Q-tron Audio

Q-tron Audio PA34B4 OTL amplifier
user manual

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Fig 1 Front view

Rear view

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1. Introduction

Thank you for choosing the PA34 OTL amplifier from Q-tron Audio. The PA34 is a new improved OTL amplifier with 10 times lower distortion than other OTL amplifiers of similar output power. The PA34B4 version described in this manual is equipped with an automatic bias calibrator that removes any need for manual adjustment.

2. Content of delivery

Box 1

1. Amplifier PA 34B4

Box 2

1. Tubes 6C33C 4 pcs
2. Tubes 6N2n-EB 3 pcs
3. Tubes 6N6P-I 2 pcs

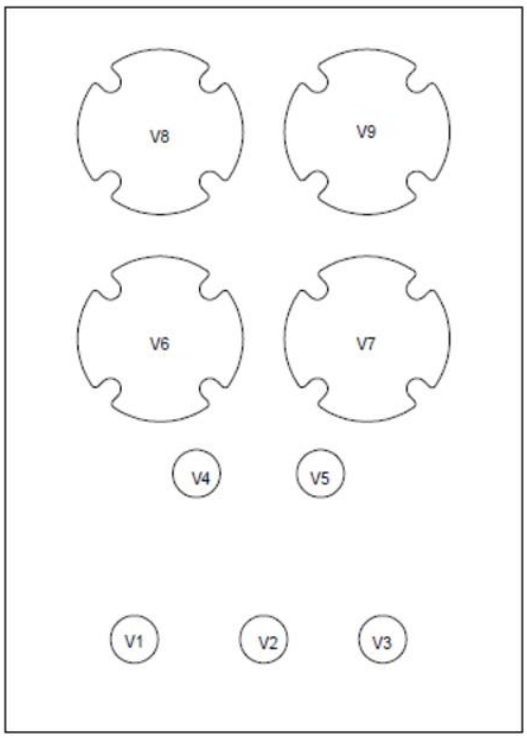
3. Unpacking Box

Put the wooden box on a table or other steady surface. Make sure that the box is oriented correctly, i.e. that the side marked top is facing upwards. Open the box by prying open the metal flaps that are holding the top lid using a screwdriver. When all metal flaps are bent so they point upwards, the lid can be opened.

Remove packing material so that the amplifier can be lifted out of the box, be aware of the weight and handle the amplifier carefully.

Put the amplifier on a steady surface with the front panel facing you.

Unpack all tube cartons and put them aside. Unpack all tubes one by one and put them into the correct tube sockets as indicated by the figure. NOTE! Output tubes are matched as a set of 4 and to each individual amplifier, make sure that the tubes are set in their correct position in each amplifier.



Tube placement

Note! V1, V3 and V4 are 6N2-EB, V2 and V5 are 6N6P, V6 – V9 are 6C33C-B

4. Setup

1. Connect the amplifier to the mains voltage with a standard IEC 320 mains cable
2. Connect speakers to the isolated binding posts
4. Connect a preamplifier to the connectors marked input

4.1 Function

The amplifier is equipped with XLR and phono connectors for the input signal and isolated binding posts for connecting speakers. The amplifier is equipped with an output-offset voltage protection circuit that protects connected speakers in the case the amplifier would give a too high DC voltage on the output. A fail-safe soft-turn-on-circuit is also included.

4.2 Start-up procedure

Switch on the mains switch on the back panel to position 1. Push in the front panel bush button for 1 second, the area around the push button will then be lit with a green dim light, after approximately another 1.5 seconds a “click” can be heard, this is an indication that the soft-turn-on-circuit is activated. After approximately 90 seconds the area around

the front panel push-button will go from dimmed green to bright green and the amplifier is then ready for operation.

4.3 Switch off procedure

If the amplifier has been switched on <u>less</u> than 60 minutes:

When the front panel push-button is pressed the amplifier will switch off immediately.

If the amplifier has been switched on <u>more</u> than 60 minutes:

When the front panel push-button is pressed the green light around the push button will first be lit dimmed and will continue to be so until the automatic bias calibration has been completed when the green light will be extinguished, and the amplifier will be switched off.

If the mains switch on the back panel is in ON position the control circuits are energised and the power consumption is about 5 W. In the OFF position all circuits in the amplifier are switched off and there is no power consumption

<u>NOTE!</u> The amplifier must be connected to speakers or another load to operate correctly, if not the offset voltage protection circuit will switch off the amplifier automatically directly after the start-up sequence has been completed.

5. Controls and connectors

5.1 Front panel

On switch with integrated indicator, this is a switch button which when pushed in will start the switch-on-sequence of the amplifier.

5.2 Back panel

Input connectors

Phono This connector accepts standard RCA phono plugs

XLR This connector accepts standard XLR plugs

5.3 Unbalanced/balanced switch

This switch should be in the U position when using the RCA connectors and in the B position when using the XLR connectors. NOTE! Do not connect both RCA and XLR connectors at the same time.

5.4 Speaker connectors

Live, and ground. These connectors accept 4mm banana-type plugs, bare wire and spade-type connectors.

5.5 Mode

This connector is used to set the mode of the amplifier, normal or tuning mode. The tuning mode is activated by connecting the tuning plug.
NOTE! Do not connect the monitor box that was used with earlier versions of the PA34 nor connect anything else to the Mode connector except the tuning plug when needed.

5.6 Indication LEDs

These LEDs indicate fault conditions as described in the table.

Alarm	Service	Indication
		Power tubes out of specification, change power tubes
		Power tubes are worn, and time for service

5.7 Mains power inlet with integrated fuse holder and mains switch.

The power inlet accepts a standard power cord with an IEC320 plug. The 2 mains fuses can be accessed if the power cord is removed and the fuse cover/holder is removed, replace the fuses only with fuses of the same rating, (for 230VAC mains power fuse rating is 4A slow blow and for 120VAC mains power fuse rating is 6.3A slow blow). The mains switch to power up the amplifier if it is set to position 1, in position 0 the amplifier is disconnected from mains power.

6. Q-tron Audio Automatic Bias Calibrator

Automatically control bias and offset in our OTL amplifiers and also automatically tune to correct bias when installing new power tubes.

1. Automatically tune bias and output offset voltage to optimal values
2. Controls the **real quiescent, (idle)** current, see https://qtron.se/en/articles/q-tron-audio-bias-calibrator-technical-background for a complete in-depth analysis and explanation).
3. Automatic tuning of bias when replacing power tubes

The circuit automatically measures and if necessary, adjusts quiescent current and output DC offset and works in the following manner:

If the amplifier has been on for less than 60 minutes, it will turn off instantly when the power switch is pressed. If the amplifier has been switched on for more than 60 minutes and the power switch is pressed to switch off the amplifier the microprocessor circuit will start measuring the quiescent current and output DC offset, this is indicated by that the area around the switch-on button change from being brightly lit to dimly lit.

Most times the bias values don't need to be adjusted and then the amplifier will switch off almost immediately indicated by the area around the switch-on button becoming dark.

If adjustments are necessary these will be performed automatically and when these values are correct the amplifier will switch off. The values for bias are stored in non-volatile memory.

When the amplifier next time is switched on, the stored values for bias will be applied.

If the power tubes start to get worn so that they need very different bias voltage an orange "Service" LED will be lit at the back panel, the amplifier can then still be used but will not be optimally tuned.

If any value is completely out of specification even after adjustments, (as in the case that a tube catastrophically has failed or got too weak) there will be a red "alarm" LED lit and the amplifier can then not be used for playing music, (the inputs and outputs will be shorted) until the fault has been corrected.

6.1 Automatic bias tuning of new power tubes

The bias auto calibrator also automatically sets the correct operating parameters for new power tubes.

Procedure:

1. Switch off the amplifier completely, also with the switch on the rear.
2. Set the amplifier in tuning mode by connecting the tuning plug to the connector on the rear panel
3. Put a new balanced set of 4 power tubes in the channel where they should be replaced
4. Note all other tubes must be installed in the amplifier
5. **Note! the new power tubes must be matched to within 2V difference in grid bias at 200mA anode current and 160V anode voltage, e.g. 2 tubes that need -55V and -57V are OK. The grid voltage of power tubes must be in any case between -55 and -65V.**

7. Performance data:

Output power in 8 ohm load	80W at 1% distortion at 1kHz
Output power in 4 ohm load	60W at 1% distortion at 1kHz
Output impedance	<0.4ohm
Harmonic Distortion	0.01% at 1kHz and 2W output power 0.1% at 1kHz and 25W output power
Power bandwidth	10 – 150000 Hz -3dB
Noise and hum	90 dB below 80W output power, (10 – 200000Hz) 100 dB below 80W output power, A-weighting filter

Line voltage	230V or 120V ± 10%
Power consumption	600W maximum
Dimensions chassis	275 x 370 x 225 mm, (W x D x H)
Dimensions overall	275 x 370 x 350 mm, (W x D x H)
Tube complement	9 tubes in total, (6C33C x 4, 6N6P-I x 2, 6H2n-EB x 3
Input connectors:	
Unbalanced	Gold plated phono
Balanced	Gold plated XLR
Output connectors	CE-approved isolated binding posts accepting 4mm banana connectors, spades and bare wire
Line voltage connectors	IEC320 jack with integrated mains switch and dual fuses
Weight	18kg

8. Contact information

Manufacturer Q-tron Audio Sweden
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