

MINI BLUE MIDNIGHT

© 2011 by Shattered Glass Audio.

All rights reserved. No part of this document may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of Shattered Glass Audio.

<b>DESCRIPTION .....</b>	<b>4</b>
<b>PARTS CHECKLIST .....</b>	<b>5</b>
<b>PARTS CHECKLIST .....</b>	<b>5</b>
RESISTORS .....	5
TRANSISTORS .....	5
CAPACITORS .....	6
DIODES .....	6
ICs .....	6
POTENTIOMETERS .....	6
JACKS .....	7
LED .....	7
SWITCHES .....	7
OTHER HARDWARE .....	7
<b>ASSEMBLY .....</b>	<b>7</b>
SOLDERING .....	7
DRILLING THE ENCLOSURE .....	10
PUTTING IT TOGETHER .....	11
<i>Assembling the Enclosure Mounted DC jack (version 2 of the kit only) .....</i>	<i>12</i>
<i>Finishing up .....</i>	<i>13</i>
<b>OPERATION .....</b>	<b>14</b>
CONTROLS .....	14
<i>Gain Controls .....</i>	<i>14</i>
<i>VOLUME .....</i>	<i>15</i>
<i>Tone Controls .....</i>	<i>15</i>
<b>PRECAUTIONS .....</b>	<b>15</b>
LOCATION .....	15
POWER SUPPLY .....	15
INTERFERENCE WITH OTHER ELECTRONIC DEVICES .....	15
HANDLING .....	15
KEEPING FOREIGN MATTER OUT OF YOUR EQUIPMENT .....	15

## Description

The Mini Blue Midnight delivers everything you have ever loved about the classic '59 Bassman® tone and then some.

The Mini Blue Midnight features two independent gain controls, "GAIN I" and "GAIN II". The GAIN I control is an equivalent of the volume control on the Bassman®.

The GAIN II control directly controls the gain of the last stage of the Mini Blue Midnight, which emulates the push-pull power section.

Roll back the GAIN II and you are in the classic Bassman® land with sparkling cleans (with the GAIN I turned down), and the roaring overdrive (with the GAIN I turned up). Crank up the GAIN II and the Mini Blue Midnight behaves like a hot-rodded Bassman®, producing everything from the thick overdrive to the searing distortion.

Connectors:

INPUT Jack, OUTPUT Jack, AC Adaptor Jack (DC 9V)

Power Supply:

DC 9V: Dry Battery 9V type or a 9V, regulated, AC Adaptor

Controls:

GAIN I, GAIN II, BASS, MIDDLE, TREBLE, VOLUME

## Parts Checklist

### *Resistors*

	value	Color code
R1	33k	Orange/Orange/Orange
R2	1M	Brown/Black/Green
R3	330	Orange/Orange/Brown
R4	150	Brown/Green/Brown
R5	8.2k	Grey/Red/Red
R6	220k	Red/Red/Yellow
R7	220k	Red/Red/Yellow
R14	470	Yellow/Purple/Brown
R15	6.8k	Blue/Grey/Red
R16	10k	Brown/Black/Orange
R17	62k	Blue/Red/Orange
R18	1k	Brown/Black/Red
R19	220k	Red/Red/Yellow
R20	2.2M	Red/Red/Green
R21	10k	Brown/Black/Orange
R22	10k	Brown/Black/Orange
R24	10k	Brown/Black/Orange
R25	150k	Brown/Green/Yellow
R26	6.8k	Blue/Grey/Red
R31	56k	Green/Blue/Red

### *Transistors*

Q1, Q4, Q5, Q6, Q7, and Q8.

## ***Capacitors***

Part	Value (F)	
C1	0.1uF	104
C2	150pF	
C3	82pF	
C4	100uF	
C5	0.022uF	223
C6	220uF 50V	
C8	220uF 25V	
C9	51pF	
C13	0.1uF	104
C14	0.1uF	104
C15	0.1uF	104
C16	100pF	
C18	1nF	102
C21	220pF	
C22	0.022uF	223
C23	0.022uF	223

## ***Diodes***

Part	Value
D2	1N5817
D4	1N5817

## ***ICs***

Part	Value
IC1	TC1044SCPA

**NB: TC1044SCPA is a CMOS IC and can be destroyed by electrostatic discharge.**

## ***Potentiometers***

Part	Value
VOLUME	A100k
BASS	A1M
DRIVE	B10k
GAIN	A1M
MID	B25k
TREB	B250k

## ***Jacks***

Part	Value
J1	2.1mm DC Jack
INPUT	¼" Stereo Jack
OUT	¼" Mono Jack

## ***LED***

3mm red LED

## ***Switches***

Part	Value
SW1	3PDT Foot Switch

## ***Other Hardware***

6 knobs  
Leaf Spring  
9V Battery Snap  
PCB

## **Assembly**

### ***Soldering***

Little Devil is designed such that all components are soldered to the PCB.

The Following are general soldering recommendations:

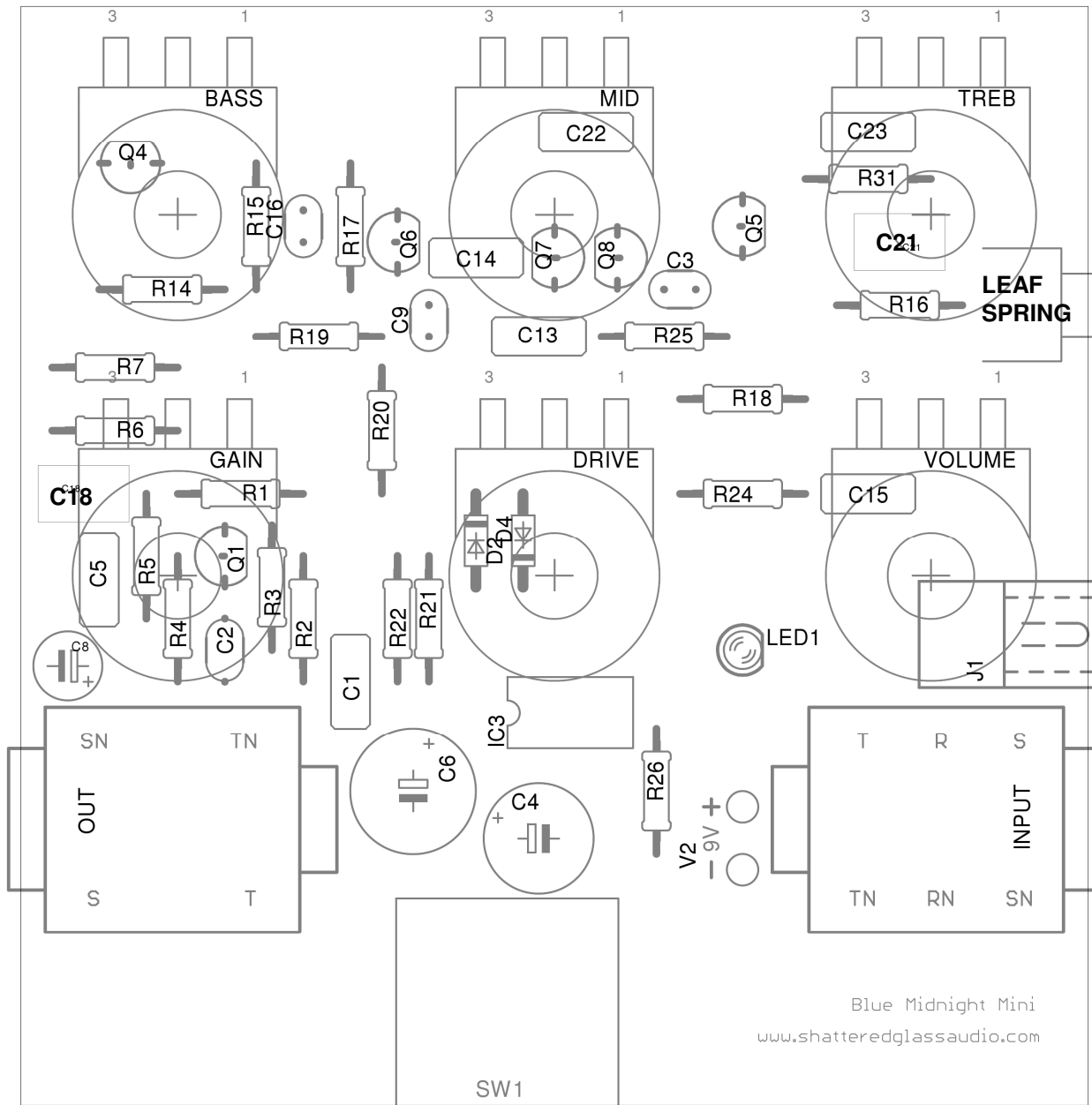
- Use a soldering iron with temperature control.
- Do not spend more than 3 seconds while soldering each leg of a transistor, a resistor, a capacitor, an IC, or a diode.
- Use an ESD safe soldering iron with temperature control when soldering CMOS ICs and MOSFETs.
- Use a heat sink when soldering active components.
- Inspect all solder joints for completeness and cold solder.
- Ensure that components under potentiometers are fully inserted into the PCB.
- Ensure that 3PDT switch, rotary switch, DC jack, input jack, and output jack are fully inserted into the PCB and that they vertical (i.e. at the right angle with the PCB).

The following are general instructions on the order of soldering components to the PCB. NB your kit may not contain all components listed below. This does not mean that your kit is incomplete.

Solder components in the following order:

1. **Sockets** (if you are using them) for ICs. Sockets are not supplied with the kit. You can purchase sockets from many online stores and they are also available at Radio Shack.
2. **Diodes** – Make sure you orientate diodes such that the diode orientation matches orientation on the PCB.
3. **Resistors**
4. **ICs** – If you are not using IC sockets, solder ICs to the PCB. Make sure that the IC is orientated such that notch on the IC matches the notch on the PCB layout.  
*CMOS ICs, such as TC1044SCPA, can easily be damaged with electrostatic discharge. To solder CMOS ICs use only an ESD safe soldering iron.* The regular soldering iron is not ESD safe and can easily destroy a CMOS IC.
5. **Transistors** – Make sure to orientate transistors such that the flat part of the transistor body lines up with the flat side on the PCB. Transistors can be damaged by prolonged exposure to heat. In addition to keeping your soldering iron not overly hot and not spending more than 3 seconds on soldering each leg of a transistor, we recommend that you use a heat sink clipped to a leg of the transistor you are soldering. *MOSFETs can easily be damaged with electrostatic discharge. To solder MOSFETs use only an ESD safe soldering iron.* The regular soldering iron is not ESD safe and can easily destroy a MOSFET.
6. **Ceramic Capacitors**
7. **Film Capacitors**
8. **Leaf Spring**
9. **PCB mounted DC jack**
10. **Input and Output Jacks**
11. **Electrolytic Capacitors** – Electrolytic capacitors are polarized and need to be properly orientated on the PCB. Make sure that the positive lead of the capacitor is inserted into the whole with a small plus sign next to it.
12. **Battery Snap** – The red lead of the battery snap goes into the hole marked “+”, whereas the black lead of the battery snap goes into the hole marked “-“ on the PCB
13. **Potentiometers** – Before mounting potentiometers make sure you snap off the tab on the side of each potentiometer. To be able to mount potentiometers onto the PCB you may need to straighten and adjust legs of a potentiometer. Mount each potentiometer such that it matches the outline on the PCB.
14. **Rotary Switch** – To be able to insert the rotary switch into the PCB you might need to straighten and adjust the pins on the bottom of the rotary switch.
15. **3PDT Foot Switch** – The 3PDT Foot Switch should be inserted into the PCB such that the longer side of solder lugs is parallel to the longer side of the board (i.e. length of the board)
16. **LED** – When inserting the LED into the PCB make sure that the flat side of the LED matches the flat side on the figure below. Lift the LED up from the PCB until the top of the collar on the LED lines up or is slightly below the top of the body of the potentiometers. Top of the collar of the LED should be at most  $\frac{3}{4}$ ”-13/16” above the PCB.



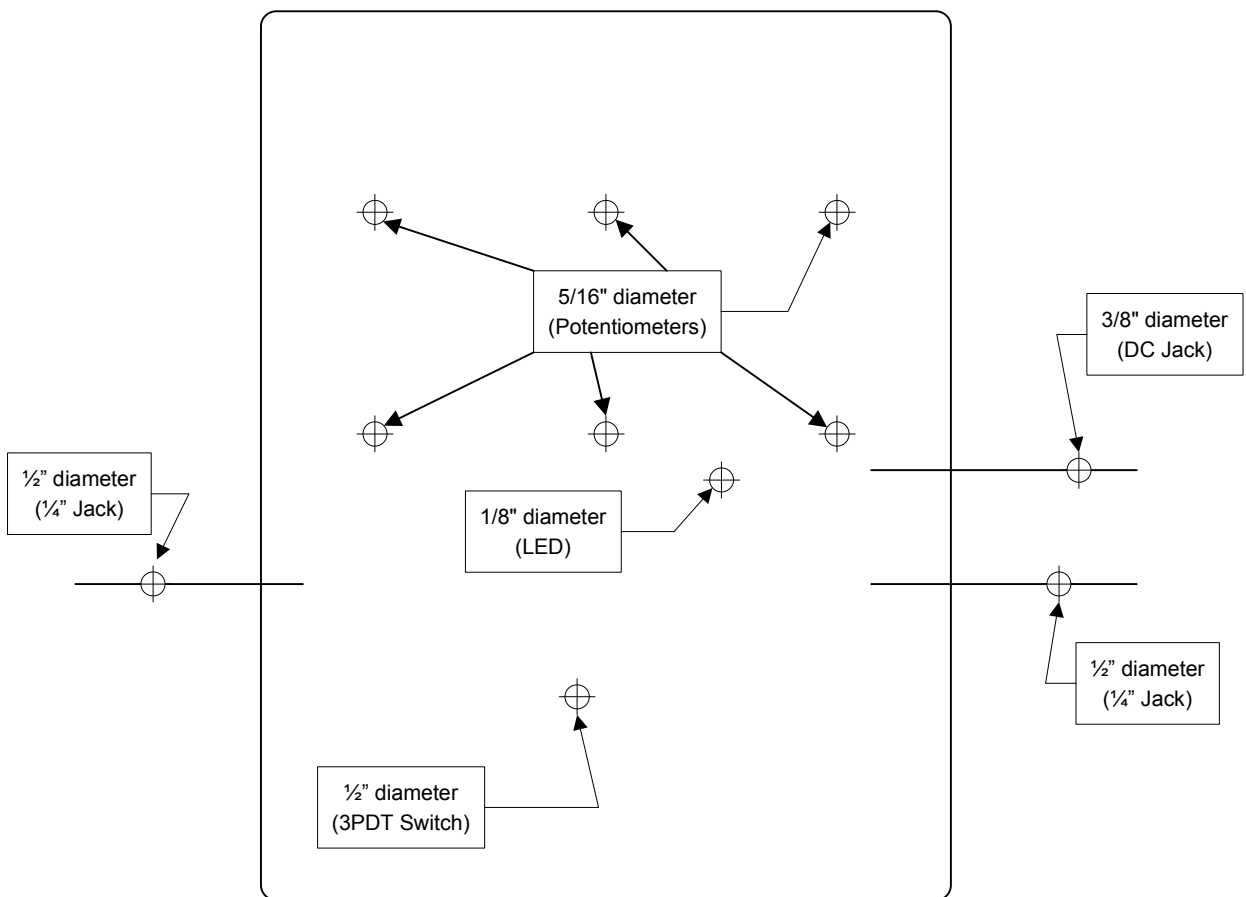


Blue Midnight Mini  
[www.shatteredglassaudio.com](http://www.shatteredglassaudio.com)

## Drilling the Enclosure

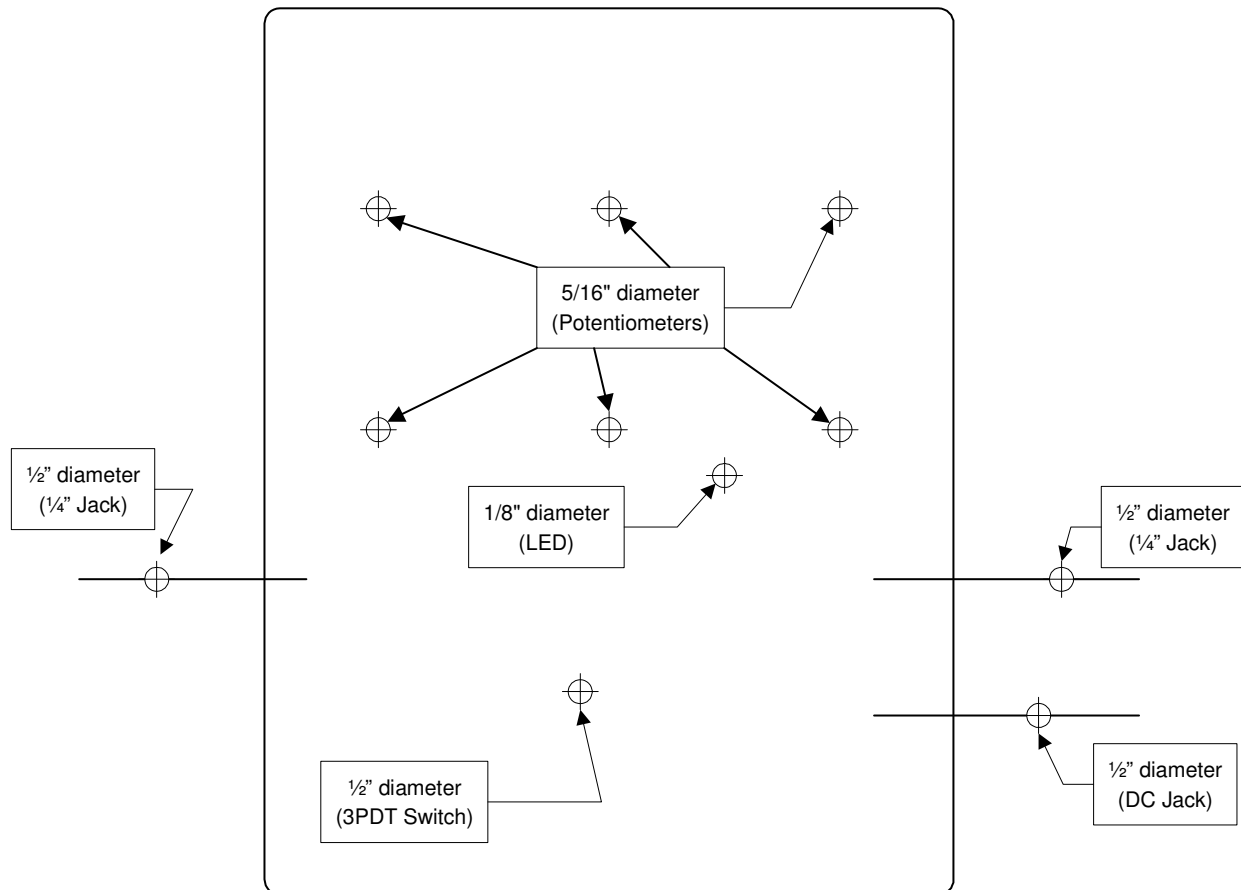
Little Devil PCB is designed with the Hammond 1590BB type enclosure in mind. It is possible to fit the Little Devil in a larger enclosure with some modifications, though. Drill template below is for the Hammond 1590BB enclosure. When printing the drill template, for your version of the kit, make sure to set printing options to no scaling, otherwise template may not match the enclosure.

Figure below is the **drilling template for version 1** of the kit.



Drilling Template for version 1 of the kit.

Figure below is the **drilling template for version 2** of the kit.



Drilling Template for version 2 of the kit.

After you have printed the template attach it to the enclosure. When attaching the template to the enclosure make sure that the top edge of the template is aligned with the top edge of the enclosure. Mark the holes with a center punch. Remove the template. Drill the holes.

### ***Putting it together***

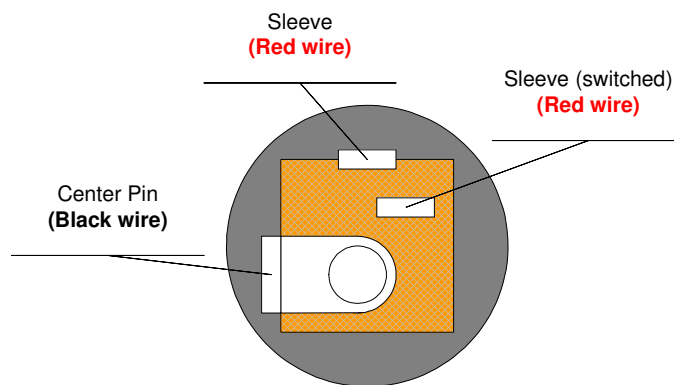
After all components are soldered, the enclosure is drilled, and the faceplate/artwork is attached you are ready to assemble the Little Devil.

Before inserting the PCB with components soldered to it, unscrew all nuts and remove all washers from potentiometers, and 1/4" jacks. Unscrew the top nut and remove the locking

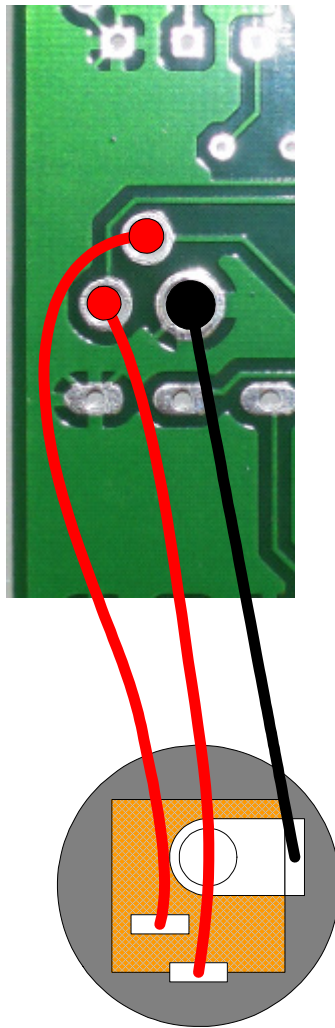
washer and the white washer from the 3PDT switch. Unscrew the bottom nut on the 3PDT switch until it is about  $\frac{1}{2}$ " -  $\frac{3}{4}$ " above the PCB. Insert the PCB into enclosure making sure that potentiometers shafts, LED, and the 3PDT switch shaft go into appropriate holes. First, screw in nuts and washers of the  $\frac{1}{4}$ " jacks starting with the jack on the side of the spring leaf. Tighten the nuts of the  $\frac{1}{4}$ " jacks with your fingers until you cannot turn the nuts any more. Do not use tools to tighten the nuts on  $\frac{1}{4}$ " jacks. Over tightening the nuts on the  $\frac{1}{4}$ " jacks will cause the PCB to bend. Next, screw on washers and nuts for the potentiometers, making sure that nuts are screwed on tightly. With your finger unscrew the nut that is on the shaft of the 3PDT switch, inside the enclosure, until it touches the roof of the enclosure. Now, screw on nut and washers for the 3PDT switch.

### **Assembling the Enclosure Mounted DC jack (version 2 of the kit only)**

The following section applies only to version 2 of the kit, only. Strip and tin both ends of each wire. Solder one end of each wire to the DC jack according to the figure below.



Insert and securely fasten DC power jack. Solder the wires from the jack to the bottom side of the PCB (i.e. the side opposite the side where other components are soldered) according to the figure below.



You will be soldering the wires to the pads where the PCB mounted DC jack would have been soldered. It is neither necessary nor advisable to fill the whole hole with the solder. Lay the wire as flat as possible on the PCB such that the tinned tip lies across the pad it will be soldered to. Make sure that the bare wire, or the tinned tip, is not touching any other pads or exposed traces. You may find it useful to tape, insulated, parts of the wire to the PCB using a piece of the electrical tape, or some other kind of tape, to keep the wire from moving while soldering.

### **Finishing up**

What follows applies to both versions of the kit. Close the enclosure. Put bumpers on the bottom of the enclosure. Install knobs on potentiometers, and you are done.

## Operation

Mini Blue Midnight is designed to operate on 9V by using either a 9V battery or a regulated, center-negative, 9V power supply, such as BOSS PSA-120. **DO NOT use unregulated power supply, or any power supply that puts out more than 10V.**

## Controls

Mini Blue Midnight has six controls GAIN I, GAIN II, VOLUME, BASS, MIDDLE, and TREBLE.



## Gain Controls

Mini Blue Midnight has two gain controls, GAIN I and GAIN II. The GAIN I control is the equivalent of the Volume control (knob) on the Fender Bassman®.

GAIN II controls the gain of the last section of the Mini Blue Midnight that emulates the push-pull power section of the Fender Bassman®. With GAIN II rolled back, the Mini Blue Midnight behaves like the Fender Bassman®. Turning GAIN II up will result in higher overdrive/distortion levels than the Fender Bassman® is capable of.

## **VOLUME**

VOLUME controls the output level of the Mini Blue Midnight.

## **Tone Controls**

BASS MIDDLE and TREBLE are designed to emulate the response of the Fender Bassman® tone stack.

## **Precautions**

### ***Location***

Using the unit in the following locations can result in a malfunction:

- In direct sunlight
- In rain
- Location of extreme temperature or humidity
- Excessively dusty or dirty locations
- Locations of excessive vibrations
- Close to magnetic fields

### ***Power supply***

Be sure to unplug the power supply when the unit is not in use. Remove battery in order to prevent it from leaking when the unit is not in use for extended periods.

### ***Interference with other electronic devices***

Radios and television sets placed nearby this unit may experience reception interference.

### ***Handling***

To avoid breakage, do not apply excessive force to the switches, potentiometers, or controls.

### ***Keeping foreign matter out of your equipment***

Never set any container with liquid in it near this equipment. If liquid gets into the equipment, it could cause a breakdown, fire, or electric shock. Be careful not to let metal objects into the equipment.