

TEE-ONE TOPICS

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KEEPING HER LUNGS CLEAN

Many owners are quite meticulous about changing their oil and filter but often forget this rather vital device for filtering out nasties before they are inhaled by the engine. The obvious area of interest is the air filter seen here on an early Shadow. Before you start complaining, the bonnet was off for other reasons but why miss a good photo? The filter is held in a roughly rectangular box at the top and the bottom of the box depends to a point about behind the front bumper. It is here that the air is sucked in a matter only inches from the ground. This should pose no problem but be aware of the intake location the next time you go fording a flooded road! I have been 'drowned' in an automatic car wash with under-car squirters and taken too long to get in position.

The original filters on all Shadows came in two pieces. This made inserting and removing them quite easy. For whatever reason these two elements combined and now we have a nice cylinder that challenges the patience and dexterity of many an owner trying to remove and

replace it. Yes you do have to use force and push various bits aside to get it in the slot. What is more important is to ensure that the element is secure in the holder. In the picture you can see a centralising black ring which the long holding nut screws against, holding the element against the back of the air cleaner housing.

If having screwed up the holding nut against the holding ring, the element is still loose, it is highly likely the neighbourhood garage who serviced the vehicle last, threw the old filter element away, not noting that at the other end of it was another holding ring that centralised the filter but more importantly sealed the inner end. Driving with this bit missing should be done in consultation with your friendly lender of loot whose services will eventually be needed to rebuild the engine.

There was a Shadow in Canberra years ago that seemed a bit 'flat' given its apparent reasonable mileage. A compression test was a sad tale, clearly the engine was seriously worn. When dismantling started we were startled to find adjacent to the connection of the large flexible trunk to the air inlet for the induction system, a small pile of gravel. There was no other indication of road debris! Having seen the damage from the ingestion of unfiltered air that was apparent in the engine, it was found that a split had developed in the main trunk, out of sight and fine particles could be sucked straight into the air stream leaving the larger bits sitting on the induction manifold beneath.

The induction pipe as supplied by the dealers is in the arm and leg category. The size is unusual but is available from ducting specialists. If the pipe itself is in fairly good nick consider buying a couple of reels of self-amalgamating tape to rebind the tube. This looks quite respectable and does an excellent job.



SPIRITED INCONTINENCE



The drops on the garage floor were getting larger and the fluid in the reservoir was lowering. I knew what it was but decided that I'd prefer a couple of cases of my single malt rather than the cost of a new rear strut. Looking at the mounting rubbers however weakened by priorities until I found that R A Chapman in Melbourne actually have an exchange service for the units at about a quarter of the price. So I could have a case and half and a 'new' strut!



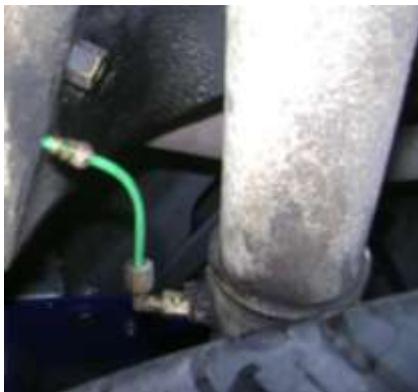
I should mention that the action of the strut was quite normal. Getting the thing out as seen in previous issues is not difficult but I will tell 'how I did

it' again anyway.

I should iterate that the strut is what holds the car up, not the spring that you see in the background. As with most shock absorber type gadgets you need to get at both ends. The bottom clearly is no problem except can I drop in a reminder to buy new self locking nuts for



this end. They are 'NYLOC' nuts which have a nylon insert in the thread and when done up the nylon jams the thread and hopefully it won't come off. This is a bit of an advance on the old practice of a nut, lock plate and four screws!!! The nuts are readily available from any nut and bolt place! Technically they can only be used once! Before you start, pump down both hydraulic systems and then jack up the rear wheel that you need to work on. Open up the corresponding bleed valve and the strut will exhaust itself. From the 20,000 series the two struts are linked and have only one bleed nipple. Either way be prepared to hold the nipple mount while undoing the nipple because they are very flimsy and held on by just one self taper!



Having undone the bottom end, you realise the other function of the strut is to limit the downward travel of the wheel. Of course you remembered to undo the drain pipe at the back of the unit. A new one incidentally is supplied with the exchange unit! These pipes are a fairly common feature on very active rams and struts and allow the odd bit of oil that does get past the primary seals to slowly dribble back to the reservoir. The early Shadows had a similar provision and for years after there was evidence in mounts and apertures of the original third pipe. Presumably they overcame the problem and dispensed with yet another

component.



The top nut presents a different problem as it is under the adapter mounted on the top of the strut that carries the gas spring. These incidentally are often referred to as accumulators since they look the same albeit larger and they have the same construction. The adapter is recommended by the workshop manual for removal when replacing the spring for reasons I have yet to fathom! The thing is bolted to a plate

with three Allen headed bolts the rear one being barely accessible given the space the assemblies work in!



When you have managed to remove the mount and gas spring here is what you find, that is after you have climbed out of the boot (trunk) straightened your back and had a pick-me-up! Note the two 'O' rings on the top of the strut mount. It is important that these not be damaged. It is fairly easy to slice them so that when the whole lot is back together you find a nice little leak from under the

mounting plate. To release this nut you may need to lock the mounting plate seen here by passing a small rod through it into the body. I have been surprised at how many of these nuts are comparatively loose!!



I think that replacement of the mounts top and bottom is fairly advisable given that LHM loves rubber like a brother. As I think I mentioned, one of the top rubbers has been modified for the better in later models and now supplied as a spare.

Note the bit of dirty paint on the top of the strut. This as Sherlock Holmes would have observed is an indication of the originality of the unit. You see the original colour of most of the ones I have seen is a mid blue and generally the

side of them can be seen over the wheel from a low perspective. This is not to the salesman's favour so the car is jacked up and the strut is given a quick blast with a can of matt black paint!!!



TRIALS OF AN AMATEUR MECHANIC

A friend very kindly lent me his Shadow II given a paucity of vehicles in my environment at the time.



On day three I set off for town only to be greeted by the 'Low Fluid' light. Since I had as a matter of course checked these levels only the day before, I was quite convinced as I swung back home that it had to be an electrical fault. Back on home territory, I made myself a cup of tea then sauntered out actually praying that the whole thing was a minor glitch. As you see it wasn't.



So since there was indeed a steady drip from the right hand side of the engine, the wheel came off. I immediately hoped for a loose hose or nipple. No such luck. The RR363 was oozing from somewhere on about or the number one accumulator. This is a bit like the captain of the Titanic discovering that his ship is doomed to sink! For those not into later Shadows, when the Factory installed rack and pinion steering they found it necessary to move one of the two accumulators from the left side of the engine to the other. The spot they chose happens to be right behind the mount for the upper suspension arm the shock absorber and the spring. For inaccessibility this then takes the cake. The last time I did one of these I applied for entry to a remote monastery but unfortunately was knocked back. So this occurrence was my penance.



Both accumulators are bolted to the engine in three places. Spacers are provided to cope with the shape of the block on which they are mounted and the three bolts are of different lengths. In addition unless some lazy sod has thrown it away there is at least one bracket at the bottom of the accumulator that holds the whole assembly rigid by cross bolting to the sump.

The previous picture is a view from behind the front right hand wheel. The large nipple above the bleed screw is the input to the accumulator from the pump and hidden partly to its left is the return pipe to the reservoir. At the bottom right is the high pressure delivery hose to the sub frame and its network of pipes to the brake distribution valve. Handle the latter pipe gently, at last count they were asking some \$500 each! Two of the fixing bolts can also be seen in the picture. The more eagle eyed will notice the gloss of hydraulic fluid around the valve plug with a convincing drip depending beneath!

Given the pale colour of our brake fluid and the fact that the accumulator valves are 'gold' in colour it is sometimes difficult to determine just where the leak is. One technique if this is a problem is to liberally douse the assemblies in chalk dust which you can get from any chemist and all will be apparent.



Since this accumulator had all its supporting bits it was safe to undo all the pipes and bolts and the assembly would just sit on the support brackets.

The picture at left gives some idea of the close quarters one operates in. Here the main supply pipe is being removed. It is necessary to hold the transfer nipple while the pipe is released. When the latter is off, and of course you have clamped off both the low pressure feed pipe to the pump and the low pressure return pipe, remove the

transfer nipple and you can then get at the return pipe beside it! The third bolt holding the unit to the crankcase can just be seen to the right of the spanner.

And here is the lower bracing bracket so often lost by lazy mechanics. Peeking under the exhaust pipe is the end of the starter motor and besides that the steering column.



If the supporting bracket is absent try refixing the main supply pipe loosely and let the unit hang on the pipe while you undo mounting bolts and pipes.



And here is the trophy. Later in the seventies these accumulators were reduced in size, apparently at the behest of the French regulators who must have taken a keen interest given that the fittings are almost pure Citroën! The 'full-sized' accumulators used on Shadows in the early seventies give incredible braking figures when measured in pumps of the brakes before the lights come on. The unit at left dropped that figure by about 30% and when we went

to one piece accumulators on the Spirits the figure was roughly halved!

The culprit in this little adventure was apparently one or more of the valve bobbin 'O' rings, since their replacement fixed the leak. If that doesn't work the solution is to sleeve the valves as you would on the old wheel cylinders.



ANOTHER ACHILLES HEEL

The electric gear change on the Shadow was the first attempt by the Factory to fit this facility. This was part of the quest to sever all metal to metal contact between the driver and the

As it is necessary to obtain either Neutral or Park position before the engine can be started, move the tommy bar to its most rearward position; this is the park position. Start the engine, then move the tommy bar forward until three notches on the gearbox quadrant are located; this is range 'D'. The car can then be driven normally as the gear changes will take place automatically without having to move the tommy bar from this position. If it is necessary to select reverse gear, the tommy bar must be moved rearward from the 'D' drive position until two notches on the gearbox quadrant have been located. From the most rearward position of the tommy bar ('P' park position) the gear ranges are 'R, N, D, L, L'.



Fig 8 MANUAL SELECTION OF GEAR RANGES

driving mechanism of the car. The electric change dispensed with a cumbersome and noisy set of linkages from the steering column to the side of the gearbox. The designers were a little nervous about their new baby it seems so they modified the hub removal tool to fit an extension on the gearbox activator lever and provided a rubber plug in the side of the gearbox cover for insertion and operation. This was only fitted to early gearboxes which were a specially modified version of the old Hydramatic used on the Clouds. Apparently they eventually summoned up courage and dispensed with the get-you-home lever system as it was called.

Ironically it is a pity that the provision wasn't left there because now, not the gear change selector motors but the associated wiring is breaking down! The Shadow was born at a time when the moulding of special plugs became economical and manufacturers saw a great advantage in incorporating the cables with the plug. Go have a cup of tea and look at the jug cord for starters.



Well here is one of two pictures of seriously damaged plugs. There are no more and there are no looms so they do pose a problem to the repairer. I wonder how many drivers consider the effort required of the gear change motor to pull the parking pawl out of its notched wheel when the car is held in park on a very steep hill. This effort has to come in the form of electrical energy from the battery via the expiring looms and plugs, so it is not surprising to see the damage shown in the lower picture.

Co-incidentally we do get bleats on the forum that the Shadow they have found buried under the altar in an Afghan monastery for the last 20 years is stuck in park, the car that is, not the monastery.

There is a reset button on the fuse box assuming the battery is good. If all else fails, simply disconnect the link between the gear change motor and the gearbox and operate the little lever by hand. It's a bit awkward to change while driving but if you can get a friend to hold the car while you move the lever to a position which, with the engine running, the car gives a little lurch forward and your friend doesn't forget that you are still under the car you should be able to get home. A three point parking manoeuvre, however, I would not recommend. The order of 'clicks' shown in the handbook extract above of course refers to the old four speed box. If your Afghan car has the later box the clicks are in the same order as they are on the quadrant.



Reminds me of the story of a European woman whose first language was not English, but she got by. She apparently picked up her brand new Shadow in William street right outside the then York Motors showroom. The salesman offered to instruct her in driving but she waved him away and managed to start the engine and even released the hand brake. At that moment somebody who apparently knew her pulled alongside in an almost new Ferrari and did the engine revving bit and took off.

As later recounted she looked down at the gear change indicator which was a new feature for her and spotted the 'D'. Apparently she decided this stood for drag, which she engaged and set off in pursuit of the Ferrari. She caught him on the Cahill Expressway and they were neck and neck across the bridge. Seeing the Ferrari starting to draw ahead she, in desperation looked again at the quadrant and realising that this was a race saw the solution by jamming the accelerator to the floor and ramming the selector into 'R' for race as she explained!!! Well that was the story I got from the service staff as they crammed bits of transmission into boxes which they raked off the recovery truck! ✘



UNDOUBTEDLY ICONIC

As most readers would know I am an old man and probably should have been put down years ago. Because I haven't been I inflict many a wary listener with tales usually prefaced 'in my day'. I find the greatest irritation to my existence apart from arthritis is rudeness, abuse of our language and disregard for standards which I have held dear for most of my life. These pages are not for debating morals, personal conduct, championing National Anthems, deferring to older people, keeping one's extreme conduct private or showing some respect for past icons that represent ideals we grew up to respect! Except one.

It is probably time for someone to write a book about the heritage of the name Rolls-Royce. The essence is not from the cars or the aero engines, nor the household names that spring out of the history books. The real 'aura' was, I believe, generated by the spin merchants. They managed to convince journalists to avoid criticising the Company's products, encouraged graphic artists to layout the most detailed sketches of the working vehicle and assist journalists to weave the aural web! When I bought my first Rolls, a partly dismantled Silver Dawn, I couldn't wait to pull it to pieces, to actually work on this legendary machine. So, besotted with this my very own example, whenever I found something broken or worn out, it was like find a spelling error in the Bible! Eventually I found reality. This occurs with so many of the pillars of our early life, which get eroded and eventually fade in our memories.

All this generated by the lead picture supplied by a member of our Club and more importantly a good friend and even more importantly an enthusiast! That Shadow was once a new car put together by a band of very skilful people to designs influenced by many decades of dogma handed down from employee to employee. Tens of thousands supported the make and many times that kept the examples alive. Today we have to be realistic in a world assailed by harbingers of doom be it climate, the atmosphere, the forests, dwindling fuel supplies or socialist revolution. Thousands of our cars have been destroyed or simply scrapped, the latter process being almost arbitrary in today's world. Hopefully however we as enthusiasts can encourage owners to preserve the examples remaining and perhaps resurrect some that are on the verge of extinction.



WHAT THE !!!!

No it's not some unique excrescence from Gray's Anatomy nor the opening scenes of the current medical play 'Gastro by Limelight' it is the end of the crankshaft breather tube on an otherwise respectable Shadow. This is the end of the thick black pipe that runs from the top of the air intake to the rear side of the oil filler. With the S2, the first car to enjoy vee eight power, the solution to engine fumes was to hose them onto the ground at the back of the engine. The S3 was a bit more civilised and sucked the stuff out of the engine at the oil filler. From here it was squirted down the air intake to be burnt along with all those other things people hate us for! But fumes have body – not much but some. And you see the collection of them in the picture on a little mesh filter adjacent to the oil filler into which the black pipe fits! Why the mesh filter? Why not burn the lot. Well somewhere sometime there was a backfire through the intake manifold and hence the air induction assembly and is usually the case there was a jet of flame and as is also usually the case the breather pipe was full of petrol fumes from a flooded engine and kaboom – no engine! It's a safety measure against such an occurrence. But that doesn't mean you ignore the filter. The reason you have a breather is to minimise crankcase pressure otherwise you blow out a variety of seals and suddenly you have a lot of fresh drips on the driveway!

Cleaning the filter usually involves two bolts and some kero. Do it!



A modest little person, with much to be modest about.' - Winston Churchill

ETHANOL TOXIC SCAM

The following is an edited version of an article by Ed Wallace of the American publication Business Week. The context is the United States but so many points made will be a familiar ring to the Australian reader.

More than one major transportation-based industry in America besides [Detroit](#) is on the ropes. For the fourth time in our history the [ethanol industry](#) has come undone and is quickly failing nationally. Of course it's one thing when Detroit collapsed with the economy; after all, that is a truly free-market enterprise and the economy hasn't been good. But the fact that the ethanol industry is going bankrupt, when the only reason we use this additive is a massive government mandate, is outrageous at best.

Where's the Logic?

First, the primary job of the Environmental Protection Agency is, dare it be said, to protect our environment. Yet using ethanol actually creates more smog than using regular gas, and the EPA's own attorneys had to admit that fact in front of the justices presiding over the Third Circuit Court of Appeals in 1995 (*API v. EPA*).

Second, truly independent studies on ethanol, such as those written by Tad Patzek of Berkeley and David Pimentel of Cornell, show that ethanol is a net energy loser. Other studies suggest there is a small net energy gain from it.

Third, all fuels laced with ethanol reduce the vehicle's fuel efficiency, and the E85 blend drops gas mileage between 30% and 40%, depending on whether you use the EPA's fuel mileage standards ([fueleconomy.gov](#)) or those of the Dept. of Energy.

Fourth, forget what biofuels have done to the price of foodstuffs worldwide over the past three years; the science seems to suggest that using ethanol increases global warming emissions over the use of straight gasoline. Just these issues should have kept ethanol from being brought back for its fourth run in American history.

Don't let anybody mislead you: The new push to get a 15% ethanol mandate out of Washington is simply to restore profitability to a failed industry. Only this time around those promoting more ethanol in our gas say there's no scientific proof that adding more ethanol will damage vehicles or small gas-powered engines. With that statement they've gone from shilling the public to outright falsehoods, because ethanol-laced gasoline is already destroying engines across the country in ever larger numbers.

Got a Spare \$1,000?

Last July was bad enough for motorists on a budget—gasoline prices had shot up to more than \$4 a gallon. But for some the pain in the pocketbook was about to get worse. At City Garage in Euless, Tex., for example, the first of numerous future customers brought in an automobile whose fuel pump was shot. A quick diagnosis determined that that particular car had close to 18% ethanol in the fuel. For that unlucky owner, the repairs came to nearly \$900. The ethanol fun was just beginning.

City Garage manager Eric Greathouse has found that adding ethanol to the nation's gasoline supply may be a foolish government mandate, but it has an upside he'd rather not deal with. It's supplying his shop with a slow but steady stream of customers whose plastic fuel intakes have been dissolved by the blending of ethanol into our gasoline, or their fuel pumps destroyed. The average cost of repairs is just shy of \$1,000.

It gets better.

Scott Morrison is the owner of the City Garage chain in North Texas and he related the story of his technical director's run-in with ethanol; in December he filled up his E85 Flex Fuel Chevy Suburban at the Exxon station in Ovilla, just south of Dallas. His Suburban died on the spot, because even an E85-equipped vehicle will not run on the 100% pure ethanol that Exxon station was pumping that day. In that case it was not Exxon's fault but a mistake at the distribution center, and Exxon ([XOM](#)) quickly made good for the cost of repairs.

On Jan. 16 of this year, Lexus ordered a massive recall of certain 2006 to 2008 models, including the GS Series, IS and LS sedans. According to the recall notice, the problem is that "Ethanol fuels with low moisture content will corrode the internal surface of the fuel rails." In layman's terms, ethanol causes pinpoint leaks in the fuel system; when leaking fuel catches your engine on fire, that's an exciting way to have your insurance company buy your Lexus. Using ethanol will cost Toyota ([TM](#)) untold millions.

An Unpublicized Trend

Though the media is ignoring it, one can easily find many stories on BMW ([BMWG.DE](#)) blogs relating similar problems with fuel systems damaged by the use of ethanol. Certainly that was the case with Christi Jordan and her 2007 Mini. For weeks it was difficult to start; Moritz BMW in Arlington, Tex., inspected it and found severe carbon buildup inside the engine. On her second trip to the mechanics they decided to test the ethanol content of Christi's fuel and found it was much higher than the federally mandated limit of 10%. This time the fuel pump had been destroyed by the ethanol. The repair bill came to \$1,200: As in all cases where vehicles are damaged by ethanol, legally the factory warranty no longer applied.

Jim Keppler, Moritz's fixed operations director, said he's had at least 10 other cases of ethanol poisoning in Minis over the past six months. Christi was one of the lucky ones; Moritz covered her repairs. But there's no telling how many motorists across the nation have had to pay for fuel pumps, or fuel systems, that ethanol damaged. Most were probably unaware of the real culprit behind the breakdown, because virtually no repair shop tests the level of ethanol in the gasoline when these fuel system problems occur.

And there are active lawsuits from boat owners; ethanol broke down the resins in their fiberglass gas tanks, destroying their marine engines. Additionally, those who deal in small gas engines for lawnmowers, edgers, and weed eaters have quickly learned that, as Briggs & Stratton's ([BGG](#)) Web site warns, "Ethanol-blended gasoline can attract moisture, which leads to separation and formation of acids during storage. Acidic gasoline can damage the fuel system of an engine while in storage. B&S strongly recommends removing ethanol-blended fuels from engine during storage."

Like motorists, if landscaping tool owners put gasoline with more than 10% ethanol in their small engines, that immediately voids any factory warranties. In the case of the Lexus recall, using just a 10% ethanol blend was found to be destroying many of these engines also.

Another Government-Mandated Mistake

It now appears that in just a few years since the government forced ethanol use on the country, engine and fuel system failures caused by ethanol are causing major damage to more and more new and used vehicles. This means the hapless owners are not only paying for

snake oil in lower fuel efficiency and more smog, but pay again when it damages their vehicles and lawn mowers.

We seem to have forgotten, but the promise of turning over farmland for fuel production was to reduce our nation's demand for imported crude.

