

Installation instructions for damper replacement hydro assist.

Ensure that your comprehensive kit of parts supplied is complete.

Parts in the kit consist of:-

- 2 Hydraulic fittings for the top and bottom of the power steering box,
- 2 Copper washers for the above fittings,
- 1 Adapter fitting to go into the bleed nipple of the power steering box,
- 2 Hydraulic fittings to go into the assist a ram,
- 2 Dowty washers for the above fittings,
- 1 Tee piece fitting.
- 1 300mm braided hose pipe,
- 1 600mm braided hose pipe,
- 1 900mm braided hose pipe,
- 1 Rose joint complete with bushing,
- 1 Modified hydraulic ram,
- 2 Polypropylene bushes,
- 1 Modified domed washer,
- 1 Nylock nut.

Tools you will need:-

- 9/16" spanner,
- 22mm spanner,
- 17mm spanner x2,
- 19mm spanner,
- Container for catching old power steering oil,
- Replacement power steering oil,

Park your Landrover on firm level ground ensuring the hand brake is applied.

Carefully clean around the whole of your power steering box to ensure there is no risk of dirt entering the hydraulic system when pipes or fittings are removed.

Remove the original steering damper from chassis end (19mm spanner) and from steering rod (17mm spanner x 2)

Retain the m10 bolt and nut removed from the steering rod end of the old steering damper for use later.

Using a 9/16" spanner remove the link pipe that goes from the top of your power steering box to the bottom of your power steering box.



Power steering fluid will leak out of the 2 corresponding holes once this pipe is removed ensure you catch this waste oil with an appropriate container.

Fit the 2 hydraulic fittings for the top and bottom of the power steering box complete with their corresponding copper washers to ensure they do not leak.



Fit the supplied tee piece to the bottom fitting (leave slightly loose until pipe work is fitted).



Remove the bleed nipple from the top of your power steering box, replace the bleed nipple with the supplied adapter fitting. Retain the bleed nipple somewhere safe in your vehicle should you need to revert your steering back to normal in the future.

Assembly of the assister ram

Ensure the rose joint is securely attached to the end of the ram piston and slide one polypropylene bush onto the pin on the other end.

Push the bush end of the ram through the fixing position hole at the chassis end.

Slide on the second polypropylene bush followed by the modified washer.

Wind on the nylock nut and tighten with a 22mm spanner.

Remove the 2 protective dust caps from the ports of the assist a ram.

Pull the piston out of the ram until the rose joint lines up with the fixing position on the steering rod.

Fit the m10 bolt that had been saved when removing the steering damper earlier.

Attach the 2 hydraulic fittings to the assist a ram complete with the supplied dowty washers.



Assembly of braided hydraulic pipe work

Leave all pipe fittings loose until you are happy with their position and routing, the JIC fittings on the pipe work provided requires tightening down finger tight then turning one more flat with a spanner .

Run the shortest of the 3 pipes from the top rear of the power steering box down to the tee piece.

(this pipe is long enough to route along the same position as the original link pipe or along the top and then drop down as I have done)

Run the middle length pipe from the tee piece to the assist a ram fitting closest to the piston rod.



Run the longest length pipe from the bleed nipple position down to assist a ram fitting closest to the chassis.

With all three pipes loosely fitted it should be possible to adjust their position such that there are no sharp kinks in the hoses or any chance of the pipes either rubbing on any engine or body components.

Once happy tighten up all fittings.

Power steering oil re fill

Fill up the reservoir of the power steering system with the appropriate power steering oil.

Start up the engine and top up the fluid reservoir.

With the engine still running slowly turn the steering from lock to lock.

With the wheels pointing forward check the reservoir and top up as necessary.

Finally check all fittings for leaks.

Steering system restore

Should you need to temporarily restore the power steering system back to original e.g. when doing long distance road work, simply slacken the hose that fits to the original bleed nipple position, undo the adapter fitting and re fit your original bleed screw, remove the short pipe from the tee piece, remove the tee piece and fit the short pipe into the hydraulic fitting.

Tie up the two pipes from the ram so they will not hang down or foul on any part of the vehicle, do not block these pipes.

Place a suitable container under the free ends of the two pipes then turn the steering from lock to lock allowing excess fluid to run out of the now disconnected pipes.

Enjoy!

The travel/stroke of the assist a ram is very close to the travel of the steering rod.

I have fabricated the Assist a ram to fit in place of the steering damper with the front steering rod in its factory position.

If you have fitted longer or shorter after marked front steering rods you will need to adjust the length of the front rod.

On full left hand lock (steering held tight left hand down the rod of the Assist A Ram is both fully into its cylinder and not obstructing steering travel.

The travel can be checked by removing the m10 bolt from the drop arm end of the steering rod and ensuring the steering won't move any further or the rod go in any more than 5mm.

As a guide the length of the front steering rod from drop arm ball joint to steering swivel ball joint should be approximately 925mm 36½"

Disclaimer

This assist a ram kit is intended for the assistance of the steering when coupled with larger than normal sized off road tyres.

As such it has not been homologated for use on the road.

It is your responsibility to familiarize yourself with the changed behaviour of your steering system.