally (more likely in the winter) hear clicks and pops as the earphone cord slinks across the carpeting. I presume by static electricity. Maybe I should never use the headphone extension cord.

I'm just using a portable reel antenna. I connect it to the built-in antenna and throw it up high around the room. I use inside and when I'm outside in the summertime. I just connect the reel antenna to the whip. Really pulls in the signals. Works great!

Actually I am a little confused after reading the posts -- does the damaging static charge build up while the external antenna is connected, or while it is just lying around not connected? If it happens when the antenna is still connected to the radio>(and the radio is on), then what can be done to avoid the problem?

I suppose it can happen either way. I think it's more likely to cause damage when the antenna is first connected, but a spark to an already connected antenna can also cause trouble (even with the whip).

The cure is to bleed it away somehow. I use a transformer (one side attached to ground) to couple my outdoor antenna to its coaxial feedline: this effectively prevents static buildup. You can also ground the antenna itself, as I suggest above.

WARNING! Some receivers (Sangean, early Sonys, etc) do not have overload protection for reasonable voltage transients on external antennas! Put back-to-back diodes in parallel between the external antenna lug and the external ground lug on the radio. Most any silicon diodes will do. Then your front end FET won't burn out as easily next time. (This includes damage from static electricity when you touch the antenna terminals in the dry wintertime.)

And yes, be sure to disconnect the antenna when you're not listening to the radio.

My suggestion is...Don't plu in an external antenna. Get an antenna for SW that clips to your mast antenna and buy yourself a select-a-tenna for MW. I do this with my DX-380 and DX-440 and both methods work wonderfully###

It seemed the problem developed after I started using an external antenna (for shortwave reception). My external antenna consists of just an 80-foot wire tacked around the baseboards. At the radio end, the wire is attached to the 1/8" jack supplied with the 818cs. The external antenna degrades AM reception (which I am told is not unusual), so I frequently plug/unplug the antenna. My theory is that the external antenna plug (jack) on the radio is damaged, probably as a result of plugging/unplugging the antenna. I have had trouble before with 1/8" headphone jacks wearing out (on packed-sized Sony radios). AM reception sometimes improves with the antenna plugged part-way in.

Has anyone on the net experienced similar problems, only with the headphone jacks on Sangean receivers, or is this a problem limited to the external antenna jack? How many plu-in/plug-out cycles are we talking about before the failure occcurs?

My boss recommended a picofarad size capacitor between the longwire and the radio. He said that picofarad size would have minimal electrical effects on the antenna and front end but still protect the FET.

Don't overlook the possiblity of a static discharge on the external antenna zapping the front-end circuits of the receiver.

I believe this is exactly what happened to my Sangean ATS-808 when I went away for a weekend and left the outdoor antenna connected. On return, the AM reception was dismal and only strong local stations could be received. Yet FM and SW reception was OK.

It is always a good idea to disconnect any external antenna when not in use or during bad weather.

Since getting the radio replaced, I have had no further trouble and I have repeatedly connected and disconnected external antennas through the antenna jack.

In fact, I prefer to use the antenna jack instead of clipping onto the whip antenna if only because the latter causes the whip to become loose and "scratchy". With an antenna connected through the jack, the whip is electrically removed along with the "scratch".

Well, there are some of the comments that we made on this newsgroup regarding the static electric problems with Sangean radios.

Subject: Re: Sangean ATS-803A Accessory: What is it?

OK, I give up. I recently bought an 803A from Universal Radio, and in the box, along with the shoulder strap, headphones and AC adaptor, was this odd item. It's got an RCA plug on one end, a wire running from the RCA plug into a black plastic box, and a small hole in the box on the other end from the RCA plug's wire. The documentation for the radio doesn't have anything to say about it, at all, and frankly, I'm pretty well stumped. I tried plugging it into the external antenna jack thinking it was some kind of neat-o keen antenna, but couldn't pick up anything at all.

The black plastic box opens--one long side is a plastic hinge. I just looked at mine and unfortunately can't tell you exactly how to open it and don't feel like opening mine again. However, it was obvious to me at the time I did it so you should be able to figure it out. Now, when it is open, you will find a binding post inside. The idea is that you feed a wire antenna through the little hole and attach it to the binding post. Then close up the box and plug the connector into the back of the radio. Next to the socket is a switch. When the switch is up, you are using the wire antenna. When down, you are using the built-in whip.

Why, you may ask, should you ever switch off the wire antenna? Well, I have about 30 feet of wire strung around my living room as an external antenna. Some fm stations are just the wrong frequency for the length of the wire, and give a terrible signal. I cure this by pushing the switch down and extending the whip antenna part way.

OTHER STATIC DAMAGE

Subject: The "death" and resurrection of my Sangean ATS-803A

I had an interesting experience that may be of use to others, so here goes. The room where my shortwave is has its own circut breaker, and the other day I had on an air conditioner and a terminal and the breaker tripped for some reason. Later I tried to use my 803A but found that it did not respond to the power button. Its LCD display was stuck with the same apparently-random segments displayed no matter what I did. I was bummed out, to say the least. I assumed that it was history, since most things these days are not made to be repaired.

However, the other day I was showing a friend the radio to help explain shortwave radio features. When I put it back on the shelf for some reason I decided to plug its power supply back in and try it. Lo and behold, it worked fine! I have concluded that the power surge that apparently happened when the breaker tripped threw the 803A's microprocessor into a funky state from which it would not respond to anything. Of course, powering it down and back up put it into a well-known initial state from which it would restart from.

I mention this in case it is of use to others. This could apply to just about any computer-controlled shortwave radio, appliance, etc.

Subject: Re: The "death" and resurrection of my Sangean ATS-803A

My DX440 (more-or-less the same) does that every time I forget to unplug the adapter from the radio when it's not plugged into the wall outlet.

Apparently the DC inlet jack disables the internal batteries, including the microprocessor batteries.

The fix is to take out the "AA"'s for a few minutes, then reinstall them. This also kills the memories.

Subject: Re: The "death" and resurrection of my Sangean ATS-803A

Recently, I purchased an ATS-818A. After installing the memory backup AA batteries, I got a random pattern on the LCD, and it didn't respond to any of the buttons (like Power).

I have seen the same problem with the display. After removing the batteries a few times and re-installing them, it eventually works. It seemed particularly stubborn after I did the anti-chuffing mod but I eventually got the display back. DON'T GIVE UP!!!!

Subject: Re: The "death" and resurrection of my Sangean ATS-803A

The instructions with my DX440 (aka ATS 803A) mention waiting for one minute, then re-inserting the batteries if this happens. I had to do it once and it solved the problem.

Subject: Wire Tuner To Eliminate Static?

Your message mentioned zapping the front end of the Sangean The front end of the Sangean 803A/DX-440 has a FET which will blow. Its Q115. Radio Shack used to sell the part which you can use as a replacement, its MPF102 and sells for 79 cents (US). Hope this is useful. Mike Stine, Clinton, Maryland, USA

MOD TO REMEDY WHINE PROBLEM

Subject: Realistic DX-440 problem(?)

When the radio is being used, there is a high-pitched whine (hum?) which is noticeable over the speaker at low volume levels. It happens on all bands (i.e. SW, FM, AM, etc.), using both power sources (AC or battery); it is not loud enough to obscure the received signal but it's definitely there. Plugging headphones or an earplug into the headphone jack silences the noise, and it is not audible when listening over the headphones. Interestingly enough, I've noticed that turning the tuning knob ever so gently--not enough to make it jump up to the next 1 kHz tuning step--also silences the noise. I am reasonably sure that this whine I'm describing is NOT the "chuffing" sound of the synthesizer, which is mentioned in the 1992 ed. of the Passport to World Band Radio. I called the Radio Shack store where I bought the receiver, & they are not sure whether this is a problem. I don't know enough about electronics to gauge whether this is unusual or not.

Subject: update on DX-440 whine

The verdict: it is NOT a defect in the receiver. Other people are experiencing the same phenomenon. One person wrote that his review of the shortwave & ham literature "suggests that such receiver noise is quite common." Another reports that the "DX-440 whine is a well-known idiosyncrasy. As far as I know, they all do this to some degree. The noise is caused by the microprocessor keyboard scanning."

Suggested remedies/fixes:

1. Gently turn the tuning knob for the least noise (i.e. try to eliminate the whine), and then tune with the up-down slew buttons.

2. Switch the "LOCK" switch on after tuning to the desired station.

3. Use a set of headphones to listen.

4. Listen at a higher volume level, which will mask the whine.

Again, thanks to those who furnished these suggestions. If I receive any other explanations or possible remedies I will let the list subscribers know.

Subject: Re: Realistic DX-440 problem(?)

That whine isn't a problem with your radio, it's present in all DX440s and ATS803As (at least all the ones I've seen). It's caused by the microprocessor in the radio. If it's annoying you while you're listening to something, hit the Lock switch, that'll cut it out.

Subject: Re: Realistic DX-440 problem(?)

It is possible to at least reduce the whine by shielding the wires between the tuning nob and the circuit board.

Subject: Some help

I bought a antenna kit from Radio Shack. I've figured out how to set it all up except for grounding. The illustration shows the ground wire going to the ground terminal on the radio. My 803A dosen't have a ground terminal! Where do I attach the ground wire? Also, do I need a lightning arrestor? If so, can you recommend one, cheap (I'm on a budget)? Does radio shack have any good ones? Or should I go for the Transitrap LT from Universal Radio (List $20.95)?

I think, if I remember right, that the DX-440/ATS803A has an RCA plug as an antenna jack. If this is the case, then you would connect the antenna to the centre conductor of an RCA plug and the ground wire connects to the outer ring of it.

If your antenna is outside (as I expect it probably is) then a lightning arrestor is an excellent idea, though I can't recommend any one in particular (all my antennae are indoors). Also, it is a good idea to unplug your antenna when you are not using your radio, or at the very least, unplug it when you hear an approaching storm.

Subject: SANGEAN_ATS-803A

A peculiarity about the 803A bothered me so much I sent it to Sangean America for repair. It has a high-pitched "squeal" audible whenever the volume is turned down low or the audio is quiet. It is a constant hum about 1200 or 1500 Hz (my guess) and is *most* annoying.

I asked Sangean America to correct the problem as it was obviously a defect in the radio. To my surprise, a tech rep from Sangean called me and said this was normal, and that *all brands* have some sort of noise in their audio! He went on to say if I turned on the LOCK switch, the noise (read squeal) would cease or be more tolerable. This indeed works, but means I must lock the tuner - inconvenient!

Subject: Re: SANGEAN_ATS-803A

I have the same problem with my ATS-803A (but under the brand Emerson instead of Sangean). What you should do is slightly turn the tuning knob, but not so it changes frequencies. Just turn it a little and the squel will disappear (at least it disappeared on mine).

Subject: SANGEAN_ATS-803A

Yes; I can confirm this. What it is is an RFI (radio-frequency interference) artifact from the digital tuning CPU. Hit the LOCK switch, and the CPU shuts down while you enjoy the station of your choice. ;) All digitally-tuned radios do this.

Subject: Re: SANGEAN_ATS-803A

I reckon that it is interference from the microprocessor in the set. I wonder if better decoupling on the audio would help. The noise doesn't seem to be present on the DIN socket audio feed (I don't think that it is on the headphone socket stereo either). Perhaps this points to noise getting into the final speaker drive circuit. You can hear it with the volume set to zero and it doesn't get any louder as you turn up the sound.

Subject: DX440 whine removed

It is possible to remove the whine that the DX440 emits by shielding internal wiring, however, having done it, I don't think everyone will find it worth the trouble.

The problem has to do mainly with lead dress in the area of the volume control. The tuning knob apparently is scanned by the microprocessor just as the keyboard is scanned; this results in square-wave-like signals being fed to the knob. As the knob is rotated, one of 8 radial spokes inside the knob makes contact with three fingers in the knob assembly; I surmise the microprocessor watches these three, notices which one was contacted first, and then deduces which way the user is turning the knob. The whine is audible when one of the spokes is touching one of the fixed contacts.

Immediately adjacent to the wire assembly that connects the knob to the CPU board is a gray shielded two conductor cable that connects the volume control on the left side of the DX440 with the audio power amp on the right side. This wire was dressed right against the CPU/display board on my radio. As well, there is a green wire (common ?) connecting the audio amp with the CPU board in the area of the volume control.

Due to the close proximity of these wires and the mix of high- level digital and low-level analog signals, the whine is coupled into the audio signal at a point downstream of the volume control; thus, the whine is most noticeable at low volume and masked when you turn up the level.

I tried bypassing the contacts in the tuning knob with small capacitors; this was totally ineffective since any value large enough to reduce noise stopped the tuning knob from working.

I came to the conclusion that the shielding of the audio signal in the area of the CPU/display board was inadequate, and decided to double-shield this wire.

I used two pieces of braid stripped off co-axial cable. A piece from RG 8, about 200 mm long, was slipped over the tuning knob wire assembly (slightly flatten the braid so that you can work the connector through the braid), then insulated with tape (heat-shrink tubing would be much tidier - don't start this project at 9 PM on a Saturday night). I ran the gray shielded pair through a piece of braid stripped from RG58 - this requires un-soldering the gray pair from the audio amp.

On each braid, leave enough length to make a pigtail you can solder to a convenient nearby ground. Tape or use heat-shrink to make sure the braid doesn't short against the underside of the tuner/IF board.

After doing all the above, the noise was almost totally eliminated. Slight manipulation of the green wire from the volume control to the audio amp reduced and then eliminated the noise - I taped the green wire down over the little piece of copper shielding found in the area.

After doing all this, the radio has absolutely no whine no matter what position the tuning knob is in, both on the internal speaker and on stereo headphones.

It took a long time to do this; I advise anyone attempting to duplicate this result to make careful note of the screws used and where they came from. I usually suffer from the Brazil-nut syndrome when reassembling consumer electronic gear, however someone not all thumbs would have less trouble than I. Observe the usual precautions when attacking a prized possession with a soldering iron. And, of course, you blow the warranty away the moment you open the back of the case.

Someone was kind enough to post the observation that installing an extra diode on the CPU/display board would extend the FM tuning range down to 76 MHz. Well, it does...but FM sensitivity goes into the pit. Two local 360,000 watt EIRP stations gave me no LEDs at all, and lesser FM stations were inaudible. I had to dismantle the radio again and cut the diode I'd put in. I could verify the loss of sensitivity on the bench, powering up with the diode in and out and showing the loss. This seems very odd to me; I don't know why the CPU is telling the radio to go deaf, maybe there's so many strong FM stations where they use 76 MHZ that you must decrease sensitivity. I also verified that the first of these three (D404) blocks tuning above 26.1 MHZ. Still don't know what the third diode was for; didn't give me aircraft band or lower LW or faster scanning, so I left it out. My DX 440 works fine on the CB and 10 metre ham band (although I can't get 10 metre FM, of course).

I tried the filter also posted earlier here; and it works wonderfully well. The lower SW bands are actually useable now with an external antenna when before they were wiped out by local top-40. Doesn't help MW or LW reception of course; but the ARRL handbook lists other filters that look useful for low-pass, too.

As always, I take sole responsibility for my actions and for the opinions expressed above, and I expect users of this information to behave similarly.

MOD TO REMEDY CHUFFING WHILE SCANNING

Sangean 803 / DX440 Modification

The following mod will remove the "chuffing" heard while tuning the Sangean 803/DX440 radios.

WARNING:
a. This operation will void your warrantee.
b. You do this at your own risk.

1. Place the radio face down on a suitable surface and orientate it so that the base of the radio is towards you.

2. Remove the battery cover and take out the D-cells. You do not need to remove the AA batteries but you will lose your clock and memories, so make a note of them before you go on.

3. Remove the six screws which hold the back of the radio in place. One of these is in the battery compartment.

4. Lift off the back cover and swing it over towards your left to lay it down. This is to avoid breaking off the wire going to the whip antenna.

5. Locate the 8-wire flat cable which runs from the circuit board above the loudspeaker on your right horizontally across to the rf/if board. The cable plugs into an 8-pin socket which is located almost dead center in the radio on the rf/if board.

6. Carefully remove the cable from its socket. Identify the second wire from your left in the cable. (Second to last on the side furtherest from the loudspeaker.) Bend this wire up and out of the way (or cut it off!) so that it will not plug back into the socket or make contact with the socket in any way.

7. Carefully plug the cable back into the socket and check that the wire you modified is not making contact with the socket.

8. Repeat steps 4 through 1 in reverse order and reprogram your clock and memories.

9. Turn on the radio and enjoy the lack of "chuffing". (You may still hear a "thud" while tuning across a strong station.)

Remember: a. This will void your warrantee but if done carefully it is reversible.

b. Follow the above instructions at your own risk.

The main purpose of the muting circuit that gets disconnected by this modification is probably to make the set silent when you hit the "search" button. I personally think that it is a feature to hear the "search" in operation.

The reason why the set is "chuffing" is a result of a bad desing of the mute circuit:

- It is placed where there is a DC potential.
- It is placed after the volume control (less audiable if placed before).

Subject: Re: Anti-Chuff Mod - Again!

You may want to think about it a bit more. The newer DX-440's seem to have a tighter plug which is harder to remove with a greater liklihood of damage.

The mod does remove the chuff when turning the tuning dial. But I find that it adds a more intolerable 'boink' when using the digital selector when tuning in any moderaely powerful signal and when turning it on. Given my druthers, I'd prefer the chuff.

Subject: Re: Anti-Chuff Mod - Again!

Actually it's done now, and I must say that I prefer the boink when you punch in a number than the horrid pop during dial tuning without. I guess it depends on what you do most...I listen to specific programs on occasion, but I also enjoy tuning around. I feel that the chuffing is absolutely intolerable if one will be freely hunting around the band.

However, neither with or without is ideal, and that's really my only complaint about the DX-440 in 24 hours of (almost) constant usage. MAJOR improvement over my Sanyo boombox (with a pair of SW bands) and the wonderful old Halliscratchers!

It also may make a difference that I spend 90% of my listening time using headphones, and the chuffing is much more evident with headphones than without.

Subject: Sangean ATS803A/Realistic DX-440 Radio Modification

Unfortunately the above mod also removes muting during power-on, which allows a potentially harmful 'thump' to be heard. In addition when entering a new freq. directly from the keyboard into the PLL freq. synth, a loud 'squeal' will sometimes be heard as the PLL locks onto the new freq. I modified the above mod to include a small SPST switch which I located on the side of the radio next to the ext. ant and tape out sockets. This switch connects the above mentioned ribbon cable second lead into its matching socket. This minor change allows you to either enable or disable muting at will. You get all the advantages of being able to scan without 'chuffing', without risking the speaker or audio amp due to the loud thumps...

Subject: Re: Sangean ATS803A/Realistic DX-440 Radio Modification

The only negative side-effect of it is that it causes a "pop" or "boink" sound to be given out when you punch in a new frequency with the keypad. Aside from that it makes the radio much more enjoyable.

Couldn't one have the best of 2 worlds by putting a switch on the side of the radio so one could switch from one mode to the other?

Subject: Re: Sangean ATS803A/Realistic DX-440 Radio Modification

One could, I did, and like the switch, makes the radio look cool.

OTHER MODIFICATIONS TO THE SET

Subject: Re: DX-440 Modification

As an aside, a convenient way to do the fine tuning with this modified control knob, is to switch the BFO on, tune it to eliminate the tone, then switch it off again when you listen to a normal station (normal meaning not-ssb). Most of the time the tuning point is near the center position but it may vary over time. This confirms the necessity of such a fine tuning facility. Many thanks to John Adams who described this modification.

Subject: DX-440 RX mod / Dual RX?

DUAL-RECEIVE for under 100 dollars! Here's how I did it.

The strong RF field at my home rendered my radio unusable. Apparently the local TV, FM, and AM signals were overloading the receiver. Honolulu is probably the worst place in the USA in this respect; there are many broadcast towers on top of residential buildings!

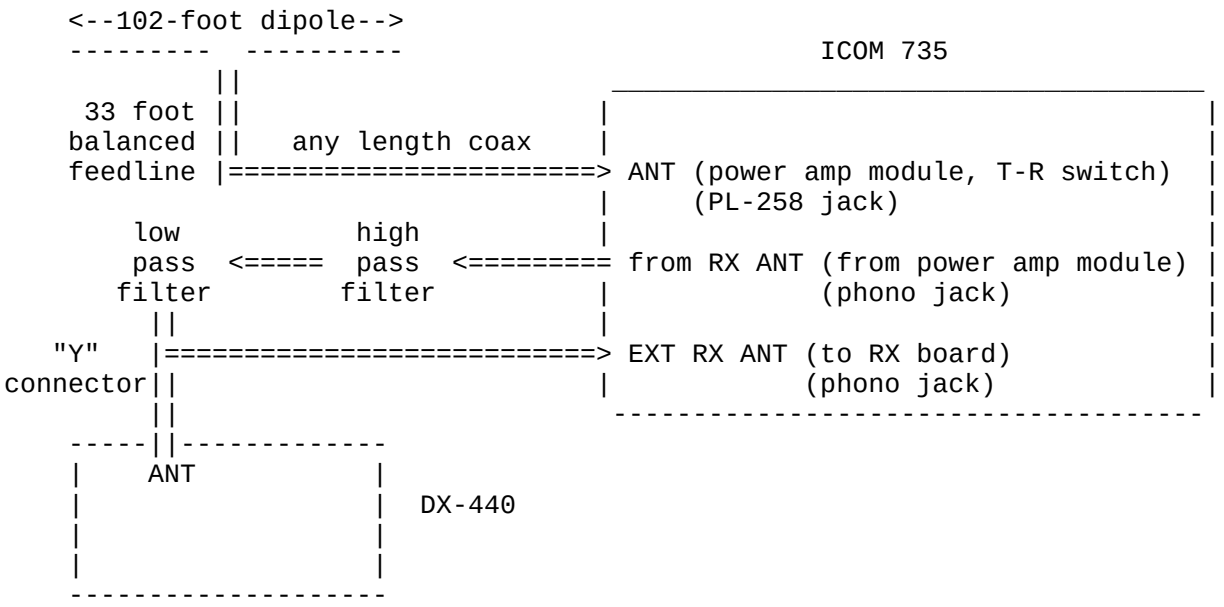
I tried using my spare antenna tuner (Drake MN4, a pi-section design with low-pass characteristics) with stellar results. The DX-440 sensitivity approached that of my ICOM 735, and it could handle the strong signals from a G5RV dipole antenna (102 foot dipole, center-fed by a 33 foot length of open-wire 450 ohm feeder) at 110 feet.

Unfortunately, it required a lot of knob twisting. I decided to try building a band-pass filter to reject the out-of-band signals.

First I built the high-pass filter described in rec.radio.shortwave, in order to reject the AM band. Next I built a low-pass Chebyshev filter from values given in the ARRL handbook (7 elements, cutoff freq 35 MHz.) The AM band filter was quite effective, and was useful primarily on the low end of the SW spectrum. But the big payoff came up when I attached the low-pass filter. Now the DX-440 picks up garbage on only a few narrow frequencies. The filters even reduced a few birdies on the ICOM 735! (It has a 105 dB blocking dynamic range!)

The filters are built on Radio Shack terminal strips (5 terminals per strip) and housed in a metal box. Shielded connectors are a must for good performance. I used phono jacks. The receive antenna line is already available on the rear of the ICOM -- I added a Y-adaptor after the filters so both receivers are hooked up to the antenna. T-R switching is handled before that point, so there's no danger of blowing up the receivers.

Here's a block diagram of my system (omitting the automatic antenna tuner):



Each filter took one terminal strip. The mounting lug made a convenient grounding point. Single-point grounds are Good Things at RF. Plus, it only took 1 hole to mount the ciruit in the box. Finding parts can be a challenge, but there's always mail-order. I was lucky; the local IC store had coils and capacitors of nearly the correct values. Since the filters are not all that sensitive to 5 or 10 percent changes, I substituted the closest values I could find.

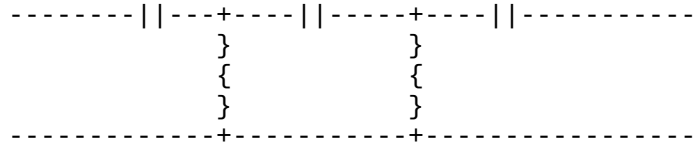
If I get requests for exact construction info, I'll make an ASCII "schematic" diagram. The ARRL handbook was very easy to follow, though, so if you have access to one, use it.

HIGH PASS FILTER

The following ascii-schematic diagram is a high pass filter that will filter out Broadcast Band (MW) stations. I found it a great boon to my shortwave listening since local MW stations overload my ATS-803A front end & appear in SW, especially with a long antenna.

If you remember my antenna saga, I went from 50 feet to 150 feet & had overload problems causing me to cut back to 50 feet. (Even at 50 feet, I still have some MW interference). I took the advice of Gary Coffman and looked up filters in the ARRL Handbook. With the filter in place, I intend to try to increase my antenna length again.

Anyhow, here is the filter, for interested parties.

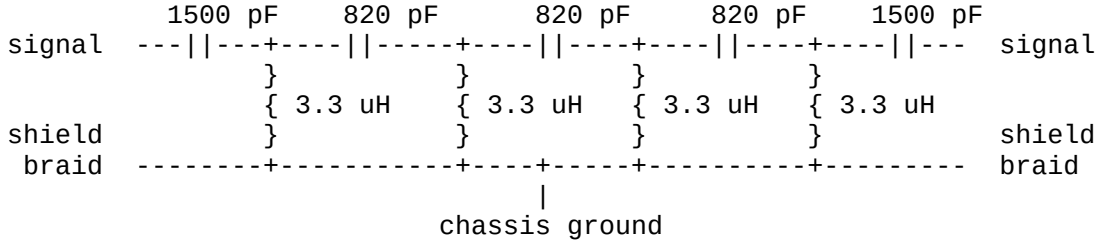


The outer capacitors are 1500 pf ceramic disks.
The inner capacitor is 820 pf ceramic disk.
The squiggly things are coils (two total). Each one is 2.7 uH.
(a close value will do).

********** end quote **********

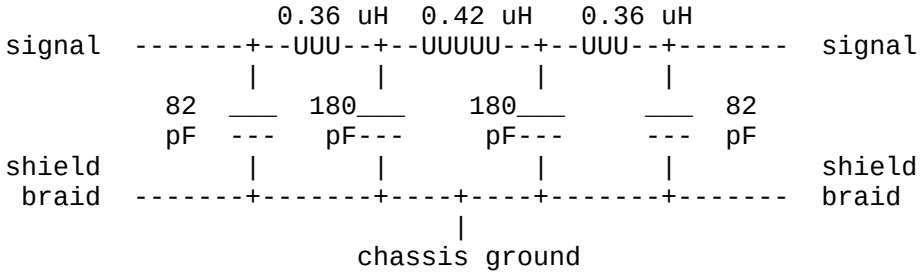
I used silver mica capacitors and 3.3 uH inductors, and built a 2-section version of the above filter. I also used an 820 pF interstage capacitor. Paul was correct when he said it was OK to use values "close" to the ones he used (within 5 or 10 percent.)

HIGH-PASS FILTER (Rejects MW broadcasters)



The high-pass filter helped some, but in my location the VHF/UHF broadcasters are also causing problems. So, I dug out the ARRL handbook and chose a 7-element Chebyshev low-pass design that is -3 dB at 35 MHz, -20 dB at 43 MHz, and -50 dB at 64 MHz (all calculated; it works well in practice!)

LOW-PASS FILTER (Rejects FM, TV, etc.)



I had to do a little more improvising at this point. I used .33 uH instead of .36, and .66 uH instead of .42, but it works fine.

The 5-lug terminal strips were perfect for these circuits, since there are 4 lugs plus a grounded lug. All "ground" connections go to the lug that is mounted to the chassis, and the other 4 lugs are used for each of the connections on the signal line. One terminal strip is used per filter.
Since both filters were necessary to clean up the hash, I am going to put them both into one box when I get the time.

The proper way to connect them is in series, i.e.

signal in ------- filter 1 -------- filter 2 -------- signal out

There is no difference between ends. They are "bilateral" which means you can't possibly hook them up backwards. (In the above schematics, left and right ends are interchangeable.)

Subject: Planned DX-440 mods...

For those interested in the DX-440 saga (my mods to the radio):

AM stereo:
What I will have done is this: my Sony SRF-A100 will be cannibalized, and the AM stereo chip will be mounted onto a new board, and will be fed off the final IF stage, replacing the old AM detector off the final IF stage. It is a multi-mode chip, fortunately... :)

Narrow-band FM:
Also off the same final IF stage that the AM stereo circuit will be fed off of, will be a PLL circuit whose design I found in a @ 1990 issue of "73" magazine, which is a simple narrow-band FM detector.

SCA:
The same NBFM circuit as above, but will be modified to tune the three main SCA channels by voltage adjustments, plus adding a filters to eliminate noise from the rest of the FM stereo signal's carriers & subcarriers, plus an IF amplifier to make it more sensitive. It will be fed off the FM stereo's pre-filtered output (before stereo detection).

Below 150 kHz:
I've been asked several times in this newsgroup and in e-mail on how I got my DX-440 to pick up signals as low as 3 kHz. Well, consider a bad power connection flickering, making the microprocessor flip a few times, some of which resulted in receiving signals below 150 kHz. If anyone has come up with a permanent method, please let us all know. (Aside from getting one of those VLF upconverters...)

MW above 1610 kHz:
This has been mentioned that there is a mod to add a switch that will allow switching between the internal ferrite loop and the outboard antennas. I will be using this.

FM down to 76 MHz:
I'm interested in what becomes of this. Further details welcome, please! :)

Other additions:
Most notably, adding a Dolby B/DNR circuit that could be turned on, off, and reverse, for different reception requirements...
Also I'm expanding the number of AM bandwidths to better accomodate the AM stereo reception, especially of "local"-quality signals. Instead of the two currently built into the DX-440 (4.5 & 7.5 (?) kHz), there will be six, including 2.5, 5, 7.5, 10, 12.5, 15, and 20 kHz.
I will also add a switch that will allow left-only/right-only/stereo audio out.
Also, a switch to turn of AGC on the stereo demodulator chip... This makes sense for reception of SSB transmissions... ;)
(There will be the obligatory CQUAM/ISB/mono switch, too...)

Subject: Re: Planned DX-440 mods...

FM down to 76 MHz:
I'm interested in what becomes of this. Further details welcome, please! :)

According to the schematic (I assume you have one? :-) there is a diode which you cut to make this work. Sorry, I don't have the schematic with me at work.

There are 3 diodes which are cuttable to change things:

- FM to 76 mhz,

- Change between 24 hour time and 12 hour time,

- Restrict AM to below 26 mhz instead of 30 mhz.

I seem to recall a poster a couple of years ago who enabled the 76 MHz tuning. He found that sensitivity was reduced across the band, so changed it back. This doesn't make sense to me and I've been meaning to try it myself.

Also, how do you plan to do all the switching between modes and such?
How much integrity are you keeping with the basic appearance and operation of the radio? (Serious question, not a veiled flame.)

Subject: Re: how to add a squelch control?

I'd like to know if anyone has or knows where I can find a squelch circuit that I can add to my DX-440 so I can use my voice-activated recorder to "sit" on some UTE channels and record only when a real signal is present.

Sometime within the past two years, in either the ARRL QEX or ARRL QST magazines (I think QEX, but I seem to remember a high-quality photo appearing with the article, which would put it in QST) had an article by Rhodes on communications receiver design, which contained a nice audio-derived squelch.

If you're really interested in building it, email me and I'll try to find the article. You might also try getting an index from the ARRL Automated Mail Server, (info@arrl.org) to see if they have an online QST or QEX index.

Subject: Fine Tuning for the Sangean 803A

These instructions describe how I modified my Sangean 803A so that the BFO Pitch acts as a fine (approximately +/- 5kHz) tuning control on all but the FM band. The instructions are as detailed as my brain permits of. The tools required are a small-to-medium Philips or posidrive screwdriver, a small soldering iron, some solder and a means of removing surplus solder (e.g a solder sucker or a few inches of desoldering braid).

1. Make sure that you have a note of any preset frequencies you have programmed into the memories. Turn the radio off. Remove all external connections (e.g. headphones, external power, external aerial) from the radio. Close down and clip down the radio's own whip aerial.

2. Take the radio to a well-lit worksurface. Put something on the worksurface to prevent damage to it or to the radio. Put the radio face-down on the table so that the base of the radio is nearest to you. Remove the battery compartment door and then remove the batteries. Unscrew the six screws which retain the back panel of the case. Five are down recesses in the back panel at the top left, top right, bottom right and bottom-center-right. The sixth is in the left corner of the battery compartment. Try to leave the screws in their respective holes. You can feel when the screws have been unscrewed enough when they don't seem to be coming out anymore! Gently free the back panel from the rest of the radio case but don't try to pull it away from the radio. There is an awkward wire connecting the whip aerial to the rest of the radio! Once the back panel is free, lift it about half an inch, and then swing it back away from you, rotating it anti-clockwise in a way that keeps the left-hand side of the back panel over the radio and hence the aerial wire safe!

3. Set the lid down and examine the circuit board which lies behind the BFO ON/OFF switch. The BFO ON/OFF switch is mounted directly onto this circuit board and you will see the switch's six solder pads arranged as two rows of three. The row to work on is the row furthest from you. Calling these, from left to right, 1, 2 and 3, use the solder removing gear to remove all solder from pad 3. This should leave pin 3 visibly isolated from the surrounding circuit board. Next, solder pins 1 and 2 together - probably most easily done by melting the solder on both pins by spreading the soldering iron across the two and then introducing some extra solder to bridge them - the sort of thing we usually do by mistake.

4. That's it. Replace the back, taking care not to catch the awkward wire in the case - or anywhere else. Do up the six screws evenly, i.e. do them up until they are all just starting to resist you, checking that the back panel is fully onto the rest of the case as you go, then give each screw a little bit more of a turn. Don't leave them loose, but don't do them any tighter than that! Its only plastic!

5 Restore batteries and any other items detached in step 1. You now have an 803A+.

I'm sure that I needn't point out that the Establishment would tear you (and your warranty) limb from limb for fiddling inside their creation - particularly as it was particularly short-sighted of them not to have done this themselves - but there, hind-sight is a wonderful thing.

Do remember that the fine tune is always in use on AM, so at its extreme you'll be 5kHz off the indicated frequency. Talking of indicated frequency, you might find that stations appear to be on tune when the BFO control is slightly off its mid-position. Well no synthesiser is dead on frequency -
although my Sangeans are within 200Hz of true. The point is that this fine tune lets you receive stations optimally and this won't always be on the centre frequency. One of the best features of having a fine tune is that a whistle interfering with a station you're tuned directly onto can usually be nulled out by using the fine tune to slip slightly off frequency. Nevertheless, if you want an 803A++, get back into the set and use a proper trimming tool to adjust T111 to bring the radio bang on tune!

My apologies to those who tried to mail me for this data. I didn't give my full email address. I could lie and say this was intentional. My SysOp, whose beast has been driving him mad with undeliverable mail said it was the only good thing I did that day, as he doesn't approve of putting his (i.e. our) addresses about. So, to stop him changing my password every hour, please comment on the above via this group.

Subject: Re: Fine Tuning for the Sangean 803A

All I have to say is thanks for posting the details on the fine tune conversion. If I feel especially creative I might even put in a switch to get BFO back when I want it . . .

Shame on you for thinking I might have covered up such a drawback in my 803A modification!

Save your creative reserve for those of other ilk. The good news is that you don't lose the BFO. All this modification affects is the half of the switch which determines when you can fine tune, not the half which switches the BFO on and off.

If this sounds illogical, then the key is to understand that the 803A's BFO TUNE isn't a BFO TUNE at all, its a fine tune! The 803A's BFO is a 455kHz fixed frequency oscillator. What is labelled as BFO TUNE controls an earlier oscillator in the receiver's AM conversion chain. Thus when you permanently activate this control you have fine tune all the time and when you switch on the BFO you fine tune the incoming signal against the fixed BFO, not the more conventional vice-versa.

I imagine the designer's did it this way around as they considered that pulling a 455kHz resonator-controlled oscillator by 5kHz just wasn't on, whereas pulling a 55MHz oscillator would be easy.

As I suggested in my original post, what a shame they didn't go that extra imaginative step and formalise a fine tune control as a fine tune control.

I just measured the external antenna input jack to my DX-440 and got 1.2V DC. Nothing is connected to the jack externally and the antenna switch is in the 'EXT" position. The voltage goes away when I switch to 'INT.' Is it normal to have a 1.2 Volt DC bias on a DX-440 front end, or have I somehow fried an input FET?

It is quite normal for a small voltage to appear at the ext. antenna jack of this receiver, although 1.2v is a bit high. It comes from the antenna switching

circuitry which consists of diode networks switched by the aforementioned voltages. You haven't therefore any evidence of damage to your receiver, nor will you damage it by shorting the ext. antenna jack, the 1.2v coming from quite a high impedance source.

Subject: Sangean 803A AM Tuning Alignment

To align a Sangean 803A on AM, adjust T111 which is near the middle of the main PCB, but before you do, consider:

1 Is your set really misaligned? Often, due to co-channel interference, the best reception of a station is not on centre-tune but a kHz or two to one side.

2 T111 should be adjusted using a proper trimming tool, not a metal screwdriver. There are two reasons for this.

Firstly, what you are adjusting is a fragile ferrite screw which, to avoid it shifting in normal use of the radio, is stiffened by locking compound or jammed-in rubber inserts. To make the ferrite turn against this resistance requires enough force to crack the ferrite when it is applied through a metal screwdriver.

Secondly, you will make this adjustment with the set on and the fine tune in center position by listening to a station and adjusting T111 for centered reception. Do it with a metal screwdriver and as soon as you take the screwdriver away from the ferrite the tuning will change!

If you've got a plastic screwdriver forget the above warnings. That is, after all, what a proper trimming tool is.

CASSETTE OUT PLUG (DIN)

I went to Radio Shack to buy the DIN jack and they had no idea what I was talking about. Could someone please provide me with a source and part number for this item. Thanks.

1993 catalog:

RS Part #	Description	Price
274-005	5-pin DIN Jack (panel mount)	$ .99

Subject: ATS-803A record output jack pin configuration

Universal radio sells a custom cable to connect ATS-803A to a cassette recorder. It has a 5 pin din plug at one end and a mono plug at the other end. It is priced at $14.95 which, I think is too much.

Does anybody know pin configuration for this 5 pin din jack? (If this configuration is known, one can make this cable for around 5 bucks.) Any help is appreciated.

Subject: Re: ATS-803A Question

Does anyone have the pin-outs for the 5-pin DIN "rec out" socket on the ATS-803A? Apparently this is some sort of "standard" European configuration, but I wouldn't know what that is, either.

I asked that about a few weeks ago but it appears that it is a standard like RS232, ie multiple possible combinations. I checked with an oscilloscope and found that the center pin is ground and the lower 2 pins are the left and right channel out. The upper 2 would probably be the inputs if the radio used them. The output levels are too low to go into a stereo system input, but work just fine for microphone inputs on a cassette player.

What I did was remove a keyboard connector (5-pin DIN) from an old blown-up PC motherboard, and put the thing in my Radio Shack DX-440. As most people familiar with it know, RS omitted it from their version of the Sangean ATS-803A, and I felt slighted that I didn't have a "complete" version of the radio!

I couldn't find any other circuitry missing - just the connector. The feedback from everyone here confirmed what I had been able to find through testing and observation.

When I called Sangean for the info (parading as an ATS-803A customer who bought it used) their recommendation was to use the headphone jack. Well, that's not acceptable, because it cuts out the speaker. I haven't done so yet, but I'll be fashioning my own cable for it to feed into mic inputs of the tape unit since that seems to be the approximate signal level of the DIN connector and see how I make out.

The signals are clearly present, so the connector itself was the only part missing. So *my* DX-440 now does have a working tape out DIN socket like its Sangean soul-mate...

Subject: Re: ATS-803A Question

Does anyone have the pin-outs for the 5-pin DIN "rec out" socket on the ATS-803A? Apparently this is some sort of "standard" European configuration, but I wouldn't know what that is, either.

I asked that about a few weeks ago but it appears that it is a standard like RS232, ie multiple possible combinations. I checked with an oscilloscope and found that the center pin is ground and the lower 2 pins are the left and right channel out. The upper 2 would probably be the inputs if the radio used them. The output levels are too low to go into a stereo system input, but work just fine for microphone inputs on a cassette player. Radio Shack has a cable that goes from the headphone jack to phono type inputs, so that will get you into a tape or AUX input of a stereo receiver. Radio Shack also carries the connectors if you want to build your own cable to go into a microphone input.

Subject: Sangean 803A: tape out

*My Radio Shack catalog doesn't seem to have a DIN to *anything* connector. Does anyone know of a convenient source for a connector that will let him plug this thing into a portable cassette recorder?*

Here's the pin out for the DIN jack in case you want to construct your own connector.

Pin 3 - Left Out

Pin 5 - Right Out
Pin 2 - Earth

You can bridge Pins 3 & 5 without any problems.

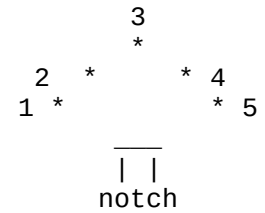
Subject: Re: DIN plug on Sangean ATS-803A

Anyone have some insight on how to hookup the "DIN [5 pin/A type] Tape In/Out" (about all the manual says).

It is a standard stereo DIN pinout but the signal levels are microphone rather than line level. I wired a 5 pin DIN plug to 2 1/4" phone plugs and it works fine into the microphone input of my stereo cassette deck.

Subject: Sangean 803a Record Jack Pinout

I have an Emmerson ATS-803 which is basically the 803A with Emmerson's name on it. According to the schematic which came with my receiver as you look at the plug receptacle on the side of the receiver:



You should be able to record between pin 1 and 3. I bought a DIN plug from Radio Shack a number of years ago and have sucessfully recorded from my radio using pins 1 and 3. 3, 4 and 5 are actually wired together. The specs for the signal are 1mv with an impedance of 1K ohm - at this level your best bet is to use the microphone input on the tape recorder. I treated pin 3 as the ground. I believe pin 2 can also be used to record with similar levels but it is hard to see on the schematic what the difference is between the two (they squeezed the whole schematic into a 5 x 8" page!).

Subject: Sangean 803a Record Jack

According to the schematic I have from Sangean, pins 1 and 2 are for the left and right channels, while pin 3 is the ground (I think). I got a copy of the schematics and a receptacle from a Sangean employee so I could install it in my Radio Shack DX-440. I don't have the schematics in front of me right now, so I may have the pin-outs slightly jumbled, but I'm fairly certain that I have it right. When I get a chance to find the schematics, I will double check it for you.

Subject: Re: Sangean 803a Record Jack

What you say makes sense. I have only used my record jack for SWL recording and so never attempted to record a stereo broadcast. Pins 3, 4 & 5 p are wired together in my schematic. /dc

Subject: Re: DX440 mod

There is a place for the "rec out" connector, just inside the hole covered by the little piece of plastic. Order a "cassette jack" for the Radio Shack Color Computer, from Radio Shack parts department. You may have other sources for this PCB mounted, 5 pin DIN connector, since it is fairly common.

Before attempting to mount the connector, you may have to clean any excess solder out of the holes on the PCB. It's a tight fit, so be sure the connector is seated all the way. If you're successful, it will look like a factory job when you're through!

Of the 5 pins, the center one is signal ground. Two pins on one side of center, are connected via resistors to ground. The two pins on the other side go to low level, left and right stereo signals. They are fed from voltage-dividing resistors, so short-circuiting them will not hurt anything. The signal level is just right for many tape recorder microphone inputs, and is not affected by the DX-440 volume control setting.

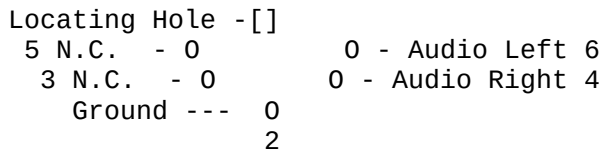
Subject: DX440 mod

Here is a pretty complete description of adding the DIN plug to a DX-440, garnered from various (identified) sources. Note that you probably will *not* be able to use the signal from the DIN plug with your stereo, unless your stereo accepts direct microphone input, since the TAPE OUT on the DX-440 is intended to connect to a MIC IN jack.
You might do better to simply run a stereo patch cord from the DX-440 HEADPHONE jack to the stereo's TUNER or AUX jack.

A GENERAL DESCRIPTION OF THE WORK

OK, Here's some stuff from the boards that I've picked up on modifying the DX440 to have the tape-out as the radio was originally designed before RS got their marketing guys on it. Check out the plug in the case where the DIN connector goes. I have the DX440 and just installed the five pin DIN connector on the PCB just as it must have been intended. The only thing you need to do is desolder the holes on the PCB and install a 5 pin DIN PCB mounted connector. Everything fits in place and you now have record output.... Once I had the DIN installed and placed the cover on, you could not tell it from a factory job... If you have a Radio Shack nearby, just order a PCB Mounted DIN Connector for a Radio Shack Color Computer Cassette Interface Port. It's the same thing that worked for me.

The Pinouts for the DX-440 Record-Out Project.



This diagram is looking at the face of the receptacle after installation. BTW.. This makes a very tidy installation. You cannot even tell it was installed by anyone but the factory. The standard DIN connector fits up flush with the case. Mind you that the output is LOW LEVEL. That is to say on the order of 15 to 20 Millivolts (.015 Volts A.C.). One person previously was trying to measure with a DC setting which doesn't work very well. This connection drives a microphone input very well. It is independent of the volume control which is nice for late night recording, and it will put out FM stereo when the stereo - mono switch is set for stereo.

A MORE DETAILED DESCRIPTION OF THE WORK

Installing the DIN jack is very easy. The PC board is already drilled and prepared for a standard jack. Find a PC board mount jack, and you cannot go wrong. I'll go through the whole procedure, just in case you haven't had a chance to explore the insides of your radio.

Lay the radio on its face, right side up. From the back of your radio, there are 6 phillips screws holding it together. They are approximately in this pattern:

```
                  o                 o           o




This one --->  o                    o      o
is inside
the battery
compartment
```

Remove all the screws. Remove the large D batteries, if any. You can leave the AA batteries.

Lift the cover but be careful of the antenna wire which connects the whip antenna to the radio PC board. Turn the back over and set it above the radio.

Look inside, now. On the right side of the radio compartment, you will see a smaller PC board mounted above the main board. This is the audio board. Near the top center and lower left corner, see the black plastic mounting clips. They support the board. Look closely and you will see that the board can be lifted carefully off these clips. Before you do this, notice the three solder pads near the lower left side. These contact the three fingers sticking out of the battery compartment to provide battery power to the radio. Those three fingers must make good contact or the radio's computer will misbehave and act goofy.

Gently pry the clips and lift the board. There are wires which connect to board to the speaker. Be careful of these. If they are secured with a plastic tie, cut the tie [NOT the wires. :-)]
This will give you some extra room. If you are very careful, you can maneuver the board over on its back and see the pattern of holes next to the earphone jack. These are exactly the right pattern for a standard PC board-mount DIN jack. Hold your jack next to the holes and you can see which ones I mean.

At the factory, the soldering of the board probably covered these holes. You will have to clear them out. From the back, using a small, low wattage soldering iron, heat the solder around these holes and stick a round tooth-pick through from the top. If you have a "solder sucker" or other de-soldering tool, the job will be easier. You must completely free these holes of solder. When this is done, you are ready to install your jack. It can't go in but one way. Insert the jack and, using fresh solder, solder each legs to its pad ... be careful and don't use too much.

Remove the plug which covers the hole in the case.

Reassembling your radio is just the reverse of the above. Carefully line up the jacks with the holes in the case at the same time you line up the clips which fit through the holes in the PC board. Snap the audio board into place. Lift the back over and onto the radio, taking care that you don't leave the antenna wire sticking outside the case. You have rock the back slightly to get it to seat, sometimes. Don't force anything. The screws are all the same.

If your radio acts goofy when you are done, it is probably due to the fact that the micro processor has not initialized properly when you connected the case back up. The small AA batteries power the microprocessor when all other power is removed. In this case, however, you removed all power from the radio when you disconnected the case. Simply remove the AA batteries for a few minutes, and reinsert. Everything should be ok.

As to which contact goes where: I have only identified the two audio pins. When I get time to run down what the others do, I will post it to Genie. Looking toward the jack from the outside of the radio, the "x"s mark the audio out pins.

```
     x             I connected these directly to
 x       o         the microphone input on my tape
                   recorder and it works just
o         o        fine as a constant level input.

    []
```

Now, you can do a favor for me! Somewhere in the process of doing this to mine, I have disconnected a small green wire. I cannot find out where it goes but the radio works without it. Right now it is just loose. It seems to have gone somewhere on the audio board, but I cannot be sure. When you go inside your radio, perhaps you can reply back as to where that little green wire goes?

THE RADIO SHACK DIN PLUG

To get the special pcb-mount 5-pin DIN connector, order from Radio Shack a "Cassette I/O Jack" (JK4) for a TRS-80 Color Computer model 2 or 3. The Radio Shack part number is AJ-7356, although the bag mine came in was marked JE-1216. The price was $1.00. If they don't know already, the Radio Shack Color Computer 3 is catalog number 26-3334.

Sangean ATS-803A/Radio Shack DX-440
THE DIN CONNECTING CABLE

Now that we've had several messages explaining exactly how to install the missing DIN plug into the Radio Shack DX-440 version of the Sangean ATS-803A, the next problem (for owners of either the ATS-803A or DX-440) is how to connect that DIN connector to the microphone inputs on your tape recorder. Note that connecting the DIN plug to LINE IN/TAPE IN jacks on a receiver or tape recorder won't work; the DIN connection only works with a low level microphone input (most mic inputs are low level).

You can buy a DIN => 1/8" miniplug monophonic connecting cable from UNIVERSAL RADIO (1-800-431-3939): it's the "ATS-803 CBL", order #1687, and sells for $14.95 (+$2 s&h). The example I have is 3 feet of RG 58 A/U foam cable connected between the right channel output of the DIN plug and a 1/8" mono mini plug. Cost of the parts (unassembled) from Universal is $3.19 (mini plug, #0707, $ .69 [Radio Shack: #274-286, $1.49 (pkg of 2)]; 5 Pin DIN plug, #1828, $1.99 [Radio Shack: #274-003, $1.69]; RG-58 A/U 50 Ohm foam cable, #2619, $ .17/ft [Radio Shack: #278-1314, $ .20/ft].

According to their catalogue, Universal will also custom build this for the cost of the parts and $10 (ask for the Special Order Custom Cable, #0569), plus $2.50 s&h.

This works OK, so long as you're happy with a one channel mono connection. However, it is just as easy (and less expensive) to build a stereo cable. (Note that if you install a stereo plug, you may need to use a stereo => mono adapter when running into a mono recorder; Radio Shack has these). There are two approaches to this (all part #'s and prices from the 1992 Radio Schack catalog, #472):

APPROACH #1 (MODIFYING A DIN - DIN CABLE)
parts:
1. a 6-ft shielded DIN - DIN cable (Radio Shack #42-2151; $4.99)

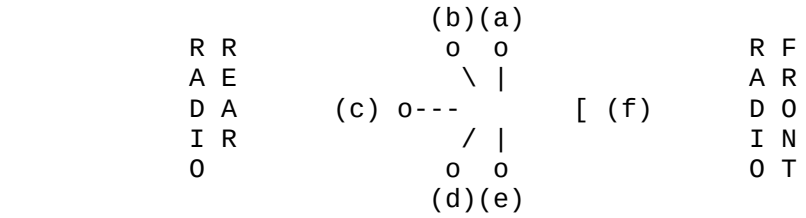
2. an appropriate stereo plug, such as a stereo mini-plug (either #274-284, $2.19/pkg of 2; or #274-1547, $1.99 (the latter is metal and shielded); other sizes of plugs can also be used, depending on your tape recorder microphone jacks); alternatively, LEFT and RIGHT mono plugs, such as red and black mini plugs (RED: #274-287; BLACK: #274-286; both $1.49/pkg of 2) may be used

Clip one end off the DIN - DIN cable, and attach the stero plug to the GROUND, LEFT, and RIGHT wires. On my cable, the RED wire is RIGHT CHANNEL OUT and the WHITE wire is LEFT CHANNEL OUT. The YELLOW and BLACK wires (LEFT and RIGHT INPUT, respectively) are ignored. On a stereo plug, the tip of the shaft is the LEFT channel, the middle section is the RIGHT channel, and the back section is the GROUND. You should be able to identify the connections from this -- if not, when attaching the cable, the LEFT channel will be the connection going to the center, the GROUND the connection sticking out the back that extends to the threaded part of the plug, and the RIGHT channel the connection between the LEFT channel and the GROUND.

If LEFT and RIGHT mono plugs are used, the LEFT or RIGHT connection is to the center of the plug, while the GROUND is to the outside. TOTAL COST: about $7

APPROACH #2 (BUILDING A CABLE FROM SCRATCH) parts:
1. 5-pin DIN plug (#274-003, $1.69)
2. an appropriate stereo plug or mono plugs, as above
3. shielded audio cable, such as #278-514 (20 ft, 2 conductor, $3.49) or #278-777 (30 ft, 4 conductor, $7.95)

On the Sangean ATS-803A the DIN jack looks like this (I suppose it looks the same on the modified DX-440), FACING THE DIN JACK:



a = left input (unconnected) d = right output
b = right input (unconnected) e = left output
c = ground f = locating hole

The DIN plug connections, then, must be exactly the same, FACING THE BACK (WIRE SIDE) OF THE DIN PLUG. Attach the stereo plug, or LEFT and RIGHT mono plugs, as above. TOTAL COST: about $7

One last note on taping from the ATS-803A/DX440: I don't believe this radio can activate a tape recorder's remote control, but by using the radio's timer in conjunction with a voice activated tape recorder you can achieve the same effect. I use a Radio Shack Minisette-20, and it works like a charm (although having an auto-reverse recorder would be nicer)!

To get the special pcb-mount 5-pin DIN connector, order from Radio Shack a "Cassette I/O Jack" (JK4) for a TRS-80 Color Computer model 2 or 3. The Radio Shack part number is AJ-7356, although the bag mine came in was marked JE-1216. The price was $1.00. If they don't know already, the Radio Shack Color Computer 3 is catalog number 26-3334.

Subject: Re: DIN to RCA jack

I have a Sangean ATS803A, and would like to connect it to my stereo system at home. In order to do this, I think I need a DIN to RCA jack. Is this right? If so, where can I get such a thing? Radio Shack?

You can make such a cable, or you can buy one, but either way, it won't work as a connection to your stereo unless you connect into mic inputs. The output is too low for standard aux or tape inputs. For these inputs, you need to connect to the ATS 803a's headphone jack. Radio Shack (and a number of other sources) have a variety of options for this: stereo mini (1/8") plug to 2 RCA/phono plugs (Radio Schack #42-2475 (3' cable); RS #42-2481 (6' cable); or stereo mini plug to RCA/phono jacks adapter (RS #274-369). These all list for under $5.

If you want to use the mic out on the Sangean, you might try calling Parts Express International (1-800-338-0531) and asking for #HU-139-165 ($.50) and #HU-139-185 ($.25). The former is a 5-pin DIN to quad RCA plugs, with 6' cable; the latter is 5-pin DIN to 1/8" mini-plugs, with 6' cable. Shipping should be between $3-4 (the minimum charge). I just received an ad for these today, so can't say if there are any problems with them, but getting both for under $1, and under $5 with shipping.... Well, I'm ordering them as backups!

Subject: Probelm with Tape/Headphone jacks in Sangean 803a

When I connect either the headphone jack or the tape out jack to an amplifier or tape deck, the radio generates a fairly loud hum. This is a recent phenomenon - I had no such problem for close to a year. A friend also had this problem a while back with his radio. Has anyone else had this problem and figured out what causes it and how it may be fixed? Thanks.

FREQUENCIES: ALIGNMENT AND INCREASING RANGE

Subject: Re: want info on DX440 mod - FM mod.

Installing a IN914 diode in D405 is supposed to lower the FM band frequency to a starting point of 76.5Mhz.

Subject: Re: DX-440, display frequency wrong

Before you believe your display is incorrect, do the following check:

1. Tune to WWV or WWVH on 5 MHz 10 MHz or 15 MHz, which ever gives the strongest signal.

2. Turn on the BFO, as you would do for an SSB signal. You will most likely hear a high pitched sound (heterodyne) on top of the WWV signal.

3. Now adjust the BFO pitch control knob until the high pitch noise decreases in pitch and eventually disappears. (This is called the "zero-beat" condition.)

At this time, the BFO control should be very close to the 12 'o clock position (straight up). Mine is just a little off towards the 1 o'clock point. Unless it is way off, you should not consider realigning your radio.

If you leave the BFO control set as above, it should zero-beat when you are tuned correctly to other stations. In practice, any given station might be just a bit off frequency and the zero beat would not be exact, but it should be close. It should not be 1 KHz out.

Subject: Re: DX-440, display frequency wrong

The tech guy told me that the way they know its right is by tuning to a station with known frequency and turn on the BFO. It's set correctly, in their opinion, if the BFO nulls when the knob is slightly clockwise of center.

Subject: DX440 needs alignment ??

I suspect the radio needs a minor alignment in the FM section. When I tune in an FM station, the sound is clearer and slightly louder if I add about 15khz to the station frequency. For example, a known station broadcasting on 107.5 sounds better when I set the radio to 107.65. What's interesting however, is that the signal strength meter registers a much higher reading on 107.5, not on 107.65. I presume this suggests that the radio tunes in a station well but is having problems extracting the intelligence from the carrier ??? This behavior appears across the entire FM band and is not remedied by turning down the RF gain and/or reducing the telescoping antenna length. The AM section of the radio works flawlessly. So my questions are:

-what is going on here?

-if you have a dx440/ats803 service manual, can you tell me what equipment is needed to remedy the problem. Before ordering a service manual, I'd like to know what I'm getting into since the problem is only slightly annoying.

Subject: Those chuffing Sangeans

Does anyone else suffer from the 803A leaping frequencies when it is tuned by the knob? I imagine it is designed to tune in large steps when the knob moves quickly, but even when I tune slowly and steadily in 1kHz steps my set is prone not infrequently to jump by 10kHz or even 100kHz. Feature or fault?

Mine did the same thing at one time. You might like to try removing the backup batteries for a while, resetting the microprocessor. This should fix it...