

Reliant Kitten ***Register***

NEWSLETTER Forty-Seven

July/August 2002



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.....

Edited and distributed by Brian W Marshall, 16 Glendee Gardens, Renfrew, PA4 0AL

☎ 0141 886 6117 Fax 0141 561 5430

MOTOR INSURANCE

IMMEDIATE COVER FROM THE SPECIALISTS



Free quotation
Payment by Credit Card
Payment by instalments

Established 1962

- Underwritten by a leading UK insurer or at Lloyds
- High quality advice from trained staff with many years experience
- Nationwide Service
- Fast, efficient claim handling

Phone Lyn on 01530 270574

The Reliant Kitten Register

MEWSLETTER No. 47

I am eternally grateful to the following individuals:-

Rebel alternative parts

Kitten alternative parts

Fox alternative parts

Our Mutual Aid Spares scheme

Mewsletter pictures

Our electric kitten man is Chris Lowe, you can reach Chris at: roseviolin@yahoo.com

This time our front cover features another of Michael Bentley's vehicles. We have not had a Rebel saloon on the cover for a while, and there are none better in the land than Michael's beautifully restored example, which he has owned from new. Rebuilt on a new galvanised chassis in 1990, it has covered less than 100 miles since! Photographed by John Johnstone before Michael moved from Pudsey some time ago. The hub caps are kept in the warm and dry to prevent corrosion, they are immaculate too.

web page :- <http://www.uk-classic-cars.com/kitten.htm>

or have a look at <http://www.reliantkitten.co.uk>

INDEX

Page 3	Contact details and cover story
Page 4	Index
Page 5	the Registrar speaks
Page 6	and continues to speak!
Page 7	Rebel Round Up
Page 8	Tempest Update
Page 9	Brian's
Page 10	Diary
Page 11	Early July 2002
Page 12.	A
Page 13	Kitten
Page 14	Estate
Page 15	Restoration
Page 16	More
Page 17	Tales
Page 18	from
Page 19	Tore
Page 20	Another Observation – car numbers revisited
Page 21	From the In Tray
Page 22	Getting
Page 23	Technical
Page 24	Air / Fuel Ratio Meters
Page 25	More Tweaks
Page 26	from Thetford
Page 27	Sales & Wants
Page 28	Notes
Page 29	Notes
Page 30	& more notes!

It should be noted that opinions and ideas, information and advice printed in this publication are as recommended by our readers and others, and, while believed to be accurate and correct, is given in good faith. Such information does not necessarily have the approval of the Reliant Kitten Register, and cannot be guaranteed by either the Editor, or the Reliant Kitten Register. Owners must satisfy themselves as to the suitability of any suggestions made within these pages, as no responsibility can be accepted.

Just a wee reminder about:

P. F. SPARE INSURANCE BROKER'S FREE DRAW

Which runs from: 1st November 2001 – 31st October 2002

Prize: Free annual cherished car policy issued by Cherished Car Agency.

Contact Lyn for details :- Tel:- 01530 270574

Email kittenregister@pfspare.co.uk Web site www.pfspare.co.uk

~.~.~.~.~.~.~

Hello again, I know that I once said I was going to stop apologising, but I have come to the conclusion that I have fallen into a trap that I was aware of, but failed to avoid, namely that of devoting too much time, and more importantly, space in this magazine, to very small minority groups. Sorry chaps, those with just the B1 licence, but it's true, I have been devoting more space than your numbers perhaps warrant. So, enough said, do however feel free to let me have a copy of any relevant correspondence you may get your hands on.

Also, while in apologetic mode, well, almost! That makes by my reckoning 4 times we have had a Vantique on the front cover, now there were only ever 10 of them made, and this is edition 47, and between Rebels, Kittens and Foxes there were almost 8,000 vehicles produced – seems a little out of balance to me - I know I always maintained that we all know what the 'normal' ones look like, and so policy dictated that we show you the more unusual ones – but, I am going to share the responsibility here, as you may have read in the supplement with the last edition, every magazine, for some years now, has a plea on page three, to send potential Mewsletter pictures to John Pearce, and you have not been doing so! Now's your big chance to redeem us all, and to see to it that I am not kept waiting for future front covers – send those photos to John NOW please. Oh, and John, if a certain gentleman has made access possible to your garage by taking his Salamander away, perhaps we will get to see a picture of the Bobcat one of these days!

Still on the subject of front covers, and in particular the last one. I am told that he played Eisenhower twice as often as he played Churchill, but is of course best known amongst the masses, for his part in All Creatures Great and Small as Siegfried Farnham, Robert Hardy is of course the man in question.

While on the subject of Robert Hardy, an observant Kitten owner noticed recently, mid July it was I believe, noticed that he was the guest on that well known Channel 4 programme "Countdown". Not only that but the show's host, one Richard Whiteley, made mention of both Kittens, and a Bentley. The Kitten he was referring to being an old family pet cat (Mittens Bentley) he had as a child, the Bentley (Richard's mother's maiden name) being by strange co-incidence, the same family as the owner of the Vantique beside which Robert was pictured on the last edition's front cover. I guess Robert was doing more than just visiting Wensleydale during that trip to Yorkshire (Countdown being produced in Leeds by Yorkshire Television). Good to know that I am not the only person who ties things together whilst visiting that part of the world. I wonder if Robert realised that the owner of the Vantique, and the 'Countdown' host are related?

On the subject of front covers, my thanks as ever to John Pearce, and even more so on this occasion, though thanks must also be extended to Jack Williams and Graham Walker who have both, one by taking the picture and sending it to John, the other by unwittingly giving up a couple of inches of his page in this edition, for the Tempestuous picture inside the back cover. Jack, and John Box come to that, have often pointed out to me that while I frequently sing the praises of the Liege, and in particular its competitive acumen within these pages, the Tempest has a far more impressive list of competition successes to its name. Hopefully this mention, and the 'extra' picture, will help redress the literary balance. Keep up the good work chaps.

Right, enough for now, talk to you again soon. Brian.

~.~.~.~.~.~.~.

REBEL ROUND UP

Dear Brian,

2/7/02

Please send me details for joining the Register. I was on the Register when Terry Scott ran it, and knew of you from "The Rebellion" mags I have. A friend gave me your details from the 'Net', and at long last I've got round to writing to you. I don't have the 'Net' so I must use the old way of writing.

I have 3 Rebels at present, I did have 5 at one time. Only 1 of my 3 is a runner, and it was rebuilt from a saloon to a pick-up.

On Terry Scott's Register it was 107, built in 1973 URC 973M, chassis number 101026, though it was rebuilt on a new chassis by a Reliant agent many years ago. I have had it for 8 years, it is my only transport. Another Rebel, the first one I had, a saloon, which I gave to a friend when I got the pick-up mobile. This saloon was Terry's Register No. 102, DTO 385L. That one is still in regular use, being road tax exempt helps.

The other two Rebels I have, non runners are, Saloon ORE 57F (7/6/68) Ch. No. R100696, and van CAM 153L (10/1/73) Ch. N. V941161. I broke another saloon, RRF 747G Ch. No. R100826 for which I had no documents, it was too far gone, and I needed the spares it provided. All the Rebels I have are 848cc engines, and the Pick-Up also has a Robin gearbox with divided propshaft which will soon be fitted with a Rebel gearbox I recently acquired from Ashley Dunn. I think that will do for now, looking forward to getting signed up.

Yours Ray Wilson - Nottingham

Thanks Ray for bringing us up to date. I did have a list of names and addresses for all of Terry's Register members, and I thought I had contacted them all a long time ago to make them aware of this Register, so I guess I made another mistake ! Sorry to have missed you then.

On the gearbox front, the arrangement you have on the pick-up is quite sought after, the later gearboxes being much stronger than the earlier ones, indeed designed to cope with the power of the 848cc engine. I assume that you are aware of the work involved – though I have never before encountered anyone reverting to an original Rebel box from the 848 one, while the work should be simpler than going from a Rebel one to a Robin / Kitten one, you will still need to

move the clutch operating lever in the opposite direction, and of course re-instate the original propshaft and gearbox cross member – of which there are a number of different designs. Oh, and don't forget to change that bush in the flywheel we spoke of in here last time.

No doubt you have reasons for wanting to change back, but all too many Rebels have had gearbox failures, even without the increased power of the 848cc engine, so please don't throw out any of the bits you take off!

Good luck, and thanks again for keeping us in the picture. Ed

Tempest update

Steve is re-grouping, having recently moved to new premises. No longer is he looking for homeless Foxes, he has sufficient donor vehicles, and indeed is moving away from that plan, intending to create a modification to enable three wheelers to be the donor vehicles.

~.~.~.~.~.~.~

Brian's Diary – early July 2002

John Blagburn rang the other day, to tell me about three adverts he had seen, two for Reliant spares, and one for an early 600cc Rebel, running, M.O.T.'d, for a few weeks at any rate, but recently resprayed, and in need of some T.L.C.

Good and all as it was of him to let me know about the spares, I have neither the money nor space to get involved. The Register has been known to buy new surplus spares, but I am running out of space even for smaller bits.

Always being something of a sucker for a sob story however, I seemed to somehow manage to 'get involved', even to forget momentarily the NO word, and so it came about, well Arleen was wanting some driving practice, and the B7076 (the old A74) is a very quiet, easy road to drive along... and it does lead to England!

Wednesday the 10th of July dawned, and as it did, Arleen and I were having a coffee, and getting ready for the off. We departed Renfrew at 04:44, the Citroen had just the 177125 miles on the clock, and I drove initially, since the easiest way to get started is on the motorway, the M8 being just over a mile from our house. By 04:53 we were on the Kingston Bridge, that is the one over the river Clyde, not the one over the Thames at Kingston on Thames!

We reached the M74 at 05:06, mileage now 177143, and motored on south till we reached Happendon Services where we left the motorway to let Arleen take over. It was now 05:30, and 177164. Arleen then drove through Abington, over Beattock Summit – I must find the time and details of who to write to to complain, when they built the new road, they lost the Beattock Summit sign, and it is no longer clear, from either the new motorway, or the old road, just where the top is. If you stop and get out of the car at the right place on the old road, you can see the sign on the railway, which runs between the two roads at that point. But I miss the old sign, there is still one at Shap, which like the missing one at Beattock, tells you how many feet above sea level you are – oh, that's probably it, they will be holding endless committee meetings arguing whither the new

sign should be in feet or these things we use to measure gas and electricity! The time at Beattock Summit was 06:01, mileage 177183.

I have always found it a bit confusing, since my mother was towing Dad in a Vauxhaull which had suffered a crankshaft failure near Wigan, and we were recovering it, (this before I had even passed my driving test, so it was some considerable time ago now!) the village of Beattock is in fact almost 10 miles south of Beattock Summit, and so, if you are not aware of that, as we were not then, you heave a sigh of relief 10 miles too soon! Anyway, we got to Gretna at 07:00 exactly, Arleen having passed her first lorry along the way, mileage now 177225. Given that she has only been learning to drive for a week or so, she was doing fine.

I did remark to a friend the following day that she had not knocked down a single policeman yet, and the friend retorted "They were all married then I take it!?"

It is in fact possible for a learner to drive even further south, because the main road over the border is not yet motorway, but the M6 starts a few miles north of Carlisle, where we were planning our first break. Tesco's on the A69 is a 24 hour shop, though the café only opens from 7:00am, which was fine for us, arriving as we did at 07:11.!

Duly watered and nourished, we were on the road again for 07:40, mileage 177237.

We were running right across the country, west to east, on the A69 to get to North Shields, but I had failed to realise that it was Tynemouth that was the favoured town on the signposts, so we had a slight detour till I sussed that out. We were however ahead of time on arrival at North Shields.

John provided a welcome coffee – must make a note to get him a jar of the real thing, this decaff is all very well....

We were on our way to Redcar then, ahead of schedule, and made good time, reaching the home of the Rebel's owner an hour ahead of plan.

Off then to collect the car, which was stored at the huge steel works there. Another missed golden opportunity – we should have taken a picture of the car with the gigantic steelworks sign as a background, but were so busy trying to find our way out of the complex, that we didn't, another missed opportunity to get a great front cover picture – I mean, when last did you see a Rebel saloon on the cover of this publication I ask you?

For a 600cc powered car this Rebel runs very well indeed. It is non-standard in as much as it has been fitted with an SU carb at some time in its past, and no doubt that has helped, but none the less both John and I were very impressed at how well it went. The respray is a pretty good job too, by no means perfect, but pretty smart. The odd sized back tyres were not nearly as obvious as John had led me to believe they would be, and while it has some missing bits and pieces, they are cosmetic, and I have most of them in stock anyway. So, another Rebel rescued, what to do with it now? Well, it has the early steering, so I must get the turning circle checked against a later one, yes John, the one in France I mean, I have not forgotten that you did ask that question – perhaps we will get you an answer soon...

John B. has washed the car now, and it is cleaning up really well. The non-standard front seats are really comfortable I have to say, and a good match to the original trim. The steering is a delight, I really don't know whether the early steering is actually superior to the later design, but the few I have driven all seem to have a better feel to them than the later ones did.

The one odd thing about the car was that the seatbelts are not attached to the floor! Mind you the 1965/6 (D registered it was) one that George Mitchell had, Simon Chisholm has it now, never had seat belts as far as I am aware, and by then it should have had, perhaps it was built in 1964?

Still on the John Blagburn front, I must ask Richard Plaxton to turn the page here – no Richard, seriously, we don't want to raise your blood pressure, just turn over please – oh well, on your own head be it! John has a friend who knows a chap who has a rolling road – remember he discovered that the Kitten he bought from Richard last year had a fast road camshaft? Well, at the back wheels it has 42 BHP. Now when you consider that the engine was meant to have 39 or 40 at the flywheel when it left the factory, and I would seriously suspect that many of our wonderful little cars have about 30 at the back wheels if they are lucky.

Anyway, I digress, Arleen drove for another 50 miles on the way home, making a total of 111 miles for her that day, and while that kind of driving, much of it between 45 and 55 miles an hour, will not help her in her test one iota, it does give her a good bit more experience, and a feel for the car.

Then, just the very next day, Bob Riches, our most southerly subscriber, (I must try to improve my geography, Bob is not, I believe, our only subscriber from the southern hemisphere, at least not if Chile is also in the southern half of the globe, anyway, back to the story) Bob just happened to be in Scotland in his Liege, and was staying within sight of the Forth bridges, so I popped over to meet the man, and his wife Judith, and we had a long chat, took numerous pictures, and had a coffee or three. Thanks Bob for the run to Dalgety Bay in the Liege – great memories. This is the 10th Liege to pass its SVA test, and Bob's career as an engineer was evident in the standard of work carried out on the car. Bob and Judith are off to Germany before you read this, to take part in the 750MC's 80th anniversary rally. Perhaps we will hear more of that later.

So, having seen one in the flesh, what do I think? Well, I'm not allowed to think thoughts like that, nor publish such words, let's just say I had an emotional night, when are you bringing out an automatic version Peter? No, it wouldn't be the same, would it?

Ed.

~.~.~.~.~.~.

Where are they now?

Well, the silence was deafening as far as responses to my plea in here last time for help with the task of finding the lost Kittens goes – I'll not beg you know! Just let me know if you have the time and interest to do something about it, and I'll pass on what details we have on file.

~.~.~.~.~.~.

The Great Partner Search continues

As you know, Michael Kerr has been seeking a partner to help with his project. Michael did say to me at the beginning, that if no suitable individual, with premises, could be found in the Somerset area, that he would have to consider other options.

A KITTEN ESTATE DL RESTORATION

For many years I've wanted to rebuild a car.

My wish list was for a lightweight four-wheeled car, which would require little or no welding firstly because my welding usually resembles pigeon poo and secondly I have a weak back. A kitten fitted the bill perfectly with the added bonus that nearly all spares are available.

So my Kitten was bought in 1994 - a DL estate - from Southampton's ex-main dealer for £125 plus £25 for delivery to my house at Poole which is 30 miles to the West.

Bodily its condition wasn't too bad with no crazing and just a few imperfections along the bottom edges. Condition elsewhere was a bit irrelevant as I was planning a body off strip and rebuild.

The body lifted off quite easily with a man on each corner and was duly placed on my front lawn whilst the rest of the strip down took place. Firstly the engine was dismantled for inspection. The big ends and main shells had worn through to the copper base metal and most rings had broken but surprisingly the crankshaft, pistons and bores were not scored and were within dimensional limits, no other parts needed replacement. The only assembly problem I had was recognising the asymmetry in the jackshaft slot that mates with the distributor. I measured the asymmetry at 0.025" - not exactly very noticeable with the naked eye.

Early on in the project I found a Kitten saloon at Langford's breakers yard near Shaftesbury in Dorset and for £100 this provided a spare engine, gearbox, diff, prop shaft, steering column and rack, wiper motor, heater matrix and many other sundry parts that I thought may be useful.

As this was a project I wanted to do as much of the work as I could myself, and the only job entrusted to professionals was to have a helicoil fitted to a stripped thread in a block stud hole. When I collected the head I was amazed to find metal swarf everywhere, which meant another, strip down to clean it up.

Next came the suspension, all rubber bushes were replaced and a couple of adjustable front shockers (courtesy of Brian) were fitted. A small bit of welding was needed right at the front of the chassis and although I say it myself it doesn't look too bad!

Next the gearbox was re-mated to the engine after fitting a new clutch assembly; I didn't strip the gearbox crossing my fingers that all was ok (it wasn't- generally its pretty good with no whines and effective syncro, but it jumps out of 2nd on the overrun).

The whole of the hydraulic braking system was renewed except the master cylinder, which was reconditioned. The adjusters on the front back plates had been rounded because they were

partly seized. I removed the captive fixing, filed the squares to the next size down and refitted them in the back plates, securing with washers (including a crinkle washer to provide the tension needed) and a split pin tapped through a new hole drilled through the base of the adjuster square.

All that was needed on the chassis was a repaint followed by a good wax oiling inside and out - a few extra holes were drilled to give better access for the probe.

The rear springs were found to be different. The offside having 2 leaves and the nearside having 3 leaves. After checking the deflections under various loads I discovered the 'stiffness' to be the same (I made a mental note for the MOT man if queried).

The body was refitted next and secured with all new bolts (actually new bolts were used throughout) which took me up to the next job - re-wiring. This proved to be a bit more difficult than I bargained for, as despite having tagged and marked everything when I had dismantled it, I had used a felt tip pen. This was a mistake. Nearly all the marks had vanished without trace and a couple of switches were faulty to boot which confused things even further - still eventually all was complete, and everything worked as it should.

The rollover bar had rotted out, and this was repaired as described in a past Kitten Newsletter article (thanks for that).

The only spare I had difficulty with was the rear nearside side window rubber. Strangely enough, although Reliant have separate part numbers for offside and nearside they only stock the offside rubber. After some thought I realised the each would fit the other if rotated through 180 degrees and turned inside out the only problem being that the preformed bends are in the wrong positions but these soon straighten out and the new bends are easily formed.

Next it was time to start the engine, and within minutes there was a catastrophic mixing of the oils and waters. I first checked the head (which had been skimmed) and the new gasket, but all was OK, leaving poor liner seals, which I thought unlikely, or internal corrosion which I thought more likely.

I reworked my first reserve engine putting in new shells and rings and grinding in the valves (it's quicker the second time) then swapped over this engine for the disgraced unit. The only problem I encountered was that the original inlet manifold didn't fit the 'new' engine - does this mean that one is 850cc and the other 750cc or is it just that one is older than the other?

Bingo. This set up ran well with nothing but the usual minor setting up problems - except that the alternator charged at 16+ volts so this also was swapped for a second unit only to find that the battery wouldn't hold charge and when running there was a 60 (yes 60) amp discharge. I didn't investigate the reason for this, but thought it maybe a direct short within the alternator. Anyway a new battery and a new alternator for £55 the pair sorted the problem (its quicker the third time).

Finally it was time to think about painting, I decided to hand paint using powder blue (well I like it) Repaint. There were two reasons for this firstly the difficulty of preparing glass fibre for a sprayed finish and secondly although I live just about as far as you can get South of the border - I'm tight, and the final value of the Kitten would probably be well less than the cost of a spray job.

After all the work it was MOT time. Failed. A few details but mega emissions failure with CO at 12%, it turned out that the choke was not pulling off properly which was easily rectified to give me a new MOT. I can now continue the inside as a rolling restoration but she drives exactly as 1 had hoped - like a 26 year old car that needs driving with sympathy and not just pointing with cruise control set.

Any help with a few points would be appreciated. Do Robin front seats fit the Kitten or has anyone got a pair of good Kitten ones?

Both front doors have got 'droop' logically it must be wear in the hinge pins but they don't look too bad - has anyone done an article on door refitting?

What's involved in rectifying the second gear problem?

Bruce Harding - Merley, Dorset

Well, I kept my council and didn't interrupt once! Good or what?

I should invite you to answer Bruce's questions, and do please feel free to do so. Meanwhile I will throw in my tuppence worth.

While anything is possible, basically NO Robin seats do not fit the Kitten, they are smaller, and mount differently, well the early ones did, I honestly couldn't tell you about the recent ones. Once again the immense value of Dick Goodall's index to the Mewsletters springs to mind, as I know we have covered alternative seats on a number of occasions in the past.

I'll run an ad for a pair of Kitten ones, but like the other chap who is looking for them, you don't say what colour, or whether they need to be reclining ones or not! That said, you may not have much choice!

Ah, door hanging. Now there's a can of worms. To those who can do it, like laying bricks, they make it look easy. I can't do it properly, though some, possibly many Reliant dealers employ people who can. Come on boys and girls, can we help the man here please? Then again, are the metal upright support brackets that attach to the chassis outrigger in place?

The jumping out of second is another area where my experience is pretty good, but my technical expertise a bit lacking. The spring that holds the wee ball up to lock the selector in place has to be the first thing to check. That said, access to it means removing the gearbox, in itself no mean task - I guess it depends how annoying the problem is!

If it is not that, then I need to again ask for expert help, worn selectors possibly, I'm really not sure. Over to the experts again please?

One thing you said which did puzzle me a bit, was the business of the manifold not fitting the other engine. Did you mean that literally, or was it just a bad match? And, or, were you fitting the inlet and exhaust manifolds as a pair or individually?

Anyway, thanks for keeping us in the picture Bruce. I have updated the database with the fact that your car is now on the road and blue, and I hope that you have many enjoyable years with the Kitten now that it is back in service.

Please keep us informed of further progress. - Ed.

Tales From Tore 18th July 2002

I have today received a very well wrapped parcel. Inside it was an air filter with movable air intake spout for an 850 Reliant engine as per my 'Wanted' ad in the last edition of the Mewsletter. Not only that, but it is resplendent in silver Hammerite and complete with fixing bolts and washers. What a splendid arrival. I have fitted it to the 'Ghost' and it looks well, with the potential to avoid any icing up in winter by taking in warm air from the exhaust manifold area. In the present 'summer' position the intake is fairly close to the fan blades and perhaps a little boost may be obtained at reasonable revs? Also enclosed in the package were 2 heater knobs to fit the orange Kitten (Orlando), from a Fiat 126 hatchback model 1987-1991.

I would prefer to personally express my thanks and appreciation to the person who sent these items, but they have signed themselves 'Anon' with no address! The only clue to the origin is the postmark of Truro. I can only offer my gratitude through these columns. To show you what this type of filter looks like, as some others seem not to know, I have made a sketch and attach a print.

Best Wishes, Dick Goodall 3. Croftcrunie Cottages, Tore, Muir of Ord. IV6 7SB

Gee thanks for that Dick – more sketches! One day I will find out how to incorporate them in the template myself – more things to learn.....

But seriously. It is good to know both that it does pay to advertise within these pages, and it is heart-warming to know that there are such generous individuals out there, thank you. Ed. Oh, and I thought you might like this:

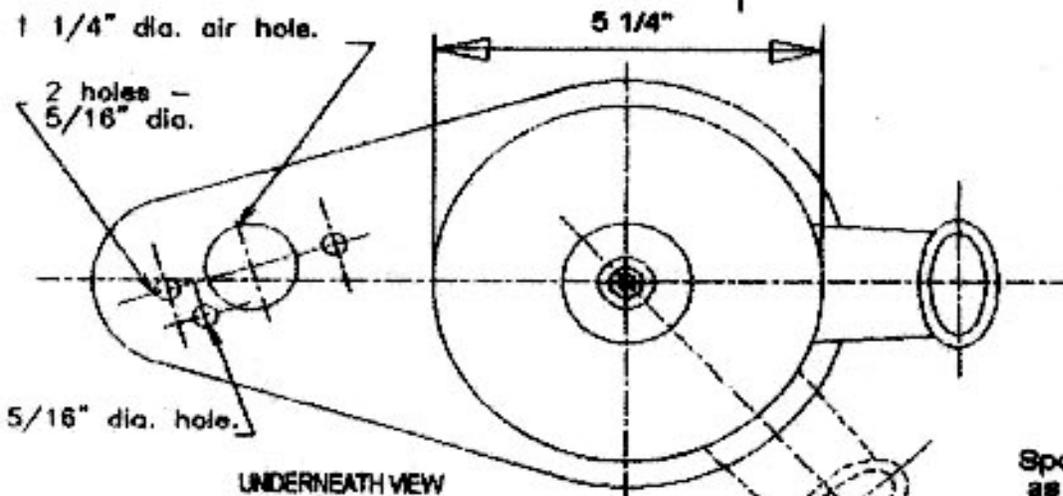
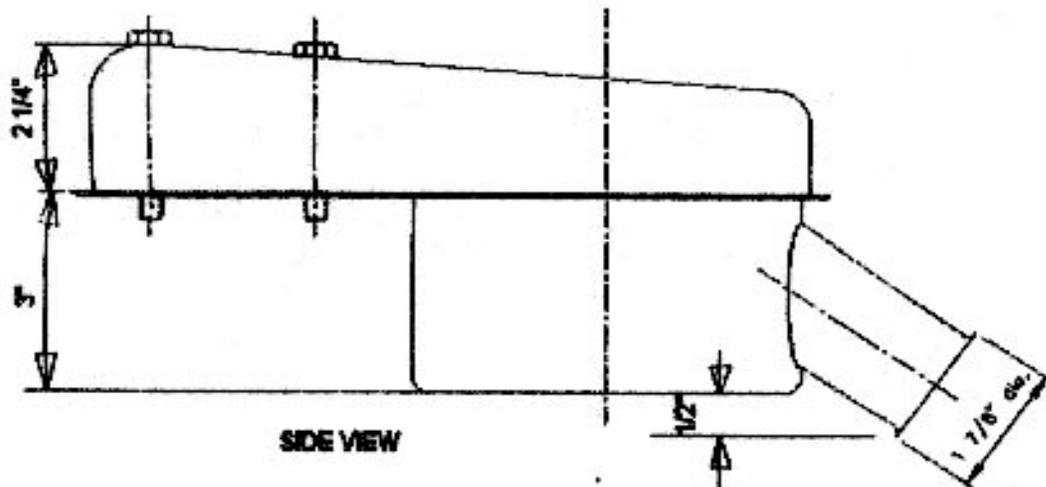
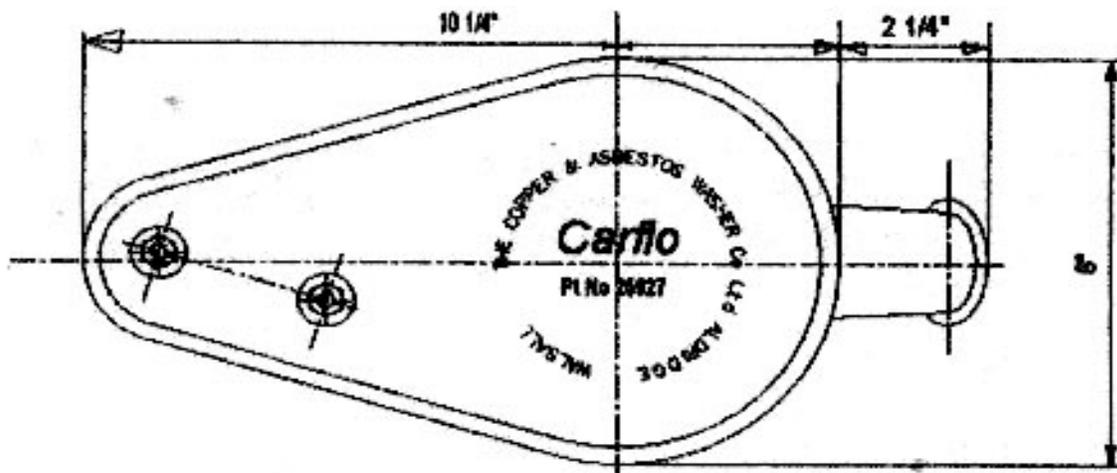
The Japanese eat very little fat, and suffer fewer heart attacks than the British or Americans.

On the other hand, the French eat a lot of fat, and also suffer fewer heart attacks than the British or Americans.

The Japanese drink very little red wine, and suffer fewer heart attacks than the British or Americans.

The Italians drink excessive amounts of red wine, and also suffer fewer heart attacks than the British or Americans. - Conclusion :-

Eat and drink what you like, it's speaking English that kills you!



Spout can be turned as required.

Reliant 850 engine later type air cleaner

Sizes approx. only.

11th July 2002

Red Letter Day, The latest Mewsletter arrived last week, my thanks to all who enabled its production. Now I am perusing and enjoying its contents at leisure, though it's not bedtime reading for me, once my head is on the pillow I'm asleep in a trice. Now if only I could cure the problem of often waking at 5am, perhaps the spirits of the previous generations of farm working occupants of this cottage think that I be too long abed?

Wibble, Wobble, Jelly on a Plate? At a reasonable main road speed, say above 45 mph, the Ghost was suffering from the shakes, both from front and rear. Aha! I thought, time for a tyre balance. So off I went to my usual place, where they confirmed my suspicions and put new weights on all 4 wheels. Full of optimism I set off home, to find - no improvement. Hmmm, I thought (and not for the first time). Now will a day of running about make any difference, er, nope, what now? Visions of many possible maladies, all entailing great expense, entered my mind. Steady boy, let's do something at no cost and check the tyre pressures, well just one was a bit soft by a couple of psi, soon remedied, but a quick road test showed no improvement. Thought - I had this happen before on a different car. Action - change over the front wheels from left to right, and a second road test showed a considerable improvement, almost good in fact. Ah the oddities of old cars.

It ain't half hot Mum. Since Thursday we have had very pleasant weather. The only snag is that I don't want to do any work, just enjoy it. Still the two spare wheels in primer have received a few aerosol coats of silver paint, so I have not been entirely lazy. And of course gardening never really stops does it?

Get the Point? Symptoms, poor idling and rough running on the Ghost. Problems found 1) Breather pipe from oil filler to carb had fallen off the carb, it was braided plastic which softens a lot in heat. So it was replaced by a rubber pipe. 2) Points gap wrong and points burnt after 3,500 miles running. They were replaced and gapped. All now seems well, holds breath for the next 'incident'.

Hyroglyphics?? I was painting a couple of Kitten steel road wheels today, and noted the markings on them. While I have an idea of what some bits mean, can you enlighten me about the remainder? As an aside, the wheels are welded up and one of the machines used was recently residing in A1 Welders in Inverness, where it was originally made.

Markings on a Kitten steel wheel -1

- a) on Outer face by wheel stud holes.
- b)

D> 1161 could be Dunlop part number.

3.5x10x24 wheel size

D 3 D unknown

21A2744 Rover part number?

b) Markings on groove between tyre walls. RSM 10 3.50Dx10 D3 meaning unknown.

Markings on a Kitten steel wheel -2

- a) on Outer face by wheel stud holes.
- b)

D> 1161 could be Dunlop part number,

3.5x10x24 wheel size

E 2 A meaning unknown

21A2744 Rover part number?

b) Markings on groove between tyre walls. RSM 10 3.50Dx10 E2 meaning unknown.

Cheers for now, Dick Goodall #157 July 2002.

~.~.~.~.~.~.~.~

Another Observation

Just thought I'd fool you by including the latest data on vehicle numbers under this heading for a change! Duncan has kindly yet again sought and acquired the relevant details, but on this occasion has chosen to delegate a bit, which I hope will not cause any discrepancies, because this time he has sent me the raw report, and I have had to do the extraction of relevant details, just hope I haven't missed anything important.

I am not even going to think about things like Tempests and Lieges, because I know that one of them is classed as, and I quote, a "Historic Liege", and even then I do not know whither that would be found under "H" or "L", certainly not under Reliant, nor even "Other Reliant" I shouldn't think !

Besides, we know the Liege story pretty accurately.

So, hot on the heels of the 2000 figures, at the end of December 2001 there were the following vehicles licenced for use on the road in the U.K. :-

Rebels	69 down from 84 the previous year
Kittens	464 down from 567 the previous year
Foxes	192 down from 211 the previous year

Giving a total of just 725 vehicles in all. Add to that the Tempests, Vantiques and Lieges, and the specials, and the number begins to approach the 800 mark. Now we know that almost as many again are lurking out there, in peoples drives, garages, even fields in some cases, but what is to become of them? With talk of the government thinking of charging us for cars that are declared SORN, is it perhaps time that I associate the Register with the FHVBC who have an excellent reputation for keeping an eye out and resisting such changes in the law?

This, in my humble opinion, presents a worrying trend. At that rate of decline there will be no Kittens left in less than 5 years, and we will even be out of Rebels then too. Now you know, and I know that that is not going to happen, aren't statistics wonderful mind you? When oh when will folk stop selling them so cheaply? A huge problem as I see it, because, when it comes to M.O.T. time, owners will all too readily just scrap them, if the cost of parts exceeds the cost of the vehicle. Not readers of this publication of course, we know just how good these wee cars are, and look after them well, don't we?

On the up side, we know of a number of Rebels and Kittens, even the odd Fox, which are currently off the road, but undergoing major rebuild operations, so some will be added to these numbers, but not right away, and unfortunately not I fear in the same numbers as they seem do be coming off the road.

Food for thought? Certainly, but no need to panic yet – I'll tell you when to panic!

Brian

From the In Tray

Right, the silence has been deafening, and so I intend dropping this section unless I hear from you in the next few hours, yes, you hear me, hours. By the time you read this I will be at least half way through the next edition, and if I don't have any positive responses to whether or not you actually use the information about events that is normally in here, then I will drop it in future – you have been warned !

However, to fill a little bit more of the magazine, I had a telephone call the other day, the 18th of July in fact, from our man in Penzance, well one of them at any rate, and no, they are not all Pirates! Nigel Keast was good enough to lay the matter of the B1 driving licence to rest once and for all for us. There is a form, no, not a little list, a form, specifically a D100, available free from Post Offices all over the land, which on page 15 quite clearly gives you the facts. Oh and just by the way, I was correct, you can drive a Rebel and / or a Kitten (saloon, estate or van) on a B1 licence! Provided you passed the test before the latest restrictions were applied.

Thank you Nigel for being the first to respond to my past plea for something official in writing. (Thanks also to Bob Neal for the stuff you sent) So, since it's free, I would recommend that if you are one of those individuals, you equip yourself with a copy, and I will re-iterate the weights on a letterheaded note for you if you wish, and thus you will be able to convince any interested law enforcement officers to the facts of the matter.

Ahh, how good does it feel to be able to lay a matter of differing views and opinions to rest once and for all, and to have been right as well! Great I can tell you.....

Oh, by the way, I should let you know that Nigel has recently acquired a Kitten which has only covered 26,000 miles from new. Which set me thinking, it has been a while since we did any reporting on mileages, high or low, so come on, don't be shy, if yours has covered less than 26,000 miles, or more that 260,000, let me know, and we will try and see where the boundaries currently lie.

I could of course use this page to keep you up to date with various snippets I receive. Brian Radford, for example, our man in Cornwall, was telling me that it had not really been his intention to restrict his Lands End to John O'Groats run to Kittens at all, anyone in a Reliant will be welcome, so if you are up for that, contact Brian on brian@northmead-online.co.uk

GETTING TECHNICAL

Air/ Fuel Ratio Meters - the real answer to SU carb tuning?

In these days of modern fuel injection systems and extended service intervals, many car owners have little understanding about the theory and importance of correct air/ fuel ratios for power and economy. Reliant owners / enthusiasts perhaps know a little more than most, especially when it comes to ensuring an SU carburettor is basically Air tuned.

But what does Air tuned actually mean? The workshop manual gives advice on how to set up an SU carb for idle, fast idle RPM increase, and how to fill the damper dashpot with oil. We have traditionally had to rely on the manufacturer for the mixture settings of the carb throughout the rest of its range. Reliant probably got it right to some greater extent, but design for mass produced engines is always a compromise, so the mixture strength for individual cars might not be at its optimum. The mechanic owner may understand how to use the SU piston lifting pin to check that the basic initial mixture setting allows good initial engine response (but not all SU carbs have one). Some of us may have used a Colourtune device, which replaces a spark plug and allows the colour of the burning mixture to be viewed with the car stationary. Unfortunately, this device does not allow the engine to be run under load, and it only allows a basic needle / jet relationship to be set up. Some of us may remember the old method of carrying out a "plug chop" to assess mixture strength. This involved stopping the engine after a fast run, removing the spark plugs and checking their colour. Unfortunately, with the introduction of unleaded fuels, this is no longer a reliable method as plugs tend to run more "sooty black", possibly falsely indicating a rich condition.

The SU carb is a simple but clever device, the basic design going back almost to the beginnings of motoring. It is a Constant Velocity (CV) design, which means that the accelerator pedal does not directly control the venturi opening. Instead, the throttle cable is merely connected to a "butterfly" plate (rather like a coin pivoted on a central axle) across the venturi, on the engine side of a piston inside the carburettor. This butterfly plate allows control of engine manifold vacuum acting above a piston inside the dashpot, basically sucking up the piston as engine speed increases. The lower, narrower half of this piston directly controls the size of the opening as it moves up and down inside the venturi. Engine speed therefore also affects the size of the venturi opening and therefore the amount of air allowed in (more revs = more suction). The piston rises against a coil spring. Oil in the dashpot has a damping effect on its upward movement and prevents flutter. But this only controls the air flow part of the equation. The fuel flow is controlled by a tapered needle projecting from the bottom of the piston. As the piston rises, allowing more airflow in, the needle is withdrawn from the jet, keeping the mixture strength correct. Or so we hope...

We rely on the manufacturer putting the correct needle in the carburettor in the first place. There are 354 different needle profiles for SU carbs with a .090 inch jet, such as in our Reliant's carb! Each needle has twelve "stations" up to a maximum of sixteen. The diameter at each station is machined to defined sizes. The thicker the diameter at the stations, the weaker the

mixture will be. If the engine varies from the mass-produced best guess average, the mixture will not be ideal and the engine may lack in either power output and response, economy, or both. All engines are slightly different in airflow from new due to manufacturing tolerances, they also begin to wear out and they get modified or reconditioned by the owner. The type of air filter fitted also affects the airflow, and as it gets dirty it may form a restriction. All these factors affect mixture strength and may require a very different needle profile from the standard to compensate.

Our simple SU device suddenly seems a lot more complicated! All told, we really don't know if our carb is actually giving the correct mixture strength throughout the engine's operating conditions at all. No surprise then that the SU carb, once universally used, is now obsolescent, and all modern manufacturers opt for computer-controlled fuel injection, mainly for emissions reasons.

Fortunately for us, some of this more modern technology can be borrowed to check, and hopefully improve, the accuracy of our little engine's SU carburettor. What is needed is a method of "seeing" our mixture strength at all times, so that we can assess if a different needle is required.

Enter the Air/Fuel Ratio Meter. An A/F ratio meter is actually a calibrated voltmeter, measuring a low voltage (around 0.1 to 1.0 volts) but marked to measure mixture strength. It needs to be connected to what Volvo originally called a "Lambda Sonde". This is a special metal probe fitted into the exhaust system. When heated to 600 degrees C it gives out a low voltage, dependent on the amount of oxygen remaining in the exhaust gasses (the fuel mixture strength determines the amount of oxygen present after combustion). For obvious reasons, these probes are now usually called oxygen sensors. They are fitted to all cars with a fuel injection system and a catalytic convertor; they feed back information to the engine management system, which then adjusts the fuel injection output. Modern cars are not generally fitted with an A/F ratio meter, because the driver doesn't actually need to see what is going on in the computer.

However, for the reasons already stated, as owners of SU equipped cars, we really would like to know what mixture ratio our engine is running on. We may be unpleasantly surprised! Fortunately for us, A/F ratio meters are commonly stocked by car tuning shops. They are often in the form of a rectangular box with a row of coloured LEDs which light up to show mixture strength.

Pilots of light aircraft also need to know what mixture strength their piston engine is using on every flight. As an aircraft climbs, air density reduces and so an uncorrected fuel mixture will get progressively richer, wasting fuel and power. For this reason, a mixture control is provided so that the pilot can manually weaken the amount of fuel entering the engine (it works like a choke in reverse). If there is no A/F gauge fitted, mixture has to be set by rule of thumb or by sound and feel, which is a little hit and miss. Some sort of a gauge is required for accuracy. Light aircraft gauges tend to be analogue (needle moving over a scale). One advantage of this type is that the needle is damped whereas LEDs aren't. The other advantage is that this type of gauge is that they cost less than the LED type sold by the car accessory shops! The one fitted to my Liege cost £36 from "Westach", as opposed to almost £100 for an LED type.

The better types of O2 sensor have a heating element built in (otherwise the probe has to rely on exhaust gas heat to warm it to 600c, which means at low power it may not work correctly). The gauge and O2 sensor can be fitted permanently, or temporarily while the engine is assessed and tuned, using a threaded insert in the down pipe. Wiring up the A/F gauge is quite simple; the gauge uses battery voltage and earth, plus the output from the O2 sensor.

A program called "SU Needle", which can be downloaded free on the Internet (use Google search, and type in "SU Needle") lists all the different needles and gives their dimensions at each station. From the results seen on the A/F meter, one can quickly get an accurate idea of what needs to be done regarding needle choice.

The A/F meter is an excellent way of finding the correct needle for our individual carburettor. If used intelligently it should allow any owner to get away from guesswork, and finally tune the SU properly, to give better economy and power.

My thanks to Paul Wheatley for the above well written article – Paul made a comment about me editing it, or just not using it at all if I felt it was not good enough – Paul, what can I say – if you had more time to type, and thus spend less time on your Liege, I could give up editing the Mewsletter – there's a thought, swap you? Once the Liege is finished of course!

Seriously though, many thanks for what I am sure many of our readers will find an interesting and educational article. Oh, just one thing, comprehensive as the story was, it does not mention that there are different rates of spring available for the SU! But that's another story.

Ed.

~.~.~.~.~

Technical Tweaks from Thetford 17th July 02

A Osborn 35 Griston Rd. Watton, IP25 6DN
I Could Have done better.

Those of you who are regular to these pages might remember one of my previous article titles was 'I should have known better' as being a self esteemed guru on motorcycle electrics/ignitions I should have been able to sort the Kitties indifferent starting for many years, and not blamed it on petrol when it was poor ignition coil connections! Now we have just about done the same thing with regard to the front struts!

We were doing some pre MOT checking and fixing and generally improving the old girl's well being and for quite a few months the 'hands off' always caused quite a severe left pull. I'd tried wheels/tyres/brakes and even spoken to John Blagburn. I'd reset the tracking several times and even fitted a new set of tyres and fresh wheels-no we still 'go left". I'd checked front back distances of the wheels, and measured the camber (albeit very basically) still nothing. Then my pal who knew these motors for many miles finds that the point where the strut bolts to the bottom wish bone is in fact several mm backward of the same point on the other side i.e. the left hand strut is somehow allowing the near side front wheel to be rearward of where it should really be, hence we turn left whether we like it or not, also we begin to get uneven tyre wear on the front. So now why is this? As soon as this problems cause is discovered then you'll be told.

Some eighteen months previous I had replaced the bottom strut on the off side with a very nicely strengthened one, if you go back far enough in these annals you will find the details. This good strut had had the vertical mounting bolt increased to 10mm (as opposed to 5/16) (good this mixing units!) and thereby made a very firm fixing, holding the bottom wishbone well forward. Not so on the near side, I'd not given it much thought that the older (5/16) strut was well worn-

elongated hole etc, this allowed near side front wheel to drop back, hence we 'turn left'. Moral of this little saga-find a worn part one side - change them both;

While we were under there doing pre MOT checking, like a good chap we must wiggle those ball joints-oh dear another dead one. Don't panic that good lass at Reliant Parts World will send me one in good time. Fine but the circlip that holds the thing in the top one doesn't come with the thing automatically and they forgot to send it. So make sure you get one with your top ball joint! But then the real fun started, these things are quite tight to fit into the wishbone, so having a wishbone spare and cleaned up ready to have the ball joint fitted makes life easy i.e. no car off the road when you get hassle fitting this ball joint. It wouldn't fit flush in the wishbone to allow the circlip to fit in properly. Try another wishbone (good to have spares!) No the same trouble so it doesn't appear to be fat metal in the wishbone but a narrow slot in the ball joint. To progress the job I trimmed a few thou off of the ball joint in the lathe, not easy as it is hardened steel and needs a narrow lathe tool, but we succeeded.

Now what was at fault? I have since questioned this affair with Reliant Parts World, they hadn't heard of this with any others, they would investigate but at the time of this ramble, mid July I haven't heard from them. If any one else has had any hassle fitting the top ball joint then please let us know.

What else has been happening in Norfolk? Well the new fat exhaust pipe was cured from hitting the chassis, but it seems to have drifted back to giving the chassis a tingle. More attention needed; But petrol consumption is continuing to cause a smile, 45mpg over the last 12 tankfulls. Some of you will think that is pretty poor with your 50s plus but I don't hang about and I do a lot of 10 mile and 2 or three mile journeys. One other thing I fitted recently was Iridium spark plugs. They cost a bit more but they do seem to have delivered, in the way of easy starting and better MPG.

Right, that's it for now, Marshall is champing at the bit for this, makes a nice change, perhaps he wants to get the next Newsletter done quick before he bunks off on holiday. Get in touch if you are stuck on something, often between us we can find a few more angles.

Alan Osborn

~.~.~.~.~

Sales and Wants

For Sale :- Fox custom B44 ECF Contact Peter Holmes

For Sale :- 1983 Kitten. Just 160,000 miles from new. Needs some work. Spares or repair. Offers to Alan McKay

For Sale :- A rare opportunity to buy a Kitten estate in Scotland ! Robert MacNeilage has decided to part with his late example. M.O.T. till September. Offers over £300.

For Sale :- Trailer tent complete with all accessories. Contact John Johnstone

For Sale : Well free to a good home in fact Two Kittens, a saloon and an Estate, also a Rebel, together with a lot of spares. Contact Robin Ellis

For Sale :- Two Kittens, a saloon and an estate, both with long M.O.T.'s and comprehensive documentation. Also most Kitten spares available. £595 will get you the estate, and £ 575 the saloon. Ring Martin Seymour for details.

For Sale :- R registered Kitten estate complete with many spares. £200 Also a Rialto estate with a good engine.

Oh, and it might not yet be too late for you to purchase either of the Rebels advertised in the supplement last time, ring John in North Shields for details of the 600, or Andrew Woodard for the 700.

Wanted :- Kitten front seats. Paul. Orkney

Wanted :- Kitten front seats –Bruce Harding

~.~.~.~.~.~.~

NOTES

Right, the mutual aid spares scheme. This has been successful in putting many buyers and sellers of parts in touch, but has also brought to light the frustrating fact that we are not always able to match desires and needs as comprehensively as one might consider ideal. This was brought home to me recently during a chat with our Australian friend Bob Riches who, in the process of building his Liege, has ended up with a vast array of spares which are of no use to him now. Things like a reground crankshaft, an engine with a plus 10 thou rebore – a bad decision as it happened, because there do not seem to be any 10 thou oversize pistons, and worse yet the individual who had the engine rebored, in desperation fitted standard pistons! Not to mention a fairly large pile of assorted leftover parts from the project. These parts are likely to be dumped in the very near future if a home cannot be found for them, which would seem a shame, but what can be done? Oh, I'll tell you what can be done, you can collect them from Bill.

Phil – ah, that elusive adjective again – I was going to say kindly, but I suspect that he was glad to see the back of the file, temporarily at any rate, the file containing many of the early mutual aid spares forms that you sent to him. One problem with this scheme is that people do not always bother to let the co-ordinator know when parts are moved on, either by being sold, donated, or even dumped, and it is frustrating to discover, having believed that a part was available, to find that the information is out of date. Perhaps we need to revise the system by having it up-dated, i.e. the information will be taken as cancelled automatically if it is, say for arguments sake, more than 2 years old. What do you think? I know that some wives will not tolerate old parts lying about for 2 months never mind two years, equally I know that some of the spares I have, and while old, many of them have never been used, and so can be described as new, are over two decades in my possession, indeed more than that in certain cases. Where oh where do we draw the line?

It was, nae still is, my intention to have a detailed search through the information in the file, and I did think I might publish extracts from it within these pages, but, ah, isn't there always a but? I guess I would need to check that the information is still current before publishing anything. Does make me wonder, given the state of my own memory, just how many of you can remember what information you provided Phil with in the first place!

Food for thought, certainly, more work for little me, absolutely. Progress, well that remains to be seen, but it must be good to air such matters. Comments, ideas, recommendations, criticisms even, awaited.

Still on the subject of spares, our man in Birmingham, well one of them at any rate, Graham Robinson, is looking for a pair of Fox rear springs, now I promised Graham recently, that I would again run the story in the magazine, to see if there is anyone else out there needing a pair of Fox rear springs. As I probably mentioned before, I can get them made, but the minimum batch quantity is 10 springs (5 pairs) and while I would be prepared to have the Register keep a pair in stock, we would need to find 3 other folk besides Graham, prepared to buy a pair at the same time before I could do anything. You know my number!

Right, John (Pearce) has excelled himself, and caught you out! The front covers arrived on Saturday morning (July 27th), great new glossy paper too, well done John. So I decided, since the last edition was late, I'd catch up, which caught you on the hop, because I don't have any recent Readers Letters, and so have opted to omit that section, along with a couple of others, from this edition.

That said, a couple of other pages are likely do be dropped in future, and so it seemed not inappropriate to vary the content a bit this time too!

We learnt an interesting, and for me frustrating lesson with the covers recently. Because of past delays, of several weeks on one occasion, we decided to use the Royal Mail's "Special Delivery" service to get the covers up here. This was proving to be quite expensive, till John checked the weights, and discovered that it costs less than half as much money to send me the covers in 2 separate parcels as it does in 1. Silly but true. I said earlier that that I found it frustrating, and so it was, because I have met this situation before, and should have remembered!

Oh, and just to put your mind at rest, Rebel No 00003 is safe, more on that next time. Talk to you again nearer the autumn, till then take care.

Brian

Effective Preservation Makes Good Economic Sense

For detailed information on our up-to-date range of easy-to-use and effective engine and workshop protection products visit our web site or write or telephone for free catalogues.

Enginewise Dehydration Kits. Plugs for 10,12,14 + 18 mm threads in 2, 4 + 6 plug kits

V2K Corrosion Inhibiting Oil. Turns any mineral oil into a preserving oil—top up every oil change.

Workshop Dehydration Kit. Keeps components + instruments corrosion free even in damp workshops.

Enginewise Closure Kits. An invaluable multi-purpose aid to restore and store engines safely.

Hygrometers. Do you know how much humidity you suffer in your garage and workshop?

Oil Drip Pillow, Barrier Rug, Heavy Duty Maintenance Wipes. Help to keep your workspace clean.

ENGINEWISE

3 Venture Business Park, Gilbey Road, Grimsby DN31 2UW

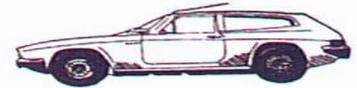
Tel: + 44 (0)1472 347400 Fax: + 44 (0)1472 267647

sales@enginewise.co.uk www.enginewise.co.uk

GRAHAM WALKER LIMITED



28 Bumpers Lane
Sealand Road Ind Est
CHESTER CH1 4LT



**RETAIL AND TRADE SUPPLIERS OF
RELIANT PARTS WORLDWIDE
ROBINS TO SCIMITARS**

**OVER 10,000 LINES STOCKED
MAIL ORDER PARTS ARE OUR SPECIALITY
NEXT DAY NATIONWIDE DELIVERY SERVICE**



**SHOP BY PHONE FOR FAST MAIL ORDER
ORDERS RECEIVED BY 4.00PM WILL BE DISPATCHED
SAME DAY**

ALL MAJOR CREDIT CARDS ACCEPTED

TELEPHONE

Mail Order: 01244 381777 - 7 Lines

Fax No: 01244 381262

OPEN

**Monday - Friday
8.00 am - 6.00 pm**

**Saturday
9.00 am - 1.00 pm**

WEB : www.grahamwalker.co.uk E.Mail : tracey.jones@grahamwalker.easynet.co.uk

**COMPARE OUR PRICES, OUR QUALITY AND OUR SERVICE
FULL WORKSHOP FACILITIES AVAILABLE**



Reliant PartsWorld

**GIRTON ROAD
CANNOCK
STAFFS
WS11 3ED**

FREEPHONE 0800 - 1975663

TELEPHONE – 01543 431952

WE ARE DELIGHTED TO SUPPLY DIRECT TO OWNERS OR DEALERS.

WE HAVE STOCK OF MANY OF THE PARTS THAT YOU REQUIRE FOR YOUR VEHICLES INCLUDING TOP AND BOTTOM BALL JOINTS.

WE ARE ALSO ABLE TO SUPPLY, DIRECT TO YOURSELF OR YOUR DEALER, REMANUFACTURED CYLINDER HEADS FOR 848cc ENGINES, WHICH COME WITH ALL THE GASKETS YOU REQUIRE AND WILL CONVERT YOUR VEHICLE TO RUN ON UNLEADED FUEL.

PLEASE TELEPHONE THE FACTORY FOR DETAILS OF SPECIAL OFFERS ON KITTEN PARTS. REMEMBER TO QUOTE YOUR MEMBERSHIP NUMBER.

PAYMENT CAN BE BY CHEQUE IN ADVANCE, OR WE CAN ACCEPT MOST MAJOR CREDIT/DEBIT CARDS.

REMEMBER THAT WE ARE HERE ON THE END OF THE TELEPHONE TO OFFER WHATEVER HELP AND ADVICE WE CAN.