

TRACK | KIT | CUSTOM

TKC

KITS & CONVERSIONS – NEW & CLASSIC



FRANK COSTIN

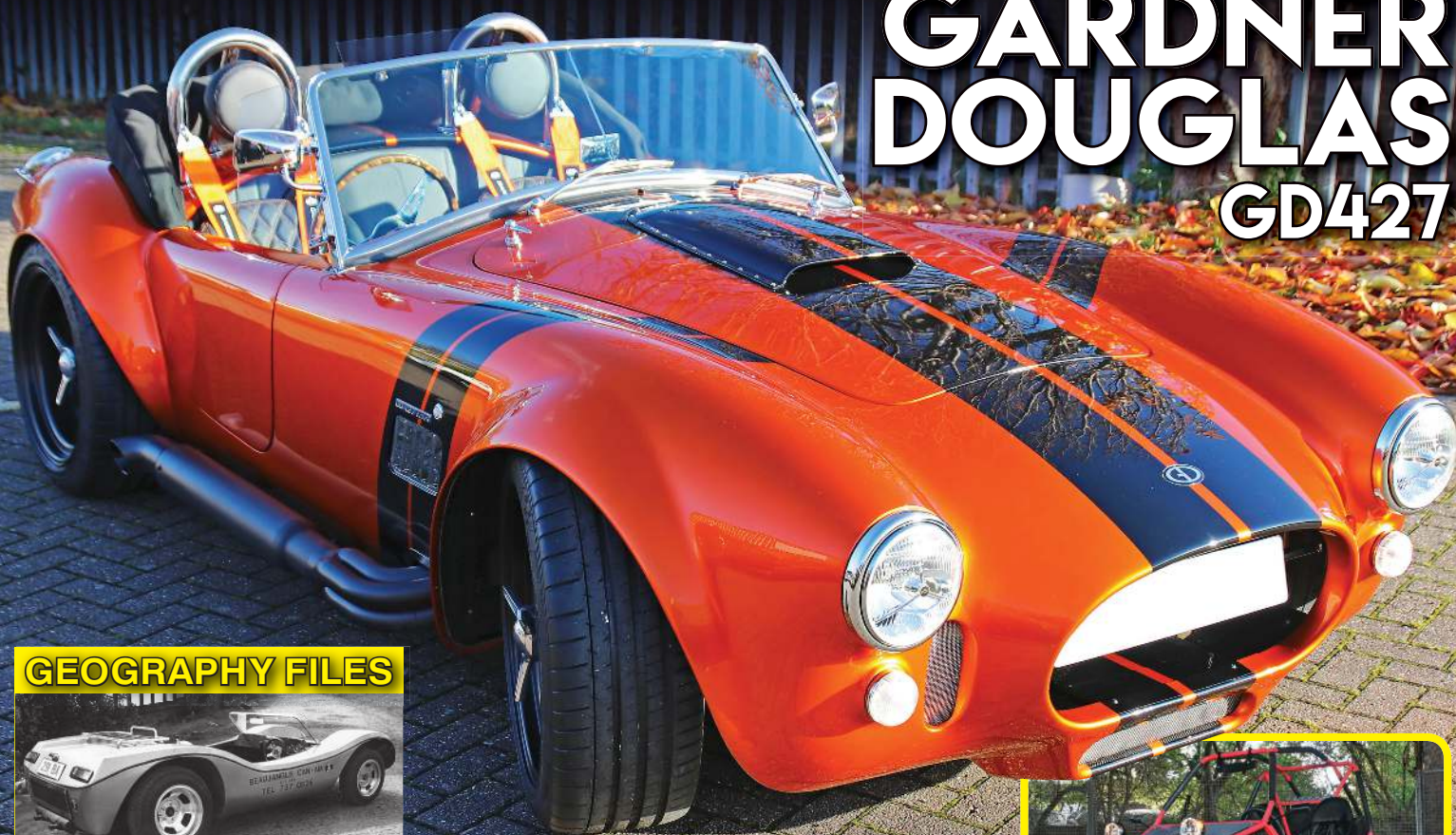
The man who tamed the wind!

INSIDE DELIGHTS

- Nigel 'Detail' Dean on heat materials
- How to fold sheet metal
- Crendon CR427 build

ORANGES ARE SWEET – SO IS THIS

GARDNER DOUGLAS
GD427



GEOGRAPHY FILES



Lancashire's kitcar history



ZCARS
MINI

BIG BANG BIKE POWER!

MARCH/APRIL 2020 OFFSALE
£4.95 | BI-MONTHLY 30-04-20



9 771742 993028



BLITZWORLD

A HEARTFUL OF SOUL



NEW
XIPHISTERNUM

Visit our website www.totalkitcar.com

No COVER PRICE increase EVER – Still **£4.95**

Suppliers of Cars, Kits,
Parts and Upgrades



AB PERFORMANCE

RACE PREPARATION
BIKE ENGINE PACKAGES

CONTINUED PARTNERSHIP BETWEEN
**ARIES MOTORSPORT AND
AB PERFORMANCE**



AB PERFORMANCE LTD
SPECIALISTS IN THE FIELD
OF BIKE ENGINED CARS
HOME OF THE ARION
S2 RACE CARS

- Visit us, pick our brains, see the cars, meet the team and take a vantage of some special offers. On show and unwrapped publicly for the first time: The Typhon and Sabre Escala as Ccomplete cars
- Also on display: Arion S2, Loco and Typhon LSI
- Plus see our technical stand out side in our race awnings with full workshop facilities

Still want more?

- Come and visit us at our showroom and production facilities. All the cars on display, tech talks, factory tours, race, track and paddock supplies. Plus the web shop is now up and running

- 100% increase in production facilities. New retail shop displaying demonstrators and cars for sale plus all your essentials for racing, track days, road
- Trips planned both near and far for new owner's group Monthly workshop Saturdays with bacon rolls, tea and coffee
- See the production versions of Typhon with over 700bhp/tonne, the production version of the new Sabre Escala after extensive wind tunnel research at MIRA, the multi chasmpionship winning Arion, plus the Loco with race-proven chassiss and running gear



Aries Motorsport & AB Performance, Pie Hatch Farm,
Brettenham Road, Buxhall, Suffolk, IP14 3DZ

• 01449 736633 • helloariesmotorsport.com • www.ariesmotorsport.com



MAR/APR 20
Bi-Monthly

Editor: Steve Hole
E: steve@tkcmag.com
T: 01435 866 068

House Photographer: Carol Hardy

Sub Editor: Vernon Mortimer

Contributors: Nigel Dean, Andrew English, Johnny Tipler, Jon Hill, Tony Thacker, Rob Hawkins, Gary Gotham, Paul Whitehead

Advertising Manager: Natalie Malton
T: 01435 866 068
E: tkcmag@carpr.net

DESIGN: Natalie Malton,
Old Shed Productions; Broad Oak
East Sussex TN21 8SJ.
T: 01435 866 068

AD DESIGN: Paul Silk Design

PRINTERS:
The Magazine Printing Company;
Broxbourne Business Centre,
Pindar Road, Hoddesdon,
Hertfordshire EN11 0FJ
Tel: 0208 805 5000

CIRCULATION:
Select Publisher Services;
62 Wimborne Road, Bournemouth,
Dorset BH3 7AR
Tel: 01202 586 148

DISTRIBUTORS:
Seymour Distribution;
2 East Poultry Avenue,
London EC1A 9PT
Tel: 0207 429 9000

Copyright 2020
All material © CAR PR Ltd and is not to be
reprinted without written consent. While every
care has been taken in the preparation of this
issue, the publisher cannot be held responsible
for the accuracy of the information herein, or any
consequence arising from it.
All rights reserved.

Submissions:
We welcome submissions from writers,
designers, artists and photographers, but no
responsibility can be assumed for any unsolicited
material and submission is construed as
permission to publish without further
correspondence and copyright shall rest with the
Publisher unless otherwise agreed in writing. The
views expressed in articles in totalkitcar are not
necessarily those of the publisher or editor. We
reserve the right to publish and edit any editorial
submissions or letters at our sole discretion.

Advertisements:
Advertisers are advised that copy is their sole
responsibility under the Trades Protection Act. All
advertising must comply with the British Code of
Advertising Practice. We reserve the right to
refuse, amend, withdraw or otherwise deal with
advertisements submitted to us at our absolute
discretion and without explanation. It is the
advertisers' responsibility to check their
advertisements carefully and advise us of errors.
The Publisher takes no responsibility for the
quality of an advertiser's service or conduct.

tkc mag is published bi-monthly
by: CAR PR Ltd,
26 Uplands Park, Broad Oak,
East Sussex TN21 8SJ.

Next issue – May/June 2020
published 1st May 2020
ISSN: 1742 9935

Printed in the UK by
The Magazine Printing Company
using only paper from FSC/PEFC suppliers
www.magprint.co.uk



When you have finished with
this magazine please recycle it.

HOLE VIEW

TKC – low volume, high octane motoring

Welcome to the March/April 2020 issue of TKC Mag. I hope 2020 has kicked off to a good start for you.

If you are one of our growing band of readers, then THANK YOU for choosing us and I hope you enjoy the ride.

EVERYONE WANTS A HYDROSHOT

At the time of writing there's still a couple of weeks to go until last issue's competition to win a Worx Hydroshot kit closes, but thus far, I can safely and definitively say that it's the most popular competition we've run in seventeen years. We've been over-run with entries. Seems like every specialist car enthusiast wants a Hydroshot!

LOOKING BACK

We have a retro-theme across this issue and I hope you enjoy looking back into the TKC Mag/totalkitcar archives with us.

You've told us in the past that you really enjoy the classic kitcar slant so we're happy to give you what you want, while also covering the best of the here and now, of course.

MASTER OF THE WIND

This year marks 100-years since the great aerodynamicist, Frank Costin was born. Sure, he is well-known, but I don't think he

got the credit he deserved. Therefore, I was delighted to compile what I think - and hope you agree - is a fitting tribute to a great man.

Not many understood the wind and how aerodynamics really affect a car's performance, like Frank did.

Several things were a given with Frank. He always seemed to have a fag on the go and regardless of the weather, he'd never be seen in anything other than a three-piece suit. Sometimes he'd take his jacket off as a concession to summer temperatures, but only sometimes, mind. What a lovely man though and the man that really brought aviation thinking and methods in to the world of car.

SALVAGE HUNTERS

I'm really enjoying the Quest TV show 'Salvage Hunters: Classic Cars' with Drew Pritchard and our mate, Paul Cowland.

In case you haven't seen it yet, it's one of those programmes that you can really relate to. In a nutshell, in each episode they buy a real world classic, do it up gently and then 'flip' it, hopefully for a profit.

What I particularly like about it is the fact it celebrates the skills of the artisan just like we try and do, in fact. I applaud them for that. It's a very enjoyable show.

ANOTHER MILESTONE

Gardner Douglas celebrate their thirtieth anniversary in 2020 and we send them warm congratulations for reaching such a fine milestone.

Since 1990 they've been making their GD427 Cobra replica range, which was joined in 2006 by the GDT70, the Burrows' take on the Lola T70 Spyder theme.

There's a feature on a particularly fine example of their work starting on page 60.

ANOTHER 2020 ANNIVERSARY!

December 24, 2020 will mark TWENTY YEARS (Crikey, twenty years!) of our website, totalkitcar.com and in case you aren't aware, in those twenty years we haven't missed a single Friday news update, something I'm extremely proud of. So, if you want to know what's going on in the world of specialist cars; product news, mixed with my views on the industry, class-leading listings and a load more, it's FREE, so come on over, you'll be VERY welcome...see you there.

Best regards

Steve Hole – Editor





**STILL ONLY
£4.95!**

tkc

March/April 2020

what's where...

SUPPORTED BY



FEATURES

8 ZCars Evolutions Profile

ZCars was founded by the legend that is Chris Allanson! for many years before a chap from Ashford, Kent acquired the marque several years ago and moved it all down south. We popped in to see how things have evolved.

14 How To Fold Metal – Part One

We're delighted that Jon Hill is now bringing his technical how-to features to TKC Mag. His stuff goes down a storm in Classic Ford mag, after all. He kicks off with part one of a two-parter on how to fold sheet steel.

22 Autosport Show 2020 REVIEW

If it's mid-January it must be Autosport

International time. Here are our highlights from 2020's show.

26 Worx Hydroshot Brushless cleans a Caterham Seven

A dirty Caterham R360 gave me the perfect chance to try out my new Worx Hydroshot Brushless model...If you like the original model, you're going to love this one.

32 Reader's Build – Paul Whitehouse's Crendon CR427

The title is pretty self-descriptive, but I think you'll find it an entertaining and informative read.

36 Blitzworld

We sent our Rob Hawkins off to get down and dirty with Blitzworld boss, Steve Malpass.

42 Xiphisternum Athame

Here's a deadly serious yet wild looking sportscar from a chap called Miles Allen. It features some class-leading technology ...

48 Metal Gurus

No, not a Marc Bolan tune. Well, yes, it was actually, but in this instance we take a look at the various companies around in the sixties who made the lion's share of aluminium bodies for specialist car manufacturers of the day.

56 We Think You'll Like

More cool car care products that we think you'll, er, like.

60 GD 427

I love the colour orange. I love an orange car. I love a GD427, so add that little lot together and here's a car I LOVE!



66 Industry Greats – Frank Costin

2020 marks 100-years since the birth of the great aerodynamicist, Francis 'Frank' Costin, so we felt it only right to pay tribute to the great man.

80 County-by-County - Lancashire

We dipped our toe into this geographical water last issue with a look at all of the kit and specialist car makers to have been born in East Sussex. I said there would only be a part two – and beyond – if you liked it, dear reader. Here's part two!

96 It's All in the Detail with Nigel 'Detail' Dean

This issue our technical guru covers the subject of heat materials. As always, it is essential reading.

100 Introducing Auto Fanatic

Our car care coverage has been getting some great feedback – thank you! – and we like to tell you about quality products, often from brands you may not have heard of. Meet Auto Fanatic.

103 Viofo 129 Duo Dashcam review

Here's a little dashcam that is ideal for specialist car use. It doesn't need a briefcase to carry it around in, while it offers great quality for a fair price. If something is worth doing and all that ...

106 Kits & Pieces

More kit and specialist car news, amusing images and other related stuff.

REGULARS

3 Hole View

The leader from the leader!

90 Clobber & Stuff

All the latest kitcar-friendly new products.

112 The Study

Automotive-related reading matter because reading matters!

Follow
us on





Hawk Cars

the collection...

...a motoring icon may be closer to reality than you ever thought

For the ultimate in authenticity,
quality & engineering
integrity



Supplier of coffin-spoke and FIA Mk2 and Mk3 427 wheels



1.8/2.6



Coupe



427



289

FIA version also available with GRP or aluminium bodywork



Workshop



Tel: 01892 750341 / 750 282
Oakdene, Riverhall Hill, Frant, East Sussex TN3 9EP
gerry@hawkcars.co.uk

www.hawkcars.co.uk

Official build agents: Jade Farms; Alland Grange, Manston, Ramsgate, Kent CT12 5BX tel: 07885 661 425

 **www.etbinstruments.com**

Instrumentation for Road, Race or Rally

Gauges

Digital Displays

01702 601055

LED Bulbs for Classic Cars

Pos or Neg Earth 12v+ 5 Yrs Warranty Money-back guarantee Designed & developed by us in the UK

Better headlights, brighter brake lights & more

www.bettercarlighting.co.uk
enquiries@bettercarlighting.co.uk
+44 (0) 121 773 7000

PETER JAMES INSURANCE

For Kit and Replica and all other Specialist Vehicle Insurance.

Call us for your next quotation

We are the enthusiast's Insurance Broker and we're always here to help.

Telephone: 0121 506 6040
 email: info@peterjamesinsurance.co.uk
www.peterjamesinsurance.co.uk

protechshocks.co.uk

Protech Shocks Ltd. Unit 10, Lysander Road, Bowerhill, Mallow, Wiltshire. SN12 6SP

protech SHOCKS

Your Complete Competition & Fast Road Shock Absorber Service

KIT CARS / AUTOGRASS / STOCK CARS / CLASSIC CARS / MOTORCYCLES / ACCESSORIES

SINGLE & DOUBLE ADJUSTABLE SHOCKS
 AVAILABLE IN 400 & 600 SERIES
HAND BUILT IN THE U.K. TO ANY SIZE
HIGH GRADE ALUMINIUM OR STEEL
SYNTHETIC OIL
3 YEAR GUARANTEE
BIG ADVANTAGE
LOW COST
SPRINGS & ACCESSORIES ALSO AVAILABLE

FOR MORE INFORMATION OR QUERIES CONTACT US ON
INFO@PROTECHSHOCKS.CO.UK
+44 (0)1225 705553

VISIT OUR WEBSITE AT
WWW.PROTECHSHOCKS.CO.UK
 FOR OUR FULL PRODUCT RANGE

THE EDGE IN PERFORMANCE AT AN AFFORDABLE PRICE

REBEL PERFORMANCE MACHINES

THE NEW HOME OF THE TRIKE & TRIABUSA PERFORMANCE MACHINES

REBEL PERFORMANCE MACHINES

Web: rebel-pm.co.uk

Tel: 01353 655192 Email: sales@rebel-pm.co.uk

ZCARS:

SAME, YET DIFFERENT ~ JUST REIMAGINED! ...

ZCARS EVOLUTIONS



If you are of a certain age, you would be sure as eggs are eggs that the crew of Z Victor One could easily apprehend the driver of a speeding original Fiat 500 using their Ford Zephyr. Read this story by STEVE HOLE however and you might change your mind...

The term 'restomod' is a buzz word at the minute. Originating in the USA, it basically means a classic car restored, but with the addition of modern design elements and upgraded mechanicals.

There are plenty of companies around the UK who have either moved into the restomod world or have been set up specifically to tackle the growing demand from customers. It's a natural evolution for our industry, I think, to embrace the restomod scene.

Ideally suited to what we do. However, much like in the classic car world, there'll be some snuffy people who'll hate being associated with the kitcar world, for whatever the reason.

Back in the real world, occupied by real people, there's a natural synergy and one of the companies that crosses over between both genres is ZCARS Evolutions.

ZCARS was founded by ex-policeman, Chris Allanson in 1999 and for a dozen or so years they'd gathered a cult following, primarily for

their Classic Mini conversion - that saw either a bike or Honda VTEC engine being shoved into the back of the little icon. Chris did develop a front-engined conversion, too, incidentally.

When Chris moved onto his Fast Mast business in 2012, he passed the ZCARS operation onto a new management team including some existing employees - and expected it to be business as usual. Although he wasn't involved on a day-to-day basis, Chris retained ownership of the company.

There was a lot of upset and

consternation when ZCARS Performance Engineering ceased trading in 2015. A very sad development and the fallout was considerable.

One of the company's customers, telecommunications professional David Rose, owned two ZCARS Minis, including a Hayabusa Turbo car, which was at the Hornsea base undergoing some work when the company packed up.

When he visited and understood what the situation was, David could see that there was more than a thousand reasons to resurrect the company. So he did a deal with Chris Allanson and took the Mini conversion side of ZCARS south to his Ashford, Kent workshop ... and created ZCARS Evolutions, opening the doors for business in 2016.

It's taken him four years to get to a position where he's now really happy to start promoting the products again, with the intervening period spent re-establishing confidence in the brand, while putting a lot of time and resources into development.

That's not to say that the sizeable

9500 sq/ft facility isn't busy. On the contrary. On the day of my visit there were kits awaiting collection and delivery and cars being built, for customers in France and The Philippines and other destinations of a global nature, as well as the UK, of course.

David has assembled a team of eight people including himself, all dedicated to producing the best product that they can. Incidentally, the Monte Carlo isn't part of the company's plans at the moment, although the Mini Conversion most definitely is.

David has worked hard on improving the quality of the products. He can supply you with a 'donor' Mini if you wish, although the preferred method is for you to source your own car and then take it to ZCARS for the conversion process - or alternatively, you can have them do the job for you. They are happy either way.

David Rose has even produced a booklet for his customers, giving them essential pointers on how to choose the right Mini donor. There's a lot of junk out there and if you're not careful



you can pay through the nose for a shed. As it is, expect to pay £5000 for a very decent example. There's no such thing as a cheap Classic Mini anymore.

Regardless of who supplies the bodyshell it gets blasted, which cleans years of detritus out of the way - but definitely is a warts and all tell-tale that reveals previous bodgery and can make an owner burst into tears when they often find out that the car they bought has more holes in it than a lump of Emmmental.

However, that aside it really is a ground zero. When it comes back from blasting, you'll know what you are dealing with. The three guys working in ZCARS' bodyshop are certainly used to seeing some horrors. Some of the bodes that people come up with are ingenious. If they put that creativity into doing the job properly then think how good their restorations would be!

Not only can they restore but they can fabricate at ZCARS, too. The vast majority of the metal parts used on their cars are produced in-house.

David and his team have completely revisited the way that their parts are made and use seamless CDS tubing for their frames now, this makes the bodyshells more rigid as well as being visually impressive.

At the rear the ZCARS subframe has been revised, meaning that it doesn't really matter which engine you choose - it bolts into a self-contained engine cradle which in turn bolts into the rollcage assembly. A universal fitment, if you will. Most kits and full builds now feature one of their own-spec Quaife drive-boxes, either the 2R, which features a chain, or the chainless all-singing; all-dancing 11R unit. Both are produced from solid billet, looks stunning and work excellently. They aren't cheap, but David's view is that if you are spending a large chunk of



money on the ultimate Mini, then it's worth stretching the budget to include one of them. You don't have to have them, of course, but if you do go that route the 2R costs £2750 inc VAT, with the 11R at £4350 inc VAT. ZCARS also offers a kit comprising of bracketry to mount units and inner CVs,

Talking of engines, sure the ZCARS marque is synonymous with the Suzuki Hayabusa, a potent beast in stock form, but some of their owners have super-sized it by fitting big turbos and/or changing engine internals, which can bring 700bhp if your budget can stretch that far. In reality, the 250-300bhp area seems to be the sweet spot and what people really want.

As you'd expect, other bike engines can be used - with the Yamaha R1 being an obvious candidate.



ZCARS History - "Aye, it's mint, is that."

I can well remember the day that then police officer, Chris Allanson announced his arrival on the kitcar scene. Like the man himself, ZCars hit the ground running at full pelt. Chris had, for many years, been a leading light on the UK's Auto Grass scene, usually in the bonkers, anything goes, Class Nine, where twin-engines are often the norm.

Indeed, Chris was good at twin engines. He first came onto our radar after he'd put a pair of bike engines into a Westfield SEi for his friend and fellow racer, Dave Jones - which appeared at the Stoneleigh Kit Car Show in 1999.

This was an ideal time to launch his company as the superbikes in kitcars idea was going crazy. Fisher Sportscars, Formula 27 Sports Cars and others were full-on with bike-powered kits. However, putting two engines into a kitcar wasn't so 'normal'!

Chris had two more Westies that received his engineering creativity, gained from years of auto grassing. The sort of stuff that he viewed as everyday. He never could understand why kitcar journos like me raved about his cars. He was also a great self-publicist and if we had an event that we thought he'd like to attend, not only did he turn up every time, he was first one there, regardless of location..

I have some great memories of Chris back in those days, with loads of funny stories. One about a fur-lined Mini van springs to mind; while there'd often be a "Aye, it's mint, is that" comment from Chris flying about.

The first time I drove the twin-engined car he did with Tiger Racing is etched into my brain. With Chris, then still a serving policeman, in the passenger seat egging me on to overtake cars on the A64 road to Scarborough, are fond memories - by crikey, that car was rabid - and also the day we went off to an RAF base at Abingdon (which at the time was open for trackday events) to do a feature.

We invited British superbike front runners of the day, James Haydon and John Reynolds along to test drive Chris's car and they also brought a couple of other riders along with them - such as Ian Simpson. They loved that car so much that they then invited us all along to a pre-season test day for BSB at Mallory Park.

Chris was there first - of course - and was having a guided tour of John Reynolds' Red Bull Ducati when we arrived. Then there was the day we organised a 0-60mph shoot-out at Santa Pod and invited every manufacturer of performance kitcars to the event. Simple concept. If you had a fast car, you had the chance to see how fast you

could sprint to 60mph. About twenty cars entered ... and guess who won? A time of 2.6-seconds was quick. Unofficial world record time quick, in fact.

When Chris decided to turn his hobby into a business it was no surprise. He was in high demand and so the setting up of ZCars was a logical step. A house move saw him relocate to a large farm on the East Yorkshire coast, between Hornsea and Withernsea. He had a large amount of land with a lot of workshop space.

His love of Minis led him to concentrate on them and he introduced a rear-engined bike engine conversion kit package that gathered a lot of interest and publicity ... and pretty soon ZCars gathered a cult following. It wasn't just Minis as Chris produced conversion kits for Citroen Saxo, Smart ForTwo and others, while engines included Yamaha R1 and Suzuki Hayabusa.

Honda VTEC was being recognised as a great engine back then, so Chris introduced a VTEC conversion, which was great, not only because it was ideally suited to his purposes but because it was ideal for people who owned a ZCar but didn't want a highly-strung bike engine.

Then came a silhouette Mini kit, Chris's first proper kitcar, that he called the Monte Carlo and I had a great morning ragging one of them around Cadwell Park, about 15-years ago. He brought along a Mini conversion and a Monte. I drove the Mini with a Busa engine first, which was ultra-fast, obviously ... but that Monte Carlo. By crikey, that was something else again. 'Aye, it was mint!'

Allanson was always looking to develop the products. A lot of people probably thought that he could have carried on in a low-key fashion enjoying his autograss hobby, building the odd car and living happily on his copper's pension. Ha, not Chris though. He's a human dynamo. Every time I'd see him at a show or an editorial event, he'd enthusiastically show me the latest addition to his pricelists.

He was also happy to create bespoke parts for customers and also take on special commissions. He attacked his new venture, Fast Mast, with the same vim and vigour and this tapped into the world of wind turbines. Rather than have to construct a permanent structure, Chris approached it differently with a 'turn up and erect it' mast. By 2012 he decided to concentrate fully on Fast Mast, so he took a step or two back from ZCars, although he retained the rights and ownership of the company's products. A new management team was installed at the company.



As far as 'car' units go, obviously the Honda VTEC is still very popular for ZCARS Mini use, while latest additions are the Volkswagen Group TFSi unit and the Ford EcoBoost, either 1-litre or 1.6-litre. A 2-litre Focus ST engine fitment was recently finished, while an Audi S3 DSG, Focus ST Stage 3, 2-litre TFSi manual are all mid-build at the moment. Actually though, if you want to go off-piste and use your own choice of engine, David will happily fabricate the appropriate cradle for you.

ZCARS is particularly well-equipped to help eke more power from the latter two units as they are official agents for Revo, who specialise in Ford and Volkswagen Group remaps, while another of David's companies, located next door, is BRC Performance Tuning who are Ford tuning meisters (In essence, ZCARS and BRC have merged). Stories of 600bhp Focus STs are frequent, aided by state-of-the-art Syvecs ECUs.

You buy your Mini conversion kit (from £8395 inc VAT) and you can leave it standard if the word 'standard' can be associated with such a car, as there are myriad options, which means

that no two builds are usually the same. Customers loving the concept and the Classic Mini, but seemingly all having differing tastes and ultimate goals with their cars. David reckons that a good spec car can be built from around £30,000. Add around £10,000 if you want ZCARS to build it for you, but that's only a guide because ultimately it depends on options and whether your car requires restoration prior to the build commencing.

Anything that hasn't been restored or refurbished, is brand new, incidentally. The next development for the XCARS Mini Conversion is to do away with the rear trailing arm set-up and David is working on a rear double wishbone arrangement.

In addition to developing and revising the Mini packages that the company is best-known for, David Rose's ZCARS has introduced its own products on the theme, too. As a fan of the original Fiat 500, David watched how the demand for those cars has grown in recent years and reasoned that if an engine conversion worked so well for a Classic Mini, it should work even better on a 500, especially if you

factor in the surge in interest in the 'restomod' idea; plus, of course, the Fiat already has its engine in the rear!

So, 2017 saw the arrival of the ZCARS Fiabusa ... yep, you've guessed it, a Fiat with a Hayabusa engine fitted. The result - the black demonstrator you see here is a stunner. A beautifully restored Fiat 500 that has a considerable 190bhp added to its original circa 40bhp mix! If you had to show someone what a restomod actually is, this is probably the best definition you could provide.

Response to the Fiabusa has been very good, but other potential customers - although digging the concept of a souped-up restored 500 - couldn't face living with a bike engine for more than five minutes. Therefore, David got thinking and came up with the - you'll love this one - 'Fubaru', which replaces the Hayabusa with an engine and gearbox from a Subaru Legacy, an EJ253 2.5-litre unit!

Incidentally, those lovely badges were originally hand cut by David's father! Lovely, aren't they?

David also acts as UK agent for the Spanish Mini conversion specialists, Restomod Classic, based in Madrid, who produce a front-engined 'sleeper' Classic Mini with a Ford 1-litre EcoBoost unit available in 123bhp, 138bhp or 162bhp 'strengths'; although on their website the company says that up to 215bhp is possible. There are many tasteful upgrades all over, inside and out.

At first glance the car looks like a beautifully restored stock Classic Mini - but again, that's the beauty of a restomod. It's a period vehicle with modern features. Prices start at £40,000.

So, there we have it. A round-up of what the 'new' ZCARS has been doing for the last four years. They are a very different company that has introduced new models of their own, while enhancing the stuff that put ZCARS on the map in the first place. They have an enviable array of facilities, which means they can pretty much cater for your needs in-house or via one of the approved specialists they use.

For example, lurking in the workshops on the day of my visit were Hillman Imp and Volvo Amazon Estate restorations. It's indicative of what the company can offer nowadays.

Same but different, indeed.



For more information contact:

ZCARS Evolutions Ltd;

Unit 7, Geerings Business Centre,
Chart Road, Ashford, Kent TN23 1EP
Tel: 01233 226 122

www.zcars.org.uk

Classic & Retro Seats

Over 60 styles of Classic & Retro style seats in Vinyl, Leather & Cloth



Brightwork

Our Massive range of brightwork is suitable for many vehicle types



Interior & Exterior Mirrors

100's of Interior & Exterior mirrors in stock



Fasteners & Latches

100's of locks latches & fasteners



Instruments & Gauges



Wiper Arms & Blades

Full wiper and washer systems



**EUROPA SPECIALIST
SPARES LTD**

**CALL FOR A
NEW
CATALOGUE
IT'S FREE**



Lighting

100's of lamps & LED lamps



Fuel Systems



Steering Wheels

Huge range of steering wheels



Warning & Switches



Boot Racks

Stainless steel or Aluminium options available



Battery & Electrical

Batteries, chargers, cables and ignition



Cobra Spares

100's of spares, upgrades and gift ideas from your Cobra Specialist



COBRA SPECIALISTS
KIT CAR · MOTORSPORT
VINTAGE · RESTORATION
RETRO · CLASSIC



International Shipping
Dedicated Sales Team
Next Day Delivery

Europa Specialist Spares Ltd, Fauld Industrial Park,
Tutbury, Burton-Upon-Trent, Staffordshire, DE13 9HS

All Major Cards Accepted



PayPal Secure Online Shopping

Call our Sales Advice Team
+44 (0) 1283 815609
www.europaspares.com
email: info@europaspares.com



IRNTAM KITZ

We complete
all makes. Collection
service available.



Do you need help with your kit?

Don't have time, space or tools — or just lost interest?

It happens! We're here to help!

Whatever the state of completion or repair of your kit.

We offer **FREE**, fully itemised estimates at your home,
so you can ask any questions.

All kits prepared are IVA
certified, registered, taxed,
fitted with free new registration
plates and a full tank of fuel

**Ready for
use!**



your babe really is ready to go...

We have...

- Bodyshop preparation & paint
- Accident repairs & rebuilds
- Polished stainless steel exhaust system
- Flat shifter gear change systems
- Rolling road set-up
- Trim & covers offered for all makes
- All forms of fabrication
- Chassis fabrication

Call **02476 695 511** or **07951 567 573**

E: irntamkitz@btconnect.com

www.irntam-kitz.co.uk

Southern Automotive

*'Thunder makes the noise;
Lightning does the work'*

**Ford Engines –
Our Specialty**
We'll power your Cobra
Rebuilt Toploaders
& Tremecs



Specialising in

Ford FE Big Block Cobra Engines

427 – 428 – 406

Original Ford 427 Side Oiler Blocks in Stock

Also your resource for

Ford 302, 351W and 351C engines.

Contact **Southern Automotive**
for more information and pricing.

Phone: **770-898-9360** or e-mail at

saengine@bellsouth.net

and visit our website

www.southernautomotiveengines.com

Innovative
design flair & ease
of construction



Find us on
Facebook 

QUANTUM SPORTS CARS



**QUANTUM
XTREME**

- Stainless steel monocoque
- Multiple engine options
- Motorsport pedigree
- Ideal trackday car

We can supply
parts and panels for

ALL QUANTUM MODELS



**Sunrunner
& Napier**

Now also available



Quantum Sports Cars

Dept TKC, Unit 7, Kingswood Court, South Brent, Devon TQ10 9YS

Tel: 01364 388 008 or 07565 956 138

Email: robmirach@gmail.com



ACEWELL.CO.UK

Multifunction digital speedometers available
from your local motorcycle shop

01670 898402

Speed, RPM, Temperature, Lap Timer, Remote Control, Trip, Odo

How To

Part One

Fold sheet steel

Making a dash-panel for your kitcar is something you might like to take on. JON HILL is our guide and helps us discover the various ways you can bend sheet metal – cheaply and cost-effectively but still using commercially available DIY machinery and tools. Next issue, Jon looks at how to do it **WITHOUT** busting the bank!

There are a few areas of my car that I've never been happy with; which means some fairly radical surgery. I'm getting more fired up to sort it right now; so, it looks like it might happen; no really!

One of the relatively minor areas is the dash – I love the smoothed-out look with as much hidden as possible but then, I'm a big fan of the 60s muscle car theme as well – can I combine both? OK, the car in question is a Ford Cortina with a V8 engine, but the methods and techniques I'll be using cross-over to the kitcar world.

Mk1 Cortina dashes – well, the Aeroflow in particular; which is what mine is – and a very late one at that, being an E-plated 1967 car – had a bit of forward thinking as far as Ford was concerned. The dash is modular so it's easy to swap from right to left hand drive.

By merely exchanging the glove-box lid for a dash insert, they could re-position the instruments and bingo you can drive on the wrong side of the road! However, in my quest for an ultra-smooth dashboard, I've welded up the glove-box door - but what of the instrument binnacle? That's actually a

problem because it's plastic and you can't weld that to steel! I'd thought of bonding it but more than likely, it would crack in use and that would ruin the effect ...

What all this dashboard waffle is all about then is the fact, I have no choice but to re-make the section in steel and weld that in, but what of those round binnacles? They'd be hard to replicate. Plus, I love strip speedos and was that the look I wanted? As you'll see, I've actually made both types of insert and I'll decide later, which I like best....

Whatever, there's still the binnacle quandary – then I had a brainwave – cut them out of the plastic base, make a folded piece of sheet metal to replicate that and set the binnacles in two round holes. Which is exactly the way the air vent pods fit at the ends – and that nicely brings us on to the purpose of the feature – the various ways you can fold sheet metal with either loads of money or virtually none at all. Having said that, there's yet another way that entails virtually zero cash – plus you can easily form curved sections too. Let's get cracking and fold some flat steel....

The dashboard



Here's our Aeroflow dash with a whopping hole where the original instrument binnacle sat – it's been trimmed a bit over the years but it's basically all there – what we need to do now is fill it ...



This is another original insert I had, which was factory made from plastic – I've always thought it would be good to simply have the two instruments in the dash and nothing else except the two dash-vents at either end – it is an Aeroflow after all; which they're famous for – plus they look quite space-age too (for the time)....



...the instruments are lovely – they have that gorgeous Cortina script; except the left is merely an instrument cluster – we'll sort that later; I have a plan! (are you sure you're not a seasoned kitcar builder, Jon! – Ed)



Gutted. As you can see, the panel is pretty complicated – plus there's loads of holes to fill....



...turning it over and the instrument fixing mechanism is tricky too; hard to replicate!



So, what I did was cut the pod sections out on my bandsaw and trim the sides flush – they will need fitting around the edges though, once I've made the panel behind from sheet steel – let's do that first!

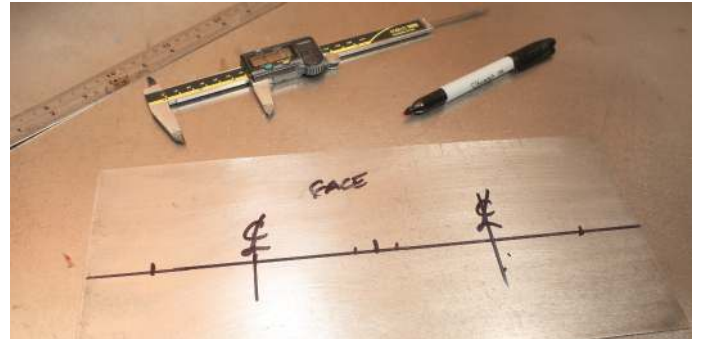
Prepping the metal



First off, I started with a piece of 18-gauge (about 1-mm) sheet steel to the over-size dimensions of the hole we need to fill – we'll trim it to size later so it fits exactly. I began by drawing a horizontal centre line on both sides; marking where the panel needs to be folded.



Placing the pods onto the panel gives me the chance to check how they sit apart – closer or farther away – originally, there's a 22-mm gap between the two; which I chose to keep although the binnacles are tapered and shaped so the outside edge covers the holes we'll cut in the sheet steel.



...I marked off the centres of each; using the outside diameters of the inner sections of the plastic pods – you'll see!



We divided the diameter by two and set that on a steel-pointed compass to scribe a line ...



...using these, it's worth centre-punching an indent so the compass point locates; to stop it sliding across the steel – you can also draw the line in with a Sharpie to highlight the scribe line.



Note, we aren't going to cut the holes out just yet because, as one-piece, it'll be easier to fold without distortion. We'd already done this next bit but it's worth showing – we flipped the panel onto its back face to mark the line we'll actually fold, too. We did this with a sliding square; which you can set the depth with and run it along to scribe a straight line; parallel to the bottom edge ...

Folding



Firstly, we need to measure the angle to fold the metal to – we used a small sliding bevel gauge, but you could easily make a tool from two bits of wood screwed together so they rotate to the required angle ...



Sorry, but I have the luxury of a big one – my folding machine will form a 3ft sheet. This is the expensive way and there are much cheaper options which we'll show in a sec....



Bending is dead easy, you slide the sheet steel in between the flat jaws which clamps it, then pull up the bending bar at the bottom – there's a gauge at the side that tells you to which angle you're bending....



We check with the sliding bevel gauge we set earlier – it's best to slightly under bend it so you can tweak and sneak up on it to get it dead right....



Next, we cut out the holes for the pods – I used a jig saw with a fine metal cutting blade and trimmed the edges ...



....so the pods nicely slide in. That bit needed more trimming than I thought since the angles seem to close up a bit so it's worth cutting the holes a millimetre or two, over-size....



Sitting on the bench mocked up, you can see how the outside faces of the pods taper and cover the holes cut in the sheet steel – looks a lot like the original but without all the holes and guff; which nicely smoothes it all out.

Fixing the pods



Turning the panel over and you can see how the pods slide into the holes we've cut; plus, how the instruments locate – they push-in, turn and locate on cut-outs in the plastic. They are essential to keep so we need a method of fixing them in – which entails different ways to bend sheet steel. Before we can do that, we need to form the top edge of our panel – remember it is oversize – so it slips under the original dash cut out.



To do this we can use a small, vice-mounted folder; which is a mini-version of the floor-mounted big folder I have; forming steel up to 24in (600-mm). It's cost effective too – around sixty quid plus it's portable so you can take it to the job...Technically, the stock we're bending is a bit thick for this machine – but in practice, it copes!



We need to form this lip at the top – trust me, we do!



These bending bars work in the same way as before but it clamps in the vice....



...you simply slide the steel sheet in, clamp it down and pull the levers up and the steel bends – although there's no angle scale on the side so there's a bit of guess-work involved!



Next bit of bending is to make some steel straps to hold the pods into the back plate. Firstly, we made these in cardboard; which we'll replicate in sheet steel...



We cut some 20-mm strips and marked where we needed to fold using our card pattern.



To form this, I use these vice-mounted brakes, which are one of my favourite tools; they are so useful for folding small sections of sheet metal – they are available in several sizes; from 4in to 8in and have removable sections; allowing them to be used as a box-pan folder....



...in this side shot, you can see how they work – they're a male and female die – you put the steel in, clamp the two together and the male pushes into the female; forming a right angle fold....



...you size the brake according to that of your vice and they simply attach using very strong magnets – although that's an irritation because they attract every bit of steel crap to them; meaning you have to clean them off before mounting – ho hum, a small price and all that ...



We slotted our strap into the brake and folded the steel along the required line...



...giving us the section we need...



....although we need a much smaller fold at the top; and angled at that. OK, we made a cock up – but it highlights another method - most of these bending machines are not good at very small folds so, what you can do is use the good old vice and a body hammer method; to tap the fold over...



...you can use this to form fairly wide sections but you do risk hammer marks so a clean vice and hammer face plus care is needed. In truth, we should have left the strap longer, then trimmed it to length!



This is our strap, which should hold the plastic pod in place; which I'll replicate on each pod, to give three-to four points of contact. Not sure how I'll fix the back edge in just yet – maybe bond it or physically fix it with mechanical fixings – that's to be determined....



The steel-contacting edge, I punched a hole in....



Allowing it to be plug-welded to the back face – might be wise to remove the plastic pod for this to prevent heat damage!



Mocked up and with instruments in, you can see the effect I'm pleased with that.



...and close up, demonstrates, I've swapped that cluster instrument for a GT rev counter; complete with matching Cortina script – the guts have been ripped out and an electronic unit's been slotted in place to cope with my V8!



...and just by way of an alternative, here's the strip speedo version I had earlier...



Complete with early speedo mounted in from the back. The jury's out – which do you prefer? I really can't decide!

So, that was Jon folding sheet metal by busting the bank, next issue, he looks at how to make the same parts WITHOUT busting the bank, using a lot more basic tools and home-made parts to achieve the same effect.

This time he used a good few commercially-available tools that really save more on time than anything else. Hand-forming can take a lot longer if you don't have a folding machine, but although it's sub-titled 'by busting the bank' none of the kit he used here cost the earth.

Either way, we hope you've found this part of the guide informative.

There are various outlets around that specialise in the materials required for automotive metalworking and we've listed some of them here.

You really can start off small but can build your workshop equipment as your skills rise and budget allows. Before long, you could end up with a professional standard environment with CNC machines and plasma cutters should you wish. However, most of us are satisfied with a modest set-up featuring a good cross section of tools that will allow basic metal folding techniques to be carried out at home.

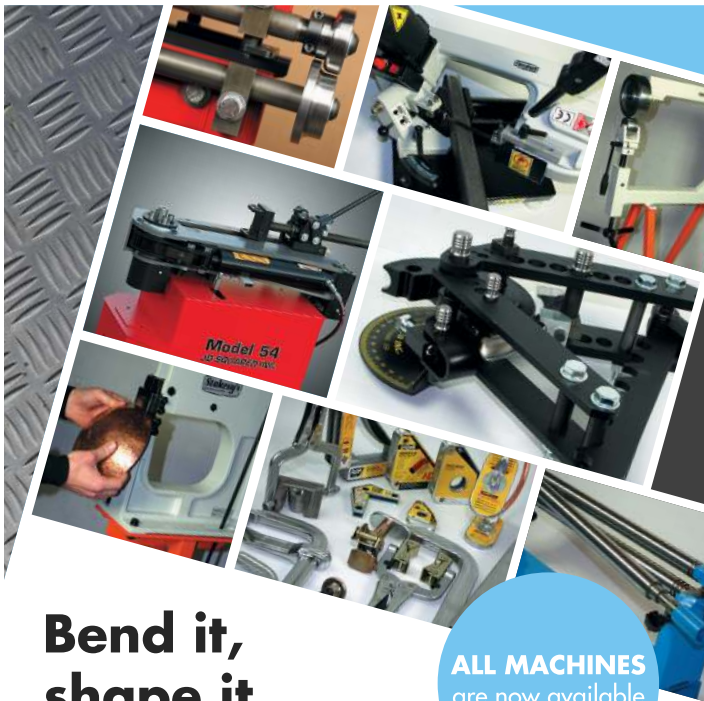
A great source of equipment can be a school or college replacing their own workshop equipment. They'll want the old lathes and the like out of the way as quickly as possible, so you'll almost be guaranteed a bargain. Likewise, keep an eye for any small engineering companies near you either shutting down, moving or replacing their equipment. Old metal-shop tools were built to last and will be superb for home use. Be aware though that those old green lathes are seriously heavy.

Stakesys - www.stakesys.co.uk

Clarke - www.clarkeinternational.com

Frost - www.frost.co.uk

Machine Mart - www.machinemart.co.uk



**Bend it,
shape it...**
any way you want it!

ALL MACHINES
are now available
for demo!

Stakesys's Metalwork Machinery brings together **affordable, high quality and unique fabrication equipment** for racing, off road, classic car, hot rod and custom bike builders.

Everything you need to **bend, shear, grind, fold and shape** metal can be found in our shop. Whether you are the fabricator for a GT race team, a classic car restoration business or a hot rod builder at home in the garage we offer equipment to make a better, more consistent product in less time.



RANGES INCLUDING:

- > Bandsaws
- > Shears
- > Guillotines
- > Folders
- > Brakes
- > Grinders
- > Mallets
- > Sandbags
- > Shrinkers
- > Slip Rolls
- > Swagers
- > Bead Formers
- > Tube Benders
- > Tube Rollers
- > Tube Notchers
- > English Wheels
- > Planishing Hammers
- > Vices
- > Welding Clamps
- > Hole Punches
- > and much more

Stakesys are the official UK suppliers for the following US brands of market leading fabrication tools and machinery:

- > JD Squared
- > JMR
- > Pro Tools
- > SWAG Offroad
- > Lancaster
- > Mittler Bros
- > Dagger Tools
- > Stronghand
- > Pipemaster
- > Nowlin

We have machines set up and are happy to make an appointment to view and demonstrate kit.

BUY ONLINE TODAY
through our website or feel free to call us, we love to talk shop!

T: 01509 812171
M: 07970 958161



WWW.STAKESYS.CO.UK

PAY SECURELY ONLINE THROUGH **segs** pay using

Stakesys's Metalwork Machinery | Unit 12 | Hayhill Ind. Est. | Barrow-upon-Soar | Loughborough | LE12 8LD
Stakesys's Metalwork Machinery is a trading name of Stakesys Ltd, Company No. 6710900, VAT No. 981251027



FREE Next Day Delivery
on orders over **£75.00***
*for total order weight under 25kg

Welding Equipment: How do you buy yours?

HARD WAY

EASY WAY

Try the R-Tech Way:

Deal direct. Next-day Delivery.

Quick Repairs. Brilliant Service.



**Welding Equipment
& Consumables**

WELDING TOGETHER SINCE 1992

✓ Getting You Welding ✓ Keeping You Welding ✓ Supporting You Welding

Order online: **www.r-techwelding.co.uk** Order by phone: **01452 733 933**

Free shipping on all R-Tech machines, plus next day delivery for orders placed before 3pm



Plexus PLEXUS plastic cleaner, protectant and polish

Originally developed for use in aviation, PLEXUS is now available in the UK.

It is quite simply the most effective product available for cleaning, protecting and polishing clear and coloured plastics such as: Plexiglass, GRP, ABS, Mylar, Lexan, Lucite, Acrylite and all other acrylics including painted surfaces.

**IDEAL
FOR KIT
CARS**

"PLEXUS is THE best product of its type that I have ever used and is ideal for kit cars and anything else made of plastic." Steve Hole - TKC Mag editor

Available in 198gm or 368gm cans order direct via:
<http://stores.ebay.co.uk/lasaerospaceLtd>

For more information contact:

LAS Aerospace Ltd; Exeter Road Ind Est, Okehampton, Devon EX20 1UA

Tel: 01837 658 081 Website: www.lasaero.com

PERFORMANCE UNLIMITED

Distributors of some of the most respected racing components manufacturers in the United States.

Distributors of:



And many other leading manufacturers



We are very proud of our machine shop which is equipped with the finest machinery available. A number of Europe's leading engine builders utilize our facility due to our extensive equipment capabilities and reputation for accuracy.

3 Chessingham Park, Dunnington, York, North Yorkshire, England YO19 5SE

tel: +44 (0) 1904 489332 • fax: +44 (0) 1904 488355

email: info@performanceunlimited.co.uk • website: www.performanceunlimited.co.uk

AUTOSPORT INTERNATIONAL

REVIEW 2020

Early January means one thing – Autosport International show at the NEC. Here's our highlights from this year's events.

I heard plenty of moans and groans about the show and although the halls had been changed and familiar layouts amended the Thursday trade day seemed much busier than in recent years.

Indeed, the show's PR man told me that journalist accreditations had increased by 100 per cent this year. I have to say though that several mainstay exhibitors seemed to be missing this time, while the rows between the stands did appear wider.

Of all the things that shows get critiqued for I think it the good old 'gaps between rows' is the one that can damn them above all others. Having said all that I still had an entertaining day and these images are my personal highlights oh, and about 10,000 steps!.

Note for your diary – Autosport International Show 2021 takes place at the NEC on January 14-17 ...



Total Headturners had a stand right in front of the main doors entering Hall 3. It featured a large cross-section of their stock and some great cars amongst them, albeit with a definite Cobra replica slant.



Loved this display on the KW Suspension stand.



Still not sure about how I feel about this lurid green metallic wrap.



Team Dynamics is one of the kitcar industry's most popular suppliers of wheels. They don't just make pro Race 1.2s either!



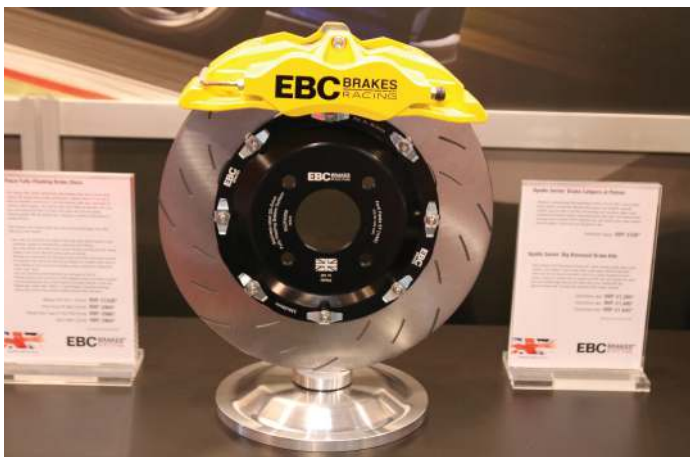
AB Arion looked impressive on the 750 Motor Club stand. Looks like there'll be a few more of them ontrack this summer. It makes a great road car, too. Ask Rocking Reverend, Gary Gotham.



I really hope that the journalist (whom I didn't recognise) standing next to me didn't really think that Yokohama actually sell a tyre with a Chelsea badge embossed on it! For the record, it is part of a competition commemorating Yoko's continued sponsorship of Chelsea FC.



I have to say that there were some glorious cars on display around the Autosport stage area.



If Team Dynamics is the industry's primary wheel supplier then EBC must take the title for most prolific brake pad supplier! They are now producing their own range of brake calipers, too.



There's still something very evocative for me about the Ogle SX1000. It's one of my favourite Mini-specials. David Ogle was tragically killed in a road accident while driving a lightweight version of his eponymous car.



Nicky Grist Motorsport. If that name sounds familiar it should because Nicky made his name navigating for the late rally legend, Colin McRae. He is also UK importer for the Stilo crash helmet range. He's always to be found on the company's stand at Autosport and is a really friendly and approachable bloke.



Dealing with more, shall we say, conventional Westfield models, the company is busy finishing off their new ST4 model designed to meet European Small Series Approvals regulations meaning it can be sold in any European country. The new version features some really neat touches including a centrally-mounted control wheel, much like BMW's iDrive system, which controls the car's vital signs...



Yes, I know the Alfa Romeo 4C has a few issues, like no power steering, but it does have loads of carbon-fibre all over it, was built in the Maserati factory and you have to agree, is achingly beautiful. I still remember the doctor I accosted in Waitrose's car park once, just after they first came out.

He had just taken delivery of his Alfa 4C company car (top bloke!) and despite him complaining that the steering was like that of a bus, he loved it for its beautiful looks and sheer soul of the thing ...



I know some people reckoned the show was much quieter than previous years, but this is ridiculous. The Autosport stage was like the Marie Celeste! Not really. I took this image at 8.30am on the Thursday before the doors had officially opened.



I do like a flight case and have a few to keep my guitars safe and away from inadvertent harm. Swan Flight Cases had an entertaining display of alternative-design cases at Autosport International.



Westfield's stand was a busy place. According to company MD, Simon Westwood, the response to them acquiring the Chesil product has been overwhelmingly encouraging with a growing order book and an electric version also now available.



SPORTS CARS

...THE AK 427

An impressive package
From £4,495 + VAT



Contact **JON FREEMAN**
to book your test drive
and talk COBRAS

Unit 51, Ivatt Way, Westwood Industrial Estate, Peterborough PE3 7PN
Tel/Fax **01733 267 633** Website www.aksportscars.co.uk



GRAHAM SYKES
THE SPECIALIST BROKER

- ☒ Fast
- ☒ Simple
- ☒ Affordable

KIT CAR INSURANCE

No Claims Discount up to 65% - Approved Club Members Discount - Limited Mileage Discounts

Introductory Discounts - Multi-Car Discounts



01395 255 100
www.graham-sykes.co.uk



Graham Sykes Ltd. is authorized and regulated by the Financial Conduct Authority.
Calls may be monitored or recorded to help improve our service.

Classic Power For Classic Cars

New Applications just released

Aston Martin 6 cyl
Datsun 240Z, 260Z & 280Z
Fiat 124,125,131,132 Twin Cam
Jaguar XK3.4-XJ3.8-4.2 & V12
Mazda RX7 13b
Sunbeam Alpine
Triumph Dolomite Sprint
Volvo B18/20
VW Type 1,2,4 Air Cooled
Porsche 356/914

Retroject is now available

Our unique new **Retroject** throttle body is now available. Designed to directly replace the Weber DGV and DGAS, **Retroject** is supplied complete with Twin Injectors, ATS, TPS, IACV & Fuel Regulator. Works with all popular EMS systems!



All Kits
Feature Genuine
Spanish **WEBER**
Carburettors, Manifold
Linkage, Fittings and
Weber Tuning
Manual



New From Webcon UK

Weber Carburettor Performance
kits for Classic Cars.

Full range details can be viewed
at **WWW.WEBCON.CO.UK**

Webcon UK Ltd

Dolphin Road, Sunbury, Middlesex TW16 7HE UK

Tel: +44 (0) 1932 787100 Fax: +44 1932 782725

Email: sales@webcon.co.uk Web: www.webcon.co.uk



www.facebook.com/webconuk



POWER TO TALK ABOUT

Suppliers of Ford engines & components since 1959

Ranges include:

- Zetec 'Blacktop' 1.8 (limited supply)
- EcoBoost 1.0, 1.5 & 3.5
- New 'Maverick' 2.0 & 2.3
- Coyote V8
- Puma 2.2 & 3.2 common rail diesel
- PSA EB2ADTS – 1.2 Turbocharged
- PSA EC5 – 1.6 Ti-VCT
- PSA EP6FADTX – 1.6 Turbocharged
- Manual & Automatic Transmissions
- OE Components from Ford & PSA
- Technical support, drawings & CAD available



AVAILABLE NOW!
Peugeot-Citroen (PSA) 1.6Ti-VCT,
1.2 Turbo & 1.6 Turbo engines.

☎ 02476 635 757

✉ info@powertorque.co.uk

🌐 www.powertorque.co.uk

HOW TO CLEAN A CATERHAM SEVEN!

Over the last year or so, I've had several people telling me they really like the car care stuff we do on the website and in the magazine. A few of them have also asked if we could specifically show how best to clean a Lotus Seven-inspired car! Here you go ...



If you want to clean a Lotus Seven-type sportscar, then it doesn't get much better than a Caterham Seven. In this case an R360. Thanks to our mates at Caterham Cars, particularly COO, David Ridley, for help with this feature. The car wasn't filthy by the time I got it home, but it was in need of a good clean.



Here's the equipment I used for this task. Nothing too exotic although I'd always recommend separate buckets for wheel cleaning, rinsing and soap. Oh, and all had a ScratchShield-type product in them.

I use distilled water for use in foam cannons as it tends to avoid water spots.

Eagle-eyed readers might notice the Worx Hydroshot Mk2 (that isn't strictly correct as Worx don't call it that), which is a more powerful model with a brushless motor.

Brushless motor? Yes. 'Brushed' motors have been around forever. The motor is surrounded by a stator that has a pair of magnets with opposite polarity, whereas brushless motors surround the stator while the rotor typically has six pairs of permanent magnets. As a result, the motors are shorter and more compact, don't get as hot, generate less friction and can have up to 50 per cent more battery running time. Worx is quick to point out, though, that the brushless version is not replacing the brushed motor product, as the two will remain in production alongside each other.

I have to say that as a huge Hydroshot fan, I really like the brushless version. It has more power and so can be used to clean driveways and is beefy enough to really take crud and dirt away from wheels and car bodywork.

I tend to use both on jobs like this. The brushed one to apply soap and foam, with the newer brushless variant being mainly used for rinsing and removing stubborn dirt.



I'm a big fan of US brand Auto Fanatic, which is now available in the UK, and it's a great foaming wheel cleaner getting rid of brake dust and debris. A little goes a long way. A few millilitres in my foam dispenser topped up with distilled water, easily coped with the Caterham's 13in wheels. There are a million and one wheel cleaning products available. There are some great ones on the market but I like to avoid acidic ones that smell like hair bleach. I used one of those once thinking 'ho bad can it be?'. Trust me it was bad as the product took the lacquer of my wheels. Pickled them



I also like to use a separate bucket and specific sponge for cleaning wheels. There can be some nasty chemicals, stones and other muck stuck to your rims, so I like to keep it separate.



My chosen wheel cleaning combo does a good job. Ta-dah – a nice clean and decontaminated wheel.



I also like to agitate dirt with a quality wheel brush. In this case, a twisted long-reach wheel brush from Valet Pro. It really gets in there.

Onto the bodywork now. Care is needed when waving a pressure washer lance around on an open-top car (especially when the hood is down) but it's surprising how precise you learn to become. Be prepared to liberally fill

your interior up with water when you first try it but you'll get used to it very quickly.



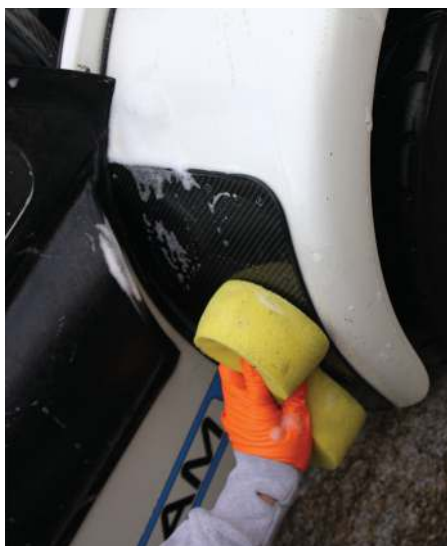
When it comes to the washing process, I normally use a pre-wash snow-foam, particularly on a tin-top that has become embedded with road filth, but the Seven wasn't that dirty and I judged that it wasn't necessary in this instance. Therefore, I skipped straight to the shampoo stage. There are loads of great soap products out there and a good number that I happily reach for. This time I chose a product from a tiny UK car care company called Detailers Passion and their imaginatively named 'Wash'. I like it because it's ph-neutral and smells suspiciously like cola cubes. Three capfuls in a gallon of water does the trick and produces loads of foam. Actually, upon checking I note that Detailers Passion don't offer that product anymore (d'oh!) but do have two alternatives. I suspect they'll be equally as impressive.



I'd definitely urge you to grab a Scratch Shield (other makes are available) for your bucket as that works a treat at catching crud that you may otherwise scoop up with the sponge. The guard prevents grit getting onto your sponge or cloth. You need to pay particular attention to the sides of the car, especially around the sidepipe exhaust where dirt gathers and hides!



People sometimes fear washing exquisite – and expensive – carbon-fibre wings. Don't. They are strong and tough, and a gentle ph-neutral shampoo will NOT damage them.



A similar story with the stone guards. Hit a patch of dirt or mud and this part of the car will look unsightly.



Some people hate the idea of using a sponge on their car. I'm not sure. I sometimes reach for one, sometimes not. I had my eye on a red Optimum sponge with slits cut in it but baulked at the 18-quid price (what would you have done?!) so I grabbed a 72p Homebase sponge and spent ten minutes with a scalpel and cut cross-slits all over it. I now use that and it seems to work fine.



Although much easier to clean than your daily driver, you shouldn't scrimp on cleaning a car like a Seven. Devote time to the job and it'll pay dividends in the end. There are plenty of other areas on the car where dirt gathers.



Another area that gets caked in dirt is under the rear wings. It's easy to miss this area but trust me, clean the rest of the car and omit this and it will stand out like a sore thumb.



My Worx Hydroshot Brushless model made short work of the dirt under the arches.



The cloth is amazing and if you gently drag it across the car's surface it literally soaks up the water.



Next, it was time to spruce up the car's Avon tyres. A new product that I really rate very highly is Tire Kicker Tire Shine (no, I haven't spelt 'tyre' wrong, it's an American product!). I like it because it isn't greasy, doesn't fling all over the car when you set off and leaves a lovely satin finish on your tyres.



you can also use it on soft trim and plastics with equally effective results.



I finished the drying procedure with a CarPro Boa XL drying towel. Do this right and it'll look like you've just polished the car, so is ideal for those in a hurry.



It was then time to give the car a quick going over with a high gloss quick detailer. I reached for Raspberry Sauce (yep, it definitely smells of raspberries!) by the brilliantly named HB Sauce Car Care from Scotland. It does exactly what it says it will and is definitely easy to use. It's infused with SiO2, which means it's good. Really good!



A very clean Caterham Seven R360. I'm well-pleased with that.



The car was lovely and clean when I finished BUT it's really important to dry the car. A blower would be great (Killer Brands sell a great range) but in this instance I grabbed an Instadry cloth made by Autoglym in association with Vileda.

LINKS:

Caterham Seven

www.caterhamcars.com

Worx Hydroshot brushless typically around £199

www.worx-europe.com

Auto Fanatic UK –

Foaming Wheel Cleaner - £26

www.auto-fanatic.co.uk

Valet Pro –

Great car care products and brushes. Circa £6

www.valetpro.global

HB Sauce –

Raspberry Sauce SiO2

Quick Detailer £13.99

www.hbsaucecustomwaxcreations.co.uk

Detailers Passion

Glo £8.99

www.detailerspassion.co.uk

Scratch Shield

£6.99

www.scratchshield.co.uk

Car Pro

Fat Boa drying towel

£11.99 or £19.99 (XL)

www.carpro.uk.com or
www.slimsdetailing.co.uk

Autoglym

Instadry - £13

www.autoglym.com

Chemical Guys –

Tire Kicker Tire Shine - £10

www.slimsdetailing.co.uk

Killer Brands

Car dryers

www.killerbrands.co.uk

Buckets – Anywhere

Sponge – Anywhere!

Clarke

MIG WELDERS

Quality machines from Britain's leading supplier
See online for included accessories

MODEL	MIN-MAX AMPS	EXC.VAT	INC.VAT
PRO90	24-90	£194.99	£233.99
110E	30-100	£229.98	£275.98
135TE Turbo	30-130	£249.98	£299.98
151TE Turbo	30-150	£289.00	£346.80
175TECM Turbo	30-170	£449.00	£538.80
205TE Turbo	30-185	£489.00	£586.80

135TE
GAS TIPS, SHROUDS & WIRE IN STOCK
FROM ONLY **£194.99** EXC.VAT
£233.99 INC.VAT

Clarke NO GAS/GAS MIG WELDERS

- Professional type torch with on/off control
- Thermal overload protection
- Turbo fan cooled
- Easy conversion to gas with optional accessories

MODEL	MIN/MAX AMPS	EXC.VAT	INC.VAT
MIG 102N2G	35/90	£124.99	£149.99
MIG 106	40/100	£159.00	£190.80
MIG 145	35/135	£179.98	£215.98
MIG 196	40/180	£219.00	£262.80
MIG 240	50/240	£399.00	£478.80

Clarke ARC WELDERS
For home user, automotive and industrial applications.
SEE THE FULL RANGE ONLINE & IN-STORE
Turbo fan cooled

MODEL	AMPS	EXC.VAT	INC.VAT
EA110	40-100	£59.98	£71.98
EA115	30-110	£71.99	£86.39
EA165	65-160	£72.99	£87.59
EA160	40-150	£76.99	£92.39
EA200	60-200	£99.98	£119.98
EA200	50-185	£104.99	£125.99
EA200	40-210	£159.98	£191.98

Clarke ARC / TIG INVERTER WELDERS

- Efficient inverter technology
- Variable output current

MODEL	MIN/MAX OUTPUT	ELECTRODE DIA.	EXC.VAT	INC.VAT
MA140	20A-140A	1.6-3.2	£119.00	£142.80
AT133	10A-130A	2.5/3.2	£129.98	£155.98
AT162	10A-160A	2.5/3.2/4.0	£159.00	£190.80
MA200	20A-200A	1.6-4	£199.00	£239.98
AT135	10A-130A	2.5/3.2	£169.98	£203.98
AT165	10A-160A	2.5/3.2/4.0	£199.98	£239.98

Clarke DIAGNOSTICS

- EOBD Fault Code Reader
- Engine EOBD/EOBD2 Fault code reader
- Engine Diagnostic & EOBD/EOBD 2 Fault Code Reader

MODEL	EXC.VAT	INC.VAT
EOBD Fault Code Reader	£39.98	£47.98
Engine EOBD/EOBD2 Fault code reader	£49.98	£59.98
Engine Diagnostic & EOBD/EOBD 2 Fault Code Reader	£99.98	£119.98

Clarke GRINDERS & STANDS

- Stands come complete with bolt mountings and feet anchor holes
- 6" & 8" AVAILABLE WITH LIGHT

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£32.99	£39.99
CBG6RSC	PRO	150mm	£42.99	£51.99
CBG6RSC	HD	150mm	£54.99	£65.99
CBG6RSC	PRO	150mm	£56.99	£68.99
CBG6RSC	HD	150mm	£59.98	£71.98
CBG6RSC	(wet)	HD 150/200mm	£58.99	£70.79

ALUMINIUM RACING JACKS
Quick lift • Non-marking nylon wheels • Rubber contact pad • helps protect vehicle undersides
CTJ1250AB

MODEL	LIFTING CAP.	EXC.VAT	INC.VAT
CTJ1250AB	1.25t	£94.99	£113.99
CTJ1800A	1.8t	£159.98	£191.98
CTJ2500QLG	2.5t	£149.98	£179.98

Clarke RACING
LOW ENTRY ONLY 85MM

MODEL	DESC.	EXC.VAT	INC.VAT
CTJ1250AB	1.25t	£94.99	£113.99
CTJ1800A	1.8t	£159.98	£191.98
CTJ2500QLG	2.5t	£149.98	£179.98

Machine Mart

64 SUPERSTORES NATIONWIDE

WHERE QUALITY COSTS LESS

Clarke NO GAS/GAS MIG WELDERS

- Uses flux cored steel wire, which creates own gas shroud as it burns

MODEL	AMPS	EXC.VAT	INC.VAT
151EN	30-150	£219.98	£263.98
130EN	30-130	£239.98	£287.98
160EN	30-150	£279.98	£335.98

Clarke ARC ACTIVATED HEADSHIELDS
Activates instantly when Arc is struck • Protects to EN379 • Suitable for arc, MIG, TIG & gas welding
SEE FULL RANGE IN-STORE/ONLINE

Clarke SOCKET SETS
Top quality chrome vanadium steel.
18 Sockets 8-32mm
Reversible ratchet
Comfort grip handle

MODEL	EXC.VAT	INC.VAT
PR0360	£26.99	£32.99

Clarke TAP & DIE SETS
High quality tungsten steel
Supplied in metal storage case (except 16pc)

TYPE	EXC.VAT	INC.VAT
CHT203 16pc Metric	£16.99	£20.39
CHT302 24pc UNF/UNF/NPT	£21.99	£26.39
CHT303 28pc Metric	£26.99	£32.39
CHT304 33pc Metric/UNF/BSP	£32.99	£39.59
CHT774 37pc Metric	£39.98	£47.98
CHT527 32pc Metric	£48.99	£58.79
CHT775 52pc Metric/UNF/BSP	£56.99	£68.39
CHT776 76pc Metric	£66.99	£80.39

Clarke CORDED IMPACT WRENCHES
CEW1100
Ideal for garage mechanics

MODEL	POWER	TORQUE	EXC.VAT	INC.VAT
CEW1000 1/2"	1000W	450Nm	£59.98	£71.98
CEW1100 3/4"	1100W	710Nm	£89.98	£107.98

Clarke 18V 1/2" BRUSHLESS IMPACT WRENCHES
3 forward and reverse gears
powered by Li-Ion
CIR18LIC

MODEL	DESC.	EXC.VAT	INC.VAT
CIR18LIC	2x 2.0Ah Li-Ion	£114.99	£137.99
CIR18LI	2x 4.0Ah Li-Ion	£169.98	£203.98

Clarke CRANES
Fully tested to proof load • Robust, rugged construction • Overload safety valve

MODEL	DESC.	EXC.VAT	INC.VAT
CCF100	1 ton fold	£164.99	£197.99
CCF1000LR	1 ton long reach	£219.00	£262.80

Clarke INTELLIGENT BATTERY CHARGER/MAINTAINERS
Automatic charger - maintains optimal charging condition

MODEL	VOLTS	MAX CHARGE AMPS	EXC.VAT	INC.VAT
IBC7	12/24V	7A	£49.98	£59.98
IBC15	12V	15A	£46.99	£56.39
IBC20	12/24V	20A	£59.98	£71.98

Clarke BC210C BATTERY CHARGERS ENGINE STARTERS
Ammeter • Multi-position charge regulator • Overload protection on charging cycle
was £191.98 inc. VAT
was £286.80 inc. VAT

MODEL	VOLTS	MAX CHARGE AMPS	EXC.VAT	INC.VAT
BC130C	15/120	15/200	£64.99	£77.99
BC190	38/120	38/200	£94.99	£113.99
BC210C	25/120	25/200	£119.98	£143.98
BC410E	35/400	35/400	£139.98	£167.98
WBC180	35/180	35/180	£139.98	£167.98
WBC240	45/240	45/240	£154.98	£185.98
BC205N	30/200	30/200	£179.98	£215.98
WBC400	60/350	60/350	£199.00	£238.80
BC520P	50/510	50/510	£219.00	£262.80

Clarke AC80 12V BATTERY CHARGERS

- Automatic charger - maintains optimal charging condition

MODEL	MAX CHARGE AMPS	EXC.VAT	INC.VAT
LA4	4	£17.99	£21.59
LA6	6	£19.98	£23.98
AC80*	8	£33.99	£40.79

Clarke INTELLIGENT AUTOMATIC CHARGER / MAINTAINERS
Keep batteries in top condition over a long period

MODEL	STAGES	BATTERY	EXC.VAT	INC.VAT
CB03-12	3	6Ah-40Ah	£24.99	£29.99
CB09-6/12	9	Up to 80Ah 6V / 12V lead acid	£39.98	£47.98
CB09-12	9	Up to 160Ah 12V lead acid & calcium	£59.98	£71.98

Clarke BLAST CABINETS
Blast away paint, surface rust, scale, burrs, carbon & dirt & revitalize aluminium
Min. air flow 10cfm
Bench & floor standing models

MODEL	DESC.	TYPE	EXC.VAT	INC.VAT
CSB20B	Compact Cabinet	Bench	£109.98	£131.98
CSB30	Large Cabinet	Floor	£279.99	£334.80

Clarke PRESSURISED SANDBLASTERS
Heavy duty steel construction sandblasters for the quick removal of surface rust, paint, dirt/grease etc.

MODEL	TANK VOLUME	FLOW RATE REQ.	EXC.VAT	INC.VAT
CPSB100B	32 litre	6-25 cfm	£139.99	£167.99
CPSB200B	63 litre	6-25 cfm	£169.99	£203.99

Clarke PRO 7" SANDER / POLISHER
Includes hook & loop backing pad and hook & loop wool polishing bonnet.
1200W motor

MODEL	DESC.	EXC.VAT	INC.VAT
CP185	7" sander/polisher	£69.98	£83.98

Clarke HEAVY DUTY LONG REACH JACKS
From only £179.98 EXC.VAT
£215.98 INC.VAT

MODEL	TONNE	EXC.VAT	INC.VAT
CTJ2GLS	2	£179.98	£215.98
CTJ3GLS	3	£249.00	£298.80
CTJ5GLS	5	£339.00	£406.80
CTJ10GLS	10	£439.00	£526.80

Clarke TURBO AIR COMPRESSORS
Superb range ideal for DIY, hobby & semi-professional use

MODEL	MOTOR	CFM	TANK	EXC.VAT	INC.VAT
8/260	2HP	7.5	24ltr	£89.98	£107.98
7/250	2HP	7	24ltr	£94.99	£113.99
11/260	2.5HP	9.5	24ltr	£94.99	£113.99
8/550	2HP	7.5	50ltr	£119.98	£143.98
11/550	2.5HP	9.5	50ltr	£139.98	£167.98
16/510*	3HP	14.5	50ltr	£209.00	£250.80
16/1010*	3HP	14.5	100ltr	£259.98	£311.98

Clarke INDUSTRIAL AIR COMPRESSORS
Top quality belt driven air compressors for industrial & commercial users inc; garages, factories, workshops and farms. 10 bar/150psi max working pressure

MODEL	AIR DISP. cfm	MOTOR HP	AIR RECEIVER	EXC. VAT	INC. VAT
XEVI1700(OL)*	9	2	100ltr	£399.00	£478.80
XEVI1600*	14	3	100ltr	£425.00	£510.00
XEVI1600*	14	3	150ltr	£459.00	£550.80
XEVI1600(OL)*	14	3	200ltr	£525.00	£630.00
XEVI1600(OL)*	14	3	150ltr	£535.00	£642.00
XEVI1600(OL)*	18	4	200ltr	£579.00	£694.80
XEVI1600(OL)*	18	4	200ltr	£619.00	£742.80
XEVI1600(OL)*	23	5.5	200ltr	£739.00	£886.80
XEVI1600(OL)*	36	2x 4	270ltr	£1169.00	£1402.80

Clarke WORKSHOP AIR TOOLS
PGF14
BEST SELLER
HUGE CHOICE IN-STORE/ONLINE

MODEL	JACK HEIGHT CAP.	EXC. VAT	INC. VAT	VAT
CBJ2B	2	148-276	£9.98	£11.98
CBJ3B	3	180-350	£14.99	£17.99
CBJ5B	5	185-355	£17.99	£21.59
CBJ8B	8	190-365	£19.98	£23.98
CBJ10B	10	195-375	£24.99	£29.99
CBJ12B	12	200-380	£27.99	£33.59
CBJ15B	15	205-390	£29.98	£35.98
CBJ20B	20	217-407	£38.99	£46.79
CBJ30B	30	230-370	£59.99	£71.99

Clarke 2 & 3 TONNE TROLLEY JACKS
FROM ONLY £29.98 EXC.VAT
£35.98 INC.VAT
JACKS ALSO IN STOCK UP TO 5 TONNE

MODEL	TYPE	TONNE	EXC.VAT	INC.VAT
CTJ12L	Long	2	£29.98	£35.98
CTJ2000LPB	DIY Low Profile	2	£33.99	£40.79
CTJ2250LP	Quick Lift	2.25	£34.99	£41.99
CTJ2250LP*	Low Profile	2.25	£39.98	£47.98
CTJ3000GB	Pro Garage	3	£79.98	£95.98
CTJ3000GB	Quick Lift	3	£86.99	£104.39
CTJ3000GB	Pro Instant Lift	3	£97.99	£117.99
CTJ3000GB	Pro Garage	3	£99.98	£119.98
CTJ200LP	Low Quick Lift	2	£114.99	£137.99
CTJ1500QULP	Ultra Low Quick Lift	1.5	£156.99	£188.39

* CTJ2250LP has a 2.25 tonne capacity, has a low entry of only 80mm and includes 2 sockets

Clarke CAR RAMPS
Lift cars safely and quickly
Tough angled steel construction

MODEL	CAPACITY	EXC.VAT	INC.VAT
CR2	2000kg	£29.98	£35.98
CRW25	2500kg	£37.99	£45.99

Clarke BOLTLESS QUICK ASSEMBLY STEEL SHELVING
Simple fast assembly in minutes using only a hammer

MODEL	TONNE	EXC.VAT	INC.VAT
CTJ2GLS	2	£179.98	£215.98
CTJ3GLS	3	£249.00	£298.80
CTJ5GLS	5	£339.00	£406.80
CTJ10GLS	10	£439.00	£526.80

Clarke SAVE 10% WHEN YOU BUY 4 SHELVING UNITS AND SAVE AT LEAST £23.99 INC.VAT

Clarke ASSEMBLES AS BENCH OR CORNER UNIT
CHOICE OF 5 COLOURS
RED, BLUE, GREY, SILVER OR GALVANISED STEEL

PAY MONTHLY

- Over 12, 24 or 36 months
- Purchases over £300
- 12.9% APR, 10% Deposit*

EASY TO USE WEBSITE
NOW OVER **21,000**
PRODUCTS ONLINE!



For hard-to-find,
specialist items
visit the
Xtra
section on
machinemart.co.uk

FREE 508 PAGE
CATALOGUE
over **760**
PRICE CUTS &
NEW PRODUCTS



GET YOUR FREE COPY NOW!

- IN-STORE
- ONLINE
- PHONE

0844 880 1265



Clarke JUMP STARTS
Provides essential home, garage and roadside assistance • Integral work light • 910 includes air compressor • Long life battery

MODEL	BOOST	PEAK AMPS	EXC. VAT	INC. VAT
900	400	900	£64.99 £77.99	£64.99 £77.99
J51100	500	1100	£69.99 £83.99	£69.99 £83.99
J51100	400	900	£72.99 £87.99	£72.99 £87.99
J51100C	500	1100	£79.99 £95.99	£79.99 £95.99
4000	700	1500	£139.99 £167.99	£139.99 £167.99
J512/24	1000	2000	£159.99 £191.99	£159.99 £191.99
J512/24LI	600	1200	£179.99 £215.99	£179.99 £215.99

Clarke TURBO FAN GAS HEATERS
Offering low cost, efficient heating

DUAL VOLTAGE 230V
110V 16.5KW
FROM ONLY ~~£226.80~~ £226.80

MODEL	OUTPUT KW	EXC. VAT	INC. VAT
Little Devil II	10.3	£79.98 £95.98	£79.98 £95.98
Devil 700	15	£99.98 £119.98	£99.98 £119.98
Devil 900	24.9	£139.98 £167.98	£139.98 £167.98
Devil 1600	36.6	£169.98 £203.98	£169.98 £203.98
Devil 2100	49.8	£259.00 £310.80	£259.00 £310.80
Devil 4000	131	£429.00 £514.80	£429.00 £514.80

Clarke DIESEL/PARAFFIN HEATERS

Ideal for fast efficient heating
• Extra-long run fuel tanks - up to 53 litres
• Variable heat output with thermostat control

MODEL	MAX OUTPUT	EXC. VAT	INC. VAT
XR60	14.7KW	£189.00 £226.80	£189.00 £226.80
XR80	20.5KW	£239.00 £286.80	£239.00 £286.80
XR110	29.3KW	£289.00 £346.80	£289.00 £346.80
XR160	46.9KW	£349.00 £418.80	£349.00 £418.80
XR210	61.5KW	£399.00 £478.80	£399.00 £478.80



Clarke TOOL CHESTS & CABINETS
PRO TOOL CHESTS & CABINETS

BALL BEARING ROLLER DRAWERS
FROM ONLY ~~£72.99~~ £87.59 INC. VAT

RUBBER GRIP SIDE HANDLES
FROM ONLY ~~£72.99~~ £87.59 INC. VAT

EXTRA LARGE DRAWER PULLS
FROM ONLY ~~£72.99~~ £87.59 INC. VAT

CHROME SPOKED WHEELS
FROM ONLY ~~£72.99~~ £87.59 INC. VAT

EXTRA WIDE 56" CHESTS/CABINETS IN STOCK

The ultimate in tool storage

Clarke GARAGES/WORKSHOPS
IDEAL ALL-WEATHER PROTECTION

BRIGHT WHITE INTERIOR **LENGTH UP TO 24'**

• Ideal for use as a garage/workshop
• Extra tough triple layer weatherproof cover • Heavy duty powder coated steel tubing
• Ratchet tight tensioning

*was £346.80 inc. VAT

MODEL	SIZE (LxWxH)	EXC. VAT	INC. VAT
CIG81015	4.5 x 3 x 2.4M	£229.00 £274.80	£229.00 £274.80
CIG81020	6.1 x 3 x 2.4M	£279.00 £334.80	£279.00 £334.80
CIG81216	4.8 x 3.7 x 2.5M	£279.00 £334.80	£279.00 £334.80
CIG81220	6.1 x 3.7 x 2.5M	£349.00 £418.80	£349.00 £418.80
CIG81224	7.3 x 3.7 x 2.5M	£419.00 £502.80	£419.00 £502.80

Clarke MICRO JUMP STARTS
Ideal for starting cars, charging phones, etc.

MODEL	START BOOST	PEAK BOOST	EXC. VAT	INC. VAT
JSM200	200A	400A	£49.98 £59.98	£49.98 £59.98
JSM300	300A	500A	£64.99 £77.99	£64.99 £77.99
JSM350	350A	500A	£84.99 £101.99	£84.99 £101.99

Clarke ELECTRIC HEATERS
BEST SELLER

DEVIL 7003 FROM ONLY ~~£49.98~~ £59.98 INC. VAT

MODEL	VOLTAGE	HEAT OUTPUT KW	EXC. VAT	INC. VAT
DEVIL 6003	230V	1.5-3	£49.98 £59.98	£49.98 £59.98
DEVIL 7003	230V	3	£59.98 £71.98	£59.98 £71.98
DEVIL 6005	400V	2.5-5	£69.98 £83.98	£69.98 £83.98
DEVIL 7005	400V	5	£84.99 £101.99	£84.99 £101.99
DEVIL 6009	400V	4.5-9	£109.00 £130.80	£109.00 £130.80
DEVIL 6015	400V	5-10-15	£169.00 £202.80	£169.00 £202.80
DEVIL 7015	400V	15	£199.98 £239.98	£199.98 £239.98

Clarke AXLE STANDS

• Ratchet action for quick height adjustment
• Sold in pairs
• #per single stand
• *Aluminium

MODEL	MAX TONS	MIN/MAX HEIGHT	EXC. VAT	INC. VAT
CAX2TF	2	235-360mm	£13.99 £16.79	£13.99 £16.79
CAX3TF	3	325-490mm	£21.99 £26.39	£21.99 £26.39
CAX-3TBC	3	300-430mm	£23.99 £28.79	£23.99 £28.79
CAX6TF	6	333-500mm	£29.98 £35.98	£29.98 £35.98
CAX-6TBC	6	400-615mm	£34.99 £41.99	£34.99 £41.99
CAX3TA*	3	295-395mm	£49.98 £59.98	£49.98 £59.98
CAX10TF*	10	450-750mm	£86.99 £104.39	£86.99 £104.39

Clarke MECHANICS' TOOL CHEST & CABINETS

MODEL	DESCRIPTION	EXC. VAT	INC. VAT
①CB8209B	9 Dr Chest	£129.98 £155.98	£129.98 £155.98
CB8210B	10 Dr Chest	£139.98 £167.98	£139.98 £167.98
CB8203B	3 Dr step up	£72.99 £87.59	£72.99 £87.59
CB8215B	5 Dr Cabinet	£199.98 £239.98	£199.98 £239.98
②CB8217B	7 Dr Cabinet	£249.98 £299.98	£249.98 £299.98
CB8213B	3 Dr Cabinet	£199.98 £239.98	£199.98 £239.98

Clarke ENGINE STANDS

• Rotates through 360°
• Fully tested to proof load

MODEL	CAPACITY	EXC. VAT	INC. VAT
CES340	340kg	£49.98 £59.98	£49.98 £59.98
CES450	450kg	£64.99 £77.99	£64.99 £77.99
CES560	560kg	£79.98 £95.98	£79.98 £95.98
CES680F	680kg	£99.98 £119.98	£99.98 £119.98

Clarke PARTS WASHERS
PARTS WASHER FLUID FROM £5.99 INC. VAT

FROM ONLY £39.98 INC. VAT

MODEL	TANK CAP.	TYPE	EXC. VAT	INC. VAT
CW2D	10Ltrs	Bench	£39.98 £47.98	£39.98 £47.98
CW1D	45Ltrs	Floor	£99.98 £119.98	£99.98 £119.98
CWM20	22.5Ltrs	Floor	£139.98 £167.98	£139.98 £167.98
CW40	75Ltrs	Floor	£159.98 £191.98	£159.98 £191.98

Clarke AUTOMOTIVE WHEEL DOLLY SET
AWD1

BIG 3" CASTORS FROM ONLY ~~£46.99~~ £56.39 PER PAIR

• Four non-marking castors for easy movement in confined spaces • Heavy duty steel construction - load rating 500kg per dolly

FROM ONLY £59.98 INC. VAT

MODEL	MOTOR MAX. PRESSURE	EXC. VAT	INC. VAT
J51850	1400W	£59.98 £71.98	£59.98 £71.98
J51950	1600W	£69.98 £83.98	£69.98 £83.98
J51750	1600W	£124.99 £149.99	£124.99 £149.99
J51850	2100W	£149.98 £179.98	£149.98 £179.98
J51950	2400W	£179.98 £215.98	£179.98 £215.98

Clarke DRILL PRESSES

• Range of precision bench & floor presses for enthusiast, engineering & industrial applications

B = Bench mounted
F = Floor standing

MODEL	MOTOR (W)	SPEEDS	EXC. VAT	INC. VAT
CDP5EB	350 / 5	£69.98 £83.98	£69.98 £83.98	£69.98 £83.98
CDP102B	350 / 5	£79.98 £95.98	£79.98 £95.98	£79.98 £95.98
CDP152B	450 / 12	£149.98 £179.98	£149.98 £179.98	£149.98 £179.98
CDP202B	450 / 16	£189.98 £226.80	£189.98 £226.80	£189.98 £226.80
CDP10B	370 / 12	£199.98 £239.98	£199.98 £239.98	£199.98 £239.98
CDP352F	550 / 16	£229.00 £274.80	£229.00 £274.80	£229.00 £274.80
CDP452B	550 / 16	£239.00 £286.80	£239.00 £286.80	£239.00 £286.80
CDP502F	1100 / 12	£549.00 £658.80	£549.00 £658.80	£549.00 £658.80

Clarke MECHANICS' TOOL CHEST & CABINETS

BALL BEARING ROLLER DRAWERS
FROM ONLY ~~£69.98~~ £87.59 INC. VAT

REAR LOCKING SECURITY BARS
FROM ONLY ~~£69.98~~ £87.59 INC. VAT

LARGE CAPACITY LOWER STORAGE WITH LOCKABLE DOORS
FROM ONLY ~~£69.98~~ £87.59 INC. VAT

Clarke PETROL GENERATORS

FROM ONLY ~~£99.98~~ £119.98 INC. VAT

Honda engine models available

CHECK FRAME TYPE WHEN ORDERING

MODEL	KVA	HP	EXC. VAT	INC. VAT
G720	0.7	-	£99.98 £119.98	£99.98 £119.98
G1200	1.1	-	£159.98 £191.98	£159.98 £191.98
PG2500	2.2	6.5	£179.98 £215.98	£179.98 £215.98
PG3800	3	7	£239.98 £286.80	£239.98 £286.80
PG3800DV	3	7	£269.00 £320.80	£269.00 £320.80
PG6500DVES	5.5	13	£499.00 £598.80	£499.00 £598.80

Clarke HEAVY DUTY PETROL POWER WASHERS

Honda & Diesel engine models in stock

FROM ONLY £229.00 INC. VAT

MODEL	PRESSURE	ENGINE	EXC. VAT	INC. VAT
PLS195	1100/1595	2.6	£229.00 £274.80	£229.00 £274.80
Tiger2600	170/2465	4	£289.00 £346.80	£289.00 £346.80
Tiger3000	200/2900	6.5	£349.00 £418.80	£349.00 £418.80
PLS195	186/2698	6.5	£439.00 £526.80	£439.00 £526.80
PLS265	260/3770	13	£669.00 £802.80	£669.00 £802.80

Clarke JETSTAR PRESSURE WASHERS

Makes easy work for washing vehicles, patios, stonework, etc.

• JET7500, 8500 & 9500 include hose reel

FROM ONLY £59.98 INC. VAT

MODEL	MOTOR MAX. PRESSURE	EXC. VAT	INC. VAT
J51850	1400W	£59.98 £71.98	£59.98 £71.98
J51950	1600W	£69.98 £83.98	£69.98 £83.98
J51750	1600W	£124.99 £149.99	£124.99 £149.99
J51850	2100W	£149.98 £179.98	£149.98 £179.98
J51950	2400W	£179.98 £215.98	£179.98 £215.98

Clarke HYDRAULIC PRESSES

PROFESSIONAL QUALITY
Built for tough daily use in automotive/industrial workshops

• Available with/without 7 pce pin, bracket & pressing plate kit
• Adjustable polycarbonate safety screen • Economy model

MODEL	EXC. VAT	INC. VAT
4 tonne bench*	£139.98 £167.98	£139.98 £167.98
10 tonne bench*	£209.00 £250.80	£209.00 £250.80
20 tonne floor*	£269.00 £322.80	£269.00 £322.80
20 tonne floor	£359.00 £430.80	£359.00 £430.80
30 tonne floor	£769.00 £922.80	£769.00 £922.80
50 tonne floor	£1498.00 £1797.60	£1498.00 £1797.60

Clarke MECHANICS' TOOL CHEST & CABINETS

MODEL	DESCRIPTION	EXC. VAT	INC. VAT
CTC600B	6 Dr Chest	£69.98 £83.98	£69.98 £83.98
CTC900B	9 Dr Chest	£84.99 £101.99	£84.99 £101.99
CTC800B	8 Dr Combination Chest/Cabinet	£119.98 £143.98	£119.98 £143.98
CTC500B	5 Dr Cabinet	£119.98 £143.98	£119.98 £143.98
CTC700B	7 Dr Cabinet	£129.98 £155.98	£129.98 £155.98
CTC1300B	13 Dr Combination Chest/Cabinet	£159.98 £191.98	£159.98 £191.98

VISIT YOUR LOCAL SUPERSTORE

MANLEY Pontefract Rd, Barnsley, S71 1EZ	01226 732297	EXETER 16 Trusham Rd, EX2 8QG	01392 256 744	NOT
B'AM GREAT BARR 4 Birmingham Rd.	0121 358 7977	GATESHEAD 50 Lobley Hill Rd, NE8 4YJ	0191 493 2520	NOT
B'AM HAY MILLS 1152 Coventry Rd, Hay Mills	0121 7713433	GLASGOW 280 Gt Western Rd, G4 9EJ	0141 332 9231	PET
BOLTON 1 Thynne St, BL3 6BD	01204 365799	GLoucester 221A Barton St, GL1 4HY	01452 417 948	PLY
BROADFORD 105-107 Manningham Lane, BD1 3BN	01274 390962	GRIMSBY ELLIS WAY, DN32 9BD	01472 354435	POO
BRIGHTON 123 Lewes Rd, BN2 3QB	01273 915999	HULL 8-10 Holderness Rd, HU9 1EG	01482 223161	POO
BRISTOL 1-3 Church Rd, Lawrence Hill, BS5 9JJ	0117 935 1060	ILFORD 746-748 Eastern Ave, IG2 7HU	0208 518 4286	PRE
BURTON UPON TRENT 12a Lichfield St, DE14 3QZ	01283 564 708	IPSWICH Unit 1 Ipswich Trade Centre, Commercial Road	01473 221253	FOR
CAMBRIDGE 181-183 Histon Road, Cambridge, CB4 3HL	01223 322675	LEEDS 227-229 Kirkstall Rd, LS4 2AS	0113 231 0400	SHD
CARDIFF 44-46 City Rd, CF24 3DN	029 2046 5424	LEICESTER 69 Melton Rd, LE4 6PN	0151 709 4484	SHE
CARLISLE 44-46 City Rd, CA1 2LG	01228 591666	LINCOLN Unit 5, The Pelham Centre, LN5 8HG	01522 543 036	SOU
CHELSEA 84 Fairview Road, GL52 2EH	01242 514 402	LIVERPOOL 80-88 London Rd, L3 5NF	0151 709 4484	SOU
CHESTER 43-45 St. James Street, CH1 3RE	01244 311258	LONDON CATFORD 289/291 Southend Lane SE6 3RS	0208 695 5684	SOU
COLCHESTER 4 North Station Rd, CO1 1EY	01206 762631	LONDON 6 Kendal Parade, Edmonton N15	020 8803 0861	STO
COVENTRY Bishop St, CV1 1HT	024 7622 4221	LONDON 503-507 Lea Bridge Rd, Leyton, E15	020 8558 8284	SWA
CROYDON 423-427 Brighton Rd, Sth Croydon	020 8763 0640	LUTON Unit 1, 326 Dunstable Rd, Luton, LU4 8JS	01582 728 063	SWI
DARLINGTON 214 Northgate, DL1 1RB	01325 380 841	MAIDSTONE 57 Upper Stone St, ME15 6HE	01622 769 572	SWI
DEAL (KENT) 182-186 High St, CT14 6BQ	01304 373 434	MANCHESTER ALTRINCHAM 71 Manchester Rd, Altrincham	0161 9412 666	WAR
DERBY (Derby) 182-186 High St, CT14 6BQ	01332 290 931	MANCHESTER CENTRAL 209 Bury New Road M8 8DU	0161 241 1851	WIC
DONCASTER Wheatley Hall Road	01302 245 999	MANCHESTER OPENSHAW Unit 5, Tower Mill, Ashton Old Rd	0161 223 8736	WIC
DUNDEE 24-26 Trades Lane, DD1 3ET	01382 255 140	MANSFIELD 169 Chesterfield Rd, South	01623 622160	WIC
INVERBEE 163-171 Piersfield Terrace	01331 659 5919	MIDDLESBROUGH Mandale Triangle, Thornaby	01642 677881	WIC



Paul Whitehead's Crendon CR427 Build Part 1

TKC Mag reader, Paul Whitehead, decided that he'd like to build a Crendon CR427 Cobra replica – the result is stunning and what's more, Paul built – and IVA'd – his car in just 22-months. Over to you, Paul ...

I forget when, or how, I first heard of Anthony Hale and the Crendon marque. I had been to the National Kit Car Motor Show at Stoneleigh a few times, scoured the internet for advice and ideas, purchased several kitcar magazines, including TKC Mag - and been to a couple of other Cobra replica locations.

However, one sunny day in January 2018 I drove to Somerset to look at the Crendon CR427. First impressions were good and it took me but a matter of days to call Anthony and discuss placing an order. Anthony is a skilled kitcar builder, having built some stunning AK427s – among others – over the years.

Many enthusiasts will know that owning the Crendon project was a new venture for Anthony, having purchased the rights and parts from founder John Kerr, the inventor and owner for the first phase of its life, in 2017.

ALL HIS OWN WORK

I was determined to do as much of the work myself as possible. When I ordered my kit, only chassis number one of the new era existed ... and mine would be the second one. All the jigs and moulds were available and the first car was to be supplied as a 'body on' rolling chassis during 2018 – I wanted to be different and attempt the whole build myself and Anthony eventually agreed to sell me the chassis and body kit over the ensuing months.

I was never in any doubt that, although I was talking to someone who had built more Cobras than I had ever seen, the next few months were going to reveal some problems and issues with me assembling the chassis and body - and many more with my lack of Cobra knowledge.

However, I was determined to get the build process under way and solve the problems as they arose. Anthony was receptive to suggestions and improvements and I had the time and the energy to find solutions and feed back information to him. It seemed to work very well.

By the end of January 2018, I had ordered a chassis and collected the suspension and differential parts from an elderly Jaguar XJ-S from Ben Thomson at Simply Performance. I'd also received an estimate for a Ford 'big block' V8 engine from Susan Parham at Southern Automotive in the USA.

The Jaguar parts included four old wheels and tyres and a V5C document to enable me to SORN the old car and hopefully keep the numberplate, or at least obtain an age-related registration number.



Everything was in place to get the project started ... and then the 'bombshell' – the Government had produced the 'Road vehicles - Improving air quality and safety' consultation document and if the DfT proposals had gone through un-amended, we would all now be looking at unfinished projects and kitcars that would always fail MoT tests.

HOMEWORK AND MORE HOMEWORK

I spent some time researching the industry and talking to other suppliers to try and establish the basis for my consultation response, a process familiar to me in my 'day job' and one that needed to be completed.

I have no idea if my detailed response was even considered by the regulators, but a few months later we all had the good news that the proposals to have all kitcars fitted with catalytic converters so as to meet 'registration date' emissions requirements had been dropped. A huge relief, especially as by now I had already ordered my engine.

Refurbishing the Jaguar axles was a challenge but not that hard to do – just very dirty and occasionally noisy as all the stuck and rusted parts were persuaded to part company, often improvising with a length of scaffold tube and my best, largest hammer. The Haynes manual on the Jaguar XJ-S proved invaluable.

Ben Thomson's advice to use plenty of degreaser, copious amounts of WD40 and lots of heat worked on all but one bearing that was firmly stuck in the rear axle and needed the attention of a small angle grinder; while upfront only one bolt refused to move - on a front caliper - and had to



be drilled out.

A box of new bearings and seals soon arrived and the old castings and suspension parts were taken for blasting and powdercoating. The 2.88:1 ratio differential was in excellent condition, as were the brake discs, front and rear; I think my Jaguar had led an easy life and maybe had done very few miles, judging by the condition of the parts.



Re-assembly was a relative breeze, following the notes in the Haynes manual, but I did discover that all the instructions for the assembly of the rear suspension lower pivot are wrong – hours of ‘fun’ was had working out in which order to use the felt washers and covers, wishing I had taken more photos of the originals as they came apart.

HEAVE!

The chassis was finished and powdercoated by the end of February 2018, so a trip to Somerset to collect it soon followed. It was an easy two-man lift, up and onto my small trailer. A trolley was constructed from 4x2in timber, with four castors to assist access and movement around my garage.

Fitting the rear axle and front suspension came next, the refurbished calipers and new pads looking terrific on the newly powdercoated chassis.

Temporary turnbuckles were used to mimic the final ride-height at each corner and the brake lines were bent to shape and neatly fitted to the chassis rails with rubber protected ‘P’ clips. It was about this time that I started consulting the IVA manual, since some of the work under the car has to meet specific parts of the regulations ... and clipping brake lines would be one of them

The coil-springs and shock absorbers went on reasonably easily using bolts from the packs provided with the chassis and the brakes were bled for the first time, before it dawned on me that I now had a completed rolling chassis. A very satisfying moment. Body next.

It took a while to source a van large enough to accommodate the bodyshell, but it will just fit in a 4m long-wheelbase Mercedes-Benz Sprinter - with a bit of juggling. All the other nine GRP body parts fitted around it and offloading at the other end was an easy task.

The roof of my garage was only constructed from 1in angle iron, so I fitted some 4x2in timber cross-bars and removable uprights - with pulleys - so that the bodyshell could be lifted when needed. I lifted the ‘shell’ and my wife tied off the ropes, making the job quite safe and supported above the rolling chassis. We lifted it on and off many times!



The sequence for the fitting and completion of the body was somewhat a matter of trial and error for me. Anthony had by then completed fitting the body for the first of his chassis’, so the detail of the assembly was available to see - and lots of photos really helped.

A couple of large tubs of resin and a pile of glassfibre chopped-strand mat were ordered and the process began - during the hottest summer for many years - which reduced

the resin work-time to a matter of a few minutes.

Many clamps, pegs and temporary fixings were used to get the body in the right place, with string lines across the axles and along the body for measurement and alignment.

It's not a difficult process to fit the body, but you do have to take your time, measure everything many times - and mark joint positions carefully. If you are not confident working with glassfibre and sheet-metal work, this is perhaps one job better left to Anthony and his team.

The alignment of the body at this stage will ultimately affect the fit of the doors, the clearance to the wheels front, back and top (hence the overall look of the finished car) and the alignment of other panels and fitments, so this part requires great care. It is vital to get this correct.

A handful of temporary strips of glassfibre were used to align the shape to the chassis, then the body was lifted and turned over to complete the glassing-in of all the rear panels.



PROBLEM SOLVING

Back to the chassis and the alignment was still pretty close, although at this stage I should have paid more attention to the fit of the doors, as they turned out to be a real test of patience and my ingenuity, at a later date.

Anyway, lots of Wunderseal and paint was applied and the underneath rear of the car was looking good. Another tip at this point is to work out where you want heat-shield material glued in under the front wings and around the footwells, since this is tricky to fit later (and subsequently upside down) - I know for sure!



Looking ahead and trying to think about all the possible pitfalls is difficult for the novice. I had never attempted a build like this before (despite many years of misspent youth taking cars apart), so inevitably I did jobs twice or even three times - and often in the wrong order.

Anthony was, of course, a great source of advice ... and a

build manual was provided for each part of the build, but he agrees that he cannot watch over your every move, or 'second guess' what you will try to fit today; so problem-solving becomes a part of the fun.

I could have drilled the holes for the throttle cable above the pedal, saving an 'upside down in the footwell' experience, or welded in the nuts for the seatbelt turret (now a standard fitment), or drilled and tapped some holes for earthing and fixing points, such as the fusebox and cable saddles; all would have saved hours of 'fun' later, not to mention my scraped knuckles. Anthony has taken some of these ideas onboard and future Crendon builders will hopefully have the benefit of my lack of experience and poor planning.

One lesson learned at an early stage was to stop work the minute anything went wrong. It could have been as simple as a dropped washer or a measurement not double-checked, but any mistake will undoubtedly be punished later, so best give in while you are still winning. The car will still be there next day, just as you left it, and you will still have the benefit of ten fingers! That mantra meant I never needed a bandage on any of my wounds

Anthony had supplied two 8'x4' sheets of 2mm aluminium and marked the approximate pattern of a multitude of parts on them. First problem - how to make accurate folds in the cut parts.

A simple bender was fabricated from old angle iron, hinges and straps and this worked really well for the bends I needed. The list of parts included front end bulkheads and closers between the engine bay and the passenger, two inner front wings, five or six parts for the transmission tunnel, two closures for under the doors - and various brackets and panels around the rest of the car. There is not much material left out of those two sheets after all the parts are made.



Fitting the aluminium sheets involved large quantities of rubber strip, sealing paste and button-head M6 fixings ... and loads of rivets and rivnuts. Every joint was sealed, more to prevent any rattling in future than for any other reason. Future proofing and reliability engineering were high priority for me.

The body was gradually and finally fitted to the chassis, measuring carefully at every stage to ensure front-to-back and side-to-side alignment and, after utilising a small boy in the boot with a torch and a pen to mark the boot hinges, the remainder of the body fitting went reasonably well.

I decided at an early stage to leave the final alignment of the doors, boot and bonnet to the bodyshop, since my skill-set stops when filler and paint are needed. Oh ... and then my Ford V8 engine arrived ...

Join us next time in the May/June issue, when Paul fits that very large engine, finishes his build in rapid time and not only passes IVA but does it at the first time of asking ...



East Coast Fibreglass Supplies

All your **fibreglass supplies** delivered direct to your door!

- Mail order fibreglass supplies
- Polyester – Epoxy resins and reinforcements, tools and ancillary's
- Free project information and technical advice
- Download a price list from our website

Place order online or call us on:

0191 497 5134

C/O Hi-Spec Plastics Ltd, West Walpole Street, South Shields, Tyne and Wear NE33 5BY.

E: sales@ecfibreglasssupplies.co.uk

F: 0191 456 5487

www.ecfibreglass.co.uk



BRITISH ENGINEERING EVOLVING

GBS Cars & Coffee
Saturday 21st March
At the GBS Factory



Zero starter kit starts from only **£3,797.00** inc vat

Finance is available on GBS Zero Self Builds & Factory Builds

CALL TODAY TO BOOK A TEST DRIVE & FACTORY VISIT



www.greatbritishsportscars.co.uk

Maun Way, Boughton, Ollerton, Nottingham, NG22 9ZD

T: 01623 860 990 E: info@greatbritishsportscars.co.uk

JOIN US ON FACEBOOK FOLLOW US @gbscars



**Specialists in American Touring Car,
Circle Track & Drag Racing.**

**Proven Engine Building and
Dyno Tuning Experience.**

Engine Data Analysis

Unit 10, Ashley Estate, Carr Wood Road,
Castleford, West Yorkshire WF10 4SR.

Tel: **01977 516 622**

Email: info@engine-data.co.uk **www.engine-data.co.uk**



Welcome to the Tifosi Family,

Rana, SS and JEM

Rana being the "Frogeye" Sprite that we all can associate with the SS "Sebring Sprite" from the early '60s with its association with John Sprinze and its racing successes and finally our flagship car the **JEM "Jacobs Evolution Midget"**, a reincarnation of Dick Jacobs' famous Midgets of which only three were produced again in the early '60s, however our version has been uprated for road use and refind for that aspect



HALLS GARAGE

Morton, near Bourne, Lincolnshire, PE10 0NS

T: 01778 570 286 E: steve@hallsgarage.co.uk

Tifosi cars from
the Halls Group

www.hallsgarage.co.uk



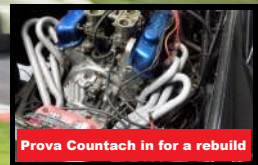
ENGINEERED SOLUTIONS

Tel: 01788 568475

Mob: 07788 728126

simon@sifab.co.uk

www.sifab.co.uk



**Race Preparation & Restoration
Kit Car builds and rebuilds**



In house fabrication of
Aluminium Radiators Fuel tanks Baffled Sumps
Oil, Fuel & Coolant tanks Suspension Components

ALL-ROUNDER

BLITZWORLD'S DX10



Blitzworld's all-new fully assembled Renegade DX10 may only have a 300cc motorbike engine, but it has a top speed of 50mph and is road-legal. ROB HAWKINS goes for a play and discovers its many uses.

It'll ride straight over a kerb edge," remarks Blitzworld boss Steve Malpass as he approached a high-looking kerbstone without backing off on the throttle. I'm strapped into the passenger seat of his latest road-legal Renegade DX10 and naturally brace myself when the 12in diameter front wheels, with their balloon-sized 205mm wide tyres, hit the kerb.

My feet are already pushing on the aluminium footrest inside the footwell, pinning my back into the high-back bucket seat. Steve was right, and the kerbstone is hardly noticeable. It's perhaps thanks to a double wishbone suspension design at the front with long adjustable coil-overs from Gaz

that allow this off-road buggy to tackle such obstacles and soak up their impact.

The 75-profile (153.75mm) all-terrain, road-legal tyres also help to absorb impacts, as proven when Steve later heads through a small woodland circuit he's constructed, where the best means of negotiating the tree stumps is to drive over them.

While the front suspension is seemingly capable, the rear appears equally competent. There's a hint of GTM Libra here with long coil-overs mounted at a 45-degree angle between the chassis and a long trailing arm. There are also a couple of link arms at each rear corner, acting as upper and lower suspension arms

between the chassis and hub/upright assembly.

Steve has so much confidence in this suspension set-up. At one point on the demonstration drive, we're heading along the top edge of a grassy bank, when it comes to a reasonably abrupt end and a steep decline. Anyone new to this terrain would be wisely cautious, but he merely pushed harder on the throttle and we became airborne for a while until gravity took effect. My feet once more react and push hard on the aluminium footrest, anticipating an impact that may send shockwaves up my spine. Instead, the front and rear suspension absorb it all, leaving me thinking I should really try to relax a little more.



Secured to the rear of the DX10's chassis, there's a CFMOTO 300cc single-cylinder motorbike engine with a CVT gearbox, including reverse. A short chain drives an open diff/cog, whereby two driveshafts power the rear wheels. The set-up is straightforward and simple to maintain, with a fuel tank and radiator mounted above, so everything is within close proximity. There is the option to fit larger, more powerful engines, such as the Subaru flat-four, and Blitzworld offer a fully built DX10 minus the motorbike engine and 'box for around £5400 inc VAT.

The performance from this small motorbike engine isn't blistering, but it's sufficient to power the DX10 up some steep inclines, even when we stop halfway up. Engine noise isn't too deafening, thanks to a sophisticated UK-manufactured exhaust silencer. Plus, with a top speed of 50mph, it's surely capable of keeping up with country lane traffic, which is where Blitzworld see most of their customers using it. A lightweight off-roader for agricultural work has long been a popular mode of transport for farmers for example, and while quad bikes

have often filled this demand, Blitzworld can see the appeal of their more civilised Renegade DX10. Such machinery has to be practical, simple to operate and simple to maintain. The DX10 seems to have it all.

On the subject of simplicity, there's more of this in the cockpit, which consists of waterproof, padded seats for two, four-point harnesses and a straightforward dashboard with only a speedometer for instruments and a handful of easy-to-read switches for the exterior lighting, horn, hazards and foglights (a column-mounted stalk switch operates the indicators).

Blitzworld decided to build their Renegade DX10 in left-hand drive to not only appeal to mainland Europe, but also because many off-road competition vehicles, including rally cars, are constructed with the steering on the left. However, the option to have a right-hand-drive vehicle exists, and there's very little to alter - the steering column is mounted to the middle of the steering rack, so it's only a matter of moving the column to the right of the dashboard. Steve later explains he's had a request to build a



Passenger grab handle is a useful addition should you need it



Remember the GTM Libra and its long rear-mounted coilovers angled at 45 degrees between the body and rear hubs? The DX10 has a similar design



Sophisticated UK-manufactured exhaust system contains lots of packing to help keep the noise levels down and prevent your ears from ringing



Cockpit has all the waterproofed essentials and if needed, can be hosed out



Left-hand-drive steering can be switched to the right



Simple switches. These three are for full beam, the horn and starter motor



Long rear trailing arms help to provide plenty of suspension travel, essential for driving off-road



Gearstick controls a CVT gearbox with forward and reverse

Renegade DX10 with dual steering for disabled drivers, and he's already worked out how to do this.

As we head into a small woodland area next to Blitzworld's workshops, Steve shows me around his carefully constructed route that requires some tricky manoeuvres. The aforementioned tree stumps are driven over and soaked up by the suspension – that soon becomes the easy part. There's a slow corner where the trees are low, so you have to watch the top of the roll cage to ensure it clears them.

On the plus side, the top half of the roll cage is bolted in position, so it can be replaced should it wallop a tree. However, this isn't the reason for its design. Steve intends to be shipping multiple DX10s, so by unbolting the top half of the roll cage, there's more space inside a container to stack several vehicles.

Elsewhere on Steve's short woodland circuit, the hardest section to negotiate consists of a steep drop followed immediately by an incline and a tight squeeze through more trees. Having driven his course more times than he's drunk cups of coffee, Steve knows every inch of it and makes it all look far too easy. The ability of the DX10 shines.

It's now my turn to have a drive. I've driven many of the off-road buggies from Blitzworld, as far back as the Fiat Seicento-based models. It's reassuring to see how this manufacturer has progressed from offering donor-vehicle-based kitcars to fully built vehicles with brand-new components, yet the prices still remain low with an off-road DX10 at £5994 inc VAT and a road legal version for £7194 inc VAT.

After strapping myself into the driver's seat and becoming familiar with the controls, which are not many, I'm ready to select 'F' on the gearstick for forward. Steve advises me to raise the engine revs a little and then back off to help the CVT gearbox to engage, then we're ready to go. Following his instruction, I start with those kerbstones to build up my confidence in the suspension.

This time, I have no option to brace myself or push my feet into a footrest. Next, we tackle some of the grassy banks around the workshops. I need a little practice to get anywhere near as confident as Steve is with driving along a 45-degree gradient – not up or down it, but traversing.

When I head along the top edge of one of those grassy banks, I take a deep breath, turn the steering and

plummet down, only to discover the DX10 takes it all in its stride. All I need to do is hold onto the steering and keep my right foot on the accelerator pedal. When I do need to apply the brakes, there are discs all round with a dual circuit, non-servo-assisted system to help.

After several minutes of driving, Steve recommends I try the woodland section. I cautiously enter and drive over the tree stumps. The terrain is muddy and a little wet, so whilst the rear wheels don't spin up, the steering becomes lighter at times when the tyres slip and slide.

Typical of wide tyres and a slippery surface, I soon discover I have to think ahead and react more quickly with the steering. I discover this more so when I arrive at the tight corner where the overhanging trees need to be watched to avoid walloping the top of the roll cage. My first attempt sees me turn far too late, so I finally get a chance to test reverse gear. After a quick back and forth, I'm clear of the trees without a single scrape and breathe a sigh of relief. Then

I realise the hardest part of the course is next. The track climbs a little and ends because there's a steep drop ahead. Steve encourages me to keep

going as we approach the crest. Another deep breath and we drop down, far slower than when Steve tackled it, but at a pace where I can feel in control.

I spot the bottom of the track and the start of the incline through a couple of trees, and think I've lined up the DX10 to get through. When we arrive at the bottom of the descent, we're quickly onto the incline and I realise I need to correct the steering to get through the trees. I'm too late with my reactions and in slow motion, the offside front tyre smacks into one of those trees.

We come to an abrupt halt and I realise that the DX10 may be a tough off-roader, but there's a limit to how much you can throw at it, and hitting a tree with a front wheel is quite a demand. I notice the tracking of the front wheels has been altered, with the nearside pointing straight ahead and the offside toeing out excessively. We take a look at the damage and conclude the steering rack has taken most of the impact, the suspension wishbones may need a little fettling, but otherwise, the chassis seems to be intact.

At this point, I've grown a large pair of ears, my feet and hands have turned into hooves and I don't know what to say except maybe, ee-aw. Steve kindly remarks that perhaps he knows the circuit too well and maybe it's harder than I expected. Reassuringly he has spare parts in stock, so we return to the workshops and assess the damage. He later tells me that a new steering rack and a little straightening of the offside front suspension arms saw the DX10 as good as new again. Perhaps there's a positive note from this test drive, in that when damage is done, the parts are available to fix it. Had there been a bull-bar or similar protection at the front, it may have helped, it may have needed replacing, or it may have transferred the impact to the chassis. In this case, the weakest point in the impact was the steering rack, which doesn't take long to replace.

Although the day ended abruptly and I left full of apologies, I'm hoping Steve will let me return one day to cautiously drive his off-road vehicles. I can see the appeal of the DX10 as not only a leisure vehicle, but perhaps more so as a utility vehicle.

It's sufficiently practical (as far as practical goes with a vehicle that has no weather protection), comes with a reassuring two-year warranty (tree damage not included) and it's road-legal thanks to its engine size that slots it into the MSVA category instead of the IVA (and Blitzworld are working towards Euro 6 for 2020).

Best of all, it's British made, but can be sold around the world. Blitzworld collaborated with several overseas specialists in mainland Europe to source the right components. They assemble the vehicles at their Stoke-based workshops and ship them out. Having launched this model in 2019 at Stoneleigh, sales are expected to reach the 100-mark by the start of 2020. Perhaps its all-round ability is the key to its success.

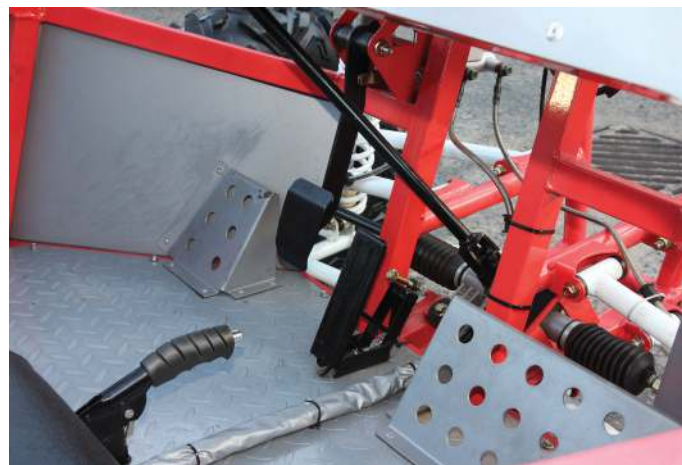
For more information contact:

Blitzworld Buggies Ltd;
Unit 14, Railway Enterprise Centre,
Shelton New Road, Stoke-on-Trent,
Staffordshire ST4 7SH
T. 01782 208 050

www.blitzworld.co.uk



Traditional kingpin design for the upright helps to keep components straightforward to maintain. Braking employs discs all round



Steering column is secured to the centre of the rack, so switching between LHD and RHD is feasible



All-terrain balloon-tyres help to soak up the lumps and bumps, along with the suspension



Front suspension adopts a well-proven design with double upper and lower wishbones and an outboard-mounted adjustable coilover from Gaz

***WHEN IT
MATTERS MOST.***



**MICHELIN CROSSCLIMATE +
WHATEVER THE WEATHER.
WHATEVER THE TIME OF YEAR.**

www.michelin.co.uk



KITS



BUILDS



PARTS



Based in Ashford, Kent and have taken on the mantle from the founder Chris Allanson building on the innovative track-focused adrenalin creations which first appeared nearly 20 years ago based on the iconic classic Mini.

The Z Cars conversion utilises a more modern engine centring on a superbike power unit or the highly-acclaimed Honda Civic Type R unit.



Whilst these engines are at a premium with prices climbing they still represent greater value over the A-series and can be tuned reliably from a standard 160 BHP to 400 BHP onwards utilising forced induction. With the engine relocated to behind the driver in a mid-engine configuration, there is an instant transformation to a micro modern-day giant-killer with genuine supercar performance, whilst retaining that classic Mini silhouette.



The heart of the conversion is a rear-mounted precision engineered bolt down rollcage which doubles as the engine cradle and locates the bespoke Z Cars suspension, drive shafts, brakes and all the mechanical components to complete the installation as a home-assembly project with clear instructions and a DVD build guide.

FACTORY BUILDS ARE ALSO AVAILABLE AS A TURNKEY SOLUTION.

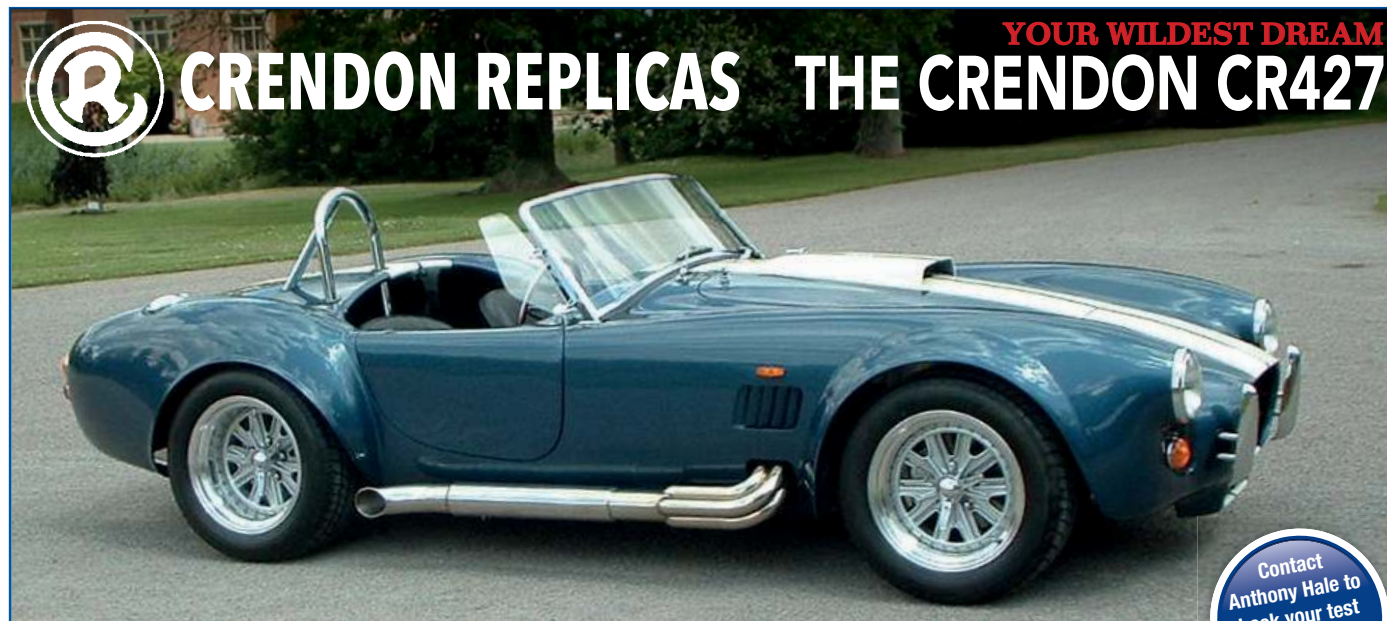


www.zcars.org.uk

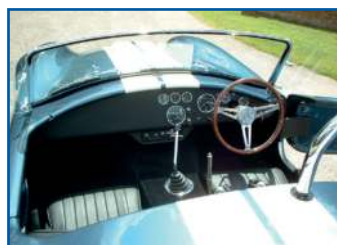


CRENDON REPLICAS

THE CRENDON CR427



Contact
Anthony Hale to
book your test
drive or to find
out more.



For more information contact:

Crendon Replicas; Dept TKC, The Workshop, 2 Ivy Cottage, Wellington, Somerset TA21 9PH

Tel: **07968 394 396** Email: crendonreplicas@gmail.com Website: www.crendonreplicas.com

SPEAR OF DESTINY XIPHISTERNUM ATHAME



Have you ever wondered what the bone that sits at the bottom of your sternum and so protects your heart is called? Of course, you have. STEVE HOLE is about to put you out of your misery...

It was TKC Mag contributor, Rob Hawkins who alerted me to the incredible Xiphisternum Athame, after the car's creator - Miles Allen - had contacted him, with a view to doing a feature.

"This is one for you, Steve, as Miles is based very close to you, near Horsham. Oh, and his car looks amazing."

That's an understatement, to say the least. Rob was right though, as Miles is located only about 40 minutes from TKC Towers. Once my jaw was picked up off the desk, a date to visit the company was arranged.

Not only does the Athame look outrageous but, speaking to Miles, it became clear to me very quickly that the guy really knows what he's doing. A very clever designer and engineer.

His automotive pedigree is pretty formidable - but more on that later - and the Xiphisternum Athame certainly features some wild vinyl wrap and plenty of wavy lines. However, if the Athame is successful, Miles will in

his words, attempt to challenge accepted convention, with his future designs. He really wants to produce cars with variable wheelbases, tracks and come up with non-symmetrical, challenging designs.

As it is, his Athame has been

designed using a 3D CAD program and each piece of tubing has been cut via data output from a computer.

His self-funded sportscar has been an incredible labour of love, featuring some very advanced engineering; the kind of stuff normally found on single-



The man behind the Xiphisternum is Miles Allen



seater formula cars.

Though the Athame is visually quite outrageous looking, it is deadly serious and isn't a replica or even remotely inspired by anything else ... although the LMP or Group C influences are clearly evident.

Unsurprisingly, Miles sees it as a track car, but he uses the prototype (the car featured here) as his daily driver and if a customer wants a road-legal example like his; no problem, it can be made IVA compliant.

The Athame is underpinned by a substantial work-of-art spaceframe chassis with delightful but deadly serious triangulation; meaning that the structure is ultra rigid, plus it features deformable carbon-fibre crash structures, front and rear.

The chassis with its liberal use of Rope (pronounced 'roper') 510 tube is quite something. It also features an MSA-compliant 2in ROPT510 rollcage. Both of these components, much like the wishbones from T45, sheet metal uprights, exhausts, oil and cooling systems and much else besides, have been fabricated in-house by Miles.

The car features class-leading stuff. For example, the axles are hollow for ultimate levels of cooling, and are ultra-lightweight, like the rest of the design, while the brake discs are of the floating type, coupled to AP Racing six-pot calipers. There are also centre-lock wheels, which really are top notch stuff, not usually found on a 'real-world' sports car design.

The suspension features, in Miles' words, 'kinematic and dynamic geometry'. Not many cars at this price-point have anti-squat and anti-dive as standard, which are adjustable at pre-set percentages of squat and dive. This is done with the use of plates that change the wishbone inclination. The steering geometry is of the 'centrepont' type, as used in top level motorsport.

It would take mere mortals like you and me a while to get used to it, although if you are a racing driver - or more likely, a full-time test driver - you'll find it second nature.

For the record, centre-point steering means that there's no tendency to toe-in or toe-out and the scrub radius is

zero when the king pin inclination meets the tyre's contact patch centreline.

Once you've digested some of the above, you are probably wondering the source of the engine for the Xiphisternum Athame and, perhaps you are thinking American V8, such as the GM LS series? No! Miles is a fan of the V12, seeing it as the natural powerplant for a Group C-inspired supercar and decided early on that a BMW 12-cylinder motor, normally found powering the big 7-Series luxo-berge, was the correct choice for the Athame.

In standard guise, the dry-sumped unit pumps out around 350bhp but Miles reckons that, once you take his custom made exhausts and headers (he created them in-house) not to mention the Megasquirt ECU (Omex is an alternative option) into account, 400bhp is more realistic. Although, as yet, he hasn't had the car on a rolling road.

Factor in that the car weighs in at 1036kg and you're probably looking at 400bhp per tonne, which isn't too shabby. Fit a couple of big turbos to the Beemer unit and you can expect anything up to 800bhp!

Miles has chosen to go the Getrag route for his transaxle, a Porsche G50-spec unit, although for his first production version he's upgraded further to the current-generation G96.0x. He really isn't compromising here - on anything.

Horsepower is clearly healthy, but there's over 368 lb ft of torque at 4000rpm on tap here, too. It really means that the performance is effortless and tree-stump-pulling.

Dramatic as the Xiphisternum Athame looks, everything really does perform a function. All those lips, ledges, ridges, scoops and wings are there in the name of maximum downforce and airflow. He's clearly very passionate about his creation - and why wouldn't he be - and is doing things his way. But spending time with him, one can't fail to be impressed and find his passion heart-warming.





Sometimes with big mid-engined cars, engine access can be limited at the rear bulkhead, but cleverly (there's a theme here!) Miles has added a little access hatch in the firewall behind the occupants.

Although it wouldn't win any drag coefficient prizes, the 'Bianco' version that is 'wingless' is very streamlined with a good coefficient as you can see from the Athame in side-profile has a pleasing 'tear-drop' shape.

When it comes to keeping the car planted to the tarmac, then that's a very different matter. What at first glance just seems like an outrageous design feature is more than likely there to resolve airflow, with its aero B-pillar deflectors, twin-element rear wing, aero wheel spats (optional) and electrically-operated ride-height adjustment (it can lift up to 75mm at the touch of a button). Miles describes it as having an 'intelligent seal and semi-blow diffuser'.

Miles has a BEng in mechanical engineering and really, problem solving is the very reason for his existence. That and designing vehicles from a clean sheet idea through to the production stage, be it for other people or - as in this case - with the Xiphisternum, for himself.

While looking for his first design job he created a three-wheeler with active camber ... and also a lightweight

aluminium, electric, monocoque motorbike. Both vehicles were a success and helped land Miles his first job, where he designed a hydrogen fuel-cell urban vehicle.

Another notable assignment was working on the potentially marvellous Grand Prix Masters, which was a one-make single-seater series for retired Formula One drivers. It debuted in late 2005 in Kyalami, but sadly, folded after just two further races in 2006.

It was great to see ex-racers such as Hans Joachim Stuck, Emerson Fittipaldi, Nigel Mansell and Stefan

Johansson competing once more. I remember watching that first race on TV and it was clear that 'once a racer, always a racer' applied here, regardless of age!

The cars featured a chassis produced by Delta Motorsport and 3.5-litre engines built by Nicholson McLaren that produced 650bhp and were basically revised old IndyCar units. The cars themselves were based around year 2000 Reynard 2KI ChampCars.

Miles then went to work for Caparo Vehicle Technologies, best-known for their T1 supercar, which he worked on, plus other stuff like a full carbon-fibre concept car for the Tokyo Motor Show of 2008, a 2-litre single-seater racecar for Renault, the Jaguar Limo-Green concept (basically an XJ with hybrid capability and a range extender engine) and most notably, the Lotus T125 single-seater show car.

There was also a concept for the London Olympics in 2012 that was a three-wheeler called Microcab, an electric device that was intended to transport athletes to the various venues.

Back to the T125. Don't remember that one? Not surprising really as it was a hugely expensive exercise that didn't generate the sales it was intended to. The concept was great. A single-seater that looked like a Formula One car of the day and probably, given its 3.8-litre Cosworth-designed engine (producing 675bhp), went like one, too. I think they were offered at around £750,000, which bought the buyer entry to an exclusive one-make racing league, factory technical support and a driving coach.

Commissioned under Dany Bahar's reign as Lotus boss and unveiled at the Paris Motor Show in 2010, potential customers were invited to buy one - and it's rumoured, were wined and dined in a very private ceremony at



the Louvre in Paris!

Ultimately, I think just two T125s were produced, but it's another great thing for Miles to have on his CV (incidentally, the T125 has been revised and is available once more via New Zealand operation, Rodin Cars (www.rodin-cars.com)).

"Having worked for several low-volume car companies, I have been constantly disappointed by race series going under and companies folding time and again.

"The designer's passion and enthusiasm in me was not enough to continually have the carpet pulled out from under my feet."

It was because of these regular bouts of frustration that Miles was prompted to start work on his own car, the Xiphisternum Athame that you see here: "I have complete control and can challenge myself to do everything, from design to manufacturing - and even self-finance it," he tells me.

In control of his own destiny, the Athame really is an incredible-looking vehicle. I ask Miles about the very curvy rear screens. He tells me that the panels are manufactured from routed sheet and do not need forming (they are actually self-forming once fitted), making the glazing very inexpensive and able to be produced easily in-house. Very often, compound curves are bad news for specialist cars, as stuff like Perspex® and Macralan don't like to bend in more than one dimension, but no such worries here.

There's a good story about the windscreen. Although Miles has gone for a stock item, he's not quite certain which car it originates from, but suspects it could be Nissan-derived. Quite often specialist cars with swoopy shapes and rakish 'screen angles can literally be killed off by the windscreen conundrum.

It's a handmade analogue process created by a craftsman. Tragically, such skilled people are disappearing just like coopers, fletchers and tanners and the like.



Therefore, if you can factor into your new car design an existing 'off the shelf' windscreen, 'e'-marked and IVA-compliant, your costs are immediately slashed, otherwise you are looking at the thick end of 10k for the tooling for a bespoke 'screen, versus (probably) £250 for a pre-existing one. The side glazing is also 'e'-marked and works electronically, with the mechanism coming from an OEM source and this again saves loads of design time and cost.

It wouldn't surprise you to hear that Miles has other cars on the chocks, I'm sure. Linked to the Athame are 'ArtCar', which is very similar in looks but features art on the body panels.

Then there's the three-seater, 'Earth' (third rock from the sun, anyone?) and 'Bianco', a basic straight-out-of-the mould version. This, as mentioned earlier, is the streamlined, non-high downforce version and will cost less because it will have no wings although will come fully built won't be trimmed inside or painted.

All prices have yet to be finalised but when Miles mentions a 'from' figure of £35,000, in my view, he's offering amazing value for money. He would also really like to hear from anyone

who could help and/or get involved with selling or manufacturing them. Serious enquiries only, please ...

Farther down the line will come 'Blunt', which shares its engineering with the Athame series but has no body overhangs; the electric 'Volar', an amphibious vehicle and also what Miles describes as a 'liquid' supercar ... the mind boggles.

I wasn't able to drive the Athame on the day I visited in mid-January, but we'll do a follow-up roadtest feature at a trackday at Brands Hatch in the spring, when the weather improves.

Incidentally - and I'm sure you are wondering - Athame is a sacred dagger with mystical meaning, while Xiphisternum is a sacred triangular-dagger-shaped bone that sits at the bottom of your sternum and protects your heart! Simple, really.

For more information contact:

XIPHISTERNUM;

Nutshell Cottage, Newdigate Road,
Rusper, West Sussex RH12 4RR.

Tel: 07756 605 630

Instagram page - #xiphisternum

www.xiphisternum.com



Axles are hollow for weight-saving and cooling purposes



THE NATIONAL KIT CAR MOTOR SHOW 2020

STONELEIGH

>> SATURDAY 2 – SUNDAY 3 MAY 2020 <<



The **BIGGEST** kit car show in the **WORLD!**

THE **ANNUAL MECCA** FOR KIT CAR ENTHUSIASTS



SAT NAV
CV8 2LZ

THE KIT CAR INDUSTRY'S MAIN SHOW OF THE YEAR
MEET ALL THE MANUFACTURERS

PLUS: LIVE ACTION
HAVE A GO!



WESTFIELD TEST CIRCUIT



THE DAKAR 4X4 EXPERIENCE

4000
KIT CARS
ON DISPLAY

The one and only
WORLD FAMOUS
kit car motor show

100'S OF TRADE STANDS
MANUFACTURERS & ACCESSORY STANDS
NEW LAUNCHES
FEATURE DISPLAYS
WSCC IN MOTORSPORT
100+ CLUB DISPLAYS

complete
KITCAR
show sponsor

at **STONELEIGH**
NAEC, STONELEIGH,
Nr. KENILWORTH,
WARWICKSHIRE, CV8 2LZ

GATES OPEN EACH DAY
9.30am – 4.30pm

BE THERE!
DIRECTIONS

From London M40:
Exit J15. A46 to A452. B4113

From M6 or M69:
Exit M6 J2 to join A46. M69 to A46.
Exit A46 to join B4113.

From M1 Northbound:
Exit J21, M69, A46, Exit A46 to join the
B4113.

TICKETS

Advance Tickets: **£12***
Available until 17th April 2020

Children (8-16): **£5**

Tickets on the Door **£15**

Children (8-16): **£5**

FREE Show Guide

FREE Parking

ALL ENQUIRIES
TELEPHONE

01406 372600

01406 372601

*All advance ticket bookings incur a 50p postage fee.

FREE > **SHOW GUIDE**
> **ENTRY FOR KIT CAR DRIVERS***

*For drivers arriving in their kit cars on the day!

MUSIC NIGHT SATURDAY
LIVE BAND
CAMP ON SITE

Camping & caravanning available from midday 1 May 2020
View prices and book at www.nationalkitcarshow.co.uk

Organised by: Grosvenor Shows Ltd.

www.nationalkitcarshow.co.uk

The **BIGGEST** kit car show in the **WORLD!**

FAMILY FUN WEEKEND Saturday 2 and Sunday 3 May 2020

THE ANNUAL MECCA FOR KIT CAR ENTHUSIASTS

Who will be there?

288 Register	Burlington Owners' Club	Exo Sportscar Owners' Club	Kit Car Direct	Opel Manta Owners' Club	South Wales Kit & Specialist Car Club
427 Hardtops	Caledonian Kit Car Club	G & T Tools	Kit Spares	Parweld	South Yorkshire Kit Car Club
A Nu Dimension	Car Builder Solutions	Gardner Douglas Owners	Kitnetuk	Pie Valley Buggies	Spartan Owners' Club
A R V E	CG Motorsport	Gardner Douglas Sports Cars	Lambo Reproductions	Pilgrim Car Club	Speed 3 Automotive
AB Performance Bike Engineered Cars	Citroen Specials Club	Gardner Douglas Sports Cars	LB Specialist Cars Ltd	Pilgrim Motorsports	Speedsters & Spyders - The Club
AB Tools	CKW Distribution Ltd	GBS Owners' Club	LEC (Locust Enthusiast Club)	Pop Browns with M & M	The Spire Owners' Club
Abrasive Solutions	Clan Owners' Club	The Gentry Motor Car Company	Liege Car Club	Pop Parts Plus Ltd	Spirit Owners' Club
Adrian Flux Insurance Services	Classic Coachworks	The Gentry Register	Lotus 7 Club of Great Britain	Power Torque Engineering	Spyda Ltd
Aerospace Tools & Technology	Classic Cobra Interiors	Ginetta Owners' Club	Luego Owners' Club	Pride Car Customs	Stafford Vehicle Components
AK Sportscars Ltd	Club Marcos International	Glo Force	Magenta Register	ProTech Shocks Ltd	Staffordshire Kit Car Club
All Leather Jackets	Club Nova	Gnawty Naughties	Make Ends Meet Ltd (MEMFAST)	PXC Leather	Stratos Enthusiasts Club
All Tools	Club Vortex	Grassbank.co.uk	Marlin Owners' Club	Quantum Owners' Club	Suffolk Coastal Kit Car Club
Alutight	Complete Kit Car - Performance Publishing	Great British Sports Cars Ltd	Martrim Ltd	Quantum Sports Cars Ltd	Stratos Enthusiasts Club
ANC Sportscars Ltd	Cooler Heat Transfer Ltd	GT40 Enthusiasts Club Ltd	Dan Matthews	Rally Design Ltd	Suffolk Coastal Kit Car Club
Animoto Buggies	Covin Owners' Club	GTM Owners' Club	Merlin Owners' Club	Rawcus	Thompson Tools
A-Plan Insurance	Crendon Replicas	H & H Ignition Solutions	MEV Owners' Group	Recycled Time	Tiger Owners' Club
Argento Global Solutions Ltd T/A Fire Safety Stick	Dakar 4x4	Hambly Sports Cars Ltd	Midas Owners' Club	RHOCAR The UK Kit Car Club	The Tool Box (Neil Sutton)
Aries Motorsport	Dakar 4x4 Owners' Club	Hawk Cars	Mills Extreme Vehicles Ltd (TEAM MEV)	Rickman Cars Owners' Club	Total Kitcar Magazine
Aries Owners' Club	Dax Rush Owners' Club	Hawke Owners' Club	Minari Owners' Register	Road Runner Racing Owners' Club	Toybox Specialist Cars Limited
Aristocat Owners' Register	DeHavilland Motor Company	Intatrim Automotive Seating	Mini Kits	Robin Hood Overlanders	Tribute Automotive
Auto Hose and Restoration Products	Digital Speedos / V-Max Bits Ltd	Italian Replica Club	Mini Marcos Owners' Club	Rochdale Owners' Club & Fairthorpe Sports Car Club	Tribute Automotive Owners' Club
Automec Equipment & Parts Ltd	DNA Owners' Club	Jago Owners' Club	MK Owners' Club	Royale Owners' Club	Triking Owners
Bailey Morris Ltd	Dunsmore Motor Club	JB Cutting Tools	MK Sportscars	RS Retro	Triple X Trading Ltd
Banham Owners' Club	Dutton Cars	JBA Owners' Club	MNR Owners' Club	S & J Motors	Turbo Trade UK
BeachBuggyInfo	Dutton Owners' Club	JK Sportscars Ltd (Dax)	Mongrels Car Club	Scamp Owners' Club	UK Cobra Replica Club
The Beauford Club	The Eagle Owners' Club	Glynn Jones	Moss Owners' Club	SCV Tools	Ultima Park
Bertini Owners' Club	East Anglian Kit Car Club	JPSC	Mtech Lite Ltd	Sebring Owners' Club	Vincent Hurricane Register
Birkin Owners' Club	Edge Sportscars	Judann Autosports	Muddybuggies	Shropshire Alternative Car Club (SHACC)	Westfield Sports Car Club
Blenco Metals	Electrostatic Magic	JZR Pilots Association	N & G Owners' Club	Siltech Racing	Westfield Sports Cars Ltd
Blitzworld Ltd	Equilibrium Kit Cars	Kay's Embroidery & Gifts	National Kit Car Heritage Trust	Simply Performance Ltd	Wrights Auto Supplies
Boost Solutions	Eurolec Components Ltd	Ken & Lyn Restoration Factors	NDP Tools & Accessories	Simtek (UK) Ltd	XCS Designs
Brasscraft	Europa Specialist Spares Ltd	Kent Kit Car Club	North East Kit and Classic Car Club		
	Exact Trading	Kingfisher Kustoms	North West Kit Car Owners' Group		
			Northern Roadsters		

complete
KITCAR
show sponsor

THIS LIST IS BASED ON THE 2019 EXHIBITOR LIST. AN UPDATED LIST WILL BE AVAILABLE ON OUR WEBSITE NEARER THE SHOW.

Organised by: **Grosvenor Shows Ltd.**

www.nationalkitcarshow.co.uk

The Pioneers

'Metal Gurus'



Tools of the trade



Back in the day, there were several 'key' companies servicing the motorsport and specialist car industries. If you needed an aluminium body making - or metal bashing in general - there were businesses around who got the lion's share of the work, for a reason. Here we round up the histories of these pioneer companies. A lot of them were involved in the specialist and kitcar industry, too, although it was motorsport where they earned the bulk of their income. STEVE HOLE is your guide ...





In no particular order ...

GRAND PRIX METALCRAFT

Along with Shapecraft, Grand Prix Metalcraft is perhaps my favourite of the sixties metal-bashing pioneers.

They were located in what I've seen described as a 'quite dilapidated' two-story building called Thane Villas on the Seven Sisters Road in Fortis Green – a suburb of East Finchley.

The area was a real hotbed of motorsport activity in the sixties and seventies. Also located around there was Paul Michaels' Hexagon Motors, Roger Nathan Racing, David Piper

Racing and Paul Hawkins Racing. Plus, of course, less than three miles away was Lotus Cars in Hornsey (before they moved firstly to Cheshunt and then on to Hethel).

Grand Prix Metalcraft was founded by brothers, Peter and Bob Hingerton and their school-friend Alf Goodenough, who were apprentices at – spending seven years in total – aircraft manufacturer, Handley-Page in Cricklewood, before all moving to the Rolls-Royce-owned coachbuilder, Mulliner (also in Cricklewood) and then to Aston Martin in Newport Pagnell.

Ironically, the three had no interest in motorsport (they were Tottenham Hotspurs fans) until Peter Hingerton

went to work for Roger Nathan (his brother and Goodenough were back at Handley-Page, this time in Radlett).

Peter worked out that what he was doing for Nathan could be repeated on a larger scale and with his, Bob's and Alf's skills, they could be successful.

So it was that Grand Prix Metalcraft was born. Using their extensive book of contacts to get work, one of their first jobs was on Aston Martin's Project 212, followed by the Ellova clubman's car for Sid Marler. Roger Nathan and another neighbour, Paul Hawkins, also kept them busy.

Before long the company was one of the leading suppliers – possibly THE go-to – for alloy tanks and those huge wings so beloved of Formula One teams in the sixties.

They offered three standard types of dry sump catch tanks that proved very popular for many years. Rather than just being an alloy tank that caught oil, it also had a clever method of removing air from the oil via a system of baffles, shaped like an egg-box, designed by Peter Hingerton.

Grand Prix Metalcraft was also one of the pioneers of foam-filled fuel tanks, but their forte was anything produced from sheet metal, really. They welcomed prototype work and one-off projects and Peter Hingerton's welding skills were legendary. They also used the best materials. Aircraft grade L59 alloy was standard, as was NS4 22-gauge aluminium (used on their wings).

Showing how diverse their work was, they made over 2500 bronze-welded chopper frames for a custom bike builder in America, along with the associated specialist hardware like 'springer' forks.

If you were a racing team, be it involved in Formula One, Formula Two, Formula Three, Formula Atlantic, FF1600 or Ford's 'works' Escorts and you wanted a monocoque or a spaceframe chassis, there's a good chance you engaged the services of Grand Prix Metalcraft. You name it; they could make it.

Although I've seen it written that Peter Hingerton said: "We don't want 'churning out' jobs, we much prefer one-off and F1 work," they did get involved in production stuff. For a couple of years, at least, they produced Elden's single-seater racecars, while all the aluminium bodies for Cameron Millar's exquisite Maserati 250F replicas were produced by Grand Prix Metalcraft.

The late Chris Lawrence of Deep Sanderson fame – amongst much other stuff – also used their services on his ill-fated Monica project, while Cobra Parts proprietor, Brian Angliss had them make his long range 35-gallon fuel tanks and Cobra 289 and 427



Grand Prix Metalcraft produced things like their own 'Falconry Special' Range Rovers and the bodies for Cameron Millar's Maserati 250F replicas



bodies, while they also made various tanks for GT40 guru, John Etheridge. Then there was Peter Zagaroff's Silhouette kitcar, which they not only produced but marketed too, along with their huge and luxurious Range Rover conversions in the eighties, which I think were called 'Falconry Specials'.

A really unique company that attracted a lot of bespoke and bonkers work. For example, when it looked like the oil crisis and three-day working week of the early seventies might threaten their motorsport work – and thus the company – they set up an operation called Proto Excel with ex-F1 driver Chris Craft, that produced hugely expensive furniture made out of aluminium. Another ex-racing driver, turned sculptor, Andrew Mylius, commissioned Grand Prix Metalcraft to turn his designs into bronze realities. Some of these were very large and at least two ended up being displayed in the middle of Scottish lochs!

WILLIAMS & PRITCHARD



The special Lotus 6 with fully enveloping body was produced by W&P

Founded by Charles Williams (1915-1969) and Len Pritchard (1919-2008), in 1948. Williams had learnt his craft at bespoke coachbuilder, Corsica Coachworks, although the pair had met during the war years when they were both building Supermarine Spitfires. The company set up in Edmonton, before moving to Hornsey with a satellite works in Hammersmith, before they consolidated everything back to Edmonton again. Williams & Pritchard were the 'go-to' coachwork operation if you were a car



Elva racecars produced by W&P



Williams & Pritchard made the Ikenga GT bodies for David Gittens



The company made all of the early Lotus bodies for Colin Chapman

manufacturer in the fifties and sixties and despite building their reputation on the quality of their metalwork, they quickly grasped the concept of glassfibre and set up a GRP division, as Charlie Williams was really excited about the material. After he died suddenly in 1969 the glassfibre division closed down and all the moulds and rights were sold on. Their client list was enviable, featuring luminaries such as Colin Chapman, Lotus, AC Cars, Lola, Cooper, Elva, Lister-Jaguar, Costin, BRM and Speedwell. Incidentally, their last client was David Gittens, who took his McLaren-based Ikenga GT to them for

rebodying; they also worked on the Owen Sedanca GT. Williams & Pritchard always gave great support to their customers, learnt during their early association with Colin Chapman in Hornsey. For example, the short-lived, resurrected Gordon-Keeble operation of 1964 was based in Eastleigh, Hampshire. Recognising the importance of this, Williams set up a satellite works with the Gordon-Keeble operation employing 20 people on sub-contract. They became very big within the GRP replacement panels market for Austin Healey Sprite ... but ultimately, it's their metal-bashing skills they are best-known for.



Ikenga Mk3

THE ROBERT PEEL COMPANY



WSM bodies made by Robert Peel Company



The company name came from the fact that they were based behind the Sir Robert Peel pub in Kingston-upon-Thames

Founded by Alec Goldie and Fred Faulkner in a workshop behind the Sir Robert Peel pub in Cambridge Road, Kingston-upon-Thames.

Always in the shadow of higher profile luminaries such as Williams & Pritchard, the company produced some stunning work. They were also the port of call for Douglas Wilson-Spratt for his WSM marque.

MAURICE GOMM METAL DEVELOPMENTS

Known as a panel beater extraordinaire. Gomm's company was one of the many operations supporting motorsport and the specialist car scene, back in the sixties - and were known as the 'backroom boys'.

Gomm was a real craftsman though; he had workshops in Woking and a satellite in Croydon that worked primarily for Peter Agg's Trojan Cars - and therefore, indirectly for Bruce McLaren, as Trojan built McLaren's road cars.

The walls of his office were reputed to have been plastered with signed and dedicated photographs of famous racing drivers of the day, all grateful for his skills. The Gomm operation was an empire, led by the artisan Maurice, but also featuring his sons, Hugh, Mick and Francis.

Their handiwork featured on the cars of Jackie Stewart and Graham Hill - and also for Ford's 'works' Escort, with Safari and Mexico rally victories.

Gomms not only shaped metal they also made stuff like oil tanks, chassis and, of course, bodies (this was pre-



Gomm made the EMKA bodies

composite days) for a variety of Formula One teams. Graham Hill's Embassy-Hill F1 operation was based at Gomm's factory. They were kind of the south London equivalent to Grand Prix Metalcraft, 'Mo' Gomm was a very generous man and many a fledgling race team, in need of a home, was offered a roof over their heads at his workshop until they found their own premises.

Gomm was also a mad motorcycle fan and often entered a Manx-Norton 'works' effort at the Isle of Man TT.

Maurice learnt the majority of his metal skills at Vickers Armstrong during the early part of World War 2 at Brooklands, where he worked on the Wellington bomber production line.

Post-war he worked for HBR at Sunbury-on-Thames, doing sheet metal work often on Ford V8-based 'specials' for Anglo-Iranian oil company. At HBR he met Paul Emeryson and the two got on very well.

Gomm formed the bodies for Emeryson 500s during this spare time. It was here that he also met Nobby Sharp, who would later go on to work for Gomm for many years.

Maurice built several 700MC specials and often raced them too, until success of this business curtailed these recreational activities.

John Tojeiro was one of the first designers to employ the services of



Mo Gomm produced the exquisite bodywork for this Jaguar XK140 Special

Maurice Gomm, alongside Brian Lister and Eric Broadley, Gomm being heavily involved on early Lolas.

Incidentally, Broadley was another who was temporarily housed at Gomm's unit until finding his own factory. Meanwhile, John Cooper had his fuel and oil tanks made by Gomm, which led to Maurice getting Bruce McLaren's work as well as Jack Brabham's.

It was the association with McLaren that in turn led to Gomm being commissioned by the Ford Motor Company to make oil tanks for every GT40 produced.

Gomm built most of the Ford Escort 'shells for Alan Mann Racing and when Mann was commissioned to design the cars for the film 'Chitty Chitty Bang Bang' guess who built the chassis and bodies? After that gig he then built the cars for the Gerry Anderson sci-fi programme, 'UFO', starring Ed Bishop.

Gomm had a lifelong friendship with designer Len Bailey, who was also based in an office at Maurice Gomm's place, incidentally.



Gomms were Alan Mann Racing's 'go-to' metalbashers and produced all the cars for the film, Chitty Chitty Bang Bang

SHAPECRAFT

Northampton-based company who are still very active producing and repairing a variety of exquisite aluminium bodies and panels, including Jaguar C- and D-type bodies. Clive Smart's company is also well-known in the kitcar game for the Jaguar SS100-inspired Birchfield Sports



Their own products have included the glorious SR15 Lotus 15 replica



Shapecraft produce beautiful aluminium bodies to this day



Barry Wood's Elan Fastback bodies were made by Shapecraft

and the SR15 Lotus 15 replica.

The company's history goes back as far as 1962, when they were founded by Harold Croydon in Tolworth. Like many of his contemporaries, Harold had learnt his skills in the aviation industry and Shapecraft's early work was on aircraft panels.

Early automotive custom came from the likes of David Ogle at Ogle Design (albeit on a one-off Elan special for his own use) and racing driver Barry Wood, proprietor of Surbiton Motors. Wood was an enthusiastic Lotus Elan racer and commissioned Croydon to come up

with a streamlined version of the Elan that he debuted in 1963 at Snetterton.

Based on an Elan S1, Wood's car featured an aluminium fastback roof that gave the car a distinct streamlined look, plus he 'borrowed' the frontal styling of Ogle's car - although this aspect never appeared on the subsequent Elan 26R Shapecraft (to give it the correct title) cars.

The 'production' version was based on the Lotus Elan 26R model and produced by Shapecraft, but sold via Wood's Surbiton Motors operation who were dealers for MG and Lotus and also sold Jack Brabham's variety of go-faster parts for the Vauxhall Viva.

Shapecraft/Surbiton Motors launched their Elan at the Racing Car Show of January 1964, organised by the BRSCC in Olympia's West Hall where one notable customer was actor Peter Sellers, who bought one as a wedding present for actress Britt Ekland.

Surbiton Motors ceased trading in late 1964 after about 20 Elan 26R Shapecrafts had been sold.

Meanwhile, although they stopped producing Elans after Surbiton Motors' demise, Shapecraft went from strength-to-strength and formed a very active relationship with Robert Jankel's Panther Westwinds operation (located down the road in Surbiton).

Indeed, Bob Jankel would end up

acquiring Shapecraft, changing the name to Shapecraft Westwinds. A canny businessman; when he learnt that Aston Martin had gone bust in 1974, realising that there would be some very talented panel-beaters and sheet metal workers out of work, he acted quickly.

Within 24-hours he was in the labour exchange in Northampton advertising for 'skilled panel-beaters'. Another seven days would see him employing ten ex-Aston men in a Shapecraft 'satellite' in an ex-tannery in Northampton, led by former Rolls-Royce apprentice, Clive Smart.

Clive acquired the Shapecraft name after Panther went under and carried on producing wondrous creations in aluminium and stainless steel, something that he still does today.

ARCH MOTOR & MANUFACTURING COMPANY LTD

The other metal experts featured here were famous for their expertise producing car bodies or stuff like tanks and wings. Some also produced chassis and monocoques. Arch Motors, on the other hand, concentrated on the latter and never produced anything relating to a car's body.

Founded in the early sixties by Bob Robinson (1934-2013) in Kings Street Arches, Tottenham, the company would go on to produce chassis and monocoques for pretty much every racing car manufacturer of the day you could name, along with a number of specialist car makers, too.

Robinson was a sidecar rider in the 1950s using a Vincent 998cc combination ... and learned how to bronze-weld (brazed) bike frames and other related parts at an early age.

Once again, Colin Chapman's Hornsey-based operation is the reason that another little north London engineering concern came to exist. Robinson's school-friend, Don Gadd, got a job at Lotus and introduced Bob to Colin Chapman.

Bob, along with his friend and another sidecar rider, Ted Young, had set up Arch Motor & Manufacturing in 1957 and once Chapman realised that Robinson was an ace welder he gave them a lot of his work. Arch produced Lotus's racecar chassis' from the Type 22 onwards, including fourteen Type 24 F1 frames plus roadcar stuff like the Lotus Seven's spaceframe.

Eric Broadley of Lola Cars was another early Arch customer. Indeed, Bob Robinson used pioneering bronze welding techniques on the Lola Mk1. The Bowmaker (John Surtees) Lotus



Arch Motors produced the chassis for Caterham Cars for many, many years

project also saw Arch's input.

Responding to a re-location initiative in 1966, Arch moved to Redwings Way in Huntingdon (where they are still located) and their new near neighbours were Lola Cars and also glassfibre gurus, Specialised Mouldings, next door, with whom they collaborated a lot.

When Young died in 1970, Bob carried on and eventually control of the company passed to his son, Bruce.

In reality, it's probably easier to recount the racecar makes who didn't use Arch's services, but customers included Frank Williams, Lola, Lotus, Ford Advanced Vehicles, Mallock, Bob King's Royale, Van Diemen, Palliser, Titan, Alexis, March Engineering, Merlyn, Gryphon, Hawke, Ensign, Rondel and Ralt. That's only a few, incidentally!

Meanwhile, specialist car work included producing the spaceframe chassis for the Caterham Seven for many years, Ariel Atom, Strathcarron, Tomita, Panther Lima, Unipower GT and Chris Craft's Rocket chassis.

Bruce Robinson and his team will still produce for you a beautiful, handcrafted chassis and although they now have less staff than the fifty they once employed, you can be sure that the work will be absolutely top class.

That completes our round-up of the specialist car industry's leading metal bashing pioneers. Even though some

of them are well-known, the detailed stuff has never really been published anywhere else – not that I've seen, anyway – and I think it is important to pay tribute to these incredibly skilled, often eccentric, pioneers.

The list of companies kind of chose itself and could have included others, but I decided to concentrate on those who did a lot of specialist car work, to highlight everything they did and their histories.

We could - perhaps, should - have included Abbey Panels (founded in 1941 by Ted Loades, Ernie Wilkinson, Les Bean and Bill Woodhall) in more detail, but they concentrated on prototype work from their initial base in Abbey Road, Nuneaton before they moved to Coventry.

Immensely talented nevertheless, they were the go-to company for Coventry's once huge car making industry and the likes of Jaguar, Rover, Lea-Francis and MG all had their prototypes made by Abbey.

For a start, it was them who developed stuff like Jaguar XK120, C-type, D-type, E-type and XJ13.

Abbey became a huge operation, listed on the stock exchange and, although the company still exists it is much altered. Their automotive work really ceased in 2002, although - as mentioned - what is now known as Loades still exists.





CHEVROLET



**PARTSWORLD
PERFORMANCE**



www.partsworldperformance.com

**CHEVROLET
PERFORMANCE
OFFICIAL IMPORTER**



STOCKIST OF LS+LT ENGINES

100+ ENGINES IN STOCK



350/290 DELUXE

Horsepower: 300 @ 5100rpm
Torque (lb.ft) 335

**£2,250
+VAT**



LS3 ENGINE

Horsepower: 430 @ 5900rpm
Torque (lb.ft) 425

**£4,350
+VAT**



**£14,995
+VAT**

ALL NEW LT5

Horsepower: 755 @ 6400rpm
Torque (lb.ft) 715

Chevrolet Performance pioneered their high-performance crate engine 50 years ago and have since been striving to offer innovative and more powerful powertrain solutions for any project you may have in mind or in your garage!

The 6.2L LT1 and LT4 engines take the basic architecture of the Gen-III engines to another level and are available in either a Wet or Dry sump configuration.

Then there is the new supercharged LT5 engine which is Chevy's fastest crate engine ever and the most powerful offered in any of their production vehicles, offering 755bhp and 715 lb.-ft of torque.

We also stock:

Small block engine

Big block engines

Automatic / Manual Transmissions

Pre Programmed controller kits

Full front end accessory drive kits

Full range of engine / transmission components

Visit our website for more details



www.partsworldperformance.com

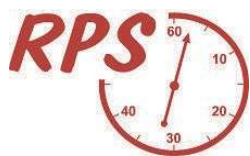


info@partsworldperformance.com



+44 (0) 1543 431941

T: 07900 431 244
E: enquiries@rps-ltd.info
www.rps-ltd.info



MGF/TF Hardtop available shortly



**Panels for the MGB GT and Roadster including rubber bumper conversion kit and VeeBee Wings RPX kit for the MGF and TF
NEW RPS-S kit for the MGF**



CLUB LOTUS

58 MALTHEUSE COURT DEREHAM
NORFOLK NR20 4UA



TEL 01362 691144 OR 694459 FAX 01362 695522

THE ORIGINAL & BEST CLUB FOR ALL LOTUS OWNERS AND ENTHUSIASTS

Club Membership benefits include:

- 52 page full colour quarterly magazine
- Discounts (10%+) on quality, specialist Lotus car insurance from either Footman James or Peter James (Members also receive a discount on their everyday car, motorcycle, home/contents & holiday insurance)
- Discounts on accessories, car covers, new spares and parts including 10%+ at Hamilton Classic & Demon Tweaks
- Insurance company approved valuations
- Free Lotus specialists guide
- Limitless free technical help & advice
- Club shop selling merchandise, books & accessories
- Assistance with all registration and model authentication matters (we are the only modern Lotus Club registered with and approved by the DVLA)
- 29 local area organisers throughout the UK – there's always a friendly monthly meeting near to you

All this for only £35 a year

www.clublotus.co.uk

OR CALL FOR FREE INFO PACK

Insurance tailored around you and your kit car

At Adrian Flux we have over 40 years experience tailoring insurance to suit your specific needs. We don't believe in "one size fits all" when it comes to insurance, which is why you could save time and money by calling a member of our team directly on **0800 085 5000** compared to online.



Ask our experienced staff about:

Club member discounts
Agreed valuations
Limited mileage discounts
European breakdown cover
Driving other vehicles

Call us today on: 0800 085 5000

Mon-Thu 9am-9pm, Fri 9am-7pm Sat 9am-4pm. Authorised & regulated by the Financial Conduct Authority

adrianflux.co.uk

ADRIAN FLUX

NEW CAR CARE PRODUCTS ON TEST

WE THINK YOU'LL LIKE...

Welcome once again to another round-up of car care products we've recently tried and recommend

Turtle Wax Hybrid Solutions Range

I tend to concentrate on the detailing equivalent of micro-breweries, here! The tiny car care brands producing (hopefully blended in-house) products made with passion in small quantities. This is the kitcar industry, after all and we have a natural affinity with the underdog.

However, this piece focuses on a new range of products from one of the world's largest car care companies Turtle Wax. Yep, Turtle Wax, the stuff your grandad probably used and still uses. I bet there's a chance you've got a rusty tin of Turtle Wax lurking in the back of your shed, somewhere.

A funny thing happened last year in the detailing world. Having dismissed industry stalwarts like Armorall and Turtle Wax as being old hat, a lot of the leading car care YouTubers started raving about some new arrivals in the American Turtle Wax Ice line-up.

They were putting them up against some of the acknowledged leaders (mostly much smaller cool boutique-style brands) and the Turtle Wax stuff was putting them to the sword.

Crikey, Brian at Apex Detailing in America had daily match-ups – winner stays on, if you will – where he'd try and find a product that bettered Turtle Wax Hybrid Sealant Wax. I'm not sure that he did, but if he did, then it definitely took weeks! What was even better was the fact it smells like Brut 33!



The Ice range doesn't exist in the UK, but thankfully Turtle Wax had launched them under the standard range, so I went onto the 'bay of E' and ordered them up.

You can see what I thought in the Sept/Oct 2019 issue.

Anyway, not satisfied with that, Turtle Wax has just raised the stakes again with the introduction of the Turtle Wax Hybrid Solutions range. Currently, there are five products available.

I'll properly test them out in the May/June 2020 issue but early testing of three of the range had me picking my jaw up off the floor. Turtle Wax, the old standby your grandad swore by, has taken a 'yoof elixir' and I love that. I guess it proves that there's no substitute for class.

Chemical Guys Hydrocharge and Hydroslick.

Chemical Guys is another of the world's leading car care companies. They definitely have one of the largest ranges.

Founded in Los Angeles by Paul

Schneider and his friend David Knotek with input from Paul's brother, Dan, founder of Detail Garage.

They would turn up at car meets with brightly coloured and vividly smelling concoctions. Other exhibitors used to say "Here come the Chemical Guys" and the nickname stuck and Chemical Guys the brand was born.

Those wild colours and heady smells remain to this day, but that's not just a cover story as some of those Chemical Guys products are brilliant.

The company has recently joined the ceramic SiO2 revolution with Hydrocharge and Hydroslick.

Starting with Hydrocharge first and it's an SiO2 spray that unlike the majority of the company's products that smell of nice bubblegum or buttered popcorn, there's a definite whiff of lighter fluid meets petroleum spirit here.

Hydroslick is my personal favourite right from the artwork to the nice mid-blue colour. It has the same whiff as Hydrocharge, though, but don't let that put you off. It's described as a hyperwax that doesn't contain any wax. Yes, I had to think about that for a minute or two, too!

I suspect that it's got a blend of man-made polymers, suspended in gel, hence the texture. The very detailed



label also says that it's a genuine ceramic product. Unlike some ceramics it doesn't require a single use cloth, as they often dry like glass and have to be thrown away.

I really like the way the product goes on and more importantly comes off, which is unbelievably easy, while its shine level is insane. Longevity is great, even winter road salt and crud took a long time to reduce the gloss.

I also recently bought the third product in Chemical Guys' 'Hydro' range, which is called Hydrosuds, with the name being quite self-explanatory and I'll be trying that out in a future issue of TKC Mag, too.

I'd assumed that Hydrocharge was a quick detailer type product that was used as a 'topper' for Hydroslick, which I felt was a sealant.

Well, I guess they are, sort of, however, Chemical Guys say that effectively they are two extra steps to your detailing regime. Use Hydrocharge first and then follow up with Hydroslick.

If you wish, leave the car for about three hours, out of the rain, and then you can add glaze, sealant, wax and detailer on top of them. Both products are 500ml and are available at £42.10 from Slim's Detailing, although you can buy the pair together for £56.99.

Available now from various sources in the UK including www.slimsdetailing.co.uk or 0333 222 9944 or to find out more about the complete Chemical Guys range visit www.chemicalguys.com

SANSOM CAR CARE

Sam Hogan has been around the UK car care scene for many years and in



late 2019 he launched his new Sansom car care range.

I've been trying out some of the products recently and I really like them. We'll be featuring some of them in action in a future issue of TKC Mag.

I'm liking the packaging, the colours and smells and above all else, those that I've tried have truly justified their existence by performing excellently.

Speedy Glass Cleaner is a winner, as is Voodoo tyre gel and Lucky Leather Crème. The prices seem to be extremely competitive, too.

For more information visit www.sansom.co.uk

YUM CARS



Superbly named car care range that is a pretty accurate description of the packaging, colours and smells of their products.

The company has run a well-regarded detailing studio in Mansfield for several years and have developed what they do by launching their own range of eighteen core products. Pricing is very competitive too.

I've tried a few of these out and will report back on how they performed in a future issue of TKC Mag. In the meantime, more information is available via www.yumcars.co.uk.

ELEMENT7 PERFORMANCE - SAPPHIRE ACTIVE WHEEL CLEANER

A little car care company based in the North East is Element7 Performance run by David and Claire Mole. A very underrated range of products that is well-regarded by those that know.

I recently tried out their wheel cleaner, called Sapphire Active, which is an alkaline-based cleaner that neatly gets rid of dirt, crud and carbon build up. It's a wheel cleaner that smells of an oven cleaner rather than peroxide.

It's also one of the only products that has been designed to clean chrome exhaust tips and it did that well on my cars. You can use anything to do the exhaust clean job but you have to be careful not to tarnish the finish. Sapphire does a great job.

A 500ml bottle costs just £6.95 and is available from www.element7performance.com.



BUILD YOUR VINTAGE DREAM CAR TODAY
RACECARREPLICAS.COM

RCR 40 v RCR P4

- ACCURATE VINTAGE BODIES,
- CNC-MACHINED SUSPENSION
- ALLOY MONOCOQUE CHASSIS



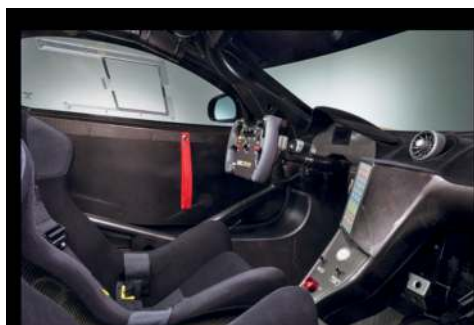
31795 Groesbeck Highway
Fraser, MI 48026

RCR40 MKI & MKII, RCR 917, 962, D-Type, RCR T70, XJ13,

Phone: +1 586-329-1573
racecarreplicas.com

GIVE YOUR CAR'S INTERIOR A LIFT

FLOCKING is the process of depositing many small fibre particles (called flock) onto a surface. When applied, the overall finish gives an attractive, seamless, fabric-like coating which can cover almost any surface



Flock can be applied to practically any substrate or porous surface and is incredibly cost-effective and long-lasting



Banbury Flocking Services have many years of experience in the motorsport industry. The team are able to deliver top quality, durable and long lasting flock services to many automotive items. Some of these include... flocked dashboards, door cards, parcel shelves, ABC pillars, door runners, custom pods, gear surrounds, centre consoles, glove boxes, sun visors, interior mirrors, steering wheels, door handles and speaker covers.



**VISIT OUR WEBSITE
TO FIND OUT MORE**

www.banburyflockingservices.com



Over 1,000,000 sets sold.

Over the past 20 years, EBC Brakes has sold over one million sets of its performance road and track day pad, Yellowstuff™, worldwide. Discover for yourself why Yellowstuff™ is one of the most popular aftermarket brake pad choices in history.

EBC
BRAKES

www.ebcbrakes.com

A BIG HIT OF VITAMIN C

GARDNER DOUGLAS GD427 EURO



Celebrating a superb thirty year anniversary in 2020, Gardner Douglas goes from strength-to-strength, reckons STEVE HOLE. We were going to caption the photos here BUT they would spoil the enjoyment of this car! Just look at it for gawd sake! His heart tells him that this could just be the best Cobra replica he's ever clapped eyes on! Praise indeed.

4 27 Euro. Is that Gardner Douglas Sports Cars' model for Europe, much like Colin Chapman intended in 1966 with his Lotus Europa? No, not even close. For those that don't know, let me explain ...

Like most Cobra replica makers, Gardner Douglas produce their cars (Mk3 or Mk4) based on a Jaguar donor vehicle. However, they go a stage further and also offer a version that uses all-new and bespoke components, which they call the Euro. Nothing to do

with Brexit or any nonsense like that.

Actually though, the link with Lotus isn't complete bunkum because just like the Europa that featured a stiff backbone-style chassis, so does GD's Cobra replica, a gloriously stiff structure on which to underpin their cars.





So, that's cleared up the 'Euro' and 'Jag' differences but what about Mk3 and Mk4?

Well, that's quite simple, too. The GD Mk3 is the company's original bodyshell, which is more akin to a 289 Cobra in many ways, with narrower, svelte rear arches, whereas the Mk4 is visually very close to the original Shelby 427 bodystyle.

The GD MK4 was launched in 2004 and uses the moulds from the short-lived AC MK IV CRS (Carbon Road Series). As the name suggests, this model originally featured a carbon-fibre body produced for AC Cars by Pro-Tech Motorsport, which was a subsidiary of David 'Kid' Jensen's F3000 race-team.

Gardner Douglas 'GD-ed' it and it is now a thing of real beauty benefiting from the technical prowess and sublime know-how that the Lincolnshire-based manufacturer has become famous for over the last thirty-years.

That's the thing about GD boss, Andy Burrows. He is meticulous about what he wants, and more importantly, what he doesn't, and he is not averse to telling anyone this, even me! I really like that about Andy. He's super



passionate about what he does and believes 110 per cent in making every Gardner Douglas kit and fully built car

better than the last one.

This is probably why you won't see a bad one. His – and his wife, Meena's – ethos rubs off on the company's owners, meaning they all 'get' it and know what's expected of them! There's a reason why so many GD customers become Burrows-family friends.

This brings us to the beautiful orange GD427 Euro that you see here. I first saw the car about eighteen months ago and was immediately grabbed by its very presence.

Sure, I love orange, amend that, I adore orange cars, but there's orange and then there's orange and this orange, for me, is a bit extra juicy.

It's one of those candy colours so beloved by hot rodders around the world. This particular hue is one of the very complex tri-coat affairs that require the attention of a master painter. Try daubing one of these paints on and even a backstreet





bodger couldn't make it look even superficially passable. This car's lucky owner is Alex Holt.

The man that GD entrust with paint application on their cars is Nathan Sage of NPB Body Repairs of Melton Mowbray. If the paintwork on this car is anything to go by then the standard of his work is incredible, quite frankly.

The story of this particular car is a bit special, too. A group of friends from the Isle of Man were impressed by the quality of the Gardner Douglas product and ordered one each! As you do. I think Andy and his missus and co-director, Meena were expecting one order on the day but perhaps not three!

As car fanatics, the chaps knew what they wanted and as such each one has pretty much individually tailored their car to suit them but all feature the vast majority of what GD can offer on their options list,

Indeed, Meena says that Alex's car is

the best GD that she has ever seen. Think about that for a second. That really is quite a statement for her to make, on the basis that I've never seen a badly made or spec-ed GD in my time and Meena, of course, would have seen every single car that the company has produced during its 30-year history. Indeed, 2020 sees them celebrate a marvellous anniversary.

What Meena said pretty much confirms the reason for my first reaction when I saw the finished article, which involved two words, the second of which was 'hell' but I can't possibly repeat the first one in a family-orientated magazine, but I expect you can guess.

I'd like to think that in the 36-years I've been doing this job I've seen a pretty good cross-section of the very best that the Cobra replica scene has to offer and this one sits in the little list of spectacular Cobras that I've seen and had the pleasure to drive.

Some have looked resplendent, but the drive hasn't matched up, while other have looked ratty but had performance levels to peel my eyelids back. Very, very few have managed both feats, but this one does.

The idea here was for a Cobra replica that Alex could enjoy on the Isle of Man, where let's not forget, the world-famous TT circuit, all 37.73-miles of it, is virtually all public road and in parts has no speed limit. The very thought of being on full bore on the beautiful Creg-ny-Bar section, gives me goosebumps, especially if you were with a group of mates in similar cars at the same time ...

Power for this one comes from a GM LS3 V8 engine producing 430bhp, which is, unbelievably the tamest of the LS3 range, although its performance potential will be hard for us mortals to get to the bottom of.

Alex's car is flamboyant yes, but it isn't blingy. If an orange Cobra replica with sidepipes, black leather seats piped in orange can be subtle then this car is just that.

There's power steering fitted which is perfectly weighted and adjusts according to speed changes thus giving the perfect resistance, while the traction control is another relative rarity on such a car but synonymous with the sublime level of specification on display here.

I think the jury is out on grilles fitted to Cobra replicas, some like them, some think they are kryptonite, but the reasoning for having one is well-meaning and protects essential (and expensive) stuff like radiators and oil-coolers getting ripped by a stone but

to me, I'm sorry, I think they look wrong, somehow.

However, it's not until Andy Burrows points out the one fitted here that I even notice the very discreet grille dead in front of the radiator giving it that vitall protection, but an innovation level synonymous with Gardner Douglas' tasteful outlook on things.

The test drive is everything I'd hoped for. The LS3 is as close to sensible as you can get when it comes to V8s. Sure, it will give stunning performance, but one can't really knock such an engine that can return 36mpg economy figures.

However, with the sidepipe exhausts fitted here there's a definite bit of edge present, and it's a bit like a very scary teacher I had at school. They didn't have to shout, there was just a very purposeful 'hint' in the tone of their voice that meant if you didn't do as requested, all hell would break loose (and in my case it often did). A bark that was as bad as a bite, and that is really bad.

Alex's car is still box-fresh when I view it, having just passed IVA and received its registration documents, plus I was hardly likely to give it the beans, two days short of him taking delivery of it, was I?

Between the gears there is real punch, and that Tremec Magnum six-speed gearbox is an absolute delight. If it were a human you would avoid arm-wrestling it, for sure, but the way it changes cogs with a meaty engagement is very reassuring.

It's Tremec manufacturer, TTC Automotive's latest range-topper and was developed from their TR-6060 'box, while taking everything learnt from the TKO II six-speeder, into account. Lessons were well-learned. Coupled with the limited slip diff, power hits the ground and stays there. There's no fuss or scrabbling about.

I imagine that Alex will really enjoy his new car around the Isle of Man's fabulous roads. Crikey, I reckon he'll be wearing a permagrin. Why wouldn't he? Those wonderful sounding sidepipes do, it has to be said, encourage your right foot!

Turn-in is razor sharp, while steering is sublime, very tactile and cornering is flat, which isn't unusual at all with a GD as they all handle exquisitely. Roadholding is built into them too, and Andy wouldn't have it any other way.

At various times, when the fancy has taken them, Andy and Meena have supported a 'works' race effort, usually the 750 Motor Club's SRGT series. In fact, Andy Burrows is often one of the team's drivers, which is great to see. A

company proprietor believing so wholeheartedly in his product that he is willing to go head-to-head with other drivers; normally up at the sharp-end, too.

It should be pointed out though that GD don't build racecars you can use on the road, oh no, they prove that brilliant road cars can be raced and/or used on trackdays or if you prefer, exclusively on the public highway.

The fact that Burrows enjoys his motorsport and has fun in his cars is rather good, don't you think?

Clearly, a growing number of people are discovering the 'GD way'. I've always seen the company as a natural successor to the Wheeler-era TVR, and in that I mean building chest-beating British sportscars, except that at Gardner Douglas there's no Springer Spaniels biting chunks out of the GRP bucks, as Wheeler's dog supposedly did

to the Griffith's mould! They don't do gimmicks in this corner of Grantham.

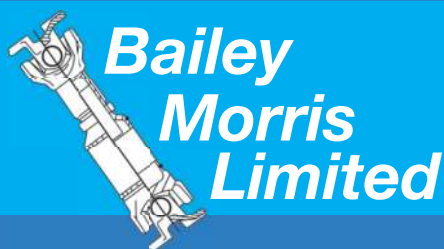
GD has always been busy, but at the moment they are especially so, with waiting lists for full builds nudging two years, and that really says a lot. There's a similarity with another cool British car maker; Morgan, as they've always said that quality can't be rushed and that people are prepared to wait for a beautiful jewel-like hand built sportscar. So it is with Gardner Douglas' products, too, clearly. Here's to many, many more years, guys.

For more information contact:

**Gardner Douglas Sports Cars Ltd;
Retro House, Swingbridge Road,
Grantham, Lincolnshire NG31 7XT
Tel: 01476 567 180**

www.gdcars.com





The leading propshaft manufacturer and component distributor in the U.K



It is always advisable to rely on a Specialist when having a Propshaft manufactured or modified.

With an item weighing anything from 5-25kg spinning at speeds of up to 10,000 r.p.m. just inches away from the drivers thighs protected only by the vehicles bodywork you need to be sure that the "Specialist" is the best available.

Since 1977 **Bailey Morris Ltd** has concentrated on its core product of universally jointed Propshafts and Driveshafts, whether it is small batch quantities for original equipment manufacturers, one off specials, prototypes, repair or modifications we have the ability to offer a product that is correct. Engineering improvements allow us to upgrade the original universally jointed products. With many options available for universal joints, tubes and flange connections, we offer upgrading and weight reduction with bespoke machinery including automated welding, post straightening and dynamic balancing all to ISO specifications.

Supplying shafts to the standards demanded by Original Equipment manufacturers we can offer you the best options available at competitive prices.



Which is exactly what a "specialist" should do!

Little End Road, Eaton Socon, St. Neots, Cambs. PE19 8GE T: 01480 216250 F: 01480 403045 E: sales@baileymorris.co.uk
www.baileymorris.co.uk

JK SPORTSCARS

QUALITY • PERFORMANCE • STYLE



Patently better



DAX 427 IS BACK!

ALL prices, technical information and donor parts list are to be found on our website -
www.jksportscars.co.uk

JK Sportscars
MANUFACTURERS OF
THE DAX 427
& COUPE.

Choles Industrial Estate,
 284 The High Road,
 North Weald,
 Essex

T: 07729 575 478
 E: post@jksportscars.co.uk

WWW.DAXBENELUX.COM

WWW.JKSPORTSCARS.CO.UK

NEW



HIGH PERFORMANCE BRAKE HOSES

It doesn't matter if you are driving in a Rally Championship car or a old classic, you need perfect brakes all of the time and it's vital that your braking system can perform as the manufacturers intended.

We offer brake hoses for over 7000 vehicles and Motor Bikes along with bespoke hoses made to individual requirements as required. Each hose assembly is manufactured inhouse using only the best available 95PVC coated Stainless steel braided Teflon Hoses and machined Stainless Steel end fittings resulting in a brake hose that will perform under the most extreme conditions whilst still looking good.

Our brake hoses are street legal for any vehicle worldwide and have FMVSS-106, ADR, LTSA, DOT and TUV approval.



APPLICATIONS
Cars
Bikes
Quads
Kit Cars
Off - Road
Custom Hoses

SILICON HOSES AND KITS

Our hoses are suitable for cooling systems, charge air systems, induction systems and negative/ positive pressure signal lines.

With its' temperature range stability, flexibility, longevity, thermal and electrical insulation properties, silicon polymers are a modern miracle of engineering material science.



OIL & FUEL LINES

This push on rubber fuel hose features a stainless steel outer braiding which not only looks good, it also protects the hose from heat and abrasion damage.

Suitable for high pressure usage and with Leaded, Unleaded, Lead Replacement and Diesel, this really is high quality and extremely versatile hose.



www.hosetechnik.com

info@hosetechnik.com

tel. 0845 838 5364



Backdraft Racing was founded in 2000 and has developed into a world recognized component car manufacturer. The Backdraft Roadster is sold in 4 different configurations. The classic RT3 features distinctive styling from the 60's. The RT3B has a more contemporary look and comes with some additional performance options. For ultimate driving experience, Backdraft offers the RTX which is a cross over between a Road and Track car, a light weight street legal race car. The TD is a full spec Race Car built with a full roll cage. All cars are factory built to accept the full range of Ford and Chevrolet engines. The Backdraft range is offered in both right and left hand drives and are sold as Turn Key minus drive train cars. Dealer enquiries are welcome.

For the latest prices and options on our cars, please visit www.backdrafracing.com

3210 SW 14TH Place • Boynton Beach, Florida 33426, U.S.A. • Tel 1-(561)752 3693 • info@backdrafracing.com



Industry Greats

FRANK COSTIN

2020 marks 100 years since Frank Costin was born. We thought it would be a good idea to mark that centenary with a look at the master aerodynamicist's career, as we all know about him being the 'COS' in Marcos but there was so much more to the man than that... STEVE HOLE reports.

I've been intending to do a feature on Frank Costin for ages, but irritatingly I'd misplaced the book with most of the notes that I had compiled on his career.

I took my usual view that if I couldn't do him justice, I wasn't doing it at all. However, a few months ago - following our house move - to my delight I found the missing book, quite by chance, at the bottom of a big box with Scalextric track thrown in it! Joy.

This happiness was further enhanced by the fact that I realised that Frank was born in 1920 (although he passed away in 1995), which means that 2020 is 100 years since his birth. All rather apt, don't you think?

While reading through those notes one evening recently, I was reminded what a great old character Frank was, not short of an opinion on most things, while also possessing a great sense of humour. Very modest, too.

Lurking in those notes, were some absolutely stunning quotes from Frank, about his career and projects, both his own and, often cuttingly, other people's. What is also amazing is the



Francis 'Frank' Costin 1920-1995

fact that I'd remembered to write a lot of the stuff down. I'm truly glad I did.

I first met Frank in 1986 and he'd regularly phone up for a chat, although once on the phone you couldn't get him off it, but most of what he talked about was automotive gold.

I remember bumping into him at the British Motor Show one year (NEC or Earl's Court, I can't remember which) and spent an hour or so walking around the show with him. Totally enthralling and very educational. His views on cars of the day and his eye for detail were incredible.

I've always felt that, weirdly, although he is a well-known name in motorsport and the kitcar industry (he was the 'COS' of Marcos, don't forget), he never really received the accolades he deserved.

By contrast, his younger brother, Mike (another gentleman) would co-found Cosworth with Keith Duckworth and Ben Rood and, of course, he is a household name. Rather charmingly, Frank always referred to his brother (nine years his junior) as 'young Mike', incidentally.

I often wonder how Frank would view today's motoring industry. How he'd view today's 'celebrity' car designers is not hard to work out... I saw a chief designer from a leading German car manufacturer wearing a suit jacket with a black string vest, slashed halfway down his chest, in a magazine the other day!

By contrast, Frank disliked the spotlight and hated ego and he'd always refer back to his aviation upbringing where aircraft designers were largely anonymous, putting simply their initials on their creations.

Another of his sayings - and there were many - was that to be an engineer you not only had to design something of your own, but you had to create/build it from scratch. He didn't think much of replicas in the kitcar game, either.

Before we get into his involvement with kit and specialist cars and give a potted run-through of the other stuff he was involved with over the years, first a little background.

Francis Albert Costin, known to all as 'Frank', was born in Middlesex in June



Frank had input on Peter Kirwan-Taylor's Lotus Elite design



Frank designed the beautiful Lotus Eleven. Image by Ray Crosthwaite

1920. His father was a soldier and part-time explorer and his mother was Irish/Italian. He studied engineering at Harrow Weald College before taking evening classes at Acton Technical College, which gained him a BSc.

What really enthused an eight-year old Frank and set him on his career path, was the day he found out about Euclid's Theorum. You'll need to Google its meaning but, in a nutshell, it basically proves that there are 180-degrees in a straight line. Frank told me once: "It was the most beautiful thing I'd seen. I never had to study geometry after I'd found out about

Euclid."

With war on the way, in 1936 he went to work at General Aircraft in Feltham as a fitter, although within a year, they'd clearly spotted his talent and he was promoted to the drawing office.

In 1940, he moved to Airspeed in Portsmouth, for a job in their design office and in 1943 Frank was on the move again, this time to Supermarine in Woolston, then in 1946 he got a position as a project design engineer at Percival Aircraft in Luton.

Then it was onto Pollard Aviation before he headed back to Airspeed,

this time in the aerodynamics flight test department at Hurn Airport near Christchurch.

As happened in those days, small aeronautical companies were regularly taken over by large concerns and so it was that Airspeed was absorbed by de Havilland Aircraft Company in 1951 and Frank was promoted to the Experimental Department at Hurn, where he regularly worked on flight testing of Vampire and Venom fighters.

In 1953, he was transferred to de Havilland's facility in Chester, where he was given responsibility for all aero flight testing. Finally, he moved again, this time to the Hatfield factory, on Pure Aerodynamics, but he didn't like it there - as he said, there was 'no flying, no testing and no fun' - and so in 1954 he resigned.

Meanwhile, Frank's brother, 'young Mike' was also working at de Havilland, in Edgware as an apprentice - and he'd formed a friendship with another young chap on his course called Colin Chapman. Chapman was starting his Lotus Cars concern from a garage behind his dad's pub in Hornsey, north London. Initially, it was a part-time operation at weekends and evenings, before rapidly gaining success and going full-time.

Frank wasn't really interested in cars or motorsport but, thanks to his aviation background, he was already a highly skilled aerodynamicist (with a specialisation in wings) and downforce expert. After leaving de Havilland, Frank went freelance and one day Mike presented him with a scale model of a new car that he, Chapman and friends were working on - and asked him what he thought.

Never a man to mince his words, Frank said it was horrible and reckoned he could do better. This, in turn, led to him being introduced to Colin Chapman, who said that he wanted an 'aerodynamic' body style for the new Lotus. That word alone was enough to get Frank's interest and when I asked him about Chapman once, he said that he found him intriguing and that in his opinion he was the best chassis designer, bar none.

Chapman really liked Frank's design and the car became the Lotus Mk8, which was very successful and put Frank on the automotive map. He also tweaked Peter Kirwan-Taylor's Elite body, using his aviation techniques to make a few adjustments. Other Lotus models that Frank created were the 9, 10 and beautiful XI, all characterised by his trademark low-drag shape and small grille aperture, featuring his straight lines and pitch stability.



The Amigo was arguably Frank's prettiest design



Mind you, the Costin-Nathan GT wasn't too shabby either



Colin Chapman jokingly told Frank he'd got the Amigo wrong, because it was pretty!



Frank loved the de Havilland Mosquito

It's often been written that Frank was responsible for the Lotus Fifteen and Sixteen. This isn't correct. It was Colin Chapman who told Charlie Williams and Len Pritchard of his favoured coachbuilders, Williams & Pritchard, what he wanted and they did the rest. I'm sure that Frank told me that his five years of work at Lotus earned him a brand-new Ford Anglia.

John Sprinzel of Speedwell commissioned Frank to design a revised nose for his racing Sprite and soon after, the body for the record breaking low-drag Speedwell Streamliner.

Leading industrialist and owner of the Vanwall marque, Tony Vandervell, asked Frank to design a new grand prix car for 1954. Costin told him that he'd design a body only if Colin Chapman did the chassis. Vandervell agreed and the first result was a special windscreen that impressed Vandervell at a race at Monza and then turned into the project that resulted in the VW5 grand prix car.

Vanwall was a British underdog who enjoyed great success taking the fight to the big boys like Ferrari. Indeed, Vandervell was famous for remarking that he wanted to "beat the bloody red cars."

The VW5 proved to be successful in the hands of Vanwall drivers such as Tony Brooks, Stuart Lewis-Evans - and Sir Stirling Moss, who became quite a fan of Costin's work. Vandervell

obviously liked Frank's work because he was on a monthly retainer with Vandervell Products for quite a time.

Frank in turn really liked Tony

Vandervell, although their relationship didn't get off to the best start. When the Vanwall owner asked him what he thought of his cars, Frank replied that the engines were okay, but the cars were rubbish! After the VW5 came the Streamliner in 1957, which debuted at Reims.

Indeed, when he moved to Maserati it was Moss who persuaded the Italian team to engage the services of Costin to design a streamlined coupe body for the 450S to tackle Le Mans in 1955 (alongside the existing Spyder version), for him and Harry Schell to drive.

That car has always been described as a disaster, but fact is it did run as high as second place for quite a while, even though Costin classed it very much a lowlight of his career. Maserati's team chief, Guerino Bertocchi, didn't think much of Frank's design and as a result, coachbuilders Zagato 'missed out' some of Costin's suggestions when they built the car!

The next major commission of an automotive nature came from Brian Lister in 1959, when Frank designed the body for the Lister-Chevrolet (Costin Roadster), of which thirteen were produced. That one didn't end that well though as Lister withdrew from motor-racing and Frank ended up falling out with Brian Lister.

Frank Costin was a self-confessed non-conformist who always spoke his



Frank Costin had a lot of input on the March 711 F1 car. The 'tea-tray' front wing is typical Frank



Lotus Mk8 was a Frank Costin design. Its shape cutting through the wind beautifully. Image by thesupermat



Lotus Mk9 was designed by Frank

mind. Rather than get angry though when something upset him, he simply walked away - much like he did from Marcos, but more on that in a while.

MARCOS

A chance encounter in a pub, at a 750 Motor Club branch meeting in Luton, was to dramatically change things for Frank Costin, when he met another of my automotive heroes - Jeremy George Weston Marsh, better-known to all as ... Jem Marsh.

It was a good meeting for both men as they each needed a new challenge and they got on well from the outset. Before long, he and Marsh (still running Speedex in Luton) had founded Marcos - using the 'MAR' from Marsh and 'COS' from Costin.

Costin went off to a farm in deepest Wales and began work on the first Marcos. He put his aviation design skills to good use with a light weight, wooden laminate monocoque body and chassis (using what he called wooden 'torsion-boxes' that he glued together) for a GT car, named Xylon (Greek for wood) which, although clearly not pretty and nicknamed 'ugly duckling', was extremely effective on the race circuits of Britain in the hands of Bill Moss, being both fast and streamlined - and for its day, was very advanced.

Moss won nine consecutive races in 1960. Incidentally, Frank had greatly admired the de Havilland Mosquito fighter bomber immortalised by the film '633 Squadron', which used wood in its construction.

Frank revised the Xylon into the Marcos GT, complete with gullwing doors, which was better looking than its predecessor.

There's a popular myth that Frank used marine-grade plywood for the Marcos GT. This isn't true. It was just ordinary ply, the sort you can buy at any DIY or hardware store up and down the country.

Frank admired Chapman's Lotus Seven greatly but reckoned they leaked for fun and that the early chassis were prone to cracking, but even so he liked the concept. He wanted something similar, albeit with a fully enveloping body.

I asked Frank about the Marcos days and he told me some entertaining

stories about his time with Jem, but even in the mid-eighties resented anyone saying that the car was ugly. He always repeatedly said that it was how a car performed rather than its appearance that counted. He pointed out its obvious abilities, not to mention its race successes. He always reckoned that the Marcos GT was really the first sportscar to use a monocoque.

It's said that Colin Chapman visited the fledgling Marcos stand at the Racing Car Show during its launch and said it was too complicated and wouldn't make any money. Frank noted that the Lotus 25 came out soon after, though!

The writing was on the wall for Frank and Jem though once the Adams brothers, Dennis and Peter came on the scene, after eleven cars had been sold. I found some notes relating to Frank's opinions of the Dennis Adams (another specialist car genius, by the way) re-design of the Marcos GT and he was pretty cutting. Even though he knew Dennis from their time at Lister Cars and liked him, he felt that all the re-style had done was add unnecessary weight (about 228kg) that took away its performance edge. He referred to it as 'The Heavyweight'.

He said that his concept was right from an engineering perspective and should be left alone. I saw a memorable magazine feature from the seventies about the GT, written by the genius that is Mike Lawrence - and when Mike bravely stated that he



One of the aircraft companies that Frank worked at was Airspeed from 1940. This is an Ambassador



Costin worked on the front suspension on 'Baby Bertha'

thought that the Marcos GT wasn't pretty and that he wasn't the only one who thought that it didn't look right, Frank retorted: "Well, it depends on who is doing the looking. If an aircraft

flies better with three rudders and five tailplanes, then that's what we'd use, as shape isn't a consideration in the aviation world."

Regardless of all of that, once Jem



Frank always felt that Gerry Marshall's 'Big Bertha' could have been better if Vauxhall had let him use more bespoke parts. As it was though it was hugely successful on track



Frank designed the Lister-Chevrolet



One of Frank's earliest automotive designs, after leaving de Havilland, was the Vanwall VW5 Grand Prix car for Tony Vandervell. Note the trademark ovoid front grille

had pushed the go-button on the re-design, wanting to attract roadcar customers, Frank walked away from Marcos. Ernie Unger, ex-Lotus, development engineer on the Hillman Imp and designer of the Unipower GT production special, knew Frank very well and rates him very highly. However, Ernie says that Frank was never prepared to compromise. "If he'd listened a bit more to other people, his Marcos GT could have been restyled without upsetting Frank's ideals but he wasn't having any of it."

In 1961, Frank modified a Lotus Elite for Le Mans for French privateer racing driver, Maurice Porthault (normally to be found racing AC Aces) and his co-driver, Jean Devos. Porthault wanted a low-drag, high downforce racer in which to tackle the coveted Index of Performance title and in Frank found the right designer for the job.

Costin went to town on the Elite, using his know-how with a decent-sized budget for a change and the revised Elite featured flush-fitting windscreen, faired-in headlights and a restyled nosecone. With Frank's input, the tiny 750cc Coventry-Climax engine managed a marvellous 141mph down the Mulsanne Straight during qualifying. Sadly though, the car didn't start the race.

However, other Elite racers had noticed Frank's modifications and he modified at least three others. He reckoned that his amendments were worth an extra 20bhp. Interestingly, there were Costin copies - with several Lotus Elite 'for sale' ads claiming Costin modifications - that weren't genuine. That irked him slightly.

In 1962, he designed an ultra-low-drag model for Trevor Wilkinson at TVR. Yep, it did have a wooden monocoque, independent suspension all-round, a plywood body veneered in GRP and had three seats. It was quite advanced for its day, with a tiny DKW engine.

More notes I found on this one refer to Frank laughing at the term 'drag coefficient' - which he described as nonsense and something that aviation people laughed at. The TVR didn't go into production though, but a low-drag nose design he did for Wilkinson in 1963 did.

That same year, his old friend Stirling Moss, who'd retired from motor racing in 1962 after his accident at Goodwood, started the Stirling Moss Automobile Racing Team or S.M.A.R.T for short and bought a Lotus Elan in kit form and got Frank to design a low-drag nose and roof for it.

Described as 'not pretty' by many who saw it, the car was fast though, as the majority of Costin designs



One of the few kitcars produced in Ireland, the TMC Costin was very capable



The TMC Costin is also the most successful, in numerical terms, Costin design. It later became the Panoz Roadster

undoubtedly were. Moss' drivers were Sir John Whitmore, Peter Gaydon and even his secretary, Valerie Pirie. There was also a S.M.A.R.T Ford Cortina racer too, I believe, but I don't think Frank had any input with that. The team didn't last long though.

1962 would also see Frank cooperate with designer, Samir Klat on a Jaguar E-type Lightweight project for privateer, Peter Sargent, who wanted his car converted to low-drag specification for his Le Mans entry that year. The car was converted by Playford Brothers and revised by Frank and Klat with a longer bonnet and more aerodynamic touches. Sargent along with his co-driver, Peter Lumsden, finished fifth overall at the race.

1964 was a busy year and saw Frank create a four-wheel-drive chassis for Jeremy Bamford at JCB and also a quirky little three-wheeler that he described as a 'shopping' car, made of wood. Costin called it 'AutoXII' as it was the twelfth automotive design on his portfolio and his wife, Nan used to drive it around.

Weighing less than a small motorbike at 74kg, it had spindly 20in

bicycle wheels and a 50cc Honda engine. He believed in the concept but couldn't get anyone to take it on as a going concern. Typically, he lost interest and moved on.

In 1965, actor Peter Sellers was funding a Formula Two team with a Lotus 35 that was driven by Brian Hart and Bill Robson. Frank modified the car with one of his aerodynamic nosecone designs, although it was described as a 'high-speed' nose that was claimed to help keep the engine cool.

That year, Ford Motor Company approached Frank and others, including Bruce McLaren, to submit a design for a replacement for the GT40. He came up with a design, but it didn't go anywhere because Ford didn't proceed with that project. He used a few design cues on the Costin-Nathan of the same year, though.

COSTIN-NATHAN

The Costin-Nathan project came about after Frank paid a visit to his old friend, gifted mechanic and Imp expert, Willy Griffiths, who was working for Roger Nathan (Racing) Ltd in Fortis Green, north London. Griffiths was, according to Ernie the best at getting more power from an Imp's engine. "Willy was a great mate and



Although Frank didn't work on the Spitfire he did work at the iconic aircraft's manufacturer, Supermarine in Hampshire



Another image of the lovely Lotus Mk9. Photo by Brian Snelson

don't forget, he was chief mechanic at Lotus until 1959. He always got inside information on new Imp parts, so was ahead of everyone else," said Ernie Unger.

When Ernie was busy working on his Unipower GT he'd often walk around on press day at the Racing Car Show with Frank. "He'd always have an opinion on every car, some good, some bad, but I learnt so much just listening to him that much of what he told me I put into practice on the Unipower GT. Frank reckoned that unless a car had ultra-low drag it was a waste of time fitting Perspex cowls over the headlights, while he derided sportscar designers who gave their cars short tails.

"I was very pleased the day in 1967 when Frank (inspecting the Unipower GT) said: 'Ernie, I think you've got that just about right', which was praise indeed." Unger tells me.

Roger Nathan was a successful Lotus Elite racer. He was also the youngest winner - at just 20 - of the National Autosport Championship, before becoming one of the best-known Hillman Imp parts suppliers in the UK; also selling his go-faster packages via mail-order from an address in Acre Lane, Brixton.

Nathan was there the day Frank visited - and heard Costin waxing lyrical about the diminutive little Climax-derived Imp unit and saying that he really could do something special with it. Before long Nathan took Frank at his word and they were collaborating on the open-top Costin-Nathan sportscar. It featured a monocoque tub, made from resin-

bonded plywood - which wasn't surprising.

Delicate - yet effective - subframes were hung off each end and the 1-litre Imp engine was mid-mounted yet canted at 54-degrees, which necessitated a revised lubrication system. Griffiths' skills saw the car - complete with close-ratio Jack Knight Developments gearbox - produce a healthy 97bhp. What was even more impressive was that it weighed just 390kg! Frank really was a master of clever packaging as well as aerodynamics.

In 1966 Nathan entered six races in the car, winning five of them and coming second in the other, while in the process, also setting five class lap records. In the October of that year he also won the prestigious Coupes de Vitesse at Monthléry.

For 1967, Frank designed a Coupé version - called the Costin-Nathan GT - and he re-visited some of the aspects

of the Vanwall VW5 he'd designed in 1955 for styling cues, such as the bulbous door hinges. Nathan, suitably encouraged, entered the Le Mans 24-Hours of that year. The car lasted five hours before retiring with electrical gremlins, although Nathan (with co-driver Mike Beckwith) was running plumb last all race.

However, at the end of two seasons racing the two Costin-Nathan models had amassed some fourteen lap records between them, not to mention two national championship titles.

Frank wanted to move onto pastures new and left the Costin-Nathan operation before the third car, the Nathan-Astra (RNR1 followed a year later by RNR2) appeared. It shared the majority of Frank's previous input, but this time featured a Cosworth FVC four-valve twin-cam engine.

OTHER STUFF

In 1966, Devonian racing driver,



Frank worked at the General Aircraft company between 1936-40



Frank was heavily involved with design and testing of the de Havilland Venom. Pic by Tony Hisgett

fully tested before its first outing.

Stuff I've read give out mixed messages about the Protos F2 car. Some reports say it was revolutionary and highly promising, while others are seriously critical. When it crashed during practice at Enna, the account I read said that it was effectively an accident waiting to happen, that it turned into a pile of sticks - and that the largest surviving part was the steering wheel. Pedro Rodriguez was lucky to walk away. Other Protos drivers include Brian Hart and Eric Offenstadt. Indeed, Hart had set an F2 lap record at Hockenheim in it.

Ultimately, it wasn't very successful and, for the following season, Harris purchased a pair of Technos for his team cars.

One thing that did come out of the Protos was that the team driver was Brian Hart, later a genius engine builder, of course. He and Frank formed a life-long friendship out of it.

COSTIN-AMIGO

Was the Costin-Amigo Frank Costin's greatest ever design? Certainly, it was one of his prettiest. Even his friend Colin Chapman who, when he saw it at its launch at the Pool of London in January 1970, was moved to say: "No, Frank, you've got this one wrong. It's very pretty."

After lots of frustrating projects, often commissioned by people who were under-funded, Frank decided that the Amigo (so named because he charmingly said it was a friendly-looking car!) would be his own take on what a proper sports car should be and was sold under the Costin Automotive Racing Products banner.

He spent three years developing it, firstly in Wales and then at Little



Frank designed the record-breaking Streamliner for John Sprinzel of Speedwell

Johnny Walker (no relation to the whisky company or the disc jockey!) commissioned Frank to design a Formula Four single-seater with a 250cc engine. Frank set to, but again this one came to nothing, mainly because Formula Four was absorbed by Formula Ford 1600.

Next notable design came in 1967 and was the Protos Formula Two car for Ron Harris Racing. Harris was a proper character, an enthusiastic motorsport entrant and London film distributor. Frank built a monocoque out of his beloved timber and utilised inboard dampers, which was unusual for the day. The car featured a Ford FVA engine and a curious 'bubble' canopy.

Although the car was said to be blisteringly quick in a straight-line (Harris had chopped Frank's original deadline, so Costin felt that the car wasn't ready) it certainly hadn't been



Costin Roadster was Frank's last automotive design in 1993

Staunton Aerodrome near St Neots in Cambridgeshire. He received some backing from Anglesey neighbour, businessman and Italian racing driver, Paul Pycroft-de Ferranti - and official, albeit low-key, support from Vauxhall.

With the Amigo, Frank gambled on his belief that customers would choose aerodynamic efficiency over a low price. Ultimately, he failed. However, the Amigo was a good car. It was well-received by the motoring press, although they said that it was almost impossible to get in - and out - of unless you were the size of a flat horseracing jockey, while the seating position was said to be too low.

However, once inside there was loads of space, the controls were well-placed and it drove beautifully, while the Vauxhall Victor VX4/90 mechanicals and 2-litre engine gave it excellent performance.

Meanwhile, the body was streamlined and aerodynamic, which one would expect from a Costin creation, as you would the use of a wooden monocoque (this one used Gaboon Plyco marine-grade plywood) and a GRP body that featured 'sail' planes years before the Jaguar XJ-S

had them. It stood just 40in high - or low, depending on your outlook.

The trouble was, the Costin Amigo was just too expensive. Its £3327 price tag in 1972 was more expensive than a Jaguar XJ12 ... and equates to £30,692 in today's money!

A lightweight version was available, along with a racer - and the works car was raced by Pycroft de Ferranti and Brian Hart at a three-hour race at Le Mans in 1972. It featured a Bill Blydenstein-tuned 2.3-litre Vauxhall engine, a dry sump, limited slip differential, bespoke Koni dampers and a five-speed Getrag gearbox.

By the time it left production in 1972, just eight had been sold. The problem? That price tag, quite simply. A real shame and something that really hurt Frank.

YOU CAN'T KEEP A GOOD MAN DOWN

He wasn't done yet though. Far from it. An 'ultra-economy car' with a plastic body in 1973 promised lots but delivered nothing in the end - while in 1974 Frank was let down again. A seemingly promising commission from a London consortium for a modern

sportscar called the Timara, was never finished because they - yep, you've guessed it - ran out of money.

FORMULA ONE COMES CALLING

For the 1970 Formula One season, Costin's services were engaged by March Engineering, founded in 1969 by Robin Herd, Max Mosley, Graham Coaker and Alan Rees. Although Herd was a gifted designer in his own right, he called Frank in as a consultant and between them they created the March-Ford 711 (the Ford bit being a Cosworth DFV V8 engine).

Ernie Unger: "When aerodynamics were involved, Frank invariably got the call. For example, Colin Chapman would regular say: 'can you get Frank to check it out?', when he was finishing off a new design.

The March 711 featured lots of interesting Costin design cues, including the 'tea-tray' front wing and his trademark ovoid nosecone. Frank also had input on the 711's successor, the 721.

Although not the quickest on the grid, the team's young hotshoe driver, Swede Ronnie Peterson, would finish second in the 1970 world championship - albeit without winning a race. Surely, this alone should have helped make Frank the Gordon Murray or Adrian Newey of his day? Sadly not.

Remember though that Frank hated the limelight and, well there's no other way of saying it, the bullsh*t that went with it! Although he was regarded as the best aerodynamicist of his day, he scoffed at that and tipped his hat to Malcolm Sayer (another ex-aviation man!) at Jaguar Cars. I've seen him quoted as saying: "I only got the publicity in the first place because of Colin Chapman and Lotus."

Another very notable racer that he created came in 1973 for Bill Blydenstein, the Vauxhall Ventora-based 'Big Bertha' saloon, driven by the irrepressible Gerry Marshall.

Although the car - and big Gerry - have gone down in British motor-racing folklore, Frank always insisted that Big Bertha would have been better described as a compromise, due to Vauxhall insisting on too many stock parts being used on it. Despite that, Gerry won six races in the 496bhp monster.

A sign of how well revered Frank was - and something he used to chuckle about - was that to try and stop the exhaust fumes coming into the cockpit on Big Bertha, which threatened to suffocate Marshall, he used duct tape to seal the door apertures. Seeing this, the rest of the grid figured that it must have been a



Frank was very protective about the Marcos Xylon, believing that performance and race success were far more important than looks



Frank always used ply for his monocoques whenever he could. He took lots of design cues from his beloved aviation particularly the DHC Mosquito



Frank's early Marcos designs weren't the prettiest, but were hugely successful on track in the hands of Bill Moss



Frank was the first to admit that he didn't 'do' interiors

trick Costin tweak ... and so all the cars soon had taped-up doors!

The Vauxhall connection came around again in 1975 with Frank's services engaged on 'Baby Bertha' a Firenza-based saloon racer, with Costin being responsible for the front suspension. Gerry Marshall was again the driver and he won all but two of the races entered.

Ultimately, Frank lost interest in motorsport; although still dabbled.

BIGGEST COMMERCIAL SUCCESS

I mentioned earlier that Frank had always admired Colin Chapman's Lotus Seven. In the early eighties he had his own take on the theme sitting in his design folder.

At the time, he was working for a Republic of Ireland-based engineering operation tasked with productionising an airport fire engine he had designed for them.

Also working at this company was Peter Thompson, who liked the sound of the little sports car sitting in Costin's folder and, along with his brothers Val, Sean and Anthony, gave up their jobs and set up Thompson Manufacturing Company in Castlebridge, County Wexford, concentrating fully on the newly named TMC Costin. Personally, I think this was Frank's greatest achievement. The car was a handling marvel.

The Thompsons weren't messing around and soon had nine staff. They were hoping to get government funding but remember, this was just after the DeLorean collapse and, unsurprisingly, no grant money was forthcoming. However, after the company had made twenty cars (and kits) the Irish government did agree to give 50 per cent towards the cost of a purpose-built, brand-new factory in Castlebridge.

This capable Costin-designed

sportscar had an aluminium and glassfibre body and a supremely rigid and lightweight spaceframe chassis, produced from square section 16g steel tube.

It had fully Rose-jointed suspension with a live rear axle, which intriguingly ran inside the body and was held in place by four radius arms and a Panhard rod. Costin reckoned that radius rods greatly helped handling and promoted gentle understeer rather than oversteer, when the suspension loaded-up. Chassis were anti-corrosion dipped (in Zinc if I remember correctly) at a local tractor assembly plant owned by Renault.

The front suspension featured Spax coil-overs as standard fitment, although top-spec option was a Koni-derived set-up of hydro-pneumatic operation, with self-levelling struts - and this mirrored the system that Costin had successfully used on his Amigo sportscar.

Vauxhall Chevette hubs were machined to accept Cortina uprights and discs, while engine choice was the Vauxhall Chevette's 1256cc unit - although others, such as Ford Crossflow, CVH and Cosworth BDR could also be used.

A real little gem but the company went bust in 1987, which was sad because Costin's spaceframe chassis was a real work of art ... and was later purchased by American sports and racing car manufacturer Don Panoz's eponymous company, with the result known as the Panoz Roadster. Frank really loved the little TMC roadster. Numerically, it was the most successful Costin sportscar.

THE LAST COSTIN CREATION

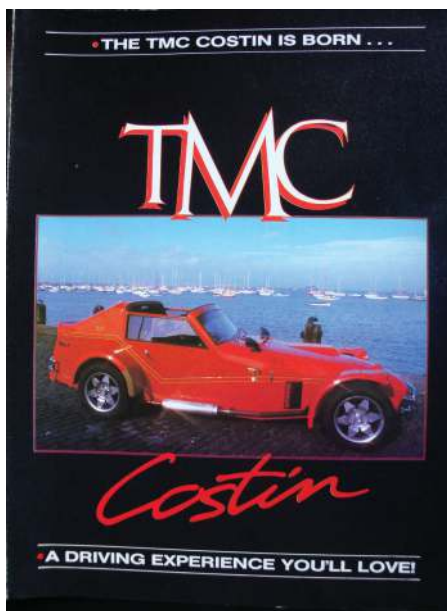
The Costin Roadster was the last design from Frank Costin, with input from Simon Garrett and Bill Barranco, then of IAD.

After a false start, it was intended to produce replicas of a previous Costin design, the Costin-Nathan. However, a new direction was taken and the first pre-production prototype appeared in 1993.

The car was powered by a Rover K-Series engine, with a triangulated spaceframe providing the underpinnings. Sadly, the project died with Frank in 1995.

Prototype number two was subsequently bought by Chris Holloway and SVA'd in 2004 - with Joe Tavani of Sayers Common, West Sussex-based, Specialist Automotive doing some work on Chris' car.

He was so taken with it that he revised it further to run on MGF mechanicals and put it back into



production, following a positive reception at the Detling kitcar show in 2007.

Sadly, the project didn't proceed any further as Joe tragically passed away in 2010, after a total of four had been sold. It was a very promising car, too.

VERSATILE DESIGNER

Proving his versatility when he moved to County Cork in Ireland in the eighties, Frank designed and project managed the building of his own house - made of wood, as you'd expect; complete with stressed beams and an 'aerodynamic' roof!

Frank Costin also found the time to design a fire engine, high-speed printing machines and ocean-going yachts, a four-man Bobsleigh for a British winter Olympics effort, a microlight and a glider called Dragonfly, with Cosworth's Keith Duckworth.

Although those who 'know' about Frank Costin's incredible talent, too many people don't realise the man's importance to the automotive industry, motorsport - and, yes, the kitcar industry.



Costin-Maserati 450S Coupe was driven by Stirling Moss among others. Frank always classed it as one of his biggest failures. The car was built by Zagato



The TMC Costin project was later bought by Don Panoz and evolved into the Panoz Roadster

A chain-smoker, a poor businessman (by his own admission he never charged enough!) and someone who always drove around in old bangers, as he claimed he had no interest in cars and he just used them to get from A -

B in. He also claimed that 'cars didn't involve proper engineering like aircraft'. He loved aviation and always referred back to aircraft.

From the late fifties if there was a press day at an automotive show, he'd always be one of the first into the halls, like an eager schoolboy and wherever he went he was always smartly dressed, regardless of the weather, in his ubiquitous three-piece suit.

He was a polymath and really was quite unique though - and a proper gentleman and, despite his tough exterior, was very warm-hearted. His legacy is enviable and assured. Aerodynamics is a pure science and Frank was the master of his and many other generations - while he was also a gifted structural engineer, as proven by his timber monocoques. Frank Costin passed away in February 1995, after some forty years of design excellence.



Costin Nathan Convertible. That's Roger Nathan at the wheel, incidentally



HYDRAGAS AND HYDROLASTIC
SERVICE LTD.

Hydragas suspension units have lost their gas over time causing a harsh and uncomfortable ride, we can restore the cars ride to an 'as new' feel

- **Hydragas suspension unit recharging**
(Full removal & refitting service provided)
- **Hydrolastic suspension unit rehousing**

All units pressure tested in our test rig



www.hahsltd.co.uk

Tel: 01952 613184 / 07506 563081

enquiries@hahsltd.co.uk

The Original Irvin®

Photo with kind permission of the BBMF



Aviation Leathercraft
www.flying-jacket.com
+44 (0)1264 772811



NEW for 2020 - 68 page colour brochure now available - FREE
Just phone or email

Build a TOP CLASS - Hi Spec AVON for far less than you would imagine!

Starter Kit - just £1,845 inc.vat

Comprising:- Powder coated chassis, alloy panel set, rivet set, brake pipe set (ended), brake master cylinder, pedal set, fuel lines x 2, wiring loom. Add body and parts as you need them on our daily courier service.



Tiger Avon
(road spec.)

For FULL details of any of our 6 model line up, contact: Paul, Jim or Laura on 01945 466200 or 01945 461423 or alternatively, phone or email for our new **FREE** 68 page full colour brochure.
laura@tigerracing.com

Tiger Sportscars

Unit 10, Anglia Way, Wisbech, Cambridgeshire PE13 2TY Tel: 01945 466200 / 461423 jim@tigerracing.com



The finest range of Road going Sports & Race Cars from a British Manufacturer



Tiger Sportscars

The brochure contains full details of our entire model line up of Sports and Race Cars plus our extensive engineering services and facilities. It also contains details of our outstanding restoration facilities which are applicable for both Classic Cars and Kit Cars.



Tiger Avon
(full race)

...and remember, the Tiger you drive on the road, is the Tiger you can use on the Track!

Powered by



www.tigerracing.com

All conversions manufactured in the UK

High quality BILLET aluminium products

All service parts carried in stock

ULTIMATE BRAKING CONFIDENCE

CORTINA BASED KIT CARS

Front conversions for Cortina fitment vehicles (plain discs)				
Conversion	With anodised calipers	inc. VAT	With powdercoat calipers	inc. VAT
Ultralite 4 245 x 13mm	£310.00	£372.00	£346.00	£415.20
Ultralite 4 245 x 20mm	£310.00	£372.00	£346.00	£415.20
Ultralite 4 260 x 10mm	£312.00	£374.40	£348.00	£417.60
Ultralite 4 260 x 20mm	£312.00	£374.40	£348.00	£417.60
Billet 4 245 x 13mm	£408.00	£489.60	£483.00	£579.60
Billet 4 245 x 20mm	£408.00	£489.60	£483.00	£579.60
Billet 4 260 x 10mm	£410.00	£492.00	£440.00	£528.00
Billet 4 260 x 20mm	£410.00	£492.00	£440.00	£528.00
R-114 260 x 10mm	£467.30	£560.76	-	-
R-114 260 x 20mm	£467.30	£560.76	-	-

Ultra lightweight brake conversions				
Ultralite 4 245 x 8mm	£360.00	£432.00	£396.00	£475.20
Ultralite 4 260 x 8mm	£362.00	£434.40	£398.00	£477.60

Lightweight billet hubs to fit Cortina uprights			
Hub	Price	Price + VAT	Weight (inc. studs & Bearings)
Lightweight billet	£52.00	£62.40	1521 grams
Extra lightweight billet	£64.00	£76.80	1096 grams

Ford Cortina geometry front uprights			
	Price each	Price + VAT	Total
Cortina geometry lightweight upright	£45.00	£54.00	£100.00
EN-24 high tensile steel stub axle	£20.00	£24.00	
EN-24 high tensile steel sleeves	£13.00	£15.60	Total + VAT
Billet steering arm	£37.00	£44.40	£120.00
Hardware	£10.00	£12.00	

Extreme lightweight front end conversion			
	Price each	Price + VAT	Total
Cortina geometry lightweight upright	£45.00	£54.00	£164.00
EN-24 high tensile steel stub axle	£20.00	£24.00	
EN-24 high tensile steel sleeves	£13.00	£15.60	
Billet steering arm	£37.00	£44.40	Total + VAT
Extra lightweight billet hub	£80.00	£96.00	£196.80
Standard cortina wheel studs	inc.	-	
Cortina fitment wheel bearings	inc.	-	
Grease cap	inc.	-	Total weight
Hardware	£10.00	£12.00	3143 grams

FORD REAR

Conversion	Base price	inc. VAT
Rear conversions for Sierra fitment vehicles (plain discs)		
Ultralite 2 mechanical hb 260 x 10mm	£480.00	£576.00
Ultralite 2 mechanical hb 280 x 10mm	£500.00	£600.00
Ultralite 2 mechanical hb 300 x 22mm	£520.00	£624.00
Ultralite slide electric hb 260 x 10mm	£999.00	£1,198.80
Ultralite slide electric hb 280 x 10mm	£1,019.00	£1,222.80
Ultralite slide electric hb 300 x 22mm	£1,039.00	£1,246.80
Rear conversions for English/Atlas axle fitment vehicles (plain discs)		
Ultralite 2 mechanical hb 240 x 10mm	£480.00	£576.00
Ultralite slide electric hb 250 x 10mm	£949.00	£1,138.80

CALIPERS

Caliper	Price	inc. VAT	Powdercoated	inc. VAT
Ultralite 4 radial	£ 90.00	£ 108.00	£ 104.50	£ 125.40
Billet 4 radial	£ 140.00	£ 168.00	£ 171.00	£ 205.20
Monster 4 radial	£ 197.00	£ 236.40	£ 228.00	£ 273.60
Monster 6 radial	£ 249.00	£ 298.80	£ 280.00	£ 336.00
Ultralite 2 mechanical hb	£ 149.00	£ 178.80	£ 149.00	£ 178.80
Ultralite slide electric hb*	£ 770.00	£ 924.00	£ 770.00	£ 924.00
Universal electric spot hb*	£ 640.00	£ 768.00	£ 640.00	£ 768.00

*Price for 2x calipers, ECU and wiring loom

GRANADA BASED KIT CARS

Front conversions for Granada fitment vehicles (plain discs)				
Conversion	With anodised calipers	inc. VAT	With powdercoat calipers	inc. VAT
Billet 4 285 x 28mm	£499.00	£598.80	£561.00	£673.20
Billet 4 295 x 28mm	£499.00	£598.80	£561.00	£673.20
Billet 4 300 x 28mm 2 piece	£790.70	£948.84	£852.70	£1,023.24
Monster 4 335 x 28mm 2 piece	N/A	N/A	£920.70	£1,104.84

SIERRA BASED KIT CARS

Front conversions for Sierra fitment vehicles (plain discs)				
Conversion	With anodised calipers	inc. VAT	With powdercoat calipers	inc. VAT
Ultralite 4 260 x 10mm	£328.00	£393.60	£429.60	£515.52
Ultralite 4 260 x 24mm	£328.00	£393.60	£429.60	£515.52
Billet 4 285 x 28mm	£499.00	£598.80	£561.00	£673.20
Billet 4 300 x 28mm 2 piece	£790.70	£948.84	£852.70	£1,023.24

CATERHAM 7, 8 & 21

Conversion	Base price	inc. VAT
Front conversions for Caterham vehicles (plain discs)		
Ultralite 4 232 x 10mm	£480.00	£576.00
Ultralite 4 260 x 10mm	£949.00	£1,138.80
Rear conversions for Caterham vehicles (plain discs)		
Ultralite 2 mechanical hb 232 x 10mm	£480.00	£576.00
Ultralite slide electric hb 250 x 10mm	£999.00	£1,198.80
Ultralite slide electric hb 260 x 10mm	£999.00	£1,198.80

MX-5 BASED KIT CARS

Conversion	Base price	inc. VAT
Front conversions for MX-5 fitment vehicles (plain discs)		
Ultralite 4 270 x 22mm	£388.00	£465.60
Billet 4 300 x 28mm 2 piece	£790.70	£948.84
Rear conversions for MX-5 fitment vehicles (plain discs)		
Ultralite 2 mechanical hb 251 x 9mm	£588.60	£706.32
Ultralite slide electric hb 251 x 9mm	£1,064.60	£1,277.52

Also available:
Pilgrim
Tornado
Ginetta
Westfield
Spartan
Robin hood
Velocity
GT40
DNA
RS200
Merlin
Silva
Osprey
and many more

IVA APPROVED
ELECTRIC AND
MECHANICAL
HANDBRAKE
SOLUTIONS

sales@hispecmotorsport.co.uk
www.hispecmotorsport.co.uk
+44(0) 1322 286 850

HISPEC BRAKES UK



KitCarBuyer

Gentlemanly Buyer of Kit Cars

Freephone: 0800 246 1600

Free Valuations:
www.KitCarBuyer.co.uk



SPORTSCARS



MX-5 BASED KITS
FROM £2599 (INC VAT)
FINANCE FROM £99 /
MONTH*
*FINANCE SUBJECT TO APPROVAL APR
9.9% (48 MONTHS)

TEL: 01376 617792
WWW.MKSPORTSCARS.COM



Moto-Lita®

+44 (0)1264 772811
www.moto-lita.co.uk

"A Fine Example of British Craftsmanship"
Sir Stirling Moss OBE

P. Moss



fraser@suffolksportscars.com
+44 7967 339424
www.suffolksportscars.com



The Suffolk C-type is arguably the best recreation of this Iconic 1950s Jaguar Le Mans winning race car that you can buy today. We can build cars to your exacting specification with a 3.4 engine like the original, or modernise the car with a 320 BHP 4.2 engine with fuel injection. We make these cars with composite bodywork or full aluminium, and they can be endlessly customised to suit your requirements. LHD is also available. We export cars all over the world and the vehicle can be supplied in component form for self assembly, for certain export markets or mechanically minded folk. You can visit our facility in Woodbridge, Suffolk to learn more about how we make our cars and how you can make this dream a reality.

COUNTY-BY-COUNTY

LANCASHIRE

We've been completely snowed under by the positive response to this new series. I only did the first one (on East Sussex) as a suck-it-and-see bit of fun and apart from one 'this is nonsense, Hole' the first feature in the series – East Sussex – went down well. So, that kind of meant we had to do another!

This time we head northwards to LANCASHIRE. Let's see how many kitcar manufacturers have been based here. Back in the day, Liverpool and Manchester were classified under Lancashire, but are now metropolitan areas (Merseyside and Greater Manchester) in their own right. For the purposes of this feature we've kept them within Lancashire, though!

There is and always has been a healthy appetite for kitcars in Lancashire. It's a real hotbed of activity. One of the country's leading owners/enthusiasts' groups, the North West Kit Car Club is based there and there aren't many more enthusiastic bunch than that lot.

We reckon that there have been around 80 kitcar manufacturers based in Lancashire since 1949.

LANCASHIRE-BASED KIT & SPECIALIST CAR MANUFACTURERS.

ACCRINGTON

The Lancashire town, famous for the 'Accrington Stanley? Who are they?' TV advert has hosted two kitcar manufacturers, as far as I am aware.

A clever little off-road-type buggy, the Animoto is the work of brothers, Steve and Tony Bradshaw. It was originally based around Fiat Seicento engine and mechanicals although an MGF (or TF)-based version was later introduced

Accrington was also the second stop for the amazing Richard Oakes-designed Nova, which some 46-years after it first appeared still turns heads.

Originally based in Hampshire, Oakes and his mate, Phil Sayers had sold 130 Novas by the time they moved to Accrington in 1974. Sadly, they only lasted just over a year before going

into liquidation. The Nova then went on a big tour of England passing through several hands before finally going out of production in Brentford in 1997.

Animoto Sports - 2012-2018 (may still be available)

Automotive Design & Development – 1974-75

BLACKPOOL

Seaside town is most famous in automotive terms, anyway, for the TVR marque who were located there until 2006. Blackpool has also hosted other kitcar companies over the years.

Trevor Wilkinson founded TVR in 1948 and steered the company for its first years of existence. They endured some turbulent times over the years. Martin Lilley arrived in 1974 and was a steadying hand.

The late Peter Wheeler took over in 1981 and transformed the TVR marque, which under his control rode high for many years. It was during his watch that TVR launched such as the

Griffith, Cerbera and Chimaera V8 chest-beaters.

Wheeler sold out to Russian investor Nikolai Smolenski in 2004 and lasted until 2006 when the marque was kind of put on the back burner, lying dormant until a consortium led by Les Edgar arrived in 2013. However, 2006 saw the end of Blackpool involvement for TVR.

Several other kitcar companies have links to TVR, with Grantura Plastics (founded in 1965 by John Ward, Bernard Williams and Tommy Entwistle) being the main one. They were TVR's GRP makers, as well as the marque's owners for a brief time, too.

When the Mini Moke went out of production they thought that their Mini-based Yak of 1969 (originally called the Gem) might fill the void. It didn't.

Meanwhile, the Saiga, was a pretty convincing TVR3000M lookalike from ex-TRV workers, Tony Edwards and Terry Steptoe, based on Ford Sierra donor.

In 2007, a Blackpool-based outfit briefly rehashed a Lancia 037 replica



Looked a bit 'Noddy' but Terry and Lee of Car Craft's little Zero was a peach. It was actually a Fiat Gamme tribute



The marvellous Autotune's first product was the lovely Aristocat. You can still buy one, too.



Some folk forget, or choose to ignore the fact, that most TVR models were available as kits until 1973

that had done the rounds several times before. Lasted about three minutes, that one.

Grantura Plastics 1969-70
Race & Rally Replicas 2007
SEM Cars 1989-91
Top Hat Coachworks 1987
TVR 1948-73

BLACKBURN

Large Lancashire town that hasn't seen that much kitcar activity over the years. The Lancia 037 replica last heard of in Blackpool actually originated in Blackburn in 1987.

Rallying authority, Mick Covill, markets a Group B rally fans heaven with his line-up of rally replicas and does a great job. Meanwhile, Peter Jackson, who was the business partner of Prova's Paul Lawrenson for a time, also briefly imported a Porsche 959 replica from America.

Finally, a very short-lived company called Thor Conversions took over and ran the Bradley S61.

Rally Legend Recreations 2011 to date

Sports Cars & Specials 1987
Thor Conversions 1994

BOLTON

Another large Lancashire town that you might have expected to have been a hotbed of kitcar activity but has only seen three manufacturers over the years and none currently.

I guess that when the largest of the three is Proteus that isn't bad. Jim Marland's company, originally known as Copycats, was located in Bolton for seventeen years, until 1999. The operation has moved around a fair bit since then but still exists, although don't offer their cars in kit-form anymore.

Marland was the first to market a Jaguar C-type replica in the UK in 1982.

A short-lived Bolton company reshaped the unloved Panache LP400 Countach pastiche but packed in within a couple of years after allegedly selling five kits. Did any get built, I wonder?

There was also an even shorter-lived three-wheeler made by a company called TriSport in 1990.

Copycats/Proteus 1982-2001



Animoto was a go anywhere little device. Well built, too.

Masterco Engineering 1991-93
TriSport 1990

BURNLEY

For Burnley read Bolton and Blackburn as far as kitcar manufacturers are concerned.

Classic car dealers, Reincarnations, took over Tribute Automotive and became the European agents for the Chamonix Brazilian Speedster replicas in doing so, although they only did that for about a year.

Evans Hunter Sports Cars 1993-94
Reincarnations 2009-2011

CHORLEY

This little town was home to Andrew Kirk's bonker's eponymously named P-Type three-wheeler for a couple of years.

Kirk Sportscars 2005-2007

COLNE

The very underwhelming Shepherd didn't round up any customers during its couple of years of existence.

It was an angular-looking utility vehicle from boat-builder, Jim Graham that used Ford Cortina mechanicals, and featured plywood body panels cut out from cardboard plans.

Shepherd Developments 1985-86

DARWEN

The Lancashire mill town may not have had many kitcar manufacturers grace its boundaries but one of them was very important in the overall scheme of these things – Paul Lawrenson's Prova Designs was based in an old mill building in the town.

As far as UK Lamborghini Countach history is concerned then Paul is THE man, end of story and his kitcar history

has been well documented in our magazine and will undoubtedly be again.

He originally started with the Panache Countach approximation that later passed to Masterco for another brief go. Paul was part of the infamous Lancashire consortium that hired a genuine Countach for a weekend and took a mould from it, thus lighting the blue touch paper for the UK's Countach scene as many other companies made replicas of that replica 'shell'!

Although Paul packed in producing kitcars – he also did a superb Miura replica too – way back in 2002, his erstwhile friend, Ged Dunbar, started up the old Prova marque once more in 2018.

Devlin Cars 1992
Panache Kit Cars 1983-87
Prova Designs 1989-2002/ 2018 to date

LANCASTER

Historic Lancashire town on the edge of the Lake District has only seen two kitcar companies over the years.

Firstly, Mike Eydman brought us his brilliant Maelstrom in 1986. Although classed by many as 'visually challenged' it remains one of the finest handling kitcars ever produced. It shifted to a company called PACE in the same town, who also had a hand in at least one other kit (an exotic-inspired one), too.

Maelstrom Cars 1986
PACE 1987-92

LEIGH

Hometown of the weirdly named Lemazone run by boat-builder, Mike 'Parky' Parkington. The Pulsar was the first UK Porsche 911 lookalike, beating Covin to market by a few months..

They also made the Comet, a revamped version of the Amplas SN1 also based on VW Beetle.

The sharp, angular lines of the SN1 were smoothed over to produce the Comet although mechanically it was un-altered and it retained the 2+2 seating configuration. Did they ever sell one? Lemazone also purchased the rights to the old Beaujangle Can-Am, which they also back-burnered.

Lemazone 1984-87

LEYLAND

British Leyland links with the truck division being based in Leyland. It was also the home of Andrew Powell's Ribble Kit Cars, after he'd stopped trading as Sammio. He offered the same selection of budget, usually Triumph-based body conversions.

Ribble Kit Cars 2014-2017

LIVERPOOL

The world-famous, one-time city of culture and home of the Beatles isn't strictly in Lancashire anymore although two specialist car companies have been located there, most notably the makers of the brilliant BAC Mono (Briggs Automotive Company) single-seater. Definitely NOT a kitcar.

Liverpudlian, Steven Campbell ran the Tempest Cars operation in the city for a couple of years from 2011.

LYTHAM ST ANNES

Just up the road from Blackpool, Lytham was home to Zero and Cyclone manufacturers, Car Craft Engineering until 2006, although founders, Terry and Lee Whiteman reappeared as kit manufacturers again in 2016 under the Mirage Automotive Developments banner with a BMW-based exotic-flavoured kit.

Car Craft Engineering 1988-2006
Mirage Automotive Developments 2016 to date

MANCHESTER

Much like Liverpool, Greater Manchester isn't part of the county of Lancashire, anymore, but for the sake of this feature we'll keep them in!

There's been a lot of kitcar activity in the city over the years and it was the birthplace of the UK's Countach replica scene with both the Conan and Venom operations based in old mill buildings there.

The UK agent for the revered German trike maker, Boom Trikes has been trading in Manchester since 2002, very successfully.

The very short-lived Cybertech Countach replica, which I'd hazard a guess must have emanated from one of the other mid-eighties products was available for a time in 1992.

A chap called John Atherton from a Manchester suburb produced a beautiful barrelback three-wheeler in 1991, although he only offered it commercially for a short-time and I don't think he sold any replicas of his car.

Spring Vale Motor Services was an agent for Pilgrim for many years and built some fine examples of the Sumo, before they took on the Canadian, Legendary 427, for a short time.



Were there any wedding hire companies that didn't have at least one Beauford on their fleet? A brilliant kitcar and an equally brilliant concept



Mick Covill doesn't offer his brilliant Group B replicas in kit form

Manchester-based hot rodders, Beaujangle Sales only sold around ten what we'd call kitcars during their history, but they were big players on the UK custom/hot rod scene for several years.

The company was run by Nik Sandeman-Allen, a glassfibre specialist along with well-known drag racer, Phil 'Ziggy' Smith.

The pair were passionate hot rod enthusiasts and ran separate operations (Smith as Mr Beaujangle in an Opus HRF called 'Anomalous' with Daimler V8 power) until they amalgamated their businesses, becoming known for building all manner of bonkers vehicles from their lock-up in Back Tootal Lane, Salford, under the Beaujangle Enterprises name, although they were best-known to rodders as 'Bojag'.

Smith had previously worked on oilrigs and in German shipyards as a welder before setting up an engineering business in Salford. Sandeman-Allen meanwhile, had been running a factory in Belgium before returning to Manchester and he'd gone to Smith's company to have some welding done. From that meeting the two became firm friends and then business partners.

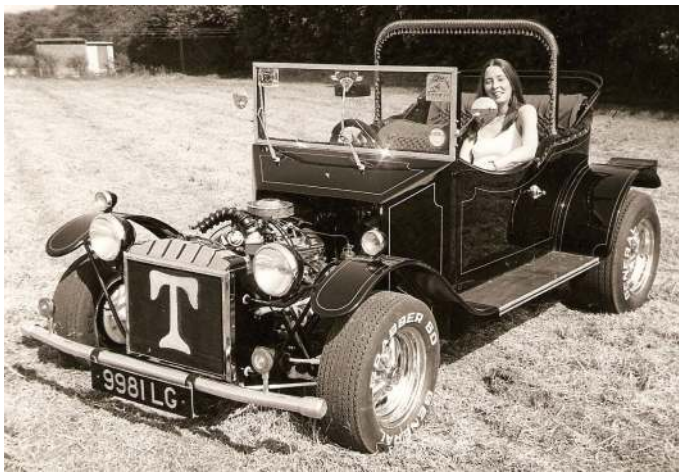
They turned their hands to beach buggies, choppers, custom cars and drag racers, while Smith had built the aforementioned sand-rail called Mr Beaujangle, the first in the UK, which went down a storm at the Custom Car show at Crystal Palace in January 1971.

Around this time, they also introduced their T-Bucket 'shell, although when they introduced the Can-Am, soon after a chap called Kendrick Gough, joined the company they changed their name to Beaujangle Sales Ltd.

The Can-Am was inspired by a similar American Group 7 kit and based on a VW Beetle floorpan shortened by 5in and Beaujangle produced it as a successor to their low-budget, Model T kit, and it was (very) loosely based on sixties Can-Am racers. Sort of.

They even went to the trouble of organising an impromptu press launch at Mallory Park in April 1972, which ended up in hilarious Keystone Cops chaos with spinning journalists all over the place and rumours that one even ended up in the Mallory lake, on the inside of Gerrards, although this was never confirmed!

The excellent Car Craft Cyclone was sold to a Manchester partnership in year 2000, but I don't think they sold



Boler T-Bone was a hoot and very much a child of its time and, with great respect, maybe even came from a period that the kitcar industry would prefer to forget



All hail the **Sherpley Speed Six**. Completely majestic. Sherpa van anyone?

one before I heard they'd fallen out and the moulds were chopped up.

Meanwhile, the man behind the Lamborghini Countach approximation, the Kingfisher Countess was a chap called, Dave Forsyth, based in the appropriately named, Kitt Green suburb, who used the memorable advertising strapline: "Can you handle a titled lady?" A belter...even if the car wasn't.

Although Ray 'The Rodfather' Christopher is synonymous with his native Dorset (namely the Poole area) for a time in the late seventies he teamed up with Graham Kelsey and Roger Attaway, two fellow (notable) UK hot rodders in the Old Trafford-based Autos International operation.

The trio had been behind some of the scene's biggest custom car shows including the famous one that took place at Belle Vue, while also touring Europe with their own rod creations.

Kelsey had originally met Ray at a show in Farnborough, Hampshire, when he was looking for quality cars for his next Manchester event and Ray had the incredible V8 milkfloat 'Past-yr-eyes' on display. One thing led to another and Ray did some TV

promotion work for the show and reputedly put 20,000 on the gate! That's what he told me once, anyway!

Notable Christopher rods appearing at this time included The Helicar and a Model T that won Ray a prestigious award in America, oh, and the V8 cement mixer, C'Men'T.

Autos International started supplying parts to KVA GT40 builders, notably suspension upgrade kits, and one particular demonstrator was known as a KVA GTD, and the intention was to co-produce the model. Ultimately this came to nothing.

They then started selling beefed-up front and rear sections for KVA chassis, which accepted Ford Granada rather than Cortina parts and they also sold KVA customers other components that weren't supplied in the kit package such as door locks.

Ray built a 2/3-scale Peterbilt truck used for Autos International's European trek in 1973, which ended at Le Mans where he unwittingly spent several hours talking to Ford's then boss, Bob Lutz. They got on very well, with Ray telling his new friend that he'd love to build a replica GT40. Lutz liked his idea and told him to get in

touch if he ever needed any assistance, while if he did ultimately build these cars, to reserve one for him! The rest is UK kitcar history ...

In the intervening period, Autos International became GT Developments in 1984 with Christopher and Kelsey moving to Ray's hometown of Poole.

Finally, but by no means least for the Manchester area is the wonderful Cox GTM Coupe.

Initially known as the Cox Grand Touring Mini the car was designed by Jack Hosker and productionised by Cheshire garage owner, Bernard Cox, in 1967.

Famously, the steel box-section chassis originated from a model fashioned from cornflake packets. It was the first mid-engined kitcar.

It was launched at the Racing car show of 1968 with a kit price of £330 and gained good press due to its fine handling and looks but was difficult to build. Cox & Co went bust in February 1969 after selling 55 kits.

Up stepped young Howard Heerey, but see under the Stockport listing for more on his tenure with the GTM.

Beaujangles Sales Ltd 1971-73
Boom Trikes 2002 to date
Conan Cars 1986-88
Cybertech Developments 1992
GT Developments (GTD) 1983-85
JBF1991
Kingfisher Mouldings 1982-86
Manchester Garages 1979-84
Spring Vale Motor Services 1998-2001
TKH Venom Services 1986
Young Guns 1989

NEWBURGH

The beautiful Lancashire village of Newburgh, just a few miles north of Skelmersdale, was home to a short-lived operation called Rhino Engineering in 1995 who made a utility type kit for a while.



Cox GTM. Without question, one of the greats. I wish I still had the red one I owned in the early nineties ... I almost gave it away. Grrrrrrr ...

OLDHAM

'I told 'em Oldham' has seen a fair bit of kitcar activity over the years starting right back in the 'specials boom years' of the late fifties and a company called Autobodies. They were one of the many companies that sprung up selling replacement low-slung, rakish bodies to transform (usually) a clapped-out Austin Seven or Ford Eight or Ten.

Run by George Levins, they offered the Autobee Pacemaker and probably sold about 120 of them before ceasing trading in 1960.

Lancastrian David Boler, who ran an exhaust centre in Oldham (proudly marketed as Greater Manchester's largest exhaust fitting company), was behind this weird rod-inspired creation. The T-Bone was designed by employees. Paul Dew and Geoff Taylor and more than likely had taken inspiration from Geoff Thomas's Opus HRF that had appeared in 1966.

The first T-Bones were built on the first floor of the exhaust business and had to be hoisted to the ground, although the company moved to larger premises, nearby in Greenfield in 1972, which was later the same site occupied by D&H Fibreglass Techniques, who made the Midas range, incidentally.

The body was made from steel with GRP wings underpinned by a rugged ladderframe chassis and Ford Cortina mechanicals although a Riley 1.5-litre B-Series was the preferred engine. Actually, any engine from 850cc to V8 could be utilised...Crikey, 300bhp and eight cylinders in a frame designed to take a Reliant engine!

Apparently, the late comedian Bernard Manning owned one, as did sword-swallower and fire-eating entertainer, The Great Stromboli, who decked his out with a fireman's ladder and bucket. Boler probably made about thirty of these between 1971-74.

Talking of D&H Fibreglass Techniques and as mentioned they'd taken over



Ohmygawd! The Kirk P-Type. You couldn't take your friends out in it.

the old Boler premises after they'd acquired the Mini Marcos MkIII following Marcos' demise in 1971. This operation, run by Harold Dermott, would later become Midas Cars and move to Corby, but they cut their kitcar teeth in Oldham.

Oldham garage proprietor, Jack Marland had formerly been an agent for GP Projects in the eighties and had built some very high-spec 718 RSKs. He reappeared in 2004, with the Citroën Saxo-based Sexo project, which featured Suzuki Hayabusa power and a few body mods.

The brilliant SDR V-Storm hails from Oldham, which is where Simon Dickens of SDR was based. He commissioned Guernsey designer, Simon Keys to pen his exo-skeletal project. The V-Storm moved hands a few times and now resides in Essex, incidentally.

The craftsman that was the late Bryan Pickup built his superb Bentley Speed Six pastiche under the Sherpley name in Oldham. The horse-drawn carriage builder based the Speed Six on two donors, one of which was a Sherpa van, while he later created the visually similar but easier to build - and Sherpa-less - Speed Four version.

People certainly knew you'd arrived in a Sherpley. It was in a similar vein to the majestic Dunsmore project some 12-years earlier. A real hoot that was also a beautifully engineered and crafted kitcar. I guess it speaks volumes that the often highly critical Bentley

fraternity, in the main, don't hate its existence, although Bryan never claimed to be making a replica ...

Autobodies 1958-60

David Boler Engineering 1971-74

D&H Fabrication Techniques 1978-79

JMA Automotive 2004 to date

Minisport 2008 to date

SDR Sports Cars 2008-2013

Sherpley Car Company 1997-2003

PADIHAM

Located near the banks of the River Calder a few miles from Burnley, Padiham is the home of well-known Classic Mini specialists, MiniSport, who for a time imported a Chinese Mini Moke replica in 2008. They didn't offer it for long.

MiniSport 2008-2009

PRESTON

Another Lancashire town with a large interest in kitcars. Alto Component Cars run by Dave Gornall, a gifted fibreglass specialist has had two goes at kitcar stardom.

First of all they came up with the Duo, which surely was twenty years ahead of its time. A more angular version of the original Smart ForTwo available in kit form that used Classic Mini mechanicals. It should have sold in big numbers but sadly, didn't.

Dave then came up with an attractive Mini-based body conversion called the Alto Boxer. This sold even fewer, sadly.

Mill Auto Conversions created a superb RS 200 replica from 2006, a car that received plenty of high praise.

A later incarnation of Gareth Atkinson's brilliant Reflex two-seater was based in Preston for a year in 1992 although weren't around very long.

The Specframe Vehicle Company, run by an ex-TRV engineer were offering the Spectre sports car for a couple of years from 1983, a well-engineered car let down by its looks.

The clever Reliant Kitten-based Tempest was designed by another ex-TRV man John Box. By 2006, a chap called John Melody, trading as Tempest Cars was the project's fourth custodian and he carried on until 2011 when Liverpoolian Steven Campbell took over for a couple of years.

Another Preston-based operation was Tri-Tech Automotive, run by Rick Edwards and Dave Chapman. They'd begun by supplying a whole raft of hitherto unavailable parts for the microcar market before moving into restoration of 'bubblecars'.

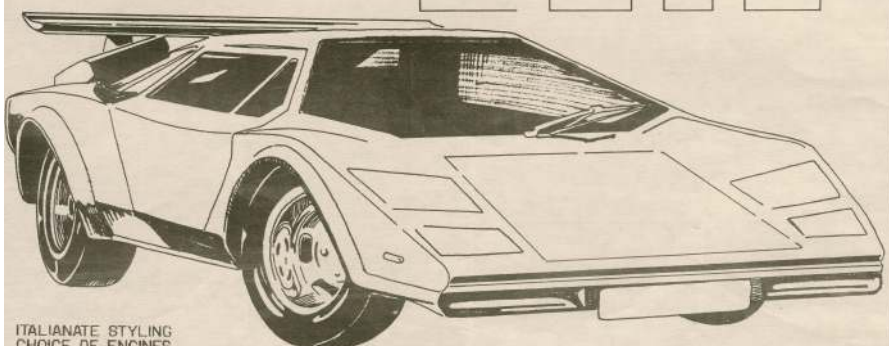
It was therefore a natural progression to produce their own vehicles. First up in 1995 came the Zetta 300, a very accurate copy of the BMW Isetta that used a 40mm box-



John Barlow's first model was the elegant Drophead. The man's a magician

Become the ENVY of EVERYBODY.

BUY! LE CHAT



ITALIANATE STYLING
CHOICE OF ENGINES
(1300 - 1500 - 1600)
SUPERB LAMINATION
(NO NEED TO SPRAY)

PRICES:
KITS FROM £1,400 + VAT
FULLY BUILT CAR
FROM £4,600 + VAT

TALK TO : JOE, HELEN OR TOM
(0695) 32203
SUTCH PRODUCTS -SUTCHES.
CASTLEHEY - SKELMERSDALE - LANC'S

Not sure if your mates would envy you in a Le Chat. You might get stones thrown at you, I fancy. The eighties advert has a certain quaintness and charm about it, though, don't you think?

section ladderframe and a Honda 250cc engine that sat directly over the rear swingarm, which Chapman says gave it much improved stability over the original's ability to resemble an automotive bowling ball.

A year later came their Schmitt KR, a more than passable GRP version of the Messerschmitt KR (they later offered a replica of the Tiger version), which used a lot of Classic Mini parts although retained the Honda 250cc Super Dream (a 400cc unit was used for the Tiger version) engine. The front suspension came from a Bedford Rascal van, which the pair discovered shared the same track as the Messerschmitt!

The company ceased trading after the business partners went their own ways. However, Chapman later came back to the kitcar industry as part of Imperial Motor Company with Royale Motor Company founder, John Barlow and was designer of the Razor three-wheeler, which he still sells.

Preston's most famous kitcar son, has to be John Barlow, ex-Leyland Trucks designer who later formed the 'B' of JBA with his two mates Dave Ashley and Ken Jones.

He had a liking for period style cars and over a ten-year period he ran the Royale Motor Company in the town with models such as the Drophead, Sabre and Windsor receiving much critical acclaim with a large percentage of them being used by wedding hire businesses.

One of the UK kitcar industry's greats, in my book.

Alto Component Cars 1994-97
Mill Auto Conversions 2006 to date
Ribble Publishers 1984-86
Reflex Cars 1992
Royale Motor Company 1991-2001
Sammio Motor Car Company 2012 to date
Specframe Vehicle Company 1983-85
Tempest Cars 2006 to date
Tri-Tech Automotive 1998-2002

RISHTON

The longest-surviving kitcar company still under the same family ownership is Autotune (Rishton) Ltd, founded by racing driver and engineer, Anthony Taylor and his wife Carolyn. The company itself dates back to the early seventies and started out doing classic car restoration work with a

specialisation in Jaguars.

In 1981, the Taylors launched their Aristocat model, inspired by, but not a replica of, the Jaguar XK120. The car remains available to this day.

Other models have followed with all of them remaining in production with the exception of the former Marcos Mantis, that they sold as the Mirage for several years in the eighties. One of the great kitcar companies.

The second kitcar manufacturer to be based in Rishton is GRP specialists, IJF Engineering, run by Ian Ferrier.

He launched the Saxan (sic) Warrior in 1992, which was based on Daihatsu Fourtrak, with it followed a year or so later by the Saxan (sic) Crusader. Both models remained available until year 2000.

Great to see that the company still exists (visit www.grp.co.uk) although the cars are long gone.

Autotune (Rishton) Ltd 1983 to date
IJF Engineering 1992-2000

ROCHDALE

One of the UK kitcar industry's pioneer operations Rochdale Motor Panels & Engineering was based in the Lancashire town between 1946-73 located in an old mill.

Lots has been written both in our magazine and elsewhere about the history of Frank Smith and Harry Butterworth's company, but of all the various cars, bodysells and chassis they produced and offered for sale, the Olympic must be their best-known and most notable model.

Second kitcar operation to be active in Rochdale is Lee Hwozdyk's MRS200 operation, which has taken over and further developed the RS200 replica originally produced by Chris Welch at Tribute Automotive. Lee acquired the project in 2019.

Rochdale Motor Panels & Engineering 1946-73
MRS 200 – 2019 to date

SALFORD

A little company called CL Cars Ltd briefly offered a small utility-style kitcar in 1984.



Not pretty but I can think of maybe five other kitcars that handle as well as a Maelstrom



What can you say about the Beaujangle Can-Am? A superb concept sold by a well-known hot rod company. I used to think it looked funny, but it's since grown on me!



Some of the UK's most talented kitcar designers have either hailed from, or been based in, Lancashire. Richard Oakes sold his Nova kits in Accrington for a few years

CL Cars Ltd 1984

SKELMERSDALE

The town of Skelmersdale has played host to just one kitcar manufacturer, Sutch Automotive run by Bob Sutch.

He made the Countach-esque 'Le Chat' that was only seen twice in 1986 and never again. Probably most notable for its advert strapline, 'Italianate styling with British electronics' while it featured the 'Sesame' central locking system, 'Need to Know' instrumentation with constant computer monitoring (CCM) and Sutch HiFi seats with what looked like a pair of bike speakers nailed to each side of the headrest. All operated by an old TV remote control. All brilliant, even if the car definitely wasn't.

Sutch Automotive 1986

SOUTHPORT

Seaside town Southport had had three kitcar manufacturers over the years. Beach Buggies of Southport was an agent for the GP buggy until they came up with their own beach buggy (!).

Meanwhile, Richard Winter's Europa Engineering located at Banks' Service Station started in 1992 and still exists although Richard has recently taken more of a rear seat. The Lotus Europa expert has produced some beautiful

replicas of Chapman's 'car for Europe' while he also supplies spare parts, too.

The other kitcar company based in Southport was run by the late, John Raffo, who, from 1980, built a succession of track-orientated models under his own name, all of which worked superbly. I'd say that I enjoyed the demo cars I drove over the years but maybe, just maybe, his last design, the Belva was his best.

Sadly, it only sold in criminally small numbers. John was the boss of his own pasta business in Southport and I can vouch for the high-quality!

Raffo retired to his native Italy in year 2000 but sadly passed away a few years ago.

Beach Buggies of Southport 1971-72
Europa Engineering 1992 to date
Raffo Cars 1980-2000

STANDISH

GB Racing Sports, purveyors of a Lamborghini Countach replica was active in Standish for a couple of years from 1988. They didn't tear up any trees in sales terms, though.

A very different kettle of fish and producers of one of the most well-regarded kitcars of all time was JBA Engineering and their Falcon traditional roadster.

Founded in 1981 by ex-Leyland

Trucks employees, Ken Jones, John Barlow and Dave Ashley. Barlow left soon after, and created his own kitcar legacy in later years, of course, while Ken and Dave soldiered on until 2006, when they retired.

A chap called Tim Banwell acquired the project and carried on trading from their Standish base, but within a year or so he'd packed up. An unrelated company, under the JBA name produced their take on the JBA Falcon theme from 2010. The Norfolk company produced a BMW-based car and continue to trade today.

GB Racing Sports 1988-90
JBA Engineering 1981-2005

STOCKPORT

When the original Cox GTM operation went under, Stockport-based Howard Heerey, whose father ran Ford dealership Midland Garage of Hazel Grove, just down the road, stepped in and took over the marvellous little project.

He'd been doing some competition driving for Cox and made some revisions coming up with a revised chassis also adding a supporting frame for the engine raising kit price to £350.

He also made further alterations to the interior and some subtle styling mods such as adding a Mini front bumper and revised indicators, re-naming the Cox GTM the GTM 1-3. Heerey sold a further 155 kits and cars before his operation went into liquidation. Cars & Car Conversions magazine built a Group 6 race version in 1970.

His adverts of the period described the GTM 1-3 thus: "...mid-engined like a Lamborghini; good-looking like a Ferrari, beautifully engineered from the best materials, roomy, fast, economic and, in fact, a proper GT car." In my view, none of that can be argued against!

An ambitious move to a 20,000sq/ft purpose-built factory never materialised, mainly due to promised finance never arriving, which also did



Paul Lawrenson is THE man as far as Countach replicas in the UK are concerned. Here's one of his Provas



JAB Falcon one of the UK's most notable kitcars hails from Standish



Jim Marland was a talented engineer and the man behind Proteus based in Bolton



Before Prova, Lawrenson hand his hand in the Panache kit

for his company, too, in March 1972.

The project went through several hands before ending up with Paddy Fitch and Peter Beck, who named their very successful GTM Engineering operation after the little Coupe. They'd go onto sell over 600 of them from their base in Leicestershire.

Meanwhile, Heerey later emigrated to Australia where he still lives.

Paul Haigh was a big player on the UK hot rod scene and in the early seventies offered a host of kit rods.

The only kit tractor thus far produced, the Trantor, originated in Stockport in 1978. The idea was the brainchild of Stuart Taylor (a research student at Manchester University) and Graham Edwards. They originally built a prototype in 1973 although the first production model didn't appear until 1976.

That original prototype was bought by Tiny Rowland's Lonhro operation and sold to a farm in Nigeria. Rowland's company bought the first twenty production Trantors, too, which were also sent off to various parts of Africa.

That was/is the Trantor's strength. Not only is it very fast, but is ideal for low-draught applications where the ground is often rough and uneven. The first UK sales went to Scottish agent, James Anderson.

The Trantor name came from 'TRANsport TracTOR', incidentally. They went like Billy-o!

As you'd expect, it was a very sophisticated build featuring three separate suspension arrangements, one at each end and an independent one for the pick-up hook. It is rumoured to have been available in kit form although subsequently been told that isn't correct.

Regardless of whether it was actually offered as a kit or not, the Trantor is highly specialised and is welcome in these pages. A 'hot-rod' tractor. What's not to like? Even better is the fact that Graham Edwards is still selling them to this day. Brilliant.

Paul Haigh Auto's 1971-72
Trantor 1978-2003

TODMORDERN

Todmorden-based GRP and composite specialist operation announced their own range of Lotus Seven-inspired products in 2013 under the Carbon Copies name, although I'm not sure if anything ever materialised. Perhaps the bodies are still in the autoclave?

Carbon Copies Ltd 2013 to date

WALTON-LE-DALE

This little town could almost have been included under the 'Preston' banner but we kept it separate.

Dave Chapman's brilliant Razor three-wheeler is based in Walton-le-Dale and I still hope and pray that it reaches the sales numbers its potential so richly deserves.

When Andrew Powell first acquired the rights to the Sammio Cars range in 2012 he was based in Walton-le-Dale before amending it to Ribble Kit Cars.

Razor Cars 2012 to date

Sammio Car Company 2012-2014

WARRINGTON

Warrington is a barren town as far as kitcars are concerned although three manufacturers have been based here.

Probably the most successful was ShawSpeed and their Lotus Seven-inspired sportscar. The company run by rallying experts Lindsay Shaw and Jon Sharples. The former had been the crew chief for rallying great Carlos Sainz senior.

After ShawSpeed packed up in 2012, the cupboard was bare until two more arrived! FourWD Engineering took over two of Nick Findeisen's NCF designs in 2014 and continue to trade in the town, while a couple of Auto Speciali (nee Fiero Factory) designs, ended up with a company called Creative Sports Cars for a couple of years.

Creative Sports Cars 2014-2015

FourWD Engineering 2015 to date

ShawSpeed Kit Cars 2009-2012

WHALLEY

Just one kitcar manufacturer located in Whalley, a little town on the banks of the River Calder in the Ribble Valley, in

the form of Bradley Motor Company who appeared in 1990.

Tony Place was the man behind the S61. The legend that was Peter Pellandine claimed that the car was one of his old Ashley designs, whereas Place said it was actually inspired by an old un-released Frazer Nash model.

Actually, regardless of all of that, the S61 was actually a pretty good car and deserved to sell in better numbers than the two produced. When Place stepped away in 1994, a Blackburn-based company called Thor Conversions took over for five minutes.

Bradley Motor Company 1990-96

WIGAN

Wigan's kitcar history has been dominated by a couple of kitcar industry legends.

Gordon Gaskell's Beauford operation was based in Wigan between 1985-96 and produced a great number of the Beauford Roadster, initially for private customers and then corporate clients. For a time, there can't have been many quality wedding hire operations in the UK who didn't have at least one Beauford on their fleet.

The project moved to Stoke in 1996, where it existed successfully, under different ownership, until 2014.

Post-Royale Motor Company, John Barlow, created the Veranti Motor Company to produce the MR2-based Veranti body conversion from 2003-2006. He then returned again with the Regent Motor Company to produce vintage style vehicles and finally for a third time with the Imperial Motor Company between 2009-2013.

Finally, also in Wigan is the lovely character that is John Ziemba the creator of the superb little JZR three-wheeler. He's been making them since 1989 and is still going strong and has made over 450 JZRs, thus far.

Beauford Cars 1985-96

Imperial Motor Company 2009 to date

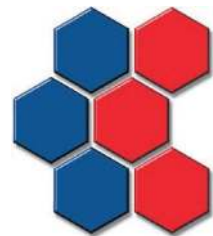
JZR Vehicle Restorations 1989-98/2000 to date

Razor Cars 2012 to date

Regent Motor Company 2006-2008

Veranti Motor Company 2003-2006

HIGH PERFORMANCE COOLING



**Wanted Setrab oil cooler
dealers, contact us for
information!**

tel +44 (0) 20 8813 7470 fax +44 (0) 20 8813 7499
Serck Motorsport, Unit 8-10, Bullsbrook Road,

AND COMPETITION PARTS



Wanted Fitec
EFI stockists and
approved fitting centres,
contact us for information!



Fitec Ef UK Distributor



Distributor



Meziere UK Distributor



email ss.hayes.m@unipart.com web www.serckmotorsport.co.uk

Brook Industrial Estate, Hayes, Middlesex, UB4 0JZ, England

WANTED approved Nitrous Oxide
installation centres and refill
centres, contact us for
information!

ALL THE BEST SPECIALIST CAR-FRIENDLY PRODUCTS...

SPECULATE TO ACCUMULATE

Accusump Oil Accumulators are a 'must' for serious trackday drivers and racers alike.

They're designed to prevent oil starvation due to hard-cornering and braking and therefore can stop catastrophic engine failure!

Merlin Motorsport is an official agent for Accusump and stock three sizes; two-pint, four-pint and six-pint (actual sizes being 1 Quart, 2 Quart and 3 Quart in US measurements).

These accumulators are available with manual and electric activation and you can find out more from www.merlinmotorsport.co.uk or call 01249 782 101.



RETRO IS BEST

It's probably fair to say that since it was launched in 2016, the Jenvey range of Heritage DCOE Throttle Bodies has revolutionised the classic kitcar market – as well as the classic car scene, too, of course.

The Shropshire-based company has been busy meeting demand for their range in the intervening four years but have just announced three new additions to their Heritage range.

First up, is a completely new Jenvey manifold and water-pipe designed to suit the Jaguar XK straight six engine. The company's marketing manager, Emma Jenvey told me: "There is a gap in the market for this manifold, which we have now filled! It is lightweight and beautifully engineered with a heritage appearance. It is needed to convert to fuel injection and works elegantly with our DCOE Heritage Throttle Bodies."

The company has also developed a new big and small port manifold for the Toyota 4A-GE engine to be used in conjunction with their DCOE Heritage throttle bodies.

Finally, the Heritage IDF throttle body is the latest addition to the range. It offers all the benefits of electronic fuel injection while maintaining the period look in your engine bay.

For more information contact www.jenvey.co.uk or 01746 768 810



CONSTANT LIGHT

New from Sealey is this LED50WS - Rechargeable Torch with Wireless Speaker 10W COB LED.

It comes secured in a rubber-coated housing with recessed hook, two magnets and an integral 90° adjustable stand. The main light has an on/off power button and when pressed multiple times cycles through two levels of brightness, 500lm and 250lm, the light produces a beam distance of up to 50m. It features a runtime of 4.5-hours.

For protection, it is IPX4 water resistant and is IK06 impact rated to withstand falls of up to one metre. The full charging time is approximately six hours but there is a battery charge level indicator on the back and the light can be used while charging for convenience. This comes supplied with a USB cable.

For further details or to view Sealey's complete range, visit www.sealey.co.uk or call 01284 757 500.



GOOD AVAILABILITY

Burton Power is now offering fully reconditioned Bosch electronic type distributor kits for the Ford SOHC Pinto engine.

The distributors are fitted with an integral electronic ignition module bolted to the distributor body. Each distributor has a modified advance curve to suit fast road/rally specification and is non-vacuum.

Each kit is supplied complete with constant energy coil and wiring harness (when using on vehicles fitted with a ballast resistor, the



ballast must be by-passed to provide 12v at the coil).

The kits are supplied with a straight cap. The approximate static ignition timing is 14deg bottom top dead centre.

Order as part number FT295K at £259.96 inc VAT plus a £40 deposit, refundable on return of a serviceable early Pinto Bosch electronic unit (later static type units are not acceptable).

Available now from Burton's Performance Centre in Essex or by ordering from www.burtonpower.com or even via 0208 554 2281.

WHEELY GOOD

Here's a particularly lovely new item from Car Builder Solutions.

It's a quality wood-rim steering wheel with a 70mm PCD and available in three diameters. It comes with six 5mm boss mounting holes and costs just £108.

The wheel wears part number WRSW70 and is available via www.carbuilder.com or 01580 891 309.



POCKET-SIZED MARVEL

Powerlite is one of the leading manufacturers and suppliers of high-performance rotating electrics for classic, performance, competition and kitcars.

Their latest innovation - The Microstart - is claimed to be the smallest, most powerful unit ever built for the A-Series engine. It's light but deceptively powerful and comes with a five-year warranty. It fits A-Series units that had the 'Verto-flywheel and pre-engaged-type starter motor.

Every unit is built at the company's West Midlands base, having been designed, tested and manufactured to the highest possible standards, using over 40 years of auto-electrical experience.

The company's range of products includes performance alternators, including compact lightweight units, ideal for competition cars where weight and space are at a premium. Their high-torque gear reduction starter motors are lightweight, offering increased cranking speeds and more power than original units, while drawing less current from the battery.

In addition, Powerlite is also the only UK company to offer a full re-manufacturing service for classic starter motors, alternators and dynamos.

For more information on the Powerlite range, visit www.powerlite-units.com or call 01384 261 984.



THE SHIELD

DEI Floor and Tunnel Shield is a dimpled, bright, 10mm aluminium facing, bonded to a finely woven layer of high temperature resistant glassfibre

material. It is able to withstand harsh road conditions as well as exposure to extreme weather.

In response to customer demand DEI is now producing its Floor and Tunnel Shield in black as well as the more familiar bright alloy finish.

The black finish will appeal to classic and kit car owners who want to insulate their car's interior from outside noise and heat with a less conspicuous modern material.

The shield is applied to the outside on the underside, on the firewall or under the bonnet with the black side facing the heat/noise source.

DEI Floor & Tunnel Shield will conform to the contours of the panels and an aggressive peel-and-stick adhesive backing will ensure it will withstand wind and water and yet will be easy to shape, trim, cut, peel and stick.

The black coating will withstand high temperatures and will be unaffected by heat from turbos, catalytic converters and exhausts.

DEI Floor & Tunnel Shield is available in two sizes:

Part No.: 050549. Black Floor & Tunnel Shield 42in x 48in

Part No.: 050552. Black Floor & Tunnel Shield 21in x 48in

In the UK and Europe DEI's products can be ordered from Demon-Tweeks.com.



FLY TRIUMPH

Fidanza Performance has announced a range of lightweight aluminium flywheels for classic Triumph engines.

Model	Part No.
Spitfire 1967-'72 - 1300cc engine	172131
Spitfire 1975-'80 - 1500cc engine	172151
TR4 1961-'65 (will also fit TR2 & TR3 if TR4 starter is used)	172441
TR4A 1965-'67	172441
TR6 1971-'75 - 2.5 litre engine	172661

The Fidanza flywheel replaces the heavy standard item and improves the power-to-weight ratio making the engine more responsive thereby improving performance.

The flywheel is made from high-quality machined 6061 T6 aluminium with a 1050 steel friction surface, CNC-machined fastener holes and chamfers. The friction surface of the flywheel is a replaceable steel plate, so when the surface eventually becomes worn it can be replaced without the need for a new flywheel. All Fidanza flywheels now come with a distinctive green protective coating on the friction surface.

The flywheels are suitable for use with just about any clutch disc material available - from organic to Kevlar and even sintered iron. The flywheels are incredibly durable and come with a heat-treated ring gear and military grade fasteners. They are equally suited for fast road, trackday and pure competition use.

Visit www.fidanza.com or if in the UK visit www.demontweeks.com



COMPACT SOCKET SET

This new socket set from Laser Tools (part number 7636) is specifically designed to offer improved access to hard to reach fuel-line connections. For example, injector connectors can be buried under a maze of pipework and fittings and it can be a major task to get a positive grip onto the hex whether tightening or loosening off.

The tool is 3/8in drive and features two spring-loaded joints to let you get down and past any obstructions. The sockets are of the open design that lets you slip them over the fuel line and down onto the hex connector. The sockets are simply connected to the tool by pressing out the retaining pin with your thumb, fitting the socket, then replacing the pin.

There are eight socket sizes provided: 10mm, 11mm, 12mm, 13mm, 14mm, 15mm, 16mm and 17mm, all black phosphate treated for corrosion and abrasion resistance. All fit into a shallow blow-mould case that fits neatly into the tool chest tray.

A useful high-quality tool for the professional technician and a real time saver. Available now from your Laser Tools stockist and typically priced at £166.12 inc VAT. Always remember to check for the best prices and special offers.

More details from www.lasertools.co.uk.



WEBER GET SENSITIVE



For over 40 years, the Weber Marelli crank sensor type SEN8D from Webcon has been the benchmark in terms of outstanding performance and an unbeatable price. However, as of November 2019 production in Italy ceased so they are no longer available.

Webcon is thus delighted to announce that, following extensive testing, it has sourced a replacement for the SEN8D and these are now available for immediate delivery.

The sensor is branded 'Webcon' to avoid confusion with non-Webcon-approved, unbranded versions and is available under a new part number: WSS075W.

Just like its predecessor it is extremely competitively priced at just £37.20 inc VAT.

For further details call 01932 787 100 or visit www.webcon.co.uk.

ECO RUST BUST



Great new product from the marvels of rust removal and control, Rustbuster, is Eco Cleaner Rust Remover, which is an environmentally friendly, bio-degradable rust cleaner that can be used on steel, stainless steel and even masonry.

It is a single-component water-based jelly-like solution that removes rust, mill-

scale, green algae and limestone.

Depending on the severity and the type of corrosion removal takes between 4-24-hours to do its thing.

A 500ml bottle costs £11.14 inc VAT with a 1-litre bottle at £20.28 inc VAT.

Find out more at www.rust.co.uk or via 01775 761 222.

MODS AND ROCKERS!

Roller tips are probably the most important factor in reducing valve and guide wear when using modern performance camshafts.

Mini Spares has now produced its own Roller Tip Rocker Assembly for 1275cc

big bore engines. The assembly features cradle type alloy rocker posts with an increased shaft size to improve rigidity and stronger EN24 adjuster screws with hexagonal head adjustment nuts.

The roller tips have a centreless ground finish and the competition thick-wall shaft sits in bronze bushes.

This is the ultimate lightweight alloy valve gear, providing maximum efficiency while cutting downside-loading on the valve stems and reducing friction and wear while increasing rigidity.

The 1.5 hi-lift keeps valves open approximately 20 per cent more than standard at any given point, although opening and closing periods remain the same. Volumetric efficiency is vastly improved thus increasing power output.

The set can be ordered as part number C-AHT446EVO. It comes with eight rockers, EN24 Allen key head adjuster screws and multi-point nuts, competition thick-wall shaft and steel pedestals. The complete set retails at £368.20 inc VAT.

Extra rocker cover clearance will be required. Use with FP24 rocker cover or Mini Spares' own covers.

For more details call 01707 607 700 or visit www.minispares.com



A 'BRAKE' FROM THE NORM

Fresh out for 2020 is the latest Hosetechnik website – a subsidiary of Forge Motorsport, Hosetechnik is a purveyor of high-end stainless braided brake lines for a variety of kitcar, OEM, custom and aftermarket applications.

Having formed just over a decade ago, Hosetechnik has built a solid reputation for offering off-the-shelf, high-performance solutions for the huge variety of vehicles that have passed through the workshop over the last few years.

In addition, the firm offers a totally bespoke service that allows for same or next day turnaround for custom fit brake line applications – whether they're intended for the competition, trackday participation or even just fast road user, the ability to tailor each and every application makes them an invaluable tool for the modifier who might have changed calipers or is looking for the next big braking upgrade.

Aside from being aesthetically pleasing, performance and braking feel are also drastically improved, thanks to the tendency of stainless lines to resist expansion under extreme hydraulic pressure. This improved pedal feel leads to greater confidence behind the wheel, whilst reducing stopping distances due to the improved fluid transfer characteristics.

All Hosetechnik brake lines are manufactured from UK manufactured 303 stainless steel end fittings, which, coupled with PTFE lined and PVC coated braided lines that are offered in a variety of colours and finishes, leads to ASI304 high-tensile braided hoses that ensure long-lasting and durable brake lines for years of service.

As a result, each and every Hosetechnik product conforms to FMVSS106 certification standards so you can be reassured of safety, fade-resistant, braking when it matters the most. Steal those extra few metres into the next apex and nudge ahead of the competition with stainless steel brake lines that are second to none.

Their new website can be found at www.hosetechnik.com

By logging onto the fresh new website it's now possible to specify your entire custom hose for almost anywhere on your vehicle. Choose from a wide range of banjo fittings, hose length and colour, male and female fittings, metric and UNF to customise any fitment to suit. There are even bulkhead-style fittings for easy exchange come race day as well as manufacturer-specific swivel fittings to boot.

By offering a wide range of top-end fittings, hose length, brackets and bottom end fittings, it's entirely possible to customise any fitment to suit online within seconds.

So, what are you waiting for? With the choice of carbon fibre effect, clear PVC, Blue, Red, Orange, purple, green and yellow PVC covering they can also be tailored to suit a highly detailed chassis refurb.



SILICON HOSES.COM

SiliconHoses.com Ltd. are a long established supplier to the kit car industry of high quality silicon hoses and ancillary engineered products.

All our hoses are manufactured from premium quality German silicon compound and high quality woven fabrics, this specification makes them the strongest hoses on the market and we also possess the largest stocks of universal silicon hoses in the UK!

Don't delay - buy today - for delivery tomorrow.

- Silicon Hoses
- Ducting
- Megaflex
- Hose Joiners
- Vacuum Tube
- Hose Clamps
- Alloy Bends / Tubes
- ALL IN STOCK!!!



0845 838 5364 - WWW.SILICONHOSES.COM

Suppliers of Cars, Kits,
Parts and Upgrades



28 PERFORMANCE

RACE PREPARATION
BIKE ENGINE PACKAGES

CONTINUED PARTNERSHIP BETWEEN ARIES MOTORSPORT AND AB PERFORMANCE

- **BIKE ENGINE** • **CAR ENGINE** • **FRONT ENGINE** • **RACE BODYWORK**
- **TRADITIONAL BODYWORK - WE HAVE IT ALL**



TYPHON



ARION



SABRE ESCALA



LOCO

- 100% increase in production facilities. New retail shop displaying demonstrators and cars for sale plus all your essentials for racing, track days, road
- Trips planned both near and far for new owner's group Monthly workshop Saturdays with bacon rolls, tea and coffee
- See the production versions of Typhon with over 700bhp/tonne, the production version of the new Sabre Escala after extensive wind tunnel research at MIRA, the multi championship winning Arion, plus the Loco with race-proven chassis and running gear

Aries Motorsport & AB Performance, Pie Hatch Farm,
Brettenham Road, Buxhall, Suffolk, IP14 3DZ

• 01449 736633 • helloariesmotorsport.com • www.ariesmotorsport.com



LOOKING FOR CUSTOM FABRICATION? LOOK NO FURTHER!

Forge Motorsport alloy tanks are hand crafted using aircraft quality low corrosion alloy. The connections are CNC machined and fabricated with the latest TIG welding equipment.

With over 10 years experience supplying to the leading F1, WRC and Le Mans teams we can offer you the same quality at affordable prices, if you need Fuel tanks, intercoolers, catch tanks, swirl pots etc we can help, please visit our website at www.forgemotorsport.co.uk to see our listed products or call 01452 380999 / email info@forgemotorsport.co.uk to discuss your personal requirements.



FMDST090
Dry Sump Tank



FMSP075
Water Swirl Pot



FMHT063
Header Tank



FMCT073
Catch Tank



FMFT078
Universal Fuel Tank



FMFT076
Universal Fuel Tank



FMINT107
Intercooler

Contact us for our custom fabrication options or check our current product range online at: www.forgemotorsport.co.uk

Can't find what you're looking for?
We can make custom parts to your specifications.
Email us for more information: info@forgemotorsport.co.uk

All Forge products deliver a level of performance far exceeding the capabilities of their OEM counterparts so you are assured of quality products and service.

info@forgemotorsport.co.uk

Visit our online store @ www.forgemotorsport.co.uk

+44 (0) 1452 380 999



AEROMASTER LMP

THE ONLY FULL SIZE LMP KITCAR ON THE MARKET

AEROMASTER SPORTS CARS

We specialize in the design and manufacture of unique prototype cars & sports kit car bodies.



Phone: +359 884 002 499 Email: office@aero-master.com

VISIT OUR WEBSITE
TO FIND OUT MORE

www.aero-master.com



Simply Performance

COBRA DONOR PACKAGES & JAGUAR PARTS



JAGUAR SPECIALISTS SINCE 1984

We work very closely with most leading Cobra replica manufacturers and can supply all the Jaguar donor parts and spares you need for your build, such as axles, brakes and differential.

WE ALSO SUPPLY SECONDHAND SPARES AND PERFORMANCE PARTS FOR JAGUARS
• SALISBURY 4HU DIFFERENTIAL PARTS/REBUILD SERVICE AVAILABLE

For more information contact:

Simply Performance; Beare Green, nr Dorking, Surrey • Tel: 01306 711 134 • Email: sales@simplyperformance.com

www.simplyperformance.com



GARDNER DOUGLAS



**YEARS
OF EXCELLENCE**

EST. 1990

For more information please visit our website or call us on 01476 567180

www.gdcars.com

IT'S ALL IN THE 'DETAIL'

WITH NIGEL DEAN

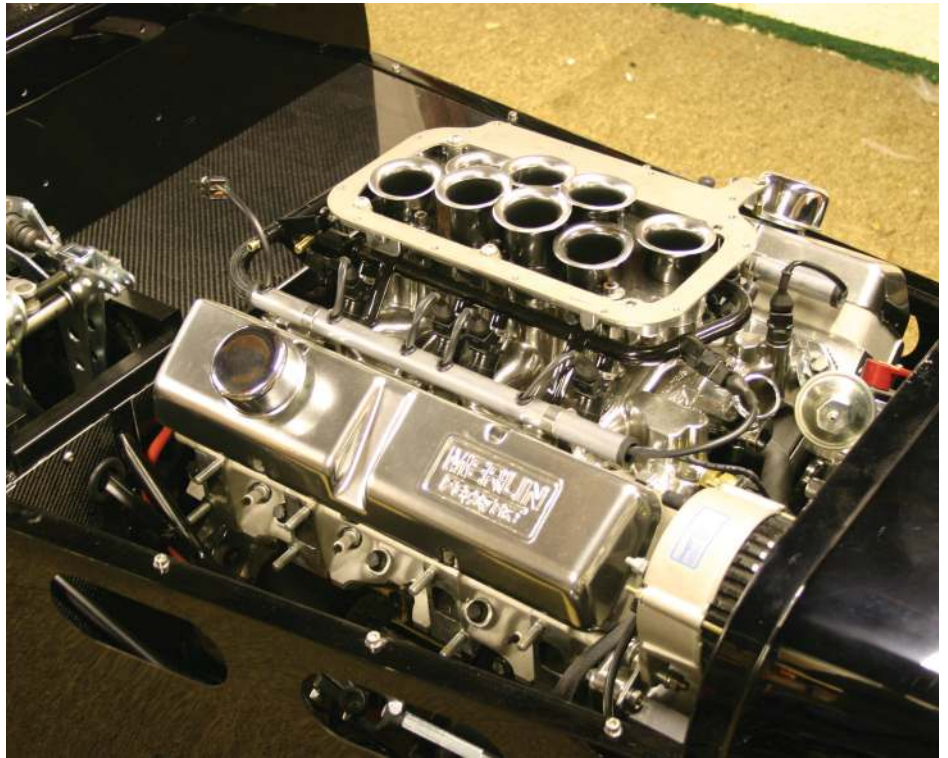


Heat management within a kitcar is extremely important for numerous reasons including optimising power, improving reliability, cosmetic retention, and, by no means least, making the cabin environment more comfortable. This issue, Nigel runs through the options available to the kitcar builder when it comes to handling the heat.

It goes without saying that the internal combustion engine produces heat, an awful lot of it in fact. Industry figures show up to a staggering 75 per cent of the energy produced during the combustion process is heat and sound!

A proportion of this latter waste energy is expelled in exhaust gases, some transferred to the circulating coolant, but a significant amount is radiated from the block and headers. To compound the situation further, the kitcar industry tends to enjoy squeezing large capacity and/or highly tuned powerplants into tight engine bays!

At the same time, coolant systems are often reduced in size and capacity (in particular the radiator) due to the physical limitations of the car's design. The net result can cause serious issues



Potential for heat management disaster. A monster V8 squeezed into a tight engine bay



Exhaust wrap reduces under-bonnet temperatures significantly

in numerous areas. Enter heat management, terminology given to various products which improve occupant comfort, increase reliability, optimise power output and protect your investment against heat damage.

Engine power

The internal combustion engine is an amazing piece of machinery and the basic principle has pretty much remained unchanged since its inception. Many advancements have improved reliability and efficiency but one aspect in particular is of immense interest to engine tuners, and that's scavenging.

This seldom mentioned process is undertaken every time a piston moves through its downward stroke. This action creates a negative pressure in the cylinder, assisting the removal of waste products (exhaust gasses) while also drawing in the new charge. The more efficient this process, the more horsepower is produced.

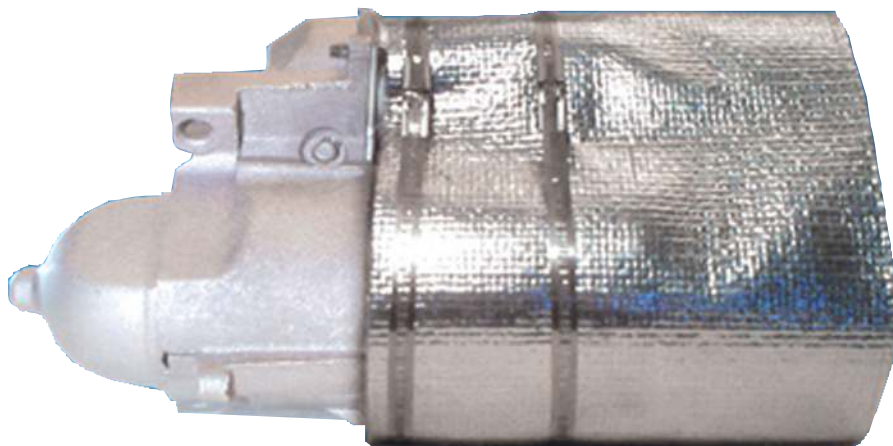
Obviously, cylinder-head design plays an important role, but just as critical is the hotter (and less dense) exhaust gases, the faster they evacuate the combustion chamber. Retaining heat within the headers can be achieved in several ways, but the simplest is to use heat wrap, a textured silica-based fabric capable of withstanding temperatures of up to 2000 degrees Fahrenheit.

Applying this heat barrier requires it to be repeatedly wrapped around the exhaust system, preferably all the way up to the cylinder-heads. An additional side effect is the significant reduction (up to 70 per cent) of under-bonnet temperatures.

In contrast to retaining heat within the exhaust gases, any air drawn into the engine needs to be as cool and as dense as possible. Since most air filters are housed within the engine compartment the reduction of any radiated heat from the headers also benefits from this requirement. It is a win, win situation. Interestingly, it has been documented that with every one-degree fall in charge temperature an additional 1 per cent of engine bhp can be released.

Most suppliers stock heat wrap in rolls with the most popular colours being white or black. Common widths are 1- and 2in, the former ideal for those tight header turns often found in compact kitcar engine compartments. Once applied, the surface of the wrap can easily absorb oil spills and discolour quickly thus it is best to coat the surface with a protective metallic-based aerosol paint.

These utilise resins and binders to seal the otherwise porous material,



Starter motors can often fail if positioned too close to heat sources. Heat jackets resolve the issue

reducing the risk of degradation due to friction and fluid spills. This comes in the form of a hi-heat coating available in black, silver or copper finishes. The cost of the heat wrap varies according to width and length, but 10 metres typically costs £20, which comes complete with stainless ties.

Another common use for heat management products within the kitcar scene is in the wrapping of turbochargers. Again, performance is increased by retaining the thermal energy within the exhaust gasses and minimising the heat transfer to the compressed intake air. An additional benefit is reduced turbo lag. Starting at around £120, it is well worth the investment when you witness the amount of heat produced from a turbo unit and the damage it can do when in close proximity to glassfibre.

Reliability

All engineered components have a defined operating temperature and exceeding these limits on a regular

basis will reduce performance and increase unreliability. A typical example is a starter motor, which in many applications is located in close proximity to the header.

Prolonged exposure to heat degrades the performance of windings while also affecting the solenoid assembly. Shields are available which can be easily attached to the starter motor in addition to the exhaust wrap detailed previously.

American V8 installations in Cobra recreations particularly, suffer from starter motor issues due to the headers coming within close proximity of the unit. Apart from reducing the life of this expensive component it is not uncommon for hot engines to have starting issues.

This is often blamed on the engine, but more often than not it is the starter motor suffering under extreme heat. Costing only £50, this is one heat management investment I would seriously consider (just check that it fits your starter motor before purchasing).

Another component often



Self-adhesive heat cloth can be quickly applied to protect glassfibre panels from heat sources. The roller helping to eliminate any pockets of air



Cabling and hoses are best protected by heat cloth sleeving

backing), this thin, flexible material can be attached to the inside of vulnerable body panels. The shiny side is directed towards the heat source and can cope with temperatures reaching 2000 degrees Fahrenheit. Heatshield is available in different sizes.

Occupant safety and comfort

It goes without saying that occupant safety and comfort are of paramount importance, and heat management is a key factor. Ensuring fuel tanks and fuel lines are well insulated from all heat sources is an obvious safety application for these products. In addition, the lining of floor panels and transmission tunnels ensures exhaust and under-bonnet heat is isolated from the passenger compartment. Without such protection interior temperatures can soar and make it uncomfortable for the car's occupants.

Beer time

As can now be appreciated heat management is a consideration that impacts many aspects of a kitcar build. Products are openly available, and better still application requires minimal knowledge and only basic tools. Some products command a premium price, but without question the investment is worthwhile. Next time, my focus will turn to oil and fuel lines, one of my favourite topics.

overlooked is the battery. Regardless of technology employed within the unit, heat will reduce its lifespan and charge retention capabilities. This is easily solved by the application of a self-adhesive wrap constructed from heat-reflective material.

Finally, wiring and plug leads are a notorious failure point when they come into close proximity of heat sources. Even if the insulation is not physically burnt it will degrade over time, becoming brittle and eventually damaging the conductivity properties of the inner core. Heat resistant shields and boots are a sound investment if

your engine bay wiring is exposed.

Cosmetic retention

Paint, as with any other product, has an operational temperature range and even though modern cosmetic finishes are more than capable of withstanding significant temperatures, there are limits.

This particularly applies to bonnets and inner wings subjected to significant temperatures. In such situations the application of aluminised heat barrier cloth is the perfect solution. Applied with glue (some come with a self-adhesive



Ceramic-coated headers; another way of keeping your engine bay cool

EQUILIBRIUM
KIT CARS

SONIC7



THE MEV DESIGNED SONIC7 IS A MODERN, MID-ENGINE, ALTERNATIVE TO THE LOTUS 7 CLONE, USING THE MK1 FORD FOCUS AS A DONOR.



T: +44(0)1242 712 220 M: +44(0)7954 441 575
E: info@equilibrium-kitcars.co.uk W: www.equilibrium-kitcars.co.uk

KINGFISHER
OVERLAND



**THE NEW
OVERLANDER**

■ The Overlander isn't just an off-road Sand-Rail. Nor is it just a vehicle to nip out to the shops in.

It's a vehicle to go absolutely anywhere, anytime

Kingfisher Overland 0121 558 9135
info@kingfisheroverland.com

kingfisheroverland.com



Ring SmartChargers

Life Support for your Vehicle

Prevention is better
than the cure.



Ring SmartChargers - Optimising Battery Performance

- For traditional and Stop/Start batteries
- One button operation for ease-of-use
- Large LCD screen clearly showing voltage and charging progress
- Cold weather charging mode to protect battery from cold temperatures
- Never overcharge - safe for longterm connection.

Be ready to go when you want to go,
with Ring SmartChargers

For your nearest stockist visit
ringautomotive.com

Available at
A1 MOTOR STORES
Driving the Independent
www.a1motorstores.com



INTRODUCING AUTO FANATIC

I'd been teased by YouTube videos of the Auto Fanatic products for ages, but couldn't get them in the UK! However, that's recently changed so I had to see if they lived up to the claims. They do ...

There are several superb American car care brands – large and small. Some of them have UK distributors, which is great, while others don't, meaning that it can be hard to get

hold of their products.

This is made all the worse by word of mouth reports and YouTube vids from car care channels raving about said products. A real tease when you can't get hold of them or the postage charge is 30 quid from the USA!

A brand that I've been hearing great things about is Auto Fanatic based in New York State. The company has a great back story and is run by a well-respected custom car builder well-versed in engineering and professional car care.

His Auto Fanatic brand is a young one but has won many, many friends thanks to the quality of his products. They don't have a massive catalogue, preferring to concentrate on core areas of detailing with a compact range.

When I saw respected detailing figures such as Pan the Organizer raving about some of Auto Fanatic's products on his YouTube channel, I decided that I had to try some for the magazine. When I heard that they





were just about to launch in the UK, it made things a whole lot easier.

When weather and a bout of flu has allowed, I've been putting the products through their paces and really have been incredibly impressed. They do exactly what they claimed on the videos I'd seen and then some.

We'll be reviewing the products individually in coming weeks and featuring them on www.totalkitcar.com, but we'll kick off with their Professional Wheel Cleaning Foam. This stuff blew me away.

There are thousands of wheel cleaners available from great to simply terrible. The worst of the worst seem very aggressive and one I used once removed the lacquer from the prized 21in alloys on my X5. Actually, it was worse than that. It didn't remove all of it, rather it made the wheel look blotchy. Still, I should have known better. However, since then I can't help treat any wheel cleaner with suspicion!

Auto Fanatic's product is a very gentle wheel cleaner. If you had a load of cars to clean a 500ml bottle would give you 15-litres of foam so when you are dealing with one or two cars at a time, it goes a long way – and I like that.

The safe formula can be used on all finishes and doesn't have caustic soda or other active ingredients. Another plus point is that unlike a lot of other wheel products it doesn't smell like cheap hair bleach!

I used it in the little foam dispenser accessory on my Worx Hydroshot brushless model and it worked a treat. I'm sure my Kärcher K5 would have given more foam as it's more powerful but I was well-pleased with the way it foamed on the Caterham Seven R360's wheels that had a lot of brake dust and what appeared to be greasy gunk

on them, especially the rears.

I let the product dwell and then used a sponge and a brush to work it in. I then blasted it off. The wheel were clean as I'd expect but they didn't have any residue leftover. They were literally squeaky clean.

This isn't the cheapest product around, but the manufacturer's say it contains only the finest and safest ingredients and having seen the results I'd believe it.

We always promote value for money and even at £26 (500ml) I'd have to say that Auto Fanatic's Professional Wheel Cleaning Foam is a fantastic product.

I then used their 007 Ultimate Secret Weapon Single Step product, which has created its own cult following thanks to its effectiveness. The formula removes minor imperfections in

paintwork while bringing with a high gloss finish. It's very easy to use, too. I stacked a few coats or in plain English, used three coats for maximum impact.

This one costs £29.99 for a 500ml bottle.

Next up came Auto Fanatics' 007 Gloss Enhancer, which is ideal for use as a 'topper' or or as the name suggests, a product for enhancing gloss. I don't need to say anymore, just look at how it brought my black X5 up. Impressive to say the least. This product costs £17.99 for a 500ml spray bottle.

I've yet to use their Snow Storm Car Shampoo but I'll report back on that soon.

Available in the UK now via Paul at www.auto-fanatic.co.uk or for readers in North America, it's www.auto-fanatic.com



Auto Fanatic gave impressive results



BF Goodrich Radial TA

Now E-marked and available from
Longstone tyres

Available sizes:

205/70R14 215/70R14 225/70R14 215/60R14
225/60R14 235/60R14 245/60R14

295/50R15 195/60R15 205/60R15 215/60R15
225/60R15 235/60R15 245/60R15 255/60R15
275/60R15 215/65R15 215/70R15 225/70R15
235/70R15 255/70R15



Other available tyres for Cobras:



INTRODUCING

I think a dashcam is almost an essential item these days and here's a really easy to use, high-quality cam that is ideal for kit and specialist car use.

I've got mixed views on so-called dashcams. I mean, I can see their relevance thanks to the proliferation of weasel drivers on the roads these days but just lately the dashcam waters have become muddled.

It's hard, I think, to sometimes find the one that's right for your purpose. Whereas they used to be quite expensive to buy, as technology has evolved, prices have come down but that has also seen a lot of detritus appearing on the market.

Crikey, I went into a fuel station recently and there on the countertop was a nasty-looking dashcam for £20! I've never quite paid that little for one but I have struggled with a couple lately, which definitely cost under £30. Inevitably, they lasted five minutes and/or kept going haywire with a frozen screen a regular occurrence.

Anyway, moan over and I was delighted recently to find out about the VIOFO A129 PRO DUO.

It's the company's latest addition to their A129 range. It provides high resolution true 4K (some claim 4K but aren't, by the way!) Ultra HD videos for road front (3840 x 2160P) and full HD for road rear with 1980 x 1080p at 30 frames per second.

To be quite honest, I've only been using the front facing camera, thus far but I've been hugely impressed on several fronts. You can genuinely fit this and forget about it, trusting it to do its job. As soon as you unlock your vehicle the units emits a little tinkling sound to tell you it's armed and ready to roll.



The dash cam allows for a faster transfer speed than its predecessors using Wi-Fi. The A129 Pro Duo applies 2.4 GHz and 5GHz dual-band Wi-Fi meaning that users can stream live video from the cameras to a phone via the VIOFO app. This can be easily set up via the app (iOS and Android) rather than needing to use the camera itself. I've had fun with that feature.

Loop recording is also possible to use in one minute, three minute, five minute or ten minute incremental 'captures' as well as the ability to turn this feature off if not required. With this turned on, the camera will automatically record over the oldest clips to make room for the newest clips.

I haven't tried them yet but a range of optional add-ons are available for the A129 Pro Duo including a Bluetooth® remote control that can be mounted in a convenient location on the car dashboard to allow drivers to start emergency recording manually to safely protect important events from being overwritten with no distractions from the road.

Other optional add-ons include an integrated GPS receiver to record speed and route data in the video file allowing compatible viewers to display the data on playback. This also

synchronises the camera's clock so all evidence is correctly time stamped.

Another VIOFO compatible add on is the Circular Polarizing Lens, which can reduce reflections and glare from the window glass and road surfaces to improve image quality further. In addition, HK3 could support parking mode and automatically turn on and off so the camera never misses a thing and the VIOFO high-quality microSD card allows recording to be smooth and provides plenty of space to hold clips.

I will have installed the rear-facing camera by the time you read this. The only reason I hadn't done it was that rather than stick it in and leave an unsightly wire hanging and getting in the way, I plan to use the enclosed trim tool (it comes in the box) to help me remove the trim and get the wire neatly hidden away.

When it comes to price, you're not going to be expecting a twenty quid fuel station special are you? However, you really do get what you pay for with a dashcam. The VIOFO A129 PRO DUO is available via Amazon at £229.99, which given the quality on offer here is real value for money.

More information on the complete VIOFO A129 range from www.viofo.com/en

BURTON

Fast mail order worldwide.
Order online.
www.burtonpower.com

Order
Online

or telephone
0208 518 9121

www.burtonpower.com

Order from our mobile
friendly website!

- Secure online ordering
- Tuning Guides
- Over 4000 product photos
- Flick Through E-Catalogue

Worldwide Delivery
to over 120 countries using
approved courier services
and shipping

sales@burtonpower.com

Easy Mail
Order.

Just call
us!

Tel: 0208 518 9121

- Open Mon-Fri - 8.30am - 6.00pm
- Saturday 9.00am - 5.00pm
- 14 Day full refund return policy*
- Free Mainland UK Delivery on orders over £100
- Free Technical Support



Come and see us!

- Close to London's M25 & M1
- FREE Parking outside door
- Open Monday - Saturday
- Over 100,000 parts in stock!
- Experienced Staff
- Extensive Showroom

All prices include VAT. Prices correct at time of going to press but subject to alteration without notice. E&OE.



Telephone, visit website or call in at our store for your FREE! Burton's Catalogue



GAZ Adjustable Dampers

FROM (each) Available for most Fords
£65.00

Bump & Rebound Adjustable

Polyurethane Bushes

Powerflex & Superflex bushes are available for almost all Fords

www.burtonpower.com/suspension

Pipercross Air Filtration

Pipercross' unique foam filter provides superior filtration and requires less frequent cleaning than other brands.

www.burtonpower.com/filters

Water Rails

Raceline Water rail - Zetec E	£209.95
Raceline fitting kit - Zetec E	£9.00
Retroford Water rail - Zetec E	£216.00
Raceline Water rail - Duratec HE 14	£255.26
Raceline fitting kit - Duratec HE 14 water rail	£9.14
Retroford Water rail - Duratec HE 14	£264.00

Comex Cooling Fans

Various sizes and kits available. Suck or blow, high power or Slimline

FROM
£55.99

www.burtonpower.com/cooling

Mocal Fuel Caps

Flip top fuel caps

Monza	£51.50
Aero (flush)	£51.50
Aero (flush) lockable	£99.50
Aston	£149.95

Facet Fuel Pumps

Fuel Pump 3psi	£31.99
Fuel Pump 4 - 5.5psi	£43.50
Fuel Pump 7psi, competition	£35.95
Mounting Kit	£5.65
Fuel Pump Kit 4 - 5.5psi	£76.60
Fuel Pump Kit 6 - 7.25psi Red Top Works	£81.50

www.burtonpower.com/fuel

Zetec Alternator Kits

FROM
£273.00

40 amp Silver Top £273.00
Black Top £312.00

Odyssey Sealed Batteries

Fully sealed. Mount any way up	
Can be safely mounted in boot	
Compact size	
Deliver more power for size	
14Amp, 5Kg, 400A cranking current	£152.50
26Amp, 9Kg, 685A cranking current	£168.00
37Amp, 12.5Kg, 965A cranking current	£189.95

www.burtonpower.com/electrical

Wet Sump Oil Pan Kits

FROM
£375.00

Zetec E RWD	£441.00
BURTON Alloy - Silver Top	£532.36
Raceline Alloy - Silver Top	£510.00
Raceline Alloy - Black Top	£510.00
Duratec HE 14	£375.00
BURTON Steel - Escort RWD	£475.00
Raceline Alloy	£475.00

Mocal Oil Coolers & Catch Cans

Oil Cooler Rads	
7 row	£58.99
10 row	£59.59
13 row	£66.95
34 row	£205.99
Sandwich Blocks	£32.95
Crash resistant, in-line, oil to water coolers	£229.90
Catch Tanks with sight glass	£104.95

www.burtonpower.com/engines

A full range of engine parts available for all Ford engines including Rear Wheel Drive conversion components for modern engines

Wide range of spares and upgrades for X-Flow, Pinto, Cosworth, Zetec and Duratec engines

SAMCO Universal Silicone Hoses and Fittings

Vacuum tube	from £2.10
Alloy Joiners	from £6.50
Reducers	from £8.50
Elbows	from £9.70
Hose Tape	from £9.95
Straight hose 0.5m	from £11.95
Stainless Hose Clip Set	from £3.25

Standard colours - Black, Red, Blue. Other colours to special order.

Brake Accessories

FROM
£57.50

Goodridge Braided Steel Hose Kits	from £57.50
Comprehensive range of pipe fittings, bends and unions. Brake pad fitting kits available for most Fords.	
Brake Pipe Flaring Kit	£24.00
Brake Pipe Clamp - Heavy Duty	£11.00

Brake Kits

HiSpec	
4 pot 245x13mm road brake kit:	
Cortina Mk3/4/5	£450.00
Escort Mk1/2	£450.00
4 pot 245x22mm road brake kit:	
Cortina Mk3/4/5	£450.00
Escort Mk1/2	£450.00
4 pot 260x20mm road brake kit:	
Escort 1/2/Capri	£500.00
Cortina Mk3/4/5	£500.00

www.burtonpower.com/brakes

Jetex Universal Exhausts

Build your own performance exhaust with universal straight pipes, angles and silencer boxes. Ideal for competition use. All standard components available in aluminised/mild steel with selected items in stainless steel.

www.burtonpower.com/exhausts

FROM £68.95	
Hand Held Portable	from £68.95
Mechanical System	from £324.95
Electric System	from £415.90

www.burtonpower.com/safety

Millers Nanodrive Oils

Fully Synthetic Oils

1 litre Gear Oil	from £16.06
5L Engine 0W50	£72.50
5L Engine 5W50	£72.50
5L Engine 10W50	£71.50
5L Engine 10W60	£79.90
5L Engine 20W50	£48.00
5L Gear Oil 75W90	£83.50
5L Gear Oil 75W140	£79.90

www.burtonpower.com/sundries

Use the Quick Links

Find your part quickly on our mobile friendly website

to find more products on our website. Search by category, brand, fitment, engine and model

Follow us on Facebook



Online Shopping: www.burtonpower.com

Showroom and Sales: 617-631 Eastern Avenue, Ilford, Essex IG2 6PN United Kingdom

Close to London's M25 and M1

JFG Classics

Historic charm with modern engineering

INTRODUCING THE

JFG AK SS

ANOTHER IMPRESSIVE PACKAGE

Contact **JON FREEMAN**
to book your test drive
and talk **JAGUARS**

Unit 51, Ivatt Way, Westwood Industrial Estate, Peterborough, Cambridgeshire PE3 7PN
Tel **01733 267 633** Website www.jfgclassics.co.uk

Classic Seats from just **£219.95** PAIR **SEATING SOLUTIONS FOR YOUR KIT CAR**



BAD BOY CLASSICS

Also available heated!

All seats include universal design runners

HARNESSES

Available in 3 or 4 point fixing in Black, Red or Blue

Visit our new warehouse outlet open to the public just off junction 9 of the M1 **01442 219145**
www.bbclassics.co.uk

Unit 2, Lantern Commercial Centre, London Road, Flamstead AL3 8HG

SPOTTED THIS MONTH

Here are some more little snippets that tickled our fancies this issue. It's called **Spotted This Month** because, 'spotted this eight weeks' would just be silly!

ELECTRIC AVENUE

I am gagging for a go in the first commercially available electric kitcar, the Chesil E. I'm just waiting for Chesil's owner, Westfield Sports Cars to give me the nod, and before anyone pipes up with 'I think you'll find', yes I do realise that there have been quite a few other kitcars powered by leccy over the years, but most were one-offs and not put into full time production.

I still have hairs on the back of my neck standing up when I think about that brilliant electric MK Indy produced back in about 2007 by Phil and Baz-era MK.

The kitcar industry is perfect for electric power. Lightweight vehicles that don't look like my four-year old grandson has designed them.

As I write this article there are currently 170,000 electric cars registered in the UK. Quite how the National Grid is going to cope when that figure becomes, 370,000, 570,000, or even the magic million, is anyone's guess. Diesel generators maybe? Er, perhaps not ...I remember I was at a future energy event last year and I upset a pompous Australian bloke who was the inventor of some new-fangled gadget on display by asking if he had a petrol generator behind his stand. He did not see my joke in the slightest and I thought he was going to chuck me off his stand.

There are only 26,000 public charging points around the UK, of which just 3000 are the so-called 'rapid' chargers (to be rapid a charger has to be 100kW and above). Tesla have ultra rapid chargers but only for Tesla owners, to use.

Hydrogen is often touted as an alternative to electricity and there's no doubt that many people do believe in it being the way forward.

Trouble is, to get the right stoichiometric (Google it!) ratio (air/fuel balance to you and me) means that you double the NOx (nitrogen dioxide) pollutant.

To counteract this, you could double the amount of air but then you'd have a car that would do the 0-60 sprint - eventually!

I'm sure that there are very clever people in white coats working on the issue though! www.westfield-sportscars.co.uk



MOST EXPENSIVE SECONDHAND REPLICAS EVER?

At the Autosport International Show in mid-January I was intrigued by this amazing Bugatti Veyron replica taking pride of place on the Totalheadturners stand.

The car was built in Poland over several years and uses Audi A8 mechanicals including its 4.2-litre engine. Sure, an Audi V8 is a powerful tool, probably delivering around 400bhp, but it's still a bit down on the Veyron's 1001bhp.

The £250,000 asking price prompted me to wonder if that made it the most expensive secondhand kitcar, but after some thought, I don't think it is. A Cameron Millar Maserati 250F replica would easily fetch 500 grand; while I fancy there's been a few moody C-Types passed off as the real thing over the years, meaning they undoubtedly changed hands for over a million quid.

As it is, a C-type with an aluminium body from a respected maker, not pretending to be anything it isn't, would easily match that £250,000 figure!

CODFORD MEMORIES



Keith Whatley from Dorset wrote in to tell us he'd enjoyed the Mini 60th feature in the Nov/Dec 2019 issue, which was nice of him.

He also took the time to enclose some photos. He used to work at Codford Motor Company back in the sixties as a paint sprayer and it was he who had painted the Trickett-designed Codford Mini in the albeit grainy photo here. He's the one in the white shirt.

SIXTY YEAR GAP!

Ken Baker is a friend of mine who lives in the Croydon area. He's a prolific owner of kitcars, some several times over. Even he has lost count of the total number of cars he's owned over the years.

While at Ken's house having a nice cup of coffee (thanks, Ando) before Christmas, he told me an incredible story about a Porsche 356 he originally owned way back in 1959.

Ken was living in New Zealand for a while in the fifties and one day he was admiring a Porsche 356 Coupe parked in a street in Wellington. The owner approached and chatted to Ken and kindly offered him a ride in the car which was eagerly accepted.

The owner even offered Ken a drive, which he again accepted with alacrity. At this point Ken realised that his next car had to be a Porsche!

Upon returning to England a few years later, Ken settled in Ayrshire, Scotland and then went about advertising for a secondhand Porsche 356 Coupe to replace his 1959 Mini (a new-ish car then).

He subsequently found a very nice blue 1955 Porsche 1500cc Pre-A model.

A year or two later, having really enjoyed the car, our Ken went off on his travels again, this time to Africa and had to reluctantly sell his 356.



A young Ken pictured with his 356 in 1959 and bottom left, Ken with the car's latest owner SIXTY years later!

Sixty years have now elapsed and (you know where I'm going with this, don't you? – Ed) one day recently Ken received a letter in the post, quite out of the blue, asking if he was the Ken Baker who had previously owned a blue Porsche 356 in 1959.

The enquirer had Ken's old home address in Scotland, the registration number of the car, and Ken's then work address, which was at a private school in Ayrshire, so had clearly been doing his homework.

It turns out that the current owner, who also lives in Surrey and who has himself owned the car for 30 years, has been compiling a detailed history of the car.

So, one more gap in its history has now been filled and Ken was able to provide many photos of the car when it was in his stewardship. An amazing and heartwarming story, I'm sure you'll agree. Anyway, I'm off to see Ken's latest newly built Royal Sabre ...



RARE SCOTTISH KIT

I was having a rough tally-up the other afternoon, and I suspect that Dundee-based ADO might be only the 25th kitcar manufacturer to hail from north of the border.

The Austin Healey Sprite was introduced in 1958 and offered a winning formula – a strong monocoque structure, a robust and tuneable engine and easily modified brakes and suspension.

It brought sportscar performance within the reach of many car enthusiasts. In the early days, Speedwell pioneered the 'performance kit' and today Frontline Developments and many others continue in the same spirit of development.

Apart from the ability to improve the mechanical basis of the car, unique to the Sprite and Midget is the potential to change its looks without compromising its basic structure, Sebring being the most famous, but there have been others.

Building on this history, with inputs from Douglas Anderson, Clark Dawson and celebrated kitcar designer, Richard Oakes, the new ADO coupé from Dundee continues the Sprite's development.

The ADO coupé, like the Sebrings of the sixties, is an attractive, small capacity and potentially high-performance car using the best and most up to date technology.

Standard or Retro Mod. Re-engineering the Midget or the Sprite involves replacing or modifying the major components such as engine, gearbox, suspension etc with modern alternatives. The options are endless. Or you could keep it standard.

Clark Dawson, the engine transplant specialist, has designed a new engine installation. A common conversion has been to replace the cylinder-head on the A-Series engine with one from the BMW K-Series motorbike engine.

This unit is a lightweight jewel so instead of using only the cylinder-head Dawson has used the complete engine, which



The 'A' of ADO, Douglas Anderson at the launch of the ADO coupé in Dundee, recently

fits the engine bay perfectly.

As the motor sits flat and low, it improves the car's handling, brakes, steering inputs and overall performance. The conversion involves a new flywheel and a simple adaptor plate between the existing gearbox (MG 1500) and the engine, and new engine mountings. The fuel system and electronics from the motorbike are used in their entirety.

To complete the ADO a new shape has been penned, drawing on the styling cues of the fifties and sixties highlighted by the Thermal Efficiency class for small makes at Le Mans back in the day.

The legend that is Richard Oakes has produced a fresh and evocative shape which is aerodynamic, elegant and offers a bright interior.

The car will be available fully built or in kit form although prices have yet to be announced. Watch this space ...

Heating & Aircon • Mechanical Parts • Interior • Braking & Clutch • Exhaust Systems

DON'T MISS OUR NEW CATALOGUE AVAILABLE NOW!



**OVER 6,000 PRODUCTS AVAILABLE
DOWNLOAD OR ORDER YOUR COPY FROM OUR WEBSITE**

Fans • Switches • Electrical • Fan Systems • Hoses & Clips • Trim • Mirrors

01580 891309 - 01580 448007 - 01580 448017

**ALWAYS 116-PAGES, ALWAYS VALUE FOR MONEY
AND WE'VE ALWAYS BEEN £4.95 PER ISSUE (NO PRICE
INCREASES) OR JUST £29* UK ANNUAL SUBSCRIPTION.**



*Dear
Reader*

**Thank you
so much for buying
this issue of TKC Mag.
If you don't already
subscribe, just £29*
gets you a year's
entertainment.**



**You'll normally receive your copies before they are published in the shops
and each issue is delivered to your doormat and you don't pay postage.
Because we're a niche title we're often hard to find on-shelf in certain
parts of the UK; by subscribing you get every copy delivered.**

***£29 is a UK only offer as sadly we can't make this price available to our overseas readers but
the current favourable exchange rate means we are even better value for money...**

European rate - £46 - Rest of the World Rate - £65 - We use AIRMAIL post. FILL IN THE COUPON BELOW

Alternatively - you can phone us - 01435 866 068

OR - visit our online store - http://www.totalkitcar.com/tkcshop/index.php?cPath=71_26

If you prefer 'print-on-paper' old skool magazines,
then fill in this form and you'll get each issue of
TKC mag delivered to your door. What's more; UK
subscriptions are POST FREE.



VISA VISA DEBIT MASTERCARD

NO / / /

Start date Expiry date

Security No.

Signature

Name

Address

.....

..... Post code

Tel No

Email

Post to: TKC; 26 Uplands Park, Broad Oak, Heathfield, East Sussex TN21 8S



Visit our website www.totalkitcar.com No COVER PRICE increase EVER - Still £4.95

(*UK only)

N-D-19



PROUD PARTNERS



GAME CHANGER

PROXES TR1

New Proxes TR1 tyres have 16% better braking
in the wet than their predecessor.

www.toyo.co.uk

 [toyotires_uk](https://www.instagram.com/toyotires_uk)

 [ToyoTyreUK](https://www.facebook.com/ToyoTyreUK)

 [@ToyoTiresUK](https://twitter.com/ToyoTiresUK)

TOYO TIRES

Kit Spares Order online today
www.kitspares.co.uk
 NEXT DAY DELIVERY ON MOST ITEMS

Easy to fit
 Bonnet Catches & IVA Compatible

Come & visit the Kit Spares Shop & Showroom.....

Over 900 products now online

NEW Carbon Fibre range
 NOW IN STOCK

WIDER SEATS NOW AVAILABLE
 GRP seat ONLY £294.00

NEW ATR Throttle Bodies
 HEAD LAMP CASES
 AVAILABLE IN BLACK OR CHROME

TR5 MOTORSPORT EQUIPMENT
 Seat Belts
 Available in Black, Blue, Green, Orange, Yellow & Red

MOTUL NOW AVAILABLE

www.kitspares.co.uk

Kit Spares, Maun Way, Boughton, Ollerton, Nottinghamshire, NG22 9ZD.
 T: 01623 860990 | E: info@kitspares.co.uk
 Follow us @Kitspares Prices and Specifications were correct at time of print

WOOLIES

Trim, Upholstery & Fittings
 for Kit Cars

www.woolies-trim.co.uk

OR ASK FOR LATEST CATALOGUE

WOOLIES (TKC),
 Whitley Way, Northfields Industrial Estate,
 Market Deeping, Peterborough PE6 8AR
 Tel: **01778 347 347** Fax: **01778 341 847**
 email: info@woolies-trim.co.uk

TORNADO SPORTS CARS Est 1984
 The Worlds Leading Manufacturer of Ford GT40 Replica Cars



GT40 turnkey cars, component packages, parts and services.
 For full details please visit our web site at :-
WWW.TORNADOSPORTSCARS.COM
 Email: INFO@TORNADOSPORTSCARS.COM
 TEL: 01562 820372

Owner: Valentine Fry, Switzerland

astrali

Steering wheels for Sports,
 Vintage & Classic Cars



FROM JUST £44.95

01442 219145 The Revolution Re-established

Available online at:
www.astralisteeringwheels.co.uk

Unit 2, Lantern Commercial Centre
 London Road, Flamstead, AL3 8HG

DON'T FORGET TO VISIT OUR ONLINE BOOKSTORE AT WWW.TOTALKITCAR.COM!

The Study

RECOMMENDED READING



CAR SUSPENSION

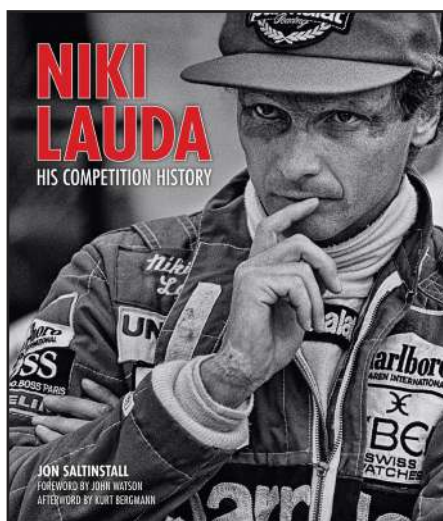


Title: Car Suspension – Repair, Maintenance and Modification
Author: Julian Spender
Published by: Crowood Press
ISBN: 1 785 006 616
RRP: £22

This book should be right on the radar of all TKC Mag/totalkitcar readers. I agree, that there are loads of books on suspension and how to set it up, but there's always room for a good one like this.

It provides an easy-to-follow practical guide to maintaining, repairing and modifying different types of cars.

With over 170 illustrations it really does give handy pointers for the novice, although for more experienced readers it caters for them too.



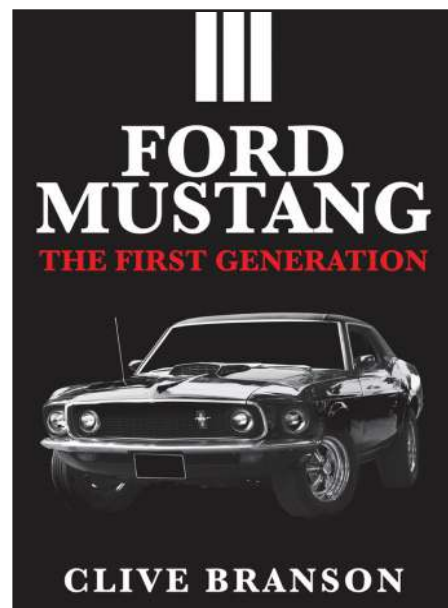
Title: NIKI LAUDA – HIS COMPETITION HISTORY
Author: Joe Sartinall
Published by: EVRO Publishing
ISBN: 1910505465
RRP: £60

When, during the tumultuous 1976 Formula 1 season, Niki Lauda nearly perished in a conflagration at the Nürburgring and then, severely scarred, courageously fought back to race again only six weeks later, the Austrian earned admiration and adulation world-wide.

While the saga of that year, and the battle with James Hunt for the World Championship, has been told many times, the rest of Lauda's racing career has received less attention.

This new book from Evro Publishing, redresses that by documenting, race-by-race, his diverse driving career from 1968 to 1985. Through detailed dissection of each of his 316 races, in an eclectic mix of cars, a vivid picture emerges of a hugely determined and vastly talented racer who, despite many setbacks, left a remarkable legacy.

All enthusiasts will treasure this comprehensive and richly illustrated examination of Niki Lauda's entire competition history.



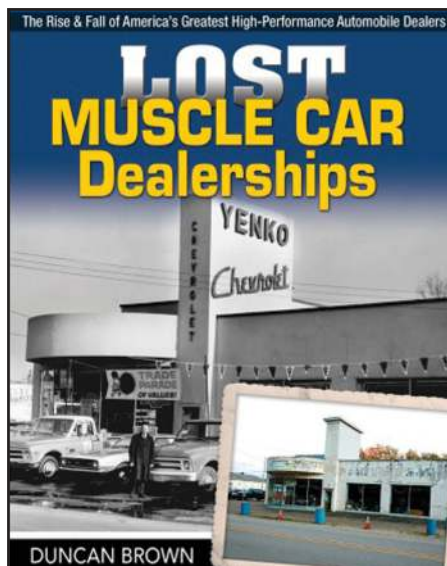
Title: FORD MUSTANG – THE FIRST GENERATION
Author: Clive Branson
Published by: Amberley Books
ISBN: 1445687889
RRP: £14.99

No one anticipated quite how thoroughly the Ford Mustang would catch the imagination of the American public. The 'stang was marketed as the all-American classic and introduced what became known as the 'Pony Car' - an affordable, compact, highly styled car with a sporty or performance-oriented image - and a revolutionary example of automotive design in the United States.

The company made over one billion dollars selling over 400,000 units in its debut year. It took only eighteen months for Ford to hit the million Mustang mark, making it their most successful launch since the Model A. Today's car sales don't even scratch the number of Mustangs sold in their first year. In over fifty years of production, Ford has sold 9 billion Mustangs worldwide.

This book focuses on the first generation (1964-73) and the

evolution of the Ford Mustang. This was an era when Mustang became synonymous with the name Ford and set an unprecedented benchmark for all rivals to follow. Its popularity was an emotional connection based on its unique and adaptable styling, its performance and its affordability.



Title: LOST MUSCLE CAR DEALERSHIPS

Author: Duncan Brown

Published by: CarTech Books

ISBN: 1613254516

RRP: £29.95

Very interesting book where Duncan Brown revisits a glorious automotive era when stuff like Nickey 427 Camaros and supercharged Dodge Demons by Grand Spaulding Dodge terrorised the streets of the USA.

Drag-sponsored cars from Reynolds Buick GMC, Yeakel Plymouth Center and Yeakel Chevrolet were legendary and informed buyers of the day that if they visited their dealership you could soon be driving you home in a screaming-fast muscle car just like the ones that they'd seen at the dragstrip.

Dealers such as Galpin Ford and Berger Chevrolet weathered the storms and survived but most went under unable to adapt to the demands of modern-day car buying.

Brown visits these old places and describes them in detail. An intriguing book.



Title: TATRA – THE LEGACY OF HANS LEDWINKA

Author: Ivan Margolius and John G Henry

Published by: Veloce Publishing (Classic Reprint Series)

ISBN: 1787116306

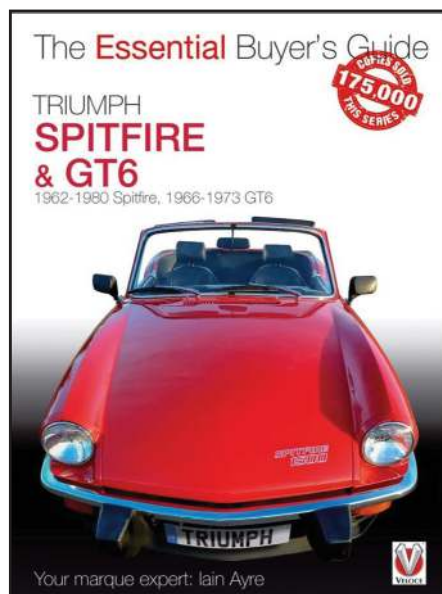
RRP: £30

This new book from Veloce Publishing is actually the paperback version of a title that first appeared in 1990 followed by an updated version in 2015.

For fans of Hans Ledwinka and his Tatra marque this book is going to be manna from heaven. Tatras were models of design excellence and very influential in shaping modern car design concepts, not to mention the development of the Volkswagen Beetle.

I've always felt that the genius that was Ledwinka has been underrated but this book pays him his due respect.

Its appeal is across the board and will suit Tatra fans, automotive historians and casual readers, alike.



Title: TRIUMPH SPITFIRE & GT6

Author: Iain Ayre

Published by: Veloce Publishing

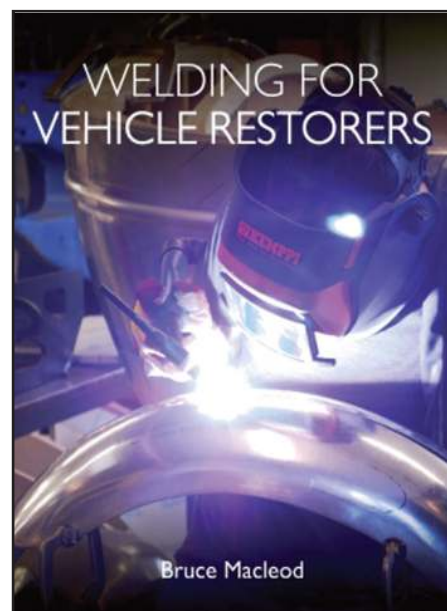
ISBN: 1787114524

RRP: £13.99

Another in the Veloce Essential Buyer's Guide Series, this one focuses on the Triumph Spitfire and GT6.

The book explains in practical language how to apply key checks to spot a bad car quickly, then gives you a comprehensive inspection guide and an in-depth analysis of the various models' strengths and weaknesses.

It provides inside technical information to save you the painful process of learning about Triumph foibles the hard way. It discusses upgrades using the author's own research and includes comprehensive details of club backup and support organisations, as well as model specs.



Title: WELDING FOR VEHICLE RESTORERS

Author: Bruce MacLeod

Published by: Crowood Press

ISBN: 1785006814

RRP: £19.99

The techniques used in welding thin sheet metal, such as on vehicle bodies and/or internal panels are vastly different to those used in welding heavier structures. This new book from Crowood Press covers the various methods of welding used to make and repair sheet metal body panels.

Some types of welding are fairly straightforward, while others require a significant amount of skill. The important thing for anyone wanting to achieve a good finish to body repair work is to start with good preparation and of course, to use the right techniques.

Skill hopefully follows the more you practice. When restoring a classic or kitcar of some value it is worth putting the time and effort into becoming proficient in the use of different techniques as described in this book.

With nearly 200 images and illustrations this excellent book by expert, Bruce MacLeod lists all the equipment and materials required, while describing the different methods of welding and provides a step-by-step practical guidance to help achieve a professional result.



Advertising Index

AB Performance	93	Stoneleigh	46	ProTech Shocks	7
Absolute Horsepower	41	HAHS Ltd	77	Quantum Sports Cars	13
Acewell - Quadtech	13	Hall's Garage	35	Race Car Replicas	58
Adrian Flux	55	Hawk Cars	6	Ravenol	90
Aeromaster Sports Car	94	HoseTechnik	65	Rebel Performance Machines	7
AK Sports Cars	24	Irntam Kitz	13	Ring Automotive	99
AKSS Sports Cars	105	JK Sports Cars	64	Rock Oil	60
Aries Motorsport	IFC	Kingfisher Kustoms	99	RPS Engineering	55
Astrali Steering Wheels	111	Kit Car Buyer	79	R-Tech Welding	20
Autosparks	78	Kit Car Direct/MK	79	Sealey Tools	3
Backdraft Racing	65	Kit Spares	111	Sealey Tools	IBC
Bad Boy Classics	105	Longstone Tyres	102	Seals Plus Direct	114
Bailey Morris	64	Machine Mart	30	Serck Motorsport	88
Banbury Flocking Services	59	Moto Lita	77	Sifab Engineering	35
Better Car Lighting	7	Moto Lita	79	Silicon Hoses	93
Burton Power	104	Partsworld Ltd	54	Simply Performance	95
Car Builder Solutions	108	Performance Unlimited	21	Southern Automotive	13
Club Lotus	55	Peter James Insurance	7	Stakesy's Metal Work Machinery	19
East Coast Fibreglass Supplies	35	Plexus	21	Suffolk Jaguar	79
EBC Brakes	59	Power Torque Engineering	25	Teng Tools	5
EDA	35	Michelin Tyres	40	Tiger Racing Ltd	77
Equilibrium Kitcars	99			Tornado Sportscars	111
ETB Instruments	7			Toyo Tyres	110
Europa Spares	12			Webcon UK	25
Forge Motorsport	94			Westfield Sportscars	OBC
Gardner Douglas Sports Cars	95			Woolies	111
Graham Sykes Insurance	24			ZCars Evolutions	41
Great British Sportscars	35				





www.sealey.co.uk



12V Tyre Inflator + Emergency Puncture Sealant Kit **NEW**

VEHICLE SERVICE 2020

2300W INDUCTION HEATER RAPID HEAT

SEALEY

WIN!
A Yiannimize Autographed Wrapped Toolchest
Enter at www.sealey.co.uk

SEE PAGE 22
MASTER LOCKING WHEEL NUT REMOVAL SET
MODEL NO. SX259

SEE PAGES 26&27
FOR OUR DIAGNOSTIC TOOLS

MODEL NO. VS250

32

VALID UNTIL 31ST MAY 2020

3pc Exhaust Pipe Expander Set



- Model No. VS1668
- List Price £106.45

£69.95 EXC. VAT
£83.94 INC. VAT

430mm Hose Clamp Pliers - Double Jointed



- Model No. VS1678
- List Price £43.95

£29.95 EXC. VAT
£35.94 INC. VAT



100psi

- Model No. MAC10S
- List Price £49.95

£39.95 EXC. VAT
£47.94 INC. VAT

26V 1/2" Sq Drive Cordless Impact Wrench



680Nm Torque

VARIABLE SPEED

Lithium RECHARGEABLE

- Model No. CP2612
- List Price £379.95

£279.95 EXC. VAT
£335.94 INC. VAT

Brake & Clutch Bleeding System

CAR MECHANICS
BEST BUY
2.5L Capacity



- Model No. VS820
- List Price £91.45

£59.95 EXC. VAT
£71.94 INC. VAT

Digital Tyre Inflator with Clip-On Connector **NEW**

- Model No. SA400
- List Price £39.95



£28.95 EXC. VAT
£34.74 INC. VAT

22mm Mechanic's Mat Set EVA

Siegen



NEW

- Model No. S08561
- List Price £25.95

£16.95 EXC. VAT
£20.34 INC. VAT

15pc Combination Spanner Set

Premier



MM

6-22mm

- Model No. AK63015
- List Price £81.45

£49.95 EXC. VAT
£59.94 INC. VAT



ORDER YOUR **FREE** CATALOGUES NOW.



THE WESTFIELD COLLECTION



Classic & FW
SPECIAL EDITIONS
Adrenalin Fuelled Performance

westfield-sportscars.co.uk
sales@westfield-sportscars.co.uk
01384 400077



Westfield XI
Classic Racing Car

Chesil
SPEEDSTER
Iconic 50's Style



chesil.co.uk
speedster@chesil.co.uk

A Westfield Technology Group Company