# cam journal

*The Official Newsletter of the*

## Lotus Car Club of British Columbia


*Volume 27, Issue 2* *LCCBC* *April-May-June, 2006*

1ST.
DUNLOP

British Empire Trophy

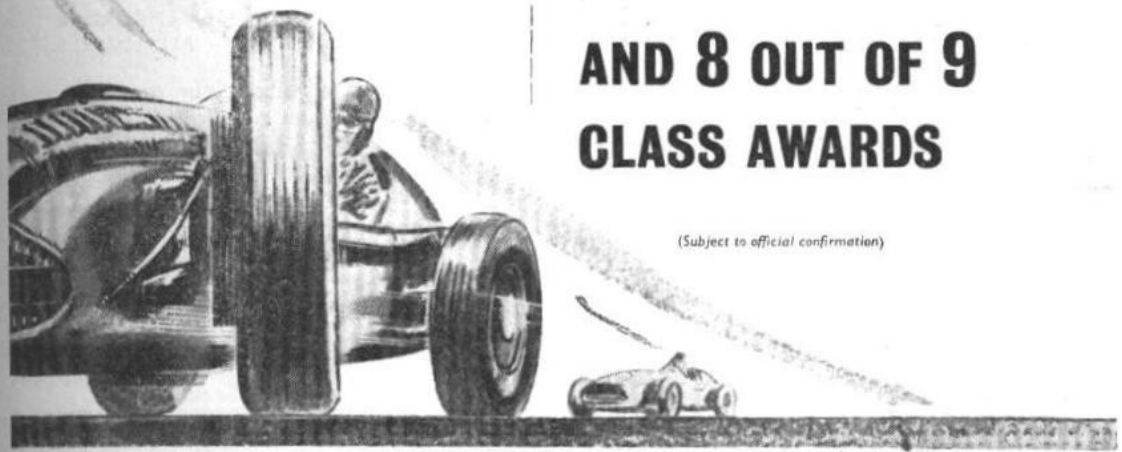
1st. S. MOSS - COOPER

2nd. C. CHAPMAN - LOTUS

3rd. R. SALVADORI - COOPER

AND 8 OUT OF 9 CLASS AWARDS

(Subject to official confirmation)



-and Dunlop makes the tyre YOU want!

# cam journal

# Lotus Car Club of British Columbia

***PO Box 44425, Westside RPO, Vancouver, BC, V6S 2C5***

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| **Advertising :** | **Single Issue** | **One Year** |
|---|---|---|
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| Quarter Page | $20.00 | $80.00 |
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| Full Page | $70.00 | $200.00 |

**Meetings:** **The First Wednesday of Each Month at 7:30PM**

| **June** | **July** | **August** |
|---|---|---|
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The Cam Journal is the official newsletter of the Lotus Car Club of British Columbia. The Cam Journal is published bi-monthly and is supported by membership dues and advertising revenues. All opinions expressed in the Cam Journal are those of the individual authors and does not necessarily reflect the opinions of the Cam Journal staff, the club executives or members of the Lotus Car Club of British Columbia. Others clubs are welcome to use material printed in this newsletter, provided the Cam Journal and the Lotus Car Club of British Columbia is duly credited. All contributions to this newsletter should be submitted to the editor by the published deadlines. The editor reserves the right to edit in whole or in part any and all contributions.

**May**

| | |
|---|---|
| 3 | Monthly Meeting 7:30PM, TBA |
| 13-14 | SCCBC Races, Mission Raceway, Mission, BC |
| 17 | Cam Journal Asembly, Apr-May-June |
| 19-21 | Knox Mountain Hillclimb, Kelowna, BC |
| 20 | All British Field Meet, Van Dusen Gardens |
| 20 | Club Lotus Northwest Track Day, Portland |
| 22 | Victoria Day, Canada |
| 27-28 | VRC Vintage Car Races, Mission Raceway Mission, BC (Italian Cars Featured) |
| 29 | Memorial Day, USA |

**June**

| | |
|---|---|
| 7 | Monthly Meeting 7:30PM, Dave Rush |
| 10-11 | SCCBC Races, Mission Raceway, Mission, BC |
| 25 | Canadian F1 Grand Prix, Montreal, Quebec |

**July**

| | |
|---|---|
| 1 | Canada Day |
| 1-2 | Historic Car Races, PIR, Kent, WA. |
| 4 | Independence Day, USA |
| 5 | Monthly Meeting 7:30PM, Dan McLellan |
| 7-9 | Molson Grand Prix, (CART), Toronto, Ontario |
| 8-9 | SCCBC Races, Mission Raceway, Mission, BC |
| 8-9 | Sovren Historic Races, PIR, Kent, WA |
| 21-23 | Grand Prix Edmonton, (CART), Edmonton |
| 22-23 | SCCBC Races, Mission Raceway, Mission, BC |

**Aug**

| | |
|---|---|
| 2 | Monthly Meeting 7:30PM, TBA |
| 5-6 | SCCBC Races, Mission Raceway, Mission, BC |
| 7 | Civic Holiday (BC) |
| 16 | Cam Journal Assembly |
| 18-20 | Monterey Historic Races, Laguna Seca, Monterey, California |
| 19-20 | SCCBC Races, Mission Raceway, Mission, BC |
| 20 | Royal City Show & Shine, New Westminster |

***LCCBC Main Web Site:***
***http://geocities.com/lotusclubofbc/***

**Sept**

| | |
|---|---|
| 1 | Club Lotus Northwest Track Day, Portland |
| 2-3 | All British Field Meet, Portland |
| 2-4 | Columbia River Classic, Portland |
| 2-3 | SCCBC Races, Mission Raceway, Mission, BC |
| 4 | Labour Day |
| 6 | Monthly Meeting 7:30PM, Richard Lee |
| 9-10 | SCCBC Races, Mission Raceway, Mission, BC |
| 9-16 | Targa Newfoundland Rally, St John's, NFLD |
| 10 | British Picnic in the Park, Hougan Park, Abbotsford, BC. Fraser Valley Motorcar Club |
| 16-17 | Vancouver-Whistler Run, Old English Car Club |
| 23-24 | SCCBC Races, Mission Raceway, Mission, BC |
| 23-24 | VRCBC Fall Finale, Portland |

**Oct**

| | |
|---|---|
| 4 | Monthly Meeting 7:30PM, Malcolm Muir |
| 7-8 | Maryhill Loops Hillclimb, Goldendale, WA. |
| 9 | Thanksgiving (Canada) |
| 31 | SEMA 2006 Show, Las Vegas Convention Centre |

**Nov**

| | |
|---|---|
| 1 | Annual General Meeting 7:30PM, TBA |
| 1-3 | SEMA 2006 Show, Las Vegas Convention Centre |
| 3-4 | Ladner-Bellingham Run, Old English Car Club |
| 15 | Cam Journal Asembly |
| 23 | Thanksgiving (USA) |

**Dec**

| | |
|---|---|
| 24 | Christmas Eve |
| 25 | Christmas Day |
| 26 | Boxing Day |
| 31 | New Year's Eve |


***LCCBC Members Only:***
***http://groups.yahoo.com/group/lotus_car_club_of_bc/***

This is slated to be the last paper Cam Journal as us old Luddites are dragged into the electronic era. If you do not get this same edition e-mailed to you or don't have access to the Internet, please contact me and we will make arrangements. You will also receive a CD or DVD at the end of the year with the next year's Cam Journal's electronic keys upon your 2007 membership renewal.

There has been lots of talk about doing this but workloads and computer literacy have slowed the process greatly. I have to thank Ian Green for his behind-the-scenes work at building the Journal to a version, where we can plug in the parts to create it; Malcolm Muir, for his never-ending role in carrying the Journal through times of apathy; and Rory and Dean for their skills in making the artwork and building of the LCCBC website over the years. And then there's Dan McLellan and his dining room table and the clip and stickers that gathered around it.

At the end of the year the CD or DVD will have 'added features' such as our own home videos and public domain videos (there are too many lawyers in the club to go full pirated), so if you come across or make any good videos, save it with the Cam Journal in mind.

I often complain about the stupid pricing of these little pieces of a car that, if they were part of a computer, would be 10% the price and 100x faster. Well, there are good values out there in the automotive world and the way I see them are:

**Tires** – in current dollar terms, they are much cheaper now than 30 years ago and are higher performance, last longer and are more reliable.

**Fasteners and sticky stuff** – A stick of RTV silicone can do an awful lot of automotive work; cable ties and pop rivets are almost free; $10.00 or $20.00 worth will replace all of the locknuts on your Lotus.

**Oil** – Every year the standards get higher and higher and $2.00 oil meets all the current standards. Synthetic oil is the same price now as when it first dawned about 30 years ago.

**Econoboxes –** About $10k will buy a 100 HP, MPFI, 16V, disc-braked, bucket-seated, tachometered, FWD, fuel efficient, safe, heavily developed car that will only need filters and fluids for 5 years. When most of our Lotuses were made, this was beyond imagination. Of course, the flip side to this, is that seemingly everybody has one and this has created a host of other problems.

**Junk Tools** – These are not for the serious professional, but $20.00 will buy you a grinder that will do many projects; $10.00 will buy a digital multimeter and I just got a IR thermometer for $33.00 and is it ever a cool gadget…

I ran the Thunderbird Rally again this year, starting in Merritt, overnight in Vernon, and ending in Merritt. I drove the Shelby-lancer, which is only used once a year to run this rally and during part of the annual commissioning, it broke an oil lien on the turbo and pumped all the oil out, running without oil a km or so until I found a place to pull over, to tend to what I thought was a bad connection on the pressure sensor. The weather was cold and dry, with no recent snow and the first three stages went well. Then a small engine knock developed, progressing to very ominous sounds by the stage end. The cause was feared to be a spun bearing; we were in the denial stage and nursed the car to Penticton, where the plugs looked OK and the can looked OK, so we tried straight 50W oil, in the hopes of nursing the car back to Vancouver. That oil change lasted about 500m, before major engine failure perforated the block, fragmenting #4 piston and bending a rod.

I have taken to carrying a salvage list with the Lancer for the past few years for just such an event, and got everything on the list, off the car, except the now useless bottom end and the Shelby's Getrag 555 tranny. That's about all I saw to report on in the T-Bird Rally/06.

I will be out of town in May, but I hope everyone enjoyed the ABFM.

PS: If you think nobody cares if you're alive, try missing a couple of car payments.

PPS: Give a man a fish and he will eat for a day. Teach a man to fish and he'll sit in a boat and drink beer all day.

At the last annual general meeting, there was some discussion regarding this newsletter, format, future, and expenses. Basically the problem is that with our reduced membership, a huge percentage of the annual membership dues are needed to publish and mail the newsletter. One solution was to print the newsletter every three months, instead of every two months. This was agreed on, hence the previous printed edition was January-February-March.

However, a few of us believe that if we go electronic, like this... we can eventually return to the bi-monthly format. Well, it's almost May, so we are going to fudge the dates a bit and call this issue “April-May-June”

Hopefully the next edition will be July-August, and we can get back to our bi-monthly schedule. Confused? It's just like owning a Lotus, you never know what to expect. :-)

Therefore... Welcome to the first electronic online edition of the LCCBC newsletter. And in colour. Thanks need to be acknowledged to Dave, Dean, Sadik, Ron, Mike and Malcolm for their contributions, advice, direction and patience.

Who am I? 56, born in England, then Toronto/Montreal/Toronto, Vancouver/Toronto, Montreal/Florida/Montreal, and finally back to Vancouver. Fanatic about Lotus since I was about 12, spent a lot of time at Mosport in the sixties, St.Jovite in the seventies, was part owner on a Seven when I was 20, bought a Europa S2 in 1978, wrote it off in 1980, got married with kids. Twenty years later, bought a Europa S1, began a rebuild. 2003 bought a Europa TCS to drive. Last year, sold the unfinished Europa S1 to a good guy in Nanaimo.

Three months ago, I bought an Elise. Today, still own the Europa TCS, but am wondering what its future is.

This is almost getting to be "stupid". I made it to the January meeting, but twelve hours later, I was told to pack my bags, and head to the Island to assist in upgrading an aircraft for a local Air Service. Got back from that, only to be told to head back to the Island to work on another project. Now, four months after attending my last meeting, I ran into the room breathless, and just made it in time for the May meeting. Problem was, the May meeting was at MY place. Hmmmmmm. So what happened. Not too much really. Most discussion centered on the upcoming ABFM, and the status of various restoration projects (automotive wise)

Through the use of modern technology, we were able to see a "slide show" of Malcolm's Cortina Rally car (complete with tartan headliner). Malcolm is going to try and get the last little bugs worked out in time for the ABFM. Dean gave us an update on his Plus2. The general trend here is a forward direction, with the ABFM being (as always) the target. My Elite is still sans radiator. The shop that is trying to create one from scratch is having trouble making any progress. They have a basic core, but are yet to make the collectors or the mounting frame. Sounds familiar eh!!!

The ABFM holds the prospect of having some Elise in attendance for the first time. I will not be able to attend, so I hope someone takes photos. I will also not be in attendance for the June meeting, as I will be back on the Island. This time I will be at Comox, doing a course for three weeks. I might as well give up attempting to do any work on the yard, car or bike this year. It seems the fates have moved against me this year. That's about all from me. I guess when you're not around much, it gives you very little to talk about.

Keep driving
See Ya!!

Not a Lotus...

Lotus pictures from Ontario. Blue Elan and other cars from Lotus day at Mosport in 2001.


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**eBay**
Some of you have made purchases on e-bay and I made comment about this at the last meeting. There has been more and more vendors posting which has pluses and minus. On the plus side is that there are more sources for new old stock, new reproduction parts and, if you are enlightened consumer, more cost comparisons and competition.

On the minus side, is that private sellers are now setting their initial prices higher and bid prices for items escalate beyond bargain or even fair pricing (compared with you your average swap meet).

So the caveat should be "Know your prices and don't bid more than what you think is reasonable". Also watch shipping costs, especially from the UK, larger or heavier items can cost you up to 50% of the value of the goods.

Some of my recent e-bay purchases are:

Paddy Hopkirk Alloy Gas Pedal (USA)
5-Day Mechanical Clock, ex MIG (Ukraine)
Locking Gas Cap (France)
DOT Certificate Holder (UK)
Old Dealer Windscreen Sticker (UK)
VDO electro-mechanical clock (USA)
Period racing sponsor stickers (UK)
Cibie Light Cover (USA)
Clutch disc & cover (Canada)
Clutch Hydraulic kits (Canada)
Crossland Air Filters (Canada)
Windscreen seal and locking strip (UK)
Die cast models (1/43) (UK)
Slot Cars (USA)

**Cam Journal**
There has been much discussion both away from and during regular meetings with respect to the format of our newsletter. It has been generally agreed that we should adopt an "electronic" format, although most of the Cam Journal is generated by electronic means, it is not an integrated document.

Ian Green has been putting a lot of time into building an elegant usable format, the end result of which is a 3M PDF in living colour.

When we started out this year, it was originally decided to go with only 4 issues as costs for printing and mailing were the largest strain on the club's budget. Additionally there is 20-24 man-hours per issue invested.

After some experimentation looks like the new e-format will take less time and save the club $$$ in its production. As such, this issue will be the last one in this format. We will also be issuing the PDF version which will look slightly different for this month. After this there will be the bi-monthly Cam Journal once again, but in PDF format.

All contributions need to be e-mailed, we're not certain to whom yet, but will have this confirmed by the next meeting.

A big THANK YOU to Ian for taking on the newsletter!

"Man is a tool-using animal. Nowhere do you find him without tools; without tools he is nothing, with tools he is all. "
**Thomas Carlyle**

Of Ball-point hammers, Left-handed screwdrivers & Metric crescent wrenches.

Tools, tools, tools, we backyard mechanics love our tools.

I have been building my tool collection since I was 16 and started wrenching on my Yamaha 180 street scrambler motorbike. Oddly enough, I still have some of my old tools, which given to me as a Christmas present, some 33 years ago.

For years and years I had only a gray hammer-tone tool box in which to keep all my wrenches, sockets, screwdrivers and pliers.

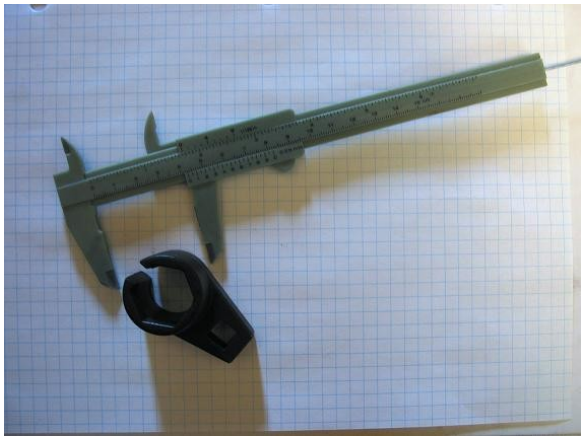
In fact it was only about 4 years ago I finally got a rolling tool chest with the pull-out drawers, and storage shelves for my brace of tools, both manual and electric.

I thought that I had finally accumulated all the tools I would ever need, until some recent jobs required a few more items, both specialty as well as commonplace.

There are still some items that I would someday like to acquire, but as long as you buy quality brand products, they will last you for ages.

This article is specifically to highlight some of the items I have recently purchased or used in the course of both daily driver maintenance and project car restoration.

**Oxygen Sensor Socket**
This socket is designed specifically for changing Oxygen sensors on cars so equipped. It slides over the connecting ware and has an ear for your ratchet handle. It cost about $15.00 and saved a lot of time and hassle compared with a box-end wrench (which I used last time I re & re'd it.)



**Chassis Hole Punch**
This tool is great for making clean holes in metal, plastic and fiberglass. It requires a smaller pilot hole and has a cutter head and receptacle. It produces a clean edged hole without distortion of the material being worked on. They are available as round, square, D or double D shapes, started at ½" diameter.

**Hole Saw**
Also good for making relatively clean holes in metal, plastics and wood. Can be used with hand drills or drill presses. Faster to use that chassis punches, but the edges are not as clean. Be certain to get the right grade of blade (ferrous metal vs. non-ferrous metal vs. wood/plastic)

**Conical Drill Bit**
For those of you who may watch American Chopper on Discovery Channel, you'll have seen this tool used to enlarge existing holes, without chewing up the material or "chattering" the drill. I used this drill bit to enlarge a hole in the firewall for the main battery cable to pass through. My largest twist drill bit is ½" and it tends to grab at metal not certain how it would perform on fiberglass; best to test on a scrap piece of material first).

**Plastic Vernier Calipers**
Most of us have a quality set of conventional or digital vernier calipers for making accurate measurements of various parts. I'm hesitant at times to use my good set to get reasonably close measurements (say +/- 1/64") dirty, rusty or sharp items which could damage the jaws of the expensive calipers. The solution is plastic calipers for $2.00 from B & J Parts in Port Coquitlam (also try Lordco).

Deadlines that come and go.

The season is now upon us; static car shows, vintage racing, custom car shows, top down driving (well for some of us), twisting roads for tarmac and gravel to test our respective driving skills, the winter's tuning & rebuilding car shake-down, or simply playing "Beat-the Clock" on a closed course.

I had a deadline date for completion of the Cortina rally car; even had a venue for the inaugural run; but issues of time, money, re-works and delivery of parts, both new and rebuilt, have pushed the completion date back by yet another month.

On the plus side of things, reassembly continues on well; the seat adapter brackets are fabricated and seats mounted; the headers have been repaired, installed and the engine ran (more on this one shortly), with good oil pressure and battery charging (for a time); headliner is almost completely in; and various trim pieces are being added. The clutch has been bled and works perfectly. The interior is near complete and all the items I ordered on e-bay have come in.

On the minus side, the rebuilt master cylinder is only working on the rear brakes (this I discovered when I went to bleed the brakes.

The ignition module (or some gremlin in electrical system) caused the car to suddenly stop running, so it's more electrical troubleshooting.

The Bosch alternator (ex fiesta) decided not the charge the battery any more; fortunately I had an Accord ND alternator which fit juts fin, charges at 14.5 V and caused me to delete the pulley-driven fan and added an electric fan (a future project which got moved ahead)

Lastly, from the "Measure twice, Cut Once" department, the light-bar I had fabricated was based on bumper brackets, of which one was slightly bent; this became evident when I went to bolt on the quarter bumpers. However, between my grinder and Dave Rush's welder , we sorted that glitch.

Glass goes in next, so for those looking for soft trim and weather seals, try jumblemaster though e-bay or Rare Spares Australia:

http://www.rarespares.net.au/mainind.htm

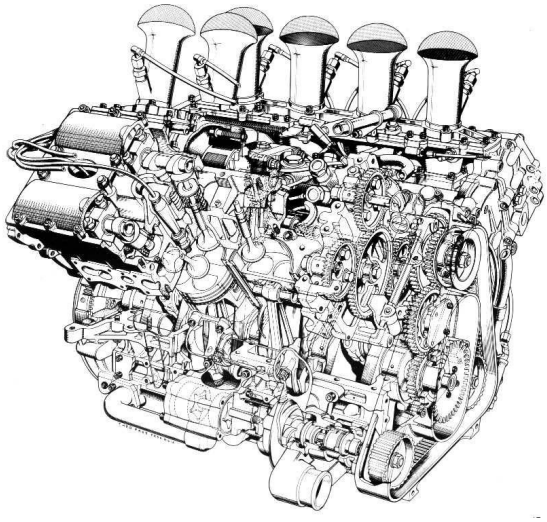
***Maybe I'll be on the road in June!***

This is an older article I came across, but was an interesting read. It speaks for F-1 engine development with specific references to Cosworth's DFV engine.

***F1 Engine Power Secrets***

*By Ian Bamsey*
*appeared in June 2000 RACER magazine*

A time traveler from 50 years ago would find today's Formula 1 cars radically different, but would be equally surprised at the relative lack of change in engine technology. Turbochargers have come and gone and there hasn't been a switch to two-stroke or rotary, scotch yoke engines - let alone to gas turbines or something not even invented in 1950. The good old four-stroke internal combustion engine powered the very first Grand Prix car in 1906 and lives on in a form instantly recognizable by any time-traveling engineers from 1950.



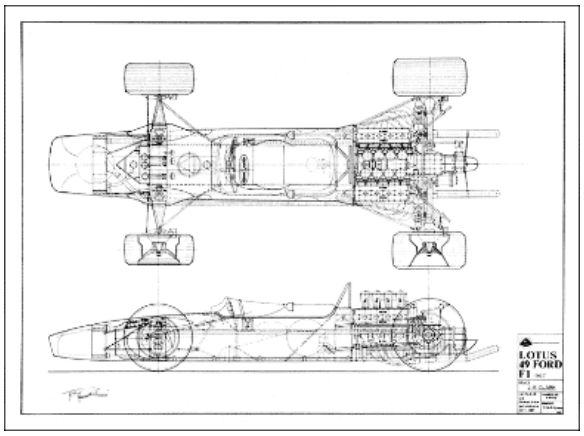
What would impress them is the performance of the current breed of 3.0-liter naturally aspirated engine that pumps out in excess of 260hp per liter, when in 1950; 80hp per liter was a competitive figure.

With careful attention to breathing and the development of highly potent fuel, including the generous use of nitro-methane-the 2.5-liter Vanwall of 1957 attained 120hp per liter as a "flash" dyno reading. Its more representative 115hp per liter race output-on a marginally less eye-watering (but still drag racing style) mix-was still then an all-time high for a naturally aspirated Formula 1 engine.

The following season exotic fuel was outlawed and, at a stroke, power outputs fell below 110hp per liter. However, Fl being Fl, they were soon creeping up again. Ten years on, development was such that, running on "pump" gasoline, 1967's Cosworth DFV produced 133hp per liter. Astonishingly, the current Cosworth 3.0-liter, Formula 1 engine, fed comparable fuel and likewise naturally aspirated, produces about twice that!

How can performance have doubled in 33 years, when there's been no major change in engine concept? Indeed, the DFV of 1967 set the pattern for the contemporary engine with its "over-square" cylinder dimensions, its pent-roof shape combustion chamber, its narrow included valve angle, its four valves per cylinder operated by double overhead camshafts and its clean porting. The DFV was not radically different from previous engines, its significance was that its detail design took advantage of the potential of four, rather than two, valves per cylinder for enhanced breathing and burning-the fundamentals of effective combustion.

The power output of the four-stroke internal combustion engine is a function of the torque seen at its flywheel and the speed at which that flywheel spins. Power per liter per 1000rpm as measured on the dyno is the so-called brake mean effective pressure (bmep) that indicates torque. The Vanwall of 1957 produced its 120hp per liter at 7300rpm, at that engine speed giving 16.44hp per liter per 1000rpm-a nitro- boosted peak power bmep reading of 213psi (14.7 Bar). The DFV of 1967 produced its 133hp per liter at 8500rpm- 15.65hp per liter per 1000rpm, a peak power bmep reading of 203psi (14.0 Bar). This fall in specific torque recognizes the far less potent fuel used in the DFV.




The increase in performance of the current 3.0-liter engines is purely a function of faster flywheel (crankshaft) speed. To attain 800hp, a current Fl engine must turn in the region of 17,000rpm, which means its peak power bmep roughly equals that of the 1967 DFV. In fact, as crankshaft speed rises, the tendency is for bmep to fall-the combustion event has to take place in a correspondingly shorter time and frictional and other losses increase disproportionately.

On the other side of the coin, the fact that the current Fl engine can match the peak power bmep of the DFV of 1967 running at half its speed is a tribute to considerable development devoted to overcoming the inevitable losses that occur with rising speed. It should be noted that some internal losses quadruple with the doubling of running speed. Measures to counteract these losses include a drastic reduction in bearing sizes, the development of high-performance coatings for the bearings, the piston and liner and so forth, and a conceptual revision of the oiling system. For example, the contemporary engine has its crankcase divided into separate chambers to reduce losses to windage.

Another major development since '67 has been the advent of engine management systems. Contrary to popular belief, the precision of computer-timed ignition and fuel injection does not automatically increase maximum power-at least in the case of a pure race engine-but it does help keep everything running on cue as crankshaft speed rises.

Of course, the biggest challenge has been holding everything together as reciprocating and rotating parts are worked ever faster, and generate increasingly fierce loadings. Even at "only" 12,000rpm there are seven tons going up a con rod, which responds by growing longer, then 12 tons going down it, which unavoidably shortens it somewhat!

For a long time, the biggest headache of all was keeping control of the valves given the less than ideal characteristics of steel coil valve springs. Using lightweight titanium rather than steel valves helped, but titanium does not make a suitable spring. The breakthrough came with pneumatic valve actuation, which offers precision of control, even at 17,000rpm, and consequently is now universal in Fl.

These so-called air springs opened the door to today's crankshaft speeds from a V10 engine, with its 40 large valves. The 32-valve DFV V8 had an 85-67mm bore, while today's Vl0s have bore sizes in the region of 92-96mm, with correspondingly larger valves (albeit titanium rather than the steel employed in 1967).

Although the piston is larger in diameter, it is smaller in depth and significantly lighter, thanks partly to materials development. Indeed, it is materials development that has made possible the recent push to a peak-power speed of 17,000rpm, even though the crankshaft is still steel and the con rods are still titanium.

Painstaking development-together with computer aided design-has produced crankshafts and con rods than can handle far higher loading despite employing significantly less material. The same can be said of pistons. Although an air spring engine employing only "traditional" materials has reached a peak-power speed of at least16,000rpm, most crankshaft speed gains come from using alternatives to traditional aluminum alloy pistons.

Painstaking development-together with computer aided design-has produced crankshafts and con rods than can handle far higher loading despite employing significantly less material. The same can be said of pistons. Although an air spring engine employing only "traditional" materials has reached a peak-power speed of at least 16,000rpm, most crankshaft speed gains come from using alternatives to traditional aluminum alloy pistons.

First in this field was Ilmor, producer of the Mercedes V10s used by McLaren in recent seasons. Since 1998, Ilmor has manufactured pistons from an aluminum-beryllium alloy, thereby reducing their weight by a third, possibly more, and gaining enhanced thermal conductivity. The cost of this alloy, and the fact that fine beryllium dust particles arguably constitute a health hazard, has led to an effective ban on its use, imposed by the FIA. Under pressure from McLaren and Mercedes, however, this ruling, for which Ferrari lobbied hard, has been postponed to the end of the current season.

Rather than specifically outlawing aluminum-beryllium (as requested by Ferrari) the new ruling for 2001 prohibits the use of any metallic material with a specific modulus of elasticity in excess of 40 Gpa/ (gm/cc). This leaves the door open for a newly introduced Metal Matrix Composite (MMC) material developed for Formula 1 piston manufacture by liner and piston supplier Perfect Bore.

This aluminum and ceramic alloy offers a weight-saving approaching that of aluminum-beryllium, together with excellent thermal characteristics. Unlike aluminum- beryllium, says Perfect Bore, it has a lot of potential for inlet valve as well as piston manufacture, promising significant gains over titanium valves.

Another application for Perfect Bore's latest MMC is the cylinder liner. Aluminum- beryllium has been used to produce lightweight wet liners, but the latest trend is the use of a super-thin dry liner within what is effectively a linerless block.

A key feature of 1967's DFV was its packaging-very compact by the standard of the day-a significant benefit for the chassis designer, but compared to a current Vl0, it looks huge. Today's clutch is much smaller in diameter (4.5in. now vs. 7.5in. then), the crankshaft is set significantly lower and the whole package is more tightly knit. While the cylinder count is the ultimate constraint, with some lateral thinking last season Cosworth reduced the size and weight of its engine by dispensing with traditional wet liners.

The linerless block permits a beneficial reduction in cylinder bore spacing, but there may be some advantage in retaining some form of (dry) liner. Not only can this be replaced-rather than the entire block-in the event of internal damage, it permits a wider selection of cylinder wall coating, which helps reduce friction.

With the help of ongoing materials development, how much faster can the 3.0 liter Formula 1 engine run? And can it get any smaller than the current Jaguar-badged Cosworth V10? If you don't have access to a time machine, you'll just have to wait and see!


www.pureluckdesign.com

11 May 2006 1700 hrs

**PRESS STATEMENT**
**CHANGES IN TOP MANAGEMENT OF GROUP LOTUS PLC**

Group Lotus Plc announced today a change in the senior management of the company.

With immediate effect, Mr. Michael J Kimberley (Mike) will take over as Acting Chief Executive Officer of Group Lotus Plc. Mike currently chairs the Executive Committee of Lotus Group International Limited (LGIL).

Given his vast experience and expertise in the automotive industry, Mike is a natural choice to manage the company and he will be supported by the existing management team at the Company and will continue to draw upon the support of the shareholder, Proton Holdings Berhad (PROTON), the ultimate holding company. His priorities will include improving the overall performance of Lotus as well as preparing and strengthening the specialist car company and high-technology engineering and consulting company to compete in a wider market and on a broader business base globally.

PROTON strongly believes that LOTUS has a critical role to play in the Proton Group to enable it to become a successful automotive engineering and manufacturing group and a prominent brand globally. Hence, PROTON will continue to provide strong support to LOTUS and its group of companies.

In view of the above, PROTON has set up a special team to provide close and specialist support to Mike and the management at Group Lotus Plc, to address the key opportunities for LOTUS for the future.

Kim Ogaard-Nielsen, former CEO of Group Lotus Plc, has stepped down to pursue his other entrepreneurial interests. Kim joined Group Lotus Plc in November 2004 and has presided over a number of projects during the past eighteen months. Lotus would like to record its thanks to him for his service to the company during this period.

Speaking from LOTUS headquarters at Hethel today, Mike Kimberely said, 'All specialist sports car companies operate in volatile and highly competitive markets. However, sales of the Elise are moving ahead in the USA and are being further enhanced by the new introduction of the Exige model. I can assure our customers, business partners and all who watch this iconic marque with interest, that LOTUS is a highly valued and integral part of the PROTON Group.'

**Michael J Kimberley's background:**
Mike Kimberley has been associated with the LOTUS brand for over 22 years, since joining its founder, the late Colin Chapman in 1969. He worked his way up the Company, was appointed as the Managing Director of Lotus Cars Ltd. between 1976 until 1983 and became the CEO of Group Lotus Plc between 1983 until the end of 1991.

Mike is a well-respected veteran of the automotive industry, having spent over 30 years with various world-renowned automotive companies including General Motors, Jaguar and Automobili Lamborghini SPA.

Two of his major achievements were the rejuvenation of Group Lotus Plc following the tragic loss of its founder, Colin Chapman in the late 1982 and the revival of the Italian supercar maker, Automobili Lamborghini SPA, in 1994.

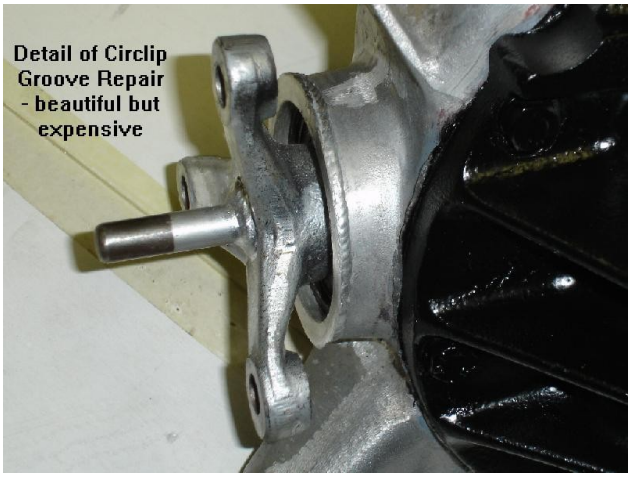
More recently, he was appointed to the Board of Directors of Group Lotus plc as well as Lotus Group International in August 2005. Mike Kimberley also chairs the Executive Committee of Lotus Group International.

**Fail-Safe.... but not Stanley Kubrick....**

I have, so far, broken two differential output shafts, at different times and neither failure happened while doing anything hairy. In retrospect, I now realize that I was not sensitive enough to feel when the actual fracture occurred. For several days before the shaft actually stopped transmitting torque, I do recall hearing a slight click, click, click, noise while leaving the line, but I didn't understand what it was trying to tell me. I guess the shaft had already severed but was still driving.


Anyone want stickier tires?

The first fracture was conical in shape, did no subsequent damage and was relatively easy to fix, with a new shaft. The second fracture was straight, but angular, resulting in thrust forces along the shaft centreline. This of course tried to push out the bearing; the bearing pushed on the circlip, which obligingly chewed it's way through the retaining groove in the alloy casting. Great!

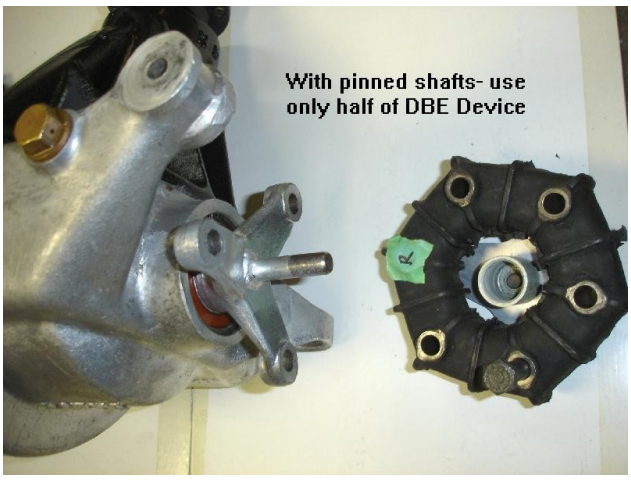

Detail of Circlip Groove Repair - beautiful but expensive

All this gave me an opportunity to become familiar with Ebay and my very first purchase there was a pair of new output shafts for about $200. The unexpected bonus was that these were the later run of pinned shafts for the fail-safe revision. The differential casting was repaired through Ian Wood of IWE, but not before having to be sent to his racing buddy in Seattle, who did a wonderful job of welding and re-machining. The assembled differential came home for about $1000. Great!

During that time, I explored an item from the Dave Bean's Catalogue (page R6) called the "Fail-Safe Coupling Centering Device". It is intended to be an aftermarket fix to retain flailing shafts in the event of Rotoflex failure. It turned out to be a rather simple device, considering it's cost of $163US per coupling, easily manufactured by any one of us with access to a lathe. Upon receiving them, it immediately became apparent that they are not as described in the Catalogue, which claims that it "fits all couplings and center pin shafts ….. a thin metal yoke has a center boss containing a spherical bearing which receives the centering pin … produces smoother drive shaft motion … by eliminating the gyrating motion caused by a slight out-of-balance condition of the intermediate shaft." And there is also a cross-sectional sketch showing just what they describe. Looked pretty smart and safe, so I bought two sets for the two inboard couplings. Buying four was too safe and too pricey.

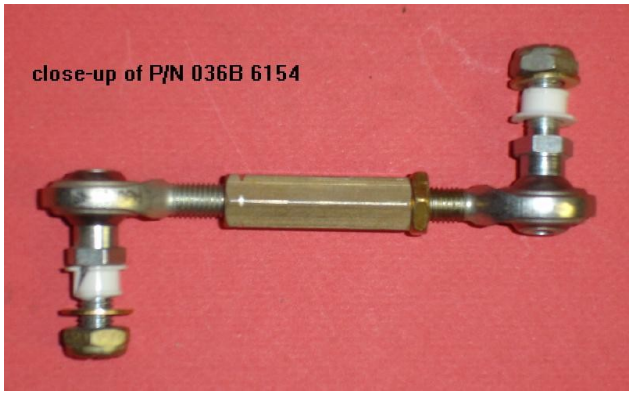
Well…what they've apparently done since publishing the catalogue is to revise the item so that the kit now fits original un-pinned shafts. One of the three-eared yokes carries a bulbous projection (male) to replicate the pin in the shaft, and the matching yoke carries a tubular receiver (female) for the bulb. There is no spherical bearing. To fit the kit as DBE intended, I would now have to saw off the fail-safe pins on my new output shafts. Great!


Well, I wasn't about to do that and you'll see the results in the photos. I ended up using only half of their kit; the female half being installed to receive the existing pins on the output shafts. Since they were never intended to be mated, there are gobs of clearance, so the fail-safe part has been accomplished, but there is neither centering, nor smoothing effect.




I now have $163 worth of male halves left over. Admittedly, these could be used on my outboard couplings (when I do that bit) but it would require that either the half-shaft or the outboard axle shaft have welded to it, a tubular receiver,
as was on the DBE female half. I trust the photos will clarify.

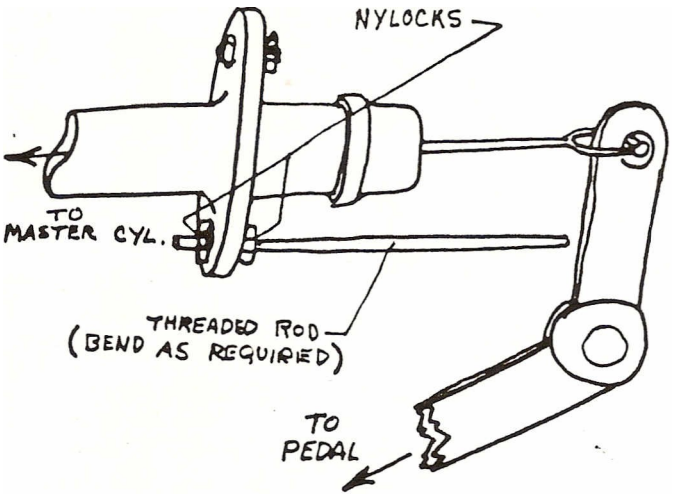
On another matter… my plastic rod-ends in the Elan headlight linkage had long ago deteriorated to hard, discoloured bits, which no longer responded to tie-wraps to extend their brittle lives. Replacement was in order but originals could not be found. I was much more pleased with DBE's kit (036B 6154) for replacing these items. At a hefty cost of $27.86US per side, it contains good quality spherical bearings, left and right hand threaded, including a plastic sleeve to fit the hole in the fiberglass. I have not fitted these yet, I am assuming that the existing hole must be larger than the new threads, hence the plastic sleeve. I won't have to use duct tape any more……. Great!

***1974 Lotus Clinic Annual (Lotus 7)***
*These Tech Tips came from Lotus West Tech Manual.*

**Cooling**
If you have cooling problems on your 7 or have delusions of being a racer, a Mazda R-100 radiator will, with minor chassis mods and some heliarc on the radiator, take 10 pounds off the front end of the car and seems to work, at least on my twin cam. This radiator is aluminum, so a substantial amount of antifreeze will be required to prolong its life. It can be special ordered at your friendly local Mazda dealer, costs about $74.00 and takes about a day to procure.

**Drivetrain**




To reduce excessive clutch travel in 7's, replace the lower master cylinder bolt with a piece of threaded stock and 2 nuts. (See illustration.) Use lots of Loctite or nylock nuts.

**Engine**
I have recently come across two special tools, which can make servicing some models of Lotus much easier. First, for all Cortina (1100, 1340, 1500, 1600) and Pinto 1600 motors. There is a special socket available which allows you to tighten all the cylinder head bolts without removing the rocker shafts. It is a Pinto 1600 tool and can be purchased from any "Snap-On Tool" distributor or from J.C.Whitney. The "Snap-On" part no. is S-8694, and the price is about $6.50. J.C.Whitney's price is $7.64 and it doesn't have the guarantee of the "Snap-On Tool". On twin Weber 1340 and 1500 Cortina motors it is very awkward to remove or replace the socket head bolts, which attach the manifolds to the cylinder head. A special allen wrench made by the Bondus Tool Company will help greatly. It has a semi-spherical tip which allows the wrench to operate when off-axis by as much as 30 or 40 degrees from the center line of the bolt. This tool is not good for high torque and final tightening should be done with a conventional allen wrench. These tools come in a range of sizes from .050" to 3/8". My Super 7 required a 1/4" and a 7 /32" which cost about $2.50 a piece. I have heard rumors that similar wrenches are made by the Excelite Company, a brand that is distributed in most electrical parts houses.

**TIRES & SUSPENSION**
Noting that my ancient Dunlop Racings were smooth almost wall to wall, I visited my local 4day store. I've had excellent relations with them in the past (Michelins for the family wheels), and when they spoke highly of Fulda steel radials I thought I'd try them. My much-beloved Skinny Fenders will only admit 165-13's so we put some on. The Fulda is a German tire, distributed in the U.S. by 4day, and looks much like an early Cinturato only nicer. They ride extremely well, have satisfactory lateral adhesion even on poor pavement, and don't make any ugly noises. Regrettably, 100+ horsepower with my weight and gearing will smoke them through first and second gears! They also tended to lock on braking so they were clearly not suitable for the kind of driving a Super 7 does best. The 4day folk took them back without any argument (after mounting and balancing them twice) and promised a full refund. Good service, that.

***1974 Lotus Clinic Annual (Lotus 7)***
*These Tech Tips came from Lotus West Tech Manual.*

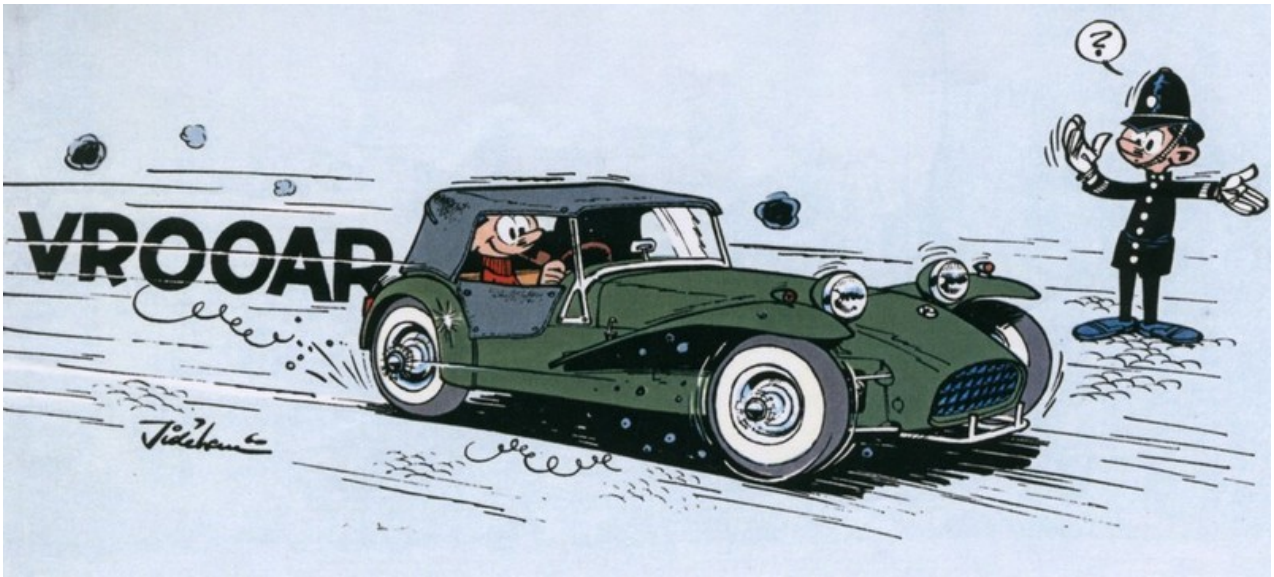
The press-in Metalastik bushes used in the upper transverse links, lower A-arms (rear leg) and trailing arms (rear end) can be obtained from LeGrand Race Cars, 13213B Saticoy Street, North Hollywood, Ca 91605 under his part no. 1369. He thinks they're engine mounts, but Colin knows better. LeGrand is a good source of racecar hardware and his catalog is useful.

All other suspension bushes are various BMC things, except the small Metalastiks at the front of the trailing arms. I have found no replacement for these in the U.S. (luckily, I don't need any, either).

An excellent,match for the ·grey enamel used on Lotus Seven chassis tubes is Krylon Light Grey Enamel #1604, which is very good spray paint to boot. I've found Krylon enamel to be extremely consistent in spraying characteristics and gloss from one can to the next.

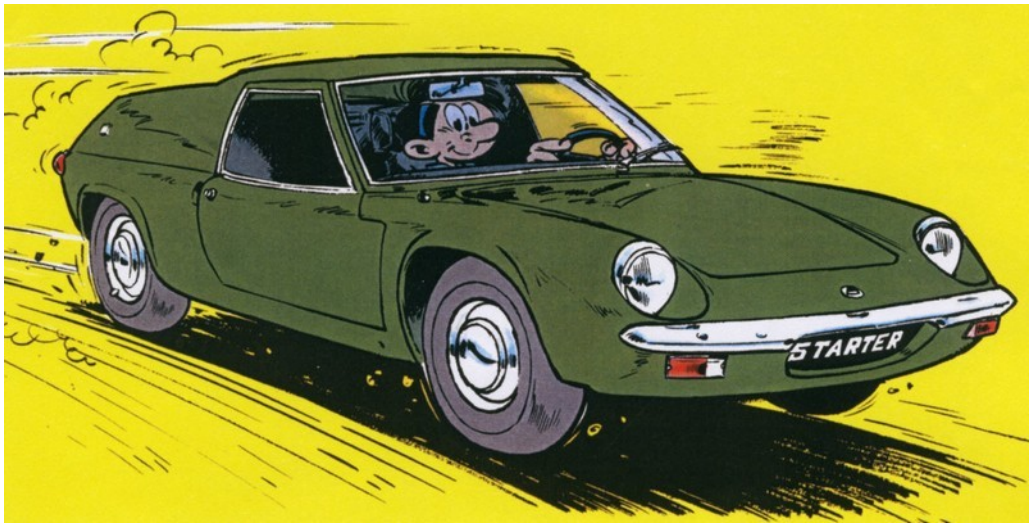
In the last Stress Cracks some information appeared about suspension bushings for Seven's. In that article the author indicated that he did rot know of any U. S. sources for the bushings used in the front end of the rear trailing arms (Lotus part No. 7786). I needed a set of these bushings desperately, as my Super 7 (purchased very used) had Teflon bushings in the entire rear end. The Teflon bushings place excessive torsional loads on the trailing arms, and caused one of mine to break (very scary). I had a friend, who was in England purchase a set from Caterham, the only 7 dealer in England. When I received the parts they came with a note that the correct bushings -are no longer available, but that I was shipped bushings for the front end of the rear A-arm, which are just the same except about 1/2" longer (Lotus part no. 7764), and must be sawed to fit. They do work, and this is the only source I know of for this part.

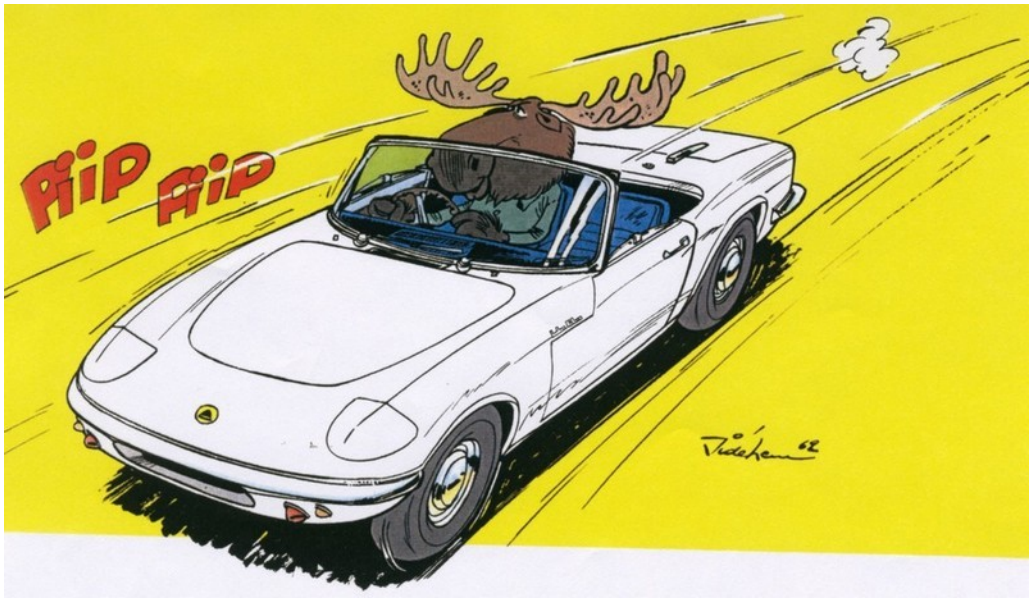
**MISCELLANEOUS**
Parts interchange trivia for Cosworth-engined Seven owners:
Lotus 8407 engine mount can be replaced by BMC3H3077 (BSF thread) or BMCIB2983 (SAE thread) which I think are Healey transmission mounts. They are slightly taller and will raise your engine a fraction of an inch, so check hood clearance.
The infamous half-bushes under the rear axle are really Sprite or MG shock bushes.

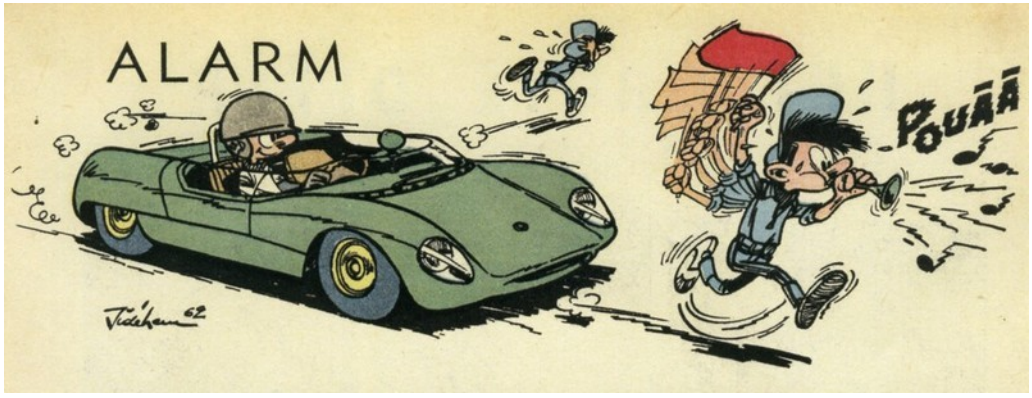


Back in the 1960's.. there was a kid's magazine in Belgium. The artist was a big Lotus fan, he always somehow found a reason to include a drawing of a Lotus in the magazine. Recently, I sold a few Autokit 1/24th scale Formula One BRM metal models via Ebay to a gentleman in Belgium. We began talking, he was a fan of Graham Hill, I was into Lotus, he sent me these scans. Small world.

Ian Green.



**Proton To Manufacture Affordable Lotus In Malaysia**

SHAH ALAM, April 25 (Bernama) -- National carmaker, Proton Holdings Bhd, plans to manufacture affordable Lotus cars in Malaysia probably in late 2007 or in 2008, its managing director Syed Zainal Abidin Syed Mohamed Tahir said.

"If everything goes on well, the affordable Lotus will be done and assembled in Malaysia. Both Lotus and Proton have agreed on the plan," he told reporters at a press conference to mark his 100 days as managing director.

He said Proton was currently identifying the specification for the car, platform to work with and the market to focus.

"This car could be priced around RM100,000 compared with the current Lotus car at between RM300,000 and RM400,000. It is a very expensive car (current Lotus). I think there is a big market for Lotus if it is within affordable range without compromising Lotus' quality."

He said with the model, the company could expand Lotus sales not only in UK, Europe, US and Japan but also in China, India and Association of South-East Asian Nations market. Syed Zainal said Proton was tapping synergies with the UK-based sports car maker, by forming partnerships with carmakers and raising quality of the cars.

"Lotus is world famous for sports cars and its engineering services, so it makes a lot of sense for us, as the owners of Lotus, to put in more Lotus in Proton cars. At the same time we will open doors for Lotus to provide engineering services to other carmakers in key Asian market such as China, South Korea and India," said Syed Zainal. He said currently Lotus was too heavily-centred in UK. About 80-90 percent of Lotus engineering expertise are there.

"That is nothing wrong with it. But with we have to be competitive. People are now working towards geo-based rather then Euro-based. Hence, going forward, Lotus has to move from a UK-based firm to geo-based in order to have its resources in the emerging market like China and India. We are taking a fresh look at making the best use of Lotus' strengths."

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The below experimental Volkswagen GX3 was spotted testing at the Lotus Hethel test track a while back, it's rumoured to have a target price around $20,000. Could this be the affordable Proton-Lotus entry vehicle?

Lotus Sport, the competition subsidiary of the British marque that produces the lightweight Elise, has been around since 1999. Until now, however, North American customers were left with few options when customizing their Elise for track use. The announcement that Lotus Sport would be now be operating in North America came at the New York Auto Show last week where Lotus debuted a special pair to commemorate the occasion.
The first is the Lotus Sport Exige Cup (shown), a purpose-built track car that does away with such civilized comforts as headlights and air conditioning and adds a supercharger to the Elise's Toyota-based, Lotus-tuned 1.9L four-cylinder. Power is up to 243 hp in the Exige Cup and makes its way to tarmac through a 6-speed manual and adjustable limited slip diff. 0-60 will occur in a scant 4.1 seconds. Only 15 copies will be made available on this continent at the price of US $78,990.


The second car is the Lotus Sport Elise, which slots in between the narrow-minded Exige Cup and the relatively civilized Elise. The Sport Elise is fully street legal but adds adjustable Ohlins dampers and front anti-sway bar, defeatable Lotus Traction Control and a competition clutch. A roll cage and harness bar is also standard equipment. Only 50 examples of the Sport Elise will find their way ashore in the North America and each will carry a price tag of US $54,995.

***Clubs and Groups:***
http://www.lotuscarclub.org/

http://www.lotusowners.com/

http://www.lotuscarclub.ca/

http://www.gglotus.org/

http://www.elcc.org/

http://www.grouplotusjapan.com/

http://geocities.com/lotusclubofbc/

http://groups.yahoo.com/group/lotus_car_club_of_bc/

http://autos.groups.yahoo.com/group/lotus-cars/

http://groups.yahoo.com/group/lotuseuropa/

http://autos.groups.yahoo.com/group/lotuselan/

http://autos.groups.yahoo.com/group/lotus4seaters/

http://www.exiges.com/ubbthreads/ubbthreads.php?Cat=

http://www.elisetalk.com/forums/forumdisplay.php?f=105

***Parts:***
http://www.banks-europa.co.uk/index.php

http://www.sportscarworld.com/

http://www.rdent.com/

http://www.tingleslotus.com/

http://www.davebean.com/

http://www.jaeparts.com/

http://www.talbotco.com/

http://www.wirewheel.com/

http://www.spydercars.co.uk/

http://www.classicgarage.com/classicgarage/parts-pertronix-ignitors-lotus.html

http://www.tirerack.com/

http://www.kodiakmotorsports.com/

***Parts:***
http://www.vtr.org/index.html

http://www.pegasusautoracing.com/

http://www.lotus-books.com/

http://ewa1.com/index.html

http://www.aircraftspruce.com/

http://www.hewland-engineering.co.uk/

http://www.christopherneil.co.uk/

***Places:***
http://utahlotusmuseum.com/

http://www.historiclotusregister.co.uk/

http://www.lotusespritworld.co.uk/

http://www.classicteamlotus.co.uk/

http://www.mikecauser.com/

http://www.race-cars.com/

http://www.hemmings.com/

http://www.pistonheads.com/

http://www.lotuselan.net/

http://www.lotuseuropa.org/gallery/index.php

http://lotus-europa.com/

http://www.weissach.com/

http://www.johnscotti.ca/

http://www.gentrylane.com/

http://www.parkplaceltd.com/

http://www.grouplotus.com/

http://www.lotuscars.com/

***For Sale !!! Was $12,000 US... Now $10,000 US.***
**1973 Lotus Europa TC Special, (Type 74) VIN# 73-3115R**

July 2003, I purchased this 1973 Lotus Europa TCS, and drove it north to Vancouver from California. Passed government inspection, fully registered, and insured as a daily driver.

Work done by previous owner (ex-race car driver / builder); Girling brake boosters replaced with Lockheed units, dash redone in Burl Elm. Engine rebuilt about 10,000 miles ago, hardened valve seats, new valve guides, +.40 pistons, emissions removed, crossover pipes removed, custom balance tube for Strombergs, K+N air filters, header and stainless steel muffler. Electric radiator fan replaced, wiring improved, extra grounds. Stainless steel brake lines. Coolant tubes replaced. Fire extinguisher. Quick release pins for front and rear decks. AM-FM radio + electric antennae.

Work done by me; Radiator fan rewired with override switch. Additional LED brake lights with override switch. Coolant tube replaced. New water thermostat and new heater valve. Radiator and brakes bled. New rear brake shoes. Battery tie down. New wiper blades. New front ball joints, tie rod ends, trunnions, Grade 5 and 8 bolts. Camshaft seal replaced, new rubber D blocks in head. New AVO-Banks dual adjustable custom shocks and springs - front and rear. Raised front swaybar with heim joints for more clearance. Gear linkage modified, repaired and adjusted for less play, more direct action. New electronic voltage regulator. New aluminum alternator drive pulley. Starter and Solenoid rebuilt. Alternator rebuilt. New battery. Carburetors cleaned and adjusted plus new throttle shaft "W" clips. Temporary catalytic converter with B1AF Stromberg needles for emission testing. Also includes workshop and parts manuals, car cover, original alternator drive pulley, wipers, new extra rear hub bearings, rear trunk box, spare battery, history, all invoices and CD-Rom of pictures.

This car runs and damn good too. About 60,000 miles. Very reliable. But needs a facelift, original black paint faded, nice patina though has some issues. Seams of seats split, carpet should be replaced.. at least on the driver's floor. Windshield starting to delaminate in corners. Speedometer cable broken. Tires and wheels should be replaced. Mechanically, she's good. Cosmetically, she's 33 years old... but still adorable.

See the website for history, details and pictures; ***http://www.europa24fps.com/3115_2005.html***

Ian Green
Vancouver, British Columbia, Canada.

***Lotus@Europa24fps.com***

**WEISSACH**
**COMMITMENT**

Time flies when you're having fun! And fly it has... as we celebrate our 25th year in business. As part of our celebration, we invite you to join us for a very special Thunder Hill track event on July 19 and 20th 2005. Stuart and I have planned a wonderful trip and every participant will receive a special surprise, so register soon for this trip of a lifetime. If you are unable to attend this great event, stop by the store and pick up a cool little gift from us to you. We think you'll like it.

All of us at Weissach want to thank you for your support, your loyalty and, most importantly, your friendship over the last 25 years. Our commitment to uncompromising quality, impeccable service and providing you with a selection of the world's best automobiles has brought us to this point, and we hope it will sustain us into the future. We look forward to earning your future business.

*...Asgar and Stuart.*

# Lotus Car Club of British Columbia

## *Membership Application / Renewal Form*

| Application Type: (Please check one) | New: ____ $40.00 | Renewal: ____ $35.00 |
|---|---|---|

| Name: | Spouse / Partner: |
|---|---|
| Address: | Res. Telephone: |
| City: | Cell. Telephone: |
| Province / State: | Bus. Telephone: |
| Country: | Email: |
| Postal Code: | Website: |

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| Special Interests / Skills: |
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| Date:<br><br>Signed: | Please make your cheque payable to:<br><br>Lotus Car Club of British Columbia<br>P.O. Box 125, 3456 Dunbar St.<br>Vancouver, B.C. V6S 2C2 |
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