



BMP (Electro-Harmonix Big Muff Pi™ Replica) Modification Ideas

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This document is intended to give some general ideas about the many, many modifications that can be done to the Big Muff Pi™. These modification ideas can be applied to any of the commercial units or to the replica project on this site.

General Upgrade Ideas

1. If you are modifying a commercial unit, some of the older units did not have true bypass switching. Rewiring for true bypass is usually a good choice.
2. Use high quality capacitors and metal film (1% tolerance) resistors. This may lower the noise and improve the tone. The quality of capacitors in and of itself may not improve tone, but at the very least good caps are more likely to be consistent and have a closer tolerance to the value you expect from it, which makes fine tuning much easier.
3. Consider socketing the transistors and trying different transistors, until you find a combination that offers the least amount of noise. 2N5089 transistors may produce less noise than 2N5088s.
4. It has been suggested that lower gain transistors may give you less noise and possibly better tone without sacrificing any gain.
5. The Vox Suppa Tone Bender Project is very similar to the Big Muff. Its basically the same circuit with a different form of distortion clipping. So, in a way, the Suppa Tone Bender is a mod to the Big Muff Pi.
6. The Jumbo Tone Bender and the 3-knob Foxey Lady are also similar to the Big Muff, so check those out for ideas.

Other Simple Ideas

1. As suggested on R.G.'s schematic: replace the 1.0uf caps with 0.1uf caps. Reference numbers on the parts layout are: C1, C3, C4, C7, C13
2. As suggested on R.G.'s schematic: replace the 0.1uf caps with 1.0uf caps. Reference numbers on the parts layout are: C6 and C9
3. Here is a very popular, good sounding tone stack mod. Replace the C10 & C11 capacitors with this values: C10 - 0.022uF C11 - 0.1uF



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From Mark Hammer

1. Higher value caps in the B-to-C path (e.g. 560 instead of 500pf) can mellow things out a bit
2. Having a slightly lower clipping threshold in the second set of diodes (e.g. by selecting for clipping threshold or using Si for stage 1 and Ge for stage 2) may produce a bit more animation in the sound (change in fuzz quality as the note is held)
3. Using a slightly higher cap value in the diode path (e.g., .22uf instead of .1uf) can introduce more bottom and clip a little more easily.
4. Changing the tone stack component values can introduce different amount of bottom retention

From J. Nage

1. Alter diodes. Try 3 germanium on each side or on one side for asymmetrical clipping (Jack Orman). Changing diodes in second stage may have bigger effect on sound and may cause the distortion character to change as the note is held (Mark Hammer).
2. Reduce coupling caps between stages and input and output caps to .1uF or so (RG Keen).
3. Reduce coupling cap before sustain pot to .01uF to decrease muddiness (??).
4. Use film caps.
5. Increase feedback caps in 3 stages to mellow out the sound. Try 560pF. Decrease for more buzziness. (Mark Hammer)
6. Increase feedback cap before diodes for more bass and gain. Try .22uf to 1uf. (RG Keen).
7. Try different transistors. Lower gain transistors might produce less noise without sacrificing distortion (??). Some possible transistors in order of approximate hFE: MPSA05, 2n3904, 2N5088, 2N5089, and MPSA18.
8. Experiment with tone stack. Check AMZ. Increase .01uF for more bass. Decrease .0047uF for more highs. (Aron Nelson)
9. Experiment with the 100K bias resistor to ground from base of 3rd transistor. Adding this moves bias more toward linear range and may produce a clearer sound to you (Jack Orman). However, leaving it out produces asymmetrical



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- clipping because one side of the waveform clips before the other due to the misbiased transistor. This is said to produce a warmer distortion that "blossoms" as the note decays. (Aron Nelson).
10. Try class 3 ceramic caps in tone section. Said to produce a "smoother" sound with wider sweet spot in the tone control. (Ed Rembold)
 11. To increase sustain try reducing values of coupling resistors (say to 2.2K) or increasing feedback resistors (to 1 to 2M). Or place 2 1M Rs in series with a .01uF cap to ground between them to form voltage divider in feedback loop. (Frank Clark?)
 12. Use a JFET (e.g., MPF102, 2N5457, J201, NTE458, etc.) for last stage transistor. Drop the two bias resistors from the base and add a 1M from gate to ground.
 13. Experiment with the bias of transistors. The values of the bias resistors reportedly vary among Big Muffs, causing them to sound subtly different (My store-bought Big Muff came with values for the collector and emitter resistors that differed by a few K).

Want to contribute? If you are happy to share your modification information with other builders, contact us at info@generalguitargadgets.com. If the modifications pass our review we will add it to this file for all to enjoy!