# How To Build The Oh My Darling Rangemaster

By Steve Daniels, President, Small Bear Electronics LLC

### What Is The Oh My Darling Rangemaster?

If you've heard of the Dallas Rangemaster, this pedal works in a similar way: A small capacitor at the input blocks low frequencies, and the amplifier stages following raise the volume of the signal that remains. A tone control potentiometer determines the effective size of the input capacitor, and so the amount of lows and mid-range that are let into the mix. But the pedal also adds subtle distortion by overdriving the Base of a Germanium transistor. The original Rangemaster used a single transistor. For reasons I'll get into later, I chose to use two cascaded devices, called a Darlington pair, hence the name of the pedal.

Those who are familiar with the Rangemaster will want to know that the printed circuit board provided can be configured as:

- A standard one-transistor Rangemaster
- The Two-NPN Device "Oh My Darling" Rangemaster
- A Hybrid NPN/PNP "Sziklai" Rangemaster

This manual contains complete build instructions, and it is written to guide people who have never built a pedal before. (Experienced hobbyists note: You can skip sections as you need to.) I don't presume that you know any electronics, but you do need some minimum comfort with hand tools and I don't cover in here how to solder; more about these issues in the next section. That said, much of the information and many of the techniques shown here are applicable to building *lots* of other pedals, and even other electronic devices.

I know that you'll enjoy building--and playing through!--the Oh My Darling. While I've done my best to make these instructions complete, I'm available by E-mail if you have questions, problems or suggestions.

Yours In Good Music,

Hwe Daniels

Small Bear Electronics LLC 123 Seventh Avenue # 156 Brooklyn, NY 11215 Http://www.smallbearelec.com Smallbearelec@ix.netcom.com

## Can I Really Build It Myself?

Yes, IF:

- You can follow directions.
- You are comfortable with using basic hand tools.
- You can solder well.

If you have never soldered before, you may need to check out some how-to information on-line about that, also, and maybe practice a little before tackling this kit. Which brings me to:

### What Tools And Materials Will I Need?

The case that we provide is powder-coated and pre-drilled, which cuts out a lot of work. You do need:

A 25- to 35-watt soldering iron, rosin-core solder and cleaning sponge.

NB: Yes, a Radio Shack iron will do, if the tip is relatively new and well-tinned. The big problem with very inexpensive irons is that the tips often aren't properly clad, and so corrode quickly.

Small screwdriver Small chain-nose plier and side-cutter Self-locking tweezers or other "third hand" Colored pencil or "Hi-liter" felt-tip marker Some small round and flat files A pointed steel "pick" or scratch awl De-soldering braid (like Radio Shack p/n 64-2090B)

### **Identify The Components**

### 5% Tolerance Carbon Film Resistors

The values are in Ohms. The first <u>two</u> colored bands define the base number. The third band is the number of zeroes to add, and the gold fourth band indicates 5% tolerance.



The four resistors below are selected to properly bias the transistors, so their values may differ. The typical values are:



### **Capacitors**

Metallized Polyester Film (Has no polarity)

5	Quantity	Marked	
	.0022 mf.	1	222
	.015 mf.	1	153
	.22 mf.	1	224

Electrolytic (These are polarized; the black band marks the negative side.)

		Quantity
6x 33#E16x 3	47 mf.	1
	100 mf.	1

### **Transistors**

They come in many different case styles. The most common ones that we supply with the kit look like this:



<u>Diode – 1N5818</u>

The band on the case indicates how it should be oriented on the PC board.



### <u>LED</u>

The shorter lead is the negative side.



# JacksQuantityInput - Switchcraft #112B Stereo1Output - Switchcraft #111 Mono1Imput - Switchcraft #11Imput - Switchcraft #11Imput - Switchcraft #11Imput - Switchcraft #11Imput - Switchcraft #11Impu - Switchcraft #1

**Stomp Switch** 

**3PDT Latching** 

Adhesive PCB Standoffs

3/8"

Quantity

1



Quantity

1



<b>Molex Plugs and Headers</b>	Quantity	
3-pin Vertical Header	2	
3-pin Plug	2	
2-pin Horizontal Header	2	And and a second se
		19.9
		U Q
3-pin Horizontal Header	1	CaCaCaC
6-pin Plug and Header	1 Each	
Terminated Leads, Various Colors	12	
		Concernance of the second s
Input Connector	1	
<b>Output Connector</b>	1	
DC power Connector	1	
Battery Snap	1	

### Enclosure

Main Printed Circuit Board

**Potentiometer Board** 

1

1

1

