

# गठकथा

Part 8 of 9





**Welcome to Get To Know Your 7. This is a download copy of a series of articles looking at the essentials of routine maintenance for your Seven. These first appeared in the Lotus 7 Club magazine 'Lowflying' between August 2010 and May 2011.**

**Each article will be a separate download and below is a table of contents as to which articles are in this series. The article you are currently looking at will appear in bold in the table of contents.**

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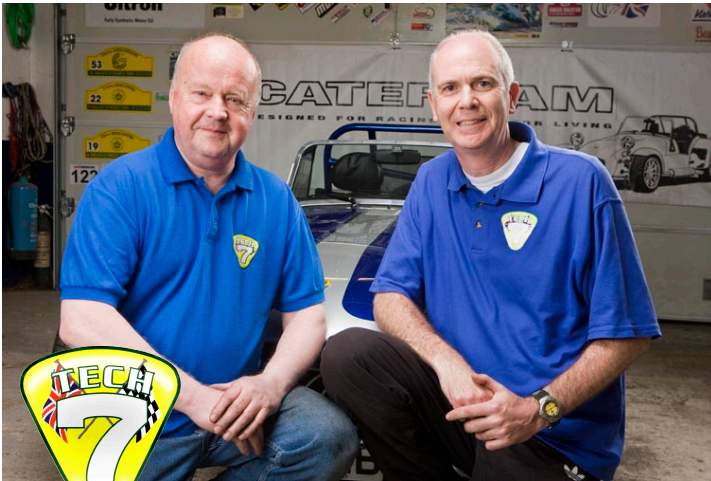
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In This issue we begin a major series looking at the essentials of maintaining your Seven. Even if you don't want to become a home mechanic, we hope this will encourage you to learn a little more about your car.

The notes for this series are prepared by **Andy Belcher, Rob Davis** and **Michael Calvert**, and the photographs are by **Jamie Jones**. *So, let us begin...*



Road & Track  
Engineering Solutions

*Andy Belcher (left) and Rob Davis*

## Introduction

**Owning a Seven** can bring you a wide range of experiences; one of these is the opportunity to carry out the servicing of the car yourself. Although many prefer to entrust the maintenance of their 'pride and joy' to one of the many specialist garages available, carrying out your own servicing can save you money, provide immense satisfaction and bring you a step closer to understanding the running of your car.

Over the coming months, this series of articles will build upon the theme of the Get to Know Your Seven (GTKY7) experience days which have been regularly organised through the Club, and extend into providing an overview of the basic tasks and procedures required to maintain your Seven.

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### **During this series, we'll be looking at the following:**

Raising and lowering the car

- including front and rear axle stand positions and trolley jack lifting points

Engine and transmission oil

- oil change for dry sump and wet sumps,
- oil filter removal and re-fitting,
- checking and topping-up gearbox oil,
- changing gearbox oil (specific models),
- checking and topping-up differential oil,

Front wheel bearings

- checking bearings for excessive play

Wheel and tyres

- checking tyre condition and tread depth,
- wheel nut re-tightening torques

Brakes

- checking condition of discs,
- checking brake pad thickness,
- changing brake pads,
- handbrake operation

Suspension

- general suspension security checks,
- lubricating trunnions (where appropriate),
- A-frame bush

Prop-shaft

- greasing universal joints on prop shaft (Series 3 and SV)

Fuel system

- checking fuel lines for security and leaks
- changing fuel filter
- carburettor balance and idle settings

Fluids

- checking coolant, brake and clutch fluid

Air filter

- checking and changing air filters

General inspection items

- exhaust condition, lights and bulbs, CV gaiters, hose condition and security, drive belts, headlight alignment, battery condition, engine mounts, wiper condition, seatbelts

Steering

- steering wheel alignment and play in steering rack

Vehicle underside condition



Safety is a very important issue when working on the car, so you must take the appropriate precautions; specific examples of this will be emphasised as part of this series. It goes without saying that no work on any safety related area should be undertaken unless the person undertaking that work is fully confident in being able to complete the tasks to the required standard. Certain more complex jobs, outside of routine servicing, should only be tackled by a competent professional, or at least with experienced help. If in doubt, a request for help on BlatChat or at your local Club meeting is more likely than not to result in the offer of assistance.

The CSR benefitted from many technical developments over Caterham's more traditional variants, including inboard front suspension, independent rear suspension (and a Cosworth-developed engine); the csr presents certain particular servicing considerations over the more familiar Series 3 cars. But as far as possible this series is targeted at the broad spectrum of Caterham owners across Series 3, SV and CSR variants.

Undertaking a yearly service will require you to have a basic knowledge of the workings of the car—however it does not require you to be a mechanic or expert. This series of articles will take you through the service procedure, identifying any specific tools and parts required. Relevant pictures will add to the understanding of the steps, along with particular safety instructions. For owners who have not undertaken such tasks before, or maybe are not confident at this stage, we hope to provide encouragement in understanding the workings of the Seven and a better understanding of what a garage would do on your behalf as part of the service regime.

We begin with a resumé of the main chassis types of the various Caterham cars—as those differences in configuration can dictate some differences of procedure.

### **The essential differences...**

The Caterham Seven has many different chassis and engine variants, so it is not possible to comprehensively cover every type here in great detail. Therefore, we will discuss general procedures and checks which should be applicable to most cars, highlighting where they are relevant only to certain cars. The most important thing to understand initially, therefore, is which car chassis and engine type you have...

**The Series 3** chassis has traditionally been the main version supplied by Caterham, but many designations have been used for different models within the Series 3 range, based on combinations of engine, major components and interior—these include the model names such as Supersprint, hpc, Classic, Supersport and Superlight.

The basic dimensions of Series 3 chassis can trace their origins to the Lotus Seven Series 3, although improvements such as the option of a 'Long cockpit' chassis from 1982, to improve comfort for the taller driver, and the introduction of the 'de Dion' rear suspension from 1985 in place of the 'live axle' were just some of the changes implemented by Caterham over the years.

Engines offered with the Series 3 chassis have been many and varied, but most popular over time have been Ford Crossflow (or 'Xflow'), Vauxhall 16v and 8v, Rover K-series, and most recently Ford Sigma.

**The SV** ('Series 5') chassis, whilst sharing similar external proportions to the Series 3, has increased length and width to provide added cockpit and storage space. These cars also use the de Dion rear suspension and are powered by Rover K-series and Ford Sigma or Duratec engines.

**The CSR** represents the latest chassis development (apart from subsequent detail changes to the s3) introduced in 2005 and is of different construction to the Series 3 or SV, with fully independent rear suspension and inboard, push-rod type, front suspension. The engine fitted to this car in the uk is the 2.3 litre Ford Cosworth Duratec; internationally, the 2.0 litre is now also available in eu4 variant.

In this issue we will be looking at Auxiliary drive belt; bulbs and switches; battery condition; seat belts; general security of fasteners and mountings

## Part 8: Raising the front and rear of the car



This is the final article (Except for the Postscript) in the Get to know your Seven series. We have enjoyed writing them and hope that you have found them informative—and that they have provided you with the necessary information and confidence to undertake some routine servicing for yourself.

Should you have further questions on these articles, or more detailed questions, the Club forum or the regulars at your local area meeting might quickly point you towards an expert or recommend a specialist garage who could help.

We will now run through some remaining checks required to complete an annual service routine on your Seven.

### Get to know your Seven:

Intro Issue/August 2010: The basics, the various types of Seven and their major differences.

1 August 2010: Working safely with the car raised off the ground.

2 September 2010: Oil and filter changes; a few words about wet and dry sump systems.

3 October 2010: Transmission lubricants.

4 November 2010: Front wheel bearings.

5 December 2010: Brake pads and discs, tyres and wheelnuts.

6 February 2011: Spark plugs and distributor; steering and driveshaft gaiters; steering column clamp; exhaust condition.

7 March 2011: Suspension; propshaft; air filter; fluid levels; fuel system; carburettors.

### Safety Points:

Most of the 'heavy' tasks are now done, but do continue to take care when working around the car.

If the car is to be raised off the ground, the safe use of jack and axle stands was covered in Part 1 of this series.

### Equipment required:

#### Tools:

- Bright torch
- Socket set
- Tape measure
- Masking tape
- possibly a torque wrench (see text)

#### Parts:

- Windscreen washer fluid

## **Ancillary drive belt**

The ancillary drive belt is often referred to as the alternator belt (or sometimes, still, the 'fan belt' from the days when they were frequently belt-driven) and is the vee or channeled/ grooved belt at the front of the engine, running around the alternator and several other pulleys (depending on engine type and how the ancillaries have been installed or modified). On a Ford crossflow engine, for example, this might typically be a toothed belt running around pulleys on the alternator and water pump.

If you hear the term 'poly-vee' or 'multi-vee' used, this just means the type with several grooves running all around the inside face of the belt.

Examine the condition of the belt using a bright torch and look for any signs of perishing, splits, cracks (usually on the inner face of the belt) or general wear. If this requires removal, it may be, dependent upon engine type, a relatively simple operation or something which is best undertaken by, or with the help of, an experienced person.

## **Security of bolts, fasteners and mountings**

This routine is sometimes referred to as a 'spanner check'. This entails running through the entire car checking all frame, suspension, and engine mountings and other logically important bolts.

Take your time and check these for general security and tightness. The safety-critical ones will have specific torque settings quoted for them (put very simply, think of that as a measure of how tight they are—it is possible to be too tight and overstress the nut and bolt assembly).

You could check what those settings are with someone who has a build manual, if you are unsure. A 'torque wrench' is the device used to achieve those settings and, whilst not absolutely essential kit, it's a nice thing to have if you like tools and want the reassurance of 'doing it right'.

## **Bulbs and switches**

This is a simple and legal requirement to undertake. It's best, and easiest, done with someone to help you. Check the operation of all side, main, indicator, license plate and brake lights (and rear fog and reversing lights if you have them).

Replacement of any bulbs is a simple operation (rather more so than on many modern 'conventional' cars) usually involving just the removal of the lens or the light casing and replacement with the correct wattage bulb.

**Inevitably, on a Seven, lights are little more vulnerable to ingress of moisture and light corrosion than on a more conventional car. Originally made for draughtsmen to remove ink from drawings on draughting film, a glass-hair pencil is great for cleaning up iffy electrical terminals, connectors and gungy fasteners or prepping for those little roadside soldering repairs that I'm sure most of you still do now and again... no? Ed.**



**For the toolbox... a glassfibre eraser**

## Seatbelts

Simple and important to do, whether they are conventional lap-and-diagonal inertia reel belts or four- or sixpoint harnesses. Firstly check each of the seatbelt anchor bolts for security and tightness, then run your fingers over the entire lengths of each of the belt webbing material looking at both sides for any signs of cuts, fraying or excessive wear. If in doubt, replace them.

## Battery condition

Safety note here—no smoking, or naked flames during this operation as batteries can give off hydrogen gas which is explosive in confined spaces. Also battery acid is very corrosive: take extreme care not to get any on your skin or in your eyes. Wash with copious quantities of water and seek medical assistance should this occur.

Checking the battery's voltage requires the use of a voltmeter and is done without the engine running. Connect the meter and check the voltage after the vehicle has been left standing overnight; minimum voltage should be no less than 11 volts. If your battery has removable cell caps, it is worth checking that the level of the electrolyte covers the tops of the battery plates.

You should now be able to hit the road again, with greater confidence that your car will be safe and dependable – and with sense of satisfaction too.

In issue 9, Windscreen wipers,  
and washers; headlamp  
alignment

