

TEE ONE TOPICS

Number 39

September 2004

ONLY THE AMERICANS

Found this on the web somewhere and threw it into the basket. We tend to scoff at such modifications to our cars but in the absence of much bespoke body equipage perhaps we can enjoy these sallies into a bit of originality. There was no picture of how the inside was treated. I have never had a categorical explanation as to why the post-Cloud cars had bonnet pads. Some say it was for sound proofing others believe it protects the bonnet paint from the considerable heat of the engine beneath.



Lately I have been patrolling a few engine bays and have been a bit put out by the amount of detritus lodged on the bonnet cushions. All engines give off oily fumes which condense on the nearest suitable surface and the pads are no exception. Not only do these fittings look awful when they are filthy but they are a fire hazard and smell like a back yard of a wreckers establishment. They are no difficult to remove and can be cleaned with a suitable solvent. Be careful about hosing them as the outer cloth is fairly thin and will break easily under a strong jet of water.

If they are torn or looking irrecoverably grotty, look to having them remade.

Bonnets incidentally are not difficult to remove or replace but it requires two people. First step is to put a thick blanket on the roof. There are two things to disconnect, the wiring for the bonnet light (two plugs down the side of the radiator) and the earth strap behind the mascot. Use a sharp pointer to scribe around the hinge assembly where it bolts onto the bonnet. This should ensure that you get it back in the same place. Each hinge is held by 4 bolts (1/2" A/F). You can safely remove the two upper ones and one lower one. Then with your friend on one side and you on the other, put your heads under the bonnet and your free hand on the outside down near the grille. Unscrew the remaining bolt and you will find you can hold the panel comfortably between your face and the free hand. The bonnet can then be safely stored on the roof which of course has a blanket on it! When replacing the panel firmly tighten two bolts on each hinge then very carefully try to close the bonnet noting that it has a gap all around. If not loosen the bolts and move the thing. When you are satisfied do up all bolts, reconnect the bonnet light and refit the earthing strap!



Brake fluid facts

By Steve Wall

As a former materials engineering supervisor at a major automotive brake system supplier, I feel both qualified and obligated to inject some material science facts into the murky debate about DOT 5 verses DOT 3-4 brake fluids. The important technical issues governing the use of a particular specification brake fluid are as follows:

- Fluid compatibility with the brake system rubber, plastic and metal components.
- Water absorption and corrosion.
- Fluid boiling point and other physical.
- Brake system contamination and sludging.

Additionally, some technical comments will be made about the new brake fluid formulations appearing on the scene.

First of all, it's important to understand the chemical nature of brake fluid. DOT 3 brake fluids are mixtures of glycols and glycol ethers. DOT4 contains borate esters in addition to what is contained in DOT 3. These brake fluids are somewhat similar to automotive anti-freeze (ethylene glycol) and are not, as Dr. Curve implies, a petroleum fluid. DOT 5 is silicone chemistry .

Fluid Compatibility

Brake system materials must be compatible with the system fluid. Compatibility is determined by chemistry, and no amount of advertising, wishful thinking or rationalizing can change the science of chemical compatibility. Both DOT 3-4 and DOT 5 fluids are compatible with most brake system materials except in the case some silicone rubber external components, such as caliper piston boots, which are attacked by silicon fluids and greases.

Water absorption and corrosion

The big bugaboo with DOT 3-4 fluids always cited by silicone fluid advocates is water absorption. DOT 3-4 glycol based fluids, just like ethylene glycol antifreezes, are readily miscible with water. Long term brake system water content tends to reach a maximum of about 3%, which is readily handled by the corrosion inhibitors in the brake fluid formulation. Since the inhibitors are gradually depleted as they do their job, glycol brake fluid, just like anti-freeze, needs to be changed periodically. DOT 5 fluids, not being water miscible, must rely on the silicone (with some corrosion inhibitors) as a barrier film to control corrosion. Water is not absorbed by silicone as in the case of DOT 3-4 fluids, and will remain as a separate globule sinking to the lowest point in the brake system, since it is more dense.

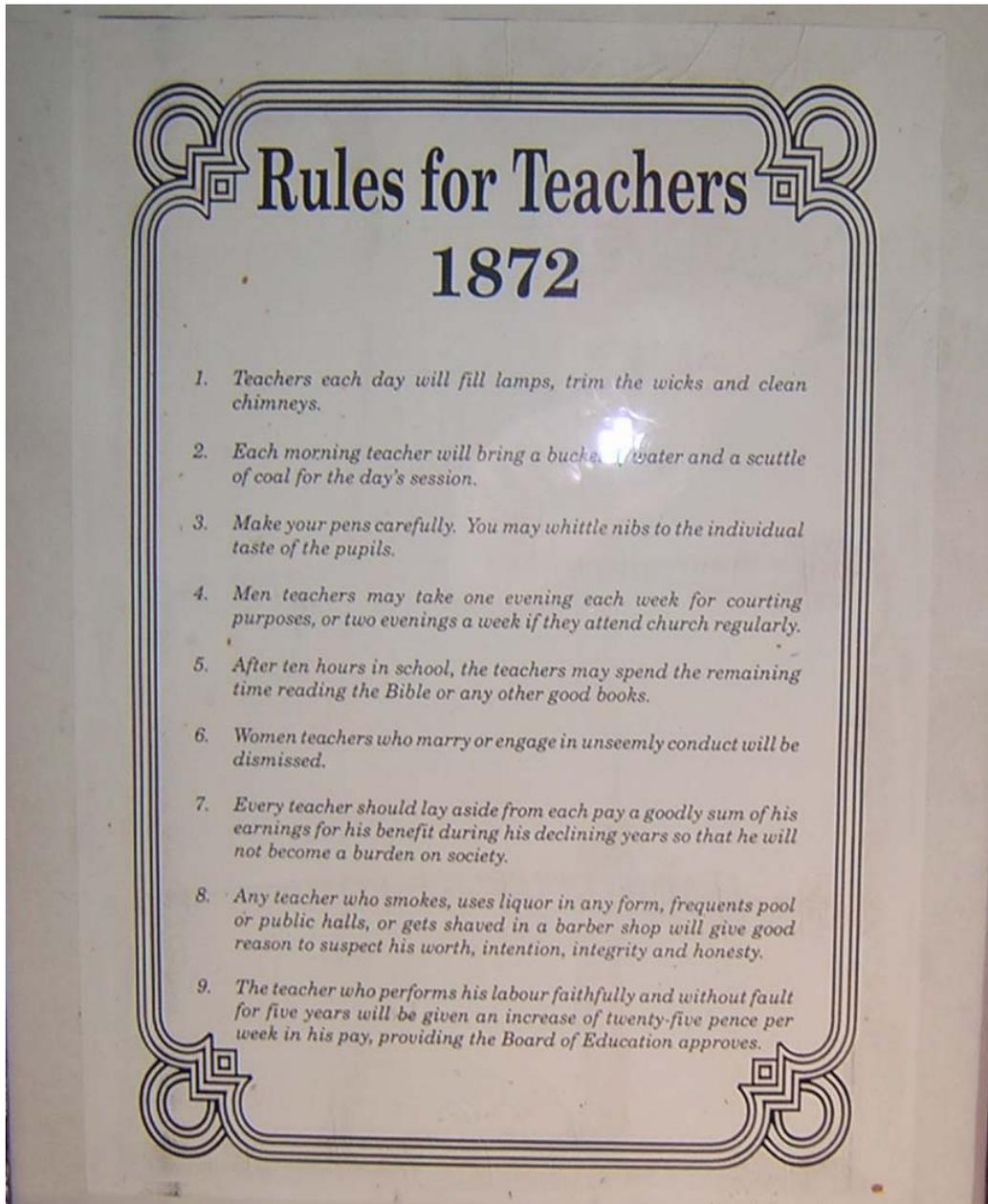
Fluid boiling point

DOT 4 glycol based fluid has a higher boiling point (446°F) than DOT 3 (446 °F), and both fluids will exhibit a reduced boiling point as water content increases. DOT 5 in its pure state offers a higher boiling point (500°F) however if water got into the system, and a big globule found its way into a caliper, the water would side at temperatures very much below freezing, let alone at 40° below zero, silicone's low temperature advantage won't be apparent. Neither fluids will reduce stopping distances.

With the advent of ABS systems, the limitations of existing brake fluids have been recognized and the brake fluid manufacturers have been working on formulations with enhanced properties. However, the chosen direction has not been silicone. The only major user of silicone is the US Army. It has recently asked the SAE about a procedure for converting from silicon back to DOT 3-4. If they ever decide to switch, silicone brake fluid will go the way of leaded gas.

Brake system contamination

The single most common brake system failure caused by a contaminant is swelling of the rubber components (piston seals etc.) due to the introduction of petroleum based products (motor oil, power steering fluid, mineral oil etc.) A small amount is enough to do major damage. Flushing with mineral spirits is enough to cause a complete system failure in a short time. I suspect this is what has happened when some car owners changed to DOT 5 (and then assumed that silicone caused the problem). Flushing with alcohol also causes problems. Older brake systems should be flushed only with DOT 3 or 4.



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If silicone is introduced into an older brake system, the silicone will latch onto the sludge generated by gradual component deterioration and create a gelatin like goop which will attract more crud and eventually plug

up metering orifices or cause pistons to stick. If you have already changed to DOT 5, don't compound your initial mistake and change back. Silicone is very tenacious stuff

and you will never get it all out of your system. Just change the fluid regularly. For those who race using silicone fluid, I recommend that you crack the bleed screws before each racing session to insure that there is no water in the calipers.

New developments

Since DOT 4 fluids were developed, it was recognized that borate ester based fluids offered the potential for boiling points beyond the 446°F requirement, thus came the Super DOT 4 fluids - some covered by the DOT 5.1 designation -which exhibit a minimum dry boiling point of 500°F (same as silicone, but different chemistry).

Additionally, a new fluid type based on silicon ester chemistry (not the same as silicon) has been developed that exhibits a minimum dry boiling point of 590°F. It is miscible with DOT 3-4 fluids but has yet to see commercial usage.

SELF HELP DAY KAMBAH 7 AUGUST

George Shores wrote the following in great haste and forwarded it to me for on forwarding to the Acting Editor of the Capital Letter. Unfortunately it was not used so we append it here for the record.

We met at Peter and Bill's place on Saturday 7th of August. The venue was most suitable as they recently had a huge shed installed (of which Bill is extraordinarily proud), and we have oodles of hardstand on which to park our cars. It was cold in the shade and cool in the wintry sunshine. We were met, welcomed, fed and caffeinated and directed to mingle by our hosts. It looked like becoming a gabfest so I shook out the wet blanket and asked everyone to assemble in "the shed".

Bill gave a short introduction to the days activities and handed over to me. We stepped through our intentions and the usual workshop and car safety procedures then moved to the reasons one should attend to the hydraulic oil on the Shadow series of cars.

Silver Shadows and derivatives are the only cars to require RR 363 which is manufactured by a supplier and distributed worldwide by Castrol. In terms of volume, the market is tiny. A few years ago, supplies of RR 363 (which came in a 5 litre can) ran out and a new batch was introduced in 1 litre plastic bottles. The oil was much paler, almost clear, nevertheless, it had been granted approval by the Company so it was used. When there is no alternative, what does one do? A couple of years later, problems with the oil surfaced and questions were put to Castrol and to the Company. The formula was modified and the "replacement" RR 363 was produced. It has been trickling in to Australia although most outlets know nothing of the issue.

We find ourselves embroiled in a strange set of circumstances. On one hand, we are advised to regularly change the hydraulic oil in our cars in order to protect them from malfunction and excessive wear. Now, we find that the available oil doesn't have sufficient lubricating properties to do the job. So, what to do? Read on.....

The old stock of RR 363 (5 litre can) was quite yellow and...well...oily in appearance and did and does the job admirably. Lucky is the owner who has a supply. The new oil (which did not have

enough lubricating properties to do the job) can be distinguished from the replacement oil (which has been modified to increase lubrication) by slight differences in the labelling of the 1 litre plastic bottles. The new oil has the Castrol logo on the lower half of the label and is almost clear in colour. The replacement oil (which is the good stuff) has the logo on the top left hand side of the label preceding the RR 363, and is a very pale yellow in colour.

MUST READ BIT.....

Why there hasn't been a fuss made about the clear oil is beyond me. It manifested itself as a problem when the hydraulic rams on some cars (including mine) began to make funny tapping noises. A long process of elimination resulted in all agreeing that the new oil doesn't have enough lubricant in it to allow the rams to function properly. The formula was changed but it seems that nothing has been done to recall or dispose of all of the unsuitable oil sitting in distributors and suppliers warehouses throughout the country and indeed the world. Replacement stocks are trickling through but it may be years before the bad oil is no more. Why should it matter? Forget the odd noises and the badly functioning hydraulic rams. Height control systems only work part of the time. What is most important is that the new (bad) oil lubricates the hydraulic pumps EVERY TIME THE ENGINE IS RUN. If a lack of lubricating properties manifest themselves in hydraulic rams, how much damage is being done to the pumps? Replacing the oil is cheaper by far than the cost of overhauling the hydraulic pumps so if in doubt, chuck it out. I purchased a box of 12 litres of the new stuff when it came out a couple of years ago and now I use it as a flushing oil for when I replace the hydraulic oil in my car.

This was to be a blow by blow account of how to flush and bleed the systems in Shadows, however, the offer to individually help Shadow owners/enthusiasts with the job is now made. If you have concerns, and want to know more, or you wish to change the hydraulic oil in your Silver Shadow and would like some guidance, give either Bill Coburn or George Shores a call on 62965893 and we'll sort out a time.

There are many maintenance jobs that must be done if one is to protect these cars from the twin ravages of time and neglect. Next month we will be imposing on Peter and Bill again to sort out a coolant replacement programme for those who want to keep their cars for a long time.



DON'T PUT WATER IN YOUR SPIRITS

For once I believe I have total support for this suggestion but unfortunately I am referring to the four wheel variety and not the single malt one! Saturday 26 September, saw me trotting down to Mr. Carl Overs for a little Auto ablution. Given that time was in short supply I opted to let the machine do the work and presented it with the requisite number of coins and drove in. This system as those of you who have used it, among other features has an under-body wash involving powerful jets squirting from pipes in the floor as one drives over them.

Wanting to get the best value for money I proceeded through this part of the wash very very slowly. When the red light came on I parked and left the engine running while the machine did its merry dance around the car. Towards the end the engine started to idle roughly in fact so roughly it eventually stalled. Dismounting I established that the engine compartment was quite dry but no amount of cranking would bring the beast to life. Fortunately the following customer helped me push the thing out of the wash.

The NRMA man arrived checked everything which was found OK. Lots and lots of cranking (starters should not be run for more than 30 seconds as they over heat) and eventually the dear old girl struggled to life cleared its throat and ran impeccably! We deduced that by sheer bad luck the air intake which is under the right hand mudguard ahead of the front wheel, had copped a good jet of water which had finally doused the internals of the engine! For information!!!



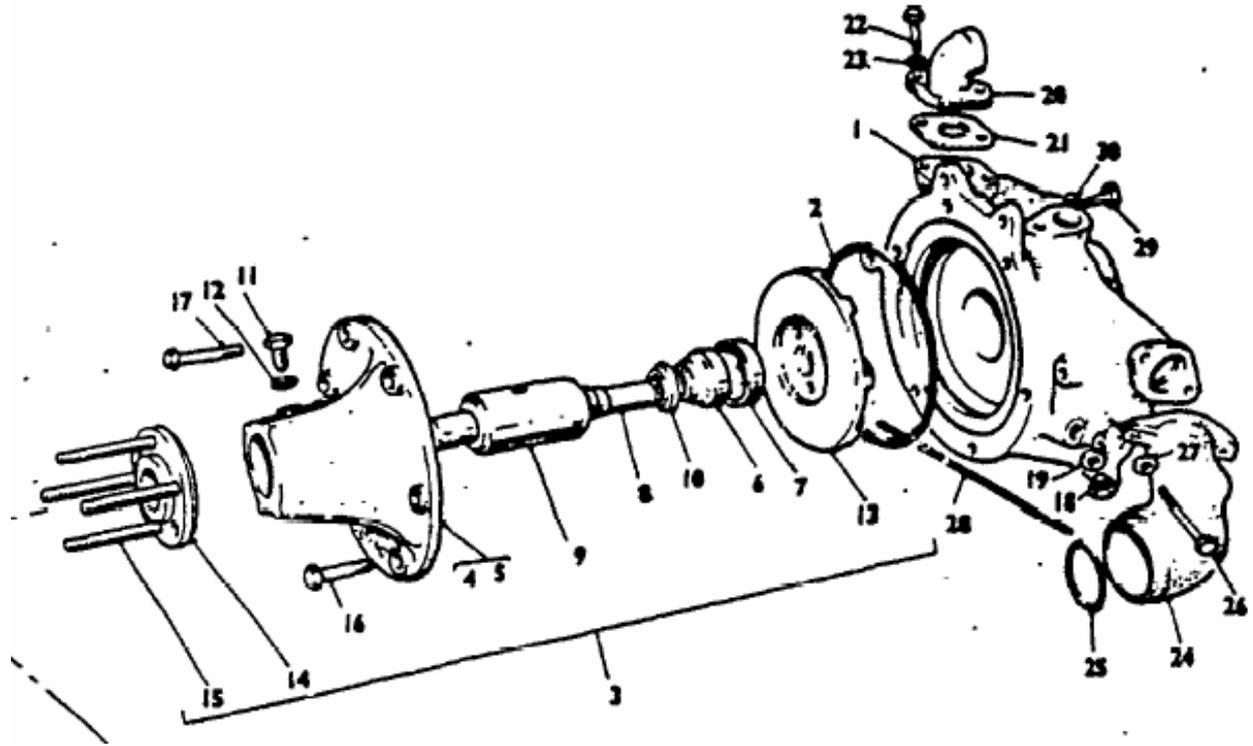
BEARING THESE IN MIND



These two assemblies off a vee eight engine are usually forgotten until suddenly lights start coming on and you end up sitting embarrassed on the side of the road worse you could be wondering about very significant engine damage. On the left of course is the water pump. The shaft with its spider has a lot of work to do including turning an internal impeller (Fig 13) to circulate coolant through the engine. At the other end of the shaft it has to turn a monstrous fan at a pretty high speed. The shaft is carried in a fairly stout bearing (Fig 9) which is packed with grease and no provision is made for further lubrication.

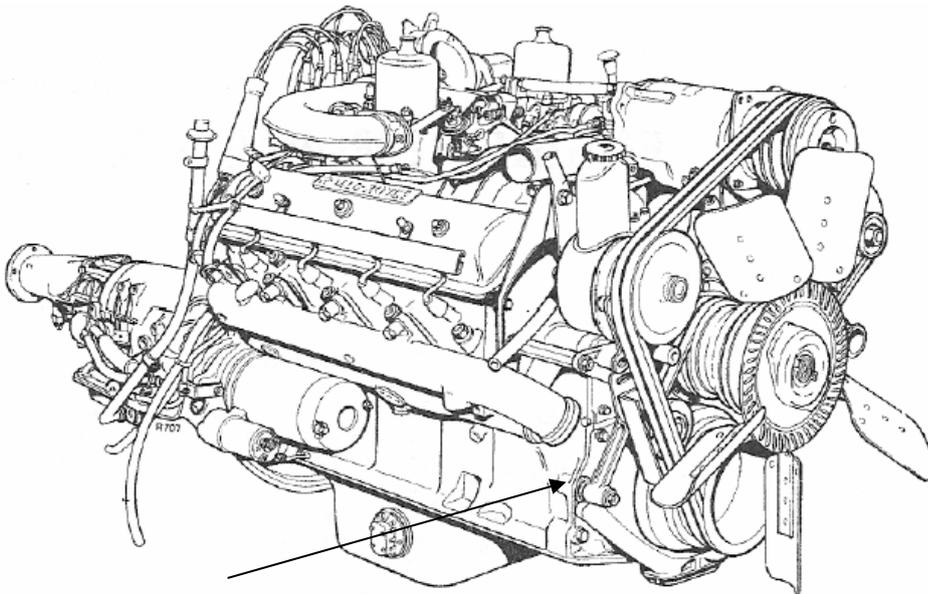
There remains the problem of stopping the coolant from seeping through the bearing. This is achieved by a special seal (Fig 6,7). If you wanted the ultimate assurance that you would have no water pump problems and you used the car a lot perhaps an overhaul every five years would not be extravagant. The pump pictured was not noisy, usually caused by a worn bearing but it did have a slow leak as can be seen on the body of the assembly. In this installation the front of the engine was so crudded up with oil and dirt, the coolant tended to be soaked up and the leak was not detected. Actually it was the pursuit of the source of the crud that prompted the removal of the pump.

Unfortunately these units tend to fail suddenly usually with the collapse of the seal. Diagnosis is not difficult when you note the steady dribble of coolant at the front of the car! If you are wondering what state your pump is in there are two tests you can perform. One is to shake the fan for and aft – you should feel no free play but make sure that any apparent play is not in the viscous unit driving the fan assuming your car is fitted with one. The second is to buy yourself a simple



mirror on an extendable handle so you can with the aid of a good light check the underside of the pump to ensure that there is not a slow leak.

The second assembly pictured to the right of the water pump is the fan belt tensioner. This is almost invisible on most engines because it is hidden under other components. The water pump pulley is driven by belts from a pulley on the front of the crankshaft. To tension the belts so that they won't slip, the pulleys would normally be moved further apart but as this is not practical the belts pass over a third pulley (arrowed on the drawing below) which can be swung away from the engine to tension the belts. The bearing that this pulley on also has a hard job and needs to be checked. Probably the simplest way is to buy yourself a stethoscope from an auto shop and



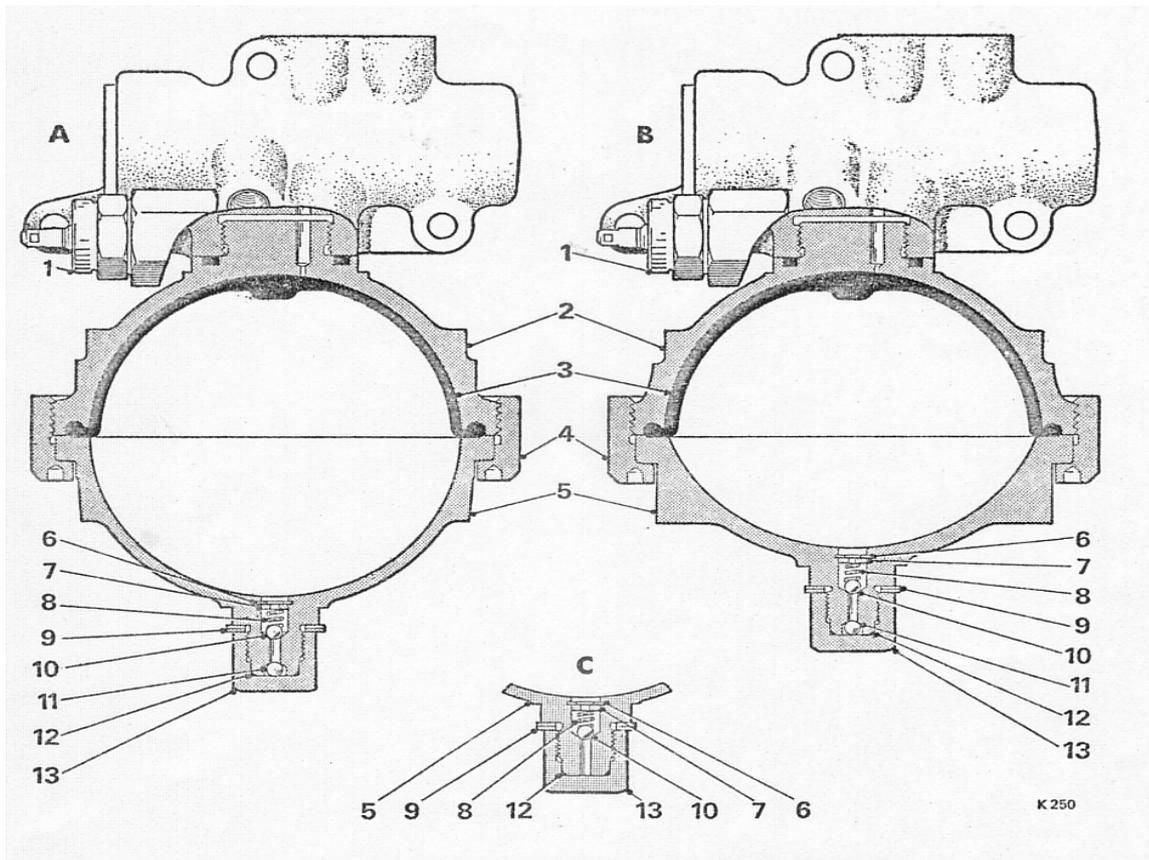
carefully put the probe onto the arm of the tensioner having first established that you are not going to be caught up in the fan or any of its supporting belts and equipment. The only likely problem with the tensioner will be a failing bearing which will be obvious as a grinding or clicking noise.

The tensioner can be seen on the engine to

the left (arrowed)



TO SETTLE THE ARGUMENT



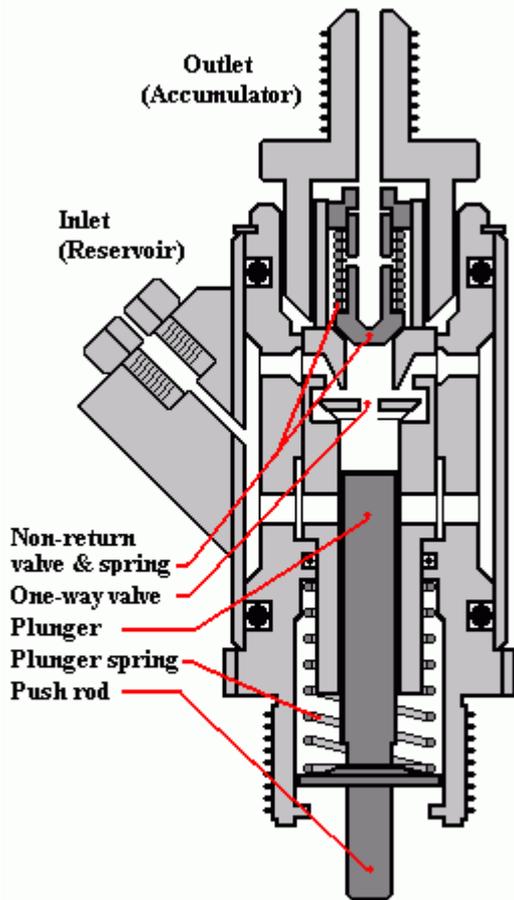
A year or so ago I wrote to a former hydraulics designer retired from the Factory and among other exchanges he confessed that he was not aware that the Factory had reduced the size of the accumulators on the Shadow II. Since some of the outpourings on the topic I have had this fact queried by a number of my readers. Well here it is – the comparison. The obvious reason for the change was to allow the units to be tucked in more snugly to the engine block to make room for other new bits. But the very first cars were fitted with these truncated accumulators if they were destined for France. It is all a lot about nothing really except cars fitted with these have fewer pumps before the lights start ablinking!

And here is the comparison of the Shadow I accumulator (left) and the Shadow II unit on the right. The positioning of the Shadow I accumulators allowed re-charging in situ. With the advent of the Shadow II and rack and pinion steering the accumulators had to be moved to either side of the engine block. There they were tucked in very neatly but denied any attempts to charge them without removal. One other important change was to move the pressure switches on the Shadow II to the engine valences remote from the accumulators. There has also been some discussion on the sealing of these units. Originally item 10 was a steel ball that tucked nicely into a conical recess above the charging hole. The latter with neglect condensation etc can get corroded making it almost impossible to get a good seal. The solution is to use one of the plastic balls item 12 and another one on the outside after you have done your inflating. A good method to clean the hole seat for the ball is a wad of steel wool jammed in there and rotated at high speed by an appropriate drill. Finally always test the finished accumulator for leakage by submersion.



DUTCH PUMPS!

Warwick Grigg found a Netherlands web site devoted to the Silver Shadow. Included were some excellent illustrations of bits dear to our hearts one of which is appended here. The club produces a quarterly magazine that is excellent, regrettably however I don't read or speak Dutch. The photos however are tantalising and hopefully I will be able to cadge some from the authors.



HYDRAULIC PUMP Rob Wilde ©

Hopefully this very clear diagram will re-assure owners that those little things that go click under the bonnet are not really that complicated anyway. The bits that usually trouble us are the two seals between the outer casing and the inner body shown here in cross section as four very black round dots. These with a bit of dexterity (the Factory loved that word) can be replaced in situ.



THE PAOMNNEHAL PWEOR OF THE HMUAN MNID

Aoccdnrng to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttar in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.



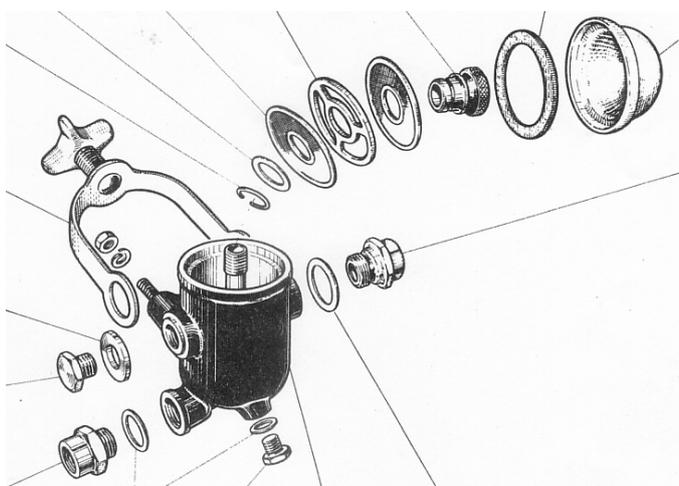
WHEN DID YOU LAST CHECK YOUR FUEL FILTER?



For those of you that missed it on the web our Swiss correspondent Richard Treacy sent this pic of the fuel filter of his Turbo which he changes regularly. Sadly this is a gadget that simply gets overlooked. When I bought the Blue Beast I changed everything in sight but completely forgot the fuel filter. I found a replacement sitting in the cupboard which jogged the memory and the change was made. I cut that one open and had a similar result to the photo.

Below is a delightful drawing from the spare parts manual for a Silver Wraith. To make such a gadget today would be prohibitively expensive and sadly the finished product would not come near the modern filter in the field of performance. Compare the two mesh filters with the folds of a modern paper unit! Well we may have come a long way with filter design but it seems not far with getting clean fuel into our tanks. A further complication is that the older cars' tanks are starting to corrode and the deposits find their way into the system. The suggestion then is to discreetly insert some modern filtration into the lines preferably on the suction side of the pumps. Cars prior to the Silver Cloud three have metal pipes which will need to be cut but from there on some fuel hose a \$10 filter and a screwdriver will give you all the protection you will need.

The Shadows onward used paper cartridge filters in canisters and are easy to change but equally easy to forget. Much later cars with fuel injection went one better and installed a filter in the bottom of the tank which is extra easy to forget as some distressed owners have discovered. Changing the latter filters involves draining the tank which of course is done with the same finesse as crimping detonators! There is an added hazard here in trusting your repairman if you are not going to do it yourself. If he is able to clean up the outside of the filter so that it looks new there is no reason to change it is there? This is not nonsense. Apparently supervisors in the larger shops make a point of regularly inspecting the garbage bins on the lookout for new components which

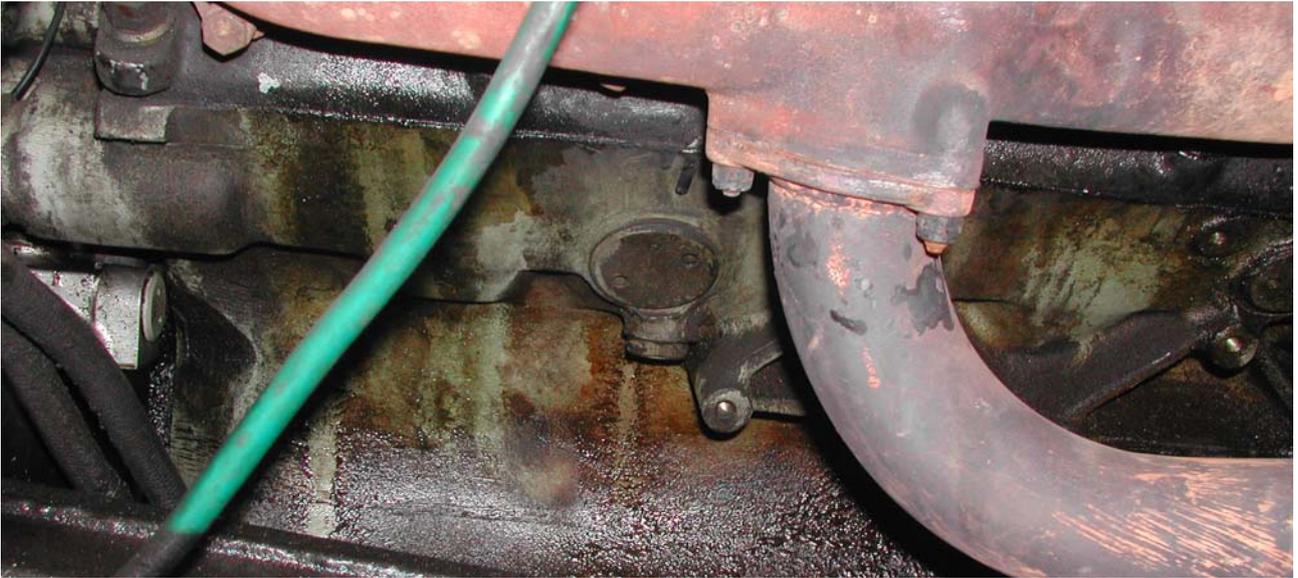


have been drawn and discarded rather than fitted. I remember a dealer who had occasion to open an employee's locker in his absence and finding a stack of brand new oil filters!

This is an extreme situation but one to be aware of. In the end it comes down to trust. Years ago I took my Triumph to a shop for a tune and the finished job did not seem to have the result I was hoping for. In innocence I called them up and asked whether they had changed the plugs – yes they certainly had. It was then I checked the bill and noted that I had been charged for 6 plugs. I called again and asked where had they found the two extra cylinders? Dead silence. I then pulled the plugs and sure enough they were very tired. It was the last time I ever gave that job to anyone!



WEEPING SHADOWS



BEFORE

This is becoming a too frequent sight nowadays. There are two obvious leak points on the engine, the rocker covers and the tell-tale holes. Here is an example of the latter leaking. A friend tells me he had a Silver Spirit brought to him which was literally dribbling oil from several of the these orifices whilst it was idling. The car moreover had done only 45,000K! Probably out of sheer pique he wrote to the Factory asking for their suggestion for repair. The solution is apparently to remove the cylinder liners and replace the seals! That would involve apparently about 120 hours of work – say \$6000 at today's rates.

This leakage is more serious on Silver Shadows onwards since the escaping oil coats the suspension rubbers and proceeds to rot them. Talking to some English expatriates I discovered that the common solution on the misty Isles is to block the holes with fine dowling. Quelle horreur I hear you cry. The spin merchants promoted the weep holes as being the automotive innovation of the



century. As

AFTER

everyone knows the bottom of the cylinder liners are sealed by two 'O' rings about $\frac{3}{4}$ " apart. The bottom ring is intended to keep the oil in the sump and the upper one the coolant in the cooling passages. Noting the fluid seeping from the much vaunted tell-tale holes, enabled one to say to

'one's man' "the top seal seems to have gone at the bottom of A3 old chap – best you whip them out now if I am to get to the hunt next Tuesday eh!!!"

But sealing them up!!! Well stopping the oil from issuing forth can surely do no harm and can only contribute to the preservation of the environment, your garage floor the driveway and the suspension. But what about the coolant I hear you cry! Well if that should leak and it gets into the sump you will quickly find that you have a Mr Whippy plant on board with the dipstick liberally coated with a white soapy foam which is coolant emulsified in the oil. Then you will need to take the big step.

The holes are 3/16" diameter and wooden dowelling is readily available for hole plugging. But when I discussed this with one of those who would know, he pointed out that it is desirable that you be able to get the plugs out if needed. To that end he recommended and I used, grub screws which fit very nicely with a little Loctite when the receiving hole is threaded with a suitable Whitworth tap!



BLOWING UP YOUR REAR WINDOW

Ken Saunders our electrical guru rang to warn against my advice on page 551 headed Rear Window Blues. He believes putting 24 volts through the element will guarantee cracking the glass. As with all material in these pages caveat emptor. The procedure I passed on actually came from a Factory Bulletin. I have done it and it was successful. Clearly you would not want to turn the thing into a translucent frypan. At the same time if it did crack there would be weeping and gnashing of teeth to be heard for miles to come since the window costs more than the average family sedan!!! Heed all advice and if still unsure put up with a blotchy rear view. My thanks to Ken for his advice!



KNOWING WHAT IS BEST FOR YOUR ALUMINIUM ENGINE

One of the favourite topics on the Club web site is what coolant to use in our aluminium motors. They are nothing new, so many appear in the Japanese catalogues and Rolls-Royce themselves have used aluminium in their cylinder heads for nearly 80 years. But they all rot. The photo at left is



testimony to the problem! You are looking down the hole that one of the cylinder liners fits in complete with specially shaped 'O' rings. The large hole to the top of the picture is a water passage.

The Nippon variety usually does not fuss owners since the cars in their home territory are usually scrapped after 4 years and



locally they just may be kept going for 20 years.

But we are now driving 40 year old engines and that is a lot of time to get rotting! Furthermore word has it that blocks and reconditioned engines for the S2 and S3 cars are no longer available! This is no surprise either when one considers the saga of the Phantom III engine nearly 70 years old! They were the predictor for the later vee eight! Those who know have told me that no matter what one uses in the cooling system the rot still goes on. It is a matter of slowing it as much as possible.

And so as to what to use? Well despite the most learned words from our erudite readers I still have enough faith in the remnants of the Factory to accept that they know best in this field. They have produced a mix which is reportedly the best for the engine and although costing a few dollars more it is a fairly cheap prophylactic!



SUN ROOF IN A SILVER SPIRIT II

Seen at Bowral during the Tulip Festival this month, I assume it is a Factory fitting given the neatness of the switches. I may have been drunk



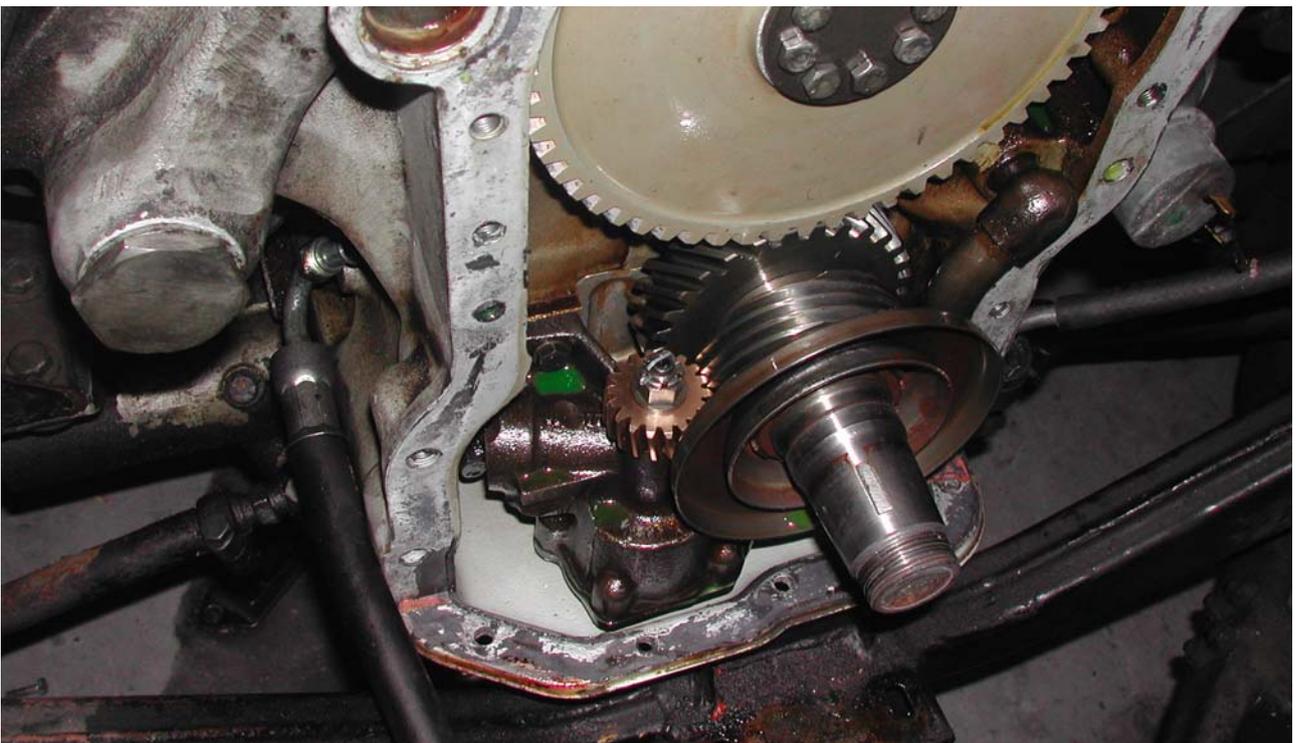
and misread it but I believe the option was costed at a mere \$64,000 on top of the car's price

AN ACHILLES HEEL

We all know that Thetis mother of the mythical hero Achilles bestowed invulnerability on her son by immersing him as a child in the River Styx. Mindful no doubt of the Family Law Act and the efforts being made to stamp out child abuse, she hung in to him by his heel. That bit did not get Styx water on it and that was his vulnerable part. There hasn't been a car made that didn't have a flaw some minor others not so minor. And Rolls-Royce is no exception. Ideally the flawed bit is visible removable and repairable or easily replaceable. One that is not is on the vee eight engine. It is crucial to the survival of the engine yet short of pulling half the unit to pieces, it is difficult to anticipate failure. And here it is.



Obviously the one on the left failed and the one on the right replaced it. This is the gear that runs the oil pump for the entire lubrication system in the engine. And here is a picture of it in situ.



That poor little bronze gear working its mechanical ass off to keep the good oil up to everything, certainly earns its keep. Fortunately the shape of the gear allows it to be removed and replaced without disturbing the oil thrower in front of it.

So how did the driver know that the gear had failed? Elsewhere we have covered this ad nauseum but suffice to say the failure of the pump caused a drastic drop in oil pressure which was sensed by a switch (one of three) sitting on the top of the later cars' oil filter head. This in turn switched and cut off the power to the electric fuel pumps and the engine – she stopped – thank God. There was no damage done and all that was required was to remove the entire front of the engine, the grille radiator bonnet and lots of skin from the knuckles and there was the culprit waiting to be fixed.

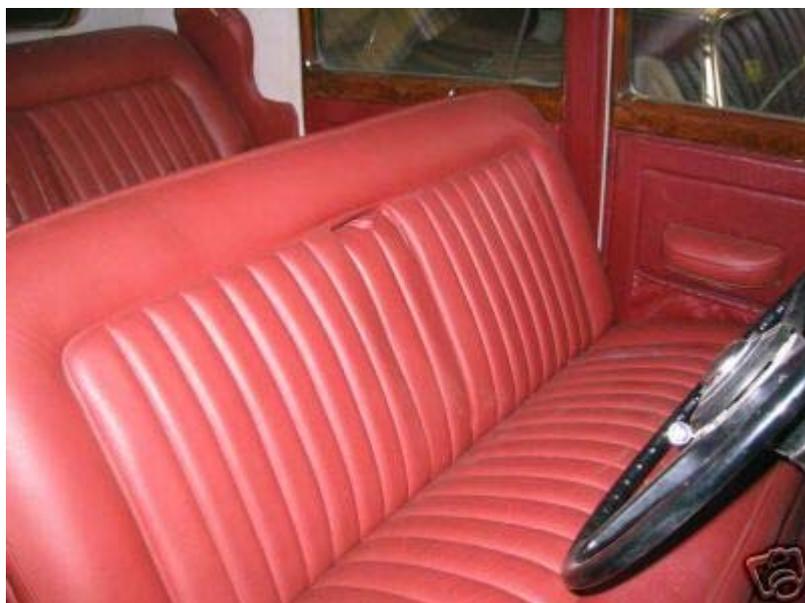
Before the 'I told you so' merchants get going I understand that the new solution devised by the factory is to replace the steel helical gear on the crankshaft with a bronze item and fit a steel little gear to the water pump. The parts cost however is in the realm of about four sets of the very best Reboks so the decision if you have to make it is yours.

What must not be done however (and it has been) it to replace the worn bronze pump gear with the new steel one. You then have steel on steel and apparently they tend to eat each other.



NOSTALGA

I ask for your indulgence. This picture is of a special to order front seat on a Silver Dawn advertised recently on eBay which had allegedly traversed some 4500 miles! Growing up in the straightened days following the last great war I used to marvel at those English cars that had 'bucket seats'.



What luxury, how personal and clearly a whole new experience in automotive comfort! The Mk VI Bentley which I teathed on in 1950 had this luxury and indeed I was not even aware that a bench seat was available.

What you will notice is missing are the now indispensable seat belts which dictate how many passengers you can put where. No trouble with the bench fitting, here is clearly accommodation for six people. These were built for the days when the most sober

of the group drove and you all hoped you would get home in one piece. And if you were on your own or with a mate and you needed a nap you could stretch out on the seat and sleep off the night's indulgences. And then there were the drive in theatres – absolutely no trouble parking but there was the problem of misting windows and if it rained – well we didn't seem to worry much about that.

Those were the days!

WEB SITES YOU SHOULD HAVE ON YOUR COMPUTER

<http://www.rroc.org.au/>

Rolls-Royce Owners' Club of Australia

<http://web.rroc.org/>

Rolls-Royce Owners' Club of America

<http://www.swammelstein.nl/rolls.htm>

A Dutch private web site with an excellent forum

www.BritishStarters.com

An American site offering Nippondenso Starters for among other British cars, units for our cars.

<http://www.nzrrbc.co.nz/>

Our New Zealand enthusiasts web site

<http://www.books4cars.com/>

A great source for handbooks and workshop manuals

<http://www.rrec.co.uk/>

The British RREC.

barbarawestlake@rrec.org.uk

The address of the lady who will send you the build sheets for your car.

All the above sites have free forums where you are welcome to share your knowledge and ask your questions. Or write to me - Bill Coburn Post Office Box 827 FYSHWICK ACT 2609 Australia or spur84@bigpond.com.

If undeliverable please return to Post Office Box 827 FYSHWICK 2609 ACT AUSTRALIA