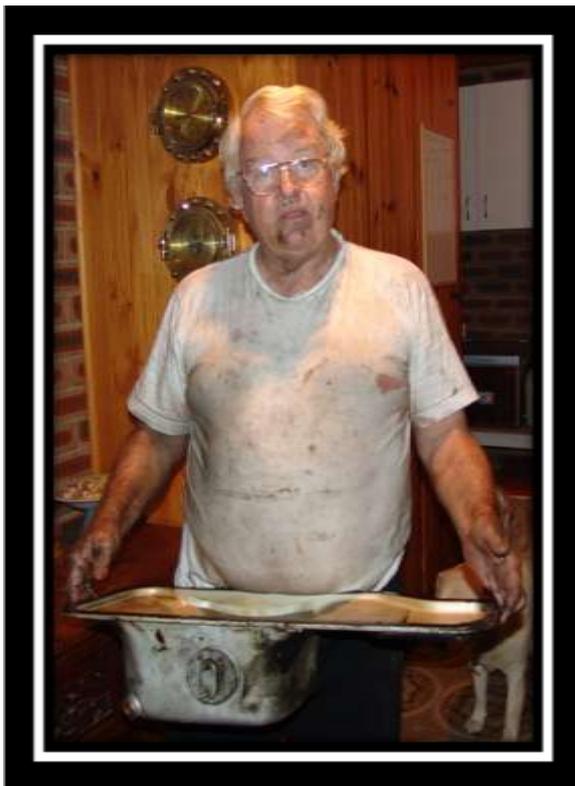


TEE-ONE TOPICS

Issue 88 August/September, 2009

TIME

I was a little shocked to discover that my time machine seemed to have jumped a cog hence the 'bonus' issue. They say 'at 40 the steps grow steeper'. It seems in my case that the steps have metamorphosed into ladder rungs and that the angle of the ladder is becoming more acute. I have however stopped talking about age since several correspondents on our RR Forum have eclipsed me age wise. Indeed my college class with which I have maintained contact for over 50 years has been jolted by the inevitable demise of our youngest member. He was 70. So that makes all of us septuagenarians!!



All this senile drivel is to apologise for falling behind in my output. At the same time I am pleased to have got what I have out to anybody that wants to read it. Some 6 years ago public information on the technical side of the cars was closely guarded and personal accounts of work on our cars were relatively rare.

This was due in the main to an attitude largely fostered by owners, that these cars are so exclusive they should only be touched by appointed hands! Not only did this frighten possible restorers it successfully frightened many perfectly competent and highly experienced mechanics. Dealers understandably encouraged this approach and today as a result we have numerous post55 Clouds and S series cars rotting in wreckers' yards around the world and many more resting in pieces in a few spare parts warehouses!

Well I like to think that this has changed for the better. We now, thanks to a complete change of attitude have access to technical material on all our cars built since the last war, even those of current manufacture. And astonishingly, no commercial restorer or repairer has gone out of business!! Cars are now readily available at an affordable price particularly for the younger generation and there is a growing body of owners 'having a go' at fixing them. Hopefully they won't be smitten from above which used to be implied in earlier times!

One really encouraging venue is our very own Club Forum at <http://au.rrforums.net/cgi-bin/forum/discus.pl?pg=menu> addressed by owners and enthusiasts from all over the world. Their accounts of repairs and experiences are of great value particularly as the archive of the forum is searchable. Then there are the Technical Libraries, for post-war cars <http://rrtechnical.info/> and http://rroc.org.au/wiki/index.php?title=Technical_Library for pre war cars.

And if all else fails try Googling Rolls-Royce and stand back!



THINGS THAT GO BUMP IN THE NIGHT!

The view at right is one few owners would have of the front suspension of their pristine Silver Cloud. To put it into perspective, look at the following.



The mangled mess of rubber above is bolted to the arm of the front shock absorber seen the right way up at the left. This rather pretty S2 had skittering suspension (I know – horses skitter but so did this car if it hit a sizable bump) which was fairly obviously

traced to inactive shock absorbers. New units are no longer available. Even if they were, the last price heard was over £2000-00! Fortunately parts to overhaul them are still available and they can be restored.

Normally one would remove the front spring to remove the shock absorber but as this does require a special tool, supporting the car on the lower wishbone and loading the front end of the car with sandbags until the rubber buffer seen above is well clear of the front cross member, should allow you to remove the unit without removing your head at the same time.

Overhauling the units is detailed in the workshop manual but the work is fairly intricate, often parts will need to be built up and machined and fitting the seals is a task originally devised by the Spanish Inquisition! TK Motors at Moss Vale can do all this for you and the finished product is something to look forward to.

And the rubber buffers? Usually only the top one seen in the picture needs replacing. This is because as with most suspensions the arms are set at nearly their lowest point. When the

wheels hit a sizable bump the load is taken by the spring, the movement dampened by the shock absorber and the reaction of the spring is to slam the suspension down to get rid of its compression. Although the shock absorber dampens this somewhat the poor old rebound rubber cops a fair bashing. If you do not replace the buffer it will eventually fall away and the next decent bump will have the upper suspension arm crashing down on the steel front cross member with a noise that will probably damage your upholstery!

They can be replaced by removing the front wheel and letting the car sit on a block under the lower suspension arm. Weighting the front mudguard with sandbags and compressing the suspension until the buffer clears the cross member, will allow you to unbolt and free the unit. They are still readily available.



BATTERING RAMS



Power steering as we know it was conceived by an American engineer in the late 1920's. General Motors declined to use it on the grounds that it would be too expensive to manufacture and it was finally left to Chrysler to introduce it on a popular vehicle in 1951. Chrysler also incidentally pioneered disc brakes in production. General Motors apparently had a quick change of mind and the following year their Cadillac sported the system.

Rolls-Royce developed their own version and it first appeared some time after the first Silver Clouds were delivered. One aspect they highlighted was that their system was to be known as power assisted to assure customers that this new fangled gadget if it failed would still leave the driver connected to the wheels via the steering wheel. Generally the system requires a steering gearbox with integral valving to direct hydraulic pressure, a hydraulic pump and hoses to connect the two together. The actual application of hydraulic power was either by

pushing components in the steering box or pulling or pushing the steering linkages externally with a ram. The factory opted for the latter system.

So the picture above is one such ram. Hopefully all owners of post55 cars know where it is, stuck out like a rhinoceros horn and mounted on the front cross member. The initiative in addressing this feature can be seen in the picture above. The body of the ram at the piston end has a nice little groove in it probably with a depth about a third of the thickness of the cylinder wall. This had been worn there by the movement of the antiroll bar which has to



pass over the body of the unit and as can be seen below there is a suitable bump in the bar to accommodate the ram..

The ram body is mounted along the central axis of the chassis supported solely by a single bolt through an eyelet at the front end and insulated by a silentbloc bush. If you refer to the first photograph you will note the distortion of the bush which was caused by someone running the whole assembly over a curb in all probability forcing the ram upwards and bending the support plates one of which can be seen above. In this case the ram mount was so distorted that the antiroll bar was rubbing on the ram casing hence the groove seen in the first picture!



The Ripley Factor. At left is the silentbloc bush pressed out of the front of the steering ram – still available from the Factory – local price AUD237. The item on the right was purchased locally, exactly the same in its packing, price AUD23.

Hopefully all owners and drivers of these cars are aware of the vulnerability of the ram because it is so easy to stop two ton of car by jamming it up against a high concrete kerb when doing some nose-in parking!



NEWSPEAK

Given the apparent political swing to equality etc rumor would have it that any sign of decadent material excellence is to be muted. Accordingly we are over-painting the logos on our valve covers.

Not as silly as it sounds. I remember many years ago in early Shadow days that the boffins who look after our health and safety decided that the grill on the old girls was likely to reflect sunlight dangerously and that it should be painted!! Fortunately that battle was won. But now of course we have painted Bentley grilles!!



AGE SHALL NOT WEARY THEM



We have many times addressed the problem of beautiful cars doing the failing to proceed routine where enquiry has revealed that new leather, perfect paint etc have been applied but the wheels are about to fall off!

The picture as all of you would have deduced is of the innards of a Mark VI water pump that has seen better days. Fortunately I gather the owner realized that here was one of the many Achilles Heels on any 60 year old vehicle and had the pump checked. To cover any distance with a unit like this would be akin to setting out on a marathon with a fractured radius! The annoying part about these cases is that most if

not all casualties in this category could have been avoided by use of decent anti-corrosion mixes in the coolant.

I am thinking, in my dotage that the cars we have at the moment will be the last to be preserved with the exception of course of the odd collector's example. We have a Lexus LX470, a magnificent example of dependable engineering, yet in the handbook there is a section detailing the procedure for disposing of the vehicle. No, not transferring it to the next owner, disposing i.e. destroying it as it is no longer to be preserved or maintained. So much for the new order!!!



VALVE STEM SEALS

These little but very important bits of the engine have been a source of much discussion among owners for many years. The original seals seen here as some coiled string around the valve stem consisted of cord impregnated with graphite, wound into a suitable tube shape and compressed by springs to take a firm grip of the valve stem and minimize the flow of oil down the valve guide and into the intake air stream!

The metallurgy and engineering in this area is mind boggling. The valve heads particularly those of the exhaust valves frequently run red hot given the maelstrom in which they function. The valve stem has to run in the guide sufficiently tightly to avoid any sideways movement which would affect the valves sealing, but not so tight that it could seize or even drag. Hence some lubrication is essential. Unfortunately the seals wear and so much oil can run down the guides and get into the combustion chambers and the spark plugs foul up.

We know that all Rolls-Royce engines use oil to various degrees but if you are curious as to whether the valve guide seals or the guides themselves are the problem the best indicator is to leave the engine when hot, running for 5 minutes then give it a good rev up. If you get a cloud of blue smoke you can lay your money on valve guide seals. You will often see this with old cars sitting at traffic lights and putting out a smoke screen when they move off!



The bits above were removed from the valve in the first picture. The 'top hat' and smaller spring at the left, fit over the old seal and the top of the valve guide, these in turn are held down by the larger 'top hat' which also has the job of holding the bottom of the valve main spring in place. The last two items are the spring cap and the little collets that fit in the groove at the top of the stem which can be seen in the first picture.



At left is the tool now used for removing valve springs. The legs that grip the coils are offset to allow for the coils and the cap is pushed down by an adjustable saddle seen here.



At left is a spring compressed and pushed down the valve stem to reveal the two collets waiting to be plucked to security



There are several types of seals now available, the most favored appearing to be ones that fasten over the top of the guide and held in place by friction. On this occasion an American seal consisting of a light metal cap with a captive flexible seal in the aperture was used. The body of the seal is a tight fit and requires driving on with a special applicator and a hammer. To avoid the seal wall picking up on the sharp upper edge of the guide the edge of the latter is chamfered with a tool. The result is shown at left.



At right can be seen a locating ring that is placed over the guide which is made up to replace the original small 'top hat' since that item and its spring has no function with the new seal. The 'rim' of the discarded

'hat' was designed to keep the larger 'hat' concentric to the valve and stop the spring slithering around on the head. The locating ring now in place does this job and keeps the large 'hat' in place. Here the new seal has been pushed over the valve stem and onto the top of the guide. This requires a thin plastic cap over the valve to avoid any damage to the seal as it crosses the sharp edges of the collet groove.



At left is the simple plastic tool to drive the new seal over the end of the valve guide. All that remains is to reinstall the main valve spring on its 'top hat', the retaining washer and the valve collets.

When fitting the collets you may be curious about a hard black deposit on one vertical face of each. This is the remains of a factory installed silastic compound that was an early measure to cope with valve stem consumption. It should be removed with a wire brush or similar device.

Below is the chamfering device in action. The tool has a small hardened bit ground to the angle required to cut the top of the guide. The lower picture was taken of a Phantom VI engine and the seals were installed with the cylinder heads in situ.

The hose and adapter seen at right supplied 100 psi of compressed air into the cylinder being worked on obviously with the piston at top dead centre and both valves closed. This is necessary as the valve has to be closed fully to get the collets in place. Valve retaining tools can also be made up and poked through the spark plug hole. If compressed air is used you will need to wedge



the flywheel with some pine blocks to stop the engine turning.



LINED UP AND READY TO GO

The Great Engine Rebuild progresses! The pistons on this '72 Shadow engine were still very serviceable and the liners had barely measurable wear in the bores. In the aggregate there was about a thou (.001") more clearance between the piston and the liner than desirable so the liners and pistons were shipped off, where the former were honed and the latter were Teflon coated. This was all new to me but I am assured it is the modern approach and very effective.



While the pistons were being doctored the ring grooves were cleaned out and the bottom oil

ring groove enlarged to take a more modern item.

This area of the engine is in the shuddering zone for would be restorers. With genuine pistons at a Big one each and liners about three quarters of that and two and a half Big ones for gaskets seals etc, then throw in bearing sets for a couple more Big ones and you have a bill of well over ten Big ones before you even put a spanner on your treasured find! Fortunately after market alternatives that are perfectly suitable are available at a fraction of the cost!





THE DREADED SEALS!

Poor old Achilles I seem to have credited him with have more feet than a centipede! But these little darlings – all 24 of them are what hold the coolant in the engine and not in the sump and that eventually contribute more oil blots on your garage floor than Rorschach ever thought of! Moreover the price hovers around a bottle of a very acceptable single malt each!



Above is the naked block showing the top 'O' ring installed in its groove and at the bottom can be seen one of the two rings to seal the cylinder liner in the block. The 'tell-tale hole' is between these two lower seals.

At left are the three seals. The thin one appears to be a common 'O' ring that seals the top of the liner, while the lower seals are almost diamond shaped in cross section and with a very smooth surface. The bottom picture is my attempt to picture the shape of the lower rings. Instructions are that these be placed in the groves with palmolive grease which translates to good old Vaseline.

Given the vagaries of the casting, the careful application of a good gasket sealant in the groves before the seals are inserted seemed at the time to be a wise move. The moment of truth will be in the running.



SERVICING THE HEATER AND AIRCON ACTUATORS

John Kilkenny

After many years of use the small electrical actuators that operate the flaps that control and direct airflow can become very noisy.



Usually all that is required is for the bearings and gears to be lubricated. This should not be attempted with the actuator in position as it is very easy to lose the very small brushes and springs.

At left is a familiar view for those that deign to open the bonnet. The actuators are rotary switches making their break and no break connections by means of a segmented disc rubbed appropriately by spring contacts.

The rotary disc is turned by a tiny electric motor which is empowered by an intricate chain of cog wheels – much like granpa's watch. A sign of the times was the use of an enamelled retaining plate to hold the rubber cover over the motor. These actuators were first used on the S2 series cars and continued until the SZ in 1980 when a new design was introduced.

The actuator can easily be removed by firstly loosening the shaft lever clamp, easing off the electrical connector, then removing the three holding screws.

Additional removal information is in Section C1 of the Maintenance Manual. Gently and evenly prise the cover plate with rubber motor cover from the actuator body.



Here the motor cover has been removed exposing the little noise maker we are so familiar with. The tiny bronze bearing seen in the middle of the motor casing is an Oilite bush.

These are a very common in applications where lubrication is either difficult or inconvenient. The heater motors in post war cars commonly have this problem.

The bushes are made usually of powdered bronze which is compacted to shape and dimension required and then heated to permanently bond the particles together but at the same time leaving the interstices to be filled with oil. The bushes dry out and should be periodically re-lubricated.

Ideally the dry bush should be placed in engine oil (SAE 30) and heated to about 80°C for at least 15 minutes. The item is then plunged into cold oil (SAE30) until it has cooled off. The heat drives out air and the cold and contraction sucks the oil in – ingenious n'est pa? Clearly you leave the bush where it is and immerse the

component into which it is pressed.

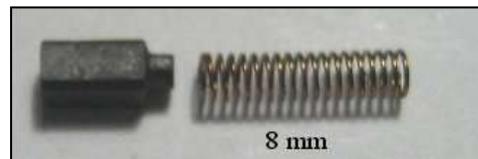


The manual suggests removing the nylon inserts, however this is not a good idea as they tend to harden with age and can be quite difficult.

The usual problem with these units is noisy bearings and both bearings can be accessed by removing the electric motor.

At left is the motor extracted after removing the two attaching screws seen here.

The small metal covers for the brushes can now slide up, releasing the brushes and springs. Be careful, they are very small and easily lost.



At left is the motor dismantled showing the armature and end plate. In the latter can be seen the other Oilite bush for the armature.

Some people use grease to lubricate the bushes but this tends to melt in the engine bay and soil the surroundings.

Carefully clean both end bearings, armature

end shaft and gear. Also put a small amount of high melting point grease on the gear seen through the centre hole seen in the picture below.

This gear can be moved by turning the output shaft on the other side of the actuator body with your finger and thumb.

Carefully re-assemble the actuator components, making sure the wear on the brushes match the armature surface and that the springs mate correctly with the brushes.

Setting procedures for the various actuator flaps can be found in Section C1 of the Maintenance Manual (Workshop Manual for SY Cars 1965-76 Prior to Chassis 30000) in the Technical Library.

<http://rrtechnical.info/>.

