



X-Eng is a division of  
PSI Design Ltd  
Units 5c & 5d Sumners Ponds,  
Chapel Road, Horsham  
West Sussex RH13 0PR

# X-Spring Fitting Instructions

Thank you for choosing to buy the X-Spring Telescopic Spring Locators.

X-Springs are a replacement for old fashioned spring dislocation systems. They continue to apply a sprung down-force for up to 10" more travel than your existing springs.

At the point your old setup would dislocate, the X-Spring is still pushing your wheel on to the ground with up to 700Lbs of force. This will give you traction where no other system can!

On the road, your handling is unaffected because the X-Springs are fully compressed and enclosed in their Top-Hat shaped housings.



## Fitting

Before you begin, you will need a HiLift type jack and a trolley or axle jack. If you do not have some or all of these, you can probably improvise with whatever you do have but this combination makes the fitting very easy.

Tools wise, you'll need a wheel-wrench (27mm), a 14mm / 1/16" spanner, a big ("Dog Killer") screwdriver, a metal bar / breaker bar / socket extension bar and a hammer is always useful!

First of all CHOCK THE VEHICLES WHEELS. It will try to move about!



Remove the wheel, your suspension spring and any old dislocation components fitted.



In your kit, you will find, in addition to the grey spring and the Top Hat, a spiral shaped piece of metal with two holes. This is the bottom retainer bracket for the grey spring.

It is most important that this is fitted, even if you do not currently use bottom retainers. There is a plate on top of your axle with two tapped holes. The threads are the same as Prop Shaft bolts (you might have some old ones lying around).

Attach the grey spring using this retainer and tighten the bolts. The retainer will deform a little to

the shape of the spring - this is normal.

At this point, make sure the grey spring is vertical. If it leans backwards (or forwards), the top-hat will not sit squarely on the spring base. **This will rub the powder coating off the spring which in turn may cause the spring to fail prematurely!**

In this case, fit the bottom spring cup upside down as shown (Right) and adjust the length of your trailing arm (place washers between the bush and chassis hanger) to ensure that the spring seat and the top spring hanger are parallel. If the top hat is parallel to the hanger, the X-Spring near silent in use.



Next place a Top Hat on top of the grey spring. Place your existing road spring on top of the Top Hat as shown.

Push the spring towards the chassis such that the top spring hanger is wedged between two of the coils.

Insert a metal bar through the top spring hanger and the spring coils to prevent the spring from coming off the top hanger.

The spring may bend to the side a bit, but this is normal and it is safely retained at the bottom.

Gently lower the vehicle. As you do this, the inner (grey) spring will compress inside the Top Hat.

Once it is fully compressed, push a screwdriver through the holes in the top hat between the coils of the spring as shown (Left). It is worthwhile carrying such a screwdriver to restrain the spring if you need to jack a wheel in the future.



Raise the vehicle again on the High Lift jack until there is no pressure on the road spring. Unhook it from the top spring hanger, having removed the bar used to retain it.

Continue to raise the vehicle until there is enough space to slide the spring under the top spring hanger.

If you cannot get the vehicle high enough (gap big enough) you may have to use spring compressors. It may help if you disconnect one end of your shock absorber. Some people have also placed a small bottle jack between the axle and bump stop to force the two apart a little.

The screwdriver will be hard to remove, but by carefully lowering the vehicle and persuading it with a hammer, it will come out.

If you lower the axle jack and raise the HiLift, you can see just how much extra sprung travel you have obtained. The shock absorber pictured is a +4" and you can see that with this fully extended, there is still a few inches travel in the grey spring.



With the wheel back on and the jacks removed you can see how the X-Spring system sits when you are on the road.

You can use the inner grey spring to give you soft, extended travel suspension off road, which means, in turn that you can use stiffer main springs which will improve on-road handling and bump resistance off road.

As your axle articulates, you may hear a little noise as the coils of the springs move over the top hat. We have carefully designed the profile of the top hat to minimise this, but there is still a little.

If you find your setup is noisy, make sure the top-hat is sitting squarely on top of the axle as per the photo (Right). If not, it means your radius arms are the wrong length for the amount of lift you are running. There are several easy solutions to this assuming the length of your arms is not already adjustable. You can put spacer washers between the radius arm to chassis bush to move the axle backwards. You can place spacer washers under the bottom spring-cup to make it more level and/or turn the bottom spring cup upside down which gives the X-Spring top-hat a flat surface to 'land' on.



If you are using spring spacers, the bottom spring cup must be placed on top of the spacer.

**IMPORTANT** *If you only read one part of the instructions – read this!*

**X-Springs are supplied with a length of White Spiral Wrap. This is to silence the springs and protect the inner spring from corrosion – which will cause the springs to snap! Be warned.**

**Jack the vehicle to expose the inner spring. You will be able to see where it is rubbing by looking the paint has worn off the spring. Cut the spiral wrap into 6cm lengths and wrap these round the spring concentrating on the coils which have rubbed. This lubricates and pretty much silences the setup.**

**Lubricating the Top Hat with a little grease can also help reduce noise as the springs slide over the cup.**

**If the powder coating is allowed to rub off, corrosion will cause localised stress concentrations which in turn lead to fatigue and failure in that area.**

