

Replacing BL rubber drive couplings

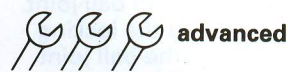
British Leyland fitted rubber drive couplings to almost all their front-wheel drive transmission models from 1959 up until the introduction of the inboard constant-velocity (pot-type) joint around 1973/74. The exceptions were the Mini Coopers and automatic models.

These units are very reliable in normal use but they do eventually fail – prematurely if the vehicle has been driven hard throughout its life. Also, if you have uprated the performance of your car, their lifespan will be shortened. If, after you have tested them for wear, you decide they need replacing, then you can either put in replacement units or put in a needle-roller unit as a longer lasting alternative.

You can tell when the couplings are worn – you will feel juddering and roughness through the transmission while accelerating and braking. There might also be an accompanying knocking noise. If the clutch operation, engine mountings and engine tie-bar rubbers are all right, then it is probably the drive couplings which need attention.

The drive couplings are found on each side of the differential casing, situated at the rear of the gearbox. They connect the differential output shafts to the drive shaft assemblies.

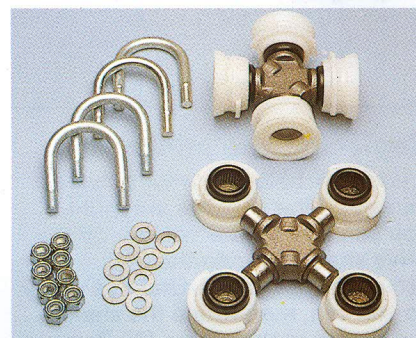
The most common reason for coupling failure is damage to the rubber, through seepage of oil from gasket leaks at the engine, gearbox and differential casings. The oil runs



Tools and materials

- Jack
- Axle stands
- Spanners
- Sockets
- Screwdrivers
- Hammers
- Ball joint splitter
- Rubber drive coupling or conversion kit

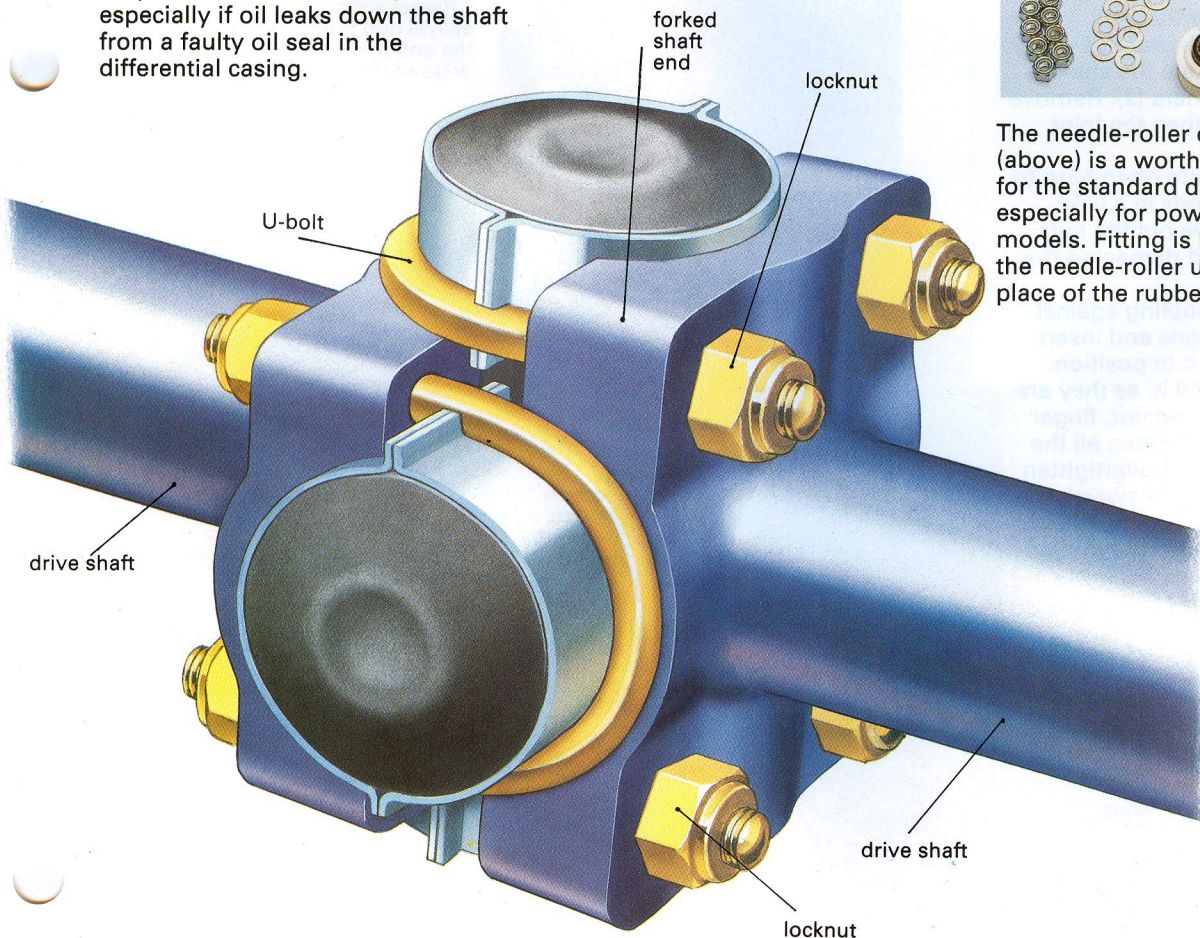
Needle-roller conversion



The needle-roller conversion kit (above) is a worthwhile replacement for the standard drive couplings, especially for power-boosted models. Fitting is relatively simple: the needle-roller units just fit in place of the rubber units.

Rubber joints

The original coupling is normally very reliable but it can fail, especially if oil leaks down the shaft from a faulty oil seal in the differential casing.



Splitting the ball joint

Some models don't give enough clearance to do the job so you must split the lower swivel-hub ball joint. When you've removed the locking nut you can separate the ball joint by one of two methods: using a splitter or shock treatment. Using a splitter is covered on *Mechanics 54*.

To shock off the joint, hammer simultaneously on opposite sides of the suspension arm adjacent to the ball pin.

When you've split the joint, remove the ball pin from within the suspension arm eye. If there is not enough clearance, lever the arm downwards. When removed, the drive shaft has approximately 3in (75mm) of free-play which aids replacement and removal of couplings.

down the shaft to the coupling and makes the rubber swell. This eventually leads to a break-up of the joint itself.

Replacement options

The cheapest option is simply to renew the units. The more expensive – but longer lasting – alternative is to install needle-roller bearings. These couplings have a much longer lifespan since oil seepage does not harm them.

If you've boosted your car's performance, then this type of joint is a good idea – it can cope better with the increased loadings you place on it. Also, if you want to fit a big-bore long-centre branch (LCB) manifold to your car, rubber drive couplings can cause clearance problems with the coupling fouling the down-pipe.

No such difficulties occur if the needle-roller bearing variety is used.

There is a third replacement option, which is to use the inboard constant-velocity joint from a later model. But this is not a good idea unless the gearbox is severely worn. This joint uses a different gearbox and differential casing and also has an uprated, remote gearchange linkage, so it is not compatible. You would have to replace the whole gearbox to do it, so it's not worth it, unless you are prepared to do all the work necessary.

Overhauling

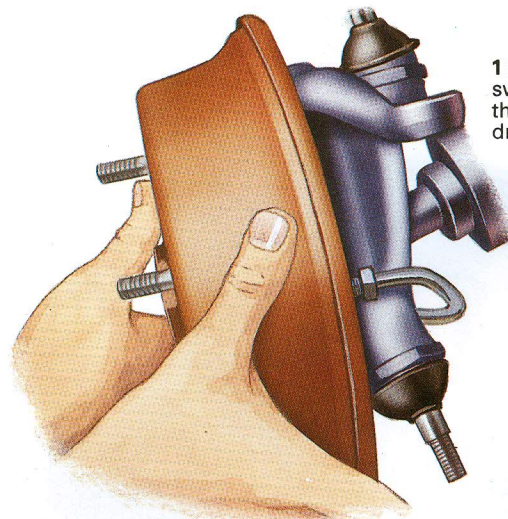
With the car on firm, level ground, remove any wheel trim and loosen the wheel nuts slightly. Raise the car to a convenient working height and

Replacing the joints

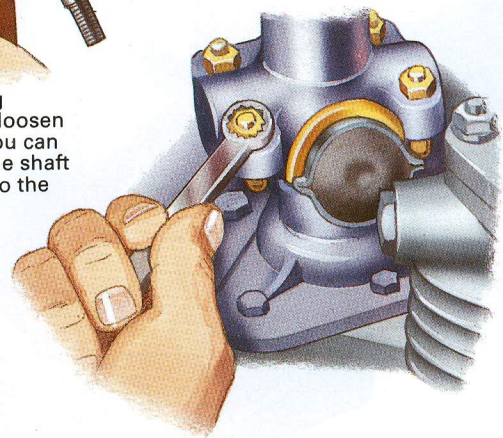
If you split both suspension ball joints and the steering arm joint, you can take the swivel hub off the drive shaft (1). Undo the nuts securing the U-bolts. Undo as many as you can, then rotate the shaft to get access to the others (2). Remove the U-bolts (3) and then the joint should come off.

The new U-bolts are often hard to get on, so nip the ends in a vice gently after you have put the nuts on part way to avoid damaging the threads (4).

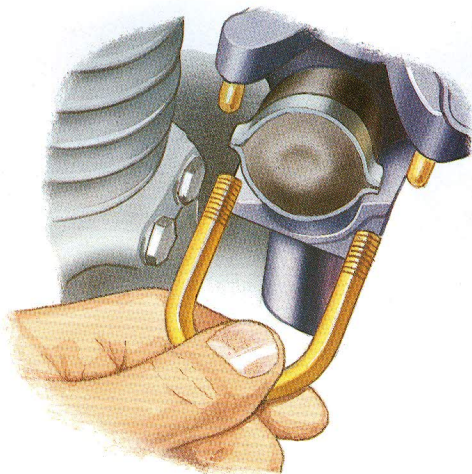
Place the drive coupling against the drive shaft sections and insert two U-bolts to hold it in position. The bolts should hold it, as they are a tight fit. But if they do not, finger tighten the nuts (5). Tighten all the nuts in turn, but do not overtighten before reassembling the swivel axle, hub, brake assembly or any other parts you dismantled to get the job done (6).



1 Remove the swivel hub from the end of the drive shaft.



2 Use a ring spanner to loosen the nuts; you can then turn the shaft for access to the others.



3 When you have removed the nuts, pull off each U-bolt.

support it securely on axle stands. Undo the wheel nuts and remove the wheel. This can make a handy seat while you are working on the vehicle.

It is theoretically possible to remove the drive couplings without splitting the hub at the suspension ball joint but, because access is fairly limited, you will find the task easier if the lower ball joint is split, especially if you are fitting needle-roller joint replacements.

Drive coupling

To separate the wheel hub from the lower suspension arm undo the $\frac{1}{16}$ in AF nut, split the ball joint (see side-

line, opposite), lever the arm downwards and swivel the complete assembly to one side. The rubber drive coupling is attached to the drive shaft and differential output shaft by four U-bolts and eight self-locking nuts. Remember that all the U-bolts are not accessible at the same time.

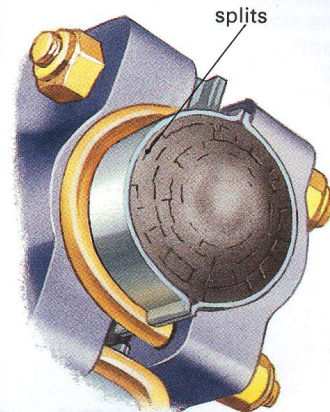
First, undo and remove those bolts which are accessible, and then rotate the drive shaft until the others come into view. Repeat the process until you've removed all eight nuts. You can now remove the U-bolts from the coupling. It will probably be necessary for you to lever them out with the aid of a flat-bladed screwdriver.

Testing for wear

Watch out for signs of wear in the spider joints. One indication is a clonking noise on acceleration or deceleration. There might even be a rattling when the car moves.

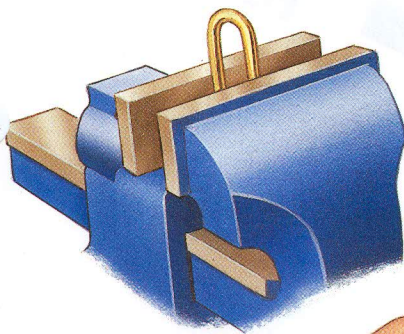
As a precaution, check the joints every 5000 miles (8000km) or six months, whichever is the sooner.

Signs to look for are saturation with oil, which usually shows as a swelling in the rubber, and a scuffed area on the gearbox casing right



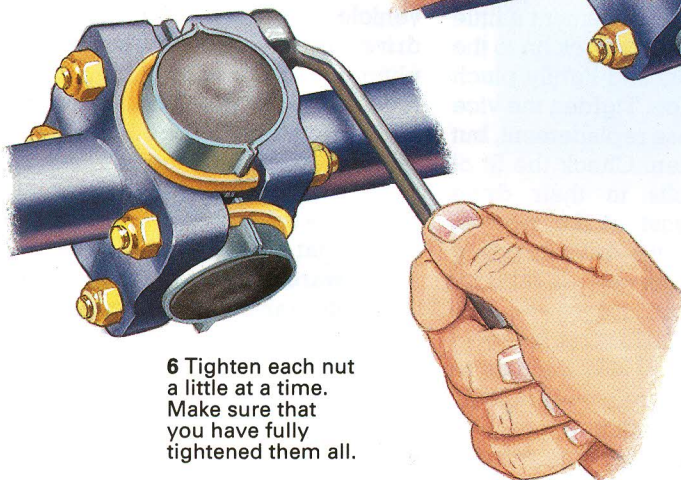
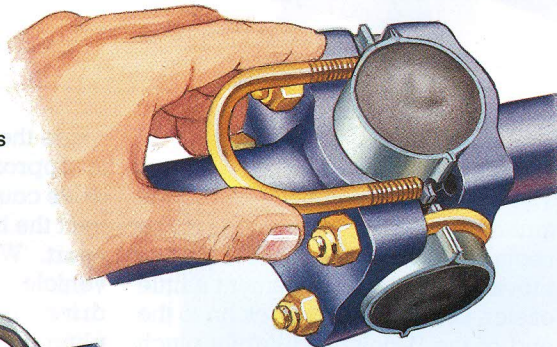
behind the arms of the spider. There is every chance that the joint will fail very soon after these signs show up. Look out also for small holes or circles at the end of any of the rubber arms. They mean that the rubber is becoming detached from the spider.

In extreme cases, where the joint has started to fail, the U-bolts themselves appear worn because of contact with the differential casing. If you can't see any obvious signs of wear, you can test the coupling by locking the differential output shaft, using a bar between the differential output shaft and gearbox casing, and then rotating the drive shaft. If the coupling is sound then there should be no appreciable movement. If there is, however, it's time to replace the couplings on both sides.



4 With the nuts on the end of the U-bolt, carefully nip it in a vice to make it easier to insert.

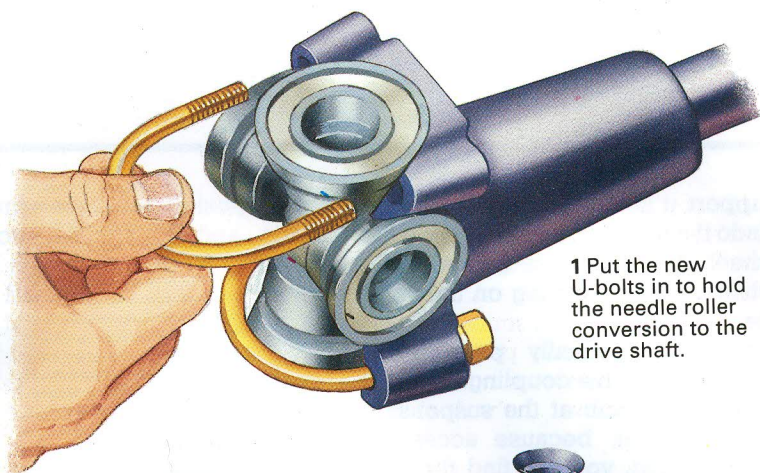
5 Push the U-bolts on to the joint.



6 Tighten each nut a little at a time. Make sure that you have fully tightened them all.

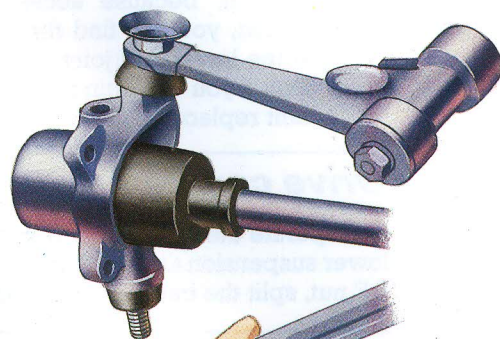
Conversion kit

If you're fitting a needle-roller bearing replacement (this type is obtainable from Quinton Hazell), you must do it on both sides. You will also most likely have to split the ball joint. Place a sheet of clean paper beneath, so that if the joint accidentally comes apart, it won't get dirty. Clean up the yoke ends thoroughly and make sure the coned faces are free of burrs. Fit the drive coupling to the inner yoke and secure with the two U-bolts, washers and nuts just finger tight (1). Swing the hub assembly inwards, engaging the outer yoke on to the drive coupling cones. Fit the other two U-bolts, nuts and washers finger tight. Refit the suspension arm to the swivel pin with the lock washer and tighten the nut to 35-40lb ft. (2). Tighten all U-bolt lock nuts to 8-10lb ft (3) – take care not to overtighten.

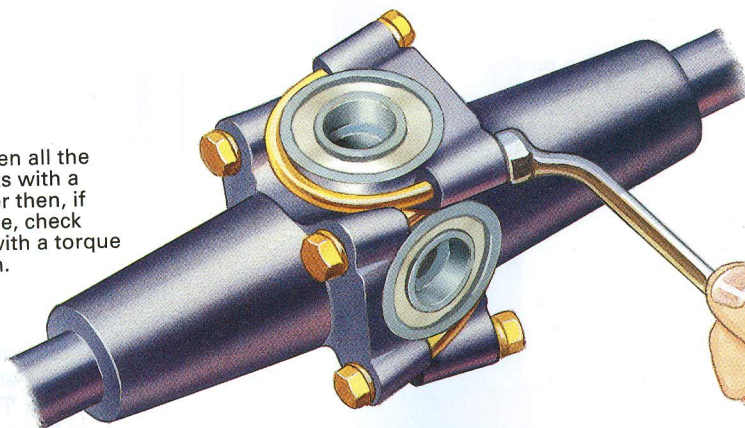


1 Put the new U-bolts in to hold the needle roller conversion to the drive shaft.

2 Fit the other section of drive shaft on to the joint then reassemble the swivel hub.



3 Tighten all the locknuts with a spanner then, if possible, check them with a torque wrench.



Ball joint replacement

Replace the ball joint spring washer and locknut, and tighten in position. The ball pin might rotate, rather than the nut tightening; if this happens, raise the suspension arm to lock the ball pin in the eye. Alternatively, a sharp hammer blow to the suspension will lock the ball pin and enable you to tighten it. As a matter of routine maintenance, grease both top and bottom ball joints and the upper suspension arm before the wheel is replaced.

Replace couplings

The coupling U-bolts have a certain amount of sprung tension so replacement can be harder than removal. To make replacement a little easier, screw the nuts back on to the end of the U-bolts and lightly pinch the U-bolt in a vice. Tighten the vice just enough to ease replacement, but do not overtighten. Check the fit of the other U-bolts in their drive flanges and adjust in the vice as necessary. Place the drive coupling in position against the differential output shafts and insert the two U-bolts to hold it in position. It should not be necessary to affix the nuts as the U-bolt will be a relatively tight fit.

With the coupling in place, and working from the side of the vehicle,

rotate the drive shaft until the flange is approximately in line with the drive coupling. Then you can reconnect the ball joint if you have taken it apart. Working from beneath the vehicle, accurately position the drive shaft against the drive coupling, insert the third U-bolt, rotate the shaft 180 degrees and insert the final U-bolt. Rotate the coupling and replace and tighten the self-locking nuts as each becomes accessible. Rotate the drive shaft once more and check that all eight nuts are tight – but beware of overtightening.

Finally, raise the car so you can remove the axle stands, fit the wheels with the nuts finger tight and lower the vehicle to the ground, tighten the wheel nuts and replace the wheel trims, if fitted.