
WOO AUDIO WA22

Fully Balanced Class-A Stereo Headphone Amplifier



OWNER'S MANUAL

Please review this manual before operating your WOO AUDIO™ product.

Important Safety Information



CAUTION: These amplifiers are shipped without the vacuum tubes installed. It is necessary to install the tubes first. The tubes must be installed correctly or *serious damage that is not covered by the warranty will result.*



Turn off immediately in the event of malfunction
Should you notice smoke or an unusual smell coming from the equipments, turn it off immediately. Continued operation could result in injury.



Do not disassemble
High voltage circuit. Touching the product's internal parts could result in injury. In the event of malfunction, the product should be repaired only by a qualified technician.



Keep out of children
Failure to observe this precaution could result in injury.



WARNING: Failure to follow these instructions could result in fire, electric shock, or other injury or damage.

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Overview

Thank you for choosing a Woo Audio product. The WA22 is a finely hand-crafted amplifier that delivers uncompromised performance and superior listening experience.

- ❖ Point-to-Point wiring
- ❖ True balanced topology
- ❖ All tubes. No semi-conductors in the entire signal circuitry
- ❖ Soft start tube protection circuit
- ❖ One 5U4G rectifier tube
- ❖ Two 6SN7 drive tubes, one per channel
- ❖ Two 6AS7 / 6080 power tubes, one per channel
- ❖ DACT CT2 balanced stereo stepped attenuator
- ❖ One balanced XLR input
- ❖ One single-ended RCA input
- ❖ One mono 3-pin headphone output (left and right channel)
- ❖ One 4-pin stereo headphone output
- ❖ One TRS headphone output (1/4")
- ❖ High and low impedance headphone output
- ❖ Die cast full aluminum enclosure and knobs, anodized finished

Quick Installation

What's in the box?



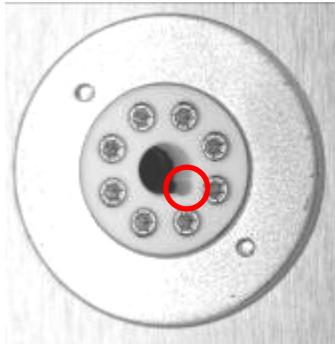
- ① WA22 amplifier
- ② One matched pair of 6080 power tubes
- ③ One 5U4G rectifier tube
- ④ One matched pair of 6SN7 driver tubes

- ❖ The actual tubes may look different.
- ❖ Compatible tubes may be included instead of the ones illustrated above.
- ❖ Power cord and interconnection cable are not included.

Installing the tubes:

Note: avoid oil or smudge on the tube glass; clean hands before installation.

1. Find the correct tube for the socket. There is a label below each tube socket that indicates a standard tube for the amplifier. For example, a 6080 tube should install on the “6080” labeling socket. You **MUST** use the compatible tube or serious damage may occur to the amplifier. See Compatible Tubes section for all the approved direct substitute tubes.
2. Align the tube guide pin to the socket as below.



Tube socket guide pin indicator



Guide pin shows on the bottom of a tube.

3. Hold the tube base firmly then squeeze it into the socket slowly. Be sure to apply force perpendicular to the tube socket; never insert the tube at an angle. Apply slight rocking motion for the tube, which is harder to insert; never apply circular motion. Apply pressure from the top of the tube if needed.

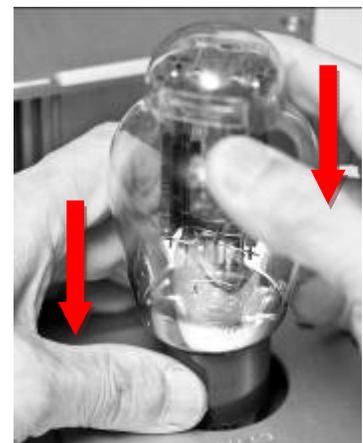
Tube to tube



Do no insert a tube at an angle



Insert a tube perpendicular to the socket.



Hold base firmly.

4. Check installation. The tube pins should be inserted fully into the tube socket receptacles.



Selecting AC voltage:

WARNING: failure to select the correct voltage will result in damage of the amp.



Switch to label “115” for AC100 to 125V voltage.



Switch to label “230” for AC210 to 240V voltage.

Installing the power cord:

Plug the power cord into the AC inlet. See ① in the below diagram. The AC inlet socket is a standard IEC type. You will need to obtain the correct type for your region.



U.S.



European



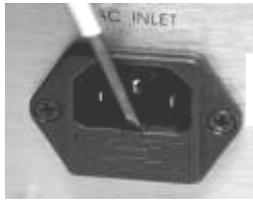
U.K.

Installing the source input:

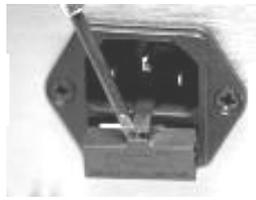
Plug the RCA interconnection cable into the RCA connectors; see ③ in the below diagram. Or, plug the XLR interconnection cable into the XLR connectors; see ④ in the below diagram.

Replacing the fuse when needed:

The fuse is located on the same unit of the AC inlet.



Insert a small flat screwdriver into the fuse door which located on the AC inlet.



Release the fuse door by pulling it out.



The fuse holder is released from the AC inlet.



The fuse is held by a clip.

Back panel diagram:



- ① AC Inlet with fuse box
- ② Voltage selection switch
- ③ RCA connectors
- ④ XLR connectors
- ⑤ RCA, XLR selector

Operation

DO NOT

- Turn on the amp before properly installing **ALL** tubes.
- Use tubes that are not approved by Woo Audio.
- Turn on the equipment without checking the correct AC voltage setting.
- Remove any tubes or the DC cord while the amp is operating.
- Touch tubes (**extremely hot**) after warm-up.
- Leave the amp running unattended. To use the amp safely, please allow it to cool down for every 8 hours of continuous play time.

DO

- Place the amp away from any wireless or frequency-emitting devices, such as mobile phones, PDAs and radios, to avoid noise interference.
- Keep away from water or excessive moisture.
- Turn off the amp if its sound is abnormal.
- Allow a minimum of 2 inches of air clearance for heat dissipation.
- Allow approximately 5 minutes of warm-up.
- Allow the tubes to cool down before replacing them.

Turning the amplifier on:

1. Turn the volume knob ① to the lowest position.
2. Insert a headphone into either ②, or ③, or ④ output.
3. Turn the power switch knob ⑤ from OFF to HI or OFF to LO position. Then, the power LED will pulsate for approx 20 seconds.
4. Observe that all tubes light gradually.
5. Wait until the LED ⑥ becomes solid and let the tubes warm up for at least 1 minute before turning up the volume.

Front panel diagram:



- ① Volume control
- ② 3-pin XLR headphone output, Left and Right channel.
- ③ 4-pin XLR headphone output
- ④ TRS (1/4" or 6.35mm) headphone output
- ⑤ Multi-functional switch for power switch and high/low impedance selection
- ⑥ Power LED indicator

Break-in period:

It is recommended to allow the amplifier to operate 150+ hours so that peak performance can be realized. An effective way to break in the amp is to run the amp normally with music playing. Please do not leave the amp running continuously.

Compatible Tubes

	Model#	Adapter	Note
Power	6080*	No	
	421A	No	Greater power. Western Electric branded.
	5998	No	Greater power.
	6AS7	No	
	6H13C	No	
	6N5P	No	
	7236	No	Greater power.
	2399	No	
	6520	No	
Driver	6SN7 * /GT /WGT	No	
	5692	No	
	6CG7	Yes	A 9-pin to 8-pin adapter is needed.
	6F8G	Yes	A 8-pin to 8-pin adapter with Grid wire is needed.
	7N7	Yes	A 8-pin to 8-pin loctal adapter is needed.
	CV181	No	
	CV1988	No	
	ECC32	No	
	VT231	No	
Rectifier	5U4G * /B	No	Directly Heated
	274A	Yes	Directly Heated, a 4-pin to 8-pin adapter is needed.
	274B	No	Directly Heated
	53KU	No	Directly Heated
	5AR4	No	Indirectly Heated
	5AS4	No	Directly Heated
	5Z4	No	Indirectly Heated
	5R4 /GA /GB /GY	No	Directly Heated
	5U3C	No	Directly Heated
	5V4 /G /GA	No	Directly Heated
	5Y3	No	Directly Heated
	5Z3	Yes	Directly Heated, a 8-pin to 8-pin adapter is needed.
	GZ30	No	Indirectly Heated
	GZ32/33/34	No	Indirectly Heated
	GZ37	No	Indirectly Heated
	CV378	No	Indirectly Heated
	U52	No	Indirectly Heated
	U54	No	Directly Heated

* The most current chart can be found in this document:

<http://tinyurl.com/4wbv5qn>

FAQ - Frequently Asked Questions

Can I plug in 2 or more headphones at the same time?

Yes, there is no harm to the amp. However, sound quality may be degraded.

Do I have to use the correct impedance setting for my headphone?

No, you can use any setting for any headphone as long as you feel it sounds the best for you.

If I connect the WA22 with RCA interconnects, will the amp still provide a balanced signal to the balanced output?

No, there is no RCA to Balanced conversion in this amp. A source with a true balanced output will work the best with the WA22.

There is abnormal sound right after turning on the amplifier.

This is normal from a cold start as the tubes are warming up to get into the proper working state. The noise will disappear gradually.

Can I change headphone while the amplifier is on?

Yes, but you must first minimize the volume.

No sound is coming out of the headphone.

- Check that all tubes are properly installed.
- Check that the source is properly installed and is working fine.
- Check that the source switch is on the correct position.
- Check headphone connection.

There is noticeable noise coming from the headphone.

- Remove all sources from the amp to check if the noise disappears. If it does, the noise is coming from the source.
- Place the amp away from other electronic devices to check whether those were causing the noise.
- Place the amp in a different location to check if the noise is coming from the AC line.
- Remove all tubes, clean tube pins, and then reinstall them again.
- Replace some or all tubes.

The sound is abnormal or distorted.

Replace tubes to see if they have deteriorated.

The LED and the tubes do not light.

Check if the fuse is burnt. See the Quick Installation section on how to replace a fuse.

Warranty and Service

Woo Audio warrants this product free from defects in materials and workmanship for 1 year from the original date of purchase. The tubes are warranted for 30 days unless otherwise stated. In the event that your Woo Audio product requires servicing, please contact us directly to get a return instruction. If the equipment needs to be shipped back, please use the original packaging and include a copy of the sales purchase along with a detailed explanation of the problem(s).

Send service inquiry to woaudio@gmail.com

Any modification not authorized by WOO AUDIO will void this warranty.

Reviews

*“It is transparent, particularly in that you don’t notice any treble veiling or grit as you do with some lesser headphone amps. Bass is solid, well defined and can be very deep with the right headphones. Tonal balance is very, very good, with no sense of treble roll-off or brightness.” – **Playback, issue 43***

*“Woo 22 balanced headphone amp which, with the premium tube upgrades, presents the most effortless, immediate presentation of sound I have heard from any headphone system, or perhaps any stereo system.” – **Positive Feedback, issue 54***

*“The Sennheiser HD800 headphones and the Woo Audio WA22 integrated headphone amp configured in fully balanced configuration is one of the best audio systems I have heard. Tremble and midrange performance are as good or better than any headphone or two-channel standalone system I have experienced. Bass is very satisfying and will only be bettered by the very best fullrange speaker and subwoofer systems.” – **6Moon***

*“I have since tried HD 800’s with the prototype Woo Audio WA 22 amp (which is tube rather than solid state amp that has variable output impedance). The WA 22 takes the sense of vividness up a notch, mostly by making the midrange contrast level higher, while introducing minimal if any deleterious side effects. The mostly subtractive errors noted above are still there, but they are diminished in the overall presentation. This gets me to the level of really, really liking the HD 800s. The HD 800s are so good that I could easily live with them over the long haul. (page 115).” – **Playback Guide to fully sized headphones***

Product Specification

Model:	WA22
Headphones Impedance:	8-600 Ohms
Input Impedance:	100 Kilo-Ohms
Frequency Response:	8 Hz - 50 KHz, -3dB
Power Output:	1500mW @32Ω 1500mW @60Ω 1600mW @120Ω 1100mW @300Ω 700mW @600Ω (with 7236 tube)
Signal/Noise:	92 dB
THD:	<= 0.3%
Voltage:	AC 110/220 - 240V, 50/60 Hz, switchable
External Dimension, end to end measurement:	7" (H) x 12 (W) x 10.5" (D)
Weight:	25 pounds or 11.4 kg

Woo Audio is committed to continuously improve its products. We reserve the right to improve the design without notice.