Modifications to Boyuu / Douk Audio A10 EL34 amplifier

1. **Stock version: Ultra-Linear mode connection only**

   **Modification:** Placed the amp to Triode mode, a truly simple mod with great return.

   ![Diagram of amplifier circuit](image)

   **Effect:** Significant improvement in definition and bass control. Placement and soundstage improved quite noticeably also. You may consider a switch so you can toggle between the two modes, depending on music style and personal preference.

   **Note:** It’s hard to drill in the enclosure, as the metal is very hard. It’s actually impossible to drill a hole in this cabinet with an ordinary metal drill.

2. **Stock version: Shuguang EL34B power tubes (V2, V5)**

   **Modification:** Replaced by Tung-sol EL34B.

   **Effect:** This change delivered a BIG improvement in tonal quality. This mod is a ‘must’ in order to get to the quality level people write about on the web regarding this amp.
3. **Stock version:** two 1N4007 in the hybrid power supply (D1, D2)

**Modification:** Replaced with two ultra-fast SF4007 diodes, bypassed by 10nF snubbing caps (Nissei CBB metallized polyester).

**Effect:** No noticeable benefit, you may as well skip this mod.

4. **Stock version:** 220nF/400V coupling capacitor between stages (C102, C202)

**Modification:** Replaced with 330nF/630V Mundorf Mcap audiophile MKP capacitor.

**Effect:** Replacing the stock capacitor gave an improvement in definition and openness, but also made the amp a little too analytical to my taste. For further details see the grid stopper modification, as these go hand in hand.

5. **Stock version:** Philips 33uF/400V HT capacitors (C102, C202)

**Modification:** Replaced C301 and C303 with Elna 100uF/450V.

**Note:** The schematic indicates 22uF, but it was in fact 33uF.

**Effect:** Auditable improvement in bass control and power, so I would recommend this mod.

6. **Stock version:** Rubycon 220uF/63V HT capacitors (C103, C203)

**Modification:** Replaced by Elna 2x 470uF/63V back to back (bi-polar).

**Effect:** Not completely sure if this made the amp more musical. Please judge for yourself.

7. **Bypass caps on all electrolytic capacitors** (C103, C203, C301, C302, C303)

**Modification:** Added bypass film 1uF 500V film capacitors in parallel (Pilkor 105 series MKP).

**Effect:** No noticeable benefit, you may as well skip this mod.

8. **Stock version:** The common (or zero ohm) end of the output is grounded

**Modification:** Floating outputs, so separating the L/R grounds, as well as disconnect the ground wire to the power board.

**Effect:** Reduced static and hum, but also opened the soundstage a bit more.
9. Stock version: the shared cathode resistor of the parallel 6N2 triodes; R104, R204 = 2Kohm

Modification: Triodes in driver biased hotter; R104, R204 = 1Kohm (Vishay Dale 3W Wire wound).

Note: Values in the graph are x2 to compensate for the fact that our amp is running two halves of the 6N2 in parallel. To get back to the real-world values in our amp, you need to divide values by two. Also the graphs of the ECC83S match those of 12AX7.

Explanation: The original bias current of the 6N2 (same curves as ECC83S or 12AX7, and I’m actually using the 12AX7 now) was about 0.5 mA, which doesn’t quite put this tube into class A operation. In addition, these tubes show best sonic behavior at a plate voltage of ~180V. The bias current increase will also result in a lower plate voltage of 175V instead of the 205V in the stock version, so all is well. The only price we pay is a 20% reduction in amplification, so that (at least to me) is acceptable. Power dissipation stays well below the maximum of 1W at approximately 360 mW (both halves). All calculations above have been confirmed by measurements.

Effect: The amp seems to have developed a bit more ‘punch’ as a result of this mod. Definition has slightly improved, while placement and soundstage seem unaffected. Simple mod, so worth it!

10. Stock version: No grid stopper resistor

Modification: NOT IMPLEMENTED - Input grid stopper 1Kohm added (Vishay Dale 3W Wire wound).

Effect: In the end I didn’t like the effect on the upper end of the audio spectrum and replaced with a 220 ohm resistor (Vishay Dale 3W Wire wound, just for construction purposes) which made no noticeable difference. I don’t recommend implementing this mod as the amp is quite stable.
11. **Stock version: No center-tap on 6n2 heaters (one side of the heaters is simply grounded)**

**Modification:** Added two 100 ohm resistors in series to the 6.3V heater voltage and connected center-tap to ground (take GND from PCB center).

**Effect:** No noticeable or measurable benefit, you may as well skip this mod.

12. **Stock version: 6N2J tubes, military grade (V1, V4)**

**Modification:** Replaced with Shuguang 12AX7 matched tubes. Don’t forget to adjust filament wiring or use an adapter.

**Effect:** I like this tube in the input stage! As always it’s a matter of taste, but am warming up to this one. Bass is a little more solid and the matched version certainly improved the openness.

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**In conclusion**

This is a great amp for its price, specifically after replacing the stock EL34 tubes and switching to triode mode. Definition and specifically imaging and openness are absolutely fabulous! Sound is not too warm, yet has a tube quality to it that I really like. Bass could be better, but remember... this is in fact a 5W amp, so high sensitivity speakers (>90dB) are recommended. Overall great value for money, even in its original (stock) state!

Don’t be misled by any forum member on the internet that states that any audio equipment from outside the US or Europe is rubbish. Those people probably voted for Donald Trump. As in any country, good and bad equipment is commercially available and it’s up to the buyer to know the difference.
APPENDIX A

Original schematic of the Boyuu / Douk Audio A10 EL34 amplifier.
APPENDIX B

Original interior of the Boyuu / Douk Audio A10 EL34 amplifier.