

TEE ONE TOPICS

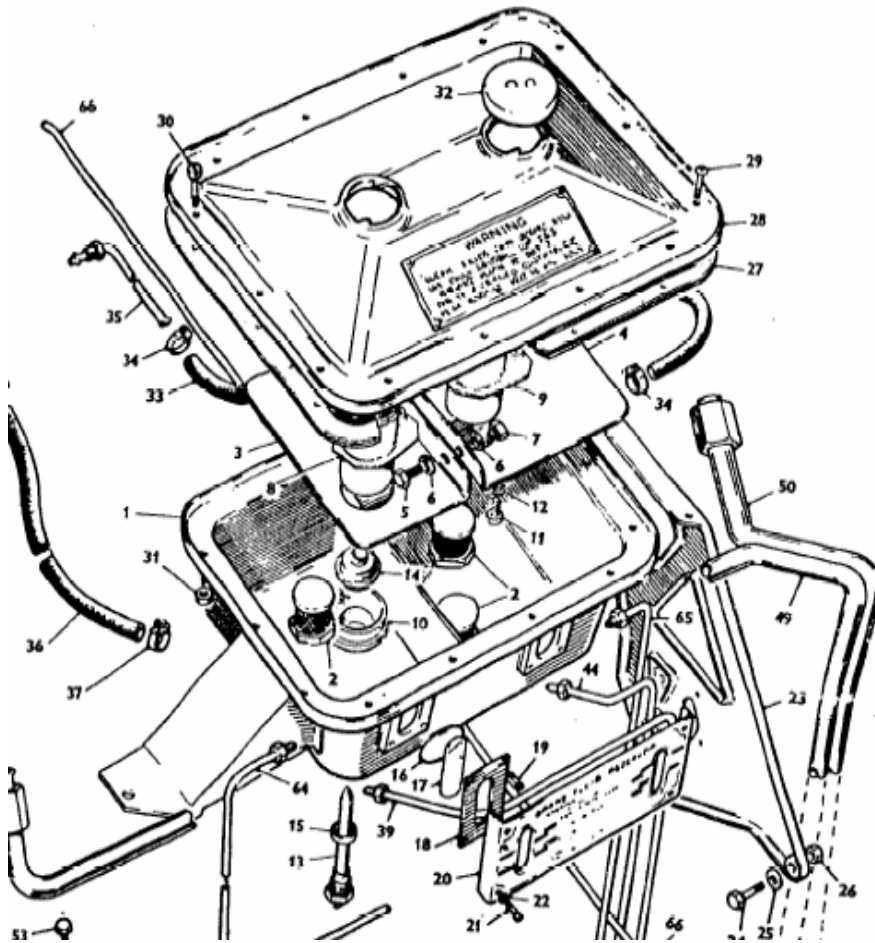
Number 41 December, 2004

ALL THAT GLISTERS IS NOT GOLD

If ever there was a crud generator in an engine compartment the hydraulic reservoir in the Shadow must take the cake. Brake fluid has an extraordinary list of ingredients in it to enable it to withstand the pressure and temperature at which it has to operate. Unfortunately it does not like paint nor does it like rubber. The rubber problem is overcome by using special formulation hoses



the paint problem is solved by not using it. We all know the ravages that brake fluid can wreak on our paintwork, even the famous P.O.R. finishes are not immune. Baked enamels seem to survive and indeed the early shadows had black 'painted' lids on their reservoirs. Later the Factory resorted to plating these containers reportedly with cadmium and that gave the very popular and attractive 'muted' silvery look. Unfortunately the environment people drew attention to the fact that cadmium and its compounds are highly toxic. Silver solder, which by the way contains cadmium, should be handled with care. Cadmium is a soft, bluish-white metal and is easily cut with a knife. It



is similar in many respects to zinc. Interestingly, a characteristic "scream" is heard on bending a cadmium bar.

And so it is very likely your friendly electroplater will give you a blank stare when you ask him to tart up your beautifully wire brushed rust free reservoir and lid. The answer seems to be zinc which gives a similar although less durable finish. Perhaps someone who has done this recently could let me know their experience. The lids often present a challenge. Some have a label, others don't. The labels have to be preserved. They are usually held on by small

aluminium rivets. These can be carefully ground off from underneath and the label removed. Save the rivets for samples and go hunting for a pair of rivet dies and a supply of new rivets.

In talking about these bits I am using reference numbers that refer to parts shown in the Spares Book diagram pasted into this story. The main body can be a challenge. There were I think four iterations mainly to cope with dropping the little master cylinder feed (the lower outlet of the two shown at 2 above) and fitting reed switches (13) for the low fluid level indicators apart from changing the mounting arrangements (23). They all had common sight glasses (17) which are literally windows on the hydraulic system. The two glasses are located on 'O' rings (16) in recesses in the front of the reservoir. Two oblong plates with suitable apertures (18) are screwed over the glasses and the 'instruction plate' screws on over them. And here is the last major challenge. The four screws (21) holding the 'instruction plate' (20) usually come out quite easily. The aperture plates beneath them though have four hexagon head countersunk screws (19) that can be quite difficult to remove. If firm pressure with the Allen key won't release them try placing the side of the reservoir over an anvil beneath the screws. Place a flat round punch that just covers the screw head on the screw and give it a belt. This will usually loosen the thread and the little darling will come out. If you have to resort to drilling etc take it to a machinist and have him do it properly. The screws are still available.

Get all the bits except the countersunk screws plated including the remaining screws and bolts and plates. Have the filters (2) repaired if they are damaged and check that the reed switches still have their terminals. Make sure you use brake fluid compatible 'O' rings in the sight glass recesses. If they are not they will swell up and you will see nought. When you are replacing the screws be sure to douse the threads in anticorrosive grease for the benefit of the next poor sod.. Replace the low pressure feed hoses (36) with the correct brake fluid compatible items not fuel hose nor

transmission hose. So follow the above and you should finish up with a reservoir other owners will drool over.



MORE ON PROPELLER SHAFTS AND UNIVERSAL JOINTS

After the last issue of Topics I had a couple of mild scoffings about the damage that can be caused by a tail shaft, propeller shaft, call it what you will, that had got out of control. Just take my word for it and if you are still sceptical feed into your Google Machine tail shafts and see what they come up with, particularly with trucks! Meanwhile we have had a Cloud with a very perished rubber boot on the back of the front CV joint and quite worn universal joints on the rear shaft, not to mention a fairly worn centre support bearing!



The rear shaft shown as the lower one in the two pictures posed no great problem as the universal joints are perfectly standard Hardy Spicer units as is the sliding joint at the front of the rear shaft.

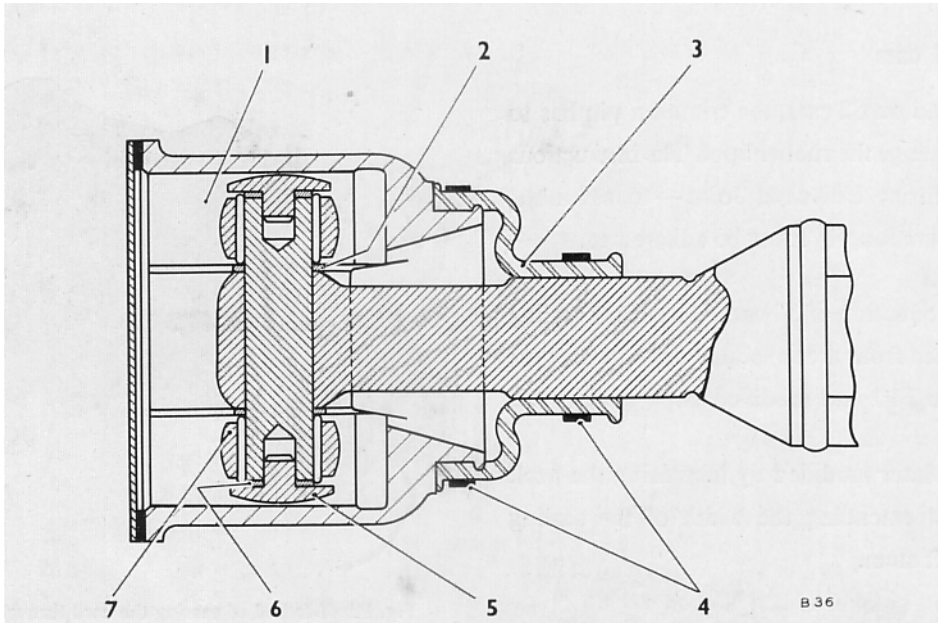


The latter of course allows the shaft to alter its length as the rear axle swings around the front

shackles on the rear springs. Unfortunately those natty extended nuts used on the CV joint are no longer usable as they are very close to the new standard universal.

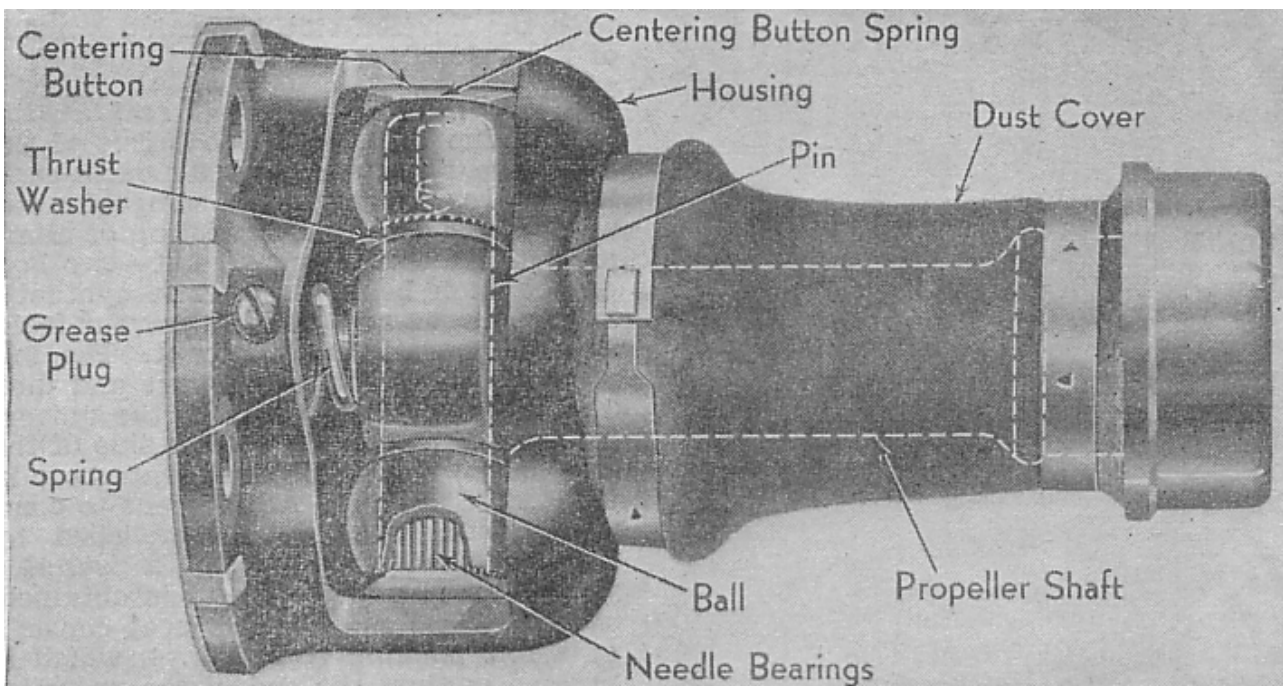
But then we needed to address the front shaft where the Factory fitted a plunge type CV trunnion joint as a means of minimising shaft vibration. As will be seen in the cross sectional drawing below, these not only provide for flexing of the drive but also longitudinal movement. With this car it was found that there was very considerable wear in the trunnion. The severed joint above has had a non standard boot fitted to replace the original item which was perished and broken. If you want

to read a complex fitting instruction look up the workshop manual instructions on replacing the boot.



Having found the joint worn I enquired about the replacement cost of the trunnion (1 in the drawing) without the associated pin rollers and buttons. It was apparently \$3600 and since we couldn't get one the colour we wanted (joke) we decided to scrap the

design. The alternative universal and slip joint is shown fitted. This is the standard approach to this problem I am advised and having had it applied some 20 years ago to a local S2 Bentley with complete success, I have no doubt this latest application will be similarly successful. What is important is the subsequent balancing of the two shafts AS A UNIT. This of course has to be done by specialists who will paint correlation marks on the adjacent joints as they were setup in the balancing machine.



If this looks familiar it is. A Detroit Ball and Trunnion joint from a 1940 Buick. The Factory quietly bought new Buicks for many years to keep an eye on New World developments.



Millicent Fitzroy Coburn born 11 December,2004 and her very confused, newly qualified grandfather.



CANBERRA GOS

It is not often events, local to where I live, have any relevance to these pages. But some of you would have picked up that for a while now I have been crawling around the bowels of the Vice Regal Phantom VI. There were two minor problems, it had difficulty going and similar difficulty in stopping. Eventually with advice and help from everybody including Henry Royce via a good medium, the car got going and I am relieved to say has not missed a beat since. He (note the capital 'H') was very pleased as there are no more of these cars left in the Commonwealth mews.

An anonymous viewer of this year's Graduation Parade at Duntroon sent me the following report:-

The G-G's car performed **magnificently**! Stately, dignified, beautiful - everything it should have been on such an occasion! It looked absolutely terrific as it glided silently over the parade ground.

But therein lay its only weakness. It was utterly silent! Did you stick a battery powered electric in there? Or a super heavy duty rubber band? Or, have you thought of trying a locally made muffler? Powatone out at Fyshwick have some pretty good ones. Fantastic sound! And much cheaper too.

The parade went really well. HE gave an excellent address - pitched straight at the graduates in language they clearly understood. Altogether it was a great day, and we did appreciate your contribution to it.

Well that was nice to know and I will make enquiries about a suitable Lukey muffler for the car – preferably one of those that have a five inch chrome exhaust poking out under the bumper bar! But then a further bulletin followed the next day-

Learnt a bit more last night about the G-G's visit to Duntroon for Graduation yesterday and thought you might like to know that you didn't fool Chubb! It seems that the R-R was bailed up in Duntroon grounds **TWICE** by Chubb Security. It wasn't a military vehicle and was therefore unauthorised to pass! Didn't have a car park ticket either. On both occasions the G-G was in the car, but the Chubb men (very young and very big, i.e. club bouncer types) failed to recognise the car, its crown or its passengers! Next time you have the car, just give it a quick all-over spray of olive drab, will you - there's a good chap!

I should get the appropriate approval before embarking on either of these modifications. More personally I have since found that His Excellency was quite amused by the Chubb challenge and refrained from launching into a perfectly justified torrent of abuse. Such is the measure of the man.

Actually they were quite plucky to make such a challenge as I am sure HE would have been wearing his ceremonial sword which as magnificent as it is in its jewelled scabbard, when drawn could change the general intestinal configuration of most challengers.

The late Guy Griffiths a past Federal President of considerable stature and former Commanding Officer of the King's Flight during World War II once told me that the imperial sword, a magnificent jewelled accoutrement, had been pressed into service a number of times when the crew having landed and despatched the King to a near-by command headquarters found themselves in the North African desert with a case of tinned bully beef and no can opener. Drawing the one tool available from its scabbard a deft flick of the wrist and a little prising and the lid was off. The blade was wiped and restored to its glittering sheath.

The King on occasions on returning to the aircraft with a local commander-in-chief, performed the ancient chivalrous service of knighting the officer, there and then in the desert. It was for this purpose the sword was carried in the plane complimented by a nice kneeling stool. Guy recalled an occasion when after performing this ritual HM raised the weapon to return it to its scabbard and in the desert sunlight noted a rather obvious smear of genuine bully beef decorating the blade. 'Hmm' he observed, 'I see that this sword has indeed been put to good use'. Nothing more was said!



Any tool drooped while repairing a car will roll underneath to the exact centre of the vehicle.

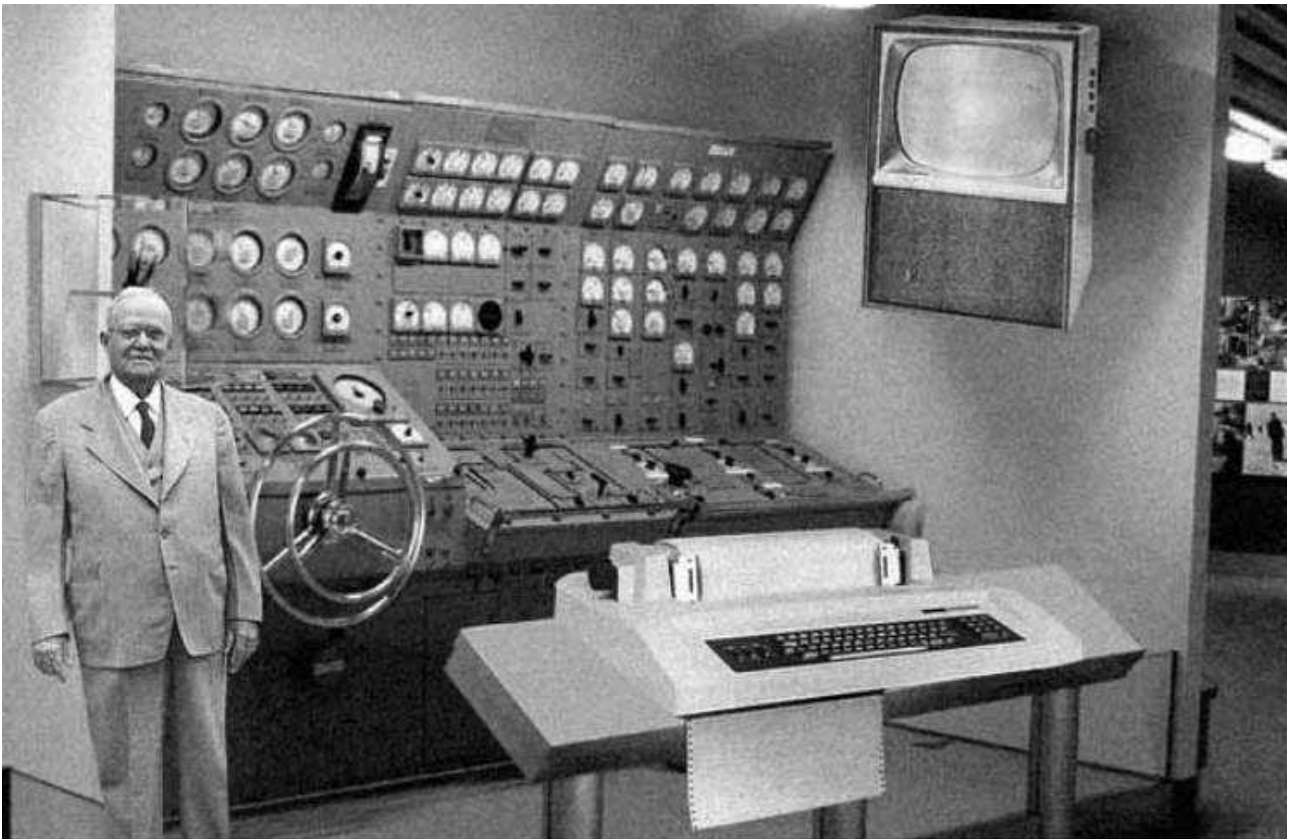
Daniel Murphy

SPECIAL NOTE ON SILICONE BASED BRAKE FLUIDS

The following notes fell out of a web site the address of which I have lost. Readers may recall my expressed misgivings about silicon brake fluid, so the following is fairly relevant.

Girling has advised that silicone based brake fluids do cause seal expansion. In most cases, in street driven cars this is not a problem because the hydraulic cylinder seal fits into a groove in the piston. The groove is very deep, and the piston and the seal slide back and forth in the bore of the cylinder in which they are a close fit. The 10% expansion of the seal, (this is the figure used by Girling), only makes for a tighter seal. But in some older Girling master cylinders, the seal fits into a groove in the body of the cylinder and the piston, which is smooth, slides back and forth through the seal. And experience has shown that in these cylinders, the expansion of the seal causes the seal to lose contact with the piston and the cylinder stops working. In fact ALL pressure is lost and the pedal goes right to the floor! The type of cylinder where this has occurred is used in all Morgans up to about 1955. All the sealing setup in most disc brake callipers is the same as this, therefore the use of silicone should be restricted to clutch hydraulics and drum brake systems that use the later design master cylinder and where the cars are driven infrequently and are really "garage queens."

In short it is not recommend to use silicone fluid for any disc brake car that is ever driven hard. as the temp of the fluid rises, the fluid becomes more and more compressible, and it becomes more susceptible to contributing to a sudden, total, and unpredictable lack of any pedal pressure.



Found in a 1954 journal with the caption " Scientists from the RAND Corporation have created this model to illustrate how a 'home computer' could look in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language the computer will be easy to use.

If you are not racing your car then silicone brake fluid can be used for any non disk brake car. Even in racing silicone fluid is better than OLD glycol fluid. The glycol absorbs moisture and the temperature where the compressibility of silicone fluid becomes noticeable is higher than the boiling point of moisture saturated glycol fluid!

The other problem (not usually mentioned) with silicone fluid is that it is much more difficult to bleed the brakes. Pumping the pedal vigorously as one does with glycol will cause air to dissolve into the silicone fluid and defeat the process. One must be very gentle with the pedal action when bleeding or use a power bleeder.



IN CASE YOU HAD DOUBTS!



Back to reservoirs and here is a first hand example from an otherwise immaculately maintained Shadow II. This car had all its brake hoses replaced 12 months and some 7000 miles previously. Needless to say the system was thoroughly flushed and refilled with the old version of RR363 not that the latter category would deteriorate any faster than the new stuff. At any rate the muck seen above accumulated in that short time. After cleaning out the reservoir some 8 litres of the new RR363 were flushed through the system and it will be interesting to see the bottom of this container in another year!



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IT'S HERE!

After seemingly interminable argument, diverse intelligence, hearsay and anecdote the 'new' RR363 has arrived on the shelves of your nearest Castrol outlet. The only supplies I was aware of previously were from the local Bentley Dealers at \$24 a litre. The new supply is the same price as the old at \$12! The one on the left with the special logo at the top of the label is the 'new' one.

MORE COOLING SYSTEM WOES

One of my readers has a very impressive Turbo Bentley and was rather concerned to watch the temperature gauge climb into regions not before noticed. Readers will remember the comparison of early and later SZ cooling systems and the importance of pressurisation. The owner was lucky to spot a plastic weld failure on the top of the overflow bottle which you will recall is actually pressurised. With a hole in the system however any generated pressure was lost. He continues "I



installed the Turbo R's coolant bottle last night after work and here are the pictures of the failed unit removed. One is, as we would more readily recognise it and the other, a close up, shows the staining from the fracture in the seam weld almost at the top of the unit, well above the high mark for the coolant. While almost no loss of water has been detected during my two years as custodian, there was however, no pressure in the system it would seem. This only became evident late last month, the day we had a rally to Palm Beach via the northern beaches of Sydney. It was a very hot day reaching about 40C. In really heavy traffic the temperature gauge climbed to the extreme high end of normal. I turned off the air conditioning and drove with the windows down which was rather pleasant, along by the beaches. Once the traffic thinned and a decent speed was attained, the temp gauge returned to normal. I thought it was the electric fans not working but all was normal in that department.

I would think that an annual pressure test by one's friendly radiator man might be good practice as well. As you might well imagine, if the fracture had been a little further to the left it would have been obscured by the wiring loom. I will be testing the car on the next "Stinker" and duly report the results. Hopefully it will be good news.



THE CAR THAT REFUSED TO MOVE

This is not a variation on the story of Thomas the Tank Engine but was a curious circumstance that was new to me and one on which you may ponder. A new owner bubbling with the joy of owning his first Rolls-Royce rang to say that he had parked the car in front of his garage where the brakes locked on and nothing would get them off!!! As his day to day car was parked in the garage, he had an immediate problem. The car had to be moved and due to the terrain could not be pushed. What was the problem and what would you do? (Answer somewhere further on)

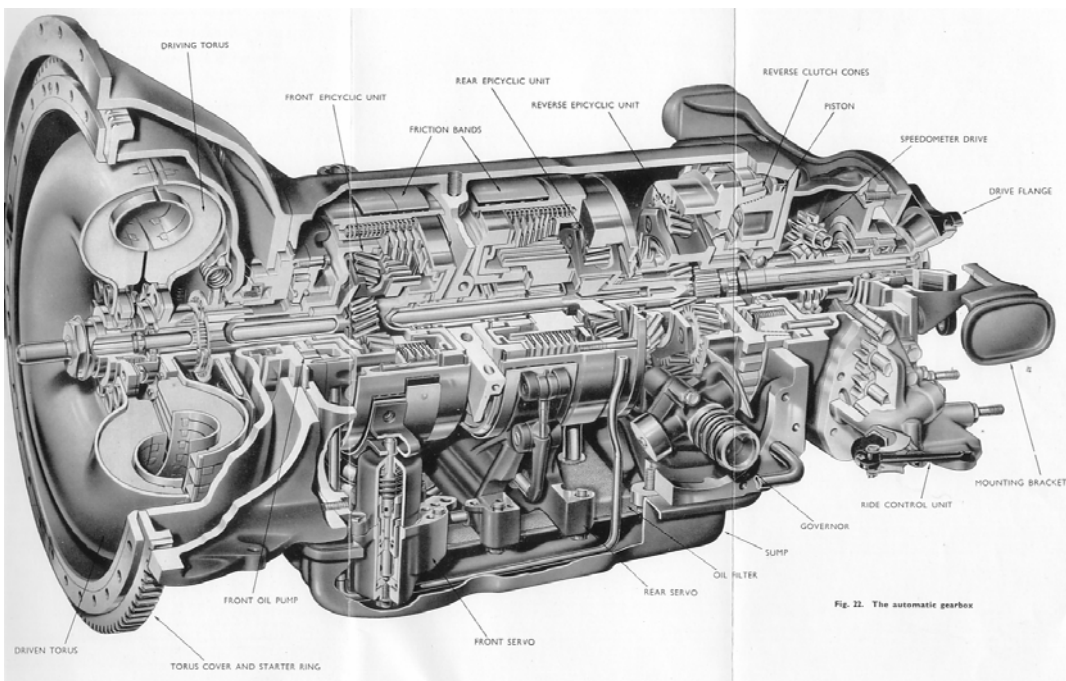
Well we did discover that after standing for a long while the brakes would indeed release. There was the possibility of the old chestnut of brake hoses disintegrating internally and working like one way valves but for that to happen to all four wheels was a bit beyond the credibility index!

Finally we noticed that the brakes only came on when the engine was started. That was novel in my experience. Under the car to have a look at the brake actuators under the driver's seat. Horrors, the cover was missing and judging by the corrosion under there anything was possible. Deduced that the actuation valves that admit accumulator pressure to the wheel callipers must be stuck open. As soon as the accumulators were charging the pressure went straight to the brakes! But we needed to move the car – solution????

We clamped off the rubber hose feeds to the hydraulic pumps. But the residual hydraulic fluid in the lines was still enough to apply the brakes, so we adopted the old trick of opening the bleed screws on the front left hand wheel. This works with the 'one way valve' hoses when they give trouble. All pressure from the system then exhausted through these two nipples. Fortunately being an older car it still had its little master cylinder at the back of the rat trap and it worked!!! So with dribbling nipples the car was manoeuvred into its future resting place and the family car was able to exit!



SERVICING THE GENERAL MOTORS HYDRAMATIC



I have often wondered how the Factory produced photos like the one on the previous page. That would have had to be produced in the early fifties in time for the first release of automatic gearboxes in Rolls-Royce cars. Originally designed by GM in the thirties, the Factory seized on the design principally because at no stage does the transmission 'freewheel' and equally in the event of the engine stopping the connection between the rear wheels and the engine remained intact until the car slowed to a very low speed.

The spin merchants of course waxed eloquent with a whole new glossary of words including effortless, smooth, imperceptible and a few others theretofore not appropriate in a manual transmission car. And for the very old you will remember that unctuous tale about the engineers stripping a sample transmission from across the Atlantic and finding certain parts not finished to their perceived 'standard'. Having refinished the offending bits the transmission would not work – apparently the lesser finish was designed as a partial oil seal!

The transmission was used for certain in the Oldsmobile in 1940 as well as other North American makes including Cadillac Hudson, Kaiser and Frazer, Lincoln Nash and Pontiac. I recite these in the hope of assuaging the anxieties of owners of our cars using these transmissions that there are sufficient revheads in that country keeping these cars on the road thereby prompting the manufacture of spares.

Checking the oil level

Owners who have passed 'Bonnet Opening III' and got a decent pass mark will by now have found the dip stick and filler hole for the transmission. The oil level in these boxes remains pretty much constant so checking say once a month for one's mental peace should be all that is required. Massive oil loss sometimes occurs when the front seal behind the torus fails. But you will be well aware of this problem as the car will stop and your worries about anti-rust treatment under the car will be over if you get my drift.

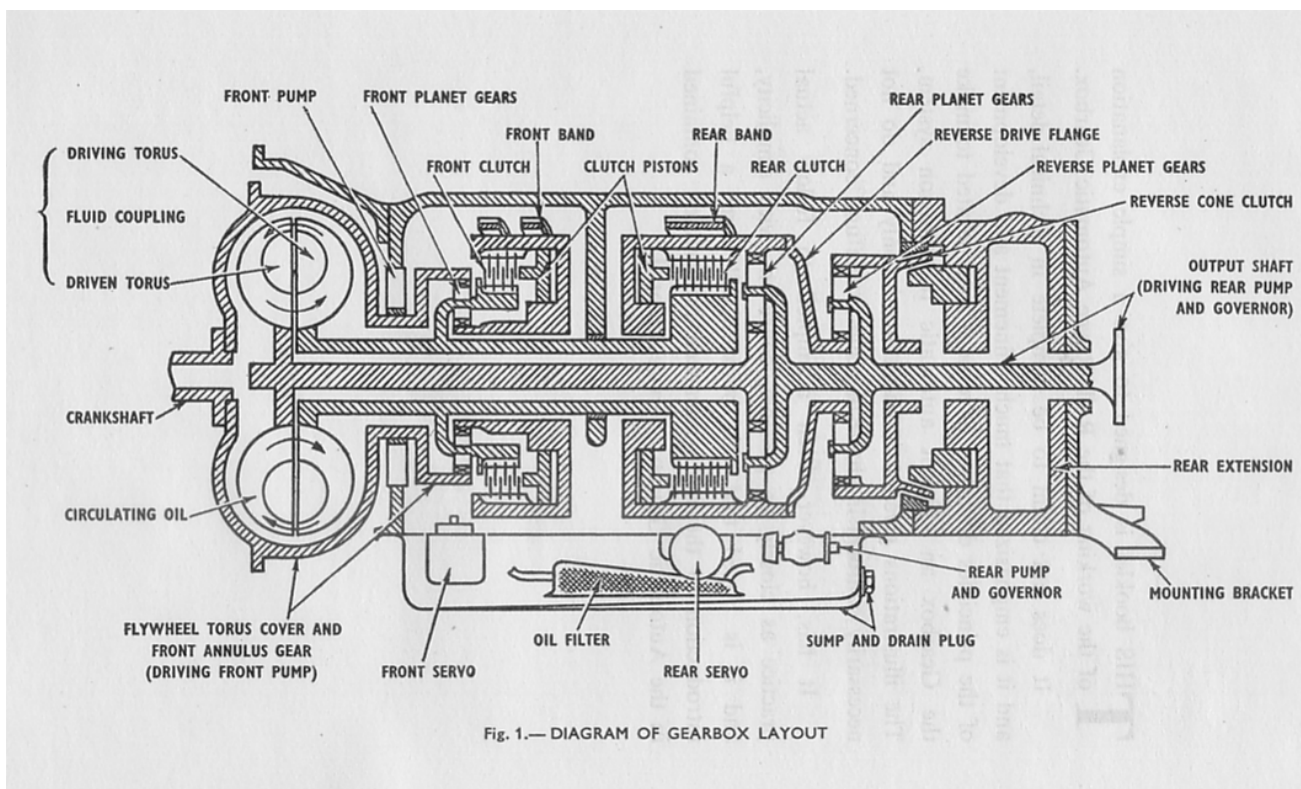


Fig. 1.— DIAGRAM OF GEARBOX LAYOUT

Checking the oil level should be done with the transmission hot, the rubber bung out of the floor, the dipstick withdrawn and wiped and laying on the festoons of rags you have spread about the hole

to catch the inevitable drips! With the engine running at a slow idle, and the handbrake hard on, move the selector lever to each position for a few seconds returning to 'N'. Then dip the stick and withdraw it. Check the level. It should be just on 'H' not above it. If it needs topping up – use good old Dexron and be very sparing with the pour as it doesn't take much to lift the level. If indeed you overfill the box, it is not necessary to turn the car upside down to get the excess out.



Simply get some clear plastic hose, **switch off the engine** poke the hose down the hole put your thumb over the end of the tube and withdraw the latter. This will contain a little of the excess oil which you empty all over yourself and then repeat the process until you have the right level. Remember that with the engine off the torus or fluid flywheel will be quietly leaking its contents back into the main box and giving you a false reading. The flywheel only stays full when the engine is running.

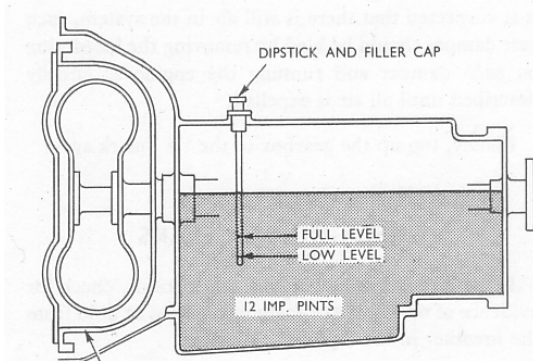
When you have the level right and checked a couple of times in case you didn't focus correctly the first time, smell the stick! Having savoured the bouquet go and have a sniff at your bottle of Dexron and compare them. The transmission oil will most likely have a slight burnt brake lining smell to it. The operative descriptive being 'slight'. The colour should

also be no more than slightly tinged compared with your new bottled oil. If you have a pronounced burnt smell (I am referring here to the transmission oil) or dark oil, it should be changed.

Changing the oil

These transmissions are much beloved by the oil companies since from dry they can contain slightly less than 11.5 litres of lovely Dexron. Draining the bulk of the oil is quite simple and as a starter may be as far as you wish to go in this new adventure. As you will have noted from the last diagram the drain plug is at the back of the gearbox pan at its lowest point. The drain plug is the same as the sump plug and you use the same tool to remove it (i.e. cold chisel and hammer, multigrips or Stilson wrench).

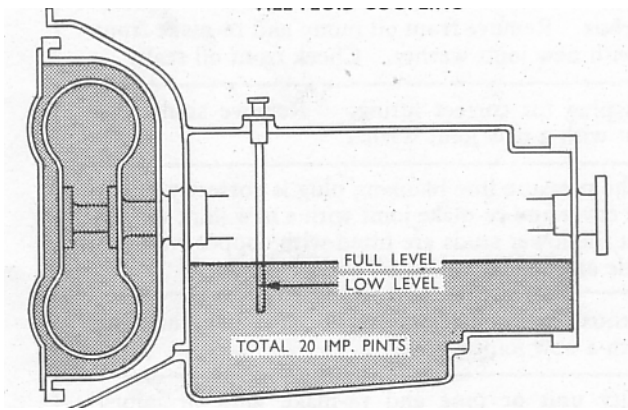
You should laugh I have seen the results of all three of these instruments of torture! If you have lost the tool from the car kit buy a 14 mm Allen key pictured above courtesy of Richard Treacy.



The draining is probably best done at the end of the day, leaving the plug out all night. This allows as much of the torus oil to dribble out as possible. It gets boring telling you all this but please be careful with hot oil from any part of the car not the least being the transmission. You could comfortably fry eggs in hot transmission oil or if you prefer one of

your hands so be very careful.

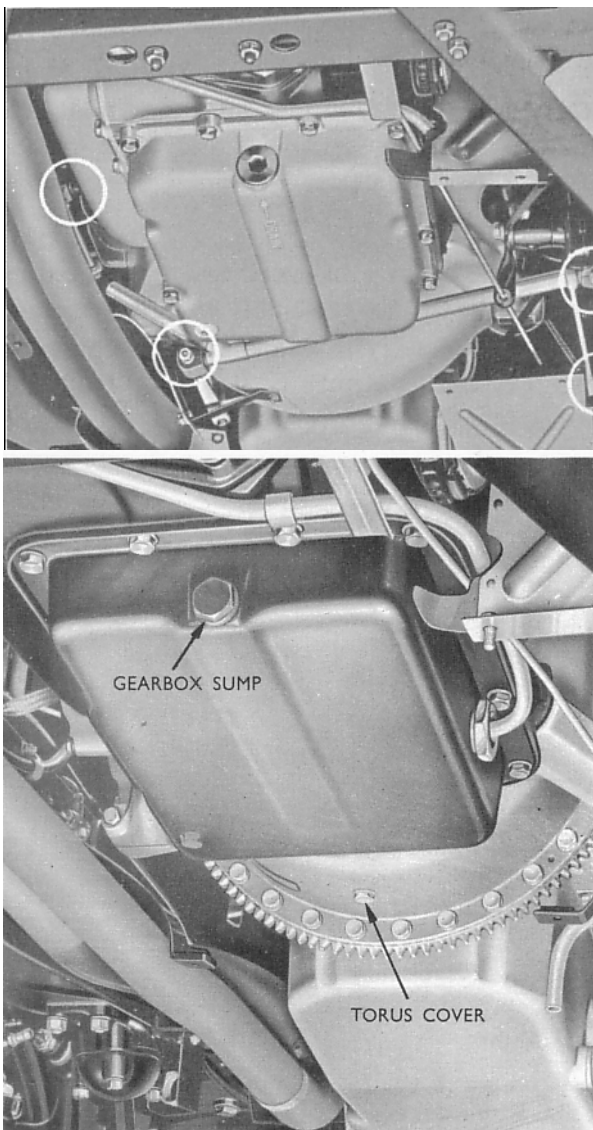
When the dribbling stops replace the plug with a new washer (available from auto shops and made by Champion). Get a large funnel that will comfortably fit in the dip stick hole and make sure all your old underwear etc is packed around it so that when your hand slips and you overfill the funnel you don't destroy the car's underfelt. The drawing above from the workshop manual quaintly refers to all measures in US pints (16 of our old ounces compared with 20 ounces in our old pint) Note that the torus is shown as empty which it won't be if you have followed the instructions above. Pour in about 9 litres of new oil, remove the funnel and start the engine, blip off the fast idle



preferably. With the engine running the front pump of the transmission will fill the torus and drop the oil level in the gearbox sump. If you hear sucking/gurgling noises coming from the filler hole switch off the engine and add more oil. Start the engine again and gradually add oil until you get the level to about half way between the 'H' and 'L' marks on the dip stick having gone through the gears several times. You will use approximately 12 litres. Go for a run (with the car) and warm up the transmission, check the level again and bring it up to 'H'. Replace the

dipstick rubber bung and carpet and congratulate yourself.

Draining the torus



Preferably this is done at the same time as draining the sump. The catch is that it involves more work and disturbing some more bits. The circled bits to the left are the disconnection points for the gear change mechanism. This is also a good time to clean these joints out and if necessary fit new boots, grease the joints and adjust them so that there is just no play. Having got the levers etc off the next step is to remove the torus cover just ahead of the gearbox sump.

The picture below shows it all. Obviously you will have to turn the flywheel round with your hands to get the drain plug to this position. The little plug in the cover has a very small thread so should you drain the torus be very careful to just nip the plug up preferably with some nice Loctite on it to stop leaking and coming undone! Modern torque converters are virtually undrainable so an oil change in one of the later boxes is always going to leave a bit of the old stuff behind. Given that only a pint of oil is left behind in the torus in the early boxes, it hardly seems worthwhile risking stripping the plug and/or having to take off the levers etc.

The more observant of you will identify the chassis in these pictures as that of an 'R' Type Bentley. That is because my manuals on this box in that model are the best. The pipe seen coursing around the sump in the lower picture is for the hydraulic ride control used in the pre-Cloud days! And

before you start writing, I have noted that the main drain plug is not your standard RR one!

I hope all this is not in vain. There is a lot of expensive mystique about these gearboxes which are relatively simple assemblies. Given the aversion that young mechanics these day have to any car that doesn't have a complete IT interface with inbuilt computers it may well behove us all to get

under and at least understand these boxes in preparation for the day when closer attention will be warranted.



Richard Treacy an ACT Branch member but resident in Switzerland, has frequent need to use the Autobahn in neighbouring Germany. His Turbo Bentley which is in daily use must be one of the closest monitored examples on this Earth. Recently during a trip Richard took this photo and forwarded it with the caption ‘This was from my trip home today from Heidelberg. I had to slow to take the shot and it was a flat stretch of road. Just beforehand, the needle was at the indicator arrow and 4,500 rpm: that's 276 clicks. At a recent car club meeting, the car was clocked as dead accurate at 50, 80 and 160 km/h on the dial.’ Mind boggling Mr Watson!



CURIOUSER AND CURIOUSER – THE CAR THAT GOT BOUND UP IN ~~RED~~ BLACK TAPE

I did think after the car that wouldn't move I had heard most oddities with these chassis but it seems not. A very long standing member of this Club rang me from far flung climes to say that his much loved mid-range Shadow was running very fast when it should have been able to quietly idle. Knowing all about everything I immediately launched into the evils of any number of vacuum hoses that may have fallen off and go look for them right now. A little later – no hoses are off. But the owner says who freely admits to just scraping through Bonnet Opening II, the throttle levers are not returning to the stop position when the accelerator is released. Well again obviously something is holding it out like the fast running solenoid for the air conditioning or the stop screw lock nut has come undone and the screw has wound itself in. Both were proved incorrect suggestions. It was during the effort of trying to find the stop screw that the owner decided to remove the whole air trunking and Lo there was a wondrous sight. There were feet and feet of black tape right through the air horns and the carburettors themselves which predictably were jamming open! The source was traced to the main flexible air trunk which was not genuine and it seems the thing was indeed lined with this tape which had become detached and been sucked through the system. No damage was done but we were all a bit wiser.

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

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www.BritishStarters.com

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

Our New Zealand enthusiasts web site

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

A great source for handbooks and workshop manuals

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

The British RREC.

barbarawestlake@rrec.org.uk

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

www.enginesaver.com.au

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