

Powerchip Inc.
Phone : 1800-495-0777
Fax : (949) 646 1238
tcattach@powerchipgroup.com



Digital Adrenaline For Your...
Volvo S60R 2.5 AWD Manual



Powerchip technology enhances your Volvo to its ultimate level, delivering faster, smoother acceleration in all driving conditions. Whether you enjoy a leisurely weekend cruise or a hard racetrack drive – there is no easier and more effective way to release the potential from your S60R 2.5 AWD Manual.

The following information is an overview of the performance the Powerchip will deliver. If you have any questions, your Power Consultant will assist you as best as possible. We look forward to giving you the best performance possible from your Volvo.

Make	Volvo
Model	S60R 2.5 AWD Manual
Engine	
Year	From Jan 04
Powerchip Code	VOL0129



Power

In standard form the Volvo S60R 2.5 AWD Manual produces 300 hp at the flywheel, and Powerchip improves the engine power to 342 hp.

Power (hp)			
Standard	Bronze/ Silver	Gold 91	Gold 93
300	N/A	336	342

The extra performance achieved by the Powerchip allows your vehicle to respond much better than stock S60R 2.5 AWD Manuals. You will notice an effortless push back into the driver's seat, to give you a much more enjoyable and at times safer driving experience. The Powerchip will tap into your Volvo's 'hidden reserves', to give you an immediately noticeable improvement from your vehicle – we guarantee it!

Torque

Torque is a measurement of your engines pulling power, and it's torque that pulls you up hills, allowing your engine a more linear and aggressive acceleration curve. With the Powerchip, you notice the increase in torque right throughout the rev range, which gives you far greater flexibility at low engine revolutions. Towing will become less demanding, and you will no longer feel the need to take the engine to the redline in each gear to get the performance you demand... It's always there for you, when you really need it most!

Torque (lb.ft)			
Standard	Bronze/ Silver	Gold 91	Gold 93
295	N/A	330	336



Acceleration

Increased Power and Torque results in faster acceleration. And it is not just standing start acceleration that is improved, your in-gear acceleration is improved and faster.

If overtaking is important to you, you will feel safe knowing that you spend less time on the "wrong side of the road", improving the safety of your car, for you and your family or passengers.

Perhaps you feel that you need that extra bit of power when you are lined up at the "traffic light grand prix" against another car with similar (or more) power? If you want to have the unfair advantage that will give you more 'GO' away from the lights, you need a Powerchip performance software upgrade for your S60R 2.5 AWD Manual.

Fitting Details

Your car utilizes a Surface Mount Chip (SMT) – a very sophisticated and powerful memory device which is fitted to many late model (post 1996) vehicles. Because of its complexity, the SMT style chip must be 'flash' programmed in the same way as the dealership (don't worry - we do this for you when we receive your ECU), similarly to when servicing the vehicle. The ECU itself is very easy to remove, and should be sent overnight to be modified at Powerchip and then return overnight to you (we use FedEx Priority Overnight Service). Detailed instructions (including photos) are also provided to ensure the ECU can be removed easily from the vehicle. Once complete, and re-installed into the vehicle, you are back on the road to enjoy your enhanced performance – as soon as possible.

On Road Development

Where Powerchip really shines out over its competitors is the emphasis and time spent refining the program for drivability and enjoyment. Much more a 'real world' gain than full throttle horse power runs on a dyno, part throttle refinement is a gain everyone uses every time they drive the vehicle. Flat spots and poor off the line performance are smoothed out in this process, and transient throttle conditions are made razor sharp for the ultimate in response. Real time changes to tables like throttle response and power enrichment are done on road to fine tune the driving experience of the vehicle, with acceleration timing equipment used to ensure consistent and measurable gains in part throttle drivability.



Driveability

Beyond the impressive torque and power gains on full throttle, many hours were spent refining the part throttle timing maps for maximum throttle response and driveability. Both the full throttle and part throttle maps are changed for improved driveability in day-to-day driving.

In other words, you don't need to be on the racetrack to notice the Powerchip performance improvement.

Manufacturers Tolerances

Volvo unfortunately leaves large tolerances in the performance characteristics of its entire fleet to allow for drivers that are negligent on maintenance, and who are non-enthusiasts. The S60R 2.5 AWD Manual is 'de-tuned' to be able to run on the poorest grade of fuel that the car is likely to encounter anywhere in the world, and also to allow for the small percentage of owners who put their cars reliability to the test due to their lack of mechanical understanding. In most cases, our clients are enthusiasts who place more emphasis on the performance characteristics of their vehicle, and therefore the Powerchip does not need to be programmed as conservatively as the stock software.



Modified Spark Advance

In the old days the ignition distributor controlled the engine spark timing. Changes to the position in the distributor will result in changed ignition settings, and is a good method of 'tune-up' for older vehicles. Modern engine ignition is controlled by a series of tables or maps. These maps give the engine any instructions required to operate, under ALL load and rev per minute access points.

Similar to the old systems, advancing the point of ignition within a cylinder results in increased horsepower and torque. It is important not to advance the timing beyond the capabilities of the fuel used, or else detonation can occur. Peak horsepower is achieved when ignition timing is set as close to the point of detonation as possible, without exceeding it. This is the primary purpose for asking the octane rating each client uses most frequently, so that the software is set to the correct level of ignition advance for the fuel used.



The end result of ignition advance changes is increased horsepower and torque, resulting in better acceleration and various other driving benefits.

49 State Emissions Legal

The Powerchip complies with U.S. EPA Memorandum 1A, or it has not been found nor is believed to be unlawful for use under the provisions of the Clean Air Act. Currently, Powerchip is not legal in California for vehicles that may be used on a highway. Powerchip is currently undergoing testing for certification under the Californian Air Resources Board (CARB) exemption process.

Our Satisfaction Guarantee

Every Powerchip sold in North America comes with an unconditional 14-day money back guarantee. This ensures that the Powerchip will live up to your expectations, not ours! If for any reason you are unsatisfied with the Powerchip, you may return the Powerchip to your place of purchase for a full refund of the purchase price (not including shipping and handling, installation and removal etc.).

Our satisfaction guarantee offers you total peace of mind, and makes the purchase of the Powerchip risk free. By purchasing a Powerchip you have nothing to lose – and everything to gain!



Octane ratings

The Powerchip is designed to get the best from your engine, and to do this you must use a high performance fuel (91 Octane minimum). It is not possible to improve the performance on late model fuel injected vehicles using poor quality fuels, such as 87 or 89 octane. When ordering your Powerchip upgrade, your Power Consultant will ask you for the octane rating you would like your program to run.

Powerchip Gold 91 is designed to run on fuel with an octane rating of either 91 or 92. Powerchip Gold 93 is designed to run on fuel with an octane rating of 93 or higher. We highly recommend that you use the highest-octane fuel available to you, such as 92, 93 or 94 octane if a higher than 91-octane fuel is available.

Warranty

All Gold 93 Powerchips come with a three year, unlimited mile warranty, which means that if anything occurs with the Powerchip in that time, we will replace it without charge to you. An optional extended Powerchip warranty is also available at an additional \$90 at the time of ordering. This extends the warranty period on any Power chip to six years.

The terms and conditions of the Powerchip warranties can be viewed in detail on our web site at

<http://www.powerchipgroup.com/products/warranty.asp>

To briefly summarize the information: if your car is covered by a new or dealer warranty, the dealer may not 'void' a warranty simply because you have fitted an aftermarket product. SEMA, the automotive aftermarket industry body in North America has made the following statements regarding aftermarket products such as performance chips...

"The vehicle manufacturer is not allowed to void the vehicle warranty just because aftermarket equipment is installed on the vehicle..."

"...In cases where such a failed aftermarket part is responsible for a warranty claim, the (vehicle) manufacturer must arrange a settlement with the part manufacturer, but the new vehicle warrant is not void under the law."

"If the failure to honor a claim involves the new-vehicle warranty, and it appears that the (vehicle) manufacturer is improperly denying a claim, the incident should be reported to the Federal Trade Commission (FTC)."

The fitment of the Powerchip will not have a detrimental effect on your vehicle performance or engine longevity, and therefore does not interfere with the manufacturers warranty in any way.



Value for a Lifetime

The investment you make in the Powerchip will last for as long as you keep your car, and for most of our customers, that is normally for 3 or 4 years. So when you consider the benefits of the chip over a number of years, it is not a lot to pay for extra performance you will probably use nearly every day. As a percentage of the total cost of your car, the Powerchip works out to be very cost effective.

Cost Effectiveness

As we all know, modifying late model vehicles is not a cheap exercise, however, when you look at it on a hp per dollar basis, the Powerchip comes in ahead of any other modification you could make to your Volvo. Have a look at just how well the Powerchip stacks up:

Price	\$990
hp Gain	42 hp
Price/hp	\$23.57



The Powerchip is designed to offer excellent value for money compared with other modifications you might be planning in the future.

COST USD(\$) (not including shipping/handling)			
Bronze	Silver	Gold 91	Gold 93
N/A	N/A	\$990	\$990

Ask the Experts

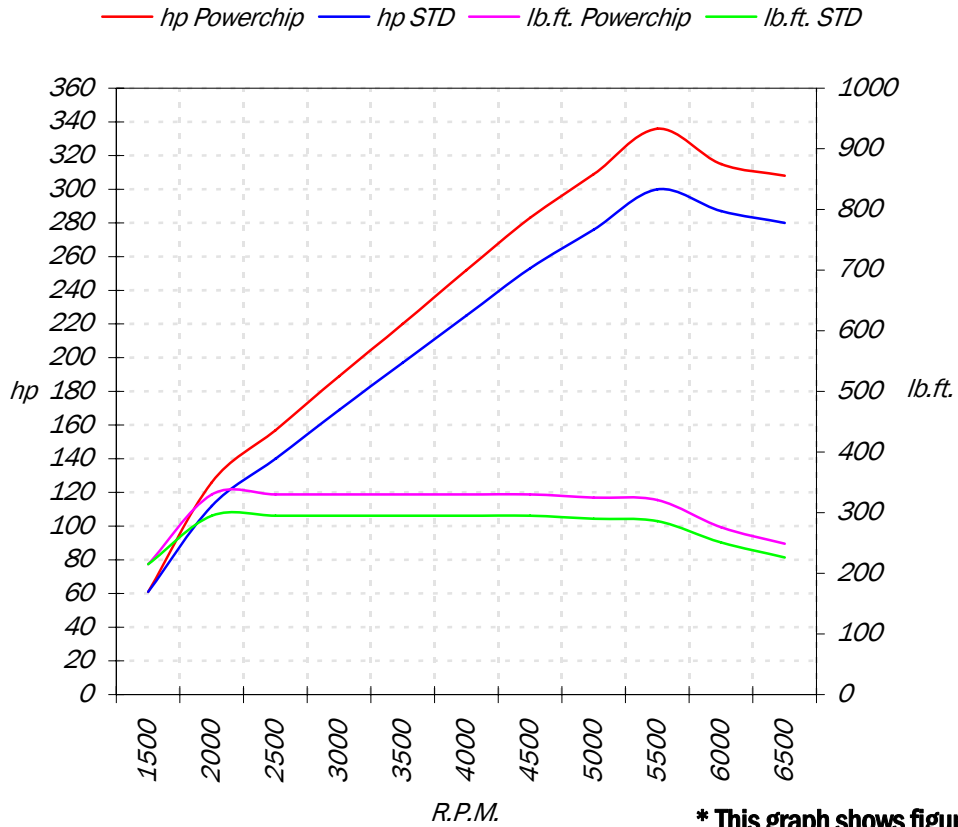
Your Powerchip Power Consultant is trained to provide you with the best information about getting more performance for your car. We have a specific Power Consultant who is responsible for the Volvo range, and he is an expert at answering all of your technical questions, especially about the S60R 2.5 AWD Manual. If you would like to speak with your Power Consultant about any aspect of the upgrade, please telephone Toll Free North American headquarters in California on 1800-495 0777 or email your Volvo Power Consultant directly at tcattach@powerchipgroup.com

© Powerchip Group, All Rights Reserved. Reproduction by any means is prohibited.

Gold 91 Performance Data for your...

Volvo S60R 2.5 AWD Manual *

R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft. STD	lb.ft. Powerchip	lb.ft Gain
1500	61	61	0	215	215	0
2000	112	126	14	295	330	35
2500	140	157	17	295	330	35
3000	169	189	20	295	330	35
3500	197	220	23	295	330	35
4000	225	252	27	295	330	35
4500	253	283	30	295	330	35
5000	276	309	33	290	325	35
5500	300	336	36	286	321	35
6000	287	315	28	251	276	25
6500	280	308	28	226	249	23



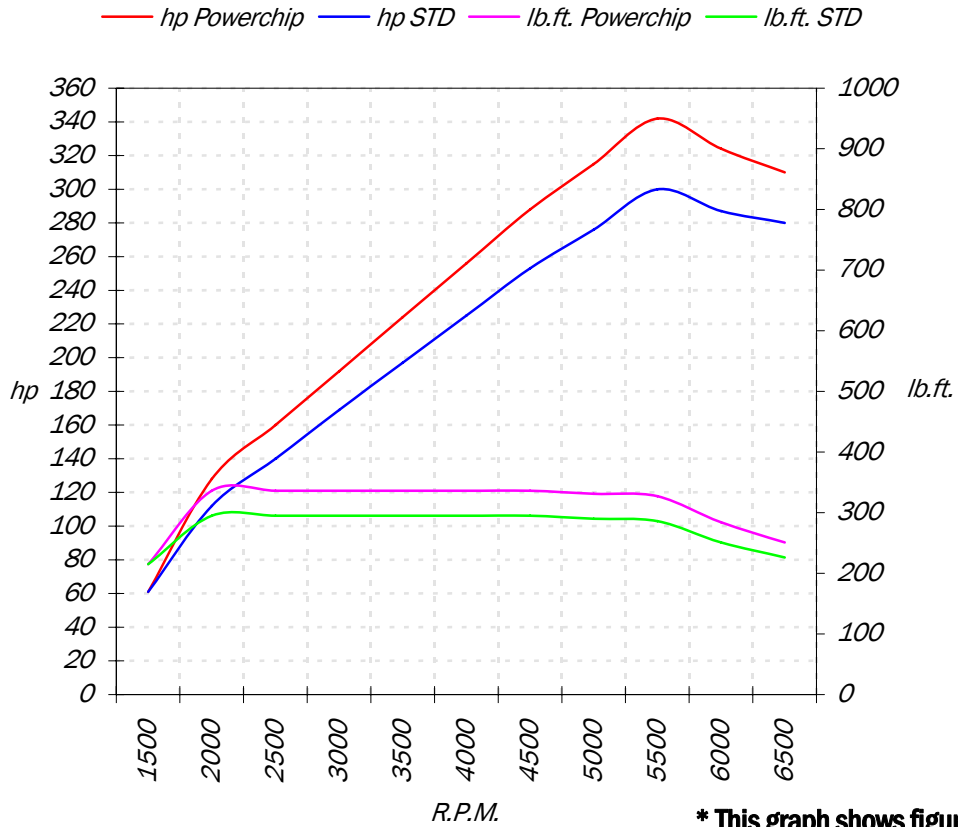
*** This graph shows figures for Powerchip Gold 91**

MODEL	ENGINE	VERSION	CAPACITY	Max hp	Max lb.ft.	0-60 Auto	0-60 Man
S60R 2.5 AWD Manual		Standard	2521cc	300	295	N/A	N/A
S60R 2.5 AWD Manual		Gold 91	2521cc	336	330	N/A	N/A

Gold 93 Performance Data for your...

Volvo S60R 2.5 AWD Manual *

R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft. STD	lb.ft. Powerchip	lb.ft Gain
1500	61	61	0	215	215	0
2000	112	128	16	295	336	41
2500	140	160	20	295	336	41
3000	169	192	23	295	336	41
3500	197	224	27	295	336	41
4000	225	256	31	295	336	41
4500	253	288	35	295	336	41
5000	276	315	39	290	331	41
5500	300	342	42	286	327	41
6000	287	324	37	251	284	33
6500	280	310	30	226	251	25



*** This graph shows figures for Powerchip Gold 93**

MODEL	ENGINE	VERSION	CAPACITY	Max hp	Max lb.ft.	0-60 Auto	0-60 Man
S60R 2.5 AWD Manual		Standard	2521cc	300	295	N/A	N/A
S60R 2.5 AWD Manual		Gold 93	2521cc	342	336	N/A	N/A

Customer Testimonials

Customer Name: C L, Los Alamos

Car: S60R 2.5 AWD Manual

Testimonial added: Mar 11 2005

Customer Comments:

"The boost is now much better and I think I could take a Porsche on now!!

but i still got room to put 3 kids in the back :)

Thanks for the good work!"

Customer Name: Herb N, Indio

Car: S60R 2.5 AWD Manual

Testimonial added: Feb 25 2005

Customer Comments:

"I drove to Santa Monica to have my chip installed (I had just taken delivery of the car earlier that week). I then drove in heavy traffic to Monrovia to pick up and install the Evolve sport exhaust. When I finally got to an open road, I was astonished at the performance improvement... I cannot help but drive aggressively (when safe to do so, of course). I did remove the sport exhaust system for a couple of weeks when I brought the car in to the dealer. I did not want to send out red flags to the dealer to cue them to ask me if I chipped it (I am a terrible liar). Yes, I am nervous about warranty issues and, because I cannot lie when asked, I will probably put on stock exhaust for dealer service appointments. There is a rumor on Swedespeed that Powerchip will have a software loading device for consumers so that the consumer can tune / de-tune their chips without having the chip sent to Santa Monica. Is that true? Overall, I am very pleased with my purchase and the professionalism I have encountered with Powerchip. Thank you"