Front Sub-frames, Sneaky Rust and a ‘hole’ lot more

One of the Mean n Greens faults listed on the eBay sales blurb was ‘top wishbone bushes need renewal’. This was more than evident, given away by the two front tyres which were practically bald on the inner sections but had 5-6mm remaining on the rest. A quick test drive revealed that the car handled and steered diabolically, it would be easier to dock the Queen Mary than get this beast round the bends. The lower wishbone bushes also looked perished and the steering rack mounts were swaying in the wind. A quick check on the inner wings within the engine bay also revealed a fair amount of corrosion below the shock absorber mounts. All things considered it seemed logical to remove the sub frame and carry out all the repairs that were needed in one fell swoop.

The decision was made easier by the thought of a fully assembled replacement sub-frame removed from a less fortunate car. I’d noticed when skidding this round the yard how well it drove and how sweet the steering was. Some things are worth putting to one side rather than chucking them into the eBay maelstrom!
Just knock a few bolts out and down it comes

Not quite! The XJS front sub-frame is a major piece of kit, not only does it play mother hen to all the steering and suspension parts, it also performs the Herculean task of supporting the engine - doesn’t matter if it’s a straight six or V12, it’s still one big lump to keep off the floor. There are quite a few things to consider when removing a front sub-frame, but I would say the most important two would be:

1. Are the two front jacking points in good shape and able to take the weight of the car?
2. How are you going to support the engine?

I’ve covered the front jacking points in previous articles, basically if you can jack the car up on these two points without crunching noises or the jacks punching through the floor then you’re of to a good start, but please give these areas a good inspection before you even do that. If the integrity of these points has been compromised by corrosion then they need to be fixed before you go any further.

The engine needs to be supported by a beam and chains that straddle the engine bay and rest on the strongest part of the inner wings; these can be purchased, or fabricated from very sturdy box section. Just remember when buying or making this support that it has to take the full weight of a very heavy engine, this is no place to cut corners. Once the sub frame has been removed you can also support the engine from underneath to take the strain off the straddle beam.

The good news is that the sub-frame is technically only retained to the car at four points, two large bolts at the front and two 3/8 nuts at the rear. The bad news is that there are ‘hangers on’ such as top shock mounts, power steering and brake hoses, anti roll bar clamps, steering column, earth leads and engine mounts. XJS’s also possess a very friendly and attention seeking bonnet - no matter what you’re doing at the front end it always wants to be next to you. It takes 20 minutes and two strong women to remove it; life gets somewhat easier after that, as long as the women behave.

Normally when you undo a nut and the relevant bolt turns it’s just a matter of putting a spanner on the head and carrying on. If the bolt turns when you’re undoing the front sub-frame mounts then it’s a time for rejoicing. These two large bolts have a habit of seizing into the bushes that they pass through and are a pain to remove as a consequence. If your bolts spin, count your blessings, your half way there. The other tricky blighters are the four 3/8 bolts that retain the anti roll bar brackets to the car. These are pretty tight and difficult to get at in the first place, but over the years the bolt heads corrode and lose their definition. Make sure the area around the bolt heads and the heads themselves are free from crud so both you and the socket have a fighting chance. Good quality tools, a second pair of hands and a firm application are required here. If you round the bolt heads off it gets a bit grim. On V12’s removing the coolant expansion tank gives you better access.

Once all the peripherals have been removed support the sub-frame on a sturdy long wheel base jack, remove the four retainers and drop it down easy as pie. Bit of a balancing act I’m afraid. The trick is to get support under the steering rack as well as the sub-frame; otherwise it tends to do an Olympian style back flip once free of the car.

With the sub-frame out of the way it was time to have a look at how the old boat had fared in the corrosion stakes. A renowned trouble spot on these cars is the double skinned section on the front inner wing, just below the shock absorber upper mount.
Inner wing double skinned section removed

Double skinned corrosion
This is very difficult to repair on the engine side with the engine in situ, however, with the sub-frame removed you can attack from the outside, cutting and removing the affected metal between the angle braces and chassis rail. Once removed it’s easy enough to make up a plate and locate it on the engine side of the wing, then weld this plate to the angle braces and lower chassis rail. The next step is to make up the outer plate and weld this to both angle braces and inner plate using plug welds to join the two plates together. Things are made much easier on a V12 if the air filters and expansion tank are removed. Ensure the air inlets are completely covered by wrapping strong plastic bags around them and securing with tape. The last thing you want is grinding and/or welding debris getting into the engine.

Repair panel view from engine bay

The Green n Mean had suffered corrosion on both inner wings plus an added bonus on the off side chassis rail. This rail has an internal strengthening plate just forward of the rear sub-frame mount which locates on the inner and bottom of the chassis rail. Most of this corrosion is obscured by the sub-frame itself but the give away is a circular piece of trouble just forward of the sub-frame when it’s in situ. (It resembles a squashed mushroom) Unfortunately the corrosion is not limited to this one small circle; it stretches back underneath where the sub frame was concealing it to the area of the rear mount. Ironically, it’s the inner strengthening plate that has caused the corrosion.

The quickest and easiest way to deal with this once the sub-frame is removed is to cut out a letter box sized section of the outer vertical chassis leg and do all the necessary repairs to the horizontal leg and strengthening section internally. Just be careful when cutting sections out that you don’t go through the flanges of other panels, just weaken the part you want to remove by slitting through 90% of its thickness and then just tearing it away. With all the internal repairs done it’s just a matter of making up a new letter box cover and welding it in. Quite a neat and easy repair due to a lack of those dreaded contours.
Letterbox surgery showing inner strengthening plate

Letterbox closed!
For further information and advice, please contact Just XJS

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