Please, take the time to read through the entire manual before operating the amplifier. At Almarro we believe that each of our products has its own personality – it is a signature of its unique sound. However to fully enjoy the remarkable and captivating sound of this amplifier you have to understand the product.

This manual will help you to appreciate all features of this amplifier and enjoy the musical sound of this product for many years to come!

Happy Listening!
# Table of Contents

A Little Bit of History .............................................. iv
Important Safety Instructions (Read me First!) ............... v
Technical Summary and Features ............................... vii
Amplifier (Front View) ........................................ xiv
Amplifier (Rare View) .......................................... xv
Specification ...................................................... xvi
Installation and Operating the Amplifier ..................... xix
Maintenance Guide ............................................... xxviii
Warranty ........................................................... xxxix
Thank You

For choosing the Almarro A318B Integrated Amplifier.

You will be amazed by the performance of this unit, hand-made in Japan with passion and love, to high performance audio.

With Almarro, you will discover an exceptional sound and the uncompromising quality of the product.

Our Philosophy

We measure success by the way our equipment sounds. We do not make any compromises when it comes to the quality of sound.

We do not use boutique audio parts. We prefer industrial parts from big companies readily available and reliable. This results in products of high quality rather than exotic parts and overpriced material.

We do not build our amplifiers for specific tubes- we use the right tubes for the design.

While Almarro equipment may look simple it performs well beyond the look and price range. This is something more and more people are finding out about and attest to.

Each Almarro product is fully tested to ensure that it is the best it can be.

A Little Bit of History

Tubes ruled the audio world during the Golden Age of Hi-Fi (1937-1950). It was the time of Acrosound, Dynaco, H.H. Scott, Fisher, McIntosh, and Thorens to name just a few.

The Bell Labs invented transistors in 1947. The consumer market started replacing tubes with transistors at 1950's. By 1970 the replacement had been almost completed (with the exception of some guitar amps) and the Golden Age of Hi-Fi came to the end. Building audio equipment with advanced circuit board technology was cheaper and quicker. During the 80's, just a few boutique tube amplifiers were being made. They were very expensive and were manufactured in very low quantities. Solid state however was unable to deliver better sound in spite of many claims and better specifications than tubes. What happened back then seemed like a miracle.

At the time when solid-state audio had become predominantly used around the world in Japan the tube audio not only managed to survive but also had become part of audio culture. While the consumer market was quickly adopting a new solid stage technology a few very talented and ambitious Japanese designers had started the resurrection of the tube amplifiers. During this time Japanese engineers re-discovered that SE (Single Ended) amplifiers can sound beautiful and musical.

Once again the most technologically advanced nation impressed the world by revolutionizing high-end audio, “going back to the future” by reinventing technology and returning to it’s original roots!
Important Safety Instructions (Read me First!)

Read safety instructions and the entire manual prior to operating the equipment.

The lightning flash with arrowhead within a triangle is intended to alert users to the presence of dangerous voltage. The voltage may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within a triangle is intended to alert users to the presence of important instructions.

To prevent the risk of severe electrical shock makes sure that you follow the instructions. Ignoring safety precautions can result in severe electric shock, fire or injury. Keep children and pets away from the unit. In case of the unlikely event when the amplifier needs service have the amplifier serviced by qualified personnel approved by Almarro Products service centers.
Important Safety Instructions

- Never does any maintenance work on the amplifier while it is operating. Always wait at least **ONE HOUR after** turning the unit off and **unplug the unit** when replacing fuse or changing tubes.

- Do not install the amplifier near any sources of heat.

- Tubes become hot (The tubes used in the amplifier heat up to a temperature of between 250 and 350 degrees Centigrade) and they could cause serious burns. Never touch a tube when the unit is on. It takes at least 30 minutes for the tubes to cool down after the unit is switched off.

- Keep the amplifier away from direct sunlight.

- Always use a correctly grounded power outlet to ground the chassis of the amplifier.

- Do not modify the amplifier.

- Never connect the amplifier to the power source without having all the tubes installed.

- In case of any smoke or burning smell immediately turn the amplifier off.

- Always connect the amplifier to the power source category for which this amplifier is rated. Protect the power cord from being damaged.

- Do not flip the power switch on and off rapidly. This can damage the power supply.
Technical Summary and Features

Single-Ended Class A.

The Almarro A318B is an integrated single-ended triode (SET) vacuum tube amplifier designed as “Class A” type of amplification.

“SINGLE-ENDED” (SE) means that a single output device handles the entire music signal.

“Class A” means that: “Grid bias and alternating grid voltages are such that plate current in a tube flows at all times”. (RCA Tube Manual). Most professionals agree that “Class “A” operation is more efficient and wastes less power as heat, while still maintaining low distortion.

The Almarro A318B single-ended amplifier produces the best musical effect in the critical midrange frequencies, at a very low level distortion.

A preamplifier is not needed when using the Almarro A318B integrated amplifier. In spite of the moderate power output the A318B is a very dynamic sounding amplifier due to its design features and combination of tubes selected from the design.

Input Tubes

The 6SL7 Tube

The 6SL7 (6H9C) is a dual tube designed for amplification of low frequency voltage. The 6SL7 (6H9C) double triode enclosed in the glass bulb and provided with an octal base and an indirectly heated oxide-coated cathode.

The Russian 6H9C is equivalent to the 6SL7 tube.

Tubes

Tube amplifiers are based primarily on two types of tubes – preamplifier tubes and power tubes. Preamplifier tubes are used to drive the power tubes. The power tubes amplify the low-level signal from the preamplifier into a level that is sufficient to drive the speakers.

The A318B amplifier utilizes a one 6SL7 (6H9C) tube on the input, one 6SN7 (6H8C) dual triode as second-stage anode-follower, driving one pair of 6C33C output tubes.
The 6SN7 Tube

The 6SN7 (6H8C) is a dual tube designed for amplification of low frequency voltage. The 6SN7 (6H8C) double triode enclosed in the glass bulb and provided with an octal base and an indirectly heated oxide-coated cathode.

The Russian 6H8C is equivalent to the 6SN7 tube.

6H8C

The driver tubes are 6SN7, renowned for their linearity and reliability. These comprise the high-power, low restriction driver/output tube circuitry for the A318B.

The 6SN7 tube has a very open, relaxed and graceful sound, without sacrificing details. Introduced by RCA in 1939, this driver tube is more rugged and sonically consistent.

Power (Output) Tubes

The most interesting aspects of the A318B are Russian 6C33 output tubes. A version of these rugged power triodes was applied in MIG-25 fighter aircraft.

"The 6C33C/6C33-B is a high transconductance indirectly heated triode tube (Where transconductance is the ratio of the current at the output and the voltage at the input written as \( g_m \))."

\[
g_m = \frac{I_{out}}{V_{in}}
\]

I out = Current at the output
V in = Voltage at the input

Sonically the 6C33C (6C33-B) tube produces a well-detailed bass and has a very good dynamic range. They offer a more traditional for tubes “warm” sound and detailed bass with a very nice distortion at “clipping” point - where the tube starts to produce audible distortion at the high power.

6C33C, 6C33C-B Tubes

The 6C33C’s internal resistance is very low, which works very well with applications which require low voltage and high current (unlike standard tubes which are designed as high-voltage, low-current devices.)

Because of its sonic characteristics and low internal resistance this tube was the best choice for the A318B amplifier.
6C33C-B Tube Specification

<table>
<thead>
<tr>
<th>PIN</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 6, 7</td>
<td>Heater</td>
</tr>
<tr>
<td>3</td>
<td>Cathode</td>
</tr>
<tr>
<td>4</td>
<td>Anode</td>
</tr>
<tr>
<td>5</td>
<td>Grid</td>
</tr>
</tbody>
</table>

The graph shows the output characteristics of 6C33C. The 6C33C has a high current capability and low internal impedance. This characteristics of the 6C33C helps to improve bass performance.
**Tube Life**

Tube life depends on the type of tube, and operational conditions. A typical oxide-cathode power tube 6SN7 (6H8C) or 6SL7 (6H9C) will last about 2000 hours. Output tube life is shorter as they are continually providing significant amounts of current. Certain specifications define the life expectancy for the 6C33C from 1000 to 2000 hours and 750-1000 hours for the 6C33C-B. In normal use, output tubes are expected to last at least 2 years.

The sound quality of the tube is the best indicator of tube performance.

**Bias**

The tube grid is a set of wires between the plate and the cathode. This grid charge controls the flow of electrons between a cathode and a plate when a cathode is heated.

The negative DC voltage applied to the grid of each output tube and controls the standing, current draw of each tube, is called bias.

The voltage that cuts plate current to zero is called cut-off bias.

The point where plate current no longer increases, regardless of increases in bias voltage, is called the saturation point.

Between cut-off and saturation, a triode behaves as a linear device and produces minimum or no audible signal distortions.

A typical integrated/power amplifier will provide its best performance only when the output tubes are biased optimally.

Any deviation from this ideal point will result in some performance degradation, including loss of output power and increased signal distortion. It is extremely desirable, therefore, to have the output tubes properly biased.

Maintaining the proper bias also contributes to prolonging the useful service life of the output tubes.

Optimum bias provides the best balance of tube life and sound quality.

The **6C33C-B output Tubes in the A318B amplifier require manual bias setting.** (Refer to the Bias Adjustment Procedure in this manual)

Manual bias circuits are adjusted for their proper bias set point with the tubes fully warmed up. The A318B amplifier employs a relay-controlled timer to allow the tubes time to warm up and stabilize. These circuits provide a 2-minute delay to pre-warm the output tubes. However during the full warm-up cycle the bias will be set too low. This stabilization may take up to 30 minutes or even longer.

The **6C33C (6C33C-B) is an electrically unstable tube** when powered on because of the narrow gaps between the electrodes. Therefore the 6C33C output tubes are subject to bias drift during the first 100 hours. The manual biasing procedure will help to overcome this tube limitation.
**Plate (Anode) Follower**

The A318B is a plate-follower NFB amplifier. The 6SN7 driver tube is suitable for both cathode-follower and plate-follower circuits.

The purpose of a cathode follower design is to act as an impedance matching device, in other words it has very high input impedance, and a very low output impedance.

The Plate (Anode)-follower is so called because the anode of the amplifier tends to reproduce the input signal in much the same manner as does the cathode in cathode follower. As impedance-matching devices, they are far more versatile than cathode followers and provide good amplification with wide frequency response and a notable lack of distortion.

The anode follower allows for a greater gain than the cathode follower.

The plate-follower design implemented in the Almarro A318B improves:
- Bass performance
- Extends high-frequency response
- Improves linearity and lowers the distortion
- 4 Ohm speakers can be easily driven with no loss of performance.

**Negative Feedback (NFB)**

Feedback was traditionally used to lower distortion of an amplifier. To overcome interaction from the loudspeaker that causes distortion and impacts the bass due to compromised damping factor the A318B, 6C33C SET amplifier requires negative feedback. Also, quite often criticized, the NFB if applied correctly, offers a powerful and detailed sound SET amplifier is famous for.

For the purpose of obtaining low-distortion feedback that eliminated speaker back-interactions the A318B uses a higher 16-ohm output that remains disconnected from the speaker load.

This makes an indirect-NFB circuit, which minimizes the impact on sound as a result of typical negative feedback to take an advantage of 6C33C's high current capabilities.

**Transformers**

The A318B uses fast-transient oversized power transformers for better bass control and power delivery. Normally, the power transformer of a single-ended amplifier operates as a stable source. In a transformer-coupled single-ended tube amplifier, the impedance matching occurs with a transformer. The A318B, needs power headroom to deal with speaker back EMF. The choke coils work for the low frequency power supply while the power capacitors handle the high-frequency transients. The damping factor of our A318B is around 8 across the bandwidth. This makes for a good combination with high-sensitivity speakers that use under hung voice coils, which need a strong current supply for the short and fast strokes. Overhung voice-coil equipped speakers may need still higher damping for their longer excursions during dynamic peaks.

With the advent of Neodymium motors used in many of our speakers and modern recording conventions, damping factors above 6 or 7 are often necessary with many of today's speakers. The Almarro A318B transformer has output taps at 4, 8 ohms allowing it to match to a wide variety of speakers.
Speakers Compatibility

Most Single-Ended Class “A” amplifiers produce the best sound when they are coupled with efficient speakers and matched impedance. We recommend Almarro loudspeakers with an average rated sensitivity of 89 dB/Watt/Meter or higher and impedance 4 ohms or higher. Greater speaker sensitivity will allow higher listening levels before the amplifier produces audible distortion (clipping). However, because in the A318B amplifier utilizing the 6C33C-B tubes this eliminates needs for very high sensitive speakers as the amplifier has more than enough power to generate sounds of the highest quality. The Almarro speakers rated at 4 Ohm and 8 Ohm impedance are designed to work well with the A318B Integrated amplifier. The “standard” 8 and 4 Ohm loads found in most commercial speakers may introduce a very poor representation of loudspeaker’s so-called “real behavior.” It has been noticed that most of 8-Ohm speakers have impedances as 6 or even 5 Ohms.

Due to the wide range of loudspeakers available on the market we recommend taking into consideration the fact that simply connecting an 8 Ohm speaker to the 8 Ohm taps does not always produce the best result. While in some cases such a connection proved to be optimal, other 8 Ohm loudspeakers, especially high-efficiency models, will produce their best sound when connected to the 6 or 4 Ohm outputs. Similarly, we have found out that some nominally rated 4 Ohm speakers (like Almarro M334) will sound best on the 8 Ohm taps.

The diagram illustrates schematics of the A318B amplifier (Only Right channel is shown)
**Build**

The 318B amplifier is hand-made in Japan from start to finish by experienced professionals who adhere to critical considerations—such as keeping signal wires and power supply wires from running close or parallel to each other.

We use point to point (PTP) wiring and quality parts to increase reliability and ensure total ease of replacement during service and maintenance.

A point to point (PTP) wiring circuit is one that uses no circuit boards, but makes all of its circuit connections directly between components, using the leads of those components themselves and very little wire.

In the PTP amp, the signal path is usually as short as possible—which, when done right, can help minimize interference and noise in the circuit—and the circuit flows logically from input to output. The circuit itself, therefore, tends to look very much like the schematic diagram from which it is built.

The amplifier is finished on all sides in solid wood. Almarro amplifiers are laid out logically with an economical signal flow. This kind of construction have the advantages of being easy to repair, because almost any component can be changed by desoldering two easily accessible joints, and lifting out the part. They are also extremely rugged, as the circuit board offers the components some insulation against heat and vibration.

Each Almarro amplifier passes an extensive quality control to ensure that it is the best it can be.
Amplifier (Front View)

Fig. 2

- 6C33C-B Output (Power) Tube
- Power Switch
- Input Select
- 6SL7 (6H9C) input tube
- 6SN7 (6H8C) second-stage (cathode follower) tube
- Volume Control
Amplifier (Rare View)

Fig. 3

- Output Transformer
- Power supply choke
- Left Speaker Terminals 8 Ohm-0-4 Ohm
- Right Speaker Terminals 8 Ohm-0-4 Ohm
- Power Socket
- Fuse
- Input RCA Connectors
## Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class of Operation:</strong></td>
<td>A (*)</td>
</tr>
<tr>
<td><strong>Input Connection:</strong></td>
<td>3 RCA Jacks (100mV; 100ohm)</td>
</tr>
<tr>
<td><strong>Output Connection (Speaker Binding Posts):</strong></td>
<td>4 Ohm and 8 Ohm</td>
</tr>
<tr>
<td><strong>Output tubes</strong></td>
<td>6C33C-B(6C33C) Triode mode A1 Single-End</td>
</tr>
<tr>
<td><strong>Input tube</strong></td>
<td>6SL7(6H9C) + 6SN7 (6H8C) Cathode follower</td>
</tr>
<tr>
<td><strong>Input Sensitivity</strong></td>
<td>450mV at 1kHz</td>
</tr>
<tr>
<td><strong>Output transformers:</strong></td>
<td>30w x 2</td>
</tr>
<tr>
<td><strong>Output power:</strong></td>
<td>18w/ch at 1.0V input 500Hz/8Ω/ch</td>
</tr>
<tr>
<td><strong>Total gain:</strong></td>
<td>13.7dB (1KHz / 8ohm)</td>
</tr>
<tr>
<td><strong>Frequency response:</strong></td>
<td>20Hz - 20kHz/-6dB</td>
</tr>
<tr>
<td><strong>Distortion:</strong></td>
<td>0.75% 0.01w/10KHz</td>
</tr>
<tr>
<td><strong>Global Negative Feedback (NFB)</strong></td>
<td>Less then 5.4 dB</td>
</tr>
<tr>
<td><strong>Hum Level (mV AC)</strong></td>
<td>0.5mV at minimum volume</td>
</tr>
<tr>
<td></td>
<td>1.2mV at half volume</td>
</tr>
<tr>
<td><strong>Power consumption:</strong></td>
<td>240w</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td>W37cm x D28cm x H20cm</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>18.0 kg</td>
</tr>
</tbody>
</table>
Important Recommendations for the System Setup

The standard Hi-Fi audio system consists of a few basic components: audio source, power source, amplifier, cables, speakers and influenced by acoustic conditions. All components in the system are connected together.

This link starts from the wall power outlet, then the power cord, the source, the interconnect cables, the amplifier and the speakers. The system will never be able to produce better sound than sound produced by the “weakest” component in any part of your system. That is why it is important to balance the entire audio system properly to achieve a high level of sound performance.

A good quality source (CD-Player or Turntable) is extremely important. When choosing the Hi-Fi audio system we strongly recommend keeping this in mind.

For example a turntable with an MC cartridge will be one of the suggested applications of the A318B. This setup will explore the full musical potential of the amplifier and release the magical sound of the LPs.

Like any other high quality amplifier the A318B amplifier is designed to produce superior sonic characteristics when used in the appropriate acoustic conditions. The acoustical conditions of the room where your system is setup, speaker’s location and even the location of your listening chair - can affect sound.

For example the amplifier will sound best in medium size rooms, having speakers located several feet from the wall and facing your listening chair forming an imaginary ”triangle” with your listening chair.

We can suggest the following approximate room dimensions as an optimal for the best acoustic performance of the Almarro A318B amplifier:

The width - 14 feet
The length - 16 feet
The ceiling – 7 feet

Try to avoid having any reflective surfaces like bookshelves, furniture, and other audio-video equipment between your speakers.

Having “clean” power is very important. We recommend the use of an isolation transformer or high quality power conditioner to reduce or eliminate impact of RFI and EMI. (Radio Frequency and Electro-Magnetic Interference.)
Speaker’s design, type of speakers and speaker-amplifier compatibility (impedance match) are extremely important for achieving a high fidelity of your system!

Speaker incompatibility can be one of the main reasons why your system sounds poor.

Avoid using speakers with complex crossover networks, or speakers that demand a lot of power with the Almarro A318B amplifier.

All Almarro speakers provide an excellent impedance match with the A318B SET amplifier.

High Quality (low impedance and high resolution) speaker cables can make a difference. Many professionals agree that speaker cable impedance less than 5-8 % of the nominal speaker impedance will work well with almost all speaker systems. This recommendation was confirmed by double blind tests.

The right cables for your system are not necessarily expensive exotic cables aggressively promoted by the boutique cables manufactures and audio magazines.

Based on our experience we do not recommend spending too much of your budget on exotic and boutique speaker cables. In order for the speaker cable to have low impedance, the conductor, cable connectors and cable shielding should have good quality.

We always recommend working with our authorized dealers and determine the right speakers for you during listening sessions (tests).
Installation and Operating the Amplifier

Installation (Step by Step)

- Unpack the amplifier
- Install the tubes
- Placement (Select the right location)
- Connect Speakers
- Connecting the Source System(s)
- Connecting Power Source
- Operation (Turning on)
- Bias Adjustment (Maintenance)
- Playing Music
- Break In

Procedures (Reference in the Manual)

- Page xix
- Page xix-xxiii
- Page xiv
- Page xiv
- Page xiv
- Page xiv
- Page xiv-xxv
- Page xxx-xxxiv
- Page xxvi
- Page xxvi

6C33C-B tube requires manual bias setting. (See the Procedure in this Manual)
Unpacking

Carefully remove the amplifier from the box. Keep the packing material and the box, which protects unit and tubes during shipment. It can be used in the unlikely event that the amplifier ever requires shipment for servicing.

Visually inspect the amplifier to ensure that there is no damage. The tubes are shipped in a protective packing material. The tubes are fragile. Shocks, humidity and dust can all cause damage to them. Treat and maintain them with great care. Carefully unpack the tubes.

If you find damages or problem, please call Almarro distributor and keep everything as it is. Distributor will claim insurance and investigator may visit you.

Before shipping, the tubes are given a full operational check and are quality tested.

We recommend using a clean dry cloth or gloves while touching the tubes. Before installing a new tube inspect it visually to verify that the pins are straight and that they line up to the socket.

Carefully observe the amplifier sockets, making sure that they are clean and there is nothing in the socket hole.

Install the tubes

Install the driver (input) tubes 6SN7(6H8C) and 6SL7(6H9C). Then install the output 6C33C-B tubes as describes in the detailed steps below (Pages xx- xxiii).
Make sure that the power cable is NOT CONNECTED during these steps. Lethally dangerous voltages are present at the tube sockets when the amplifier is powered on!

Fig. 4

A318B SET INTEGRATED AMPLIFIER LAY OUT
Before inserting a tube into its socket, you should check the tube to verify that there are no defects such as glass breakage or damage to its pins.

Insure that tubes are installed in the appropriate sockets. Do not confuse between 6SN7(6H8C) and 6SL7(6H9C) tubes (See picture for correct location below)

The picture below shows the base plate sockets of the 6SN7 (6H8C) and 6SL7 (6H9C) tubes.

The picture above shows the 6SL7(6H9C) tube. The bottom structure of 6SN7(6H8C) is the same as 6SL7(6H9C).

Set the 6SN7(6H8C) to the left socket and 6SL7(6H9C) to the right socket.

Adjust the guide pin of the tube against the guide socket, and other pins against related sockets. You should be able to gently push the tube into the socket without excessive force. Make sure to hold a bakelite base when you press it toward the socket.

Push the tube down until you feel that the pin has reached the bottom of the slot in the socket. While you plug the tube into the sockets shake the tube slightly in order to ensure that they are plugged into the sockets properly. Verify that the tubes are fully inserted in the socket and that they are in a vertical position.
At its base the tube 6C33C-B has seven pins. The larger pin is the guide pin. Clean the surface of the guide pin with a clean cloth.

The picture shows the base plate socket of the 6C33C-B tube.

Adjust the guide pin of the tube against the guide socket, and the other pins against related sockets. Gently insert the tube pins into the sockets. You should be able to gently push the tube into the socket without excessive force. Push the tube down until you feel that the pin has reached the bottom of the slot in the socket. While you plug the tube into the sockets shake the tube slightly in order to ensure that they are plugged into the sockets properly. Check to ensure that the tube is in a vertical position. If a tube appears to be dislocated, press down gently using a glove or clean cloth.
**Placement of the Amplifier**

A318B amplifier is an open tube design. The amplifier should be placed on a flat and firm surface away from direct sunlight, heat radiation and moisture.

Do not place the product in a closed cabinet.

The amplifier generates heat because of its single-ended class “A” operation. We recommend that the amplifier be placed at least 25 cm below the top of the open cabinet and 15 cm from each side of the open cabinet (shelf) so that airflow is not obstructed.

**Connect Speakers.**

The A318B amplifier is non-inverting. A non-inverting amplifier means that positive signal in gives a positive signal out. For the best sound, ensure correct polarity at the speaker terminals. Do not confuse L and R terminals. Connect the positive (RED) (+) 4 or 8 Ohm outputs of the amplifier to the positive (+) binding posts of the loudspeakers and the negative (BLACK) (−) outputs (indicated as “0 Ohm at the back panel of the amplifier) to the (−) negative loudspeaker binding posts.

---

**Connecting the Source of Signal**

Using the RCA interconnects connect output terminals of the sources to the RCA inputs on the rear panel of the amplifier.

**Connect Power Source**

*When all connections are made,* connect the power cable. Prior to connecting the power cable ensure that the power source voltage is rated with the voltage category for which the amplifier is designed. Connect the power cable to the power outlet on the rear panel of the amplifier first. Then plug it firmly into the wall outlet.

Always have the speakers connected to the amplifier before turning it on. Short wires can damage the amplifier.

**Operation**

After speakers, input and power sources are connected it is safe to turn on the amplifier by pushing on the “power switch” and having the volume control turned all the way down.
**TIPS:**
Keep the input selector switch at the Mute position and turn on the power switch.

Rotate the VOLUME Control clockwise to increase the volume.
The A318B amplifier employs a relay-controlled timer to allow the tubes time to warm up and stabilize. When you turn on the power switch this will start the amplifier’s 2 minutes timer. For the first two minutes electricity will pass through the 6C33C-B heater. After the first two minutes electricity will pass into the input tubes 6C33C-B.

Only after the amplifier is on, select the desired input source by turning the INPUT SELECTION SWITCH on the Front Panel.

![Warning]

It will take at least 30 minutes to bring the amplifier to its best performance.

**Useful Tips:**

Turn the VOLUME CONTROL to the minimum level prior to powering ON the amplifier. Always turn ON the source equipment in the system before turning ON the amplifier and always turn OFF the amplifier first before turning off the source equipment. This procedure stresses the speakers and ears the least. Turn your amp off when it is not in use. Tube life is directly tied to hours of operation.

**Break-In period.**

Due to capacitors break-in the amplifier will sound better after a certain period of usage.

The break-in period for the A318B is about 100 hours when the amplifier is first used. During this period the sound quality will improve. Further improvement in sonic performance will occur after 100 to 200 hours of use.

**Playing the Music**

Tubes require some time to warm up (*). Allow the amplifier to warm up for 30 minutes, and then slowly raise the volume to the desired listening level.
Fig. 5

Connecting the Amplifier Diagram

4/8 Ohm Speaker

4/8 Ohm Speaker

Turntable

Phono Stage

CD-Player
Maintenance Guide

The Almarro A318B amplifier is designed to keep maintenance to a minimum. In some cases, however the owner can perform simple maintenance.

6C33C-B tube requires manual bias setting. We recommend checking and adjusting the bias voltage after the first 30 minute of operation every time when using the amplifier. (Read Output tubes Bias Adjustment Procedure carefully).

Any time you notice a change in the amplifier’s performance, check the tubes first. If it’s been a while since the tubes were replaced and the amplifier produces “unusual” sounds, the power tubes most likely need to be replaced.

To check input or output tubes replace them with a new set and compare sound quality. If you can’t hear any difference, the tubes are good and don’t need to be replaced.

Microphonics are caused when the insides of a tube start to lose their solid construction from vibration. There is no fix for microphonic effect and the tube should be replaced. All tubes will exhibit some degree of microphonics.

Any time you notice a change in the amplifier’s performance, check the tubes first. If it’s been a while since the tubes were replaced and the amplifier produces “unusual” sounds, the power tubes most likely need to be replaced.

Noise is more of a problem than microphonics. A noisy tube will make random popping noises, crackle occasionally or just hum. All tubes have a certain noise floor, this is the inherent background noise that the tube makes in operation. Typically, you will notice this as a soft hiss or “white noise” for high gain can exhibit more background noise.

Other components can cause noise problems that may be blamed on a bad tube.

Plate resistors can cause “hiss and crackling” as they age and begin to fail. A new tube may better amplify these defects, so try substituting another new tube to be sure of the source of the noise.

Tube quality degrades with age. Input tubes will vary from tube to tube and should be checked yearly.
Dust

Tubes last longer if the glass tube envelope remains clean from the oil on hands. This is why we recommend using a clean dry cloth.

We recommend removing dust from the tubes using a dry cloth before turning on the amplifier.

Note: Fine steel wools sometimes used for cleaning the tube surface are more effective for cleaning the surface however, a fragment of steel wool could cause an electric short, resulting in damage to the tube.

Bias Adjustment

CAUTION!

The voltage of the bias measurement point is a direct current of around 100v in relation to the ground potential of the chassis and tube socket fixed screws. There is the danger of a severe shock if you directly touch the bias measurement point. Please do not touch it under any circumstances.

The high voltages inside the amplifier chassis can be LETHAL.
WHY DO WE NEED TO ADJUST BIAS?

The 6C33C-B tube employed in the A318B amplifier requires manual bias adjustment due to its electrical characteristics and stability. Each of the 6C33C-B tubes has individual trimmers that are used to adjust each output tube’s bias voltage. “The negative (idle) DC voltage applied to the grid of each output tube which controls the standing, current draw of each tube is called bias”. (Page VII of this manual). The bias conditions are what determine how much current flows through the output 6C33C-B tubes when the music is not playing.

When we "measure the bias" we actually measure the voltage drop across the cathode resistor of that tube. When we "set or adjust the bias" we actually adjust the amount of negative voltage going to that tube's grid. When we set the bias by adjusting a trimmer you are establishing the correct amount of idle CURRENT that flows through the power tubes. Fluctuations in that current flow when you are playing music drive the speakers.

But we can't adjust the bias current directly; The only way to change the bias current is to change it by adjusting the amount of bias VOLTAGE that goes onto the tubes' control grids. Thus when we set the bias of an amplifier, we are adjusting the static VOLTAGE at the control grid of the tube in order to produce a desired amount of idle CURRENT flowing to the tube's plate. A small change in grid voltage, produces a large change in the amount of current flowing -- and that's basically how a tube works.

BENEFITS

- Optimum bias provides the best balance of tube life and sound quality.
- Individual bias trims eliminate the need for expensive matched sets of tubes or the need to replace all the tubes if one tube has a problem.
- The test points allow the user to check bias that each tube is working and that the amp is performing well (even if you don't intend to trim bias. You would see excessive voltage drift or a tube is out of adjusting range. This means that tube has to be replaced.

WHEN CHECK AND ADJUST BIAS?

Check and adjust the bias voltage every 1-hour during the first 10 hours break-in. We recommend to checking and adjusting the bias voltage after the first 30 minute of operation every time when using the amplifier. Bias has to be adjusted when output tubes 6C33C-B are replaced. Check and adjust the bias voltage every 20 hours during the next 100 hours break-in.

The step-by-step bias adjustment procedure below is simple and does not require technical skills or special training.
6C33C-B Bias Adjustment Procedure

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**TOOLS YOU NEED**

For bias adjustment/checkup you will require The "Multi-Meter"(or DC.V Meter/ voltmeter), and a flat-type screwdriver with a plastic handle.

General purpose analog voltmeters may have an accuracy of a few per cent of full scale, and are used with voltages from a fraction of a volt to several thousand volts. Digital multimeters (DMM) can be made with high accuracy, typically better than 1%. The particular tools incorporated into one DMM depend on the manufacturer and the price range. At the very least, a DMM will have meters for measuring voltage and current - both AC and DC.

**NOTE:** You will need a meter capable of measuring 0-1 Volt D.C. in order to make this adjustment. A low-cost Digital Multimeter (DMM) is the tool of choice, and can be obtained from many of the electronics retailers as well as auto parts stores and home centers.

The Multi-meter comes with some basic instructions. Read them first. If your multimeter is digital, it will require a small battery to operate. If it is analog, it does not need a battery to measure voltage.
6C33C-B Bias Adjustment Procedure

REQUIREMENTS

- An output load is required. Make sure that the speakers are connected to the amplifier. Prior to switching on the amplifier, verify the cables, including the speaker cables, are correctly connected.
- We recommend turning the volume to the lowest position in order to avoid any signal input that would in turn affect the accuracy of bias adjustment.
- The amp must be well warmed up (we recommend 30 minutes warm up). When you get ready to check the bias, there must no music playing through the amplifier.
- You will need a meter capable of measuring 0-1 Volt Direct Current (D.C) in order to make this adjustment and a flat screwdriver with a plastic (isolated) handle.

HOW TO MEASURE THE VOLTAGE:

- When you want to measure the DC voltage between two points on your circuit set the DMM to a DC Voltage measurement and touch the two leads on the two points. The voltage displayed is the voltage of the other lead relative to the “ground” lead.
- Set the meter to read 'millivolts' DC or use the 2 Volt scale. The voltages you are looking at are 0.18V. Each 6C33C-B tube has two bias adjustment points under its ceramic plates (“+” and “-” in picture below).
6C33C-B Bias Adjustment Procedure

- Insert the voltmeter test probes into the holes (bias measurement points). The tip of the Black test probe from the voltmeter should fit in the amp's NEGATIVE ("-") Bias Adjustment Point. The tip of the Red test probe from the voltmeter should fit in the amp's POSITIVE ("+") Bias Adjustment Point.

It is vital that the probe tips make *good* contact with the pins that you're attempting to read. Don't go overboard when pressing the probes against terminals.

- Turn on the A318B.
- Warm up the amplifier for 30 minutes. (Remember that the A318B amplifier employs a relay-controlled timer to allow the tubes time to warm up and stabilize. This will start the amplifier’s 2 minutes timer.)
Take a reading of the DMM. Recommended bias value is **0.18 Volt or less.** As an example the voltmeter shown in the picture below reads 166.6 mV (0.1666 V).

If the voltage is too high, the tube will be running "hot", and will have a shorter life. Low voltage settings cause output power down but it extends the tube life.

**ADJUST BIAS**

Each of the 6C33C-B tube has individual bias adjustment dials (trims) that are used to adjust each output tube’s bias voltage. These adjustment dials are located on the front panel of the amplifier. The picture below shows two dials hidden inside the small holes.
The left side bias trimmer as Adjustment Dial corresponds to the left side tube test point, and vice versa.

- Using the screwdriver **SLOWLY** adjust the bias for each tube until it measures the value at 0.18 DCV.
  - Turning bias trimmer right (clockwise) will increase bias voltage.
  - Turning bias trimmer left (counterclockwise) will decrease bias voltage.
  - You should never force-turn one of these trimmers.
Do not set the bias voltage over 0.22V because of the risk of damaging the tubes. If the voltage is too high, the tube will be running "hot", and will have a shorter life. In the worse case a tube plate may glow "cherry red" - which eventually destroy the tube if it has been this way for more than a few minutes!

The correct bias voltage value is 0.18DCV or less. (Direct Current Voltage). We recommend keeping bias voltage at 0.18DCV. This way the amplifier will produce enough power and tube life will be extended.

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END OF THE PROCEDURE
Troubleshooting

The troubleshooting guide helps problem solving.

Always follow these steps...

Problem
Hum from both channels.

Possible Cause
Bad tubes or tubes.

Troubleshooting...
Troubleshooting

The troubleshooting Guide

Problem
The tube has turnses white and

Possible Cause
Warranty

Almarro Products warrants to the original purchaser that each vacuum tube amplifiers shall be free from defects in parts or against defects in manufacture for one (1) year from the date of the original purchase. Vacuum tubes, if any are used in the component, are offered for 30 days warranty from purchase date.

This is a limited warranty, for the original purchaser only and does not transfer to any subsequent owner. During the limited warranty period, Almarro Products or an authorized Almarro Products service centers will provide service free of charge for both parts and labor.

To obtain such warranty service, the original purchaser must:

1. Complete and send included Warranty Registration Card within thirty (30) days of purchase.
2. Deliver the product to the nearest authorized service center of Almarro Products or ship with all freight and insurance charges prepaid, in its original packing container or equivalent to Almarro products (Japan)
3. Warranty does not cover regular product maintenance (tubes or fuses replacement)

WARRANTY DISCLAIMER

Except for the express warranties stated herein, Almarro Products claims all other warranties including, without limitation, all implied warranties of merchantability and fitness for a particular purpose. The foregoing constitutes Almarro Products entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages.

The warrantor assumes no liability for property damage or any other incidental or consequential damage whatsoever which may result from failure of this product.

All returns to the factory must be in the original packing, (new packing will be supplied for no charge if needed), accompanied by a written description of the defect, and must be shipped to Almarro Products via insured freight at the customer's own expense. Charges for unauthorized service and transportation costs are not reimbursable under this warranty.

Almarro Products will return repaired or replaced product to the original purchaser with pre-paid by Almarro Products shipping and insurance costs.

All warrantees, express or implied, become null and void where the product has been damaged by misuse, accident, neglect, modification, tampering or unauthorized alteration by anyone other than Almarro Products or service centers authorized by Almarro Products.
References:
Lynn Olson. “Tiny History of High Fidelity”. First published as "The Soul of Sound" by Lynn Olson, revised and updated in 2005.
RCA RC-30 Receiving Tube Manual, 1970
“All about Wiring”, Web Article (Guitar Amplifier) By Dave Hunter, February, 2008

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Information in this manual is subject to change without further notice