

REAR SUSPENSION LINK - EXTERNAL

Re-typed from an article by Peter Davies

There are many variations to this theme and the sizes quoted are not important, the essence of the arrangement is to connect the two springs and dampers together so that they both work together on the single rear wheel. My solution is as follows:

1) When having the rear arm modified (you have to use parts of both), ask for the redundant parts back. If you are lucky Lomax will seal off the truncated arm at the point where it transforms from a square to a circular section with a closing plate.

(This is now possible (July '96), request suspension arms modified for the Lomax linking bar but stating that you do not need that bar)

2) Refit the arms to the axle tube; select a piece of rectangular section tube (mine was 40mmx80mm with a 2mm wall thickness), long enough to bridge the distance between the two suspension arms. Obtain four pieces of rectangular section bar (8mmx45mmx150mm) drill them in pairs to suit two M10 bolts positioned 130mm apart after off-setting the bars by 5mm. (I.e. a 5mm differential between centerlines on each pair)

Weld one bar across each end of the tube to form an "H" section. Bolt on the other two plates with M10 bolts and Nyloc nuts, these bolts to have plain shanks for the distance that they pass through the plates.

3) Offer up the assembled beam to the tops of the square sectioned portions of the suspension arms, so that the plates bolted to the beam hold it 5mm above them, check for squareness and weld the plates to the arms. Check that you have left clearance for the wheel and petrol tank.

This method allows the beam to be removed for access to the bearings. Some consideration of position of the entry tube to the fuel tank may be necessary.

4) be sure that when you connect up the spring connecting rods you have a minimum of 1.5 times the diameter of the thread screwed into the eye bolts; if the ride is too high use the Lomax extended bolts (I managed without).

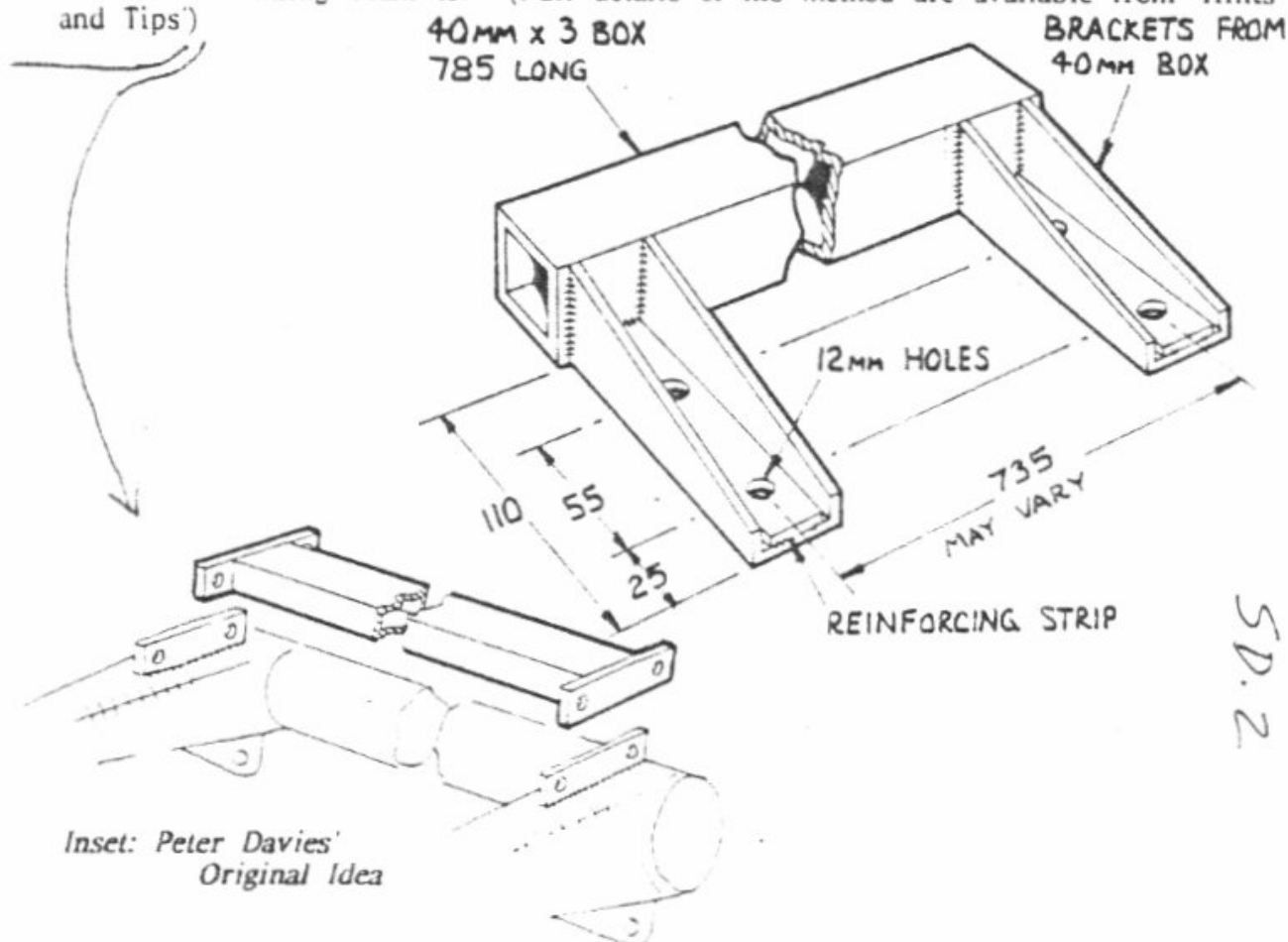
(a photo originally accompanied this article but it had become useless through repeated photocopying, Some additional notes have been inserted by Peter Low.)

From Revd. Peter Low:

Rear Suspension Linking - External Methods

As custodian of the 'Hints and Tips' archive, I have followed the developments of the 'internal suspension link' with great interest (and it has been one of the most requested items from 'Hints and Tips'). I have held back from having a go at making this set-up myself because I have some doubts about the durability of the slotted link at the end of the internal cross-over tube.

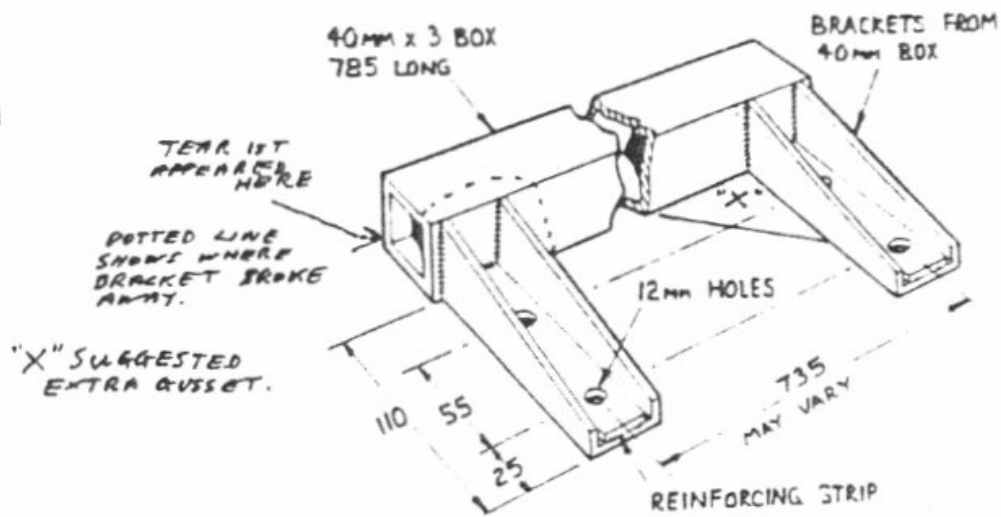
Why is such complexity needed if all we are looking for is a more rigid link than the Lomax anti-roll bar type? Ever since I experienced my Lomax 223 hitting its chassis repeatedly on Spanish roads last year when touring with full camping gear, I've been considering a rigid external rear suspension link based on an idea by Peter Davies from quite an early issue of 'FLAT OUT'. He started out without the plates that Lomax weld to their suspension arms modified to take their own linking bar. These welded-on plates come complete with M10 threaded holes. As a consequence of this, Peter had to devise his own welded on plates to bolt his box-section linking beam to. (Full details of his method are available from 'Hints and Tips')



Having already got Lomax's modified arms, all I had to do was to make up a steel box section beam to bolt to the threaded holes already there. I decided on 40mm x 40mm box section with a 3mm wall thickness. The main beam was cut to a length of 785mm. From the offcut, I made two triangularly-braced brackets by cutting diagonally along the length of the box section. The threaded holes in the suspension arms are 55mm apart and the distance between the holes on each arm (on my car - check yours!) was 735mm. It seemed a good idea to weld some reinforcing strips to the inside of the brackets where the bolt heads would bear and the holes were drilled 12mm dia. to allow clearance. This could be greater, as once the bolts are tight, the holes do not affect the assembly's rigidity.

All the joints were fully welded using 2.5mm electric arc rods. This linking beam sits directly above the suspension axle tube and clears the rear wheel, the boot floor and the petrol tank. Be careful, however. My car has its petrol tank entry tube on top, if yours comes in from the rear, you will have less room for this arrangement. The increased stiffness of the rear suspension has of course reduced the 'featherbed' ride quality, but now, even with a lower ride height, my chassis and body skirt are safe from the fiercest road bumps.

SD.2



REAR SUSPENSION - EXTERNAL LINK

A WARNING.

On returning from the Liege-Agadir rally, I was investigating the rear end of my 223 to see what might be done about it's twisted rear suspension arm, (see details of this problem elsewhere). I was dismayed to discover another problem.

The external link which I had made up and a drawing of which appears in "Hints & Tips", had torn itself appart at one end. It appears that the box section had begun to split along one corner, and then, one of the brackets that holds the link to the suspension arm had torn away, not at the weld, but the metal around it.

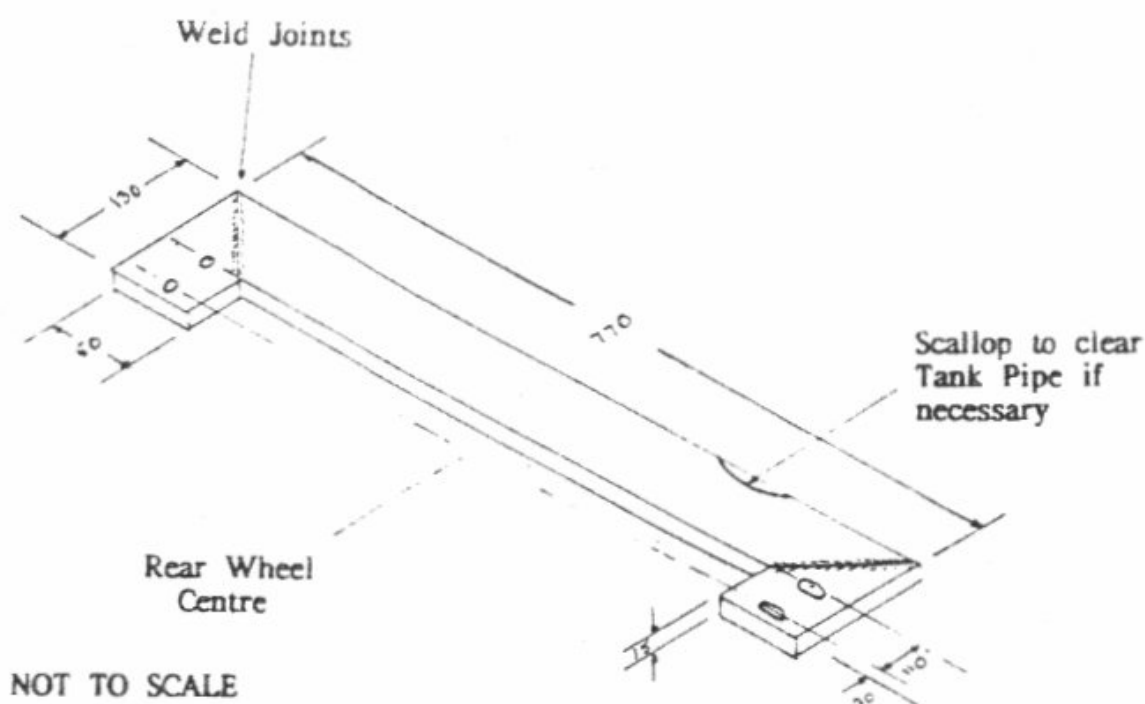
I shall leave this sheet in "Hints & Tips" but with this warning attached. Use it for dimensions only. I am fairly sure that welding a plate over the open end of the box section would prevent this break occuring, and some extra gusseting might help.

Rev. Pete Low

From Richard Noble:

Linked Suspension - Yet Another Suggestion !

To have single side suspension on a central wheel at the rear when a dual configuration is available seems a little irrational. Not only is it 'all your eggs in one basket', but it must surely be imbalanced. So, the requirements ? To operate both suspension cannisters simultaneously with a rigid, strong, dependable, easily accessible, relatively cheap device that would miss the filler pipe, the rear wheel and boot floor. For a number of reasons, I was unhappy with the idea of fitting the Lomax expensive optional extra, the 'torsion bar', not least because of a somewhat critical article in a national kit car magazine. Other ingenious ideas of box sections, internal tubing etc., seemed either too bulky to clear the tank, (side mounted) filler tube, or were almost inaccessible in the event of problems and wear, etc. Hence this alternative at a total cost of circa twelve quid.....



NOT TO SCALE

ALL DIMENSIONS IN MILLIMETRES

I cut off the surplus arm leaving the stub, and capped off the end with a shaped piece of mild steel. I welded mine, but I think this could be neatly fixed with chemical metal - it's cosmetic only. **Any further welding, I sought professional TIG'ing for a fiver!** The diagram is now self-explanatory, but to add a few more details: The bar has two 90° ends, the joints being welded above and below, very securely! Edges are grinder chamfered, merely for convenience of handling. Positioning on the arms is dictated by the clearance from the fuel pipe and the rear wheel - jack both arms up as far as possible and mark it in-situ. Mine ran close to the fuel tank pipe where Jubilee clips hover, so **only** at that point I scalloped out the leading edge - not too much on the basis of the weakest link and all that. On each arm, two 12mm (10mm would probably suffice) high tensile bolts were welded centrally, heads down. The heads and supporting welds will hold the bar slightly proud of the arms - this seems to be an advantage, allowing the bar to clear the axle completely, and mine sits to the rear of same anyway. N.B. In case of movement of the bolts during welding, leave the hole drilling in the bar until later. The holes were then drilled appropriately, and on one set, elongated to allow for slight width-wise variation of the suspension arms. A coat of underseal, and it was ready for bolting on with large steel washers and self-locking nuts, tightly! Clearance from a fully-inflated tyre is about 40mm, and it will certainly scrape off lumps of cow dung! 1,000 miles later and it is still doing a grand job! The only disadvantage is the heavy steel weight and possible hinderance to any central brake pipe coupling on the axle - I have adapted mine to single flexible at the side (courtesy of Norman Higgins) so I am not sure on the latter.