

## Installing front locking CDL housing

By Josh Salas "jycsalas"

This set of instruction divides the installation of a locking CDL front out-put housing in a 2003 Discovery II into the following sections:

1. Removal of stock front out-put housing
2. Installation of locking front out-put housing
3. Turning on diff lock indicator light on 2003 Discovery

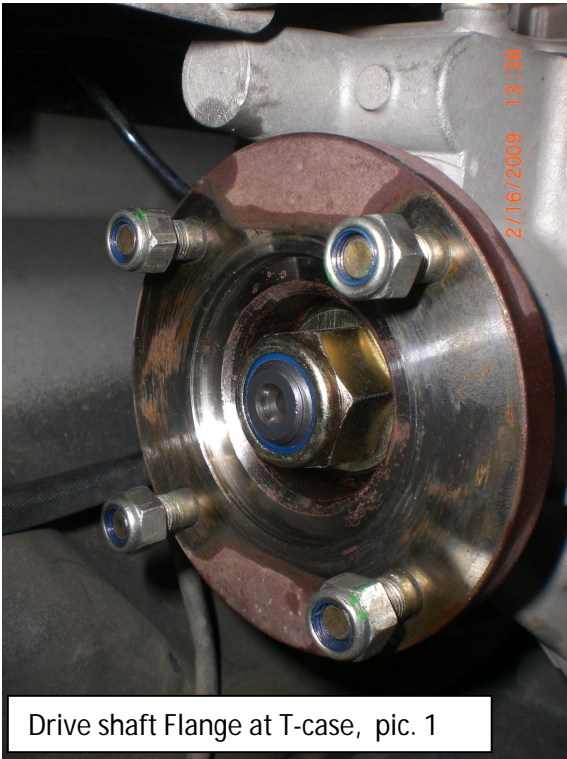
CAUTION\*\* Before unbolting anything, make sure the area you will work around and the bolts and nuts to be removed have been degreased, cleaned, and sprayed with liquid wrench. It is recommended to power scrub the underside of your Discovery first.

**Disclaimer: Proceed with this and any modifications at your own risk! Improper modification may damage or leave a vehicle immobilized.**



### REMOVAL OF STOCK FRONT OUT-PUT HOUSING:

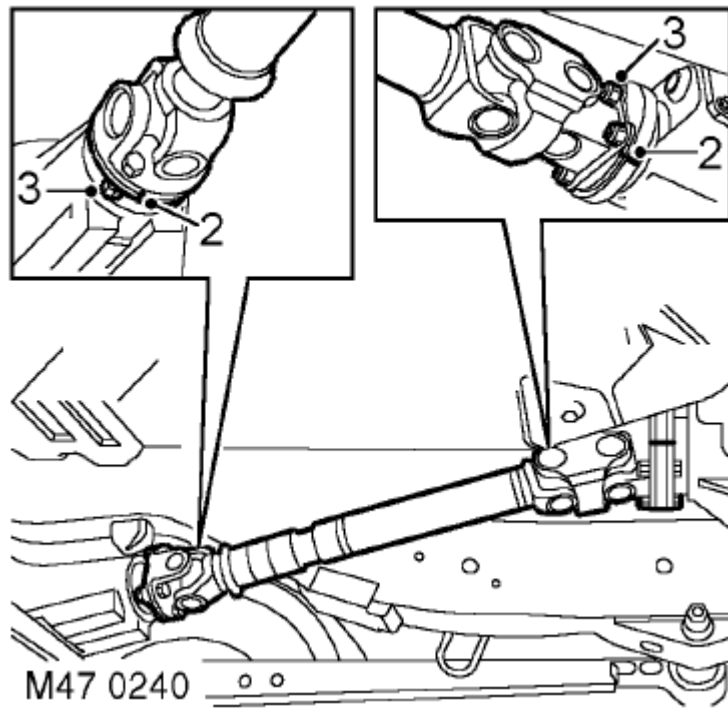
1. Drain transfer case- remove plug - *1/2 inch drive*- reinstall plug
2. Lift and properly support front end of your Discovery
3. Remove both cross beams
4. Remove front drive shaft-



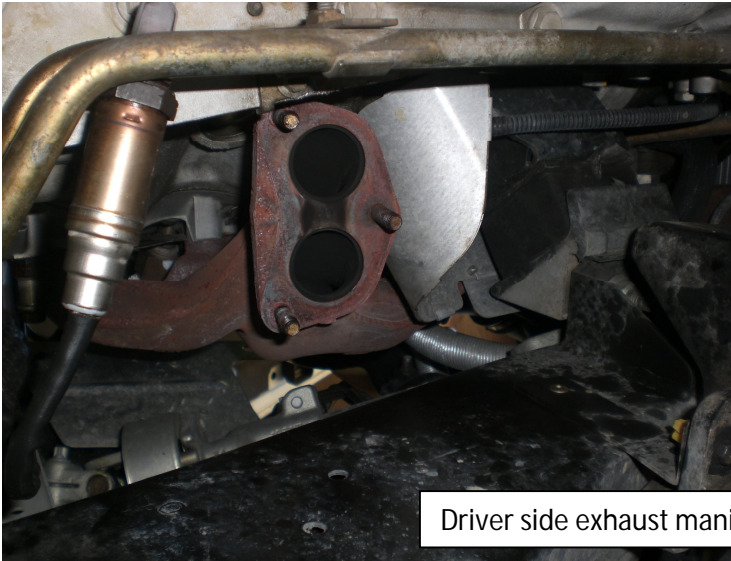
Drive shaft Flange at T-case, pic. 1



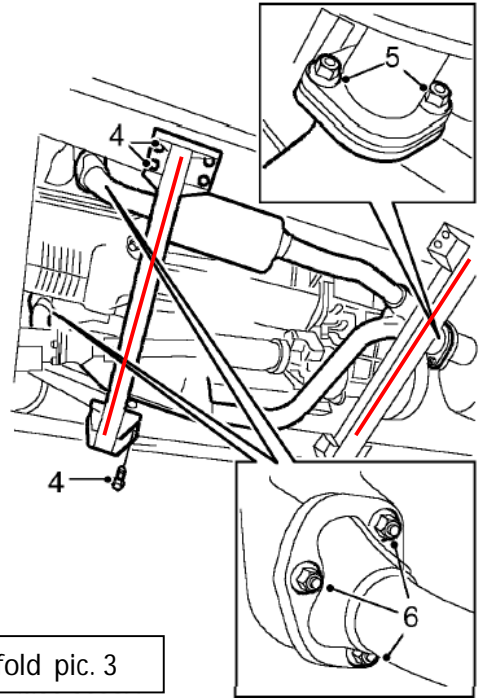
Drive shaft Flange at front axle, pic. 2



5. Remove 4 oxygen sensors or disconnect from plug.
6. Remove down pipe – collect 2 gaskets and 8 nuts (3 for each manifold, 2 for rear)- pic. 3



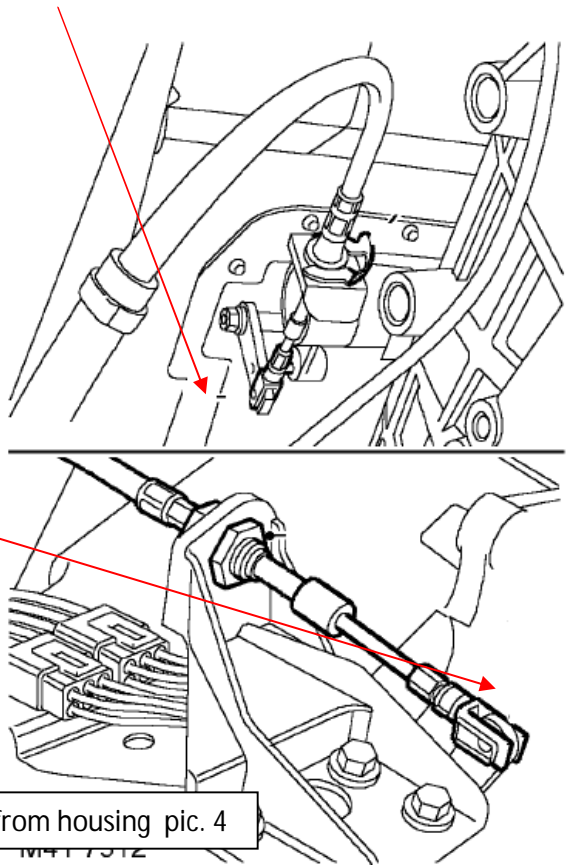
Driver side exhaust manifold pic. 3



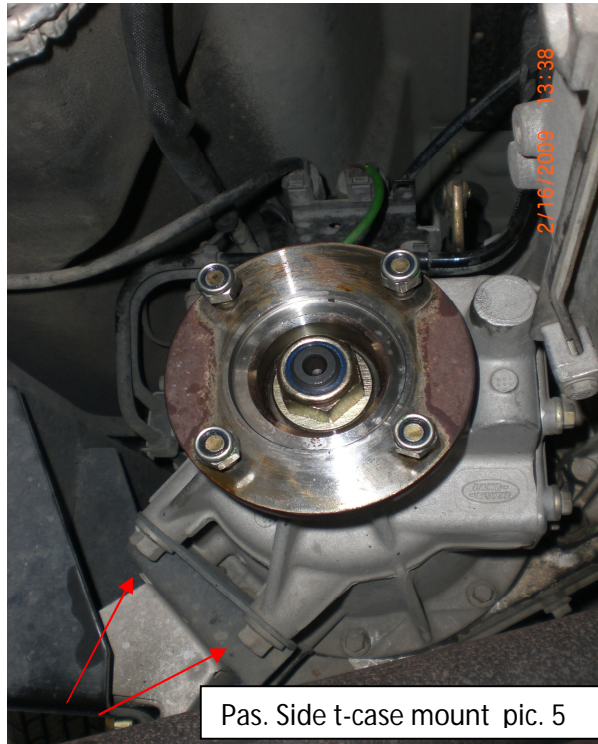
7. Remove drive shaft flange at t-case . Collect metal washer and nut—see pic. 1
8. Remove clevis pin securing shift cable to hi/lo selector lever on the hi/lo selector lever housing and if removing entire cable setup, remove second clevis pin at center console assembly -pic. 4



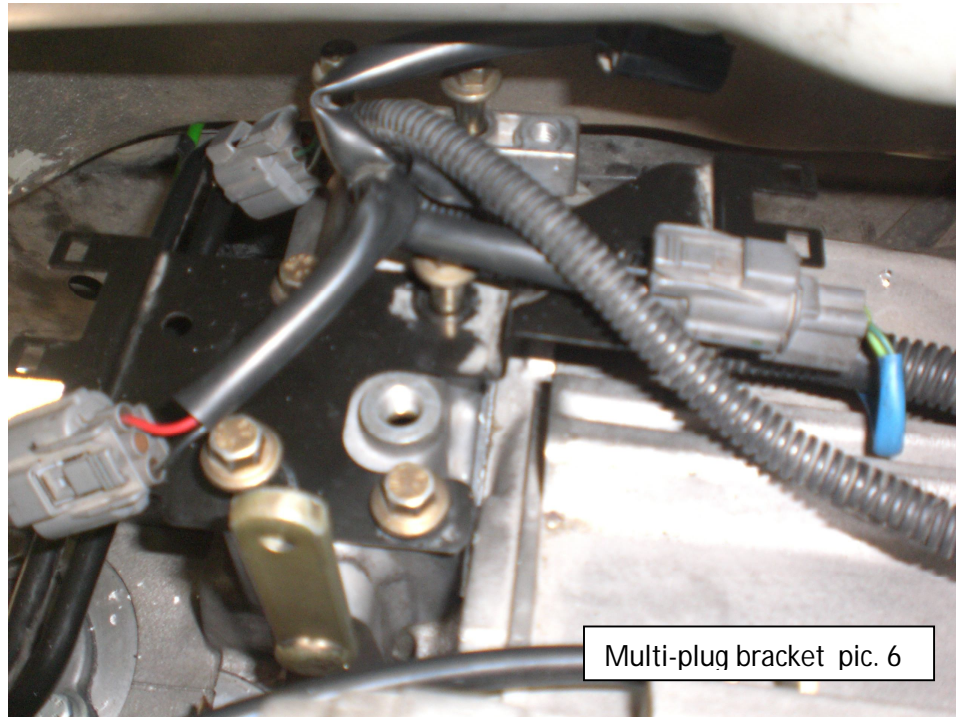
Shift cable disconnected from housing pic. 4



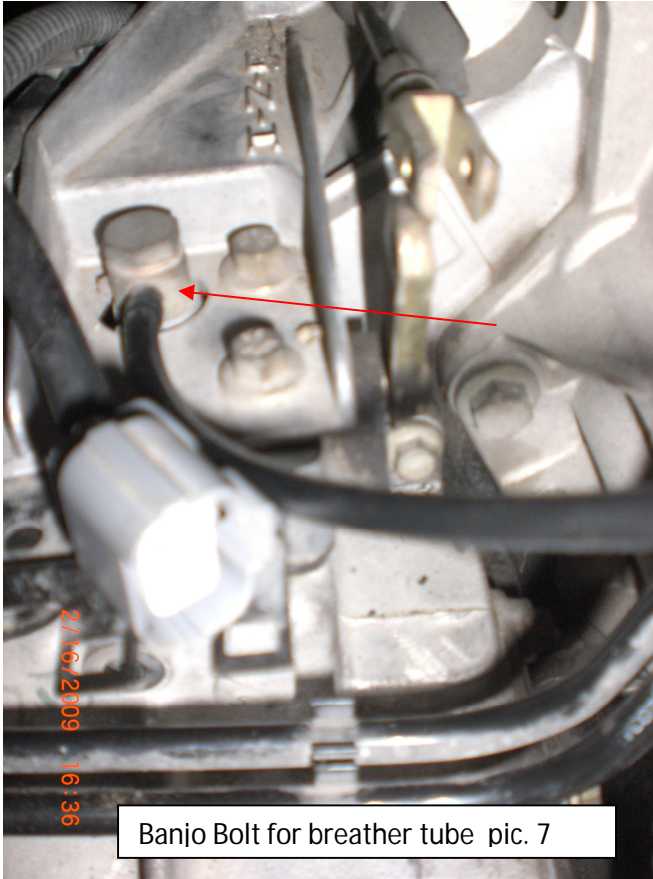
9. Remove passenger side t-case mount and support t-case with jack. This will allow up/down movement of t-case/transmission for easier removal of housing. -pic. 5



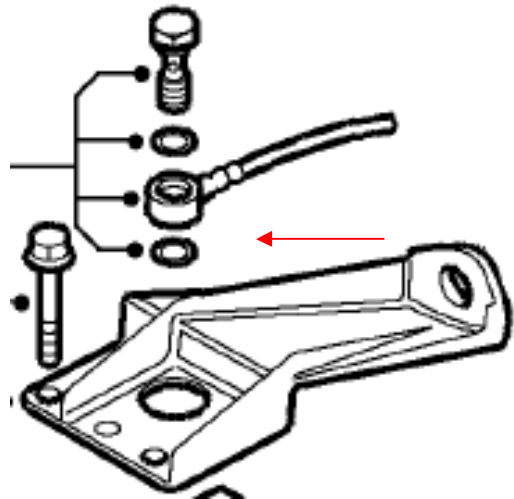
10. Disconnect all switches on the black multi-plug bracket secured to the hi/lo selector lever housing- pic.6



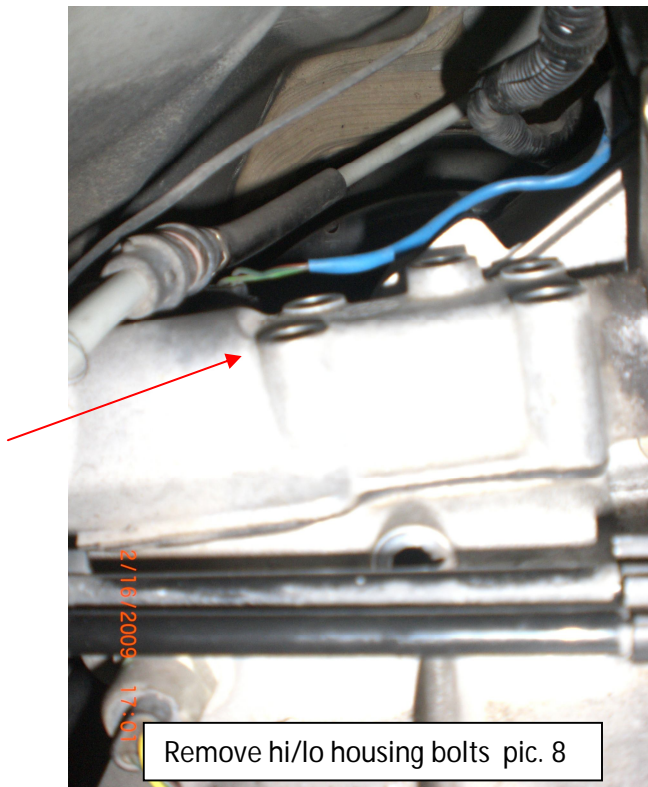
11. Remove 1 Banjo bolt on the transfer case breather tube -- collect 2 washers. Pic.7



Banjo Bolt for breather tube pic. 7

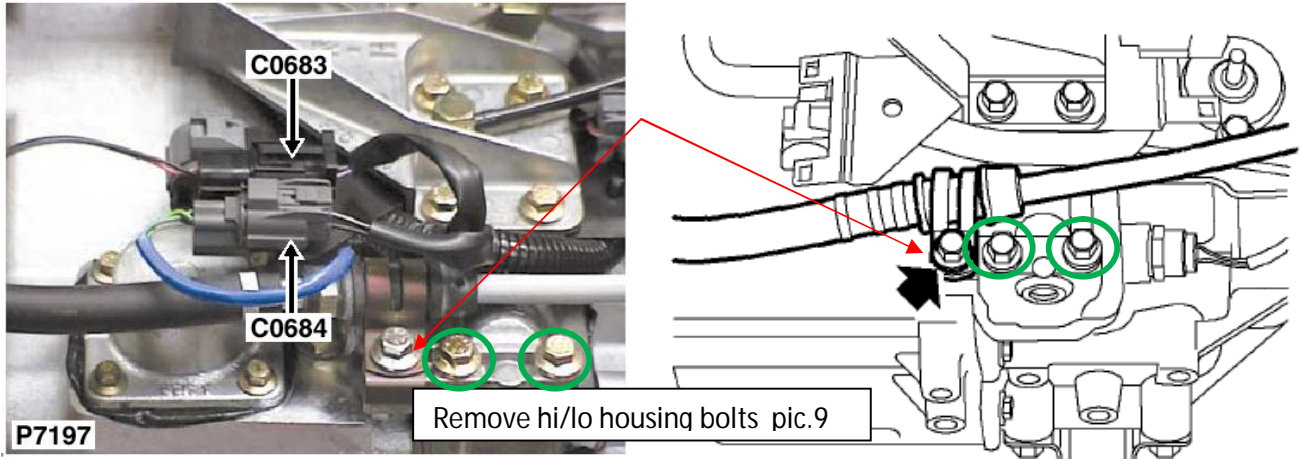


12. Remove 6 bolts securing hi/lo selector lever housing - pic. 8

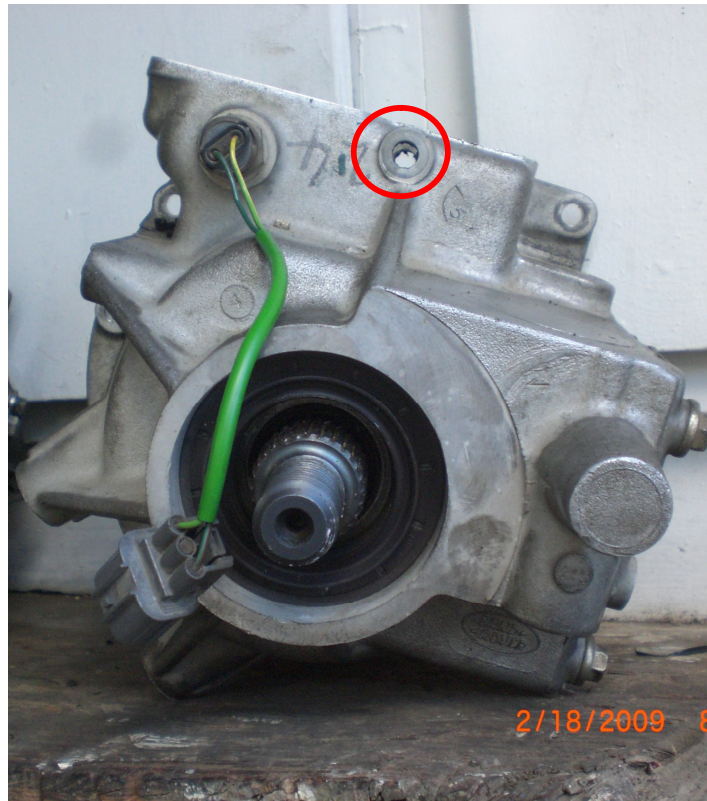


Remove hi/lo housing bolts pic. 8

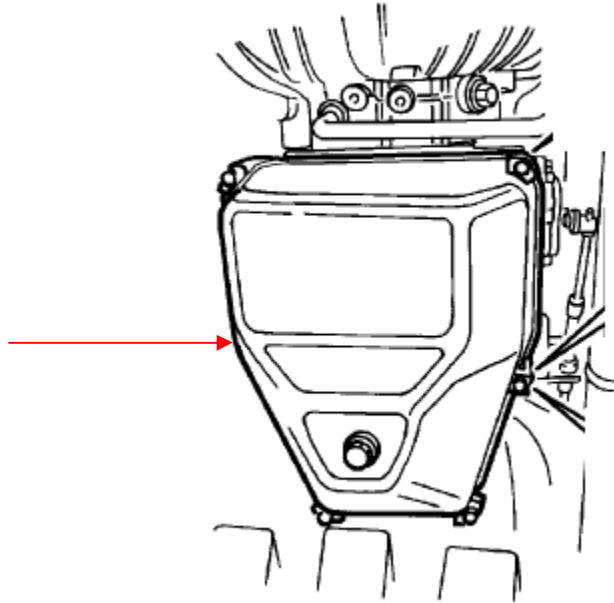
13. The only thing left to remove on top of the hi/lo selector lever housing is the bolt for the shifter cable retaining bracket pic.9. Removing the 2 bolts in green gives access to the third bolt with a 10mm ratchet-wrench. Remove high/low selector housing.



14. Remove 8 bolts securing front out-put housing – Note the position of the longest one on top.

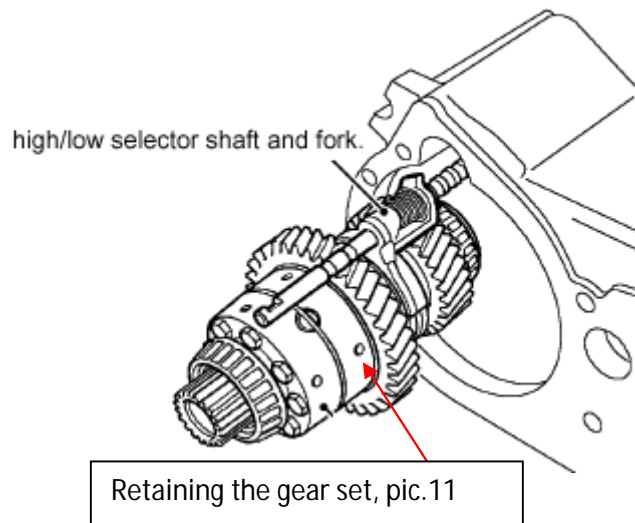


15. Remove one transmission oil sump pan bolt and anchor identified by red arrow – pic.10



16. Grab the housing with two hands and begin to wiggle, nudge, or use a flat head screw driver to pry it forwards. BE CAREFUL !! At this point the housing may un-lodge itself without warning an inch or two forward and some t-case oil will pour out.

17. Use a long screw driver or 10" ¼ drive extension bar, stick it in the hole identified by red arrow and hold the set of gears in the main casing. Pic.11



The purpose of this is to only remove the front housing while leaving the gear set in to remove afterwards OR one can attempt to remove the housing and gear set together.

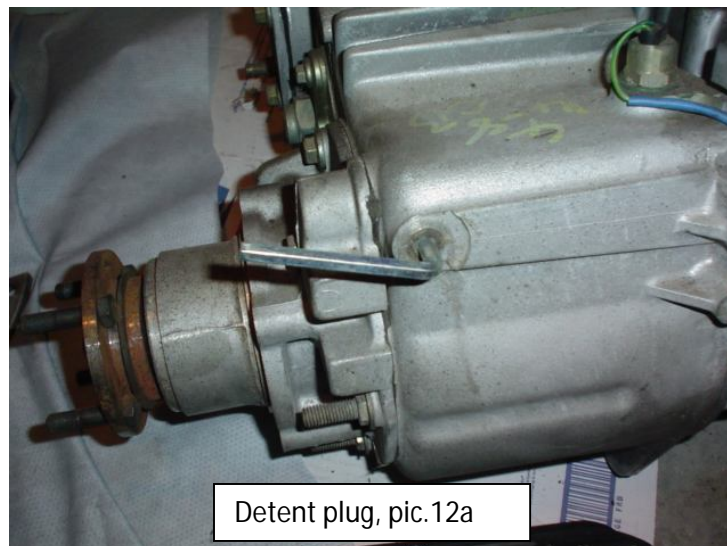
18. Pay attention to the angle of the housing as the hi/lo selector shaft may still be part way in the front or main housing. Use the jack to lower or raise the t-case to gain better clearance. Note to not lower it too much.

19. Once out, set aside. Inspect the inside of the main casing for metal shavings. Grab a magnet and stick it down this hole to retrieve the detent ball for the hi/lo selector.



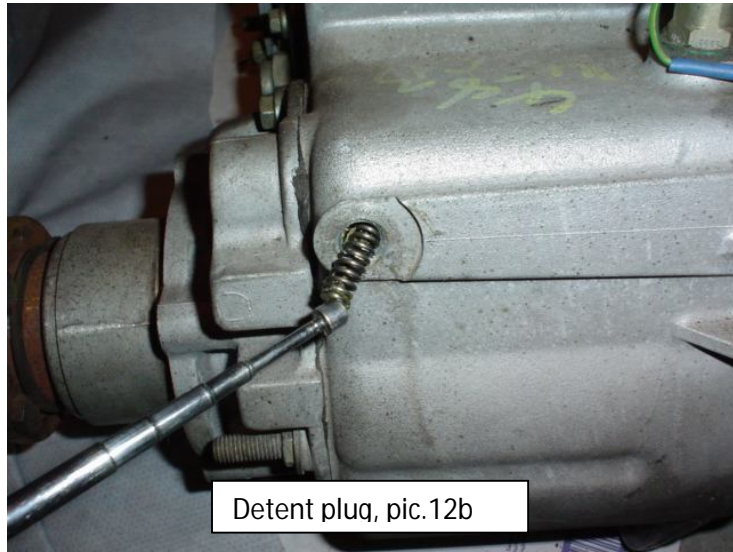
Free at last, pic.12

Or it can be accessed at the side of the main casing. See pic. 12a,b,c. Failing to remove the ball will inhibit engaging in Hi.



Detent plug, pic.12a





Detent plug, pic.12b



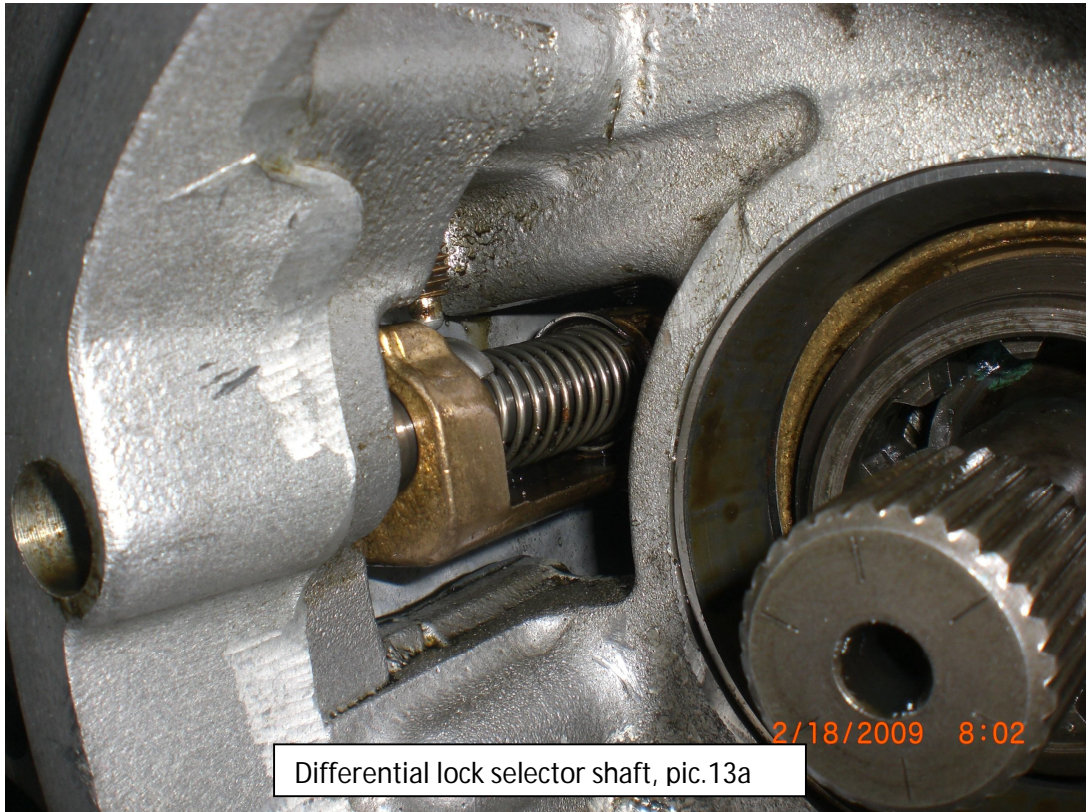
Detent plug, pic.12c

Update 03-20-09:

Make sure to Re-install the ball, spring and plug once final assembly of the CDL housing is complete. The ball helps keep the hi/lo selector shaft from moving during off road use. To re-install, shift the hi/lo selector lever to either hi range or low range to ensure ball sits in the groove of the selector shaft. Insert ball, then spring, then plug.

## INSTALLATION OF LOCKING FRONT OUT-PUT HOUSING:

1. Take the new housing assembly and clean it up real good.
2. CAREFULLY remove the gear set from the housing and retain the hi/lo selector fork. Take this time to learn how the nipple actually engages the dog clutch on the front out-put shaft. Pic.13

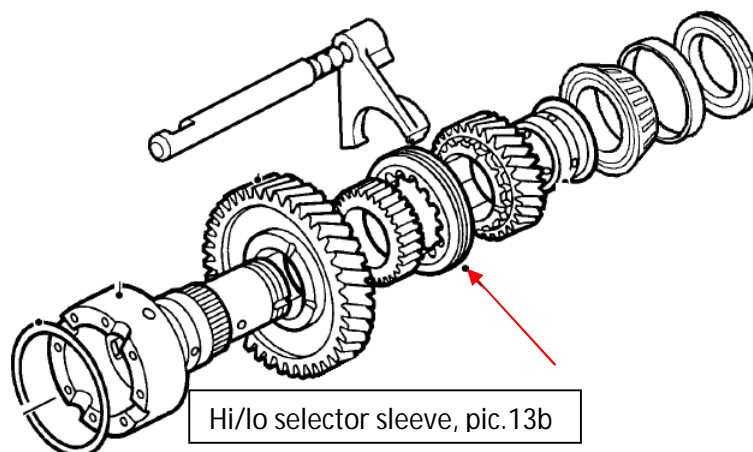


3. Take the gear set and noting its position, insert it into the main casing of the transfer case whilst aiming the hi/lo selector fork into the rear of the main casing. Ensure the selector fork shaft is lubed and that it is resting on the hi/lo selector sleeve. Pic. 13b

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### Differential components – Vehicles up to 03 model year

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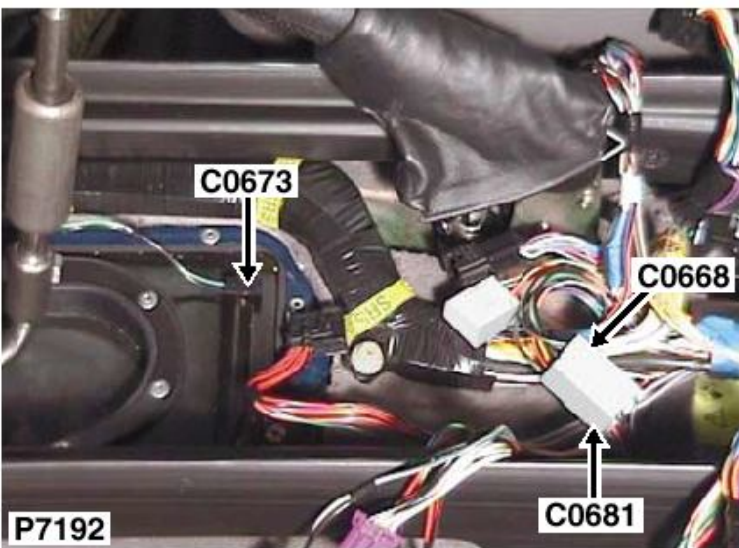


See pic. 11 as it should look like that when installing. Wiggle it and tap it lightly with a rubber mallet or wood until the low range gear (the big gear) is no longer sticking out of the main casing.

4. Lube the opposite end of the hi/lo selector shaft that will be inserted into the front out-put housing with gear oil.
5. Before installing the new housing, ensure it is fully engaged in the lock position to ensure the receiving end of the gear set fully slides forward onto the front out-put shaft.
6. Using high temp black RTV apply it on the front out-put housing following the instructions. Make sure you practice getting the housing in all the way once or twice before the final assembly.
7. Torque all 8 bolts to 25nm in a star like sequence
8. Installing the rest of the removed components is the reverse of removal. Make sure to re-fill the t-case with GEAR oil!

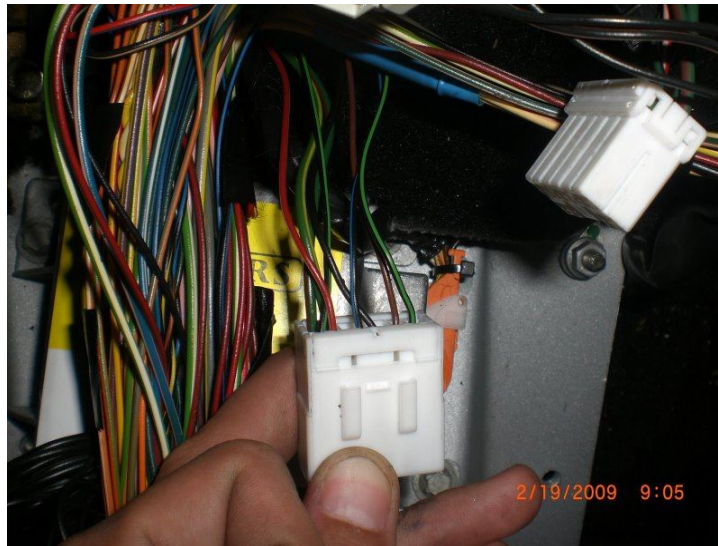
### **TURNING ON DIFF LOCK INDICATOR LIGHT on 2003 Discovery:**

1. If you were unfortunate to not have the diff-lock switch harness zip tied somewhere near your transmission or t-case and you have to cut and splice to get your diff light on, then read on.
2. Remove your center console.
3. Once removed, find connector C0681 and disconnect it from C0668

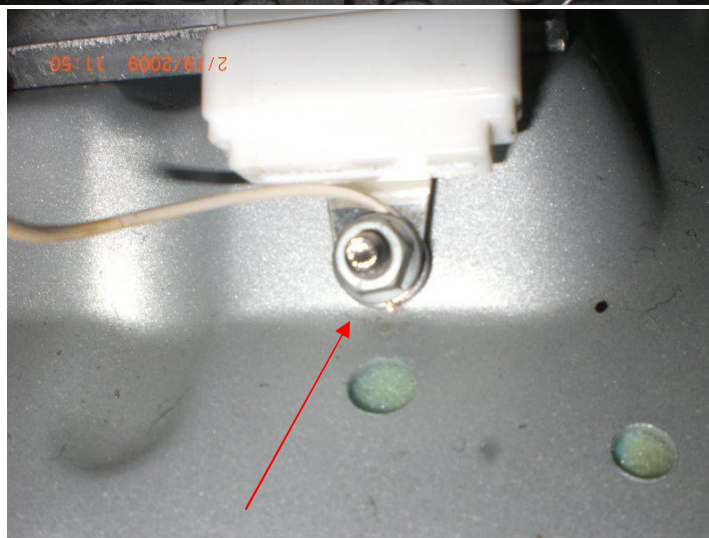
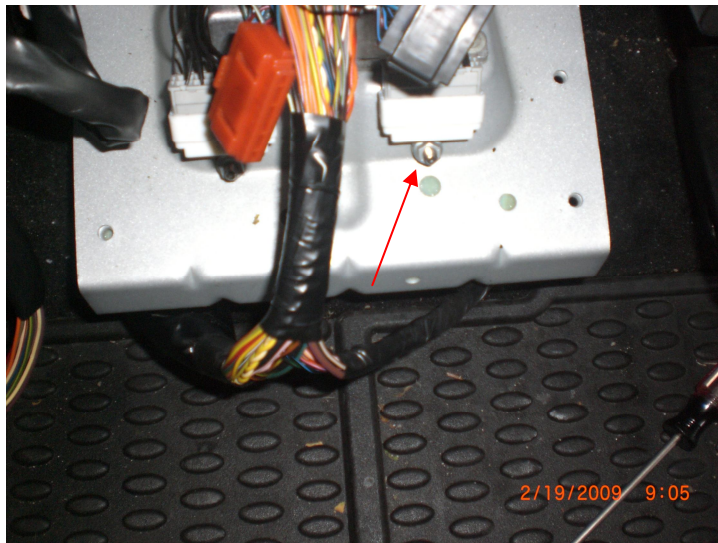


Cav	Col	Cct
1	GN	ALL
2	GY	ALL
3	NP	ALL
4	BLG	ALL
5	BG	ALL
6	RK	ALL
7	BU	47
8	B	ALL
10	BG	ALL

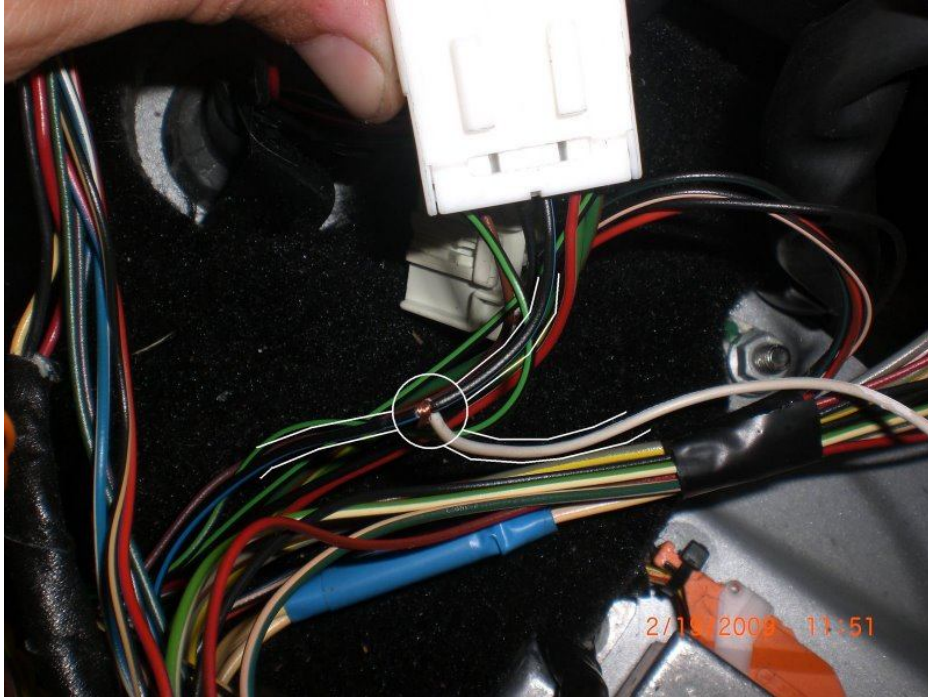
4. Grab the connector and look for cavity # 7 which will have the black/blue wire for the diff lock circuit, (circuit 47)



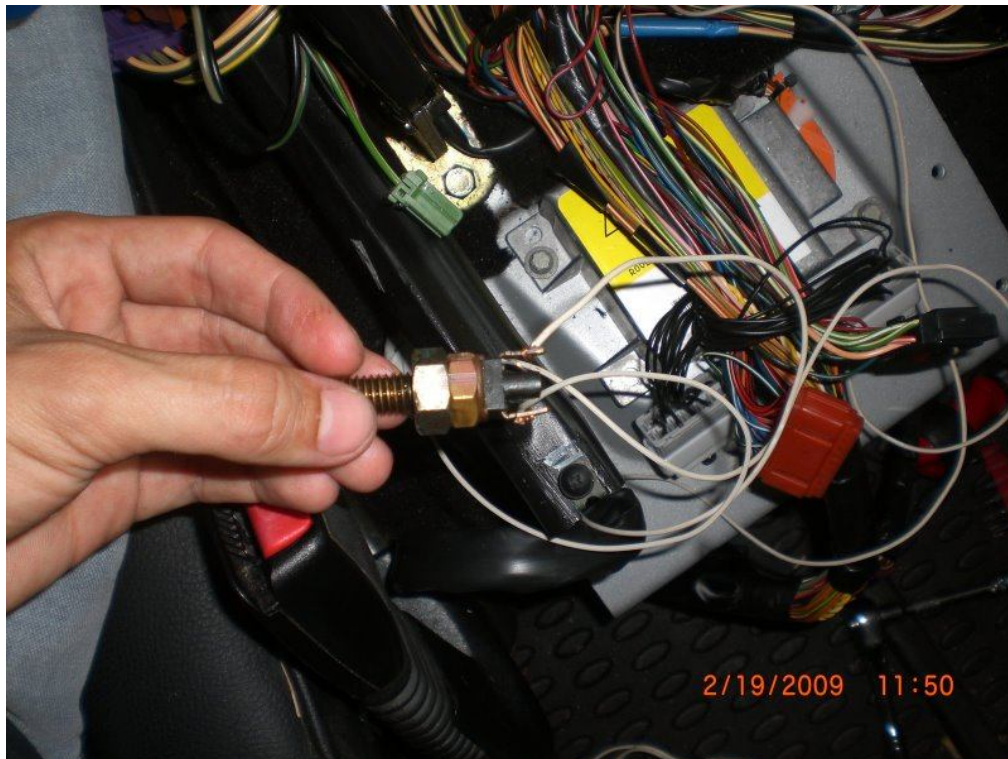
5. Create a ground on the ground connector bolt by attaching a piece of electrical wire.



6. Going back to connector CO681. Splice a wire into the black/blue wire. Make sure to leave about 2 inches from the connector. (Again, this is my rough splice for testing purposes)



Turn the ignition on, and push the diff lock switch...





7. Now all you have to do is connect female connectors and run the wiring as you see fit down to your diff-lock switch.