

# Trafomatic Audio

## EOS

Stereo Integrated Tube Amplifier  
And Stereo Power amplifier

User's Manual



# Trafomatic Audio EOS

Stereo Integrated Tube Amplifier and Stereo Power amplifier

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# SAFETY PRECAUTIONS

## IMPORTANT SAFEGUARDS

**PLEASE READ CAREFULLY ALL THE FOLLOWING IMPORTANT SAFEGUARDS THAT ARE APPLICABLE TO YOUR EQUIPMENT**

### CAUTION!

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE SCREWS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

## SAFETY

### 1) Read the User's Manual and refer to it frequently during use of this product

All the safety and operating instructions should be read before the product is operated.

### 2) Retain the User's Manual

The safety and operating instructions should be retained for future reference.

### 3) Follow Instructions

All operating and instructions for use should be closely followed.

### 4) Power Sources

This product should be operated using only the type of power source indicated on the marking label. If you are not sure of the type of power supply in your home, consult your product dealer or local power company.

### 5) Grounding

This product is equipped with a three prong IEC connector. Always use power cord with adequate wire cross section and an electrical outlet that is grounded. If you do not know whether the outlet is grounded, consult your electrician or local power company.

### 6) Power Cord Protection

Power supply cords should be routed so that they are not likely to be walked on or pinched. Pay particular attention to cords at plugs, convenience receptacles and where they exit from the product. Always use power cords with adequate current ratings and safety certifications (UL, CE, TÜV, CSA, etc.)

### 7) Fuses

For continued protection against fire hazard, replace fuses with the same type and rating of the fuses specified. When changing fuses, completely unplug the AC cord from the wall outlet.

### 8) Tubes

During operation the tubes get very hot. Do not touch the tubes since this may result in a severe burn. Allow at least 10 minutes after removing power for tubes to cool down before touching them.

### 9) Turn-off when not using

Turn off the unit as soon as you stop actively using it. Unplug the power supply from the wall during a lightning storm or when the product is to be left unattended and unused for longer periods of time.

## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### ENVIRONMENT

#### 1) Water and Moisture

Do not use this product near water - i.e. near a bathtub, ash bowl, kitchen sink or laundry tub; in a wet basement; or near a swimming pool or the like. Damp basements should be avoided.

#### 2) Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves or other appliances that produce heat. Also avoid putting the unit in the direct rays of the sun.

#### 3) For indoor use only.

### PLACEMENT

#### 1) Accessibility

It is normal for a vacuum tube power amplifier to run warm if used for prolonged periods. Tubes are very hot when operating and should not be touched for at least ten minutes after the unit is turned off to prevent burns. **Always place your amplifier away from children and pets to prevent burns.**

#### 2) Ventilation

This product should not be placed in a built-in installation or rack unless proper ventilation is provided or the manufacturer's instructions have been followed. Never place anything on top your amplifier that could obstruct the airflow and cause the electron tubes to overheat and damage the amplifier. Do not place your amplifier in a closed bookcase; overheating could occur. Ensure that there is at least 8" (200mm) of open space above the amplifier.

#### 3) Surface

Place the unit on a flat level surface. Care should be taken to prevent objects from falling and liquids from spilling into the unit. Do not subject the unit to excessive smoke, dust, vibration or shock.

### MAINTENANCE

#### 1) Cleaning

Unplug this product from the wall outlet before clean-

ing. Do not use liquid cleaners or aerosol cleaners. Use a dry cloth for cleaning. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

#### 2) Tube replacement

Electron tubes have their life in the 2000-3000 hrs range. We strongly recommend replacing the output tubes at 20-30 months interval (depending on your listening habits) and signal tubes at every other power tube replacement (after 24-36 months). This will ensure that the amplifier always performs at its best and tube failure will not overstress other parts.

#### 3) Biasing the amplifier

The EOS amplifier uses tubes in fixed-biasing configuration and require adjustments after change output tubes (KT120). Follow the **Biasing** text for correct biasing.

### SERVICE

#### 1) Replacement Parts

When replacement parts are required, be sure that the service technician uses replacement parts specified by the manufacturer or parts with the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

#### 2) Tube Replacement

Should it become necessary to replace your tubes, remove the AC power plug from the wall and allow thirty minutes for the high voltage capacitors to discharge. Follow instructions outlined in this manual.

#### 3) Modifications

Modifications to the amplifier are strongly discouraged. The unit was designed by experienced engineers and tested for safe and reliable operation. Any modification may pose a safety problem and result in reduced lifetime of the product. Any removal of the cover will void warranty.

# EOS Trafomatic Audio

## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### Getting Started - About Stereo Tube Amplifier

Your **EOS** amplifier was designed to provide a significant value based on a high performance to price ratio that will exceed the sonic quality of good solid state amplifiers with its musical accuracy.

The **EOS** uses four Tungsol KT120 power output tubes, two ECC99 drive tubes and two 5687 input tubes. The **EOS** is designed to work in a Push-Pull class AB. Parts are carefully chosen for the optimum sound quality and the overall circuit layout is maximized for sonic purity.

#### Handling Vacuum Tubes

Many people have never had experience handling vacuum tubes. Process is very similar to handling incandescent light bulbs. As with light bulbs, you should not touch a vacuum tube when it is operating since you can burn yourself. Similarly, if a tube is dropped on a hard surface it will break. When replacing the tubes allow sufficient time, minimum 30 minutes, for tubes to cool down and internal capacitors to discharge. Before you insert a tube you should make certain the unit is disconnected from the AC outlet and that the tube has cooled down. Inspect the tube for cracks and physical damage. Make sure that the pins are straight. If you need to straighten the pins, be very careful as it may cause the glass envelope to break, causing the tube to lose the vacuum and

fail as soon as the amplifier is powered on. Carefully align the pins with the socket and gently insert the tube. **Never force a tube into a socket.** Should you decide to buy replacement tubes from Trafomatic Audio, rest assured that they were fully tested before the shipment.

#### Packaging

Save all the packaging in a dry place. Your amplifier is a precision electronic instrument and should be properly packaged any time shipment is made. Because of its weight it is highly probable that the unit will be damaged during shipment if repackaged in a box and packing other than that designed for the unit.

#### Preparation for Use

Place your amplifier on a flat surface. Before inserting the tubes, inspect them for cracks and physical damage. Make sure that the pins are straight. If you need to straighten the pins, be very careful as that may cause the glass envelope to break, causing the tube to lose the vacuum and fail as soon as the amplifier is powered on. Refer to the drawing below to locate correct location for each tube. Carefully align the pins with the socket and gently insert the tube according to the drawing below. **Never force a tube into a socket and never run the amplifier without tubes.**



Figure 2: EOS tube layout

Never use excessive force when inserting the tubes into their socket.

## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### Operating Procedure

1. Make sure that you read instructions before attempting to operate your unit.



Figure 2: EOS amplifier Front panel

2. Attach the audio sources and speakers (refer to the picture below). **Never run the amplifier without speakers connected since that may damage the transformers.** Speaker's minus terminal should be connected to the speaker terminal marked as zero (0) and positive terminal should be connected to the terminal that corresponds to the speaker's nominal impedance (4 or 8 ohms). The amplifier is optimized for these impedances. Higher or lower impedance will result in higher distortion or loss of power. Do not use a speaker with impedance lower than 2 ohms on either of the outputs. Make sure to prevent short circuit at the amplifier's speaker terminals as that will damage the amplifier.



Figure 3: EOS amplifier speakers connection

**NOTE: 4 ohms and 8 ohms speakers cannot be connected to the speaker terminals at the same time!** Make sure your amplifier is properly connected to a high-current power receptacle.

3. **WARNING for EOS power amplifier:** The EOS power amplifier is power amplifiers. This means they are always on at full power. Applying uncontrolled line signal, or a signal from a preamplifier with volume control fully open will result in full power out. This can damage your speakers or ears. Always take care volume controls are in the proper position and that you use a controllable source.

4. The amplifier will be fully functional after only a couple of minutes. However, as it warms up over the first 30 minutes of operation you may notice slight improvement in the sound quality.

5. At the end of your listening session make sure to turn the amplifier off. Leaving it on does nothing for sound quality and it reduces life of the vacuum tubes.

**The amplifier should always be turned on and off via its own power on-off switch.**

# EOS Trafomatic Audio

## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### Controls and Their Functions

#### Left Side Panel

**Power Switch:** Press the power switch to (1) turn the power on. Within 10-20 seconds, as the heaters reach operating temperature the tubes will begin to glow a soft orange light. Press the power switch to (0) to turn the unit off. As the heaters cool off, the orange glow will slowly disappear.

**It is normal for a vacuum tube equipment to run warm if used for prolonged periods. Tubes are operating at much higher temperature and should not be touched for at least ten minutes after the unit is turned off to prevent burns. Always place your amplifier away from children and pets to prevent burns.**

**Audio signal connection jacks** - Use these jacks to connect the audio interconnects from your components to the amplifier.

**Speaker terminals** - Your amplifier has two output channels, the Right Output and the Left Output. Each output channel is designed to handle one speaker.

Follow the instructions outlined in the Operating Procedure for the correct speaker connections.



## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### TUBE REPLACEMENT

Your **EOS** amplifier's conservative design maximizes life of the tubes. You can expect that your Tungsol KT120 tubes will last in excess of 1000, while the drive ECC99 tubes and 5687 preamplifier tubes should last approximately 2500 hrs. Lacking the accurate time measurement, we strongly recommend replacing the output tubes at 20-30 months interval (depending on your listening habits) and signal tubes at every other power tube replacement (every 24-36 months). This will ensure that the amplifier always performs at its best and tube failure will not over-stress other parts.

Before you start replacement you should make certain that the unit is turned off and disconnected from the AC outlet and that the tubes have cooled down. Allow sufficient time, minimum 30 minutes, for tubes to cool down and internal capacitors to discharge. Before inserting a new tube, inspect the tube for cracks and physical damage. Make sure that the pins are straight. If you need to straighten the pins, be very careful as it may cause the glass envelope to break, causing the tube to lose the vacuum and fail as soon as the amplifier is powered on, possibly damaging the amplifier as well. Also, make sure to inspect the tube sockets for cracks and pin inserts. Carefully align the pins with the socket and gently insert the new tube.

**Never force a tube into a socket.** Should you decide to buy replacement tubes from Trafomatic Audio, rest assured that they were fully tested before the shipment.

Only KT120 power tubes can be used. Regarding preamplifier and drive tubes, the ECC99 and 5687 tubes cannot be replaced with other tubes type (like ECC81, 82, 83, 88). No other types of tubes can be used as they may cause damage to the amplifier, which is not covered by the warranty.

***We do not recommend frequent changes of the tubes, as the sockets are sensitive mechanical parts and are rated for relatively small number of insertions.***

### Servicing

Because of its careful design and high manufacturing standards, your amplifier should normally require only minimal service to maintain its high level of performance.

### CAUTION

***Lethal voltages are present inside the amplifier. Do not remove the amplifier's bottom cover and do not tamper with components inside the unit even with the power turned off. Servicing should be left only to authorized and trained personnel.***





### Biassing the amplifier

The **EOS** amplifier uses tubes in fixed-biasing configuration and require adjustments after change output tubes(KT120). Follow the next text for correct biasing.

**Welcome to Your First Use and The Bias Setting of Your Eos.** Many of you may never have set bias on an amp before. Well, you're in luck. Setting the bias on your **Eos** is very simple and requires nothing more than the included screw driver.

If you have already placed your clear tube guard onto the front of your amp, remove it now for ease of biasing. You'll notice a meter dead center on the front facade of the amp. It's more than just the 'O' in EOS, it's also the meter you'll use when biasing. You'll notice that your output tubes (the big ones) are marked V1 through V4. Examine your power tubes and place them into the appropriately marked sockets. If you've already removed the tubes from their marked boxes, don't worry, the tubes are also marked on their bases. Once your output tubes are installed, install the four smaller tubes. The taller ones on the outside and shorter ones on the inside. (doesn't matter which side)

Next you'll want to locate the included screwdriver. Make certain that your Eos' on/off switch (located on the left side of your amp) is toggled to 'off'. Next, connect your amp and power supply using the included umbilical. Plug the power supply into the wall. Turn the switch on the power supply (not the amp) On. Connect your speakers. If you want to be ready to listen to music directly after biasing, go ahead and connect a source. Turn on the source but keep the volume of your source at nil or zero.

If you have the integrated version of the Eos, and have plugged your source into inputs 1 or 2, I would put the input selector on an input not being used. Again, turn on your source. It need not be playing, and again, keep the volume set to zero.

Looking at the right side of your Eos, you'll find a bias plate. In it are 4 holes which correspond to the 4 output tubes and are so marked. If you are comfortable with using the holes, do so, many of you may find it easier to remove the plate so you can actually see the screws. (I do) You'll also want to have comfort-

able space around that area when biasing the amp. Give yourself a good 12 inches and this will be easier exercise. Now you're ready to switch on your amp.

I like to let the amp set for at least 3 minutes. Once that time has passed, we will begin the biasing. You'll see the bias knob dead center on the top of your amp. The tubes get a little hot, so you'll want to use caution. That's why we left the tube guard off, so one can more easily reach in and turn the knob with the tubes heated.

When the knob is dead center, pointed straight back, the amp is in operational mode. Switch the bias knob two clicks to your left, or V1. You'll see the the needle on the bias meter (on the front facade) jump into action. Using your screwdriver, go ahead and adjust the screw. You'll see with a turn or two the needle will move. Don't worry about things being too awfully high or low-this is a sturdy amp with sturdy tubes. For optimal use, we like the amp set at 50mA. Once you've set the first tube turn the bias switch to V2 and accordingly adjust the V2 screw on your bias plate also to 50mA. Repeat the same for V3 and V4. Once set, you're ready to listen to some music. Select your source and turn up the volume. For this first time, I like to leave the plate off, and re-set, after about 2-3 hours of play. If you don't have time to wait, don't worry, just repeat the bias section after your next long listening session. Once that is done, re-attach the bias plate (if you removed it).

Once bias is set, you're good to listen to your Eos for a long time before any re-biasing need occur. With regular usage, biasing need only occur a few times a year, and after one or two go rounds of practice, the procedure won't take you more than 5 minutes.

We hope you enjoy your new Eos from Trafomatic Audio. It's designed to bring the true passion and spirit of music into your home for many many years to come.

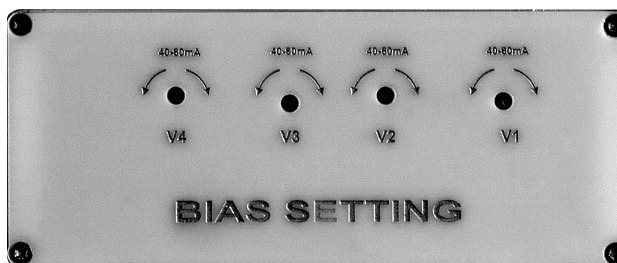


Figure 1: Bias plate on the right side of amplifier

# Trafomatic Audio **EOS**

## Stereo Integrated Tube Amplifier and Stereo Power amplifier

### Technical Specifications:

**Maximum output power:** 100W

**Class of operation:** A (till 10W ), Class AB till 100W

**THD:** 3.5% max (100W/1kHz)

**Bandwidth:** 10Hz-85kHz

**Inputs:** 3xRCA , 1x XLR for integrated version. For power amp: 1xRCA , 1xXLR.

**Input sensitivity:** 0.8Vef

**Input impedance:** 100 kohm

**S/N:** 83 dB (1KHz / 1W)

**Output (speaker) impedance:** Speaker terminals for 4 and 8 ohms

**Tubes:** 4 x KT120, 2 x ECC99 , 2x 5687

**Input Voltage:** 120V, 60Hz or 230V, 50Hz (as marked on the real plate of power supply box)

**Maximum input current:** 4A at 120V, 2A at 230V

**Dimensions:** Width x Depth x Height: 450mmx350mmx240mm

**Weight of amplifier:** 25kg

**Weight of power supply box:** 12 kg





# Trafomatic Audio

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