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Q-tron Audio PA12B OTL amplifier user manual



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Fig 1 Front view



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Fig 2 Rear view

Introduction

Thank you for choosing the PA12B OTL amplifier from Q-tron Audio. The PA12B is a new improved OTL amplifier with fully balanced input and 10 times lower distortion than other OTL amplifiers of similar output power.

Content of delivery

1. Amplifier PA 12B
2. Tubes 6C33C 4 pcs
3. Tubes 6H2n-EB 5pcs
4. Tubes 6H6PI 2pcs
5. Monitor interface unit
6. Adjustment screwdriver

Unpacking

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



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removing the metal brackets on each side of the lid and by bending open the metal flap that is holding the top lid using a screw driver.

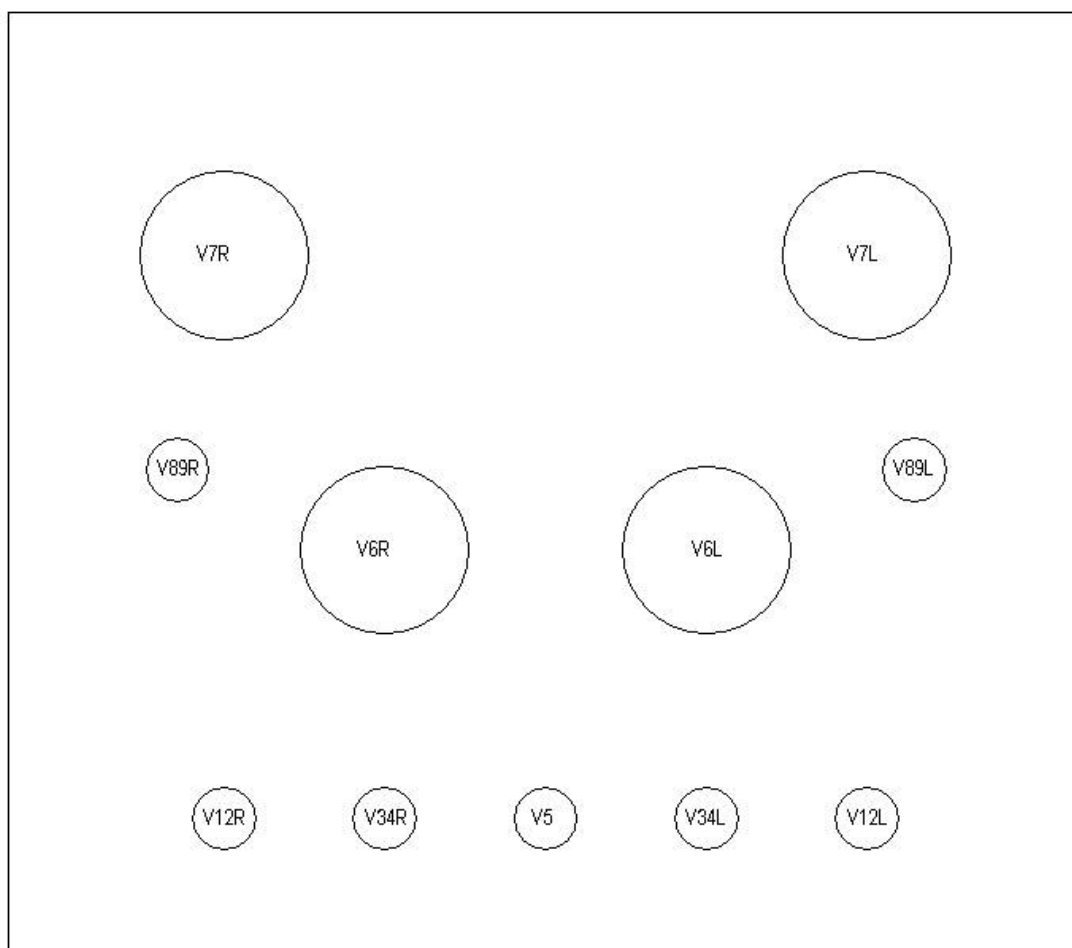
Unpack all tubes cartons, the adjustment screwdriver and the monitor interface unit and put them aside.

Remove the wooden divider shelf and 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 towards you. Unpack all tubes one by one and put them into the correct tube sockets as indicated by the figure.

NOTE! each power tube is marked with 1 - 4 red colour dots on the base and there are corresponding yellow colour dots on each tube socket.

Please make sure that the power tubes are inserted in the correct position, i.e. the tube with 1 red dot should be inserted into the tube socket with 1 yellow dot and so on.



Front



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Setup

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

Function

The amplifier is equipped with XLR and phono connectors for input signal and isolated binding posts for connecting speakers. The amplifier is equipped with an output offset voltage protection circuit which protect 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.

Start up procedure

Check that the front push button switch is not pushed in. Switch on the mains switch on the back panel to position 1. Push in the front panel bush button, after approximately 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 be lit green and the amplifier is ready for operation.

If the offset voltage protection circuit is activated this is indicated by the green area around the front panel bush button is not lit after waiting for more than 90 seconds. To de-activate the offset voltage protection the amplifier has to be completely shut-off for at least 1 minute by setting the mains switch on the back panel to position 0. After the 1 minute delay the normal start up procedure can be followed.

NOTE! The amplifier must be connected to speakers or other load in order 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.

Controls and connectors

Front panel

On switch with integrated on indicator, this is a switch button which when pushed in will start the switch on sequence of the amplifier. If function is normal the area around the switch button will light up with green colour after approximately 90 seconds. If function is abnormal, i.e. if output offset voltage is too high the amplifier will not switch on and the indicator will not be lit.

Back panel

Input connectors left and right



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Phono These connectors accept standard RCA phono plugs

XLR These connectors accept standard XLR plugs

Unbalanced/balanced switch

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

Speaker connectors

Left live, left ground, right ground and right live. These connectors accept 4mm banana type plugs, bare wire and spade type connectors.

Monitor

This connector is used for connecting the monitor interface unit when measuring adjusting the output tube bias point and offset voltage

Bias control adjustment

Through these 4 holes the bias and offset for each channel can be adjusted using the adjustment screw driver.

Mains power inlet with integrated fuse holder and mains switch.

The power inlet accepts a standard power cord with 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 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 power up the amplifier if it is set to position 1, in position 0 the amplifier is disconnected from mains power.

Monitor interface unit

This unit is used when adjusting output bias and output offset voltage. The unit connects with a cable to the monitor connector on the rear of the amplifier.

NOTE! The monitor interface unit should only be connected to the amplifier during testing and adjustment; it should be removed during normal use.

The adjustment knob has 3 positions to select different test points.

1. Bias current
2. Output offset volt
3. Not used



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The 2 test points are for connecting a DVM, (Digital Volt Meter)

The toggle switch on the side is for selecting right or left channel when adjusting offset and bias current.

Test procedure:

NOTE1 We recommend to measure offset and bias every 6 months, there is normally no need to do more frequent checks.

NOTE2 The amplifier should be switched on for at least 30 minutes before performing the test.

1. Connect the monitor interface unit to the amplifier
2. Connect a DVM with setting 200mV DC to the monitor interface unit
3. Place the monitor interface unit so that the toggle switch faces towards you
4. Turn the adjustment knob on the monitor interface unit to position 1
5. Set the toggle switch to right position
6. Check the reading of the DVM for bias current, it should read between 100 -150mV which is equivalent to a bias current of 200 – 300mA.

NOTE! Higher bias doesn't give better performance!

Optimum bias current for lowest distortion is 200 – 300mA for the output tubes, higher bias will give higher distortion and reduce tube life.

7. Turn adjusting knob to position 2
8. Check the reading of the DVM for offset voltage, it should be less than +-100mV
9. Set toggle switch to left position
10. Repeat steps 7 – 9
11. If readings are within specification you don't need to do anything, otherwise follow procedure described below.

Adjustment procedure for bias and offset



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NOTE! The adjustment is sensitive so adjustments should be made by turning the adjustment screwdriver a tiny amount each time, don't turn more than 5 degrees each time!

Too increase bias for one channel both potentiometers for that channel should be turned counter clockwise.

Too decrease bias for the same channel both potentiometers should be turned clockwise.

For every adjustment of the 2 potentiometers bias and offset should be measured. Adjust bias so it reads between 100 - 150mV on the DVM

To increase or decrease offset for one channel the potentiometer marked R7L, (for left channel) or R7R, (for right channel) should be adjusted. For every adjustment offset should be measured, adjust offset so it is less than +-100mV

Performance data:

Output power in 8 ohm load	2 x 25W at 1% distortion at 1kHz
Output power in 4 ohm load	2 x 20W at 1% distortion at 1kHz
Output impedance	<0.4ohm
Harmonic Distortion	0.01% at 1kHz and 1W output power 0.1% at 1kHz and 10W output power
Power bandwidth	10 – 150000 Hz -3dB
Noise and hum	90 dB below 25W output power, (10 – 200000Hz) 100 dB below 25W output power, A-weighting filter
Line voltage	230V or 120V \pm 10%
Power consumption	600W maximum
Dimensions chassis	430 x 370 x 130 mm, (W x D x H)
Dimensions overall	430 x 370 x 240 mm, (W x D x H)
Tube complement	11 tubes in total, (6C33C x 4, 6H6PI x 2, 6H2n-EB x 5)
Input connectors	Gold plated phono and XLR
Output connectors	CE approved isolated binding posts accepting 4mm banana connectors, spades and bare wire



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Line voltage connectors

IEC320 jack with integrated mains switch and dual fuses

Weight

21kg

Contact information

Manufacturer

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