



FRONT SUSPENSION OVERHAUL

In order to achieve all this, the front suspension has to be a carefully designed, flexible device which can fulfil all these requirements safely. As you would expect, the front suspension is not immune to the ravages of time and use and there are particular weak points which are fairly easy to check. Here is a brief tour of the front suspension components.

Perhaps the most well-known 'Achilles heel' is the steering links – or upper and lower swivels, usually referred to as the 'trunnions'. These consist of threaded joints where the turning movement is accommodated by the steering leg turning in the upper and lower links. These are a favourite check point on the MOT test and excessive movement will result in a fail. Judgement should be exercised with these however, and a little bit of play will usually be acceptable. Frequent maintenance is important and they should be greased every 500 miles. Excessively worn units have been known to part company with the steering leg leading to the classic 'wheels up approach' where the front wheel ends up neatly tucked up inside the wheel arch. Fortunately, this usually only happens at low speed, but I haven't seen one myself since the seventies! It is always emphasised that they should be pumped with grease until new grease emerges from the end furthest from the grease nipple.

A persistent squeak when going over bumps is often due to worn eyebolt bushes. A squirt of WD40 (other

We expect quite a lot from the front suspension assembly of our cars, don't we? It makes the car go in whichever direction we choose to point it with the steering wheel, well, usually anyway! It also deals with most of the bumps and holes in the road. Most importantly, though, the front wheels are responsible for most of the braking effort.

penetrating fluids are available) will often quieten them, albeit temporarily. The eyebolt is the bit that connects the lower arm assembly to the chassis leg. It also anchors the front of the torsion bar which provides the front spring action. You can inspect the condition

of the rubber bushes from the outside and you should be able to see the rim of the so-called 'top-hat' buses each side of the eyebolt. If they have broken up, the bushes will probably need replacing. When extremely worn, the lower arm will appear too close to the

Words and Pics Brian Wood





engine bay tie plate. There should be about 1/4" gap between the arm and the tie plate and if it is nearly touching, maintenance beckons! Usually, the pin will cut its way upwards through the rubber bush and make metal to metal contact with the eyebolt – causing the persistent squeak. This being the case you will certainly need new pins and possibly new eyebolts as well. It is also worth checking the chassis leg for corrosion in this area since it often rusts around the eyebolt mount and in extreme cases the eyebolt will no longer present a horizontal 'attitude' due to loss of structural support. It will then only be short time until it pulls out of the chassis – with potentially disastrous results. Anchoring the lower arm to the front of the chassis leg is the tie-bar. This provides longitudinal restraint to the lower arm when braking and helps to spread the braking load along the chassis leg. The tie bar is angled at 45 degrees to facilitate this. At the front of the tie bar are two doughnut shaped bushes – one each side of the tie bar bracket. These are secured by a

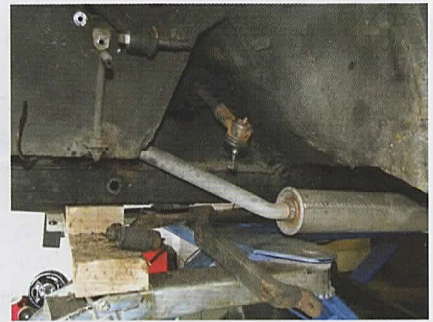
castellated nut with split pin in the end of the tie bar. Sometimes, the bushes will be degraded and allow the lower arm and wheel to move backwards under braking load. This is usually accompanied by a loud rattle which sometimes also happens when you go over a bump.

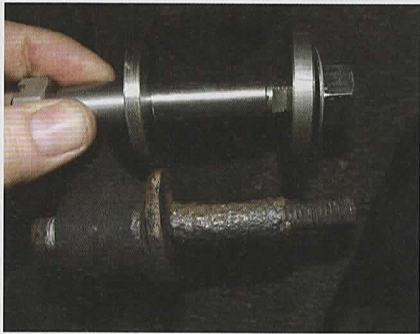
So, having considered the state of the suspension, you might decide on a strip down and overhaul of said assembly. This is not something that you need to do regularly – more a case of doing it during a major refit. You might, of course have to attend to individual failures as noted above, but on a well-used model, I don't think it is a bad idea to do the whole lot in one go. It also affords the opportunity to clean (and paint) everything – if that is your requirement. You are likely to find other things which are broken or worn such as the rebound check bracket, bump stops etc. This particular car had a worn wheel bearing, the suspension was set too low and had rather tired trunnions and worn bushes all round. So a full strip down and rebuild seemed like a good idea.

First of all, safe access is required so get the car off the ground on axle stands etc. Don't forget you need good clearance around the lower arms. You need to rotate on the torsion bar through quite a long arc, so make sure your supports give adequate clearance (unlike in the photo!). Remove the road wheels, brake assemblies and back plates.

I had decided to fit 8" brake drums and back plates to this car at the same time since it was a 1962 948cc model with a later 1098cc engine, gearbox and back axle. Remove the hub and fit the 2 new bearings and oil seal (if needed) and put to one side. Remove the tie bar and the other two fixings on the lower arm and remove the front arm. Remove the track rod end from the steering arm.

Check the track rod end for play and replace with new if necessary. Knock back the lock tab on the top (trunnions) pivot and remove the nut. Support the rear lower arm with a jack and raise it slightly. This should allow the steering leg to be removed and inspected.





I used my patented suspension clamp as shown in the photo. The trunnions should be removed, cleaned and refitted. It is a bit easier to inspect them (and the threads on the leg) if they are clean. As already mentioned there is usually a tiny bit of play. A bit more than 'tiny' and you will need new trunnions. If there is still too much movement with new trunnions it means that the steering legs themselves will be unserviceable and need replacing.



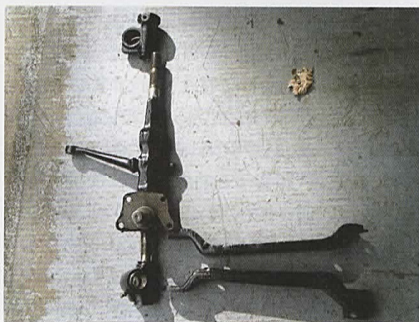
The large nut on the engine bay side of the eyebolt should be removed and the eyebolt itself should be withdrawn through the chassis leg allowing the torsion bar to be released. (The torsion bar should be refitted to the same side from which it came – so don't mix them up if you take both off at once.) Now is a good time to inspect everything and replace that which is not re-usable.

The corroded top pin shown in the photo was an absolute 'pig' to remove from the damper arm. I tried the old trick of simultaneous bashing the arm and the pin in opposite directions to 'shock' open the tapering joint. Having failed to achieve more than a completely crippled thread at the front and a less than polite personal demeanour, I resorted to the oxy-acetylene set to apply a bit of heat. This was ultimately successful and resulted in the separation of components.



However, I didn't notice until afterwards that I had inadvertently bent the damper arm slightly backwards. This had resulted in a mysterious backward 'twist' to the whole steering leg assembly which is actually noticeable in the photos of the back plate and wouldn't have done much for the handling! Luckily I had a spare r/s shock absorber which had to be fitted. This serves to reinforce the view that brute force and ignorance should be used with due discretion! I have since learnt that the correct procedure is to wallop the outside of the 'eye'. This technique, if applied to any taper joint should result in the pin popping out like a cork from a bottle (according to Roy –of "Roy's Welding" – Thanks)

New wheel bearings were fitted into the hubs I had decided to fit a set of polypropylene bushes which are available for about £20. These are better quality than the standard rubber



ones and should last longer. If you are particularly sensitive, you might notice a slightly 'harder' ride.

The recommended procedure for fitting these is to apply a little washing up soap so that they slide in easily. Excess lubrication (i.e grease) should be avoided since you don't want the bushes turning inside their housings when in service. They should be fitted loosely and the securing nuts only tightened when the suspension has its working load applied.

The trunnions should be replaced on the legs (with plenty of grease this time) and screwed down as far as they will go and then backed off enough for the leg to turn both ways without snagging. Re-fit the torsion bar with the vernier adjuster on the cross member in its central hole, remembering to refit the stepped washer in the cross member hole at the back of the torsion bar.

Refit the cast lower suspension arm loosely on the torsion bar and re-fit the front end assembly (with eyebolt) into the chassis leg. The lower arm should be rotated around on the splines until you have 432mm (+/- 6mm) or 17" (give or take 1/4") distance between the bottom of the circular hole in the inner wing (on the outside of the shock absorbers) and the centre of the lower pivot at the end of the suspension arm. This tip has been used by me several times and trust me, it works! The only time it didn't work was on a car where the owner had welded steel plate over the holes in the inner wing and removed all trace of them! You can use the vernier adjuster on the cross member to fine-tune the distance if necessary. If it is a little over the specified distance on the driver's



side, I think this is OK since this helps to achieve an even keel. It is sometimes difficult to replace the tie bar and to get the bolt at the lower arm end into place so I always try to assemble it in conjunction with the lower arm when it is all a bit loose. You can then tighten up the nut at the front (on the chassis leg bracket) to put sufficient tension in it afterwards.

You will need to 'pre-load' the torsion bar with sufficient twist so that you can re-fit the steering leg. Some people do this by just supporting the lower arm on a hydraulic jack so that the weight of the car does the job for you. My preferred method employs a home-made clamp (see photo) which I believe is a bit safer and permits the job to be done on a more lightly loaded shell which might not have the engine fitted and consequently no 'reaction' to push against. (Heath Robinson would have been proud of this one!). It has been modified a bit since the photo was taken and no, it is actually not patented. Now you can refit your back plates, remembering that they are handed - left and right. If you have cleaned them up you should

be able to see the 'LH'/'RH' markings as indicated by my finger in the photo. If the marks are not visible, check that the brake cylinders are pushing against the direction of rotation of the hub. The braking system is designed as 'twin leading shoe' and if you get it wrong you will have 'twin trailing shoe'. This, you will find, will give you excellent braking performance, but only in reverse gear, however.

This has been tried, trust me (identity withheld to spare embarrassment!) and it has been verified that the brakes are almost useless under these circumstances. (It still managed to pass an MOT however!). Next re-fit the brake shoes and cylinders - which is a bit easier without the hub.

As ever - good luck with your spanners and if anyone would like the dimensions of the suspension clamp - let me know via Russ and I'll send you a drawing (or even make you one for a small fee!) Incidentally the lower 'U' clamp has since been replaced by a welded bolt which goes through one of the holes in the lower arm - avoiding the possibility of slippage! ■

