

# Power From Your MG

by Rick Astley

On a recent trip to a part of Michigan with which we were unfamiliar, my wife and I used the Google Maps app as our GPS on one of our iPhones to provide us with directions. We had a USB adapter plugged into the car's power outlet, and the phone plugged into that, yet the phone's battery became exhausted before we had reached our destination. It was obvious that the USB adapter we used was incapable of replenishing the phone with current as fast as it was being used.

The acronym USB is now very familiar to anyone with a computer or a phone but its full name 'Universal Serial Bus' refers not to it as a source of power but as a method of moving data in or out of a computer. Because a computer or similar device might need to be connected to a peripheral that doesn't have its own power source, like a mouse, keyboard or memory-stick, the USB standard made provision for the supply of a small amount of power — 5-Volts electronically limited to 0.5-Amps draw — to be available. USB outlets soon became a useful source of power for small devices such as cell phones. The European Union, frustrated that every phone model seemed to have an exclusive charger that later went into land-fills (actually they didn't, they all seem to be in a tangle in the bottom of one of my desk drawers) demanded that, if cell phone manufacturers wanted to sell in Europe, they had better use a common charger and connector, and for that they selected USB as the standard. That was fine when mobile phones were just phones but now with bigger and brighter screens, GPS, Bluetooth and powerful data processors, 0.5-Amps doesn't hack it anymore.

Just as the USB socket wasn't meant to be primarily a general source of power, so also was the car power outlet, which was originally designed to supply energy exclusively to a cigarette lighter. That outlet, as found in modern cars, no longer operates a cigarette lighter but has become solely a source of 12-Volts for a myriad of accessories that may be plugged into it. The Society of Automotive Engineers (SAE) writes standards for car related products and methodologies so as to maintain conformity across the automotive world. The worldwide SAE standard for automotive power outlets was decided by half dozen people sitting around a table in Troy, Michigan; among them yours truly. I'm not very proud of what we achieved, mainly because we were not starting from a blank sheet of paper but rather from a device designed for lighting cigarettes but that had become the de facto power outlet. We just had to make sure that every one of them would work the same mechanically and electrically and that they would be safe, easy and reliable to use.

MG started to add a cigarette lighter to their cars around 1967. If your car has one, and you don't smoke, you might consider swapping it out for a 12-Volt power outlet, which looks and works very much like the cigarette lighter socket it replaces but isn't designed to eject whatever is plugged into it. MG chose to connect the lighter to the purple circuit, which is fused and always live. The SAE standard allows automakers to decide whether they want the outlets always powered or only when the key is turned to the accessory or run positions. Sometimes manufacturers will do both, providing power to the passenger areas with key-on but adding an always-live outlet in the back of trucks and SUVs for tailgating. If you have an earlier car and want to add a 12-Volt outlet, take care to neither use a retention bracket that could knee-cap you or your passenger in an accident nor mount it in an upright position into which small coins can fall and short it out. Connect any added outlet to the purple circuit if you want it live at all times, or to the green circuit if you only want it to operate with the key in the run position.

If you need to run and charge a smart-phone in the car, then a search on-line will turn-up several USB adapters that plug into the 12-Volt outlet and that will provide more than 2-Amps. Choose carefully because some have a protruding head of quite large diameter, which may get in the way but that provides something to grab onto if you need to remove it often. Others are very small but that makes them quite hard to extract. The one shown on the left, which cost \$13 from Amazon, claims to be the "smallest yet most powerful in the world" and will run 2 phones at the same time, each at 2.4-Amps, which happens to also be the recommend current capability for the iPad. If left plugged into an always-live outlet, then all in-car USB adapters will continually bleed a little current that will eventually run down the vehicle battery. You don't necessarily need to use the 12V outlet to get USB power. The \$6 device from eBay illustrated on the right can be wired directly into the car with the USB dongle protruding wherever needed.

