VAC Signature 202 iQ

Stereo Beam Power Amplifier
with patented
iQ Continuous Automatic Bias System

Operation & Maintenance Information

VAC

Valve Amplification Company

Manual issued 11/15/2023

Valve Amplification Company, Inc. 2172 10th Street Sarasota, FL 34237 Phone 941-952-9695 FAX 941-952-9691

SAFETY NOTICES, WARNINGS, AND CAUTIONS (ENGLISH)

The MAINS plug is used as the disconnect device. Disconnect the mains plug from the apparatus before servicing the unit.

Operate only from an AC MAINS SUPPLY of the voltage indicated. If voltage conversion is necessary it must be done at the VAC factory or by the importer.

The MAINS SUPPLY must be EARTHED. Do not defeat or remove the MAINS cord safety ground connection. Do not connect the mains cord to an outlet that is not properly earthed.

Provide adequate ventilation - allow at least 3 inches above, behind, and to each side.

Do not place in a completely enclosed cabinet.

Do not stack other equipment on top of the VAC unit.

Do not operate on carpet or any other surface that might block air flow. Do not impede air flow.

Keep all flammable objects away from the amplifier.

No naked flame sources should be placed on or near the apparatus.

Do not leave the apparatus unattended in operation.

Apparatus must not be exposed to dripping or splashing. Do not place objects containing liquids on the apparatus.

This apparatus is heavy. Be certain to install it in a secure location from which it can not fall or tip over. Obtain appropriate assistance to unpack, move, and install the apparatus.

Never operate the apparatus without all covers and cages securely in place.

Vacuum tubes become hot enough to cause serious burns. Never touch a tube when the apparatus is on; it may take several minutes for it to cool down after the apparatus is switched off.

Do not touch a tube if the glass is broken; the internal structure carries high voltage. Unplug the apparatus and wait 30 minutes before attempting to remove such a tube.

Recommendations de sécurité (French)

Le câble d'alimentation est utilisée comme interrupteur principal. Débranchez le cordon d'alimentation de l'appareil avant d'intervenir sur l'appareil.

L'appareil ne doit être utilisé que sur la tension indiquée. Si un changement de voltage est nécessaire, il doit être effectuée par VAC ou par l'importateur.

L'appareil doit être relié à la terre. Il ne faut pas supprimer pas ou déconnecter la terre sur le cordon d'alimentation. Ne pas brancher le cordon d'alimentation à une prise qui n'est pas correctement mise à la terre.

Il faut assurer une ventilation adéquate - laisser au moins une dizaine cm au-dessus et de chaque côté de l'appareil.

Ne placez pas l'appareil dans un meuble complètement fermé.

Ne pas empiler d'autres appareils sur le dessus du VAC.

Ne pas utiliser sur un tapis ou toute autre surface qui pourrait bloquer la circulation de l'air. Ne pas faire obstacle à l'écoulement d'air.

Conservez tous les objets inflammables loin de l'amplificateur.

Aucune flamme nue ne doit être placée sur l'appareil ou à proximité.

Ne pas laisser l'appareil sans surveillance lorsqu'en fonctionnement.

L'appareil ne doit pas être exposé à des éclaboussures. Ne placez pas d'objet rempli de liquide sur l'appareil.

Cet appareil est lourd. Veillez à l'installer dans un endroit sûr d'où il ne peut pas tomber ou basculer. Faites-vous aider pour déballer, déplacer et installer l'appareil.

Ne faites jamais fonctionner l'appareil sans que tous les couvercles et les cages soient bien en place.

Les tubes chauffent suffisamment pour causer des brûlures graves. Ne jamais toucher un tube lorsque l'appareil est allumé, cela peut prendre plusieurs minutes pour qu'il refroidisse après que l'appareil est éteint.

Ne touchez pas un tube si le verre est cassé, la structure interne est traversée par des courants élevés. Débranchez l'appareil et attendre 30 minutes avant de tenter de retirer un tel tube.

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INTRODUCTION

The Signature 202 iQ is a unique power amplifier, and one of the most vivid and detailed in VAC's history. When compared to the earlier Phi series amplifier, the Signature features VAC's patented full time stable automatic bias system (the "iQ" technique first seen in the Statement 450 iQ), and a new low distortion direct-coupled input & driver circuit configurable specifically for balanced or for SE inputs via a rear panel switch. In the balanced mode, the 202 is fully balanced from input to output for the best performance.

The Signature 202 iQ may be used as a 100+ watt/channel stereo amplifier, or can be connected as a 200+ watt monophonic amplifier.

The Signature 202 iQ is designed not to the latest fad but to substance, for the highest possible sound quality. Time spent familiarizing yourself with this manual will be well rewarded.

INSTALLATION - STEREO OR MONO USE

01) Open the hinged tube cover.

02) Install the vacuum tubes. Each tube or its box has a "V" number, which corresponds to the labels on the top plate of the amplifier; these indicate where each tube should be installed.

Fit each tube into the matching socket.

When inserting and removing tubes, handle them by their bases, not by their glass bulbs.

Note that there is a locator pin on the octal (eight contact) tubes that indicates proper alignment.

03) Connect input cables, either RCA types for unbalanced sources, or balanced XLR types for balanced sources. If you are operating in the mono mode, you may use either the left or right channel jack.

04) Verify that the two "Balanced / Single-Ended" switch on the back panel is set to the same desired position. Set the input type switch to "BAL" (for balanced input via the XLR jacks) or "SE" (for single-ended input via the RCA jacks).

05) Set the mode switch to "MONO" or "STEREO" as desired.

06) Connect the speaker cables; the black lead goes to "COM". The red lead goes to "+2 to 4" or "+4 to 8". If you are operating in the mono mode, you may use either set of connectors; be sure to listen to both taps to see which best matches your speaker. Call or e-mail to consult with us if you have any questions about the taps.

07) Connect a 12 volt trigger cable into the socket on the back panel if desired; this allows the amplifier to be turned on and off by an external device.

08) Provide adequate ventilation - allow at least 3 inches above, behind, and to each side.

09) Do not place in an enclosed cabinet. Do not stack other equipment on top of the VAC unit.

10) Do not operate on carpet or any other surface that might block air flow.

11) The chassis will become hot in normal use.

12) Do not allow the chassis to touch any metal parts, such as the frame of an equipment rack. This might create a parallel ground path that could degrade the sound of your system.

13) Connect the power cord to the power source indicated on the rear panel (will be either 100, 120, 220, or 230/240 volts AC). Voltage conversions must be done at the factory of by an authorized VAC importer.

14) Avoid power conditioners that float the ground pin - these could be dangerous.

15) Power requirements are approximately 600 watts. Pay close attention to power quality, and be aware that different power cords can alter the sound.

16) **No bias adjustment is necessary.** The patented VAC iQ system watches tube conditions continuously and keeps the underlying quiescent current withing 1% of the target value at all times. Any problem with a KT88 tube will be indicated on the front panel display. See the section on the "VAC iQ System".

NOTES:

Do not remove and connect input cables or speaker cables while is amplifier is running. Doing so risks damage to your loudspeakers or the amplifier from transients.

Do not operate the amplifier without a loudspeaker or load resistor attached.

Do not allow anything to touch the tubes in normal operation - they become very hot.

Take care to keep everyone, especially children and pets, from being able to reach and touch the tubes, which become extremely hot and cause serious injury.

Never touch a tube if the glass is broken. The internal structures carry high voltage and could present a serious, possibly lethal shock. If a tube breaks, unplug the amplifier and wait 30 minutes, then remove the tube.

Keep flammable objects away from the amplifier.

Do not connect a grounded load to the outputs.

FUSE

It is unlikely that you will ever need to change a fuse.

The fuse is located in a small drawer that is built into the AC power receptacle. There are two possible positions in the drawer. The one nearest to the inside of the chassis is the active fuse. The position nearer to the outside of the chassis may be used to store a spare fuse.

Adjacent to the fuse holder you will find text indicating the operating voltage for your preamplifier and the appropriate fuse rating. Fuses of are the 5x20mm size and should be of the “slow blow” or “time delay” type.

Use only fuses that have the proper safety approvals for your country.

OPERATION

Power on using the front panel rocker switch. The iQ circuit will most quickly bias the tubes for optimal performance if you wait a minute or two before playing music.

As with all high fidelity products, the sound characteristic of the VAC changes somewhat as it warms up. We advise against leaving the equipment on at all times for safety reasons, and because of the attendant acceleration of output tube wear and power consumption. Life of the output tubes averages 3,000 to 8,000 hours. For best tube life, turn the amplifier off when you are not listening.

Any time that the VAC Power Amplifier has not been used for a few weeks the sound may be different. This is also normal for high resolution audio equipment. Optimum sound should return after a few hours of operation, preferably with an audio signal.

Please note that although your VAC System has been run for 48 hours at the factory, the break-in time of high resolution audio equipment is infuriatingly long. The Signature sound will continue to season for approximately 200 hours. The early sound of the amplifier will be less extended, dynamic, and coherent. Then the sound will improve noticeably, followed by a period of darker sound, finally giving way to the desired musicality. Patience is a virtue.

Also be aware that many components display the need for a new break in period after being transported in unheated cargo aircraft.

The VAC iQ System

In engineering, the abbreviation "Iq" denotes the quiescent current of a vacuum tube, also known as the idle current or bias point. The Iq is what is being set when you adjust an amplifier's bias.

For best performance, the idle current must be set and maintained precisely, even as the amplifier warms up, the power line varies, the tubes drift, and regardless of whether you're playing the music softly or loudly. No system has been able to do this. Until now.

The result of 17 years of research, the patented VAC Iq Bias Control System is the only system able to monitor continuously the true quiescent current point of each output tube and hold it precisely at the desired value, thus ensuring optimal performance at all times. It actually outperforms manual systems because it can correct for the heating effects that occur when reproducing loud passages of music. The VAC circuit both MONITORS and CONTROLS, continuously, in real time.

The resulting performance difference is one that you can easily hear. And not only does it sound better, it radically reduces the rate of tube failures, and is self-diagnosing.

In operation:

The iQ circuit monitors and maintains the correct bias adjustment for the KT88 output tubes at all times, regardless of the music playing. It also contains two other components that inform you of tube condition and protect the amplifier; the operation of these two circuits is indicated by the bicolor LEDs located in the silver trim bar on the front of the amplifier.

If an LED illuminates GREEN, this is an indication that the associated KT88 is becoming weak. In a conventional amplifier, you would have advanced the bias control well clockwise for this tube. No immediate action is required; simply replace this KT88 with a fresh one when time permits, and the amplifier will make the best of the weak tube until then.

An LED will illuminate RED if an output tube draws excessive current, i.e., if a 'run away' occurs. Because of the stabilizing action of the auto bias circuit, this is most likely to occur if something inside the tube has physically broken. The iQ system detects the fault within a fraction of a second and shuts down the main power supply, thus preventing any damage; all of this happens long before the fuse can react. Switch power off, and replace and discard the indicated tube after it cools down.

INSTALLING NEW OUTPUT TUBES

First, see the SAFETY NOTICE earlier in the manual.

Output tubes are type KT88. Replacement output tubes should be purchased from VAC. It is desirable that tubes be in matched quartets for each channel, and be close to the "bogey" values for the major parameters. Make certain that each tube fits firmly in its socket.

ALL POWER MUST BE OFF. Wait until the old tubes have cooled down (TUBES BECOME HOT ENOUGH TO CAUSE SERIOUS BURNS WHEN IN OPERATION AND MAY TAKE SEVERAL MINUTES TO COOL DOWN). Install the new tubes firmly and fully in the sockets, observing that the tube will only fit into the socket in one orientation, determined by the plastic “keyway” in the center of the base. Do not use excessive force. Lower the hinged tube cover before operating the amplifier.

Switch on the amplifier. The patented VAC iQ System will adjust and monitor idle current continuously.

A slight blue or violet glow in the tube is not cause for concern.

Some versions of KT88 will evidence a dull orange glow over a small percentage of the tube’s anode.

In the event that trouble is encountered check connections and/or try another tube. Stop if the problem persists and consult with your dealer or VAC.

For further information, refer to Tips & Advice: Tubes in General and Tips & Advice: Output Tubes.

REPLACEMENT OF LOW LEVEL TUBES

All power must be switched off. Allow tubes to cool down. Remove and replace with new tubes of the appropriate types. Note that these tubes have a central plastic shaft with a locator ridge on one side; this ridge must be aligned with the slot in the socket.

Replacement tubes are available from VAC and other sources.

For further information, refer to Tips & Advice: A Word About Tubes in General and Tips & Advice: A Word About Low Level Tubes.

CARE OF CHASSIS

VAC chassis are machined aluminum for superior electromagnetic performance. The main chassis is finished in a durable matte powdercoat paint. Cleaning the unit with a damp cloth WHILE THE AMP IS SWITCHED OFF AND UNPLUGGED should suffice. Do not get cleaning solutions onto or into the tube sockets or jacks.

TIPS & ADVICE SECTION

A Word About Tubes in General

It is true that each brand of tube sounds different in a particular high resolution circuit. This is because no two manufacturers make a tube type in quite the same way, and the central tendencies of the performance parameters will differ slightly with each maker. To emphasize the point, examine the plate structure of any two 6SN7 from different manufacturers and you may find that they are not the same shape and size. (Be careful here, as often a tube is made by a firm other than indicated on its label. In the heyday of tubes it was common to crossbrand between major labels, such as GE and RCA. Today many labels do not manufacture their tubes at all, including Gold Aero and RAM.)

This sonic variability may at first seem a liability, but further thought will reveal that it is an advantage, just like the ability to adjust VTA on a tone arm. The owner of a tube amplifier can select those tubes which sound like the real thing in his/her specific system. Of course, if the manufacturer you prefer is rare you may want to purchase a few spare tubes for the future.

How long should tubes last? It has long been known in professional circles (and probably now forgotten) that a tube such as the 12AX7 will display better performance characteristics after two years of continual operation than when it was new. In normal use it is not unusual for a low level tube to last 5 years or longer. Output tubes are another story, as they are continually providing significant amounts of current. Here the sound is your best guide. Certainly a tube should be replaced when its emission is significantly down or its transconductance is substantially out of specification. In normal use, output tubes will last at least 2 years and perhaps more than 5 years.

It is normal to see a slight blue or violet glow in a power tube such as a KT88. However, a vivid violet indicates excess current flow through the tube and should be investigated.

VAC can test tubes for concerned customers.

Tips: Output Tubes

Your VAC Amplifier uses the KT88 kinkless tetrode. It is strongly recommended that replacement tubes be purchased only from VAC. If, however, you want to customize the sound to your tastes, be aware that as with interconnects and speaker cables, each tube manufacturer's KT88 tends to have a distinct sound, as well as its own reliability profile.

KT90A/KT99, KT120, and KT150 tubes that meet at least the minimum KT88 specifications may be used. However, as of the time of this writing, the KT150 does not produce desirable sonic characteristics in this application. Note that you will need to provide alternate protect from burns if the tube cover can not be fully closed.

Tips: Low Level Tubes

The Voltage Amplifier/Phase Splitter and driver tubes are the 6SN7 medium mu octal twin triode. Your amplifier is fitted with the current production

Other equivalent type numbers are 5692, 13D2, B65, ECC32, QA2408, QB65, and CV1988.

Tubes V1 (input tube) and V2 (driver tube) in each channel should be transconductance matched for minimum distortion.

We strongly recommend obtaining tubes as sets from VAC.

Tips: Impedance Matching

We strongly suggest that you experiment with the available impedance connections for the best sonic match with your system. Since no loudspeaker represents an unchanging impedance at all frequencies, it is impossible to assert with certainty which output tap is appropriate to use. In many systems an amazing difference in sound will exist between the various impedance taps.

Since the impedance of most loudspeakers vary over a wide range experimentation is essential. Most speakers have a rated impedance of 4 or 8 ohms. We recommend starting with the 8 ohm connection; after you know the sound if that connection, try the 4 ohm connection. Choose the connection that sounds best to your ears.

If you bi-wire your system (run separate speaker leads from the amplifier to the high and low frequency transducers) you may discover that two different impedance taps work best.

Contrary to popular misconception, no power is lost due to unused output taps.

For more information consult VAC Technical Monograph 90-9, which may be viewed on our wesite (http://www.vac-amps.com).

Tips: Audio Grounding

Systems incorporating single-ended interconnect cables ("RCA cables") are prone to a problem known as "ground looping", which can result in extraneous hums and buzzes audible through the loudspeaker. If this occurs in your system, you have to attempt to minimize the ground loop.

To minimize the buzz using the normal RCA input jack, there are several steps you can take:

1) Use the shortest interconnects possible.
2) Use interconnects with good shielding properties.
3) Keep the audio cables as close together as possible.
4) Keep the AC cords away from the audio cables.
5) Try different ground settings on your preamplifier, if it has them. For example, the VAC Signature, Phi, and Renaissance preamplifiers may be set to "ungrounded" or "XLR" audio modes.
6) The use of cheater plugs is not recommended and poses a safety hazard.

SPECIFICATIONS

The VAC Signature 202 iQ has been developed with the critical ear as the major arbiter of quality, with both conventional and unique measurements providing insight and guidance as necessary. The lack of emphasis on measurements is due to the fact that engineering's arsenal of equipment and techniques do not operate on the pattern recognition principles that control human perception of sound.

In the immortal words of Daniel von Recklinghausen, if it measures good and sounds bad, it is bad. If it measures bad and sounds good, you've measured the wrong things.

For those concerned with test bench performance, the following describes typical measured performance when operated at 120 VAC, 60 Hz.

Power Output:	110 watts/channel continuous average power at 1 kHz with less than 3% THD into 8 ohms connected to the 8 ohm tap in the stereo mode.
	220 watts in mono operation, 4 ohm load connected to paralleled 8 ohm taps.
Frequency Response:	down 0.5 dB at 7 Hz and 30 kHz, ref 0 dB = 1 watt @ 1 kHz.
	down 3.0 dB at 3.5 Hz and 115 kHz, ref 0 dB = 1 watt @ 1 kHz.
Absolute Polarity:	Does not invert absolute phase.

WARRANTY

Your equipment is warranted for a period of thirty (30) days from the date of purchase. In addition, if the registration form is received by VAC along with a copy of your sales receipt from an authorized VAC dealer within this thirty days, the warranty will be extended to two (2) years (tubes excepted). This warranty applies only to units sold in the United States of America through authorized VAC dealers and operated within the United States by the original purchaser. It covers factory service and, within the continental U.S., standard return shipping. For warranty information outside of the U.S. contact the importer of VAC equipment for your country. Units sold outside of the U.S. should still be registered with VAC. It is the responsibility of the customer and/or dealer to ensure suitability of this equipment for any particular application.

Your questions and comments are always welcome. Contact:

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2172 10th Street
Sarasota, FL 34237
Telephone (941) 952 9695 Fax (941) 952 9691
info@vac-amps.com

Detach and mail to the address above as soon as possible.

Signature 202 iQ Registration Form

Name _____

Address _____

_____

Telephone _____/_____-_____ e-mail _____

Dealer name _____ City _____

Salesperson _____ Purchase date _____ Serial Number _____

How did you first learn of VAC products? _____

What other brands/models did you consider? _____

_____

What made you decide on the VAC? _____

_____

What else would you like us to know? _____

_____

_____

Optional:

What magazines/websites do you read regularly? _____

What are your hobbies (besides filling in warranty cards)? _____

What are your favorite types of music? _____

_____

On what format? (CD, LP, Streaming, DVD, SACD, MP3, etc.) _____

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Also be aware that many components display the need for a new break in period after being transported in unheated cargo aircraft.

The VAC iQ System

In engineering, the abbreviation "Iq" denotes the quiescent current of a vacuum tube, also known as the idle current or bias point. The Iq is what is being set when you adjust an amplifier's bias.

For best performance, the idle current must be set and maintained precisely, even as the amplifier warms up, the power line varies, the tubes drift, and regardless of whether you're playing the music softly or loudly. No system has been able to do this. Until now.

The result of 17 years of research, the patented VAC Iq Bias Control System is the only system able to monitor continuously the true quiescent current point of each output tube and hold it precisely at the desired value, thus ensuring optimal performance at all times. It actually outperforms manual systems because it can correct for the heating effects that occur when reproducing loud passages of music. The VAC circuit both MONITORS and CONTROLS, continuously, in real time.

The resulting performance difference is one that you can easily hear. And not only does it sound better, it radically reduces the rate of tube failures, and is self-diagnosing.

In operation:

The iQ circuit monitors and maintains the correct bias adjustment for the KT88 output tubes at all times, regardless of the music playing. It also contains two other components that inform you of tube condition and protect the amplifier; the operation of these two circuits is indicated by the bicolor LEDs located in the silver trim bar on the front of the amplifier.

If an LED illuminates GREEN, this is an indication that the associated KT88 is becoming weak. In a conventional amplifier, you would have advanced the bias control well clockwise for this tube. No immediate action is required; simply replace this KT88 with a fresh one when time permits, and the amplifier will make the best of the weak tube until then.

An LED will illuminate RED if an output tube draws excessive current, i.e., if a 'run away' occurs. Because of the stabilizing action of the auto bias circuit, this is most likely to occur if something inside the tube has physically broken. The iQ system detects the fault within a fraction of a second and shuts down the main power supply, thus preventing any damage; all of this happens long before the fuse can react. Switch power off, and replace and discard the indicated tube after it cools down.

INSTALLING NEW OUTPUT TUBES

First, see the SAFETY NOTICE earlier in the manual.

Output tubes are type KT88. Replacement output tubes should be purchased from VAC. It is desirable that tubes be in matched quartets for each channel, and be close to the "bogey" values for the major parameters. Make certain that each tube fits firmly in its socket.

ALL POWER MUST BE OFF. Wait until the old tubes have cooled down (TUBES BECOME HOT ENOUGH TO CAUSE SERIOUS BURNS WHEN IN OPERATION AND MAY TAKE SEVERAL MINUTES TO COOL DOWN). Install the new tubes firmly and fully in the sockets, observing that the tube will only fit into the socket in one orientation, determined by the plastic “keyway” in the center of the base. Do not use excessive force. Lower the hinged tube cover before operating the amplifier.

Switch on the amplifier. The patented VAC iQ System will adjust and monitor idle current continuously.

A slight blue or violet glow in the tube is not cause for concern.

Some versions of KT88 will evidence a dull orange glow over a small percentage of the tube’s anode.

In the event that trouble is encountered check connections and/or try another tube. Stop if the problem persists and consult with your dealer or VAC.

For further information, refer to Tips & Advice: Tubes in General and Tips & Advice: Output Tubes.

REPLACEMENT OF LOW LEVEL TUBES

All power must be switched off. Allow tubes to cool down. Remove and replace with new tubes of the appropriate types. Note that these tubes have a central plastic shaft with a locator ridge on one side; this ridge must be aligned with the slot in the socket.

Replacement tubes are available from VAC and other sources.

For further information, refer to Tips & Advice: A Word About Tubes in General and Tips & Advice: A Word About Low Level Tubes.

CARE OF CHASSIS

VAC chassis are machined aluminum for superior electromagnetic performance. The main chassis is finished in a durable matte powdercoat paint. Cleaning the unit with a damp cloth WHILE THE AMP IS SWITCHED OFF AND UNPLUGGED should suffice. Do not get cleaning solutions onto or into the tube sockets or jacks.

TIPS & ADVICE SECTION

A Word About Tubes in General

It is true that each brand of tube sounds different in a particular high resolution circuit. This is because no two manufacturers make a tube type in quite the same way, and the central tendencies of the performance parameters will differ slightly with each maker. To emphasize the point, examine the plate structure of any two 6SN7 from different manufacturers and you may find that they are not the same shape and size. (Be careful here, as often a tube is made by a firm other than indicated on its label. In the heyday of tubes it was common to crossbrand between major labels, such as GE and RCA. Today many labels do not manufacture their tubes at all, including Gold Aero and RAM.)

This sonic variability may at first seem a liability, but further thought will reveal that it is an advantage, just like the ability to adjust VTA on a tone arm. The owner of a tube amplifier can select those tubes which sound like the real thing in his/her specific system. Of course, if the manufacturer you prefer is rare you may want to purchase a few spare tubes for the future.

How long should tubes last? It has long been known in professional circles (and probably now forgotten) that a tube such as the 12AX7 will display better performance characteristics after two years of continual operation than when it was new. In normal use it is not unusual for a low level tube to last 5 years or longer. Output tubes are another story, as they are continually providing significant amounts of current. Here the sound is your best guide. Certainly a tube should be replaced when its emission is significantly down or its transconductance is substantially out of specification. In normal use, output tubes will last at least 2 years and perhaps more than 5 years.

It is normal to see a slight blue or violet glow in a power tube such as a KT88. However, a vivid violet indicates excess current flow through the tube and should be investigated.

VAC can test tubes for concerned customers.

Tips: Output Tubes

Your VAC Amplifier uses the KT88 kinkless tetrode. It is strongly recommended that replacement tubes be purchased only from VAC. If, however, you want to customize the sound to your tastes, be aware that as with interconnects and speaker cables, each tube manufacturer's KT88 tends to have a distinct sound, as well as its own reliability profile.

KT90A/KT99, KT120, and KT150 tubes that meet at least the minimum KT88 specifications may be used. However, as of the time of this writing, the KT150 does not produce desirable sonic characteristics in this application. Note that you will need to provide alternate protect from burns if the tube cover can not be fully closed.

Tips: Low Level Tubes

The Voltage Amplifier/Phase Splitter and driver tubes are the 6SN7 medium mu octal twin triode. Your amplifier is fitted with the current production

Other equivalent type numbers are 5692, 13D2, B65, ECC32, QA2408, QB65, and CV1988.

Tubes V1 (input tube) and V2 (driver tube) in each channel should be transconductance matched for minimum distortion.

We strongly recommend obtaining tubes as sets from VAC.

Tips: Impedance Matching

We strongly suggest that you experiment with the available impedance connections for the best sonic match with your system. Since no loudspeaker represents an unchanging impedance at all frequencies, it is impossible to assert with certainty which output tap is appropriate to use. In many systems an amazing difference in sound will exist between the various impedance taps.

Since the impedance of most loudspeakers vary over a wide range experimentation is essential. Most speakers have a rated impedance of 4 or 8 ohms. We recommend starting with the 8 ohm connection; after you know the sound if that connection, try the 4 ohm connection. Choose the connection that sounds best to your ears.

If you bi-wire your system (run separate speaker leads from the amplifier to the high and low frequency transducers) you may discover that two different impedance taps work best.

Contrary to popular misconception, no power is lost due to unused output taps.

For more information consult VAC Technical Monograph 90-9, which may be viewed on our wesite (http://www.vac-amps.com).

Tips: Audio Grounding

Systems incorporating single-ended interconnect cables ("RCA cables") are prone to a problem known as "ground looping", which can result in extraneous hums and buzzes audible through the loudspeaker. If this occurs in your system, you have to attempt to minimize the ground loop.

To minimize the buzz using the normal RCA input jack, there are several steps you can take:

1) Use the shortest interconnects possible.
2) Use interconnects with good shielding properties.
3) Keep the audio cables as close together as possible.
4) Keep the AC cords away from the audio cables.
5) Try different ground settings on your preamplifier, if it has them. For example, the VAC Signature, Phi, and Renaissance preamplifiers may be set to "ungrounded" or "XLR" audio modes.
6) The use of cheater plugs is not recommended and poses a safety hazard.

SPECIFICATIONS

The VAC Signature 202 iQ has been developed with the critical ear as the major arbiter of quality, with both conventional and unique measurements providing insight and guidance as necessary. The lack of emphasis on measurements is due to the fact that engineering's arsenal of equipment and techniques do not operate on the pattern recognition principles that control human perception of sound.

In the immortal words of Daniel von Recklinghausen, if it measures good and sounds bad, it is bad. If it measures bad and sounds good, you've measured the wrong things.

For those concerned with test bench performance, the following describes typical measured performance when operated at 120 VAC, 60 Hz.

Power Output:	110 watts/channel continuous average power at 1 kHz with less than 3% THD into 8 ohms connected to the 8 ohm tap in the stereo mode.
	220 watts in mono operation, 4 ohm load connected to paralleled 8 ohm taps.
Frequency Response:	down 0.5 dB at 7 Hz and 30 kHz, ref 0 dB = 1 watt @ 1 kHz.
	down 3.0 dB at 3.5 Hz and 115 kHz, ref 0 dB = 1 watt @ 1 kHz.
Absolute Polarity:	Does not invert absolute phase.

WARRANTY

Your equipment is warranted for a period of thirty (30) days from the date of purchase. In addition, if the registration form is received by VAC along with a copy of your sales receipt from an authorized VAC dealer within this thirty days, the warranty will be extended to two (2) years (tubes excepted). This warranty applies only to units sold in the United States of America through authorized VAC dealers and operated within the United States by the original purchaser. It covers factory service and, within the continental U.S., standard return shipping. For warranty information outside of the U.S. contact the importer of VAC equipment for your country. Units sold outside of the U.S. should still be registered with VAC. It is the responsibility of the customer and/or dealer to ensure suitability of this equipment for any particular application.

Your questions and comments are always welcome. Contact:

Valve Amplification Company
2172 10th Street
Sarasota, FL 34237
Telephone (941) 952 9695 Fax (941) 952 9691
info@vac-amps.com

Detach and mail to the address above as soon as possible.

Signature 202 iQ Registration Form

Name _____

Address _____

_____

Telephone _____/_____-_____ e-mail _____

Dealer name _____ City _____

Salesperson _____ Purchase date _____ Serial Number _____

How did you first learn of VAC products? _____

What other brands/models did you consider? _____

_____

What made you decide on the VAC? _____

_____

What else would you like us to know? _____

_____

_____

Optional:

What magazines/websites do you read regularly? _____

What are your hobbies (besides filling in warranty cards)? _____

What are your favorite types of music? _____

_____

On what format? (CD, LP, Streaming, DVD, SACD, MP3, etc.) _____