

TEE-ONE TOPICS

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THE ACHILLES HEEL THAT WASN'T

The Silver Shadow as most of us know was the Factory's first real sortie into the Brave New World. Sales of the staid but beautiful Cloud and 'S' series cars were falling through competition from much less expensive vehicles who through the impetus of technical development that was burgeoned by the Second World War were able to offer everything that Rolls-Royce could fit to their cars. The American market was finally recognized as the Company's salvation. No longer could they rely on beautiful tasteful finishes quiet engines and sumptuous rides to keep the bottom line healthy.

The vee eight engine that was jammed into the Cloud chassis greatly improved performance but then they had to have noisier clocks! By then the ancient 'Jerkomatic' transmission as it is fondly known in other circles, was retired after some 15 years service to be replaced by the pan-automotive transmission the GM400 a three speed that enjoyed production numbers in the millions; but providing a means of communicating with the unit was a challenge. The transition from a floor mounted change lever for the last of a long line of manual gearboxes to a lever on the steering column was indeed a quantum leap. By then millions of vehicles around the world had, for over half a century got by with a central



change speed lever that was stuffed through the lid of the box and worked very well. One drawback was engaging low gear with a reserved lady in the centre of the front seat which could present some embarrassing situations but they were not a major consideration.

Here we see the left hand side of the GM400 gearbox with its change lever and control rod; the other end of the latter is connected to the servo motor at the rear of the box as seen in the first picture on the previous page. The small black object screwed into the case is the kickdown switch operated by pushing your accelerator to the floor.

Both the GM400 transmission and its predecessor the Hydramatic wore their control levers on the left side of the unit which in a left hand drive car greatly simplified the web of levers required to connect to them! But for right hand drive cars the route was significantly longer.

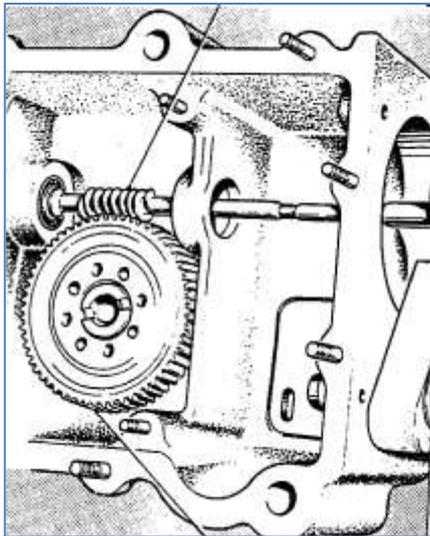
The Factory devised beautifully engineered joints and levers to meet the requirement and when these are in good order the operation of the gear change is unique but admirable! I should add before my detractors race to print that left hand drive pre-55 cars with manual gearboxes were fitted with gear change levers on their steering columns! And for the real rarity the fitment of a central floor gear change could be supplied.

Apart from the complexity and the weight there was the 'problem' of noise transmission. The Factory were very proud of their achievements in this field having among other things replaced oil pipelines to the dash gauge from the engine, gear and handbrake levers from the transmission along with rubber dampers in the steering column. All these items work like a stethoscope to transmit noise so the concept of connecting the gear selector to the gearbox with electric cables was very attractive. The idea was not new. Armstrong Siddeley supplied an electric switch on the side of the steering column to operate their pre-selector boxes and Chrysler and its badged brothers used a push button selection panel on the dashboard adjacent to the steering wheel rim.

Since 1960 our cars had enjoyed small sector motors. Basically these were rotary switches, fundamentally like those we use to turn the table lamps off after we have retired from the living room. The automotive version however differed in that their little motors only ran when the driver switched them on. Their power feed was from an insulated disc on which brass strips were attached in concentric arcs. Each arc had a sprung contact riding on it through which the power for the little motor completed its circuit. The disc revolved until the end of the arc was reached, then contact was broken and the motor stopped.

All that remains is to hook the shaft of the contact disc up to a small gearbox to give the motor a bit of leverage and by adjusting the lengths of the arcs you can predetermine where the shaft starts and stops. This is the way the car is able to open valves and shut flaps in your air conditioning system.

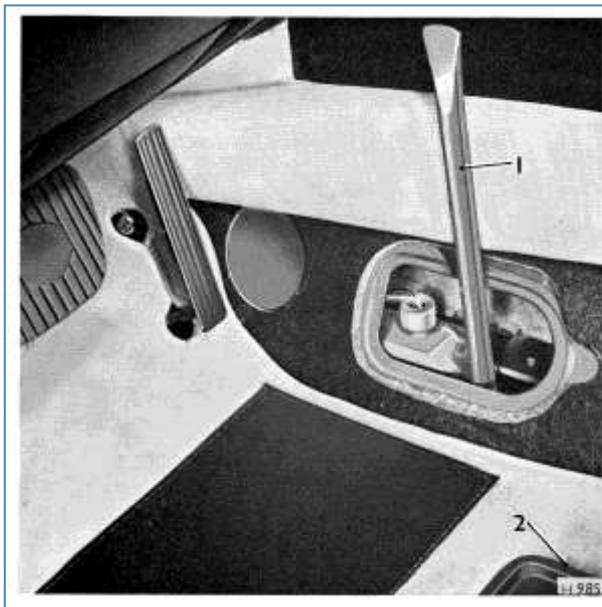
Presumably the Factory eyed these little work horses decided to adapt the system to changing gears since the change pattern for our automatic boxes is linear and progressive. So the system adopted was to fit a rotary switch on the top of the steering column and wire the various 'stop' points to make the motor move the output shaft to a precise position. Bolt a lever to that shaft, hook it up to the lever on the side of the transmission that selects the various operating positions and you have our system to select drive ranges used on about 100,000 cars!



As you will have noticed in the first picture the motor required to drive this system is NOT little and as you will see from the diagram at left the gearbox to do the job is not little either. This mechanical advantage is needed principally to disengage 'Park' particularly when the car is parked on a steep hill. You will be familiar with the 'clunk' when the parking pawl is pulled in this situation. To pull this pawl electrically requires a lot of power and common sense suggests there should be a circuit breaker in the system if this gets out of control.

The circuit breaker is in the fuse box of your car. Pushing the red button is the first step in the event of your gear change not working. But then some drivers are not aware of how to tell if the system is working. If you are in a quiet place turn on the ignition and move the selector lever through the quadrant. Hopefully you will hear the motor and

gearbox on the selector moving. Otherwise have somebody move the selector lever while you peer under the car from the left side and you should see the selector rod from the gear changer to the transmission lever moving back and forth. If you don't, try pushing the circuit breaker button and try again.



At left. The Get You Home Lever as described by the Factory in the very early Shadows. The only tried and proven bit on those cars was the engine which must have been a great comfort to a nervous Board of Directors.

If you are still stuck and can't or don't wish to go home on the back of a truck you still have one more trick up your sleeve. The object you will have realized is to move the selector lever on the side of the gear box. You can do this in an emergency by removing the connecting rod and moving the lever by hand. But first be mindful of the isolating switches designed to prevent starting the engine whilst 'in gear'. There were a few variations in this design but generally there were two isolating switches to prevent the engine being started whilst 'in gear'. One of these is in the servo unit.

To start the engine you will need to move the lever on the servo unit right forward and likewise the lever on the transmission also needs to be right forward. This is where they would be normally if the system was in 'Park. Otherwise, the engine will start and if the transmission lever is in drive and if you are still under the car and the handbrake holds, your next task will be a visit to the laundry. If you don't have a good handbrake you will probably have to enroll for harp practice! .

If you are driving a very early Shadow and can't select gears, after checking the circuit breaker, you can lift the carpet on the transmission tunnel remove a rubber bung, get your hubcap remover from the boot and fit the smaller end into the top of the selector lever through the hole in the transmission tunnel. Pulling the lever right back will engage park. Having started the engine you can then move the lever progressively through the positions you would see on your steering column quadrant.

This provision was dispensed with somewhere in the 1969/70 era as far as I can gather. The fact that it was provided in the first place was the traditional conservatism winning the day with what must have been seen as a radical feature that could well seriously erode the image of the marque. The Achilles Heel healed apparently because this feature which was carried through with modification to the end of the line and would probably be one of the most reliable systems fitted!!



REGASSING SHADOW ACCUMULATORS



By now we have all appreciated that a couple of small canisters of high pressure nitrogen stands between the average driver and his Maker! Brake fluid is pumped into these spheres up to about 2,600 psi when the regulating valves sitting out of sight here on top of the spheres redirect the pump output back to the reservoirs. We all also

know that the gas dissipates mostly through the 'rubber' diaphragm between the gas and the fluid. Shadow owners rejoice in their equipment because the capacity of their spheres is considerably larger than those of the succeeding 'Shadow III'. So when, after a good run, you park and turn the engine off then switch the ignition on and pump the brake pedal until the lights come on and find that you only have managed 20 pumps with lights out, you are starting to tempt fate.

Ideally you will pull the accumulators, overhaul them and fit new diaphragms and ragas them to 1000 psi. This is not a job you will tackle before breakfast. If however you can find someone with a cylinder of nitrogen and a high pressure regulator and an adapter to fit the



units you may be able to re-gas them in situ. The procedure is not rocket science, simply exhaust the existing hydraulic pressure by bleeding or pumping, screw off the protective cap remove any seal, screw on the adapter and slowly increase the pressure to a bit over 1000 psi. The bit extra allows for a bit of pressure you may lose when

the hose is disconnected and while you are screwing on the cap. If the gas gushes out in these cases the charging valve is defective and you will have to dismantle the unit. Similarly, if when you remove the cap brake fluid is present as in the picture above, the diaphragm has been perforated and once again overhaul is the order of the day!



NEGLECTED TIE ROD ENDS

There has been some Forum-talk about difficulty in getting grease into these little but vital assemblies. Greasing, while very satisfying albeit time consuming, if not done regularly can result in blocked nipples. The slide-on fittings that we enjoy on post 55 cars seldom give

trouble but if they do the simplest solution is removal and replacement. The original items were made of fairly soft brass and after 50 years tended to be glued to the tie rod end



This is 'all' there is to these joints. The tapered pin at the top rides on the little ball bearing which in turn sits in the cup between them. The spring allows the joint to flex when the suspension moves to extreme positions.

housing. Using an open-ended spanner will usually result in distorting the nipple rendering it useless. A 12 point socket, remembering that these are Whitworth fitting should do the trick.

Replacements in steel are readily available from machine shops. Before fitting the new item try poking around in the grease hole to remove or at least loosen up caked grease and any other muck.

Fit one of those fine nozzles and tubes that come with WD40 cans and try squirting into the joint. Unclip the rubber boot on the top of the joint and build up a well of WD40 on top. You can also put a small bottle jack under the joint and gently push up remembering that the joint is spring loaded. This should open the top up to let more fluid in.

All the above assumes you are unable to release the tapered ball pin from the steering arm. Please do not hammer these joints, but use a scissor-type splitter which prises the base of the tie rod end away from the steering arm. They are beautifully made units that with proper maintenance will outlast you and the car!

As a last resort you can unscrew the base of the unit, remove the bits, thoroughly clean them and reassemble. Enjoy them; they are no longer fitted having been integrated early in the Spirit program with the tie rods themselves. These 'improvements' are not dismountable and are not 'greasable'!



DIRTY WASHER BOTTLES

So help me we are now into disease prevention. In Canberra where I live, rain and its attendant frum splash and general grime are but memories. The last time it rained earnestly here, matrons were seen cavorting naked in the main thoroughfares to celebrate. It was not a pretty sight! At the time the spare parts people did a roaring trade in wiper blades since so many owners when starting their wipers, having remembered where the switch was located, found that most of the rubber blades were vulcanized to their filthy windcreens.

Since then people have remembered that pushing the appropriate button will squirt water on the screen and the wipers hopefully will wipe it off. All well and good. Some of us however augment this action with the addition of an additive of which there are several brands, to the washer bottle. They are to be commended since it appears that the additives

have an unexpected property of killing the somewhat deadly virus 'Legionnaires Disease' which apparently breeds in the washer bottle water. The message, 'Get some or die'!



THE EMPEROR'S CLOTHES

The more diligent of my readers may have noticed a particular aversion I have for people with Rolls-Royce vocabularies that include majestic, sleek, pristine, gliding, silent - the list is almost endless. I can drool with the best of them over a beautifully prepared car body but then the spinners get into print and the car appears to take on some spiritual character! I always keep in mind that the most beautiful body in the automotive world is little more than shelter from the elements if the chassis beneath it won't go.

As a pre-pubescent lad I used to wander into among other places, the showroom for our local Daimler dealer. If ever there was a marque that orchestrated the swank car

community the Daimler took the cake! After the last war car makers were struggling their tank making and associated optional extras out the door and cobbling together whatever they could find to start making cars again. These same people had an impossible task of assessing the market, given the near bankruptcy situation in greater Europe, extremely limited fuel supplies and the displacement of millions of people around the globe.

Daimler before the war enjoyed the ultimate Royal Warrant and supplied complete cars to the Royal Family. To avoid the spectacle of a destitute Daimler on the side of the road a fleet was kept by the Factory as a back-up for this one customer. After the war in which Daimler featured well with the production of military vehicles, the wife of the Daimler Board, one Lady Docker convinced her husband to commission some very beautiful although in some cases vulgarly opulent bodies on their cars. Apparently the public customers were somewhat daunted by this display to the cost of the Company.

To further damage the entity, legend has it that the Duke of Edinburgh visiting Crewe with his fiancé, spotted the unique experimental Bentley nicknamed the Scalded Cat. This was a one off bodied Silver Wraith sized car driven by the fairly new 8 cylinder 'B' series engine, a version of the then production Bentley 6 cylinder unit and the four cylinder motor used in among other vehicles, the Austin Champ! The Duke asked to drive the vehicle and then with his Princess fled South to London and apparently there was considerable diplomacy exercised to get it back. The Duke apparently prevailed on the dying King George VI and Daimler got the 'dear John' letter with Rolls-Royce getting the Royal Warrant.

All the foregoing is to plead with enthusiasts and would be owners, to look beyond the leather and veneers, the legends, the implied status and focus on what is underneath these wonderful cars. But to hearken back to the photo preceding this monotribe, I found this sub-frame out of a late Silver Spirit rear end which had been extracted to renew various mounting bushes. It is a view few owners would see but one that I hope that might enthruse some to consider what is beneath the floors of their cars, understand their function and hopefully be aware when things start to wear!



SHORT CUTS CAN BE EXPENSIVE

Everyone knows what this little bit is. In Shadow days it used to be crowned by a 'cool' black painted little copper square dome with a small porch on one side to admit a couple of wires. That in turn was secured by a nice spring wire clip cadmium plated and all. Inside the wires were

carefully inserted into two small terminals and fastened with two brass grub screws. The function of this unit is a simple electro magnet. When energized it clasped a lever in the intake system that controls that very large choke butterfly and held the latter in a vice-like grip until the engine started. But too much of a good thing, in this case fuel, is bad for the engine's digestion.

To avoid this, the weather has to get to about single figures Centigrade to close a switch and let the power through to the magnet. But you will realise that with the choke jammed shut there is a good chance the engine will drown so the designers included another switch in the power circuit. This, a bit like a toaster, heats up with the current going through it until 'click' it opens, the circuit is broken, the magnetic field collapses, the butterfly flips open, the engine takes a deep breath and the exhaust stops splattering carbon credits all over the garage wall!

So to the picture. The bottom line police apparently got to our beloved little brass box and clip and found someone to simply poke the two wires through the mounting plate and connect them with a couple of push in joiners! But they forgot that these engines actually do vibrate a little. The days of pennies balancing on the cylinder head have long gone. Under them thar heads are a lot of very angry powerful horses – hence the vibration. So our wires shake and eventually wear through and short out and blow the fuse!



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BUT FOR A HAP'ETH OF TAR THE SHIP WENT DOWN

Recently I was looking over a newly purchased Spirit, as usual all glamorous with paint and polished wood and when I recovered from that little spasm of ecstasy thought an inspection of the boot (trunk) would not go astray. This car still enjoyed that nice ample cubby box in

the boot floor behind the battery, later cars needing to be fitted with a gigantic rear muffler lost this facility.

The light was not particularly good so I nearly missed the potential catastrophe staring at me. Can you spot it? These cars take only one invitation to burst into flames and it is usually started by an electrical short and or spark. The initiator for this is of course the



battery, a device of very considerable power, so all connections to it should be treated with considerable respect.

And here if you are waiting for the answer, is the answer. That black wedgy thing is a rubber grommet threaded over the main battery cable on its way to the fuzeboard. Its function is to insulate the cable from abrasion by its surroundings, in this case the metal frame of the battery case. There is also the most obvious matter and that is the

carefully moulded functional cover (in red) designed to protect the positive terminal of the battery. Apparently as so often happens during a recharge or a jump start where the terminal needs to be accessed putting the cover back on is overlooked.



For those that watch the TV series CSI (Crime Scene Investigators), working out why people do things to our cars is almost as interesting as working out what they have done to our cars. This car was an Australian delivery to a very well known Club identity who has long gone to the great garage in the sky. Either he or a subsequent owner probably needed a

telephone in his chariot and for the younger readers, mobile phones as we know them were in their infancy, so a radio telephone was installed. This apparently needs power direct from the battery and for neatness the best access is via the lid over the battery. To preserve some safety for the main cable the entry originally was via a small plinth of heavy plywood which was suitably drilled and notched to thread the cable. Threading more cables through the same aperture posed problems of space so out with the grinder, open the slot to make room, cram the cable in place and jam the wooden plinth back in place! But having got it all together, bugger, as the ad says the grommet is still sitting down the cable!

So the last picture on the previous page is the end of the story. Do take note that the anodized strap shown is one of two that holds the fuel tank in place, a matter of inches from a possible sparking main cable!!! It really wasn't rocket science you know!!



SEAT JACKS ON SPIRITS

This system was borrowed I understand from General Motors. The main motor and gearbox has been detailed before but the jacks of which there are three are normally trouble free.

First a commercial. If you are heavy, try to take the weight of your body on the window sill and the centre console while you are lifting the seat. The mechanical advantage and the power of the little electric motor are considerable but finite and the units like all of us are aging! What does expire occasionally is of all things the whole gearbox casing which explodes with the internal torque being exercised by the internal gubbins.

But the height units of which there are three per seat (one each side at the rear and one in front) are simply

screw jacks consisting of a driven circular gear with a coarse threaded centre and a matching shaft bolted to the seat frame. The gear is driven by a pinion, which in turn is driven by the flexible cable here coloured black.

The picture shows the seat unbolted from the jacks and propped up. The threaded shaft is lying on the floor adjacent in order with the three securing pieces. 'Normally' it would be

most unusual to undo the jack but then some owners do so chasing the 5 cent piece that has lodged beneath the seat frame. With age the mechanism will probably clag up indicated by the motor grunting to move the seat even when the latter is empty.



At left is the mount for the top of the jack. The screw shaft is very firmly anchored in the two securing plates to prevent its turning during jacking. The seat here is at maximum height.

Below is the screw shaft fully extended with the primary locating piece sitting on top before the seat is lowered on to it. It is important

that all three lifting jacks be fully extended when the units are finally bolted down and as they must operate in unison.



The blue flexible cable, one of two, drives the gearbox that traverses the seat fore and aft.

Should the need arise to clean the various jacks out, having removed the top fixing (noting that they are distorted to ensure their security, the threaded lifting shaft can be screwed down and out of the jack for cleaning AFTER traversing the seat to the rear.

