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# How to Replace a **SHOCK ABSORBER**



## ***This workshop procedure guide contains:***

Step-by-step instructions on how to change a shock absorber.

## ***Personal safety:***

Whenever you perform a task you must use personal protective clothing and equipment that is appropriate for the task. Among other items, this may include:

- Work clothing, such as overalls and steel-capped footwear.
- Eye protection, such as safety glasses and face masks.
- Ear protection, such as earmuffs and earplugs.
- Hand protection, such as rubber gloves and barrier cream.
- Respiratory equipment, such as face masks and valved respirators.

## ***TIPS FOR CHANGING A SHOCK ABSORBER***

### ***Safety check:***

- Suspension components support the weight of the vehicle. Make sure the vehicle is supported by something other than the vehicle's suspension system, such as a hoist or jack stands, before removing any suspension components.
- Some vehicles use the shock absorbers to limit the amount of suspension travel. When removing the shock absorber an unsupported part of the suspension may fall from the vehicle. If you are to remove the shock absorbers make sure the vehicle suspension is supported by suitable means.
- Strut assemblies contain a coil spring that is held under compression. Always use a spring compressor to release the spring pressure before disassembly.
- Always wear protective clothing and the appropriate safety equipment.

## Points to note:

- Shock absorbers are also known as dampers. Their task is to reduce suspension oscillations.
- The two most common types are strut cartridges and telescopic shock absorbers. Each type has a different shock absorber replacement procedure.
- Struts can be used for both the front and rear suspensions of front- and rear-wheel drive vehicles. The strut and spring assembly for each are basically the same with the difference being the types of arms and linkages that are used for its location.
- Due to the wide variety of mounting types there is no set method of removing and replacing a strut, so always refer to the manufacturer's manual for the recommended procedure.
- Always replace shock absorbers and strut inserts in pairs so that the suspension has the same characteristics for left and right sides.
- Shock absorbers are rated for "Bump"- the rate at which they compress and "Rebound"- the rate they expand. They also have high speed and low speed valves.
- The high-speed valves are used when the shock absorber has to move quickly, such as over a speed bump or into and out of a hole in the road. The low-speed valves are used when the vehicle is cornering, braking and accelerating.
- A bounce test is not a true indication of the serviceability of a shock absorber. It does not test the serviceability of the low-speed valves.
- Shock absorbers operate by forcing oil through small orifices, or valves. This converts the movement of the shock absorber into heat. Too much heat will cause the oil to thin, reducing the effectiveness of its operation. This is referred to as "Fade"
- Some shock absorbers are gas pressurised. It helps to reduce the effects of shock absorber fade.
- Shock absorbers can have the same mountings at the top and the bottom. Make sure the shock absorber is fitted the right way up.
- Shock absorbers use rubber mountings to isolate them from the vehicle's body. Always replace these mountings when replacing the shock absorbers.

# Changing Shock Absorbers

## 1. Remove telescopic shock absorber



If the shock absorber is not integrated with the strut assembly, make sure the vehicle weight is supported...



...and then loosen the fasteners at the top...



...and bottom of the shock absorber.



Slide the shock absorber away from the mounting boss and remove it from the vehicle.

## 2. Refit telescopic shock absorber



Fit the rubber mountings to both ends of the shock absorber...



...and position the unit on the vehicle.



Fit the other half of the rubber mounts to the mounting boss and attach the fastener.



Tighten the fastener to the manufacturers recommended value.

### **3. Remove shock absorber from strut assembly**



If the shock absorber is part of the whole strut assembly, you will need to remove that first before you can replace the shock absorber.



Strut assemblies can be attached to a vehicle in a number of different ways...



.. so refer to the manufacturers' manual for the vehicle you are working on and follow the instructions on how to remove it.



## 4. Compress the spring



Mount the strut assembly securely in a vice ensuring that you do not damage the casing...



...and attach the spring compressors to the coil springs and compress the coils.

## 5. Remove the spring



Loosen and remove the nut that secures the top mount to the shaft.



Remove the top mount and the upper spring cradle, and remove the spring.

## 6. Remove the cartridge



Loosen and remove the nut that locates the strut cartridge within the strut housing...



...and withdraw the cartridge.



## **7. Fit the new the cartridge**



Fit the new strut cartridge into the strut housing...



...and tighten the securing nut.

## **8. Refit the spring**



Fit the bump stop to the shaft...



...and fit the compressed spring.



Position the upper cradle and top mount on the shaft and tighten the securing nut.



Loosen the spring compressor while guiding the spring into its correct position within the upper and lower cradle.

## 9. Refit the strut assembly



Refer to the manufacturers' manual and follow the instructions on how to refit the strut assembly. Repeat the procedure for the strut assembly on the other side.



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