R-390 Reflector September ‘04 Edited

From ka4prf at us-it.net Wed Sep 1 09:37:07 2004
Subject: [R-390] Frequency meter

Is there any place inside the R-390A where a frequency meter can attached to get a frequency reading? Chuck

From mikea at mikea.ath.cx Wed Sep 1 12:10:39 2004
Subject: [R-390] Frequency meter

Well, yes. But what frequency do you want to read? If it's the freq that the radio is tuned to, I don't remember anyplace with an osc that puts out _that_ freq. You'll find frequencies that are _related_ to it, but not in any way that'd be obvious just from taking a freq reading at one point.

http://mikea.ath.cx/R-390A/TM_11-5820-358-35.pdf, the Field and Depot Maintenance Technical Manual, is a really good place to look for what you can expect to find -- especially around pp. 4-5 of the manual (pages 18 and 19 of the PDF).

From David_Wise at Phoenix.com Wed Sep 1 12:20:06 2004
Subject: [R-390] Frequency meter

Theoretically, yes. It's harder than it sounds.

Within any one 1MHz band, it's easy to snoop the VFO output, and there are companies selling display modules just for this purpose, which can be programmed with an offset to account for the target receiver's frequency changer topology. However, in addition to not giving the full story, this ignores the inevitable inaccuracies in the 1st and 2nd crystal oscillators, which vary from band to band. This is the main reason the radio contains a 100kHz marker. To get a true readout, you'd have to snoop all three oscillators and either mix them, or measure each and combine the results digitally. As a compromise (the best possible one to my way of thinking), you could read the VFO alone, provided your readout module had a "Cal" button to press after calibrating the radio when you change bands. This button would cause the readout to snap to the nearest 100kHz value. I doubt there is a pre-built module that does this, but it would make a *very* interesting project.

There are a few R-390x variants out there that bring all three oscillators out to the back panel, so at least you wouldn't have to hack the radio, but you'd still have to combine them, and in any case you will have problems with RFI unless you're very careful with shielding. 73, Dave Wise (SWL)

From ham at cq.nu Wed Sep 1 18:22:28 2004
Subject: [R-390] Frequency meter

Hi, As the other posts have mentioned it's not a simple thing. A lot depends on how accurate you want to get. RTTY and SSB are the two things that most people would like to tune accurately. With AM the bandwidth of the filters makes a 10 or 100 cycle error a lot less important. If you are going to tool up to do a full readout for SSB or you would need to measure:

1) The first crystal oscillator
2) The second crystal oscillator
3) The VFO
4) The PTO

The digital stuff to do that isn't terribly expensive these days, but it does make noise.

Once you had all the frequencies measured then oddly enough you would have to know what band you are set to. It turns out that several of the crystals are used for more than one band so there is no direct and simple way to guess the band in every case.

That all sounds like a lot of work and I'm lazy. If I was going to do it I'd fake it:

No matter what you need some way to track the band switch. Say we slave a pot to the shaft and measure the resistance.

The 17 MHz ovenized crystal isn't going to drift much I would simply measure it's frequency with a bench counter and store the result somewhere.

The same thing is true to a lesser extent for the crystals in the crystal deck. They do drift but maybe by sixty cycles. I would just measure them and store their frequency as well.

That gets us to the BFO and the PTO.

There is an old military mod that puts a multi turn gear drive and readout on the BFO shaft. The net result is the ability to reset the BFO very accurately. If you can lock down the BFO shaft fairly well (maybe mechanical detents) you can get around reading the BFO.

All that's left is the PTO. You can either count it's frequency or try the slave a pot to the shaft trick.

The cute thing about doing it al with pots would be that you have no RF counters at all. You are dependent on the radio not drifting but that's what the 390 is known for.

Definitely a bit far from the "well enough alone" zone thought .... Take Care! Bob Camp KB8TQ

From mjmurphy45 at comcast.net Wed Sep 1 18:59:59 2004
Subject: [R-390] Frequency meter

Here are a few links. The DFD series is popular. MM WB2UID

http://www.aade.com/dfd.htm#prices

http://www.eham.net/reviews/detail/1457

http://www.ohr.com/dd1.htm

http://www.radioadv.com/ham_radio_equipment/FreqMC/A2.htm

http://www.qsl.net/k5dkz/r4digital.html

http://www.circuitsonweb.com/resources/Projects/fc50.html

http://www.aade.com/Applic~1.htm

From DCrespy at aol.com Wed Sep 1 21:37:14 2004
Subject: [R-390] RE: Using Surplus Meters

I got to know Tom Bowes a 5 or 6 years ago, when I bought one of the kits in discussion right now. Until about 2 years ago (?), I ran into him regularly at swaps in the Detroit area. I always enjoyed talking with him. Really decent guy!

Anyway, the kits included two International brand 1 mA meters. They had 100 ohm movements, as delivered. Somehow, Tom had found that there was an internal series resistor in these particular movements. Jumpering (shorting) the resistor brought the series resistance of the meter down to about 38 ohms (on the one I got from him). That was close enough to the 18 ohm spec that the meter actually worked in the application. I had occasion later to compare the meter movement to a couple of correct original meters. On the same radio, same signal source, could see no difference in the meter readings.

Tom supplied a some standoffs and diodes for the line level conversion, all of the hardware, a special socket to disassemble the meter face, and sets of both white face and black face meter scale overlay stickers. A nice kit, however I believe he has been out of them for years now.

I still have his instructions and will scan and send them, if anyone is interested. (It may be next week before I can respond however.)

Two caveats, 1) If you find a kit, these are the glow in the dark movements, so open the cases at your own risk. And 2) If you are looking to convert other International brand 1 mA meters, I have opened many of them and have never found another with this internal construction (with series resistor to short). Tom found an interesting stash! 73 Harry KG5LO Saline MI 48176

From jmiller1706 at cfl.rr.com Wed Sep 1 22:06:42 2004
Subject: [R-390] R-390a Hurricane Prep?

I'm in Melbourne, Fl., the predicted ground zero for Frances. All I think I can do for my 390a is cover it with pastic. Alternatively I could chain it to my ankle to keep me from blowing away in the 140 mph winds. Any other suggestions? Jim

From ToddRoberts2001 at aol.com Wed Sep 1 22:42:41 2004
Subject: [R-390] R-390a Hurricane Prep?

writes: I'm in Melbourne, Fl., the predicted ground zero for Frances. Jim

Jim I would recommend you seal it in something waterproof. Maybe a couple of large plastic garbage bags sealed tight so you have more than one layer of protection. You might want to wrap it in something soft first like a blanket so there are no sharp edges or corners that could easily tear the plastic bag. Putting it in some kind of wooden box or crate might help protect it better also after the radio is sealed watertight. At least if it is watertight it wouldn't get ruined from being soaked if a window broke and rain blew in the room and then left to sit in a wet mess for several days. Best of luck and hope the storm

misses you. 73 Todd Roberts WD4NGG.

From djmerz at 3-cities.com Wed Sep 1 23:44:58 2004
Subject: [R-390] Frequency meter

Hi, I can't resist - maybe a pun is intended - as Bob suggested taking care of the whole thing with a pto coupled variable resistor as an option.

But since accuracy wasn't mentioned, I would say just use the mechanical indicator on the radio and let it go at that. If you want to do more work and want to know how accurate your radio is, just make some notes using a notebook and pencil, on how far the dial is off using a known signal or xtal calibrator for reference. Pretty soon you'll know just where you are and you'll know more about your radio than anyone else, which is hard to accomplish on this listing. You'll have become an expert.. Eventually, you'll be unhappy because you'll hate having a radio that's that as good as it could be. This will lead you to tear open the pto and fix it - then you'll discover not all crystals are where they should be - life gets interesting. But you're an expert enjoying a good radio.

My opinion is to enjoy the radio as much as possible the way it was built, fix some things that you can't live with. I left my 390a freq. readout as-is but I added a digital frequency readout from AADE for about $60 + to my Mackay 3010C.

This is a programmable readout and works fine (all the programming was done by AADE and is amazing in itself), no noise that I can tell but I shielded and isolated it pretty well. According to the online info the DFD3 works for a 390a. And I used the offered 20 preamp to give more isolation. I have no experience with it's use for the 390a, but I especially like it for the 3010 because it eliminates the backlash of the tuning mechanism belt mechanism, ever so slight but makes tuning ssb tricky. hope this helps, Dan

From ham at cq.nu Thu Sep 2 06:56:16 2004
Subject: [R-390] R-390a Hurricane Prep?

Hi, I'd recommend bubble wrap and plastic sheet in a couple of layers. That at least will take care of the water issue. If the surplus guy out by the airport (can't remember the name ... sorry) still has an inventory of metal military packing cases they would be an ideal thing to drop the wrapped radio into. It's been a while since I was in Melbourne so the guy I'm thinking of may be long gone. Take Care! Bob Camp KB8TQ

From chacuff at cableone.net Thu Sep 2 09:29:18 2004
Subject: [R-390] Frequency meter

Greetings Group,

I have watched this thread for several days....interesting. I have had nothing of any real help to add...until I had an idea this morning that took me back to the days of rock bound transmitters (Xtal) and "Spotting" your transmit freq. on the receiver.

High quality signal generators with digital displays have become relatively cheap in the last few years...why not pick up a nice HP-8640B signal generator....set the TCXO reference on frequency (zero

beat WWV on your receiver) and the display and output will be dead on the money. Generate a spotting carrier with the signal generator on the desired receive frequency, zero beat it with your receiver and there you are. If you want to know where you are tuned sweep the generator across the part of the band you are in until it is zero beat the signal generator with your radio and read the freq.

I use a similar technique when using my old HP-606A tube type Signal Generator...I pass it's output through my frequency counter and pretty much ignore the analog dial during setup, then reduce the output level and go to aligning.

You could probably pick up a working 8640B for around $200 on one of the auction sites and it can serve other duties around the shop as well....you can even use it as a frequency counter by inputting a frequency to be counted to a front panel jack. Just a thought! Cecil....

From r390a at bellsouth.net Thu Sep 2 12:11:36 2004
Subject: [R-390] Frequency meter

Of various ones that have the BNCs in the rear, such as the R-1247, the BNC's are used as oscillator INPUTS rather than outputs. Tom

>>There are a few R-390x variants out there that >bring all three oscillators out to the back panel, >so at least you wouldn't have to hack the radio,

From r390a at bellsouth.net Thu Sep 2 12:27:11 2004
Subject: [R-390] Whoopsie... RE: Frequency meter

Looking closer at the R-1247, I see references from Tom N5OFF that say it is possible to *output* the internal oscillators via the rear connectors. Hmm, might work for external freq sampling then. I guess I should pay closer attention... Tom NU4G

Moments ago, I wrote: Of various ones that have the BNCs in the rear, such as the R-1247, the BNC's are used as oscillator INPUTS rather than outputs. Tom

From David_Wise at Phoenix.com Thu Sep 2 18:20:00 2004
Subject: [R-390] Frequency meter

I browsed all of the links below, and none of these inputs all three oscillators, although some have a "BFO" input which might be usable. In my opinion, if you want an outboard readout, the AADE DFD3 is the ticket. It stores up to 32 separate frequency offsets. Downside: You have to turn two band switches instead of one. 73, Dave Wise

From tangerame at earthlink.net Thu Sep 2 19:07:52 2004
Subject: [R-390] Re: R-390 Digest, Vol 5, Issue 3

Cecil, A man after my own heart. For authenticity I picked up and old LM/BC freq meter and a T connector to my freq counter and to the blank port on my multicoupler. Zero beat and instant readout....well almost. Tony WA6LZH Ex 29252 USAF "I listen more than I send."

From vk2abn at batemansbay.com Fri Sep 3 08:41:35 2004
Subject: [R-390] 390a frequency readout

the cosmos pto on one of my recievers has 4 linearity adjustments /turn I made a jig usiny the dial from a ten turn pot and using a HP5245 counter and a couple of sheets of graph paper and after a few adjustment runs my reciever after i calibrate it on any particular band the frequency read out is within 100hz , I have also checked it against my racal /dana synthasized sig gen and that also supports the same conclusion Who needs better accuracy than this

From mahlonhaunschild at cox.net Sun Sep 5 22:54:28 2004
Subject: [R-390] TJ311M01 sighting at Shelby

Hello, list.

At Shelby this weekend a tube-head in the flea market forced me to purchase a pair of TJ311M01s from him for $5 the pair (yes, that's right, $5). As most of us know, the TJ311M01 is essentially the same as the 3TF7. Just wanted to note here that these particular examples were made by Victoreen in 3/56, so it seems that there were other sources/production lots made other than Amperite in 1978 (as one source has noted). Just so you know. regards, Mahlon - K4OQ

From ba.williams at charter.net Sun Sep 5 23:35:10 2004
Subject: [R-390] TJ311M01 sighting at Shelby

If not, wire and a 12BA7 works well. You can skip the witchcraft part too. Les

From gharmon at idworld.net Mon Sep 6 22:53:04 2004
Subject: [R-390] FW: [Hammarlund] need r-390a help --- I know wrong list

Can someone help Gary?? 73, gary

From w5kp at direcway.com Tue Sep 7 09:00:48 2004
Subject: [R-390] FW: [Hammarlund] need r-390a help --- I know wrong list

Chuck Rippel, WA4HHG. See www.r390a.com for details. Expensive, but he is the acknowledged master, and the best there is. Your receiver will be absolutely perfect when you get it back, but he usually has a significant waiting list. 73, Jerry W5KP

From jonandvalerieoldenburg at att.net Tue Sep 7 09:52:06 2004
Subject: [R-390] FW: [Hammarlund] need r-390a help --- I know wrong list

Chucks work is great, but he is often quite busy. A friend here has used MILTRONICS, Rick Mish. I have spoken with Rick on the phone once or twice when I was stalled in a project, he is good also. He has a web site and offers various levels of repairs and restorations.

From roy.morgan at nist.gov Tue Sep 7 10:48:18 2004
Subject: [R-390] FW: [Hammarlund] need r-390a help --- I know wrong list

wrote: >Chuck Rippel, WA4HHG. See www.r390a.com for details. Expensive, but he is >the acknowledged master, and the best there is.

(On finding someone to work on an R-390A):

Howard Mills, long regarded as the master of the 75A-4 and other "Black Collins" radios, is now doing R-390A's also. "significant waiting list" also applies with Howard. It has been rumored that some of the R-390A's at Howard's place will emerge with black panels.

"Howard Mills W3HM" <w3hm@nfis.com> 304 876 6483 Roy

From davidmed82 at yahoo.com Tue Sep 7 13:31:09 2004
Subject: [R-390] Dave Medley Retirement

Hi Gang,

Due to health problems beyond my control coupled with old age I am retiring from the R-390 restoration business. No more requests please. I will also be taking down the R-390 web page quite soon as the cost of maintaining it has become a burden.

I have 3 R-390 radios here in process of restoration and will offer them for sale when I get them finished.
My sincere thanks to all for your support over the years. Dave Medley

From hbreuer at debitel.net Tue Sep 7 14:51:44 2004
Subject: [R-390] Dave Medley Retirement

Hi Dave, sorry to hear about your health problems.

It would be a pitty to close down the R-390 page. Have you considered to "sell" it. Hopefully there is somebody who will keep it up and running. How much are the monthly costs? Maybe a donation from the group would help to maintain it. Take care and best 73 Heinz DH2FA, KM5VT

From w9ya at arrl.net Tue Sep 7 14:59:47 2004
Subject: [R-390] Dave Medley Retirement

> Due to health problems beyond my control coupled with old age I am retiring from the R-390 restoration business.

Hey Dave and the gang; If there is useful information to other restorers OR you would like to maintain this for "sentimental" or historic reasons can I ask you if you would consider placing your web site or portions thereof into someone else's custody?

I am sure among the enthusiasts here we can find something suitable. Personally I hate to see a good resource go away. Vy 73; Bob w9ya

From 946762458 at telefonica.net Tue Sep 7 15:34:22 2004
Subject: [R-390] David Medley Retirement

Hi David. I am sorry to read about your retirement from the R-390 restoration business. I hope you continue on this List, and continue with you always very interesting contribution to it. In the mean time I will thank you for your invaluable and cotinuous help. Especially I will thank you for the nice job you have done repainting the panel for my R-390 Besta Regards from Spain Pedro EA2IG Hi list excuse my poor english

From lester.veenstra at lmco.com Tue Sep 7 15:46:43 2004
Subject: [R-390] R-388 / 51J Covers

What is the cost and availability of top and bottom covers for a R-388 that I am bringing back up to speed? Any ideas? Les K1YCM/3 (CTM1)

From cfandt at netsync.net Tue Sep 7 15:17:29 2004
Subject: [R-390] Dave Medley Retirement

Hi Dave,

Well congratulations on your retirement! The third retirement perhaps? I guess after 85 birthdays one deserves to take it easy but because of health problems I think it is not quite so pleasing. Please take care of yourself!

Nevertheless, I think I speak for many on the list: You have had a long and seemingly rewarding life and we have enjoyed your contributions to the R-390 (non-A <g>) world!

But yeoww!!! We may lose your website! Please consider having somebody either take over your info-filled website or perhaps someone would offer to move the content over to theirs! Of course, the parts which offer your restoration/repair services should be removed as this email specifies that happening. Would this be an idea you would entertain? Anybody have webspace which could handle the content? Chuck Rippel's website would be one of the logical choices as it contains a large amount of "A" info but none of us can speak for him on this of course.

You see, it seems to be (to me anyway) the only source of info specific to the R-390 while there are at least several websites on the R-390A. I have the pleasure of owning both and will need some of your info when I get to complete restoration of my "non-A" <g> in the next couple of years.

Please stay on the list and keep in touch as much as you are able. There may be someone who casts forth a plea for help on a recalcitrant R-390 which nearly all the rest of us might not have the answer. Best regards to our friend, Chris F.

From dsmaples at comcast.net Tue Sep 7 20:48:05 2004
Subject: [R-390] Dave Medley Retirement

All: Perhaps someone would consider zipping all the data on the web site and making the zipped files

available. I'm certainly no expert on this... Just a thought... Dave WB4FUR

From jshorney at inebraska.com Wed Sep 8 00:37:30 2004
Subject: [R-390] Dave Medley Retirement

wrote: >All: Perhaps someone would consider zipping all the data on the web site and >making the zipped files available. I'm certainly no expert on this...

Anyone so inclined should be able to use wget to mirror Dave's web site to thier local machine. I believe this would fall under 'fair use' and not violate any copyrights.

From bipi at comcast.net Thu Sep 9 20:29:11 2004
Subject: [R-390] Parts Left From RF Deck Rebuild.

Howdy, Just finished up the rebuild of my R390A RF deck after looking at all the pieces lying on my table since last April. I had meant to complete this activity before summer but our weather was so good, well, I just didn't get back to it.

Huge thanks to Scott Seickel for the excellent pictures and instructions making this job doable after such a long absence from the tear-down.

I have the RF deck all back together now and mechanically aligned. Both the Mc and Kc mechanisms tune very smoothly. However, I am left with a few parts that I cannot account for. These parts are shown in the following picture: http://home.comcast.net/~bipi/miscpic/leftover.jpg

There were 2 shim washers and a slip-ring for both of the ten-stop turns shaft that I used during the assembly. So I have 4 shims and a slip ring left over that I can't account for. Also, 3 other misc shims. Finally, I have an extra shaft spacer like that used on the veeder root counter Mc change gear. Early on I tore apart an old junker RF deck to get some needed parts and it is possible that these are from that activity but I just can't remember. Can anyone guess if I have missed something?

BTW, if anyone is interested, here are before and after pictures...
http://home.comcast.net/~bipi/miscpic/geargunk.jpg
http://home.comcast.net/~bipi/miscpic/finished.jpg

Thanks again to all those who helped with the Y2K manual and to Scott for his excellent pictures and instructions. 73 de Mike K7PI Mercer Island, WA

From jmiller1706 at cfl.rr.com Fri Sep 17 20:52:56 2004
Subject: [R-390] Dave Medley Retirement

Dave had hosted an article I wrote about the Cosmos PTO dissection and linearity. I notice a few of the images on it have become corrupted. I will send the original article to anyone who wants to refresh it on

From greg_werstiuk at msn.com Sat Sep 18 03:09:01 2004
Subject: [R-390] Dave Medley Retirement

I can handle the maintenance. Can handle the hosting as well. Only downside at the moment is DNS is handled indirectly. May change that in a couple of months when I sort out a few things in terms of how I want to continue to host my existing site(s).

Maintenance should be minimal. For the most part, we need to remove the personal materials, "for sale" pages, etc. Beyond that the only maintenance will be whatever new articles/material people "donate" for publishing. I'd also want to continue to include information identifying Dave as the original source of the web site with an indication he has now retired, etc. - Greg

From w5kp at direcway.com Sat Sep 18 06:49:33 2004
Subject: [R-390] Dave Medley Retirement

You are the MEN, Greg and Joe. Thanks for stepping up! Dave's site is one of the three or four we can't afford to lose in the 390 community. Jerry W5KP

From JMILLER1706 at cfl.rr.com Sat Sep 18 09:35:54 2004
Subject: [R-390] COSMOS PTO Article

For use in Dave Medley's page re-hosting, the full COSMOS PTO article is on my web account at: **http://home.cfl.rr.com/jmiller1706/cosmos.htm** The two corrupted images can be restored from there. Jim N4BE

From wc4g at knology.net Sat Sep 18 12:46:53 2004
Subject: [R-390] R390 Back Panal Outputs

Hello to the group

I have just received another R390 to restore for my collection (like we need more). On the back panel just above the pin straighteners and near the tool holders are two added female BNC connectors which were professionally added. Penciled near one is "PAN OUT" and the second has X UA IN with grease pencil.

This radio reportedly came from an AFB in TX and was used in a "special" area according to the seller. I have an idea about PAN OUT, but could someone explain what the X UA IN note could mean. The cables are connected as follows:

PAN OUT goes to the RF deck thru RG-58 to an SMA connection near the back left green screw. X UA IN goes thru a small cap to a BNC TEE with the VFO output. Thanks, Don Heywood WC4G, Charleston, SC

From glennmaillist at bellsouth.net Sat Sep 18 12:57:22 2004
Subject: [R-390] R390 Back Panal Outputs

Don, The XUA is a Rhode & Swartz (sp) synthesizer. This would appear to be a mad to stabalize the receiver. BTW, do you want an XUA?? 73 Glenn

From tetrode at comcast.net Sat Sep 18 15:34:00 2004
Subject: [R-390] R390 Back Panel Outputs Corrected Copy

Hey Don, here's my 2 cent guesses: PAN OUT = Panadapter Output, meaning it is a pick off for an input to a panadapter or spectrum analyzer, probably from a variable IF or fixed 455 KC IF. X UA IN = eXternal or auXilary Unbalanced Input, meaning that it is used as an RF input to the receiver, probably at a high impedance point. Be careful with this one, if it is directly connected to the calibrator input to the RF deck then it will be HOT with B+ (one of the quirks of the R-390). 73, John

From jamminpower at earthlink.net Wed Sep 22 19:52:39 2004
Subject: [R-390] Speaker

> where can I find a 600 ohm speaker?

Well, you can't really. The don't make them that I know of.

I will be happy to sell you (or anybody else) a NOS military transformer that converts 600 ohms to 8 ohms for $15, postage included (US only). (sorry for the appearance of crass commercialism, but I don't really make any money off this - I just do it as a service). Actually, the transformer is marked as 9 ohms, but that is close enough. James A. (Andy) Moorer www.jamminpower.com

From Radiograveyard at aol.com Thu Sep 23 10:41:18 2004
Subject: [R-390] 600 ohm speaker

The best sounding speaker to use with the 390s or anyother comm. rcvr. for that matter is the Hallicrafter R-42. Big but a terrific sound.Pete

From w5kp at direcway.com Thu Sep 23 11:24:33 2004
Subject: [R-390] Speaker

At least on board ships, almost never was a speaker driven directly from a receiver output. All receiver audio was taken from line outputs and wired to a batch of audio "patch" panels (actually just a bunch of multipole switches in a x-y matrix). Wired to the same patch panels were "Speaker-Amps" (don't remember the designation of the amps) strategically placed around the ship, which in turn were hardwired to an accompanying speaker, usually an LS-166 type. In Radio Central you could simply walk over to the patch panel and connect any receiver to any speaker-amp (or to any CW operating position's phone jack) by a simple twist of the correct switch. Similarly, you could switch any transmitter and it's audio/key/sidetone lines to any place on the ship you desired, as long as that place was wired with a mic and speaker/amp or phone jack/CW key position. Fidelity wasn't the issue, communications readability was, and readability was pretty good when teamed up with the proper amp. For obvious reasons most CW operation was done from dedicated CW positions in the radio shack, where a mill, hand key, set of phones, and a stack of R-390A's (or whatever) was available directly in front of the operator.

It has always surprised me that those audio switching panels (usually comprised of a 5x10 matrix of multipole rotary switches) aren't seen on the surplus market and used by hams. I'd love to have two or three myself. They were compact, extremely reliable, and simple to wire up and use. Heck, they were so reliable maybe they are still using the same ones and none have ever been surplused! Jerry W5KP

From mjmurphy45 at comcast.net Thu Sep 23 18:19:24 2004
Subject: [R-390] Speaker

Good idea Chuck, Why not a 600 Ohm speaker?

For extra credit, carefully detach the speaker cone and spider from the 8 Ohm speaker voice coil. Unwind the voice coil. Now attach the voice coil form to a lathe which has been outfitted with a slip mechanism. Wind approximately 1000 feet of #38 wire in a back and forth pattern. Make sure that the winding occupies the same footprint as the original 8 Ohm winding. You should measure around 500 Ohms of DC resistance. The AC impedance will be higher of course. Glue the voice coil back onto the cone and spider and reattach the leads. This technique may take practice. Mike M. WB2UID
http://www.vintage-radio.com/repair-restore-information/valve_philips-speake rs.shtml

http://www.mwaspeakerparts.com/speaker_parts.html

From dsmaples at comcast.net Thu Sep 23 21:29:31 2004
Subject: [R-390] Speaker 600

All: Cecil's recommendations are all sound.

I have used a standard 70.7 V transformer rated at 10 watts for this. It comes out to 500 ohms, which is plenty close enough for this purpose. If you can locate an 8-watt 70.7 volt line transformer, that comes out to 625 watts. I don't think you'll do much better than that. both the 10-watt and the 8-watt 70-volt transformers are pretty easily located. Another possibility is a 25-volt, 1-watt transformer. That also comes out to about 635 ohms (again plenty close). For what it's worth. Dave Maples

From chacuff at cableone.net Thu Sep 23 23:23:56 2004
Subject: [R-390] Speaker

Your right about patience.....I would give a novice doing a one off a near zero percent of success in maintaining the Gap dimensions. The thickness of the windings that has to pass through the Gap in the magnet pole pieces. If not kept in tolerance rubbing will occur. A 1000' of even #38 wire results in a good bit more thickness that the original windings. Then one has the task of gluing the bobbin back onto the cone....and perfectly centered.

I have reconed many EV and various other manufacturers speakers over the years...even with their recone kits that are specifically designed for the purpose it is sometimes difficult.

I won't say it is not doable....just not something one would expect someone who has never done it before to be successful at doing...especially just once.

I have been thinking recently about maybe having a speaker maker doing a run of 600 ohm speakers....maybe in a 10" or maybe 12". One could build a nice wooden cabinet and get a great sound out of our classic tube radio's...

I went to a tube guitar amp repair/restoration class out in Texas a few months back and the guy that taught the class was having speakers custom made for the amps he built. For a speaker maker I wouldn't

think 600 ohms would be much more difficult that the 4 or 8 ohm speakers they normally make...certainly they are equipped to do that type of work with great success.

I could check with him and see who he uses... What do ya think? Cecil Acuff

From dallas at bayou.com Fri Sep 24 08:10:23 2004
Subject: [R-390] Carrier Meter Linearization

TM-11-856A, among others, shows (in Fig. 41) a linear (wrt dB) carrier meter response for the R-390A. As we all know, of course, this is not the case. Carrier meter readings are always 20% to 30% low (20 or 30 dB less than 100 dB when a precision signal generator is used to examine the acccuracy of a carrier meter in an R-390A through its 100 dB range). The reasons for the inaccurate carrier meter readings are incorrect values for R524, the R523 + R537 assembly, and R548. After removing R524 and R548 and bringing insulated wires out of the IF deck so that I could vary those values, I determined that (1) R537 (22 ohms nominal) should be removed entirely (to provide more range for meter zero adjustment), (2) R524 (680 ohms nominmal) should be replaced by 649 ohms 1% (since R524 is usually higher in value than it should be, you can usually obtain 649 ohms by adding an appropriate resistor in parallel), and (3) R548 (27 ohms nominal) should be replaced by 62 ohm 1%. R523 should probably be replaced by a 10 turn 2 watt high quality 100 ohm wire wound variable resistor to make zero adjustment easier and to improve long term zero set stability (though "zero" will still drift around a bit).

From dallas at bayou.com Fri Sep 24 09:36:01 2004
Subject: [R-390] 3TF7 Substitutes

The standard 3TF7 substitutes, (1) using a 42 or 43 ohm 10 watt resistor in place of the 3TF7, and (2) using an appropriate tube, like a 12BY7A, with a 12.6 volt filament in place of the 3TF7 are both acceptable substitutes. Using a 10 MHz rubidium standard I determined, somewhat to my surprise, that the power resistor is generally a more stable substitute than a 12BY7A. Recently while examining the long term frequency stability of one of my R-390A's with the BFO turned ON (for SSB, ECSS, or CW) using a rubidium standard, I found that the 3TF7 does not do a very good job of stabilizing the BFO and PTO frequencies when the AC line is varied. A change of only 2 or 3 VAC in the line voltage (I used a VARIAC to vary the AC input voltage to the R-390A) causes a substantial (4 or 5 or 6 Hz or more) departure from zero beat. Next, I removed the 3TF7, inserted a 9 pin tube test extender into the 3TF7 socket, and powered the BFO and PTO filaments with an external regulated 12 VDC supply (12 VDC was found to give almost exactly 300 mA filament current). With this arrangement, no change in zero beat was observed as the AC line voltage was varied from 120 VAC nominal down to 100 VAC and back up to 120 VAC. WOW. Whoever designed the original BFO and PTO filament stabilizition circuit was on the right track. They just used the wrong method to stabilize it. Current regulation is the wrong approach; voltage regulation is the correct approach.

Rather than rewire the 3TF7 socket, I opted to make the mod "plug-in" in so far as it was possible. I cut the metal flange off a miniature 9 pin ceramic tube socket, pushed 9 pieces of #18 tinned solid copper wire in each receptacle, soldered them, cut off the ends to the appropriaste length for a 9 pin tube, deburred and polished the tips, drilled out the cylindrical center piece of metal and removed it.

I ground off most of the head of a 6-32 brass screw of the appropriate length and attached an inch

long (or somewhat longer) insulated spacer, and mounted an insulated standoff on the threaded end. This provided me with a home made tube socket extender on which I could build most of a 12 VDC regulator.

There is a nut on the front of the IF deck where I added a ground lug. I ran a diode from the #2 pin lug of the adapter to the standoff, and a 1000 mF 50 volt electrolytic from the standoff to the ground lug. The ground tab of a 3 pin 12 voilt 1 amp regulator was attached to the RF deck corner nearest the IF deck using one of the green screws that hold the oscillator deck to the RF deck plate; the regulator pins stick up above the top edge of the RF deck plate.

The input and output pins of the regulator were bypassed to the ground pin with 0.1 mF 50 volt capacitors, and the regulator ground pin was wired to the added ground lug on the IF deck. An insulated wire from the standoff to the regulator input pin and an insulated wire from the regulator output pin to lug 7 of the plug-in adapter completed the modification. Well almost... three (3) complete wraps around the lugs of the home made adapter with Scotch Glass Cloth Electrical Tape and heat shrink tubing on the standoff protected the plug-in adapter from shorts.

This mod is not 100% plug-in because to remove it you have to (1) remove the nut on the front of the IF deck to remove the ground lug, and (2) remove the green screw on the RF deck to remove the 3 pin regulator.

I have now had the mod running continuously for about 48 hours. No problems were expected and no problems have been experienced. Not only does this mod give you improved frequency stability for ECSS, SSB, and CW, it should also provide a permanent solution for the 3TF7 replacement problem. There is still some very slow frequency drift, as much as 1 Hz per hour, sometimes more. I currently do not know the cause of this drift.
>
> I have already spotted a few typos in my postring, which I believe will be obvious to those who read it. I meant to include that I used a 1N4003 diode, 200 PIV and 1 amp. I presume a 100 PIV 1 amp diode would be fine. I just happened to have 1N4003's on hand. > Also, be sure to mount the 3 pin regulator to the RF deck plate (unless you want to drill a hole in the IF deck and mount it there). I don't know how large a heat sink the regulator actually needs, but the RF deck front plate is surely much more than enough. Best regards, Dallas
>
From dallas at bayou.com Fri Sep 24 14:09:48 2004
Subject: [R-390] 3TF7 Substitutes

Thank you, Tom.

No, I have not seen a spec on frequency shift vs. line voltage change. If you find it, I would like to see a copy.

For a stock R-390A and the usual applications exceptional stability is not necessary, just as my BFO vernier fine tuning mod is not rerally necessary. But if you like your SSB to sound like AM, then the fine tuning mod is a step in the right direction. And the remaining step (there may be a 3rd if I can figure out where this slow +/- 1 Hz or so drift is coming from) is the 3TF7 replacement with a 12 VDC regulator. Then when your AC or 50 amp electric CH kicks in, the SSB tone (or CWS tone) won't change. And when the fellow you are listening to drifts off 5 or 6 Hz, you will know it is him, and not because your house line voltage drifted off several volts. For ECSS (which hams seldom use, but which is a mainstay of AM DXers), staying on frequency is important for obtaining the best recovered audio from difficult DX.

As for spookland, there is no telling what they are up to. But it wouldn't surprise me if they didn't still have some rooms full of R-390A's. Best regards, Dallas

> From: mikea [mailto:mikea@mikea.ath.cx] > Sent: Friday, September 24, 2004 10:29 AM
> Subject: Re: [R-390] 3TF7 Substitutes > cause of this drift.
>
> Thanks _very_ much for your research results. I have had the benefit > of your expertise for some years now, and think it is appropriate to > give you your due in public. > > I feel some construction coming on.

If you're in the mood for construction and would prefer to make *no modifications whatsoever* to your radio, you might consider the 3DW7A, which I designed a while back. Thanks again to Roy Morgan for massaging the picture into a portable format. I tried to post it here, but the listserv rejected the .jpg attachment. Contact me off-list and I'll email it to you. The single-source items (the MOSFETs and the RMS converter IC) are available at DigiKey. Everything else is generic.

It's a cool-running two-pin module, although you'll need a magnifying glass and tweezers to cram it into the "tubester" form factor like I did. Maybe I ought to post a photo of the completed unit to prove it can be done.

By the way, I'm still working on the 3DW7D, which does the same job digitally at about 1/2 the parts count. Somebody asked for a LED to simulate the olde-tyme glow, and I got carried away. Soon (but that means < 5 years :) 73, **Dave Wise (SWL)**

From chacuff at cableone.net Fri Sep 24 17:25:20 2004
Subject: [R-390] 3TF7 Substitutes

There are any number of complex ways to solve the 3TF7 issue but we should not be short sighted and forget about any noise that might be generated by the solution. Linear regulator circuits work great but are quite noisy.

The new fangled sand box radios suffer from many problems associated with noise generated by devices internal to the radio...fortunately the 390 series doesn't have that problem....that's one of the things that makes it such a stand out performer. Cecil...

From David_Wise at Phoenix.com Fri Sep 24 17:51:56 2004
Subject: [R-390] 3TF7 Substitutes

Right. (I presume you mean "switching regulator circuits", not linear.) By the way I did a linear regulator too. It worked fine but I didn't like the extra stuff cluttering up the view.

I once put a Sangean ATS-803A at maximum gain right next to the 3DW7A when it was still a breadboard, and with certain antenna orientations I could hear a little bit of hash around 150-300kHz. I don't hear any noise in the R-390A itself, at any frequency. My circuit uses reverse phase control at 120Hz, which is much quieter than anything one can do with the kind of switcher you're probably thinking of. The MOSFET pass elements are on at zero cross, and softly turn off part way through the waveform.

I'm not arguing that my circuit is simple, far from it. Some would call it an obsession gone wrong. But to my knowledge it's the only good regulator that is also 100% nonintrusive. You don't so much as have to loosen a screw, you just plug it in like a 3TF7 and it plays. 73, Dave Wise

From dallas at bayou.com Fri Sep 24 18:01:06 2004
Subject: [R-390] 3TF7 Substitutes

Uhhh... I guess I need to look at my mod again and try to figure out where it is invasive. I must have missed something. But you can get all my parts, except the miniature 9 pin tube socket, at Radio Shack. I think that outweighs any invasiveness (which I can't seem to find anyway). Dallas

From ham at cq.nu Fri Sep 24 20:08:37 2004
Subject: [R-390] 3TF7 Substitutes

Hi, The crystals in the crystal oscillator deck probably have a 0.25 to 0.5 ppm per degree C temperature coefficient when the radio is at normal room temperature. On the 10 MHz band the second crystal oscillator is running at 13 MHz. A one hertz drift on a 10 MHz signal would equate to roughly 0.08 ppm of drift on the second crystal oscillator. That would equate to something in the range of a degree C change every three to six hours. That's not a bad temperature change for a room with good temperature control. Take Care! Bob Camp KB8TQ

From vk2abn at batemansbay.com Fri Sep 24 20:40:27 2004
Subject: [R-390] 3tf7

I still maintain that shorting out the conections for the 3tf7 and replacing the BFO &VFO with 12ba6 tubes is the simplest way to go and the placing of the 3tf7 socket is just right for a 12au7 double triode product detector ,I use mine all the time on SSB and after half an hour drift is no problem regards to all VK2ABN

From hankarn at pacbell.net Fri Sep 24 21:24:41 2004
Subject: [R-390] 3tf7

Let us get down to the nitty gritty. I have over 40 R-39XX and have never had a 3TF7 failure. I have heard of "VERY" few failures . How many TECHS out there that really worked on the units can verify that this is a real.

HOW ABOUT SOME PROOF IN THE PUDDING AS THE OLD SAYING GOES. Some people hype this to sell upgrades and mods. As Nolan Said he had some running 24/7 for over 7 years with no failures. WHO IS TOOTING WHOSE HORN. I have sold over 100 NIBOS 3TF7's and nobody has ordered one other than as a spare or some bought several maybe to speculate on later.

It is amazing that these fine units worked all over the world in had to various power conditions without the use of variacs, inrush limiters and with and with out black tube shields, in racks and racks and running 24/7. If you do not get the point then call ET in one of his calls home.

HOW MANY PEOPLE OUT THERE CAN TRULY VERIFY A 3TF7 FAILURE. as i slide off of my

soap box and my .002 worth. 73 Hank KN6DI

From w2ec at attglobal.net Fri Sep 24 22:45:16 2004
Subject: [R-390] 3tf7

I've only had 3 personal R-390A's and one R-391. I've had one failure in an R-390A while it was in service in my home shack, one of my R-390A's had an open 3TF7 on arrival and a second R-390A arrived minus the 3TF7, reason unknown.

I wasn't keeping track so I don't know which one of my three R-390A's the failure occured in, the one I received with a good 3TF7, the one I relaced the 3TF7 in or the one I had to put the 3TF7 in since it was missing one at the start. 73, Ray W2EC

I have had four 3TF7 failures since 1973. Two were in radios purchased and transported by motor frieght. Four in Thirty plus years isn`t so bad .Hey, Hank ,what would you want for a couple more? I tend to agree with Hank. These radios were built to work under very severe conditions and to work 24/7.Both the R390A and R390 were /are supurbly designed radio recievers.73 Gregory

From ham at cq.nu Fri Sep 24 23:34:21 2004
Subject: [R-390] 3tf7

Hi

A total of three failures out of less than 15 radios.

1) Radio I got on the e place and it came with a resistor where the 3TF7 used to be.
2) Hamfest acquisition. It was working when bought and was dead when I got it home.
3) Fair radio was the source. It arrived with a dead ballast tube. I have stood there and watched Fair check out R-390's. I am *very* sure it did not leave Lima with a dead ballast tube. Just for the record there was no problem getting the part replaced.

Obviously I did not see the first one fail. I can only draw the conclusion that it failed. Maybe that one does not count. The other two have an obvious common element. The R390 got bounced all over New England with a used ballast tube in it. I suspect that is not a real good thing to do to a 20 or 30 year old ballast tube.

To your point. I have never seen one fail in a radio that was operating normally. Assuming they survive transport they seem to be fairly reliable. Take Care! Bob Camp KB8TQ

From Radiograveyard at aol.com Sat Sep 25 00:19:29 2004
Subject: [R-390] RE 3TF7

I have to agree with Hank when I bought the 134 from the government all were missing the 5814s many 6C4s and other tubes BUT most had the 3TF7s still in the sets and all were good no bad ones. Like they say if it ain't broke don't fix it. I personally have had one failure last year in my 67 EAC everyday user. Pete

From k0jd-l at seboldt.net Sat Sep 25 20:34:01 2004
Subject: [R-390] Below 500 kHz mod, again?

I have 3 recievers 390a and in 25 years i have had two 3TF7 tubes that have gontogod

I read and deleted the simple no-damage mod for opening up the R-390 below 500 kHz, before realizing that it probably would apply to my R-392 also! Could somebody repost it again? Thanks John K0JD Milwaukee, WI

Date: Sun Sep 26 04:08:44 2004
Subject: [R-390] RE 3TF7

The reference to the ballast failures in the R-392 that I made earlier should actually reference to the similar series filament circuit of the PTO / BFO in the R-392. The is, of course, no ballast in series with these filaments. But they will open due to voltage spikes caused when the primary DC power is running over 28VDC and the RCVR is powered up or when the vehicle is started to charge batteries or when switching from vehicular to generator power. Sorry for any confusion. It was my age addled brain causing it. RICH WA6KNW

From ham at cq.nu Sun Sep 26 09:49:49 2004
Subject: [R-390] Below 500 kHz mod, again?

Hi

I have seen a no change mod for the Racal 6790 but I don't think there is one for the R-390. The way the front end of the R-390 works it would be a major mechanical mod to get the poor beast running below 500 KHz.

The best bet on an R-390 is to use an outboard up converter to boost the DC to 500 KHz band up to something like 2 to 2.5 MHz. There are a number of designs out there for these converters. Some of them do the up conversion at the antenna so they can combine a whip antenna pre-amp with the up converter. A bunch of the guys that show up in the archives here have a neat little whip pre amp they came up with. It would make an interesting starting point for a high performance antennal mounted converter. Enjoy! Bob Camp KB8TQ

From mjmurphy45 at comcast.net Sun Sep 26 19:33:16 2004
Subject: [R-390] Below 500 kHz mod, again?

John,

Never heard of this R390A sub-500 KHz mod either. The up-converter idea Bob is talking about should work great with the R390A. Active voltage probe antennas and active loops work fantastic with an upconverter. There are plenty of antenna projects out there.

In the R390A I would try upconversion to a band like 10 MHz (as the tunable IF). A few advantages here: First the R390A is dual conversion 8 MHz and up and that means more stability, less noise and potentially fewer birdies than at 2 MHz where it is triple conversion. (Bob?). Secondly, 10 MHz crystals and 10 MHz stabilized references are easy to find for your converter. Finally, WWV lives here, so we

can always "zero" everything.

Tuning will be normal - upward, that is 10.200 MHz = 200 kHz.

Of course we want to use a nice vacuum tube circuit with a 6BA6 preamplifier and a couple of 6C4s, one as a mixer and one as the 10 MHz oscillator and some serious tuned circuits up front. Anybody got a circuit? It seems that everybody uses boring solid state upconverters! These usually are simple circuits with a low pass filter followed by single or double balanced ICs like the MC1496/1596 or the NE602 or SA612. Passive switching converters using CMOS gates or analog switches can also be utilized. Double balanced mixers used backwards are very effective with an active antenna ahead of them.

Here is a simple circuit: http://jacksonharbor.home.att.net/lfconv.htm

Here is a link to a circuit which is very similar to the first LF converter that I built back in the late 1980's. Mine was a bit simpler, but used the diode mixer idea as shown and it worked very nicely. I think I used a 4 MHz tunable IF. **http://www.lwca.org/library/articles/kf5cq/lfconvtr.htm** Mike Murphy WB2UID

From ham at cq.nu Sun Sep 26 20:33:50 2004
Subject: [R-390] Below 500 kHz mod, again?

Hi, At least from what I have seen the R-390 does a very good job from 6 MHz on down. I would not be concerned about the 390 limiting the process of up conversion down there at all. As far as a reference is concerned it's pretty easy to divide what ever you have handy down to what ever you need. A reference TCXO out of an old cell phone should be up in the > 10 MHz region. You could divide it down to just about anything you needed.

To keep from changing bands on the 390 I would say there is a significant advantage to converting everything into a single 1 MHz span. Doing everything at exact 1 MHz multiples probably will get you in spur trouble so I would not go to great lengths to make that part of it happen.

A reasonable cell phone TCXO should be in the 1 ppm range over normal operation temperatures. That would give you a 4 Hz error / drift with a 4 MHz conversion oscillator. At 12 MHz you would get 12 Hz. In this case lower is better for drift.

Depending on the antenna you may not be able to cover the whole band from DC to 500 KHz in one swoop. On the 390 they work pretty hard to only cover an octave (2:1 frequency range) with any one set of RF coils. The guys who did the 390 did a pretty good job of it. Duplicating the same thing probably isn't a bad idea ...

If we stick with octaves then we get something like 512 to 256, 256 to 128, 128 to 64, 64 to 32, 32 to 16. Setting up five front ends is a construction project of the first order.

Once you get to about 110 KHz LORAN-C at 100 KHz is about all you will hear. There isn't a lot of stuff below that, that is very interesting to listen to. Dedicated receivers seem to work better for LORAN, WWV-B and that sort of thing. That would eliminate all but the top two octaves and get the construction project back to some kind of reasonable level. Of course you could always just pick up a **BC-453** and do it the easy way ... Take Care! Bob Camp KB8TQ

From chacuff at cableone.net Sun Sep 26 22:36:33 2004
Subject: [R-390] Below 500 kHz mod, again?

Guys I don't remember the specifics but there is a mod where one moves a couple of cables which bypasses part of the tunable front end/1st RF amp...and allows the radio to tune down below 500KC with reduced sensitivity and selectivity. It has been posted here several times in the past and documented in one of the publications...either Electric Radio or HSN...I can't remember. I think that is what is being asked about....no one remembers that one? Cecil...

From Llgpt at aol.com Sun Sep 26 22:44:08 2004
Subject: [R-390] Below 500 kHz mod, again?

It is in one of the early issues of HSN. Simple mod and it works. Les

From chacuff at cableone.net Sun Sep 26 23:23:07 2004
Subject: [R-390] Below 500 kHz mod, again?

This was posted from Walter Wilson in January of 2001:

<HSN issue 2 pages 3-4, or HSN reprints page 10 have the information you <need. The simple solution is to couple the antenna via a 0.05 mF capacitor <to test point E209. This bypasses the antenna coils and RF stage, but <allows you to receive longwave signals. Some people have used the <unbalanced input to feed directly around the RF amplifier stage to E209 <through the coupling capacitor, and they hook their longwave antenna to the <unbalanced connector. I have not tried either of these. I found this while searching the archives....which ain't as easy as it used to be I might add...so much for progress! Cecil...

From w2ec at attglobal.net Mon Sep 27 00:38:12 2004
Subject: [R-390] Below 500 kHz mod, again?

Index indicates it should be in Volume 2, page 3.

From clemens at it.dk Mon Sep 27 09:22:01 2004
Subject: [R-390] "New" R-392

Assembled high priests of the R-39x ,

The R-392 I had been looking for for a while finally materialized last week. From another corner of Europe, namely Austria, which is no longer in the front line of a Cold War and so is able to let go of a great receiver like this. It is a fairly late contract, Philco 59, so likely made in 60-61, Marcottes list has 688 of them, and the s/n of this one is in the middle of the run.

I have to say that I am very impressed. I had thought of it as a variation of the R-39x, which I somehow ought to include as a quaint relative, but should not otherwise expect too much from. In fact this particular set at least is extremely sensitive, has a very accurate readout, a great sound to a 600 ohm speaker (not LS-166 :-, but vintage Bang & Olufsen), and is easy to tune SSB on.

It is sensitive enough that on startup it received Far East stations on 2, 5 feet of wire, and later, when listening to N4KG on 80 metres, I discovered that the patch of coax that I thought was connecting to my antenna-switching, was in fact only going to the Eddystone 880 across the room! A very lively receiver thus, and yet also reasonably quiet, especially on a T2FD. The 8 kcs filter does give a better sound than its counterpart on the R-390A, and I begin to understand why people rave about the R-390(non-A) (which I have not encountered in Europe), but of course the filters do not cut like the -A.

Readout is as I say very accurate (Dubrow PTO holding out well), and I hardly need to adjust zero. It is in very good condition, even has spline wrench, tube pullers , spare dial lamp, but not the angle screwdriver. The covers of the two audio-sockets (Amphenol 164-8, I think) and the IF out are missing. Because of the submersion-proof seal, I guess, the innards are spotless, a pleasure to behold the way a 390 has been packed into a small space seemingly without loss (apart from a lot of specialized controls) The meter has full movement, while the antenna trim is a little less easy to peak than on my trusty R-390A's.

I have Jeff's invaluable CD, including a lot of the Rovero-site and plenty manuals. Now all I need is a jeep- or a tank -, a 15 feet whip and perhaps the Arctic mittens that the strange knobs permit using! I manage quite well at the moment, but if anyone can point me to a connector for power/audio, or to covers for the other sockets , it would help beautify (I know, not the right word about an R-392) this surprising receiver.

I realize that I have probably been a bit lucky, and that it is extremely well aligned, and generally set up by professionals. Could easily become a favorite. (My SWIMBO, realizing its potential, or perhaps just jealous, suggested that I place it on permanent station in the garden to test its weatherproofing...) Best wishes, Clemens Clemens S.Ostergaard Aarhus DENMARK

I have the mod that you are talking about. I have sent it to list members several times and will send it again if they contact me. I scanned the article into a pdf file. I think the file is 580 kb. A former member did the mod and sent some details of how well it worked. I'm not sure about losing sensitivity, but he did say that audio output suffered some. As far as performance, he was happy with the results in heavy NDB chasing every night. The only complaint that he had was fine tuning with the VFO knob. I'm not sure that is a real issue myself. I have logged some very good beacons with the Quantum loop down to where the R-390A stops working. It never bothered me. Barry

From tetrode at comcast.net Mon Sep 27 23:49:12 2004
Subject: [R-390] Below 500 kHz mod, again?... yes it works!

I just tried this mod and it really works, not great but it only took a minute to hookup and try.

Took a test probe and plugged it into E209, clip leaded it to a .01uF cap I had handy, and then clip leaded that to a 150 ft long wire. I left the clip leads, cap, and extra probe wire just sitting on top of the crystal compartment.

In a few minutes of tuning I heard LOTS of power line buzz and the following air navigation beacons which were all MCW transmission. Freqs are in KC followed by call letters and sig level.

402 KC, LW, +20 dB
(this is local and is for Lawrence Airport, Lawrence, MA. I actually found the transmitter by accident

one day, it's next to the water department building on RT 133 here in Andover, MA)

415 KC BC, in the noise
393 KC, ML, in the noise
382 KC, ??, very weak, could hear the CW but couldn't make the ID
333 KC, YFM, in the noise

Not bad for a few minutes playing around. A better, less noisy antenna (like a loop or dipole) would definitely help as this temporary long wire I'm presently using is very poor with respect to line noise pickup. Anyone have a beacon database?, I'm curious to know the locations of the ones I heard. John

From terryo at wort-fm.terracom.net Mon Sep 27 23:53:55 2004
Subject: [R-390] Very rare R-390x spy accessory

There was a spectrum display designed expressly for the R-390 series of radios, The Communications Electronics Inc. SM-8512. I have added information on it to my website. http://watkins-johnson.terryo.org/SDUs/SM-8512-6.htm

The SM-8512 is very rare, as R-390 accessories go. It is a 455 kHz spectrum display unit in a 2 rack unit high package. It uses a 3XP1 tube and is an all nuvistor design. I have included photos of the unit, the original catalog sheet and pages from the manual describing how to add a wideband (30 kHz) pre-filter IF output to the R-390 for use with a spectrum display unit.

There was also an SM-8513 designed for simultaneous display from two R-390x receivers, but I have never seen one in 25 years of following the CEI and WJ equipment lines.

In addition to domestic sales, three version of the SM-8512 were sold to the government:

IP-861/URR NSN 5820-00-105-3064 a plain SM-8512 contract F41621-73-C-0075 Feb 1973 (Air Force)

IP-866/URR NSN 5820-00-933-7909 an SM-8512-4 contract NOM73611 July 1966 (Navy)

no designation or NSN an SM-8512-5 contract DA18-119-MAC-03432(X) (NSA)

Happy hunting, Terry O' http://watkins-johnson.terryo.org/

From roy.morgan at nist.gov Tue Sep 28 11:16:01 2004
Subject: [R-390] Below 500 kHz mod, again?... yes it works!

wrote: Anyone have >a beacon database?, I'm curious to know the locations of the ones I heard.

To the R-390 list,

There are a number of beacon databases. (I've sent to John separately the files I list below):

There is a whole community of beacon hunters. Below is the section of links from my bookmarks file related to VLF and beacons.

NDBRNA0413.PDF is also available in an Xcel spread sheet form. You can get an updated version online.. URL is: http://www.dxworld.com/ndblog.html

statesort.pdf may be the same info sorted by state.

hunter.pdf tells you ALL about hunting beacons.

index.htm is the front page of a thing called "On the Art of Long Wave DX-ing" and that is a must read. It's on the LWCA club site. (the title graphic is not there, but the links should word to get you back to the original.)

Here are a bunch of links: You should start at http://www.lwca.org/

http://www.beaconworld.org.uk/info.htm
http://www.qsl.net/on7yd/136lit.htm
http://www.contelec.com/ATU.htm
http://www.alan.gale.clara.co.uk/beacons.htm
http://www.pacificsites.com/~brooke/electron.shtml#Broadcast%20Band
http://frodo.bruderhof.com/ka2qpg/
http://www.vlf.it/trond2/list.html
http://beaconworld.org.uk/
http://www.weaksignals.com/
http://www.g0mrf.freeserve.co.uk/lf.htm
http://web.inter.nl.net/hcc/Shortwave/
http://www.wireless.org.uk/index.htm
http://lwca.org/sitepage/lfutil/index.htm
http://www.cl.cam.ac.uk/~mgk25/lf-clocks.html
http://dybka.home.mindspring.com/jill/radio/beacon.html
http://lwca.org/wwwboard/wwwboard.html
http://www.lwca.org/
http://www.spaceweather.com/glossary/inspire.html
http://www.qsl.net/on7yd/software.htm
http://www.qrz.com/
http://web.tiscali.it/vlfradio/index.htm
http://www.coastal-radio.org.uk/
http://www.highnoonfilm.com/xmgr/
http://www.computerpro.com/~lyle/
http://www.cp.duluth.mn.us/~lyle/
http://home.att.net/~n.gianakopoulos/wsb/html/view.cgi-home.html-.html
http://www.vlf.it/easyloop/_easyloop.htm
http://www.vlf.it/
http://204.108.4.16/

Roy Retired Navy pilot who used beacons for real.

From brookbank at triad.rr.com Wed Sep 29 12:15:10 2004
Subject: [R-390] R-390A or R-390 Teletype reception

Would like to know how to set up a teletype receiving station. Have R-390-A (3 of them and 2 R-390), an A/SGC-1A Radio Teletype terminal set (no manuals) and a AN/UGC-74C(V)3 also without a

manual, additionally I have found on my stored treasures a CV-483/URA-17 Converter Frequency Shift also with no manual.

Can I some how use these units to set up a TTY receiving station? Have always been curious about TTY but never been able to set up a unit nor the knowledge to do so. Now that I have found all of these boat anchors maybe some one can help me do so. If able to help, please respond directly unless you think that the response will add to the net knowledge. Thanks and regards, Pat

From drewmaster813 at hotmail.com Wed Sep 29 20:49:31 2004
Subject: [R-390] On 3TF7's...

On the topic of the 3TF7 ballastube, Dallas Lankford wrote: (snipped) >...I found that the 3TF7 does not do a very good job of stabilizing the >BFO and PTO frequencies when the AC line is varied.

There are other failure modes for the 3TF7 other than just going "open". I have one which "regulates" at 350 mA; another list member reported having one at around 240 mA (the spec is 300mA). The degree of regulation probably is degraded with that type of failure. It could be that Dallas' 3TF7 has that defect.

Dallas continued: >Whoever designed the original BFO and PTO filament stabilization circuit >was on the right track. They just used the wrong method to stabilize it. >Current regulation is the wrong approach; voltage regulation is the correct >approach.

A good 3TF7 is specified to hold current constant within +-1% over the voltage range. Perhaps that performance is not adequate for the ultimate in PTO/BFO frequency stability.
Either current regulation or voltage regulation would accomplish the same desired result in terms of frequency stabilization. The designers used current regulation because that was far simpler to implement with the technology of the era. Their current regulators weren't as good as those we can inexpensively build today.

Current regulation has an added benefit in that it eliminates inrush current surge on startup. That high current (a bit over 2 amps for a 6BA6) causes a brief heater hot spot which eventually burns open. Tube heaters are generally designed to reduce that effect, but it still remains to some extent. (Extreme example: I have a few Bugle Boy 12AX7's the lowest part of whose heaters flashes brilliant white on startup).

A few current regulators using the LM317 have been described in this forum. One is Dr. Gerald Johnson's simple AC regulator. While his circuit does not get the best performance from the LM317, it is still quite good and much much better than a recalcitrant 3TF7. It dissipates no more power than the 3TF7 and places neither asymmetric load nor current spikes on the power transformer.

Another is Dave Wise's LM317 DC circuit (not his phase control based "3DW7" designs). Its regulation is excellent and is adjustable from 270 mA to 330 mA IIRC, but it generates more heat than Jerry's circuit (I calculated something around 7 watts compared to the 3.8 watts of Jerry's design). With its half wave rectification it places an unbalanced load with high current peaks on the transformer. Dave incorporated series resistance to reduce those peaks somewhat.

Dallas' voltage regulator circuit generates higher heat and without the aforementioned refinement used by Dave draws even higher current spikes in its unbalanced load from the transformer. Dallas' circuit is not adjustable and is simpler than Dave's.

May I suggest yet another DC current regulator circuit? Connect 25.2 VAC from ballasocket to anode of diode (1N4002 and up suitable). Connect cathode to + side of 1000 uF 50V electrolytic capacitor. Ground - side of cap. Run DC thus formed from + of cap to input of LM317 (pin 3). Connect load at 3TF7 socket (the connection to the seriesed BFO and PTO tube heaters) to LM317 adjust terminal (pin 1). Connect a current sense resistor (4.166 ohms, 1 watt) from LM317 output terminal (pin 2) to the adjust terminal. A 4.0 ohm, 1% resistor will give nominally 313 mA - close enough to the desired 300 mA. For those who want to set the current exactly (given the LM317's Vref tolerance) use 5.0 ohms in parallel with 20 to 33 ohms. Add the obligatory short leaded, grounded .1 uF caps on LM317 input and output to quell LM317 oscillation/noise tendencies. Heatsink well.

That circuit would have close DC current regulation, not be as readily adjustable as Dave's, be simpler than Dave's, more complex than Dallas' and have the same high input current spikes, unbalanced load, and excess heat as Dallas'.

Both the circuit I propose and Dallas' could be made to dissipate a little less heat and be a little less "spikey" by reducing the filter cap to 470 uF thereby allowing more ripple (not Chuck) at the regulator chip's input. That would have no noticeable effect on regulation.

While the current spikes and unbalanced load of half wave rectification with capacitive filtering will cause additional heating in the R-390x power transformer, I'm of the opinion that there would probably be no detriment given the transformer's conservative design and massive size. The transformer's existing load is symmetric and spike free, comprising resistive and full wave rectified choke input. The added half wave rectified load is small by comparison and hence would be "diluted".

On 3 terminal regulator noise Cecil Acuff wrote: (snipped)

>There are any number of complex ways to solve the 3TF7 issue but we should >not be short sighted and forget about any noise that might be generated by >the solution. Linear regulator circuits work great but are quite noisy.

>The new fangled sand box radios suffer from many problems associated with >noise generated by devices internal to the radio...

I don't know how much of a problem that would be for an R-390x using a 3 terminal device for PTO/BFO tube heater regulation. The radios having that malady have operating bias voltages so regulated/adulterated. OTOH, heater power is not directly associated with the signal path, though there can still be some leakage. In the R-390x, encountered first after the tube heater regulator's output is the BFO tube heater. There and at the detector the signal level is high enough that 3 terminal regulator noise would be miniscule by comparison. Next in line is the PTO tube heater. That is fed through a brute-force LC noise filtering circuit included by the designers to keep PTO signal in and noise out; no trouble there.

Any noise problem caused by the aforementioned heater usage of 3 terminal regulator would most likely be due to radiation from heater wiring inside the IF module. That would be dependent on existing lead dress and shielding. An inductor and another .1 uF capacitor could be connected to the regulator output to form a pi-section brute force filter thereby addressing any noise concerns.

Not all of us demand the ultimate in stability from our R-390x. On ballasubstitution, Jerry wrote a while back:

(snipped)

>The purist restorationist will want to use ballast tubes until there are >no more. The picky will want to go solid state regulation, and the AM >listener probably will be super happy with a pair of 12BA6 and a jumper. >Since the 12BA6 was the standard IF tube in 4 and 5 tube AC/DC radios using >miniature tubes, there should be a million of them about or more.

A schematic of Jerry's AC current regulator and a component connection description of Dave's DC current regulator can be found under the "Ballast Tube" heading in Wei-i Li's brilliantly conceived "Pearls of Wisdom". Go to r-390a.net . Select "References", "Pearls of Wisdom". There reside postings from this forum painstakingly distilled over the years. There is much elightenment to be gleaned and amusement to be had by perusal of the lively and animated discourse over this most controversial of R-390x topics. Vive le Caballo Muerto! Drew

From ham at cq.nu Thu Sep 30 19:28:55 2004
Subject: [R-390] On 3TF7's...

Hi

The main issue with the 3TF7 is that is is designed to regulate around a line voltage of about 108 VAC. With 122 VAC line power you are getting close to the "unregulated" end of the 3TF7's range.

Since the 3TF7 works just like a tube filament it has the same inrush current issue as a tube. Other types of current regulation will take care of the tube inrush but a 3TF7 will not. It's not very clear exactly how important the inrush effect is on receiving tubes. As far as I can see tubes are pretty reliable as long as you don't vibrate them. That makes it a bit tough to quantify an improvement from inrush limiting.

The whole issue of half wave rectification to run the tube filaments has as you mention been thrashed out at great length in the past. One idea that has not been tossed around is to lift the far end of the regulated filament string and then full wave rectify the AC. That would at least reduce the level of pulsation on the AC line. I have never taken a look at the connectors involved to see if there are enough spares to make it something you could do. Take Care! Bob Camp KB8TQ