

Hyper Ground System

Grounding Your Way To More Horsepower

By Casey Thorson

Let me just start by saying that this may not be a typical topic for CA&E; that is, horsepower. However, we are all essentially electron junkies and the product reviewed on these pages does flow them (electrons) from point A to B. But wait, this product might even be helpful to your audio system, so maybe I am not that far off. What is this product I am talking about? It's the Hyper Ground System, of course.

The Hyper Ground System, manufactured by Sun Automobile in Japan, consists of a series of large-gauge grounding wires for under the hood of your vehicle. Sun Automotive is a manufacturer of high quality accessories for Japanese-built cars, including OEM parts for Mitsubishi, Nissan and Toyota. In fact, these three manufacturers offer the Hyper Ground System as a factory option that can be bought and installed right at the dealership (in Japan). I guess you could consider

Ground wires? Aren't those the ones that go from the car's chassis to the negative terminal on your amp? What are they doing under the hood? Well, here's the deal: Newer cars all use computers, OBDII or otherwise, that control virtually every aspect of the engine and driveline performance through various electronic engine components, all to keep the car running at its optimum performance. These components commonly use a variable ground (negative) signal connected to the computer; thus the problem. Engines and transmissions are typically grounded to the alternator and battery in one location, mainly the motor block. Usually there is a great distance between this grounding point and the various electrical components, not to mention that these components are seldom mounted to the block itself. This creates variations in the voltage at these multiple mechanisms. As a sensor sends information to the computer, the computer in return sends out a signal to make the necessary adjustment(s) to other components. However, if there is a slight variation in the voltage, the computer will not compensate correctly, causing a loss in horsepower. And this is where the Hyper Ground System comes in. It provides a direct ground path from battery negative to body, chassis and engine components, making for an extreme improvement in electrical circulation. According to Sun

Automobile, there are multiple benefits to using this system: horsepower and torque gains; better gas mileage; and quicker engine starts. The company also claims that it can reduce audio noise.

Like myself, I am sure many of you are thinking that you can make these cables using some 4awg cables and a few ring terminals, right? Sun Automobile claims its high quality wires are constructed of near pure copper, 99.99% to be exact, and 1477 strands per cable to optimize the current flow. Compared to factory grounds, this system offers 10 times less impedance, providing improved conduction to prevent electrical losses. It is in this purity of the wire that the Hyper Ground System has benefits over the typical car audio power cable.

While all this hoopla sounds good on paper, I needed to see proof that five wires can do what Sun Automotive claims. For this I recruited the Technical Editor of Import Tuner, Gary Castillo, to assist us in using XS Engineering's dyno. Of course we needed a car to perform the tests on, so I offered up my Volvo 850R wagon.

The first test we performed was a baseline (no modifications) dyno run. This was performed in third gear, which created some problems for us. Unfortunately, the 850R is an automatic and will not hold the transmission in a single gear other than first (first gear dyno tests are not very accurate). Therefore, the results of the test were recorded above 5000 rpm, shortly after the vehicle shifted from second to third. Respectably, the stock Volvo kicked out 193.9 horsepower at the wheels at just over 5000 rpm.

Using simple hand tools, we installed the Hyper Ground System. The cables attached to the ground points in a series or in a daisy chain configuration, with one cable directly attached to the next. Two cables were attached to the battery terminal, with one bolting to the strut tower and the other to the first ground point. From there, the Hyper Ground cables were attached to the intake manifold, transmission/motor block, head, and the chassis of the computer. Generally, this last connection is supposed to go to the opposing strut tower but after the various mounting positions we tried, attaching this to the computer chassis yielded the best results.

Again, we loaded the Volvo back onto the dyno. As before, we started recording the results above 5000 rpm in third gear. The results were astounding, with a gain of nine for a total of 202.9 horsepower at the wheels. Not only did the max horsepower increase, it made an additional 15.9 hp over stock at 5800 rpm, broadening the power band

(see graph). Our torque band also increased, providing up to 14.1 more pounds of twist above 5300 rpm.

The dyno tests are always nice to see but driving the vehicle is where the real enjoyment lies. The response of the car feels much smoother, with an endless pull when the throttle is mashed to the floor.

As far as high performance products go, the Hyper Ground System is one of the best values on the market. While horsepower gains will vary per the vehicle applied one can't go wrong with spending from \$115 to \$205 for a performance item that is so easy to install.

Hyper Ground System Vehicle: 1996 Volvo 850R

RPM	Hp Before	Hp After	Gain	Torque Before	Torque After
5200	189.3	192.2	2.9	191.2	193.0
5300	188.9	194.9	6.0	187.1	192.1
5400	189.9	196.8	6.9	184.7	191.4
5500	191.8	199.7	7.9	183.0	190.6
5600	191.2	201.0	9.8	179.2	188.5
5700	187.7	202.1	14.4	172.9	186.2
5800	183.6	199.5	15.9	166.2	180.6
5900	176.6	190.1	13.5	157.2	169.2
6000	168.1	181.2	13.1	147.1	158.5
6100	162.0	170.3	8.3	139.5	146.6

SOURCES

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