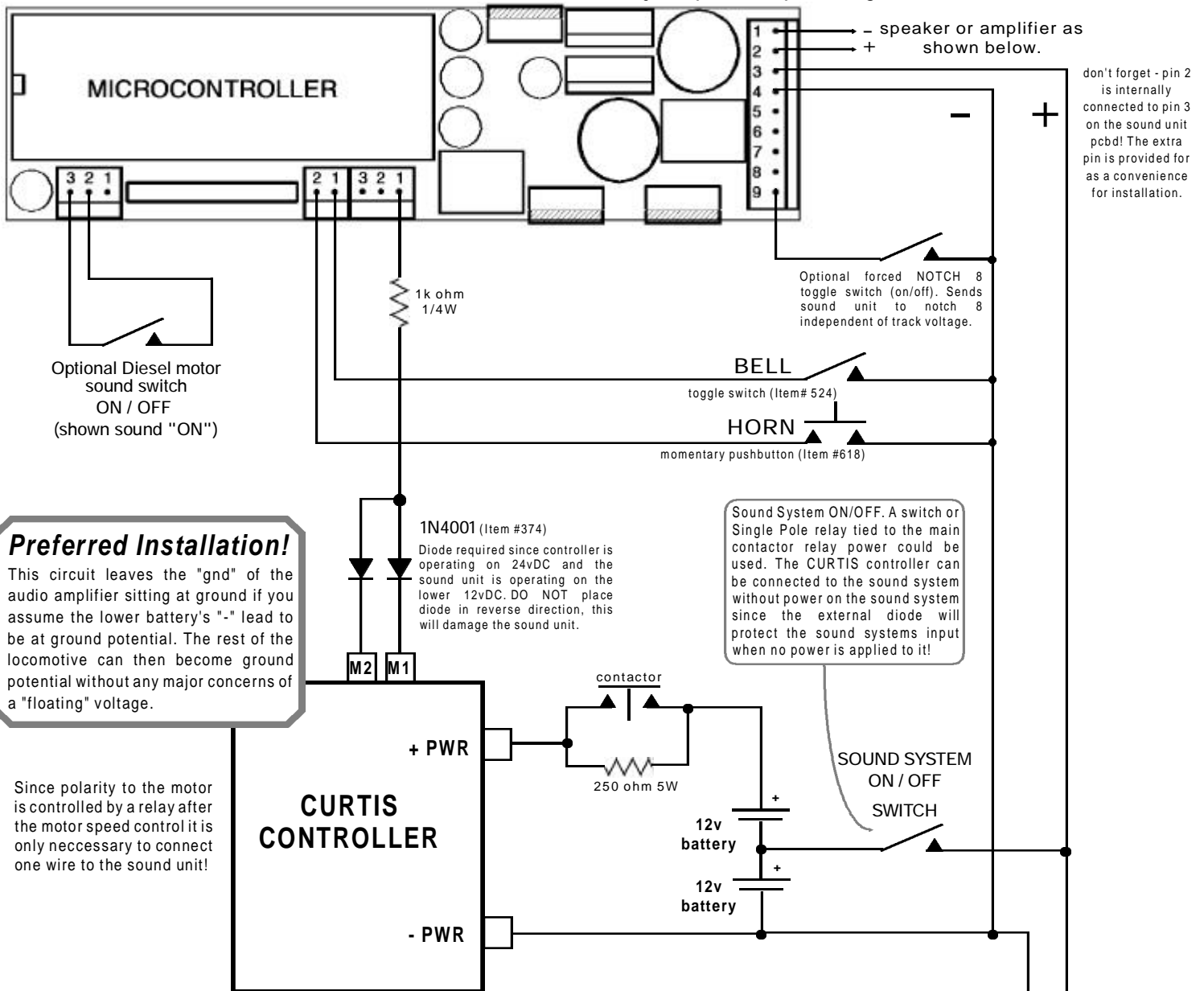
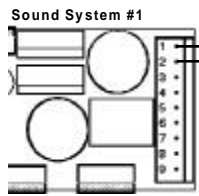


# CURTIS motor controller installation using motor power for notch settings and switches for HORN, BELL, and Notch 8. Sound unit and auxillary amplifier operating from lower 12 volts.



**Preferred Installation!**  
This circuit leaves the "gnd" of the audio amplifier sitting at ground if you assume the lower battery's "-" lead to be at ground potential. The rest of the locomotive can then become ground potential without any major concerns of a "floating" voltage.

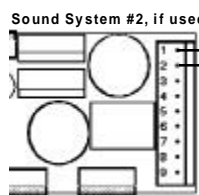
By using two sound systems you can create the most realistic operation. For diesels, one is wired for no motor sound thus providing the HORN & BELL. The other is wired to the controller without any HORN / BELL inputs, thus providing only the prime mover sound!



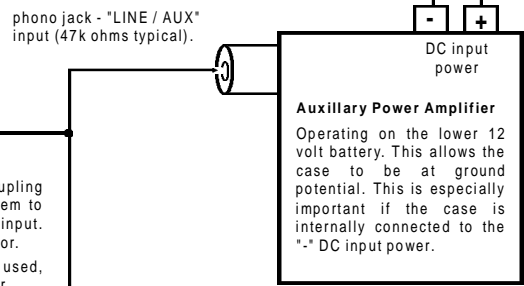
Volume increase

for remote audio control. Use 1k or 5k 1/4W audio taper (if desired) potentiometer. For fixed volume use two 1k resistors to form a voltage divider. Set "VOLUME" on sound system to 10 o'clock. If more overall volume is desired when all other controls are at "MAX", then set the sound units volume control higher.

10k, 1/4w 1mfd  
use these values when coupling more than one sound system to the same amplifier input. Observe polarity of capacitor. If only one sound system is used, you do not need the resistor. If you want to decrease the low frequencies coupled, reduce the value of the capacitor.



Volume increase



The audio wires should be kept close to the amplifier input since they are not shielded from external noise. The audio output from the amplifier can be left long since this is a low impedance line. For best noise immunity place the potentiometers in a metal enclosure (grounded for proper shielding), then take the sound unit's audio output thru a twisted pair to the potentiometer. The input lead to the amplifier can use shielded wire to the audio control box but DO NOT connect the shield (normally ground) to the circuit. Cut off the shield and tape or place heat shrink tubing on the cable so that it cannot come in contact with anything. This circuit leaves the "gnd" of the audio amplifier sitting at ground if you assume the lower battery's "-" lead to be at ground potential. This is why this is the preferred method of installation. The rest of the locomotive can then become ground potential without any major concerns of a "floating" voltage.