GB Proton Pack “Economy” Sound Package – 40W 8 sound version

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Sound Package Features

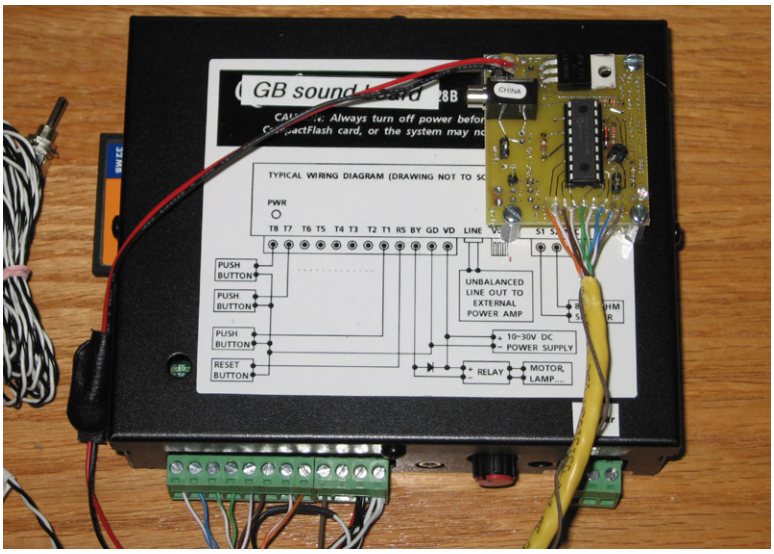
The proton pack sound board package is the ULTIMATE addition for making your pack come "alive". The economy sound package includes a custom sound board with custom sound effects card. Sound effects include: A pack powerup sound, hum sound, gun fire sound, and gun winddown sound. You can even add several music tracks assigned to pushbuttons if you like. The pack “powers up” when you power on the unit.

NOTE: The package comes electronics that need to be wired up and installed. You must install it into your pack. You can use any speakers with the package that you like. The bigger the speakers, the more sound will be projected. Mounting the speakers is also important to get optimal sound.

A sufficient power supply should consist of two 6V lantern batteries (connected in series), a 12V rechargeable lead acid battery, or 8 D cell batteries (connected in series). This battery setup is needed to power the amplifier. The sound board can accept anywhere from 10-35V DC. We recommend 12V since it is nice to run all your lights and sounds from one common battery source.

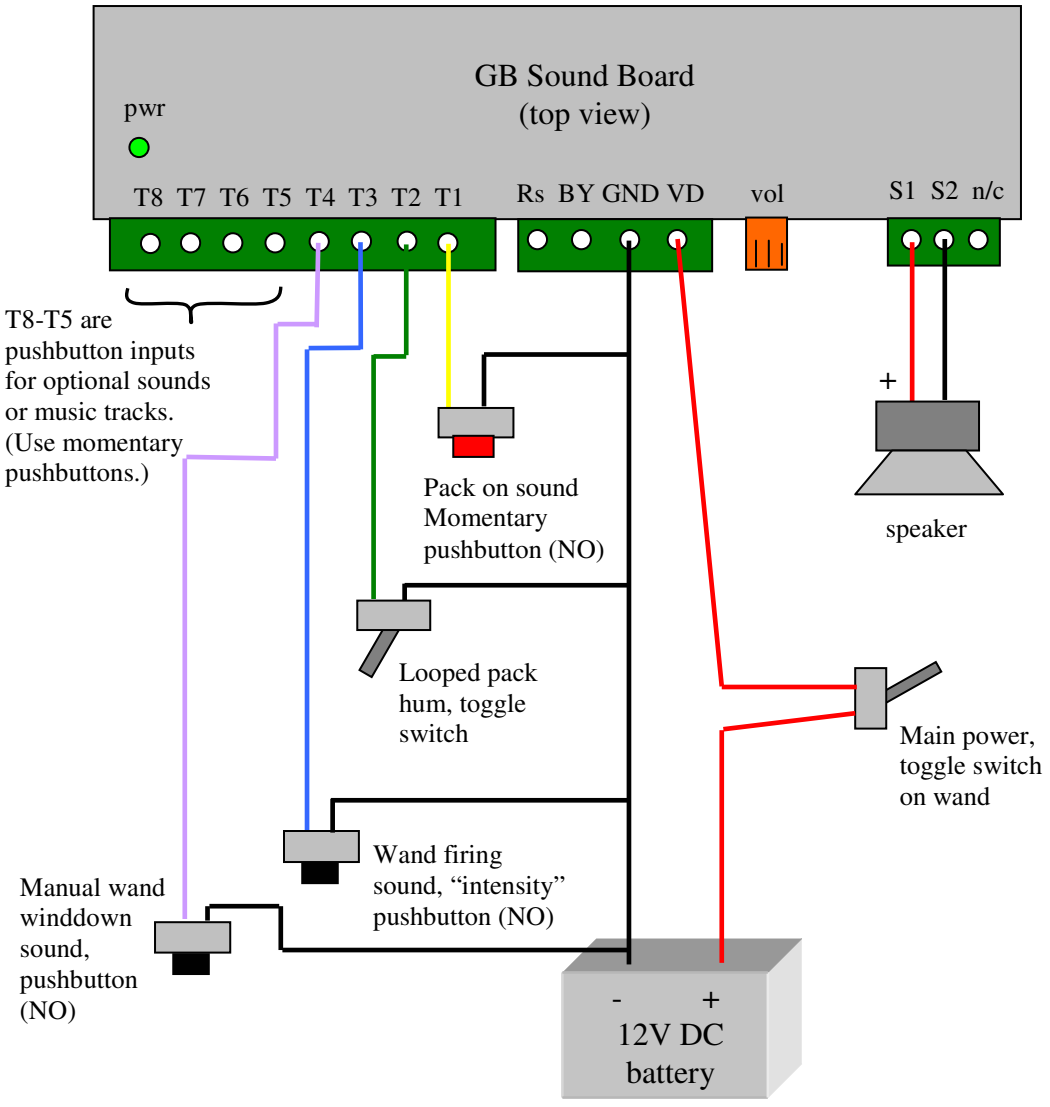
An earth-shaking setup would be an 8" woofer and tweeter for the startup and gun sounds. Setups will differ based on the available space in your pack.

Here is a pic of the economy sound board.



Wiring

You will need to wire up the sound board to your battery supply, switches, and speakers to make it operate. Below is a wiring diagram to hook up the battery, master on/off switch, wand firing button, wand winddown sound button. You can simply unscrew each end connector, insert the wire, and screw it back down to secure each wire.



NOTE: All momentary pushbuttons are normally open (NO) by default.

Upon powerup, the pack startup sound will play out automatically. You can also play out the pack startup sound at will by using a momentary pushbutton hooked to **T1** shown above. Pushing the button will play out the pack startup sound.

NOTE: You can use a toggle switch to play out the pack on sound, but if you flip the toggle switch it will loop the startup sound continuously. The only way to have the start up sound play out once is to flip the toggle switch to trigger the sound and then flip it back off right away.

You can toggle the looped pack hum sound by flipping the toggle switch attached to **T2** above. Flipping the switch back will turn off the looped hum sound.

Your unit also has a pack firing sound. If you press and hold the wand firing pushbutton (connected to **T3**), the gun firing sound will automatically start playing out. The sound will continue to play out until you release the button.

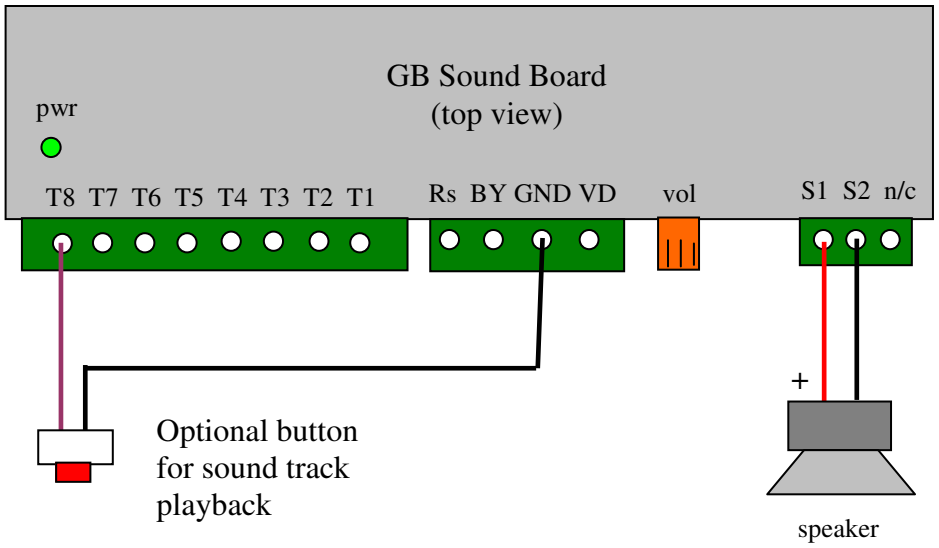
In the economy version, the gun winddown sound does not play out automatically after you let go of the wand firing pushbutton. You can manually play out this sound by connecting up another pushbutton (connected to **T4** above) and using that to manual trigger the wand powerdown sound after you let go of the firing button.

Here is the list of sounds currently stored on the sound board's flash card:

1. Pack startup sound
2. Pack hum sound (looped)
3. Proton gun firing
4. Proton gun wind down sound
5.
6.
7.
8. Ghostbuster's theme music track

If you want to trigger the theme music track, you can connect a separate pushbutton to **T8.** Pressing this will enable the music track.

Below is a diagram for hooking up an optional pushbutton for the music track:



NOTE: You can use a toggle switch to play out the sound track, as long as you flip the switch to trigger the sound and then flip it back. If you don't do this then the music track will play on a continuous loop.

Programming other sounds

The sound board uses a standard compact flash card to store all of the sound media.

All of the sounds on the board are interruptible, meaning if you are playing out the looped hum sound the firing button will interrupt this sound and play out the wand firing sound. When you let go of the firing button the looped hum will continue on.

If you have a PC compact flash card reader/writer, you can custom program any sound bytes onto the flash card. Each sound is stored in raw wav file format. The valid sample rates are 22.050, or 44.1kHz. The files must be mono. They can be 16 bits for CD quality.

For storage onto the sound card, each wav file must be renamed to the desired sound number as it is stored on the board. Using the above list of sounds, the pack startup wav sound has been renamed from packon.001 on the flash card, since it is the 1st stored sound. You do this for all the sound numbers 1-8. So each .wav file will be renamed with an extension of .001, .002, .003, up to .008.

To see this, you can simply copy packon.001 from the flash card to your computer, rename it to packon.wav then listen or edit the file. With this procedure, you can now add, move, or change any of the sound bytes, music, or effects to the flash card to totally customize your sound setup! You can even buy a second flash card to store a second set of sound files, which can turn your sound board into a versatile sound playback system!

Finally, you can simply drag and drop the desired wav files (renamed with the .00x extension) onto the flash card. Do not remove the "mode.txt" file on the flash card, as this sets up the sound board for proper operation.

Hookup and Installation

Installation consists of finding the space in your pack to mount each component and then wiring all the components together. You need to mount the sound board, amplifier, speakers, and battery pack all in your pack. The battery and sound board fit nicely up inside the top of the pack. The speaker fits down by the cyclotron, and you can cut the motherboard to house the speaker.

Installation Tips

Make sure that you have enough room in your pack to install the sound board and amplifier. Calculate the space you have and make a diagram of where the boards will fit best.

Do not cram the boards in a tight space. Give them a little room to breath, as the amplifier will get hot when the volume is turned up. Treat it as you would a home stereo amplifier.

NOTE: *Handle your board as you would any piece of delicate electronics! Do not get it wet and do not handle it without grounding yourself first! Even a static shock can destroy the delicate components on the board. I suggest when installing the board, insulate it with non-static foam, hot glue, or other material. Handle the board around its edges when moving it. We are not responsible for boards that are rendered useless by improper handling.*

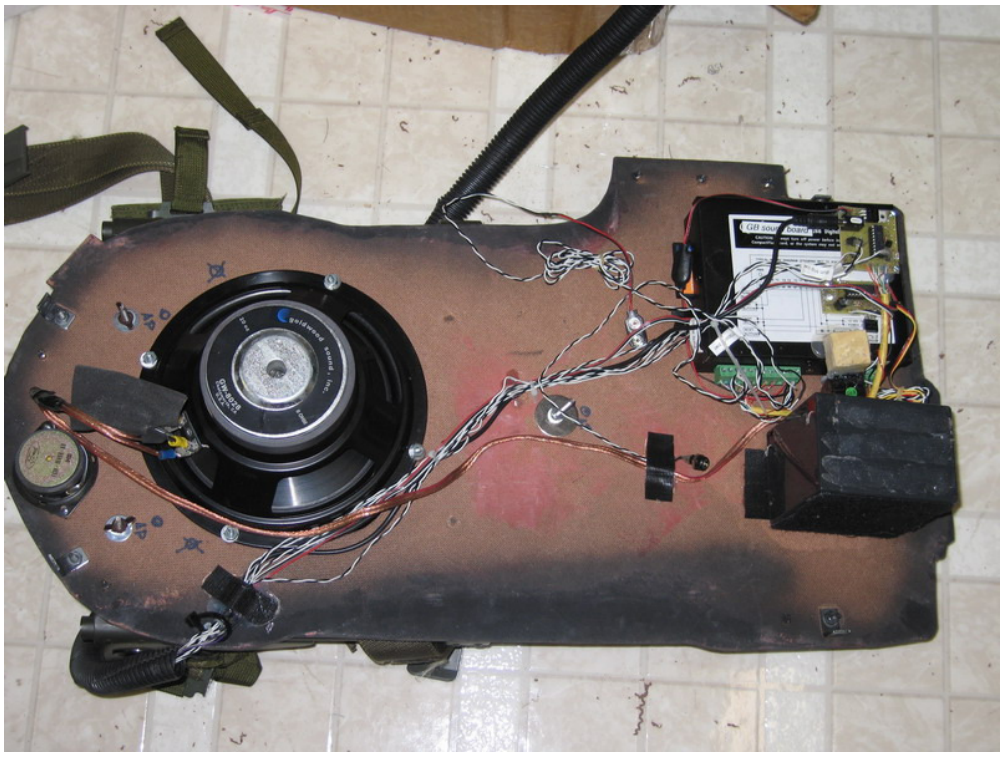
Install the speakers in a large enough area like the cyclotron. Make sure that the speaker is exposed to free air so that it will project the most sound.

The physical placement of the woofer is not as important, as bass waves are non directional. The gun sound speaker is more critical to placement since higher frequencies are directional in nature.

If you do not have enough room for one big speaker, you can use 2 smaller speakers. The amplifier needs at least 12V to operate efficiently. If your batteries are weak, the amplifier and sound board can begin to behave unpredictably!

Install in a GB pack – motherboard

Here is a pic of the system installed on the inside of a proton pack motherboard. The proton pack shell will fit over the motherboard. You can run the trigger wires and all control lines to your proton gun to control the entire pack from your wand!



Economy "Plus" Sound Board Package

(Only read if you have the plus version)

The economy "plus" sound package includes everything in the economy package, but it also includes components to automate several of the sound events, which are amenable to switches on your proton wand. These are:

1) The wand powerdown sound is automatically played out after the wand firing button is let go.
2) The pack powerup sound can be hooked to the vent light toggle switch so you can synchronize the vent light coming on with the powerup sound.

"Plus" Circuit Assembly

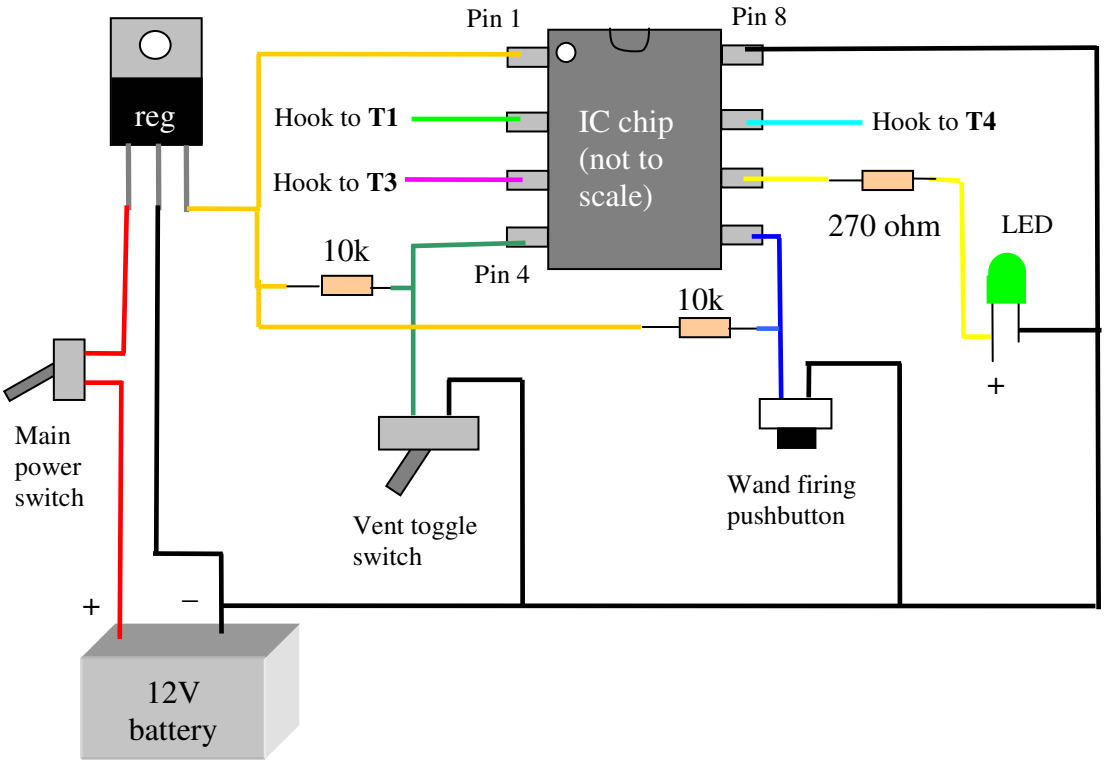
Tools: soldering iron, wire strippers, 24-28 gauge hookup wire, breadboard

The economy plus version comes with a handful of components to handle the aforementioned sound automation. You will have to assemble this circuit first. You can put the components on a breadboard (available from Radio Shack) and solder wires to each leads. 24-28 gauge hookup wire does nicely for the component wiring.

The components you should have received in the plus package include:

a) (1) 7805 3-pin voltage regulator
b) (1) 8-pin programmed IC micro chip
c) (1) 270 ohm resistor, (2) 10k ohm resistors
d) (1) LED (longer leg is positive)
e) (1) DPDT vent toggle switch
f) (1) wand momentary pushbutton (NO)

Here is a wiring diagram on how to hook up the "plus" circuit:



NOTE: You can connect the power to the circuit using the same master power switch from the 12V battery. Crossed wires above are not connected together! Only wires of the same color are connected together.

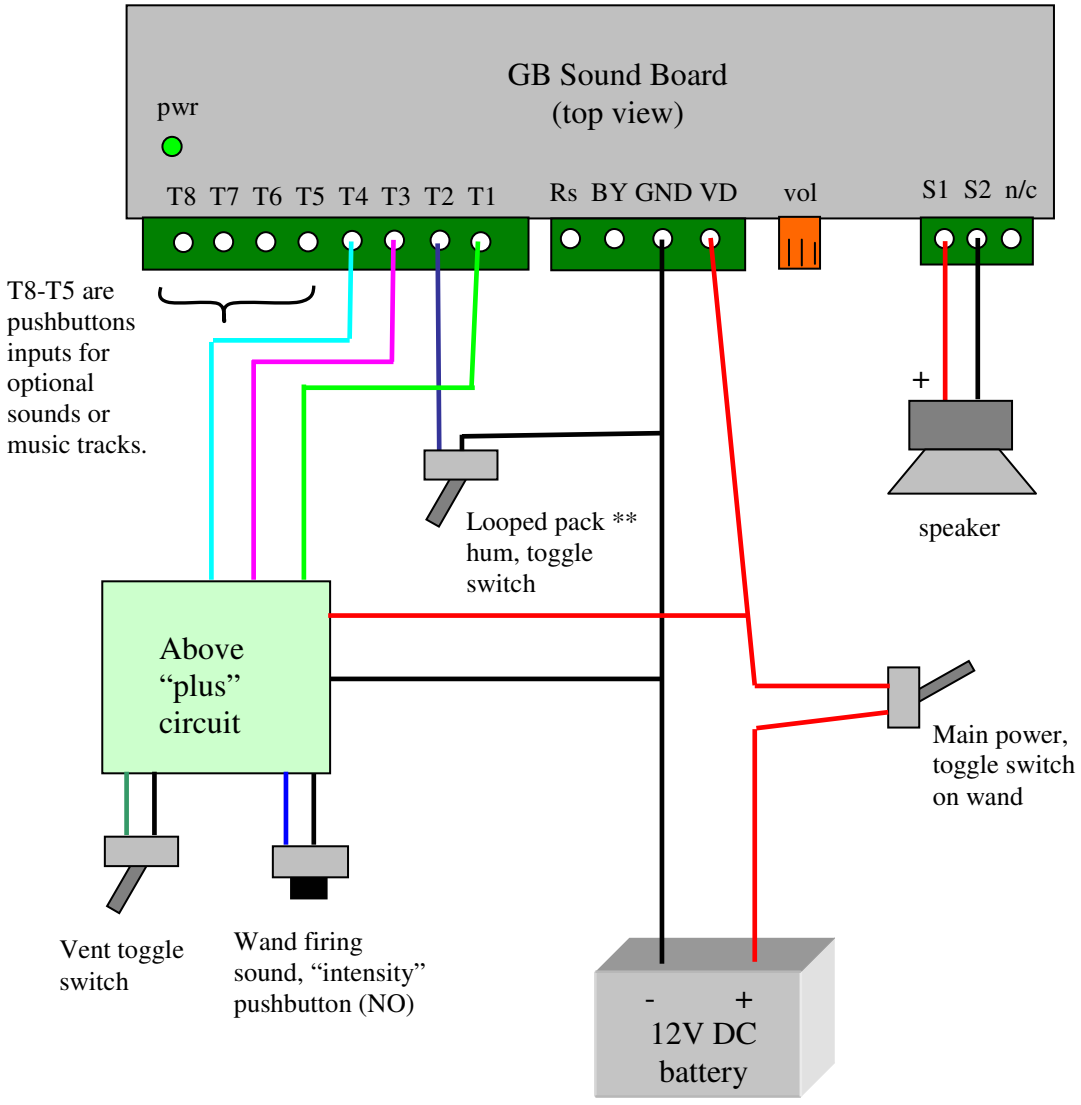
The LED hookup is optional, but it will let you know if your assembled circuit is working correctly!

<u>The LED will do the following during normal operation:</u>

On powerup – LED blinks once
Fire button depressed – LED stays lit until button released
Vent switch triggered – LED blinks twice

Connecting Above Circuit to the Sound Board

Once you have the circuit assembled, here is the new wiring diagram for the sound board. The above circuit is shown as a green box. Reference the above picture for the colored wires on the circuit.

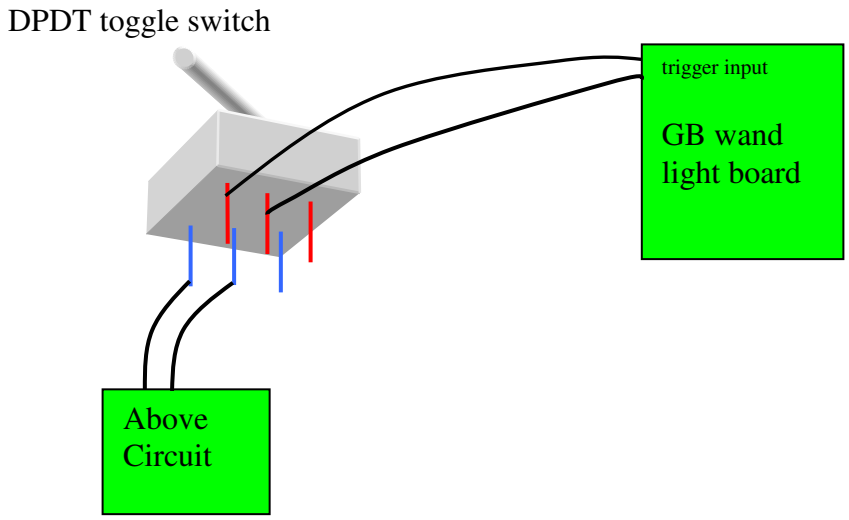


NOTE: Crossed wires above are not connected! Only wires of the same color are connected together.
*** The hum toggle switch should be cycled once to play out the looped hum. Otherwise if you keep the switch on, then after a firing sound is played out the sound board will act unpredictably.*

Connecting the vent switch to your vent light:

The vent switch can also be wired into the toggle switch used on our Hyperdyne GB gun light board. This allows you to automatically play out the pack startup sound when you flip the vent switch and turn on the internal vent white light in the wand (ala GB1). If you use a DPDT toggle switch, you can connect one pole to our GB gun board (follow the wand board instructions on how to do this) and the other pole to the above "plus" circuit. When you turn on the vent switch, the white internal gun light should illuminae, and the sound board will play out the startup pack sound.

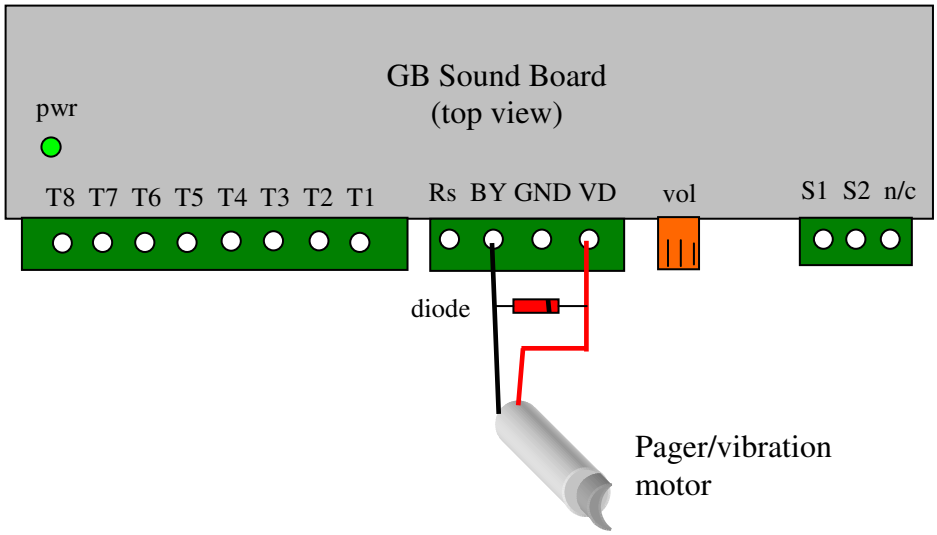
Here is a diagram showing the proper vent switch connections to the above circuit and our gun wand light board using a DPDT toggle switch:



Motor connections:

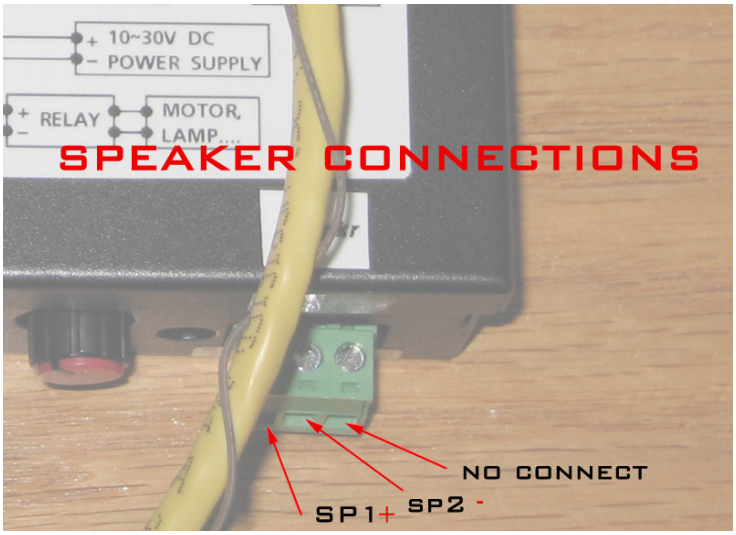
Using the "plus" circuit, you can also wire up an optional pager motor to add a vibration effect to your wand! All you have to do is wire up a pager motor that will operate off 5-12V DC to the sound board. The added circuit should control the motor using the BY output of the sound board. *You will need a normal diode (1n1014 or similar) to put in parallel with the motor to prevent damage to the sound board.* NOTE: The cathode of the diode is attached to VD.

Wire connections for optional motor



Speaker/amplifier connections:

The amplifier is integrated into the sound board. All you have to do is connect wires to the speaker terminal SP1 and SP2. Connect the + speaker wire to SP1 and the – speaker wire to SP2. Here is a pic showing this:



The volume control is also located on the black housing.

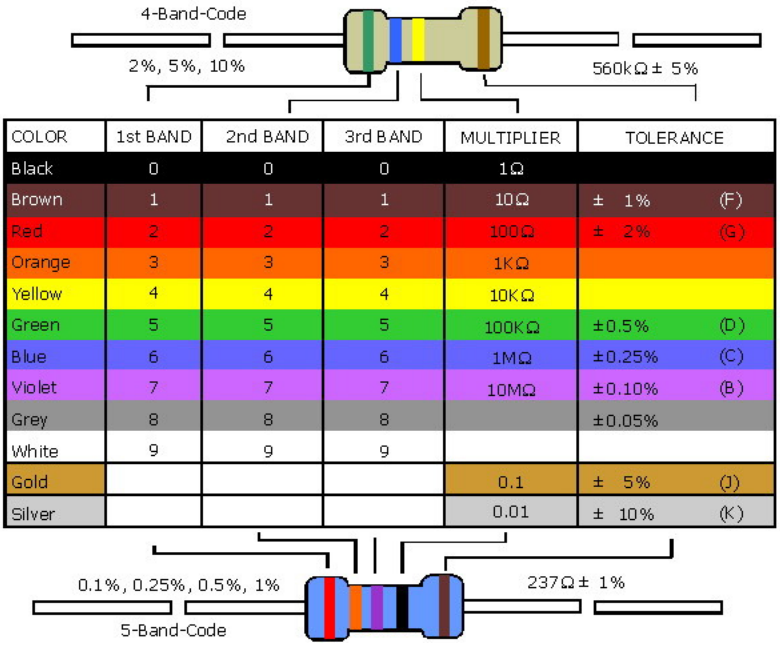
Your kit is now complete!!

DEBUG TIPS

- Double check your wiring and connections.
- Make sure to hook up power correctly!
- If the "plus" circuit gets hot when power is applied most likely you have a wiring error!
- Make sure all the switches and sounds are working correctly. Use the LED on the circuit to verify correct operation for the switches!
- After debugging, start installing everything in your pack.

Resistor guide:

Below is a resistor guide in case you need help in reading the values of the resistors from their colored bars. All resistors are 5%.



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE	
Black	0	0	0	1Ω		
Brown	1	1	1	10Ω	± 1%	(F)
Red	2	2	2	100Ω	± 2%	(G)
Orange	3	3	3	1KΩ		
Yellow	4	4	4	10KΩ		
Green	5	5	5	100KΩ	±0.5%	(D)
Blue	6	6	6	1MΩ	±0.25%	(C)
Violet	7	7	7	10MΩ	±0.10%	(B)
Grey	8	8	8		±0.05%	
White	9	9	9			
Gold				0.1	± 5%	(J)
Silver				0.01	± 10%	(K)

NOTICE: There is no warranty on kits!! It is your responsibility to install the board. Kits cannot be returned! This kit can consume a lot of current. Be careful if you plan to use a battery source that is capable of delivering alot of current. Contact a professional if you need assistance. Hyperdyne Labs assumes no responsibility for the misuse of this kit.