

## CATCHER OF THE DAY

**UK mechanics have had a busy time fitting new coil-springs to cars during the first half of 2009. Andrew D. Graham, Managing Director of SUPLEX, discusses the reasons for this and offers advice to mechanics servicing Citroen C2 and C3 models which can help prevent an expensive failure on the road.**

Since their introduction to the UK market, the Citroën C2 and C3 have proven a popular choice of small car and many of them are now being serviced by the independent aftermarket. Mechanics familiar with these vehicles may be aware of a front coil-spring problem and many will certainly have had to fit new front springs as a result of the original springs breaking.

### Vehicle Recall

Many models of C2 and C3 were recalled by the vehicle manufacturer in October 2005. The

official recall mentioned that "...in the exceptional event of a spring breaking there could be a risk of the spring making contact with the vehicle tyre..." The remedial action involved "...recalling the vehicles that are likely to be affected and fitting a suspension cup to each side of the front suspension..."

The "suspension cup", more often than not, is referred to as a "springcatcher" because this provides a good description of its function. It provides a quick and relatively cheap means to prevent tyre damage should the spring break.

### How many vehicles were affected? (see table on next page)

Cars are now of an age where coil-springs are likely to fail, this is reflected in current coil-spring sales for these cars.

### Front coil-springs for the Citroen C2 and C3

PSA employs side-load coil-springs as the suspension medium on these cars. These special springs are curved when unloaded but straighten out when compressed. When the spring is compressed, a side force is generated, the magnitude and direction of which can be carefully controlled to negate frictional forces acting between the shock absorber piston rod and its seal. This improves

shock absorber response, especially when the vehicle is subjected to a symmetrical, low amplitude vertical vibration.

Original springs can break because an accumulation of road debris in the lower spring pan, once mixed with moisture and, in winter, road salt, will cause rapid deterioration of the spring surface coating and the spring will rust. When the spring breaks, it will almost invariably do so one half-coil in from its lower end and there is a real danger the tyre sidewall may be pierced by a sharp fragment of broken spring.

### Tyre Sidewall Damage

The vehicle tyre can suffer severe damage should a coil-spring fail at its lower end and fragments of broken spring make forcible contact with the tyre sidewall. The coil-spring will almost always fail in torsion and the resulting 45° fracture plane ends in a sharp point which is perfect for ripping into the relatively soft tyre sidewall. This is a real danger and the reason so many C2 and C3 models were recalled for modification.

### The Citroen Springcatcher

Springcatchers are only available from Citroen and are handed, depending on whether intended for the left-hand or right-hand strut. Here are the original

The springcatcher is supplied in two halves for rapid fitting



Once fitted, the side-load spring adopts a conventional shape



# STEERING & SUSPENSION

Vehicle	Qty of vehicles	Vehicle Build Dates	VIN Range
C2	4.962	01.04.03 – 30.11.03	VF7*****97000278 to VF7*****97046531
C3	51.614	01.11.01 – 30.11.03	VF7*****28000180 to VF7*****26853555

Source: VOSA

equipment part numbers :

- OE# 5031.A5 for left-hand strut
  - OE# 5031.A4 for right-hand strut
- In addition, bolt (OE# 6922.H3) and nut (OE# 6936.C9), 2 off per side are required.

## When does the springcatcher need to be fitted ?

One question the mechanic might raise when fitting new shock absorbers to these vehicles is whether or not the springcatcher needs to be removed from the old damper and refitted to the new damper. Aftermarket shock absorbers are supplied without the springcatcher and advice is generally not given as to whether the springcatcher needs to be removed from the old damper and refitted to the new damper. SUPLEX recommends the springcatcher is always fitted, regardless of whether the spring, damper or both components have been replaced. Our reasoning is simple. The original design without the

springcatcher is not "fail-safe".

Good engineering design incorporates fail-safe features. The failure of one component should not lead to the catastrophic failure of another. In the case of the Citroen C2 and C3, failure of the coil-spring can lead to catastrophic failure of the tyre. A lower spring seat which incorporates a taller skirt would contain a broken spring and this is the reason Citroen fitted a springcatcher during the recall. SUPLEX aftermarket replacement springs for these vehicles are always fitted with an isolator sleeve at the lower end. This sleeve reduces vehicle noise-vibration-harshness (NVH) and also serves to protect the vulnerable, lower coil from surface damage.

## Preventative Maintenance

Catastrophic coil-spring failure of this type can result in a very expensive repair for the vehicle owner. If the spring fails when the car is being used, which will almost certainly be the case, the car will be

impossible to drive and towing charges will be incurred. Should fragments of the broken spring pierce the tyre, two new tyres will be required. Other components, e.g. driveshaft bellows, may also suffer damage.

SUPLEX recommends :

- Replace both front coil-springs as soon as surface corrosion is evident on either spring.
- Mechanics should inspect the final, lower coil for damage where this seats on the damper (but with a lamp, not by feeling with the bare hands !) whenever one of these vehicles is in the workshop for servicing.

In this case, prevention is better than cure and your customer will appreciate it.

Citroen C3 Strut (shown here without the springcatcher)



## MORE INFORMATION

To request a brochure detailing more about SUPLEX's range of springs for the aftermarket **circle 165**



Typical, stress-corrosion fracture of a road spring