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Digital Adrenaline For Your...
Land Rover Discovery 4.6 V8



Powerchip technology enhances your Land Rover 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 Discovery 4.6 V8.

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 Land Rover.

Make	Land Rover
Model	Discovery 4.6 V8
Engine	55D
Year	Jan 03 to Dec 04
Powerchip Code	LAN0020



Power

In standard form the Land Rover Discovery 4.6 V8 produces 217 hp at the flywheel, and Powerchip improves the engine power to 236 hp.

Power (hp)			
Standard	Bronze/ Silver	Gold 91	Gold 93
217	N/A	234	236

The extra performance achieved by the Powerchip allows your vehicle to respond much better than stock Discovery 4.6 V8s. 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 Land Rover'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
300	N/A	321	327



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 Discovery 4.6 V8.

Fitting Details

Your car utilizes a soldered chip (EPROM). In addition to being soldered to the computer, the chip's software is specifically coded to each vehicle (VIN#), and in most cases the Powerchip software must be matched specifically to each chip. This ensures the integrity of each program, and can also assist with the servicing of your vehicle in the future. The Powerchip upgrade includes the modification and de-soldering of the computer board so that the chip will have a plug-in socket installed. This then means that changing chips in the future is simple and can be done at any time.

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

Land Rover 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 Discovery 4.6 V8 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.

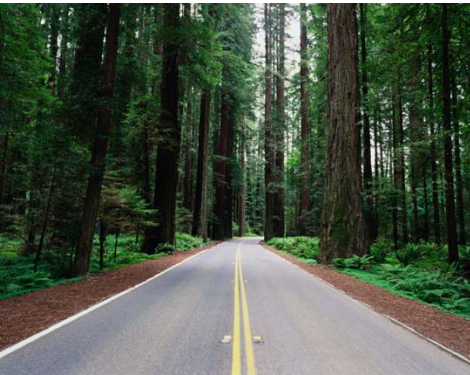
Powerchip Gold 91 is designed to run on fuel with an octane rating of either 91 or 92. Powerchip Gold 93 is designed to run on fuel with an octane rating of 93 or higher. We highly recommend that you use the highest-octane fuel available to you, such as 92, 93 or 94 octane if a higher than 91-octane 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 Land Rover. Have a look at just how well the Powerchip stacks up:

Price	\$490
hp Gain	19 hp
Price/hp	\$25.79

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	\$490	\$490

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 Land Rover range, and he is an expert at answering all of your technical questions, especially about the Discovery 4.6 V8. 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 Land Rover Power Consultant directly at tcattach@powerchipgroup.com

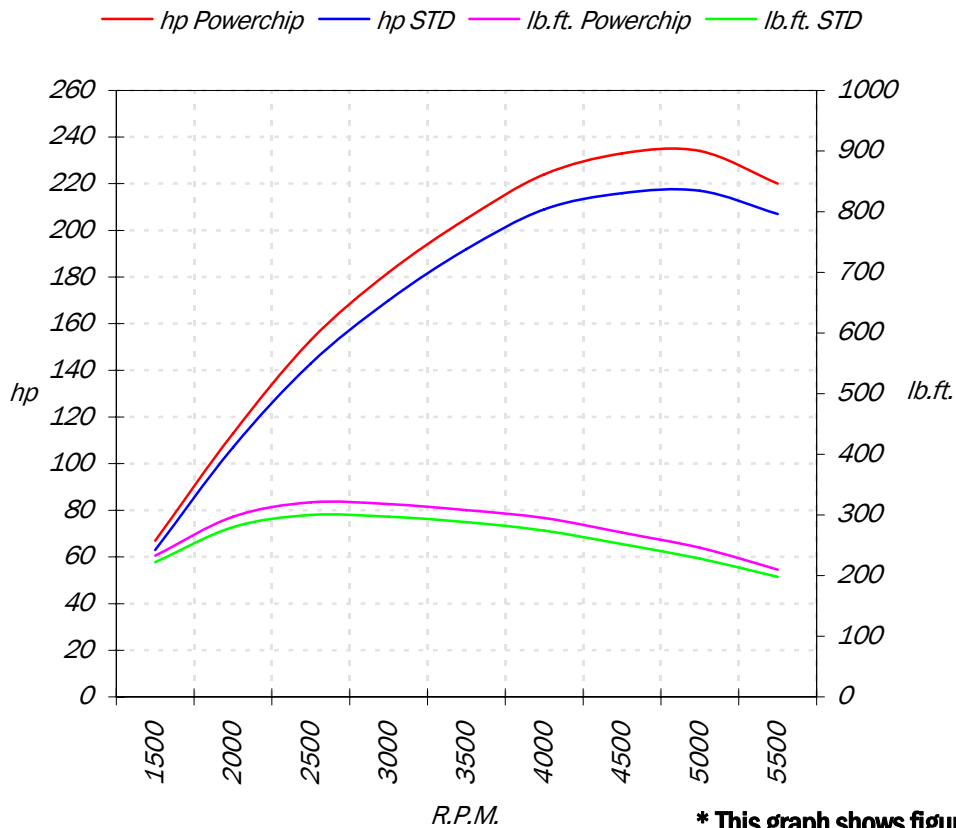
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Gold 91 Performance Data for your...

Land Rover Discovery 4.6 V8 *

R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft. STD	lb.ft. Powerchip	lb.ft. Gain
1500	63	67	4	222	233	11
2000	107	113	6	280	297	17
2500	143	153	10	300	321	21
3000	170	182	12	297	318	21
3500	192	205	13	288	308	20
4000	209	224	15	274	295	21
4500	216	233	17	252	271	19
5000	217	234	17	228	246	18
5500	207	220	13	198	210	12



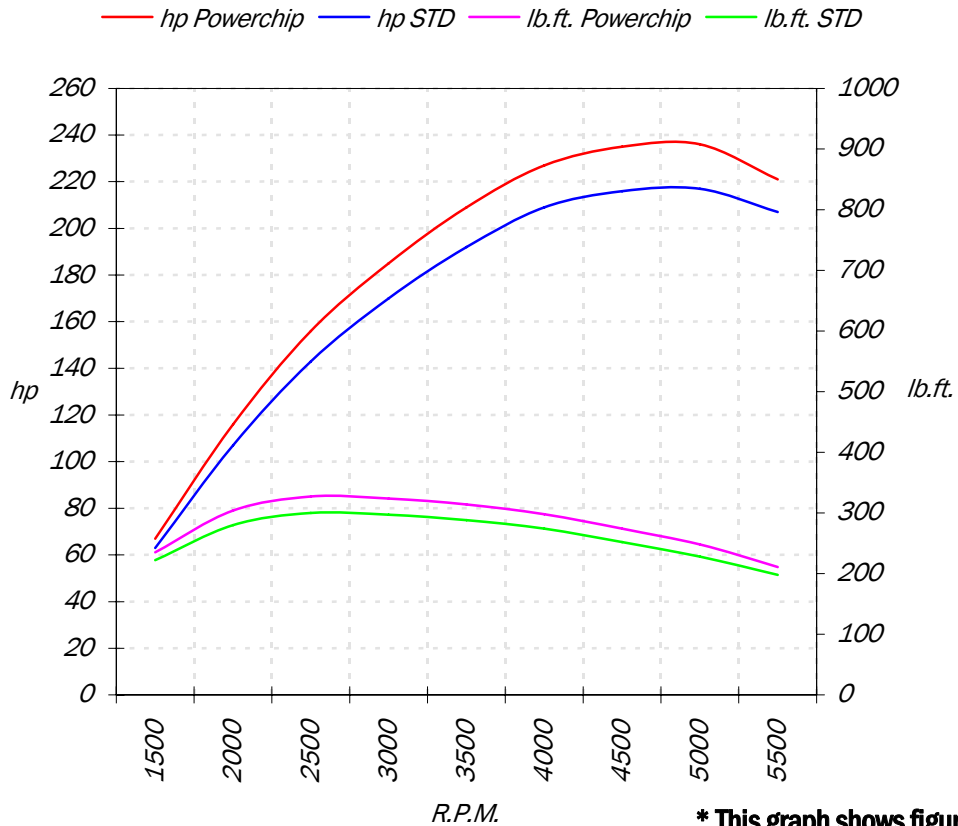
* This graph shows figures for Powerchip Gold 91

MODEL	ENGINE	VERSION	CAPACITY	Max hp	Max lb.ft.	0-60 Auto	0-60 Man
Discovery 4.6 V8	55D	Standard	4554cc	217	300	N/A	N/A
Discovery 4.6 V8	55D	Gold 91	4554cc	234	321	N/A	N/A

Gold 93 Performance Data for your...

Land Rover Discovery 4.6 V8 *

R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft. STD	lb.ft. Powerchip	lb.ft. Gain
1500	63	67	4	222	235	13
2000	107	116	9	280	304	24
2500	143	156	13	300	327	27
3000	170	185	15	297	324	27
3500	192	209	17	288	314	26
4000	209	227	18	274	298	24
4500	216	235	19	252	274	22
5000	217	236	19	228	248	20
5500	207	221	14	198	211	13



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

MODEL	ENGINE	VERSION	CAPACITY	Max hp	Max lb.ft.	0-60 Auto	0-60 Man
Discovery 4.6 V8	55D	Standard	4554cc	217	300	N/A	N/A
Discovery 4.6 V8	55D	Gold 93	4554cc	236	327	N/A	N/A

Customer Testimonials

Customer Name: Tom O, Agoura Hills

Car: Discovery 4.0 V8

Testimonial added: Aug 16 2003

Customer Comments:

"I am pleased with the results of chipping my 96 Land Rover Discovery. I no longer have to drive around town in 3rd rather than leaving it in Drive, in order to have good responsive performance. Acceleration from a stop is crisp, unstrained. Performance on uphills is much better than before. Rather than the total dog it was around town, I feel like I am driving a normal car, that when placed in low range for offroad, is now even more unstoppable!"

Best regards,

Tom O"

Customer Name: Trevor T, Altadena

Car: Discovery 4.0 V8

Testimonial added: Aug 26 2003

Customer Comments:

"My vehicle is actually a 1997 Land Rover Defender 90 4.0 V8 (not a Discovery).

One month into the Powerchip era, I've noticed a definite improvement in my truck's performance, both in terms of highway acceleration (I can actually pass the big-rigs now!) and low-end torque offroad (e.g., on steep hill-climbs).

Must surprisingly, these gains have not come at the expense of fuel economy. In fact, I seem to be getting about 10% more miles per gallon (although that only represents an improvement from 10mpg to 11mpg....)

All in all, I'm very satisfied."

Customer Name: William W, Prescott

Car: Discovery 4.0 V8

Testimonial added: Nov 17 2004

Customer Comments:

"I reinstalled the Ecu with the Powerchip installed and departed the next day on a 900 round-trip to Denver. Most of the miles were driven at an altitude of 5,000 to 9,000 feet and the Disco performed as advertised.

I have previously owned 5 Landrover/rangerover models and my complaint has been the lack of power for all models. The Power-chip has provided me with a quick fix. It will be installed in my next Landrover/Rangerover or any other model car I will own.

Customer service has been outstanding."

Customer Name: D. O, Los Angeles

Car: Range Rover 4.6 V8

Testimonial added: Apr 21 2004

Customer Comments:

"The chip in my Range Rover made a big difference in performance and pickup. I'm especially pleased with the throttle response from stand still and the power gains going uphill. I notice there is less hunting in the transmission when going uphill. Overall I am very satisfied."