Wholesale
AUTOMATIC TRANSMISSIONS
03-9762 8004

Nomad
Heavy Duty Valve Body
Suitable for:

Aisin AWR10L65 10 Speed

To Suit:
Toyota LandCruiser 300 Series

WITH THE FOLLOWING ENGINES:
Toyota F33A- FTV 3.3L V6 Turbo Diesel - 2022 to present

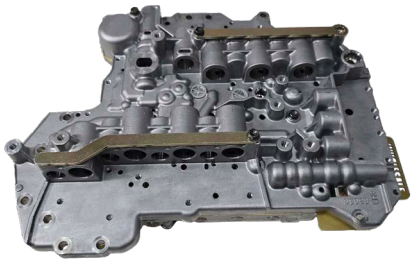
Please read through all of the instructions carefully before proceeding. If any of the information does not appear correct or the diagrams don't match your vehicle, please contact Wholesale Automatic Transmissions on +61 3 9762 8004.

Safety First

Hot engines and hot transmissions can cause serious injury. Before removing parts from the vehicle allow sufficient time for the engine and transmission to cool.

Parts List

AWR10L65 Nomad Heavy Duty Valve Body



AWR10L65 Rubber Pan Gasket

AWR10L65 Filter

Expected Installation Time: 2-3 Hours

Tools

- Socket wrench
- 14mm socket
- 10mm socket
- 8mm socket
- 14mm spanner
- 6mm hex key (Allen key)
- Strong magnet
- Magnetic parts tray
- Assembly Lube or Petroleum Jelly
- Torque wrench suitable for 6.4Nm (4.7 lbf·ft) (56 lbf·in) to 39Nm (28.8 lbf·ft) (345 lbf·in)
- Oil drain pan
- Small flat blade screwdriver
- Circlip pliers
- Small pick or pry tool

Before commencing work please take the vehicle for a comprehensive test drive. Note any existing vibrations, shift issues or DTC codes.

Your new Nomad valve body comes with retainers installed over the solenoid mounting locations to prevent additional parts from falling out during shipping.

These shipping retainers MUST be transfered to your Original valve body after the solenoids are removed.

The shipping retainers will not function correctly if they are used on the Nomad valve body when installed in your vehicle.

Failure to install the shipping retainers before returning your Original valve body is likely to result in damage to the valve body that will affect the return of your deposit.

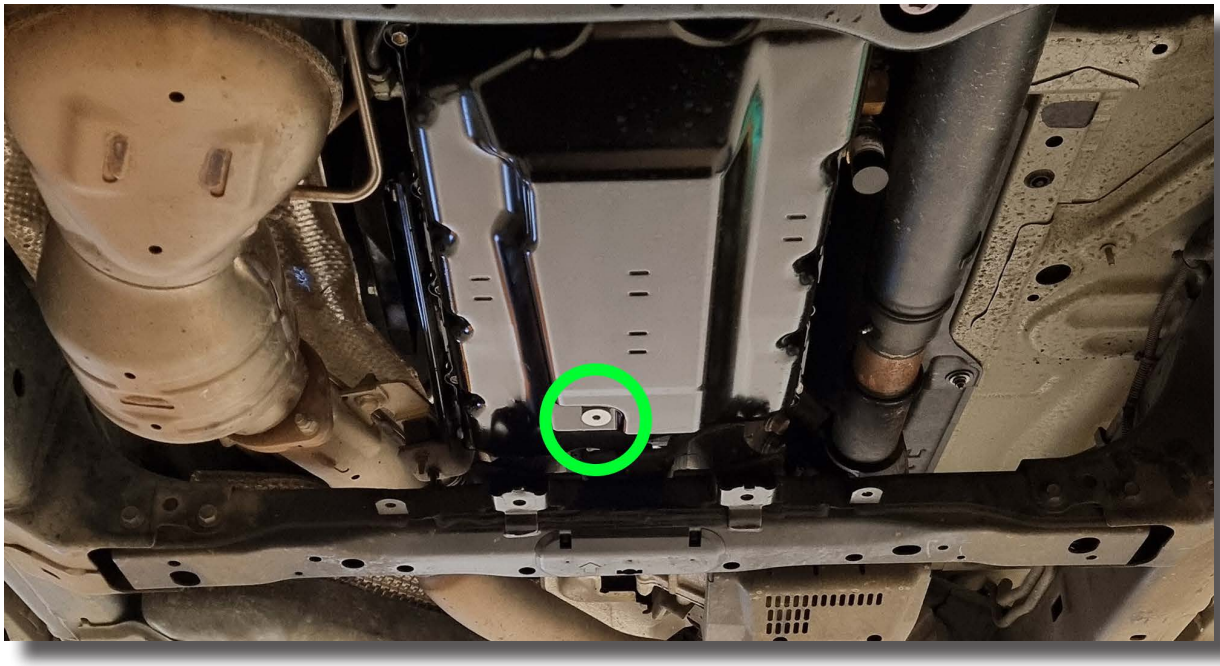
1. Road test the vehicle BEFORE installing the Nomad valve body. Ensure the vehicle is clear of any fault codes and free of any warning lights. Take special note of the shifts and how they feel. Try to use the same roads for this road test and the final road test.

2. It is recommended to use a hoist for performing the valve body swap. Please be prepared for a significant amount of transmission fluid to be spilled; there is a significant amount of fluid left when it stops dripping from the check bolt. Transmission fluid can reach temperatures that are capable of burning you, please be careful.

3. Remove any bash plates covering the transmission pan.

4. Position an oil drain pan under the Check bolt in the transmission pan. With the engine off use a 6mm hex key to remove the Check bolt and allow the transmission fluid to drain. Note that this will not drain the entire pan.

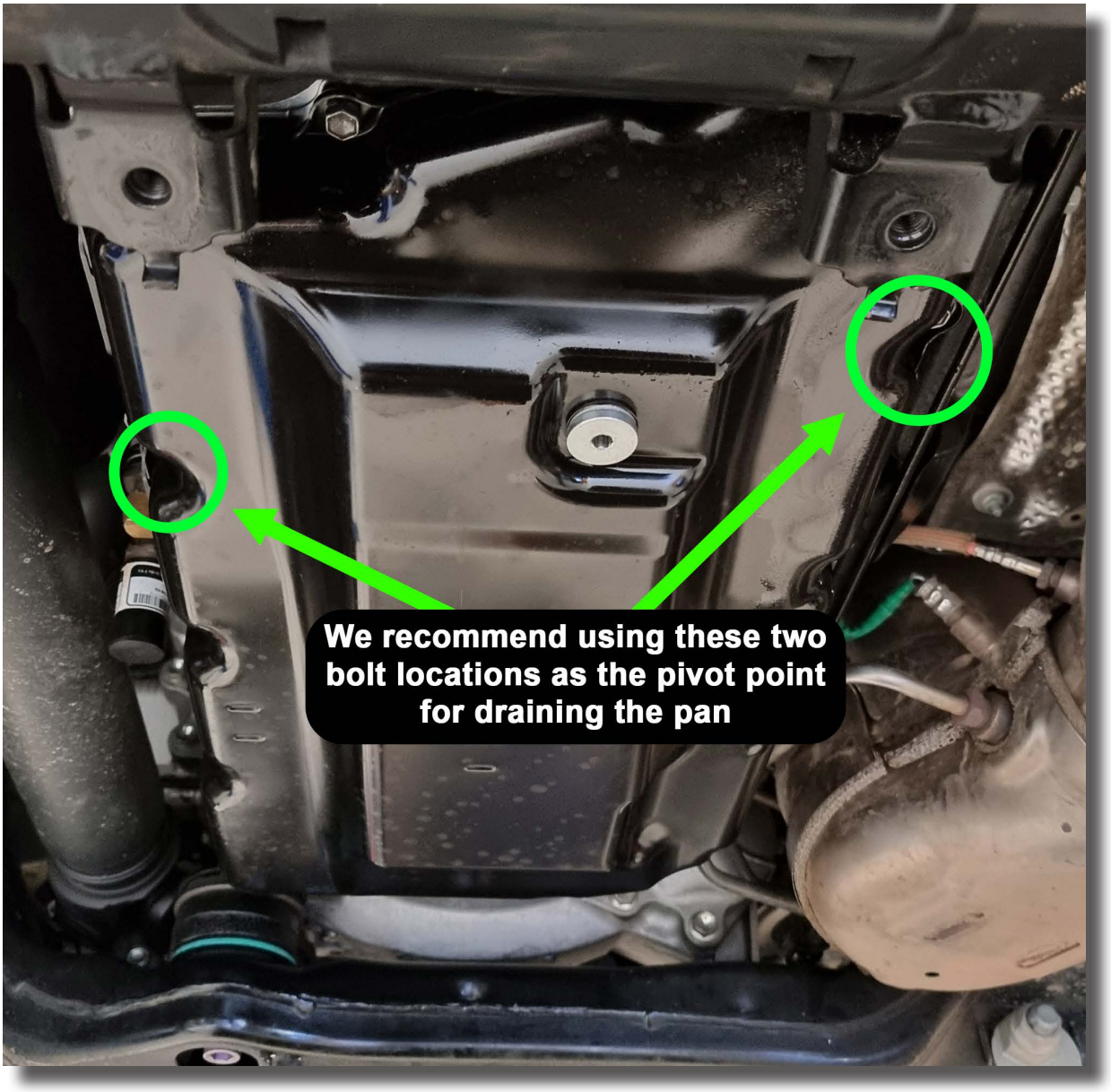
   There is an inner section of the check tube that can be removed to drain additional fluid. However, we DO NOT recommend removing this as it is extremely difficult to reinstall without cross-threading it. The final height of this tube sets the transmission fluid level, so the correct installation of this inner section is extremely important.



5. After transmission fluid has stopped draining from the Check bolt refit the Check bolt and washer - this can be finger tight as it will be removed again later.

6. As removing the Check bolt does not allow all the transmission fluid to drain out the pan will need to be removed to drain the remainder of the fluid. This can make a large mess if you are not prepared for it.

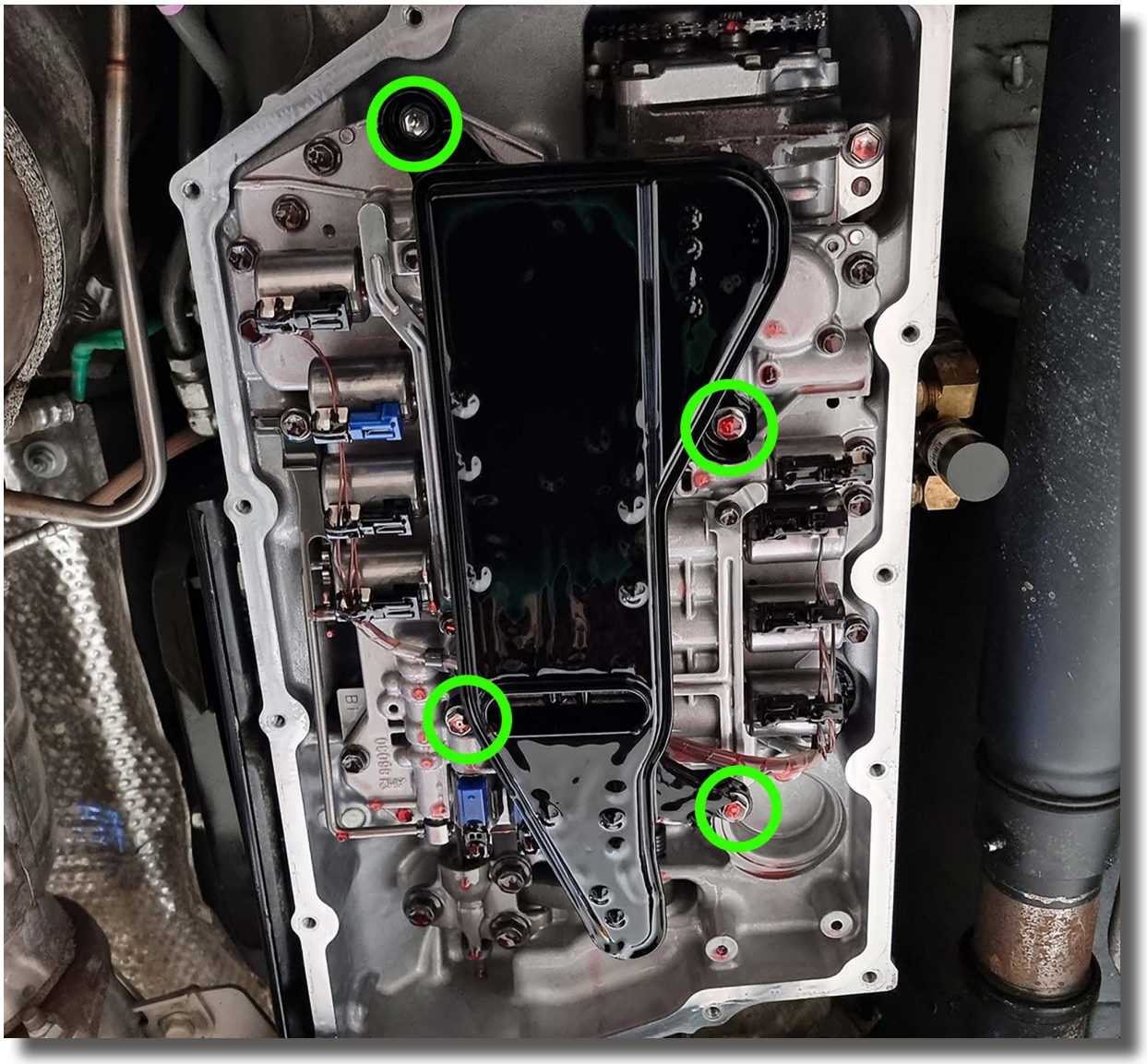
7. Pick two bolts that are opposite each other towards the rear of the transmission pan - these bolts will be removed last to allow you to somewhat control how the fluid drains out of the pan when it is removed. Remove the other 11 bolts using a 10mm socket.



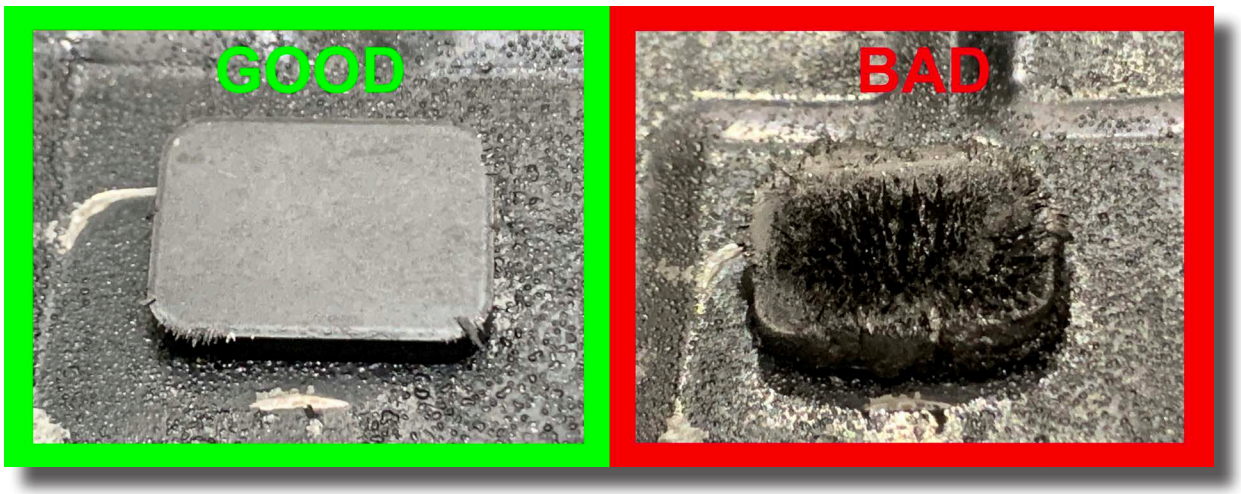
8. Loosen the final two bolts until the front of the transmission pan starts to hang down so the fluid can drain out the front. If the two bolts are loose but the front of the pan does not start to drop finger-tighten the bolts again and gently pry the front of the pan to break the seal. Then you can loosen the bolts again and allow the fluid to drain.

9. Once the flow of fluid has stopped completely remove the final two bolts and remove the transmission pan.

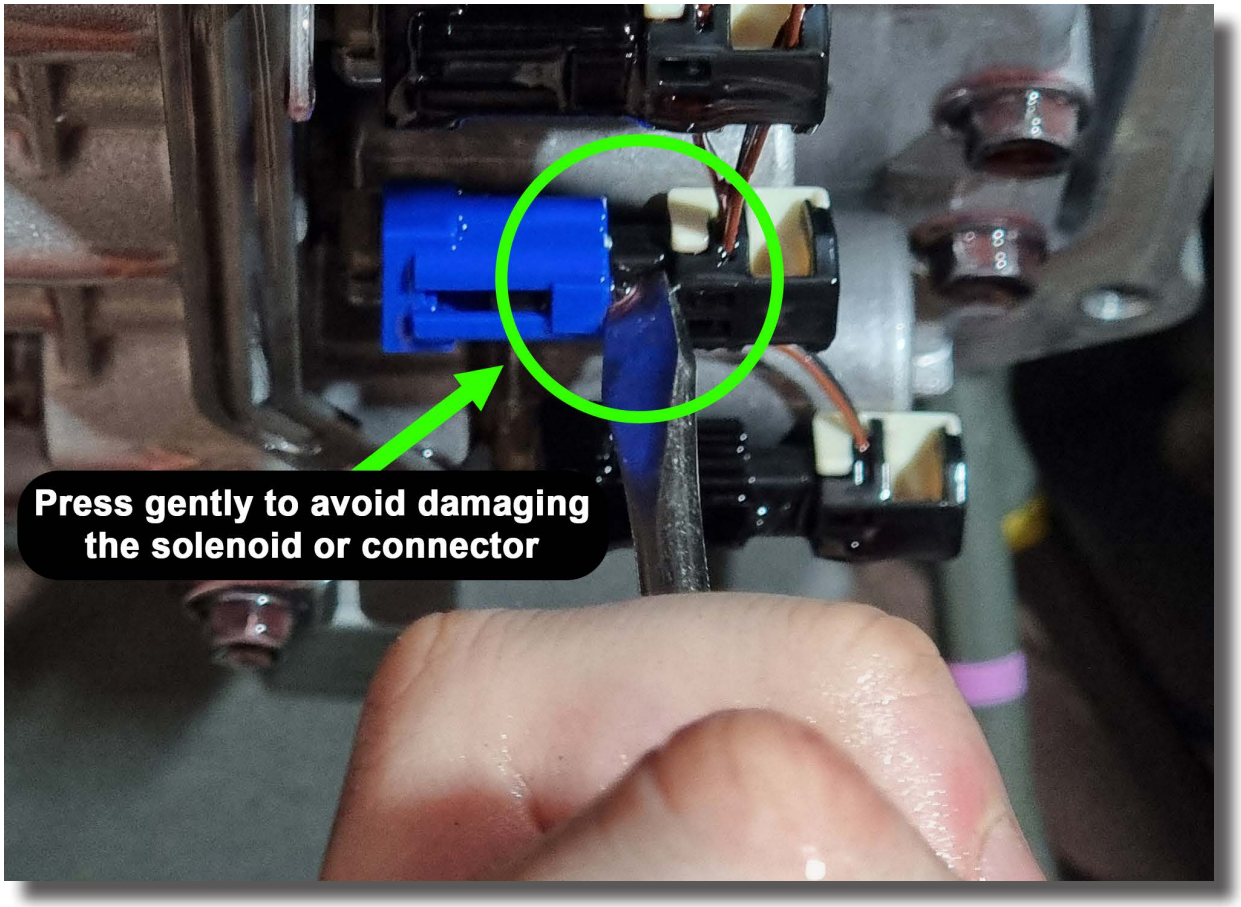
10. Remove the 4x 10mm bolts that are holding the transmission filter in place. Pull the filter straight down to remove it, but be careful that the o-ring does not stay in the valve body. Check that the filter you removed matches the new filter.



11. Check the magnets in the pan for metal. Most transmissions will have a very small amount of metal fragments on them - this is normal. Not normal is the magnet completely covered in metal fragments. This may also have black sludge in the base of the pan. Do not proceed until you have spoken to someone at Wholesale Automatics.

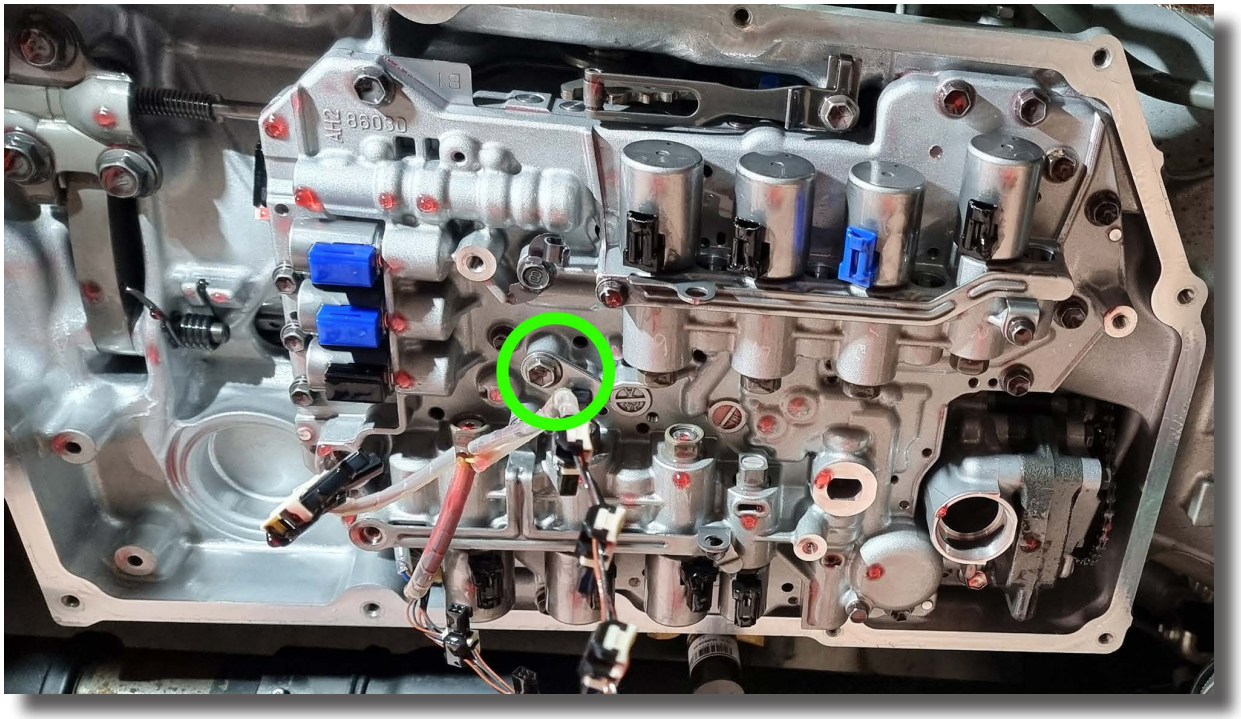


12. Using a small flat bladed screwdriver press down on the locking latch on each solenoid connector and then gently remove it from the solenoid. Repeat this step for all the solenoid connectors.



13. Remove the 10mm bolt and metal retaining bracket that holds in the temperature sensor. Gently pull the temperature sensor out of the valve body.

    Also remove the internal harness from the cable clip.



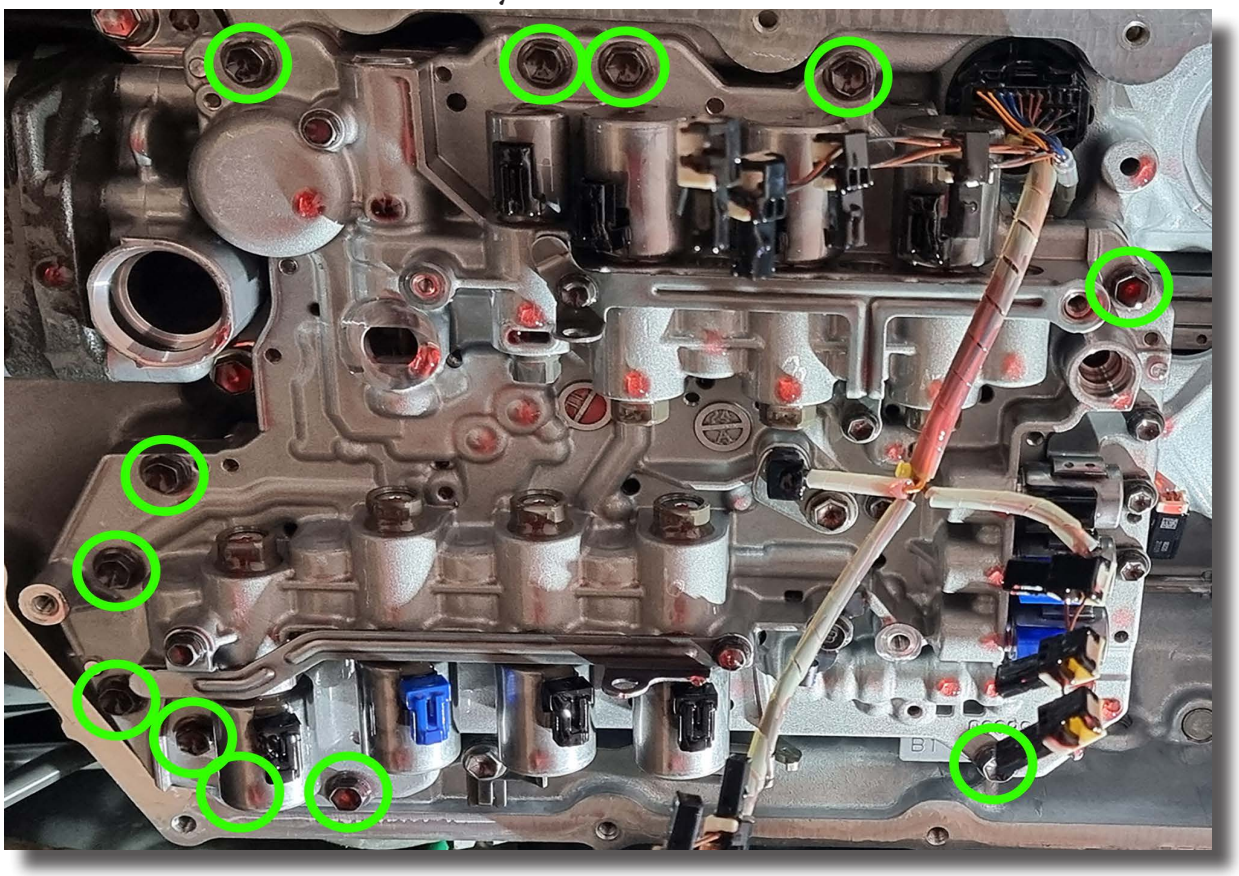
14. Before proceeding with removal of the valve body ensure you have a clean flat surface to place the removed valve body assembly on that is large enough for both valve body assemblies side by side. From this point, we will refer to the valve body removed from the transmission as the 'Original' valve body and the new supplied one as the 'Nomad' valve body.

    Removing the original valve body will result in further fluid draining from the transmission so have the drain pan ready. There is also likely to be some oil retained inside the original valve body that will drain out over time.

15. Once all the connectors have been removed, remove the 12x 10mm bolts holding the valve body to the case. Place the valve body bolts into the magnetic tray to keep safe.

    TIP

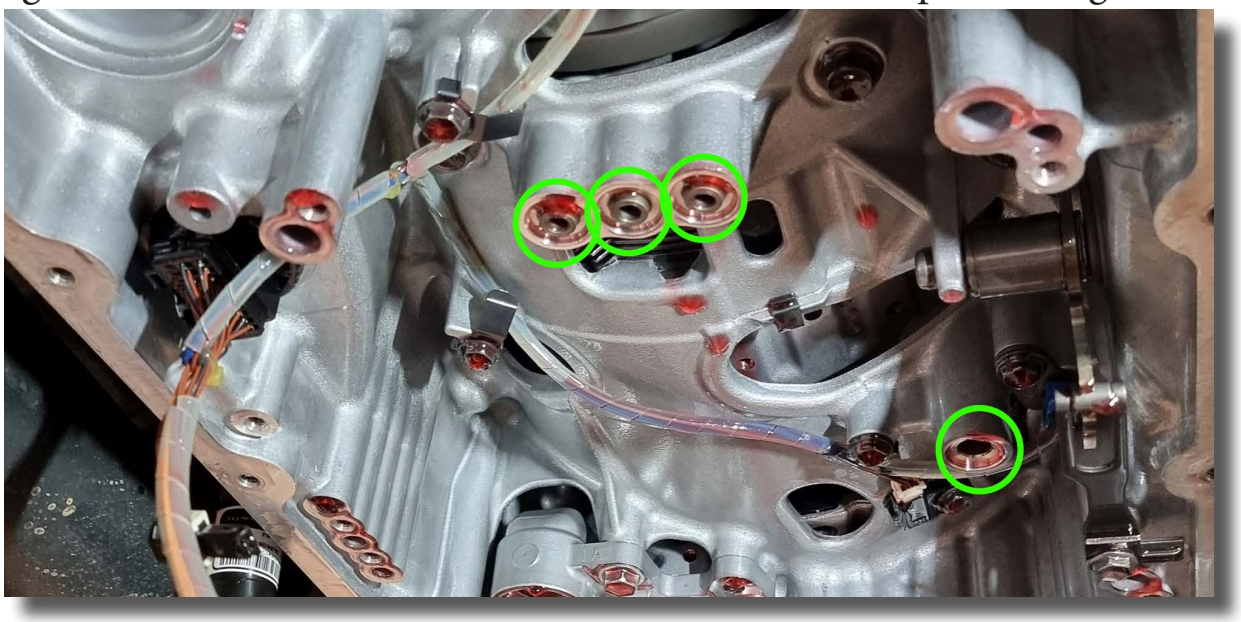
    Remove all bolts except one - leave that last bolt finger tight. This way, without tools in your hand, you can support the valve body with one hand and remove the last bolt with your other hand.



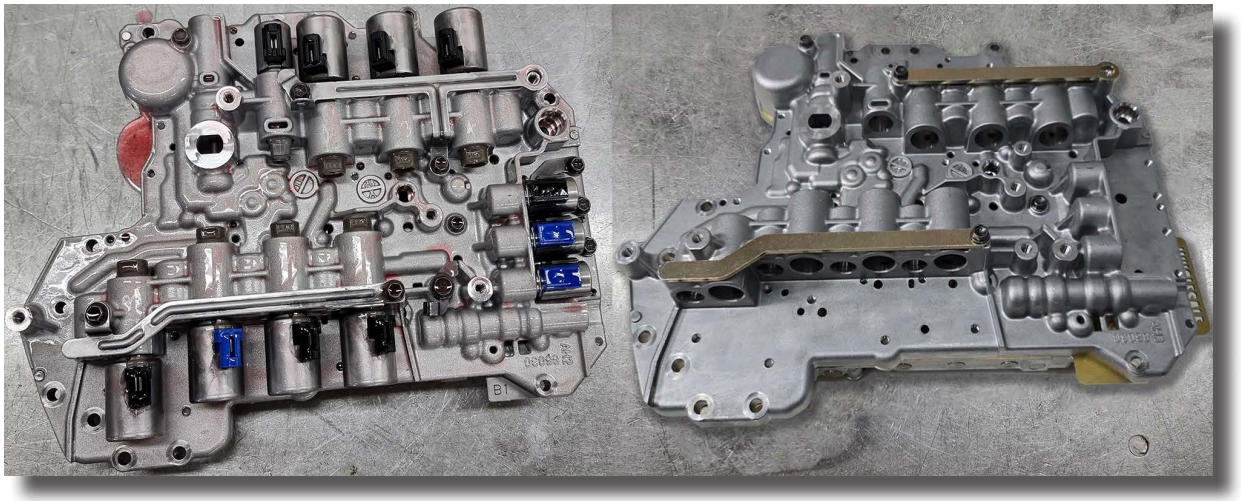
16. Once the valve body bolts are removed you can remove the manual valve linkage from the shift lever shaft. To do this lower the valve body 20-30mm, until the linkage is no longer blocked by the transmission case. You can then move the whole valve body to the side to disengage the linkage from the shift lever shaft.

17. Remove the 4 valve body to case grommets. If any of the grommets are not present in the case it's possible that they may have fallen out during valve body removal, or they may be stuck to the top of the valve body. Keep these grommets in a safe location as they will be reused.

Also, since you can see the clutch packs easily, inspect these for damage. Black heat spots are the most common symptom that can be seen which also indicates a fairly serious problem. If you see something that doesn't look right, contact Wholesale Automatics for advice before proceeding.

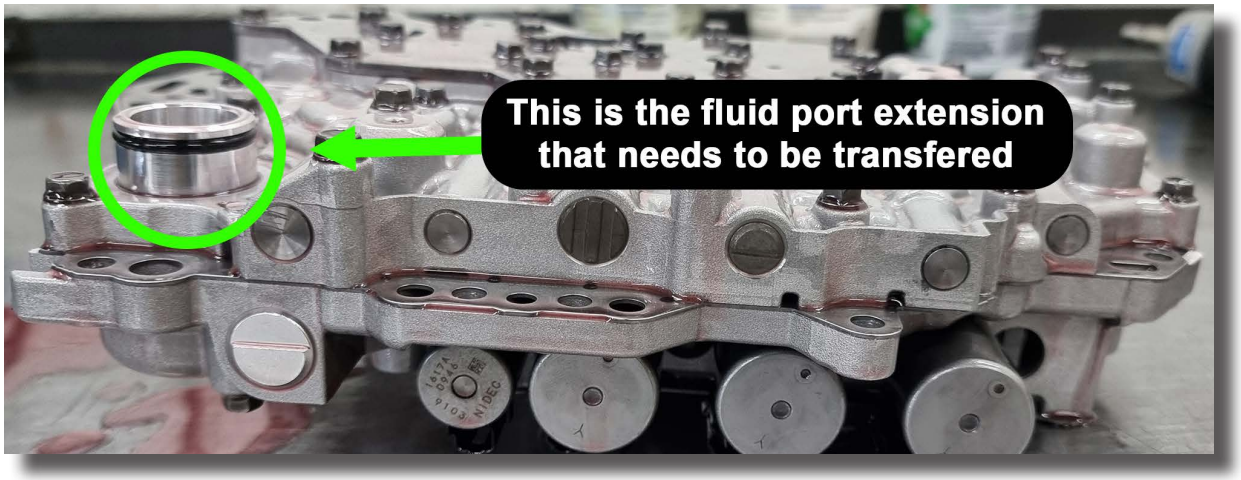


18. Place both valve body assemblies on the flat clean surface facing the same way with the solenoids on the top. Always compare both valve body assemblies to ensure they look the same, less any parts that need to be swapped over. If anything doesn't match, please contact Wholesale Automatics prior to proceeding.

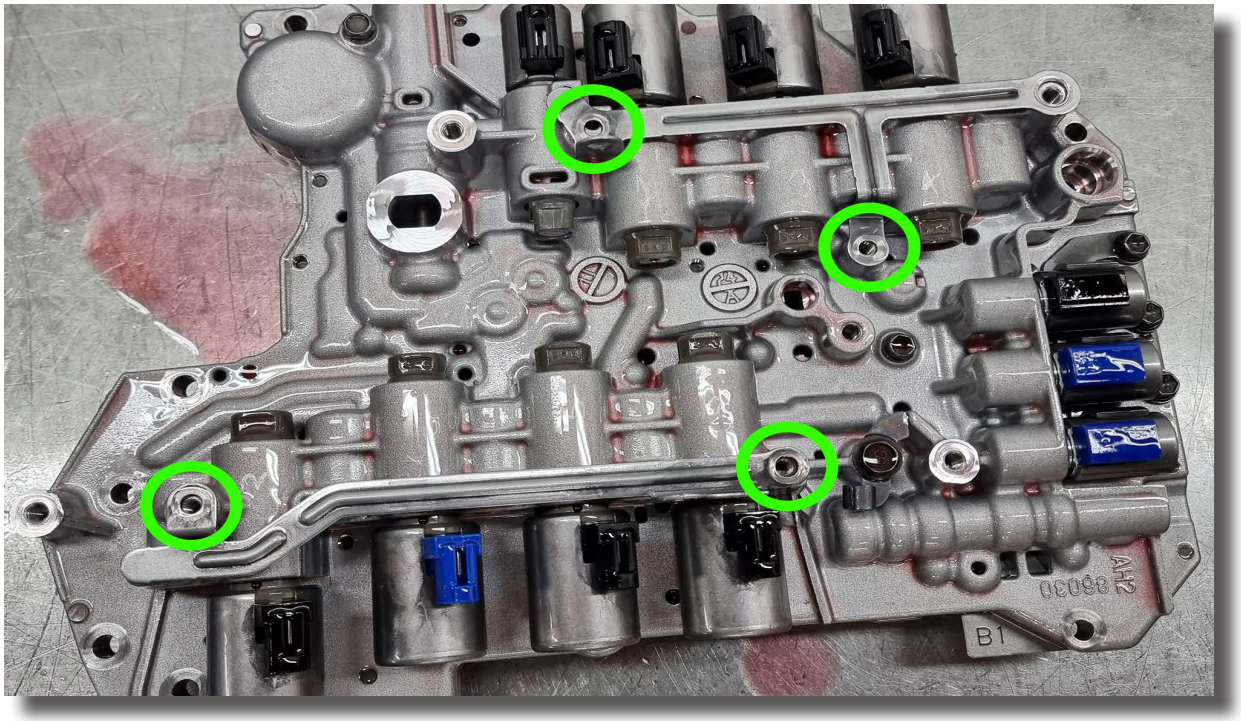


19. Remove the o-ring from the fluid port extension to ensure it does not get damaged. Use the circlip pliers to grab the fluid port extension in the o-ring groove and gently wiggle it out of the Original valve body- we do not recommend using a pry bar on this. Transfer it into the corresponding port on the Nomad Valve Body.

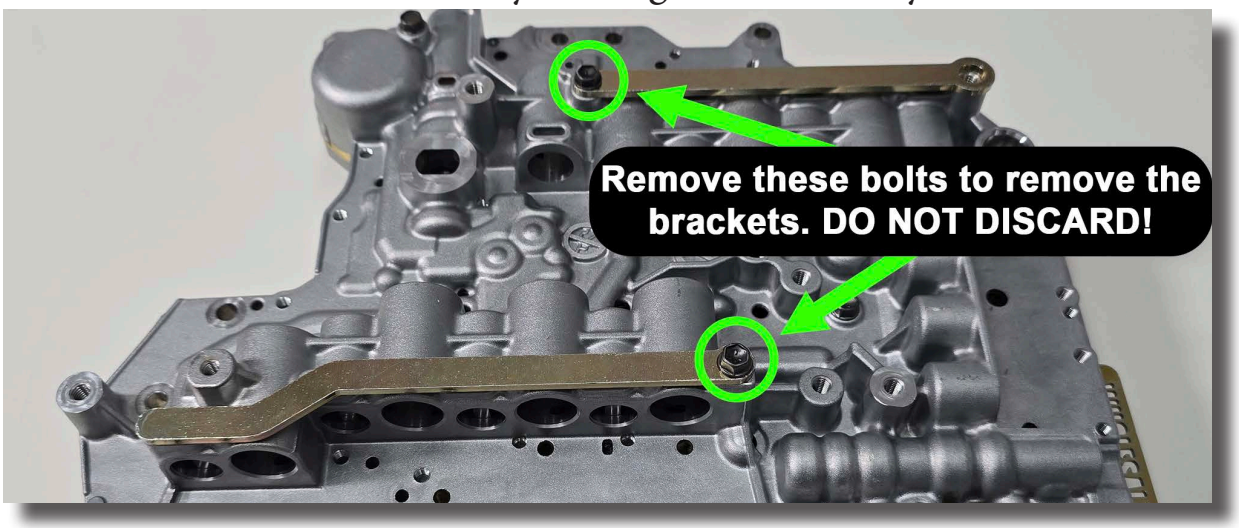
    Reinstall the o-ring into the top groove of the fluid port extension. Apply a thin film of fresh transmission fluid to the o-ring.



20. Remove the 4 indicated bolts from the two solenoid pin retaining brackets from both the Original and Nomad Valve Body (the last bolt location is for one of the filter mounting bolts. Do not turn the valve body over until the shipping retaining brackets are transfered over.

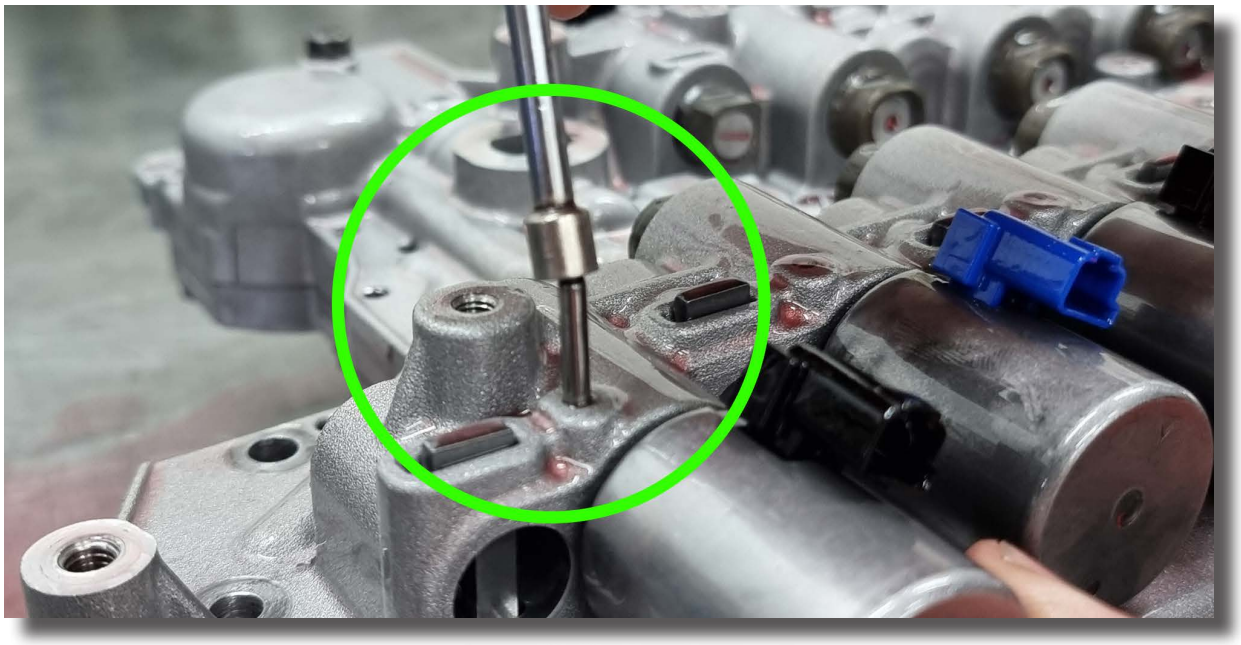


21. Your Nomad valve body comes with some thick solenoid pin retaining brackets installed to prevent small parts from falling out. These shipping retainers will need to be removed from your Nomad valve body before you can install the solenoids from your original valve body.

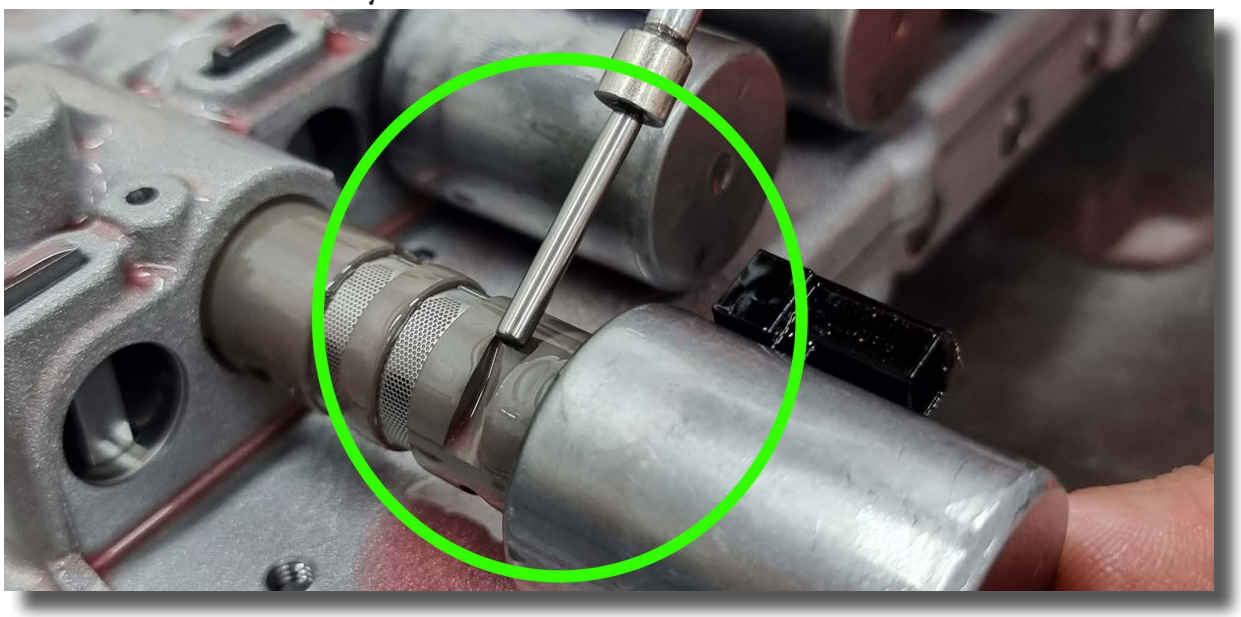


22. ***IMPORTANT* It is vital that ALL the solenoids and the locating pins are placed in the exact same location on the Nomad valve body. The solenoids and pins are NOT interchangeable.**

23. Use a strong magnet to remove the first larger solenoid locating pin. Note the orientation of the solenoid in the valve body before you remove it. The solenoid can then be removed from the Original valve body by pulling it straight out and transfer the solenoid to the same location in the Nomad valve body.

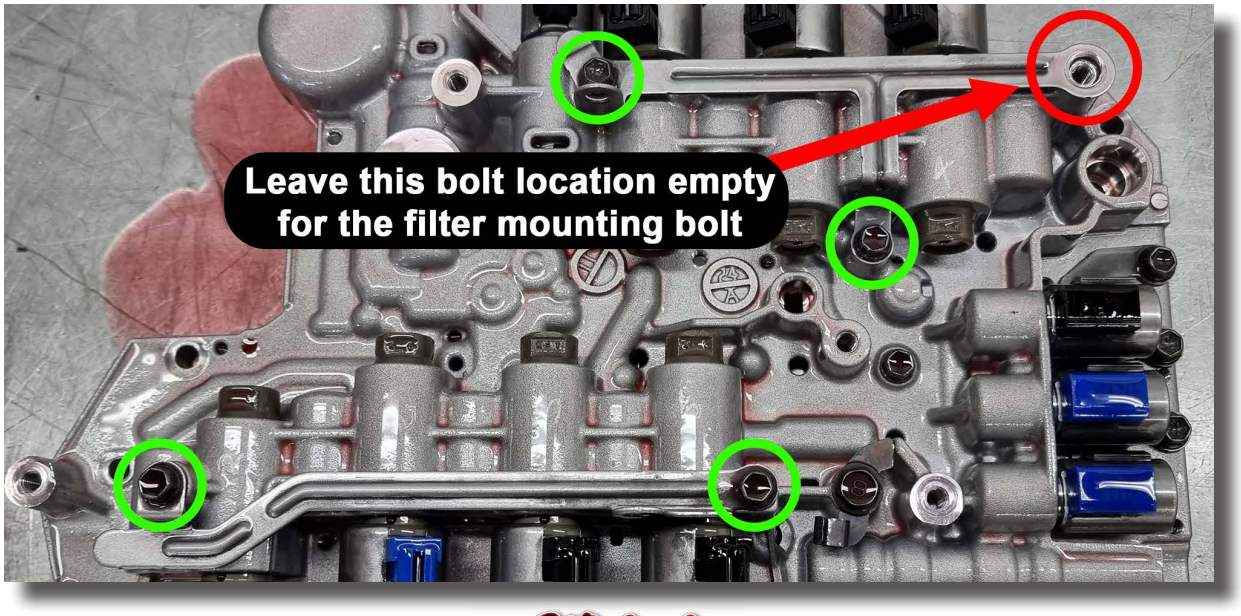


24. Secure the solenoid into the Nomad valve body by inserting the retaining pin into the corresponding hole in the Nomad valve body - this must align with the groove in the solenoid and the solenoid must be fully inserted into the Nomad valve body.



25. Continue transferring the remaining larger solenoids, one at a time, using the same process as the first larger solenoid.

26. Once all solenoids and the locating pins have been installed into the Nomad valve body install the two solenoid locating pin retaining brackets and the 4 bolts removed from the Original valve body. Torque these bolts to 6.4Nm (4.7 lbf·ft) (56 lbf·in). Make sure to not install a bolt in the mount intended for the filter mounting bolt.



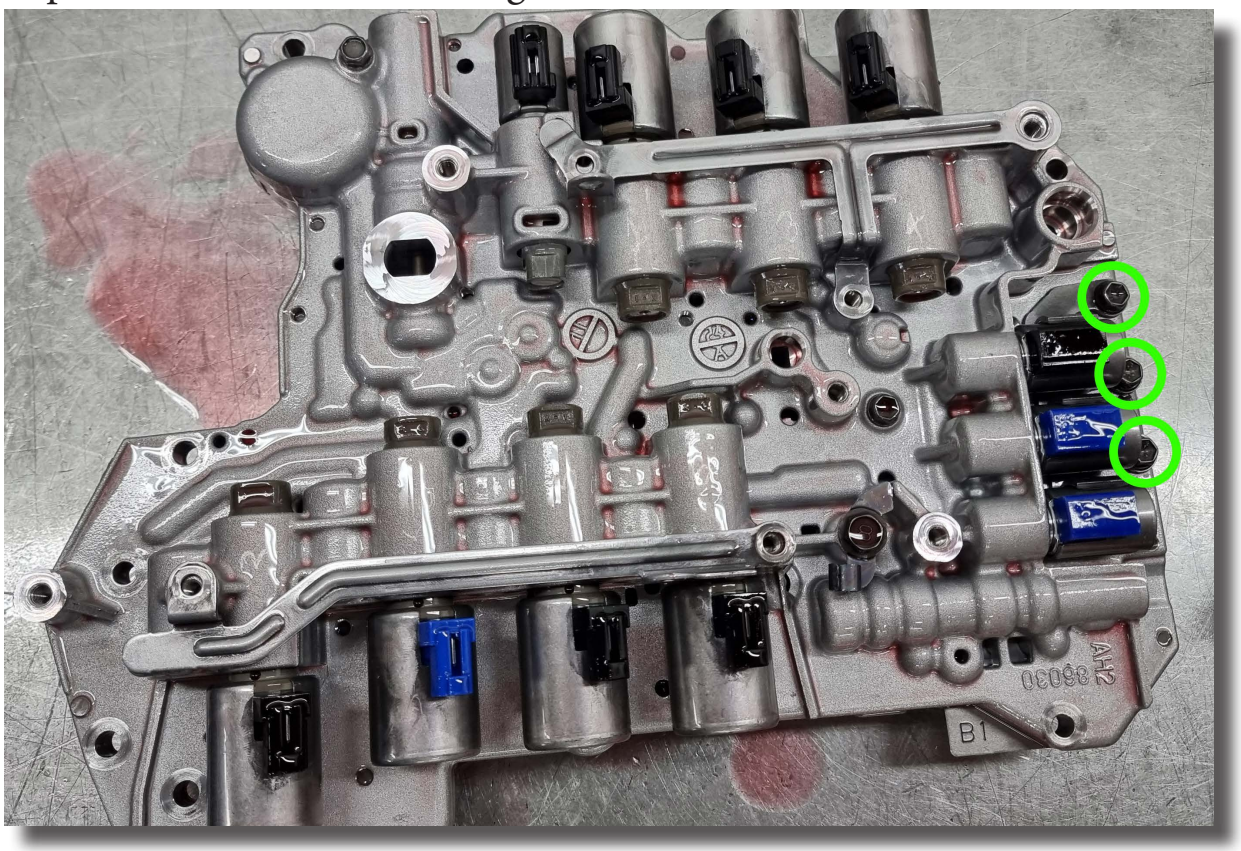
27. Install the shipping solenoid retaining brackets onto your Original valve body. Torque these bolts to 6.4Nm (4.7 lbf·ft) (56 lbf·in) - this ensures the threads are not damaged and the brackets cannot move during shipping.

    These retaining brackets MUST be installed before your Original valve is wrapped up for return to WAT. If these brackets are not installed it is very likely that small parts will fall out of your returned valve body and be damaged or lost during shipping.

    Failure to install the shipping retaining brackets may affect the return of your deposit.

28. Swap over the smaller individual solenoids one at a time. These solenoids are not interchangeable and must be installed in the same position that they were removed from. Remove the retaining bolt and then gently extract the solenoid. Transfer it into the same position on the Nomad valve body. Secure it with the retaining bolt, torqued to 6.4Nm (4.7 lbf·ft) (56 lbf·in).

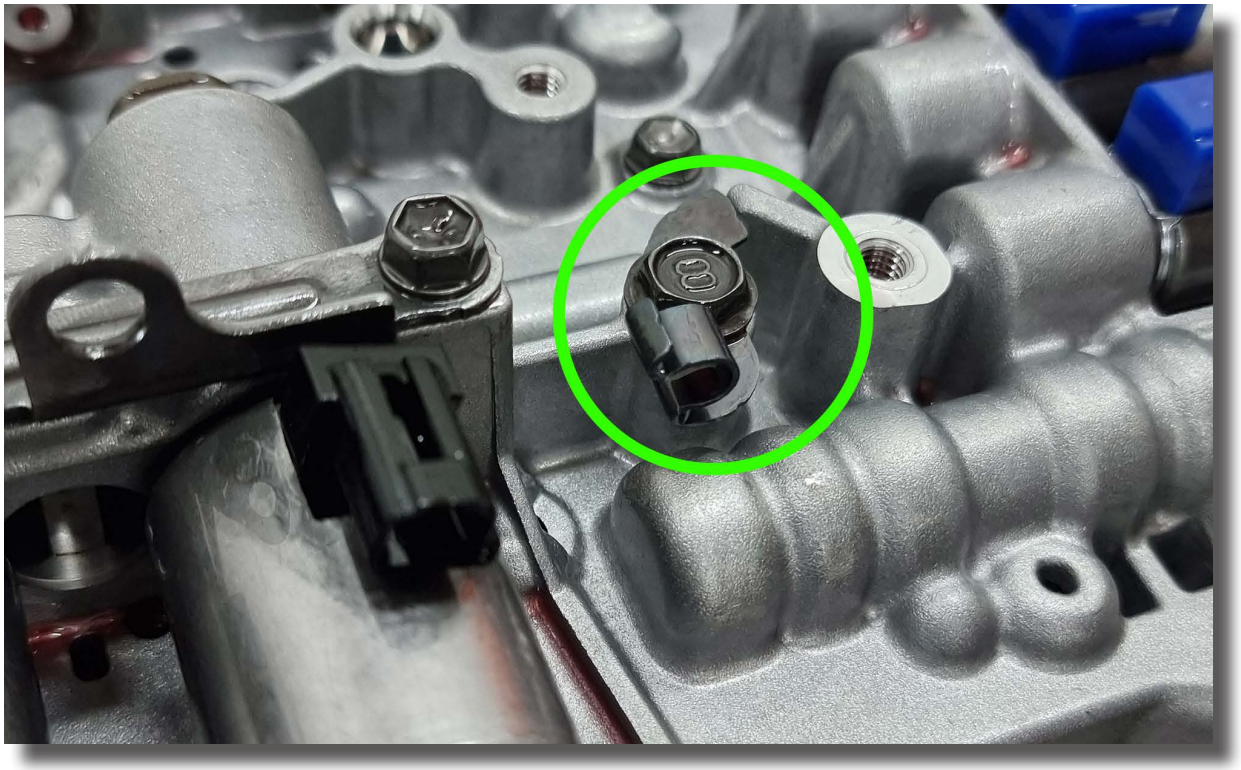
    Repeat this with the remaining individual solenoids.



29. Remove the Manual valve from the Original valve body by sliding it straight out - be careful not to pull it out at an angle to avoid risking scratching the bore.

    Apply a fresh layer of transmission fluid to the outside of the valve and then transfer it into the Nomad valve body.

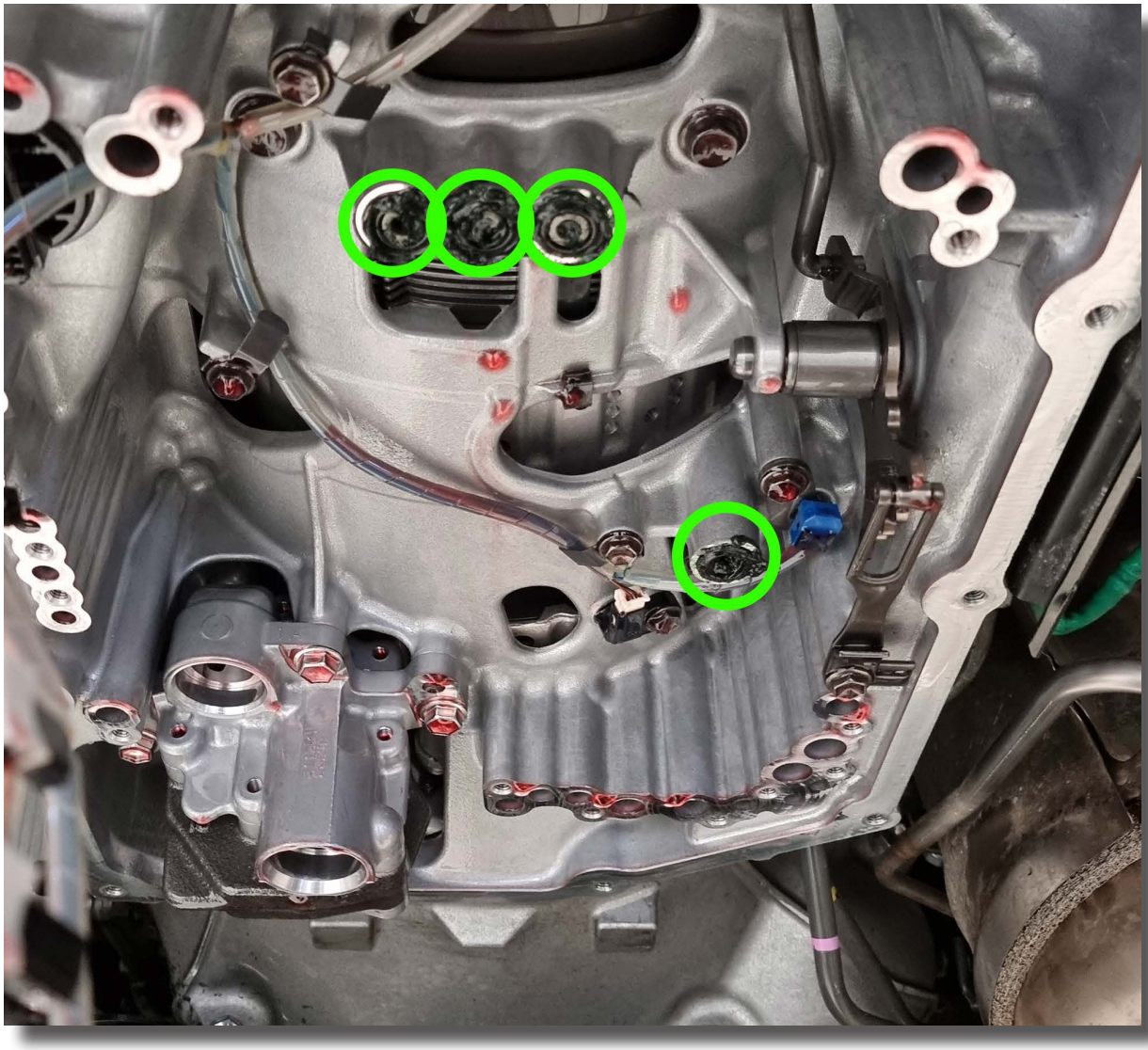
30. Swap the cable retaining bracket from the Original to the Nomad valve body.



31. You are now finished with the Original Valve Body. Do your best to drain as much of the fluid out of it as possible prior to returning for exchange purposes. When you wrap it please use rags and multiple plastic bags to seal it up so there is no cleaning surcharge from the freight companies.

    Ensure the shipping solenoid retaining brackets are installed onto your Original valve body BEFORE wrapping it up for shipping.

32. Reinstall the 4 rubber case grommets removed earlier. Fit them into place on the transmission using assembly gel or petroleum jelly to hold them in place. If your transmission is quite warm you may only have seconds before the gel or jelly dissolves.

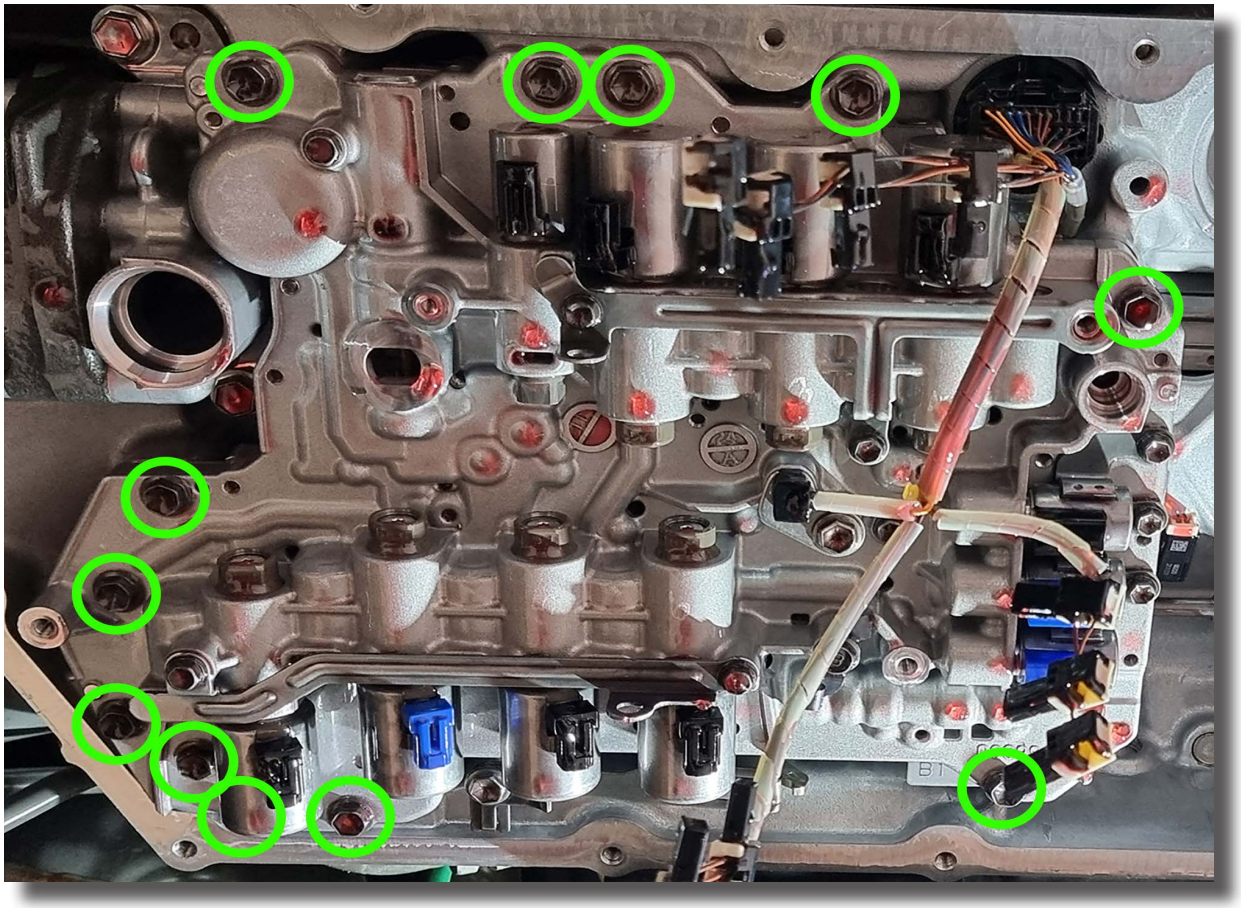


33. You can now fit the Nomad valve body to the vehicle. You may find it easier to have a helper while installing the valve body as it can be difficult to line up the manual valve, insert the bolts, support the valve body and not have one of the clutch grommets fall out if you are installing it on your own.

    First, install the manual valve linkage in the opposite way to its removal - you may need to angle the valve body slightly in order to align the linkage into its mounting hole.

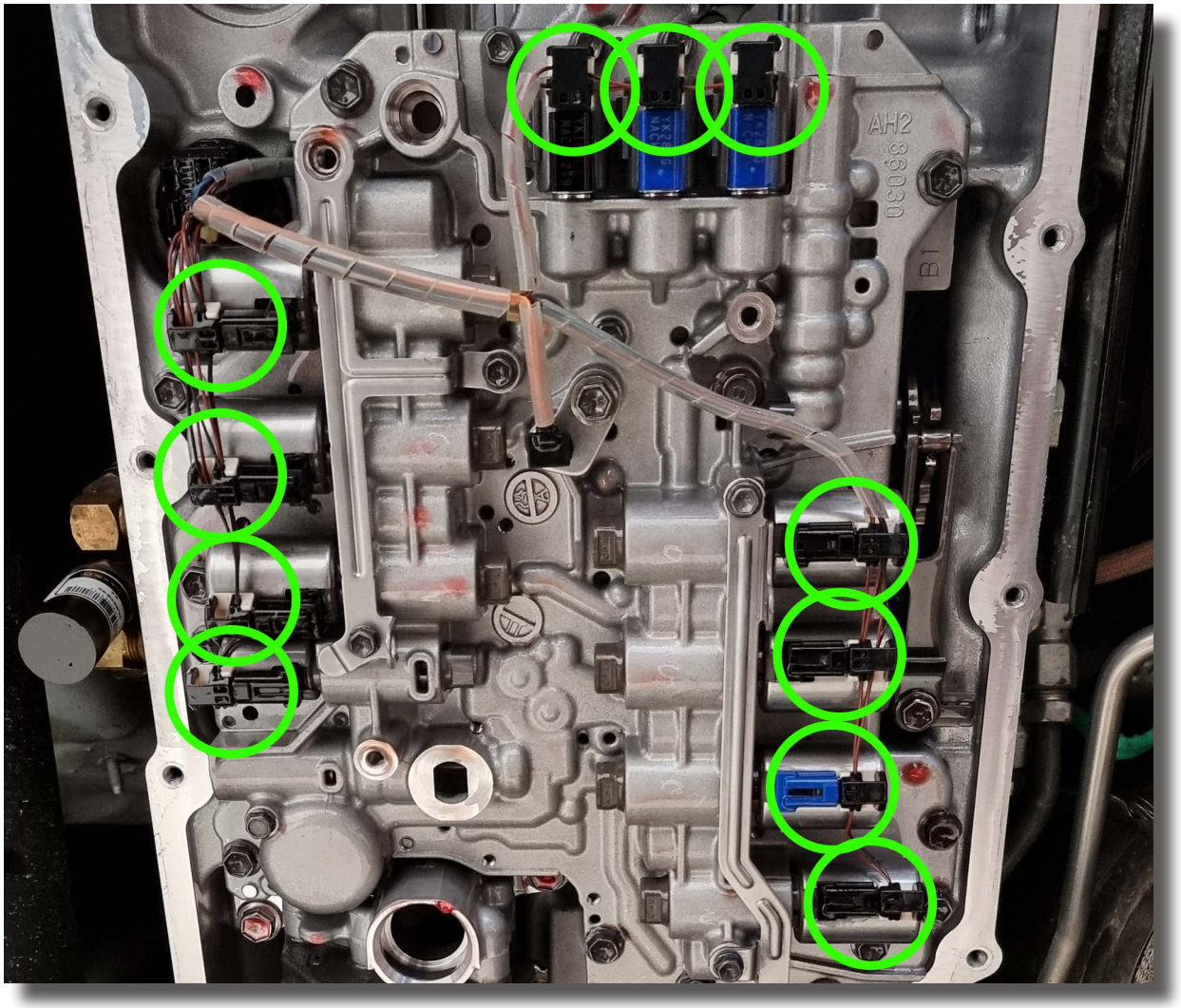
    Then, line up the valve body and install all the 10mm bolts finger tight to start off with. Be careful not to pinch any of the internal harness wiring between the valve body and the transmission.

34. Tighten all the valve body to case bolts and torque them to 11Nm (8.1 lbf·ft) (97 lbf·in).



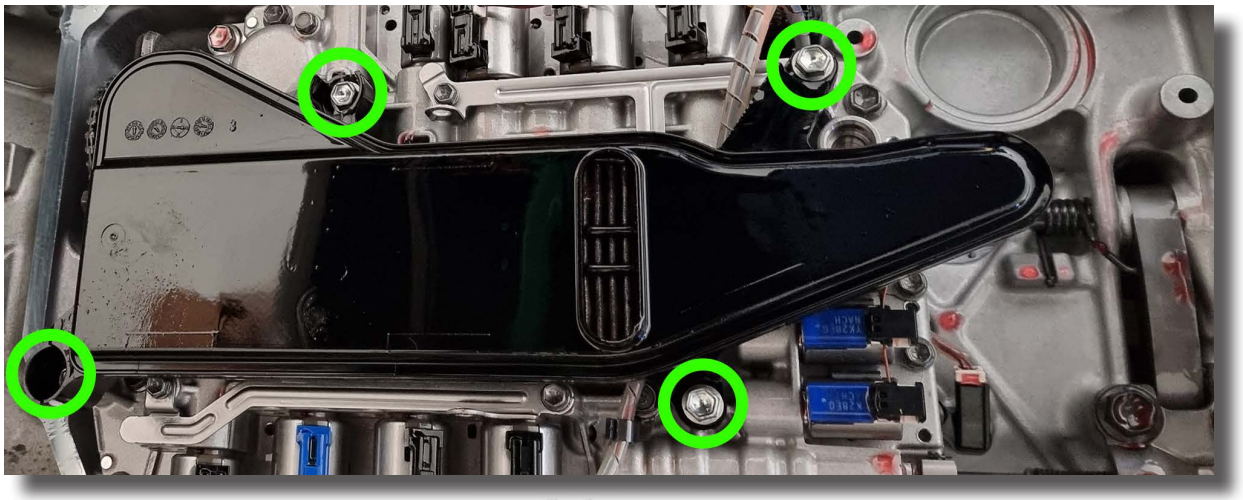
35. Plug in all the solenoid connectors and clip the internal harness into the cable clip. Apply some fresh transmission fluid to the temperature sensor o-ring and install the temperature sensor. Secure it with its bracket and bolt. The connectors are fully inserted when they 'click' into place.

    The connectors are all keyed differently and must be inserted into the correct solenoid. Do not force the connectors together.



36. Secure the internal harness to the cable clip near the manual valve.

37. Locate the supplied new filter and apply a light coating of transmission fluid around the rubber o-ring on the filter neck. Install the filter into place and secure with its 4x 10mm bolts. Torque these to 10Nm (7.4 lbf·ft) (88.5 lbf·in).



38. Check that the mounting surface of the transmission where the pan gasket will mate with is completely flat. Remove any debris, silicone, or gunk to reduce the chances of leaking - you can carefully use a scraper blade if needed. Finally, wipe the sealing surface with a clean rag to remove any remaining fluid or debris.

39. If you were supplied new steel collars with your pan gasket insert them into the holes in the new supplied gasket. If your new pan gasket was not supplied with new steel collars transfer the collars from the original pan gasket into the new pan gasket.

40. Place the pan gasket into position on the transmission pan and lift the pan and gasket into place. Secure it with at least two bolts to hold everything in place. Hand tighten all remaining transmission pan bolts, ensuring that each bolt goes through the steel collars and into the transmission case thread freely. We don't recommend using air or power tools for this as the risk of cross threading is high. Torque all transmission pan bolts to 7.4Nm (5.5 lbf·ft) (65 lbf·in).

Flushing and Fluid Level Checking Procedure

41. It is recommended that you perform a flush of the transmission fluid as part of the Valve Body fitting process. If you are doing a flush without a flushing machine, we have provided a simple guide in the next few steps.
It is recommended to be done with two people - one underneath to pump in fluid in to the transmission while the other is in the drivers seat.

42. There is a 14mm bolt that can be used as a fill port on the transmission. This is mounted above the level of the pan on the drivers side of the vehicle.

43. Remove the Transmission Cooler return line - this is the upper of the two cooler lines in the 300 Series LandCruiser - and allow it to drain into a waste container. Your waste oil container must be capable of holding at least 20L.

44. Fill the transmission with approximately 7L of transmission fluid.

45. Start vehicle and continue to pump transmission fluid into the fill port until the transmission fluid coming out of the return line is clean and it is clearly visible that it is the new fluid.

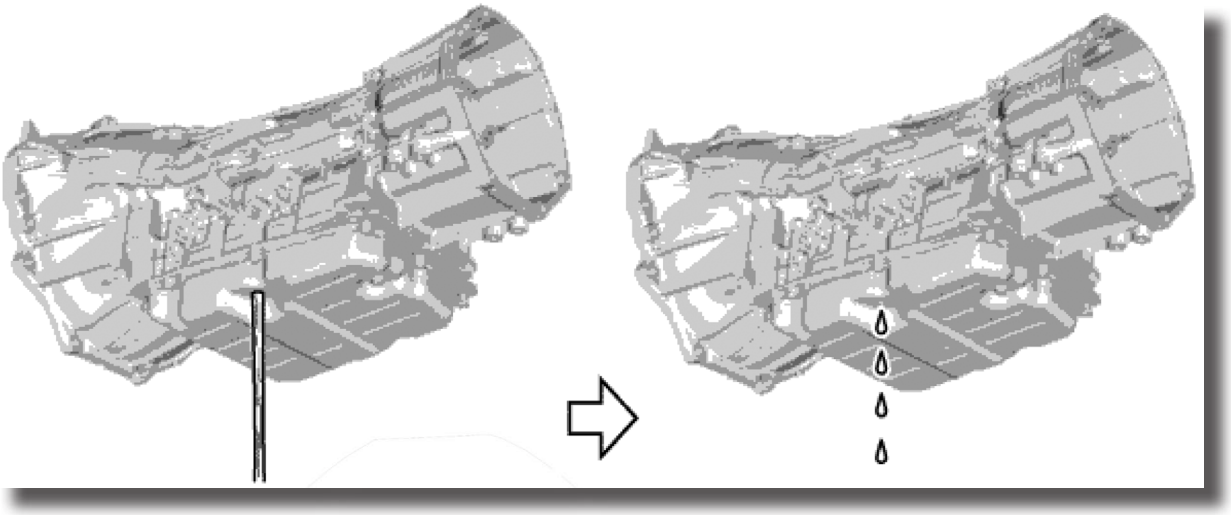
46. Once the transmission fluid coming out of the return line is clean have the person in the vehicle switch off the engine. Reconnect the return line.

47. Have the person in the vehicle start the engine again. Ensure the vehicle cannot move, then move the shifter into each gate position P, R, N, D, pausing for a few seconds before each shifter movement, to ensure all the clutch packs are filled. Return the shifter to park.

    Once this is done use a 6mm hex key to remove the Check bolt.

48. While the engine is running, continue to fill the transmission with fluid until the fluid starts to come out of the CHECK tube hole.

49. When the fluid reaches a dribble (see image below), reinstall the Check bolt and torque it to 20Nm (14.8 lbf·ft) (177 lbf·in).



50. The engine can now be switched off and the Fill bolt can be reinstalled. Torque the Fill bolt to 39Nm (28.8 lbf·ft) (345 lbf·in).

51. Clean up any transmission fluid from under the vehicle.

52. Take the opportunity to recheck any bolts that have been touched during work to ensure you haven't missed any.

53. You are now ready to take the vehicle for a test drive for at least 10 minutes to get the transmission fluid up to temperature.

Test Driving

54. It is extremely important that the person who drove the vehicle prior to starting work also drives the vehicle again after the work has been completed to verify any changes from original valve body. We also recommend driving the exact same route.

55. After completing the test drive it is necessary to recheck the transmission fluid level, as during the road test it is possible that you have forced an air pocket through the system. This will mean the fluid level may be lower than what it should be.

56. Leave the engine running and recheck the fluid level by removing the Check bolt from the transmission pan again. If fluid is still dribbling out then that is good. Reinstall the Check bolt and torque to 20Nm (14.8 lbf·ft) (177 lbf·in).

    Please be careful as the transmission fluid may be hot.

57. If no fluid is coming out of the Check tube then you need to add more transmission fluid in the process described previously. Repeat the test drive and recheck until the fluid dribbles from the Check tube after test driving.

58. Reinstall any removed panels and bash plates.

59. Clean the vehicle to remove any marks or fingerprints.

This now completes the installation of the Nomad Heavy Duty Valve Body Upgrade Kit to suit: Aisin AWR10L65 10 Speed Automatic Transmission

Remember to put a service sticker on the customers windscreen to remind them of their next transmission service in 2 years or 40,000km from now.

Please Provide us with Feedback

If you have a minute to provide us with some feedback about your experience with Wholesale Automatic Transmissions and our products, that would be greatly appreciated.

Using your smart phone or device's camera app, point at the QR code below to take you straight to our feedback page for you to choose the most appropriate feedback method.