



# Reliant Kitten Register

**MEWSLETTER 87**

*March / April 2009*



The Register caters for all the under 1 litre Reliant 4-wheeled vehicles plus all of their derivatives: Rebels, Foxes, Tempests, Salamanders, Ciphers, Jimps, Asquiths and all other specials including the Liege.....

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# The Reliant Kitten Register

Rebel parts stock held by: - Adrian Hanwell

New Kitten / Fox / Rebel parts stock held by Brian Marshall

Rebel alternative parts list contact:

Kitten alternative parts list: **\*\*Situation vacant\*\***.

Fox alternative parts list contact: Duncan Bradford

Our Mutual Aid Spares scheme is run for us by Phil Hallam

Tempest Registrar: Martin Seymour

Mewsletter pictures – should be sent to John Pearce

The Register is a member of the FBHVC, which monitors UK & EU legislation and lobbies on our behalf to protect our freedom to use vehicles of all ages on the roads. Readers are invited to show their own support of this worthy cause by becoming members in their own right. Contact the editor for details.

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Web page: <http://www.kitreg.org.uk> or have a look at <http://www.reliantkitten.co.uk>

# Dinky Cars

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**SALES, SPARES, REPAIRS,  
ENGINE RECONDITIONING**

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Our front cover this spring re-introduces a car you have indeed seen before. It is in fact the subject of our “Kitten rebuild in pictures” feature in this edition. My thanks to Rik Borgman for kindly providing the information and the excellent pictures.

I know that Rik is really enjoying reaping the benefits of his labours as he drives the Kitten on a daily basis. There is no doubt in my mind that the satisfaction you derive from driving a vehicle that you have rebuilt from the ground up is a most rewarding experience indeed. Thank you Rik for sharing it with us.

I was going to say "Surprise! Two in the space of a month!" but frustratingly it was I who was surprised when my computer caught fire and, in spite of the back-up procedures that I meant to introduce after my last computer disaster in 1999, some things were lost, including all of my e-mails, and all my e-mail addresses, and the almost complete version of this magazine. So, here I am in the latter half of March struggling to get things together.

I begin with an apology, in spite of doing a last minute extra sheet last time, the dark blue one, I forgot to give you details of our proposed Yorkshire get-together this year. John Metcalfe is the man behind this, and he has kindly offered to save your old registrar from more things to do. So, please give John a ring now if you are interested and for details.

I won't spend a lot of time on it, but you will remember my interest in University Challenge, well now I am getting really worried. On a Sunday morning there is a short 3 minute programme called "Oddbox", and they feature the top ten most unusual stories of the week – do you know that on Sunday the first of February they featured that very episode of University Challenge, remarking on how difficult the questions were and chose the ten meters square compared to ten square meters question as an example. Every mathematician and engineer in the country must be cringing – every child in the land would have known the answer to that one if our education system was anywhere near up to the mark. I'm not going to dwell on my despair but I ask you, just what are we teaching our children?

Moving swiftly on then, I had most of this edition typed up before my trip south in March, and during that trip I collected from John Pearce not only the covers for this edition, but the next one too, thank you John. Susan, John's good lady, has been instrumental in getting me to get organised with a web presence of our own, and while there are still things to do – and I freely admit that it is me that is holding things up – if you have the facilities go have a look at [www.kitreg.org.uk](http://www.kitreg.org.uk)

Rob Spare of P. F. Spare, our friendly insurance broker, tells me that he has once again secured for one of us the prize of a year's free insurance. To qualify you have firstly to be a subscriber to this Register, and secondly to have a current policy with the Cherished Car Underwriting Agency through P. F. Spare, and that will allow your name to be put in a hat, from which the winner will be drawn. Many thanks Rob for again being able and willing to offer this generous support.



My thanks to Thomas Touw for the above picture

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I have given Terry Horler a bit of time off in this edition, his Rebellious Conduct article will be back next time, enjoy the break Terry.

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You are allowed to comment you know! It occurred to me that we have a regular Rebel bit, a slightly less regular Fox bit, the occasional Liege or Tempest bit, but our poor Kittens risk getting lost in between!

Well no more!

As the beginning of an attempt to rectify those shortcoming I thought I would share this with you. Back in 1981, the November issue of a publication called "Motorists guide to new and used car prices" happened to have a blue Kitten estate on its front cover – its registration plate simply said KITTEN. It did have a lot of clearance between the top of both the back and front tyres and their wheel arches – a good bit more than my not very accurate 3 or 4 fingers width by the looks of things!

The relevant bit of text on page 113 makes mention of the suspension improvements that were introduced in October 1976 when the De Luxe version came out, when the heated rear window and a reclining passenger seat became standard.

They go on to tell us that in the October of 1977 the basic version was discontinued, inertia reel seatbelts were introduced, and new mirrors, inside as well as out, were the order of the day. Along with new front seat catches.

Optional extras originally included a laminated windscreen at £38, Alloy wheels at £87, and a rear screen wipe / wash for the estate car at £45.

Ahh, those were the days! I seem to recall the rear screen wipe wash system costing well over £120 when I enquired in the mid 80's.

Back in 1976 a new Kitten would have cost £1812, while by 1981 a saloon would set you back £3425 and an estate car a whopping £3775, which brings home just how expensive they were, and what fantastic value they are today. Can any of that select group out there who have owned their Kitten from new tell us what they paid for the car? and when, and what if any options it had?



# Foxes Den

Not for the first time Duncan Bradford has kindly sent me the latest version of his "Living with a Fox" story, which in its latest form, January 2009, runs to 29 pages (of A4). It began in October 2004, was updated 3 times in February 2005, December 2005, and April 2007, and had major additions and amendments: June 2007, September 2007 and November 2008.

I have hesitated in the past, not being able to decide if I should serialise it, just draw extracts from it, or publish the whole thing in a bumper Fox edition of the Mewsletter. I still cannot make my mind up. What I do not want to do is ignore it. In Duncan's words then :-

First collated in 2004, and most recently added to in November 2008, these rambling jottings are aimed at anyone interested in Reliant Foxes. If you've already got one you may well already know most of the following and more, and you probably disagree with the rest, but please read on and feel free to put me right.

If you've not yet become a Fox owner, then don't let this put you off; go out and find one. Basically I've decided to bundle up all I can think of that I've picked up over the years and which may be of interest. I intend to continue to update it as I learn or remember stuff., and as other owners pass stuff on.

I bought my blue Fox pickup new in 1984, and must admit largely neglected it and ran it into the ground for far too long. Today, although mechanically it is largely overhauled, it looks a wreck. 100,000+ miles of short journeys and 20+ years of standing on the street outside the house have taken serious toll on the exterior and interior.

Can you drive it on a motorbike licence? As this outdated question is often asked I'll give you the answer before you read on: 'No'.

No enclosed vehicle can be driven on a motorbike licence. However if you are licensed for Category B1, you may drive 3- or 4-wheeled vehicles weighing under 550kg. See the DVLA website for details, and check the categories included on your individual licence as they do not always include the same categories.

Robin and Rialtos weigh in at 436kg, the Kitten at 533kg. The Fox pickup base vehicle is a much more sturdy design, hence its 640kg rising to 994 kg for the full Hardtop or van version. [Yes, pretty near a tonne!]

## **Love at first sight?**

The good points:

Driving a Fox is a revelation. The excellent chassis, positive steering and good power to weight ratio add up to a very safe feel. A vehicle that will do what is asked precisely, keeping good contact with the road, and giving positive feedback.

Foxes are simple to work on, economical and relatively roomy. The galvanized chassis and glassfibre body mean they can last indefinitely. Recently however, I have seen three Foxes with significant rust despite the galvanising, and heard of several more. This seems to be commonest around the suspension turrets – a vital area, not easily noticed.

Most mechanical parts are readily available and cheap. Apart from the vulnerable mild-steel doorframes most body and interior items are either easily repaired or common to other models. Stainless frames are again available [in 2008]. People smile and point as you drive past, especially the young.

However:

Wheels are specific to the Fox [and late Viva HA vans] and now unobtainable. There is not much choice of tyres now as the size is possibly only shared with Mk I Fiestas and something foreign that not many people like enough to buy in huge numbers.

A decent respray will cost you anything over £1000. This is because of the labour required to remove the old paint by hand. Don't believe anyone who says they can do it mechanically or with chemicals: any mechanical method cannot account for the fact that the paint is harder than the grp beneath, so as soon as the paint is through, the sander gouges the gel coat, and any chemicals will be absorbed into the gel coat and cause problems further down the line, so its many many hours of expensive hand sanding!

Most Foxes will by now have had a long hard life.

The Reliant 850 engine is a mixed blessing. When it is good it is very good. Otherwise it's probably been worked on by someone who meant well, and really thought they knew what they were doing, but who didn't respect the subtle differences that need to be noted when working on these engines. This was, sometimes, unhelpfully, true of Reliant themselves. The rear axle ratio is Fox-specific. Tripod axles are too high geared to substitute, really, although with a well sorted engine and low profile tyres some have found even the 3.23:1 diff gives acceptable performance.

But please don't be put off by the seemingly negative aspect of what follows. It is intended to help deal with the sorts of problems to be encountered on an ageing vehicle which is suffering from neglect, and suggests some improvements found useful over years of varied use. The many good points of the Fox are largely left to speak for themselves. If you're seriously interested, or just have nothing better to do, you might read on...

First though, four useful contacts.

1] Brian Marshall's Kitten Register: [also for all Kitten derivatives, e.g. Fox]

A must join... Brian has put in years of work and a keen brain getting to know many cars and their owners, and magically manages to distil it all into a regular newsletter, whose contributors cover most technical topics - and much more.

Even more importantly Brian has organised the renovation and refabrication of all sorts of vital parts from bushes to springs; too many to list in fact.

2] The Yahoo group for Fox and Kitten owners:

<http://autos.groups.yahoo.com/group/foxandkitten/>

Post messages to over 100 owners and enthusiasts to swap experiences and expertise.

Just visit the site, click on register, select how you want to receive your emails etc, and join the family.

3] Reliant Express: Tel 01745 855235, mo: 07718 231339

AKA: Brian Hughes, who has a comprehensive stock of spares, especially Fox items, a speedy supply service, and much useful knowledge about parts etc., especially as his trusty delivery van for many years was a Fox.

4] Carwise Reliant Spares: Tel 01226 766039, mo: 07890 156327

AKA: John Copestake, who has a huge availability of spares and knowledge, and has been a great help, and a swift supplier of all these things.

5] R3W – the main forum for all Reliant owners; in fact there is a forum for every model, as well as for other specific areas of Reliant interest. Lots available at: <http://www.r3w.co.uk>

If you own or are considering buying a Fox, the Haynes manual for Reliant Robin and Kitten [no. 436] is going to be a basic bible. A search on eBay may find one for £10 -£20 ISBN 0 85696 696 7

There was a Reliant workshop manual for the Kitten, but not for the Fox, although there is a wiring diagram [phew]. There are very few differences for maintenance purposes between the two models. Apart from the HT-E engine, of which more later.

NOTE THAT FOR SOME REASON BOTH THESE MANUALS AND MOST OTHER PRINTED DATA SOURCES GIVE THE BASIC IGNITION TIMING FOR THE 850 ENGINE AS TOP DEAD CENTRE. IT IS ACTUALLY 10 degrees BEFORE TDC FOR ALL 850 SERIES ENGINES, AND WILL OF COURSE NEED FINE-TUNING WITH THE ENGINE RUNNING.

## OTHER REGULAR MAINTENANCE

Do follow the regular service schedule especially with regard to:

Ball joints: grease until grease appears out of the dust covers at least every 3000 miles or twice a year. It is best to do this with the weight off the wheel for the upper joint and the car on its wheels for the lower joint. A degree of vertical play develops between the ball and its seat, and this ensures that the gap is filled with grease which can then circulate easily.

Engine oil and filter change at least once a year. It seems as though a 'classic' 20W/50 multigrade is far better than a modern spec 10- or 5-rated oil. On engines worn to the point where the oil lamp flickers on at idle speed changing to a classic oil often results in the pressure improving enough to extinguish the lamp. This has the dubious good effect of making you feel better without spending money on fixing the cause of low oil pressure, which is usually terminal wear. By this I mean wear that will at some point in the future result in termination, not just wear on some mythical set of terminals somewhere in the depths of the engine bay.

The necessary toolkit for Fox maintenance is relatively simple, and based on AF spanners, though some metric sizes crept in when my Fox was assembled [only on the nearside, oddly - presumably the guy on that side of the assembly line kept dipping into the wrong bucket].

I don't often recommend Halfords, but they do a slimline 'Pro' range of AF sockets which get into places others struggle to reach. Otherwise buy the slimmest half-inch socket you can find for prop-shaft and manifold fixings, and even then you may need to file the walls thinner.

If you're really taking things apart most fixings to the body are achieved by setscrews into captive nuts. The little plates that these nuts are captively spot-welded to are generally riveted to the body. Trying to remove a recalcitrant screw can decapitate it at a weak spot-weld, loosen a weak rivet etcetera. Some plates are riveted at a non-flat plane, so the screw enters cross-threaded. Drilling out the rivets may help, especially if your local garage doesn't mind spot-welding a few spare nuts onto plates for you. An angle-grinder may be useful too.

If you are new to the idea of looking after an ageing and unusual car you might need to know that patience, perseverance, the ability to step back and think sideways plus an ample supply of something at least as strong as coffee solves most problems. If that doesn't work try a phone call or email to someone who has been there before. It will at least give someone a laugh if nothing else.

I personally have always found that WD40 is much better than cheap alternatives for releasing seized and rusted parts. A container of derv fuel is good for long term soaking, as it's pretty 'creepy' stuff.



For your own sake, cleaning up all fixings and the liberal use of grease or Copper-ease on reassembly will make things so much easier next time. Remember that copper compounds are primarily anti-sieze, anti-creep, rather than lubricants in the true sense, so use the correct grease where it's needed. It's worth a note that only wheel-bearing grease should be used to lubricate the handbrake cable, as some other greases actually attract water and rust the cable, leading to fraying, usually just before the MOT test.

For access to the lower engine area it can be a worthwhile exercise to adapt the inner wheelarch panels to echo those on Scimitars, ie make them removable. It honestly doesn't take long, and can save so much time:

Wheel removed, cut horizontally back from near the top of the suspension turret towards the bulkhead, then follow the sloping line of the bulkhead down to the chassis., leaving a 2cm margin. I've used an angle grinder and hacksaw to remove this diamond shape panel. Rivet or bond on a couple of tabs of glassfibre or aluminium, which can then be attached to the adjacent remaining body panel material with self tappers. Picture-sequence available on the Yahoo group site.

Duncan Bradford Norfolk No 046

## Another Quick Fox Mod!

My Fox bumper was held on at the ends with bolts & nuts as well as the two fixings in front of the radiator accessible after removal of plate under the bonnet. I am sure someone must have won a prize for this design. When you tried to remove the bumper by lifting over bolts it usually cracked the bumper (mine had a previous repair already). This was by no means a quick job and I decided on a solution.

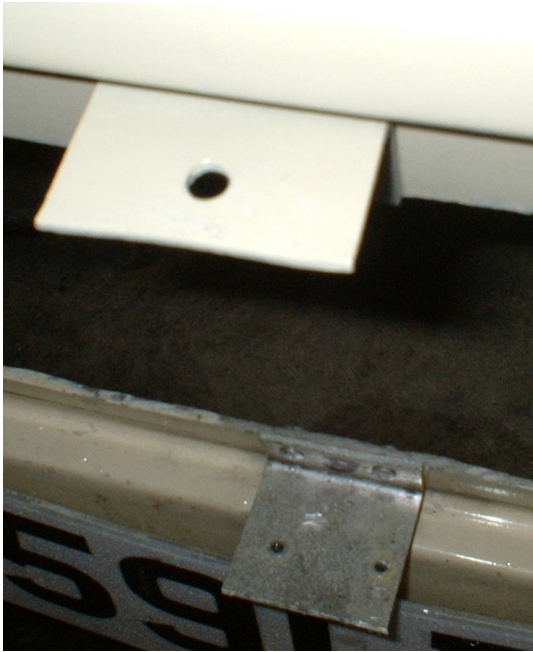
The two end bolts either side were cut & sleeved to the correct length to fit just behind the bumper and a hollow stud bolt was tapped & secured at correct spacing, I think they were from an electrical radio chassis spacing.



Two aluminium plates were riveted to the body in the centre of the bumper to just go inside the bumper. The top one tapped M6 and the bottom one drilled for two stainless self-tappers. The original long fixing

bolts either side of air intake were left as a guide for re-fitting and sleeved with a piece of fuel hose at correct spacing to prevent bumper going on too far back.

The bumper can then be re-fitted using the two original long bolts as a positioning guide, bumper is then held by two stainless screws underneath, a machine bolt on top with bolts instead of nuts either side end. This does not involve stretching the bumper at all.



The outward end result looks the same except for one visible machine screw on top. Its all held as secure as before and the bumper can be removed in a couple of minutes at the most without fishing through access hole. In my case this is very handy as its now impossible through access hole due to electric cooling fan just in front of radiator.



Les Smith, No.378 Ashford in Kent

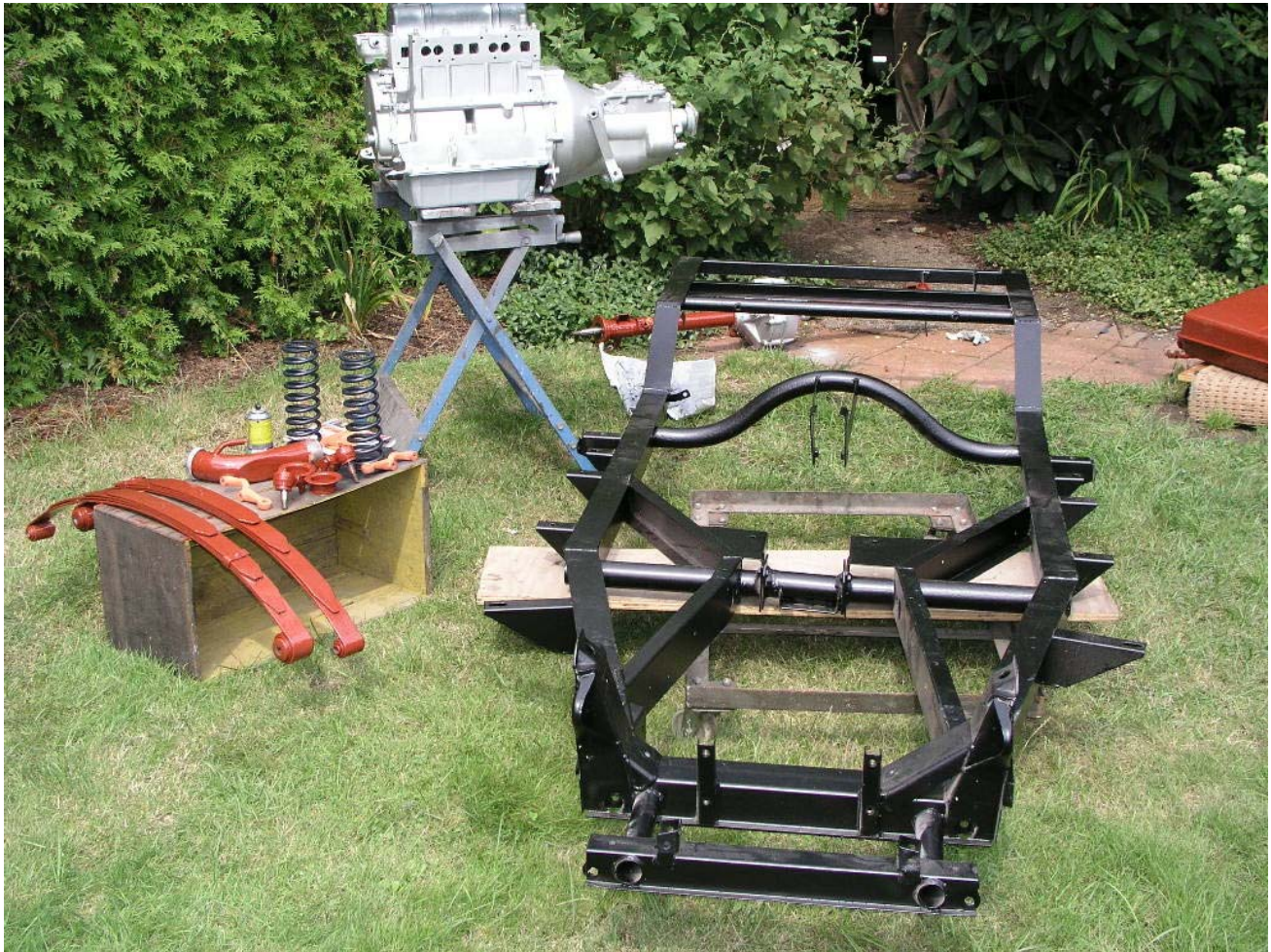
## A Kitten rebuild in pictures

In the beginning – well, after the respray!









I just love it when you get a series of self explanatory pictures, don't you? On the previous page you see the bare rolling chassis, indeed, fuel tank excepted, the complete car minus the body, then above, the results of many many hours of hard work. I'm certain – in spite of this memory of mine – that Rik told me the chassis was shotblasted before being galvanised, and then painted. What I never did ask was what paint they used? I know that not many paints will take to freshly galvanised steel.

Also, just for the record, I'd love to know how many hours the operation took. Did you keep a record Rik? Or can you remember roughly?

Next comes the fun of putting it all back together, a more rewarding and cleaner task than the dismantling process I know. I have never had the body off any of my Kittens (two of the three saloons I ever owned had had comprehensive body off rebuilds carried out by the person I bought them from, (Keith Parrott and Donald Jack respectively, just for the record, and yes I am still in touch with them both even though they both subsequently sold their Kitten estates that they had also rebuilt to other people – I would much rather have had their estate cars, and they knew that, but were holding onto them at that time!) , but I have taken the body off a Robin back in 1976 or 77, and several Rebels over the decade or so after that.





Rik at the wheel during the rebuild, circa 2006 I believe







Ahh yes, that does look like two pipes on the top of the float chamber.





It does suit those 12" wheels, don't you think?





I ought to check that Rik has created some place safe for any fuel overspill to go. Petrol pouring out of the top of an SU float chamber, completely overwhelming the small aluminium drip tray that was originally fitted for the purpose of collection of said spillage can be woefully inadequate. I know of several Kittens that have been destroyed by fires more than likely to have been caused by such a shortcoming.

I know that we have covered this in the past, even quoted part numbers for the appropriate alternative float chamber lid, and I believe even talked about how to modify the original to make it safe – all of which reminds me that a booklet of approved and recommended mods ought to be a priority.

Perhaps I ought to delegate, or at least invite you to make your recommendations – please help me with this – together we can do it – yes, this year, even if we don't get it published till next.

What are the five most important things you should change on a Rebel, Kitten or Fox, assuming it was original?



I do like it when you get a good setting for a picture, thanks Rik, well done, I hope that you have many years and thousands of kilometres pleasure and enjoyment from the car.

# FIVE MINUTE MANAGEMENT COURSE

## Lesson 1:

A man is getting into the shower just as his wife is finishing up her shower, when the doorbell rings.

The wife quickly wraps herself in a towel and runs downstairs.

When she opens the door, there stands Bob, the next-door neighbour.

Before she says a word, Bob says, 'I'll give you £800 to drop that towel.'

After thinking for a moment, the woman drops her towel and stands naked in front of Bob, after a few seconds, Bob hands her £800 and leaves.

The woman wraps back up in the towel and goes back upstairs.

When she gets to the bathroom, her husband asks, 'Who was that?'

'It was Bob next door' she replies.

'Great,' the husband says, 'did he say anything about the £800 he owes me?'

Moral of the story:

If you share critical information pertaining to credit and risk with your shareholders in time, you may be in a position to prevent avoidable exposure.

## Lesson 2:

A priest offered a Nun a lift.

She got in and crossed her legs, forcing her gown to reveal a leg.

The priest nearly had an accident.

After controlling the car, he stealthily slid his hand up her leg.

The nun said, 'Father, remember Psalm 129?'

The priest removed his hand. But, changing gears, he let his hand slide up her leg again.

The nun once again said, 'Father, remember Psalm 129?'

The priest apologised 'Sorry sister but the flesh is weak.'

Arriving at the convent, the nun sighed heavily and went on her way.

On his arrival at the church, the priest rushed to look up Psalm 129. It said, 'Go forth and seek, further up, you will find glory.'

Moral of the story:

If you are not well informed in your job, you might miss a great opportunity.

### **Lesson 3:**

A sales rep, an administration clerk, and the manager are walking to lunch when they find an antique oil lamp.

They rub it and a Genie comes out.

The Genie says, 'I'll give each of you just one wish.'

'Me first! Me first!' says the admin clerk. 'I want to be in the Bahamas , driving a speedboat, without a care in the world.'

Puff! She's gone.

'Me next! Me next!' says the sales rep. 'I want to be in Hawaii , relaxing on the beach with my personal masseuse, an endless supply of Pina Colodas and the love of my life.'

Puff! He's gone.

'OK, you're up,' the Genie says to the manager.

The manager says, 'I want those two back in the office after lunch.'

Moral of the story:

Always let your boss have the first say.

### **Lesson 4**

An eagle was sitting on a tree resting, doing nothing.

A small rabbit saw the eagle and asked him, 'Can I also sit like you and do nothing?'

The eagle answered: 'Sure, why not.'

So, the rabbit sat on the ground below the eagle and rested. All of a sudden, a fox appeared, jumped on the rabbit and ate it.

Moral of the story:

To be sitting and doing nothing, you must be sitting very, very high up.

### **Lesson 5**

A turkey was chatting with a bull.

'I would love to be able to get to the top of that tree' sighed the turkey, 'but I haven't got the energy.'

'Well, why don't you nibble on some of my droppings?' replied the bull. 'They're packed with nutrients.'

The turkey pecked at a lump of dung, and found it actually gave him enough strength to reach the lowest branch of the tree.

The next day, after eating some more dung, he reached the second branch.

Finally after a fourth night, the turkey was proudly perched at the top of the tree.

He was promptly spotted by a farmer, who shot him out of the tree.

Moral of the story:

Bull Sh\*t might get you to the top, but it won't keep you there..

## **Lesson 6**

A little bird was flying south for the winter. It was so cold the bird froze and fell to the ground into a large field.

While he was lying there, a cow came by and dropped some dung on him.

As the frozen bird lay there in the pile of cow dung, he began to realize how warm he was.

The dung was actually thawing him out!

He lay there all warm and happy, and soon began to sing for joy.  
A passing cat heard the bird singing and came to investigate.

Following the sound, the cat discovered the bird under the pile of cow dung, and promptly dug him out and ate him.

Morals of the story:

- (1) Not everyone who sh\*ts on you is your enemy.
- (2) Not everyone who gets you out of sh\*t is your friend.
- (3) And when you're in deep sh\*t, it's best to keep your mouth shut!

THUS ENDS THE FIVE MINUTE MANAGEMENT COURSE!

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# **Us.**

Not wishing to dwell on it, but this year has seen a significant drop in subscription renewals. The reasons for this are not clear, though as regular readers will know I have, for a number of years now, been surprised at how well our numbers have held up in the face of the declining number of our fine wee cars that remain on the road.

All the more important then that we do what we can to help those couple of hundred remaining individuals. I know that I am preaching to the converted, those who did not renew their subscription for 2009 are reading a short final reminder notice as you read this - Thank you for your continued support and enthusiasm, it is appreciated, and is not taken for granted.

*Adrian Hanwell's D.L.O.C. (Daimler and Lanchester Owner's Club) 2009 Great Eastern Rally, at which all are welcome, is planned for the 26th July at its usual venue of Ingateson Hall. Give Adrian a ring for further details on 01277 227708*

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## Getting Technical

Lucas Distributors used by Reliant

Part One: Types and Series.

Four-cylinder Reliants used Lucas distributors from four ranges: 23D4, 25D4, 43D4, 45D4.

D4 means 'Distributor for 4-cylinder engines, 5 means with a vacuum advance unit, 3 without. The initial 2 and 4 are the style numbers. In fact the '4' style was just a cheaper replacement for the '2'. Both were the same physical fit. The bodies are effectively interchangeable.

The important differences, which make a disi suitable for one engine and not for another, are the internal mechanisms, components and settings, and whether they are built to run Clockwise or Counter Clockwise. That is why each disi has a series number stamped on it, near to the 'LUCAS' stamp and the 'mmy' date code.

To illustrate the range of Reliant applications for which the 2/4'x'D4 disi type could be tuned here are some serial numbers.

40852A	25D4	Counterclockwise	Sabre 4 sports car, 1964-65
40872A	25D4	Clockwise	Regal 3/25, 1964-68
41533	23D4	Clockwise	Robin, 1973-75; Bug, 1973 only, Ant 'E', 1972-1977
41625A	45D4	Clockwise	Robin, Kitten, 1975-83, 9.5:1 c.r. engine
41961A	45D4	Clockwise	Rialto, 1983-85; Fox, 1983 on, 10.5:1 c.r. only.

This is only a small selection. From 1975 Reliant seemed to make do with the 41625A or /B distributor for all UK 'small vehicle' applications, until car production finally ended, except for when the 'Yellow-top' HT-E engine was used, i.e. in Fox and Rialto1 models. This was probably because it was deemed of adequate performance and it was not cost-effective to tailor-tune for better performance. The /A model was apparently for earlier engines; the /B seems to have differed only in the vacuum unit fitted, and was probably an attempt to cope with the lower octane rating of modern fuel.

So it's the various mechanisms and settings inside a distributor, and the way they interact, which define how suitable it is for your vehicle, not what it looks like.

When we set up the timing on a static engine we time it so that No. 1 [the foremost] cylinder would receive a spark when its piston is at either Top Dead Centre [for 600cc, 700cc and 750cc engines] or 10° before [850cc engines]. Please ignore all literature that says otherwise – Reliant were aware of the error but never corrected it. It's not that important because the static timing is only a starting point. When the engine is running the spark needs to be delivered considerably earlier, in order to time the most powerful part of the explosion just when it will exert most downward force on the piston. Furthermore at higher engine speeds it needs to be even further advanced. This is achieved by the centrifugal advance mechanism: basically engine speed causes two weighted levers to fly outward against springs. The weights lever the distributor upper shaft progressively further around to initiate the spark earlier.

Conversely, when the engine is under load it needs less advance. This is the job of the vacuum advance unit. Under light loads the sucking in of the fuel mix causes a partial vacuum below the



carburettor. A thin pipe transfers this negative pressure to a diaphragm in the vac unit, drawing it outwards. This draws the contacts plate round a bit, advancing the spark. When the throttle is wide open but the engine is also under load, the vacuum is reduced and the plate returns. More detail in Part 2, but it should be becoming obvious that all these moving parts at least require some checking now and then as well as lubrication.

At even moderate road speeds the distributor is initiating over 100 explosions per second, each, hopefully, accurately timed, according to speed, load, and fuel mixture strength, to get the most downward force on a piston at the right instant in its cycle. We can do a lot to make its job more successful.

If you are still using contact points be aware they are the weak link in the chain of events. The plastic heel can wear, the spring behaves unreliably at such speeds, the contacts' faces get burnt uneven and hard to gap accurately. The gap is anyway not an accurate guide to the dwell angle, which is what we really should measure. The condenser, or capacitor, is another weak point. Usually they either work or not but recently there have been batches that seem to fail intermittently. Keep one that's proven to work as a spare in the car, and don't automatically trust a new one. I went through three new duds in a row a year or two back from the same batch. Fortunately the storeman knows me well...

All in all an electronic kit, with its 100% accuracy enables far better performance, and therefore fuel economy, and nowadays at a reasonable cost. At least fit new contacts and gap them correctly to 15thou, or preferably so that the dwell angle is 50°.

In part 2 we will look inside the distributor in an attempt to check its bits and restore its efficiency.

Part 3 will think about tuning and improving performance.

Duncan Bradford 2009

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## Parts

*As you will have read in the supplement last time, we have at last had a batch of Fox rear springs produced. They are coming in at £176 a pair plus the delivery. They weigh over 10 Kilos, so I have yet to find out what that will cost.*

*Ball joints, lower ones in particular. We are short of old units for reconditioning. So, if you have any lurking in a toolbox, or drawer, or shelf in the garage. Please look them out and give me a ring.*

*The warmer weather is coming and we need to keep on top of this. Not every old unit is suitable for reconditioning, and right now I have no old units, so please don't leave it till you need one. Just give me a ring on 0141 8866117 and I will tell you what to do.*

*The feedback I have had about 10" tyres is confusing, but some people are having difficulty, certainly at an economic cost.*

*Having bought both back springs and front ones, and front dampers recently, there is not a lot of money left in the spares fund at the moment. Feel free to help keep things turning over.*

Ed.

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# Sales and Wants

For Sale :- 1977 Kitten Estate. Two tone Grey / Cream. MOT till June 2009, taxed till April. Nice tidy car, recent tyres and battery, used daily. Only real fault – slips out of second gear. Chassis waxoiled. £200. Hip operation forces sale. Terry.

For Sale :- R reg Kitten saloon, Reliant blue, new tyres and windscreen. 6 months tax and Mot until September 2009 needs to be used and some cosmetics . Located in Hertfordshire. Reluctant sale £850 Ring Terry

For Sale :- well, free to a good home actually. Kitten estate, good undersealed chassis, good Minilite alloys. Not run for a few years, scruffy body. Ring Sean Swindon area.

For Sale :- Syncro rings John Box Stable Cottage, Thornleigh Drive, Burton in Kendal LA6 1NQ

For Sale :- Reliant Kitten saloon project, outside Balluinluig near Pitlockry contact Lyn.

For Sale :- For those of you who have envied Duncan's Tandy, I believe that there may still be one for sale - contact Duncan in 1st instance

Wanted :- Kitten bumper end caps. The ones I had sold quickly, and now I have a buyer for a bumper, which I have, but he needs end caps too – can you help? If so give me a ring. Brian 0141 8866117

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## EPILOGUE

Somebody told me that it's not getting old that stops us doing things, rather it is stopping doing things that makes us old – I must remember that!

Adrian Hanwell was telling me that his 1909 Daimler's leather upholstery has seen better days, and if he is to continue to be able to use the car, it's seats need to be re-covered, the experts did say they could preserve it if he didn't want to sit on the seats! So, guess what it is getting for its 100th birthday present? Imagine the originals only lasted 100 years – I guess the warranty is up then Adrian!

Give me a moment to share a couple of non-Reliant parts of my recent trip south with you. I spent one night with Tom Lockhart, that retired friend of my late father's. Tom has almost finished making the steam engine that he had designed a couple of years ago to power one of his model boats. It is a twin cylinder affair, oscillating double acting engine., ½" bore by 5/16" stroke, we ran it on compressed air at 30psi. The level of control you would find hard to accept. I know that steam engines are a lot more flexible than internal combustion ones in that regard, but Tom has designed and built this one so that it develops plenty of torque at low revs – necessary to avoid the consumption of large amounts of steam, and hence fuel and water. By their very nature oscillating engines do not offer the relatively even power output that comes from an internal combustion engine, but this one can actually turn over at less than one revolution a second without stalling, and when you speed it up a bit, you can reverse it by moving the piston valve and it changes direction so quickly that you cannot see it doing so – almost incredible. I said reverse, I am not sure that such an engine has a forward or reverse, it can run as fast in one direction as the other, but, and without a means of measuring it I cannot be precise, say somewhere between a hundred and two hundred r.p.m., you cannot detect the change of direction of rotation of the crankshaft from one way to the other. I have to say that the change one way is exceptionally easy to execute quickly, you just squeeze the piston operating rod between your thumb and forefinger, an operation which takes so little effort and an almost imperceptible amount of time, but to do it the other way round you have to hold the engine with one hand, grab the small diameter rod between finger and thumb, and pull it the other way, a clumsy and time consuming operation which can take anything from half a second to two or three seconds. I can't wait till he

builds it into the model and operates it with a servo, though I suspect he will gear it to prevent such a sudden change of direction, can you imagine the stresses on the propeller blades and shaft once it is all connected up?

Tom had taken the engine to his local model boat club the previous month and, you guessed, 5 of the guys want one. But Tom is 84 now and his son Alan (who is my age) gave him a box from his attic at the New Year and said "Dad, can you please make this up for me, I don't have time" It was a model aircraft kit that Tom had given to his son as an 18th birthday present. He agreed, indeed has already made a start, though it will be electrically powered rather than i.c. But Tom tells me that he reckons it will take him a couple of months or so to make each of the model steam engines, and he has quite a number of his own projects, boats, aeroplanes and cars on the go. So he has decided to refuse, much as it goes against his nature, to make the steam engines – all he needs to do now is decide the value of the plans! He is committed however to continue with his beginners guides to various aspects of model making – "Tom's Technical Tips" as they are called, then there is the large garden to look after – have you noticed, the grass has started growing again! Not to mention the odd evening off to entertain the likes of me – yes I do feel very honoured indeed.

I was relating much of the above to John Box on my way home a few days later, and he showed me a collection of photographs a friend in New Zealand had sent to him of a early Landrover he had built from the ground up, even doing patternmaking and castings where necessary. Machined the gears, the lot. What skill, and, like Tom, so rare to find all those skills with the one individual. But then in the final series of pictures you see where he went wrong – it is only 3/5ths full size! When will those model engineers learn that there is only one scale that counts – 12" to the foot!

I was pleased to see the Mewsletter mentioned in the Federation of British Historic Vehicle Club's current Magazine – No. 2, 2009, page 15, it is good to know people do actually read the complimentary copies we send out. (Just showing that I read their's too!)

Oh, and I should tell you that the May edition of Practical Performance Car magazine will be featuring a 5 or 6 page article about Kittens. That said I should warn you that not many of the ones featured are still powered by a Reliant engine!

Do you ever get a feeling of dread, you suddenly realize that you have forgotten something important – but can't remember what? Well, that is where I am now! I have re-typed some pages from the hard copy I had, thankfully, printed off before I went south, yet there are still a couple of blank pages, and do you think I can remember what I was going to put in there? Not a chance! It does make me think I could remove the management course article and save an A4 sheet from this edition, but then again I could put in the likes of the following letter which arrived from Harry Darby the other day, and even put back in a picture of three Foxes that our man at Dinky Cars sent me which I was going to keep for another time, but you are going to send me lots of pictures to use in future, aren't you? :-



Dear Brian,

23rd March 2009

Here is perhaps a little unknown news about the 850 Reliant engine for your Mewsletter sometime.

I have been reading the biography of Harry Webster the "gas flow expert" who it appears had a lot to do with the improvement of fire pump engines during the war (1939 – 1945).

The Reliant engine was used after the war as a fire pump engine running for long spells at high speed to drive water pumps.

I think the final configuration of the combustion chamber is the result of his work in the end.

No wonder Dick Harvey and his pals in the 750 Racing Club could persuade it to put out 60 – 65 BHP with reliability.

I hope you and Moira are in the pink of health.

Sincerely, Harry (Darby) No. 100 South Glamorgan

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*No edition would be complete without a mention of lubricants and their on-going use, the nights are longer now, so no excuses!*

*Ed.*

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