TEE-ONE TOPICS

Number 57 September, 2006

SHEER NEGLECT, IGNORANCE OR FRAUD ?

A nice looking Shadow appeared on our drive last week with a broken compressor drive belt – could I help? The lady owner heard a bang and rather wonderfully leapt out of the car threw open the bonnet and extracted what remained of the broken belts, She drove up our steep drive because she had misplaced her phone and hoped she would find someone home to use a phone. Well she got me instead. I had some used belts in good nick and popped those on but noticed that the belts that were on were very worn. Had she not had the cat serviced for some time? No, she advised only last week it had gone to her reputable garage that seemed to know what to do on her car.

Checking the dip stick more or less confirmed that the sump had clean oil in it and the oil filter was nicely wiped and grease hung in shards from the nipples. Next step check the hydraulics. The engine had been running so switch on the ignition and pump. Eight pumps of the brake pedal and the system 1 light came on but when I was contemplating a leg transplant there was still not a system two light. There was a bit of a slope so I got in and actually asked the lady to push the car. Hand brake off and she got the car rolling a bit. Applied the brake pedal – nothing happened we

just kept rolling along as Paul Robeson would sing. No brakes. Started the engine – instant brakes – well the pumps at least work. Her daughter came to collect her and looked a bit dubious. I got them to stay while I pulled the top off the reservoir since the sight glasses were quite black. The picture shows the mess that was revealed after I siphoned off the murky liquors in the tank. At this stage the owner and daughter departed. I am glad she saw the evidence of simple neglect.

I filled the reservoir after cleaning it and the sight glasses and the filters and ran about a litre of brake fluid per bleed nipple out under full pressure in the hope that the detritus that must have got into the system would be flushed out. I earthed the pressure switch wire and the light came on so off with the switch, a kit inserted a quick pressure test on the nitrogen cylinder refit and all the lights are a blinkin!

Next step was to carefully unscrew the accumulator charging screw caps which on a Shadow I you can do, unlike its immediate successor.
Prising out the plastic sealing balls there was no squirt of gas so at least the charging valves were sealing.

In the number 1 section at left a collapsed filter near the top of the compartment as we look at it is almost submerged in muck. How the pumps survived was a mystery

Most importantly there was no brake fluid so the diaphragms were still intact. I carefully screwed the charging hose on to the bottom of the number one accumulator, and knowing that there was no hydraulic pressure in the sphere I slowly squirted in nitrogen until the gauge was a little over 7000 kilopascals (about 1000psi). Quickly releasing the pressure and unscrewing the hose I whacked on the cap with a new plastic sealing ball and screwed it home firmly.

The lady came back that day and drove away with old but good belts and a fully operating hydraulic system. Took about 6 hours but then I am slow at these things. Why was that so difficult?

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FITTING A TYRE IS NOT DIFFICULT

If you have the right equipment that is. For those of you who have watched, the man usually grabs what appears to be a dish mop and slops something around the rim of your new, about to be installed tyre. The slop is soap solution quite harmless to rubber and a good temporary lubricant drying to nothing. Clearly in this case it didn't happen. The big finger on the tyre mounter wiping around the dry rubber ring finally peeled some covering off and eventually destroyed the seal of the tyre bead. Didn't leak to start with, but left sitting the tyre would deflate in 48 hours. An expensive mistake.

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WHAT IS UNUSUAL ABOUT THIS SPEEDOMETER?

I suppose without seeing the rear of the instrument you could be excused for guessing it belonged to a T2 Bentley. Actually it is designed for an S3. They are as rare as rocking horse manure. They drop straight into the dashboard and avoid you having to do sums as you drive along the road.

Now if only I could find one for my S2. The latter were of course the last cars to have the dial where the needle sat on nought at about 2.00 o'clock. The theory was that as the needle spends most of its working life between nought and a hundred and twenty then leave gravity to do most of the work. But like many innovations someone thought a driver might get confused so the conventional zero at 7.00 o'clock prevailed!

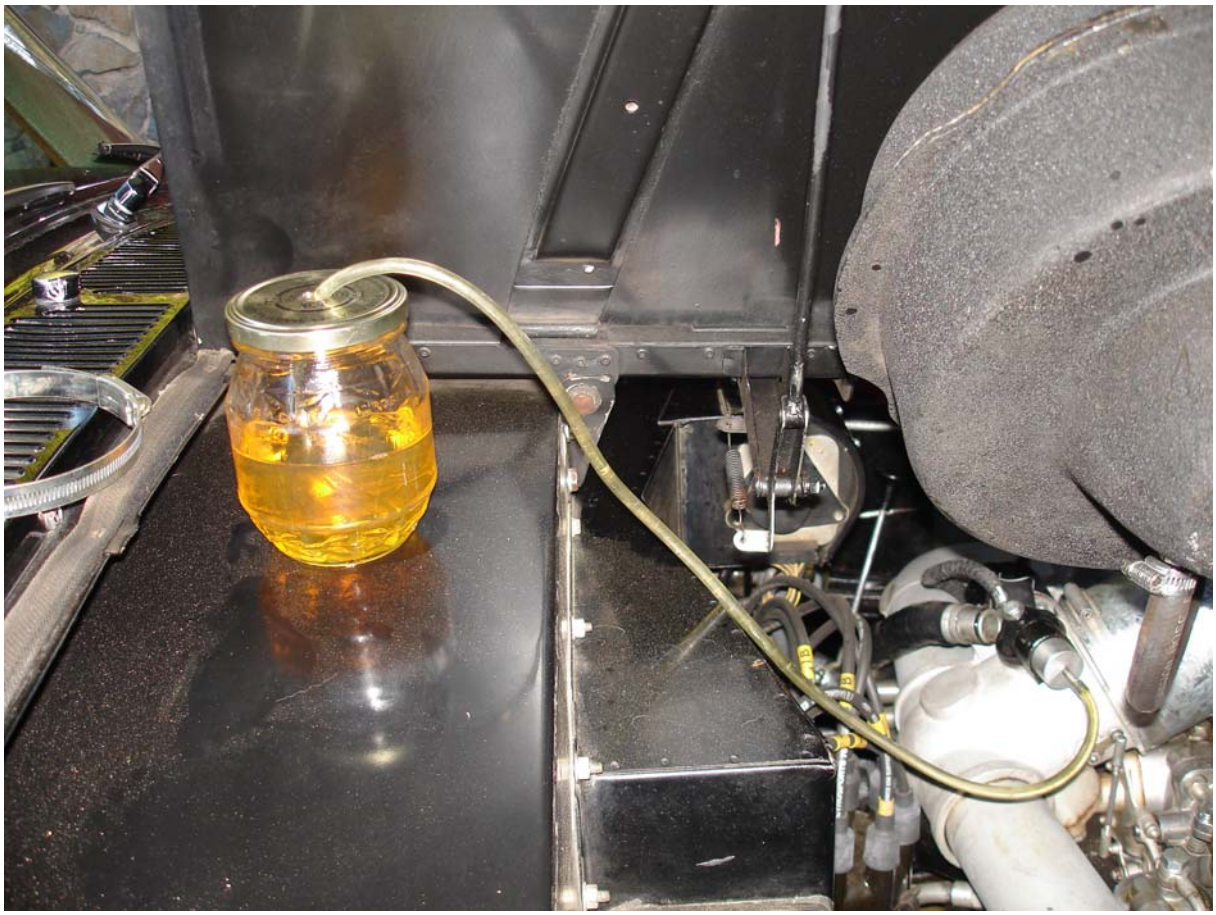
WHO HASN'T GOTA SET OF THESE?

Having only a little garage (7.4 x 14.2 M) I always have to think carefully which car I should put where so that a 'goer' is not jammed in by a 'non goer'.

These trolley jacks were the answer to my prayer. About $99 a pair they slip under the wheels and with a bit of a grunt a 2 ½ ton car can be moved in any direction you want.

LOBRO JOINTS

Ever wondered what they look like? Most applications are on front wheel drive shafts which allow the wheel to swivel while the drive is transmitted. The Factory finally decided early in the Sprit run that these were the answer to the rear drive shafts connecting to the rear stub axles. About the only maintenance is occasional repacking the joint with grease and renewing the dust covers.



DECARBONISING THE EASY WAY

Back in the last century when I was lad a neighbour bought a new 1949 Ford Custom. At the time new cars were a source of great wonder, with waiting lists running into years. The Holden was a year old and already tales abounded of all the things that could go wrong with that brave new venture. My favourite one was the rear doors popping open if you dared tow anything heavy with the car, presumably strewing passengers all over the road as you sped along! The Ford by today's standards was a pretty Spartan production but with a big side valve vee eight, a decent wheelbase and a bit of weight it was a pretty nifty conveyance.

The owner of the Ford was a very fussy about the car and one thing that really bothered him was pinking which we know as pre-ignition. It was caused by poor fuel and all cars suffered accordingly. One side effect was to seriously carbon up the combustion chambers and if you got 10,000 miles out of a set of plugs you were doing well. Plug cleaning was an accepted prophylaxis for most owners! But removing the carbon build up from the combustion chambers was another thing. There were various home remedies and patented gadgets to do the job included water injection which reportedly loosened the carbon allowing it to be blown out the exhaust valve. My father's 1948 Chevrolet with overhead valves posed a fair amount of work to decarbonise until another trick was employed – burning the carbon out. This involved bringing the piston to top dead centre poking in a petrol soaked small piece of rag into the spark plug hole then hosing in pure compressed nitrogen to excite the flame. The carbon would get so hot it was burn and blow back out of the plug hole. I never did see the result with the head off.. As to the Ford, being a side valve engine whipping the heads off was about as easy as changing the wheels. So the owner, every 1000 miles used to have this done to keep his engine running sweetly.

With the improvement in fuels the carbonning up problem was gradually forgotten until today most engines it seems are not opened up until they need a complete overhaul. But carbon still builds particularly around valve stems and rings and in the past few years various chemical brews have been developed that can be fed into the fuel system which in turn cleans out the muck. Most of these concoctions are designed to be fed into fuel injection systems which also benefit from the cleansing. Carburetted cars however being relics it seems of the past have been largely ignored.

A friend shared his method of overcoming this discrimination particularly with the vee eights of our cars. His technique is to start with a hot engine and arrange to tap into the main air intake. The adapter on top of the air horn is ideal. Remove it, turn it around and feed the cleaner through this aperture having made up a suitable adapter. To create sufficient suction a crude 'choke' is placed over the intake which is closed down until there is enough 'suck' to draw in the cleaner. But first the engine is treated to a good dose of diesel fuel which softens the carbon about half a litre should be ample. Warn the neighbours that you are not conducting self immolation demonstrations since the amount of smoke generated during this exercise is considerable.

The diesel is followed up by the cleaner and more smoke and soot is generated. Having got everything back together go for a short hurry up drive and that should leave the internals a lot cleaner than when you started.

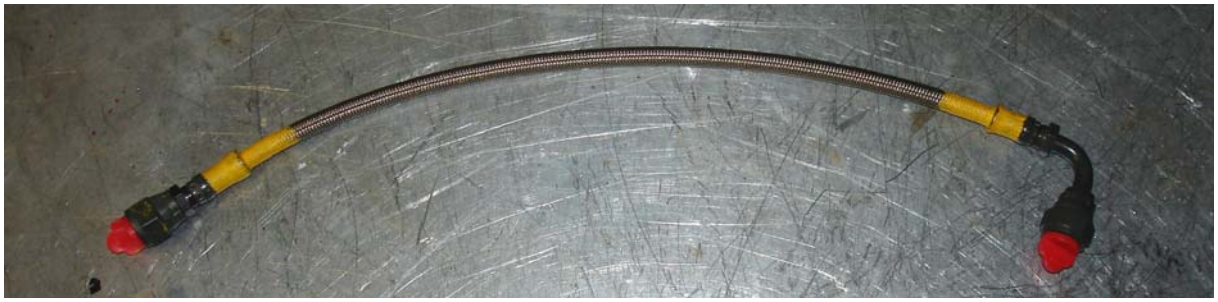
A BIT OF ANTIQUITY

This is a bit esoteric but I mention it in the hope that if you come across one of these do not discard it. As they say today's junk is tomorrow's treasure. The little brass plate is the manufacturer's specification plate for a leaf spring, last fitted to the Silver Cloud – actually Phantom VI's wore leaf springs until they died (1992). The plate was fastened to the leather gaiter on the spring by bifurcated rivets and is easily lost. It is really not much use to anybody from a practical point of view but to the faithful restorer they are like gold.

If you have had a good run on the horses lately you might like to replace the gaiters on your car since if they are original they will be in tatters. The reason for this is that leather as you know dries out and eventually becomes quite hard and fairly rigid. The spring however goes up and down for ever flexing the hardening gaiters. Something has to break and it is usually not the spring. If you happen to have good intact gaiters, clean them thoroughly with soap and water and then let them dry having rinsed them well. Then you can feed the leather with a number of products including saddle soap and neatsfoot oil. Saddleries always have a whole range of these to confuse you. The only thing to watch that I am aware of is avoid using material that will rot the stitching.

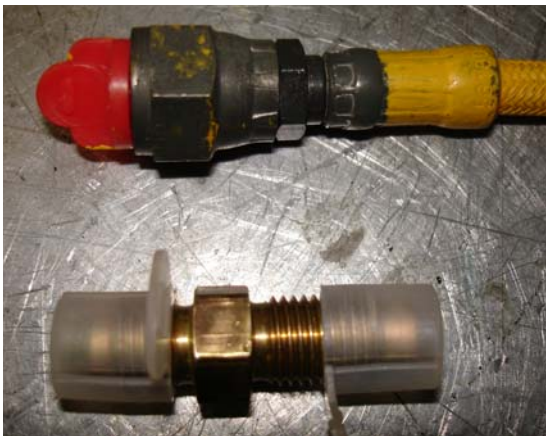
If your gaiters are BER (beyond economical repair) get new ones. At this date you won't have much change out of $1K. The traditional maker is WEFCO which is now part of the Vintage Car

Parts group in England. They are on the web (www.vintagecarparts.) where you can download a self measuring form. They are hand made and very satisfying to fit!



THE FIVE HUNDRED DOLLAR HOSE

Small bore braided flexible hoses have been fitted to Rolls-Royce and Bentley cars since 1966 with the advent of the Silver Shadow. The carry almost 3000psi of hydraulic fluid mineral or ester, from the accumulators to the frame of the car. From there the stuff is hosed around the place in steel tubing until it gets to places of great flexion such as the brake callipers when ordinary brake hoses carry the load.



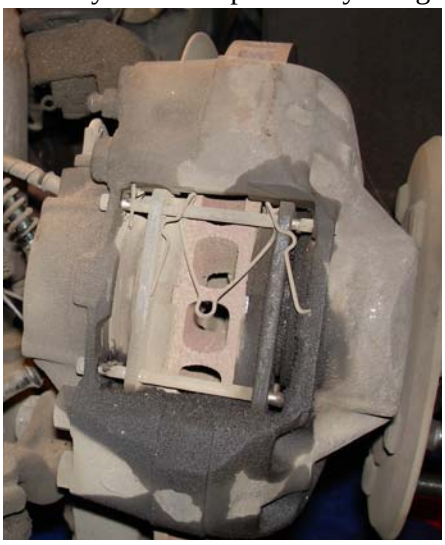
These braided hoses seem to last for ever and seldon'blow' but they can leak usually where the hose meets the end unions. For this reason when you are working with units on or around them treat them with great care. They are flexible but after a couple of decades of holding the fort this should not be tested. If access is required and the hoses are in the way, remove them carefully. Note that metrication seems to have prompted adapters seen at left.

On the subject of brake hoses, cars that use conventional brake fluid (DOT 4 or RR363) can be fitted with made up after market items. They have to be made by licensed brake establishments. You simply take your old hoses along to them and they will duplicate them including the fittings. For mineral oil cars however a special hose material has to be used which few if any hose makers in Australia seem to have. Worse if your take your RR363 hoses in and let drop that it is for a Rolls, often they will tell you that they are not permitted to make up hoses for the marque. This appears to be because they have been caught by some stupid people who have had hoses made for their Silver Spirit using RR363 hosing and the things have rotted and burst. (It's always a few isn't it). So secure in your knowledge that you are outfitting an RR363 car, if they ask you what car they are for tell them a late model Hispano Suiza!

Finally, don't gamble on hoses. They are not expensive, are easy to fit, grant a great opportunity to clean the crap out of the system and save your laundry bills which occur if they blow out! Every eight years – no longer. If you buy a car and don't know when the hoses were changed – then change them anyway. Harp practice is very tedious until you the hang of the instrument!

MINERAL OIL BREEDS ITS VERY OWN DETRITUS

After working for a while on mineral oil cars, you wonder how on earth the Factory tolerated brake fluid systems. Brake fluid as we know deteriorates chemically, is hygroscopic (takes in water) and must be changed at least every two years – preferably annually. It produces disgusting sediments as can be seen in the initial picture in this edition and if enough water is absorbed it will allow steel components to rust inside the system! It is imperative however that the 'rubber' components in any brake system are specifically designed to handle the hydraulic medium. Try putting brake fluid in your mineral oil reservoir and save time that day to borrow about $20K to repair the damage. I imagine the converse is probably true. We have already talked about silicone fluids (DOT5). As far as I am aware no brake 'rubber' components have been made to cope with this medium.

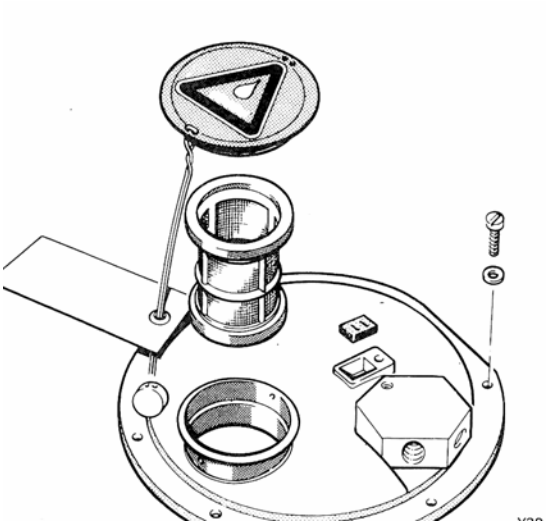


But there is no perfect fluid and mineral oil is not an exception. From my experience, for some reason mineral oil run in brake callipers will eventually start to leak through the seals, something very rare with brake fluid. And despite the care we take of these systems mineral oil will breed sediments. The picture at the top of the page is offered by way of example. The SZ cars needed more room in the engine compartment for the advanced gadgetry and the rather bulky reservoirs were a prime target for re-design.

The gadgetry at the top of the page is the 'guts' of the reservoir obtained after releasing the odd pipe, unscrewing the cap and lifting the assembly you can see out of the reservoir. No PhD qualifications needed there. For those who are familiar with the tops of the reservoirs, the green tube and its slider with

float are what you look for to check the level. Having cleaned the filter and siphoned out the remaining fluid (of course you exhausted the accumulators before you started), you will be surprised at the sediment at the bottom of the container. Clean it out, refit the top and pipes and refill. Refilling can be a pain with the quantity needed to fill so cut down a couple of bottles fit tem into the top and use them as funnels. This is particularly handy when bleeding the system.

MINERAL OIL RESERVORS

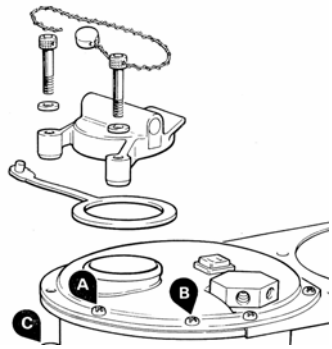


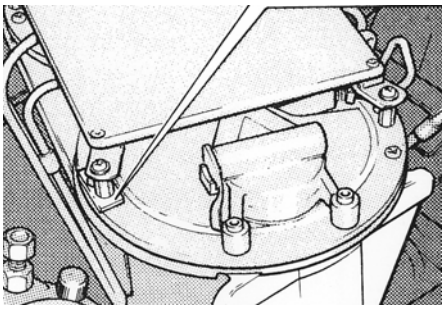
Initially, SZ cars' reservoirs were a simple affair as seen at left. To top up the cap was simply prized off and the fluid poured in. Note the label and warning logo on the cap.

Despite those precautions, some cars managed to attract the attendant who thought it was all nonsense and poured in brake fluid. The tiniest bit in the system will destroy every seal in the system as well as the suspension struts and accumulators – hence the recovery cost.

To try and avoid these accidents, the Factory commenced wiring the caps in place and locked them with lead seals. Multi lingual labels were conspicuously mounted but still contamination occurred.

Finally the Factory redesigned the caps so that fluid could only be put in with a special adapter that comes with the mineral oil bottle.

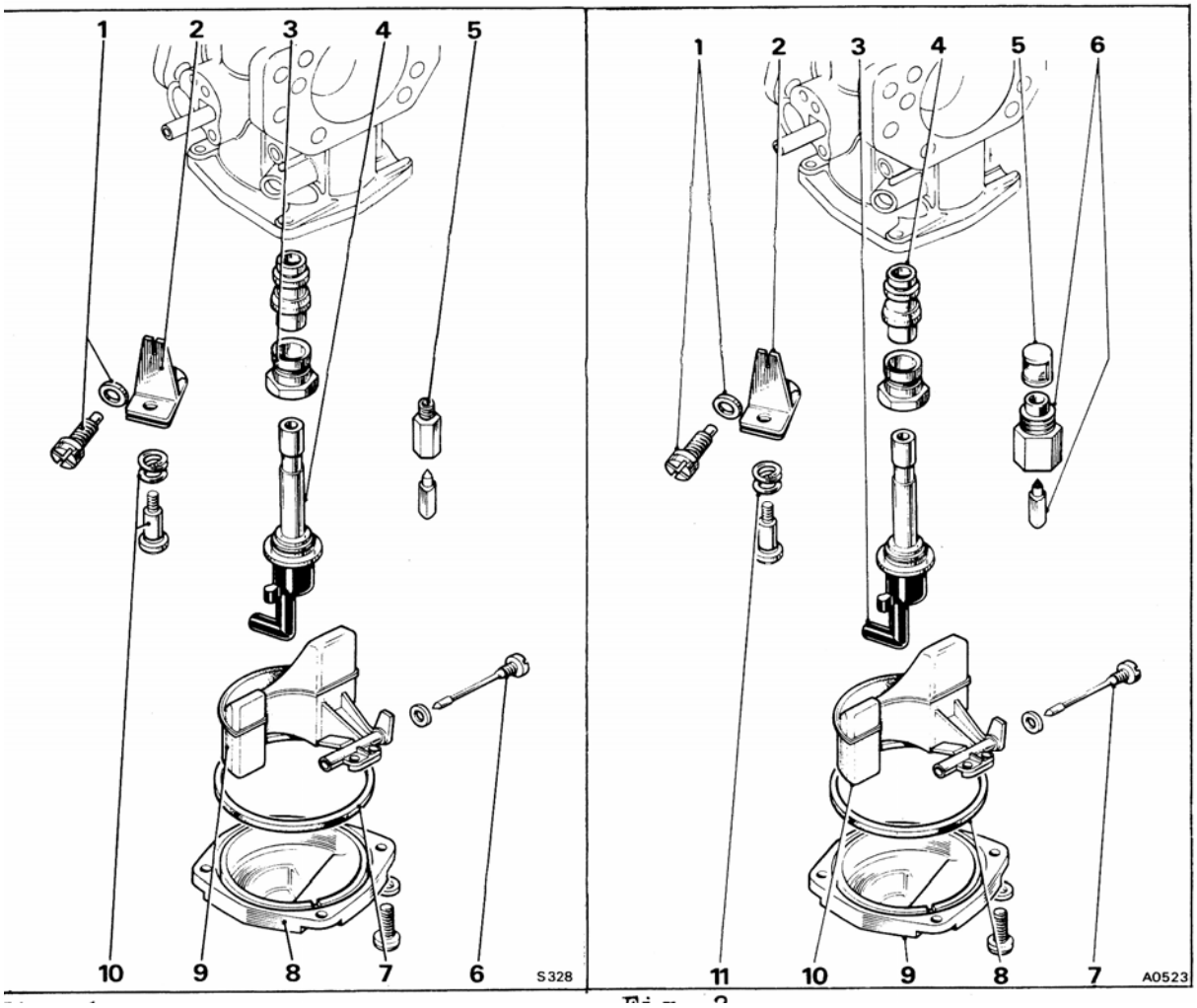




The final modification was not too drastic, new caps a few spacers and screws and a new label. All worthwhile as a bit of insurance. In 1987 the Factory went to the later black reservoirs previously shown.

SECRET CARBURETTER CHANGES – SZ CARS

NEW		OLD	
1	Jet adjusting screw and 'O' ring	1	Jet adjusting screw and' O' ring
2	Jet adjusting lever	2	Jet adjusting lever
3	Jet bearing assembly	3	Jet bearing assembly
4	Jet	4	Jet
5	Float chamber needle valve	5	Fuel strainer
6	Float pivot spindle	6	Valve seat and needle valve
7	Sealing ring	7	Float pivot spindle
8	Bottom cover plate	8	Sealing ring
9	Float	9	Bottom cover plate
10	Jet lever adjusting screw assembly	10	Float
		11	Jet lever adjusting screw assembly



SZ cars still running on carburettors in early 1985 were subject to a change even the Factory was not aware of. The manufacturers of the instruments apparently changed the float needles and seat and added another strainer but didn't think it was necessary to tell the customer! The change of needle required a bigger threaded hole in the carburettor body so the latter was changed also. In short you can only fit the larger needle and seat to the later body! I would have loved to hear the phone calls that ensued. It was no matter since the carburettors were otherwise unchanged. But I

got caught. Thinking a needle change would be a good prophylactic gesture I ordered some from our Australian suppliers (Midel) only to get the older version. I just assumed they had made a mistake. Not so and much amazement and querulous noises at the end of the phone but they had the ones I wanted. So if you are contemplating a needle change check what is there first.

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‘O’ Rings

All of us who have worked on the hydraulics of our later cars have suffered immediate hyperventilation at the price of these little essential seals. The more inventive minds over the years have pursued the problem empirically with mixed results. One of our most prolific purveyors of advice in this Club, many years decided to replace the ‘O’ rings that seal the sight glasses in the brake reservoir of his Silver Shadow. He certainly obtained a dimensionally exact item from the local bearing suppliers and fitted them. They sealed but perhaps a little too effectively since they quickly swelled to the extent that there was no room for the fluid in the sight glass cavity! Well he tried again and I imagine he was successful.

Then there was my right hand partner in crime who has since moved to much warmer climes. He against vehement head shaking lip trembling advice pursued ‘O’ rings for the levelling valves of his Shadow II. As a precaution he experimented by boiling these off the shelf items in brake fluid, leaving them soaking for some weeks in and out of sunlight and abusing them in any practical way he could think of. There was no change. He fitted them into his system arguing that the worst he could no is block up his levelling valves and or the restrictors. The car some years and many miles later is still running on those ‘O’ rings.

So what is the secret. I am about to find out. A young friend doing a splendid job of a seriously neglected Shadow and who clearly changes his complexion when large amounts of money are mentioned has asked me to overhaul his hydraulic system. At his risk I have approached a very reputable supplier of ‘O’ rings and clearly stated I want rings this this and that size but they have to withstand hot brake fluid. No problem they said we will give you them in EPDM! Right says I and crept back to Google my computer. This is what I found.

Ethylene Propylene

Standard Color: Black

Trade Names:
• Buna EP® (Bayer Corp.)
• Keltan® (DSM Copolymer, Inc.)
• Nordel® (DuPont Dow Elastomers)
• Royalene® (Uniroyal, Inc.)
• Vistalon® (Exxon Chemicals)

Relative Cost: Low

General Temperature Range: -65° to +300° F

Ethylene propylene is a copolymer of ethylene and propylene (EPM), or, in some cases, a terpolymer due to the addition of a diene monomer (EPDM). This additional diene monomer can be important because it includes unsaturation to facilitate sulfur crosslinking.

In use since 1961, ethylene propylene is still primarily valued for its outstanding resistance to Skydrol® and other phosphate ester type hydraulic fluids (including Pydraul® and Fyrquel®), as well as for its typical temperature range (-65° F to +300° F, -54° C to +149° C). Ethylene propylene is also known for its good resistance to weathering thanks to saturation within its main backbone. EPDM is also the primary polymer used for coolant hoses because of its good resistance to heat, hot water, and ethylene glycol (the most common antifreeze). EPDM also has good resistance to weathering and ozone damage.

EPM performs well in:
• Alcohols
• Automotive brake fluids
• Dilute acids and dilute alkalies
• Ketones (MEK, acetone)
• Silicone oils and greases
• Steam (up to 400° F, 204° C)
• Water

EPM does not perform well in:
• Aliphatic and aromatic hydrocarbons
• Di-ester based lubricants
• Halogenated solvents
• Petroleum oils

So there you have it. The secret is out. Mind you I am still trying to find out what those tiny little coloured dots mean that you find dabbed on the side of the 'genuine' item!

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THE TECHNICAL LIBRARY

Thanks to our web site administrator, the plethora of equipment over which he presides, Richard Treacy, Tim Dean, John Richardson and sundry other contributors we are slowly assembling authoritative documents on the Federal Web Site that should facilitate the restoration, repair and maintenance of all Postwar Rolls-Royce and Bentley cars. This information is open to the world, Club member or not, owner or not in the hope that anyone who has an interest in these cars will not be hindered by lack of information.

I believe this is a first and judging by the number of 'hits' there have been on the site there has been a considerable use made of this facility. This project has the approval of the copyright holders who have no objection to the dissemination of information as long as it is not done for profit.

The postings so far are:-

Tee-One Topics

Hydramatic Gearbox Workshop Manual TSD 2042
Service Instructions for Rolls-Royce Cars (Pre-War)...
Pre SZ car production and modification lists

Bentley Mark VI Workshop Manual
Wiring Diagrams for Immediate Post War Cars
Parts_List_for_1980-1989_SZ_cars
Workshop_Manual_for_Silver_Shadows_Pior_to_Chassis_#30,000
Wiring_Diagrams_for_Pre-War_Cars
Supplementary_Parts_List_for_2_Door_SZ_Cars
NZRR&BC Technical Index October 2000
R-R and B Vehicles Produced and Survival Numbers
Crewe Genuine Parts List
Post-1980 Rolls-Royce Vehicle Identification Number D...
NSW Branch Library Catalogue
Bentley Mark VI Service Bulletins
Updated Vehicle Identification Number Codes

In the pipeline are the complete workshop manuals for the SZ cars up to chassis number 20,000, the Shadow II workshop manuals, spares lists for Mk VI and ‘R’ type Bentleys and Service instructions for Bentley Cars (pre-war.) .