

Time
One day

Difficulty



HOW TO

FIT A COIL SPRING CONVERSION

Improve your ride quality by replacing standard rubber cone suspension with coil springs.

Words and photography **Jon Betts**

There is nothing wrong with standard rubber cone suspension, but over time the rubber can deteriorate and perish, which in turn will affect the ride. Standard replacements can be bought, but in recent years we have also seen the introduction of coil springs, which are a direct replacement for the standard cones. These shouldn't be confused with coilover conversions, however as these are something completely different. The coil spring conversion actually replaces the old rubber cones with a small coil springs, which it is claimed can greatly improve the ride quality of a Mini, and especially those using 13-inch wheels.

To complete the conversion you will need to dismantle the suspension, both front and rear, so that the old cones can be removed and the new coils fitted. In the case of the front cones, you will need a special cone compressor tool to complete the job. These are around each, but beware as there are two different types of cones with metric and UNF threads, so be sure to check which one you need before fitting.

The usual safety precautions should be adhered to, so place some decent axle stands securely under the car, ideally on the

subframe, making sure that they are on solid and level ground. For the rear, you will need to move the fuel tank to gain access to the top damper mounting point. This is done by simply undoing the strap that fits around it using a 1/2-inch AF socket and long extension bar. Then, with the cap removed, simply move the tank into the centre of the boot. As you are doing this, make sure you keep an eye on the fuel pipe in case there is not enough slack to move it. Then, replace the cap while you are working to stop fumes and petrol from leaking out.

In some cases it may also be necessary to remove the top arm from the front suspension altogether. To do this you will need to undo the nut with a 11/16-inch AF socket or spanner and then separate the joint with a purpose-made ball joint splitter (these can be bought from most good motor accessory shops or Mini specialists).

We are installing our coil springs along with a set of adjustable Hi-Los, so it will also be necessary for us to set the ride height once we are finished. This should be checked again after the car has been used on the road for a short while, to allow the components to settle into position. →

Tools

- 1/2, 11/16, 3/4 and 1 5/16-inch AF Sockets and spanners
- Jack
- Axle stands
- Grease gun
- Tape measure
- Screwdriver
- Cone compressor tool
- Torque wrench
- Ball joint splitter

Essential tool

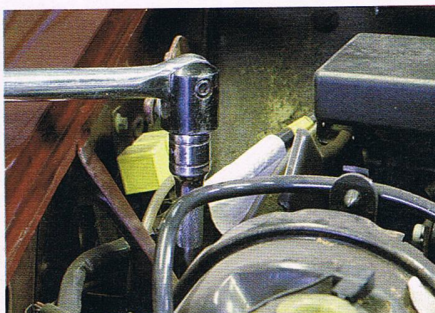
Cone compressor tool: There are a number of different types of these tools available today, and you can expect to pay upwards of for a good quality one. They come with two different threaded rods, one for early Minis and a metric one for later cars. If you are unsure which one will fit your car, try both but only fit them finger-tight; you should be able to tell which one better fits into the threaded section on the cone.



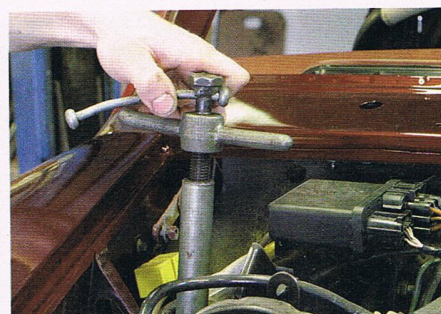
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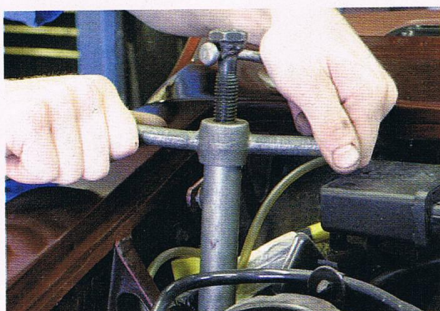
1 New coil springs and adjustable ride height kits are available from most Mini specialists. The coils simply replace the standard rubber cones and come in various configurations for road, fast road and track use.



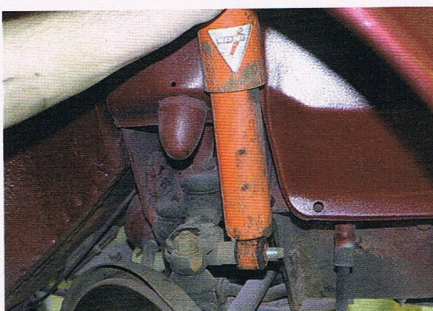
2 With the car jacked up and safely supported on some axle stands, remove the road wheels. Next, undo the large tower bolt using a large 1 5/16 AF socket. You may find it makes it easier if you remove the bonnet as well.



3 There are two types of threaded bar on spring compressors, so make sure you have the correct one. Screw the inner section into the rubber cone, making sure it goes all the way in to prevent it pulling out when under pressure.



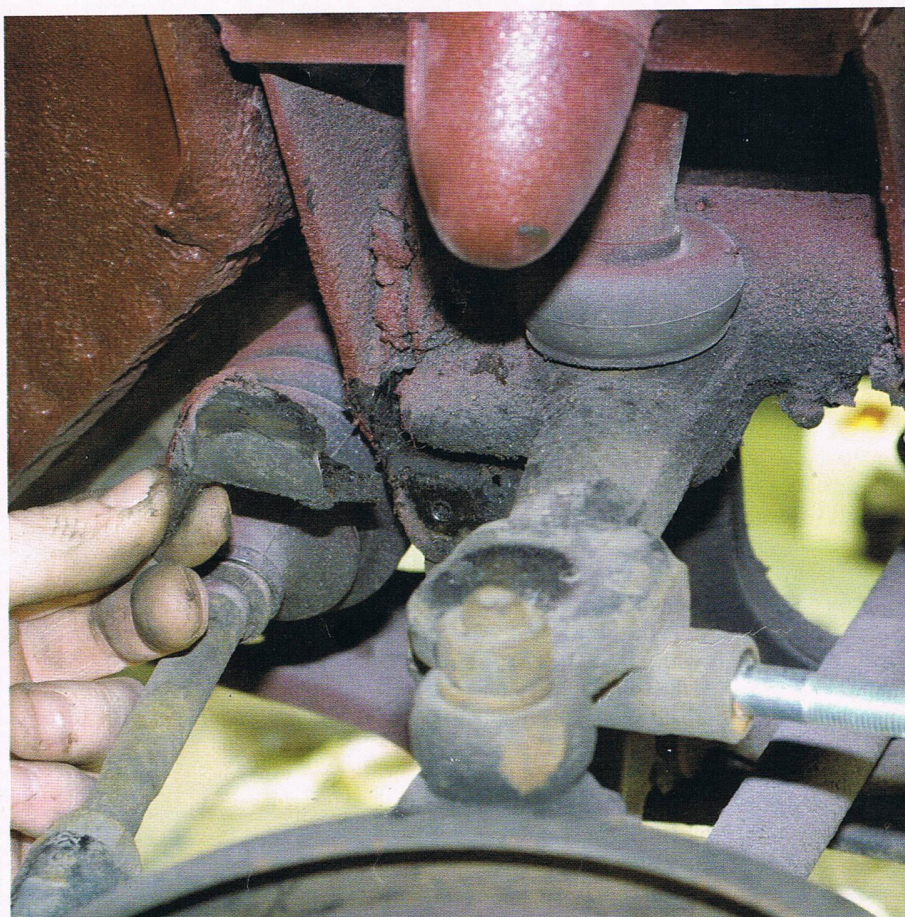
4 Next, turn the 'T-handle', which will draw up the inner section, thus compressing the rubber cone. This can become quite stiff so you may need to use a short extension bar to increase the leverage.



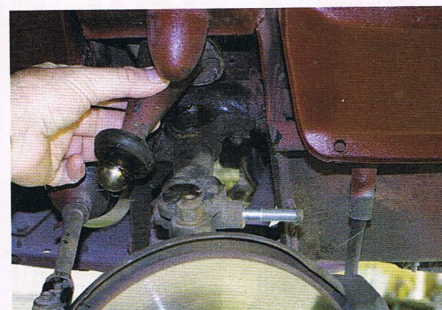
5 Moving to under the arch, you can now undo and remove the front damper by removing the nuts and large washers holding them in place and then sliding it off the locating pins.



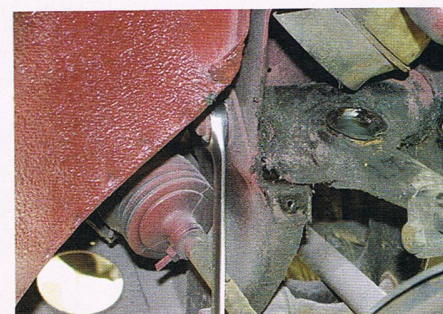
6 The lower rebound rubber will also need to be removed. For this you will probably need to clean off the small crosshead screw that holds it in place and then undo it with a suitable screwdriver.



7 Lift the suspension up slightly and you should then be able to pull the rubber buffer out of the way. With this gone you will be able to lower the suspension even further.



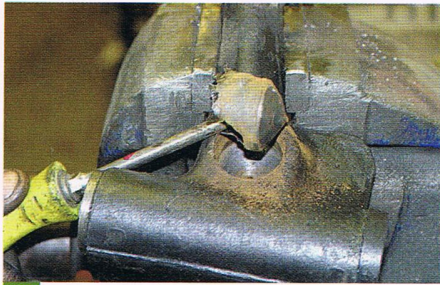
8 By pushing the suspension fully down you should now be able to remove the suspension trumpet - these may need a little bit of persuading to get them to release from their seats. With the trumpet removed, you can now release the tension on the rubber cone.



9 To get the cone out you will need to remove the top suspension arm. Start by undoing the nuts at either end of the pivot shaft using a 3/4-inch AF spanner, and then remove the retaining plate that prevents the shaft from coming out.



10 Remove the large washer and seal and then withdraw the pivot shaft. The top suspension arm can now be removed to allow you to lift out the rubber cone. At this point we found that the plastic cup needed replacing and so we needed to release the top ball joint with a suitable ball joint splitter.



11 With the arm removed from the car we were able to mount it securely in a vice so that we could prise out the old plastic cup using a screwdriver. It is possible to do this insitu so you don't have to remove the top arm completely - it all depends on how easily the cup comes out.



12 The new knuckle joint we used came complete with a new plastic seat, so this was duly fitted to the top arm. If the existing seat is still serviceable and you are retaining the old knuckle joint then simply clean and re-grease it and then fit back together.



13 The top arm can then be refitted by replacing all the components in the reverse order to which they were removed, remembering to clean them first. The new coil and seat can then be inserted.



14 Next insert the new Hi-Lo adjuster - at the moment you will just have to guess the correct adjustment as this will need setting up properly once all four corners are completed.

15 You can now fit the nuts and washers back onto the pivot pin and then install the locking plate, making sure everything is done up tight. A good

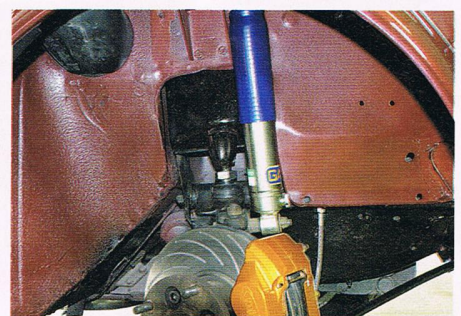
amount of fresh grease should also be applied to the grease nipple on the pivot bolt.



16 We set the Hi-Los at a midway point and loosely wound up the locking nut. If you removed the top ball joint then this will also need reassembling and tightening to 40lb.ft using a torque wrench and 11/16-inch AF socket.



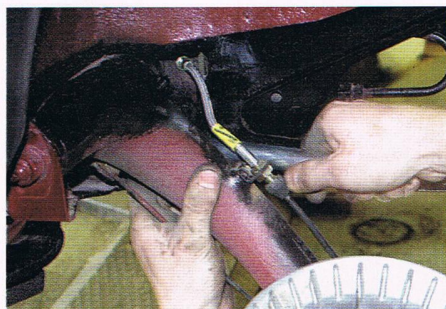
17 The tower bolt will also need to be refitted at this point using your large 1-5/16-inch AF socket, extension bar and T bar or similar. Make sure the tower bolt is tightened fully to prevent any possible movement of the subframe.



18 The damper unit can also be refitted and should keep everything together while you fit the road wheel and get the car back on the ground. If you plan to lower your car then you might want to consider dampers designed for lowered Minis. →



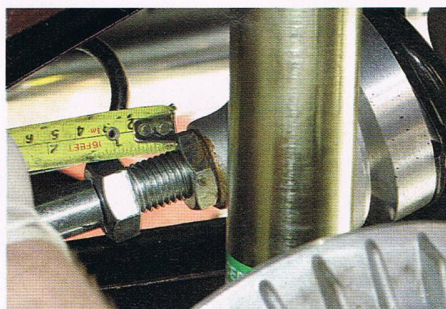
19 Repeat for the other front wheel and you can then start on the rear. Here you can see a standard rear trumpet and rubber cone next to the replacement coil spring, seat and Hi-Lo.



21 As with the front, we removed the old plastic seat with a screwdriver and then installed the new knuckle joint - not the easiest of jobs to carry out but still possible insitu. Make sure the knuckle joint is pushed fully home.



23 With everything in place you can then refit the rear damper to the radius arm and up through the hole in the suspension tower. The top nuts can then be fitted back on and the petrol tank strapped back in on the near side.



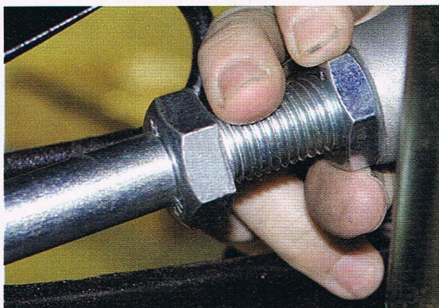
26 You will have to adjust one corner at a time, which can be a long and laborious process. Measure each one as you adjust it so you can transfer the measurements to the other side. Bear in mind, though, that there may be some slight variation.



20 You will need to remove the rear damper and then push the suspension arm down as far as it will go. This will allow you to remove the rubber cone and trumpet. They may need prising out with a large screwdriver or something similar.



22 You can then fit the rest of the Hi-Lo, the spring and its seat in the order shown. Following this you will need to raise the suspension arm to hold it all in place. Use a jack or similar to hold it up.



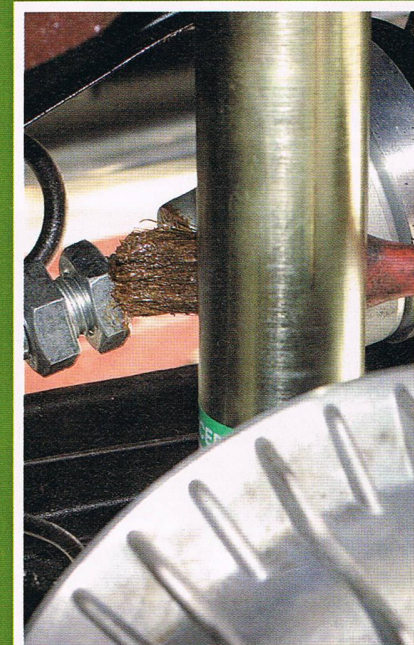
24 As with the front, we set the adjusters midway and just locked them off finger-tight. While you are in that area you can always grease the rear suspension pivot shaft too! Then it's time to move on to the other side and repeat the process.



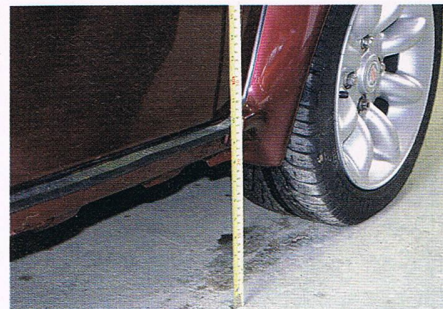
27 After each adjustment, replace the wheel, push the car back and forth a few times and then check the ride height again. You may find further settlement over time, but once you're happy with the ride height make sure you tighten the nut on the Hi-Lo.

Top Tip

Apply some copper grease to the threads of the Hi-Lo. This will make any future adjustments or removals much easier. If left untreated, the threads can become corroded and they may even seize up, making adjustments extremely difficult.



25 With all four corners done, refit the road wheels and push the car back and forth a few times to make sure that everything is located correctly. You can now assess the ride height and begin to make any necessary adjustments.



28 A good way to check the ride height - with the car on level ground - is to measure the distance between the ground and the sill at points as close to each wheel as possible. This should ensure that the car sits level.