

MEMO



To: SFR Drivers
From: AccelRaceTek Team
Date: 06/02/2022
Re: GEN2 Engine & Transaxle Removal & Installation Procedure

Background

The following procedure outlines the process to remove and then install a GEN2 1.9 engine and transaxle. The engine and transaxle can be removed as one unit, this procedure describes the removal together. If you use this process you should be able to remove an engine and transaxle in less than 2 hours.

Special Tools

1. 30 mm Socket – You will need a 30-mm socket with a large breaker bar or strong impact to get the rear axle nuts off and on. A 1-3/16 is close to the 30 mm and will work.

Engine Removal Procedure (Summary)

1. Disconnect Battery
2. Disconnect Wiring & Sensors
3. Drain the Water
4. Raise the Rear
5. Drain Transaxle Oil
6. Remove Axle Nuts
7. Remove Wheels
8. Remove Axles
9. Throttle Cable
10. Alternator Removal
11. Air Box
12. Large Crank Pulley - Optional
13. Expansion Tank
14. Exhaust and Muffler
15. Oil Cooler & Fuel Lines
16. Rear Radiator Hoses
17. Starter
18. Shift Universal
19. Attach Hoist
20. Engine Mounts
21. Transaxle Brackets
22. Pull the Motor

Detailed Engine Removal Procedure

23. Disconnect Battery - Disconnect the negative battery terminal at the battery. It is safer to remove the negative wire, shorting the wrench to the frame will not cause an arc.
24. Disconnect Wiring & Sensors – Go around the motor and disconnect all or the connectors that go to the sensors and peripherals like the air box. Disconnect the

ground cable that goes from the transaxle to the frame. Disconnect all the wires from the starter and disconnect ground wire from the engine mount. It is recommended that the cables to the alternator be left on at this point.

25. Drain the Water – This can be done by removing the right front radiator hose and drain it into a pan if you don't want it on the floor.
26. Raise the Rear – Raise the rear of the car and put rear of car on blocks.
27. Drain Transaxle Oil – This can be done by removing the right front radiator hose and drain it into a pan if you don't want it on the floor.
28. Remove Axle Nuts – Use a 30-mm socket to remove the both axel nuts. Some people leave the right one attached but we feel it is easier to remove both axels.
29. Remove Wheels - Remove both of the rear wheels.
30. Remove Axles – Remove the nut at the LCA from the LBJ pin and the pull axles out of the rear knuckles. Note that the right axle can be left in but it doesn't take long to remove it and it is out of the way.
31. Air Box - Remove the air box as a unit. Remove the hose clamp at the throttle body, the hose clamp at the body air intake, and then remove the two bolts that go through the frame.
32. Throttle Cable - Remove the throttle cable from throttle body and put in the right-rear wheel area.
33. Alternator Removal - Remove the bolt or pin from alternator adjuster at the bottom of the alternator. Remove the large alternator bolt and lay alternator with wires attached on right side bodywork or remove the wires and move the alternator completely.
34. Large Crank Pulley – The removal the large pulley from crankshaft this can make pulling the engine out less frustrating.
35. Expansion Tank - Remove the expansion tank and ½" hose to water manifold. Removing the expansion tank bracket will give additional clearance to remove the motor but is optional.
36. Exhaust and Muffler - Remove all of the exhaust components from the exhaust header on. It is recommended to leave the header on the motor.
37. Oil Cooler & Fuel Lines - Disconnect the oil cooler lines and fuel lines from engine and pull to right side of car where wheel used to be. Disconnect the lines leading to the fuel rail. Note, capping the hoses and fittings with AN plugs and caps is a good idea.
38. Rear Radiator Hoses - Disconnect the coolant hoses from right and left side of engine.
39. Shift Universal - Disconnect the bolt that connects the shift linkage to the transaxle.
40. Remove Coil Assy – Removing the coil bracket and coil makes removal and installation easier.
41. Attach Hoist - Attach a sling and hoist and put a small amount of lift to the motor. A tool to allow the motor and trans to be tilted is required to pull both the motor and trans together. If this tool is not available the trans and motor can be separated to allow removal.

42. Engine Mounts - Remove the top upper right-rear motor mount bolts first. Then remove the remaining frame bolts; the one below the alternator, the one at the rear by the shifter, and the one at the transaxle.
43. Transaxle Brackets - Remove the 3 bolts that attach the upper transaxle bracket to the frame and remove the bracket. Remove the bolts that attach the lower rear transaxle bracket and remove the bracket if possible. This can be removed later after the transaxle is raised.
44. Motor to Transaxle Bolts - Remove all transaxle to engine mount bolts.
45. Pull the Motor – As the motor is lifted, rotate the motor slightly to clear the header. Watch out that you don't catch the master switch wires and the fire extinguisher nozzle.

Engine Installation Procedure (Summary)

46. Connect Motor & Transaxle
47. Install Motor & Transaxle
48. Transaxle Brackets
49. Engine Mounts
50. Shift Universal
51. Oil Cooler & Fuel Lines.
52. Rear Radiator Hoses
53. Exhaust and Muffler
54. Expansion Tank
55. Large Crank Pulley
56. Alternator Install
57. Throttle Cable
58. Install Axles
59. Install Wheels
60. Lower the Rear
61. Tighten Axle Nuts
62. Fill the Water.
63. Fill Transaxle Oil
64. Fill Engine Oil
65. Air Box.
66. Connect Wiring & Sensors
67. Connect the Battery
68. Pre-Start Check
69. Start Your Engine
70. Double Check for Leaks

Detailed Engine Installation Procedure

Installation is almost the reverse the removal procedure with a few exceptions.

1. Install the Motor and Transaxle – Tilt the motor and transaxle assembly and lower it into the frame. Start with a lot of tilt and as the assembly gets lower in the frame reduce the tilt.
2. Transaxle Brackets - Install the upper transaxle bracket with 3 bolts, wait until later to tighten them. Install the lower rear transaxle bracket to the transaxle.
3. Engine Mounts - Install the 4 engine and transaxle mounting bolts without tightening them. After they are all in, tighten 4 engine mounting bolts and 3 upper transaxle bolts.
4. Shift Universal - Connect the bolt that connects the shift linkage to the transaxle.
5. Oil Cooler & Fuel Lines – Re-connect the oil cooler lines and fuel lines.
6. Rear Radiator Hoses - Re-connect the coolant hoses from right and left side of engine.
7. Exhaust and Muffler – Install the exhaust and muffler or tailpipe.
8. Expansion Tank - Install the expansion tank and tank bracket.
9. Large Crank Pulley – Install the large pulley from crankshaft.
10. Alternator Install – Attach the alternator connections. Then Install the alternator adjuster and the main bolt. Install the belt, tighten the belt and lock down the tensioner bolt.
11. Throttle Cable - Install the throttle cable to the throttle body.
12. Install Axles – Install the axles into the transaxle and the spindles.
13. Install Wheels - Install both of the rear wheels.
14. Lower the Rear – Lower the rear of the car off the blocks.
15. Tighten Axle Nuts – Use a 30-mm socket to tighten the axel nuts to 150 ft-lbs.
16. Fill the Water – Fill the water tank.
17. Fill Transaxle Oil – Fill the transaxle with oil and replace the fill plug.
18. Fill Engine Oil – Fill the engine with oil and replace the fill cap.
19. Air Box - Install the air box.
20. Connect Wiring & Sensors – Connect all or the sensors and peripherals like the air box.
21. Connect the Battery - Connect the negative battery terminal at the battery.
22. Pre-Start Check – Check the fuel, oil and electrical connections to be sure they are tight.
23. Start Your Engine – Check fuel pressure after the ending starts.
24. Double Check – Go over the engine and check for any leaks.