

## The Axles, Differentials And ...Those Swivels!

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There are several different types of differential fitted to Series Landies: broadly, the Rover type differential, the Salisbury type differential, and the E.N.V. type differential.



And a front salisbury axle,



A front ENV axle...



And



Plus a couple of shots of the rear ENV axle...



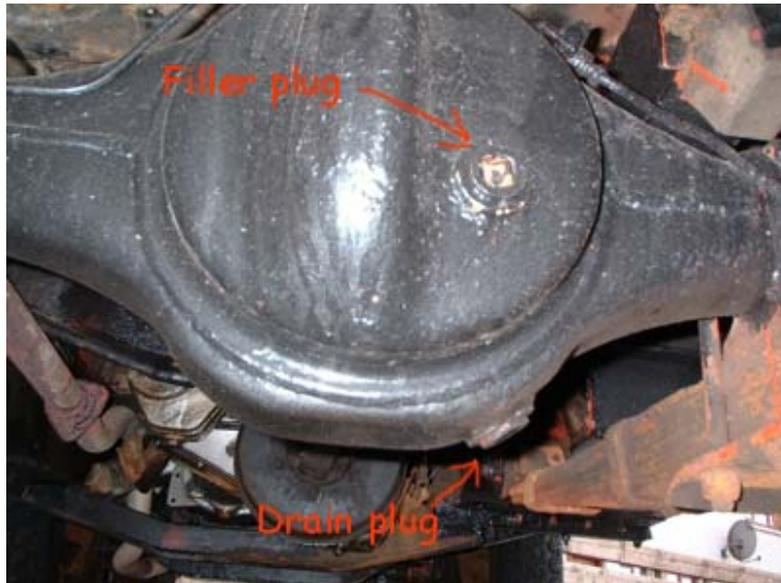
(ENV Axle photos courtesy of CCKW353A1)

The Rover differential was fitted to the front and rear axles on most SII and SIIa models, and on the S.W.B SIII model. The E.N.V. differential was fitted to the forward control models (the SIIb). The L.W.B. SIII was fitted with a Rover diff on the front axle and the Salisbury differential, which was of stronger manufacture, on the rear. It is important to ascertain just which differential your particular Landy has fitted – no matter what your Landy ‘should have’ fitted as standard, there is always the possibility that somebody may have made modifications during the vehicle’s lifetime. Hopefully the accompanying photos and drawings should help.

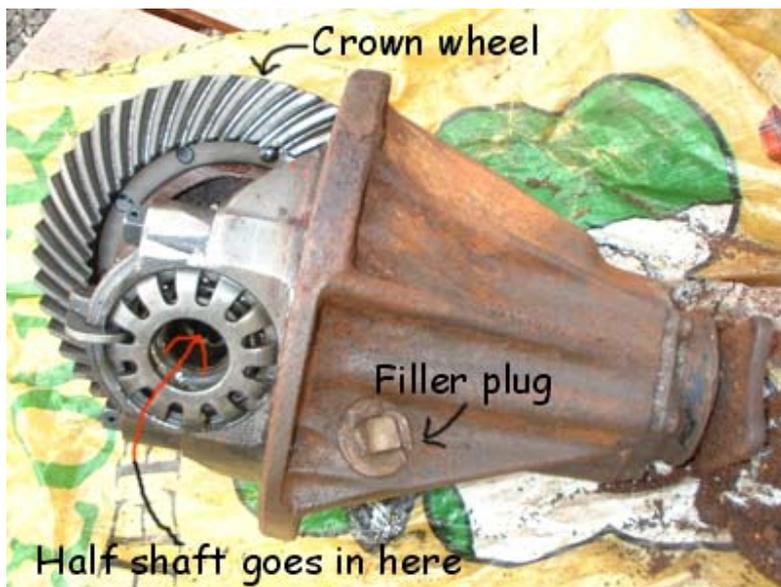
The majority of photos in this article are of a late SIII SWB which has (up ‘til now at any rate ;- ) mostly standard fittings.

On all axles there is a drain plug at the bottom of the differential; in some cases it will be a square socket that is the same size as the drive in your socket set (1/2”), and some axles will have a brass sump plug similar to the drain plug on the transfer box. The Salisbury Diff has a square nut on the bottom.

The filler plugs are different too; the late SIII has a 1/2” square socket, again the same size as your socket set (as in the photo).



Earlier Rover diffs have the filler/level plug on the body of the differential itself, (not on the axle casing like the later models) though you may find that the front axle has two filler plugs, one on the diff and one on the axle casing. The filler on the diff is usually a hexagonal brass nut on the left side of the differential when viewed from the propshaft end. The attached photo is of a differential from a 1970 SIIA LWB rear axle.



(So that's what the insides of the diff look like ... hopefully you won't need to see one too often!) You can see that the filler plug has had some modification at some point in its life, and has been filed square! The Salisbury diff has a square nut on the axle casing itself, at the back, similar to the filler plug on the transfer and main gearbox.

Now you have found the filler and drain plugs, remove the filler plug on the axle you wish to work on first ... Don't be surprised if there is a puff of air; a vacuum can form in the axle as it cools down after a run. Having placed a suitable container under the diff, remove the drain plug and allow the old oil to drain out from the axle. It will probably be a grey colour, as it is very hardworking stuff!

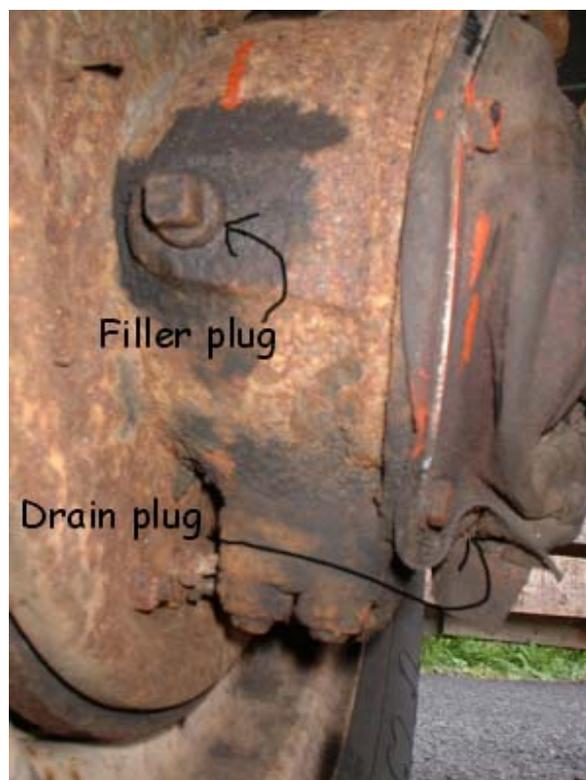
It's not a bad idea to remove the axle breather at this point too.



This is to make sure it is working and not clogged with dirt. If you shake the breather after removal, you should hear a wee ball bearing rattling inside. It is important that this is clean, as this little brass thing is what's stopping the pressure getting too high in the axle casing and blowing oil seals. If you can't hear a rattle, try blowing through the breather (YUK!) as somebody may have actually removed the ball bearing. If it is blocked, you can try cleaning it with WD40 or petrol; it will come apart with persuasion, but in all honesty it's easier to just buy a new one!

Once the axle has finished draining, replace the drain plug; a light smear of instant gasket, "Hylomar" or similar, is not a bad idea, just on the last few threads of the plug. Now refill the axle with EP90 using the appropriate filler/level plug to your axle. The Rover diff will take 3 pints (1.75ltr) of EP90, the E.N.V will take 2 ½ pints (1.4ltr), and the Salisbury rear axle will take 4 ½ pints (2.5ltr). Now replace the filler plug (again, a smear of instant gasket isn't a bad idea) and that's the axle/diff oil changed!

Now, the swivels! These are basically the same throughout the models. Even though some of the internal components changed from the early to the late series models (for example, different half shafts and bearings) this will not affect the way in which the oil is changed in the housings.



From the photograph you can see the filler/level plug, which is again similar to the transfer box filler plug. There is a leather gaiter fitted to this particular axle, protecting the chrome 'chalice' or ball from damage by loose debris, and this makes it

difficult to see the drain plug ... it is a hexagonal nut facing out at an angle from the housing.

Jack up the front of the vehicle and remove the road wheel **MAKING SURE** the vehicle is adequately supported with axle stands (DO NOT rely on the jack alone!!! Squished folk don't get driving Landies!). Remove the filler plug, and having placed your trusty suitable container under the drain plug, remove the drain plug. The oil should drain freely, and it's possible there may be some water in it; this being the main reason for changing the oil regularly! Once it has finished draining, replace the drain plug, and fill the housing up to the bottom of the filler plug with EP90, which should take 1 pint (0.5ltr), replace the filler plug, and then replace the road wheel. Repeat on the other end of the axle.

Now, you may have removed the drain plug on the swivel housing and found grease instead of oil! Why? When the chrome ball (or chalice) gets pitted with rust, it makes the oil seal to the ball fail, resulting in a persistent oil leak – usually all over the insides of the tyres. Sometimes, people then replace the oil with grease, which to them, is an easier option than stripping down the housing and rebuilding it with new parts. It isn't really advisable however, as grease cannot get into all the places that the EP90 can; the oil gets splashed about, and the grease (even the non-tracking variety) does not. In this instance, you may wish to get the swivel housings stripped and rebuilt using new components at some point; hopefully there should be an article dealing with this in the not too distant future.

You might also have "Free-wheel Hubs" fitted to your particular Landy. (There are several camps on these, whether they are any use/benefit or not ... I am not going to get involved with that argument though!) Basically these hubs work on the principal that they isolate the driving member of the hub from the half-shaft so that the hub spins freely without the rest of the axle components being engaged; allowing the road-wheel to turn without turning the half-shaft, differential, or propshaft. This is achieved by either turning a nut in the centre of the hub (e.g. M.A.P. hubs), the whole hub (e.g. Fairey hubs), or a wheel in the centre of the hub (e.g. Warn or Superwinch hubs), to engage or disengage the hub. The reason I mention the Free-wheel hubs is not that they need any specific maintenance, but that you must remember to engage these hubs on a regular basis so that the oils in the swivel housings, and the differential, get stirred occasionally and lubricate the bearings and bushes within. It would probably be okay to run the hubs engaged for a while every hundred miles or so to do this.

Well, that's all your axle oils done, time to get behind the steering wheel again, and enjoy your Landy!