
WOO AUDIO WES ELECTROSTATIC AMPLIFIER

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 WES is finely hand-crafted amplifier that delivers uncompromised performance and superior listening experience.

- ❖ Point-to-Point Wiring
- ❖ Four EL34 power tubes
- ❖ Four 6SL7 drive tubes
- ❖ Two 5AR4 rectifier tube. Direct substitute: 5U4GB
- ❖ Two 12AU7 phase splitter - unbalanced to balanced input conversion
- ❖ Two selectable balanced inputs
- ❖ One selectable unbalanced input
- ❖ One 5-pin pro bias Stax output
- ❖ One Sennheiser HE-90 output
- ❖ DACT CT4 24-way stepped attenuator
- ❖ Auricap capacitors for inter-stage and output coupling
- ❖ Telfon tube sockets

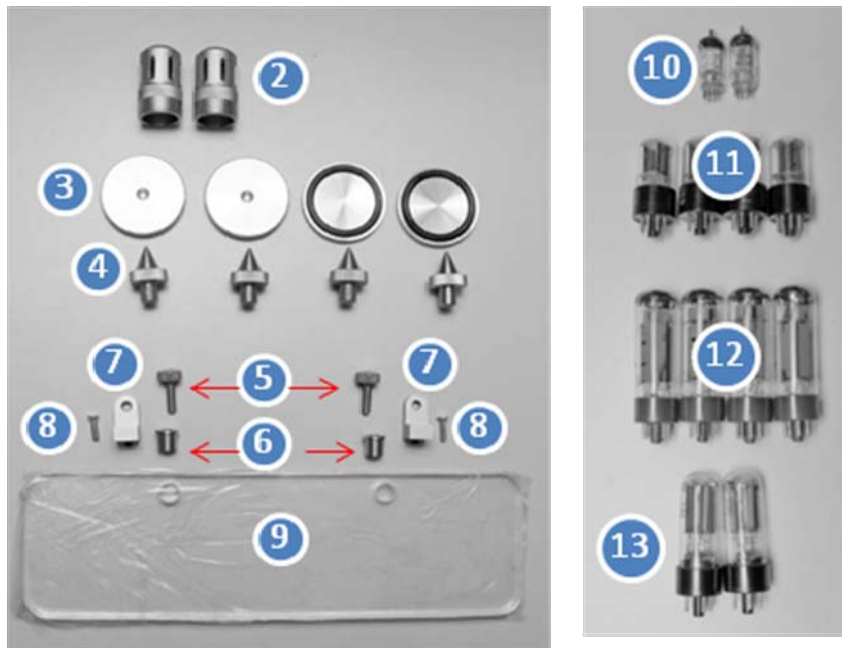
Quick Installation

What's in the box?

- ① WES Amplifier unit (AMP)



AMP accessories and tubes diagram:

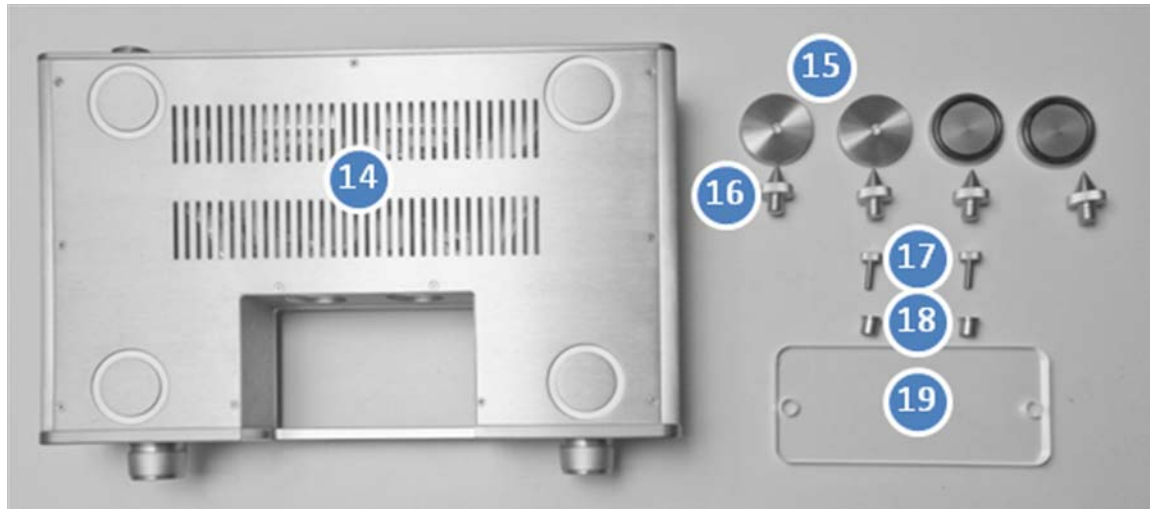


- ② Aluminum Phase splitter tube shields, 2 units

- ③ Aluminum Cone feet dish with rubber pad, 4 units
- ④ Aluminum Cone feet, 4 units
- ⑤ Aluminum Panel screw, 2 units
- ⑥ Aluminum Panel screw filler, 2 units
- ⑦ Aluminum Panel L-shaped holder, 2 units
- ⑧ Stainless steel L-shaped holder screws, 2 units
- ⑨ Acrylic panel (long), 1 unit
- ⑩ 12AU7 tube (phase splitter), 2 units
- ⑪ 6SL7 tube (driver), 4 units
- ⑫ EL34 tube (power), 4 units
- ⑬ 5AR4 tube (rectifier, 2 units

- ❖ 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.

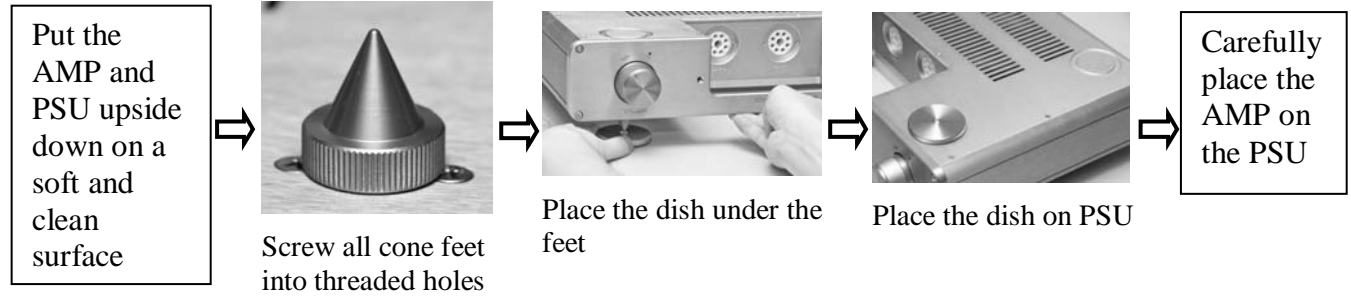
PSU accessories diagram



- ⑭ WES Power Supply unit (PSU)
- ⑮ Aluminum Cone feet dish with rubber pad, 4 units
- ⑯ Aluminum Cone feet, 4 units
- ⑰ Aluminum Panel screw, 2 units
- ⑱ Aluminum Panel screw filler, 2 units
- ⑲ Acrylic panel (short), 1 unit
- ⑳ DC power cord - connecting the AMP and PSU

- ❖ The AMP and PSU have the same aluminum Cone feet dishes, feet, panel screws, and panel fillers. They are labeling differently for illustration purpose.

Installing the feet and plates:



Installing the tubes:

Install these tubes on the AMP unit: 6SL7, EL34, 12AU7 (optional).

Install these tubes on the PSU unit: 5AR4.

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 6SL7 tube should install on the "6SL7" labeled socket. You **MUST** use the compatible tube or serious damage may occur to the amplifier. See Compatible Tube 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 the tube, which is harder to insert; never apply circular motion. Apply pressure from the top of the tube if needed.



Do not insert a tube at an angle

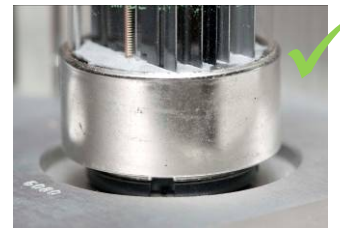


Insert a tube perpendicular to the socket.



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.



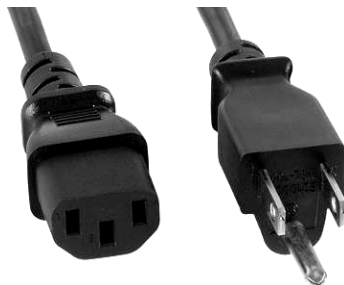
Switch to label "115" for AC100 to 125V voltage.



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.

Back panel diagram:

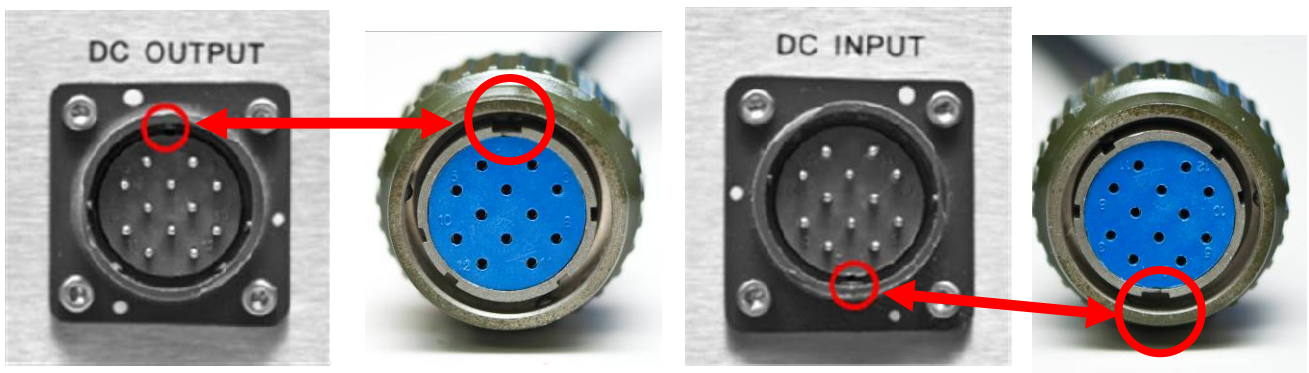


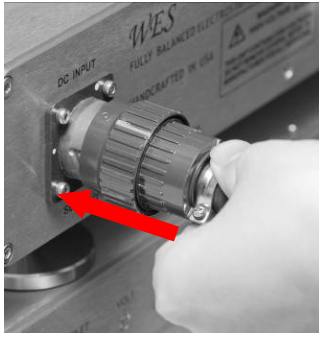
- ① DC input connector
- ② Phase splitter tube sockets
- ③ RCA connectors
- ④ XLR connectors
- ⑤ AC input connector
- ⑥ AC voltage switch
- ⑦ DC output connector

Installing the DC cord:

NOTE: Both ends of the cord have the same plug. The plug can be inserted into either the input or the output.

Align the plug's orientation mark to the socket. Once aligned, the plug can be inserted slightly into the socket.

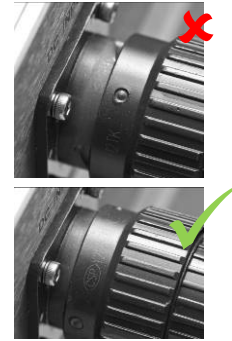




Slightly push the plug inward



Turn the ring clockwise until you hear a click sound



Installing the source input:

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

Installing the phase splitter tube shield:

NOTE: This installation is optional if you do not use the RCA input.

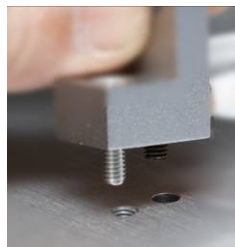
1. Install the 12AU7 tube into the socket ②
2. Screw the tube shield clockwise into the ring of the socket.



Installing the acrylic panel on the AMP:



There are 2 holes near the faceplate on the top of the AMP unit. One is threaded and the other is clear.



Put the stainless steel screw on the threaded hole.



Secure the screw.



Put the panel filler into the panel



Put the panel screw through the filler then secure it.

Installing the acrylic panel on the PSU:

Similar to the last 2 steps above.

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 amps running unattended. To use the amps 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 to the lowest position.
2. Insert a headphone into headphone output
3. Turn the standard-by power switch knob ⑤ from left to right until you hear a clicking sound. The LED ⑦ will light.
4. Observe that all tubes light gradually.
5. Let the tubes warm up for at least 1 minute.
6. Turn the power switch knob ⑥ from left to right until you hear a clicking sound.
7. The amplifier is now in operation.

NOTE: The amplifier will not function until both power switches are turned on.

Front panel diagram:



- ① Source input selector.
- ② Stax 5-pin PRO bias headphone output
- ③ Sennheiser HE-90 headphone output
- ④ Volume control
- ⑤ Stand-by power switch
- ⑥ Power switch
- ⑦ Stand-by LED indicator
- ⑧ Power LED indicator

Turning off the amplifier:

Both power switches ⑤⑥ must be turned off. You can turn off the power switch in any order.

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
Driver	6SL7	No	
	6188/6SU7	No	Tungsol branded only
	12AX7	Yes	A 9-pin to 8-pin adapter is needed.
	CV1985	No	
	ECC35	No	
	VT229	No	
Power	EL34	No	
	6CA7	No	
	KT88	No	
Rectifier	5AR4	No	Indirectly Heated
	5Z4	No	Indirectly Heated
	GZ30	No	Indirectly Heated
	GZ32	No	Indirectly Heated
	GZ33	No	Indirectly Heated
	GZ34	No	Indirectly Heated
	GZ37	No	Indirectly Heated
	U54	No	Indirectly Heated
Phase Splitter	12AU7	No	
	ECC82	No	
	ECC802S	No	
	5814	No	
	5963	No	
	6189	No	
	7316	No	

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

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

FAQ - Frequently Asked Questions

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.



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.

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 wooaudio@gmail.com

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

Reviews

“The WooAudio WES and Stax SR-007 Mk2 headphones will dazzle your ears with state of the art sound for a tiny fraction of the cost of a system built around speakers.”
– **Home Entertainment**

“I don't mean to sound overly dramatic, but the WES is one of those break through products that leaves you wondering about the future of high-end audio.” – **Positive Feedback, issue 54**

“In my 60 years as an audiophile, never have I experienced a more complete and satisfying experience as I am enjoying with WOO AUDIO's WES.” – **A R**

Product Specification

Model:	WES
Headphones output voltage swing:	1300 volts p-p
Stax PRO bias	580V
Sennheiser HE90 bia	500V
Signal/Noise:	>100 dB
THD:	<= 0.3%
Voltage:	AC 110/220 - 240V, 50/60 Hz, selectable
Power consumption:	118 watts
External Dimension	
PSU:	4.5”(H), 16.5”(W), 12”(D)
AMP:	7.5”(H), 16.5”(W), 12”(D) (with tube guard)
Weight (AMP + PSU):	40 pounds or 18.2 kg

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