

IRS!

PART 7

Jim Patten concludes the rebuild of Jaguar's independent rear suspension

W

e're there at last, the long haul is almost at an end - just

the hub carriers and driveshafts to go, with a little bit of plumbing around the brake parts. As an aid, we are reproducing an exploded diagram of the rear suspension along with part numbers and the retail prices as at December 1993.



The home straight...

Although we have concentrated on the 'S' type throughout this series, the parts are fundamentally the same for virtually all IRS Jaguars from the 1961 'E' type through to the XJS and Series 3 XJ saloons. Some models, notably the 'E' type, are fitted with a rear anti-roll bar - wearing parts here are simply a couple of bushes in the bar links and two further roll bar rubbers securing the bar to the rear bulkhead. We have refrained from listing brake parts as well because these vary so much over the different models.

Generally we have been going strictly by the book but during the reassembly of the rear end, you may like to consider an adaption to make the job of bleeding the rear brakes a bit easier. Bailey Brakes (081 459 0307) supply a kit that consists

of correct length brake pipe, an adaptor and bleed nipple.

The existing bleed nipple is removed from the caliper and replaced by the length of brake pipe, the other end of which is mounted on the cradle exiting in the wheelarch side. You may have to make a hole in the cradle to secure it firmly or alternatively mount a carrier bracket to the side.

On my last 2+2 'E' type I used a flexible brake hose from the caliper to the inspection plates behind the rear seats where the bleed nipple was fitted. It worked perfectly. Not for purists maybe, but it does save a whole lotta sadness laying underneath the car with brake fluid running down your arm during efforts to "expell the air from the system".



Slide hub and carrier over splined end of drive-shaft making sure that the shim, so carefully calculated in a previous issue, is in place. It is important to ensure that the split-pin hole in shaft corresponds to hole in hub. Position hub carrier (with dummy shaft still in place) between the forks of the lower wishbone.



With hub carrier pushed fully over to one side, measure the clearance using feeler gauges between oil seal track and wishbone face. Use shims (available in .004") to centralise hub.



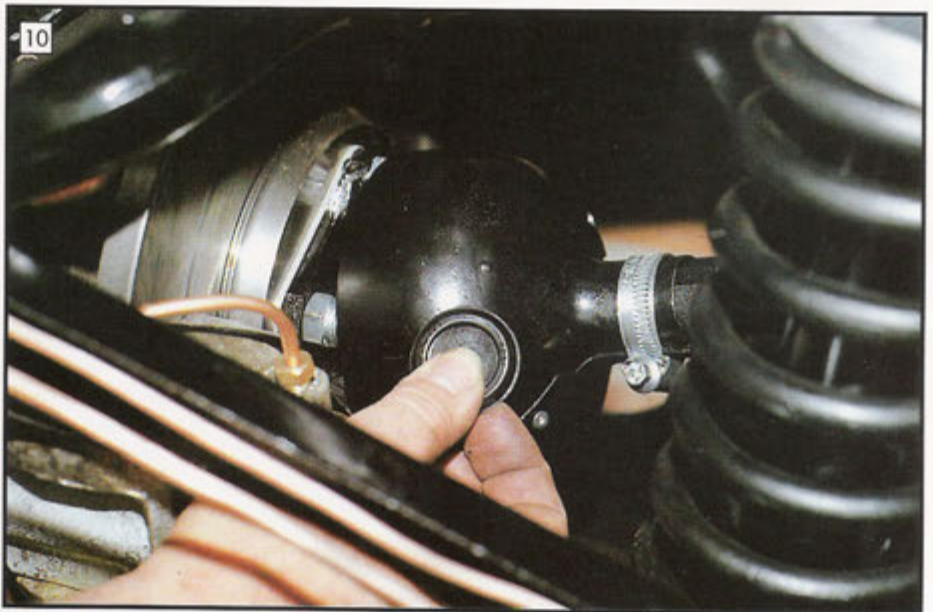
Tap lower fulcrum shaft into position, displacing dummy shaft in the process. Replace the Nyloc nuts, tightening to a torque of 55lb/ft.



Replace slotted nut and washer to secure hub to shaft. Fully tighten to a torque of 140 lb/ft. Replace split-pin by entering through the access hole in hub. It may be necessary to rock the nut back a little to get the split-pin in.



The brake pipes can now be plumbed in. We used the easy to bend, long lasting copper pipes, bought as a vehicle set from Automec (0280 822818). There is a three way junction secured to the frame. One pipe from each caliper and the flexible hose to join the circuit on the body. There is an acute bend to make to one of these junctions and extreme care should be taken to avoid 'closing' the pipe.



Secure cover to shaft with a Jubilee clip and place a bung in the grease nipple access hole.



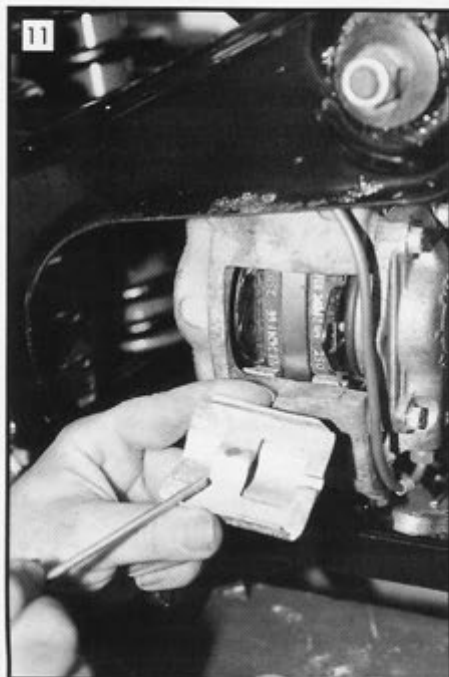
Replace the lower pan to cradle by bolting to lower wishbone brackets and around the edge of the cradle. Note that the brake pipe retaining clips running along the front of the frame are secured with these bolts.



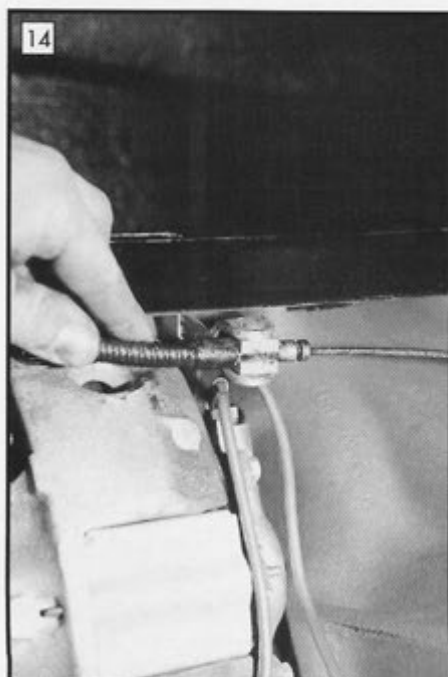
Replace grease retaining caps on hub carrier. These will need tapping home. Use an old socket to prevent damage to the cap.



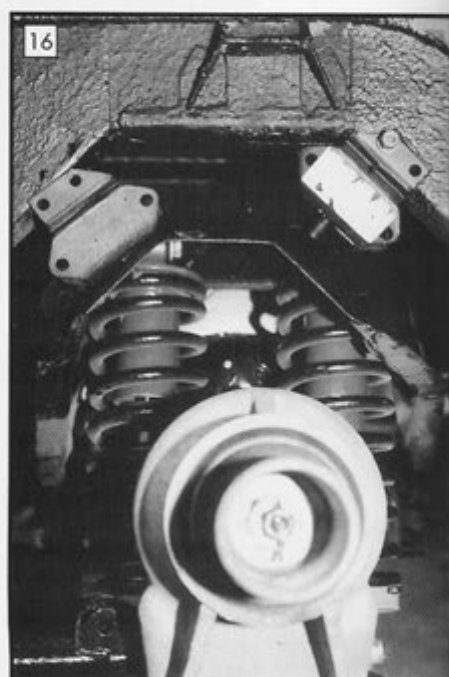
Covers protecting the four driveshaft universal joints are in place. Position them over the shafts so that the bell end covers the joint and if a grease nipple is fitted, the hole in the cover corresponds. Align the pop-rievet holes and rivet in place.



11
Fit new brake pads and in the case of the 'S' type saloon, put the cover in place and secure with the pin. Ours had perished but new ones were obtained from Bailey's Brakes.



14
Before jacking in place, position handbrake cable through eye of first caliper and secure to second with a clevis pin.



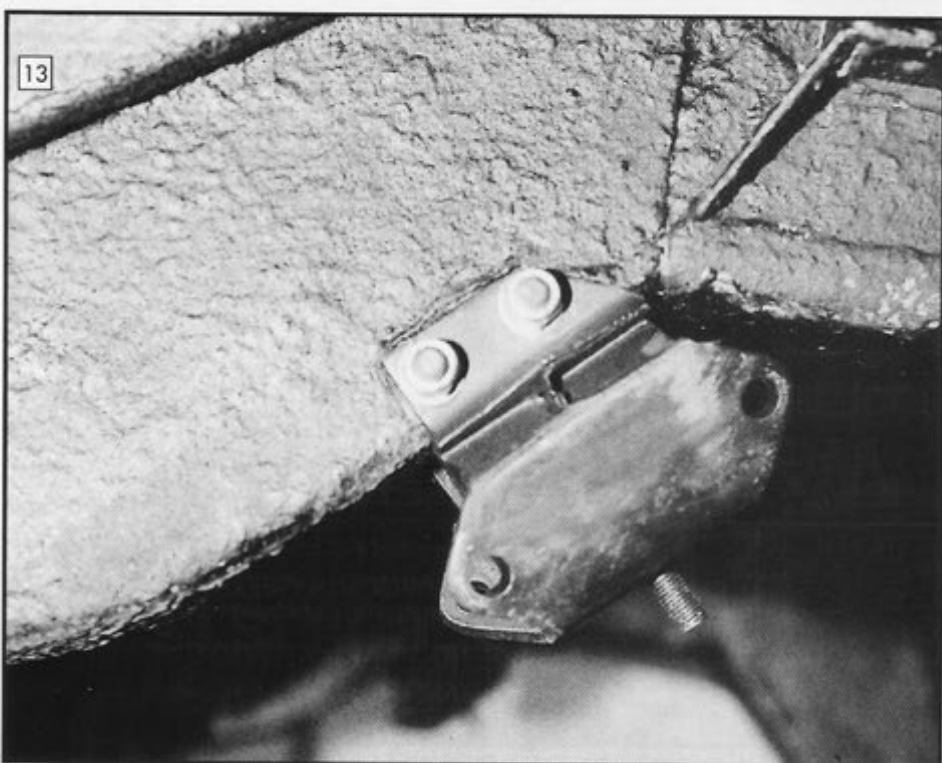
16
Try to have some help at hand as the complete unit is jacked into place, and take great care as it's heavy! Lay some old tyres around the suspension just in case the worst happens and it slips. Bolt all the mounts up securely and then turn to the radius arm mount. Apply some 'Copperslip' or similar to all bolts and a smidgen on the radius arm mount itself. Don't forget to put the safety bracket over the radius arm bolt and then use locking wire to finally secure the bolt.



12
Here the rear end is positioned ready to be lifted in place.



15
Don't forget to replace the spring that supports the handbrake cable. Hook this over the cable only when the rear end is secured.



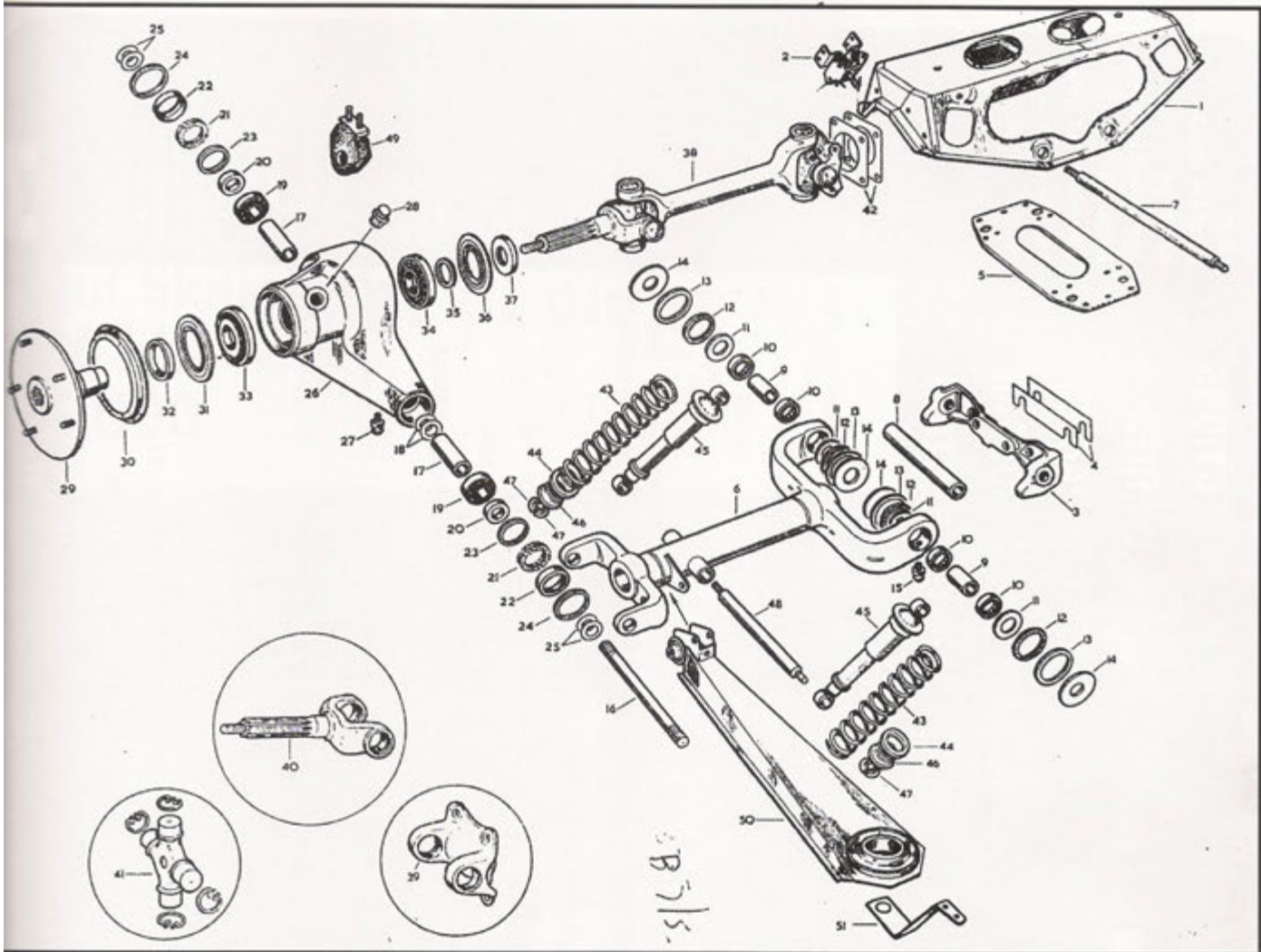
13
It sometimes helps to put a rear mount in place first and then lift the assembly up to it.

There, job done and I hope you feel a better person for it. All that remains is to fit the unit back into the car, an operation that in its basic form, is the same whatever car it is.

If you have the time, clean as much of the body usually hidden by the axle and apply a quality rust preventer such as Waxoyl. To avoid any future problems in removing the cage, coat all bolts and the radius arm locating dome with Copperslip or similar. On the 'S' type/420 saloons, try fitting the first pair of body mounting rubbers to the cradle and the second set on the car. Every little helps when you're trying to jiggle that great lump in place.

Make sure that your jack has a wide head and that you use a thick piece of wood to spread the load across the cradle's bottom pan. Do not choose a piece that exceeds this as it will invade space occupied by the lower wishbone and the unit will become unstable. You'll need some help to keep everything steady as it eases into position. Don't be an idiot and lay underneath wriggling the cradle about to line bolts up, that's a sure fire way to end up in casualty. Try wherever possible to use new nuts and bolts.

On cars fitted with wire wheels, coat the splines with a quality grease. I had an 'E' type some years ago where a previous owner had never bothered, and the only way I could remove a front wheel was to loosen the caliper bolts and free the brake pipe, remove the centre hub nut (this



...ent hammering a socket over the top
...d applying a huge amount of pressure to
...ear' the split-pin) and remove the
...hole thing from the car, physically
...washing the hub from the wheel.
...everything except the caliper was
...stroyed for the sake of a bit grease...
Now that you have a fully rebuilt unit,
...n't neglect it - stick to the service
...chedules even if that means greasing the
...ints every six months whether the car is
...ed or not. Keep to that and you will
...ways have a taut Jaguar that will be a joy
...use.
In our next overhaul series we will be
...oking at the refurbishment of the SU
D6 carburettor.

Acknowledgements

Rebuild:

Alan Slawson, specialist in rear end rebuilds

Tel: 07831163158

Brake machining:

Tim Smith, Avon Engineering,
0279 816541.

Shot-blasting:

Mike Carlton-Baker, 0277 821491.

Brake components supplied by:

Bailey Brakes, 081 459 0307.

Brake pipes supplied by:

Automech, 0280 822818.

Other parts supplied by:

Grange Jaguar, Brentwood,
0277 260793

Ken Jenkins (Jaguar Spares)

0909 732219.

Parts and Prices

| | | | |
|----|-----------|----------------------------------------------------------|--------|
| 2 | C.17198 | Body mounting rubber x 4 | £26.25 |
| 9 | C.17168/1 | Fulcrum shaft bearing tube x 4 | £9.30 |
| 10 | C.17167 | Needle bearing, wishbone x 8 | £4.55 |
| 11 | C.17166 | Thrust washer inner (on bearing tube) x 8 | £3.40 |
| 12 | C.17213 | Sealing ring on inner thrust washers x 8 | £1.30 |
| 13 | C.17936 | Retainer for sealing rings x 8 | £3.30 |
| 14 | C.17165 | Thrust washer outer (on fulcrum shaft) x 8 | £3.15 |
| 15 | C.3044/1 | Grease nipple for inner fulcrum shaft x 4 | |
| 18 | C.16626, | /1,/2,/3 End float shims x as required | £0.25 |
| 19 | C.16029 | Bearing on fulcrum shafts x 4 | £9.50 |
| 21 | C.20178 | Felt oil seals on fulcrum shafts x 4 | £0.79 |
| 22 | C.20179 | Container for oil seal x 4 | £4.60 |
| | C.8667/7 | Self-locking nut on fulcrum shaft x 4 | £0.34 |
| 27 | C.3044/1 | Grease nipple in hub carrier (wire wheels) x 2 | |
| 28 | C.18124 | Grease retaining cap on hub carrier x 2 | £2.60 |
| | JLM.9732 | Hub bearing kit x 2 | £29.00 |
| 35 | C.19110 | Spacer shims on half shaft x as required | |
| 41 | 10420 | Universal joints x 4 | £14.00 |
| 42 | C.16621 | Shims between drive shaft and output shaft x as required | £0.25 |
| | C.15349 | Nut self locking drive shaft to output shaft x 8 | |
| | L.105/13U | Split pin on hub bearing nut x 2 | |
| | C.23782 | Radius arm bush front x 2 | £12.20 |
| | C.17146 | Radius arm bush rear x 2 | £9.50 |

**Total excluding small items (grease nipples, shims, nuts and bolts),
brakes, shock absorbers and VAT.**

£491.22

The above prices are per item and as supplied through a Jaguar main dealer. If you source your parts outside of this sphere, make sure that they are either genuine parts or from a thoroughly reputable manufacturer. We have heard some real horror tales concerning spurious parts. They are not worth the pound or two saved. Shock absorbers and brake parts vary between models and these should be priced as they are needed. Some dealers offer a discount to members of a Jaguar/Daimler car club.

Diagram courtesy Jaguar Daimler Heritage Trust