

El Rey de la Gloria Azul

Build Document



Introduction

The Marshall Blues Breaker was a pedal introduced in 1991 with the purpose of simulating a vintage Marshall combo amp used by Eric Clapton. The pedal itself doesn't produce much gain, but the way that it pushes the tubes brings out some amazing tones. JHS and Analogman used the Blues Breaker circuit as a basis for their own variants.

This board is one of my favorites. It allows for three stock circuits to be on a single board. However, the fun is the amount of control we each have in regards to the modifications. Do you want a stock Blues Breaker with a few clipping options? What about a King of Tone with an extra gain stage?

The Ultimate King of Tone (I'm calling it the Ultimate) is a King of Tone with all of the extra mods. You could easily make an "Ultimate" Blues Breaker or an "Ultimate" Morning Glory. Choose any combination of modifications to make it your own. You could also add a V-Boost board to switch from 9V to 18V!

The Analogman King of Tone is two of these boards in a single enclosure. If you're looking to clone that pedal, buy two of the boards!

Final notes.

1. JP1 should be set. However, my ear didn't hear much of a difference between jumping pins 1 & 2 and 2 & 3. Let **your** ear decide.
2. The same can be said for the volume pot's lug 1. Setting it to GND or VR made no audible change to me. Try either way if you want.
3. Have fun with the clipping options. Try different diodes and combinations of diodes. Try asymmetrical vs. symmetrical. "The world is your oyster."
4. **D11 is backwards.**



Bill of Materials

Capacitors

I obtained all of my capacitors from Tayda. That's what the layout was setup for.

P/N	Blues Breaker	Morning Glory	King of Tone	Ultimate King of Tone	Type	Notes
C1	10nF	47nF	10nF	10nF	Film Box	
C2	10nF	10nF	10nF	10nF	Film Box	
C3	10nF	10nF	10nF	10nF	Film Box	
C4	47pF	47pF	100pF	100pF	Ceramic	Early versions of the Blues Breaker used 10pF.
C5	220nF	100nF	Jumper	Jumper	Film Box	
C6	220nF	Jumper	100nF	100nF	Film Box	
C7	Omit	Omit	Omit	100pF	Ceramic	
C8	Omit	470pF	Omit	470pF	Ceramic	
C9	10nF	10nF	10nF	10nF	Film Box	
C10	10nF	10nF	10nF	10nF	Film Box	
C11	Omit	100nF	Omit	100nF	Film Box	
C12	Omit	10uF	Omit	10uF	Aluminum Electrolytic	(5 x 11)
C13	Jumper	Omit	Jumper	Jumper	Film Box	
C14	Omit	2u2	Omit	Omit	Aluminum Electrolytic	
C15	Omit	Omit	1uF	1uF	Aluminum Electrolytic	
C16	100nF	Jumper	1uF	1uF	Film Box	
C17	Omit	100uF	100uF	100uF	Aluminum Electrolytic	Power filter. It's ok to add anytime. (8 x 11)
C18	100uF	100uF	100uF	100uF	Aluminum Electrolytic	(8 x 11)



Diodes

I obtained all of my diodes for the Blues Breaker and Morning Glory from Tayda. That's what the layout was setup for. However, I obtained the BA282s from smallbear.

P/N	Blues Breaker	Morning Glory	King of Tone	Ultimate King of Tone	Notes
D1	Omit	Omit	Omit	Pick one	See the section about modifications for more information.
D2	Omit	Omit	Omit	Pick one	See the section about modifications for more information.
D3	Omit	Omit	Omit	Pick one	See the section about modifications for more information.
D4	Omit	Omit	Omit	Pick one	See the section about modifications for more information.
D5	1N914	1N4148	MA856	MA856	You can sub a 1N4148 for a 1N914. Some people suggest a BA282 as a sub for the MA856.
D6	1N914	1N4148	MA856	MA856	You can sub a 1N4148 for a 1N914. Some people suggest a BA282 as a sub for the MA856.
D7	1N914	1N4148	MA856	MA856	You can sub a 1N4148 for a 1N914. Some people suggest a BA282 as a sub for the MA856.
D8	1N914	1N4148	MA856	MA856	You can sub a 1N4148 for a 1N914. Some people suggest a BA282 as a sub for the MA856.
D9	Omit	Omit	1S1588	1S1588	Some people suggest a 1N400x as a sub for the 1S1588.
D10	Omit	Omit	1S1588	1S1588	Some people suggest a 1N400x as a sub for the 1S1588.
D11	1N400x	1N400x	1N400x	1N400x	Polarity protection. On this board, it is backwards!

Integrated Circuits

The JRC4580 isn't at Tayda. However, the TL072 and LM833N are.

P/N	Blues Breaker	Morning Glory	King of Tone	Notes
IC1	TL072	LM833N	JRC4580D	Have fun; try other dual opamps.

Transistors

The 2N5457 and J201 are hard to get from Tayda. You can get the MPF102 easily from them.

P/N	Blues Breaker	Morning Glory	King of Tone	Ultimate King of Tone	Notes
Q1	Omit	2N5457	Omit	2N5457	You can try a J201, MPF102 or other JFET.



Resistors

P/N	Blues Breaker	Morning Glory	King of Tone	Ultimate King of Tone	Notes
R1	1M	2M2	1M	1M	
R2	4k7	4k7	27k	27k	Early versions of the Blues Breaker had 27k.
R3	3k3	3k3	33k	33k	Early versions of the Blues Breaker had 33k.
R4	1M	1M	1M	1M	
R5	4k7	10k	10k	10k	
R6	4k7	Jumper	Jumper	Jumper	
R7	220k	220k	220k	220k	
R8	6k8	6k8	6k8	6k8	
R9	1k	1k	1k	1k	
R10	6k8	6k8	6k8	6k8	
R11	Omit	100k	Omit	100k	
R12	Omit	68k	Omit	68k	
R13	Omit	1M	Omit	1M	
R14	Omit	22k	Omit	22k	
R15	Omit	12k	Omit	12k	
R16	Omit	12k	Omit	12k	
R17	1M	Omit	1M	1M	
R18	47k	47k	47k	47k	
R19	47k	47k	47k	47k	

Potentiometers

I obtained all of these from Tayda. That's what the layout was setup for.

P/N	Value	Notes
GAIN	B100k	I recommend this one. Want more gain? Use a B250k.
PRES	B50k	Not required in Blues Breaker and Morning Glory, but doesn't hurt. You can always set it to 0 ohm. Trimpot.
TONE	B25k	I recommend this one.
VOL	A100k	If using a B250k for GAIN, bend lug 1 of the VOL pot to use the octagonal pad instead. VOL lug 1 normally goes to VB, but if using the B250k, lug 1 needs to go to GND. I recommend this one.



Switches

Look at the Modifications section for a little more information.

You must set JP1!

P/N	Blues Breaker	Morning Glory	King of Tone	Ultimate King of Tone
BRIGHT_CUT	<i>Omit</i>	SPDT	<i>Omit</i>	SPDT on-off-on
HARD_CLIP	<i>Omit</i>	<i>Omit</i>	SPDT	SPDT on-on
CLIP	Jump pins 1 & 2	Jump pins 1 & 2	Jump pins 1 & 2	SPDT on-off-on
OUTPUT_GAIN	Jump pins 1 & 2	Jump pins 2 & 3	Jump pins 1 & 2	SPDT on-on
JP1	Jump pins 2 & 3	Jump pins 1 & 2	Jump pins 2 & 3	Jump pins 2 & 3

Other Parts

I obtained all of these from Tayda. That's what the layout was setup for.

Qty	Value	Notes
2	8-pin socket	Cut one in half to use for the transistor.

Modifications

I wanted this build to have more options than some of the others out there. So, instead of you picking and choosing which one or two mods to have, I've allowed all of them. This makes for a TRUE box of tone.

Bright Cut

The Morning Glory adds a 470pF to the feedback/clipping section. The pedal has a toggle switch to activate/bypass this capacitor. You have a couple options here:

1. Stay with the Morning Glory style to only use the 470pF and activate/bypass it.
2. Add a 100pF cap to switch between the 470pF and the 100pF. This 100pF is "pull out of the air" number based on the original Tube Screamer. Use any value that you prefer; high capacitance will cut the treble more than lower capacitance.
3. Use a SPDT on-off-on to do a combination of numbers 1 and 2.

Hard Clipping

The original King of Tone had a DIP switch internally that allowed you to turn this on or off. Now, you can use a SPDT on-on to do it externally. Combine this with the Clip mod to allow for many different clipping options. Only use this mod in combination with D9 and D10.

While the King of Tone uses 1S1588 diodes here, feel free to socket and try others.

Clip

This switch allows for you to have a second set of clipping/voicing options. You can use a SPDT on-off-on if you want; the center position will just lift out the clipping. Feel free to use any diodes of your liking, including LEDs.



Output Gain

The Morning Glory adds a JFET as part of the output stage. This will increase the volume and change the output impedance. If you use this mod, be sure to connect lug 1 of the Volume pot to the GND pad located next to the original pad. (You'll need to bend the pin of the pot.)

If you want to switch this on and off using a SPDT, you'll want to use the GND pad, too.

Presence

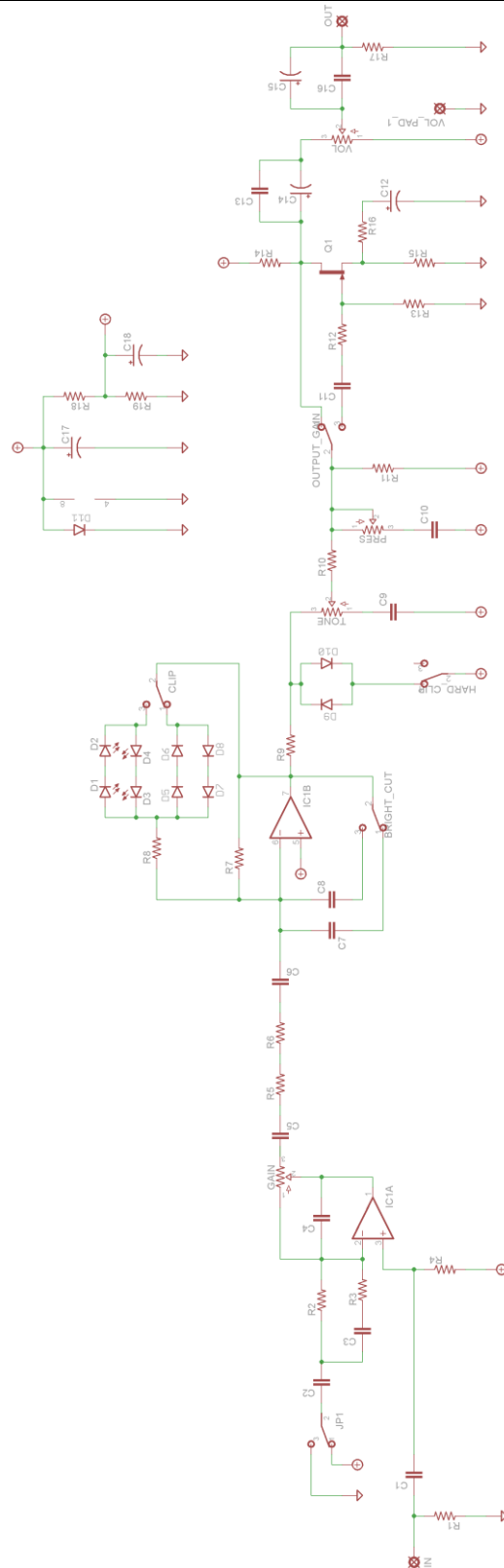
The King of Tone adds an internal trim pot to allow tweaking of the tone. There's really no reason to not include this trim pot. If you want, just set it to zero resistance to make it behave like a stock Blues Breaker or Morning Glory.

Build Notes

1. D11 is backwards.
2. You may have to slightly bend the GAIN and TONE pots to fit the CLIP and HARD_CLIP switches. See the Ultimate King of Tone Images for a reference.

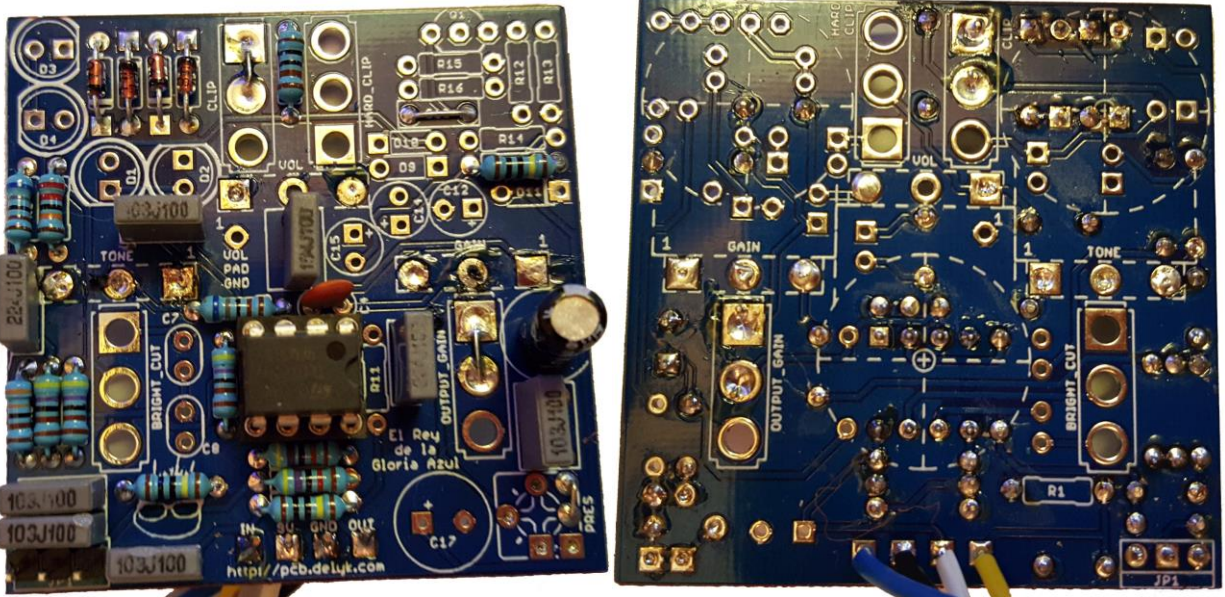


Schematic

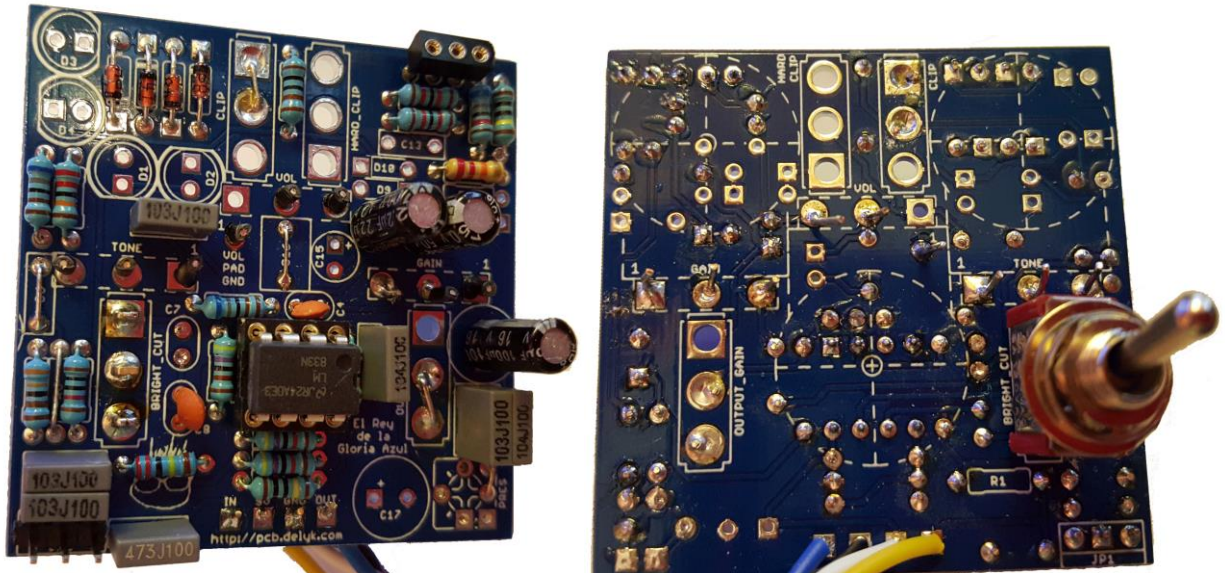


Images

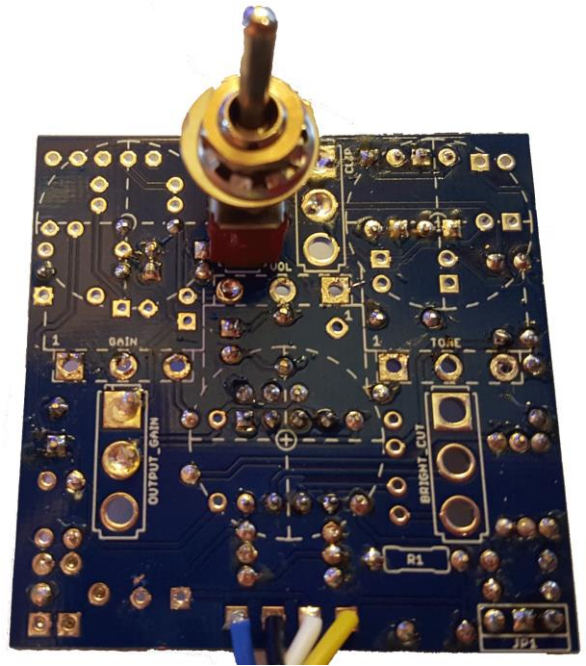
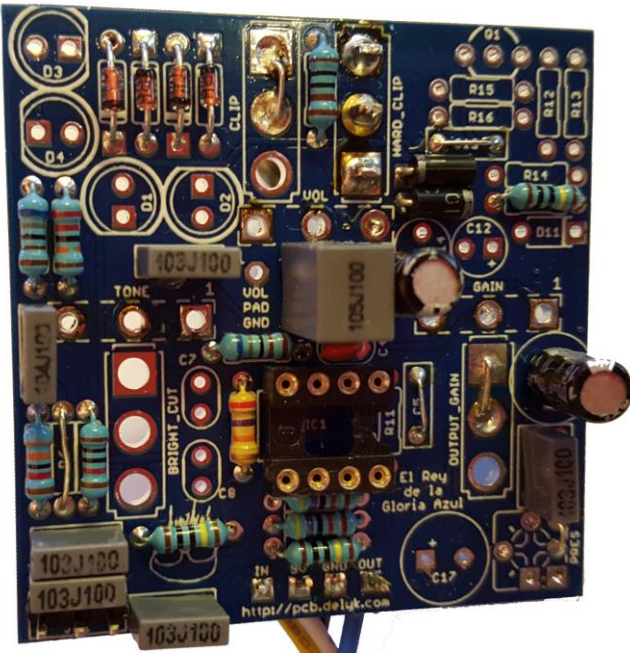
Blues Breaker



Morning Glory



King of Tone



Ultimate King of Tone

