

Rocky Mountain Parabolic Springs Installation

ROCKY MOUNTAIN PARABOLIC SPRINGS ARE NOT HANDED

This method is recommended for owners installing their own springs, working on one spring at a time. Those with more facilities may choose to do an axle at a time.

Please read through before starting.

1. Loosen slightly the lug nuts of one wheel, but do not remove.
2. Raise your Land Rover by its chassis until the wheel is off the ground.
3. Remove the wheel and place an axle stand under the chassis rail, then lower the truck onto the stand.
4. Remove the shock absorber from the lower mounting plate.
5. Remove the nuts holding the 'U' bolts to the axle and/or cut the 'U' bolts off.
6. Place the jack under the axle to support it.
7. Remove the lock nuts and bolts holding the spring eyes to the frame and shackles, then remove the old spring. NB: Shackle bolts must be unthreaded from the inner shackle plates once the locknut is removed.
8. Check condition of the chassis bushing. It should be firmly located in the frame. The shackle plates should have unworn holes and the bolts should not show significant wear. (If you have purchased the full Combo kit then we have supplied new shackles so you can cut the old ones off). Clamping plate under the spring should be flat and not cracked. Check that the new 'U' bolts pass freely through the clamping plate holes; as RM use a full 1/2" dia. thread, slight enlarging of the 7/16" holes on some trucks may be required. The shock absorber mounting post should be round and parallel to the plate surface. Check shock absorber for resistance if they are to be reused – but please note that with parabolic suspension, it is recommended that extended travel shocks are used. Check that axle buffer is in place and serviceable. **NB: Warranty is void if axle buffers are not in place.** Parabolic springs will lose their arc if overextended. Any increase in ride height/shackle length must be accompanied by an equivalent downward adjustment to the axle buffer position.
9. The outer wrap of the spring mounting eye is simply an added safety feature and is left loose to allow for the spring leaves to move as they flex. The outer wrap may be tighter at one end of the spring than the other. **For the front springs install the tightest wrap to the chassis mounting.** This can be important as variations in truck manufacture make some front frame horns very constricted. If necessary the spring center pin can be loosened and the leaves adjusted to create tighter wrap at one end to avoid interference in the frame horn. The upper leaf has a slotted center hole for this adjustment.
10. Using the reverse procedure bolt the new spring into place on the chassis **without** fully tightening up. You may need to raise the axle slightly.
11. Lower the axle onto the new spring making sure the spring center pin is located into the hole in the axle bracket. Lining up the dowel can be difficult; loosening the U bolts on the other end of the axle helps.
12. Install the new 'U' bolts and tighten enough to remove slack, **do not torque.**

- 13 .REPLACING THE SHOCK ABSORBERS. Replacing shock absorbers is quite straightforward. It may be difficult to get your old shocks on with the axle unloaded if they are too short! All shock absorbers are mounted with the shafts pointing upwards. The Rocky Mountain Explorer 9000 ES shocks are mounted with the steel protective sleeve uppermost. Although it is easy with the 109 to differentiate between the front and rear shocks because of the eye at the front and pin at the rear, it is not so easy with the 88 – front and rear both being eyes. Make sure you select the correct 88 front and rear – the front are the shorter ones (18 inch) part no. WO18550
14. At the rear, the check straps should be adjusted so that they stop the downward progress of the axle approximately 1/2" before the shock bottoms.
15. Repeat procedure for other three springs. Replace the wheels, and with the Land Rover standing freely on its new springs rock the truck energetically to settle the mountings. Do not expect your truck to sit perfectly level - parabolic springs are more load sensitive than cart type springs which is what gives improved ride and articulation . There may be very slight differences between pairs of springs that you can use to tune your truck's side to side static position based on your typical loading of driver, fuel, etc.
- 16 Now – find 3 adults to stand on the front bumper (!) whilst you tighten all the front shackle bolts to a torque of 70lb/ft. Repeat for the rear shackle bolts with the 3 adults hanging on the rear. After you have tightened all the bolts, tighten the lock nuts to the same torque.
Torque up the U-bolts to 65 lb/ft. THIS IS IMPORTANT! Your springs cannot support the weight of your Land Rover unless they are well clamped to the axle. Spring's are not designed to flex across their centre section and may fail if 'U' bolts become loose. Torque settings are for dry components - anti corrosion products should not be applied until after tightening as overstressing of fasteners can occur and can lead to failure and damage to axle plate.
- 17 Springs can be lubricated with any used oil to prevent squeaks and coated with Waxoil or a similar product to reduce cosmetic corrosion.

Rocky Mountain front spring pairs are supplied with three 78456UB-S & one 78456UB-M for the inside right hand axle position. Rear springs are supplied with four 78456UB-M/L.

CAUTION!

Parabolic springs make a difference to the driving comfort of the vehicle . Bear in mind that the unladen weight of your Land Rover will be higher than with conventional springs. This increased ride height raises the centre of gravity of your vehicle. Please drive carefully until you are familiar with these new handling characteristics.

As Series Land Rovers are not equipped with anti-sway bars, good quality shock absorbers are necessary to control the improved spring performance. Rocky Mountain has PRO COMP manufacture shock absorbers exclusively for us, to fit our springs. These are based on their 9000 series premium gas shocks, modified to our specification, and offer 2" extended travel.

Thank you for purchasing our product.

www.parabolicsprings.com