

Battery Disconnect Switches

By Allan Brown

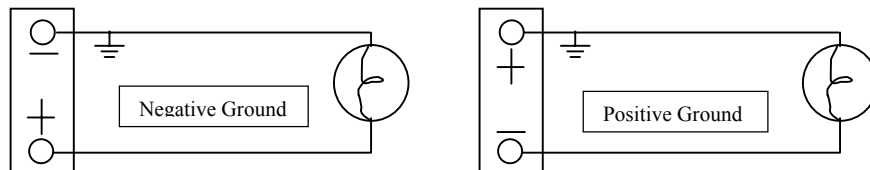
The installation of a battery disconnect switch is usually done either for safety considerations or as an anti theft device or both. Here are a few thoughts on the subject. First, let me say this — The following assumes we are talking about adding a disconnect switch to a B'. If you don't have a B', you could always buy one or see the note at the end.

To be practical, the switch should be readily accessible to the driver from the driver's normal seating position. This, therefore, precludes those types that are mounted directly on the battery itself. While this type of switch will remove the power from the car, it is unsuitable in an emergency situation where you have to disconnect the battery with little time to spare.

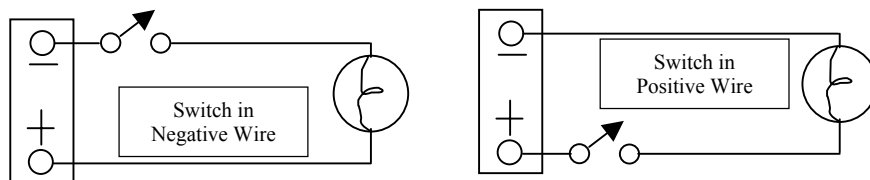
The best type are those with a removable key. With these, you can "turn-off" the car and take the key with you. While the switch is easily by-passed and, therefore, not a true anti-theft device (is there really such a device?), the hassle of troubleshooting as to why the car won't start while you are trying to steal it, will put off most jobs.

The safety aspect of the switch is to remove battery power to all of the car's electrical system so that if you are working on the car or something goes wrong while driving, you can quickly turn the power off. When the battery is disconnected, any fire or rough metal that melts or cuts the wire insulation and shorts it to the body (chassis) will have no effect on the electrical system — unless the fire reaches the battery. It is for this reason that the switch should be readily accessible to the driver.

The existing set-up is with the battery(ies) in behind the seats. The newer cars have the positive (I'll call "power") wire running under the car to the front to the starter. The negative wire is screwed to the car body adjacent to the battery. This is what is known as Negative earth or Negative ground. The older cars are the opposite and are known as Positive earth or Positive ground.



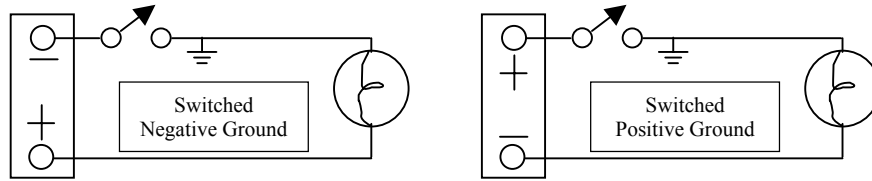
So, which side of the battery should you put the switch in — the positive or negative wire?



In the drawings above, the switch will supply power to the lamp whether it is in the positive wire or the negative wire. So, electrically, it makes no difference which side is switched but there are mechanical considerations. These considerations are due to the power involved, physical size and nature of the wires, connectors and the switch itself, and depend on the grounding system of the

car. You don't want any potential shorts! There is more smoke in those wires than you can imagine!

I believe the switch should be inserted in the ground path, IE, between the battery post and body (ground) for four reasons —



- 1) It is the easiest method of insertion as you don't have to cut or make joints in any of the wires
- 2) If for some reason the switch wires happen to touch the body, nothing will happen as this would be the normal connection anyway. You would be able to tell by turning on the lights. If the lights come on and the switch is off, then your wires are touching the body somewhere near the switch.
- 3) The switch is located right at the power source. This is important — you want to know that the power is turned off at the source and not at some other location.
- 4) If you install the switch in the “power” wire then you have to cut the wire and attach it to the switch. Depending on where you locate the switch, you may not have enough length. If not, just how are you going to safely join the wires?

Due to the large current involved when starting, and due to the environment and location, this is not quite straight forward — especially if you are not confident with wiring or electrical systems. There is also the factor of the large connectors on the wires and on the switch. These can lead to the possibility of shorting to or being shorted to the body of the car. This will cause a fire and possibly explode the battery. Remember, ground is everywhere and very easy to touch.

You also have the possibility of making a bad connection and/or eventual corrosion. This will lead to starting and other electrical problems.

If you install the switch on the ground side, you can buy the pre-made wires in various lengths and all that is involved is unscrewing the wire from the body and attaching it to the switch then attaching the new wire from the switch to the body.

No cut wires, no trying to join wires and if the contacts short to the body, no harm is done.

My battery disconnect switch is located on the battery cover a couple of inches from the battery. When the key is not in place, the hole is covered by the pile of the carpet and when in place, does not interfere with anything. I can reach the switch from the sitting position in the drivers seat. Another recommended position is the vertical bulkhead behind the passenger's seat directly in front of the battery.

Question; *If the switch is near the top of the battery, can it spark as it makes contact — could it cause an explosion from the spark? How safe is it?*

If your battery is in it's factory position, and you're not using a non-vented battery box*, then chances of hydrogen gas building up in the battery area are remote as this area is not enclosed. Additionally, chemical action and gassing is not really generated unless a battery is undergoing heavy charging or discharging.

* You should never place a battery in a non-vented battery box.

There is a suggestion of diverting the battery wire from the starter post and adding the switch to the consol. **I would not do this, it can lead to dangerous situations!** When starting the car, there will be a large current draw requiring a large gauge wire. The existing wire is usually thick and stiff — not easy to work with. If you decide to do this, you introduce the problems of *a)* how do you safely join the new wire to the existing wire and *b)* how do you get the wire from the starter to inside the car to the switch and from the switch back to the starter without the risk of future damage to the wire or creating a short circuit? Because of the power involved, these two aspects are not as simple as they may seem. Remember, this is the main power wire and if it gets shorted to the body, you will be saying goodbye to your car!

There is the possibility of adding a relay. A relay suitable for this job would be large. You need to take into consideration relay reliability and contact bounce. In other words, it could lead to more problems than it's worth. I had thought of doing this on my car but decided against it.

Another question; *I have a digital radio with memory presets. If I disconnect the battery then I will loose all my settings. What about the clock?*

My solution is to remove the digital radio and replace it with a period radio that does not require power all the time and why do you need a clock — are you not having fun?

Or, you could put a small value fuse, say 1 amp, across the switch to allow power for the radio and clock. This will blow if you try to start the car without turning the key or there is a fault. But, you don't want to be replacing fuses every time you forget to turn on the switch and try to start the car. There are things called poly fuses. Like a regular fuse, they will “blow” if the current is excessive but they will reset themselves when the load is removed. They are small and can be easily fitted to the back of the switch. You can buy these at Active Components and Sayal Electronics.

So, you don't have a B' and want to add a switch to an A' or T' series or even a Triumph.

Cars that have the battery up front beside the engine or in the boot present a slightly different problem. I still believe the switch should be in the ground path for the reasons stated above — this is important! You will face the problem of routing the wires to the inside of the car, however, this is not as critical as in the case above because if the wires become shorted to ground, no harm will be done. Your switch will just no longer function.

To do this, I suggest using the wire used for hi-end car audio. This comes in large sizes and, unlike regular battery wire, is very flexible. There is an assortment of connectors designed for the high powered audio amplifiers and some are suitable for battery disconnect applications.

Assuming a negative ground car, disconnect the existing wire from the battery Negative (-) post and remove the post clamp from the wire. Take the switch connection directly to the post. You may want to buy a new post clamp. The other wire from the switch should be properly connected to the original negative wire.

If you want to discuss this further, email me at allansmgb@gmail.com. Put MGCCT in the subject line so that it won't be deleted by my spam filter.

Also see <http://www.mgcars.org.uk/electrical/switch.html> for other thoughts on this topic.