

# TEE-ONETOPICS

Number 32 February, 2004

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## BUSHING THE SUSPENSION



Elsewhere I mentioned this task but have just found the above picture of the rear lower suspension arm from the Spur. I find the compliant suspension quite amazing when you consider the flexibility of the bush seen in shadow here, the top end of the suspension swivelling on another Metalastic bush and the whole lot kept upright by yet another rubber buffer in the caster department. The bush seen above I have to confess was fitted three times before I got it right. This was because of the aging memory chips and having to go to the other side of town to use a press. The bush by the way is dipped in oil before insertion and the description of this lubricant by the Factory conveyed nothing to me at all. I called up my friends at Castrol and they finally arrived at the prescription, the very stuff – LHM with which we fill our brake caddies.



## GREASING THE BRIGHT SPOTS

Ever noticed the bright spots on the face of the hubs of your car and the inside of the wheels? This is where the wheel ‘works’ as it struggles to keep the car on the road despite your efforts at the steering wheel. The Factory recommends that you put a smear of grease on these spots no doubt to minimise the wear and make the job the wheel has to do a little easier. The is also the small matter of the brakes and their products. Brakes work by grinding their friction material off a block by

rubbing on a moving surface. It is inevitable that dust will accumulate. When you wash your car try to hose out the calipers – you can’t do any harm and hopefully you will remove a build up of brake dust.



## SOME INTERESTING LOGIC

The following question appeared on a University of Washington chemistry mid-term exam paper. The answer by one student was so "profound" that the professor shared it with colleagues, via the Internet, which is of course why we now have the pleasure of enjoying it as well.

**Bonus Question:** Is Hell exothermic (gives off heat) or endothermic (absorbs heat)? Most of the students wrote proofs of their beliefs using Boyle's Law (gas cools off when it expands and heats up when it is compressed) or some variant.

One student, however, wrote the following:

"First, we need to know how the mass of Hell is changing in time. So we need to know the rate that souls are moving into Hell and the rate they are leaving. I think that we can safely assume that once a soul gets to Hell, it will not leave. Therefore, no souls are leaving. As for how many souls are entering Hell, let's look at the different religions that exist in the world today. Most of these religions state that if you are not a member of their religion, you will go to Hell. Since there is more than one of these religions and since people do not belong to more than one religion, we can project that all souls go to Hell. With birth and death rates as they are, we can expect the number of souls in Hell to increase exponentially. Now, we look at the rate of change of the volume in Hell because Boyle's Law states that in order for the temperature and pressure in Hell to stay the same, the volume of Hell has to expand proportionately as souls are added. This gives two possibilities:

- 1) If Hell is expanding at a slower rate than the rate at which souls enter Hell, then the temperature and pressure in Hell will increase until all Hell breaks loose.
- 2) If Hell is expanding at a rate faster than the increase of souls in Hell, then the temperature and pressure will drop until Hell freezes over.

So which is it?

If we accept the postulate given to me by Teresa during my Freshman year, "...that it will be a cold day in Hell before I sleep with you", and take into account the fact that I still have not succeeded in having an affair with her then #2 above cannot be true, and thus –

I am sure that Hell is exothermic and will not freeze over.

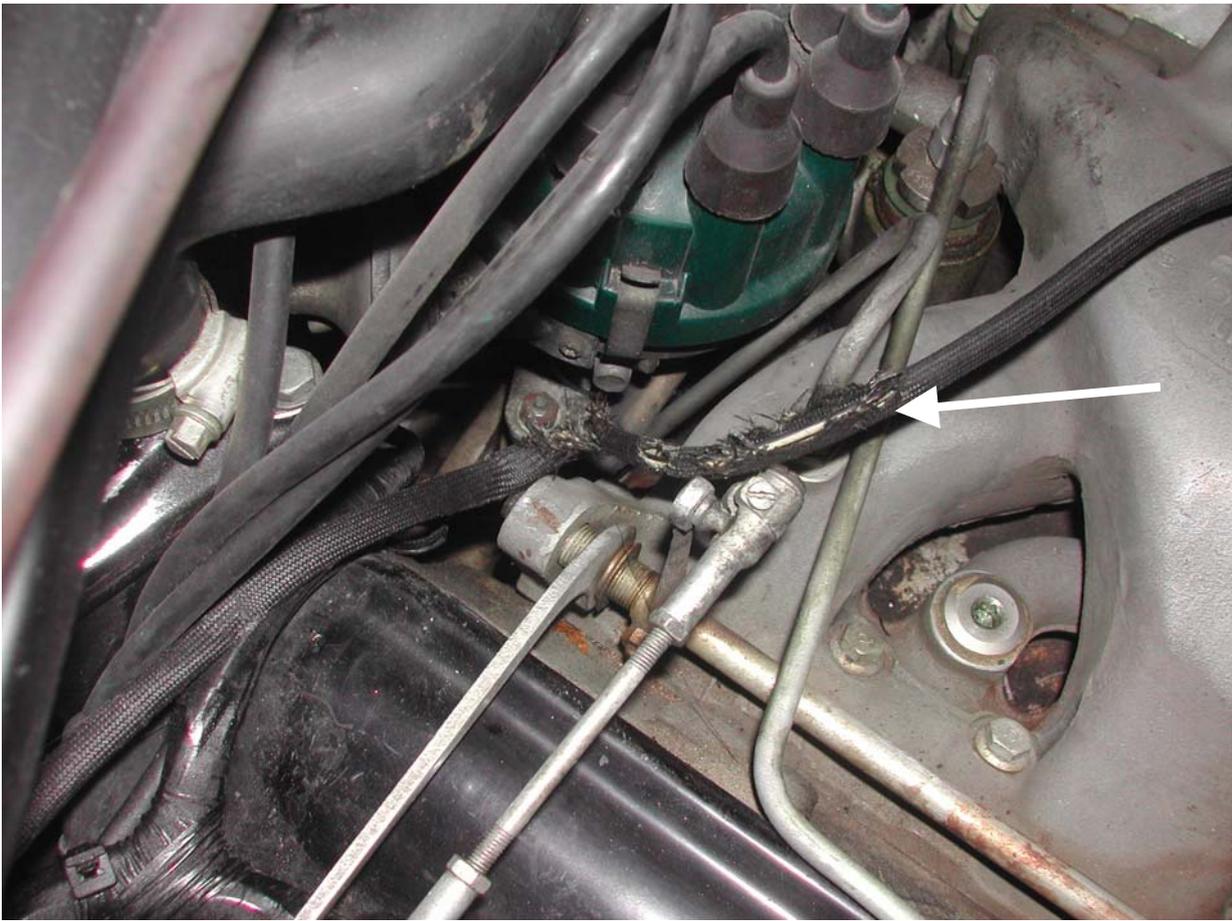


## LOWER BALL JOINT DUST COVERS



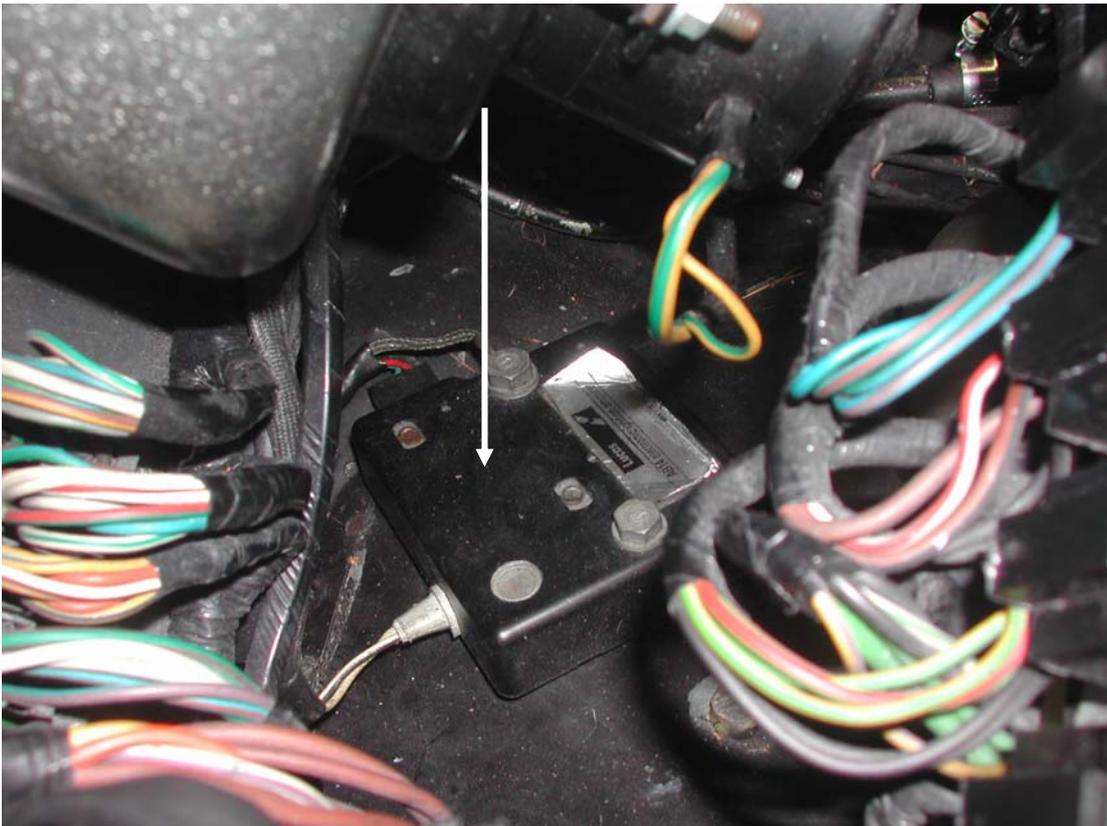
These little darlings seem to get a fair bashing and are often holed or split. They are not easily lubricated and are certainly not easily replaced. Worst factor is that they are not available. But help is at hand, the genuine item at right can be nicely replaced with

that at left, the latter being the seal on the side of the gear change shaft of the actuator unit. As to how to replace them, watch this space!



## AN IGNITION SCARY

Having dragged most of the induction system off the blue beast I was startled to find the above damage. Fortunately the wiring was not damaged but the outer fibreglass(?) covering was severely



lacerated. The wiring connects the ignition amplifier module to the coil and runs under the distributor. I suspect the damage was caused by 18 years of flopping around and bashing the odd sharp protuberance. The amplifier

seen in the second picture bolts to the top side of the right front mudguard. The solution was to destroy the car's originality by covering the whole loom with 7mm modern split convoluted protective tubing. I notice this was used from at least in the 1987 models so I may get away with it!



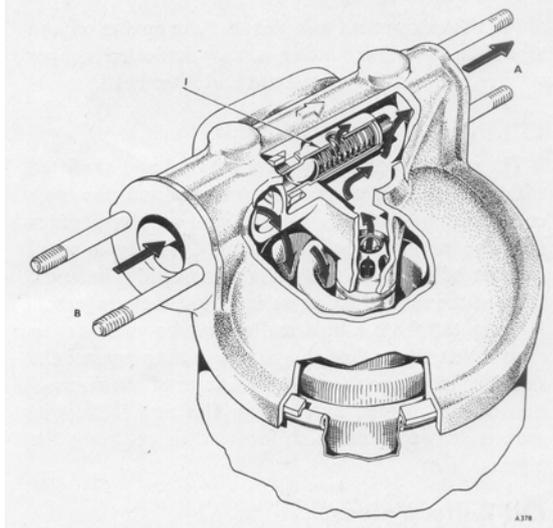
## SURELY A JOY TO BEHOLD



Bill Vatter a vigorous American contributor to the RROC(A) web site actually makes an adapter for the post-war post 4¼ litre motors that were fitted with full flow engine oil filters. The post-war six and eight cylinder cars initially emerged from the Factory with by-pass filters a concept almost unheard of today. A proportion of the oil was pumped around the engine and pushed through a filter; the theory being that all would be strained eventually. I suspect that the limiting factor was the reliability of the filter elements since a collapsed filter is far worse than no filter at all. Rolls-Royce was not unique in this approach. My Father had a new 1948 6 cylinder Chevrolet and that was retro-fitted with a bypass filter.

Australia had the distinction of breaking the first Rolls-Royce crankshaft, an event traced to inadequate lubrication. And so eventually the full flow filter system was approved and fitted. Bentleys with their twin SU carburettors,

manual choking and confined engine compartments really taxed the ingenuity of the mechanic to make an oil filter change. The Factory recommended moving the generator, others can get the bowl of the filter out through the windscreen washer bottle holder. Some owners drop the bowl and leave in sitting in the chassis, suck the oil

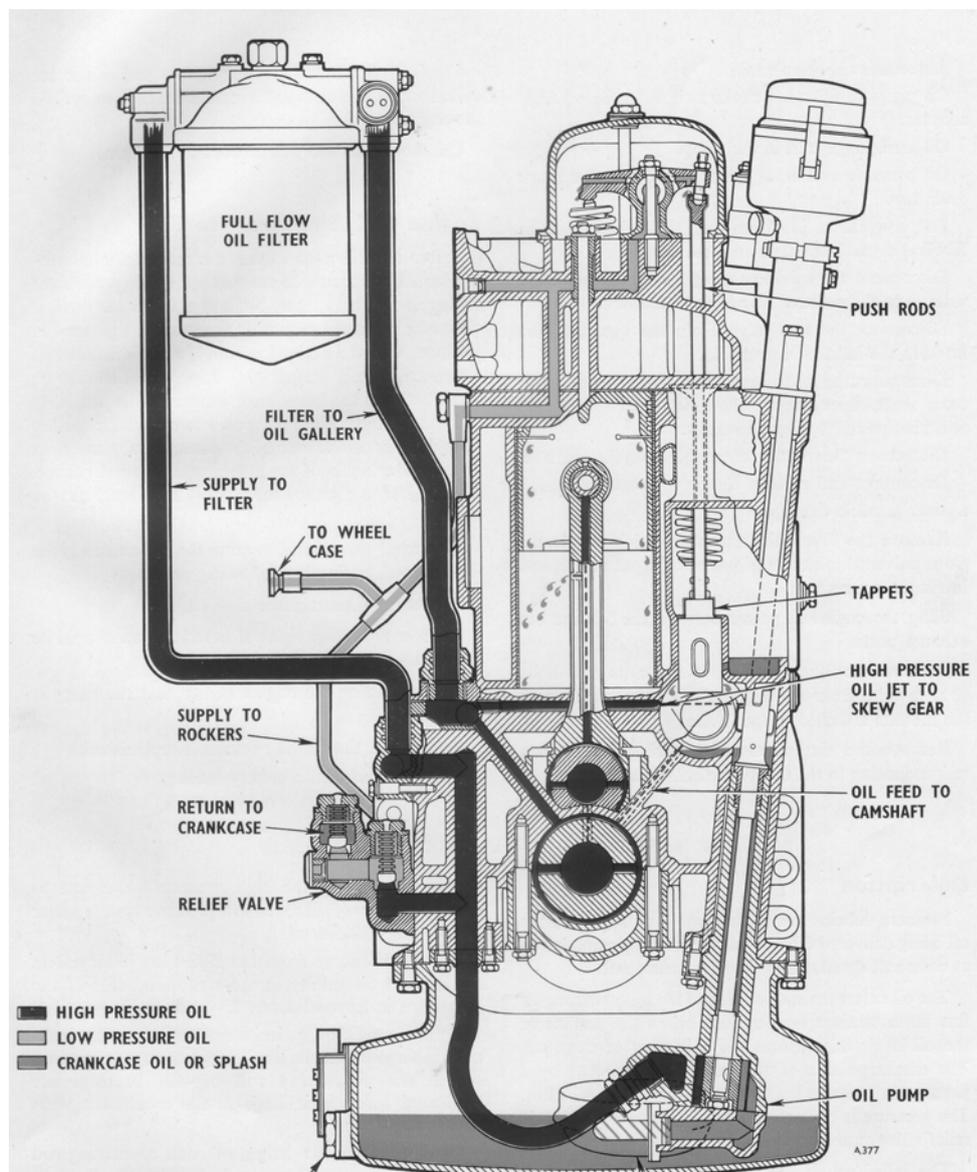


The pressure relief valve used in the filter head of Silver Clouds. The likelihood of a filter needing such relief is not uncommon with neglected cars. The original filter element for these cars consisted of a double perforated metal coil covered with felt. An S2 Bentley arrived in Canberra many years ago that had lived in outback New South Wales. Removal of the filter canister revealed the metal coil and absolutely no filter medium.

out with a syringe, wipe all dry and clean replace the top rubber gasket and assemble the thing in situ. Whichever way you approach this you will get covered in oil and muck – truly a task to be put off until you are in a really keen mood.

Fortunately Bill Vatter has devised a bolt on adapter which enables you to spin on a Ford filter in a matter of minutes. The filter does a much better job than the original and if you want to revert to type at a later date you can with no difficulty. Bill writes, The key to a proper filter adapter for the early cars is reversal of the flow direction. The RR full flow filter system for the 4 1/2 engines (and factory conversions for the 4 1/4) is set up for flow inlet to the inside of the filter passage from the inside, through the media to the outside, and discharge to the main oil gallery from the outside of the filter. Convention for all modern spin-on filters is the opposite; that is a flow from the outside through the media and exiting from the inside through the threaded pipe.

The adapter block I made redirects the flow to meet the needs of spin-on filters. Any adapter that



The full flow scheme fitted to the Silver Cloud 4.9 litre engine.

sent the flow through the filter backwards would create a serious problem. If the spin-on filter had a reverse flow preventer, it would simply lock up and let nothing through, dumping everything through the main relief valve, or if there were no reverse flow preventer, it would as likely just suffer collapse of the media because the media is not supported to take a differential pressure in that direction. Also the internal bypass relief would not work.

Beginning with the Cloud 1 and continuing through the Shadows, the RR filter flow convention is industry standard, that is outside to inside. Also, the filter head on those cars incorporates a bypass relief, which is accomplished

within the filter for the early cars. For the early cars, the spin-on filter used with an adapter must have an internal bypass relief, and the desired set point for that is about 6 psi.

Adapting the Cloud/Shadow filters to spin-on technology should be a simple task of just making an aluminum or steel plate with a threaded pipe in the center, a couple of holes drilled in the right place, and a mechanism to hold it all together. Probably there would be more market for it than for the earlier cars because there are more of the later cars on the road. If you want to buy an adapter, I offer them for \$185 USD, but they fit only the RR 4.5 liter engine filters (and factory conversions on the 4 1/4), either single center bolt style as on the R-type cars or six peripheral bolt style as used on the 4.5 liter Mk VI.



## A SMALL BRAG

The Blue Beast has now been pampered powdered and petted in readiness for the trek South for the Rally. Being a pessimist at heart, I decided to take her down to Orbost, an historic town in East Gippsland for a trial. Several friends drove her on all manner of roads and at extraordinary speeds (once exceeding the traditional 'ton' – it does have an imperial speedometer) and it came through with flying colours. Total distance nearly 700 miles and consuming no oil and gobbling petrol at 14.1 miles to the gallon! You can work that out in your own language! (US readers remember you have a 16 ounce pint!). Very satisfying.



## SOME MOTHERS!

(Extracted from a letter from a very old friend in New Zealand)

Recently there were roadworks near where we live and a piece of stone shot up and made a tiny star in front of me on the windscreen (OK, windshield, for those who say trunk instead of boot . . .). So I took the car into Tauranga Windscreens (we're pretty original about descriptions of businesses here) and asked Can you please fix it and they said Watch this. So I did and they reduced the star to about meteor size in a heartbeat which was very clever and I told them so.

I drove home happily, and although I noticed that there were a couple of smears on the screen where the star had been I didn't think too much about them. But over the next week they began to annoy me : you know how it is.

I tried scooshing with the windscreen washer. That didn't work. Then I tried ordinary window cleaner. Nup. So I thought the smears must be some sort of gummy stuff. It looked like gummy stuff. So I got the bottle of anti-gummy liquid, that invaluable household convenience that always runs out when your fingers are covered in super-glue. And I splashed it on the windscreen and rubbed like blazes and nothing happened. Sod this.

Dredging the memory, I remembered that the way to remove streaks from watch glasses is to rub them with Brasso, that military remedy for scratches and abrasions, even on people. Aha! This would solve it. I splashed ; I rubbed. I rubbed harder. Nothing happened. The smears remained, and I swear they were grinning at me. They had assumed a sort of lip-curl at the ends, so, refraining from smashing the windscreen with the nearest hammer, I took myself back to Tauranga Windscreens which, I might say, does a roaring trade.

The skilled technician came to the car. I explained my problem. He looked at me. He went to his workbench and tore off a small piece of paper towel on which --- aha! --- he squirted some magic potion. My goodness, I thought, the wonders of modern science. He has summed up the whole

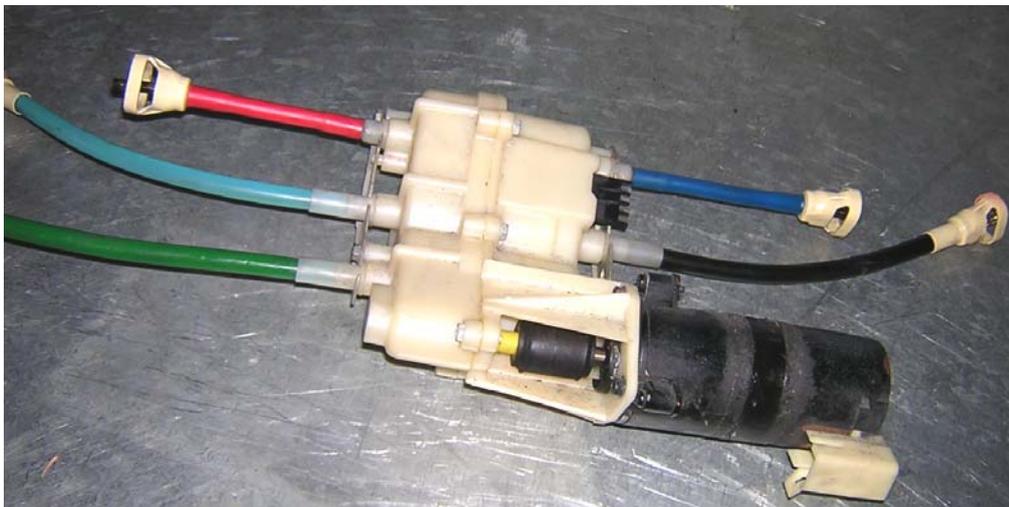
thing instantly, reached a conclusion, devised a solution, and now he will demonstrate to me the fruits of long experience in automotive technology. He did.

He returned to the car, opened the driver's door, reached in, and rubbed the inside of the windscreen with his soggy paper towel. The smears vanished!



## IMPROVING YOUR MOVEMENTS

One of the great improvements brought in with the SZ cars was the simpler and easily serviced seat motors and associated equipment. Pundits were horrified on lifting their seat cushions to find



The whole assembly removed. Lower right is the motor with its one way plug, driving through a flexible drive into the gearbox. The top Bowden cables wind the for and aft mechanisms, the centre ones lift and lower the rear of the seat and the single one raises and lowers the front end. The second plug-in point seen on the right between the first and second set of cables connects to the solenoids.

oceans of plastic and Bowden cables replacing the Titanic threaded rods, clutches and various relays. The seat is lifted and lowered by three simple screw jacks two at the back on either side of the seat frame and one at the centre front. Rather than have a little handle to wind these jacks up and down they are connected by a flexible (Bowden)

cable to an electric motor and gearbox. The motor is capable of running one way or t'other and obviously through the cleverly designed and hideously expensive seat switch the various circuits are energised to achieve the desired result.



To move the seat to and fro two little rack and pinion gearboxes

Inside the box. From left the first gear is driven from the motor, the second is an idler to connect the first gear to the third gear and give a bit of reduction, the remaining three gears drive the respective Bowden cables. The collars beneath the gears are pushed up by the solenoids beneath them and connect the gear to its respective shaft. The solenoid terminal can be seen at the bottom of the picture.

again driven by Bowden cables, are employed. And so when

you have two mechanisms working in the same direction such as the rear lifting/lowering jacks and rack and pinion gearboxes moving the seat to and fro, it is highly desirable that they start from the same point.



One of the solenoids and armature. Powering the unit pushes the armature left out of the solenoid and lifts the clutch against a return spring to engage the respective gear.

The blue beast arrived with a number of irritating maladies one of which was the inability of the driver's seat to move to and fro. Furthermore somehow a special shouldered bolt securing the seat squab rake mechanism was missing which produced a nicely upholstered driver's seat that appeared Hell-bent on exiting through the

nearest door. To fix this required the seat be removed. But the four bolts securing the seat to the floor could not be addressed because the seat was in the way and could not be moved.



The solution was to remove the motor and gearbox assembly and employing one of the Bowden cables and variable speed battery operated drill to wind the seat mechanism to an appropriate position where the bolts were accessible. Again as each side has its own gearbox the drill had to be wound in

One of the clutches. Note that the gears spin freely on their shafts but the clutch is keyed to the shaft. When the solenoid pushes the clutch into the gear the latter turns the clutch which in turn, turns the shaft which in turn, turns the Bowden cable!

increments, first one side then the other. Really good fun!

The stepped bolt having been duplicated, the next step was to replace the seat and work out how the seat mechanism worked. As I mentioned there is one reversible motor and this appeared to be working perfectly. Asking around it appears that the main problem with these assemblies is stripped gears which are nylon. The motor

complete with a flexible coupling comes out easily. The gearbox casing splits revealing a 5 unit gear train. None were stripped. Behind the three larger gears were three electrically operated (by solenoid) clutches. When the motor is energised all three gears run freely until one of the clutches is engaged. The engaged clutch in turn is 'splined' to a shaft which passes right through the gearbox and emerges both ends. The 'ends' in turn drive the Bowden cables. My problem was much simpler, - a dirty contact on one of the plugs!



My method of moving the seat when all else fails. Here was a case of move the left side forward as far as it would go then do the same to the right. When re-installing the motor and gearbox, best you first crank the whole assembly to the end of its travel (either way) and then install



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## SHOCKING A SPUR

With the offer made by Bentley Sydney for discounted shock dampers there was no excuse to not fit a new pair to the blue beast. Best money I ever spent. Initial registration of the car did produce a bit of lemon sucking from the inspecting officer who was not impressed with a bit of rubber hanging out of one of the inner wishbone bearings. Looking me straight in the eye he said that he should knock the car back but he knew I would fix the errant rubber. Well with half the suspension out to fit new shocks there was not much more to replacing a rubber bush.

Removing the springs is a necessity and as we have discussed before this is not to be taken lightly. It is a dangerous procedure given the poundage of the springs and confines of working on them. On one of the web sites recently a group of

The assembly ready to install. Crimping the rubber boot retainer at the bottom is best done with the spring seat assembly off the shock.

correspondents worked out that by progressively replacing the tower holding down bolts and nuts with lengths of threaded rod and more backup

nuts the towers could be gradually released but given that you would be working on ten rods and nuts it would be a slow practice. Better that though than losing your head!

As you know with strut suspensions, the car rides on the shock absorbers. The lower end of the shock is mounted on a swivel which in turn is bolted onto an extension of the stub axle. I must confess that this swivel, which is a miniature version of the ball joints of the steering swivels, has always looked familiar until a good friend sent me scurrying into the local BMC agent.

Sure enough there was the main ball joint used in the suspension of the old Austin 1800! Surprisingly the price was less than half that of the 'genuine'.





These lower joints are fitted to the suspension with a taper and while with some cars they simply lift out, having removed the retaining slotted nut, others require some assistance. Undoubtedly there is a special tool provided by the Factory but a simple two claw puller adjusted to the shoulders of the mount soon

Here you see the anodised sleeve sitting on the shock with the spring seat sitting on that. Between them are the half-circle shims used to adjust the standing height at the front of the car.

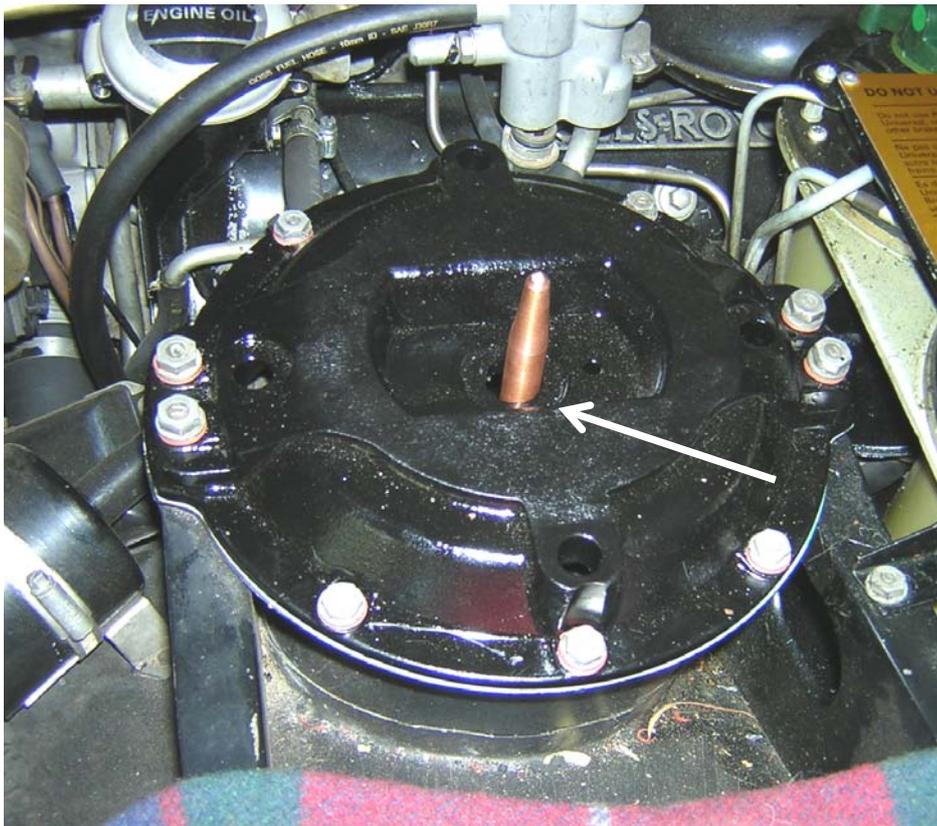
had the little darlings leaping out of their restraints.

It is at this point that you find you need some very large spanners. Measure carefully across the flats on the shock absorber base and the bottom of the swivel and take yourself and wallet to your nearest tool shop. Unless you have a problem with your bank

complaining that you have too much money in your account, or you are a professional mechanic with years ahead of you pulling these things to pieces, do not buy expensive spanners. The ones now readily available from China and Taiwan are more than adequate and in the unlikely event of breaking a spanner a few more dollars and another trip is all that is required. But please buy spanners. Do not use adjustable wrenches, hammers or multigrips or I will haunt you until your sump runs dry! I must have a dozen large spanners and sockets that I have used once but when you consider the outlay that would be involved in paying a professional to do the job the cost of this equipment is a mere drop in the wooden pail. And be sure to hang the spanners on the wall in your workshop they are a great conversation piece!

With some triumph you will lift the whole strut assembly out of the open tower and then retire to gloat over your achievement. Returning, you will lift the coil spring clear only to discover that the annular spring seats on your Spirit/Spur will fall to pieces in your hands. Two per spring – don't scrimp immediately order more. Earlier cars which used canvas and rubber seldom have this problem but I suppose that's progress. Having used your new big spanners and smartly whipped off the ball joints off the lower end of the shock absorber, carefully prise off the rubber grease retainer/dust excluder, avoiding damaging the retaining spring. Then go out and buy an even larger spanner to open up the ball joint.

You of course have a decent vice (the one on the bench that is), and the bench is secured to the planet. It was here I ran into trouble. Whoever had done up the joint last was the winner in the Mr Hercules world contest. When I noticed that my electoral roll address had changed by two house numbers I decided that the assembly was not going to simply screw apart as the Factory had intended. So far the effort had proved my point about the spanners. The spanner in this case, 1 3/4" A/F, was augmented with a length of water pipe I could barely lift and it was only when I realised that the vice was about to emulate a pretzel that I desisted. But the spanner did not break/distort or slip! The problem was solved by my drilling strategic holes in the old swivels and reducing them to very sad looking structures when they happily succumbed and permitted their extraction. Fortunately the jammed bit was brass which was easy to drill!



This slightly obscene projectile is a gadget that I use to thread the top of the shocks through the tower cover. When the spring load goes on the carrier the shock tends to lean to one side or the other and this little gadget helps guide it through the hole.

The new swivels (genuine since the Austin intelligence had not been received at this stage) had to be preloaded by select fitting of various shims. These also are available from Mr Austin! The idea is that the joint which consists of a hardened steel ball jammed onto a plastic seat, must be fairly tightly squeezed otherwise they will rattle. A tension wrench is desirable here for the inexperienced to know how tight to make them.

Next step was to remove the spring supports which ride on the body of the shock absorbers. For those who live in

climes that seem to use salt on their roads than bitumen, this may be a problem since they will readily rust given half a chance. Furthermore if my previous warnings have not been heeded, you will have allowed the supports' drain holes to become blocked, further promoting the corrosion stakes. In the perfect world you can tap the supports upwards and off the shocks but other means may be necessary if corrosion has had its way. The bottom line is that they have to come off to get at the adjusting half shims installed to maintain the front end height of the car!

Assuming all this has worked out re-assembly is straight forward. The new shock absorbers come with a new anodised support sleeve meaning that you do not have to get the old one off the old shocks. Also included is a new system of 'sealing' the top end of the assembly with a very nice convoluted boot. Note the order of the various washers at the top of the unit one of which is stepped and designed to hold the boot at the correct height. The bottom end of the boot is clamped onto the support sleeve with a supplied clamp. The clamp has two protrusions which when squeezed reduce the diameter of the clamp. The squeezing I have found most simple with a pair of carefully used side cutters.

A word on springs. Clean these up and paint them. If they are rusty, have them sand blasted which apparently eases built up tensions in the metal (so I am told). Use black spray enamel and be generous. When dry reassemble with your new seats. Of course you have checked that the holes in your tower tops have not been chewed out and if so they have been repaired and painted. There is another innovation; with the new shocks comes a very nice gasket that fits between the tower cover and the tower itself. This is not to keep the dust out but insulates the suspension from the body.



Before fitting the cover install the plain rubber insulator on its holder on the shock. The stepped one goes on top.

When you have finally compressed the springs and are ready to insert the ten bolts that hold each of them in place (assuming you are still alive),

there is a further goody that you must find and fit. This consists of fibre washers with suitable internal diameters that insulate the bolts from the body. The fibre washers are placed

This shows the top of the shock, the new gaiter to protect the shock shaft, the seating cupped washer for the rubber mount and the non-spigotted rubber. The latter are very common and if you need to replace them they are standard fare at your nearest steering and suspension specialist. It is a good idea to keep an eye on these bushes since they can wear through and damage the tower cap.

under the steel washers under the heads of the bolts and over the washers over the nuts. These provide

insulation and improve the refinement of the car and were fitted in production from about 1982. The washers and gaskets were introduced in the SZ series about 1982 and can be applied to all post-Cloud cars!



## Australian Etiquette

*That dreadful man John Elmes sent the following in the hope that he might inculcate a little couth into some of my readers. I offer no other comment.*

1. Never take a beer to a job interview.
2. Always identify people in your yard before shooting them.
3. It's tacky to take an esky to church.
4. If you have to vacuum the bed, it's time to change the sheets.
5. Even if you're certain you're included in the will, it's rude to take the trailer to the funeral home.

## DINING OUT

1. When decanting wine from the box, tilt the paper cup and pour slowly so as not to bruise the wine.
2. If drinking directly from the bottle, hold it with only one hand.

### **ENTERTAINING IN YOUR HOME**

1. A centrepiece for the table should never be anything prepared by a taxidermist.
2. Don't allow the dog to eat at the table, no matter how good his manners.

### **PERSONAL HYGIENE**

1. While ears need to be cleaned regularly, this should be done in private, using one's OWN Ute keys.
2. Even if you live alone, deodorant isn't a waste of money.
3. Use of toiletries can only delay bathing a few days..
4. Dirt and grease under the fingernails is a no-no, as it detracts from a woman's jewellery and alters the taste of finger foods.

### **DATING (outside the family)**

1. Always offer to bait your date's hook, especially on the first date.
2. Be assertive. Let her know you're interested: "I've been wanting to go out with you since I read that stuff on the dunny door two years ago."
3. Establish with her parents what time she's expected back. Some will say 10:00 PM, others might say "Monday." If the latter is the answer, it's the man's responsibility to get her to school on time.

### **THEATRE ETIQUETTE**

1. Crying babies should be taken to the lobby and picked up after the movie ends.
2. Refrain from talking to characters on the screen. Tests have proven they can't hear you.

### **WEDDINGS**

1. Livestock is a poor choice for a wedding gift.
2. Kissing the bride for more than five seconds may get you shot.
3. For the groom, at least, rent a tux. A track suit with a cummerbund and a clean football jumper can create a tacky appearance.
4. Though uncomfortable, say "yes" to socks and shoes for the occasion.

### **DRIVING ETIQUETTE**

1. Dim your headlights for approaching vehicles, even if the gun's loaded and the roo's in sight.
2. When approaching a round-about, the vehicle with the largest tyres doesn't always have the right of way.
3. Never tow another car using panty hose and duct tape.
4. When sending your wife down the road with a petrol can, it's impolite to ask her to bring back beer, too.



## SEEING IS BELIEVING



This is a speedometer fitted to a mid range American market Shadow. One of the ploys used to discourage their citizens from speeding and more reportedly to reduce the rate of consumption of gasoline. Turning back odometers is now verging on a capital offence and speedometers have tricky foilers to make such practices difficult to hide.

### 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

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 of tuppercharles@bigpond.com.

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

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