

# Traynor Tweaks - Rev 12.0

## FINAL

*a document dedicated to the modification of the Traynor YBA-1 Bass Master*

New Introduction July 2007:

The material below was formerly a website called Traynor Tweaks. After several years of maintaining it I decided to condense it into a PDF document that could be shared easily among those interested. My interests have changed over the years and while I still respect the Traynor amps, I have new goals for tones and amp performance... namely older tweed and Valco-made amps. I recently sold this amp and the buyer said it was one of the best amps he ever played though. So, this document is what remains of the ol' Traynor Tweaks page. I hope you might find some parts useful.

*Contents (c) 2007 Sean Kilback*

*Please don't reproduce without permission, thanks.*

If you have questions or comments you can email me at:  
sean @ kilback . net



---

## Modified 1965 YBA-1 Bassmaster



[Introduction](#)

[Objectives](#)

[The Source Circuit](#)

[Complete Schematics](#)\*\*\* Updated

## The Modifications...

Grounded power cord  
Changed the first 12AX7A to an NOS 12AY7  
Volume Potentiometers  
"Brightness" Capacitors  
Channel Defeat  
Tone Stack Changes  
Master Volume Control  
Tube rectifier installation  
Variable bias control  
Plexi mid-boost mod  
Filter Capacitor Replacement  
2 x 10" Speaker Cab

## Conclusions...

## Modified Schematic.

[Back to main page..](#)

---

### Introduction

This section documents my adventures in modding my YBA-1 to more closely resemble the circuit of the famous '59 Bassman. My YBA-1 is a 1965 model with an early serial number of 348 marked on the inside of the chassis in black marker. It's got the huge transformers used in the earliest models and a choke (later models didn't have the choke).

### Objectives

First, let me say that this particular YBA-1 sounded pretty good when I received it. But I felt there was room for improvement. If you don't already know, the YBA-1 was very much inspired by the classic Fender '59 Bassman (5F6-A) design. In fact, only a few changes are needed to exactly mimic the circuit. Still, some things which are difficult to replicate include the transformers and original cabinet. Some guy named Jim Marshall over in the UK also thought the 5F6-A was a super sounding circuit...

Like Marshall, EL34s were used in the YBA-1's (actually, 7027s were used in the earliest examples). Early on I investigated replacing the old EL34s with some classic 6L6 style tubes but could never sort out the different pros and cons to this idea so I decided to keep using EL34s. I have installed new Svetlana EL-34s which I'm happy with.

### The Source Circuit

My inspiration for attempting these mods came from reading a page by a gentleman and fellow Canadian named Jean-Charles Maillet's. I essentially followed the process he lays out for modifying a YBA-1 to the "source circuit". If you benefit from his writings as I did he might appreciate an email of thanks.

The 5F6-A is revered by many guitar players as having one of the HOLY GRAIL amp tones. It's one of the finest blues amps but is also used extensively by country and rock players as well. I play blues and was after that elusive sound but am not able (or willing) to drop several thousand on an original example. Modifying my YBA-1 was the best approach for me because I had some experience modding amps and have a background in electronics. Traynor amps are very well built and stand up well to modifications.

## Complete Schematics

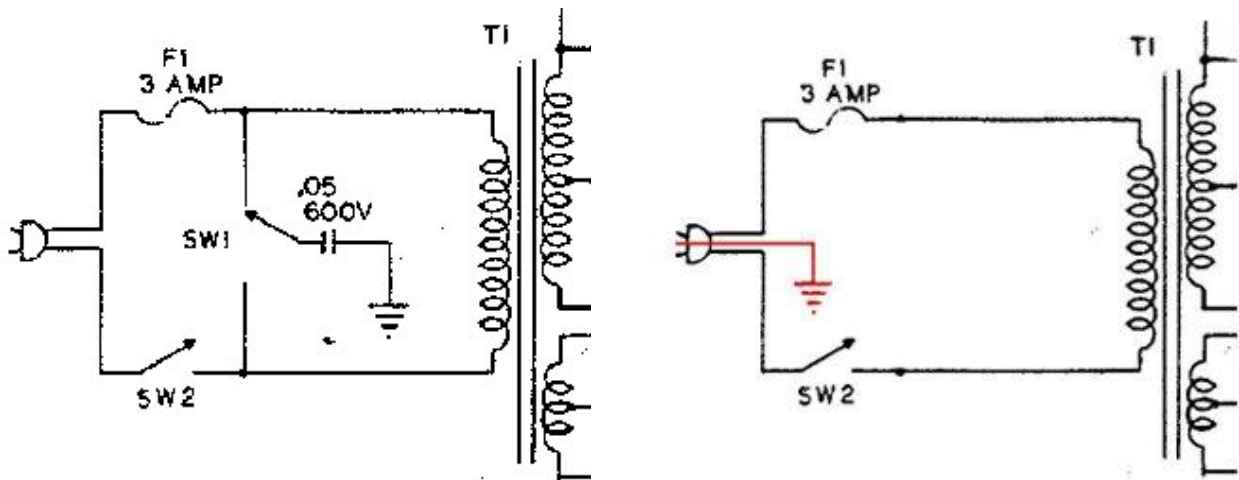
The original Fender Bassman 5F6-A and Traynor YBA-1 schematics are readily available online, so I won't reproduce them here.

My final revised schematic including all the mods is included at the very end of this document.

---

## The Modifications...

I'd like to explain some of the mods as best as I am able which I'm hoping will help you decide if you want to make changes to *your* amp. ALL these changes are reversible, some easier than others, so I didn't feel like I was making evil changes to the amp. I didn't change the faceplate or drill any holes anywhere (yuck).



BEFORE

AFTER

FIGURE 1 - Grounded power cord

## Grounded power cord

In my opinion, the first mod you make to any vintage amp is to install a grounded power cord. This protects you from shocks when you touch your strings and another device (microphone, another amp, etc) which is grounded with the opposite polarity. When you do this you can remove the ground polarity switch on the back of the chassis. This provides you with an excellent location for new controls (master volumes, etc). See figure 1.

Easier said than done. I've found in a couple of cases, this amp included, that removing and reinserting the cord with its strain relief is a seriously difficult task. I suggest using a pair of large pliers to work the strain relief back and forth until you can push or pull it out. Most 3-conductor cords are of course thicker than the original 2-conductor so the strain relief itself needs to have a larger cavity (for lack of a better word) - I've found that the trusty soldering iron is useful for this task...plastic melts you see... !

## Changed the first 12AX7A to an NOS 12AY7

I changed the first 12AX7A to a NOS 12AY7 to lower the gain a little. Not co-incidentally this is the same tube which the Bassman uses in this position. As expected the amp was a little tamer and

slightly cleaner. 12AY7's appear to be getting quite expensive recently...

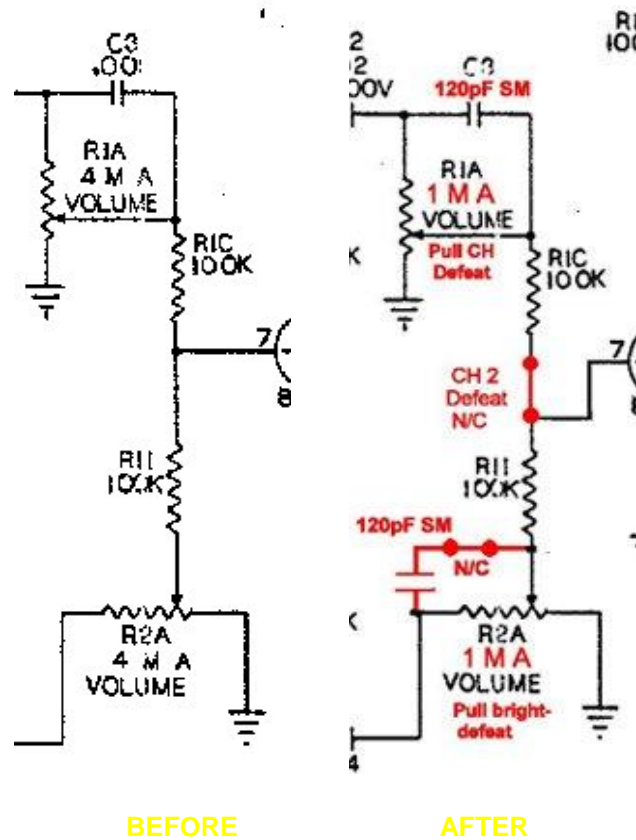


FIGURE 2 - Volume pots, bright caps, and channel defeat.

### Volume Potentiometers

J.C. recommends changing the 4M-A volume pots for 1M-A pots to improve the tone. This increases the "immediacy" of the amp and makes it less squasy. I noticed a big change after doing this simple change. I used push/pull 1M-A pots for both channel I and II (more on those later). See figure 2.

### "Brightness" Capacitors

The stock YBA-1 circuit uses a 0.001uF (1000pF) cap on channel II to make the amp brighter at lower volume settings. The result is a VERY BRIGHT tone which was overkill for my ears. I changed the channel II cap to a 120pF Silver Mica. For channel one I installed a 120pF which is switched in with the push/pull volume pot (ch1 did not originally have a bright cap). See figure 2.

### Channel Defeat

◇ J.C. also talks about improving the "transient fidelity" by removing unnecessary elements from the signal path. One method of accomplishing this with the YBA-1 is to eliminate one of the channels. I wanted to retain the versatility that two channels offers so I used the ch2 push/pull switch to include a channel-defeat option. See figure two. There is a remarkable difference in tone when you pull to defeat the other channel...the tone is instantly clearer and more refined. I wouldn't say it's thinner but certainly sounds purer. It's excellent for playing clean. When you need grinding hunks of sludge (or more dirt) simply engage the other channel.

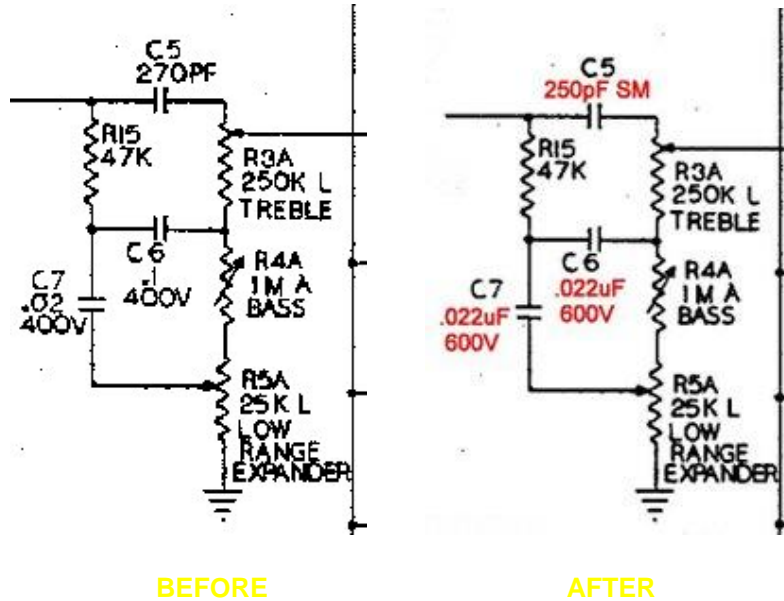


FIGURE 3 - Tone stack changes

### Tone Stack Changes

The YBA-1 shares the same tone stack topography as the Bassman but some values are different. I changed some components to match more closely. See figure 3. I can't really comment too much on this change because I did not do any head-to-head comparisons...too difficult to switch all the values at once! :-). Again I used silver mica caps for the 250pF treble cap and two 0.022uF Sprague Organge Drops. BTW, the "low range expander" is just funky name for a midrange control.

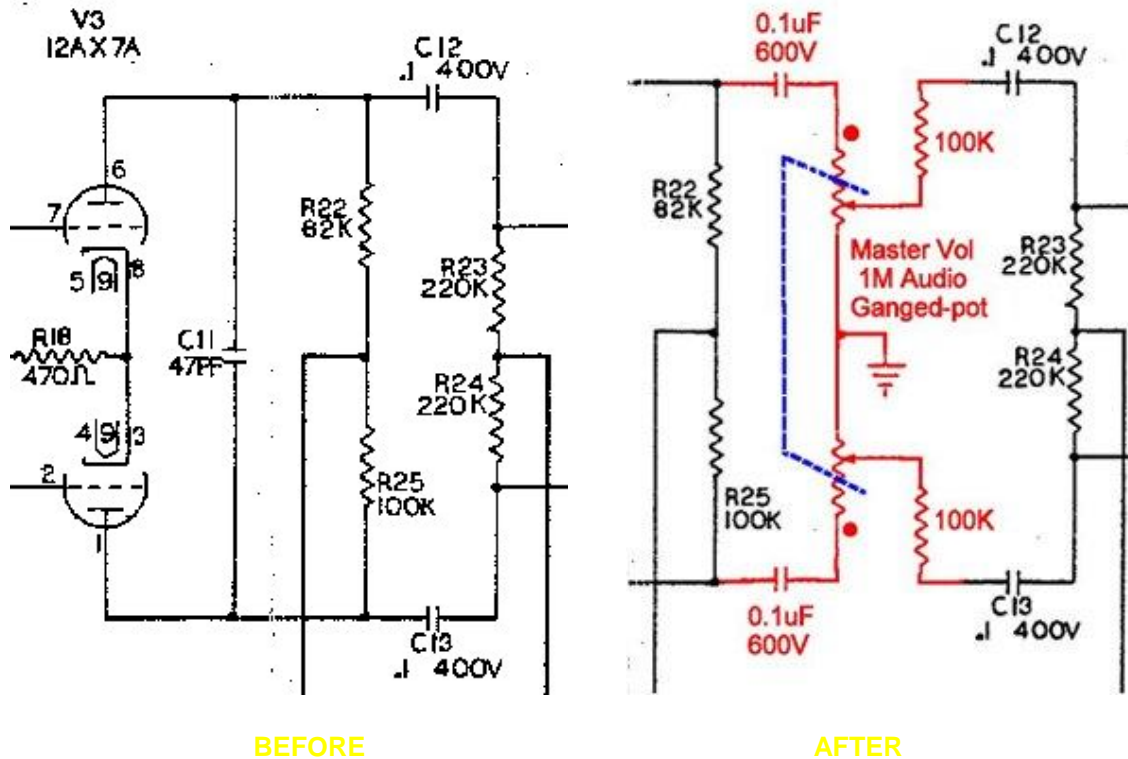


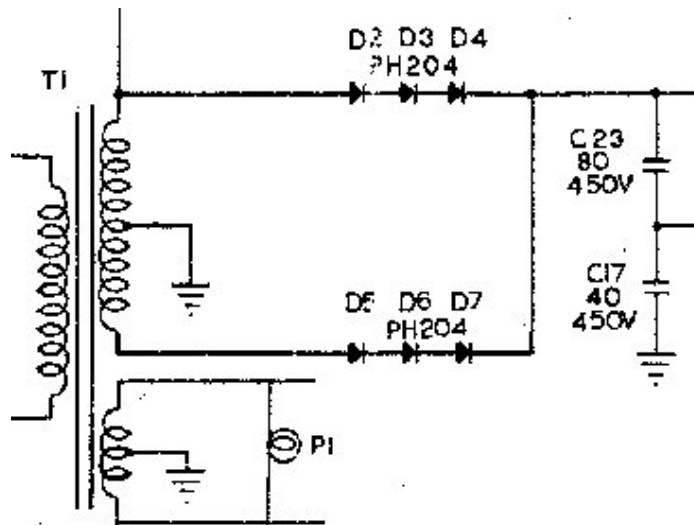
FIGURE 4 - Master Volume addition

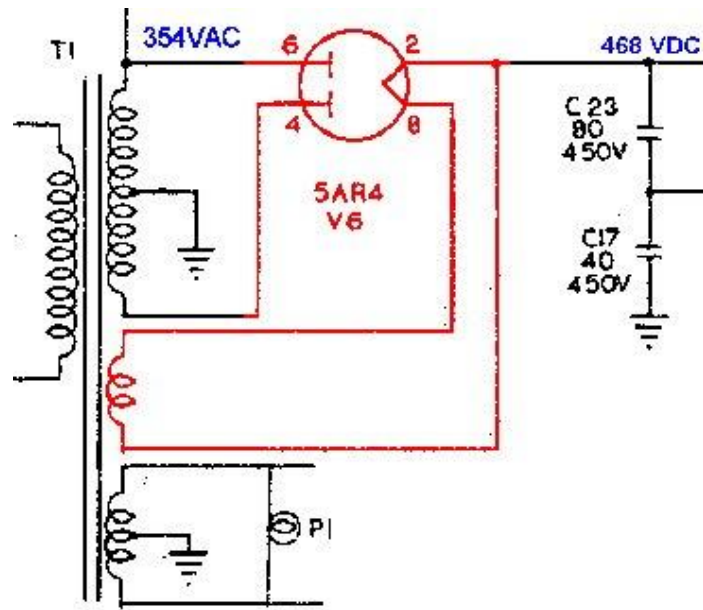
### Master Volume Control

Of course this is a damn LOUD (what's that?) amp. To try and reign in some of the power to get a decent crunch at lower volume I installed what is commonly known as the "Ken Fischer version #3" or Post-PI master volume circuit. I've included a couple of refinements suggested by Kevin O'Connor which were nicely documented in a drawing by a chap named Bruce Collins. This circuit gradually grounds out the analog signal travelling to the output tubes. This is done with a dual 1M-Audio ganged pot (this is a special device with two potentiometers which turn together). The 100K resistors help to retain similar tone throughout the swing of the pot. Of course, the extra caps block DC from the pot. See figure 4.

The use of this MV control are limited. The preamp design doesn't allow for extreme hi-gain craziness so don't expect super compressed raging Marshall tones with this setup...rather, I like to use it to obtain a crunch at lower volumes. It extends the versatility of the amp while retaining the fully cranked tone with the controls full up.

I installed the MV pot in the empty hole left by the ground polarity switch. I installed the extra caps and resistors point-to-point style which basically means they are hanging in free space suspended only by their leads and a couple of tie-wraps.





BEFORE

AFTER

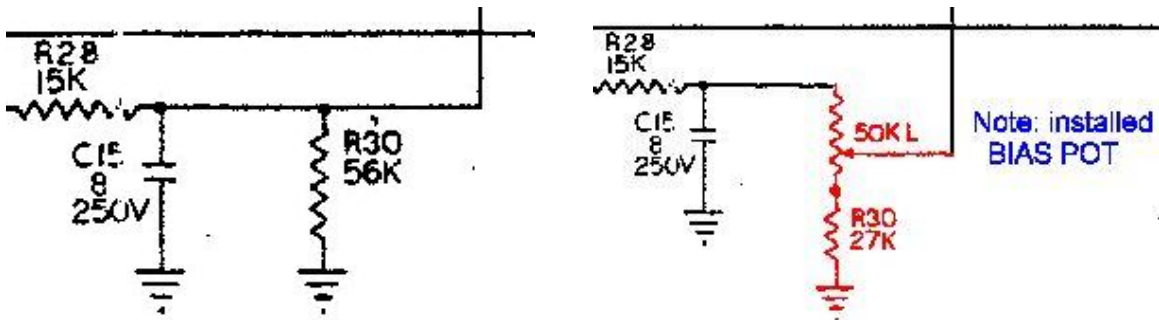
FIGURE 5 - GZ34 tube rectifier

#### Tube rectifier installation

When I received my YBA-1 it had a silicon rectifier circuit installed (4 diodes). The original schematic for the 1966 model shows this in detail. I dated my amp to 1965 from the transformers and potentiometers. See the Velvet Black site for help dating your amp. Anyway, I believe this amp originally came with a GZ34 tube rectifier since it has a hole for an extra octal tube right where the rectifier would sit. My most recent change has been to install a Chinese GZ34.

The diodes were soldered to a Fender-style fibre board which I completely removed. The power transformer still had the remains of the 5V taps which had been "cauterized" and left intact. Installing a new tube socket and rewiring the chassis was simple. Still, I triple checked all connections before powering up! The plate voltage on the EL34s dropped from around 480VDC to 453VDC which was a pleasant surprise considering that the drop with a USA made GZ34 is supposed to be around only 10V. I was looking for less plate voltage anyway...

Again, I wish I could rave about the amazing difference but without being able to toggle between the silicon rectifier and the new GZ34, it's difficult to really go crazy with adjectives. But, I do notice a nicer sustaining tone and maybe a "sweeter" sound if that means anything to you.



BEFORE

AFTER

## FIGURE 6 - Variable Bias

### Variable bias control

In order to bias the amp properly with different output EL-34's, I needed a bias pot. After consulting the Ampage BBS, the circuit in figure 6 was installed and works flawlessly. I biased to approx 37mA per tube which is within range for EL-34's running a plate voltage of 449VDC.

EL34 power rating = 25W

Acceptable dissipation = 1/2 to 2/3 rating = 12.5 to 16.7W

so, acceptable bias current range:

$(12.5 / 449) + 4\text{mA} = 31.8\text{mA}$  (lower range for longer tube life, sterile tone)

$(16.7 / 449) + 4\text{mA} = 41.2\text{mA}$  (upper range for shorter tube life, BETTER tone!)

(the 4mA takes into account the screen current)

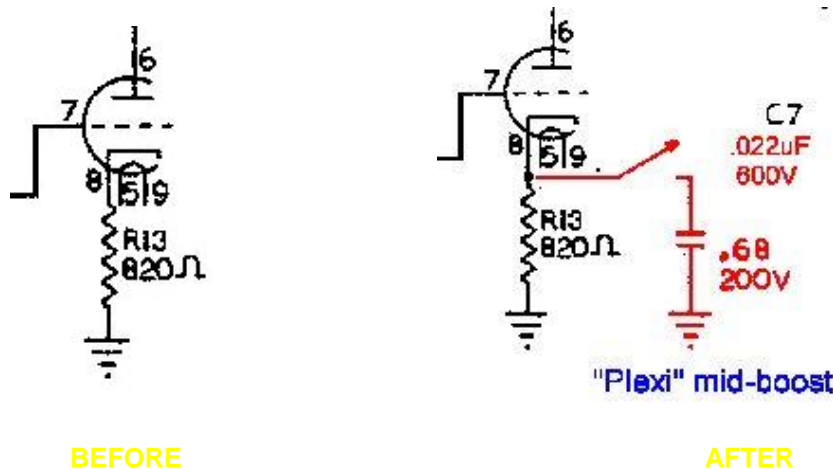


FIGURE 7 - "Plexi" mid-boost

### "Plexi" mid-boost mod

And now for something completely different... I thought I'd try adding a switch for engaging a 0.68μF cap in parallel to the 820R cathode resistor on the second stage. I'm now using the ch1 volume pot for switching this on/off.

When engaged, it provides a noticeable upper-mids boost to the tone. Nice!

### Filter Capacitor Replacement

I replaced the four 40μF @ 450V filter capacitors with two blue LCR cans (2 x 50μF @ 500V). I mounted these under the chassis in place of two of the older can caps. This was a major task that involved desoldering the older caps from the chassis, removing globs of solder, and drilling new screw holes for the LCR mounting rings.

At the same as replacing the filter caps, I replaced ALL 4 input jacks. The shorting mechanism on all of them was shot and when the guitar cord was removed they were not grounding properly and there was some buzz and hum because of the floating inputs.

### Conclusions...

I'm extremely pleased with the changes made to this amp. I distinctly recall being a little disappointed by the amp before making any changes...it sounded good but was not inspiring the way *great* amps can be. After these mods the amp plants a smile on my face for hours. That says it for me!

If you've have any questions/comments about the above ramblings please feel free to give me a shout via email.

*Thanks to J.C. Maillet and the gurus on the Traynor eGroups list (now Yahoo Groups), as well as the support from the Ampage contributors.*

---

### Modified Schematic

Below are a couple of different sizes of the schematic.

Alternatively, you should be able to find a full-sized GIF format file here:

[http://www.kilback.net/66yba-1\\_with\\_mods\\_rev3.gif](http://www.kilback.net/66yba-1_with_mods_rev3.gif)



