How to get a lower crawl ratio in a Series

Often when off roading in a series Land Rover you find that the low range ratio leaves something to be desired- particularly when you've fitted tires of a greater than stock diameter. Most other vehicles have different lower differential ratios available but with Land Rover we already have maxed out at 4.7- as far as I know no one makes any other gear sets that provide a lower ratio. You'd have to do something drastic like swap to Toyota diffs to get 4.88 or 5.29, 5.71 ratio. Instead of doing this expensive and complicated conversion a more economical modification is to fit a B suffix transfer case. The B suffix has a 2.89 reduction versus the 2.35 of later transfer cases that difference makes for a much better compound low ratio.

To figure out your compound crawl ratio you multiply the 1st gear ratio times the transfer case low range ratio then times the ratio of the differential's ring and pinion,

In the case of the stock Series III LR you do 3.68x2.35x4.7= **40.65**

With the early A or B suffix transfer case you have a better 3.68x2.89x4.7=**49.99**

that is a fairly significant change in ratio ~**23%**!! The difference means the engine will have to turn 50 times for every one rotation of the wheel so you'll be able to drive slower with more control off-road, it also means there is more compound gearing and thus the torque of the engine is multiplied more- giving you more torque at the wheels. This is the simplest way to improve the low range performance of a series LR. The stock LR low range of 40:1 is decent but not great so a change of 50:1 makes a significant proportional difference.

Thus the most bang for your buck is to swap to a B suffix transfer case gearing.

other LR ratio info available here:
http://www.expeditionlandrover.info/gear_ratio.htm

a gear calculator is available here:
http://www.californiajeeper.com/crawl-ratio.htm

and here:
http://www.novak-adapt.com/knowledge/gearing.htm