Quadra-Trac Chain Replacement

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The patient - '77 Cherokee Chief S, 401, AT, QTw/ reduction unit, 145K miles - first chain replacement to the best of my knowledge

Parts I used - Chain, 2.5qts of Quadratrac fluid, Gasket/seal kit (although I only used the gasket for the reduction unit, my seals where fine), 10" of I don't know what size vacuum hose, Blue silicon sealer, lots of rags & newspaper, Brake cleaner

Tools I used - 3/8" drive Sockets & extensions (1/2", 9/16", 7/8"), 1/4" drive socket (9/16"), Hammer, Flat screw-drivers, Combo wrenches (1/2", 9/16"), Vise-grips, Razor Blade, Drain pan, Oil suction gun

I did this in my garage, with the front-end on jack-stands, no "special" tools required. I'm just an average "wrench".

While it is easy to get underneath my Cherokee (1.5" lift, 32" tires), you'll want to raise at least the front to have room to move things around AND also so you can turn the front drive-train to get things position while putting things back together.

Most of the work is just dirty and messy, nothing really non-obvious about the disassembly & assembly. Took about 5 hours not including warming my hands, lunch, drying time for silicon sealer.

The article in the Sept '97 Petersen's 4Wheel & Offroad was handy. Some good pictures including the 4wd locked sensor that must be removed to get to one bolt. Also, 4wd Hardware Inc. catalog has a nice exploded view if you don't have manual or parts book.

I marked a couple places with "**" to indicate steps that would speed things up if "only I'd known" or places to pay special attention ...

- **, Wash, wash, wash the underneath again before you start. Even though I had washed it at the pressure wash, I wish I had done it some more as there was still lots of fine mud/dirt falling on me while I worked.

- Remove lower drain plug and let fluid drain while doing some of the next steps

- Remove the rear drive-shaft

- Take speedo cable, 2 vacuum lines, wire to 4wd locked switch loose and place out of the way.

- Take reduction unit shift lever loose by removing clip pin (it's not a cotter-pin, just a clip)

- Remove bolts from reduction unit and slide back a little ways to let fluid out

- Once all fluid is out, you may want to do the standard chain slack test using the access hole with the littlest plug in it. I was curious - mine old chain had about 1.25", new one had about 0.25"

- Remove reduction unit, this piece is heavy and you must rotate a bit (15 degrees?) to clear the gas tank and get it out. When it comes off the planetary gears, it's all yours to hold, be ready! Note that there are 3 types of bolts.

- **, Remove bolts from back cover on transfer case. Of course up to this point, things have been easy. Here's where you hit "that one bolt" that slows you down. It is right behind the 4wd locked switch, so you must first remove the switch. (Again, see Petersen article, top of pg 149 - you can see it from underneath) It's real tight there, but a 7/8" with 3/8" drive ratchet will just fit. Mine had a small pebble between the bolt and switch that kept the socket from seating at first. After the switch it out, to get to the bolt, you need a short-throw 1/4" ratchet with a 9/16" socket. It's tight in there ...

-Note, I left all of the vacuum shifter apparatus for the differential locking in place during the whole operation

- Once that bolt is out, double check you got all the bolts out. I start trying to split the case and found I'd missed a bolt in the shadows, oops.

- Split the case using flat screwdrivers and work slowly. There are two guide pins, one top and one bottom, you should give a shot of liquid wrench and tap lightly. Note that my case has no rubber seal between the halves, just silicon sealer. So if you badly scar the nice flat aluminum surfaces, you may have a hard time sealing it. With a bit of work, the case starts spreading and the last of the fluid comes out.

- **, Now for some more heavy parts. When I pulled the back plate off, all of the gears and chain came with it, be ready! I suppose you could work it off and leave the gears/chain behind, but at least in my case, that wasn't how it naturally came off.

- Now it's all apart, time to clean everything in your favorite stuff. I just used brake cleaner. The inside was in great shape. I didn't bother to take the differential apart.

- (Btu - there was some discussion awhile back about whether the case fluid and reduction unit fluid were "connected". In fast they are via two good size holes in the back plate. These are visible in the upper left hand picture on pg 150 of Petersen's article. They are immediately to the left of the gear hole on the right.)

=== time to re-assemble ===

- Remove and install new gasket for reduction unit. I used a bit of Form-a-gasket to hold it in.

- Clean the mating surfaces and dry well. Put a bead of silicone sealer, go easy. I used the Blue variety. I did it at this point and by the time I had the gears in, it had skinned over a bit

-**, One of the two hardest parts is next. Getting the big/heavy gears and chain back in the case. Petersen's is right about needing a third hand. But I came up with a way that worked very well. While under the car, I set the gears flat on the ground and put the chain around them. Then grabbing the slack between them with one hand and squeezing, I applied tension to the whole assembly. It looks kinda like a figure eight like this. Then I lifted this whole thing up, putting the lower gear on first, then gradually letting more of the slack out from the center of the chain I'm holding, worked the upper gear on. Once things are started on, this is where rotating the front drive-shaft comes in handy to align things. All told, this only took 15min if you don't hurry.

- (During assembly, I would rotate things around as I went. Chain/gears are kinda noisy with no lube, but good to check for no binding, etc.)

- **, The back plate will now go back on, the only tricky part is aligning a spacer on the upper gear with a notch in the plate. I had to lay directly under it and with about a 1/4" gap between the halves, use a thin screw-driver and align it.

- Now with a gap still between the halves, it's time to gradually tighten the halves together with the bolts. The guide pins are tight enough you can't just push them together. Tighten each a bit while working around the perimeter. If you go to much on one end or the other, the guide pins will bind.

- Reinstall 4wd locked switch.

- Now comes the last of 2 hardest parts, reinstalling the reduction unit. The trick is going slowly and getting the planetary gear meshed up right. It took a couple tries, while turning the front drive-shaft with my foot pushing the front tire. (I'm 6'2" - must be some sight to see me doing this :-). Don't force things here, it just slides on when it in the right place.

- Install bolts and fasten reduction unit in place.

- Reconnect shift rod, put drain plugs back in unit

- Reconnect speedo cable, wire to 4wd switch, vacuum hoses (I replaced mine)

- Reinstall rear drive-shaft (took the opportunity to grease)

- I let the silicon sealer dry 3 hours before putting fluid in

- Fill lower part of unit, put in plug

- Fill upper part of unit, put in plug

- Test drive, starting slowly. A bit noisy for a couple blocks. Did the figure-eight thing to work the clutches, doing fine a day later. Noticeably less noisy & clunky. I replaced the xfer case mounts during the summer, things are nice and new now!