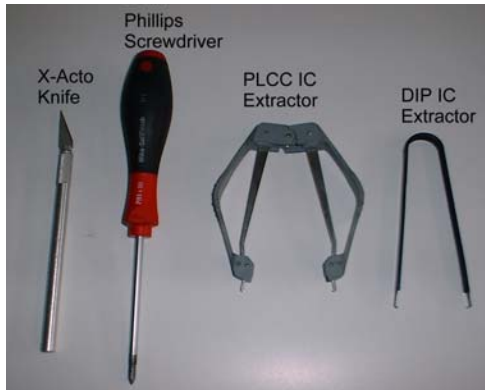


## PROCEDURE FOR UPGRADING THE SOFTWARE IN A BFD:

The BFD software is programmed into the microcontroller chips located in the transmitter and receiver amplifier. To upgrade the software you need to replace the micro controller chips with new one's that contain the new software.

### Tools required:



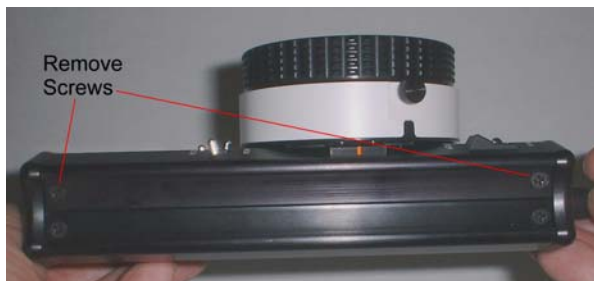
- Thin, flat bladed screwdriver or X-ACTO knife
- Phillips screwdriver
- PLCC IC extractor (\$9.99 from Radio Shack, Cat.#: 276-2101) or equivalent
- DIP IC extractor (\$7.49 at Radio Shack, Cat.#: 276-1581) or equivalent

**MAKE SURE THE POWER IS DISCONNECTED WHEN REMOVING AND INSTALLING THE IC'S!**

### Procedure for replacing the transmitter microcontroller:



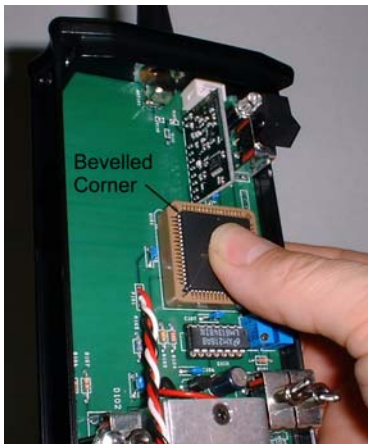
To open the transmitter, first remove the rubber strips on the sides by prying up one end with the thin bladed screwdriver or X-ACTO knife and peeling the strip out. They are held in only by pressure.



Once the strips are removed you will see a line on each side that separates the front panel from the back panel. Remove the two screws on each side on the front (knob) side of the separation line. Carefully pull the front panel away from the rest of the transmitter. **PULL SLOWLY** because there are wires leading from the front panel to the PC board.



Once the front panel is off and the PC board is exposed, remove the old microcontroller chip using the PLCC extractor by inserting the prongs on the extractor into the slots at the corners of the socket, squeezing the handle and pulling.



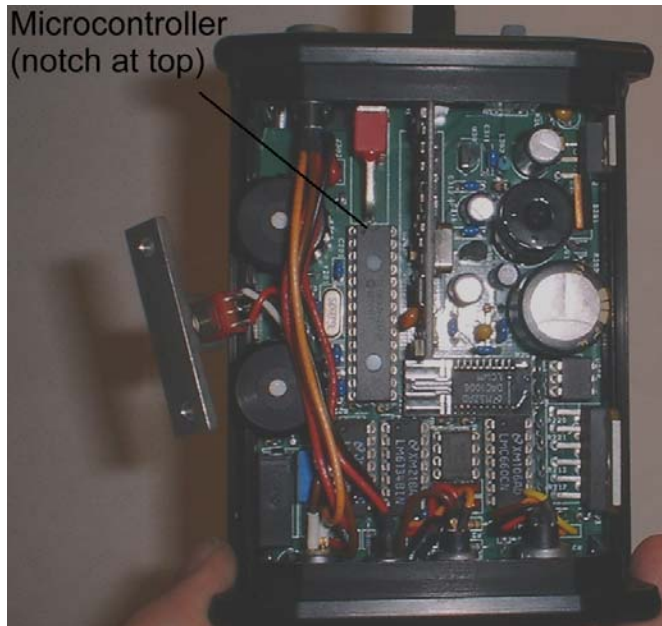
Insert the new microcontroller, taking care to insert it so that the corner of the IC that has a slight bevel lines up with the similarly beveled corner of the socket. Insert the battery and turn the unit on and verify the power LED comes on. Replace the cover, screws and strips.

### **Procedure for replacing the receiver microcontroller:**

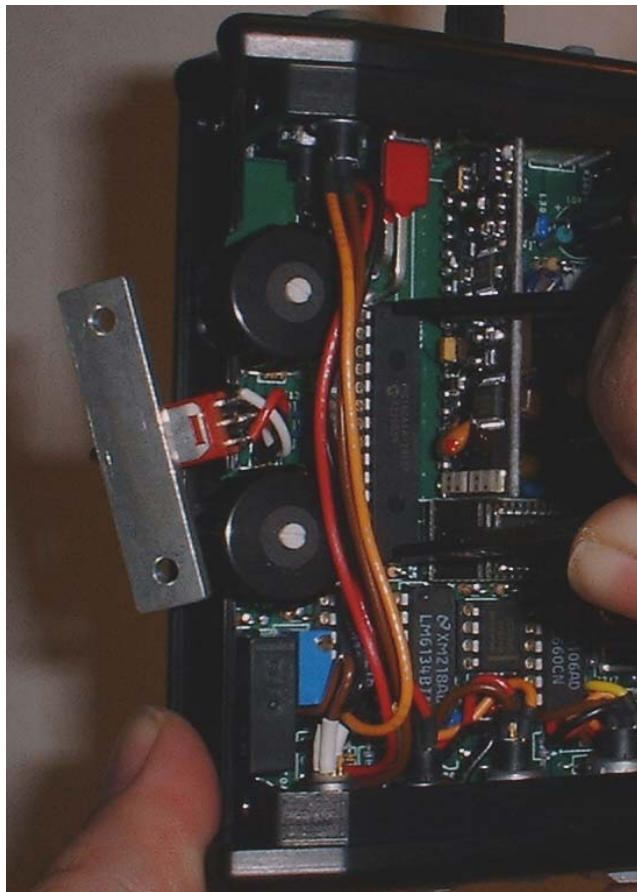


The case of the BFD receiver/amplifier is made of 4 parts: a top, bottom and 2 end pieces. The two end pieces are the pieces that have the connectors mounted to them. To replace the microcontroller IC only the top needs to be removed. The top can be identified as the large flat piece that has 7 screws (3 on one side, 4 on the other) holding it on. The bottom has only 5 screws (3 on one side, 2 on the other). Remove the 7 screws from the top piece and pull it straight up away from the bottom. This will expose the circuit board. Also locate and remove the remaining screw holding the switch/knob support in place and lift the support off of the top of the knobs and move it to the side to allow access.

# **B** BarTech Engineering



Locate the old microcontroller IC that is positioned directly behind the calibration knobs and adjacent to the receiver board that stands upright from the main PCB. You will have to move the wires out of the way leading to the connectors and the calibration switch. Note the orientation of the IC, with the small indentation located closest to the main power toggle switch.



Take the dip IC extractor and grab the IC at both ends and pull it straight out. Insert the new IC and press it firmly in place, making sure no leads bend out or underneath. Power the receiver up and verify the LED comes on. Before you replace the top cover, observe that two of the screw holes in the cover (the inner two) line up with threaded holes in two IC's on one end of the PC board (on the side opposite the side the calibration knobs are on). Note which screw holes these are. Replace the top cover. Replace the screws, **MAKING SURE NOT TO OVERTIGHTEN THE SCREWS GOING INTO THE IC'S.**