



# VT80 SE

Stereo Power Amplifier



Thank you for choosing the VT80 SE to be a part of your high performance music listening system. Since 1970, Audio Research has been creating some of the world's finest audio equipment. Each piece is handcrafted in Minnesota and has been designed to provide many years of listening enjoyment.

We understand you are eager to begin listening; however, please take a few minutes to read through this guide for useful information concerning the operation of your new amplifier. Once installed, the performance of this amplifier will continue to improve over time for you to fully appreciate the benefits it will provide to your system.

After reading the user guide, if you have any further questions regarding your amplifier, contact your dealer who will be happy to help you make the most of your new component.

Good Listening!

**Thank You.**

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Warnings

To prevent fire, or shock hazard, do not expose your VT80 SE to rain or moisture.

Do not place objects containing water on top of this unit.

This unit contains voltages which can cause serious injury or death. Do not operate with covers removed. Refer servicing to your authorized Audio Research dealer or other qualified personnel.

The detachable power cord on your VT80 SE is equipped with a heavy gauge, 3-conductor cable and a standard three-prong (US) grounding plug appropriate to the country to which it is originally shipped. For absolute protection, do not defeat the ground power plug. This provides power line grounding of the VT80 SE chassis to provide absolute protection from electrical shock.

The appliance coupler (a.c. power connector) at the rear of this unit must be accessible for emergency power disconnect.

The VT80 SE shipped outside North America is shipped with a protective, ventilated cover. While the cover may be removed, its use is recommended to prevent accidental contact with the hot vacuum tubes.

For continued protection against fire hazard, replace the fuse only with the same type and rating as specified at the fuse holder.

The power button on the front of this unit, when off, does not disconnect all power from this unit. This unit is in sleep mode when not on.

This unit is RoHS compliant.

**A note about packaging...**

Save all packaging in a dry place away from fire hazard. Your VT80 SE amplifier is a precision electronic instrument and should be properly cartoned any time shipment is made. You may not have occasion to return your unit to the factory for service, but if that should prove necessary, or other occasion requiring shipment occurs, the original packaging will protect your VT80 SE from unnecessary damage or delay.

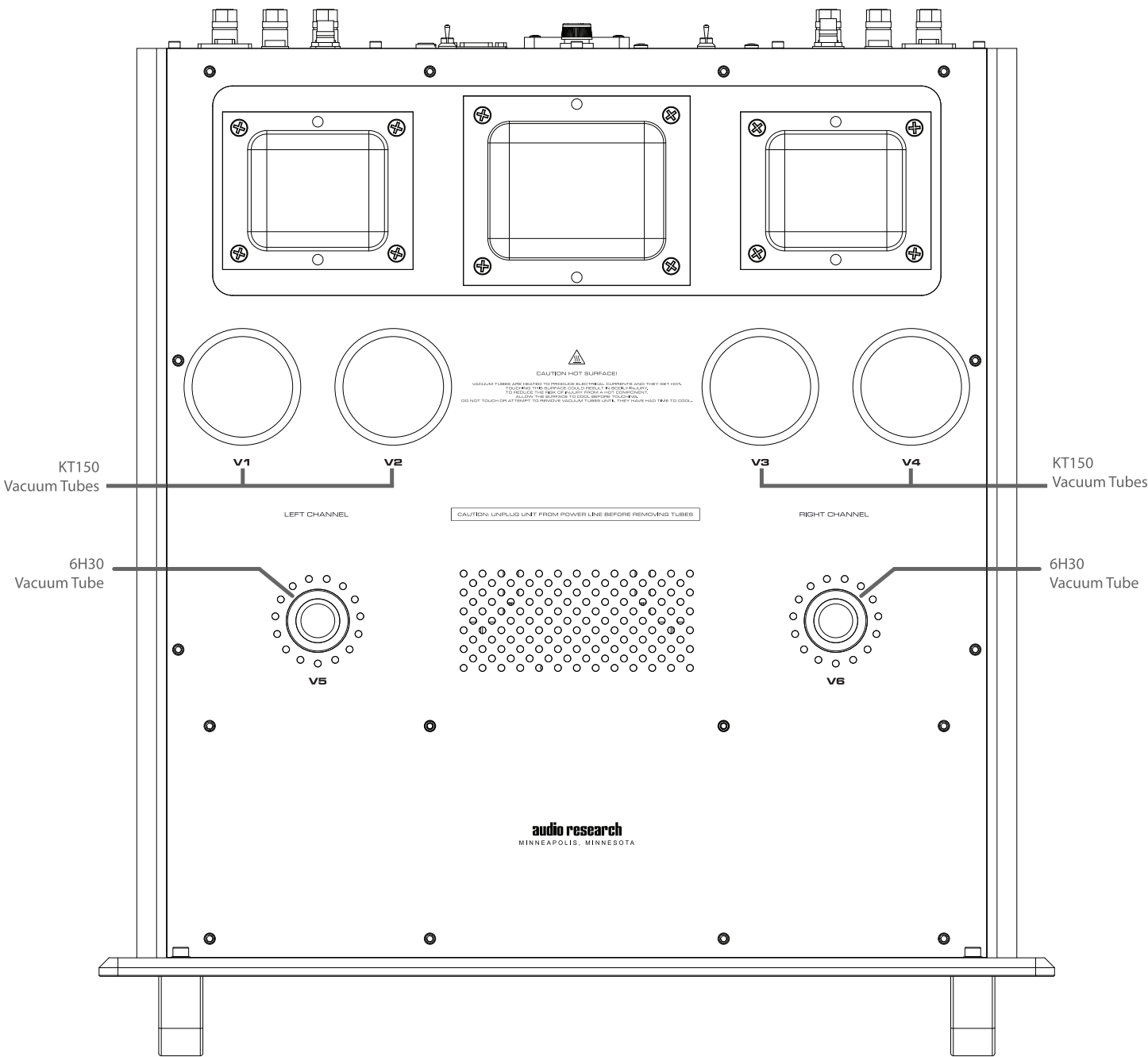
**Before operating the VT80 SE**

This unit has been shipped with the vacuum tubes installed in protective foam in separate boxes packed inside the shipping carton. Included are two matched pairs of KT150 power output tubes and two 6H30 tubes. Remove the tubes carefully from the protective foam.

# Installation

## Top Plate

### VT80 SE TOP VIEW



# Installation

## To remove the top cover (for VT80 SE units sold outside of North America)

Using the provided hex-head driver, loosen the fastening screws from the front and back edges of the tube cover. Once all of the screws have been removed, carefully lift the cover.

After removing the top cover and the vacuum tubes packed in protective foam, see the Top Plate illustration to install the tubes for your VT80 SE in their proper locations in the chassis. Note that the numbers written on each tube correspond to a 'V' number etched on the chassis next to each tube socket. Insert each tube firmly, carefully aligning the tube pins with the corresponding socket holes.

## In your system

To insure normal component life and safe operation this unit must be operated only in an upright position. Adequate airflow and proper cooling can occur only if there is no restriction above and behind the unit and on either side.

The special non-marring elastomer feet provide adequate spacing and stability only on a smooth, hard surface, and also assist to isolate the amplifier from spurious vibrations. For upright stability and best performance, never operate the unit while it is sitting on a soft surface such as a thick rug or carpet.

Due to its weight, this amplifier must be supported on a surface specifically rated for such a load. Check with the manufacturer of your support system to be sure it is rated to handle this weight.

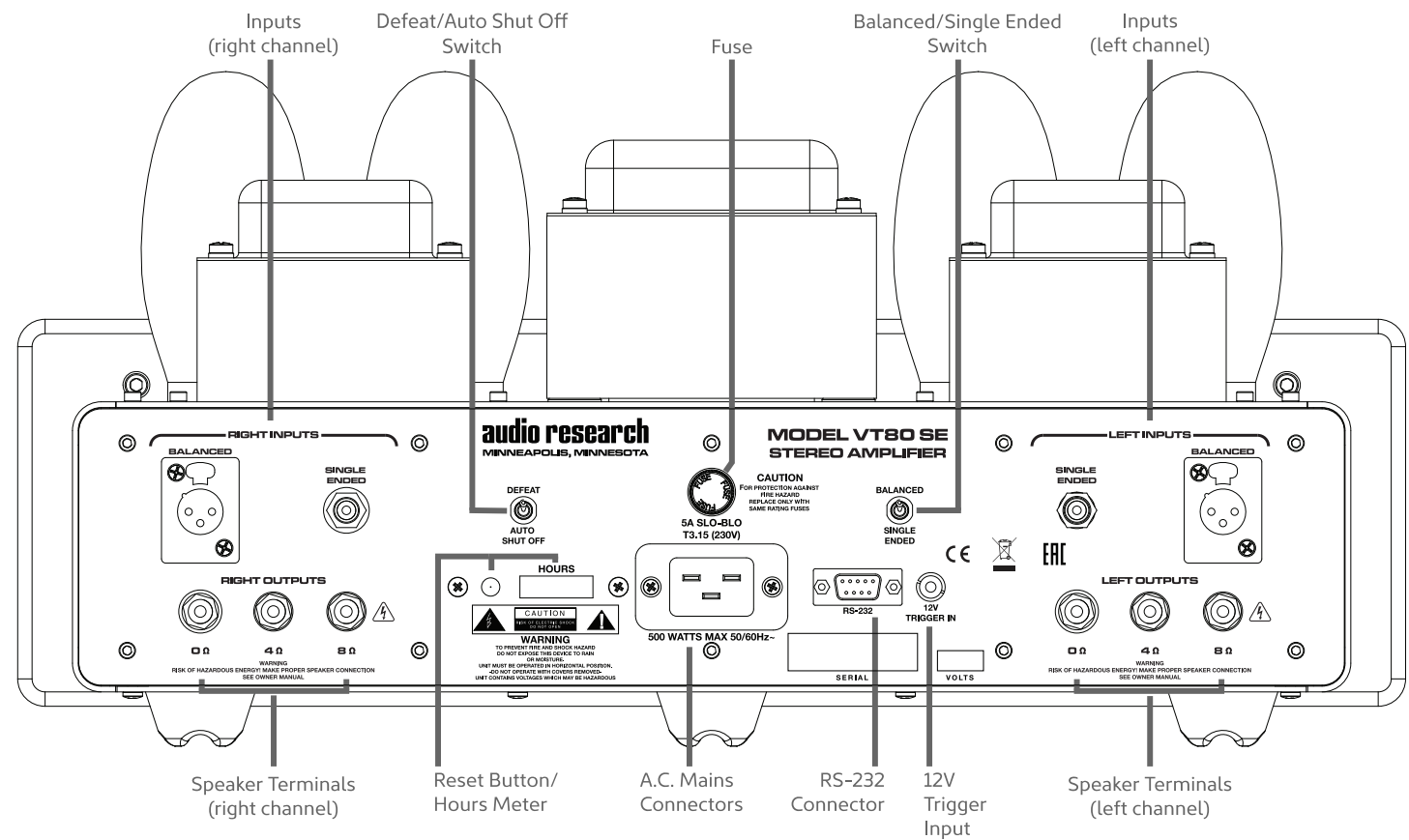
If the unit is to be operated in an enclosure such as an equipment rack or cabinet, make certain that adequate airflow above and to each side of the unit is provided. A minimum of 6 inches (16 cm) on top and an open back. During operation, if there are doors on the cabinet, they must remain open.

The 'ambient' operating temperature should never exceed 86° F, 30° C. Improper installation will cause premature tube failure and will affect your warranty, as well as the service life of the unit. It is normal for a vacuum tube power amplifier to run quite warm, and if used for prolonged periods, hot to the touch. All components within are operated at safe, conservative levels and will not be improperly affected providing the requirements outlined above are adhered to.

# Connections

## Back Panel Controls and Connections

### VT80 SE REAR VIEW



# Connections

## Input Connectors

The VT80 SE uses a fully balanced circuit topology and has a pair of balanced XLR input connectors along with a pair of single-ended RCA input connectors. The rear panel switch must be in the appropriate position for either Single-Ended or Balanced use. Connect your preamplifier's output to the VT80 SE before turning on the amplifier. Do not connect the balanced XLR input connectors and the single-ended RCA connectors at the same time – connect one pair or the other.

## Output Connectors

Proprietary, heavy-duty output terminals are provided on the rear panel for 4 or 8-ohm speaker impedance loads. Using high-quality speaker cables, securely fasten the (-) speaker lead to the appropriate ( 0  $\Omega$  black banded) terminal, then the (+) lead to the matching (4 or 8  $\Omega$  red banded) terminal. Follow your speaker manufacturer's impedance specification. The VT80 SE puts out the same amount of power whether the 4 or 8-ohm terminals are used.

**Note:** The 4  $\Omega$  tap is grounded. Avoid wiring and speaker switching systems that have a common ground wiring or switching of the amplifier output. Some headphone switching systems have a common ground. Special connections must be made to use such systems. Contact Audio Research customer support for more information.

## Important

Use the best available speaker wires and interconnects. Audio Research cannot emphasize this enough. As better components and systems are developed, it becomes increasingly important to avoid the limitations of inferior system interconnections.

It is important sonically that your entire system be connected so that the audio signal arriving at the speakers has correct, or 'absolute' polarity (i.e., non-inverted). Connect the black or '-' speaker terminal to the wire that connects to the '0' terminal on the VT80 SE. Connect the red or '+' speaker terminal to the wire that connects to the '4' or '8' terminal on the VT80 SE and tighten the speaker terminals securely to ensure best sonic results. Use a 7/16" (12mm) hex- end screwdriver to tighten the output terminals. Avoid using a wrench as this can lead to overtightened, stripped or broken output terminals.

## Matching

It is important to use as close as possible an impedance match between the amplifier and speaker for optimum transfer of power to the speaker with minimum distortion. In the case of speaker systems with significant variations in impedance throughout the frequency spectrum, such as most electrostatic types, determine the best impedance match empirically for best overall sonic results.

## Connections

Connect the VT80 SE input to the preamplifier or electronic crossover, using only the highest grade of audio interconnect cables. To avoid sonic degradation use the shortest practical length of cables.



**Note:** The VT80 SE will not be damaged by improper impedance match to the speakers, but maximum power delivered into the speakers may be affected.

### A.C. Power Connection

It is important that the VT80 SE be connected via its supplied 20 amp IEC 12-gauge power cord to a secure, dedicated A.C. power receptacle. Never connect to convenience power receptacles on other equipment. Only use the power switch on the front of the VT80 SE for On/Off control of the amplifier, or the 12V start-up trigger for remote installations.

The AC power source for the VT80 SE amplifier should be capable of supplying 10 amperes for 100 or 120 volt units, or 5 amperes for 220 or 240 volt units.

For the very best performance on 100 or 120 volt circuits, the VT80 SE should be connected to its own AC power circuit branch, protected by a 15 amp breaker. The preamplifier and other audio equipment should be connected to a different power circuit and breaker.

The VT80 SE should be turned on after the

other components of your system. If the VT80 SE is turned on before other components, the amplifier will amplify any extraneous turn-on noises those components might generate, which could potentially damage the loudspeakers. Good operating practice dictates that the amplifier should be turned on last, and turned off first in an audio system.

The VT80 SE uses a grounding system that does not require a ground-lifter adapter plug on the A.C. power cord to minimize hum. The power cord supplied with the VT80 SE has a standard grounding plug to provide maximum safety when properly connected to a grounded wall receptacle. If there is any question regarding proper grounding procedures in your installation, seek help from a qualified technician. Caution should be taken before using custom after-market power cords: they must be at least 12-gauge and have a standard grounding plug properly installed. These power cords are to be used with caution, at the sole risk of the owner.

## Connections

If electronic crossovers or other AC powered equipment is used with the VT80 SE it may be necessary to use 'ground lifter' adapters on the power plugs of that equipment to minimize system hum. Generally, the lowest hum is achieved when the only direct connection between audio common 'ground' and true earth ground occurs in the preamplifier, through its grounded power cord. Other equipment in the system should have some form of isolation to prevent ground loops and associated hum.

### Remote Turn-on

The VT80 SE has a built-in 12VDC remote turn-on/off circuit for operation by a master control system in a home theater or large audio system. Use a 3.5mm (.140") diameter mini plug to connect to the +12V TRIGGER IN jack on the rear of the VT80 SE.

The +12V TRIGGER IN jack should be connected to the +12VDC output of the master control system, using a continuous +12VDC signal at 12mA per VT80 SE for the duration of amplifier on-time. Do not use a momentary or data pulse control signal.

The +12VDC remote jacks have polarity protection, so they will not operate if a -12VDC signal is accidentally connected, or if the control wires are reversed.

### RS-232 Control

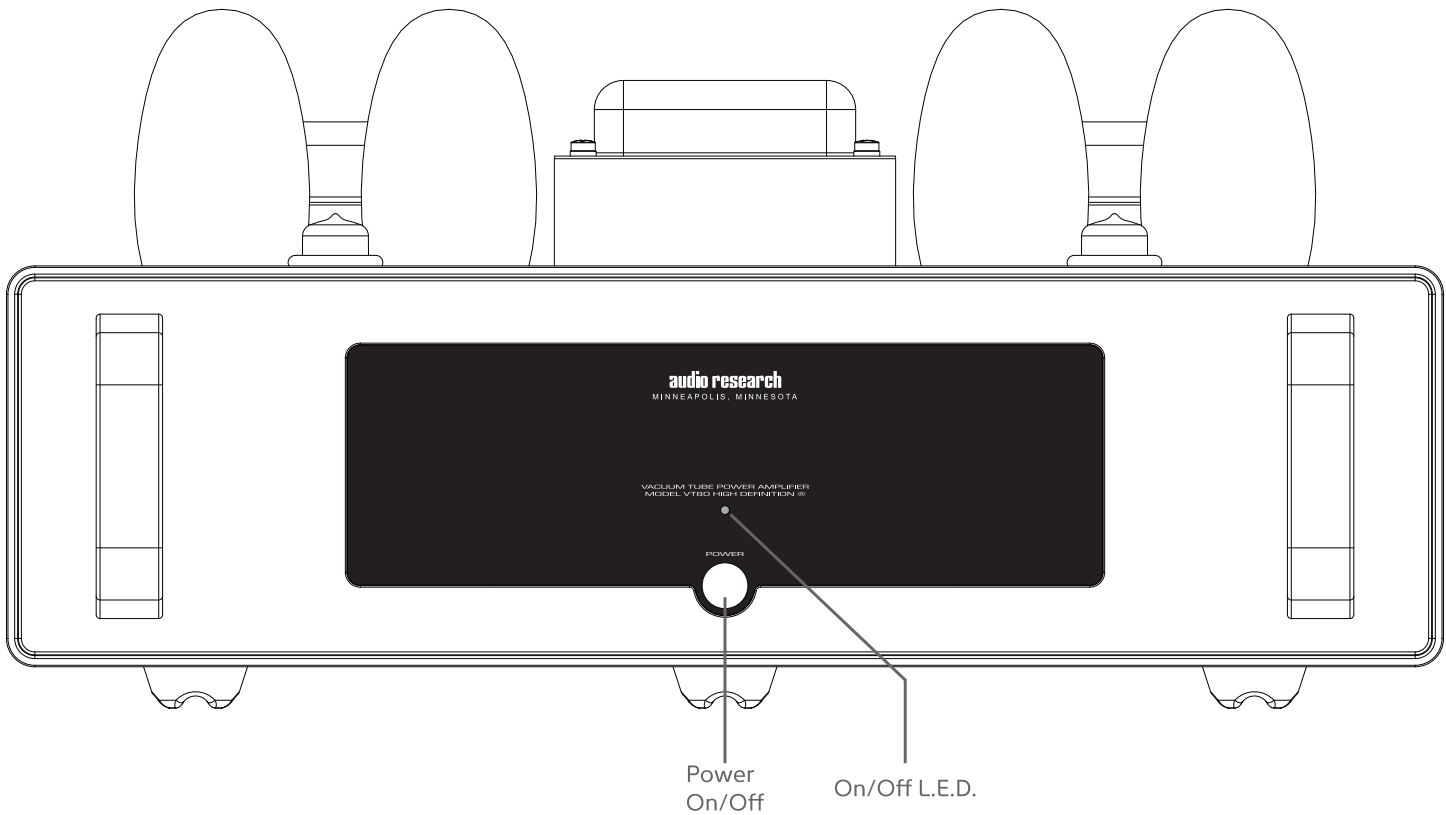
The VT80 SE has an RS-232 connector on the back panel, in the event the amplifier is incorporated into an automated or two-way remote communication system. Please see your dealer or contact customer service at Audio Research to acquire the specific codes relative to the RS-232 control.



# Operation

## Front Panel Controls and Displays

### VT80 SE FRONT VIEW



# Operation

## Start-Up

- Secure interconnects between the amplifier and your preamplifier; attach speaker leads to the appropriate output terminals.
- Attach supplied power cord to rear IEC inlet of amplifier, and plug other end into grounded A.C. power receptacle.
- Turn on preamp and all other components; mute preamp output.
- Press VT80 SE front panel control switch. Green power LED will light.
- The VT80 SE has an automatic 30 second mute circuit which allows the amplifier to stabilize before becoming active.
- Unmute preamplifier output, initiate source component signal, and adjust gain as appropriate.

## Shut-Down

- Mute preamplifier output.
- Press VT80 SE front panel power switch.
- Turn off preamplifier and then the associated input source components.

**Note:** When the VT80 SE is shut off, avoid restarting the unit for a minimum of 5 minutes to allow the vacuum tubes to cool.

## Hour Counter

An LCD hour meter of elapsed tube operating time can be viewed on the back panel, located next to the IEC power connector. This displays accumulated hours of vacuum tube service life. If the amplifier is unplugged from the mains supply, the total accumulated hours are retained. The hour counter may be reset by inserting a small, pointed object in the hole directly to the left of the LCD counter. The KT150 power vacuum tubes in your VT80 SE have an average life span of approximately 2000 hours. The smaller 6H30 vacuum tubes have a life span of approximately 4000 hours. Actual tube life will vary depending on the frequency and manner of usage of the amplifier.

**Note:** Once the hour counter has been reset, the total accumulated hours cannot be recalled.

## Operation

### **Auto Shut Off**

The VT80 SE is equipped with an auto shut off feature, designed to turn the amplifier off after two hours of no signal being present at the output of the amplifier.

In the event that quiet music is listened to at very low volumes, there may not be adequate signal for the auto shut off circuit, resulting in the amplifier turning itself off. If this is the case, please disengage the auto shut off feature. The auto shut off feature control switch is located on the back panel of the VT80 SE. Toggling the switch allows you to turn the feature on or off.



**Note:** The auto shut off feature is not in the signal path of the amplifier and has no deleterious sonic effect on music playback.

### **Break-in**

All quality stereo equipment benefits from a break-in period; during this time, various components change as electrical signals pass through them. While your VT80 SE will sound excellent out of the box, it will only improve with continued use.

### **Auto Bias**

The VT80 SE incorporates a highly sophisticated auto-bias circuit for each individual output tube. There are no user-adjustable bias controls. Each tube will auto-bias upon initial turn-on of the amplifier. There should never be a need to check or adjust the auto-bias circuit, once it is factory set, no additional adjustment is required. The

auto bias circuit compensates to maintain the proper bias as the tubes age. Auto-bias sets idle current at 65ma per tube.

It is always recommended owners purchase replacement tubes from Audio Research Corp. It is still recommended that matched sets of output tubes be installed. While auto-bias will correct for mismatches, sonic benefits still apply with matched tubes.

The auto bias circuit will not accommodate output tubes with extremely high or low plate current readings. Aftermarket tubes may not be tested to the same rigorous standards as Audio Research tests, so care must be exercised when installing aftermarket tubes. If uncertain about aftermarket tube requirements, please contact Audio Research Customer Service for recommendations.

## Maintenance

### **Vacuum Tubes**

It is recommended that you replace the vacuum tubes of your VT80 SE in sets. All of the tubes in your amplifier have been matched to have similar operating characteristics, to provide the best sound quality and reliability. In the event you need to replace a single output tube, please refer to the numbers written on the silver base at the bottom of the vacuum tube. Audio Research recommends replacing output tubes after 3,000 hours of operation.

### **Servicing**

Because of its careful design and exacting standards of manufacture, your VT80 SE amplifier should normally require only minimal service to maintain its high level of performance. Your VT80 SE is equipped with individual fuses for each output tube. This is to prevent circuit board damage should a tube arc occur. These fuses are accessed on the underside of the circuit board adjacent to each tube. In the event a fuse opens, consult a qualified service technician or Audio Research Customer Service. High voltages can exist long after the unit is turned off. Use extreme caution.

### **Caution**

Your VT80 SE amplifier contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or part inside the unit. Even with the power turned off, a charge remains in the energy storage capacitors for some time. Refer any needed service to your authorized Audio Research dealer or another qualified technician. Additional questions regarding the operation, maintenance or servicing of your amplifier, please contact

the Customer Support Department of Audio Research Corporation at service@audioresearch.com. You may also initiate a service request by visiting the Audio Research website (www.audioresearch.com) and selecting 'Service Repair'.

### **Cleaning**

To maintain the new appearance of this amplifier, occasionally wipe the front panel and top cover with a soft, damp (not wet) cloth to remove dust when the unit is powered off. A mild, non-alkaline soap solution may be used to remove fingerprints or similar smudges. Cleaners containing abrasives should not be used as they will damage the anodized finish and the acrylic insert of the front panel. A small, soft paintbrush is effective in removing dust from bevels and other features of the front panel.



### **Disposal and Recycling Guidelines**

To dispose of this electronic product, do not place in landfill. In accordance with the European Union Waste Electrical and Electronic Equipment (WEEE) directive effective August 2005, this product may contain regulated materials which upon disposal require special reuse and recycling processing.

Please contact your dealer or importing distributor for instructions on proper disposal of this product in your country. Or, visit audioresearch.com for the name of your importing distributor and how to contact them. Packing and shipping materials may be disposed of in a normal manner.



## Warranty

Audio Research Corporation products are covered by a 3-Year Limited Warranty or a 90-Day Limited Warranty (vacuum tubes). This Limited Warranty initiates from the date of purchase, and is limited to the original purchaser, or in the case of demonstration equipment, limited to the balance of warranty remaining after original shipment to the retailer or importer.

In the United States, the specific terms, conditions and remedies for fulfillment of this Limited Warranty are listed on the warranty card accompanying the product in its shipping carton. The warranty terms are also available on the internet at [www.audioresearch.com/en-us/company/warranty-statement](http://www.audioresearch.com/en-us/company/warranty-statement). Outside the United States, the authorized importing retailer or distributor has accepted the responsibility for warranty of Audio Research products sold by them.

The specific terms and remedies for fulfillment of the Limited Warranty may vary from country to country. Warranty service should normally be obtained from the importing retailer or distributor from whom the product was purchased.

In the unlikely event that technical service beyond the ability of the importer is required, Audio Research will fulfill the terms and conditions of the Limited Warranty. Such product must be returned at the purchaser's expense to the Audio Research factory, along with a photocopy of the dated purchase receipt for the product, a written description of the problem(s) encountered, and any information necessary for return shipment. The cost of return shipment is the responsibility of the purchaser.

## VT80 SE Specifications

**POWER OUTPUT:** 75 watts per channel continuous from 20Hz to 20kHz. 1kHz total harmonic distortion typically 1% at 75 watts, below 0.05% at 1 watt. (Note that actual power output is dependent upon both line voltage and 'condition' i. e.: if power line has high distortion, maximum power will be affected adversely, although from a listening standpoint this is not very critical.)

**POWER BANDWIDTH:** (-3dB points) 7Hz to 60kHz.

**FREQUENCY RESPONSE:** (-3dB points at 1 watt) 0.7Hz to 80kHz.

**INPUT SENSITIVITY:** 1.4V RMS BAL for rated output. (25dB Bal gain into 8 ohms.)

**INPUT IMPEDANCE:** 300K ohms Balanced (150K ohms SE).

**OUTPUT POLARITY:** Non-inverting. Balanced input pin 2+ (IEC-268).

**OUTPUT TAPS:** 8 ohms, 4 ohms.

**OUTPUT REGULATION:** Approximately 1.0dB 8 OHM LOAD TO OPEN CIRUCIT (Damping factor approximately 8).

**OVERALL NEGATIVE FEEDBACK:** 15dB

**SLEW RATE:** 10 volts/microsecond

**RISE TIME:** 4.0 microseconds

**CHANNEL SEPARATION:** 112dB

**HUM & NOISE:** -84dBV weighted, 8 ohms tap

**SIGNAL TO NOISE:** 112dB

**CONTROLS:** Power on/off, auto shut-off on/defeat, Input BAL/SE, RS232, 12V trigger

**AMBIENT AIR TEMPERATURE:** 30° C (86° F) maximum ambient air temperature

**POWER SUPPLY ENERGY STORAGE:** Approximately 350 joules

**POWER REQUIREMENTS:** 100-125VAC 60Hz (200-250VAC 50Hz) 410 watts at rated output, 500 watts maximum, 230 watts idle. Sleep power < 1 watt

**TUBES REQUIRED:** 2 – Matched pair KT150 – Power Output; 2 – 6H30 Driver

### DIMENSIONS:

|        |                                                             |
|--------|-------------------------------------------------------------|
| width  | 19" (48.3 cm)                                               |
| height | 10.33" (26.2 cm)                                            |
| depth  | 18.45" (46.8 cm) to chassis , 19.40" (49.3 cm) to terminals |

**WEIGHT:** 45.7lbs. (20.7 kg) Net; 60.5 lbs. (27.4 kg)

# **FOUNDATION**

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## SERIES

**audio research**  

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3900 Annapolis Lane North  
Plymouth, MN 55447  
[www.audioresearch.com](http://www.audioresearch.com)

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