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Petrol engine swaps – the options

Will it be worth the cost?

This article is mainly directed at owners of Classic Range Rovers and Discovery 1 and 2 models. 2-door Range Rovers in particular have become “cult” vehicles and a fully restored 2-door may be worth in excess of \$100,000. Good 4 door models are also appreciating in value, so if the vehicle is in generally good condition, replacement of a worn engine will not only allow it to run entirely to the owner’s satisfaction, but the value may also be greatly enhanced.

The simplest “fix” for a 3.5 V8 is to change it to a 3.9 litre engine or even a reworked 4.6 engine. Vehicles already fitted with 3.9 engines can also be upgraded and/or have reworked 4.6 engines installed. Neither are cheap options, but the results are frequently outstanding. Additionally, the work is usually less expensive than replacing the vehicle, by the time all associated costs are taken into account – like insurance, financing etc. The outcomes are also predictable, whereas replacing one vehicle with another may not always be the better option.

So what is possible?

At the “extreme end” of the quest for power, one can, of course swap to almost any engine if one has the time and money. There are several examples of owners dropping in large American V8 power plants but the added weight requires modification to the power train and suspension to handle the extra weight and torque – not a job for the financially challenged!

Less adventurous options including reboring, changing the camshaft, the ignition module and making other substitutions but each case must be assessed on its merits. Such modifications may increase the torque and overall power to the wheels by as much as 30%.

Arguably, a better option is to change the power unit wither to a 4.0 litre or 4.6 litre engine taken from the P38 Range Rover. The major problem will be finding a suitable donor engine. If they were any good, they would probably not be available in the first place but regardless, complete reliability will only be achieved by a thorough rebuild that will include the fitting of “top hat” liners, cross-bolted mains, reworked heads, filters, gaskets, and so on.



Stepped liners

The process

As an indicator of what is required to upgrade a 4.0 or 4.6 engine, consider the following list of parts and add 4 or more days of workshop time: The list also assumes the heads, inlet manifold, injectors etc on the existing vehicle are fully functional and can be reused and/or repaired:

- Donor engine block – cleaned and inspected, rebored and fitted with stepped cylinder liners
- Replacement or re-machined crankshaft
- Replacement pistons (with option for high or low compression)
- Piston rings
- Camshaft
- Full set of bearings
- Timing chain
- Reconditioning of cylinder heads probably with new valves, guides & springs
- New head bolts
- Oil seals
- Heater and coolant hoses
- Thermostat
- Oil pressure switch
- Full set of gaskets & O-rings
- Grease, Oils
- Filters



A 4.0 or 4.6 litre engine and some of the parts required to complete the rebuild

Graeme Cooper Automotive has years of experience rebuilding and upgrading engines and will ONLY do the job without shortcuts!

The best solution is to engage in a serious dialogue with a workshop with proven practical experience in modification and upgrade work - certainly available from the specialists at Graeme Cooper Automotive.

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