

The Chapman Report



Published by the Golden Gate Lotus Club www.gglotus.org April 2005

New Photo System In California

by jim mcclure, editor

A new highway system is going into service this month, which will not only alert drivers to upcoming scenic views, but can also take a photo of you and send it to you in the mail. When you see the posted sign which looks like a camera, you will be one of the lucky ones that get their photo taken by the photo system, shown



As we have many scenic sites here in California, the hope is to put thousands of these devices on our highways and will get a photo of your wonderful drive through California, and only a small fee will be charged for it by the state.

This system has been used in Europe and Britain with much enthusiasm. Drivers cheerfully call the devices by their manufacturer's name, Gatso. So loved is this photo system that many drivers, especially motorcyclists, give a big wave as they go by.

Alas, I've had my picture taken by one, but being a tourist, they were unable to get my correct address and send me the photo. If their beauracracy wasn't so insurmountable over there, I would try and get my photo from them as a memory of my trip.

So remember, if you see the sign of the old camera, speed up, roll down your window and prepare to give Gatso a friendly wave as you fly by.



Esprit 350Z Spotted

While at the Donington Lotus Show, I saw what must be the much awaited new Esprit. The major hint was the American Ford V8 nestled in the rear. As we know, if you want to sell in the U.S., it's best to start out with a motor that has been previously blessed by the EPA. It sounded great, too!



April Meeting

Friday, 18th

Host: Carol & Scott Whitman's

Calendar

April 23	fiberglass Seminar	Mike Ostrov's
April 25	GGLC Track Day	Buttonwillow (new date)
April 28 to May 1	Marque Madness (in conjunction with the Rolex Sportscar Series)	Laguna Seca
May 1	Concours d'Elegance	Hillsborough
June 3 - 5	Lotus Convention	Lake Tahoe
June 3	GGLC Track Day	Reno - Fernley
June 3 - 5	Wine Country Classic	Infineon Raceway
June 26	Palo Alto Concours	Stanford, Palo Alto
July 28 - 31	San Jose Grand Prix	Streets of San Jose

SCCA Tire Seminar *by Richard Ryan*

On Saturday, March 12, Paul Haney presented a 6-hour seminar on tires and handling. The seminar was based on his third book on racing, "The Racing and High Performance." Paul is a former, long time GGLC member who is now living in High Point, N.C. The seminar was organized by Blake Tatum, San Francisco Region SCCA Board Member, and sponsored by the San Francisco Region. About 80 people attended.

Paul has presented similar seminars on tires to Michelin, Goodyear, Yokohama, Bridgestone, and at the Tire and Rubber Expo in Cologne, Germany.

Paul's presentation style is down to earth and easy to understand. He interspersed his comments with fascinating racing stories from his 30 plus year involvement in the sport.

Tires may be the most complicated structures made today. Rubber is a very complicated mixture. It has 10 to 15 ingredients, and each ingredient can have 8 to 20 components. There are so many variables involved, and there are no real solid equations to define the process of making tires so each tire is

different from the next one produced.

Charles Goodyear patented the vulcanization process for rubber in 1844. But because he was a poor businessman, he died penniless. Up until 10 years ago, the whole focus of the tire industry has been on the chemical components of the tire-making process. Then the tire companies figured out that a tire is also a mechanical system and started hiring mechanical engineers.

Paul blew away some common racing myths. For example, the best way to warm race tires on the pace lap is to accelerate and brake often. Weaving left and right does not effectively warm them up. (It will, however, help scrape debris of the tread.)

Another myth is, "The lap times get quicker as more laps are run, and more rubber is laid down on the track surface." WRONG Think about it! The spaces between the tiny peaks of aggregate are filled up with rubber particles. Then the rubber tires are trying to stick to a surface that is increasingly (over the weekend) made

up of more and more rubber. Do rubber (tires) stick to rubber (the surface) well? No! The coefficient of friction between the rubber tire and the aggregate of the track surface is always larger than the coefficient of friction between the rubber tire and a surface made up of large portions of rubber.

So why does a track get faster during the first few track sessions of the weekend? Because the track is dirty at the beginning of the session. And then cars continually "sweep" all dust, debris, and other microscopic junk off the racing line and produce a constantly increasing coefficient of friction.

Why do tires have a tread design? The only reason is to move water from between the road surface and the tire. Paul discussed some of the variables that are used to design tread patterns and measure their performances, wear rates, and noise levels.

Paul told us a good Mario Andretti story. Mario told Paul that he "discovered" the use of slicks for Champ Car Racing. Until then, the Champ cars used treaded tires. Mario told them slicks must be better, because treaded tires have air in the spaces between the tread sections that are in contact with the tread surface. If the contact patch was 100% rubber (with no air spaces), the car must be faster in the turns. Champ Car finally let the competitors use slicks.

Tires are the single, most important component of racecar performance. The only things that connect your car to the outside world are 4 small contact patches (unless you are lifting a wheel in a corner, then you can subtract one). The coefficient of friction between the tire and the track surface has many variables.

Some of them are:
How dirty is the track? Is the wind constantly blowing dust on it? Did the car in front of you put a wheel off causing dust? Are you the first group out and the track is still dirty, or are you the fifth group out and the track has been swept by many cars?

· Has someone dumped fluid on the surface?

· Are you on the racing line

where the track surface aggregate has been “polished” by many, many sets of tires? Or are you “off line” where aggregate is sharper and has more grip? (However, this portion may be dirtier.)

- Is the track surface asphalt or concrete? Has the basic asphalt track surface been repaired with concrete portions in the heavy braking or acceleration areas (the turns)? Are you racing at an airport circuit with its very abrasive, grippy type concrete?

- Are you using the painted concrete berms? (Do you want to use the painted berms in the rain?)

- Lastly, how wet is the track surface? Is it raining? Hard? Is the surface drying out? Where? Is the track completely dry except for that stream of water running across the surface just before (or in) the heavy braking section before the hairpin.

Here are some of Paul’s practical suggestions for street and racing applications:

Keeping tire pressures correct is the single, most important tire maintenance chore. Check them often.

- Try not to put moisture into the tires as you put air in them. The moisture content will increase the tire pressure as the tire warms up. Drain the water from your compressor’s tank regularly. When using one at a gas station, shoot a few blasts of air out of the nozzle before you put it on your tire. This helps clean moisture out of the hose and tank.

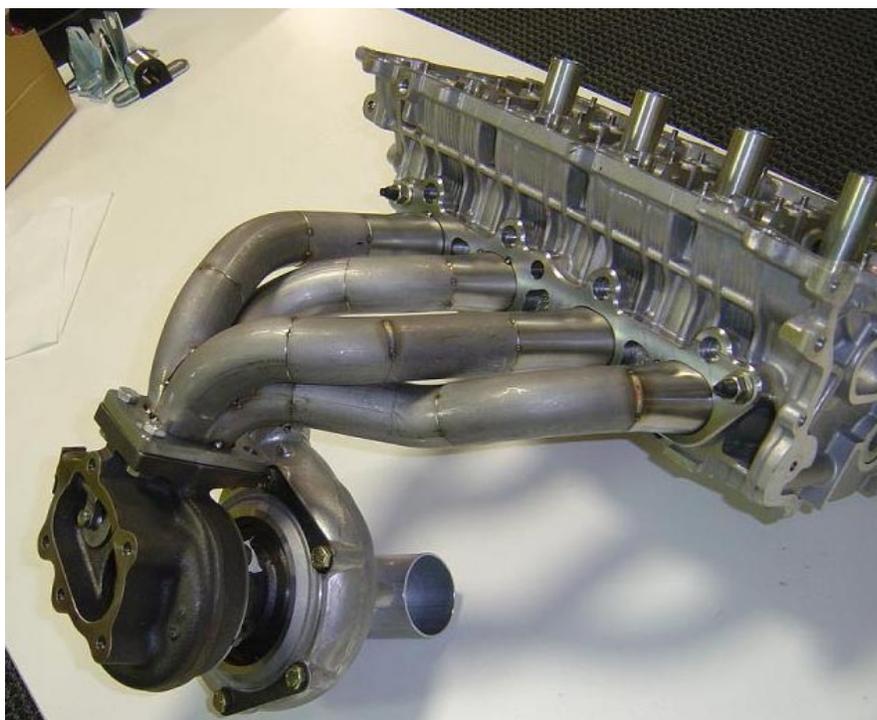
- When storing tires, put them in a black plastic bag, lower the pressure, avoid temperatures below 32 degrees F, and avoid ozone concentrations. They should be unloaded because the tread may take a set if the tires are supporting a load.

- Go to Paul’s website for other info and suggestions:

www.insideracingtechnology.com

See Paul’s book for more info and engineering theory. It is available on his website. Thank you Paul for sharing your insight with all of us.

And a big thank you goes to Blake Tatum and SFR for putting on this seminar.



Exhaust manifold & turbo. Note how the manifold tapers to smaller diameter runners in order to maintain the velocity of the exhaust charge.

Forced Fed Elise Tuners

By Kiyoshi Hamai

Traditionally the Lotus enthusiast who has wanted to enhance their Lotus has had to be part engineer, part test driver, part fabricator and part pioneer, willing to venture into areas where no man has gone before. There have been turbocharged Europas, Sevens with V8s, Esprits with nitrous and Elans with rotary engines, all done typically in the shade of a large tree and the sweat and knuckle blood of the owner.

Enter the Elise to the US shores and in numbers that smaller tuning shops are venturing into developing unique products for this low production car. Armed with experience with other higher volume cars, a few shops and manufacturers are cropping up around the world to cater to the Elise. ForcedFed located in Livermore, California is one such company who has made a business decision to build

and produce high-end performance parts for the new Elise.

ABOUT FORCEDFED

ForceFed is about a year old and was started by principles of Modacar (modacar.com) and Brett Payne.

Modacar has been supporting the sport compact performance scene since 1996 and grew from a home-based e-commerce business to a brick-and-mortar location in Pleasanton and then moved to its current location at 6583 Las Positas Road Livermore, CA 94550 in summer 2003. Customers can walk into their showroom and see a wide array of performance parts for their Acura, Honda, Nissan, Mazda or other sport compacts. Along side the showroom is a shop includes an installation bay equipped with a in-floor Dynojet dynamometer.

Payne joined to help build a new business and focus on the marketing of Modacar. It became clear that Modacar’s e-commerce business was being attacked by off-shore and small firms selling cheap poor quality parts sold at little or no margins. Challenged to meet its business objective Modacar decided to spin off ForcedFed and

end

build proprietary performance parts that required significant R&D and offer those to the discerning enthusiasts. ForcedFed looked at the market for cars that had significant build numbers, yet were niche products and attracted the enthusiast. They first chose the Mitsubishi Lancer EVO VIII and more recently the Lotus Elise.

Taking lessons learned from Modacar, ForcedFed is focused upon creating quality performance parts that are well engineered, use top materials and built by experienced and skilled fabricators.

PERFORMANCE FOR THE ELISE

ForcedFed is in the process of developing 3 stages of engine performance packages. All packages require installation by authorized ForcedFed dealer/installers. Each ForcedFed installer will have access to a dyno where the customer's Elise will be dynoed before and after the ForceFed modifications are installed.

By requiring installation ForcedFed is trying to protect their significant investment of 350+ hours of R&D that has gone into their Stage 1 turbo package. Were the ForcedFed package to be sold over-the-counter in a box, it would be only matter of time before someone duplicated the pieces overseas with lower quality and undercut ForcedFed. ForcedFed is planning to train their authorized installers to assure that the kits are correctly installed.

The first Elise performance package (Stage 1) ForcedFed has developed is a turbo kit that develops 241whp (estimated 275hp at the engine) and 170 lbs-ft torque at the rear wheels (stock is 166hp & 119 lbs-ft).

The 275 horsepower Stage 1 Turbo Kit consists of:

- Garrett GT28R Turbo
- Stainless Steel Turbo Support System
- 321 Stainless Tubular Manifold
- Heatshielding for turbo and manifold
- Sparco 450 HP Intercooler Core
- 750CM Puller Fan

- Aluminum Dedicated Inter-cooler Ducting
- Powder coated Aluminum Intercooler Pipes with Isolator Mounts and Chassis Brackets
- Samco Intercooler Hose
- 304 Stainless 3 Inch exhaust system with flanged removable cat and muffler with optional tip and test pipe, using the factory donut with swivel and motorcycle springs for flex
- 550cc Injectors
- Proprietary Engine Management Computer
- Dedicated Air Intake System
- Modified Toyota Oil Pan (core exchange)
- Pressure Adaptor Fitting and Line
- NGK Spark Plugs
- Bosch Porsche BOV with Plumbing for Recirculation
- Brackets, Braces, Lines and Fittings
- Engineered Engine Restraint System

The ForcedFed Stage 1 Turbo Kit is priced at \$7200 (without installation). Total weight gain over stock is estimated to be 20 lbs.

ForcedFed contracted a designer for the initial kit who has a long background in turbo engines having designed turbo systems for CART, Trans-Am and other racing series. The thought and engineering that went into the Stage 1 kit is apparent, the inter-cooler is mounted to existing holes and mounts. An aluminum shroud mounted to the left side grill ducts all the air from this opening into the intercooler. The pull fan is nicely mounted to the intercooler with studs welded to the intercooler tanks. The plumbing for the entire system is assembled with quality hose clamps and hoses and is designed to be as short as possible to eliminate turbo lag. The intercooler tanks are fabricated from sheet aluminum instead of the common cast type. Cast tanks are thick and heavy and act as a heat sink deducing the effectiveness of the intercooler.

Testing has shown that ForceFed achieved sufficient results with the intercooler. In full throttle test runs the intercooler temperatures dropped 20-30

degrees.

The intake is mounted behind the right side grill opening that allows lots of cool air and then ducted back to the Garrett GT28R Turbo. You can barely see the Turbo mounted to a nicely fabricated s/s header with tapered exhaust runners to promote a high velocity stream of exhaust gasses to turn the turbo. ForcedFed claims that there is no perceptible turbo lag due to these design features. Maximum boost is approximately 7 psi.

The ForcedFed exhaust system mounts to a factory donut with swivel and springs that allows ample movement to prevent fracturing. The system retains the catalytic converter and exits through the stock location.

The fuel injectors are enlarged to 550cc to cope with need for additional fuel. ForceFed has tuned the air/fuel ratio to about 11.5-12.0, substantially richer than the stock 13.0-13.6.

There are no internal changes to the engine; the cams still come on at about 6200 rpm. However with full boost attainable at 2500 rpm the Elise is transformed into a stormer even from 3000 rpm.

On this, my second visit to ForcedFed the UniChip piggyback engine management module, which was in place during my original visit was being re-calibrated. During ForcedFed's testing the stock Lotus ECU from EFI slowly adjusted the air/fuel ratio back to the 13.0-13.6 that is desired for the normally aspirated engine. When ForcedFed realized the Lotus ECU was learning and adapting they stopped testing not wanting to damage the engine (too lean). ForcedFed was surprised by the quality (smartness) of the stock Lotus ECU, it is very uncommon for a factory ECU to be able to adapt by such a significant amount. Most factory ECUs have a very narrow range in which they can adapt and change, but the Lotus board is significantly "smarter". ForcedFed working on a solution at this time and are confident that the ultimate result will be the correct fuel map.

Just after my first visit to ForcedFed they took the car down to

Southern California for testing by "Sports Compact Car". The results of that test could not be disclosed to me due to press embargos, but it was clear ForcedFed was pleased the way the car performed making 10 quarter mile runs in a row in the 12 second range. Expect to see the test results in a future edition of "Sports Compact Car".

The test car (belonging to a Chicago owner) did get a ACT clutch, but ForcedFed feels that the stock clutch is up the task for normal street driving. If the owner of a turbo car intends more frequent standing start launches then the ACT clutch is recommended.

At this writing ForcedFed has not done any emissions testing. When asked about CARB (California Air Resources Board) approval, ForcedFed indicated that it is unlikely they would pursue approval unless they could find a way to obtain it without the cost and time normally required.

SHORT RIDE

It was on my first visit to ForcedFed that Brett gave me a ride in the Stage 1 modified Elise. The power is phenomenal. The car's nose pops up and the car rockets off getting to triple

figures in a few short seconds. The claim of 12-second quarter mile times seems realistic, as does high 3 second 0 to 60s. When was the last time your head was slammed into the headrest and pinned there as you blew by just about anything else out there?

Power delivery was smooth, with not perceivable flat spots or hesitation. The turboed engine is capable of smoothly pulling from 2500 rpm right up to redline. As you look at the dyno charts you'll note a slight dip at 6200. The higher lift cam kicks in and briefly starves the engine until the turbo has an opportunity to catch up.

Simply put the Elise is transformed into something akin to supercar performance.

TWO OTHER KITS

ForcedFed is designing two additional performance kits.

Normally Aspirated Kit

The NA kit will include a new intake system and exhaust. ForcedFed will evaluate the need for an ECU change.

400 Horsepower Stage 2 Turbo Kit

ForcedFed purchased a new Magnetic Blue Elise and plans to use it for developing the 400hp Stage 2 Turbo kit. The Stage 2 kit will likely include:

- Forcedfed Built Long Block with British Racing Green Crinkle Valve Cover
- Forcedfed Engineered Fuelling System
 - Garrett GT28/71 Turbo Internally Gated
 - Stainless Steel Turbo Support System
 - Larger Runner 321 Stainless Tubular Manifold
 - Heat shielding for turbo and manifold
 - Spearco 450 HP Intercooler Core
 - 750CM Puller Fan
 - Aluminum Dedicated Inter-cooler Ducting
 - Powder coated Aluminum Intercooler Pipes with isolator Mounts and Chassis Brackets
 - Samco Intercooler Hose
 - 304 Stainless 3 Inch exhaust system with flanged removable cat and muffler with optional tip and test pipe, using the factory donut with swivel and motorcycle springs for flex
 - 550cc Injectors
 - Engine Management System TBD
 - Dedicated Air Intake System
 - Forcedfed Aluminum Baffled Oil Pan
 - Pressure Adaptor Fitting and Line
 - NGK Spark Plugs
 - Bosch Porsche BOV with Plumbing for Recirculation
 - Brackets, Braces, Lines and Fittings
 - Engineered Engine Restraint System

The price for the NA and the Stage 2 kits has yet to be determined.

AUTHORIZED FORCEDFED INSTALLERS

Two authorized installers have been appointed at this writing.

KTR Performance LLC.
99 Fitchburg Rd.
Ayer, Massachusetts 01432
978-772-9911
Fax: 978-772-9499



The intercooler is at the top-right and the exhaust manifold can be seen between the engine and the boot (trunk).

info@ktrperformance.com

Dimmitt Lotus

25191 US Highway 19 North

Clearwater, FL 33763

1-800-407-6557

info@dimmitt.com

Lotus of San Francisco

999 Van Ness Avenue

San Francisco, CA 94109

PH: 415-776-7700, FX: 415-771-2483

www.bmcd.com Auto Logic

5627 Star

Houston, Texas 77057

713-516-2081

brad@auto-logic.biz

www.auto-logic.biz

FINAL THOUGHTS

I am impressed with the overall quality, design and engineering that ForcedFed has put into the Stage 1 Turbo kit. The installation and results speak well for their efforts. ForcedFed is building a quality product that has the look of a factory effort. ForcedFed is a small independent company who must be praised for their work and taking such a business risk, however they do not have the resources of Lotus and thus their testing cannot duplicate a factory effort.

Additionally, any aftermarket kit that is not approved by Lotus is likely to void the factory warranty. The Toyota engine is has been proven to be durable in the Toyota vehicles. Aftermarket turbo and superchargers in the Toyota cars have not shown ill affect on the durability of the 2ZZ-GE engine. The Elise owner should then be armed with this knowledge and make their own decision.

So, if you're interested in a seriously fast Elise, one that can run past a Z06 on the straights, then consider the ForcedFed Stage 1 Turbo Kit.

Contact: Brett Payne, ForcedFed
www.Forcedfed.com, 925.371.2288

end

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Mike's Place

Yes, we have another fiberglass workshop scheduled for Mike Ostrov's shop, on Saturday, April 23rd. And at this one, we are going to have our debut try to also have a **parts swap/sell** also. So everyone that has Lotus stuff to sell, or that they need, **BRING IT**.

4119 Santa Rita Road, El Sobrante, CA 94803 (510) 222-6437. RSVP at: (510) 232-7764 or mikeostrov@webtv.net. 10:00 am start time. The topics are open to suggestions. We all usually take a lunch break at one of the local sandwich shops. Remember to bring a folding chair along with any 'show & tell' piece or fiberglass offering you may want to bring. This event is not necessarily limited to experiences in plastic. If you have any suggestions or subjects you would like to discuss or contribute, just call Mike to discuss them.

Directions Fom Highway 80: Exit at San Pablo Dam Road, bear right onto the Dam Road into El Sobrante (2 miles or so). Left turn onto Appian Way (Light controled and Olivers ACE Hardware store on the left). First right onto Santa Rita Rd (Grocery store on the corner). Shop is third building on the left with gravel driveway.

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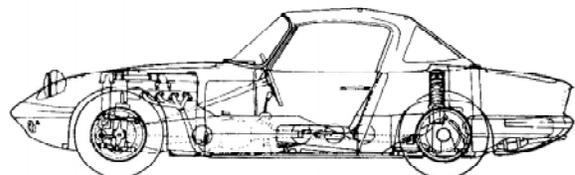
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For Sale: Cobra (1) sport seat. Adaptor bracket fits M100. Medium grey cloth. Like new. \$200 OBO. Mel 925-831-8834 or darmel@sbcglobal.net.

For Sale: 1974 Lotus Elite. Complete operating car and a small mountain of spare and maintenance parts. 80k, needs paint. Best offer. Allen (408)354-7645 or dubberly1@verizon .net

For Sale: 1969 Lotus Europa 54/1636 for sale. Original except for Hermes manifold, Weber 45, oil cooler, Cosmics with Yoko A008's. Good runner and very decent looking. Robin Jackson, 707 526 5535 , apexbrit@msn.com

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For Sale: 74 Europa. Yellow with creme cloth interior. Low mileage car. Not running, bent valves trying to replace pulley seal. Head redone and ready. I didn't install for obvious reasons. Can send pictures to interested members. I live in Moorpark, Ca.(Ventura Area).Contact at 310 4660421 day cell or evenings at 805 5290544. E mail allis99@earthlink.net Reasonable offers accepted for immediate sale. (3/05)

For Sale: 1967 Europa Series 1a Perhaps the finest original example left in existence. This two owner car was used by Lotus for the 1967 Auto Show circuit and was sold off the floor at the LA Auto Show that year. It has won several awards and is in excellent condition. At less than 1400lbs the Series 1a is even more pure and light in the Chapman tradition than the later, more common and heavier S2. The car is garaged in the Seattle area. For more information go to: <http://www.galos.net/mike/CarsForSale>. (01/05)

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The Chapman Report is published monthly by the Golden Gate Lotus Club, PO Box 117303, Burlingame, CA 94011. The GGLC is a non-profit incorporated car club and is not affiliated with Group Lotus, Team Lotus or Lotus Cars USA. The GGLC's annual membership dues are \$25.00.

Opinions expressed in the Chapman Report are those of the authors and do not represent those of the GGLC or its officers.

Submissions to the Chapman Report are accepted and encouraged. Please email them to chapmanreport@gglotus.org in MS Word, rtf or ASCII text. Submissions may also be mailed to Jim McClure, 11238 Bubb Road, Cupertino, CA 95014.

2003 GGLC Officers are: President: Faisal Khan, Vice President: Pete Richen, Treasurer: Laura Hamai, Event Coordinator: John Zender, Membership Chairman: David Anderson, Secretary: Jon Rosner

Chapman Report Staff: Editor: Jim McClure, Circulation Manager: Tom Carney, Advertising Manager: Mel Boss.

Classifieds

(non-commercial ads are free to GGLC members and will run for three issues before requiring renewal)

For Sale: 1979 Esprit S2. Commemorative Edition #100 (last one). Black with gold stripes (like all of that series Esprit). Very good condition. Well cared for. Reliable. Previously owned by David Anderson (GGLC). Chuck is 3rd owner. \$10000 Call Chuck: 707-875-3728 (2/05)

For sale: open trailer ,pro built custom,15' bed,73" between fenders, fulldeck with Recessed D ring tie downs.Tandem dropped axles with full spring suspension,surge brake,new tires with new chrome wheels.less than 1500 miles on trailer.built for lotus elan and Jag xke.nice light towing trailer.

Also have lotus twin cam L block,perfect weber cyl head,omega 11:75 pistons, steel crank, carillo rods,genuine set minilites with both sets of lug nuts.all lotus components are brand new including wheels. contact Joel Mauser 209 477 4198 or 209 482 5351cell.located in Stockton,calif.

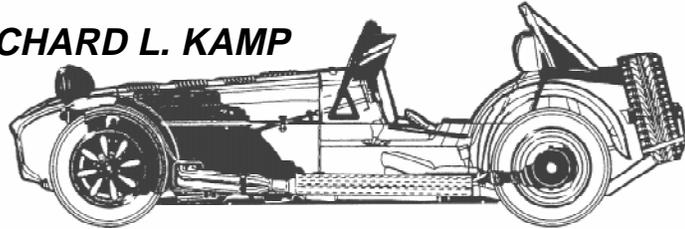
WANTED: Lotus Europa S2. Project or non-runner ok. Frame should be straight. Call Ed at 510-849-2833 (3/05)

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FOR SALE: 1. Elan Series One body only. Needs some glass fibre remodeling and attention to the rear lamp panel. No title. 2. Elan FHC Series 4. Almost complete. missing a few mechanical bits: ie engine tranny, backbone chassis, suspension, diff. Great project or starter car. Title available. 3. Elan knock off (4), bolt on steel wheels (4) and one set (4) Europa factory alloy wheels. Sensible offers considered. All items FOB El Sobrante, CA. Mike Ostrov (510) 232-7764 or mikeostrov@webtv.net

For Sale: 1991 Elan (M100) This car has been an amazingly reliable daily driver from the time I bought it until my Elise replaced it. It has less than 39,000 miles and is in very good shape. The car is in the Seattle area and can be seen at: <http://www.galos.net/mike/CarsForSale> (01/05)

For Sale: 1969 Lotus Elan +2 vintage race project car comes with Spyder chassis, Cosmics, limited slip dif, Koni's, steel brake lines. Extra set of widened steel wheels. Have Weber head to be installed with mild cams. \$4800.00 George at 831-648-9064 (3/05)

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