

**MOTOR SPORT****SECTION XA - ELISE '96 - '00 M.Y.**

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XA.1 - INTRODUCTION

Lotus Cars is marketing a range of performance products for the Elise, aimed primarily at competition and/or track use of the vehicle. Some of the kits may be used alone, but others may be recommended for use only in conjunction with other complimentary kits. Using the car on the public highway with competition parts fitted may contravene emission and/or noise regulations and invalidate insurance cover. In addition, the specification will be compromised in terms of comfort and refinement, and demand increased maintenance and service. In most cases, the standard vehicle warranty will not apply after the fitment of 'off road' or 'competition' oriented parts.

XA.2 - 190 VHPD ENGINE

The 190 VHPD (Very High Performance Derivative) engine is designed for motorsport track use only, and may not comply with emission regulations. The unit is based on the same 1.8 litre Rover 'K series' block as the standard engine, but with a revised cylinder head featuring new inlet and exhaust camshafts, solid tappets, and new throttle bodies providing individual throttle butterflies for each cylinder and a competition type oiled foam air cleaner. The engine bottom end includes forged pistons, strengthened connecting rods and crankshaft, and a lightened flywheel. A reprogrammed ECM is an integral part of the package. The preferred fuel is 98 RON unleaded ('Super Unleaded'), although 95 RON is useable. Oil recommendation is Mobil 1 5W/50 fully synthetic after running in on a good quality mineral oil.

Output: Max. power; 190 ps @ 7,500 rpm
Max. torque; 189 Nm @ 5,600 rpm

The engine is supplied only as a complete assembly for competition use, and does not carry the normal vehicle or parts warranty. Included in the engine package are:

Engine harness and new ECM with matched security 5AS module.
Exhaust manifold (unchanged).
Inlet manifold, throttle bodies and competition air filter. Air filter oil aerosol.
Fuel rail and injectors.
Alternator and auxiliary belt (unchanged).
Lightened flywheel (no clutch).
Engine mounted water rails.
Oil filter.
Ignition coil, spark plugs and H.T. harness.

Engine Fitting Kit

The additional parts required in order to fit the VHPD engine, are contained in fitting kit A111E0034J, and comprise:

- Carbon fibre cold air box and trunking. Requires removal of boot bulkhead to accommodate the air box, and cutting down of the standard air filter mounting plate for the trunking. The charcoal canister also requires removal, with a corresponding modification to the filler neck breather hose routing.
 - New throttle cable.
 - New fuel feed and return pipes with clips.
 - Crankcase breather pipe kit.
 - Throttle cable 'U' bracket.
 - Cobra immobiliser bridging plug.
- Unless already so equipped, the later type closer finned (20 f.p.i. instead of 16 f.p.i.) engine cooling radiator must also be ordered and fitted - A111K0021F.

Additional parts strongly recommended:

In order fully to exploit the performance of the VHPD engine, it is strongly recommended to fit the following components:

- Oil cooler kit (A111K0037S).
- Competition silencer kit (A111S0037S) and catalytic converter substitution pipe (A111S0048S).

**XA.15 - YOKOHAMA A038-R COMPETITION TYRES**

The Yokohama A038-R tyre has been jointly developed by Lotus and Yokohama specifically for the Lotus Elise, and whilst the specification is optimised for track use, the tyre is road legal in the U.K. and Europe. The tyre offers a high level of grip in both dry and wet track conditions combined with good braking performance. The water clearing ability of the tyre is limited in standing water, such that appropriate allowances should be made in these conditions. For competition use, the eligibility of the tyre should first be checked with the appropriate organising authority. Note that the tyre tread pattern is directional, with the correct rotation marked by an arrow on the sidewall.

The potential chassis loadings provided by this tyre require that it be used only in conjunction with the sport road spring and damper set, lowered ride height, specific suspension geometry (with increased negative camber), uprated front anti-roll bar and, on cars with extruded alloy rear hub carriers, Uniball rear toe link kit. The tyres should be mounted on factory approved Elise 'race' wheels (6J front, 8J rear) in order to provide good tread stability for ultimate performance.

Tyres

Tyre designation		Yokohama A038-R
Size	- front	195/50 R15 82V (K-5243)
	- rear	225/45 R16 89W (K-5244)
Pressure (cold)	- front	1.6 bar (23 lb/in ²)
	- rear	1.7 bar (25 lb/in ²)

Suspension Geometry

Refer to sub-section XA.8 to set the chassis to the lowered ride height of 100/110mm front/rear, and to set the steering rack height and rear bump steer shimming. The following suspension geometry setting is recommended for dry circuit use:

<i>Item</i>	<i>Specification</i>	<i>Tolerance</i>	<i>Max. difference side/side</i>
Front Camber:	- 1.8°	+ 0.1°, - 0.2°	0.2°
Front Caster:	+ 3.8°	± 0.2°	0.2°
Front Toe:	0.5mm toe out overall	+ 0.2mm, - 0	
Rear Camber*:	- 2.7°	+ 0.2°, - 0.2°	0.2°
Rear Toe:	2.5mm toe in each side	+ 0.2mm, - 0	

* It may be necessary to machine the top ball joint plinth in order to attain sufficient negative camber.