

Phil Smart - Still Loves His Jaguars

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When One Lightweight is Not Enough

Car No. 1 - 'CUT 7'

Phil Smart loves his Jaguars. The Foundation President of The Jaguar Driver's Club of South Australia, who has lived in Brisbane for many decades, has built an impressive collection of Jaguars, and that included a 'semi-lightweight' Low Drag bodied E-Type mirroring **Dick Protheroe's** famous ex-factory-built racer registered 'CUT 7'.

Phil's 'CUT 7' Replica was made by **Rod Tempero** in New Zealand. **Tempero** are famous worldwide for their C type and D type bodies that they have been building since the early 80's. Rod built the car in the mid-eighties for his personal competition use.

After campaigning it for several years he sold it on and it ended up in Melbourne where **V&A Spiteri Jaguar** did a lot of work on it while it was a competition car for one of their clients. Phil bought the car off **Andrew Spiteri** around 2010 and used it on and off the track in Queensland for several years while he was having two other Lightweights built.



Dick Protheroe's LWT racing E type registered 'CUT 7' off in the lake at Oulton Park UK. Jaguar created just this one Low Drag car from scratch, it utilised a light gauge steel shell and was purchased by Dick Protheroe, a personal friend of Sir William Lyons in 1963. (Dick, a scary but fair driver, was killed in a Ferrari 330P at Oulton Park 1966).

Phil sent 'CUT 7' down to **Gavin King's Concours Sportscar Restoration** to widen the rear end and put period LWE wheels on it. Up until then it was sporting D-Type wheels.

Concours Sportscar Restoration, located north of Sydney, has also built many fabulous faithful C-Type replicas, most of which are now scattered around the world.

Desire Still Not Satisfied

However, the 'CUT 7' Replica Low Drag E-Type utilised a standard steel shell

with alloy panels, but Phil still had an itch he needed to scratch.

Phil is a man with a clear mind. Firstly, he wanted an all-aluminium car the same as the twelve 1960s Lightweight E-Types. However, the recreation was to be built on the one-off all aluminium Low Drag Coupé, specifically the **Peter Lindner/Peter Nocker** car, but incorporate specific up-grades and improvements to enable this car to be used as a road car rather than the all-out race car that the originals were designed to be.

The second Lightweight was to be a FiA (Fédération Internationale de l'Automobile) compliant pure competition car, complete with a LWT aluminium block 3.8 litre Crosthwaite & Gardiner race engine.

History - 'Low Drag' LWT E-Type

If you are wondering what a 'Low Drag' E-Type is, it was the beautiful body modification created by Jaguar aerodynamacist **Malcolm Sayer** in an effort to make E-Types slipperier through the air in taking on the Ferrari 250 GT in particular. Sayer created the C, D and E-Types, plus the sculpture-like XJ13 based on air flow.

He took a Ferrari Berlinetta and the **Coombs** E-Type Roadster with its hardtop attached, and put them both into the MIRA wind tunnel. He found that air drag on the Ferrari was 10½% worse than his Low Drag E-Type and



Rod Tempero built a Replica 'CUT 7' that Phil bought and raced. Both Andrew Spiteri and Gavin King undertook upgrade work on 'CUT 7'. Seen here with his new Gavin King Low Drag LWT Lindner/Nocker Replica road car taking to the track at Wakefield Park.

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The Lindner/Nocker Lightweight as it was after the aerodynamic body was fitted in 1963 and prior to its huge accident that killed Peter Lindner. When new, the car was a 'standard' lightweight E-Type and the 5th of 12 built.

7½% better than the E-Type with a standard hardtop fitted.

The effort to build genuine all-aluminium Lightweight E-Types was not begun by Jaguar until late in 1962. The alloy shell weighed 250 lbs less than a standard steel body. Jaguar created just one Low Drag car from scratch, but it utilised a light gauge steel shell and was purchased by **Dick Protheroe** after languishing in the Competition Department. It became well known by Protheroe's traditional registration 'CUT 7'.

The **Lindner/Nocker** all aluminium car, the 5th of only 12 built, was sent back to Jaguar to have an identical Low Drag body grafted onto it in place of the previously

removable hard top. It was owned by German **Peter Lindner** who was tragically killed in the car when it was hit from behind while leaving the pits at Montlhéry near Paris in October 1963. The other driver and three marshals were also killed and the wreckage of the E-Type was impounded for ten years by the French authorities.

It was restored a number of times, but Classic Motor Cars UK (CMC) finally put it right by remarkably repairing every panel of the original body.

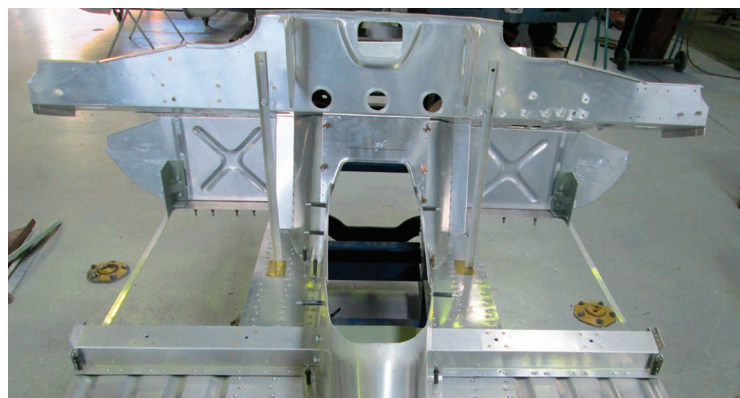
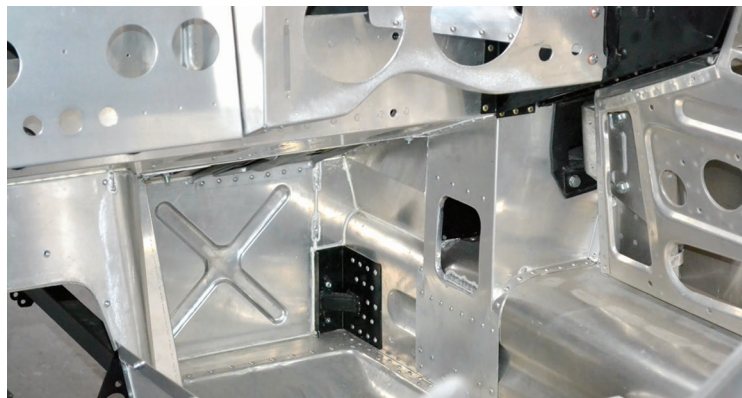
Starting From Scratch

The body of Phil Smart's Low Drag Coupé was created by **Gavin King** totally from scratch in aluminium, and is as true to

form as the original as possible. Gavin flew to the UK to witness the unveiling of the restored original Lindner/Nocker car at Goodwood in 2011 and took hundreds of photographs of what was the only other Sayer designed Low Drag E-Type Lightweight built in the period - it was also was the only Low Drag with a factory aluminium body.

For this very special project *Concours Sportscar Restoration* (CSR) imported from an aircraft manufacturer in the U.S. a specific grade of aluminium sheeting and also the correct rivets.

The body structure was built up on CSR's specially built alignment jig using the factory E-Type dimensions.



A work of art, not just a car in the making. The correct period rivets were used, and along with specific aluminium sheeting imported from the U.S. They provided a final result to please the most fastidious of inspections.

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The front frames were built new, but upgraded to handle extra stress. Additional strengthening and upgrades were also strategically incorporated into the structure to avoid fatigue - something Jaguar was not concerned about in the original car.

Unique Body Panels

The bonnet used on the Low Drag is quite different to a production E-Type bonnet, as is the rest of the outer body including rear guards, doors, boot lid and roof.

There is also a host of unique features incorporated into the Low Drag body from the boot floor, the firewall to the transmission tunnel and the inner rear quarter panels. New unique door frames and Perspex windows, and the special Low Drag front/rear windscreens included.

Mercedes Benz Pearl Beige was the colour Phil chose - and it looks spectacular.

Extensive Engine Modifications

It was decided early on to base the engine on an E-Type 4.2 litre cast iron block. A little-known fact is the original Lindner/Nocker car also used a cast iron block (albeit 3.8) rather than an alloy block which was used in the other Lightweight E-Types.

Additional torque was the aim, driveability and smoothness would be the preference over all out horsepower.

A custom long rod and short piston combination was designed, and perhaps it is a design not seen before because it was to be used in conjunction with a specially fabricated Crosthwaite & Gardiner (UK) aluminium wide-angle head. Each piston is different, and is designed to fit each combustion chamber, provide the 11.0:1 compression, and has valve pockets to provide adequate clearance to the huge valves used in the wide-angle head.

Correct dry sump lubrication is used, exactly as it was in the twelve Lightweight E-Types of the day. A correct Lightweight E-Type inlet manifold was fitted with clever 'Weber look-alike' fuel injection throttle bodies. The ignition system is distributor-less and has one coil pack per cylinder. The injection and ignition are all controlled through a Haltech computer.

The exhaust uses correct Lightweight E-Type manifolds, but the piping was designed and handmade in-house (as were the unique injection ram tubes) following an extensive dyno development programme being undertaken.

After running the engine in, on the dyno, more testing was performed to arrive at the most efficient combination and user-friendly power delivery. Peak power was seen at 409 hp, but altering cam timing, ignition settings, fuel settings, ram tube



What a thrilling sight this is in the Concours Sportscar Restoration workshops near Newcastle north of Sydney. Phil Smart's new Low Drag all-aluminium bodied Lightweight E-Type with its paint applied and wide-angle 4.2 litre XK engine fitted and his Lightweight race-car in the background. Gavin King and his team garnered a huge amount of information before beginning these projects.

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design and exhaust design arrived at a very smooth torque curve which saw the engine develop 391 hp at 6000 rpm and 365 ft-lbs of torque at 5200 rpm.

Additional testing of the completed car on the chassis dyno, and changes to muffler and tailpipe design, saw 336 rear wheel HP at 6100 rpm and 1210 ft-lbs of torque!

An E-Type Fabs all alloy 5-speed gearbox was fitted utilising tried and proven T5 internals.

Suspension & Mechanicals

The front suspension from a donor E-Type was dismantled, checked, zinc plated and then rebuilt with new poly bushes, ball joints, eccentric camber-castor top fulcrum shaft as per the factory cars, up-rated torsion bars, GAZ adjustable shock absorbers and a bigger front sway bar. CSR fitted a brand-new quick ratio steering rack solidly mounted to the front frames. The donor steering column was restored.

The donor rear suspension was dismantled, checked, bead blasted and painted. All new bearings, universal joints and up-rated bushes were fitted. GAZ adjustable shocks, with adjustable



The dedication and skills gone into these new Jaguars is nothing short of astounding.



A thing of beauty - the stunning CSR replica Lindner/Nocker Lightweight E-Type created by Gavin King and his highly skilled team.

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spring platforms and up-rated coil springs, were added. Up-rated trailing arms and cradle mounts, plus a larger sway bar, were also installed.

New peg drive hubs were fitted front and rear. The original Limited Slip Differential (LSD) centre was replaced with a Quaife torque biasing differential, and a 3.54 final drive ratio chosen to give relaxing touring legs.

Wheels are correct 15" replica peg drive cast magnesium units, six-inch front and eight-inch at the rear. They are shod with period Avon rubber - 225/65 x 15" front and 245/60 x 15" rear.

A Few Home Comforts

Air-conditioning was always a part of the build specification, but it was to prove difficult because the remaining space in the engine bay, after the dry sump tank and plumbing were installed, meant some very creative bracketry and pulleys were needed to make it fit, along with the alternator and alloy water pump.

The evaporator and blower motors were mounted in the boot under the rear parcel tray, and feed the cabin with cold air from the rear. Another challenge was seat belts.

Safety & Internals

The build specification called for fully retractable harnesses, but anchor points were the first challenge. A tubular sub-structure, designed and integrated when building the body was arrived at, so that helicopter retractable seat belts could be



Car No. 3. Phil's FiA compliant LWT race car complete with purpose built fuel injected Crosthwaite & Gardiner (UK) aluminium block and wide angle head.

adapted and fitted. The result is fantastic. There are also strengthened mounting points within the body to clip five-point harnesses into the car for track days. Replica Lightweight E-Type seats were created; here another challenge was faced. Phil's build specification incorporated head rests, and again, designed and built-in house, this was achieved. Brand new electronic Smiths instruments are used but still look faithful to 1963 units. The trim in the car was nothing short of astounding.

Many hours of custom work went into upholstery and fitting out the Low Drag Coupé to a level which rivals a brand-new luxury car. Sound and heat

insulation is used throughout. Inside the boot is installed an all-alloy fuel tank of Lightweight E-Type specification, but two fuel pumps are fitted and a surge tank to provide a recirculating fuel supply to the fuel injection system.

Phil's other all-aluminium E-Type race car was still being built so they took the road car for a shake-down and hand-over to Phil. This was completed at Wakefield Park outside remote Goulburn. Appropriately, Phil also brought down his 'Low Drag CUT 7' to sit alongside his new car. As we mentioned, only two Sayer Low Drag Racing E-Types were created in the 1960s, and now Phil Smart has his tribute Jaguars!



Car No 3. Gavin King's replica lightweight 3.8 litre E-Type race car that he also built for Phil. However, the story regarding the construction and testing of this car is a story for another day.

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Test Time & Suspension Tuning

“The initial shakedown, the process of putting testing miles on any newly built or restored car, is vitally important, but also a challenge,” according to Gavin. “With cars destined for the Concours D’Elegance arena, driving must be kept to an absolute minimum to retain the ‘as new’ freshness required to win concours events.

With the extreme performance capabilities Phil’s Low Drag possesses, testing on the road is useful, but there is no way those capabilities could be reached on the road. So, Brad Tilley, past Australian Historic Touring Car Champion, and front runner in the Touring Car Masters series, met us at Wakefield Park for a two-day testing programme with a briefing of setting up the car to be a neutral handling car which won’t ‘bite’ when pushed hard.

With alterations to rear springs, shock settings, ride height and wheel alignment all easily possible, we made changes based on Brad’s feedback.

The result is a car which enabled Brad to record a best lap time of 1:09.8. From there, further miles on the road came up, plus a comfortable road setting which Phil can alter within five minutes for planned track days.

Brad has driven a wide range of historic racing cars. He found the torque of the Low Drag “amazing”, and couldn’t believe how easy it was to drive, setting lap times of 1:10 with ease, lap after lap.



Two happy men - Gavin King and Phil Smart.

His summation: “This car is only one second off my Group NC Touring car lap record here, and it’s a road registered six cylinder with full interior, air conditioning, no roll cage, and is a car that can be driven by anyone to the shops!”

Car No.3

With the road car finished, Gavin King completed the replica lightweight 3.8 litre E-Type race car complete with purpose built aluminium block and wide-angle head. However, the story regarding the construction and testing of this car has been left for another day.

Because Phil now had three E-Types, ‘CUT 7’ was reluctantly sold. Phil stated that ‘CUT 7’ was a ripper of a car and he

had a lot of fun in it, but he primarily bought it so he could race something while the two Gavin King Lightweights were being built. The sold car went back to Melbourne where he understands it continues to have an active competition life.

Phil uses the road car as his daily work car, and he couldn’t be happier. As for the race car, that also gets lots of use, primarily racing around Wakefield Park.

There will be strong demand for CSR built Low Drag Lightweight E-Types from home and abroad. It is thrilling to see such fine craftsmanship on our doorstep. ■



Phil has owned Jaguars since he was 17 when he was driving around in his black Mark V. He has owned many others since but is content at the moment with his two lightweight E-Types and his reliable Mark X.