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BONEYARD

FX TYPE: DISTORTION

Based on the Carl Martin® Plexitone™

Release date: 03.26.11

Updated 08.03.11

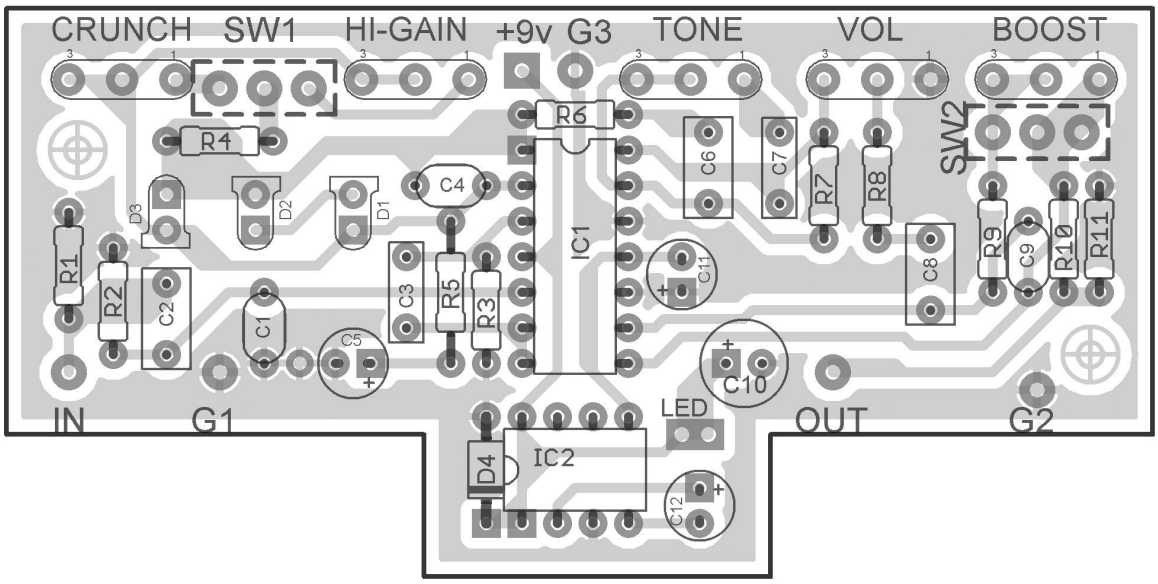
The **Boneyard** is a modified Carl Martin® Plexitone™, which is a very high gain distortion powered by an on-board transformer running at +/- 12v. To simplify the design, the Boneyard eliminates the transformer and instead uses a simple voltage inverter to power the effect at +/-9v. Additional changes are suggested to the BOM to modify the overall gain and eliminate potential oscillation.

The controls are as follows

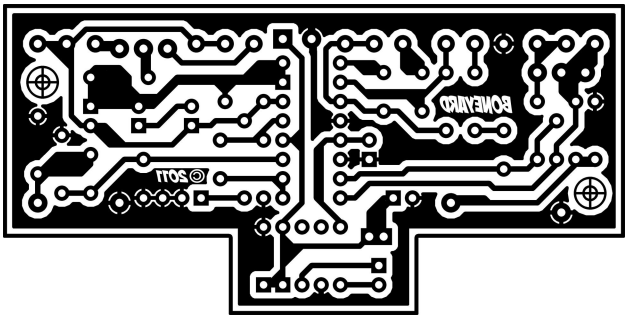
CRUNCH: This is the normal gain control.
HI-GAIN: This swaps out the **CRUNCH** pot with a larger pot for added gain.
SW1: This switches between the **CRUNCH** and **HI-GAIN** modes. It can be set up as either and SPDT toggle or an additional 3PDT switch for foot control.
TONE: This is an active tone control.
VOL: A passive volume control before the final output stage.
BOOST: An active boost control that can give added output to either the CRUNCH or HI-GAIN modes.

Notes

- There are two BOMs listed for this project. The first BOM is the “stock” version, which is also the version depicted in the schematic drawing. The second is a modified version which is the one you should build. Tracing information on the stock version seems to have a couple of sketchy values which resulted in TOO MUCH gain and oscillation to be use-able. Therefore, the alternate BOM was developed to eliminate this problem. The Modified BOM offers all the gain and range you need without the noise and unwanted feedback!
- A 1590BB is suggested for ease of assembly. If using three 3PDT switches, as depicted in the wiring diagram below, you will want to set up your enclosure horizontally to allow the most useable space between the switches. However, a two switch version will allow you to set the 1590BB vertically, which takes up less space length-wise on a pedal board. For a two switch version, it is recommended to use an SPDT for **SW1** instead of a 3PDT, and use the **BOOST** function as a foot switch instead.
- If you do not have a 5kA for the VOL control, use a 10kA and put a 10k resistor across lugs 3&1 of the pot. This will yield approximately 5k.
- You can use an LT1054 in place of the TC1044/MAX1044 listed. This will allow you to run the **Boneyard** at +/-12v with a single 12v power supply adaptor (note that the TC1044/MAX1044 should only be used with a 9v adaptor). If using the LT1054, you will need to either lift up or clip out pin1 on the IC for it to work properly. Or you could use two IC sockets and simply clip out pin1 on the top socket so you do not have to alter the actual LT1054.

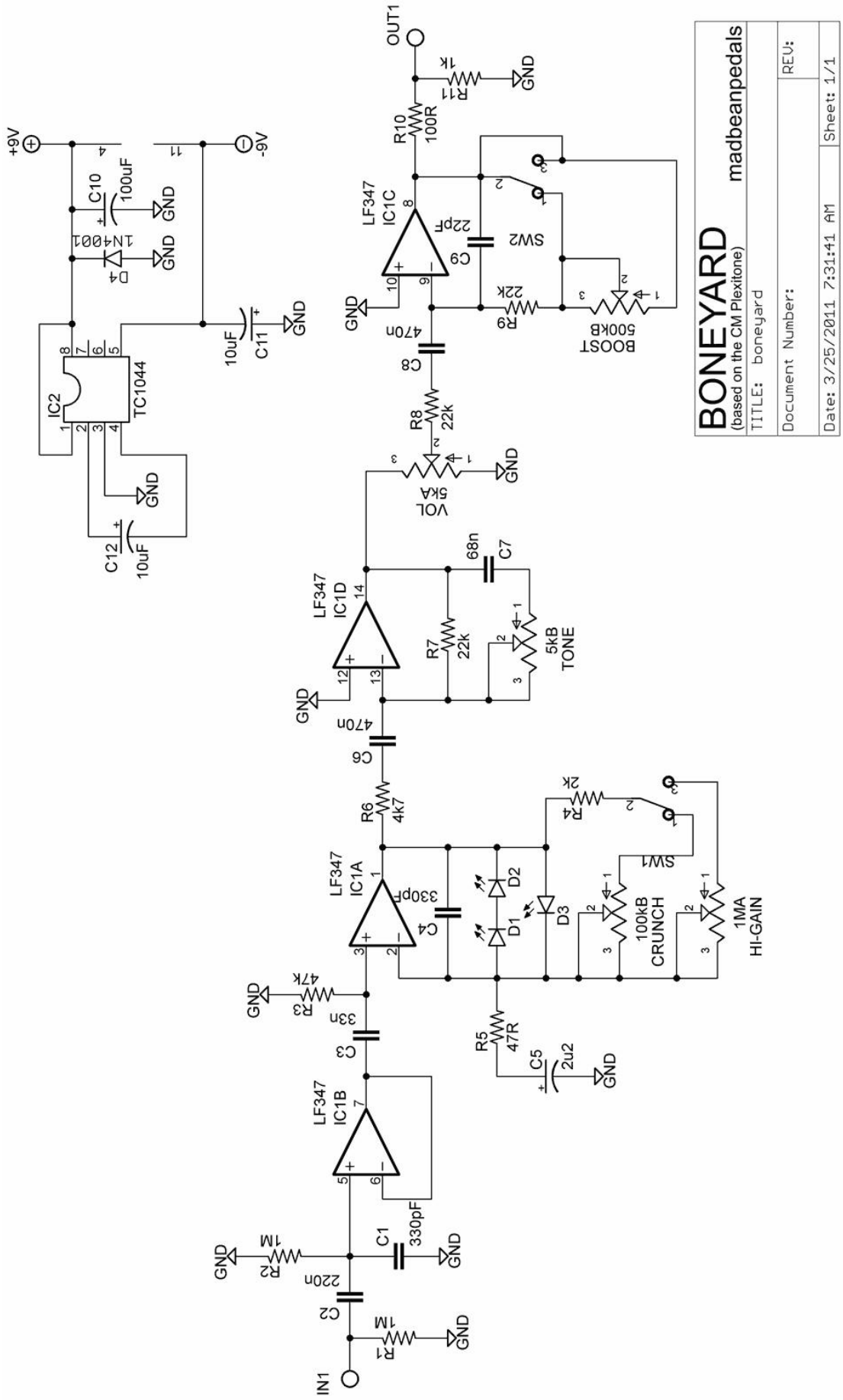


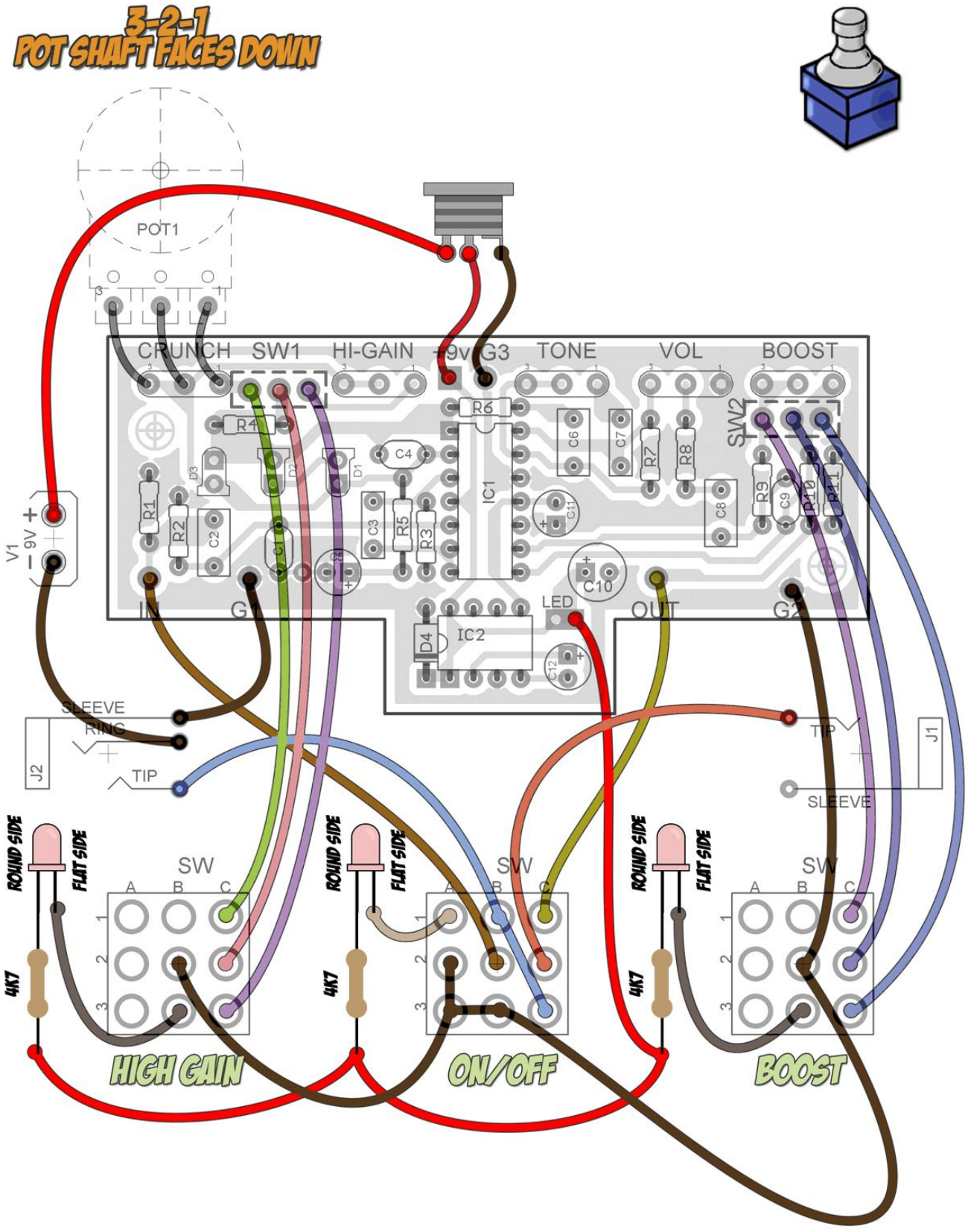
3.23" W x 1.61" H (including borders)



Stock Version					
Resistors		**Caps**		**Diodes**	
R1	1M	C1	330pF	D1 - D3	RED LED
R2	1M	C2	220n	D4	1N4001
R3	47k	C3	33n	**IC**	
R4	2k	C4	330pF	IC1	LF347
R5	47R	C5	2u2	IC2	TC1044
R6	4k7	C6	470n	**Pots**	
R7	22k	C7	68n	BOOST	500kB
R8	22k	C8	470n	CRUNCH	100kB
R9	22k	C9	22pF	HI-GAIN	1MA
R10	100R	C10	100uF	TONE	5kB
R11	1k	C11	10uF	VOL	5kA
		C12	10uF		

Modified Version (build this one)					
Resistors		**Caps**		**Diodes**	
R1	1M	C1	330pF	D1 - D3	RED LED
R2	1M	C2	220n	D4	1N4001
R3	47k	C3	33n	**IC**	
R4	2k	C4	330pF	IC1	LF347
R5	47R	C5	2u2	IC2	TC1044
R6	4k7	C6	470n	**Pots**	
R7	22k	C7	68n	BOOST	50kB
R8	22k	C8	470n	CRUNCH	50kB
R9	22k	C9	150pF	HI-GAIN	250kB
R10	100R	C10	100uF	TONE	5kB
R11	1k	C11	10uF	VOL	5kA
		C12	10uF		


BONEYARD
(based on the CM Plexitone)
madbeanpedals
TITLE: boneyard
Document Number:
REV:
Date: 3/25/2011 7:31:41 AM
Sheet: 1/1
IN1
OUT1
+9V
-9V
GND
IC1A
IC1B
IC1C
IC1D
LF347
IC2
TC1044
R1 1M
R2 1M
R3 47K
R4 2K
R5 47R
R6 4k7
R7 22k
R8 22k
R9 22K
R10 100R
R11 1K
C1 330pF
C2 220n
C3 33n
C4 330pF
C5 2u2
C6 470n
C7 68n
C8 470n
C9 22pF
C10 100uF
C11 10uF
C12 10uF
D1
D2
D3
D4
1N4001
SW1
SW2
VOL 5KA
5kB TONE
100kB CRUNCH
1MA HI-GAIN
500KB BOOST


3-2-1
POT SHAFT FACES DOWN
POT1
CRUNCH
SW1
HI-GAIN
+9v
G3
TONE
VOL
BOOST
SW2
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
D1
D2
D3
D4
IC1
IC2
LED
IN
G1
OUT
G2
V1
9V
J1
J2
TIP
RING
SLEEVE
SW
ROUND SIDE
FLAT SIDE
4K7
HIGH GAIN
ON/OFF
BOOST

Smallbear Parts Guide

R1, R2	1M	http://www.smallbearelec.com/Detail.bok?no=664
R3	47k	http://www.smallbearelec.com/Detail.bok?no=663
R4 R6	2k 4k7	http://www.smallbearelec.com/Detail.bok?no=661
R5 R11	470R 1k	http://www.smallbearelec.com/Detail.bok?no=660
R7 - R9	22k	http://www.smallbearelec.com/Detail.bok?no=662
R10	100R	http://www.smallbearelec.com/Detail.bok?no=659
C1, C4 C9	330pF 150pF	http://www.smallbearelec.com/Detail.bok?no=969
C2 C6, C8	220n 470n	http://www.smallbearelec.com/Detail.bok?no=894
C3 C7	33n 68n	http://www.smallbearelec.com/Detail.bok?no=892
C5 C11, C12 C10	2u2 10uF 100uF	http://www.smallbearelec.com/Detail.bok?no=1070
D1 - D3	RED LED	http://www.smallbearelec.com/Detail.bok?no=332
IC1	LF347	http://www.smallbearelec.com/Detail.bok?no=200
IC2	TC1044	http://www.smallbearelec.com/Detail.bok?no=244
	LT1054	http://www.smallbearelec.com/Detail.bok?no=794
BOOST CRUNCH HI-GAIN TONE VOL	50kB 50kB 250kB 5kB 5kA	http://www.smallbearelec.com/Detail.bok?no=555