



Digital Adrenaline For Your...
Range Rover
Discovery
Defender
3.9L



Powerchip Inc.

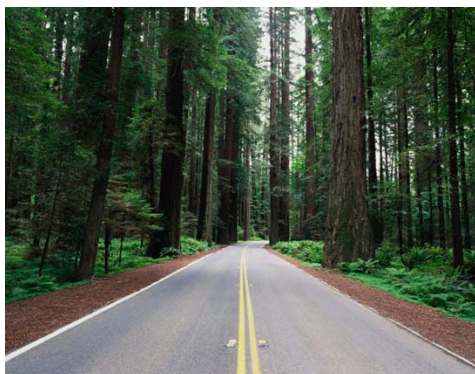
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This data sheet explains why the POWERCHIP is the best way of improving your vehicle, to give you faster, smoother acceleration, in all conditions.

Make	Land Rover
Model	3.9L
Engine	37D/38D
Powerchip Code	LAN0006



Power

In standard form the Land Rover 3.9 L produces 182 hp, however the addition of a Powerchip will improve the engine power to 205 hp.

Power (hp)			
Standard			

The extra performance attained by the POWERCHIP, means that your car responds so much better than a standard 3.9 L. You will find the car responds with less effort, really pushing you back in the seat, to give you a much more enjoyable and safe driving experience. The POWERCHIP will tap into your Land Rover's 'hidden reserves', for more punch, more pull, and more driving fun - and you really notice the power increase!

Torque

*Torque is a measurement of your engines pulling power, and it's torque that pulls you up hills. With the POWERCHIP, you really notice the increase in torque right throughout the rev range, giving you far greater flexibility at low engine revolutions. Towing will become effortless, and you will no longer **need** to take the engine to the redline in each gear to get the performance you demand...It's always on tap for when you really need it!*

Torque (lb.ft)			
Standard	Bronze/ Silver	Gold 91	Gold 93
232	232	252	259



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.

Maybe 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 an unfair advantage to give you more of an leap away from the lights, you need a POWERCHIP for your 3.9 L.

Fitting Details

Your car uses a soldered chip. Fitting takes about 1 hour and can be performed by a Powerchip Authorised Fitter, who are available in most areas. The Powerchip is currently in stock and can be delivered by next day courier.

Manufacturers Tolerances

Land Rover de-tunes its cars to allow for drivers that do not service their cars regularly or those who are non-enthusiasts. The 3.9 L 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 knowledge. In general, our clients are enthusiasts who place more emphasis on the performance of the vehicle, and as such the POWERCHIP does not need to be programmed as conservatively as the standard software.



Modified Spark Advance

The Powerchip modifies the ignition timing on the 3.9 L where possible on both part and full throttle to ensure the car is running at optimum tune throughout the rev range. We are able to achieve significant gains because of the time spent adjusting these settings for optimal performance.

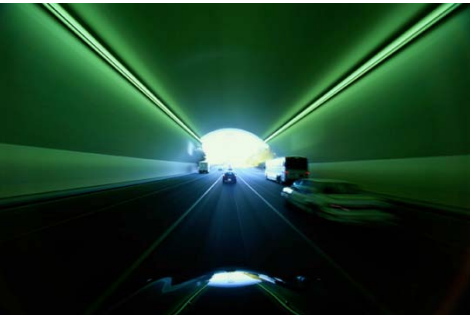
Driveability

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.

So you don't need to be on the racetrack to use the POWERCHIP and to notice the improvements in the way the car responds.

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.



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).

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 loose.

Warranty

The Powerchip Gold 93 comes with a thirty six month warranty, offering you peace of mind knowing that if anything happens to 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. An optional Powertrain Warranty is also available for \$190 at the time of ordering your Powerchip. This would cover damage to the drivetrain in the unlikely event of damage caused by the Powerchip.

The terms and conditions of the Powerchip warranties can be viewed in detail on our web site at <http://www.powerchipgroup.com>.



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 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. ..."

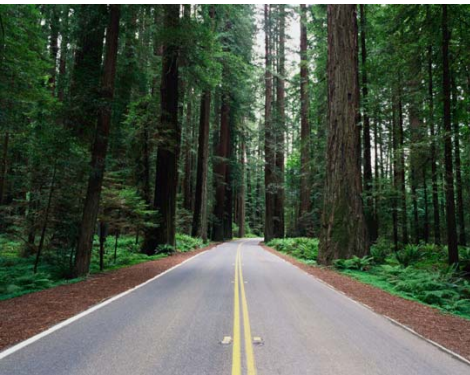
"...In cases where such a failed aftermarket part is responsible for a warranty claim, the (vehicle) manufacturer must arrange a settlement with the part manufacturer, but the new vehicle warrant is not void under the law."

"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)."

Octane ratings

The Powerchip is designed to get the best from your engine, and to do this you must use a good quality of fuel. It's simply not possible to get more power from late model fuel injected cars using poor quality fuels, such as 87 octane.

The Powerchip takes advantage of the tolerances that motor manufacturers build in to allow the car to run well on poor fuel. By removing this tolerance, the additional spark advance of a Powerchip unleashes the potential that is locked away with the restrictive factory presets.



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.

The minimum octane fuel that can be used with the Powerchip is 91 octane. We 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.

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. As a percentage of the total cost of your car, the Powerchip works out to be very cost effective. Also, with the Powerchip, you can expect your car to command a higher price when it comes to sell your car.

Cost Effectiveness

As we all know, modifying late model vehicles is not a cheap exercise, however, when you look at it on a horsepower 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	23 hp
Price/hp	\$21.3

As you can see, the POWERCHIP is excellent value for money compared with other modifications you might be planning in the future.



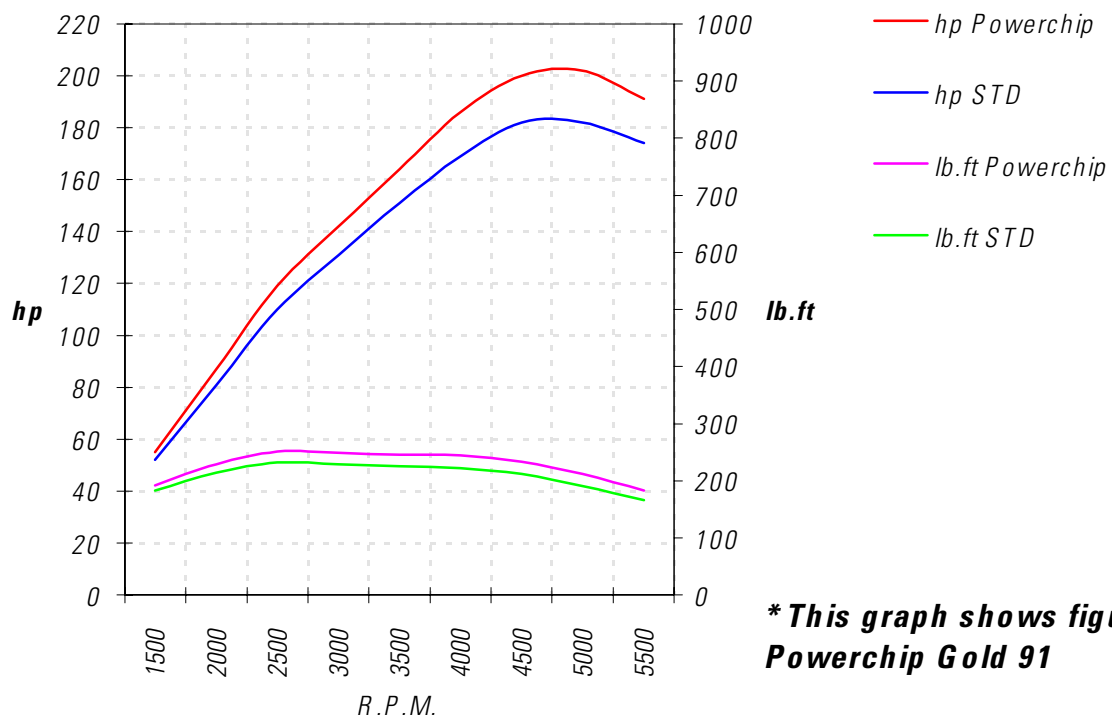
COST USD(\$)			
Bronze	Silver	Gold 91	Gold 93
\$390	\$440	\$490	\$490

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 3.9 L.

Gold 91 Performance Data for your...
Land Rover 3.9L *

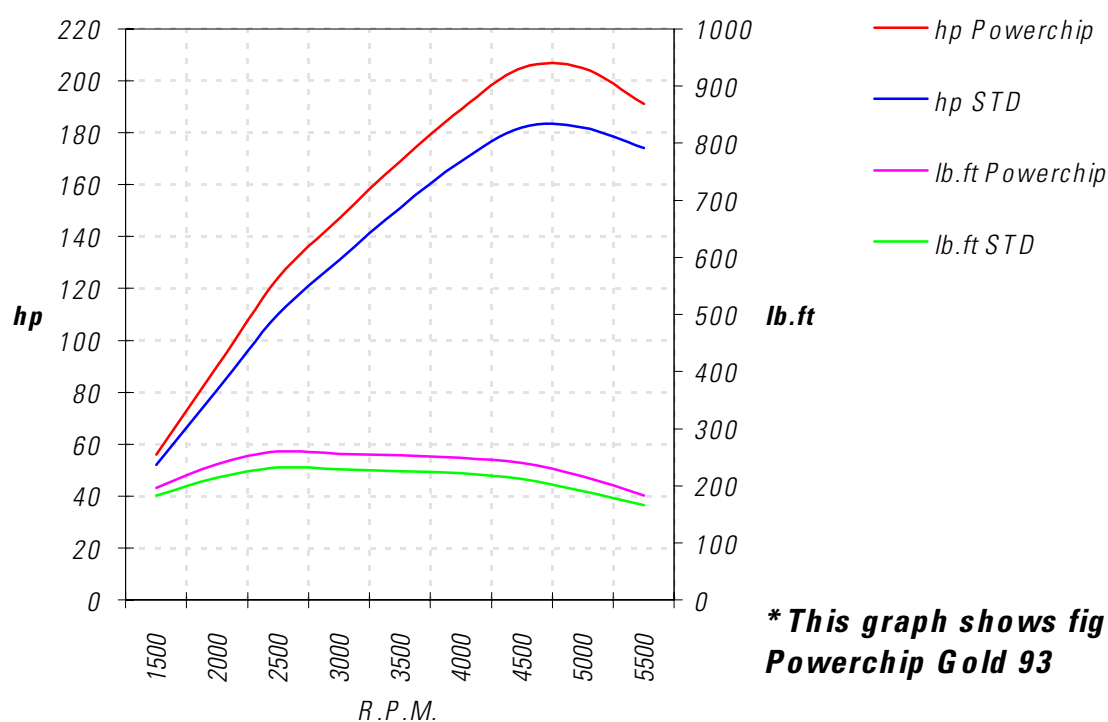
R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft STD	lb.ft Powerchip	lb.ft Gain
1500	52	55	3	183	192	9
2000	81	87	6	214	229	15
2500	110	119	9	232	251	19
3000	131	142	11	229	249	20
3500	151	164	13	226	246	20
4000	169	186	17	222	244	22
4500	182	200	18	212	233	21
5000	182	202	20	191	212	21
5500	174	191	17	166	183	17



MODEL	ENGINE	VERSION	CAPACITY	Max hp	Max lb.ft	0-60 Auto	0-60 Man
3.9 L	37D/38D	Standard	3950cc	182	232	17.0	N/A
3.9 L	37D/38D	Gold 91	3950cc	202	252	16.4	N/A

Gold 93 Performance Data for your...
Land Rover 3.9 L *

R.P.M.	hp STD	hp Powerchip	hp Gain	lb.ft STD	lb.ft Powerchip	lb.ft Gain
1500	52	56	4	183	196	13
2000	81	90	9	214	238	24
2500	110	124	14	232	260	28
3000	131	147	16	229	256	27
3500	151	169	18	226	253	27
4000	169	189	20	222	249	27
4500	182	205	23	212	240	28
5000	182	205	23	191	216	25
5500	174	191	17	166	183	17



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3.9 L	37D/38D	Standard	3950cc	182	232	17.0	N/A
3.9 L	37D/38D	Gold 93	3950cc	205	259	16.2	N/A



Fitting Instructions

Range Rover, Discovery 3.9

Tools Required.

- 10mm Socket with extension
- Flat Blade Screwdriver
- Torx 15, 20, 25
- Very Small Flat Blade Screwdriver

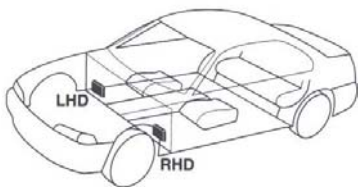
Locating & Access To ECU.

Allocate 45 minutes towards the installation and testing of the POWERCHIP. It should be done when you are not rushed for time, and can concentrate on the installation.

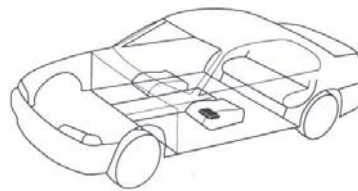
The car is fitted with a LUCAS manufactured E.C.U, and is black in colour.

Early models: This is located under the drivers seat.

Late models: Drivers Side under dash mounted on A - Post.



Late Model



Early Model.

Release the E.C.U. cable plug by carefully unclipping the catch and swinging it through 90 degrees. The black plastic connector will now be loose, and may be eased out of the socket.

Use the 10mm socket with the extension to remove the four 10mm bolts which hold the E.C.U. to the underdash of the car. Two of the four are hard to get at, but persistence will help. Remove the E.C.U. from the car and place it on a clean work bench.

Removing Standard Chip.

The Range Rover 3.9 uses a soldered chip, it is not plug in/pull out as fitted at the factory.

The circuit board is now visible. The standard chip has a silver sticker on it, and it contains 14 pins on each side, total of 28 pins.

De solder the standard chip using a soldering station. This must be performed by a professional. Please note the notch on the chip, as it indicates the direction. The socket should then be soldered in place.

Plugging in Powerchip.

Now Take the POWERCHIP

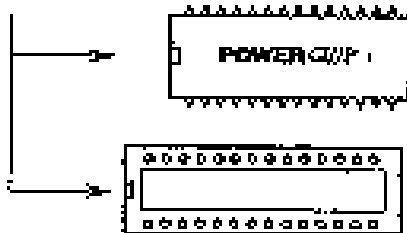


Place the chip over socket, with **be sure that:**

1. The chip is the right way round (check the way the chip is pointing).
2. All the pins line up exactly to go into the holes in the socket. It may be necessary to bend the pins slightly to get them to line up. The POWERCHIP must be inserted so that the divot on the chip and the divot on the socket are on the same side.



Ensure that chip's
'divot' is located
on same side as
socket's divot.



When you are happy with the position of the pins, gently push it into the socket. Make sure the pins go straight into the holes. (The chip may 'click' into place when it is fully in.)

Final Checks.

Reassemble the E.C.U., fix it back to the car and re-connect the cable connector. Make sure the clip goes fully home. If it does not it means that the connector is not engaging properly. **Make sure the car idles before putting the ECU back in place.** Start the car and make sure the engine runs at idle. If this is ok the POWERCHIP is now successfully installed.