R-390 Reflector March 2005 Edited

From chacuff at cableone.net Tue Mar 1 09:09:25 2005
Subject: [R-390] Re: R-390 Digest, Vol 10, Issue 23 - MB connectors

Hey Folks,

Direct from one of the pictures. www.skycraftsurplus.com Works... Cecil...

Bob, Fair Radio sells them (used) for $2.50 ea. >> 73, >> John >>

Hi, The last time I was in Skycraft Surplus, 2245 W. Fairbanks, Winter Park, FL 32789 (407) 628-5634, they had a whole bin full. According to my old catalogs, the correct designation for these connectors is type MB. 73 David C. Hallam KC2JD

Date: Tue, 15 Feb 2005 09:36:51 -0500
Subject: [R-390] Need some small parts for RF deck

Anyone have a "donor" RF deck? After tearing my RF rdeck down, I noticed last night that someone has rreplaced one of the roll pins that lock the cam onto rits shaft with a small piece of flat metal. This rallows the cam to twist slightly on the shaft which, rof course, isn't good. I need an original 3/32" rdia. x 3/8" long roll pin to properly pin the cam to rthe shaft. r rAlso missing are the two brass(?) washers that go on rthe shafts between the cam and the frame. This rmakes this particular camshaft have a little too rmuch axial play.

I know a Fair Radio deck would be a good source for rthese, but I only need such a small set of parts, I really don't want to go that route. Thanks guys! Barry(III) - N4BUQ

Date: Tue, 15 Feb 2005 11:09:16 -0500
Subject: [R-390] RF Deck Parts update

Thanks to all who have replied. I looked at the camshaft assembly drawing and the holes are supposed to be 0.078" +0.003/-0.000 so it looks like these are 5/64" pins, not 3/32".

A list member has replied and says he has these so it looks like my roll-pin need will be met.

I'm going to disassemble the cams and see what size those washers are. Hopefully, I can locate a few of these locally; if not, then maybe someone can point me to these as well.

My main reason for asking here is I was hoping someone might have a donor deck. I'm sure I can buy these parts via the net or mail-order, but the shipping and handling costs just kill you for things like this. One supplier I looked into had great prices on the parts ($1.00 for 25/ea. packs, etc.), with no minimum, but their $12.00 shipping cost just made this very cost ineffective. Thanks again guys! Barry(III) - N4BUQ

Date: Tue, 15 Feb 2005 11:57:29 -0600
Subject: [R-390] 5-25pf ceramic cap needed

I need a variable cap for my R-390 non-A -- it's one of the caps on the crystal deck, 5-25 mmf ceramic ~1/2" diameter. Fair Radio doesn't have them, and I don't have anything close in my junk box nor in any of my 390A carcasses. Thanks in advance Tom NU4G

From: Tom Norris <r390a@bellsouth.net> Date: Tue, 15 Feb 2005 17:18:26 -0600
Subject: [R-390] 5-25pf ceramic trimmer found, thanks all

Thanks for the help guys. Yea, I ran into Murphy's Junkbox Rule -- the parts in your junkbox will not be of any use whatsoever unless they accidently get lost or thrown away. Tom NU4G

From DJED1 at aol.com Tue Mar 1 21:31:00 2005
Subject: [R-390] R-390A sensitivity measurements

I tried making some sensitivity measurements on my receiver, in which the IF gain was reduced per Chuck Rippel's suggestion. I tried several different scenarios:

First, per the MIL spec, sensitivity is measured with an 8 Kc bandwidth and adjusted for a 10 dB change in output by switching the modulation on and off (30%, 400 cycles). They also call for a resistor in series with the radio input. I couldn't see how this made sense, so I followed the directions in the URM-25 manual. It calls for a series or parallel resistor such that the load the generator see is 50 ohms. I know both the URM-25 and the new HP need to be terminated in 50 ohms to provide the voltage indicated on their meter, so I put an 82 ohm resistor in parallel with the nominal 125 ohm receiver input, resulting in a 50-ohm load. The results were interesting: Using the method of modulation on and off gave a sensitivity of 1.9 microvolts. Not the result you often hear discussed with these radios, but credible for a radio where the specification is 3.3 yo 4.4 microvolts. I then tried the method I used in the past, of turning the modulated carrier on and off, and using a 4 Kc bandwidth. Big difference- 0.23 microvolts. I tend to like this method because it seems more representative of an actual signal. Finally, considering that we listen to CW and SSB as well as AM, I measured the sensitivity with the BFO on and a 2 Kc bandwidth. Got about the same result- 0.22 microvolts. I then reduced the signal level until the signal was just detectable in a 1 Kc bandwidth and got down around 0.01 microvolts. That's in the ballpark of the -143dBm noise floor that is quoted by some for the radio.

All in all it was an interesting exercise. The measurements made with the specified method explain the specification of 3.3 microvolts, while I believe the method of switching the carrier on and off is more realistic. Definitely, the CW measurement is more representative of real world conditions. And I think 1/4 microvolt is adequate for almost all application in which I would use the receiver. I'd be interested in hearing from anyone who has duplicated the test setup and gotten results better than mine.

(Incidentally, I did check the generator for leakage prior to making the measurements. Detected a very low level with the receiver connected to a wire near the generator, but nothing when connected to the generator by a shielded cable.) Ed

Date: Tue Mar 1 21:54:28 2005
Subject: [R-390] R-390A sensitivity measurements

Hi, The only odd thing being done here is to terminate the generator with an external 50 ohm load.

Here's what's going on put in fairly simple terms to keep the math from overloading my brain ...

1) The generator is set up to deliver 2 volts into an open circuit load
2) You terminate the generator in 50 ohms.
3) There is 1 volt on the output of the generator (since it's a 50 ohm generator).
4) The impedance at the output is now 25 ohms (50 in parallel with 50 = 25)

Since the generator is calibrated in terms of a 50 ohm load the generator is "set to 1 volt" in all the examples above. A lot of this does not make a lot of sense, but that's the way it's all defined.

A normal sensitivity test is done with the generator only terminated by the impedance of the radio you are testing. If you have a radio that looks like an open circuit then it gets 2 volts. If the radio looks like 50 ohms it gets 1 volt. This is also the way a 50 ohm antenna would drive the radio.

If you want to have a 125 ohm generator then you need to put a 75 ohm resistor in series with a 50 ohm generator. Because of the way levels are defined you don't have to change the voltage level when you do this. If you first load the generator in 50 ohms you cut the output voltage in half and must figure that into what you are doing.

I know this all is a bit whacked, but that's the way RF is defined .... Take Care! Bob Camp KB8T
From DJED1 at aol.com Tue Mar 1 22:09:01 2005

From: DJED1 at aol.com (DJED1@aol.com)
Subject: [R-390] R-390A sensitivity measurements

Thanks for the note, Bob. I went with the instructions in the URM-25 manual, which clearly intend that there be a 50 ohm load on the generator for the output voltage to be equal to the meter reading. I was reminded of this when i put my scope on the HP generator to check the output- way off until I put a 50 ohm termination on the etup, then the generator output was right on. So I'm convinced that the generator needs to be terminated properly. Of course this is not a problem for 50 ohm receivers. For the R-390, it troubles me that we don't have an impedance match between the generator and the radio, but we do know, I submit, the voltage across the receiver terminals. If you wanted to determine the power going into the receiver, I would use the 125 ohm value and the measured voltage. Probably the best way is to devise a lossless transformer to go from 50 ohms to 125 ohms. I haven't tried to do that yet, but I'm working on it. Regards, Ed

From jamminpower at earthlink.net Tue Mar 1 22:25:38 2005
Subject: [R-390] R-390A sensitivity measurements

Given that a 50 ohm resistor has a thermal noise of .0142 microvolts (at room temp, BW of 1 KHz), it is hard to see how adding .01 microvolts can cause a 10 dB change in the reading. Even if the input is 25 ohms, the thermal voltage will still be .010 microvolts.

See my "noise and sensitivity page" at http://www.jamminpower.com/main/noise.jsp

I think we are doing this measurement wrong, but I haven't managed to figure out what the right way of doing it is. I did publish (with permission) an article by Dallas Lankford on the measurement process where he obtains numbers that are more believable. I understand that we do see the meter change by 10 dB, but I think there are other explanations for that. For instance, the R-390A is not very well shielded.

Neither is the URM-25. Is it possible there is some leakage via a route that is external to the antenna input? I dunno, but I know we can't get more sensitive than the thermal noise. It doesn't take many electrons rolling through the ether to show up as a 10 picovolt input. James A. (Andy) Moorer

From ghayward at uoguelph.ca Tue Mar 1 23:26:16 2005
Subject: [R-390] R-390A sensitivity measurements

I did the impedance match with one of National's really fast unity gain amplifiers, the LH0063. I run the sig gen into the high impedance fet input, with a 52 ohm terminator and drive the antenna input directly with the amp low impedance output with a 0.01 uF cap to kill any DC offset from the amp. The voltage at the amp input is the same as the voltage impressed on the radio antenna connector. I used 20 dB attenuators on the terminated amp input so I could check the actual sig gen output with a scope. The scope results look OK when I use a humongous signal and when I cut the gen output way back I get reasonable sensitivity values. Does this sound like a reasonable approach to the matching? Cheers, Gord (VE3EOS).

From tetrode at comcast.net Tue Mar 1 23:59:11 2005
Subject: [R-390] R-390A sensitivity measurements

Maybe for the sig gen, but from the radio's point of view it is a total abandonment of the concept of "matching" :^0 And on top of that error you're also adding the noise contribution of the buffer amp, so you are no longer measuring the S/N of the radio, but the S/N of the radio + the buffer amp. You'll measure something but it won't be meaningful. John

From vk2abn at batemansbay.com Wed Mar 2 01:25:06 2005
Subject: [R-390] 390a sensitivity

I have reservations about Bob camps 0.03uV. sensitivity ,The thermal noise at a bandwidth of 3Khz = 0.036 uV. and for practical comunication one would have to go 10db above this to say 0.2uv. this is a believable sensitivity for a reciever of this type, Maybe u missplaced ur decimal point bob???

Date: Wed Mar 2 03:33:06 2005
Subject: [R-390] sensitivity ref DJed1

Ed you are gilding the LILLY 0.1 uv. I might be able to digest with some SALT but 0.01uv. not possible, I cant jump such a big credibility gap without a lot of help, you are measuring LEAKAGE from ur sig gen ,0.01 uv. even in this bandwidth is Violating Fundamental laws of physics..

From ham at cq.nu Wed Mar 2 07:16:21 2005
Subject: [R-390] R-390A sensitivity measurements

Hi, A lot of this is not a matter of what is right and wrong from theoretical standpoint. It's an issue of how things are defined. In the case of a receiver measurement you do not supply an external load, regardless of what the input impedance of the radio actually is. Fifty ohm radios rarely if ever present 50 ohms back to the generator. Since we don't know the impedance of the radio the decision was made long ago to define this measurement not in terms of the *actual* voltage at the input of the radio but instead to define it in terms of what the voltage *would be* if the radio was presenting 50 ohms.

One way of looking at this is to consider what we are trying to do. When we use the radio we hook it up to an antenna. Antennas are weird just like receivers, but let's ignore that for right now. With a bunch of power the antenna would put out 2 volts into an open circuit and 1 volt into a fifty ohm load. By the way we define things we would call this a 1 volt signal from the antenna. If the receiver presents an open circuit then it gets to use 2 volts. If it presents a 50 ohm load it gets to use 1 volt. We test the radio the same way we use the radio.

If you are going to calibrate a scope then yes you need to remember to terminate the generator properly. Probably the biggest issue here is to check what the input capacitance of the scope looks like at the frequency you are using. A 15 pf scope capacitance can have a big effect at 400 MHz.

If you are going to use a 125 ohm antenna then by all means use a 125 ohm generator. In fact if you use a balanced antenna then a balanced generator is a good idea. The radio should be aligned with the same source impedance as your best guess for the antenna. Again test the radio the way you are going to use the radio.

Hard core electrical engineering for breakfast - gotta love it !!! Take Care Bob Camp KB8TQ

Subject: [R-390] R-390A sensitivity measurements
In-Reply-To: <000801c51ee4$93148720$7c629318@compy2>

First off, use the Balanced Adopter that is normally used for the Balanced input. This shorts out one side of the input transformer, and presents the other pin with a '62 ohm' input. Since this input changes with tuning, you will have error unless you correct impedance match at each frequency of measurement. According to Lankford, the input impedance of an R-390A varies from 90 to 250 ohms over frequency range. For measurement purposes, a reading of 0.3uV could actually be 0.2 to 0.4uV. Without a lot of work you are never going to get much better than that. If you are interested in doing better than that, build an attenuator with a 50 ohm input, and a variable impedance output. Connect the generator to the receiver at the frequency of interest. Tune radio to same frequency, increase generator output until you can measure amplitude on oscilloscope or AN/URM-26 VTVM across receiver input. (you have to use unbalanced feed for this to work). Adjust output impedance of attenuator to maximum. Measure voltage. Divide this by half, then adjust attenuator impedance until voltage reading is half. Measure components in attenuator and calculate input impedance, output impedance, and attenuation. Reinsert attenuator into circuit and do sensitivity test at that frequency. Adjust result using the calculated attenuation. Repeat the whole thing at the next frequency. Unless you want bragging rights, and can be sure they are doing it exactly the same, it doesn't seem to be worth the effort.

From chacuff at cableone.net Wed Mar 2 11:48:27 2005
Subject: [R-390] R-390A sensitivity measurements

I've been contemplating a balun to go from the balanced input to the antenna/generator anyway. Question is do I do a 2:1 or a 1:1. Keep the radio at it's native 125 ohm nominal impedance or take it to around 50 ohms nominal which is what we are doing using current wisdom on the twinax connector to coax fabrication. Cecil...

From huffb at avalon.net Wed Mar 2 11:55:59 2005
Subject: [R-390] cabinet

What are people using these days for R390A cabinets? I would like to have a CY-979A but these seem to be bringing ridiculous sums on ebay, one guy just paid $820 + shipping for one that was NIB. I would like to have something without having to mortgage my S-line equipment. Maybe I should build a nice wooden one. Any thoughts? If anyone has one to sell please contact me off list.-Brad

From n4buq at aol.com Wed Mar 2 12:54:38 2005
Subject: [R-390] cabinet

Other types of cabinets work well. See mine at http://members.aol.com/n4buq/r390a One like mine sold a few weeks ago for around $50 (as I recall). Barry(III) - N4BUQ

From JMILLER1706 at cfl.rr.com Wed Mar 2 13:30:35 2005
Subject: [R-390] R-390A sensitivity measurements

One thing I found with my HP8640B sig gen is that if you do not use the 50 ohm terminator, the output voltage meter would not measure correctly. If you depend on the output level meter as a reference point for sensitivity measurement, without the proper impedance match your calculaions could be off considerably due to meter inaccuracy.

From ham at cq.nu Wed Mar 2 20:05:59 2005
Subject: [R-390] R-390A sensitivity measurements

Hi, Simply put you have two reasonable alternatives. A one to one turns ratio gives you 50 ohms to 50 ohms. A two to one turns ratio gives you 50 ohms to 200 ohms. Either way it's a mismatch. In general (though not always) you will do better with an input impedance that is higher than the characteristic impedance rather than lower.

The whole issue is made a bit more complex by having a piece of coax between the antenna and the radio. A high impedance at the radio may be transformed to a low impedance at the antenna.

Each time this thread has come up before the net result of the tests run has been that the radio is slightly more sensitive when run from 50 ohms than it is when run from 125 ohms. Take Care! Bob Camp KB8TQ

From mjmurphy45 at comcast.net Tue Mar 1 20:16:15 2005
Subject: [R-390] R-390A sensitivity measurements

A lot of these RF guys on the R390 net will attest that leakage can surely fool you. Some have probably solved the leakage isue by building something or using some clever technique. The basic symptom of RF leakage is that the receiver seems miraculously sensitive - "what a good tuneup job did I!" You keep reducing the RF input signal (throwing in more attenuation) and the receiver just keeps hanging in. Wow is this baby hot!

I have been burned by measurements done much below half a microvolt on the bench. We have problems at work obtaining accurate measurements outside a screenroom or screenbox environment. One typical (difficult) test is to determine end to end system gain with a high power transmitter and a

sensitive receiver. The RF just seems to be able to go around to the back door! This is a bad example since our test generator is not a 2 Watt transmitter, but the ideas still apply.

Let's look at an approach.. Good results are obtained by placing the RF generator on the outside of the screen room. This may not be ideal, but it keeps the receiver from picking up extraneous signals and keeps the higher level RF on the outside (the dirty side). Terminate the generator if that is required. Connect the generator to the screenroom bulkhead via double shielded coax like RG-223. Adding an inline pad of say 10 dB on EACH SIDE of the bulkhead is another good trick. Just inside is also a good spot to put a precision variable attenuator inline. Next connect to the receiver with more RG-223 using one of the matching networks described. Of course one will have to know the total loss of the cable attenuator system. Our three Screen Rooms at work are double shield Faraday types with a single point ground and they claim better than 100 dB of isolation. Solid construction screen rooms are actually far better than this.... but it gets so lonely.

I would say that a more practical home version of this approach might be to make a simple screen box to house the generator side. This could be made of copper screen and wood. Making the inside and outside of the box insulated from one another using square dowel or lumber should enable you to build a tight little Faraday screenbox. The bulkhead can serve as the single point ground. Ground the box. A clever door with RF gasketing fingers would allow access to the generator for setting adjustment. Think about it - the door must also be two metal doors without inside touching outside to maintain the cage integrity. Again, double shielded cable is a must. Mike Murphy WB2UID

From anchor at ec.rr.com Wed Mar 2 21:42:41 2005
Subject: [R-390] cabinet

Hi,

take a look at http://www.bluerope.com/temp/rackcase/elma.htm if you want a brand new one, "modern" style. I have no connection with him, but he's asked me to list them on The Hammarlund Historian website in the Service - parts secn. contact him, Ricky Ponder, KC4KIN ricky-ponder@charter.net not me. 73, Al,

From DJED1 at aol.com Wed Mar 2 23:02:35 2005
Subject: [R-390] R-390A sensitivity measurements

A shield room is not a bad idea, but it may be too expensive for most of us. I played around with a couple of items tonite, and the issue of shielding came to the fore. first, I made an autotransformer on a toroid which matched 125 ohms to 50 ohms (both unbalanced). I soldered it to a piece of coax and a connector and put it on the back of the receiver... the external noise coming in on it was 10 dB higher than that of the receiver. Definitely not useful unless built in a well-shielded case. So I've put that on the back burner. I thought about the very good comments from you guys, and did a few calculations which turned up some interesting results.

First, I concluded that adding an 82 ohm resistor in parallel with the receiver, to give the generator a 50 ohm load, and adding a 75 ohm resistor in series, to give the receiver a 125 ohm load, both form 2 to 1 voltage dividers between the generator open circuit voltage and the voltage across the receiver terminals. Thus either will allow us to use the generator meter to read the sensitivity. I haven't tried a pad which matches both, but requires a correction to the meter reading. That also awaits a shielded box. I also did some calculations on the noise floor assuming a 125 ohm resistor at room temperature, and the 9 dB

noise figure I measured on my receiver. It comes out to a voltage of 0.4 microvolt for 10 dB S/N in a 4 Kc bandwidth. I then reran some of my measurements using both the URM-25 and the 8660. For measurement with the carrier turned on or off, either with the BFO on or with 30% modulation, I got measurements of 0.3 to 0.4 microvolt. So everything seems to hang together, including agreement between the URM-25 and the 8660. The only difference is that below 0.5 microvolt on the URM-25 the readings don't drop down much as I turn the attenuator. The 8660, on the other hand, just keeps going down into the noise. So shielding is definitely an issue for the old generator. However, I think I'll keep her. I was pleasantly surprised at the accuracy- the two generators agreed within 1 dB at levels of 1 and 5 microvolts.

I got sensitivity of 1 microvolt in 4 KC bandwidth when I measured with the modulation turned on and off. This is the specified procedure for AM. I'm now satisfied that I understand the methods and results. The only unexplored issue is whether a balun will make any significant difference. Ed

From w9ya at arrl.net Thu Mar 3 00:21:45 2005
Subject: [R-390] R-390A sensitivity measurements

Hey to all the gang; Um....put a 6db pad 'tween the generator (50 ohm sourced) and the load (at whatever Z the r390 may be at that particular freq.) and forget the transformer. This is a "close enough for g'nment use" solution. In fact you probably will not be able to measure the difference compared to "ideal" solution. Vy 73; Bob w9ya

From w9ya at arrl.net Thu Mar 3 00:34:27 2005
Subject: [R-390] R-390A sensitivity measurements

Of course you would NOT want this between your antenna and rcvr., but for making accurate measurements with your generator, the pad is the "cat's meow". Sorry I was not clear about this. Vy 73;

From ham at cq.nu Thu Mar 3 18:21:54 2005
Subject: [R-390] R-390A sensitivity measurements

Hi

One or two minor items:

When you put an 82 ohm shunt resistor on the generator that gives you a 31 ohm source impedance for the combination (50 ohms from the generator in parallel with the 82 ohms you just put in).

When you sick a 75 ohm resistor in series with the receiver you get a 106 ohm source impedance.

The 75 ohms is in series with the assumed 125 ohm input impedance of the receiver. That gives you 200 ohms.

The 200 ohms in parallel with the 82 ohms gives you 58 ohms. That's pretty close to a 50 ohm match to the generator.

The net result is that you are almost matched to the generator, and sort of matched to the radio.

If you refigure the resistors you can hit both terminations at the same time. In this case you have put in a second termination on the generator. You need to subtract six db from the generator output to get the correct value for the driving voltage relative to the generator output.

The real question is weather any of this will make the radio work better.

Any time you put a resistor on the input of a radio you degrade it's sensitivity. This is true weather the resistor is is in series or in parallel with the antenna input of the radio. If sensitivity is your goal stay away from resistors. They can improve overload performance but you will always trade off sensitivity.

When you use the radio you peak up the sensitivity with the antenna trimmer. As soon as you move it off of the "straight up" position you are changing the radio's input impedance to something other than the best setting for the impedance you aligned it with. Assuming the signal goes up when you do this then your antenna is not providing the same source impedance as your generator. Most all of the time I seem to run with the antenna trimmer set to one side or the other of straight up.

The antenna is what we care about. If you could set up the generator to duplicate the antenna then you might be able to directly measure what is really going on. If you run a vector network analyzer into the antenna you can get a pretty good idea of what it looks like. That sounds like a lot of work though ....

The easy test is to hook the antenna to the radio. See if the noise out of the radio goes up. If it does then the whole front end match thing is not an issue. With a reasonable R390 and even a fairly short antenna I pretty much always seem to pass this test. The only time it can be a problem is above about 16 MHz after the band dies. Take Care! Bob Camp KB8TQ

From DJED1 at aol.com Thu Mar 3 22:07:22 2005
Subject: [R-390] R-390A sensitivity measurements

No, the 82 ohms goes in parallel with the nominal 125 ohms of the radio, resulting in 50 ohms as seen by the generator (procedure from URM-25 manual) In this case, the generator is correctly terminated in 50 ohms, and connected directly to the receiver terminals.

The 75 ohm resistor goes in series with the 50 ohms of the generator, giving a 125 ohm impedance for the radio (procedure from MIL-SPEC for R-390). In this case, the generator is not terminated in 50 ohms, but the voltage division between the 75 ohm resistor and the receiver impedance give the correct voltage at the receiver terminals.

Either approach allows you to use the generator meter to correctly read the voltage across the receiver terminals. You can use both a series and shunt resistor to provide the correct impedance to both the generator and the radio, but then you have to correct the meter reading to get the voltage across the receiver terminals. I haven't tried this yet, but doubt that it will make much of a difference in the results. Ed

From Lester.Veenstra at intelsatgeneral.com Fri Mar 4 07:50:29 2005
Subject: [R-390] R-390A sensitivity measurements

"See if the noise out of the radio goes up. If it does then the whole front end match thing is not an issue"

Again Bob has come back to the key point. If the interest is in coming up with numbers to make a radio look good, then there needs to be a commonly used "interface" pad (or no pad at all).

However if the interest is in getting the most sensitive receiver operationally, than it should be connected to the antenna it will be operated on, and with signal injected via an independent antenna, the front end adjusted for optimum.

In the absence of that, and in recognition of the fact that most of us use multiple antennas, an alignment with a 50 ohm source signal generator into the standard configuration of one side the standard balanced to external input and the other side of the balanced line to ground is most practical. Then, in the few cases where the ambient noise from external sources is not significantly in excess of the radio's internal (input terminated) noise, and when the trimmer adjustment does not produce a peak within its range, you might want to consider an antenna specific front end only re-alignment.

The antenna is what we care about. If you could set up the generator to duplicate the antenna then you might be able to directly measure what is really going on. If you run a vector network analyzer into the antenna you can get a pretty good idea of what it looks like. That sounds like a lot of work though ....

The easy test is to hook the antenna to the radio. See if the noise out of the radio goes up. If it does then the whole front end match thing is not an issue. With a reasonable R390 and even a fairly short antenna I pretty much always seem to pass this test. The only time it can be a problem is above about 16 MHz after the band dies. Take Care! Bob Camp KB8TQ Lester Veenstra

From: tetrode at comcast.net (John KA1XC) Date: Fri Mar 4 11:43:38 2005
Subject: [R-390] R-390A sensitivity measurements

I have to disagree here, I think aligning this receiver front end to a (freq dependent) antenna load is falling off the deep end of the RF sensibility curve; for one thing you can kiss your RF deck coil tracking goodbye. Is anyone actually doing this? (the aligning part, not the kissing part!).

The 390x antenna trimmer circuit is designed to tune out only *small* amounts of XC or XL present at the antenna input, and it can do nothing to compensate for a mismatch in the R component because the turns ratio in the RF transformer Primary to Secondary windings is fixed and so is the degree of coupling between them.

If you really have a bad antenna mismatch and you really really want that last dB of performance from your setup then put an antenna tuner/transmatch device inline and tune it up with a TX or MFJ-259B, they work as well in the receive direction as well as in the transmit direction ya know..... 73, John

From DJED1 at aol.com Fri Mar 4 12:39:29 2005
Subject: [R-390] R-390A sensitivity measurements

I agree with John about not aligning the radio to the antenna- too much variation in impedance over the band. I use an antenna tuner on my wire antenna and logged the settings for each frequency of interest using an MFJ antenna analyzer. The tuner settings show a LOT of antenna impedance variation, especially below 4 MHz. Of course, the radio is now looking into 50 ohms, but it's close enough for Guvm't work. Certainly, for those of us in noisy suburban locations, a tuned antenna provides a high enough noise level that I don't worry about that last 0.5 dB of sensitivity. That's what I did today- put the signal generators away and tuned up the radio to some interesting SWBC. Ed

From mikea at mikea.ath.cx Fri Mar 4 12:50:14 2005
Subject: [R-390] R-390A sensitivity measurements

But ... You're actually using the radio to listen to radio transmitters? You aren't using it as an instrument by which to evaluate siggens and other test equipment!

Fellow list members, I appeal to you: Can we permit someone who behaves like this to remain subscribed? ;=) for the humor-impaired, and 73, de -- Mike Andrews

From chacuff at cableone.net Fri Mar 4 13:31:46 2005
Subject: [R-390] R-390A sensitivity measurements

I believe antenna tuners fool your radio by presenting a controlled impedance thus making solid state transmitters happy but they don't make your antenna system any more efficient. My guess is that received signal strengths with the antenna tuner in line and tuned are probably the same or maybe even lower as without the antenna tuner and antenna directly connected in an accepted manner and radio trimmer peaked. Just a guess....haven't tried it....yet! Cecil...
>

Hi,

If you want a picture rebuild of the RF deck, do a Google search for R-390A geartrain rebuild. I found at least two sets of step by step rebuild pics.

Regards, Bob

One of these days somebody needs to do a close up video of *exactly* how the RF deck goes together mechanically. It would take some time, a good deck, and a *very* good camera. I think I strike out on all three.... Take Care! Bob Camp KB8TQ

From chacuff at cableone.net Fri Mar 4 18:18:50 2005
Subject: [R-390] R-390A geartrain rebuild pics

You might want to forward the links. I did a google search and got zip. Did get Nolan's entry into the pearls of wisdom. Don't know why my google search would turn up any different stuff. Cecil

From chacuff at cableone.net Fri Mar 4 18:20:55 2005
Subject: [R-390] Filter cap rebuild pics

Any interest in a documented rebuild of the R-390A filter caps. I am about halfway through that process and have documented it with digital pics. So far it's not a bad job. Got about 2 hours in the project so far. Cecil...

From ham at cq.nu Fri Mar 4 18:26:04 2005
Subject: [R-390] R-390A sensitivity measurements

Hi, If when you *use* the radio the noise out goes up when the antenna is attached then you do not need to do anything at all. The front end of the radio is not limiting what is going on.

If this is not the situation then the best thing to try is an antenna tuner. This will allow you to match things up better, add a little front end selectivity, and generally will not create distortion. There are a variety of outboard tuners out there that allow you to do this. Since you really need this kind of thing at the higher end of the radio's range you can also build one fairly easily.

To the extent that the antenna tuner is "tuning the radio" then it's a perfectly reasonable thing to do. If you have an idea that your antenna looks like 300 ohms broad band, then by all means align your radio out of 300 ohms. The main effect will be to better center up the antenna trimmer for use with a near 300 ohm antenna. Since the range of the trimmer is limited it makes sense to center it up as best you can. The radio will not provide a 300 ohm "match" but then it doesn't supply a 50 ohm or 125 ohm match either.
If you want to go really nuts:

1) Grab a "correct" coax connector for the balanced input and a chunk of "correct" coax.
2) Run it over to a nice little box and mount a properly designed 1:1 balun to drive the coax.
3) Put in a "bypass" switch and a simple T match tuner for 10 to 30 MHz

On receive the tuner is not so much providing a proper load to the antenna as taking what you get from the antenna and doing the best job of shoving it into the radio.

I would guess that if this won't peak up the antenna to override the front end noise then you have a really rotten antenna (or the band is *very* dead). Take Care! Bob Camp KB8TQ

From roy.morgan at nist.gov Fri Mar 4 18:38:10 2005
Subject: [R-390] R-390A geartrain rebuild pics

2) On the R-390 site of KK4DF: which includes:

Parts kits are now available to help with your rebuilds. These include:
<http://r-390a.us/parts.htm>Capacitor-only kit (Orange drops, tantalum, C327)
<http://r-390a.us/parts.htm>Complete Rebuild kit (above plus filter caps, inrush limiter, precision 10-turn pot)

<http://r-390a.us/parts.htm>Front Panel kit (stainless steel screws and conical lock washers)

His Gear train rebuild page: <http://r-390a.us/gear_train_rebuild.htm>

3) Scott Seickel's detailed set of photos and instructions (referenced in the above link):

"Scott Seickel rebuilds an R-390A RF Deck Gear Train and shares his photos and step by step instructions. " <http://militaryradio.com/r390a-rfdeck-geartrain.html> Roy

From wd8kdg at worldnet.att.net Sat Mar 5 12:49:22 2005
Subject: [R-390] Searching: R-390A & Signal Generator

Greetings to All,

Sometime in the near future I hope to acquire a R-390A, (still looking) and then a signal generator. Neither has to be museum quality as far as looks. The quest is a good receiver to go with a Johnson 500 I restored this winter.

With that said, any extra R-390As floating around the shack? Would like to find one near the Pacific Northwest. I'm retired and would like to save on shipping cost. The big question is on a signal generator. Don't need the latest and greatest, thinking something along the lines of a URM-25. What attenuators and or db pads would be needed, at a minimum, to go along with a URM-25? My thought is I can rebuild, restore, or trouble shoot whatever follows me home.

Help, comments, tips, are appreciated. Tnx & 73's wd8kdg Craig

From DAVEINBHAM at aol.com Sat Mar 5 13:56:04 2005
Subject: [R-390] Re-stuffing bathtub capacitors

Al, I am very interested in finding out how you re-stuffed the bathtub capacitors. I need to do that for my SP-600. Kindest regards, Dave

From ham at cq.nu Sat Mar 5 19:21:34 2005
Subject: [R-390] Searching: R-390A & Signal Generator

Hi, Depending on the local market and possibly the phase of the moon URM-25's and HP-606's move around relative to each other. Both are fine generators for setting up a R-390. About all you might need to go with them is a single pad in the 6 to 20 db range. A lot of people run them with no pad at all.

A VTVM is about the only other "major" piece of test gear that you need for an R-390. Nothing fancy is required, the auction sites have a number of them pretty darn cheap these days. Take Care! Bob Camp KB8TQ

From N4BUQ at aol.com Sun Mar 6 21:39:00 2005
Subject: [R-390] Planetary Gear Assembly

Just thought I'd pass along a tip. When I tried to reassamble the three planetary gears to their mating gears, I could never get them to go together without something going wrong. Preloading the anti-backlish gears and holding them with hemostats just wouldn't work. The assembly would bind and be misaligned. I never did figure out what caused this, but I did figure out a way to successfully reassamble them.
The method I used was to assemble the planetary gears without the clip that holds the anti-backlash gear in place. The assembly will go together quite easily this way and there is room for the anti-backlash gears to move out of the way slightly so that they don't interfere in this first step. Of course, you pre-load the anti-backlash gear in the center at this point as it can't be done later.

After tightening the three screws that hold the planetary gear shafts, you can then load each anti-backlash gear, one at a time. There is sufficient clearance just above the center gear to allow this. It's a bit tricky to get both nibs of the internal spring into their respective holes in each half of the gear, but it

can be done. With the anti-backlash gear cocked just a bit to clear the mating gear, you can put a few teeth of spring load on the anti-backlash gear half and then let it slide down onto the mating gear. Press the "C" clip in place and proceed to the next gear. It really worked out rather easily.

AND, if you want some real fun, take a toothbrush and some Brasso(tm) to that big brass gear assembly that is comprised of two larger gears that are riveted together. Wow. Does that thing ever shine up nicely! Yeah, I know it won't work any better shiny than dull, but there's just something about a sparkly gear that satisfies my R390A rebuilding soul. Happy rebuilding, Barry(III) - N4BUQ

From n4buq at aol.com Mon Mar 7 10:27:27 2005
Subject: [R-390] Geneva Mechanism question

I've started reassembling the geartrain (yes, I work slowly with limited time). Since I disassembled the Geneva mechanism, I started there. When I disassembled it, I didn't pay too much attention to how it worked. When I reassembled it, though, I was pleasantly surprised. The Geneva mechanism of the subassembly is common enough (although the intermittent action of having different groups of triggering gears is a bit unique), but the other part is quite amazing too.

The little ball bearing's action with the larger part of the Geneva mechanism is quite unique. The ball bearing along with the accompanying slots and hole are a marvel to see in action. It allows the main gear to make nearly two complete revolutions before coming to a hard stop. I don't think I've ever seen anything quite like it.

Does this part of the mechanism have a name? It is perhaps one the cleverest part of the entire geartrain. If you do decide to do a rebuild, I would definitely recommend taking this thing apart just to see how it is designed. Mine had a bit of crud in the gears that needed to be cleaned out (and besides, it allowed me to polish the brass outer gear) and it really works smoothly now. Regards, Barry(III) - N4BUQ

From n4buq at aol.com Mon Mar 7 12:22:59 2005
Subject: [R-390] Planetary Gear Assembly

Yeah, I had problems counting teeth too, especially with the halves apart like that. I think I got at least 2 teeth loaded on each one, though. I'm figuring that with three gears, a small amount of anti-backlash tension on each one is sufficient - especially considering how soft those brass gears are.

Interesting idea of the solder. As I said, though, with pre-tension on the planetary gears, I could never get them together without something mis-aligned; however, given the mechanics involved, I could never figure out what was causing the "crookedness" I was seeing. It was so bad that the whole assembly would not slide onto the shaft. The pressed gears in the "front" would be cocked to one side and I just couldn't figure out what was causing it. My new method (while a bit tricky) did work great.

I have a broken bandswitch clamp that I need to get a replacement for; however, once I get that, I can't wait to get this back together and see how much difference I can feel between this one and my first one which I did not tear down. If there's a lot, then it looks like I have one more job to do! Thanks, Barry(III) - N4BUQ

From paul at pdq.com Tue Mar 8 16:03:28 2005
Subject: [R-390] Geneva Mechanism question

Don't forget that these little guys are sensitive to proper spacing on the shaft. They may need very thin shims to get them to not rock so much that the ball bearing slips enough that the band tuning switch doesn't make definitive transitions from band to band going both forwards and backwards. I've run across a few in R-392's (and one R-390A) that had this problem, and I also introduced this problem myself when I wasn't careful. Paul

>
From n4buq at aol.com Tue Mar 8 16:42:52 2005
Subject: [R-390] Geneva Mechanism question

Paul, Thanks for the advice. I'll try to remember to watch that the bandswitch gear makes good, clean transitions.

I placed a 0.003"-0.004" shim washer between the outer gear and the sandwiched plate. It seemed that with the outer gear riding directly against the plate, I could detect a very small of drag. With the shim washer, it is very smooth; however, if this causes too much 'slop', then I'll remove it. Everything appears to be 'tuned' quite nicely here, though. Thanks, Barry(III) - N4BUQ

From N4BUQ at aol.com Thu Mar 10 23:57:30 2005
Subject: [R-390] Another geartrain tidbit

While cleaning and reassembling one of the split gears tonight, I discovered something interesting. No matter how much I wetsanded the faces of the teeth, when I reassembled the halves the assembly would bind and the two halves would not move freely against each other. I had this happen (to a lesser degree) on another gear set and I was determined to figure out why on this one.

It turned out that the half of the gear that has the hub brazed onto it had a slightly convex shape. When I pushed the snap ring down into its groove, it was applying pressure on the flat gear forcing it against the non-flat half and only the outer edges near the teeth were pressing together. Laying a straight edge against the side of the gear confirmed this. It was about 0.015" to 0.020" out of flat.
I was able to use a steel disk (with a hole in it just a little smaller than the OD of the gear and a neoprene hammer to flatten the outer gear. Well, actually, the gear material was a lot softer than I anticipated and I ended up getting it convex in the other direction; however a few taps with another setup and I was able to get it flat again.

Now the two halves rotate quite freely against each other with the snap ring in place and the antibacklash springs are easily set to a tooth or two of tension.

Just thought I'd pass this along. It wasn't easy to see the problem with this one. Barry(III) - N4BUQ

From tetrode at comcast.net Fri Mar 11 13:48:51 2005
Subject: [R-390] Another geartrain tidbit

Interesting find, that is one of those arcane problems which are only discovered only by those who tear down the gear train.

The 390A currently on the bench has what I eventually started to call the "RF deck from hell" as it had so many problems. One of those involved the split gears, and *none* of them moved. As you discovered, the two gear halves had to be compressed so much for the snap ring to take hold that the whole thing bound tight. Upon inspection each was found to have one of its gears out of "flat" and I proceeded to fix them in a similar fashion to what you described.

All seemed OK until the gears went back on the shaft during reassembly and then I noticed they were now wobbling when rotated. Took them off and apart again and gave them a closer look and what I discovered made me feel sick - the center hubs had been soldered/brazed into the gear crooked!

These were obviously defective parts, and this deck likely had this problem since day one out of the factory. My fix was to pick up some replacement gears from Fair and things went back together smooth after that. The RF deck was a '63 Teledyne BTW. 73, John

From N4BUQ at aol.com Fri Mar 11 17:05:30 2005
Subject: [R-390] Another geartrain tidbit

I noticed the same thing. Some of mine wobble just a bit, but not enough to matter. There is one (not a split gear) that drives the bandchange to the crystal deck and the MC section of the VeederRoot counter that wobbles a bit more than the others. It doesn't really affect performance so I just decided to leave it alone.

It's odd that some of the gears were manufactured to very precise standards, but then some of the quality steps like the brazing of the hubs to the gears didn't get a lot of QC. Barry(III) - N4BUQ

From N4BUQ at aol.com Fri Mar 11 23:25:49 2005
Subject: [R-390] Geartrain Alignment Question

As soon as I get the replacement gear clamp, I'm ready to begin aligning the gears and cams; however, I realize there's something I'm not sure how to do.

There is a relationship between the Geneva drive and the 7.000+ position on the cams. I don't know how to determine this. I assume that when approaching the 7.000+ position, the Geneva drive's gearteeth are in a certain orientation. In other words, it has most likely just clicked the bandswitch gear just before or just after the 7.000+ position. The gear teeth on the Geneva drive are intermittent and do not click the bandswitch between every band and there is some correlation between it and the 7.000+ position, I just don't know what it is.

I have Scott's CD that illustrates the rebuilding steps and it goes into detail about setting the actual bandswitch with respect to the 7.000+ position, but it doesn't mention the relationship between that position and the Geneva drive.

Can someone help me out here? Hopefully I'm being clear with the question. Thanks, Barry(III) - N4BUQ

From N4BUQ at aol.com Sat Mar 12 09:15:00 2005
Subject: [R-390] Geartrain Alignment Question

Joe Foley pointed me in the right direction. On page 112 of the TM 11-5820-358-35 Field & Depot Maint Manual, it shows the position of the "intermittent switch drive". Not too absolutely clear as to how to verify it's set right, but it gets me in the ballpark. Thanks! Barry(III) - N4BUQ

From N4BUQ at aol.com Sat Mar 12 09:42:54 2005
Subject: [R-390] Geartrain Alignment Question

...and page 153 of TM 11-856A Technical Manual give me a procedure. Looks like I'll be able to figure this one out. Barry(III) - N4BUQ

From: Flowertime01 at wmconnect.com (Flowertime01@wmconnect.com)
Subject: [R-390] Gear Train Alignment At +7.000

Barry, I think the item we are missing here is some black lines scribed on the cams and RF subassembly. Hopefully your receiver still has them. These lines were just inked on during manufacturing. Aggressive cleaning of the chassis is known to remove the lines.

At +7.000 a line on each cam will line up with a line on the RF deck face. At +7.000 all the cams are mostly pointed up, and it makes it easy to check the alignment.

Two ways into the alignment after replacing the clamp (Quick, Full Process) Depending on the clamp that is being replaced the outcome is more or less precise. If its the 16-32 band, the outcome of a quickie is more positive than if you are doing the 5.-1 band. Always more precision in adjustment is better receiving.

1. Check the zero adjust. This is an eyeball to center it in the midpoint of the adjustment range. Do set it to center.

2. Check the dial counter over run on each end. It should be at least 25 or more on both ends. A. change the zero adjust a little to get both over run counts equal. B. drop the dial cover and reset the over run (this should be followed by a full RF deck alignment). If your receiver has had a full up good alignment, the dial over run should be good.

3. Roll the count up to 7.000+ and look at the cam alignment marks. All 6 RF band cams should have their marks aligned (except the one with the broken clamp).

4. If the-5-1 bank mark is off just a little, you can do a zero adjust of 2 or 3 maybe 5. If its off more than that, then a mechanical cam adjustment and signal alignment are in order. (The receiver will work as is, some of us are just fanatics)

5. If some of the other band cams are off, consider a full mechanical alignment and full RF alignment. Mechanical being an eye ball thing. RF being the signal generator and slug alignment.

6. When installing the new clamp consider where the clamp bolt goes and where the spline wrench is going to be placed to adjust the bolt. Once you get the new clamp on the shaft, rotate the clamp so you can get the wrench on it. Rotate the cam to the alignment lines. And tighten the clamp.
7. If you had a full up running receiver, you can just put the new clamp in on the visual alignment and be done with it. If the receiver is carefully aligned, then loose and broken clamps can just be

reset, replaced and your good to go. The mechanical setting of the clamp should be within the zero adjust range. You are trading VFO frequency against the band pass skirt of the RF band section in use (the one with the to be replaced clamp). The old prior proper planning prevents poor performance applies here. Roger L. Ruszkowski KC6TRU

From r390 at al.tirevold.name Sat Mar 12 13:57:07 2005
Subject: [R-390] Collins versus Curry IF Filters

I recently replaced the failing Collins mechanical filters in my 67 EAC R-390A with three of Dave Curry's Longwave Products filters.

So many people asked me to share my measurement results that I wrote a report and published it.

The report is available in the "Tutorials" section of the "References" page on the R-390A FAQ web site - http://www.r-390a.net Or - from this direct link: **http://www.r-390a.net/Collins-Curry-Study.pdf** 73, Al, WA0HQQ

From r390a at bellsouth.net Sat Mar 12 16:38:02 2005
Subject: [R-390] Tube Sub Question

I'm looking for a sub for the 6BJ6. Is there anything out there in a remote or semi-remote cutoff tube and 150 ma fil current?? Anyone have an extra dozen at less than Epay prices? Thanks Tom NU4G

From r390a at bellsouth.net Sat Mar 12 18:37:29 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

Item nos 5757861780 and 5757957803 Tom NU4G

From chacuff at cableone.net Sat Mar 12 18:48:23 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

The box on the IF deck says it's a rebuild from 83. The seller argues it's NOS and that it's not uncommon for new parts to end up on boxes marked rebuilt. Buyer beware... Cecil...

From: Radiograveyard at aol.com (Radiograveyard@aol.com)
Subject: [R-390] NEW 390A IF and AF decks, you know where

By the looks of the boxes and all the things I have bought from the DRMO and G.L. I think they are both depot overhauls. The depot overhaul items I have now are in similar boxes with the same type of stencils. Pete

From ham at cq.nu Sat Mar 12 20:45:03 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

Hi, Well judging by the only question posted the part is headed for Japan. I doubt our cautions will

mean much. If it's brand new why did somebody swap out the tubes ... Take Care! Bob Camp KB8TQ

From: Radiograveyard at aol.com (Radiograveyard@aol.com) Date: Sat Mar 12 21:18:42 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

Someone with sharper and younger eyes has read the box. If you look at the box where it says "C-C F" means condition code failed!! Condition code "A" is what you want, means new or overhauled. Pete

From ham at cq.nu Sat Mar 12 21:38:44 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

Hi, Well then there's a NOS broken part headed for Japan .... It is nice and shiny though isn't it. Take Care! Bob Camp KB8TQ

From ham at cq.nu Sun Mar 13 09:26:49 2005
Subject: [R-390] NEW 390A IF and AF decks, you know where

Hi, I have worked at a number of places that had source inspection imposed. My conclusion is that it's a very personal thing. In one part of the country you will get a guy who's toughest question is "where do I sign?". In another part of the country you will get an inspector who wants to see the original first article test data on the gear or have the tests all repeated. Oddly enough both inspectors were looking at exactly the same piece of gear bought on the same contract.

Depending on the depot and who was in charge the information on the tags may mean nothing or it may mean a whole lot. Are the philips heads screws painted the proper shade of green? Can you prove that the MFP has no pinholes? I doubt any of us worry a whole lot about that stuff. With a real by the book guy doing the checking it's a failure ...

Bottom line here is still weather we should all be breaking up our R-390's to sell them as parts. To say the least that's a *major* heartbreak issue for some people. I'm in the process of sorting out the R-390 collection in order to thin it out a bit. Needless to say I'm agonizing over this very point. Take Care! Bob Camp KB8TQ

From RLucch2098 at aol.com Sun Mar 13 11:02:39 2005
Subject: [R-390] WTK: Did any R-390's come with Grey knobs?

Hi All; I picked up a Collins R-390, not R-390A! It has Grey knobs & was wondering if any came that way or were they all black? Tnx in Advance. 73..Rich WA2RQY

Roger L. Ruszkowski KC6TRU
Subject: [R-390] WTK: Did any R-390's come with Grey knobs?

Hi, With R-390 paint schemes it's almost impossible to ever say "never". Since the production run of the 390 not an A was quite a bit smaller than the 390A there probably are not quite as many variations. About all I can say is "I've never seen a 390 not an A in anything other than the standard gray front panel black knobs version. Take Care! Bob Camp KB8TQ

The 6BJ6 is base diagram 7cm

Type	Amp.	Cutoff
6AS6	.175	Dual control
6BH6 / 6661	.15	sharp
6BJ6 / 6662	.15	remote
6BZ6	.3	semiremote
6CB6 / 6676	.3	sharp
6CF6	.3	sharp
6DC6	.3	sharp
6DE6	.3	sharp
6DK6	.3	sharp
6EW6	.4	sharp
6GM6	.4	sharp
6JH6	.3	semi remote
6JK6	.35	sharp
7056	.15	sharp

If you are running a string of series filaments and need the exact current to fit the string you have a very small range of choices. If you have a parallel filament you can use the .3 or .35 tubes. The extra .15 current draw will not kill the filament transformer.

These will all plug in with no problem.

The grid bias point may be off and the tube may not work well.

You offer no B+ limit but if you are under 300 volts you will be OK. If you inspect the exact wiring on the tube socket, several more tubes may be used. Schematic may give a clue, but you need to look at the circuit. The Grid 3, Internal sheild and cathode may be wired such that tubes with other base diagrams may also work in your exact application. Roger KC6TRU

From Flowertime01 at wmconnect.com Sun Mar 13 12:41:33 2005

I care not what the manuals say about you can do a band switch alignment with a meter probing into the pins of tube sockets. Sure you can do a lot of things. The question is should you do it?

Drop the front panel, pull the RF deck, turn the deck upside down on the bench and put the MC knob back on the shaft.

Roll the MC through the ranges both up the bands and down the bands. Look at the switch and the amount of contact mesh at each wafer section and at each change point going both up and down. As you move the MC change knob through the receiver range you will see the band switch change as you roll up or down across (.5-1 , 2-3 , 4-7 , 8-15, 16-31). At each change point, the switch should move over one contact and seat as the MC change knob sets into its detent position.

Now this is a judgment call. Depending on the free lash slop, mechanical exact construction of any given wafer and straightness of the switch assembly, how much contact mesh you will get varies. Resist thoughts of touching or adjusting wafer switch contacts of section. Just do not go there.

Now looking at the switch contacts do the adjustment of the band switch. Your goal is to get the maximum contact overlap at all switch sections on each band.

You will find that one end the wafer is just making to the left of a contact, and when you dial to the other end of the receiver, the same wafer will just be making to right of a contact. One switch wafer will be lining up real good and another wafer will just barely be making contact. Remember, that receiver has worked for over 40 years, what ever adjustment is needed is very small.
The idea of doing this adjustment visually is to get maximum switch contact area. When you are doing the meter check, the meter current is very low and contact will "test" OK. You can get close with a meter and start burning the switch contact in actual use. Also the meter test is only one switch section. One section may be making contact while another switch section is not quite making it.

The first indication you may need a band switch adjustment is when you change bands and have to roll over (up or down past) the switch change point to get switch contact.

As long as you have the RF deck and crystal OSC deck there on the bench, check the crystal oscillator switch also. It chages every MC. Again contact area will drift from end to end. Also some contacts in the mid range may not be exactly spaced so some judgment must be applied to where best to set the switch. Check the contacts tuning both up and down as the gear lash will be different each way.

Roger KC6TRU P.S. Am I using the correct detent spelling here?

From sparks at codepoets.com Sun Mar 13 12:47:01 2005
Subject: [R-390] TMC SSB Converter CV-1722

I know everyone will shed a tear but at the Vienna VA hamfest this morning I bought a TMC CV-1722. While walking out to the car a guy stopped me and told me he just tossed out four of them last week. His wife wanted them out of the garage. UGH... I need a few parts for this unit and want to know if someone restores them. The front panel will need painting and lettering. It's an early model, SN 53. It's missing the indicator lamp "U" on the front panel, and the power cord and jack. Anyone have these parts available? Thanks 73 Tom

From odyslim at comcast.net Sun Mar 13 13:03:58 2005
Subject: [R-390] TMC SSB Converter CV-1722

Rick Mish Restores them. He does beautiful work. 1-419-255-6220 Scott W3CV

Rich, The things that have been done to these receivers since they were manufactured are both extreme and unimaginable.

Read the NOS line on the AF deck. The knobs were not original issue. They may be GI replacement parts, or striped and repainted.

My contact with R390's was the 69 - 75 time frame. I was well aquatinted with most that made it to the Pacific area. I worked with guys who had become aquatinted with the ones in Europe, Africa and of

course the US. The knobs were black back then, and only black. Knobs no longer black were made black. We saw no knobs that did not start life as black. Black had variation but did not extend to gray. Front panels were gray. Roger KC6TRU

From chacuff at cableone.net Sun Mar 13 13:39:05 2005
Subject: [R-390] WTK: Did any R-390's come with Grey knobs?

I've only seen black... Cecil..

From doscorazonessa at onebox.com Sun Mar 13 19:03:29 2005
Subject: [R-390] Need to locate and purchase a Collins R390A

Can you help me locate and purchase a Collins R309A receiver?

James K. Valentine Pres/CEO
Dos Corazones S.A.,Eng.Consult.
#1202 Hillside Cafe/Mary Anne Marlow
Flam?ngo Bay
Santa Cruz,GTE
Costa Rica,05150
E-mail: doscorazonessa@onebox.com
Tel:(506)653-8574or653-8553
FAX;+(506)654-4226
Cell:(506)815-3384

From tetrode at comcast.net Sun Mar 13 19:07:29 2005
Subject: [R-390] Painting International Meters - need some advice

Has anyone ever painted International meters? Most 390 meters I've seen have a metal faceplate that easily detaches and is no problem to refinish. Now I've got a pair of International meters I'd like to do but they are built differently.

They have a rather solid (milled?) faceplate that can be removed but the glass stays attached. First you have to pry out the rear rubber gasket that's between the round meter case and the faceplate. Then there are 4 reverse threaded hollow-center fasteners to remove.

Now the faceplate + glass is free from the meter case and the meter "innards" are exposed, which is usually something I prefer to avoid. But the real problem is that the glass is still attached to the faceplate with a gasket, and I don't know if it's permanently glued in or not. And with the glass still attached, the faceplate is really not in any better state to refinish than if the whole meter was simply left intact and the glass masked off. What to do??

Here is a pic of the meter when I had it apart a few weeks ago to take a peek, the glass really is in the faceplate but it's not visible in the pic:
http://img198.exs.cx/my.php?loc=img198&image=dscn0038c5gy.jpg thanks, John

From N4BUQ at aol.com Sun Mar 13 20:51:26 2005

Subject: [R-390] Painting International Meters - need some advice

John, I have a meter just like the one you show that I'd like to have painted (powder coated) as well. So far, I haven't gotten up the courage to take the cover off and expose the innards. Quite frankly, just looking at the picture of your exposed meter is sort of scary :~)

I'll be interested in knowing what you find out concerning removing the glass from the front case. 73, Barry(III) - N4BUQ

From tetrode at comcast.net Sun Mar 13 20:49:07 2005
Subject: [R-390] Can you help me locate and purchase a unit?

Well, occasionally they show up for sale on this list, you just have to be patient and wait around, or maybe someone will contact you.

Then of course there is Ebay, there are always some for sale there, in all kinds of condition.

Fair Radio sells used/repairable and used/working units, but even the later can require quite a bit of work. Depending on your technician skills you can work on it yourself or contract it out to one of the folks that does restorations, there are a few listed in the References/Web page section of the R-390 FAQ page at http://www.r-390a.net/

Local hamfests and electronics fleamarkets usually are a good source too, many of them will be starting up soon as spring and summer approach. That's all I got! 73, John

From dougnhelen at moonlink.net Sun Mar 13 21:22:10 2005
Subject: [R-390] Boonton 74A Capacity Meter

I hope this is appropriate. With all the interest in checking capacitor values, I have available a Boonton lab grade Capacitor meter. It measures from 3000pf to 1pf full scale. Analogue and in great shape. . Reasonable. Contact me if interested. Doug K6JEY Long Beach. Ca.

From Flowertime01 at wmconnect.com Sun Mar 13 21:52:41 2005
Subject: [R-390] Meter glass stuck to meter face.

Fellows. Its the old meter glass is stuck to the meter face trick. Sorry you both have old rubbers. This is quite common and not just R390 related.

Its skill and craft time. Get out the exacto knifes and do some surgery. I would recommend some solvents, however you have exposed meters and solvent in the jewels could be worse than the cure.

Start with two knifes or a couple razor blades. Do not respond if blood becomes involved. (be careful) No one on the R390 net will want to hear about it.

In easy with a blade between the glass and the rubber gasket. Do not pry at large angles. Try not to mark up the meter face with a blade point. You will likely need to work around the whole meter face.

What do you fellows plan to do to create new meter face art?

There are some real nice new art coming off the printers. However the problem is getting that ink onto a surface with stick stuff that will really stay on a meter for the next unpteen years. Roger KC6TRU

From N4BUQ at aol.com Sun Mar 13 23:20:38 2005
Subject: [R-390] Geartrain pic

Just posted a picture of my almost-ready-for-prime-time geartrain.
http://members.aol.com/n4buq/r390a/ (Scroll down to the bottom of the page) Barry(III) - N4BUQ

From huffb at avalon.net Mon Mar 14 04:02:54 2005
Subject: [R-390] Lankford 2 diode agc mod problem

Has anyone experienced failure of one of the ssb diodes used in the Lankford mod when switching between Med and Slow positions of the agc switch? I saw a reference to this on a web site that suggested this possibility and recommended placing either a mov or back to back zener diodes in the circuit. I've never heard of this before, any thoughts?-Brad

From ham at cq.nu Mon Mar 14 07:28:05 2005
Subject: [R-390] Lankford 2 diode agc mod problem

Hi, You are dealing with fairly high voltages in the circuit. Depending on the diodes you use this may be an issue. It's probably easier to just use diodes rated high enough to withstand the transient than to monkey with more parts in the radio. Take Care Bob Camp KB8TQ

From djmerz at 3-cities.com Mon Mar 14 11:54:36 2005
Subject: [R-390] Power connector R-390 (non-a)

Hi, I came home with an R-390 from the Puyallup WA swapmeet. I think I was doomed to have one if the price was tolerable. Its serial number is 2064. It has both covers, seems to have good mechanical mechanism, panel excellent, knob paint very worn and reportedly operating but weakly according to the seller that I trust as a good guy. It has ss diodes stuck in the 26z5 sockets and a series of 5 ohm resistors (7 of them = 35 ohms) stuck in the appropriate pins of the ballast tube socket. I assume this should be about 50 ohms instead, as discussed here for the 390a, as a substitute for the 3tf7??

I don't have a power connector/cord - are these available from a known source or does someone have an extra?

I was surprised that the tube sockets for the 26z5's are ceramic - was this a heat consideration decision in the design ? I usually think of ceramic for high electrical insulating quality.

Other items seen at the meet, an R-391 asking $800, which I looked at initially and thought was a 390 but later when I stopped to talk to the seller I realized it wasn't a 390. The tag indicated it was an RCA model. It was missing the keys that go in the knobs and condition was undetermined but it looked very good from the outside. A 390a, asking $600 as I recall. I don't know if either of these sold.

Any help with the power connector would be appreciated, thanks, Dan.

From R390rcvr at aol.com Mon Mar 14 12:31:59 2005
Subject: [R-390] R-390 power connector

Dan: The original connectors are fairly hard to come by. Fair used to have a similar connector, with a dog house shape, which did work OK. Surplus sales of Nebraska had one that looked ok but required some filing to fit. I certainly have seen a number of radios jumped with Molex style connectors. If well insulated, they probably work OK.

Occasionally they show up on ebay. Be sure that it is an original, not the doghouse one, which are often advertised as original. I do believe they work OK, but aren't original.

The original ones I have seen go for 25-30 dollars. I don't know if William Perry might have some. Anyone else know of other sources? Randy Stout

From W1RC at Verizon.net Mon Mar 14 13:26:14 2005
Subject: [R-390] FS: MILSPEC 1" Panel Meters NB: Not Original!!!

I have four beautiful MILSPEC 1" square meters for which I have no practical use. These will fill the front panel holes perfectly until you find the correct meters for your R-390/390A. Scale is 0~50 mA.

They are brand new, black metal meters with four mounting screws. They were made by A&M Instrument. I don't know where my father-in-law got them but they were found in the cellar so here they are..... $10.00 plus a couple bucks for postage. Limit of two to a customer please. Reply by e-mail if interested. 73, Michael Crestohl W1RC

From hankarn at pacbell.net Mon Mar 14 14:47:30 2005
Subject: [R-390] R-390 power connector

I ordered 5 from Bill Perry a few weeks ago for $29.99 each. Hank KN6DI

From w5or at comcast.net Mon Mar 14 15:04:04 2005
Subject: [R-390] R-390 power connector source

Here is the contact info for Bill Perry. Landline call preferable over emails.
http://militaryradio.com/Images/WilliamPerryCompany.jpg (posted with permission from Perry Co.)
Don

From redmenaced at yahoo.com Mon Mar 14 19:30:06 2005
Subject: [R-390] Costa Rican?

Could that guy from CR e-mail me again, I lost his address and have someone he can contact in Mexico that HAS an R-390!! Joe

From levyfiles at att.net Tue Mar 15 02:22:44 2005
Subject: [R-390] grease

I use gun grease. The stuff you put on a semi automatic pistol instead of oil. You can buy it in small quantities. Try a gun store. It comes in syringe type devices.

Trust me, if you put it on a pistol you can put it on a radio! Both made for the same guv'ment Bill N2WL

From rbethman at comcast.net Tue Mar 15 15:23:54 2005
Subject: [R-390] grease

There is also a gun lubrication product that one MIGHT consider, it is "anhydrous graphite". I would ONLY use it on the gear train, and NEVER inside the R-390(*). This being that graphite IS conductive. Bob - N0DGN

From k3pid at sbcglobal.net Tue Mar 15 17:54:58 2005
Subject: [R-390] R390 Meters

I suppose a guy would have to take out a second mortgage or sacrifice his first born to get a good looking pair of meters for his R390. 73 K3PID

Nothing better than a warm pair of 4-400s on a cold winter night! Well, maybe.

From terry_rob at hotmail.com Tue Mar 15 19:13:53 2005
Subject: [R-390] 2kc. Filter for R-390A

HI, Folks: I have an E.A.C. R-390A that was manufactured in 1960. Now I am having some trouble - the 2kc. filter has "died". I previously had the same trouble with the 4kc. filter and was able to get a replacement which I fitted from Fair Radio Sales. Now I think Fair Radio no longer has any filters to sell. Anyone know where I might be able to obtain a spare filter, please.

From chacuff at cableone.net Tue Mar 15 20:53:57 2005
Subject: [R-390] 2kc. Filter for R-390A

Best bet is to watch the auction site for a used IF deck. Cecil...

From DJED1 at aol.com Tue Mar 15 21:04:30 2005
Subject: [R-390] 2kc. Filter for R-390A

Occasionally, I used to see stand-alone filters also. Do a search for filters or Collins. Ed

From chacuff at cableone.net Tue Mar 15 21:05:48 2005
Subject: [R-390] R390 Meters

Last ones I saw sold went for $150+ for the pair.... Cecil...

From robert.boyd at sdc-dsc.gc.ca Tue Mar 15 21:12:14 2005
Subject: [R-390] grease

Your suggestions are appreciated, but I personally would not want to use powdered graphite in close proximity with RF circuitry, because sooner or later this stuff is going to migrate and cause all number of conductivity problems. Comments?

From Flowertime01 at wmconnect.com Tue Mar 15 21:40:30 2005
Subject: [R-390] Need 2KC Filter see Collins versus Curry IF Filters

Terry, Last week end AL Tirevold put up a post on using Curry filters in place of the Collins filters. You should be able to install one of these to get your 2KC bandwidth back in operation. We been solid stating 26Z5 for a long time. And doing all kinds of mods to work around ballast tubes. Now we are going to have to start modifying around the mechanical filters.

The report is available in the "Tutorials" section of the "References" page on the R-390A FAQ web site - http://www.r-390a.net Or - from this direct link: http://www.r-390a.net/Collins-Curry-Study.pdf 73, Al, WA0HQQ

Look these web pages up and give Al some E-mail if you need to go this route and do a curry filter. Roger KC6TRU.

From rbethman at comcast.net Wed Mar 16 09:20:54 2005
Subject: [R-390] grease

Actually, I have NOT found there to be a migration problem. As with ANY lubricant used on the gear train, "Just a little dab will do ya!". The gears AREN'T making "wild" rotations of high RPM.

Since this particular lube is wet when applied, it stays where you put it. I use it, and find it hasn't migrated in over 5 years. The "train" is smooth as silk. This same tube has lasted for MANY uses for about 12 years, and looks like it will last at LEAST another dozen or so.

It is about a half or three quarter ounce tube.

I only apply it to the shaft to gear locations, NOT on the teeth themselves. In that location I use a Silicone Grease.

No issues with it or the other getting into modules! Bob - N0DGN

From robert.boyd at sdc-dsc.gc.ca Wed Mar 16 10:01:40 2005
Subject: [R-390] grease

Bob: So yours is wet (what a line) Possibly I was quick off the mark as the graphite lube that I was referring to is/was powdered and when applied resulted in overspray! Robert

From n4buq at aol.com Wed Mar 16 10:24:57 2005

Subject: [R-390] Cap Question

Looking at the caps in my "new" R390A RF deck, I'm considering replacing the three brown beauties in it. I'm curious, though, about two of them. They are used in the heater thermostat circuit of the crystal oscillator can. In the picture referenced below (thanks, Don), they are the big, yellow ones in the upper right corner:

http://militaryradio.com/Images/390rfd.jpg

The heater voltage is 6.3VAC and I'm wondering why the designers used 400V or better caps here. Is this necessary because the noise spikes are considerably larger than 6.3V or is it possible that these were just handy since there were so many other 0.1mfd @ 400V caps used in other places in the radio.

Any comments? Thanks, Barry(III) - N4BUQ

From chacuff at cableone.net Wed Mar 16 10:42:11 2005
Subject: [R-390] Cap Question

Looks to me like they have already been replaced. Someone may have just used what was on hand. Looking at the solder joints and the insulating tubing it looks like recent (relative) work. Maybe from a Mil. Overhaul.

From n4buq at aol.com Wed Mar 16 11:33:02 2005
Subject: [R-390] Cap Question

I should clarify. My RF deck has the original brown beauties in it. I just used the picture as reference to show which caps I was talking about. I agree: these look like they are replacements.

In my first RF deck rebuild, I replaced these with 400V Orange Drops, but they were a real pain to position and I was wondering if ratings like this are needed in this circuit. Thanks, Barry(III) - N4BUQ

From rbethman at comcast.net Wed Mar 16 11:36:09 2005
Subject: [R-390] grease

Yes, as originally stated - "Anhydrous Graphite". It IS in solution. I don't remember "exactly" with what, BUT it is. It applies "like" grease out of a squeeze tube.

The spray type lubes NEVER get applied in ANY of *MY* radios. I do not care if it is molybdenum disulfide, OR silicone.

If you ARE spraying - YOU don't know WHERE the overspray goes! I apply by toothpick, "Q-Tip", or other VERY directive means. Sometimes syringe and fine gauge needle.

An for Lord's sake - STAY AWAY from WD-40! It is NOT a lubricant! READ it carefully! The "WD" stands for "Water Displacer". Best and almost ONLY use for THAT *crud* is in locks that are exposed to the elements. I.e., on sheds, trailers, and perhaps auto door locks after exposure to heavy rains. Always follow WD-40 up with a REAL lube! Bob - N0DGN

From djmerz at 3-cities.com Wed Mar 16 12:24:48 2005
Subject: [R-390] grease

Hi, what brand/type of silicone grease do you use? I hardly ever am tempted to use silicone grease because I recall that it is near impossible to clean from a surface once applied but my attitude is biased by my work experience where we used it routinely on O rings for vacuum seals because of its very low vapor pressure. But it had to be kept away from any surfaces that we wanted to be clean because it could not routinely be removed by vapor degreasing in some pretty potent degreasers. I'm aware it has outstanding dielectric properties and is available in many varieties including some that are sold as lubricants. So far I've been using synthetic Mobil 1 gear lubricant on the gears with the hope that it wouldn't gunk up as quickly as other types or evaporate and leave a residue. Maybe silicone-based lubricants are a choice I should reconsider. I'm cleaning up an R-390 and will be re-examining my choice on what to put on the gears soon. I've been happy with the Mobil 1 so far, about 4 years since I put it on, thanks for the info and any other info, Dan.

From ham at cq.nu Wed Mar 16 17:42:05 2005
Subject: [R-390] Cap Question

Hi, As far as I can see there is no reason at all to *need* 400 volt caps on the filament circuit. There is also no real reason to worry about leakage on filament bypass caps. I would leave them in place unless they are obviously damaged. Take Care Bob Camp KB8TQ

http://militaryradio.com/Images/390rfd.jpg

From djmerz at 3-cities.com Wed Mar 16 18:36:41 2005
Subject: [R-390] R-390 serial number

Tom, in case you're still collecting R-390 serial number data, the one I recently picked up is contract 14214-ph-51-93 ser # 2064. I assume this is an early Collins-made radio as there was no mention of Motorola on the tag. Is this assumption correct? I was checking your list and assumed that a Motorola radio on the same contract number would have Motorola indicated on the tag. In reading Medley's description of the green wheel I was unsure, from what I read, about the differences between the Collins and Motorola with regard to the green wheel. Is it stored in a different place or is it attached to a different location when removing the rf assembly? My green wheel is stored right at the top of the rf gears a little to the left of center of the set. On reading the Medley's material again just now, maybe the point is that there is a difference but it may not be a distinguishing difference between Collins and Motorola sets, perhaps each maker used one of two arrangements or placement of the green wheel. Dan

From andy at champ1.freeserve.co.uk Wed Mar 16 10:37:31 2005
Subject: [R-390] grease

For decades, electro-mechanical telephone exchange equipment (Strowger, or Stepper in the US) used a product called "Oildag" which was a suspension of graphite in oil. This was used in areas where one metal part impacted on another - ratchets, pawls etc, and providing it wasn't applied too liberally, stayed where you put it. This was usually in close proximity to open relay contacts and mechanically operated contact sets and it was normally applied as a drop with a small artists brush. The great benefit was that even after the oil component dried out, the graphite continued to lubricate. The disadvantage was that

the graphite did produce a rather messy appearance.

In the 1970s it was replaced in the UK at least by a specially formulated oil to which a "stickyness agent" had been added but general opinion was that it was never as good as the old Oildag.

Unfortunately, modern exchanges don't require any oil at all - except maybe on the main door hinges!
73, Andy G8JAC

From roy.morgan at nist.gov Thu Mar 17 10:42:17 2005
Subject: [R-390] Cap Question

The yellow caps in the picture are not brown beauties. They are yellow. That means that they are metal film caps, not paper-foil caps. Leave them be.

The fact that they are in the 6.3 volt heater circuit means that any leakage in a cap would not cause the trouble we avoid when we replace paper caps.

In a nutshell:

- The yellow caps are almost certainly metal film and not paper dielectric.
- *Paper* caps are the ones to worry about.
- Leakage in caps in such places as screen bypass spots, and especially plate to grid coupling and most especially in AVC circuits causes trouble.

The heater voltage is 6.3VAC and I'm wondering why the designers used 400V >or better caps here. Is this necessary because the noise spikes are >considerably larger than 6.3V

Yes, switching spikes can be of much higher voltage than the normal circuit voltage, especially when there are inductances involved (which is not the case in an oven heater.)

>or is it possible that these were just handy >since there were so many other 0.1mfd @ 400V caps used in other places in >the radio.

Yes, very likely.

>Any comments?

Leave any yellow caps in place unless you have determined that they are in fact giving trouble.

See: http://www.achesoncolloids.com/doc/pds/Oildag.pdf for the spec sheet from Acheson Colloids, Inc. the company who has the name registered. They put it up in pints and larger quantities.

Grainger appears to not carry it. I have sent a request to Acheson Colloids to find out where I can buy some, and will report the results. Roy

From Flowertime01 at wmconnect.com Thu Mar 17 12:10:31 2005
Subject: [R-390] Cap Question

Fellow's, This is a military receiver. It has / had a logistic support system that spans the planet. As

many common parts are used as possible. Do you really understand how many of your tax dollars are needed every time some engineer introduces another part into any military design. As part of the R390 to R390/A cost reduction program, all the parts would have been reviewed and common parts used. We could use lower voltage rated cap in many places in the receiver. But that a part on a drawing, parts lines of ink in parts manuals. parts laying on depot shelves. More items to get shipped wrong. The driving factors are logistic cost not electronic design. Roger KC6TRU

From jpl15 at panix.com Thu Mar 17 12:27:41 2005
Subject: [R-390] Cap Question

The Work I do (in order to have the money to buy heavy old radio gear!) is involved with the refurbishment and modification of ground support gear for military aircraft.

The actual cost the electronic/mechanical work is in many cases the least of the burden on the project - what must also be considered, as Roger points out, is the logistics, the supply-chain blizzard of paperwork, the required changes to *all* the pubs and docs amd drawings/illustrations associated (they must all be in a standard, prescribed format), the various calibration and maintenance procedures, nomenclature changes, and then there's the *training* issues - the responsible folks in the field need to be brought up to speed on any significant changes - operators, repair folks, cal-labs the various course syllabi need to be updated, the trainers trained....

That's why a 10-32 3/4 cad-plated Phillips pan-head screw can cost $14 each.... not that that's a *good* thing, but factor in all the costs.

An R390A is just one radio - think of the costs of a battleship - every part, every fitting has it's own *coordinated* system of information and logistics, every subassembly, of every major component...

The mind fair boggles.... well, mine does at any rate! ;} Cheers John KB6SCO

From Flowertime01 at wmconnect.com Thu Mar 17 12:35:35 2005
Subject: [R-390] Green Grears

Tom, When used to lock up the RF deck gear train for removal, the gear always went in the same place.

There are several 6/32 taped holes in the R390 gear train frame. At least two of them will hold the green gear without getting in the way when not in use. Us 33's would use what ever location got under our hands first. Where you find a gear mounted today is no clue as to how it was factory assembled. There are some old TM graphics that show gear storage location.

The original R390 TM was photographed from an original production first run Collins. Later changes to the TM were mostly to correct text (and add a few missing sections). The photos did not change. I do not think we can infer anything sacred about the receivers from the location of the gear.

I do not have my R390 TM at hand, Its still packed in the moving cartons. There are differences in the RF deck caps that were added in later production runs. If someone has a TM they may be able to list them for you. There is a short note paragraph in the TM that list what was added when. You can look at your RF deck someday and see if it was real early production Collins or a later production run. Roger KC6TRU

From n4buq at aol.com Thu Mar 17 13:00:57 2005
Subject: [R-390] Green Grears

Is this the same C275 issue (5,000pf to 3,300pf) issue as with the R390A?

From djmerz at 3-cities.com Thu Mar 17 19:51:12 2005
Subject: [R-390] Green Grears

Roger, thanks for the overview on green gear. I haven't studied or even looked at the manual I have beyond the schematics so I need to do a little homework on the mod's that you remembered. I have TM-11-5820-557-35 which is a field and depot maintenance manual from 1962 that I downloaded as a pdf file. I see the types of mod's you mentioned but no dates attached to them. The one thing that caught my eye was two ways that the green gear is used depending on whether mod 1 is present or not. In one case the green side faces the rear and doesn't engage the clutch gear. With mod 1 the green side faces forward and engages the clutch gear. I haven't gotten far enough with my receiver to know the significance of this, but probably obvious when trying to use it?? Does this ring a bell? Later in the manual there is mention of a difference in how the green gear works in early production models - but no mention of whether this has to do with mod 1 or not mod 1. This all is probably of little consequence but interesting to my idle mind, regards, Dan.

From Flowertime01 at wmconnect.com Thu Mar 17 21:37:03 2005
Subject: [R-390] Green Grears

Fellows, I'm sorry I kicked this can. I just have a poor memory of my R390's production models. Better we all go back and read the TM's and consult the archives we have collected. Some new owners are looking for the real truth about the receivers they have, and are entitled to the best knowledge we have. Off the top of my head, I do not know the exact truth. Lets go read the archives again. Roger KC6TRU

From jmiller1706 at cfl.rr.com Thu Mar 17 22:12:51 2005
Subject: [R-390] HP-410C VTVM w/ RF Probe FA

Item #5761440117 Thanks/73 N4BE

From djmerz at 3-cities.com Fri Mar 18 02:04:23 2005
Subject: [R-390] Green Gears

Hi Roger, yes, that's a good idea. I did some browsing on the r390a.net archives and found enough on the function, how-to-use aspects of the green gear to satisfy me for now. I didn't search for more details on various mod's or variations in early production. Regards, Dan.