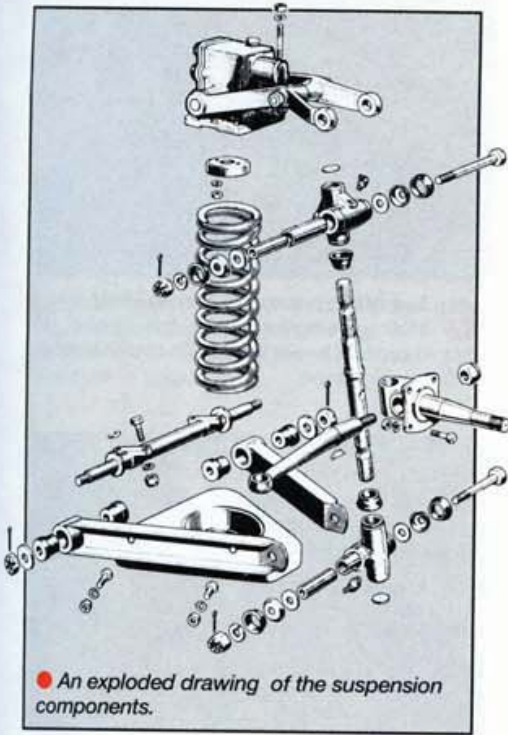


PINS & BUSHES

Part 1

An occasional series on suspension overhauls. Here Brian Cox deals with threaded swivel pins and links used on four post-war MG models.



● An exploded drawing of the suspension components.

Back in the late 1940s, Nuffield abandoned cart springs for the front suspensions on most of their models and introduced a number of new cars with independent front suspensions featuring threaded swivel pins (king pins) and swivel links (trunnions). Among them were the Morris Minor, Oxford and Isis as well as Wolseley and MG saloon and sports models.

One advantage of this Issigonis-designed system is that it provides a larger bearing surface than plain bushes and absorbs both thrust and journal loads. And provided it receives regular lubrication it has a very long life.

Unfortunately they are also more expensive than most systems when the time comes for a major overhaul, as many an owner has discovered.

When my MG YB was MoT'd last year the engineer said the front suspension was showing signs of wear, so a month or two ago I decided to do a preliminary stripdown to see what was required.

The Y-Type has the same suspension system as the MG sports models - the TD, TF and the MGA - and parts are interchangeable, so the stripdown and rebuild procedure is the same for all four models.

There is one difference I should point out. MGAs were originally fitted with malleable iron rather than bronze swivel links (trunnions). Whether these were introduced to cut costs or improve durability is uncertain. Some of the replacement parts on offer are made of the latter, but today's experts seem to be divided on which are the best.

Unless the suspension is stripped down, it is difficult to judge the amount of wear by rocking the road wheels in the time-honoured manner. But doing this I was able to detect considerable movement between the distance tubes/ trunnions which accounted for an occasional clonk when braking. Complete dismantling also revealed excessive wear in the

bottom trunnions.

The original bronze trunnions on my car had lasted for over 70,000 miles, but one TF owner I spoke to is still on the originals after 200,000 miles! I decided to stick with replacements in the bronze from NTG Motor Services Ltd, of Ipswich, who also supplied all the other parts I needed for the overhaul "off the shelf".

I should stress at this point that it is a good idea to obtain all replacement parts from the same supplier as there may be small differences in machining tolerances and if two parts don't fit properly neither supplier is going to be very interested!

I was made aware of this problem when I decided to use a 'new old stock' BMC swivel

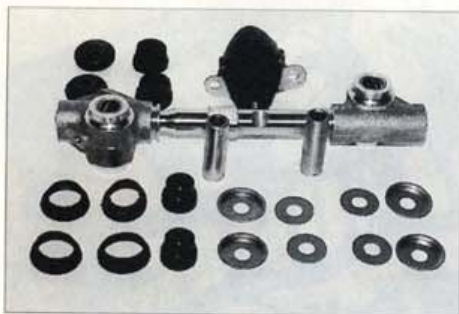
link with a new NTG trunnion. The trunnion was very tight fit and I had to spend a couple of hours lapping it in using Brasso and T-cut. It was suggested that I could have used valve grinding paste, but I felt the carborundum particles would have become embedded in the bronze, resulting in a short life for the new components.

Dismantling

After loosening the nearside wheel studs, jack up the car under the front crossmember before lowering it on to axle stands placed under the chassis. Next remove the road wheel. Then place a second jack under

● The trunnions can be checked for play by rocking the stub axle. Slight rock is permissible - up and down play isn't.





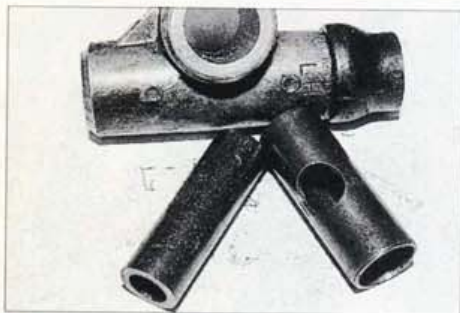
1 Parts I obtained from NTG to rebuild the offside front suspension. At the rear are anti-roll bar bushes and a new bump stop.



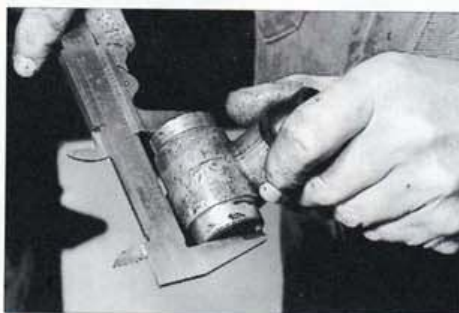
2 Using a puller to remove the hub; don't forget to slacken the adjusters first and to uncouple the brake hose and steering tie rod.



3 The brake backplate can be lifted off after undoing four bolts. It is a good idea to protect brake linings from oily hands with masking tape.



7 The corroded distance tube and worn bush removed from the bottom trunnion. These tend to wear more than the top ones.



8 Check measurement across the thrust faces of the trunnions. It should be 59.11mm plus or minus .04mm. Replace if badly worn.



9 There must be .008in. - .013in. clearance between the trunnions and thrust washers when fulcrum bolt is fully tightened. Seals omitted for clarity.

whichever side suspension you are going to tackle and lift the lower wishbone until the upper trunnion is clear of the bump stop. The suspension should then be firmly chocked under the spring pan before attempting any dismantling. It is also a good idea to loop a wire rope round the road spring and tie it to something solid, such as the inner wishbone mounting. This will prevent the spring breaking free if anything slips. Provided the inner fulcrum bushes are sound, there is no need to remove the spring.

We will assume you are going to remove the stub axle assembly, so disconnect the brake hose from its inboard mounting. MGA owners should tape off the air bleed in the top of the master cylinder to minimise fluid loss. T and Y-Type owners need not bother as fluid loss is minimal due to the master cylinder being lower than the uncoupling point. Put a bung in the brake hose couplings to keep out dirt or insects and cover the linings to prevent contamination by oily fingers.

At some stage you will find it necessary to separate the hub from the stub axle, and it is probably easier to do this before dismantling anything else. Assuming your car has drum brakes, slacken the adjusters, then remove the hub grease cap followed by the cotter, nut and washer. Then draw off with a suitable puller. Check that the inner bearing or oil seal has not been left on the stub axle. You can prevent this happening next time by using Loctite Bearing Fit when re-fitting the bearing into its housing.

The brake backplate will also have to be removed or slackened at some stage to allow the bottom trunnion to be removed. The four fixing bolts are accessible on or off the car, so you can do it now or on the garage bench. (I chose to do it on the car).

Then slacken the steering gaiter clip and tie-rod locknut and screw the tie rods out of the

Interchangeable parts

Several parts from the MGB front suspension are interchangeable with the earlier post war MGs. The rear lower wishbone arms can be used to replace worn components on Y and T Types and also the MGA. Other parts you can use are the distance tubes, bottom fulcrum bushes and swivel pin fulcrum bolts. If the bottom wishbone rubber bushes are worn, it is recommended you replace these with the MGB V8 Metalastik type.

balljoints. Remove the cotter and nut from the top trunnion fulcrum bolt and slacken the bolt linking the twin damper arms and wedge them apart to make withdrawal and replacement of the trunnion easier. But don't remove the trunnion bolt yet.

Instead, slacken the lower trunnion fulcrum bolt and tap it with a drift to see if the bolt is free in its distance tube. If it is, slacken the two bolts holding the front wishbone arm to ease the trunnion's removal. You can now withdraw the fulcrum bolts from the upper and lower trunnions and remove the stub axle to the bench for degreasing.

As we all know, jobs don't always go according to plan. You may find that the lower trunnion fulcrum bolt has seized in the distance tube and if you wish to avoid removing the road spring, you may have to apply heat to the trunnion to free it. If this doesn't work your best plan is to remove the spring by lowering the wishbone carefully on a jack. Then you can remove the wishbone arms which are almost certain to have elongated bolt holes caused by running the car with a seized trunnion.

Luckily for me, the Y-Type seems to have been well maintained by previous owners and

the suspension came apart without much trouble.

After degreasing the stub axle assembly on the bench, I fitted some soft jaws in the vice. I removed the distance tubes from the trunnions to prevent them fouling the threads when the trunnions were unscrewed later and clamped the lower trunnion in the vice.

The BMC manual says when new, the threaded trunnions are a free turning fit without slack and that "an appreciable amount of slack is permissible and they do not require renewal unless very slack." As the threaded bearing surface at each end of the swivel link is 2.5in. long, only slight rock should be noticeable when the trunnions are screwed on as far as they will go and then slackened by a couple of turns. If there is any up and down play, then both the trunnion and swivel pin will need replacing.

By wriggling my MG's swivel pin I was able to detect considerable rock in the lower trunnion, and very slight up and down play. The top trunnion was in much better condition with hardly a trace of rock and I deemed this fit for further service when fitted to an original unused BMC swivel pin I had acquired two or three years ago at an autojumble.

Both distance tubes were slack in the trunnion bushes and the bottom one was badly corroded too. This is not uncommon and emphasises the importance of checking the condition of the trunnion seals regularly.

If excess play appears to be limited to the fulcrum pin distance tubes/bushes, then you may get away with replacing just these components. I did on one top trunnion.

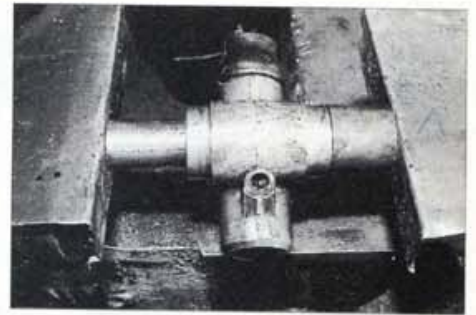
I used the vice to press in a new trunnion-bush taking care that the hole in the bush lined up with the threaded bore. This gives the necessary clearance to the waisted swivel pin and also acts an oilway. I then took the trunnion to Couzens Engineering of Stamford (Tel: 0780



4 Before removing or replacing the stub axle, slacken the bolt linking the damper arms and use a piece of metal to keep arms apart.



5 Check the lower fulcrum bolt holes on the wishbone arms for elongation. Replace arms that are faulty - MGB rear arms fit.



6 Use suitable diameter tubing in a vice fitted with soft jaws to press out a worn trunnion bush. New bush will need reaming. New trunnions have ready-reamed bushes.

56818) for the bush to be accurately reamed.

If you have to replace a swivel pin, there are a couple of tough customers to deal with. The first of these is the steering arm, which is often hard to remove from the stub axle. It is a taper fit and located by a keyway. The swivel pin is also a tight fit in the stub axle and I suggest you take it along to your local garage and get them to remove it on a press and also to fit the new pin for you. Note that the pin is removed and fitted from the top side of the stub axle. It's a good idea to mark the assembly to prevent any mistakes.

As I have already mentioned, I had to spend a couple of hours persuading the BMC pin to fit NTG's trunnion, which was sand cast unlike the original which had been diecast. I must emphasise that there is nothing wrong with the quality of NTG's products. I examined a matched pin and trunnions at their Ipswich premises before purchase and found they were an excellent fit and engineered to a high standard and I have no hesitation in recommending them.

While the brake backplate was off, I took a close look at the wheel cylinders and brake linings and all was in order. I didn't disturb the hub bearings as they had given no trouble and unnecessary withdrawal causes deterioration of the fitting surfaces.

I also took the opportunity to examine the Girling damper which was seeping slightly and will need specialist attention.

The bottom wishbone bushes still looked fit for further service, so these were not disturbed. However some of the anti-roll bar bushes and rebound rubber were past their best and have been replaced.

The only other suspension part I scrutinised closely was the stub axle mounting holes in the lower wishbone arms, which if elongated can affect the wheel camber and allow movement of the stub axle. The holes should be 21/64in. (8.33mm) and if they had become elongated the arms would have needed changing.

Re-assembly

It makes sense to fit new rubber grease seals to the trunnions and I fitted a set of three to each. I lubricated the threads of the swivel pin generously with heavy gear oil before assembly. I shall use grease thereafter.

I removed the distance tube and screwed each trunnion on to the pin until the waisted portion of the pin lined up with the hole for the distance tube. Then I placed the distance tube in the trunnion and screwed it up as far as it would go on the swivel pin thread (about

Prices	
Swivel pin	£29.07
Swivel link (trunnion)	£31.11
Seals, distance tube and bush kit (2 per side)	£17.76
Trunnion bush	£5.05
Fulcrum bolt and nut	£2.47
<i>All prices plus VAT and carriage.</i>	

three revolutions). Then I screwed the link back about 1.5 turns. This ensured maximum clearance to the distance tube in both directions.

Before the stub axle is permanently installed on the car, it is very important that you check the total end clearance between the trunnion and the thrust washers which should be .008in. - 0.13in (.2mm to .33mm). If you examine the hardened fulcrum pin distance tubes carefully you will see that they protrude slightly when placed in the trunnions to give the necessary clearance.

When the fulcrum pin is bolted up tight on the car this allows the trunnion to pivot on the distance tube. Without this clearance the suspension will be rock solid and other suspension components will be damaged. This

is a common mistake I have been told, so be warned!

When you are happy the necessary clearance is present, you can go ahead and refit the stub axle permanently, not forgetting to fit new cotter pins (or lock nuts) to the two fulcrum bolts when fully tightened.

Don't forget to re-tighten the front wishbone arm bolts and the bolt linking the damper arms.

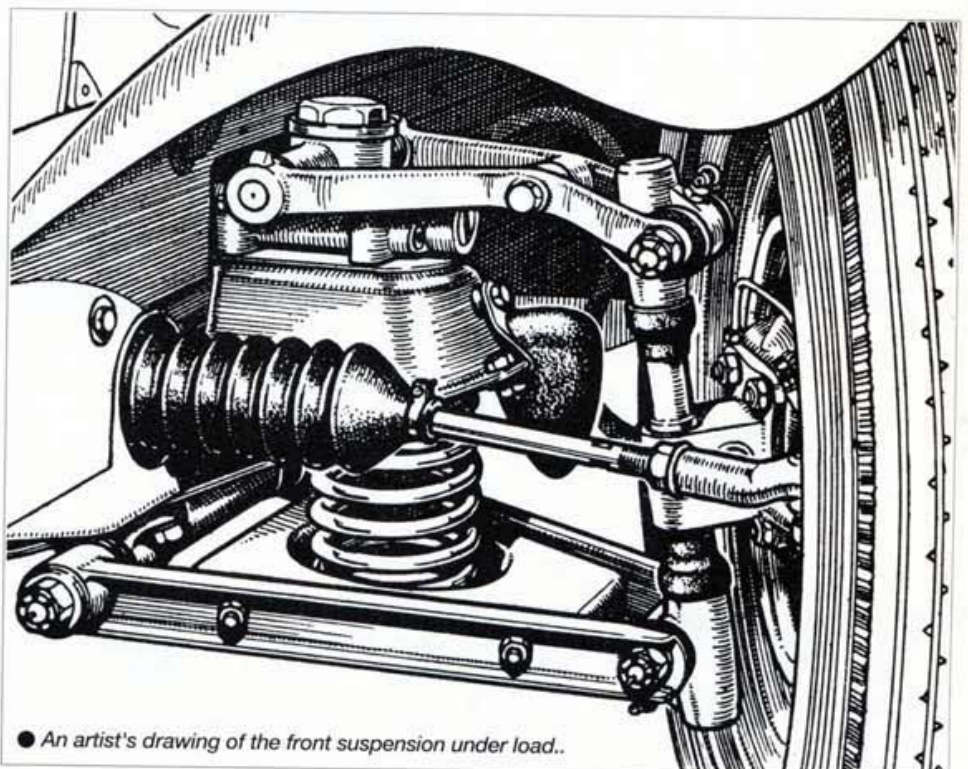
You can now reconnect the ball joint to the steering tie rod and refit the brake backplate (four bolts) and hub. Then reconnect the brake hose and bleed and adjust the brakes.

Now you can repeat the exercise on the offside suspension if necessary! In my case this involved replacing the swivel pin, both trunnions and associated distance tubes and seals. NTG supply the trunnion bushes fitted and machined to accept the distance tubes, so assembly can be accomplished within an hour or so.

Don't forget to lubricate all moving parts again when assembled and then lubricate every 500 miles thereafter.

NTG Services Ltd are 282-284 Bramford Road, Ipswich, Suffolk, IP1 4AY. Tel: 0473 211240.

COMING NEXT: THE MGB.



● An artist's drawing of the front suspension under load..