B i t s b o x   M u f f - B o x   E f f e c t s   P e d a l   K i t

Overview

Based on the classic Big Muff effects pedal of the 70's and providing an effect somewhere between fuzz and distortion. The kit consists of the PCB, electronics pack and hardware pack, each of which are available separately. It is intended for assembly into one of the Hammond 1590BB range of enclosures - that choice and that of the control knobs are left to the builder.

PCB Layout
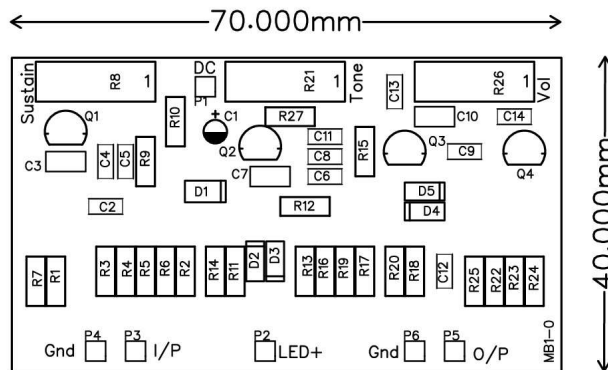
Electronics Pack Parts List

Name	Designator	Part Code	Quantity
Muff Box PCB		PCB012	1
1M resistor	R1	MR251M	1
2k2 resistor	R2	CR252K2	1
33k resistor	R3, R20, R27	MR2533K	3
100k resistor	R4, R11, R16, R22	MR25100K	4
470k resistor	R5, R12, R17	MR25470K	3
12k resistor	R6, R13, R18, R24	MR2512K	4
100R resistor	R7, R14, R19	MR25100R	3
100k linear pot	R8, R21	VR174	2
820R resistor	R9	MR25820R	1
7k5 resistor	R10, R15	MR257K5	2
390k resistor	R23	MR25390K	1
3k3 resistor	R25	MR253K3	1
100k log pot	R26	VR172	1
100uF 16V Ecap	C1	EC100U16	1
100nF polybox	C2,C4,C6,C8,C9,C13,C12,C14	PY100N	8
470pF ceramic	C3,C7,C10	CC470P	3
150nF polybox	C5	PY150N	1
3n9 ceramic disc	C11	CC3N9	1
1N4001 diode	D1	QD040	1
1N4148 diode	D3,D2,D4,D5	QD022	4
2N5088 transistor	Q1,Q2,Q3,Q4	QD176	4

Resistor

Electrolytic capacitor

Polybox capacitor

Ceramic capacitor

Diode

Transistor

PCB Assembly

The PCB should be assembled according to the above layout, matching components to their designators. A suggested sequence is resistors followed by capacitors, semiconductors and finally potentiometers facing to the rear of the board. Make sure that the polarised parts such as electrolytic capacitor, diodes and transistors are fitted with the correct orientation as indicated on the board. Resistors, ceramic capacitors and polybox capacitors can be fitted either way round.

Lengths of 7/0.2 wire (provided in the hardware pack) should be fitted to the 6 connection points labeled P1,2,etc. Wire colours are unimportant. The finished board should look like the photo below.
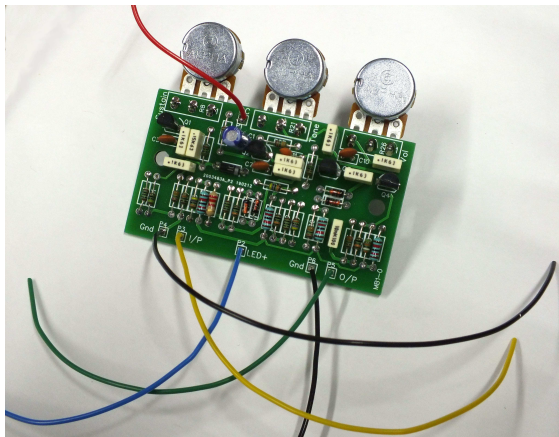
Component Identification Tips

Resistors - Use the resistance setting on your multimeter.

Potentiometers - Marked with the value together with an 'A' prefix for log and a 'B' prefix for linear.

Electrolytic Capacitor - Marked with the value. The longer lead indicates the positive side and a stripe on the body indicates the negative side. Look for + on PCB indicating orientation.

Polybox Capacitors - Marked with the value in microfarads. 100nF marked .1 and 150nF marked .15.

Ceramic Capacitor - Value marked in picoFarrads (pF). Over 100pF a 3 digit code is used with the last digit indicating the number of zeros. 3.9nF (written 3n9) will be marked 392 i.e. 3900pF (1000pF = 1nF).

Diodes - Marked with their type reference. A band indicates the cathode end and should align with the band shown on the PCB.

Transistor - Marked with their type reference. A flat face indicates orientation and should align with the flat shown on the PCB.

B i t s b o x

Enclosure Drilling

86

20

15

4.5

4.5

4

4

6

6

4

4

12

24.3

24.3

15

15

26.5

15

82
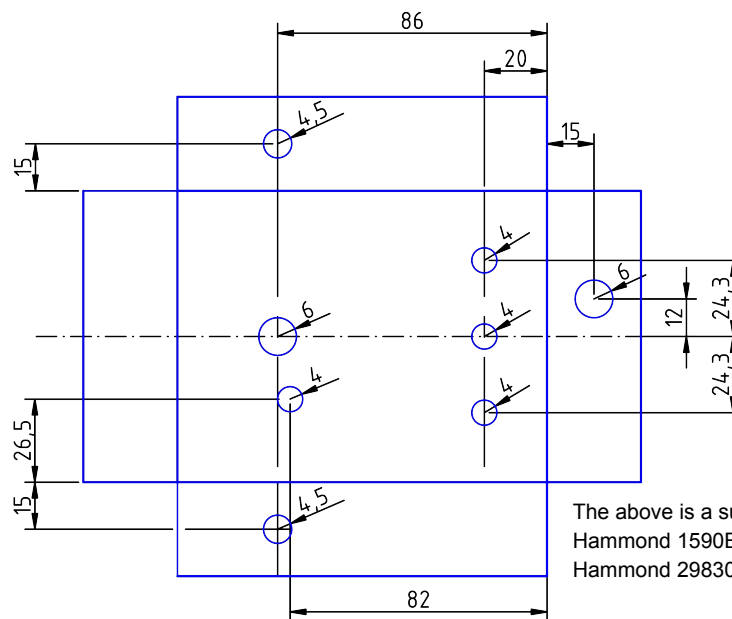
The above is a suggested drilling detail based on the Hammond 1590BB range of diecast enclosures - the Hammond 29830PSLA would also be suitable.

Hardware Installation and Wiring

The hardware kit contains the following:
DC Jack Socket (CN306)
Stereo Input Jack Socket (CN141)
Mono Output Jack Socket (CN140)
3PDT Footswitch (SW108)
Chrome LED Bezel (HW042)
5mm Red LED (OP002)
PP3 Battery Clip (BAT043)
7/0.2 Wire Bundle (CN112)
5 x Cable Ties (HW046)
Heatshrink sleeving 1.6mm (HW031)

1. Referring to the picture below, fit the DC connector (top), stereo input jack (left), mono output jack (right), footswitch and LED bezel to the drilled enclosure.
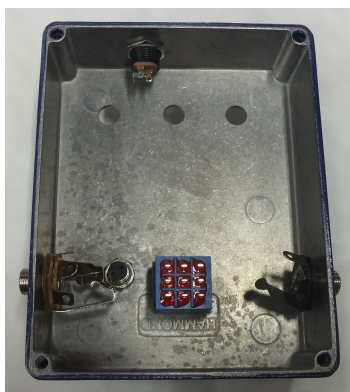
2. Fit the LED to the bezel.
Note that the LED has one long leg (+ve) and one short (-ve).

Wiring Schematic

Battery Clip

DC Socket
Centre -ve polarity

LED

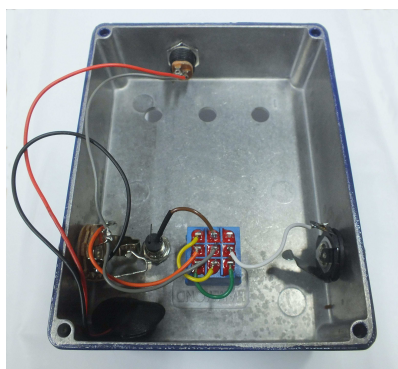Footswitch

Stereo input socket.

Mono output socket.
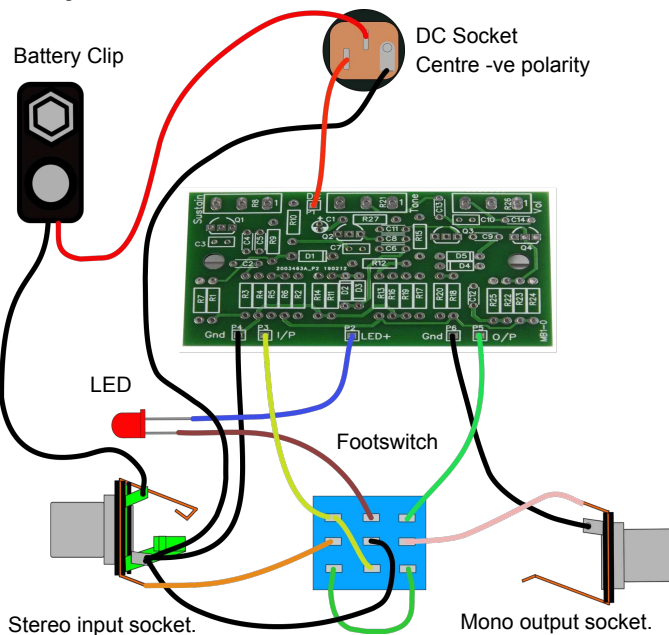
3. Before fitting the PCB assembly, fit the wiring that does not connect to the PCB - see the wiring schematic (above) for reference.
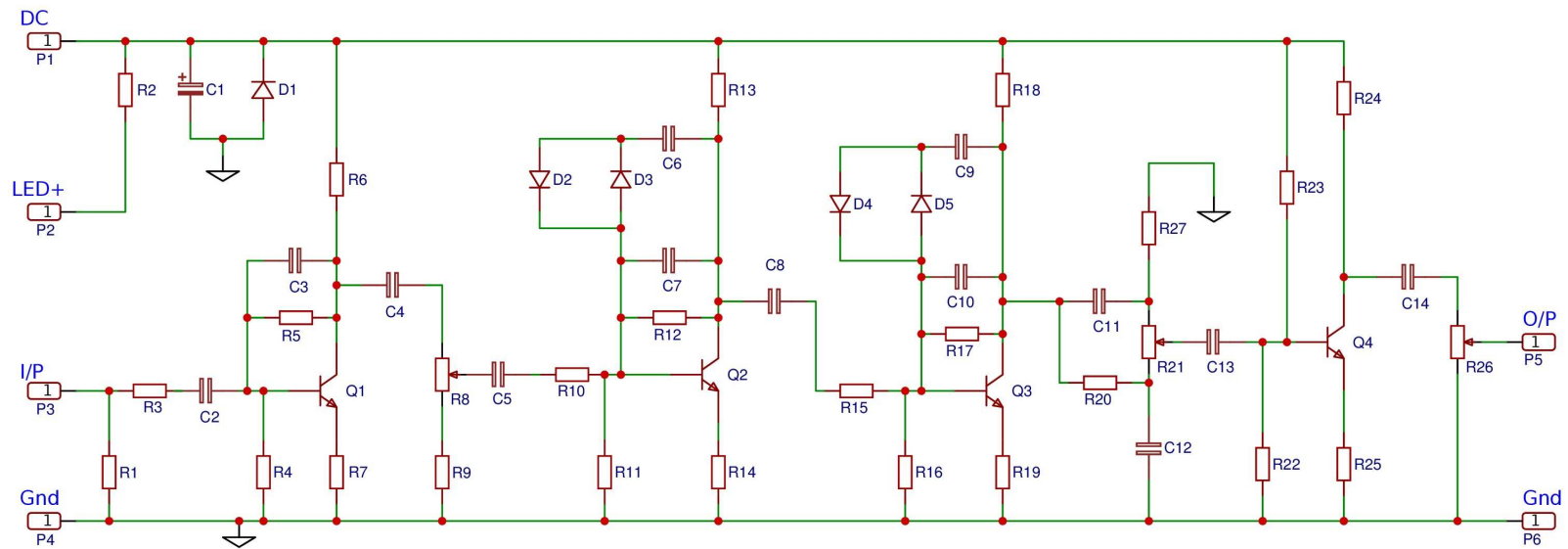Add heatshrink sleeving to the connection to the short leg of the LED.

4. Fit the PCB assembly and complete the wiring.
Add heatshrink sleeving to the LED connection.
Tidy the wiring using cable ties to complete.
The exterior can be finished off with your choice of graphics and control knobs.

DC
P1

LED+
P2

I/P
P3

Gnd
P4

O/P
P5

Gnd
P6

R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14

D1 D2 D3 D4 D5

Q1 Q2 Q3 Q4