MILLER AUDIO LLC
Design - Restore - Upgrade

Frequently Asked Questions

Revision I, February 2026

Q1: You removed the Rectifier tube in the Dyna-70 Ultimate Upgrade; isn't this essential to the ST-70 sound signature?

There are lots of opinions on the use of Rectifier tubes. Often these "opinions" are just that and not based on sound engineering principles. In general, use of a Rectifier tube keeps the ST-70 "stock"- the way Dynaco designed it. For purists, we endorse using a "good" Rectifier tube in a stock ST-70, if that is what you appreciate and enjoy listening to. However, there are limits you already know about in access to "good" rectifier tubes, especially if you already own an ST-70 amplifier. Let's review several aspects of Rectifier tubes in ST-70's:

- First, supplies of RCA, Mullard, and Telefunken 5AR4/GZ34 Rectifier tubes are scarce. Not everyone can afford $125+ (Q1/24) for a NOS Rectifier tube. Let's also face the reality that new production Rectifier tubes come from countries that are not friendly to the United States or "the West." The better, new production GZ34/5AR4 tubes such as Gold Lion, Sovtek or Tung Sol are well over $50-60. Ideally, an ST-70 today needs 2 Rectifier tubes given how highly loaded it is and how poorly many new production GZ34's perform, leading to the next point.

- Second, most new production, imported 5AR4/GZ34's are not as well made as North American and Western European 5AR4/GZ34's were made. There are several new production 5AR4/GZ34's, which New-in-Box (NIB) can barely power an ST-70 without stressing the tube and blowing fuses. Search the internet; you will find many reports of NIB imported 5AR4/GZ34's that fail after a few weeks to a couple of months use in ST-70's. As a ST-70 owner, likely you have experienced this already.
    - If you are committed to using a Rectifier tube in your ST70, we suggest using a Tung Sol, Sovtek, or Gold Lion 5AR4/GZ34 for a new production Rectifier tube.
- Third, there some who argue that they prefer a Rectifier tube because it produces "sag" and "distortion" or it "sounds better." Here is the truth about Rectifier tubes in a piece of stereo equipment designed for high-fidelity sound reproduction: You want a dependable, stable, and consistent Power Supply system. You want as little, to no variation (sag, distortion, voltage drop, etc.) in the power supply of your stereo equipment - PERIOD!

    - NOTE: Rectifier tubes in Guitar amplifiers are a different issue! <u>*Often*</u> Guitar players want their amplifiers to intentionally distort and "clip" upon command. However, musicians are *creating music*, not *reproducing* it. Musicians want sound "effects" to make their "signature" sound when they play. ***<u>This is exactly the opposite of what we want in sound reproduction from a stereo system</u>*.**

- Fourth, in the 1960's some of the most iconic tube stereo amplifiers from renowned companies such as McIntosh, Dynaco, and Fisher and utilized solid-state Rectifiers in several amplifier designs. A sample list includes the following amplifiers / integrated amplifiers (most will agree these are some good sounding tube audio pieces):

  Dynaco: SCA-35 & ST-35
  Fisher: X-100-B, X-100-A
  McIntosh: MC-225, -240 and -275

- Finally, the best reason for removing the 5AR4/GZ34 Rectifier is that it does not have enough current to power the 3 added 6SN7 tubes, even with elimination of the Rectifier tube, a stock ST-70 Power Supply system doesn't have the power to run all the heater filaments required in the Dyna-70 Ultimate Upgrade (Capt. Kirk: Scotty, we need more power!)

- In summary, most new tube amplifier-based audio designs today do not use a Rectifier tube and depend upon solid-state rectification for DC power. Here are a few examples of U.S. designed and manufactured stereo amplifiers with solid-state rectification:

  Audio Research: VT-100, VT-200. VTM-200, REF-110, REF-150/150SE, REF 160M
  Conrad Johnson: LP125sa, CL62/SE, CL120/SE
  Miller Audio LLC: Dyna-70 Ultimate ST-70 Upgrade
  Rogue Audio: Stereo 90 /100, Atlas Magnum, Cronus Magnum, M-180

Q2: You removed the Capacitor Can, why?

There was no single reason for eliminating the "cap can"; it is a combination of factors that influenced us to move away from a cap can. Some of those considerations were:

Working Voltage: When used in a "stacked" manner (i.e., 2 or more capacitors in parallel) we can increase the working voltage of the capacitors in our circuit to 700-900 volts upon turn on, settling to 375-400V nominal operating voltage. Most cap cans are limited to about 525-550 V turn-on voltage, settling down to 400-475V nominal operating voltage.

Tolerance: Most multi-section cap cans used in audio today are designed with a tolerance of approx. +50% / -10%. We use discrete capacitors on our Dyna-70 Circuit Card Assembly (CCA) that have a tighter tolerance variation (usually +/- 10% or 20%).

Temperature Rating: Many multi-section cap cans made today are rated only for 55-85^{o}C. Considering the proximity of both power and signal tubes to the Dyna-70 upgrade PCB, and operation with the Tube Cage in-place (which we recommend), we sought an increase in operating temperature margins as a design goal and therefore used 105^{o}C rated parts for the electrolytic capacitor pairs.

Cost: 4-Section electrolytic capacitor cans for the ST-70 are approximately $50+; or approximately $12.50+ per section (not including taxes and S&H fee's). We can use discrete capacitors rated for 400-500V and 105^{o}C and execute a better capacitor filter network and improve voltage and temperature design margins at a lower cost than using a multi-section cap can.

Space: Finally, execution of the Dyna-70 Ultimate Upgrade design, we needed "real estate" between the tubes to host all components, as well as three 6SN7 preamp signal tubes. Likewise, we also had to incorporate the Auto Bias Module and its status LEDs, while maintaining a PCB layout which is

common to both the manual and auto bias component layout and follows the same basic assembly process.

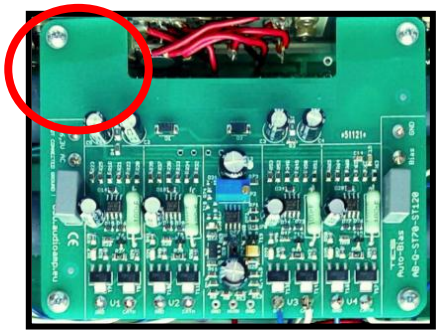
Q3: ANOTHER ST-70 driver upgrade? What makes Miller Audio LLC's upgrade better than other ST-70 Driver upgrades now available?

Good question. If not obvious from this FAQ and our website information, a lot of effort was invested in the Dyna-70 Ultimate Upgrade. The field of ST-70 upgrades is vast with several providers who have been in the ST-70 and Dynaco upgrade market for 20+ years. However, we believe we have the best ST-70 audio upgrade available on the market today. A simple claim, but one listening session is all it takes to make a believer of you too.

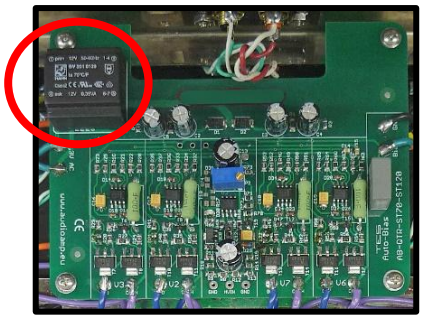
In simple, we use better parts, conservative design values, tight specification of parts & tolerances, the best suppliers in the industry, and we back it up with a great warranty. You get what you pay for at Miller Audio LLC.

Q4: I have seen Forum discussions about the Auto Bias modules; weren't there problems with these? I have seen reports of failure with the Auto Bias modules on the web.

It is true; 6-8 years ago, (approx. 2017/2018) with the first generation of AB modules, there were problems with the 6.3 VAC power circuit which powers the module. This was addressed through the addition of a 6.3V matching Transformer to the module. This is a molded "brick" that was not used on the first-generation bias modules, ref. pics below.



A- First Generation Module



B- Second Generation Module w/ Transformer

Q4: Comparison of First & Second Generation Auto Bias Modules

It was also necessary to protect the Auto Bias module in case of tube failure. The latest generation of AB modules has built-in protection on the control module PCB to protect the module in case of tube failure. You will note minor differences in components between photo's A & B on the Auto Bias module providing this protection.

If you are concerned about the AB function, and want to save a few dollars, you can always purchase the Manual Bias kit and use the dollars to help pay for the required larger PA-060 Power Transformer. There is no difference in sound quality between a Manual or Auto Bias equipped unit.

Q5: What does the Dyna-70 Ultimate Upgrade kit cost?

Frankly, the Dyna-70 Ultimate Upgrade is expensive. In fact, our Dyna-70 Ultimate Upgrade is one of the more expensive ST-70 upgrades available. However, it is also much more than just a driver stage with tubes that are easier to find than 7199's! We addressed a design-to-cost compromise Dynaco

made with the ST-70: its low-cost power supply system with a single rectifier tube. We upgraded the power supply and made that upgrade using our Dyna-70 PCB, whereas most providers of ST-70 driver updates, only update the audio drive PCB and the tubes on the PCB. In upgrading the power system, we gave the ST-70 what it really needed to perform on par with a McIntosh, Audio Research or Conrad Johnson product: MORE POWER!

Dyna-70 Ultimate Upgrade w/ Manual Bias	**$349.95 MSRP**
Dyna-70 Ultimate Upgrade w/ Auto Bias Module	**$499.95 MSRP**
Manual or Auto Bias PCB (For those who want to purchase a Dyna-70 PCB and populate with your own choice of components)	**$60.00 MSRP**
Manual Bias PCB Assembly Fee	**$185.00**
Auto Bias PCB Assembly Fee	**$225.00**

Kits include all parts required to assemble the Dyna-70 circuit card; a Printed Circuit Board for either Manual or Auto Bias configuration, electronic components, fasteners, wire and shrink wrap to complete integration with your ST-70.

Kits do not include tubes; these are an additional cost item required to complete the Dyna-70 upgrade. If you have a good set of 6CA7 / EL-34 tubes in your Dynaco ST-70 now, they will work fine with our Dyna-70 Ultimate Upgrade system.

We offer a complete compliment of tubes for ST-70's, as well as film cap options for coupling caps in the audio circuit. We also offer a Trade-In program for your tired, rusty old ST-70 for a completely new ST-70 with the Dyna-70 Ultimate Upgrade already integrated into it. Ask for details on our ST-70 amplifier Trade-In option.

Q6: Wow, $350 for an ST-70 Upgrade. That seems high…

You get what you pay for. There is "more of everything" when comparing a Dyna-70 Ultimate Upgrade to other ST-70 upgrades. Most importantly, you will hear the difference the first time you listen to our Dyna-70 Ultimate Upgrade- we promise!

In 1960 the value of $1 U.S. Dollar was of course $1, but today in 2025 the value of One Dollar is now $10.59 (2025). Said another way, a Dynaco ST-70 Kit that sold for $100 in 1960 would now cost $1059 in today's 2025 money, due to inflation.

Another perspective: Have you seen what ST-70's are selling for today? 5-6 years ago, used ST-70's were $300-$600; today decent ST-70's bring $800-1200+, with restored or newly built ST-70's going for $1500-$2000+. The truth is that ST-70's have appreciated to the point that one can justify spending more on upgrades because they are worth more today, modified or not.

Finally, we leave you this thought on prices of audio equipment: ***"…Great, high quality audio products aren't cheap; and cheap audio products aren't great…"***

Q7: Your upgrade costs more than that- one must buy a bigger PA-060 Power Supply Transformer too.

Correct, there is no way around it- to get an ST-70 to really "sing" it needs more, clean power, it is that simple. **One cannot power our Dyna-70 Ultimate Upgrade without using a larger Power Supply**

Transformer. However, you will hear the results the first time you play your favorite tunes on a Miller Audio Dyna-70 upgraded ST-70. The good news is that if you were to buy a new ST-70 amplifier kit today, it already comes with the larger PA-060 Power Supply Transformer as standard equipment; most everyone came to realize the ST-70 needed a more powerful transformer to perform well and operate at cooler temperatures.

Q8: What 6SN7's do you recommend for the Dyna-70 Ultimate Upgrade?

One has a wide selection of 6SN7 tubes to choose from, so getting the correct 6SN7's for your amplifier is a key element to getting great sound. There are several types of 6SN7's to choose from; several you can use safely in your audio equipment and one that you want to avoid. Today, you can use a new production 6SN7-GTB tube in any application that calls for a 6SN7-GT or 6SN7-GTA tube. However, one cannot go the other way around and put a New Old Stock (NOS) 6SN7-GT in place of a 6SN7-GTA or -GTB, because it will be over driven and will fail in short order.

6SN7 & 6SN7-GT (Avoid)

Starting with tubes made in the 1940's there is the 6SN7 & 6SN7-GT; where GT stands for "Glass Tube". However, this tube is not ideal for use in modern-day tube equipment (it has less gain than the GTA & GTB versions) and lower plate voltages and plate dissipation {3500mW} than newer versions of the 6SN7 {i.e., 5000mW}). Early 6SN7 & 6SN7 GT's have a maximum operating voltage of around 300 volts, whereas the later -GTA & -GTB's are rated for 450 volts. The straight 6SN7 & 6SN7-GTs are the 6SN7's you want to avoid; it is not suitable for use in most modern-day audio equipment. Yes, you can find folks on the web that are using -GT tubes in a *preamplifier*, but we suggest you do not take that risk in a Dyna-70 Ultimate Upgrade *amplifier*.

6SN7-GTA (Use)

This tube was developed for and used in the first mass produced televisions in the early 1950's. The-GTA version is an improved -GT, which has higher plate dissipation than the -GT (5000mW vs 3500mW). Also, with the small amount of real estate in early TV's and the need for a lot of tubes to operate a TV, the tubes needed to be shorter to make more room and most -GTA tubes are of the short glass bottle version. Most -GTA tubes will be of an older vintage and if you have a choice between a GTA or GTB, assuming all things are equal, we recommend your choose a -GTA that has the sound you like at a price that is reasonable, otherwise we suggest that you default to the -GTB.

6SN7-GTB (Recommend)

Finally, there is the 6SN7-GTB; it is a -GTA tube but designed with a more robust heater filament that permitted faster heating of the tube upon turn-on of the TV. New Production GTB's are available and of course there is a large volume of New Old Stock (NOS) 6SN7-GTB's available. The ideal 6SN7-GTB are the Sylvania made tubes. However, any U.S. or Western-made NOS 6SN7-GTB are great tubes, and you can spend as little, or as much as you like, on several select 6SN7-GTB's. Miller Audio LLC stocks both New Production and NOS tubes and if there is something you want specifically, let us know. We have several NOS tube sources that can supply any brand or make of 6SN7-GTA or GTB tube you might want and at several price points to fit any budget.

Q8(a): What about Russian 6H8C / 6N8P 6SN7 Equivalents?

We have tested Russian-made 6SN7's; several eBay sellers and specialty vacuum tube retailers offer these tubes here in U.S.A.

In simple, we've had several customers who put in Russian tubes of the wrong description, and they ruin either the tubes (if lucky) or damage their amp (worst case). We had a customer recently put in Russian equals for an EL84/6BQ5 power tube in a Magnavox 9300 series amplifier (Miller Audio services our local customers who we built stand-alone amplifier conversions for some years ago), and it took out every Russian power tube in the amp. A complete waste of time and money and it required another new set of tubes. This time we recommended the customer buy JJ Electronic EL84's - they have worked perfectly since- and the lesson was learned.

If you are going to use the imported equals to a 6SN7-GTB, we suggest that you have a tube tester (more than one tube tester for more consistent measurements) so you can check each tube and ensure that you can match-up tubes properly (however, good luck finding the proper tube tester setting to test a Russian tube!).

Our position on use of Russian equals to 6SN7's: <u>We do not sell these tubes; we do not warranty our amplifiers with these tubes, and we do not recommend use of these tubes in our amplifiers.</u>

We take this position since there are some confusing factors for customers to sort through, like understanding Russian Cyrillic alphabet vs our English Alphabet (aka Latin or Roman Alphabet) and ensuring you don't confuse the proper identification of the tube. It's your amplifier and you can operate and use it anyway you like, but if it fails because you used an imported Russian 6SN7 tube (i.e., 6H8C or 6N8P, etc.), we will not warranty the repair of your amplifier. It makes no difference if a Manual or Auto Bias unit will not be warrantied. We also state this in our Assembly Manuals, so this applies to both Miller Audio built amplifiers as well as Kit built amplifiers that you might assemble.

NOTE TO CONSUMERS: While we do not warranty our amplifiers using Russian or Chinese vacuum tubes that are not designated as 6SN7 or 12SN7 tube " replacements", once your warranty expires and if you wish to experiment and sample Russian or Chinese 6SN7 equivalents (i.e., CV-181), feel free to do so. If you encounter problems or any issues with your amplifier, any cost associated with these problems is on your nickel, not ours- and that is OK for us both.

Q9: Does Miller Audio offer custom Resistors, Capacitors, and related Passive Components?

We work with customers who desire a special order set of components, such as resistors, capacitors, and NOS vacuum tubes. However, we approach use of such "boutique" components with some reservation, since one's hearing abilities, depending on one's age and what loud sounds you have been exposed to over your life, impact what you can hear now. Unless you have great hearing- and know it- (such as being tested by a professional hearing specialist known as an Audiologist) then it could be an expensive purchase which you get little enjoyment from (but everyone else who might listen will appreciate it!).

If you are interested in exploring "component rolling," then we suggest the best place to start is not with resistors and capacitors, but in rolling vacuum tubes. If you can hear and discern the subtle differences in either preamplifier or power output tubes, you can then ascertain your hearing abilities and your ability to "sense" and hear resistors and capacitors, which tend to be much more subtle and difficult to hear changes, primarily because the time frame to "A/B" compare is much longer than just pulling tubes and inserting different tubes.

Also, something else to consider: Just because your friend claims that his recapping of his speaker crossover changed it from a so-so speaker to a Altec, JBL or Klipsch "killer speaker," take a lot of these comments with a grain of salt. Yes, often speaker manufacturers use a cheaper electrolytic cap in

place of a proper film cap, and *you can improve* the sound quality with these type of changes in speakers. However, most substitutions in an amplifier are not this simple or easy to make.

If you desire a custom or special set of resistors & capacitors, feel free to contact and discuss with us. If you are planning a new amplifier custom build and you wish us to use your supplied resistors, capacitors, or tubes, we'll gladly do so. However, we cannot warranty components that we did not procure, qualify, and test for suitability- or that we know our suppliers have also qualified and approved. If you can accept that exception, we will gladly assist you in achieving "Audio Nirvana" with whatever parts you want to use.

Q10: Can the Dyna-70 really be called an upgraded ST-70? Given all the changes Miller Audio has made, is it even the same amplifier?

We get this question a lot at Audio Shows, where one can have a 1-on-1 conversation with show attendees and potential new owners of Dyna-70's. Despite the observation by some that it's a completely different amplifier, let's review what our Dyna-70 and an ST-70 still have in common (regardless of whether the original ST-70 PC-3 audio driver card is still in the amplifier, or an aftermarket PC-3 that allows use of tubes other than a 7199 is used).

a) The Dyna-70 "basic" architecture is unchanged from an ST-70. The amp is used in Pentode/Ultralinear mode, the EL-34 tubes are cathode biased, using a Push-Pull tube configuration, just like the ST-70, which has not changed.

b) We use the EL-34 family of vacuum tubes, which are still integrated using the same pin-out and wiring configuration as the ST-70. The only difference is in our bias circuit design for the EL-34 tubes. We use a dedicated bias circuit for each power tube and in the Dyna-70 amplifier we have 4 independent bias settings, one for each power tube.

This is not a unique feature of the Miller Audio Dyna-70, as there are other Audio upgrade cards for the ST-70 that also offer independent bias setting for each power tube. No one claims these amplifiers are not ST-70's just because the audio driver card was modernized with independent bias for each tube.

c) We use the PA-060 Power Supply Transformer, and we use the latest model of the PA-060 which follows the original construction and winding technique used by Dynaco. The PA-060's manufactured today are better transformers because they feature a larger gauge of lead wire on the primaries & secondaries and a taller, 2-inch lamination stack that produces more power, runs cooler, and doesn't hum like some of the older "short stack" transformers did. A unique feature of our PA-060 is that it is manufactured with:

a) M6 lamination steel plate and;
b) A Copper Flux band encapsulating the major axis of the transformer.

Our PA-060 is the only PA-060 made using M6 plates and a Flux Band, which helps reduce EMI/RFI noise, and makes the transformer 6-8% more energy efficient, resulting in a lower operating temperature for the PA-060 Power Supply Transformer.

d) We use the Dynaco A-470 OPT Transformer, and for Output Transformers we offer customers the option of selecting an original, restored A-470 for their new Dyna-70 amplifier, or we can supply a new reproduction A-470, also offered by several transformer suppliers.

OPT Transformers can be a sensitive topic because Dynaco A-470's are credited with helping the ST-70 have the great sound signature it has. Experienced ST-70 owners agree, and some won't have an ST-70 unless it has the original cloth-leaded A-470's in the amplifier. We understand these preferences and respect those that want an original Dynaco transformer.

An interesting detail regarding how we do business: If you buy a new Dyna-70 amplifier that Miller Audio builds for you, and you specify original Dynaco made A-470's, we not only will supply your restored A-470's, but we also warranty those transformers just like they are new transformers! We have not had a failure of any original Dynaco A-470's in any amplifier that we have built. However, if you want a new production A-470 transformer, we will supply those as well; the price is the same - the warranty is the same (we've not any failures of new production A-470's either).

The next question is: "Which transformer sounds better?" That is your decision, not ours. You know best how well you can hear, the quality and condition of your audio system components and the acoustic properties of your listening room; that is a complex decision only you can make. A "least risk" decision / recommendation is to default to use of original Dynaco A-470's; it's the only practical advice we offer.

e) The original ST-70 Capacitor can is still used (from an electronic architecture standpoint), *but it's not in a single can anymore*. Look at a photo of our Dyna-70 circuit card, note at the rear of the circuit card, next to the PA-060, you see four pairs of electrolytic capacitors across the back of the circuit card- that is the old four section capacitor can, but now implemented in a more modern configuration. We've just changed the "electronic packaging," not the need for, or use of capacitance and filtering in the amplifier. We suggest you review ***Q2*** above for why we re-designed the 4 section cap can as used in the ST-70 as 4 discrete capacitor pairs in the Dyna-70 Ultimate Upgrade.

An electronic packaging change like this is what we believe generates the observation the Dyna-70 isn't an ST-70. However, our marketing slogan for the Dyna-70 is: ***"We bring the ST-70 into the 21st Century"*** – and we mean it!

f) We use the C-354 Choke and use it in the same manner as Dynaco did in the ST-70. The Choke, like the Power Supply and OPT transformers is the same "Iron," and we use it in the same application Dynaco did. Again, "electronically," it's still an ST-70 in basic architecture than the amplifier might appear to be "visually". You can't see the Choke in an ST-70 (and you can't see ours either) but know it's under the chassis and in the same location it's always been, and we use in the same circuit as Dynaco did.

Q11: Do you still offer the standard Dynaco ST-70 Stainless-Steel Chassis? You show most of your products with your new Black chassis…

Yes, we still offer the Stainless Steel Chassis, and we keep them in stock. For 2023 onward, we have focused on our new Black powder coated chassis. It's a new, more modern look, and of course, one can now use a custom IEC Power Cord with our new Black Chassis; that can't be done with the Stainless-Steel chassis.

Q12: Have you considered making a Tube Rectified Dyna-70 Ultimate Upgrade product?

An interesting question… Yes, we have. Stay tuned to this FAQ and the Miller Audio website for new products to be announced mid-to-late 2025/2026, we just might have a tube rectified Dyna-70 Ultimate Upgrade as a new product. It has more to do with the economy and future view of inflation and balance of everyday items we must have to live vs luxury nice-to-have items, which are optional.

Q13: Do you offer new Amplifiers without Tubes?

A strange question, but we get more than one might think. We build you a new Amplifier and give you a 1-Year Warranty on all parts and labor; most tubes only have a 90-Day manufacturer's warranty. However, for us it makes no sense to sell you a new amplifier for you to then insert your own tubes and hope all is well. In these cases, we ask that you send us the tubes you want to use, and we will not only test them, but we'll also put them in your new amp and burn it in with your tubes. When we ship the amplifier to you, you know it works properly and that we have checked everything out and you saved a few bucks by using your own tubes… But!

What are you going to use for a spare set of tubes? We advise all customers to have a spare set of tubes in case you have a weekend listening event and incur problems with your tubes- do you cancel the party?

Q14: Our Kits, Auto Bias Installation & Novice / Inexperienced Kit Builders…

(Note this isn't a question but a statement of policy when buying from MALLC. This message is specifically directed to Kit / DIY builders on the complexity of our kits).

Recently we had a customer, who claimed to be an experienced DIY kit amplifier builder, order one of our upgrade kits that he was going to assemble and install into his ST-70. Fine, the only problem is he didn't have the experience he claimed he had. Knowing we would not sell him a kit as a Novice/Beginning builder, he tells us he is experienced and tells us the kit amplifiers he has built. Unfortunately, after shipping his kit, we knew right away after 3-5 *emails every day* seeking guidance that anyone with some tube amplifier build experience would know how to do. We suspected this was the case, but we are not into running customers off, so we stuck it out, helping them with no supplied pictures or any other visual aids from this customer for over 3 months. However, the horse comes out of the barn, when he has no clue what to do to get the humming out of his amp during the start-up and check out phase of his new build. We then ask him what his true experience REALLY is in building kit amps because by this stage it is OBVIOUS he is in way over his head based on his reported "experienced builder" skill set. Oh, one more thing: He wanted the RCA jacks on the back of his amplifier (a bad idea on an ST-70- instant hum)!

To All Kit Building Customers: We state this on our website, and it is on the first page of our Assembly Manuals, our kit products are NOT designed for inexperienced builders- PERIOD! If you buy a kit from us and do not have the skill set to build it, we will cease all support to you. If you have not soldered or lost any of the kit parts, you of course may return for a full refund. You will have purchased your kit providing false pretenses in the process to obtain it. This is a deceptive practice that you as a customer execute to get what you want. However, you will not get what you want, either from your amplifier or us. Our kits are designed with a pre-determined level of support, and we entertain plenty of questions, provide pics and even phone calls to help those who need it. However, if you overestimate your skills or intentionally deceive us to obtain a Kit - that error is on you, not MALLC. We do not have the time to answer any customer with 3-5 questions a day about what to do next to your amp. If you can't follow our Manuals, then we suggest you send your amplifier and kit to us, and we will complete it for you. Please DO NOT buy one of our Kits if you lack the skills to build it. If in doubt, please give us a call first.

We have the same concerns regarding the installation of Auto Bias Modules; we expect all potential customers to have the proper skill set before installation of any Auto Bias Module. These products are new to the market and more DIY builders are exploring the benefit of using Auto Bias products.

However, one must be able to read a schematic and understand the basic concept and operation of vacuum tube bias before attempting to install any Auto Bias Module into an amplifier.

Q15: What is Your position on use of "Audiophile" Fuses?

Hmm, well to start it's a controversial topic. When we were first asked this question, we considered that someone was trying to bait us into an argument. However, the engineer in me decided to be pragmatic and answer the customer's questions as best we could.

Generally, most of us don't pay much attention to fuses; they are a necessary element of most electronic systems and are used to protect the component(s) of an electronic system, or the entire system itself, from overloads, or if something is connected incorrectly (such as a tube in the wrong socket) they will fail to protect more valuable components. The bottom line is a fuse is a safety device and is *designed to intentionally* fail.

However, in the Audiophile world, one tends to see many overly thought-out ideas (an understatement), often on a level of minutia not worth addressing. It starts like this: An audiophile invests heavily in upgrading to high end power cables, audio interconnects, and speaker cables. Hearing an improvement in his system, he then takes upgrades a step further, questioning why he invested all that money in a power cable when all the power passes through a small 3-Amp fuse (if a Dyna-70 amplifier). He can't accept that he spent a lot of money only to have it all funneled into a small melting fuse link that doesn't (and can't) carry all the power his cable can. Now he is researching Audiophile fuses- does this sound familiar to you? Do you know a few audiophile friends like this?

However, the real question is: Does a fuse limit the performance of an audio piece? Thinking about it, some audiophiles spend a considerable sum of money on power cords, audio interconnects (RCA, XLR, etc.) and speaker cables, trying to extract maximum performance from their system. Therefore, it is reasonable to expect that surely there will be better, more conductive fuses that will pass more power, right?

Friends, save your money for more important audio items… if you can hear a difference in fuses, I readily admit you have better hearing than I do.

Q16: Can you move the RCA Jacks from the front Face Plate to the rear panel on a Dyna-70 or Dyna-120 amplifier?

This is the most asked question we receive at Miller Audio. While it seems a remarkably simple question, it's a complicated issue to address and can involve a lot of time and money as well. Can one move the RCA inputs to the back panel? Yes, it can be done, **however we do not recommend this modification**. Often the next statement is "…but there are folks on Audio Karma or on YouTube who have made this modification, and it seems to work for them….". True, I agree, likely you are seeing the results from an experienced DIY'er, who knows what to do, how to do it, and has done it before. I personally put myself in that category, but it doesn't mean I recommend this modification just because I can install it effectively.

Danny Richie, owner of GR Research, addressed this in his YouTube video overview of our Dyna-70 amplifier back in July of 2024. In the latter portion of the video, he mentioned the RCA jacks being in the front, quite common "back-in the-day" when tube amps ruled the 2-Channel audio world back in the late 1950's and into the '60's.

It was for performance and noise isolation reasons the RCA jacks were put in the front, and all 120 VAC power was brought into the amp from the back side, where also the fuse, power switch, and power cord all entered the amplifier. This separates the RCA's that carry the low power audio signal (i.e., measured in millivolts) and the high powered AC power & current (extremely noisy), to the maximum extent physically possible. If you review several tube amplifiers made by McIntosh, Marantz, HeathKit, Eico, etc. this was a common approach, and it was utilized by most of the audio equipment manufacturers at that time.

Now, we add in upgrade parts that Dynaco never used, like an ICL (In-rush Current Limiter), "snap" capacitors on the power switch and we've now added parts that make the amp function better and more reliable, extending tube life and keep operating voltages in check, but all those parts are in the 120VAC prime power supply and we're adding parts to make the amp more dependable & reliable, and yet customers are focused on how the cables look in the front of the amp?

Here are some factors one must take into consideration to put RCA jacks on the back of a Dyna-70 or -120 amplifier:

First, one must understand that the ST-70 chassis was designed to be small and have a small footprint. It was to be lightweight, with a finished weight of around 30-35 lbs. and in kit-form with a shipping weight about 40 lbs., making it easy for most people to handle and carry.

Second, the ST-70 was designed originally with a Nickle-plated, mild-steel chassis, which provided a nice shiny amplifier finish that was less expensive than using Chrome plating and more importantly had ferrous metal in the chassis construction, meaning it had EMI/RFI shielding capabilities since it was a made from a ferro-magnetic material.

Our new Black Powder coated chassis are made the same way, using a mild steel sheet that is stamped and bent to shape, then powder coated for a durable, long-lasting finish. We make our chassis with an IEC fitting, permitting use of any heavy duty or high quality IEC power cable that is now removeable from the amplifier. Of course, now you can select the gauge of wire, the cable length, and cable finish, all great benefits of having an IEC fitting on the chassis. Most importantly, we make our chassis from the same base material that Dynaco did, so we can maintain the same basic configuration and have the same grounding, bonding, and shielding properties the original Dynaco ST-70 chassis had.

This cannot be said of the reproduction Stainless-Steel chassis that are designed to be a replacement for the original Nickle plated chassis mild steel chassis that rust and pit over time. These chassis do not have the EMI/RFI shielding of a mild steel chassis and while they have a great appearance, they do not perform as well in EMI/RFI environments. If you build your ST-70 in a stock configuration, the Stainless-Steel chassis will work fine. However, when upgrading and making heavy mods for maximum sound quality and performance, these chassis will present some shortcomings that complicate moving RCA jacks around, and running RCA and power leads close together will cause extra noise and hum, which one must deal with.

Audiophiles, a question for you: Did you buy your audio system to look at or listen to? This is a fundamental question; are you more focused on how your system looks, or are you focused on how it sounds? Our job is to build the best sounding amplifier we can make, for us it's not an issue of how it looks- we make it so it sounds the best we can make it sound… it is what the product is designed to do!