

SILK Amplifier Minute Series EL-34 Vacuum Tube Integrated Amplifier

Operation Manual

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Due to continuous improvements in this product, information contained herein is subjected to change without prior notice.

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1. Safety Instruction

Read this Operation Manual before attempting to use or install this equipment

WARNING

To reduce risk of fire or electric shock, do not expose this equipment to rain or moisture.

No user serviceable parts inside. Refer servicing to qualified personnel

Do not operate this equipment with its bottom cover removed.

Never touch any component inside the chassis. High voltage can be fatal.

Never directly touch vacuum tubes during operation due to very high bulb temperature.

Do not disconnect the power linkage cable while power up the equipment.

Disconnect AC power cable every time before attempting to relocate this equipment.

Do not attempt to modify this equipment in anyway.

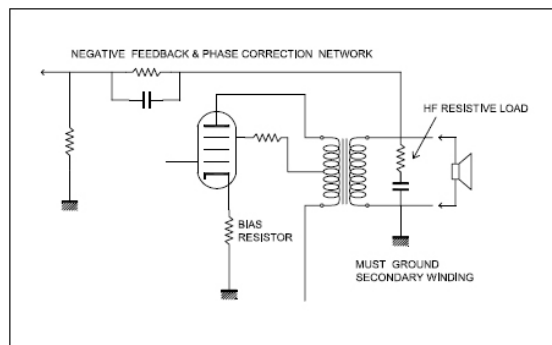
Only use this equipment with the AC power line voltage indicated under IEC plug.

SACThailand and Saeng Amnuay Commercial Ltd., Part. are not liable due to any injuries, loss or damage caused directly/indirectly by or the consequence of using this equipment to anyone or any property.

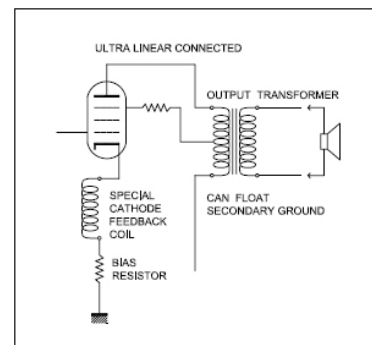
2. General Description and Features

In the past we introduced "Cathode Feedback" circuit topology in 2006 Minuet EL-34SE with great success and received many praises from listener around the world. The new 2010 Minute EL-34SE has further realized the scheme to "Super Cathode Feedback" circuit. This circuit greatly reduces harmonic distortion in quite a different approach than conventional "Global Negative Feedback" and improves sonic performance without disturbing other circuit parameters.

By having the output transformer with dedicated cathode feedback coil that connected directly to cathode of output tube, the feedback current path is totally isolate from other component. Unlike notorious global negative feedback which gain the feedback signal from secondary coil of output transformer, cathode feedback coil is virtually free from back EMF induced by loudspeaker or other kind of spurious noise, phase shift from any network circuit; therefore, only pure feedback signal is applied back to cathode of EL-34. This technique reduces THD by the factor of 10 times. Total Harmonic Distortion of 2010 Minute is less than 0.3% at 1 watt RMS while most conventional SE amp like 300B will start producing more than 1~2% of THD at same output level. Further we are able to fine tune the circuit and output transformer so that the combination will produce so pure signal with absent of higher than the 4th Harmonic at regular listening level.

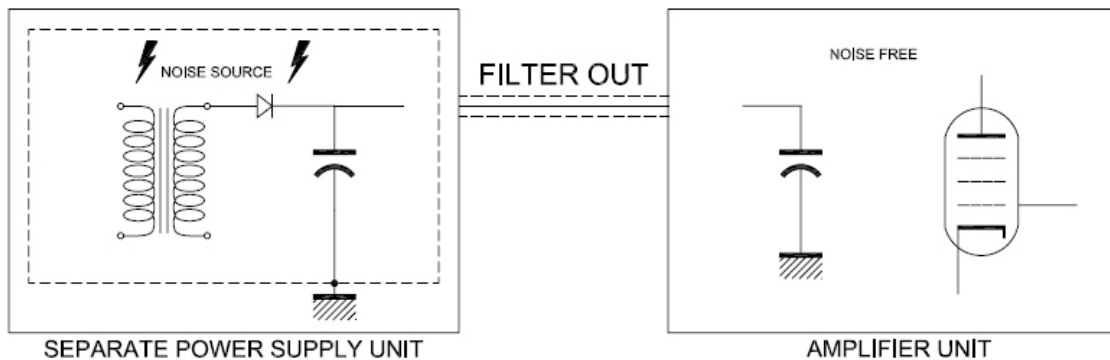


GLOBAL NEGATIVE FEEDBACK



SUPER CATHODE FEEDBACK

Moreover since cathode feedback topology does not require secondary winding to connect with ground, we can design and make output transformer to neglect any grounding effect and make this new output transformer to perform much better than ever before. Stereo image also improves with our new output transformer since both loudspeakers are totally isolate from one another because they are floated in respect to each other (in conventional SE design the grounding path of each loudspeaker shares the same path and signal can be mutually coupled causing weak stereo separation).



Besides the use of all high quality power supply parts like UltraFast recovery rectifier, Electro-static shield handwound power transformer and high quality capacitor, we still faced same old problem...."Tube rectifier will produce nicer tone". To totally combat with this, we went to use separated power supply unit. The concept is very simple by keeping all noise generators away from the main amplifier unit and shield all noise within the power supply casing. This new radical design for such a small amplifier proved to be outstanding solution and not only it help bring down hum and noise to lowest level, but also improve the tonal and clarity of the main amplifier to exceed that of tube rectifier.

Additionally by separating the power supply unit from main amplifier, we are able to reduce the heat exchanging between the two sections. When heat is reduced, both units run cooler and can be operated for extended period of time without the need for air-conditioning environment. This also greatly extends the life expectancy of all elements in the amplifier.

Another new improve design is to make the circuit perform best at any given volume control setting. A conventional integrated amplifier will have insufficient bandwidth at low volume control setting. This problem can be easily observed as "less detail sound when setting low volume control level". This is not unusual for general circuit since volume control element increases impedance of signal source; moreover, it also acts like a low pass filter to the circuit (from dividing resistive network). With the new 2010 Minute EL-34, we use our special proprietary circuit and layout together with tube adjustment to totally eliminating this problem. At any given volume control setting, the amplifier will have the same frequency characteristic (no HF roll-off) displaying full details and transparency.

3. Installation

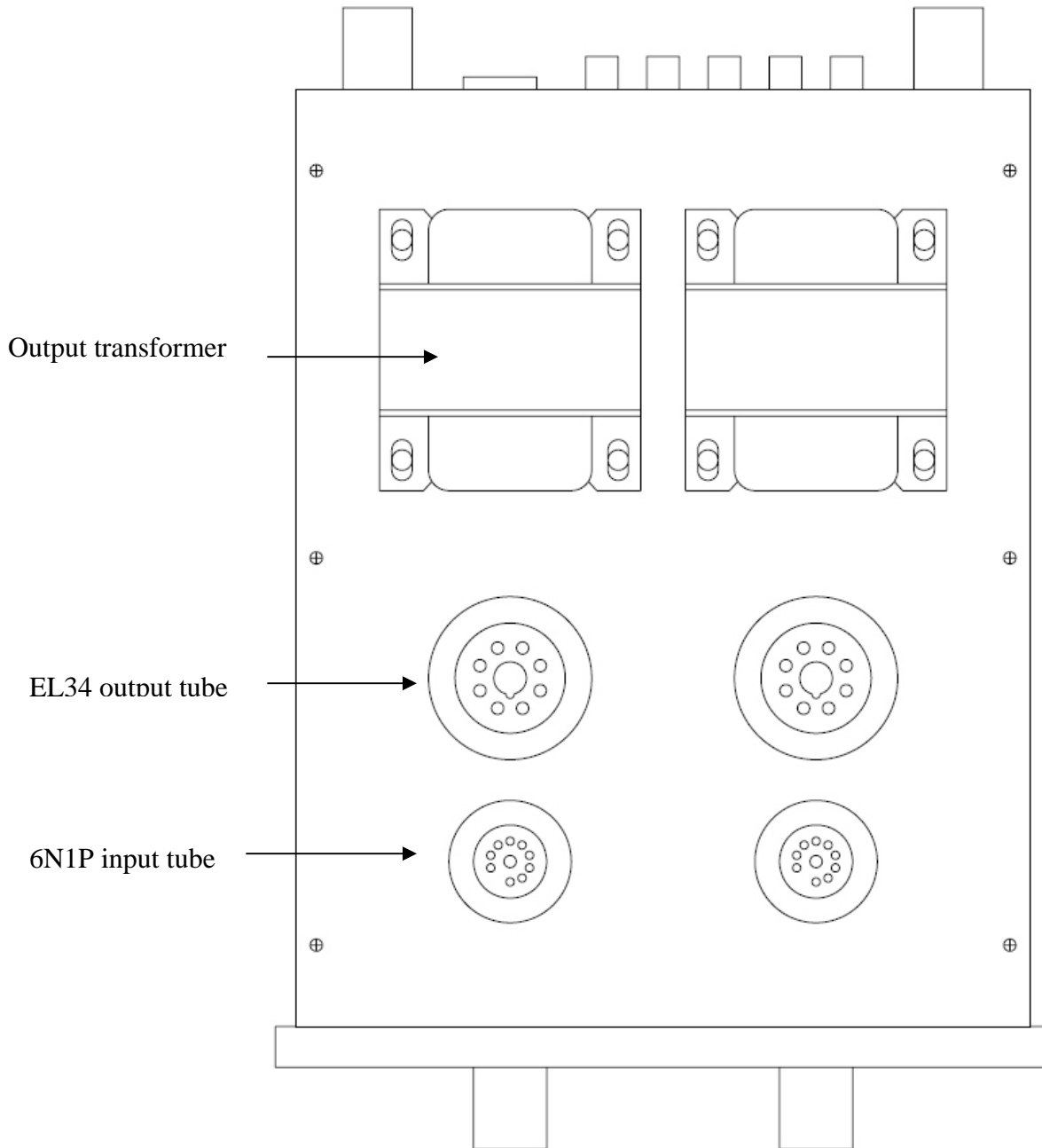
Caution: To prevent electric shock, make sure to disconnect the AC power cord to this equipment during every new installation or removing of vacuum tubes

After opening the outer transit box – carefully remove the packaging – and gently lift the second inner box out. This can be done by tipping the case onto its side and sliding the inner box out. Then remove the equipment and inspect it for any obvious signs of damage.

The transit boxes and packing should be retained and stored in a dry place in the eventuality of you needing to return your equipment for maintenance, upgrading or servicing.

The tubes are packed in their original boxes with foam protection – and located under the cages which are screwed to the chassis.

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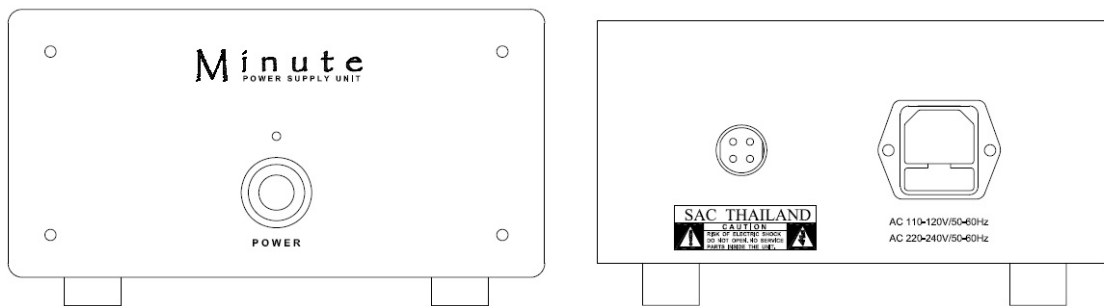
Each tube is labeled – and matched a label to be found on the tube base. Carefully remove the labels on the tube base and insert the appropriate tube. Handle the tubes with care, using only enough force to locate them securely into the bases. Make sure that the pin alignment is correct before inserting the smaller tubes as failure to do this can bend the pins, crack the glass and render the tube useless.

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The larger EL-34s have a locating lug molded to the central molding which guides the tube into place. Double check that the tubes are correctly inserted, and make a note of their locations for future use.

Since this equipment generates heat from vacuum tubes, careful placement with adequate ventilation on top and sides will help prolong the service life. Tube protection cages not only serve to prevent anyone to accidentally touch the hot tubes, but also act as radiator, conducting heat from tubes and use its large surface to radiate heat in much faster manner.

Minute EL-34 system consists of one power supply unit (with on/off switch) and one main integrated amplifier unit. These two units are connected via Power Linkage Cable (PLC). At each end of the PLC there is a slot guided 4 pin plug for making correct connection to its socket. Do not over tighten the ring nut of the plug.

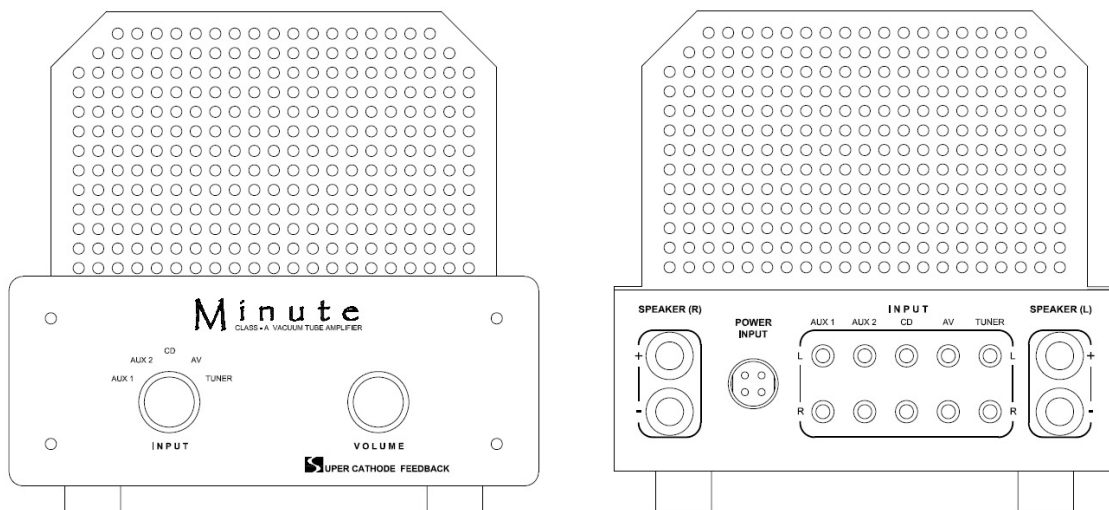


4. Operation

Up on “Power On” switched, the LED status will light and the cooling fan inside the power supply unit should start. Within less than 5 seconds, the cooling fan should go to idle mode with very low fan noise. The main integrated amplifier should have all 4 tubes slowly heat up and warm glow should be observed from inside of all 4 tubes.

During this start-up process there will be no music signal out to loudspeaker for about 30 seconds. After 30 seconds the music signal should be heard from loudspeaker connected to this amplifier. It is recommended to fully turn off the volume control knob to the lowest level before each turn on sequence. The circuit will fully stabilize around 5 minutes after turn on.

Selector knob selects the source to be amplified by the amplifier.



Caution: Do not remove RCA signal cable or XLR signal cable while the power is turn on. Fail to comply with this will result in large signal surge and can cause damage to this equipment and other equipment.

Caution: It is recommend to always securely connecting loudspeaker cable to speaker binding post at all time during power on.

Although the circuit design and implementation of this equipment are focused to suppress chances to produce oscillation, it is best practice to always connect input cable and load (loudspeaker) to the equipment at all time during power on.

Caution: Although this equipment has been designed to operate at extended period of time, it is not recommend to operate this equipment unattended by acknowledged person. Force air cooling by fan or air conditioning directly to this equipment will help lowering the buildup heat inside the chassis, thus improve the reliability and performance.

During Power Down process, it is usual that this equipment will still generate music through loudspeaker for around 10 seconds and sound will start to fade away.

Caution: After each power down process, it is required for the internal circuit to fully discharge the high voltage remaining in power supply. This period takes at least five (5) minutes. Attempting to restart the equipment right after power down process will cause damage to internal circuit and vacuum tubes.

In case there is an interrupt in main AC power line, it is recommended to switch off the equipment as soon as possible to prevent internal circuit or tubes damage from fast restart time.

5. Maintenance and Troubleshooting

Minute EL-34 has been designed to operate freely from any kind of bias adjustment.

Upon power up or during operation, if the LED status does not light and the amplifier does not function, the most likely cause may be “Blown Fuse”. Below figure shows the location of main protection fuse and the rating. Once unplug the AC power cable, the access to main fuse door is possible as pictured.

Blown fuse may have signs of burn inside and can be verified by checking with multimeter to read the resistance of the fuse’s caps (normally the DC resistance of the fuse should read below 1 ohm). If the new fuse keeps blowing, stop the operation and contact your dealer or SACThailand.

Main Fuse replacement



Caution: There will only be one voltage system marked on each equipment.

For 110-120V 50Hz or 60Hz power line voltage system, use 1.6A slow blow fuse

For 220-240V 50Hz or 60Hz power line voltage system, use 1A slow blow fuse

6. Specification

Specification	
Stereo Vacuum Tube Integrated amplifier with separated power supply 5 selectable RCA inputs, EL34 output tube operating with Super Cathode Feedback circuit running in pure Class-A in all stages.	
Output Power	10watt/RMS per Channel
Total Harmonic Distortion	less than 1.0% at 6 watt/RMS, less than 0.3% at 1 watt/RMS
Intermodulation Distortion	Less than 0.3% SMPTE
Frequency Response	15-30,000Hz (-1.0dB) at 1W/RMS power, 30-30,000Hz (-1.0dB) at 10W/RMS
Cathode Feedback	Super Cathode Feedback
Circuit Gain	42dB
Damping Factor	3.2
Output Impedance	2.3 ohm
Signal to Noise figure (SINAD)	below -87dB, Hum less than 2.5mV
Power consumption	100 watts
Power requirement	220-240V at 50/60Hz (stock version), 110-120V at 50/60Hz (special order)
Power Supply Unit Dimension	19 x 26 x 10 cm. (W x D x H) Weight: 4.5 kg.
Amplifier Unit Dimension	19 x 29 x 19 cm. (W x D x H) Weight: 5.5 kg

7. Warranty

The warranty of this equipment is limited to a period of one (1) year from the date of original retail purchase. This warranty is not transferable and is made only to the original retail purchaser.

SACThailand and Saeng Amnuay Commercial Limited Partnership warrant to the original retail purchaser from a period of one (1) year from the date of original retail purchase that this product is free from defects in materials and workmanship and agree to replace or repair, at its option, any defective part free of charge (parts and labor) No other expressed or implied warranties are to be assumed by the purchaser. The manufacturer does not assume or authorize any other liability in connection with the installation, use, sale, or shipment of this product.

Because the manner in which this product may be installed, used, and maintained is beyond the control of the manufacturer, SACThailand and Saeng Amnuay Commercial Limited Partnership shall not be liable for any special, incidental, or consequential damages or costs incurred therefrom. No warranty is made or implied for fitness for a particular use or installation. Damages resulting from failure or inability to follow proper instructions, unauthorized repair or modification, abuse, misuse, or damage by accident are expressly excluded.

Purchaser must pay the initial shipping and insurance charge of this product. SACThailand and Saeng Amnuay Commercial Limited Partnership will repair or replace at its own discretion and will pay the return shipping charge if the repair is covered under this warranty.

Permission for return (return authorization number) must be obtained from SACThailand by email at info@sacthailand.com

The manufacturer reserves the right to make changes and improvements in its products without requiring advance notice nor incurring any obligation to similarly alter products previously purchased.

8. EC Declaration of Conformity

We

SACThailand
Saeng Amnuay Commercial Limited Partnership

Declare that the product herewith

Minute EL-34 Stereo Integrated Amplifier
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Confirmed to comply with the requirements set out in the following Council Directives:

The EMC Directive 89/336/EEC
The Low Voltage Directive 73/23/EEC

This Declaration of Conformity is based upon compliance of the product with the harmonized EMC Directive:

Emission Per

EN55013:2001 for Conducted and Disturbance power
EN61000-3-3:1994 Voltage Fluctuation and Flicker

Immunity Per

EN55020:2002 for Measurement of Immunity from Radiated Fields and
Measurement of immunity to induced voltages

IEC61000-4-2:1995 +A1:1998+A2:2000, Electrostatic Discharge Immunity Test, +/-
4Kv Contact Discharge, +/- 8Kv Air Discharge

IEC61000-4-2:1995, Electrical Fast Transient/Burst Immunity Test, +/-1Kv on AC
port, 5/50nSec, 5KHz Rep. Freq.

IEC60065:2002 Audio, Video and similar electronic apparatus Safety
Requirements