

## R-390 and R-390A Thread to April, 1996

Note: This compilation is not complete. Some posts undoubtedly got lost in the great Internet Black Hole and never reached me. Some I just left out. Many initial posts are deleted, because their questions are contained in the reply posts. The order is erratic - mostly it's organized by the original Subject Heading. But people sometimes change the heading as a thread progresses, or reply with their own heading. Thus, there are posts that are connected in terms of content, but don't appear together. Signature blocks have been deleted, unless they contained an e-mail address. Many folks don't include an e-mail address in their signature block, so remain somewhat anonymous! All headers have been deleted. The spelling has been cleaned up a bit, only so that I can use a search program without missing stuff because of odd spellings. A bit of editing has been done on some posts to shorten them. All errors and omissions are either the work of the original poster, or myself! However, note that folks are sometimes careless in differentiating the R390 from the R390A. There may also be the odd comment about other RXXX receivers. There is a lot of "R390(A) Lore" which I find fascinating, even if it ain't all that technical. Also, contrary information may be contained in some posts, so caveat emptor!

AC leakage current testing (Tue Mar 12 14:51:02 1996)

Ah, the hazards of testing out of context ... That is a good method to "check transformerless chassis for AC line leakage." It will cause unnecessary trouble if you apply it to an ungrounded set that is intended to be grounded, like a lot of RF receiving and transmitting equipment. The best thing to do is ground it, and then test that your ground and the power line ground are not fatally far apart. The ground pin in a 3 wire outlet will almost certainly be useless for RF grounding.

The power line RF filter in an R390A will trip most GFI outlets, even though it is doing the job it was intended to do, back before GFI was invented. If you put more faith in a GFI than you do in a good ground, then you'd best remove the RF filter.

If you measure the chassis voltage of an R390 class set in its ungrounded, unnatural state, you'll see half of the power line voltage, split between two equal capacitors. If you drag a ground wire on the metal, you'll see sparks, because you're discharging capacitors. If you ground the set, and a fuse blows, the set has a problem. Otherwise, it is doing what it was designed to do.

That's just my opinion, though I've stood on this ground before.

Bill Hawkins

Ballast Tube Bypass Sat Mar 16 10:51:26 1996

I don't want to derail Radiomatt's sale of parts, but he is a simple method to bypass the ballast tube in the 390A. The Ohm's law math is the same with a ballast tube and 6 volt tubes, or a shorted ballast tube socket and 12 volt tubes.

Read on. I have done this, works well.

1) Obtain two 12BA6 tubes (same tube as the 6BA6, but it has a 12-volt filament) and substitute them in place of the BFO (position V505 on the IF subchassis) and VFO (position V701 on the VFO subchassis) tubes.

Then remove the 3TF7 (the front-right tube on the IF subchassis) and jump the two pins that would normally power-up that tube.

Thats it. I have rigs with and without ballast tubes, no apparent difference.

73 de tom, n5off%w5ddl.aara.org@usl.edu

BC-348 Split Gears Fri Feb 02 16:51:28 1996

Many of the split gears are made of steel. If these split gears are working against a brass gear, it is possible to get too much tension on the split gears and ruin the brass gear in a relatively short time. I have changed many bad brass gears on 390s over the years that were stripped for that reason. A clean, or non-binding gear system, shouldn't require much torque to stop the backlash.

I set them by bringing the two split gears together until the compression spring just begins to compress - then I add one or two more teeth of compression and leave it at that. Some procedures that I have seen call for about 4 to 5 teeth of compression. I have worked on some 390s that had more than that.

---Howard Weeks, weeksh@csranet.com

Capehart Fri Mar 29 08:49:49 1996

Looks like Capehart was all over the place, but the Richmond Hill, NY (that's borough of Queens, in NY City, folks) sounds right during the time I remember, which would be the 60's. About ten years after your R390a creation I bought my first car from a Capehart employee, and while that was of no concern to me the fact that he was a smoker, was. Never again.

You know, back when I was a kid in the 60's this sort of business and radio history was fascinating to me, but my dad basically just said "who cares" and in recent years I see some of his point. The New York area was filled with zillions of these little and not-so-little contractors and subcontractors. They would trade on some friendship to get a contract, set up shop in some low-rent rabbit warren commercial office, add as little value as possible to get product out while scrambling for the next contract.

The big game was to get retired military officers in some sinecure just to get an entre to new contracts. These firms were not headed by Art Collins/Bill Halligan type visionaries - it was more a question of coming and going, many times with no name on the building, sometimes not even on the door. It wasn't for security mostly, just that they weren't selling an image.

When the contracts ran out, that was the end of the company, but the same people would open up a new company when they got another contract.

I think the demand for increased capital, the need to have actual r & d operations, and the increased difficulty of working with the government, plus the government cutbacks, ended that phase of the industry.

..another little-known chapter of American history...

73, -Pete, WB2QLL, pferrand@scoot.netis.com

Capehart Thu Mar 28 16:33:16 1996

Thanks for the poop on Adler.

The last thing I have on Capehart is that they were located at 87-46 123rd St., Richmond Hill, N.Y. The chairman was G. Loecher (Jerry) and they had 250 employees in 1962.

In 1969, Clavier Corp (who was also in the 390A business, maybe just in modules) was located at the same address with the same chairman.

Jerry was later the owner of Fowler Industries, which made five R-390A's in 1984. They also knocked off DF's, IFF's, etc. on small govt contracts. Jerry still owns real estate in the home town of Fowler, Port Jarvis, NY, but he lives in Jerusalem.

73 de tom, n5off%w5ddl.aara.org@usl.edu

Caps in R390A, reliable or not? Fri Feb 09 12:17:06 1996

Greetings all,

>BTW while trouble shooting this I noticed that the 47 ohms  
>from the cathodes were all a little high (~55 ohm) but one  
>was 70 ohm or so. Should this be replaced, or does it not  
>matter too much?

>Dean Davidson

For what it's worth, I've gotten into the habit of checking resistance on all resistors on the AF chassis of the R-389/ R390/R391 series. The massive amount of heat from the twin 6082 regulator

tubes really cook the old carbon resistors. I replace the 47 ohm resistors with 5-watt wirewound versions. I also do the same thing to the 47 ohm resistors under the 26Z5Ws on the power supply. If one resistor is out of tolerance by a significant amount, it will shorten the life of the tube.

In addition, almost EVERY AF deck from these models has shown that resistors R-626 (2.7K) and R-625 (1K) are significantly out of tolerance. The symptoms of these resistors being out of tolerance is a loss of voltage regulation control. This causes the B+ to slowly drop. Eventually, you will notice this as an unusually high hum level in the audio.

Dennis Gibbs, dgibbs@rational.com

For those that don't roll their own - Part 2 Wed Mar 27 10:29:09 1996

In view of the fact that I was inundated with requests for what it cost me for a Rick Mish R390A overhaul I have decided to post the information to the list. This is the most expeditious (and easiest) way to disseminate this information.

Thanks to all who responded and it was nice to hear from those of you that I have corresponded with in the past.

First the most requested information - the cost. Here it is right off the invoice:

7 12AU7/5814 @ \$6ea 42.00  
1 6BA6/5749 6.00  
1 6AK5/5654 6.00  
1 6DC6 6.00  
1 6AK6 6.00  
1 T202 Antenna Xfrmr 10.00  
1 Band Crystal (9 mc) 10.00 (for 15 & 24 mc band)  
5 Power Supply filter caps 30.00  
1 3-wire line cord 5.00 (for shock prevention)  
1 1-lot of misc resistors, capacitors and misc hardware N/C

Breakdown entire radio, wash and degrease geartrain, check tubes, clean controls, realign entire radio, check all xtals for tolerance, calibrate PTO, touch up front panel and knobs. (Its not on the invoice but Rick removed an extensive mod that was not needed.)\*

Parts 121.00  
Labor 250.00  
UPS shipping/packing/insurance 40.00  
Grand total \$411.00

In addition to the basic service I bought new top and bottom covers at \$50 for both and two type 'C' antenna connectors for \$10 each. The antenna connector goes on the unbalanced antenna input. I got one for me and one for my brother who got an R390A for Christmas last year. Keep in mind that your price may vary. My R390A didn't play worth a hoot but it was in basically good mechanical and physical condition. Rick can give you a pretty good ballpark figure on what yours may cost. It turned out that mine needed more tubes than he estimated. Thanks to that diode mod I put in the power supply.

Also, he returns all the parts he replaced. Yes, bad tubes too.

Next question - Shipping.

Rick will tell you: Buy a double-wall cardboard box 22"x24"x14" and get about 40 paper grocery sacks. Wad the grocery sacks up for packing material. They don't compress in shipping like the foam peanuts. I was able to get foam pieces at work that we receive our high dollar avionics gear in. Just made for shipping a Boat Anchor. I lucked out there. So I was only out \$12 for the box.

Before shipping Rick told me to turn the rig over and remove the power supply. This saves about 20 pounds shipping weight. And all you're removing is the transformer and rectifier tubes, which he obviously doesn't need on his end. He'll ask you to send the rectifiers to check them if you like. My shipping weight came to 70lbs and with \$1000 insurance the UPS bill was about \$18 to ship from

Tulsa, OK to Toledo, OH. He said he's only had two units damaged in shipping in all the years he's been doing this.

Turn around time?

It will depend on how busy he is. My radio was back in under six weeks. I expected two months but Rick was able to get to it sooner than he thought. The radio languished in the attic for a few years so a couple of months more seemed like nothing.

Does he restore other radios besides R390s?

I honestly don't know. You'll need to give him a call about this.

Whats the cost of his rebuilt R390As?

Rick said he's selling a rebuilt R390A for \$850. About half the price of an NRD-535. He told me that another customer of his has both and the R390A can pull a signal out of the mud better than the sand-box. Why? Those digital rigs produce noise slinging those 1's and 0's around.

- Address and phone number?

Rick Mish - Miltronix  
36 E. Manhattan Blvd  
Toledo, OH 43608  
Phone/fax: 419-255-6220

>From my glowing report you may think I have an interest in his business but I am just so pleased with having a top notch receiver that I wanted to share this information with other boatanchor fans.

I fell in love with R390As back in 1967 when I was overseas at one of Uncle Sams listening posts. (Iraklion Air Station, Crete. Operated as SV0WCC using an SBE-33 into a multi-band dipole hung between the barracks.) Owning one was a dream of mine and now listening to this one really takes me back to those mid-shifts when our target stations were quiet and we could tune around to see what else was out there. There was a lot, but that's another story.

Give Rick a call. He truly loves what he does and that alone says a lot. He's not getting rich repairing these radios but in my opinion he deserves to make a decent living doing what he enjoys. Should we all be so lucky.

73 de Stan - WB5LBH scgilstrap@aol.com

\*The mod Rick removed was evidently a depot mod. It allowed the use of external oscillators for extremely accurate frequency control and stability. Not having the external oscillators I had no use for the extra hardware so Rick removed it and returned it to me.

For those that don't roll their own - Tue Mar 26 08:58:58 1996

A couple of months ago the bug to fix up my R390A bit hard. After pulling it out of the attic and staring at it for awhile I decided it needed a professional's touch, having neither the time nor technical expertise to work on it myself. R390As are too much for me and I read with envy the posts of those of you who tackle the job of restoring R390As and other high performance receivers. (It must be nice guys.) Ok, so I don't "roll my own" when it comes to the really heavy iron, preferring fly-weight projects like simple xmtrs and assembling vertical antennas. But I'll bet I'm not the only BA'ite intimidated by big complex radios, or perhaps just don't have the time to tackle such a rig. So to those of you in that category (and you know who you are) I wish to share how I came to have a like-new R390A in my shack. Simply put, I sent it to Rick Mish (Miltronix) and it came back working better than when I first got it.

This R390A has been in my possession for around 15 years, a Collins, contract 375-P-54, s/n 146. It worked very well when I got it but after the 26Z5s went out and I stuck diodes in their place the performance slowly deteriorated. I then let a local yokel work on it and when I finally got it back after having to go rescue it from his clutches the radio worked worse than before. I didn't find this out until after giving him money for "fixing" it. Live and learn!

Sending it to Rick was a completely different experience. He is a real professional in not only his technical abilities but also in terms of customer service. I'd kill for an automotive repair shop that fixes cars the way Rick fixes R390As.

After using the radio for a couple of weeks I'd like to report the following:

- The front panel looks virtually new.
- The KC tuning knob turns as smooth as silk.
- The band (Mc) switch operates cleanly and positively.
- Sensitivity is 0.3uV on some bands and no more than 1uV on others. (This according to Rick. I have no way to measure it myself but Rick was not wrong on anything else he told me about that I could confirm.)
- The radio is spotless inside and out. I have no idea how he got it so clean.
- It performs flawlessly! The alignment amazes me. (He complemented my VFO for being exactly on frequency after alignment. It is.)
- All the tubes have bright red tips. A nice touch.

I could go on and on but suffice to say its a hell of a radio.

The service? As one who is practically convinced that pride of workmanship is a thing of the past Rick has restored my faith in the idea that some people still care. He called me at his own expense twice while working on it and explained at great length what he was doing and when he'd be done. And then to my surprize and pleasure he called a me at home a few nights ago to see how the radio was doing.

It must be stated that Rick's service does not come cheap. But it was worth every penny to me. My radio had a lot wrong with it and many, many tubes had to be replaced too. Those diodes were part of the problem. I recommend spending the money to buy the rectifier tubes from AES or wherever. Its really false economy not to do it right.

If you are curious about what it cost send me email and I'll give you the breakdown on my cost. It was less than half of what he sells remanufactured R390As for. And you can buy two depot maintenance quality R390As from Rick for what you'd pay for a new NRD-535. And an old sand-less R390A will have a lower noise floor than any gee-whiz digital box.

One other thing. I bought top and bottom covers from Rick too. They are new copies of the originals and are first class. So if you are considering putting new life into your R390A give Rick a call. What you'll get back will send you to Boat Anchor nirvana.

73 de Stan - WB5LBH, scgilstrap@aol.com

Hammarlund Signal Slicers A or B Tue Jan 23 17:26:59 1996

- >One other thing: I plan to use this with my R-390A to process SSB
- >signals. Am I on the right track in thinking this way?

Yep, it works with the R390A, right off the IF output jack. Of course you will have to align the Slicer to the R390A's IF; it may have been used on an receiver with a different intermediate frequency. One remark: you will have to use the RF gain on the R390A to control the audio volume at the Slicer, unless you want to go in and do a bit of surgery on your R390A. I have my R388 permanently hooked up to the Slicer, so this is what I did. BTW, if you decide not to buy, put me in touch with your contact.

Shaun, merrigan@ee.ualberta.ca

Lube job of R390A' s Fri Jan 05 17:39:54 1996

For my two cents, When i was over in Koera, at a ASA site, I remember repairing many 390A's and what ever. We used to clean the gear cages along with Model 28 TTYcariages in the the same containers of some solution unknown to me know, After drying, we never lubed the 390's gear train ?

Question (I haven't seen the manual for almost 25 years, I mean the Field Dopt manual), Do Brass plated gear teeth need LUBE.?

I have seen a lot of guys asking about lubing the gear train to make it smoother, What gives, The ones I worked on didn't require anything more then cleaning

Always in search of data

Al Fritsche fritsche@msn.com or attmail!!fritsche

Navy manuals for R390A, 51J-4, & others... Wed Feb 14 08:51:16 1996

Okay, here's the latest I can find. The "EE125-" prefixed stuff is the latest Navy manual numbering scheme, so must be the latest & greatest manuals. Note the "-LP" in all the rest, the only difference between what you guys were given & the usable number.

The entire stock of manuals was moved in '95 from Philadelphia to Ships Parts Control Center (SPCC), Mechanicsburg, PA. Requisitions still have to go through Philly, but they're warehoused in Mechanicsburg where the folks don't really want 'em, don't like the stock numbering scheme, and are constantly devising excuses for shredding documents. They sent the semi-trailers back to Philly when they first arrived! (Didn't do 'em any good, though.)

FILE: C:\TEMP\RCVRMAN.LST 13 February 1996  
LIST OF NAVY MANUAL NUMBERS FOR SOME RECEIVERS  
(Operating & Maintenance Instructions)

NOTE: ALL ARE NAVSHIPS NUMBERS

R-274B/FRR 0967-LP-995-0010

R388A/URR(51J-4) 0967-LP-994-9010

R-390A 0967-LP-063-2010, -2020, & -2030 (-2050 is maint svc bull, -2070 thru 2140 are field changes)

EE125-AB-OMI-010

EE125-AB-OPI-010 (operating instructions only)

R-391 0280-LP-655-8000

0367-LP-141-3010

R-1051 0285-LP-004-2000, -3000, -4000, & -5000

0967-LP-432-2020, -2030, -2040, & -2050

0967-LP-878-3010

R-1051H EE125-AF-OMI-010

RAS 0967-LP-373-8010

RAS-2,4,5 0281-LP-026-6000

RBB-1 0284-LP-092-2000

RBB-2 0967-LP-973-5010

RBB-2A 0967-LP-115-5010

RBB-3,4 0280-LP-032-0000

RBC 0967-LP-973-5010

RBC-1 0284-LP-092-2000

RBC-3 0280-LP-032-0000

0967-LP-973-5010

RBC-3A 0967-LP-115-5010

RBC-4 0280-LP-032-0000

RBM,-2,3,4,5 0284-LP-063-8000

RBS 0281-LP-027-3000

RBS-2A 0967-LP-170-9010

RBS-3 0280-LP-228-0000

73.....Ray Mote, W6RIC <rmote@rain.org>

Navy manuals for R390A, 51J-4, & others... Wed Feb 14 18:06:07 1996

Thanks for posting the list. I have an RBC-3 & I'd like to get a manual. Can I write/call this depot for one, or if not, how does one get one?

Also: I see two numbers for the RBC-3. Does that mean it's a 2-manual set?

RBC-3 0280-LP-032-0000

0967-LP-973-5010

73, Ross KB9JJR

New R390A List in BA Archive Mon Feb 12 09:27:20 1996

Jack has installed the latest R-390A list in the archives. Here is how to retrieve it.

73 de tom

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Reply to: n5off%w5ddl.aara.org@usl.edu

To get a copy of the subject list, send an Internet message to:

listproc@theporch.com

leave the subject line blank in the body of the message type

get boatanchors r390a.users

Thanks to all who have contributed R-390A info. We have data on about 200 rigs from 17 contracts. The lowest serial number seen was 2, and the highest in a given contract was over 6000. Contributions include those from Dittmore-Freimuth and Fowler Industries contracts, as well as an EAC Industries consumer products run.

As I mentioned in earlier posts, I am compiling a survey of R-390A's owned by people who frequent the packet and Internet boards. The object of the game is to try and ascertain how many contracts were let for manufacture, and how many were made.

If you wish to participate in the census and you own one or more R-390A's (or spy them on ships, hamfests, or just anywhere), please go take a peek at it (them) and then reply to me with this information:

- 1) maker (EAC, Motorola, etc.)
- 2) order number (63-PH-54 for ex) from the front tag
- 3) serial number off of the front tag
- 4) any unusual features (tags, stamps, frequency shield, etc.)

The list includes an accounting of the contributors, however, the names are not matched with the rigs. If contributors have a desire to sell their rigs, I'm sure they will speak up, so you won't get any cards or letters from making a data contribution to the list.

Thanks, de tom n5off%w5ddl.aara.org@usl.edu

New version of the R390A User Survey Fri Dec 29 05:38:36 1995

Gang-

Due to some fine work and lots of cooperation, another edition of the R390A User Survey, from Packet, InterNet, and the BA list is now in the email archives and the ftp site at theporch.com.

To retrieve this file, or any other in the email archive, send email

(NOTE: this is NOT the BA list address!!!!) to:

listproc@theporch.com

Then, in the body, type:

get boatanchors R390A.users

and it will be returned by email...

While you are there, pick up the index by adding a line:

index boatanchors

And, most of all, enjoy these contributions, and let the authors know if you have additional information, or you just enjoyed the list... it represents a lot of work, by a lot of people...

73 Jack, listown@jackatak.theporch.com

Peeling off of numerals from R390A Tue Sep 26 09:48:37 1995

This may be yet another non-pinball use for Cover-Your-Glass Lite (tm), already recommended for preserving dial glasses with reverse printing on the backside. Dribble it on very carefully with an eyedropper.

Shellac may work just as well and be easier to find and use. Shellac has the nice property of sticking to metal.

Good luck es 73, mike k w9nrd

PP-621/URR in R389, R390, and R-391 Sun Mar 03 18:00:49 1996

Greetings all,

I just discovered some information that may save someone some grief.

I currently have an R390, and two R-391s. I performed an alignment and some other repairs on my R390 about six months ago. During that time, I had swapped the PP-621/URR power supply in the R390 with one from the R-391s. I ASSumed this was no big deal. Both PP-621s looked identical, and were even made on the same contract.

I was wrong. The problem that came up involves the 3/8 amp B+ fuse. On some versions of the PP-621/R-389/R-390/R-391 combinations the B+ fuse is bypassed!

I am missing some documentation and therefore the following explanation is based partly on fact, and partly on my speculation: It turns out that early versions of the R-389, R-390, and R-391 had NO B+ fuse. A Modification Work Order (MWO) came out in 1958 to retrofit the R-389/R-390/R-391 receivers with a 3/8 amp B+ fuse. I do not have the documentation for this work order, but the work order number is SIG 11-5820-294-35/1. If your receiver has had this MWO implemented, you should see this number stamped on the upper right-hand corner of the back panel of your R-389/R-390/R-391. I am pretty sure that this MWO included modifications to both the receiver itself (to add the B+ fuse) as well as power supply PP-621/URR. Of course, there is no guarantee after all these years that you have the original PP-621 power supply in your receiver.

Anyway, I was looking at the schematic of my R-391, and was comparing it with the schematic of my recently acquired R-390 manual and noticed a difference in the way the B+ fuse is wired into the circuit. I THINK (This is my speculation) that the R-390 schematic I have incorporates the MWO mod, but I am not certain. Anyway, judging from the schematic, if you take a PP-621 power supply from a receiver that DOES NOT have the MWO performed on it, and install it in a receiver that DOES have the MWO implemented on it, the B+ fuse is effectively bypassed! Note that this can happen even if both receivers have a B+ fuse. In other words, if one receiver has the B+ fuse as a result of the MWO performed on it, and the other receiver had the B+ fuse incorporated as part of its original design, the two methods are incompatible!

So here is my WARNING: If you have an R-389/R-390/R-391, you would be well-advised to check to see if your B+ fuse is wired into the circuit, by removing it and verifying the the receiver is inoperative. Note that this does not apply to the R390A, I am only speaking of the non-'A' version here.

By the way, does anyone have a spare PP-621/URR power supply for sale?

Regards, Dennis Gibbs dgibbs@rational.com

PP-621/URR in R389, R390, and R-391 Sun Mar 03 18:01:08 1996

This is the mod that changed the 20 amp 28VDC fuse for the dynamoter that could replace the PP-621, into a fuse for the B+. I have a 390 that must have been modified in the field, 'cause I don't think they would'a used that much black tape back at the factory. Seems to me it was done by lifting



the HV winding center tap from ground and tying it to the dynamoter power lead that went back to the 20A fuseholder, then tying the other end of the fuseholder to ground. An unmodified power supply, with the HVCT still tied to ground in the PP-621, would bypass the fuse.

Dennis, is your power supply damaged (like, how did you become aware that the fuse was bypassed), or do you just want one that is modified?

I'll trade you a good unmodified supply for a modified one.

Bill Hawkins

PP-621/URR in R389, R390, and R-391 Sun Mar 03 18:01:12 1996

Bill,

Actually, I don't believe this is the case. One of my R-391s has the MWO number stamped on it, yet it retains the original 20AMP fuse. The mod added a third fuse, marked "H.V." Also, the manual I have that mentions the mod doesn't say anything about replacing or changing the existing 20AMP fuse. I wonder if perhaps your unit originally did not have the B+ fuse, and never had the MWO performed on it. Perhaps an earlier owner performed this himself. That would explain the excessive amount of tape...There is no tape at all on my unit marked with the MWO number on it.

Do you actually have anything that shows the MWO involved changing the existing 20AMP fuse?

My power supply appears to be actually damaged, presumably due to this problem. It appears that some of the transformer windings have burned up.

Dennis dgibbs@rational.com

R388 Restoration Wed Jan 31 09:30:55 1996

A "note" on one item:

The antenna coils on the R-388 were arranged for a high impedance antenna. Many were used in the AN/GRC-26 Radio Hut. One end had 10-12 foot whips for two R-388 receivers, the other end had a "tank" whip for the transmitter (usually a BC-610).

Most of the used ones I have come across all have the same problem:

Slug wires for antenna coils bent/broken, and slugs jammimg in the antenna coils.

This was caused by high RF voltages heating and swelling the coil forms! If you repair or get new slugs, be sure to make sure that they go in and out of the coils without binding at all! I have found the "swelling" can be remedied by taking out the antenna slug rack (easily done once the springs are removed.) and gently 'filing' the inside of the coil forms with a fine chainsaw file. Use a NEW SHARP one! If you shop around, you will be able to find a file slightly smaller than the inside of the form. Be very careful and take just a little of the 'cooked' phenolic off at a time as the forms will break if you get too overzealous! After you are done, the problem should not recur. Check the neon lamp mounted in the rear of the chassis too. They are frequently broken or bad. If you MUST use a seperate receiving antenna and you run high power, use a pair of back to back rectifier diodes across the antenna terminals and a 15-40 watt lamp in series with the "hot" antenna lead. This will keep the same thing from happening again.

73, Sandy W5TVW

R389,390,391,392 Data, I' ll Keep Fri Apr 05 08:08:03 1996

I was keeping this on the back of a napkin. With a brief note this week, I received 3 new (for me) R-392 contract numbers from folks. So, I'll begin keeping a good record of all the contracts for above sets. I'll accumulate the info for a while, and then post results. The R-390A data is already in the BA Archive. I'm going to trim all of this down to contract and high s.n. data. If ya got it, send it.

73 de tom n5off%w5ddl.aara.org@usl.edu

R390 Contract Confusion Wed Apr 03 09:22:45 1996

I think there may have been some confusion on the Motorola R-390 contract, since the Collins number and the Mot number are so close looking.

Here is what I have on 389/390/391/392 contracts, may not be complete, but it clarifies Mot for Collins.

Collins R-391 1950 21852-PH-50-93  
Collins R-389,390,391,390A 1951 14214-PH-51  
Collins R-391 1951 11424-PH-51  
Collins R-392 1951 3075-PH-51  
Collins R-392 1951 11653-PH-52  
Motorola R-390 made for Collins 1951 14241-PH-51-93  
Motorola R-390 1952 26579-PH-52  
Dubrow Electronics Industries R-392 1961 52713-PP-61

hope this confuses not.

Tom

R390 Help Needed Mon Dec 26 16:44:17 1995

Maybe I can answer part of this:

>What kind of connectors are used on the two antenna inputs?

The unbalanced one is a 'C' and needs a UG-573 plug. I bought a brand new cable with one on each end from Fair Radio. They still list them for \$9. You can cut the cable and put what you need on the cut end. Then, of course, you'll need another 390 or 390A to go with the other half of the cable. The balanced one needs a UG-421 that Fair lists at \$6.50. I have a couple. They are cut off cable, and would be a %\$#\$ to disassemble. I stripped the cable stub back and use the bared conductors - mine isn't a demanding application!

>What is the headphone impedance (the one on the front panel?)

It's just parallel the back panel connection.

>There is a dc fuse marked 20 amps.

This is the part of your query that got me delving into my manuals to answer your questions! I too have wondered what such a thing was doing on this radio. This fuse is connected to a pin on the power input socket. This same pin is connected to one on the remote control socket. The other side of the fuse goes to a pin on the plug that connects to the existing 110/220 power supply. It's a guess, but I would assume this provides for 24 vdc operation with a different power supply or dynamotor. The 390 filament circuits etc. are wired for 24 v operation as it stands - unlike the R390A which has a 6.3vac filament supply.

Boatanchorites: Has anyone ever seen the alternate supply????

>I was told to use a 600 ohm speaker and that Fair radio might have some.

Yes they do. They also, I'm told, have 600 ohm to 8 ohm transformers (the same one that's in the 600 ohm speaker they sell). I have one of their speakers on my 390A, but use a 500 ohm to 8 ohm Radio Shack transformer to an ordinary speaker on my 390. The second way is much cheaper.

>Are the phones 600 ohms too?

Yes

>I was also told that on the power connector pins A and D are the

>ones to make a temporary hook up to.

According to my manual, pins A and D are the 110/220 connections. There is an internal switch somewhere to select the correct voltage. Pins B and C are the ones mentioned earlier for the DC supply. C is ground. I don't know if B is + or -.

>But which one is hot and which is ground

Both A and D float off ground. Each goes through its own LC filter. If the filter caps are good, this should be fine. My 390 came with a power cable and includes a chassis ground (presumably using pin C (???) and a three prong plug. If you're doing a temp connection, you should use three wires also. Then if one of the line filter caps has gone, you'll blow a fuse rather than something more valuable.

>As you can see I am clueless.

Without a manual, we're all pretty much clueless!!! Your caution is admirable. To damage a good 390 would be a shame.

Cheers! Jan Skirrow, VE7DJX

R390 Help Needed Tue Dec 27 10:12:34 1995

Glad someone else answered the detail questions. I can fill in some of the 28 VDC stuff. The 390 was originally intended to be a dual supply set. There was a dynamotor supply to be put in place of the AC supply (transformer and 26Z5's), but the Signal Corps finally removed the requirement. My set is modified to use the old 28 VDC wire to the power supply connector to take the high voltage winding center tap to a ground on the main chassis, rather than on the power supply chassis. There is a wire on one side of the fuse, but not the other. Dunno why they would want to move the ground. An unmodified supply would work just fine. The mod in my set looks like a field mod - like the first soldering job someone ever did, covered with a lot of black tape.

Dynamotors for the R390 ought to be quite rare. I bet Collins couldn't get one quiet enough for such a sensitive receiver.

Bill Hawkins

R390 Meter recap Tue Jan 02 09:57:45 1996

Greetings, Troops.

I got a couple of messages asking what R-390 meter removal had to do with safety.

Here's a recap for new list subscribers who weren't around when we beat the subject to death a year or so back. :- ) Maybe it's time to redo this anyway, as some of the new folks might unknowingly encounter the hazardous stuff out there.

It seems that in the early 1950's military gear specs often called for the ability to operate the equipment in total or near total darkness. To that end, meter movements often had their calibrations and needles painted with materials that glowed in the dark, like old fashioned alarm clock dials did.

The clocks were done with radium doped paint. I hesitate to say that the meters were done the same way, but some of them show definite emission of ionizing radiation; i.e., they're low level radioactive.

Because of the radioactivity, the meter movements were removed from some sets prior to the release of the radios to the surplus market. Presumably, the removed meters went to a radioactive waste dump somewhere. It now seems that these meters are no longer being pulled.

The hot meters are MOSTLY (but not all, by any means!) hermetically sealed units, and are probably perfectly safe if the seals remain intact, and the operator is a reasonable distance away from them. If the beast is sealed and the glass is intact I'd have no problem with having them in my shack.

Some of the units known to have this sort of meter (usually, but not always) are R-390, R-390A, R-389, R-391, R-392, T-195, and many of the VHF FM military sets. The movements are usually square, about 1.5" x 1.5" . There is usually no radiation hazard marking or sticker on the meter case; I've yet to see one.

Checking to see if the meter you've got glows in the dark is not a reliable test to tell if you've got a hot one. Some of these were pretty dim to begin with, and they've lost light emission efficiency over the years. The easiest to tell for sure is with a Geiger counter.

For me, the rule of thumb is that ANY sealed meter is suspect until proven otherwise.

That's the good news. Now, here's the bad news.

During World War 2 a number of military radios got the same glow in the dark treatment, but in places where the paint wasn't sealed from exposure, wear and flaking. In addition, some of them were treated with paints that were REALLY hot as compared to their Cold War brethren. These things probably can and do release radioactive dust that can be accidentally inhaled or swallowed. It was in panel markings, on knobs, on switch levers, etc. In addition, the stuff was used on UNSEALED meter movements!

These things ARE NOT welcome in my shack under ANY circumstances!

Two of the worst offenders are the TBY transceiver (low band VHF backpack, U S Marine Corps issue), and the TBX transceiver (HF field set, USMC issue. Too bad, this is a really neat radio). Highly suspect is the meter movement in the APR-4 and APR-4Y electronic countermeasures receiver (38 - 4000 MHz with appropriate plug-in tuning heads).

Bear in mind that this list is NOT all inclusive. A more complete list of hot radios (and even that's not complete) is in a back issue of ELECTRIC RADIO. I don't mean to scare anyone, but forewarned is forearmed.

73's, Tom, K9TA

R390 Meters -- radioactive labeling Sat Jan 07 11:56:48 1995

One short note: The reconditioned (like new) R-390 that I recently purchased from Fair came with meters, covers, spare tubes ... the works. And it must have sensitivity in the tenths of a microvolt -- cause it out performs everything I have.

BUT ... the meters were labeled as follows:

Radioactive Material  
Controlled Disposal Required  
1 micro Curie Ra226 or less

So ... from all that has been posted here, plus the above, as long as the meters are intact, everything is okay. Isn't that about where we are on this subject?

Regards, Tom KE4RHH Bridgers@Leaders.CCL.org

R390 Meters Tue Mar 19 17:46:23 1996

Needless to say I along with many others are looking for meters for the R-390-390A. I have been checking, and I have a company that would be willing to make the meter movements. What I need to know, is what is the actual meter movement, i.e. 0-10 ua or ?. By looking at the circuit, it looks like the line level meter is an AC vu meter, and the signal level a low current dc meter. If someone knows the answer, please drop me a line. With that information, I can get quotes on the movements. If it looks reasonable, I will proceed with have a tool made to mold the housings, and get the meters scale made. If anyone is interested in reproduction meters that look and function like the original ones, drop me a line.

Thanks Dale NM0H

R390A Wed Mar 06 11:12:36 1996

Thanks, everyone, for the many helpful replies when I asked for advice on getting an R390A. I've decided to go ahead & get one. Now I have another question - it seems like th R390A is pretty much regarded as a Collins radio, but there are many made by other vendors such as Motorola. Is there any manufacturer that should be avoided, or are they all equally good? Is there any particular reason why one would want to pay extra bucks for a Collins unit? If Collins is #1, then how would the others be ranked?

Once I get my rig, I will report on how the restoration goes...

73,

Ross/KB9JJR

R390A Thu Mar 07 09:07:11 1996

Such a can of worms you may have opened -- hope you got your bass boat ready! Given that all these rx are pretty old by now, the quality and condition of a particular R390A will have a lot more to do with its history of usage, maintenance, and storage (depot warehouse versus chicken shed), than with its ethnic heritage, i.e., who built it.

Collins made a few in the beginning, so theirs will be among the oldest, and thus maybe the most worn out.

Many R390As were left tuned to one freq for months (what a waste, but at least they could stay put on a freq!), whereas others were constantly dialed back and forth for surveillance. After 10 years that makes a difference on the gear train.

Remember the modular construction means that by the time you get it, the RX may have IF, audio, and PS modules of other makes, and the PTO likewise. There was a lot of info gathered here about various PTOs, mostly about which were easier to re-linearize, but here again any PTO that tests well is going to stay linear for the time you own the rx.

It's a VERY good idea not to buy an R390A sight unseen, or not working, as you want to personally check out the feel of the gears, the linearity of the PTO against the xtal calibrator, and that every band has about the same noise level.

BTW, I think that all xtal filters for the IF bandwidths were made by Collins regardless, but better take that from someone who really knows.

Anyway, congrats on your wise decision. Other radios may sound better, look nicer, feel better, have prettier dials, or do better on SSB, but overall the '90A can't be beat.

73, mike k aa9rg

R390A 16 kHz Problem? Wed Jan 03 08:37:40 1996

My 390A sounds a little rough on the 16 kHz position, like it may be off frequency.

When I measure the neg DC voltage at the diode load connection on the back, I seem to get 2 peaks in the 16 position, while I get only one peak on the 8 position. The peak on the 8 is right at 455 Kcs IF freq. The 16 is so wide, it is hard to measure the center freq, but it looks like it may be around 453.5 Kcs.

This rig is the early type with no trimmers on the filters.

Any ideas?

73 de tom

R390A ant trim "dot"??? Mon Dec 12 08:12:48 1995

At 06:31 PM 12/11/95 PST, Jan Skirrow wrote:

>>..you remove these, you'll never get the panel off, because the cable harness  
>>doesn't stretch enough to permit it to come all the way off the KC and MC  
>>shafts. (This may vary with different manufacturers -- my set is a 1960 EAC.)

>My manual doesn't either; it's a Dept of the Army manual. Strange, 'cuz  
>without the clamp off, the front panel no move! My 390A is a Capehart.

Hi Jan,

There are \*many\* errors in the manual that I've found already, just in the few sections I've needed to consult! There must be many others I haven't found yet. I was really rather bewildered about this, followed by feeling somewhat \*betrayed\* -- after all, isn't everything about the R-390A supposed to be PERFECT?? ;-) Well, I've learned a few things since being disabused of \*that\* notion!

Re: the RF deck --

>...Taking it out is not so difficult. It's the getting it back so that  
>the PTO is right and the <\$%^ coupler is in place.

Well, I've had the PTO out many times, tweaking on it. I think by now I've got that Oldham coupler down to a science. :) The thing I worry about is fatiguing those old springs with repeated removal and replacement. I haven't broken (or lost) one yet, but I don't want to press my luck!

73, Bill N6FN, bill@starquest.com

R390A ant trim "dot"??? Sun Dec 11 13:50:13 1995

Hi Bill . . .

>Two: My NAVSHIPS manual doesn't mention this one thing that is quite  
>crucial: there a couple cable clamps near the bottom of the panel. Unless  
>you remove these, you'll never get the panel off, because the cable harness  
>doesn't stretch enough to permit it to come all the way off the KC and MC  
>shafts. (This may vary with different manufacturers -- my set is a 1960 EAC.)

My manual doesn't either; it's a Dept of the Army manual. Strange, 'cuz without the clamp off, the front panel no move! My 390A is a Capehart.

>P.S. -- I've yet to pull the RF deck -- so far, haven't had to. But I have  
>had to deal with bandswitch synchronization woes, and loose, slipping gears,  
>so I got an education on how that whole mechanical contraption works. :)

You were lucky.

The bit in the manual about verifying the bandswitch sync didn't work for me. It resulted in correct operation only for (as I recall) the lower 1 or 2 bands. There was enough slop that I had to visually see what the switch was doing as I adjusted the over-travel, and pick a setting that gave me reliable contact on all bands in both directions. Thus, off comes the RF deck. Taking it out is not so difficult. It's the getting it back so that the PTO is right and the <\$%^ coupler is in place.

Jan Skirrow, VE7DJX

R390A ant trim "dot"??? Sun Jul 02 16:16:43 1995

Probably the easiest way to relocate the "red dot" doesn't sound easy, but is. Tune in a steady signal, like a BC station. Peak the antenna trimmer and note whether you get one peak or two. If just one, then you know the cap is fully open or closed, so 90 degrees off on either side is now known (it doesn't matter which side).

If you get two peaks, as a well-aligned rx should, note their positions carefully on the knob or gear. Halfway between the peaks is fully closed or open. Again you know where 90 is relative to that.

If you aren't getting a dual peak, and want to know whether the cap is fully open or closed, take your Bristol (Allen works too due to the low torque involved) and drive the appropriate RF slug rack antenna slug (nearest the front panel) in whichever direction improves the signal. Keep going past the peak. Now you should have twin peaks (tm) on the trimmer knob.

If you screwed the slug in to improve things, then the trimmer was fully closed, and vice-versa.

If your trimmer cap is shorted out over most of its rotation, you'll have to fix that first. Unless I'm overlooking something, sad to say you'll have to pull the front panel, and maybe even the RF deck (horrors), and tear into the little can.

Be sure to make up a shopping list of lots of other chores you can do while you have the set apart! At least clean and lube. 73, mike k w9nrd

R390A Audio Sun Jan 21 10:50:15 1996

Had an interesting chat with a university colleague who spent many Navy reserve summers tweaking and rebuilding 390As. I recently put mine on the bench for a few checks and once again was impressed with the capabilities of the beast. When I complained to him about the quality of the

output audio, he pointed out that in their designed role, the 390A drove something else. Thus, the emphasis on the line output. The speaker/headphone output was to monitor that output at the radio's location. Thus the marginal sound. He also talks of rooms full of 390As, and the assembly line they had to rebuild them. For a time, he worked with the NSA restoring the receivers which were then being rotated out of Navy service. It seems the spooks coveted them, and according to him, still do.

The 390A rotates back into the "inside shack" once the bride finishes painting my office. Last night she eyed the rack holding the 32V3, tuner and R-388 and asked, "honey, can we just pull that away from the wall for a few minutes while I paint behind it?" Ah, right, sweetheart!

Haney no2n howellh@winthrop.edu no2n@sunbelt.net

R390A Covers Fri Feb 16 08:36:31 1996

Covers for the R-390A and the 390 are interchangeable.

73 de tom

R390A Filters Fri Sep 15 08:43:53 1995

The last few email from Jack indicating that one-peak in a tuned circuit indicates either too much or too little capacitance, has opened my eyes in two ways. First, In Jack's case, the problem was with the capacitor. But in a similar situation I had replaced a 4kc filter that was down by 5-10db, and afterward everything was just fine. In other words, it was the filter, not the capacitor. At least 2 of my receivers have either a 4kc or 2kc filter the output of which is 5 to 10 db down. So... before I buy more expensive filters, my question is: how do I determine whether it is the 82pf capacitor or the filter?

And second, applying Jack's point to the RF Deck tuned circuits, in situations involving low sensitivity or where a peak cannot be obtained or where there is only one peak, I probably should be testing the capacitors in the cans and replacing those. Right?

One of the biggest problems with several of my R-390A's is low sensitivity. Putting in new tubes has no effect. (And yes I have isolated the problem by module substitution to the RF Deck.) In most cases I can recall adjusting both the slugs and trimmers with little or no effect in trying to improve the receiver's performance. Now, I'll start investigating the cans more closely.....or should I be looking elsewhere?.

Thanks for reading this far and would appreciate your comments on this...particularly in solving low sensitivity problems.

73's Tom KE4RHH Bridgers@leaders.CCL.org

R390A FRONT PANEL REMOVAL Mon Jul 03 09:05:10 1995

Bill VanAlstyne (BA #357) is absolutely correct. If you have the Bristol wrench, a Philips screwdriver and a couple of 2X4's, pulling the front panel from an R-390A is simple and nothing to dread doing. During the two years that I was aboard USS Valley Forge (LPH-8) in the late 60's, I must have pulled 30 or more of them. HOWEVER, something that no one ever seems to mention is that virtually all of the Navy sets had a field change installed to facilitate the monthly PMS sensitivity check. It consisted of a green pin jack mounted in the lower left-hand corner of the front panel which was, as I recall after um? years, connected to the diode load resistor. As normally installed, the lead length was too short to allow laying down the front panel in front of the set. I always suspected that the guy or gal who designed the fc carefully calculated the exact length required for the front panel to JUST clear all of the shafts. Then it abruptly stops moving! The preferred cure was a soldering iron, an inch of hookup wire, two MS contacts, and two short pieces of insulating sleeving or heat shrinkable tubing (BEFORE you remove the panel). Then, if you forgot to disconnect the thing, it at least unplugged itself. Otherwise, if you laid the panel down anyway, it usually broke something at the other end of the wire.

73, Robert, WA5CAB

## R390A Help

Used RF decks and many of the individual critical parts (slugs, transformers) are available from Fair Radio. I don't know of anyone selling reconditioned decks, but maybe someone else will know.

I've done a fairly complete revamp of a more or less non-functional RF deck. I couldn't have done it without the technical manual - there are simply too many things (electrical and especially mechanical) that need checking, synchronizing and tuning, and the procedures are touchy, often requiring the patience of Job! I don't know how much you know about how the 390A is put together, so my remarks may be either too simple, or utterly mystifying!

A few suggestions: if the main RF deck bandswitch (not the mhz switch in the crystal oscillator sub-chassis) is not synchronized correctly, you will have problems with some groups of mhz segments. Which mhz bands are dead? If the mhz switch is out of sync, you'll have problems with individual mhz segments, but not necessarily in the groups controlled by the main rf switch. If the cams that control slug rack movement are out of sync, they will really screw up functioning in a somewhat random way. These can be out of sync individually or in groups. The adjustment here is difficult. Of course, dead crystals will also kill individual bands - have you checked that the oscillator works on all mhz segments? Missing gear teeth are also worth looking for - especially on the gears that change the main RF bandswitch as when switching between groups of mhz segments.

I really suggest you get a manual - while not the easiest thing to navigate through, it does have the info you need. Without it, I think the task would be nigh on impossible - at least if you want to restore your revr to anything like specs.

If I can answer more specific questions, just ask! Good luck - it is worth the effort.

Jan Skirrow, VE7DJX

## R390A Help Need Sun Mar 03 18:01:40 1996

Hi URR fans-

The patient is a Motorola order 363-PH-54, serial #44. Stock. Symptom is no bands 0 to 8mc. on warmup and lately occasionally dropping out after warm-up. Can sometimes restore by jiggling between MVC and AVC. TM sent me directly to V202 (6C4 1st mix) and V207(5654 1st xtal osc). Both have been changed out twice. Test Point E209 is -6.4 when op o.k. and near zilch when fubar. Just like the book says. T207 is peaked right on. Have cleaned HR202 xtal oven inside and out, cleaned pins and socket. Resistance of R213 close to 1 meg. Haven't pulled chassis to check C324/5/6. R211 o.k. to 150 supply. (These are 1st osc.grid compos).

Questions:

- (1) Have I missed any known suspects in the neighborhood (or beyond)?
- (2) Should I bite the bullet and admit that Y201 (the 1st osc xtal) is the OJ here? Yes the oven works fine and constant.
- (3) Where to get replacement xtal for Y201, the 17 mc. 1st osc. rock?
  - (a) what is real stock number?
  - (b) what are characteristics of this rock (series res? capacitance?, etc) for purposes of ordering a sub from JAN or whoever?
  - (c) have I missed a listing of it in Fair cat? They seem to have only the osc. less xtals and the individual Mc. band xtals (A,B,C, etc).

And-the PiezoDeResistance Query- I was building up to (drum-roll please.....

Has anyone got an R390A 1st osc xtal Y201) I can buy, trade for?

Many Thanks in advance. Jim Dillon WL7CMQ Beadgal@ptialaska.net

## R390A Help Need Wed Mar 06 11:12:28 1996

> Hi URR fans-



- > The patient is a Motorola order 363-PH-54, serial #44. Stock.
- >
- > Symptom is no bands 0 to 8mc. on warmup and lately occasionally dropping
- > out after warm-up. Can sometimes restore by jiggling between MVC and AVC.
- >
- > TM sent me directly to V202 (6C4 1st mix) and V207(5654 1st xtal osc). Both
- > have been changed out twice. Test Point E209 is -6.4 when op o.k. and near
- > zilch when fubar. Just like the book says. T207 is peaked right on.
- >
- > Have cleaned HR202 xtal oven inside and out, cleaned pins and socket.
- > Resistance of R213 close to 1 meg. Haven't pulled chassis to check
- > C324/5/6. R211 o.k. to 150 supply. (These are 1st osc.grid compos).
- >
- > Questions:
- > (1) Have I missed any known suspects in the neighborhood (or beyond)?

Check that the function selector switch (S102) terminals are not touching the RF chassis. Mine are within an 1/16". Not a good design. Also check that terminal 7 on the band switch (S208) is 150 VDC when on bands 0-7.

The 150 volts goes thru R210 to the screen of V207. This turns the 1st crystal oscillator on and off. The band switch could be out of alignment or dirty causing S208 terminals 6 and 7 to be intermintant. I doubt it is the crystal. The oven for the crystal is on all the time. The crystal is a 17.00000 MC CR-27A/U. It is designed to operate at 75°C +- 1°C. 7pF shunt capacitance, load capacitance 32 pF, ESR 20 OHM, frequency stability 5 PPM.

Info from MIL-C-3098/9E.

Hope this helps

Dennis

R390A Help Needed Mon Mar 25 15:58:19 1996

- >Well, I got the front panel off with no
- >problems, but when I tried to get the xtal osc. shaft coupling off, I could not
- >remove the #8 "Bristo" screw.
- >I managed to strip all the little bristles out of the
- >screw head. At this point, it ain't goin' nowhere! What do I do now? I'd try
- >to drill it out, but I'm afraid of getting metal filings into the radio. (Also
- >wondering - is Bristo the same as Torx?)

Actually, it's Bristol, and the devilish things look a lot like Torx, but they aren't! (Been there, tried that). I had bought a set of Bristol "wrenches" from Nebraska Surplus, but they were junky - one broke almost immediately. And they were expensive. So now I have a set of Xcelite ones, which although mindlessly expensive, are quality goods, and work very well. I've found (the hard way) that using anything other than the correct Bristol wrench leads ... well you know!

Anyway, prop the radio up so the filings fall out, not in, and drill the sucker out. With care, it should work.

But .... I don't think that the crystal oscillator module needs to be detached, as you seem to be doing. It comes out as part of the RF deck, and I think the manual suggests this as preferable. By the time you get the front panel off and so on, pulling the RF deck isn't much more work and doesn't (if I remember correctly) involve the particular screw you're having trouble with. You will need to disconnect the Oldham coupler (watch that little spring and the dial setting) that couples the PTO to the RF module. I seem to recall that I could get at all the oscillator parts, clean the switch etc. without separating it from its home. So you may not need to remove that screw at all.

Jan Skirrow, VE7DJX

R390A Help Thu Aug 31 17:07:58 1995

>I have the stage gain charts from both the army and airforce books.  
>Problem is, I can sort of "make up" for the lack of gain with  
>internal gain pot.  
>  
>The receiver will make impressive numbers but with a meter indication  
>that is 20 db low and the gain pot turned up nearly all the way.  
>  
>I have heard there is a cap which causes this problem but haven't  
>found it out yet.

Interesting. My 390A had a <<lot>> of problems when I got it. The rf bandswitch was out of sync, the alignment was unbelievably bad, and the VFO no where near the range it was supposed to have (it was badly corroded internally and I replaced it - I've since rebuilt the original, but it'll never be more than an emergency backup!). The only station I could hear was a very strong BC station near where I live. :<(

At this point the set is working quite well. :<) But there are several residual problems I've put off. One is the AGC. The voltages I measure are not even close to what the manual states, and my carrier meter - like yours - reads way too low.

So, should someone let you know about the mystery cap, I'd appreciate a post. If I get around to looking further, I'll let you know. Working on this beast is a trial, as I have homemade tube extenders, and no cables to allow modules to be operated out of the chassis. And if I have to remove the rf deck one more time, I may just decide to live with the problems! Specially since I got my new, government rebuilt Collins R390 (no A) a few weeks ago!

Good Luck & 73 Jan Skirrow VE7DJX

R390A Help Tue Sep 19 13:50:32 1995

I assume you don't have the full 390A manual, as you don't indicate whether the if stage gains meet the specs in it. If this is so, let me know and I'll send you the info - it is fairly lengthy! Of course if like me you find the manual very difficult to find things in, these gains are given in paragraph 105 on page 126.

Let me know if I can help.

Jan Skirrow VE7DJX

>I have an R390A that I am having some trouble with. After checking  
>all the tubes and doing a full alignment, it appears to be lacking  
>gain. The carrier meter will only go to about 40 when using the  
>calibrator and the radio seems to have a lack of sensitivity.  
>  
>The numbers bear out at less than 1 uv for 10db s/n + n though.  
>  
>I heard a story about a capacitor going bad in the IF amplifier (not  
>the plate blocking cap before the filters, C553) mine has already  
>been replaced with a 600V .01 Sprague Orange Drop.  
>  
>Any ideas out there? How about sending me an E-Mail to this address.  
>  
>Chuck Rippel [crippel@exis.net](mailto:crippel@exis.net)

R390A High S.N. List Fri Mar 10 07:45:14 1995

Since there has been recent discussion about this, I've extracted this snippet of data from the 390A list which Jack has under the BA Archive. This short list has only the high s.n.'s. Download the complete list for more data. I suspect three of the contracts shown were for parts, and not for complete sets as there have been no examples reported in over 200 samples.

Collins 1951 14214-PH-51 745  
Collins 1954 375-P-54 192  
Motorola 1954 363-PH-54 3427  
Collins 1955 8719-P-55 4790  
Motorola 1956 0014-PH-56 3248  
Motorola 1958 14385-PC-58-A1-51 5866  
Stewart-Warner 1959 42428-PC-59 2076  
Stewart-Warner 1960 20139-PC-60-A1-51 4511  
Electronic Assistance Corp 1960 23137-PC-60 969  
Helena Rubenstein 1960? ? (80 units from Collins) 0  
Capehart Corp. 1961 21582-PC-61 4237  
Amelco/Teledyne Systems Corp 1962 35064-PC-62 3642  
Imperial Electronics/Teledyne Sys 1963 37856-PC-63 3976  
Stewart-Warner 1963 DA-36-039-SC-81547 0  
Communications System 1966 FR-11-022-C-4-26418(E) 0  
Clavier Corp. 1967 DAAG05-67-C-0016 0  
Electronic Assistance Corp 1967 DAAB05-67-C-0155 10717  
EAC Industries/Hammarlund 1968 consumer 115  
Dittmore-Freimuth 1968 DAAB05-68-C-0040 215  
Fowler Industries 1984 N 00024-84-C-2027 2

Total of high s.n.'s 48,728

R390A Info on Rec.radio.shortwave Sun Jul 02 16:15:34 1995

I just read some interesting articles on rec.radio.shortwave that should be of interest to all boatanchor people. One article describes how on a recent DX expedition an R-390A outdid the Drake R8A and Watkins Johnson HF-1000's when the going got tough! Music to my ears!

73 Stan K8RPA, flegler@pilot.msu.edu

R390A Inputs and Alignment? Mon Jan 22 17:34:49 1996

To: boatanchors@theporch.com

Last nite I sold one of my two R390As (to another BA List member, so I guess it's OK :-), and then got to tinkering with my remaining set. I've had the List turned off for a couple weeks during vacation, so sorry if these just happened to be discussed while I had the mail suspended.

It's been said that the R390A's front end performs better if you go in thru the balanced antenna jack, even if you just feed the ground of your unbalanced feed into one side. So I made up an adapter to do that (had to trash one female side of a T-adapter) from my unbalanced coax. What I got was:

1. About 6 dB more signal, after re-trimming the antenna.

So far, so good.

2. The antenna trimmer peak moves radically on some bands compared to the single-ended unbalanced input position (well, not really surprising). This means you have to decide which antenna hookup you'll be using when you align the foremost coil slug in the RF racks to center the trimmer peak.

3. I got cross-modulation sums -- local BC stations at 1000 and 670 KC added up to a pretty solid 1670 KC signal. Never got that on the single-ended input. And the balanced input was supposed to \*increase\* front-end selectivity. Instead, the added 6 dB seems to have pushed the RF amp into overload. I didn't check for the cross-mod products down around 800 KC that the SP-600 is noted for; have to do that in daylight.

4. The foremost coil in each of the 6 RF slug racks has two trimmer caps. The front cap never did much when aligning from the unbalanced input. I expected it to do something for the balanced input. But it still has no effect, not on any of the 6 bands. Is that trimmer there to pad the cost-plus military contract, or is something wrong with my set (like the silver plating is worn off all 6 trimmers)? I don't

think my sensitivity is down, but a double-tuned input circuit might cut down the cross-mod. Please don't think I'm badmouthing this king of BA RX -- I just want mine to "be all it can be."

PS: I put in the Klerenamous hi-fi audio module I bought from someone on this List. It gives a lot more available power (I think the hi-fi speaker is saying uncle before the amp), a tad more bass, a bit less treble (usually but not always an advantage), and maybe a bit more hum when the noise limiter is turned way up.

And of course one of my 600-to-8 ohm RatShack xfrmers is freed up for some other RX. Anyway, my R390A now qualifies as a SW BC band cruiser, with the sound of a big walnut Philco console.

PPS: Someone had put the next larger size of spline-head screw in one of the main knobs. A good idea (at least if you have a set of Bristow wrenches, which I have from McMaster-Carr), but it really scared me at first -- thought the head was stripped (oh, boy!).

73, mike k w9nrd

R390A knob redo Sat Apr 06 10:34:52 1996

So far so good on redoing my knobs. I stripped them bare with a Dremel tool and sanding disks. The sprayed them with Krylon Primer and now in the process of putting the second coat of black on.

I am using Krylon ColorWorks Appliance Epoxy spray AE1505 Black. It has a nice shine and according to the description it is designed to "resist stains, fading, chipping" and is "scrubbable" It says to wait 5 days between coats plus it is getting to cold to spray in the garage ( snow is in the forecast this weekend in Wash DC, argh!)

I'll post my final results.

Gary Mitchelson garym@racalrecord.com N3JPU

R390A knob redo Sat Apr 06 10:35:03 1996

>So far so good on redoing my knobs.

>I stripped them bare with a Dremel tool and sanding disks.

>The sprayed them with Krylon Primer and now in the process of putting the

> second coat of black on.

My \$0.02:

I have used chemical strippers (just put all the knobs in plastic container, pour in the stripper, put a lid on and wait) with excellent results. It sometimes takes a couple of applications, and then a bit of work with a toothbrush to get everything off. A couple of thorough water rinses, and then a wipe down with laquer thinner (caution) just before painting does the trick.

I have tried enamel paints and "baked" the knobs in a old toaster oven.

This results in a durable, hard finish.

Shaun

R390A low sensitivity Fri Sep 15 08:44:04 1995

A few folks seem to have low sensitivity, sometimes intermittently, on their R-390A's. My admittedly limited experience is that the 2-3mc IF in the RF assy is prone to failure. Mine had an intermittently open 100pf capacitor inside a can, and another boatanchorite is also fighting a low sensitivity problem and has narrowed it down to that area. So that IF stage may be worth some attention if you suspect low sensitivity. Test points E210 and E211 can come in real handy, as can a tube extender.

The hard way to find out is to use stage by stage gain analysis. Takes a calibrated siggen and maybe a freq counter to do it right, but careful measurement and analysis can find a lot of problems. The 390A is so robust it will continue to more or less work with a few problems.

Apologies in advance to anyone who sends mail and expects an answer. I go on vacation this weekend.

Regards, Gary

R390A manual - got one, do I need another? Sat Dec 30 16:59:06 1995

I recently acquired TM 11-5820-358-35, Field and Depot Maintenance Manual Radio Receiver R-390A/URR (8 Dec. 1961)

Looks like fun, but as in all things, the caveat. I supercedes previous issues from '56-onward, so that's life, I don't have all versions of my flytying 'classics' either. At least it tells what the mods are. I'll cross that bridge of previous issues if and when necessary. But from its introduction and References, how much utility is there in the 'companion' manuals?

358-10.... The Operators Manual  
358-20.... The Organizational Maintenance Manual  
358-20P....Organizational Maintenance Parts and Special Tool List  
358-35P.... Field and Depot Parts and Special Tools List

Those 'parts' are not likely going to be in my 'depot' here, and tools are what I have or might get/borrow (spline/Bristo wrenches).

But... the Operators Manual? More than the obvious in there? And... The Organizational Maintenance Manual? This one I am very curious about, since the one manual I have is for third, fourth and fifth echelon maintenance. Do I require the first two echelons as well?

Anyhow, anyone with opinions, answers and or a manual photocopy where available is invited. I sort of hope there is a copy out there someone might have that is an unbound photocopy that they might easily slip through the autofeed of a copier (I do realize there are some likely larger pages of schematics that might require 11x17 copying). Anyhow, anything toward my edification, education and references on the 390A that is coming back to life here would be appreciated. Email address below.

Of course, trades of copies might be done too. I assume I am going to flat bed copy this manual - I'll use the result as a master for autofeed copies later.

Brien, Toronto VE3VAW, pepperb@gov.on.ca

R390A manual - got one, do I need another? Sat Dec 30 17:03:55 1995

Hi Brien

When I got my government overhauled R390, it had a new Operator's Manual with it. It was on the level of "this is a knob." I doubt if the R390A version would be much different. I don't know about the others.

Jan Skirrow, VE7DJX

R390A Manuals Tue Feb 06 11:34:17 1996

>I understand the manuals for the R390A are still available from the  
>government printing office. If anyone has the information how to go about  
>ordering the please let me know.

>Dale A. Hagert NM0H

Yes, they available through NTIS, (NaTIONAL Technical Information Service) via fax 703 487 4841. (Springfield VA.) You need to include your name, address, and credit card number and in from 2-12 weeks you should receive it. I called today for an inquiry and the R390, R390A, AND R392 are still available-- who'd have guessed?

R392 TM 11 5820 334 35 \$27  
R390 TM 11 5820 357 35 \$27  
R390A TM 11 5820 358 35 \$27

(be careful--- 357 and 358 makes a BIG difference in the above!)

I also asked about the following, and they are Not available"

NAVSHIPS VERSION OF 390A NAVSHIPS 0967 LP 060 2020  
NAVSHIPS--FOR R1051B NAVSHIPS 0967 LP 427 4010

(I believe Robert Downs can make you a copy of the 1051B (287 pages)

In addition, NTIS charges \$4-\$8/ order for processing fees.

My suspicion is that the KWM2a would also be available but I don't know the ARMY TM number on that one. Does anyone know that one? If known, could someone post to BA? It should be something like TM 11 5820 xxxx 35.

They do not send a confirmation copy of the order, just wait and hope and maybe send a fax inquiry after 8 weeks or so. As the above 3 BA's are currently available (today), all one has to do is send the info via fax. For other inquiries, one should send a fax asking if the EXACT TM/NAVSHIPS manual is available. They will fax you back with availability and price. They aren't real interested in looking one line above on the screen if your number is off my one. Basically, they can only order and search by number only, they cannot search by equipment.

73's dave metzd@cfw.com

R390A Mech Filter Tue Sep 12 15:55:24 1995

Most of the BIG problems with my R390A have been solved (knock on wood), so we're getting to the "minor" ones - you know, those ones that look simple, but aren't.

The rx is dead on the 4kHz filter position, so I assumed the mechanical filter had gone bad, or one of the associated components. When I pulled the if chassis (one I haven't had to get into before) I found that the filter wasn't bad - it was gone, along with the input and output caps.

I can get a filter from Fair, but I have a question about the input/output caps. My manual shows both ends of the filter paralleled by 110pf fixed caps. My set has the output of the three remaining filters paralleled by an 82pf cap in parallel with an 8-50pf trimmer. The input is similar, except two of the filters have 82 pf caps, and the third a 51pf cap. All are paralleled by 8-50pf trimmers. Can someone tell me what the fixed cap should be for the missing 4kHz filter, and is the 51pf cap correct?

Also, I assume the trimmers are adjusted for maximum output, but am not sure.

This 390A is a Capehart - as is the if strip.

Jan Skirrow VE7DJX

R390A Mech Filter Wed Sep 13 09:19:32 1995

Thanks for the response on my 390A query. My (Army) manual has a 1956 date on it. Presumably there are other little surprises lurking in the depths of my 390A!

Jan Skirrow VE7DJX

R390A Meter Zeroing Tue Jan 02 09:58:25 1996

Dear BA Enthusiasts.

I had a problem zeroing the signal strength meter on my Collins and Motorola R-390A receivers using the zero control on the IF unit. Both units have the 22 ohm resistor factory modification installed across the zero pot. The pot was very touchy to adjust, even after spraying the pot with Deoxit.

I also noticed that the zero point seemed to drift both with time over several months and when the receiver was first powered on until full warmup.

I connected a 1/4 watt 8.2 ohm carbon el cheapo resistor across the 22 ohm resistor. This modification made zeroing the meter much easier, and has virtually eliminated the zero point drift.

If you try this modification and you cannot zero your meter, increase the resistance to 10 or 12 ohms.

Jack 73, jackg@xetron.com

R390A meters "kludge" Sun Jan 21 10:45:38 1996

I am planning to "kludge" a couple of meters for an R-390A using readily available \$8.00 meters from Fair Radio. (They are out of the meters which "almost fit" as-is.) I plan to work the the impedance and current issues using series/shunt resistors, etc.. I know an R-390 uses a 1 mA and a 100 uA meter, but I've not seen an original meter to know what the actual scale looks like. I'm going to run up a new scale on some CAD software and refinish the meter scale. Would someone please provide me with a description of the meter scale?

For those who are interested, I have had good luck with meter relabeling by using CAD software and a plotter. The easy way is to paint the scale white (actually the reverse side of the scale so as not to mess up the original) and tape it on a carrier sheet. Then the sheet and the meter face are run through the plotter and put the scale directly on the face.

You can get quite detailed in this way. I haven't done any white on black at this point, however, I am looking at a local decal shop for doing this from the computer printed art work.

If I get good results I'll see about putting a DXF/PCX file where folks can get to it.

Thanks and 73, Richard KB5WLH rbiddle@advax.mo.ti.com

R390A Mods - Osterwald Fri Apr 05 08:07:35 1996

In ER #26, Ray Osterwald published a set of fairly extensive modifications to the R390A. His measured performance improvements look nothing less than phenomenal. Has anyone out there tried this set of modifications with equal results?

Grant/NQ5T nq5t@gte.net <http://home1.gte.net/nq5t/index.htm>

R390A Mods - Osterwald Sat Apr 06 10:34:59 1996

- >In ER #26, Ray Osterwald published a set of fairly extensive
- >modifications to the R390A. His measured performance improvements look
- >nothing less than phenomenal.
- >Has anyone out there tried this set of modifications with equal results?

Grant:

Here is some anecdotal evidence:

1) I have an IF deck that is partly modified the way that Osterwald recommended, but I have not done any measurements on it yet. To my ear, it does not seem different from an IF deck that has the Cornelius SSB mod and some minor AVC tweaking. But I have more work to do on it; I need to get some 6HA6's to complete the IF mods Osterwald recommended.

2) I asked Dallas Lankford (when he was still involved heavily with HSN) what he thought of the mods and the end result, and his opinion was that Osterwald's initial measurements of the R390A's performance were suspect, (or he had a unit with problems) and therefore his so-called performance gains were dubious, at best. He recommended NOT doing the mods.

3) There was a message posted here by someone who had tried the mods and experienced indifferent results; but I cannot lay my hands on it now. If I find it, I'll follow this up.

Shaun

R390A Mods - Osterwald Sat Apr 06 10:35:42 1996

Say guys -- all the R390A mods that I've seen a zillion of in HSN and heard about quite a few more -- they all seem aimed at the IF BW, SSB, audio, and AVC attack/decay rates -- all areas where the 'A could stand some work.

But has anyone gone after more sensitivity, lower noise figure, wider dynamic range, less cross-modp by noise for Tropical Band DX, and other truly ultimate measures of RX performance?

Not very much -- and that may mean that the R390A is already about as good as you can get with hot little bottles (and mre than likely with grains of sandy rice).

I won't deny the advantages of working on the back end of the radio, but is there much left to do on the front end?

Speaking of back end, one of the best features is that variable noise limiter -- I could copy daytime AM BC DX that would otherwise be drowned in the light dimmers.

Only other radio I have with that feature is the HQ-180. 73, mike k aa9rg

R390A Mods - Osterwald Sat Apr 06 10:36:27 1996

- > 2) I asked Dallas Lankford (when he was still involved heavily with HSN)
- > what he thought of the mods and the end result, and his opinion was that
- > Osterwald's initial measurements of the R390A's performance were suspect,
- > (or he had a unit with problems) and therefore his so-called performance
- > gains were dubious, at best. He recommended NOT doing the mods.

Thanks .... That's why I'm asking :-)

Osterwald is a little inconsistent in the article series on the numbers, but if his initial measurements were correct, the gains in noise floor (-127dBm to -150dBm) and single-tone blocking (72dB to 123.5dB) and 2-tone 3rd-order (52.7dB to 85 dB at 10kc spacing) dynamic range are astounding. What made me wonder about the whole thing was the above (quoted) point -- that the stock radio, reflected in the initial measurements, was a pretty below average performer by today's standards.

I guess its unclear whether these IF/RF modifications are good/bad/indifferent. I've been bitten by unforeseen/undocumented "side effects" of modifications in the past, or mods that just didn't quite live up to their promise. Once is ENOUGH!

Grant Youngman -- NQ5T nq5t@gte.net <http://home1.gte.net/nq5t/index.htm>

R390A mods from ER Fri Apr 05 08:08:07 1996

- >In ER #26, Ray Osterwald published a set of fairly extensive
- >modifications to the R390A. His measured performance improvements
- >look nothing less than phenomenal.
- >Has anyone out there tried this set of modifications with equal
- >results?

I plan to apply some of those suggested changes in one of my 390A's that's due for an overhaul anyhoo. Probably a summer project, as the NC300 and SX42 boxes have priority once I get all the shack stuff unpacked late this month. I'll certainly report in with comments during the 390A wiring changes. Anybody have a spare pair of 8640B's I can use for sensitivity and intermod measurements?

(Grin!)

73! Mark, NE9G mshaum@ns.cencom.net

R390A NAVSHIPS manual number Thu Feb 15 08:19:07 1996

Hello Andy:

I believe the SPAWAR manual is from 1986! I'm too cheap to buy one for \$48.00! The reproduction of the new "official" manuals leaves a lot to be desired.

I don't know about Marlborough! I hate that place! Those halls are jammed with people and its hard to see anything with everybody tripping over each other trying to scavenge goodies. Most uncivilized and animal-like indeed. Also, a lot depends on the weather. They're calling for more snow tomorrow night - just what we need. Come to think of it, here's more reasons why I probably will blow it off:

I hate the parking arrangements and that awful bus. And that woman that runs the show is a real pain in the scrote to deal with. Come to think of it, I've never found anything good there. Naw - I think I'll pass!

73, Michael



R390A NAVSHIPS manual number Thu Feb 15 15:50:50 1996

>Hello Andy:

>

>I believe the SPAWAR manual is from 1986! I'm too cheap to buy one for  
>\$48.00! The reproduction of the new "official" manuals leaves a lot to  
>be desired.

The date on mine is 15 May 1985. The photos are fair but the Schmematics and drawings are fine. I do however prefer the 1956 Army manual.

Ed Zeranski ejz@marlin.nosc.mil

R390A NAVSHIPS manual number Thu Feb 15 15:51:01 1996

Super! Darn right I'm going to order one. BTW: the list I provided was based on 1994 data available. Not surprised that SPAWAR and NAVSEA independently had different manual numbers for it. Assume it'll be the standard reprint from microfiche -- yecch.

Thanks for providing the alternate data. My wife worked with the ESTEPS database for NAVSEA, but I never got a look at the SPAWAR database.

Ray Mote, W6RIC <rmote@rain.org>

R390A NAVSHIPS manual number Wed Feb 14 18:06:24 1996

Hello Ray:

If you want the latest Navy R-390A manual - SPAWAR 0913-LP-009-1400 \$48.00 payable to ASO/NAVICP, 700 Robbins Avenue, Code 0862 Att'n Mailroom, Phila PA 19111

Let us know what the quality is like, especially the illustrations!

73, Michael Crestohl, KH6KD/W1 c@shore.net

R390A PTO Sun Mar 24 13:34:10 1996

>I recently bought a R-390A whose PTO only covered 991 kc with 10 turns  
>of the Kilocycle Change knob, instead of the desired 1000 kc.  
>Following the maintenance manual, I tweaked the PTO "zero-point adjust"  
>inductor in series with the main tuning inductor and managed raise the  
>frequency spread to 998 kc. Unfortunately, that is the MOST that I can  
>get, no matter how far clockwise I turn the adjusting screw.  
>Apparently the PTO component values have drifted enough over 30 years  
>that this adjustment is no longer sufficient to do the job. Is there  
>any simple way to get the last 2 kc? Or will I have to open the  
>hermetically sealed "inner sanctum" of the PTO and replace one of the  
>10 pf padders? Any suggestions would be appreciated.

>Jim Condon, AD4YM jcondon@nrao.edu

Jim ...

Your situation may be very different from what mine was. I had a similar problem, and like you could not adjust the PTO to its correct range. The mechanism didn't operate smoothly, but seemed more or less Ok - of course I had no previous experience with the 390A, so didn't really know how it should "feel."

As there was no external way to correct the situation, I decided to open the "inner sanctum." What I found was a corroded mechanism, with crusty deposits on most of the components. Exposed copper wires had corroded. There was no sign of any of this from an external inspection. There had also been small bags of some kind of dissicant fastened to the structre. These had deteriorated and come unstuck, and the contents were everywhere.

I cleaned it up as best I could, and it works Ok. There was enough residual damage to make the PTO not very good, so I replaced it with a Fair Radio rebuilt job, and have kept the old one as a spare - or future project!

It isn't that difficult to open the PTO up. Very little disassembly has to be done, but the fit is very tight! One needs to be particularly careful in removing the insulating blanket that wraps the inner can so that it can be replaced reasonably intact when you're done. At best, it'll be easily fixed; at worst you'll need a replacement while they are still readily available.

Good Luck Jan Skirrow, VE7DJX

R390A Restoration Tue Mar 19 17:44:00 1996

A while ago I asked the group about the R390A, and after many helpful responses decided to go ahead & get one. My "new" radio arrived at Chicago O'Hare Delta freight yesterday, so I went to pick it up. First lesson learned: Air freight is fast, not horribly expensive, but kind of a hassle. Toronto Surplus & Scientific shipped out the unit Wednesday, and it arrived Thursday afternoon. It cost around \$45 (US). The hassle was in driving to O'Hare, finding Delta freight (that part wasn't too bad, the Delta guys were very helpful), then spending another hour driving to US Customs on the opposite side of O'hare, getting the paperwork cleared, the driving back to Delta. Once that was done, I had my unit.

I managed to fit it in my car. With moderate difficulty, I managed to unpack it while stopped at red lights on the way to work. Hmm. It was pretty dirty on the top side, no cover, just as the guy said, and the knobs were in bad shape - they looked badly oxidized as if they had been in a salt spray. The good news was that the tuning mechanism was working just fine. Maybe the grease helped preserve it.

That night, I put it up on the bench & powered it up - the tubes glowed, there was a faint hum from the headphones, but the signal level meter was reading high even with no antenna. I hooked up the antenna and didn't receive any signals. Tired and disappointed, I crawled off to bed.

Next morning I ran back down to the shack with my coffee & ten-year old son and looked at the manual copy I had bought years back from Fair while contemplating a buy (all I had money for at the time was the manual). Naturally, the manual recommends checking the power supply first. So I flipped the unit over & popped the bottom cover. Nice & clean underneath, I was remarking, when my son said, "Dad, are those 2 sockets supposed to have tubes in them?" Aha! Good troubleshooter. The rectifier tubes were missing.

Here I will pause to ask my fellow BA-ites: anybody out there have a couple of extra 25Z5W's? The suspense is killing me. I am also considering poking a couple of 1N4007's into the sockets. Anybody feel that this would be a BAD idea? Of course I will still get the tubes, but this would at least let me continue...

That's all the news for now. A lot of cleaning needs to be done, but fortunately no mechanical work appears to be needed. I will try to wait for some opinions to come in about using silicon rectifiers temporarily, then will post more news as things move along.

73 de Ross KB9JJR

R390A Restoration Tue Mar 19 17:52:08 1996

- > A while ago I asked the group about the R390A, and after many helpful responses
- > decided to go ahead & get one. My "new" radio arrived at Chicago O'Hare Delta
- ..snip...
- > extra 25Z5W's? The suspense is killing me. I am also considering poking a
- > couple of 1N4007's into the sockets. Anybody feel that this would be a BAD
- > idea? Of course I will still get the tubes, but this would at least let me continue...

You can use diodes if you make sure to power-up in stages. Turn the Function switch to Standby, wait 1 minute, then turn to AGC. This allows the tubes to heat up in Standby mode before the B+ is applied. Be aware that the diodes put more voltage on the filter caps and chokes than do the original hollowstate rectifiers, so you'll be stressing the rest of the set. I have had diodes in my R-390A for a couple of years, but consider myself lucky...your mileage may vary.

Walt waltn@hooked.net wnovinger@shl.com <http://www.hooked.net/users/waltn>

R390A Restoration Wed Mar 20 15:37:23 1996

- > that the diodes put more voltage on the filter caps and chokes than do
- > the original hollowstate rectifiers, so you'll be stressing the rest of
- > the set. I have had diodes in my R-390A for a couple of years, but
- > consider myself lucky...your mileage may vary.

If you put a resistor equivalent to the rectifier tubes internal forward resistance and rated for the appropriate power dissipation the above problem goes away.

Kevin Pease WBOJZG Mount Juliet, TN.

R390A Restoration Wed Mar 20 15:37:30 1996

On Tue, 19 Mar 1996, Walt Novinger wrote:

- > that the diodes put more voltage on the filter caps and chokes than do
- > the original hollowstate rectifiers, so you'll be stressing the rest of
- > the set. I have had diodes in my R-390A for a couple of years, but
- > consider myself lucky...your mileage may vary.

Then Kevin Pease wrote:

- >If you put a resistor equivalent to the rectifier tubes internal forward
- >resistance and rated for the appropriate power dissipation the above
- >problem goes away.

That solves the voltage problem - but tube rectifiers still have a built-in time delay while they warm up. How about a negative temp. coeff. thermistor? Anybody know of any? Maybe this could be made into a plug-in tube replacement...

Ross KB9JJR

R390A Restoration, part2 Thu Mar 21 09:10:38 1996

Lahlum Ross wrote:

- > Dennis,
- > That's exactly the kind of information I need - thanks.
- > What kind of resistors did you use to replace the drifted ones? Did you stick
- > with carbon comp?

I used NTE metal film flameproof resistors for the 1/2 and 1 watt ones. I wanted to dig in repairing things and these were what the local electronics store carried. New Tone Electronics parts are common in local stores. All resistors are 2%.

Dennis

R390A Restoration, part2 Tue Mar 19 17:44:31 1996

Well, several folks came back right away regarding the rectifier tubes. Sure enough, the shield holders were bent, and there were silicon diodes soldered in underneath. Furthermore, the B+ checked out OK at +207 v, and the regulated B+ was fine at 149 v. Thanks for the quick feedback. I started going through the trouble shooting procedure and found out that V401, the 2nd Xtal Osc, had no grid leak bias at E402. Per sec. 44, the voltage at E402 should be between -4 and -11v. I had -0.1v. I checked the B+ & reg. B+ at the connector - both OK. Checked the resistance measurements per sec. 56 - all OK (what a great manual - are all the military manuals this good?). The next suspect was the 5654/6AK5 tube itself. I yanked it out, and got NO voltage at the grid. That made sense, so I swapped with another 6AK5 in the radio & got slightly more voltage this time (abt 0.3v). I tested both tubes on my trusty ol' Hickok, and both had low transconductance, well below the min of 3150.

So here's a new question: this radio is pretty old; it's a Collins from the 2nd lot they made in (I think) 1956. Do 6AK5/5654's age poorly? Or is it the fact that this one's an oscillator? Since the radio is so old, am I going to have to replace ALL the tubes (arrg - more expense!)? If I do have to, where's a good place to get good tubes cheap?

Thanks again, all - I'll post my new findings when I get to the bottom of this grid leak problem.

73, Ross ross\_lahlum@msmail2.wes.mot.com

R390A Restoration, part2 Tue Mar 19 17:52:51 1996

> Well, several folks came back right away regarding the rectifier tubes. Sure  
> enough, the shield holders were bent, and there were silicon diodes soldered in  
> underneath. Furthermore, the B+ checked out OK at +207 v, and the

Lahlum,

I have a R390A built in the early sixties. I bought it from Toronto Surplus two years ago. The 26Z5W rectifiers were missing. Two JAN 1N561 diodes were installed under the tube sockets. On the audio chassis a 220 Ohm 10W resistor was mounted between terminal #1 on L601 and a unused pin on the XC606 cap socket. I think the wire from J619-9 and L601 was moved to the unused pin on XC606. The high voltage leaves the cathodes of the diodes goes through fuse F102 (1/4A) to the 220 Ohm resistor then into L601.

On my R390A the dual cap C606 was leaking. I replaced it with 2 47uF caps mounted in a old tube socket. I found that many of the carbon resistors were well outside the 10% tolerance. I replaced 2 resistors on the main frame chassis, 26 on the RF chassis, 4 on the second crystal oscillator, 13 on the IF chassis, and 15 on the AF chassis. One 5814A tube did not glow, three 5814A's had cathode to heater leakage. The line gain and local gain pots were about 10K unstead of 2.5K. The 500K limiter pot is open. The 200KHz calibration crystal also aged and could not zero beat with WWV.

I've fixed everything except the limiter pot. All of the RF and bypass caps checked out and seam to be reliable. I dissembled, cleaned and reassembled the gear train. Tri-Flow oil with teflon works great. Used bicycle grease on the cams. After all of this I would recomend checking resistors, band selector, and bandwidth switches. What a super radio.

Have Fun Dennis

R390A RF Module Gearboxes Mon Jan 22 17:34:05 1996

Having begun the very interesting journey into the recently purchased R-390A, I need to ask some questions about the magic gearbox the "elves" put together :)

The R-390A appears to be of a 1967-68 vintage (I'll confess - the front label says Dittmore-Freimuth). The manual TM 11-5820-358-35, 1961 printing, indicates the intermittent gear should switch the band switch between 07+000 and 08+000 mc positions. Instead it switches between 08+000 and 09+000. The cams appear to line up properly at 07+000, but one of the cams (.5-1 mc RF slug rack) does not match the drawings (fig 68) in shape. The RF deck bandswitch appears to select the proper coils except where the band switching points are (i.e., after it does switch it is okay). The radio apparently took a pretty good hit from UPS :( Now for the \$60K question - is the manual wrong or the radio? On some bands I can get an enormous increase in signal by rocking the megacycle change switch between bands, so I suspect the alignment is off somehow. The manual says I should be able to turn the mc change counter-clockwise to halfway between 99 and 00 mc. It stops hard at 00 and between -963 and -972.

I do have receive on all bands and the second crystal oscillator is correct on all bands.

Thanks for the assistance.

Richard, KB5WLH rbiddle@madvax.mo.ti.com

R390A RF Module Tue Jan 23 17:26:25 1996

Hello Richard,

- > the intermittent gear should switch the band switch
- > between 07+000 and 08+000 mc positions. Instead it switches between
- > 08+000 and 09+000.

This is most likely an improperly adjusted gear on the end of the RF bandswitch shaft. As I recall, there is a drawing in the manual that shows how to align this gear. Unfortunately, I found it difficult to do without removing the RF deck from the chassis. Even with the module out of the chassis, the adjustment is still a bit finicky.

One potential problem with the RF module in the R390A is the gear clamps. Some are very brittle and will break if over tightened. This can be hard to spot if the clamp is buried deep within the gear train. I have also heard that the clamps will loosen over time, presumably due to having been stored in an unheated warehouse. So make sure all the clamps are tight, but not too tight!

- > one of the cams (.5-1 mc RF slug rack) does not match the drawings
- > (fig 68) in shape

That sounds very strange. Is the cam on the opposite end of that shaft the correct shape? The cams in the back are pinned on, as I recall, and thus should be very difficult to get mixed up. I suspect someone put the wrong cam on the front end of the shaft.

- > On some bands I can get an enormous increase in signal by rocking
- > the megacycle change switch between bands, so I suspect the alignment
- > is off somehow.

Yes, that is a sure sign that the radio needs to be aligned. That symptom is usually not a problem with the alignment of the cams in the gear train. Assuming the cams are properly adjusted, aligning the radio by the book should solve that.

Best of luck! Mark Glusker, [glusk@sgi.com](mailto:glusk@sgi.com)

R390A sens problem Mon Jan 23 09:17:49 1995

Sounds like someone needs to dive into your bros' rig and adjust the RF coils for those bands, and possibly the variable IF coils. Its not too tough if you have the right spline wrench and insulated blade. It would be handy if the calibrator worked.

Having the rigs work well on all bands but a couple is not too bad a problem. OOps. I re-read it is just the lowest band.

Have him peak up the slugs and caps on the large rack farthest to the right at the frequencies indicated on the inside cover. Use the calibrator or nearby (in frequency) broadcast stations for a signal source, and peak either the carrier meter or a negative DC voltage found on the diode load pin on the back.

This stuff might sound daunting, but it is really easy and satisfying (more so that packing it up and mailing it). Be careful with the cap trimmers. They can be hot. Insulate your tool, er.. perhaps that comment belongs on another list :-)

73 de tom

R390A sens problem Wed Jan 24 09:55:30 1996

Just thought I'd mention -- when aligning the RF slug racks of an R390 family set, teh calibrator is fine for setting the middle and rear slugs and trimmer caps. And for a rough start on the front slug and trimmer.

But the front pair should be tuned up on real signals (easy on the BC band), using the antenna you intend to keep using, and with the antenna trim control set in the middle, and with the antenna connected to the input (single ended or balanced) you'll use.

An insulated alignment tool will keep you out of \*most\* kinds of trouble...

73, mike k w9nrd

PS: A Torx screwdriver usually works fine on the slug-rack adjustments, and maybe the smaller knob setscrews. Just don't try it on the big knobs.

R390A sens problem Wed Jan 25 09:01:05 1996

Before you go crazy aligning this RX, make sure you have a good input RF transformer T201. Primaries are sometimes open due to lightning etc. I had one with a primary to secondary short.

If the primary is OK you can see it with an ohm meter across the antenna jack. If the secondary is OK it will peak when you adjust the slug. Otherwise, examine T201 (broadcast band). It can be removed by pulling the slug rack and removing the phillips screw from the bottom of the coil form. Just unplugs from the RF deck.

My two cents, Al- N3FRQ

R390A sensitivity question Mon Jan 23 09:17:42 1995

An R390A that I recently bought for my brother in Indiana has apparently got a low sensitivity problem on the lowest band (below 1 MHz). He's been using it for about 3 weeks now and reports that the problem definitely exists. I hesitate to suggest that he send it back to Fair Radio since he says it works great otherwise. Could there be an easy fix on something like this? A slipped tuning slug maybe?

On another R390A note. My R390A shipped out to Rick Mish last week for overhaul. Even after receiving all the back issues of HSN with all those R390A articles I felt the task of fixing it up was too daunting for me at this time. And with all the good reports I received from BA list members about Rick's work I think sending it to him was the right thing to do.

Stan - WB5LBH scgilstrap@aol.com

R390A Solution! Sun Dec 17 17:04:18 1995

Thanks for all the help each of you gave me on trying to find the low gain I was getting out of the RF deck in my EAC R390A.

Miltronix found the problem and it was a real hum-dinger.

It turns out that one of the coupling capacitors in the 2-3 mHz IF was cut where it soldered to a tube base. There was  $< 1/64$ " gap and Rick Mish felt that enough signal was coupling by the very small capacitance provided by the wire end and tube base, that the receiver would work.

In all the hours I spend trying to find why that thing didn't work, I don't know how I missed it. I guess you would have had to actually try to move that component before it would be obvious.

Now the radio works fine save for a small problem in the audio chassis, the description of which I posted on boatanchors just now.

Again, thanks.

-73- Chuck Rippel crappel@exis.net

R390A SSB adaptor Fri Apr 05 08:06:57 1996

Ray, AES had tons of tube sockets of all sizes available recently. However, they may have sold most of them off. When you consider that tubes are used mostly "for renewal purposes" (to quote RCA), there isn't much market for sockets (although they sometimes need to be replaced to, when DeOxit fails).

Synch detection is indeed the way to go. Be nice if it could be switched to either Costas mode (no carrier needed) or the usual carrier mode.

I figure a 565 PLL and a PD chip would do everything but Costas.

I'm trying to decide whether an audio phase shift network (Hilbert Transformer) is needed to get selectable USB/LSB via phasing method. Or do we only need a set of 45-degree phase shifters at the IF freq? If the latter, then now I know how Sony fits it on one little chip.

This should be fun. I almost built something like this into my HQ-129X years ago -- but a little voice told me someday that clunker would be a vintage antique, and I shouldn't hack it :-). 73, mike kaa9rg

R390A SSB adaptor Wed Apr 03 18:34:06 1996

I received a number of replies (which most of you saw). No one seemed terribly tied to only hollow state, so I think a hybrid is probably in order.

Actually, the hardest part of this project is going to be finding tube sockets!! I don't understand it. No one manufactures or distributes sockets for hollow state anymore :<).

I will try to track down the number for AES in the archives and see what their stock looks like.

I am looking to put in synchronous detection for DSB-SC, SSB w carrier, and AM. This should allow operation with current and proposed SW broadcast. A product detector for SSB is the easiest part.

Thanks to all for the interest.

Ray Mack WD5IFS mack@mail.med.com

R390A SSB, FAX, RTTY Sat Dec 30 16:59:27 1995

Re. using R-390A on SSB and "exotic" modes;

I've been doing this for quite some time. An R-390A and a pair of R-390 s are my main weapons for my favorite pastimes, utility DXing and searching for ARQ, FEC, RTTY, and FAX transmissions. I consider them to be outstanding in this kind of service, especially in respect to the very tight frequency stabilities that these modes demand.

There's a caveat tho. Using these radios for those modes requires HANDS ON EXPERIENCE with them in more conventional modes. These are NOT radios for the beginning utility DXer. It is much easier for the operator if a new chip box is instead considered, say an R-8A, R-5000, or a 535; in fact, at one time I toyed with the idea of trying to replace my R-390s and 390A with the R-8!

That would have been a VERY bad move, in my opinion. The idea was born of a passing infatuation with a new toy I'd bought.

On the plus side, operating convenience scores heavily, combined with capability for computer control.

On the minus side, there is (obviously and always) COST!!! In addition, the R-8 performance is very good, but stability is inferior, both electrically and mechanically. Overall receiver noise figure seems to be MUCH worse than the Big Iron Collins radios.

While the USSR still existed, I used to routinely copy the early morning TASS News Service transmissions coming out of CLP41 in Cuba (50 baud Baudot, 425 Hz shift) on 16,148 kHz. This tended to be a VERY long English language transmission (1 - 2 hours), usually followed by PRENSA LATINA (Cuba) in English or Spanish, coming from the same transmitters. I think it was beamed at Central or South America, but it used to put a pretty usable signal into Wisconsin on a Mosley SWL trap vertical antenna that fed an R-390A, R-8, or SP-600.

The Hammarlund was seldom used because, unlike the other two, there was no line level output on it to feed the RTTY demod.

The Drake performed admirably, but it fell seriously short in one area, namely LONG TERM stability. Every 15 or 20 minutes a slight frequency tweak was needed to rezero the signal in the demod filters. I was uncertain at first if the R-8 was drifting, or if CLP41's frequency control system was.

The R-390A settled THAT one in a big hurry!

I normally run the radio with the ovens turned on continuously to maintain temp stability. When I tuned it to CLP41, it STAYED tuned with no dinking around! Once in awhile the shift would widen or narrow, but carrier frequency was rock stable. The only times I lost TASS copy was when

propagation did a fade, or when the M-7000 demod got constipated; the PRINT BUFFER FULL indicator would come on because the printer couldn't take the text fast enough to keep the RAM buffer cleared. The result was a catastrophic crash that latched up the system, requiring a total reset to clear it. It was a ROM problem that they later corrected somewhat by issuing new chips, but which they never cured completely. But, I digress from the main topic...

The single R-390A was so satisfactory that the system grew somewhat.

I was living in a rented house next to a golf course (then in the early stages of construction), and there was space to run a long wire out to a tree, as a complement to the trap vertical.

The trusty old R-390's were brought in from storage in the garage, set up, and connected to the TWO audio inputs on the demod. One radio had the vertical antenna, and the other had the horizontal wire.

Next morning, CLP41 was running its RYRYRY tuneup tape and the old 390's were there, ready and waiting.

Both receivers were tweaked into perfect tuning on the signal, and the M-7000 was thrown into its DIVERSITY mode (the demod listens to both radios, and it used the audio from the one providing the best signal at a given moment).

No more copy losses from propagation fades. Hour after hour those two rigs sat as stable as the Rock of Gibraltar. I got almost three hours of solid copy without touching a control before the M-7000 buffer filled up and upset the apple cart. THAT'S impressive! There aren't many receivers, BA or chipbox, that can match this sort of performance.

Bearing in mind that the R-390 and R-390A are specialized radios that demand an experienced operator, I can recommend them heartily for what you've got in mind.

Tom, K9TA

R390A SSB/FAX/RTTY?

Hi Richard

You ask:

- >1. I have done business with Fair in the past and was always treated well,
- > but are there any suggestions for an alternate supplier? On the
- > basis of your experiences, is it worth the extra \$120 for them to produce
- > a checked radio (I can fix almost anything given the availability of
- > parts)?

I have bought quite a bit of stuff from Fair, and have no complaints. I have mixed feelings about the premiums they charge for "checked". As far as I can tell, they turn it on and see if anything useful happens - if Yes, that's checked; if no or not sure, that's used-repairable. I bought a "checked" URM-25D that worked fine, but the pots are very noisy and must be replaced. Also, not all of the accessories were there, even though they were supposed to be. Fair did make good on the missing bits. I bought an "unused" audio oscillator (for a premium price) that didn't work at all. Fixing a broken lead from the power transformer and a calibration fixed it up good as new. The "used-repairable" stuff I've bought has been in quite good shape and needed little to bring them around.

Most of the stuff they sell is very rugged equipment. If it is complete (and not too uncommon), it's probably easily fixed. I don't think you get much for the extra dollars for "checked". This is in contrast to Tucker. They charge a premium, but their stuff has been refurbished, and comes calibrated and with a nominal warranty. Not a likely source for R390(A)s, though. With a 390 or 390A, I'd check to be sure all the crystals are present - these can be hard to find. Try to get one with the meters - apparently Fair has some, even though they aren't listed in the catalog.

I bought a 390A from Toronto Surplus (I could probably dig up a phone number if you're interested) about 18 months ago. It was cheap but their selection had been picked over by then. I was told the tubes would light, but it was unlikely to work. They did, and it didn't! But the only problem that cost money to fix was the PTO, which was badly corroded internally and virtually useless. I



replaced it with a new one from Fair. The rest was just the tedious tracking down of intermittent corroded switches, alignment etc. It took a lot of time, but very little money to fix - and it was a basket case.

I guess it depends on your sense of adventure!

>2. Since the R390 does not have a product detector, how well does it perform  
> for RTTY/FAX/SSB?

I use mine for RTTY and SSB. Both my 390 and 390A are rock solid receivers and work well for both, IMHO. I run a Kenwood transceiver alongside them, and I really don't see it as being any better - maybe just a tad easier to use for these modes. I don't do fax.

Good luck! Jan Skirrow, VE7DJX

R390A SSB/FAX/RTTY? Sat Dec 30 16:59:00 1995

>2. Since the R390 does not have a product detector, how well does it perform  
> for RTTY/FAX/SSB?

Greetings, Richard. Regarding the use of a R-390A on SSB, the general opinion (including mine) is that an external SSB adapter is required to make the radio really usable in that mode. Walt Novinger recommends the HC-10 in an earlier message. I myself use the TMC CV-591A. Others are applicable.

As to FAX and RTTY, I believe the R-390A really shines in these modes, with no need for external adapters. I use my '390A to copy FAX and find that the ability to set the BFO to the required 1.9Kc. offset is very valuable (this can not be done in more modern radios such as the Icom R-71A sitting on the bench here, rather intimidated by the heavy iron surrounding it). This plus the 1Kc. mechanical filter makes for excellent FAX reception. I expect the same would apply to RTTY as well. After all, it is these modes the beast was really intended to copy.

Dick Dillman WPE2VT N6VS ex-WA2BJK <ddillman@igc.apc.org>

R390A vs R390 and repair of R390A BFO Thu Mar 28 13:35:29 1996

Thought you would be interested in a recent experience:

Over the last few years I have tried several R-390's and have found them lacking either in sensitivity or selectivity. Recently I was able to get one that had been refurbished by a depot, and its performance was impressive. This one must have been aligned properly because it was more sensitive than my 390A, was just as selective with the 2kc passband rejecting adjacent signals as well as the mechanical filters on my 390A, and the audio quality was superb with a much brighter, fuller audio signal to enjoy. Listening to it was a genuine pleasure. Hmmm ... now I'm conflicted when I visit my shop: do I turn on the 390 or 390A?

Some may recall that the 390A brought back from California as "luggage" had some problems. I was able to fix all of them save one: an inoperative BFO. It wasn't the 6BA6, and all of the voltages tested ok. Hmmm ... must be the 450-460 pto, and a substituted one worked perfectly. But wait a minute, the removed PTO looked almost brand new, why would it have failed so soon? After removing the cover, all looked well, until I noticed a black, round cylinder resting against the back phenolic plate. And when I tipped PTO downward it slid from view into the PTO chamber! You guessed it. The ferrite core had separated from the PTO shaft! No problem ... I moved a RFC choke out of the way, ladled a small dollop of epoxy glue in the hole where the shaft engages the ferrite core, slid the it back into position at the end of the chamber, reengaged the core with the shaft, held it in position for five minutes (was using 5 min super epoxy), and voila it was repaired. Now would it work electrically? Ans: Yes! It works like a new BFO, which I assume it was/is until the problem occurred before I acquired the unit. I can't begin to tell you how enjoyable that repair was, or how much satisfaction there was with successfully getting it repaired!

73's

Tom KE4RHH Bridgers@Leaders.org

R390A w/meters Tue Dec 27 17:22:31 1995

- >As a newbie to R390A ownership what else does he need? I can
- >think of the following accessories:
- > 600 ohm speaker or 8 ohm and matching xfmr
- > Headphones (600 ohm?)
- > Manual (I'll copy mine for him)
- > Hollow State Newsletter subscription and all back issues
- > A strong back
- >Anything else? I think he'll enjoy pulling signals out of the ether on

If you can find one, a Hammarlund HC-10 SSB converter is an exceptional match for the 390A. We use this combination almost exclusively to listen to swap meets here on the Left Coast. Once the HC-10 stops drifting during warm-up (it is the IF strip and detector stages from an HQ-180, after all :=)), the combination is very solid and the audio is excellent. The IF from the back of the 390A is at the correct frequency and level for the HC-10...just tweek the two alignment points per the HC-10's manual, and you'll be cookin' with gas.

I strongly suggest that those with HC-10s make an attempt to cool them more than the "holey case" approach used by Hammarlund allows. I took a 110VAC muffin fan with a 10W power resistor in series (to slow it to about half-speed), and plugged it into the switched accessory outlet on the back of the HC-10. Four stick-on plastic feet from Rat Shack at the corners of the fan keep it from slipping and damp any noise that might be conducted to the HC-10's cabinet. The fan sits on top of the HC-10 and is inaudible from 2' away. Internal temperature of the HC-10 drops by over 50 deg F...not bad for 10 minutes work.

Happy New Year to all!

Walt waltn@hooked.net wnovinger@shl.com <http://www.hooked.net/users/waltn>

R390A/URR Covers Wed Mar 15 09:57:23 1996

For those to whom a good quality repro is okay, Rick Mish at Miltronix has 'em.

Dick Dillman WPE2VT N6VS ex-WA2BJK <[ddillman@igc.apc.org](mailto:ddillman@igc.apc.org)>

R390' s/6082 tubes Thu Apr 04 08:43:05 1996

Greetings all,

Well, I took the plunge and placed an order for 25 6082s from this place. I needed a bunch, as well as another former subscriber. I will report to the list when I receive these!

Dennis

- >Yesterday I received my copy of glass audio. There is an ad from New Sensor
- >Corp for "oddball" tubes. At \$4 ea is listed the weirdo 6082WB
- >JAN(Raytheon) for the R-390 (not an A!) power supply..
- >THE KICKER: \$100 MIN ORDER
- >Their Phone # is 800 633 5477. Unfortunately, I'm not in the market to pool
- >an order for these as about a year ago I bought enough for quite a few years
- >at present consumption!

Dennis Gibbs [dgibbs@rational.com](mailto:dgibbs@rational.com)

R390' s/6082 tubes Wed Apr 03 09:24:23 1996

For those of you who need tubes at very reasonable prices, try calling Donna at United Electronics in Newark, NJ at 800-526-1275 or Don Gies, K4GIT at 904-475-1950.

Dave, W3BJZ Publisher of the Collins Journal

R392 alignment questions Mon Jan 22 10:00:38 1996

I've discovered that it has a few more tweakable items than are listed in the manual (purchased from Fair Radio).

For instance:

1. There is an extra pot in the IF stage. Rather than one hole with one pot (R532 - bias adjust), there are two holes with two pots. It looks as though the other pot controls the bias to the previous stage. Does anyone know the correct way to adjust these?

2. Some of the RF Stage tuned sections have two, not one, pairs of inductors/caps. For example, L204/C213 are not alone in their can - there's another L/C adjustment pair too. Are these aligned similarly to the original L204/C213 pair? Oh, and finally, alignment of the Second Crystal Oscillator calls for setting the trimmer capacitor C435 for one-half capacitance. Which "direction" should the cap's slot point for one-half capacitance - top-bottom or left-right?

Thanks! - Jeff, WA6AHL

R392 alignment questions Mon Jan 22 13:32:54 1996

Hi Jeff,

I have a Stromberg-Carlson R392 also with the extra set of adjustable caps in the front end tuning coil assemblies. I just peaked them for max signal, but I don't know if this is best. Let me know if you find out. Mine does not have the extra pot on the I.F. chassis.

I did not take apart the osc chassis to see how the trimmer is oriented and thus determine 1/2 capacitance position. Rather I just set it according to the photo in the manual.

Have fun,

Randy Zelick

R392 module extender cables? Mon Feb 12 17:43:01 1996

Hi Ray,

I've just spent a bunch of time on two R-392s. I got by without extender cables, since if you disassemble the set enough, there is sufficient slack in the wiring harness (just) to get at the bottom of the lower deck with power on. (Don't lose the little coupler for the bandwidth control shaft!)

I too had low audio output in one unit, although everything worked properly. The recovered audio on a modulated carrier, or with the bfo on, was fine. But there was little hiss under no-signal conditions. The hiss improved slightly when I did a super by-the-book alignment, but was never equal of what I get with other receivers. Of course all the tubes checked OK and I even made stage gain measurements on the I.F. chain which checked out.

As for the solid state modules, these may not be all they are cracked up to be. In an earlier set I owned the ss module oscillated. In another it just sounded bad. In my present set, the same module works well. My advice would be to design a new ss audio driver with a LMxx chip. All you have to do is get it to be stable with low gain, since the purpose of the output tube is only a current amplifier. By making your own ss stage, you also will get a low-Z output, which is more convenient than the 600 ohms.

The LS-166 could then be used by bypassing the built-in xfmr if you do the conversion, but I would suggest a higher fidelity speaker. The 392 has really good sound (better than the 390A) and deserves a good speaker.

Finally, I should say that none of the 392's I played with work well at my QTH because of distortion products. I went round and round with this problem, and never was really satisfied that I understand it. Basically, I have many-kHz-wide grunge, more pronounced on some bands than others. The grunge sounds like noise modulated with the combined audio of two or more broadcast stations. I haven't been able to pin-point which stations. With the fancy tuned front end of the 392 I find it remarkable that either AM or FM bcb signals could get in, but this seems to be what is

happening. Others I talk to seem convinced that the poor dynamic range of the '392 is to blame. With 20-30 volts on the plates, apparently the tubes are barely in their linear operating range and 3rd order imd is awful. I think the best way to solve the problem would be to replace the RF amp with a wire, and change the mixer to a passive balanced mixer design, then make up the gain in the I.F. chain. While probably a straightforward mod for some folks, this is beyond my engineering ability to get right without a hundred hours of cut-and-try, so for now I just don't use this otherwise fine receiver very much. Let me know if you have additional specific questions, and I can contribute my \$0.02.

Later,

Randy Zelick

R392 PLUG BA 396 Sat Jan 06 15:22:32 1996

Rich, et al,

The 9-pin female power/control plug for the R-392/URR is 164-44FS (Amphenol) or UW1220FB17 (Frank - the 17 is the cable gland size). The much more common 164-201-3S(nn) fits every other Military BA that used those plugs except the R-392, which is unfortunate.

I have one extra UW1220FB17 that I'll part with for \$25.00 plus shipping. BTW, in the course of discussions (and a little cussing) recently with another collector over the solder which I discovered on the pins of a set that I had bought, I was surprised to discover two things; (a) he had no idea how expensive new metal-shelled connectors are today, and (b) he didn't know how easy it is to disassemble AN, MS and Cannon 'K' series connectors for the pins or sockets by removing the snapping from the rear with a jeweler's screwdriver. The only ones that won't come apart are the 'E' series which have molded rubber inserts.

While it's not that difficult to remove the solder from solid pins, it's virtually impossible to do on the banana types found on Command Sets, BC-375's, etc. Armed with a handful of assorted pins and sockets, making up a temporary cable is actually easier than soldering to the pins. Put heat shrinkable tubing over each contact, and if you can locate a compatible plug body (usually easier than finding the plug itself), put it over the whole mess to keep from accidentally unplugging the wires, and to make it look 'right'.

Also, Gene at Tartan Electronics had some 2-wire power cables (NOT the dog-bone) with the correct connector for the R-392 a while back. I think that he was getting \$30.00 each, but I don't know whether he still has any.

73, Robert Downs, WA5CAB 103012.2130@compuserve.com

R392 Question(s) Mon Jan 29 11:48:21 1996

I've been aligning my R-392 and happened across an interesting problem that I've not yet been able to solve.

When I feed an unmodulated RF signal into the receiver on the lower frequency bands (7 Mc. & below), I hear what seems to be modulation on the signal - even though the RF input is unmodulated (I verified this with two different signal generators).

Its level, and pitch (that is, modulation frequency) differs, according to the band. On some of the lower bands there is just a hint of modulation, even with a very large input signal. 7 Mc. is probably worse, but even then it takes a fairly strong signal to make it noticeable, but noticeable and annoying it is.

Has anyone ever seen a problem like this? My first suspect was the first crystal oscillator/mixer circuit, as these stages are only used at 7 Mc. and below. However, I haven't been able to find anything wrong except for what appears to be an AC waveform (about 600 cycles) superimposed on the oscillator's signal (not as a modulating signal (multiplied), but additive instead) - my guess is this is what is producing the carrier effect, but I haven't figured out how.

Any ideas what could be causing this low frequency oscillation, and how to get rid of it?

Besides that, the R-392 seems like a fine receiver, although I have a couple of dead bands (bad crystals), and the sensitivity on 10 meters leaves a lot to be desired. And I'm getting pretty fast at pulling off front covers, removing subassemblies, and then putting it all back together again (with only a minimum of parts left over).

Is anyone parting out an R-392 (I need some crystals!).

Thanks, - Jeff, WA6AHL

R392 Question(s) Tue Jan 30 16:15:16 1996

I haven't found this bug in my R392 (love this little set!), but it may be related to something I found the other night. When listening to SSB, if I let the RF gain get too high, the signal doesn't just start to distort as in any rx without a PD, but instead there's a threshold, such that whenever a voice peak crosses that level, I get some serious crackling noise along with the voice peaks.

My guess is that some IF stage is getting prodded into self-oscillation. Or maybe, in your case, the first mixer. Maybe our problems have a common cause. I forget what band I had the SSB troubles on, but if it was after dark it must have been below 8 MC (20m really stinks lately).

I congratulate you on your skills in dis- and re-assembling this jewel of the clockmaker's art. I haven't needed to yet. Don't you love the shafts that run thru one subchassis just to get to some other section?

I hobody parts out an R392 unless it's really in sad shape (but you do need the parts). Xtals should be easy to get; I think they're all integer MHz. (hobody == hope nobody).

My '92 is every bit the equal of the R390A and sounds better, but I agree it slips a bit on the high freqs. I'm only using 25 VDC on the filaments, with 30-40V on the plates whenever I feel like splicing the extra supply in. 73, mike k w9nrd/ae

R392 servicing Tue Feb 20 09:19:02 1996

Am discovering the hard way just how much "fun" it can be to work on an R-392. Currently shoveling down on the lower deck, in the audio module.

1. V607 (6AJ5 used as phase inverter prior to final AF amp) is pure hell to get out. Neither of the AES tube pullers (straight & right-angle) would work as shield can covers most of tube, puller just slips off the sides. Had to use large slip-joint pliers and very light touch! Think I'll go looking for Dennis Doonan's "spark plug boot pullers" first chance I get.

2. Anyone owning one of these would probably be well advised to get spare 20-pin connectors and build his own "breakout box", to allow monitoring signals on that interface. It might save having to pull the lower deck.

3. I've got a beautiful set of Vector tube socket extenders/test points for 7 & 9-pin and octal. Unfortunately, can only use the octal (great -- lets me test one whole tube out of 25!). The shield bases on all the miniatures have a multiple-leaf assembly inside where the tip of one leaf rests on the base of the next, probably intended to minimize tube movement with vibration. This junk prevents insertion of the miniature tube extenders. Anybody run across this before and solved it satisfactorily?

4. Pulling one tube to squirt signal into pin on socket won't work easily here because a number of tubes have their filaments in series. Manual recommends using small insulated wire wrapped around tube pin, then reinstalling tube in socket. Hate to do it, but will be forced to dig out the #30 Kynar.

73.....Ray Mote, W6RIC <rmote@rain.org>

R-725 info Mon Apr 01 09:31:37 1996

The R-725 is actually a R-390A in sheep's clothing. The difference is the R-390A IF deck was replaced by a newly made R-390 typed tuned circuit IF deck to enable better direction finding.

The new decks were called "series 500 IF deck". The sets were modified by Arvin and Servo Corp.

I have a copy of the drawings from Servo.

BTW, there is also a separate power supply module added in to supply filament voltage for the IF deck and the PTO. The PTO has a mod to enable this new filament source.

Look to a future ER on this.

73 de tom

Rack rails for R390A? Sat Sep 23 13:09:53 1995

- > tHE RAILS YOU SEEK CAN BE HAD FROM : Premier Metal Products East
- > coast 718-993-9200 west coast 909-829-3089
- > Ask them to send you their catalog. price is anywhere from 14.58pr
- > to 20.66pr in actuality you will use either the 14.58 or 15.77pr
- > CSA-16 14.58 PR 14.25" long fit to 18" deep CSA-18 15.77 PR 16.25"
- > long fit to 18" deep
- > This company made all the cabinets for Hammarlund.. They just about
- > any hardware for rack systems you'd want..
- > Robert

Hi Robert,

At one time, you emailed me the Premier part number for the SP-600 cabinet and I managed to lose it. If you have it handy, I'd appreciate it again. I'm talking about the one without the vents (i.e., the cheaper one :-)).

Rolfe rolfe@ldp.com

Restoring R390A' s Fri Feb 23 09:10:02 1996

Gary,

you can get a whole set of tubes and probably the crystal cover from Fair Radio in Lima Ohio 419-227-6573. In addition, there is a place in Canada called Toronto Surplus & Scientific 905-887-0007 that has pallets & pallets of R-390's. In addition, he has every conceivable part for the radio as spares. They are very easy to deal with.

Now, I have a r-391 in excellent shape and the way I refinished the knobs was to take them all off, and using Scotchbrite, clean the surface and ready them for paint. I then painted all the knobs with a high quality black epoxy paint. Once they were dry, using hobby white enamel and a toothpick, I then filled in the depressions for the white lines with paint. Do not worry about slopping the paint up the sides of the knobs, when you have filled the trough with paint, simply take a dry rag and wipe the knob, the paint will stay in the trough while you remove the excess from the upper surface of the knob.

Now, I would be interesting in obtaining a copy of your notes from your "A" school training ( at least that is what us Navy pukers called our schools) and would be glad to pay the copying costs, or I would do it since I work for the big X.

Hope this helps Gary..

73's /joe k8fc

Restoring R390A' s Thu Feb 22 09:29:57 1996

I have recently acquired 2 R390A's and I am in the process of restoring them.

One is in great shape and needs very little work but the second one is missing a few parts that I need. I am looking for the cover for the Mechanical Filters and a cover for Z503. It is a Collins from a 1951 contract and does not appear to have had an oven that fit over the top of the crystal tray. Is this the case?

Where is the best place to get a new set of tubes?

Does anyone have any hints for refinishing the knobs?

It has been 15 years since I worked on R390's but at that time we had 750 at the AF site I was stationed at. I still have my notes and handouts from Tech school where we had a week long course on the R390. Plus somehow I still have the tube extenders and BNC adapters for the Antenna and the mini connectors inside.

Thanks

Gary Mitchelson garym@racalrecord.com N3JPU

Restoring R390A' s Thu Feb 22 16:27:40 1996

Gary, before you get several hundred requests for a copy of your tech notes on the R-390A, perhaps you may want to consider letting us as a group know if you would be willing to run up several copies for an appropriate cost up front, or, if you don't want the headache, a cheerful volunteer could take that task.

Depending on the quality, I may be able to scan and possibly OCR the critters and turn them into an Adobe Acrobat PDF file for uploading to the mail server.

BTW, in looking for tubes, I found Fair Radio (419-223-2196/227-6573) had pretty good prices for unused old stock tubes - around \$4.00 each for most. Plus they have some R-390(A) parts.

Restoring R390A' s Thu, 22 Feb 96 08:19:40 -0500

It has been 15 years since I worked on R390's but at that time we had 750 at the AF site I was stationed at. I still have my notes and handouts from Tech school where we had a week long course on the R390. Plus somehow I still have the tube extenders and BNC adapters for the Antenna and the mini connectors inside.

Thanks

N3JPU garym@racalrecord.com

Restoring R390A' s Thursday, February 22, 1996 5:16AM

I have recently acquired 2 R390A's and I am in the process of restoring them.

One is in great shape and needs very little work but the second one is missing a few parts that I need. I am looking for the cover for the Mechanical Filters and a cover for Z503. It is a Collins from a 1951 contract and does not appear to have had an oven that fit over the top of the crystal tray. Is this the case?

Where is the best place to get a new set of tubes?

Does anyone have any hints for refinishing the knobs?

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Thanks Gary Mitchelson garym@racalrecord.com N3JPU

Secret R390' s and their use Mon Feb 12 09:27:30 1996

Guys, ive seen talk here about specialized R-390's or 391's, I would like to respond to them but am uncertain as if it wouldn't be a breach of security even after all these years.

Now, a question. What was the weight of a R-390 , I pulled many from the duplex consoles we used back in the early 60's at ASA. Did I dream this or did they use Selenium Rectifiers for rectification. Seems like I remember pulling one out of the console one time and a ugly cloud of smoke hit me in the snout locker. Even in those days we knew not to breath that stuff.

So what's the weight.

Guess I got to have one before long, God knows where I will put it.

Al fritsche fritsche@msn.com

Servo Help with R-725 Sun Feb 18 08:45:44 1996

I recently purchased an R-725. This is a R-390A with a new IF deck similar to that of the R-390 (no mech filters).

The company which packaged this rig for the TRD-15 direction finding system was Servo Corporation of America (Servo Industries in 1965) of Hicksville, NY.

I dropped them a note, and Mr. Stephen Barre, chairman of the company, was nice enough to send me a packet of about eight drawings fully documenting the modification of the 390A, and a how-to on scratch building a 390 IF deck.

Servo scratch built the 390 style decks for this modification, robbing some parts (like BFO) from actual 390 decks. The new IF is was called a series 500 IF.

They also added a separate power supply to provide 28V DC to the filaments of the IF deck and the PTO.

Anyway, I'll write this stuff up for ER, but I thought it was nice of Servo to send these drawings.

If anyone wants to scratch build a R-725, look me up.

73 de tom n5off0w5ddl.aara.org@usl.edu

SSB adapter for R390A - got one? Tue Mar 26 08:59:47 1996

Brien,

Glad you brought that up - I was going to post that I found an SSB adapter this weekend - a Central Electronics Sideband Slicer. Don't know if it works yet, since I have more urgent things to work on, like getting out of my stripped Bristo nut jam (sounds tasty, but it's not...)! Anyway, I'll let you know how the sideband slicer works once I get it going. (BTW, anybody familiar with this unit?)

Also, the Sideband Slicer mentions some articles in QST on "exalted product detection" which apparently is the technology it uses. They are in the April, June & July 1948 issues. (Anybody got copies?)

73, Ross KB9JJR ross\_lahlum@msmail.wes.mot.com

>Sorry, I don't know the model number, but if anyone does have the SSB  
>adapter (external box) available for a 390A, I am looking.  
>Anyhow, I'd not seen much on this, I know I asked last December about  
>product detector mods, and the reaction was underwhelming. We are  
>thinking about subscribing to Hollow State News (and getting the  
>backissues), so maybe we will find product detectors discussed there.

SSB adapter for R390A - got one? Tue Mar 26 08:59:57 1996

The classic SSB adapter is the CV-157. But that's a two-man carry, with 40+ tubes, and a bear to get and keep working. But it can do both sidebands independently at once, and has motor-driven AFC fro truly boatanchor synchronous detection (take THAT, Sony!).

There are lighter models, whose numbers I forget. And sicne the R390A uses standard 455 KC IF, many other maker's adapter will work. I have never seen one at a swap fest, so I have to agree that your wait may be long.

I got the bound back issues of HSN (thru Vol. 29) and yes there are all sorts of mods to the R390A. Be sure to read the later articles first, as authors often recant and deny their earlier articles, or someone else criticizes it severely. There are several AVC mods alone, and I have yet to figure out which one is best overall. HSN mentions some mods from other sources, sometimes favorably but usually not. Mods should be undertaken only after great forethought.



Oddly, both the R390As I've had were modified so I've never heard a straight original BFO on SSB. My keeper set has a 6BE6 PD (with a bad relay so right now I can use it only on AM), and the 2nd set that I sold off has an IC job in it that worked pretty well.

The 6BE6 mod sounded OK but you had a choice of either overdriving the tube and distorting, or getting too weak audio out.

Back to outboard adapters -- you could build your own, hollow or solly or a hybrid. 73 es gud luck, mike k aa9rg

SSB adapter for R390A - got one? Tue Mar 26 09:00:00 1996

>I keep telling HIM I think the  
>R390A SSB sound is quite fine as is, and he'd always thought so too - but  
>now that he has the adapter attached he says the difference is worth  
>looking for the adapter.

Greetings, Brien. I agree with you and your friend that a SSB adapter is a worthy addition to the R-390A. While I don't have any available, I have experience with two different types on the '390.

Right now, I'm using a recently-acquired Hammarlund HC-10. This, as you may know, is essentially the IF and audio section of a HQ-180. As such, it provides a variety of interference-fighting options including an effective notch filter.

Previously, I was using a TMC CV-591A which is the unit actually intended for use with the '390. It provides USB/LSB selection with push button switches, lights and a properly loud stepping relay, vernier tuning or crystal control and choice of AVC speed. However, there are no other controls for notching out hets, etc. The '591 is a rack mount unit.

The CV-591A is currently in the hands of Rick Mish in Detroit who provides a R-390/390A restoration service called Miltronics. He's going to do the full overhaul of the unit and paint the panel black to match the black panel of my R-390A (also from Rick). I plan to mount them together in a grey cabinet for full visual effect.

Dick Dillman WPE2VT N6VS ex-WA2BJK <ddillman@igc.apc.org>

SSB adapter for R390A - got one? Wed Mar 27 10:30:14 1996

Lucky you -- I have yet to see any SSB adapter at a swap fest. You'd have no trouble selling that CE if you wanted to.

I think the CE is one of those that uses the Phasing (Hilbert transform) method to select upper/lower.

"Exalted Product Detection" is sort of an oxymoron, but I think I can guess what they're doing. Before they finally went to product detectors, some rx makers used "exalted BFO" injection into the same old diode detector, meaning a BFO signal 10x or stronger than the signal. This comes close to the good audio you can get out of the typical weaker BFO injection that's OK for CW but distorts on SSB unless you cut the RF gain.

A true product detector multiplies the BFO and SSB signals, and ideally is a pentagrid mixer (6BE6), diode ring, or special IC. Many product detectors, found in good places like the CV-157 and HQ-180, are really just square-law "plate bend" detectors recycled from early '30s broadcast radios (what goes around....), but they sound good if adjusted for proper bias and given plenty of BFO -- hence the "exalted prodcut detection."

BTW, a nice trick for AM or reduced-carrier SSB or DSB is "exalted carrier detection" whereby the RX boosts the carrier freq by 10x or so compared to the audio sideband(s). This is sort of a chicken approach to SYNchronous detection and is one selectable mode of the CV-157, which actually separates the carrier, boosts it, and injects it into the other side of its PD in place of a local BFO.

I've surely misstated a few facts and opinions above, and await corrections.

73, mike k aa9rg

SSB ADAPTER FOR R390A Tue Mar 28 09:38:48 1995

I have seen at least 3 different SSB adapters used with the R390 (and its various versions) in military service.. The CV-157/URR is big but has great audio quality if the transmitting station is leaking enough carrier to lock onto.

The CV-591/URR is much smaller and easier to use and is generally what is found at surplus stores.

The CV-1694/GRC-129 is the smallest one I've seen taking up only 3 1/2 inches of rack space. It only has 2 front panel controls, power on and mode select switch. It was designed to operate with the R-1247/ GRC-129 receiver which is a stabilized R-390 and works fine with the unmodified receivers just as well.

I have used all 3 at one time or another and still like the look of the CV-157 with all those neat knobs and indicators. Be sure to call your electric company before you put one of these on, they will need to warm up another generator.

Good luck on your search. Ken--K7RPX

SSB slicer for R390A Mon Apr 08 11:22:59 1996

Dear Roy,

>My question is this: Is there a market for such a thing for  
> those of you who have the R390/R390A? From what I have been able to  
> discern, it would not be a terribly difficult design to reproduce.  
> This brings to mind again the definition of a BA. Does it have to be  
> old to be a BA or just tube and American made?  
>  
> I see 3 possibilities for a design:  
>  
> 1) A true BA with only tubes  
> 2) A hybrid with sand for the nasty stuff and tubes for the easy stuff  
> 3) (gasp) a total sandbox

Lots of people have attacked this problem in various ways. The R390A has an IF output socket for just this purpose. I'd be surprised if anyone tried to build anything as elaborate as some of the military sets with independent sideband, freq. tracking, carrier notch filters etc. but outboard product detectors are not difficult to design using either tubes or solid state.

My own approach was a MC1496 chip product detector initially outboard but now on a small card tucked behind the IF strip. It gets BFO feed from a small "gimmick" modification to the BFO tube and feeds the audio into the rear diode load terminal. There is a minimum of irreversible change made to the R390A itself.

I'm sure you will get a few replies on this subject

73 Morris VK3DOC morriso@vifp.monash.edu.au

SSB slicer for R390A Tue Apr 02 09:46:31 1996

There WAS an after market device, just made for such receivers! Hammerlund built it! Called the SBC-10. It is an auxiliary IF strip for the SP-600JX. But it will work fine with ANY receiver that has a 455-500 khz IF! I just got one with an old SP-600JX which I'm gonna overhaul and clean up. Jeese, what a boat anchor!. It has everything. Notch filter, vernier tuning variable selectivity, product detector, variable speed AVC, and audio output stage too. All you need is an IF cable from your receiver to it, 115 vac power and a loudspeaker. Donno how many of these they made. The Hammerlund experts will know!

73, Sandy W5TVW

SSB slicer for R390A Tue Apr 02 10:17:18 1996

If someone goes to the trouble to build a good SSB adapter, go all the way and include synchronous detector option. The synch should offer USB, LSB, or DSB (the Sony radios lack the latter).

Also the "box" should have the option of cutting audio response below 300 Hz (for voice) or full bass response (for SW broadcasts on synch detection). All these options will give you a better SWL setup than a Sony or Drake R8.

A really simple SSB adapter can be built with one 6BE6 (still pretty easy to get) and audio stages, using the receiver's IF for selectivity.

If you want selectable sideband, you need filters, or self-shifting BFO (not hard), or a Hilbert audio phasing filter downstream. Latter is best done with the Sony chip, or a DSP. My house ain't big enuf for either of the last two implemented in firebottles.

Which reminds me of my departed CV-157, which was getting too big for my workbench. It could deliver each sideband independently to opposite stereo channels. Supposedly a superb way to listen to SW BC, especially after indulging in Mexican mind melding materials (with or without the worm at the bottom).

If you elect to skip synch detection, a simple all-toob unit should work fine on an R390A. Nice little aluminum chassis, 6X4 rectifier, 6BE6, 12AX7 and maybe audio output.

The R390A does a great job of bringing out all sorts of internal signals to the rear panel, but I wish it had an Audio Input to feed SSB adapters or whatever back into its audio amp. But I can see why the Army didn't put a "TV/Phono" jack on the back :-)

Back to the synch detection and DSP stuff: The R390A may be the best HF RX ever made. It deserves an all-out effort to backfit the best possible detection and processing. If that requires some sandy centipedes, what the hey, after 20 tubes the signals will forgive you.

73, mike k aa9rg

Stumped ... 2-4mc not working on R390A Sun Jul 02 16:16:13 1995

Tom writes:

- >Got my R-390A . . . It works well on all bands except I only
- > get static on the 2-2.99 and 3-3.99 bands.and Jan replies:
- > I had a similar problem with my 390A. It turned out the problem
- > was in the RF bandswitch.

I had a similar problem as well, with a few complications. I would get the RF bandswitch properly synchronized, put it all back together, and after several band changes it would slip again. After repeating this several times, I discovered a crack in the gear clamp on the RF bandswitch gear. A new clamp from Fair Radio (that was a different, more durable looking design than the original) solved the problem once and for all.

Be careful not to over torque those screws!

Mark Glusker, glusk@sgi.com

Taping from an R390A Tue Sep 26 09:48:23 1995

- > sensitivity and selectivity, and I'd like to start taping from it. Is
- > there a "standard" tape out modification (reversible!) that can be made
- > on the R390A?

As others will probably advise, the line output on the R-390A is just what you want for audio taping. I'm using that output on my '390 to feed a fax machine at the moment but I'm sure it will do the trick for audio taping too. Plus you have front panel control of the level to the tape recorder as well as a VU meter. No ice box will give you those features (with apologies to my faithful ICF-2010)

Best Regards, Dick Dillman/WPE2VT <ddillman@igc.apc.org>

The ultimate R390 accessory Wed Apr 03 09:21:52 1996

Howdy,

Well Ray Mack jogged my memory about a design I sketched some years ago for a super R90 accessory.

The thought process went like this: What is missing from my R390?

Well I would like...

1. better audio
2. some different filtering for CW
3. smoother tuning with increased bandspread
4. a digital readout with more accuracy & resolution than the mechanical one
5. a product detector
6. a synchronous detector

The better audio is easily obtained with an outboard amp. But since a new AM (synchronous) and product detector would be nice, it makes sense to just take the 455 kHz output and run it to new custom detectors \*and\* a hi-fi audio stage. Of course then, a built-in quality speaker would be great. It could all fit on a gray rack panel above the 390.

Well why stop there, thought I? On the same rack panel I could mount a frequency counter with the appropriate down-counting and offset to read out the kHz of the 390. A "T" on the coax to from the PTO would be a convenient non-invasive method of sampling.

But then - why not mount an outboard PTO on the new chassis, frequency-count this one, and feed it into the 390 in place of the normal PTO. The outboard PTO would be driven with a reduction drive to give really smooth, high bandspread tuning.

With a sizeable head of steam up I ordered a spare 390 PTO from Fair Radio (the BNC connector is easier to deal with than the type on the 390A PTO) and found a surplus gear reduction drive of the appropriate amount (I think it was about 7:1) and mounted it all up on a rack chassis with a power supply for the PTO, and coupled it into the 390.

In fact the design worked, but the sensitivity was a little low. Presumably due to coax coupling loss or perhaps just a weak output from the Fair Radio PTO. You tune the 390A's main kHz tuning knob to get close to the frequency of interest, then tune gracefully around with the accessory unit. Every 50-100 kHz you touch up the main 390A tuning knob as you would a front-end preselector control.

Alas, like so many projects, this one got put on the shelf at that point. The next step would be to add the frequency counter, then start working on the detectors and audio amp. The entire rack panel would be about 7 inches tall, I thought. This would allow for the digital display window and a large enough speaker to have good fidelity.

The audio amp and product detectors could be hollow state, but for the synchronous detector I had planned to use the design published in Electric Radio by John Staples. There would be provision to insert a DSP device - in this way I could get some better CW bandwidths.

So there you have it!

If anyone thinks this is still a good idea, I would be happy to collaborate on a more thorough design and prototype. It certainly would be the add-on to end all add-ons for the R390, and amazingly enough, would require no mods to the 390 itself!

Cheers,

Randy Zelick

The ultimate R390 accessory Wed Apr 03 09:23:37 1996

Well, Randy and I agree on many of the features like synch detection and better audio. But I wonder about the need for an even more precise frequency readout, and I'd rather do the tuning at the R390A, with a vernier touch-up knob on the adapter, as on the HQ-170/180 and CV-157.

I agree the KCs tuning is a bit stiff on many R390-family sets, but I'd rather do my work at the RX and touch the adapter only for mode and volume changes.

But it would be nice to have some \*accurate\* digits to watch, so you don't have to remember that 1857 is really 1860, etc. (Of course for smooth analog/digital accurate readout with velvety easy tuning, Radny could buy back my Racal RA-17, only I'm not selling :-)

The adapter should have its own AVC, your choice of IF or audio-derived, with output to feed back to the R390A as done with the CV-157. This is not really needed, tho.

Let's not restrict ourselves to the R390 family. Make sure there's provision for other IFs, including 500 (51J's) and 100 (Racal). Maybe do all the processing at 100 KC or below.

Today a good 4" speaker can outperform the big old ones, so that sounds like a good idea. Even a little 2-incher like that Racal's would be fine for comm and CW work.

Might as well include detection and output options for RTTY and packet and SSTV.

Take back what I said about AVC not being all that important -- given all the HSN articles about hacking the AVC in R390As, 51Js, etc., might be best to get it RIGHT in the adapter, feed it back to the rx, and keep our dykes and irons out of the rx.

Anyway, I think a Collins PTO is overkill. Give me a simple +/- 2-3 KC vernier, simple variable cap with a BIG knob on it like on the HQ-170.

BTW, have the DSP types at W-J figured out how to analyze the pitch harmonics in speech and automatically fine-tune the SSB BFO? IF we put in DSP beyond Rat-Shack accessory level, let's go for it.

73, mike k aa9rg

The ultimate R390 accessory/synch detector Fri Apr 05 08:05:51 1996

- > Would the GE YRS-1 have used the Costas loop? I remember
- > that as a type of synch detector that did not require a carrier at all,
- > but did require two sidebands. Moore's shows a prototype GE military
- > rx based on it, as "the only commercial direct-conversion rx" -- well,
- > with toobs anyway. It was indeed GE's attempt to push DSB instead of SSB.

I'm sure the YRS-1 would have used the Costas loop. I once had a YRS-1, but don't think I ever saw a manual for it. There was a Synchronous Detector article in the June 57 CQ mag by John Webb, a GE employee, as was Costas. I suspect that article looks a lot like the YRS-1. Copies available upon request (up to the 'continued on page 117'), as well as copies of the '67 synch det. article in 73 mag by Nagle, and the IRE article by Costas. Anyone have any other synch detector articles they'll swap me?

I once had a FRR-48 also, one of only 3 that were made, I was told. Still have the main tuning knob from it.

- > For SWL and ham AM use, the Costas loop is both good and bad.
- > It will survive a selective fading hit right thru the carrier
- > (that turn on the Carrier Fade Alarm light on a CV-157!),
- > but if one sideband fades you're in trouble.
- > Maybe a whole sideband wouldn't fade out, but what if you deliberately
- > filter one out to get rid of QRM on that side?

Well, clearly, the Costas loop wouldn't work if you don't start with both sidebands.

If selective fading reduces the amplitude of the carrier, the detection process (standard diode detector) goes to pot real fast- detection continues using whichever frequency is strongest at that instant as the carrier. If fading knocks out one sideband in a Costas loop, the oscillator loses the

correction voltage to keep it locked to zero degrees phase relative to the transmitted (or suppressed) carrier, but the balanced mixers still have a full strength carrier near the correct freq. You would get deep nulls in output as the phase moved through 90 degrees, but most of the time, should sound like SSB not quite on freq. The loop time constants would determine how long the oscillator stayed at the previous freq before being pulled off. I don't know how much of one sideband selective fading would have to distort before a Costas loop would lose lock, but it should sure happen a lot less often than selective fading messes up a standard AM diode detector.

I've always wondered how well a sync detector could reject the stronger signal on the channel, the one it's locked to, to copy the weaker signal.

- > So maybe the Ultimate accessory should have a choice of carrier or
- > sideband (Costas) based synch detection. Might end up with more knobs
- > and lights than a CV-157. --mike k aa9rg

Only an extra position on the mode switch, and a pot to supply the tuning voltage for the oscillator (BFO) instead of using the correction voltage from the loop.

John Kolb KK6IL jlkolb@cts.com

The ultimate R390 accessory/synch detector Fri Apr 05 08:07:41 1996

Good post by John. For articles, I have the 1957 (?) edition of Radio Engineers Handbook, which devotes a whole page to "synchronous detection." It describes not the Sony carrier-based simpler scheme, but rather the Costas Loop, and states that this will work on either AM or DSB.

I agree with John that the Costas synch detector should be very robust on AM SWL work, [provided the QRM on one side doesn't get too serious. But since Costas uses \*all\* frequencies in each sideband, not only can you tolerate a serious selective fading hit on one (or both) sides (there will always be something left of each sideband), but you could filter out QRM on one side (with a notch/slot filter, or just slide the signal over into the "wall" of the mechanical filter bandpass), and still maintain lock as long as some bass remained on that side.

Costas multiplies the two sidebands together to get the sign of the correction voltage -- I understood it but the book is at home.

BTW any synch detector should include an integrator in the control voltage feedback path, to simulate motor-driven AFC as in the CV-157. That makes your BFO stand still when your phase detector loses output due to fading. You also need a fade detector to lockout the phase detector.

Hmmm, now I really appreciate that CV-157...73, mike k aa9rg

The ultimate R390 accessory/synch detector Thu Apr 04 08:41:48 1996

Would the GE YRS-1 have used the Costas loop? I remember that as a type of synch detector that did not require a carrier at all, but did require two sidebands. Moore's shows a prototype GE military rx based on it, as "the only commercial direct-conversion rx" -- well, with toobs anyway. It was indeed GE's attempt to push DSB instead of SSB.

For SWL and ham AM use, the Costas loop is both good and bad. It will survive a selective fading hit right thru the carrier (that turn on the Carrier Fade Alarm light on a CV-157!), but if one sideband fades you're in trouble.

Maybe a whole sideband wouldn't fade out, but what if you deliberately filter one out to get rid of QRM on that side?

So maybe the Ultimate accessory should have a choice of carrier or sideband (Costas) based synch detection. Might end up with more knobs and lights than a CV-157. --mike k aa9rg

The ultimate R390 accessory/synch detector Wed Apr 03 09:24:02 1996

That YRS-1 is a sooper rare... GE's hope against SSB. The synch. det. method was leaked to the ham community in the 3/55(?) CQ mag.

However, the complexity was too great, the bandwidth too high, and cost too much when compared with Collins' filter-type SSB mod./de-mod. schemes.

Besides, it couldn't be packaged compactly like Gen'l Lemay's KWM-1.

I know a man with a YRS-1 manual (think the govt. bought a few for eval.) but I've never seen it or a unit. Sandy, you're a lucky buck for having owned one!

Sic transit gloria, DSB / Synch. detection.

MR

The ultimate R390 accessory/sync detector Wed Apr 03 09:22:34 1996

Be it known that General Electric made an 'adapter' that WAS a synchronous detector. In fact it is an ISB detector! You can rig it with a "stereo" amplifier and stereo headphones and hear both sidebands at one time. This might not sound too exotic, but some SWBC "SSB feeder" stations sometimes transmit (or did) two programs at the same time, one on lower and the other on upper sideband. Many years ago I had one. It is the GE model YRS-1. It is a tube "boat anchor" and seems like it was rigged for a 455 khz. I.F. input.

When you have it rigged for "stereo" (a modification, by the way) and tune your receiver, you have an audible "sense" to tuning. Heterodynes seem to originate in one ear, go thru your head to the other ear! It's very wierd. You can immediately tell which side QRM is on! Sort of an "Auditory" panoramic adapter! I sold mine after I got a Central Electronics model "B" sideband slicer that I used with my R-388/URR. (They retune fine to 500 khz by the way!)

Either of these devices will add very good SSB operation to the Collins 51J-3/4 series, and I would assume it would work well with the R-390 too. No need to extensively modify the receiver either! The "big" change with the 51J series is, you have to take low level audio from the receiver into the "slicer" and back into the receiver again. I used two BNC connectors. Two RCA or whatever type jacks turn you on will work OK. The model "B" manual specifies where to tap, into the receiver, don't remember if the YRS-1 book did, its been too many years ago!

73, Sandy W5TVW

Unusual R390/R-391/URR etc. Tue Feb 13 07:54:42 1996

Group,

Thought I might shed a little light on the subject of unusual R-390's and there uses. When I was stationed with the U.S.Army Security Agency in Udorn, Thailand my job was autotune op. In this position we had two receivers, A and B (R-390's). When we received a tip off from the 05H's (morse code copiers) we would find the guy and take a DF shot on him. The receivers in the outstations (4 or 5) would autotune up to where we set our receiver(s) so they would be approximately on the same frequency (plus or minus a KC or so). Then they would take the DF shot and forward the information back to us in operations. Even back in the 1970/71 days it was amazing how fast we could fix someone.

Of course to do this the receivers had motors in them connected to the tuning mechanism. Not being a receiver tech at the time I don't know how they worked exactly.

>I don't know what the difference between the AN/FLR-7 and the AN/FLR-9

>is. Perhaps they are just different versions of the same antenna.

If memory serves me correctly the AN/FLR-7 was the smaller 'portable' version of the doppler DF'ing setup that we used in SE Asia. It had 26 or so verticals in a circle with the shack in the middle where we had our operating positions. R-390's, DF scope, etc. The antennas were sampled at several thousand times a minute and a station's signal formed a half propeller pattern on the screen of the scope showing the direction it was coming from. The whole setup covered a circle of about 100 feet with the antennas only about 20 feet tall. In school at Ft.Devens we were given handouts explaining the parts of the system and they weren't classified so this discription while vague shouldn't be a problem.

The AN/FLR-9 setup as described by one of the people on the group was a huge affair. One of them had been in construction in Udorn for over a year when I left in June 1971. There were supposed to be several around the world in Germany, Phillipines, England and several other places. I never did get to see the inside of one but I did meet some of the guys that went TDY all over the place setting them up and they could tell some stories. They formed a circle about 500 feet in diameter as I recall and had 3 rows of verticals around them plus the inner reflector screen as I recall. The tallest verticals were about 100 feet. A lot of money was wasted IF they pulled out of Thailand like we heard later.

Udorn was the best Army base I ever seen with modern airconditioned barracks, paved streets and well maintained lawns, pool, PX, bowling alley and (after a while) a reasonable mess hall. Course, the night the cobra showed up in the kitchen right in the middle of the mile wide base didn't make anyone feel safer to walk the streets. The Air Force base down the road really sucked compared to the Army base if you can believe that.

Terry KI7M

Unusual R390A? Thu Mar 28 11:19:51 1996

Yeah -- Capehart made some incredible home stuff in the '30s, including a 78 RPM phono that turned the records over to play both sides! Homer Capehart was in and out of jukeboxes in the '20s and again in the late '40s.

One of his home consoles is said to have used Super Pro guts for its tuner. They were in Indiana, at least the juke operation. Homer Capehart was a senator from IA for a few years too.

A great EE/ME engineer, politician, and quality-oriented manufacturing CEO all in one person! He's probably giving harp and flying lessons to David Packard right this minute. 73, mike k aa9rg

Unusual R390A? Tue Mar 28 09:39:43 1995

One of my recent swaps made me the happy owner of an R-390A. As an admirer for many years (abetted by my close proximity to Fair Radio), I'm happy as a clam to own one of these fine receivers. And now, to the point...

I checked the tag info against the users list in the BA archive and in Electric Radio, and found that my receiver is from an apparently unknown contract. The tag reads "Manufactured by Capehart Corporation for Adler Electronics, Order No. 20878-PP-63". My set is serial number 5. This info leads me to believe that Capehart was making these sets in 1963, though the lists show them as the maker of the 1961 models. Another interesting item: this set has a metal dial window cover that is spring-loaded and attached to the upper two screws of the dial cover unit. It doesn't look "homebrew", but I've never seen one on an R-390A.

So, the usual "unusual" questions: Anyone know of Adler Electronics, or have any additional information about this contract? Is the dial glass cover standard issue for R-390A's? Also, can anyone decipher the ornage stamp on the front? It says, in a circle "C 23" then, on a second line "USACOMZ" then, on a third line "24". There is a date stamp of 4/68 below that. Any information would be appreciated.

Also, as regards the recent product detector mods for the R-390A: the Hollowstate Newsletter back issues cover these in detail. The back issues are a genuine steal at a buck each, IMHO.

73 de N8SNC, Tony

Unusual R390A? Tue Mar 28 09:40:06 1995

Hi Tony!

- > I checked the tag info against the users list in the BA archive and
- > in Electric Radio, and found that my receiver is from an apparently
- > unknown contract. The tag reads "Manufactured by Capehart Corporation
- > for Adler Electronics, Order No. 20878-PP-63". My set is serial> number 5.
- > This info leads me to believe that Capehart was making these sets



- > in 1963, though the lists sho them as the maker of the 1961 models.
- >So, the usual "unusual" questions: Anyone know of Adlr Electronics,
- > or have any additional information about this contract? Is the dial

Just a little light here: My dad worked for the Adler Electronics operation (QC mostly) during this time period and yes, e does remember the R-390's. Adler built communications shelters, truck mounted mostly, for the US Military and I vaguely remember seeing them as a kid. But he never brought one home...

Adler was located in New Rochelle, NY, just north of NY City, wit another plant in Pleasantville (later) and another plant or two near New Rochelle in Pelham I think. Founder Ben Adler merged it ith Adler-Westrex (famous for early movie sound) and it eventually became part of Tex Thornton's Litton Industries, later Litcom in armingdale, LI, just down the street from Harrison Radio in its inal days...later operations (mid 70's by this time) moved to omeplace in Pennsylvania, my dad quit after being laid off and hired ack many times (that was the way it used to work!) and he and I both ost interest in them.

Capehart was an electronics outfit that did lots of stuff and was probably best known for those large "console" am-fm-tv things that filled up a whole wall of a small living room. I think they were headquartered around NYC someplace.

This is all from memory cells not used in years and I have no documentation for any of this!

-Pete WB2QLL pferrand@scoot.netis.com

Unusual R390A? Tue Mar 28 09:40:19 1995

Just a couple of clues:

- >Another interesting item: this set has a metal dial window cover that is
- >spring-loaded and attached to the upper two screws of the dial cover unit.
- >It doesn't look "homebrew", but I've never seen one on an R-390A.

This would be consistant with a "secure" installation where they didn't want passersby to read off the frequency.

- > Also, can anyone decipher
- >the ornage stamp on the front? It says, in a circle "C 23" then, on a
- >second line "USACOMZ" then, on a third line "24". There is a date
- >stamp of 4/68 below that. Any information would be appreciated.

COMZ stood for Communications Zone (Europe), later known as TASCOM, Theater Army Support Command. I was stationed at Pirmasens Army Depot in Germany where they overhauled 390's (Lots of PTO's in the Trash Cans), but I wasn't directly involved. The name changed while I was there in 1969. Orange is the official Signal Corps color.

73,

Unusual r-391 receiver Mon Feb 12 09:27:17 1996

I suspect the receiver was part of the world-wide hfd network run by the navy to triangulate ship positions based on hf transmissions. It is a fascinating system of which very little is written. Much remains classified.

Mike michaels@kc2kj.k2nesoft.com

Unusual R-391, FLR 7/9 Antennas Tue Feb 13 07:55:00 1996

The big concentric antenna arrays used in the FLR 7 and FLR 9 are technically known as Woolenweber Arrays. Their principle of operation is described in Jasik's "Antenna Handbook" for those antenna nuts among us. I have a friend who was in the Army Security Agency in Thailand assigned to one of these sites. He alternately called it a "Flare 9" or "Glare 9". His specialty was the repair of R-390A receivers used at the site.

Evidently the antenna array could be used in several modes. With proper capacitive coupling to each (amplified) antenna output, a unidirectional pattern could be obtained. A pseudo-Doppler method was also available for more precise direction finding. A large number of receivers could be used simultaneously and the antenna switching system used a (relatively) modern computer system to do the switching and phasing. However, good old R-390A receivers were the preferred receiver for their reliability and minimal phase noise. Constant scanning up and down bands did cause premature wear of the R-390A RF deck "watchmaker's nightmare". My friend said similar sites were located in England, Germany, Turkey, and elsewhere.

Never one to like the radio intercept operators, he called them "ditty-bops". He said it was not uncommon for these poor fellows to go "looney" after an extended shift of monitoring Chinese CW stations.

73, Barry WA4VZQ ornitz@eastman.com

Unusual R-391, FLR 7/9 Antennas Tue Feb 13 07:55:13 1996

Doesn't the FCC use Wolenweber (sp?) antennas for their DF'ing? I've called them on several occasions and heard the op do the DF bit over the phone. It sounds like a "whirring" sound, like an electrically steered array of some kind.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI

Unusual R-391/URR Receiver Mon Feb 12 09:27:07 1996

If I remember correctly, the FLR-7 is the nomenclature for the huge elephant cage HF direction finders used by the NSA and their military adjunct groups for HF monitoring from their various world wide HF monitoring sites. Most are run by the Naval Security Group (NSG) I believe. These are the big circular concentric rings of many tens of tall monopole antennas over a ground screen that occupy several acres.

Your R-391 was modified for use with those direction finding arrays, which use a phase sensing doppler mode that requires controlled phase characteristics over the IF bandpass. For this reason R-390A's were not used, as they have mechanical filters which have complex group delay versus frequency curves and a tendency to ring. Simple stagger tuned IFs have much more linear group delay versus frequency and no tendency to ring.

The absence of a bandwidth knob suggests that the IF bandwidth was optimized for some one kind of signal - I'd be curious to know what the actual IF bandpass curve is for that radio. My guess it that it would be optimized for CW ...

Dave Emery NIPRE die@die.com

Unusual R-391/URR Receiver Mon Feb 12 09:27:32 1996

Greetings everyone,

>If I remember correctly, the FLR-7 is the nomenclature for the  
>huge elephant cage HF direction finders used by the NSA and their  
>military adjunct groups for HF monitoring from their various world wide  
>HF monitoring sites. Most are run by the Naval Security Group (NSG) I  
>believe. These are the big circular concentric rings of many tens of  
>tall monopole antennas over a ground screen that occupy several acres.

>  
> Dave Emery

Dave,

Your response triggered a faint memory. I have a book that describes the antenna you mention, and even has a picture of it at a monitoring post in England. The nomenclature shown in this book is AN/FLR-9. The book also describes that these were indeed used with R390s, but it doesn't specifically mention an R391.

I don't know what the difference between the AN/FLR-7 and the AN/FLR-9 is. Perhaps they are just different versions of the same antenna. I am wondering, though, why this radio was modified for the Navy, when it seems like the system used with the AN/FLR-9/7 antenna would definitely be land based.

I need to post a description of this book on the boatanchors list one of these days as well. It is written by a former US Air Force Signals Intelligence Officer and describes his tours of duty at RAF Chicksands in England.

Dennis Gibbs dgibbs@rational.com

Unusual R-391/URR Receiver Mon Feb 12 09:27:37 1996

> Dave wrote:

>>If I remember correctly, the FLR-7 is the nomenclature for the  
>>huge elephant cage HF direction finders used by the NSA and their  
>>military adjunct groups for HF monitoring from their various world wide  
>>HF monitoring sites. Most are run by the Naval Security Group (NSG) I  
>>believe. These are the big circular concentric rings of many tens of  
>>tall monopole antennas over a ground screen that occupy several acres.

> Your response triggered a faint memory.

Same here. I'd forgotten all about the "dinosaur cage" located near NMO (Coast Guard Radio Honolulu). NMO was on the Navy's NAVCAMSEASTPAC (what a mouthful!), and I always thought that the directional antenna control located below each Collins 651S rcvr (we had about 2 dozen of 'em) was connected to that DF cage. Each control was a dozen-position rotary switch.

>From memory, the cage must have had a radius of \*at least\* 40 yards, and certainly would have held captive the largest dinosaur or elephant. (Note I said radius, not diameter!)

NAVCAMSEASTPAC was located in Whitmore Village, just north of Wahiawa and Wheeler AFB, and just east of Schofield Barracks, smack dab in the middle of the pineapple fields.

Jeff NH6IL (NMO CW op '77 to '80)

Unusual R-391/URR Receiver Sun Feb 11 11:56:51 1996

Greetings all,

I've been meaning to post something about this to the group for a long time. I picked up an R-391/URR receiver about 1.5 years ago that seems to be unusual. I am curious if anyone out there has seen another R-391 like this, or perhaps may be familiar with this particular version.

The front panel of this rig has an additional decal, about 1.5 inches square, immediately below the function switch. It reads:

R-391/URR (MOD)

RECEIVER, RADIO

-----  
A unit of direction finder set AN/FRA-44 (XN-1)

Counter Measures Receiving Set AN/FLR-7(XN-1)  
-----

Modified For  
Navy Department - Bureau of Ships  
by contractor  
Radio Corporation of America  
Camden N.J.  
contract NObsr 81315  
U.S.

On the front panel of this receiver, there is a small metal plate that covers the hole where the bandwidth switch should be. In other words, the bandwidth switch has been removed. On the IF Deck, there is NO shaft coming out of the chassis where the bandwidth control would be. There is just a hole there. In addition, the IF transformer covers on the IF deck look different, and in fact, have the name "RCA" and a part number on the sides. It definitely appears that the IF Deck was modified by RCA.

The rest of the receiver appears to be normal, just like any other R-389/R390/R391.

Does anyone else out there have an R-391 modified like this? Does anyone know the story behind this unit?

Dennis Gibbs dgibbs@rational.com

Wanted - Collins tuning slugs Mon Jan 02 16:27:02 1995

The slug racks in the 51J series are identical to the R-388/URR. My suggestion would be to check the RF coil forms themselves with the slug rack removed. Frequently the receivers were used with separate receiving whips in nearby high RF fields. (On the GRC-26 the BC-610 antenna was on the other end of the radio hut!) This caused the coil forms to heat and swell. This in turn makes the slugs jam and bends the wires between the adjustment screws and the slugs themselves.

A "fix" I have found, is to find a chainsaw file with very fine teeth and gently pass it inside the offending coil form. After several careful strokes, you will find the slugs will pass freely into the forms once again. I have also used 150 or 220 garnet paper glued (with contact cement) to a round hardwood dowel about 1/32" smaller than the inside diameter of the forms.

All they used for front end "protection" was a neon lamp, which did a dismal job.

Hope this helps you R-388 owners out there.

73, Sandy W5TVW

Weird 391 Mon Feb 12 09:27:53 1996

The R-725 was the R-390A with the R390 IF strip used by NSA in the TRD15 and 23 systems. As mentioned, they used 8-10 of these receivers and a circle of receiving antennas 150' in diameter and a device called a goinometer? (I think that's right) to sequentially rotate the "antenna farm" to feed it into a truckload of additional equipment from scopes to amplifiers and a transmitter. This allowed the doppler effect to then give a line of bearing for DF Work.

It would sound as if the mentioned 391 had a similar purpose. However, the autotune 390 version creates more questions. Maybe NSA didn't mean to get rid of this one and it slipped away! (Maybe from the Ft. Meade skunk works?) Definately WEIRD!

73's Dave metzd@cfw.com

Which is it- 51J-3 or R388? Sat Jan 06 15:22:27 1996

- >1. Which is it- 51J-3 or R-388? How do I tell?
- >2. How desirable is it relative to an R-390 or R-390A? (Been thinking about picking one of those up either from Fair or Toronto Surplus)
- >3. What's it worth?
- >4. What would the second nameplate have been? And- does anyone have appropriate nameplates for this thing that could be restored?

1. 51J-3 = R-388

51J-4 = R-388A (this set has mechanical filters)

2. Many folks think that it is the equal of the R-390. The R-390A has mechanical filters and, to me, is superior in that respect. I think that the R-388 is easier to work on. Some R-388s experience a bad problem with PTO aging such that you cannot adjust the end points properly, i.e., ten turns of PTO = 1 Mc frequency change. Some don't, though.

3. Depending on condition, I would say \$ 75 - 250.
  4. Likely the R-388 nomenclature plate.
- 73 Joseph W Pinner kc5ijd@aol.com