

Scimitar GTE Jaguar IRS Conversion

The following notes will, I hope, be of some use to those of you contemplating the above job. The advantages conferred by an independent rear suspension in this way are twofold; handling is improved, particularly rear-end grip and stability under power on wet roads and braking is improved due to the use of discs instead of normal drums.

General

The Jaguar I.R.S. bears a family resemblance to the standard live axle, which is the basic MkII Jag. Unit modified by Reliant for use in the Scimitar. The Salisbury differential and c.w.p. are the same in live and independent axles. The diff. ratios available and of interest to us are 3.07:1 and 3.31:1. Other ratios range from 2.88:1 (4.2 manual, o/drive E type) to beyond 4.1:1. The ratio can be deduced from a small metal tag secured by one of the screws holding the diff. rear cover on – the two numbers stamped thereon indicate (large number) crown wheel teeth and (small number) pinion teeth. The ratio, of course, is one divided by the other. The Salisbury 'Powr-Lok' limited slip diff. can be fitted to any of the units. Finally the width of the overall assembly varies. The 'E' type unit is about 50" overall and is too narrow, except perhaps for the Coupe. The 'S' type unit (also old-style Daimler Sovereign?) at 54" (ish) is the one to go for, and doesn't require modified wheelarches. The early Mk.X and late XJ6/XJ12/Sovereign/Double-Six type is about 58" wide and would need enlarged wheelarches to be of use.

Changing axle track can be done by 'cutting and shutting' half-shafts and lower members but is prohibitively expensive and its better to find the right one really, to avoid the trouble.

Installation

- i) The gist of the installation is as follows:
The differential is mounted to a cross member which is rigidly fitted to the chassis – see Fig.2. The use of the standard, pressed Jaguar cross member (see Fig. 3) eases installation and with its noise-absorbing mounting helps reduce transmission of noise into the car.
- ii) The twin coil-over-shock units are mounted at the top to new brackets, which are welded in place of the old brackets, which should be cut off. Spring rates depend on installed length, angle, etc.
- iii) The chassis needs modification at the vertical portion behind the rear seats to give the half-shaft U.J.'s room to rotate – see Fig. 4. simply cut out the appropriate portion and plate it over with 16 s.w.g. mild steel.
- iv) The lower members need bracing in a fore-and-aft plane to resist braking and acceleration forces. Although the axle is exceptionally strong, it is most dangerous to omit such bracing. The radius rods should locate to brackets as close in to the car centre-line as possible, just behind the centre chassis outriggers, up front. The rearward end of the radius rod mounts to brackets at the outermost end of the lower member – using a rubber shock absorber bush. Rose joints should be used at the front end, RM8U type was used, with dirt excluded boots and integral grease nipples for long life.
- v) A similar type of rod, but shorter, is used at the inboard end of the lower member, feeding differential reaction forces into the chassis. This eliminates diff. 'wind-up' under braking and acceleration. As before, Rose joints at the front, rubber bushes at the rear, give accurate location with just enough compliance to reduce noise transmission. Se Figs. 5a/5b.
- vi) The lower member inboard pivot pins should be tied together across the diff. and bracing plates should be fitted underneath the pivot pin mounting brackets, to replace the rigidity lost in discarding the rest of the Jag. 'cage'.
- vii) The handbrake cable will need replacement. I had a special one made up by Messers. Wicks and Martin of Bromyard, who specialise in cables. The handbrake lever wants modification to give sufficient travel on the cable. Adding another two inches under the pivot point does the trick, as per Fig. 6.
- viii) Exhaust piping should be made up to go up and over the axle centre lines in place of the old straight through pipes which go under the standard axle.

- ix) Wheel sizes and types differ. To use the standard Scimitar wheels, extract the Jag. 5-stud hubs, remove the old studs and weld in threaded mild steel plugs, machine true and mark out new holes (4) on the Scimitar P.C.D. Jag. Wheel studs are identical – fit these and melt over the backs after fitment with a shielded arc (argon, etc.). If you have done your sums right, you can now fit the Scimitar wheels on the Jag. hubs.

Bits and Bobs

It is not yet clear just what effect this conversion has on the front-rear braking balance. With the standard car (V6) you need most braking at the front, but of course the V8 changes this – more brakes at the rear needed. My first impression was how much more they work for their living now! A brake-proportioning valve could always be fitted, but I don't feel the need for one as yet. Propshaft length does not need alteration when using the one-piece shaft with the splined portion at the front, as the wheel base is more or less unaltered. Newer vehicles with 2-piece propshafts need some careful checking here. Cars fitted with a towing hook cause a little extra work, as the bottom of the tow-hook should now be re-connected to the bracing plate method no longer works, due to the need to remove the tie plates which used to pass under the axle. For this conversion I recommend buying the Haines XJ12 or XJ6 manuals to help – the section on the rear axle assembly is quite detailed. All necessary bearings etc. can be had from B.S.L.

All the above is valid for any Scimitar, from early Coupe to late GTE. Who was the clever one who said "Measure a thousand times and cut once"? He must have done a similar conversion.

*** Contact details omitted by V8 Church for privacy ***

BILL COWELL

* = coil-over shox top mount

Radius rods – RM8 rose joints front, rubber bushed rear – resist fore and aft forces of suspension.

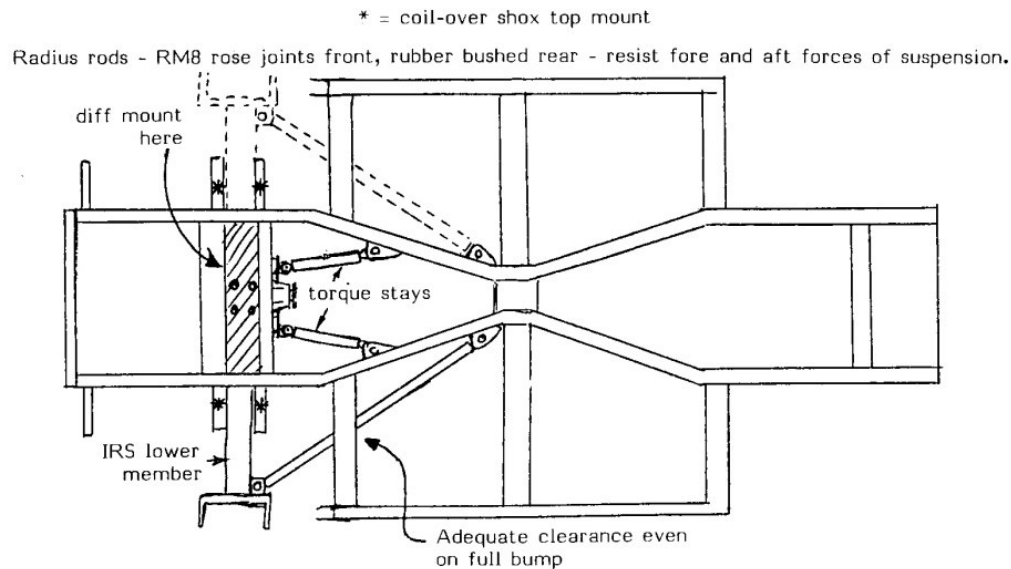


Fig. 1 Diagram illustrating fitment of Jaguar IRS.

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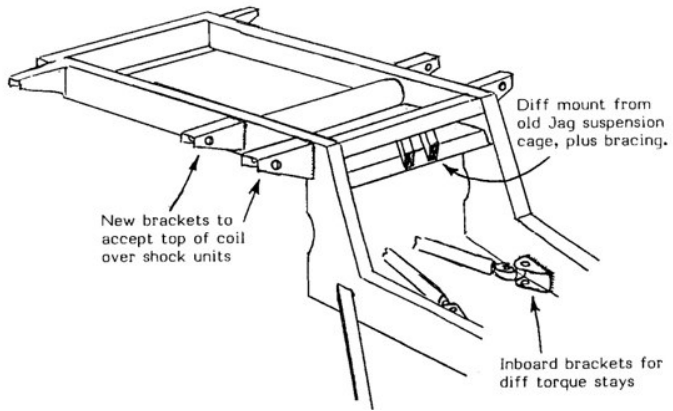


Fig.2 Illustrates top bracket and diff. mount.

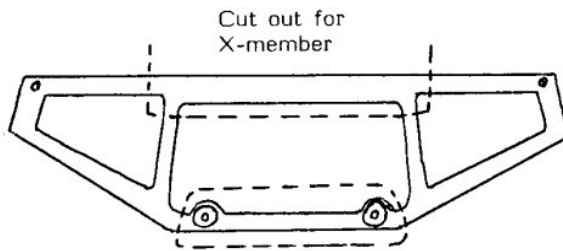


Fig.3 Illustrating the Jag. cage and those portions of it used in the conversion.

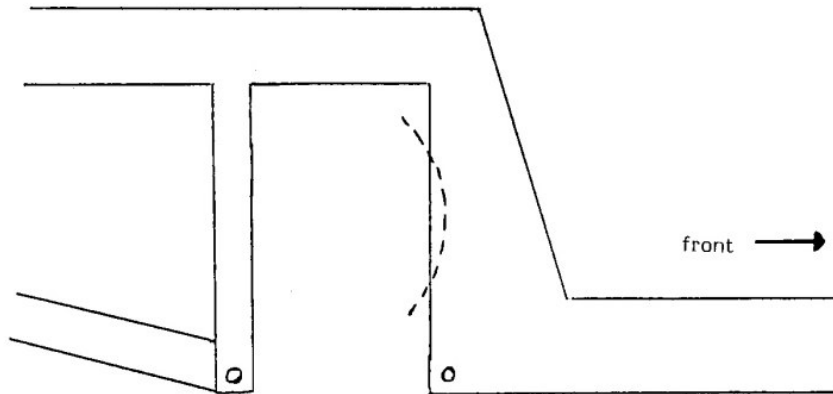


Fig.4 Illustrating chassis mod. necessary for UJ clearance.

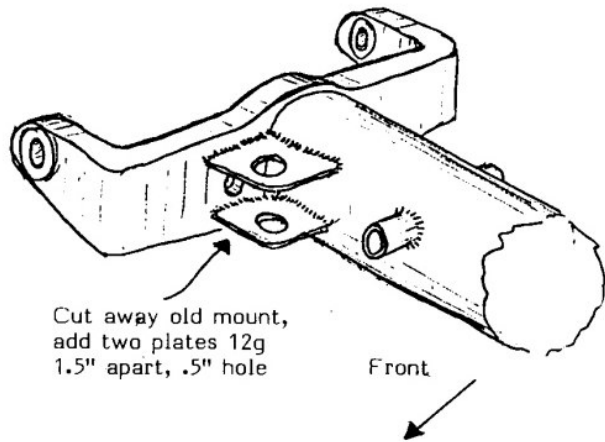


Fig.5a Fitting brackets for radius rod to Jag. IRS lower member.

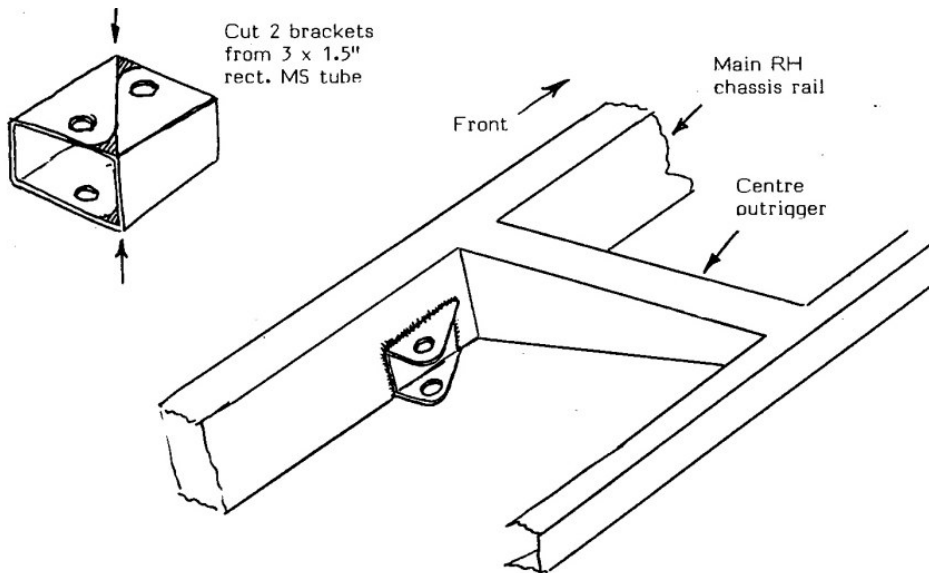


Fig.5b Fitting brackets to chassis for radius rods – forward end.

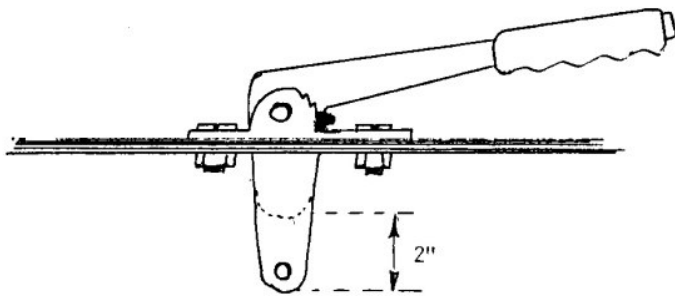


Fig.6 Extension of handbrake lever to give more cable travel.

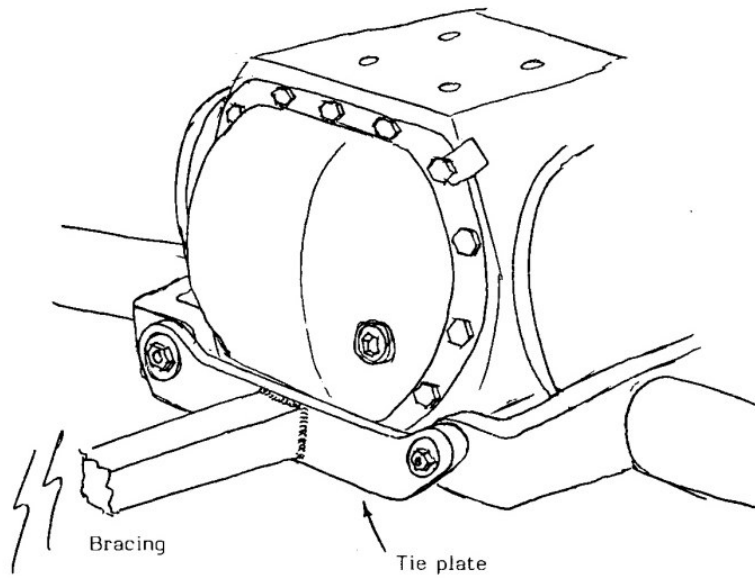


Fig.7 Showing bracing tie for use with tow hook.