



# SERVICE BULLETIN

Classification:

AT19-007

Reference:

NTB19-046

Date:

June 14, 2019

## ENGINE SUPPORT TOOLS

**APPLIED VEHICLES:** 2013-2016 Pathfinder (R52)

### SERVICE INFORMATION

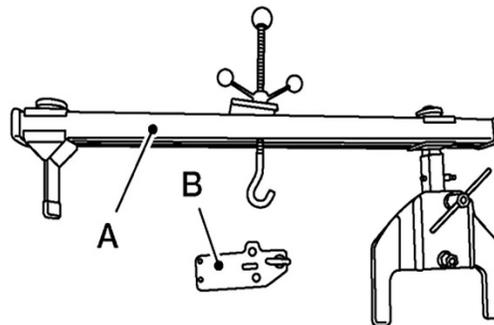
A new Engine Support Tool and Engine Support Bracket are now available to allow the CVT to be removed from the Applied Vehicles without having to remove the engine.

The procedure in this bulletin is different from the procedure currently in the Electronic Service Manual (ESM), which will be updated with this information at a later date.

Please refer to the SERVICE PROCEDURE to use these new tools:

- **Front Wheel Drive (FWD)** – pages 2-18
- **All Wheel Drive (AWD)** – pages 19-37

- A.  
—  
(J-52389)  
Engine support tool
- B.  
—  
(J-52604)  
Engine support bracket



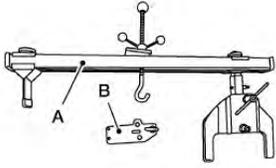
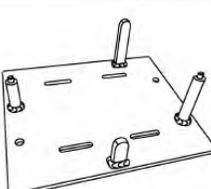
Nissan Bulletins are intended for use by qualified technicians, not 'do-it-yourselfers'. Qualified technicians are properly trained individuals who have the equipment, tools, safety instruction, and know-how to do a job properly and safely. NOTE: If you believe that a described condition may apply to a particular vehicle, DO NOT assume that it does. See your Nissan dealer to determine if this applies to your vehicle.

# SERVICE PROCEDURE

## PATHFINDER FWD

### Special Service Tool

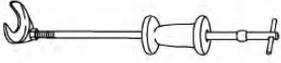
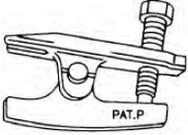
INFOID:RDE-001037032

Tool number (TechMate No.) Tool name	Description
A. — (J-52389) Engine support tool B. — (J-52604) Engine support bracket	Supporting engine
 <p style="text-align: center;">RDE-001037032-01-DIA0481ZZ</p>	
(J-51307) CVT transmission jack adapter	Removing CVT
 <p style="text-align: center;">RDE-001037032-02-DIA0537ZZ</p>	

### Commercial Service Tool

INFOID:RDE-001037051

Tool number Tool name	Description
Power tool	Loosening nuts, screws and bolts
 <p style="text-align: center;">RDE-001037051-01-IIB1407E</p>	
Hydraulic lift table	Removing front suspension member
 <p style="text-align: center;">RDE-001037051-02-DIA0077ZZ</p>	
Transmission jack	Removing transaxle assembly
 <p style="text-align: center;">RDE-001037051-03-DIA0078ZZ</p>	

Tool number Tool name	Description
Drive shaft joint puller  <small>RDE-001037051-05-DIA0439ZZ</small>	Removing drive shaft
Ball joint remover  <small>RDE-001037051-04-T146</small>	Removing steering outer socket

## Removal and Installation

### Removal

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

#### **CAUTION:**

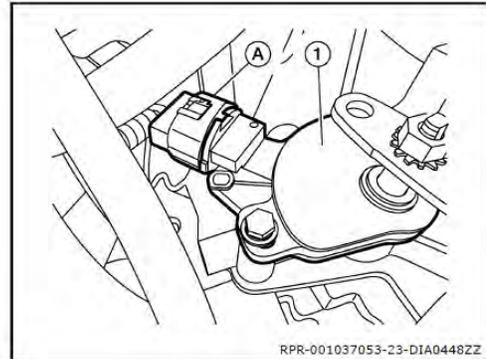
- Perform when the engine is cold.
- When replacing the TCM and transaxle assembly as a set, replace the transaxle assembly first and then replace the TCM. Refer to "Description" in the Transaxle and Transmission section of the ESM.
- When replacing the transaxle assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY." Refer to "Description" in the Transaxle and Transmission section of the ESM.

#### **NOTE:**

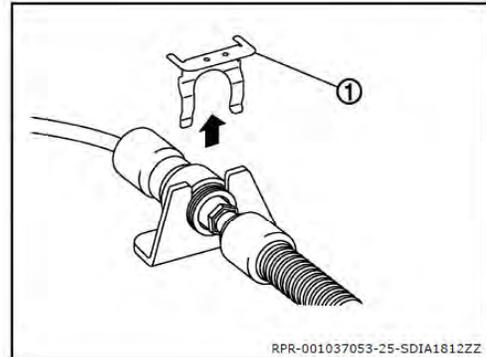
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove battery tray. Refer to "Removal and Installation" in the Power Supply, Ground & Circuit Elements section of the ESM.
2. Remove the cowl top cover and the cowl top extension. Refer to "Removal and Installation" in the Exterior section of the ESM.
3. Remove engine room cover. Refer to "Removal and Installation" in the Engine Mechanical section of the ESM.

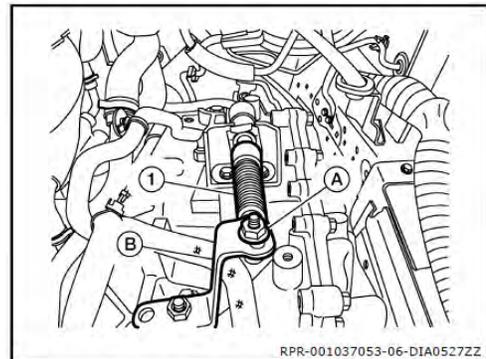
4. Disconnect the harness connector (A) from the transmission range switch (1).



5. Remove lock plate (1) as shown.

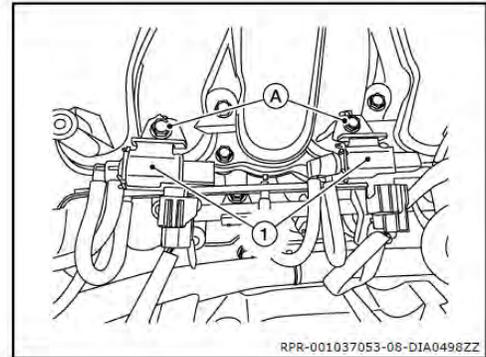


6. Remove nut (A) and separate control cable (1) from the manual lever (B).

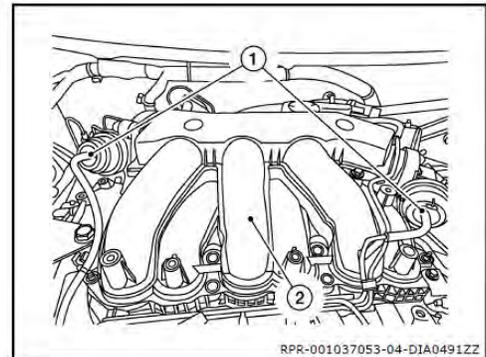


7. Disconnect brake booster vacuum hose from intake manifold collector. Refer to Vacuum Lines "Exploded View" in the Brake System section of the ESM.
8. Disconnect PCV hose from intake manifold collector.

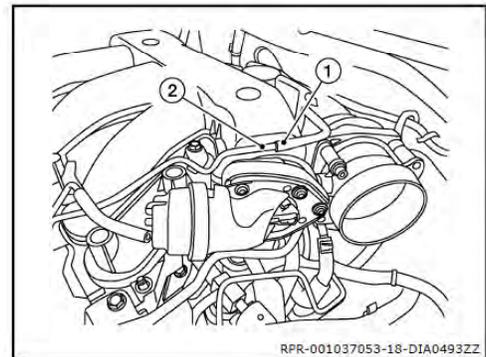
9. Remove bolts (A) and set VIAS control solenoid valves (1) aside.



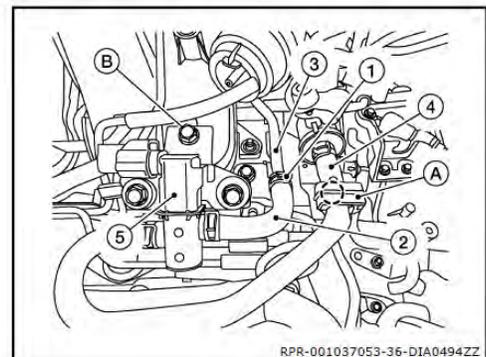
10. Disconnect vacuum hoses (1) from intake manifold collector (2).



11. Disconnect vacuum hose (1) from vacuum pipe (2).



12. Remove clamp (1) and disconnect hose (2) from pipe (3).



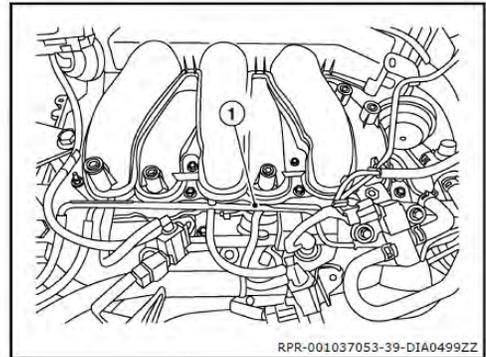
13. Release pawl and remove hose (4) from retainer (A).



: Pawl

14. Remove bolt (B) and set EVAP canister purge volume control solenoid (5) aside.

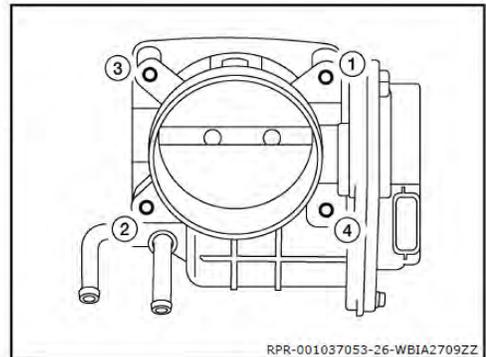
15. Set vacuum tube assembly (1) aside.



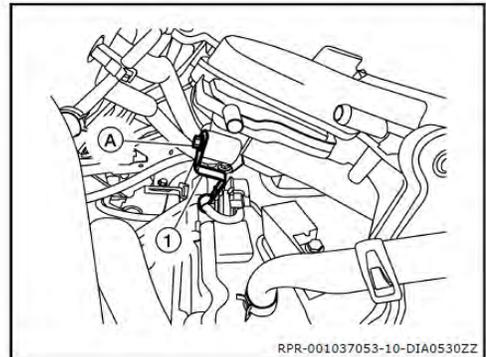
16. Loosen bolts in reverse of sequence shown and remove electric throttle control actuator bolts, then remove electric throttle control actuator and position aside.

**CAUTION:**

- Handle carefully to avoid any shock to the electric throttle control actuator.
- Do not disassemble electric throttle control actuator.



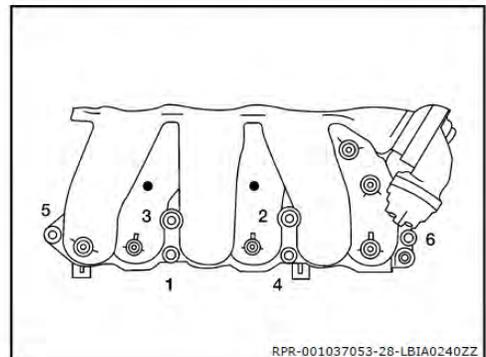
17. Remove bolt (A) and set bracket (1) aside.



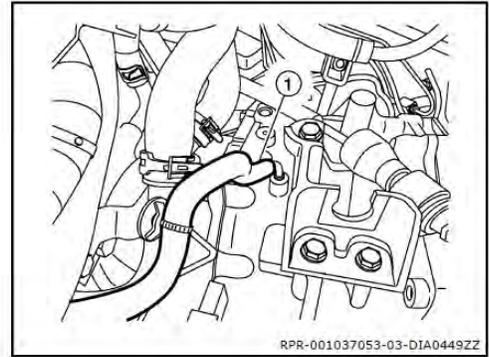
18. Loosen the intake manifold collector bolts and nuts in reverse of the sequence shown, then remove the intake manifold collector and gasket.

**CAUTION:**

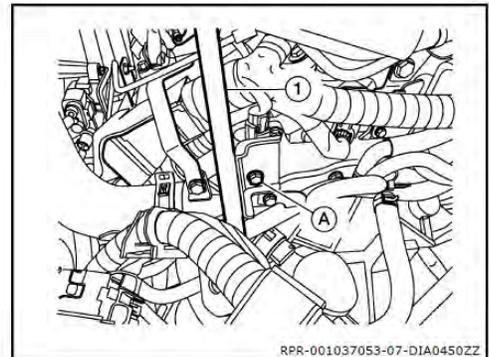
**Do not reuse intake manifold collector gasket.**



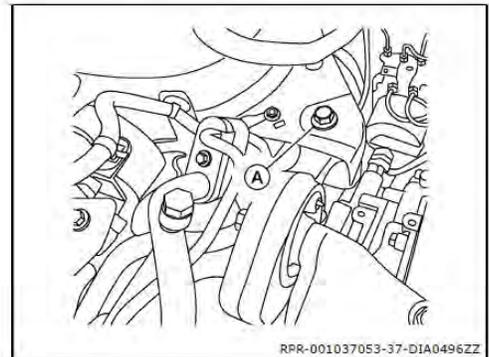
19. Disconnect transaxle breather hose (1) from transaxle assembly.



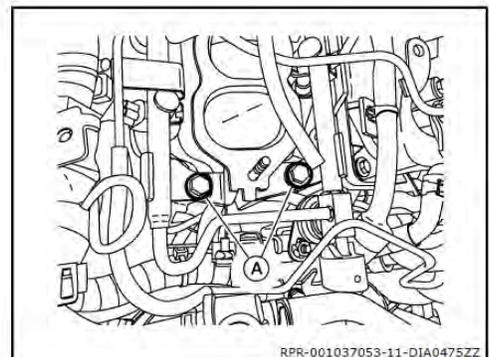
20. Remove bolt (A) from CVT charge pipe (1).



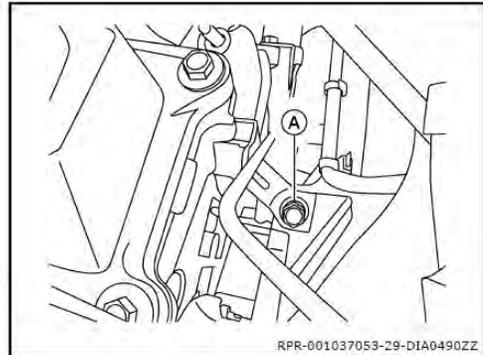
21. Remove bolt (A) from upper torque rod.



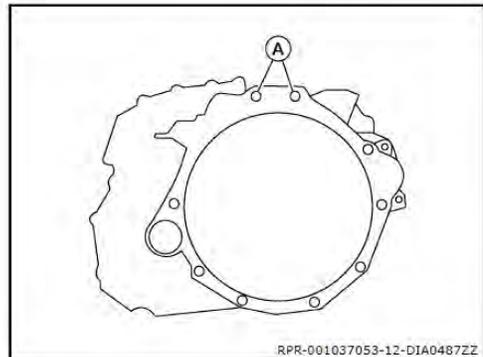
22. Remove fuel tube bolts (A).



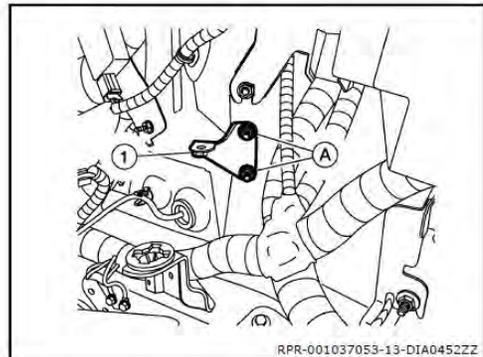
23. Remove CVT gusset bolt (A).



24. Remove bolts (A).



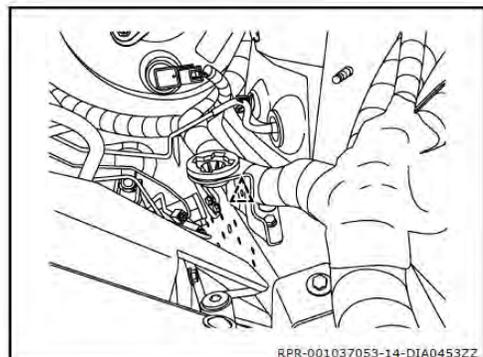
25. Remove nuts (A) and bracket (1).



26. Using a suitable tool, release clip.

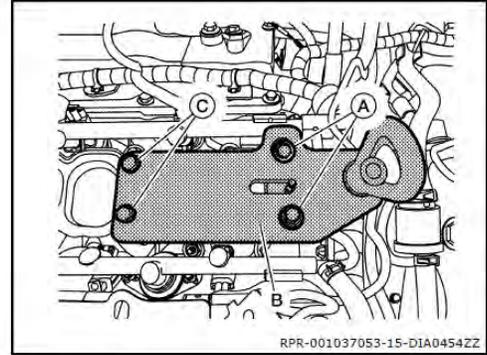


: Clip



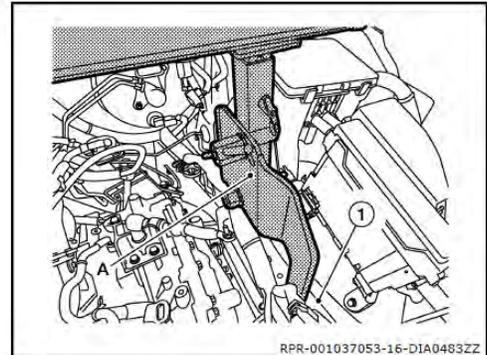
27. Install Tool (B) using bolts (A) and (C) supplied with Tool. Tighten bolts to specification. Refer to Engine Support Tool Operating Instructions.

Tool (B) : (J-52604)  
Bolts (A) : 20 N·m (2.0 kg-m, 15 ft-lb)  
Bolts (C) : 11 N·m (1.1 kg-m, 8 ft-lb)



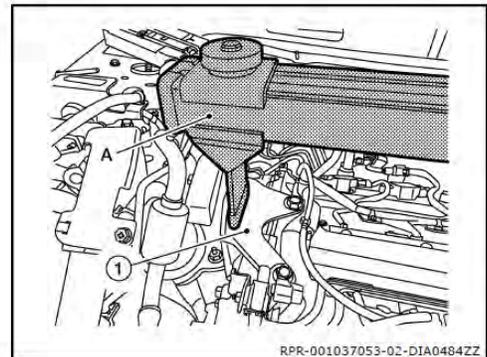
28. Install Tool (A) to drivers side frame rail (1) as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



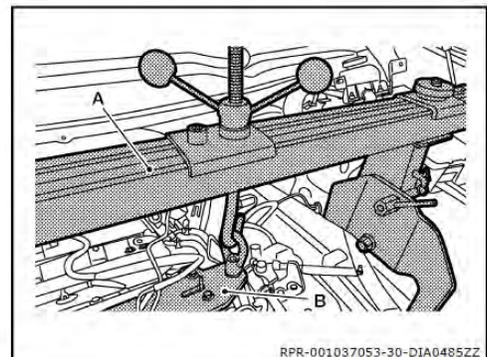
29. Install Tool (A) on top of engine mounting insulator [RH (1)] as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



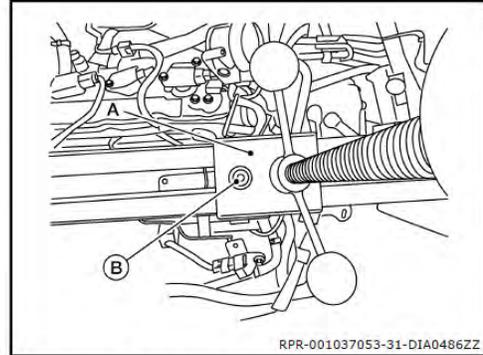
30. Install Tool (A) to Tool (B). Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)  
Tool (B) : (J-52604)

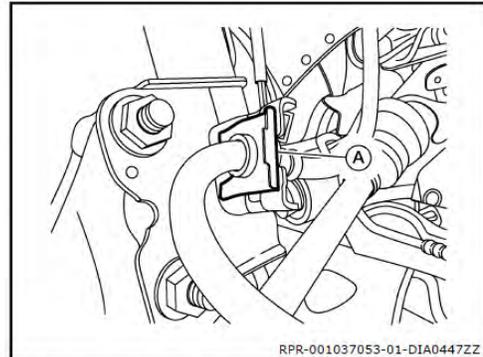


31. Using bubble level (B) on Tool (A) level Tool as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



32. Remove nut from engine mounting insulator (front). Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.
33. Remove nut from engine mounting insulator (rear). Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.
34. Remove front under cover. Refer to "Removal and Installation" in the Exterior section of the ESM.
35. Remove the front wheels and tires using power tool (LH/RH).
36. Remove the lock plates [A (LH/RH)] and remove brake hoses from struts.



37. Remove nut and separate stabilizer connecting rods from struts (LH/RH). Refer to Front Stabilizer "Exploded View" in the Front Suspension section of the ESM.
38. Remove the brake caliper torque member bolts, leaving brake hoses attached. Position the brake calipers aside with wire (LH/RH). Refer to Brake Caliper Assembly "Exploded View" in the Brake System section of the ESM.

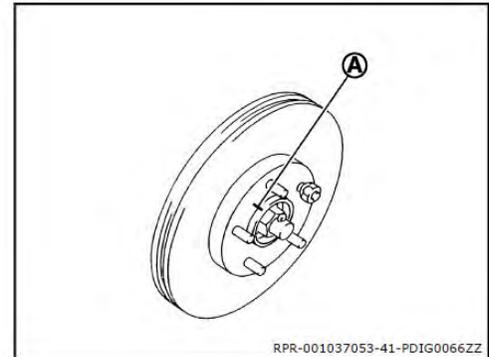
**CAUTION:**

**Do not depress brake pedal while brake calipers are removed.**

39. Put alignment (A) marks on disc brake rotors and on the wheel hub and bearings. Remove the disc brake rotors (LH/RH).

**CAUTION:**

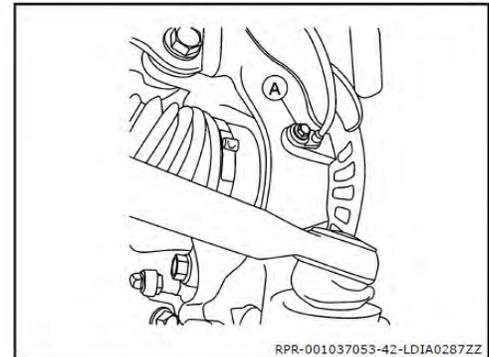
**Do not drop the disc brake rotors.**



40. Remove wheel sensor bolts (A) and position wheel sensors aside (LH/RH).

**CAUTION:**

**Do not pull on wheel sensor harness.**



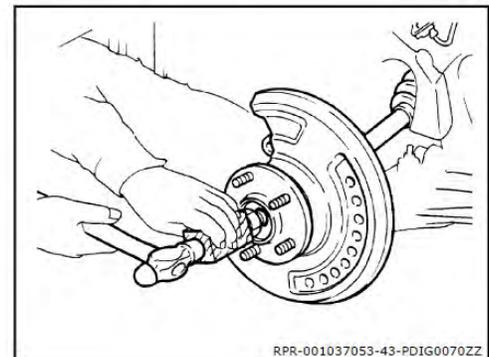
41. Remove cotter pins from front drive shafts (LH/RH).  
42. Remove the nut retainers from front drive shafts (LH/RH).  
43. Loosen the wheel hub lock nuts from the drive shafts using power tool (LH/RH).  
44. Using a piece of wood and a suitable tool, tap on the wheel hub lock nuts to disengage the drive shafts from the wheel hub and bearings (LH/RH).

**CAUTION:**

- **Do not place drive shaft joints at an extreme angle. Be careful not to over extend slide joints.**
- **Do not allow drive shafts to hang without support.**

**NOTE:**

**Use suitable puller if drive shafts cannot be separated from wheel hub and bearings.**



45. Remove the wheel hub lock nuts (LH/RH).

**CAUTION:**

**Do not reuse wheel hub lock nuts.**

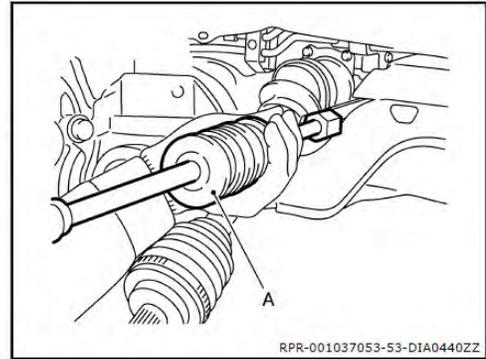
46. Remove the lower strut bolts and nuts. Separate the steering knuckles from the struts (LH/RH). Refer to Front Coil Spring and Strut "Exploded View" in the Front Suspension section of the ESM.  
47. Remove bearing retainer to support bearing bracket bolts (RH only).

48. Insert suitable tool (A) between the drive shafts and transaxle. Remove the drive shafts from the transaxle (LH/RH).

**CAUTION:**

- **Confirm that the circular clips are attached to the drive shafts.**
- **Do not place drive shaft joints at extreme angles when removing drive shafts. Also be careful not to overextend slide joints.**
- **Do not reuse circular clips.**

Tool (A)                      Drive shaft joint puller (Commercially available)



49. Remove the differential side oil seals (LH/RH).

**CAUTION:**

**Do not reuse differential side oil seals.**

50. Remove front fender protector side covers (LH/RH). Refer to Fender Protector "Exploded View" in the Exterior section of the ESM.
51. Remove the front half of front fender protectors (LH/RH). Refer to Fender Protector "Exploded View" in the Exterior section of the ESM.
52. Remove outer socket cotter pins (LH/RH). Refer to Steering Gear and Linkage "Exploded View" in the Steering System section of the ESM.

**CAUTION:**

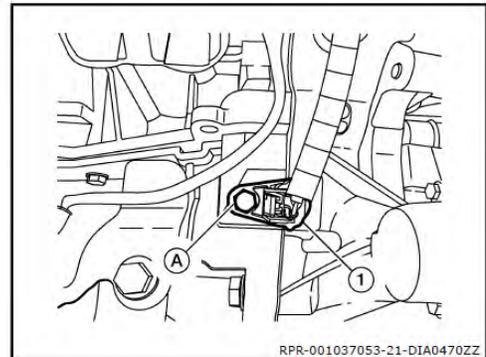
**Do not reuse outer socket cotter pins.**

53. Loosen the outer socket nuts and separate outer sockets from the steering knuckles (LH/RH) using ball joint remover (commercially available).

**CAUTION:**

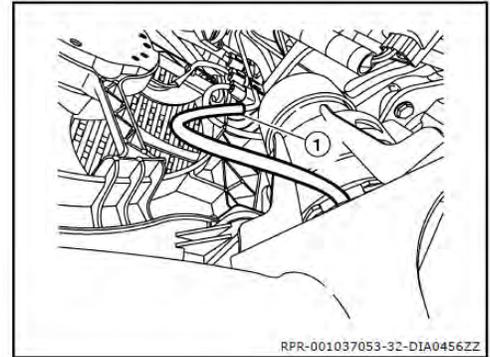
**Leave the outer socket nuts half threaded on the outer sockets to prevent damage to threads and to prevent the tool from coming off suddenly.**

54. Remove the outer socket nuts and separate the outer sockets from the steering knuckles (LH/RH).
55. Remove bolt (A) and position crankshaft position sensor (1) aside.

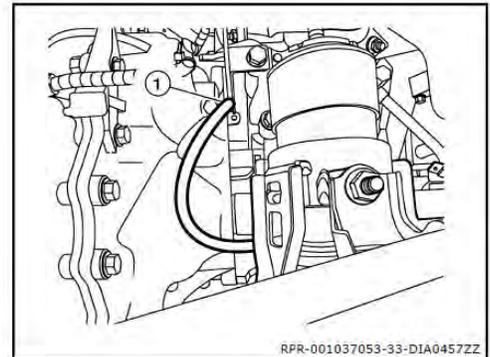


56. Remove the front exhaust tube. Refer to Exhaust System "Exploded View" in the Exhaust System section of the ESM.

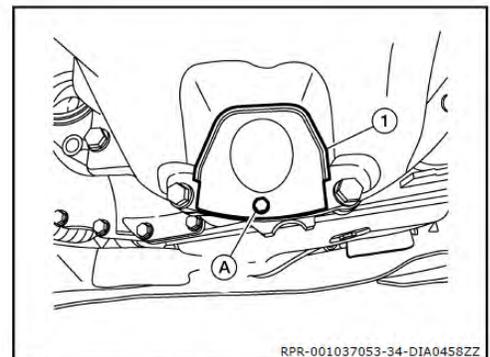
57. Disconnect the front engine mount insulator vacuum hose (1).



58. Disconnect the rear engine mount insulator vacuum hose (1).



59. Remove bolt (A) and remove rear cover plate (1).



60. Hold drive plate with a suitable tool and remove torque converter nuts. Refer to Transmission Assembly "Exploded View" in the Transaxle and Transmission section of the ESM.

61. Remove the power steering tube bracket bolts. Refer to Hydraulic Line "Exploded View" in the Steering System section of the ESM.

**NOTE:**

**There are 4 bolts on the suspension member for the power steering tubes. The power steering tubes will stay with vehicle during removal and installation.**

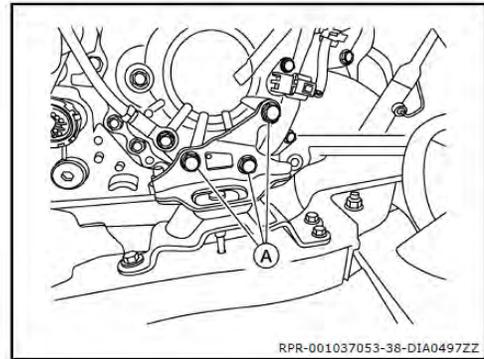
62. Remove the bolts and nuts from the steering gear. Refer to Steering Gear and Linkage "Exploded View" in the Steering System section of the ESM.

63. Secure the steering gear using suitable wire.

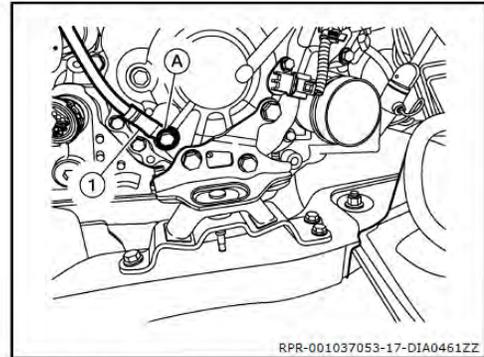
**CAUTION:**

**The steering gear will remain in vehicle. Secure steering gear using suitable wire.**

64. Remove bolts (A) from transaxle mount.

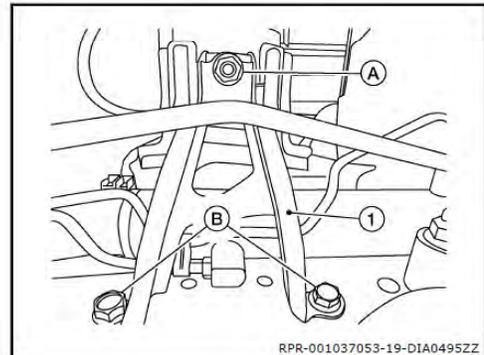


65. Remove bolt (A) and position ground (1) aside.

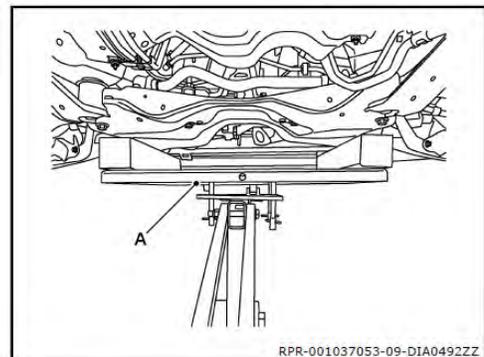


66. Remove rear torque rod bolt. Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.

67. Remove nut (A) and bolts (B) and remove engine mounting insulator (rear) bracket (1).



68. Set hydraulic lift table (A) or equivalent tool under front suspension member.



69. Remove front suspension member bolts and front suspension member stays. Refer to Front Suspension Member "Exploded View" in the Front Suspension section of the ESM.

**CAUTION:**

**Secure front suspension member to hydraulic lift table (or equivalent tool) while removing it.**

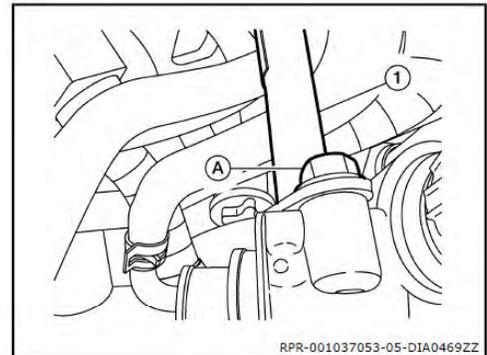
70. Lower the front suspension member.

71. Remove bolt from heater thermostat bracket. Refer to Water Hose "Exploded View" in the Transmission and Transaxle section of the ESM.
72. Drain coolant. Refer to "Changing Engine Coolant" in the Engine Cooling System section of the ESM.
73. Remove CVT fluid cooler hose A and CVT fluid cooler hose D from the CVT oil warmer. Refer to CVT Fluid Cooler System "Exploded View" in the Transaxle and Transmission section of the ESM.
74. Remove CVT water hose A and CVT water hose B from CVT oil warmer. Refer to Water Hose "Exploded View" in the Transaxle and Transmission section of the ESM.
75. Using Tools lower engine and transaxle assembly until the transaxle assembly is low enough to clear driver's side frame rail.

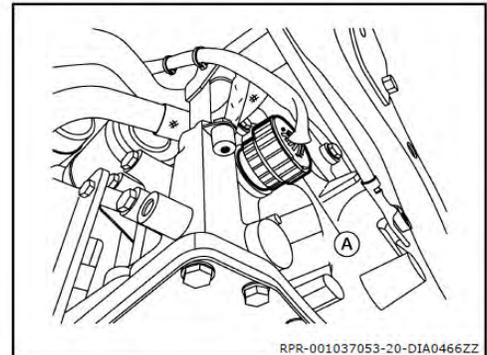
Tool numbers

: (J-52389, J-52604)

76. Disconnect the harness connector from the starter motor "S" terminal. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.
77. Remove nut and remove "B" terminal harness and position aside. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.
78. Remove starter motor bolts and remove starter motor. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.
79. Remove bolt (A) and remove CVT fluid charging pipe (1).



80. Separate the harness retainers from the transaxle assembly.
81. Disconnect the harness connector (A) from the transaxle assembly.



82. Disconnect the harness connector from the output speed sensor. Refer to Output Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.
83. Disconnect the harness connector from the primary speed sensor. Refer to Primary Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.
84. Disconnect the harness connector from the input speed sensor. Refer to Input Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.
85. Support transaxle assembly using a suitable transmission jack and Tool.

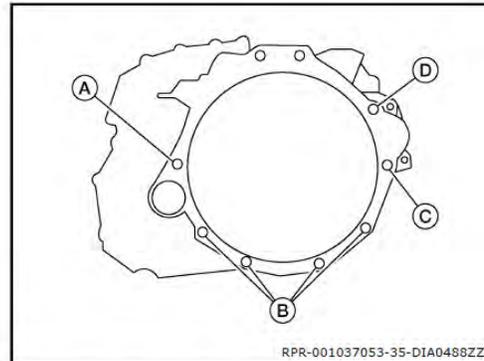
Tool number

: (J-51307)

**CAUTION:**

- Always secure transaxle assembly to transmission jack.
- Do not lift or support transaxle assembly using the bottom of oil pan or damage can occur.

86. Remove bolts (A), (B), (C), and (D).



87. Separate the transaxle assembly from the engine assembly and lower transaxle assembly.

**CAUTION:**

**Secure the torque converter to the transaxle while removing transaxle to prevent torque converter from falling.**

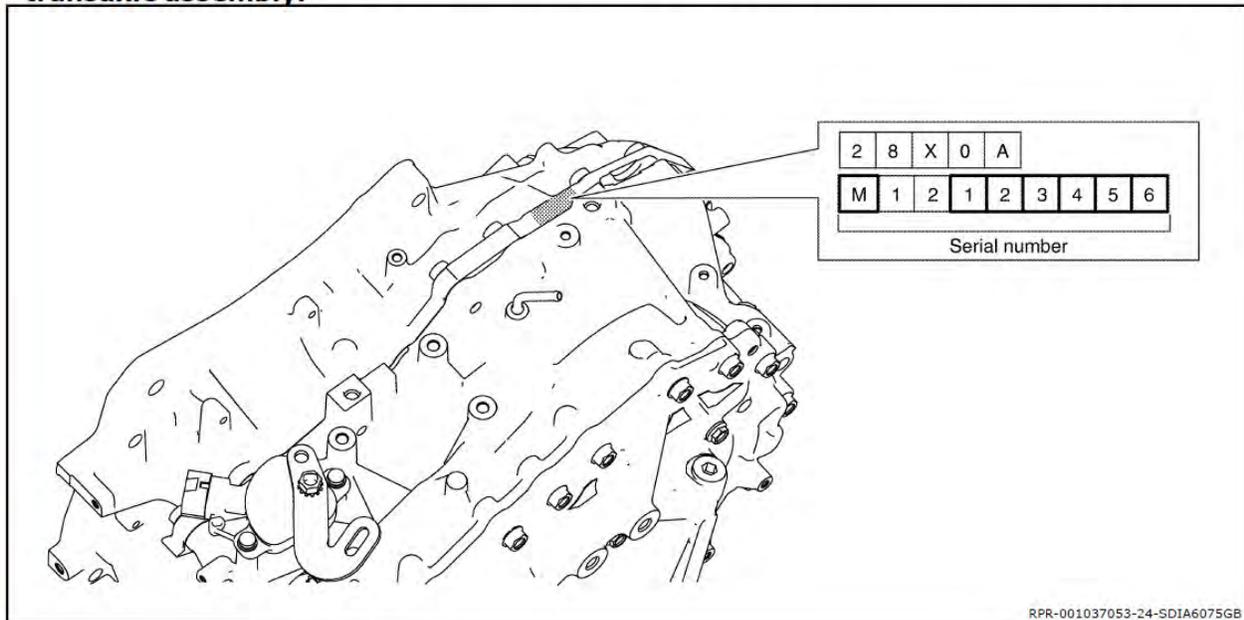
### INSTALLATION

Installation is in the reverse order of removal.

Perform inspection before installation. Refer to "Inspection Before Installation" below.

**NOTE:**

- **If the same transaxle assembly will be reinstalled, replace differential side oil seals (LH/RH). Refer to Differential Side Oil Seal "Exploded View" in the Transaxle and Transmission section of the ESM.**
- **If a new transaxle assembly is being installed, write down the serial number of the new transaxle assembly.**



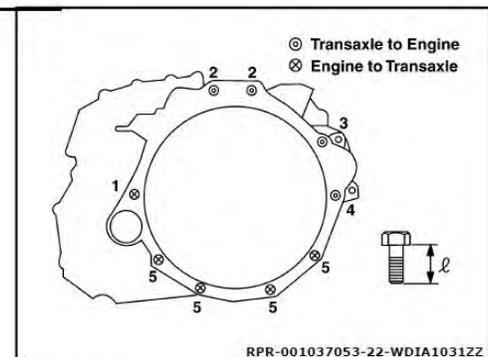
**CAUTION:**

- When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drivetrain components.
- Do not reuse O-rings or copper sealing washers.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to front timing chain case "Removal and Installation" in the Engine Mechanical section of the ESM.
- After torque converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.
- Do not reuse differential side oil seals.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.

**NOTE:**

- When installing the drive plate to torque converter nuts, tighten them temporarily. then tighten the nuts to the specified torque. Refer to "Exploded View" in the Transaxle and Transmission section of the ESM.
- Install the transaxle assembly and engine assembly mounting bolts according to the following standards.

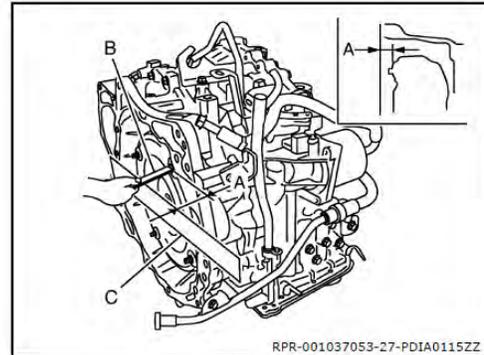
Bolt No.	1	2	3	4	5
Number of bolts	1	2	1	1	4
Bolt length "ℓ" mm (in)	55 (2.17)	39 (1.54)	35 (1.38)	50 (1.97)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	74.5 (7.6, 55)				50.0 (5.1, 37)



- Perform adjustment after installation. Refer to "Adjustment After Installation" below.
- Perform inspection after installation. Refer to "Inspection After Installation" below.

## INSPECTION BEFORE INSTALLATION

After inserting a torque converter to the CVT, check that dimension (A) is within the reference value limit.



B : Scale

C : Straightedge

Dimension (A) : Refer to "Service Data and Specifications (SDS)" in the Transaxle and Transmission section of the ESM.

## Adjustment After Installation

Perform the following.

- Adjust CVT position. Refer to "Adjustment" in the Transaxle and Transmission section of the ESM.
- Check and adjust the engine coolant level. Refer to "Changing Engine Coolant" in the Engine Cooling System section of the ESM.
- Adjust the CVT fluid level. Refer to "Adjustment" in the Transaxle and Transmission section of the ESM.
- Perform accelerator pedal released position learning. Refer to "Description" in the Engine Control section of the ESM.
- Perform throttle valve closed position learning. Refer to "Description" in the Engine Control section of the ESM.
- Perform front wheel alignment. Refer to "Wheel Alignment" in the Front Suspension section of the ESM.
- Perform adjustment of steering angle sensor neutral position. Refer to "Description" in the Brake Control System section of the ESM.

## INSPECTION AFTER INSTALLATION

Check the following items:

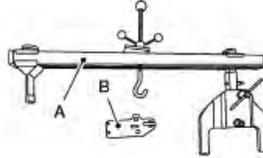
- CVT fluid leakage, refer to "Inspection" in the Transaxle and Transmission section of the ESM.
- For CVT shifter position, refer to "Inspection" in the Transaxle and Transmission section of the ESM.
- Start the engine and check for coolant leaks.

# PATHFINDER AWD

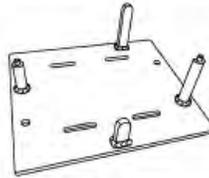
## Special Service Tool

INFOID:RDE-001047687

Tool number (TechMate No.) Tool name	Description
A. — (J-52389) Engine support tool B. — (J-52604) Engine support bracket	Supporting engine
(J-51307) CVT transmission jack adapter	Removing CVT



RDE-001047687-01-DIA0481ZZ



RDE-001047687-02-DIA0537ZZ

## Commercial Service Tool

INFOID:RDE-001047689

Tool number Tool name	Description
Power tool	Loosening nuts, screws and bolts
Hydraulic lift table	Removing front suspension member
Transmission jack	Removing transaxle assembly
Drive shaft joint puller	Removing drive shaft



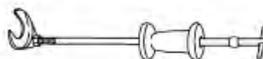
RDE-001047689-01-11B1407E



RDE-001047689-02-DIA0077ZZ



RDE-001047689-03-DIA0078ZZ



RDE-001047689-05-DIA0439ZZ

## Removal and Installation

### Removal

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

#### **CAUTION:**

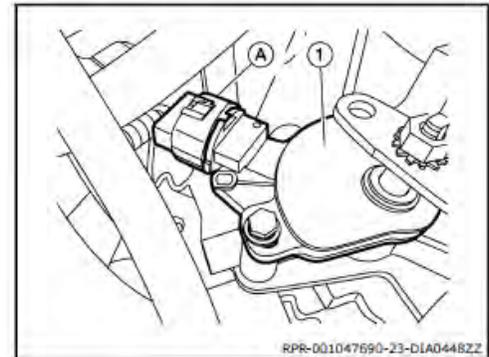
- Perform when the engine is cold.
- When replacing the TCM and transaxle assembly as a set, replace the transaxle assembly first and then replace the TCM. Refer to "Description" in the Transaxle and Transmission section of the ESM.
- When replacing the transaxle assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY." Refer to "Description" in the Transaxle and Transmission section of the ESM.

#### **NOTE:**

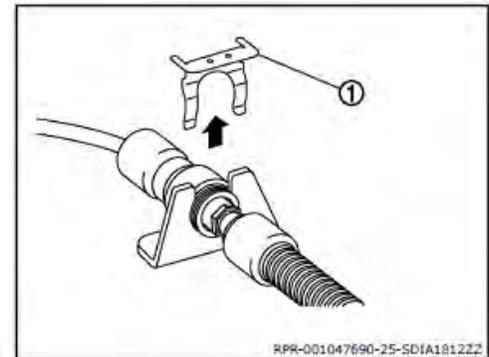
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove battery tray. Refer to "Removal and Installation" in the Power Supply, Ground & Circuit Elements section of the ESM.
2. Remove the cowl top cover and the cowl top extension. Refer to "Removal and Installation" in the Exterior section of the ESM.
3. Remove engine room cover. Refer to "Removal and Installation" in the Engine Mechanical section of the ESM.

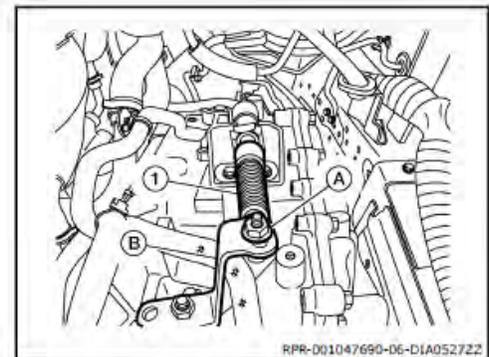
4. Disconnect the harness connector (A) from the transmission range switch (1).



5. Remove lock plate (1) as shown.

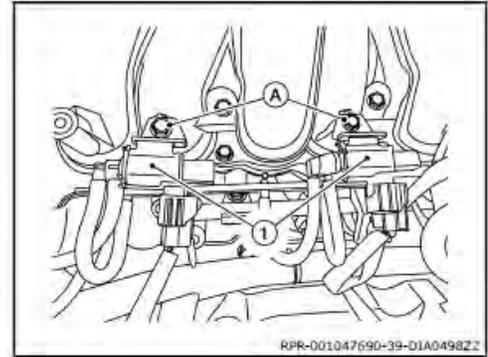


6. Remove nut (A) and separate control cable (1) from the manual lever (B).

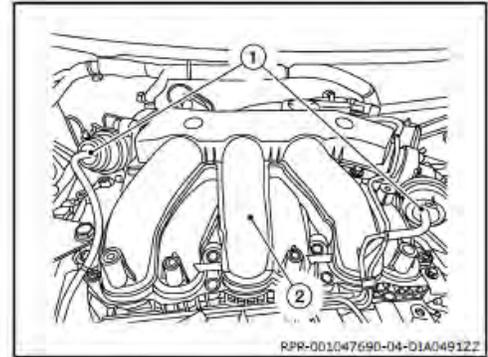


7. Disconnect brake booster vacuum hose from intake manifold collector. Refer to Vacuum Lines "Exploded View" in the Brake System section of the ESM.
8. Disconnect PCV hose from intake manifold collector.

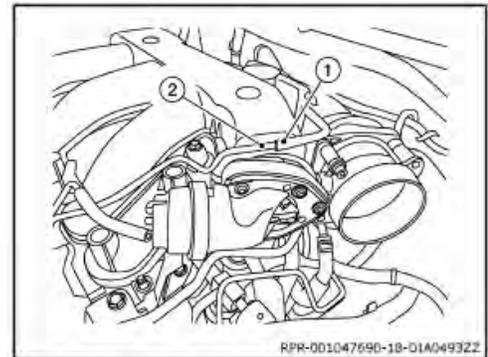
- Remove bolts (A) and set VIAS control solenoid valves (1) aside.



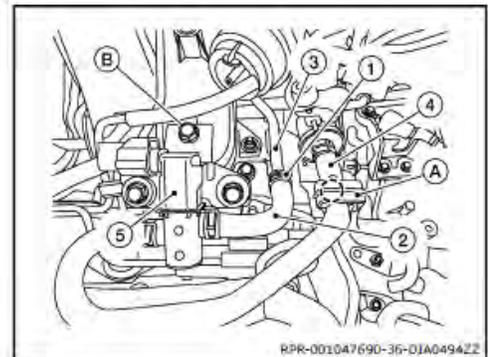
- Disconnect vacuum hoses (1) from intake manifold collector (2).



- Disconnect vacuum hose (1) from vacuum pipe (2).



- Remove clamp (1) and disconnect hose (2) from pipe (3).



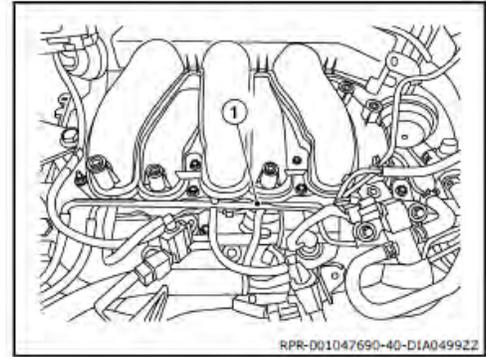
- Release pawl and remove hose (4) from retainer (A).



: Pawl

- Remove bolt (B) and set EVAP canister purge volume control solenoid (5) aside.

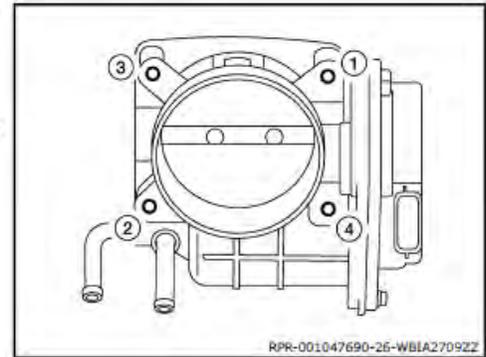
15. Set vacuum tube assembly (1) aside.



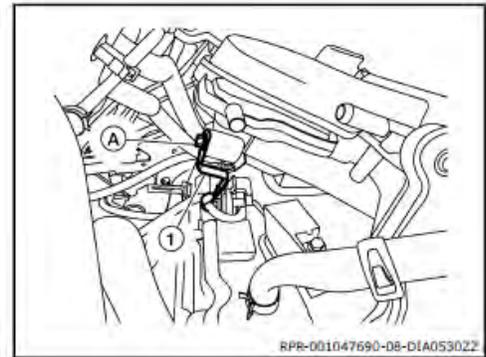
16. Loosen bolts in reverse of sequence shown and remove electric throttle control actuator bolts, then remove electric throttle control actuator and position aside.

**CAUTION:**

- Handle carefully to avoid any shock to the electric throttle control actuator.
- Do not disassemble electric throttle control actuator.



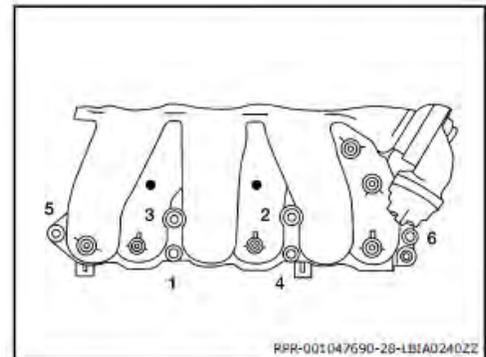
17. Remove bolt (A) and set bracket (1) aside.



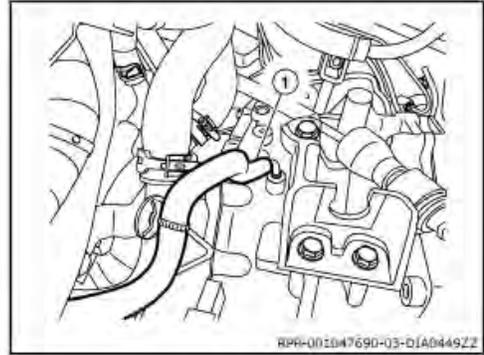
18. Loosen the intake manifold collector bolts and nuts in reverse of the sequence shown, then remove the intake manifold collector and gasket.

**CAUTION:**

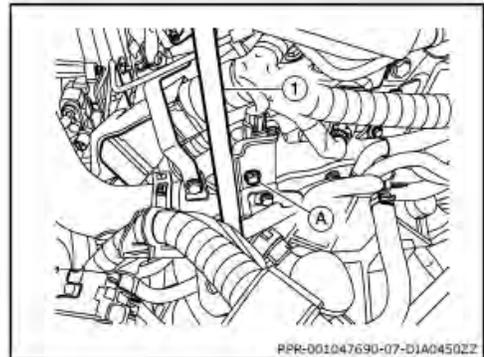
**Do not reuse intake manifold collector gasket.**



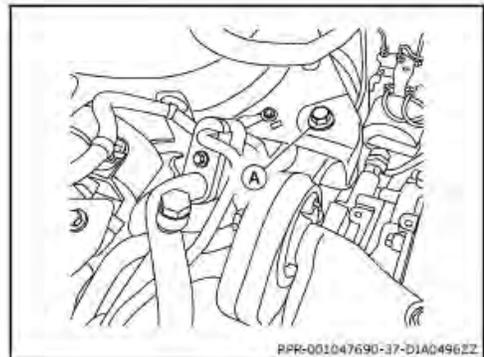
19. Disconnect transaxle breather hose (1) from transaxle assembly.



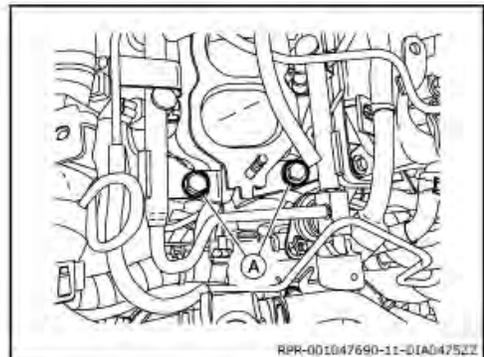
20. Remove bolt (A) from CVT charge pipe (1).



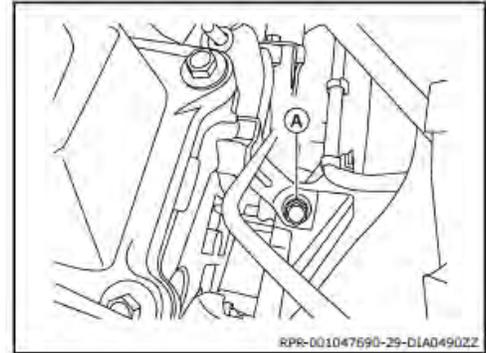
21. Remove bolt (A) from upper torque rod.



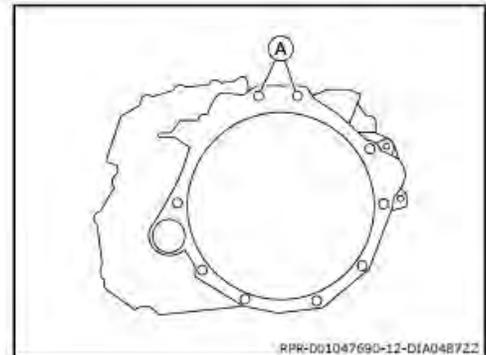
22. Remove fuel tube bolts (A).



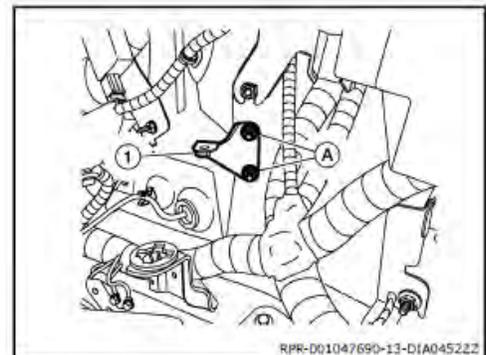
23. Remove CVT gusset bolt (A).



24. Remove bolts (A).



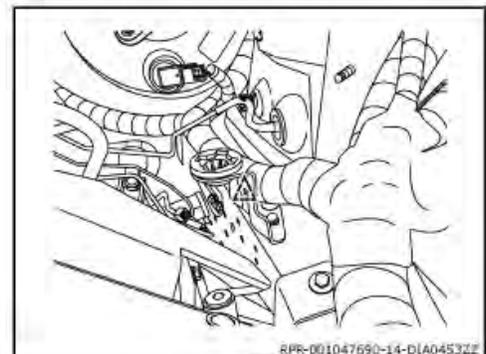
25. Remove nuts (A) and bracket (1).



26. Using a suitable tool, release clip.

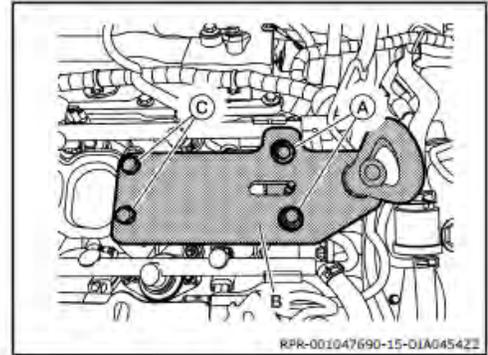


: Clip



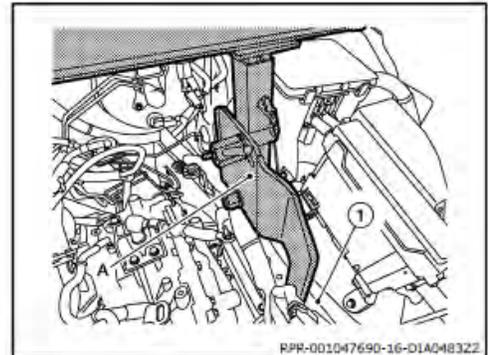
27. Install Tool (B) using bolts (A) and (C) supplied with Tool. Tighten bolts to specification. Refer to Engine Support Tool Operating Instructions.

Tool (B) : (J-52604)  
Bolts (A) : 20 N·m (2.0 kg-m, 15 ft-lb)  
Bolts (C) : 11 N·m (1.1 kg-m, 8 ft-lb)



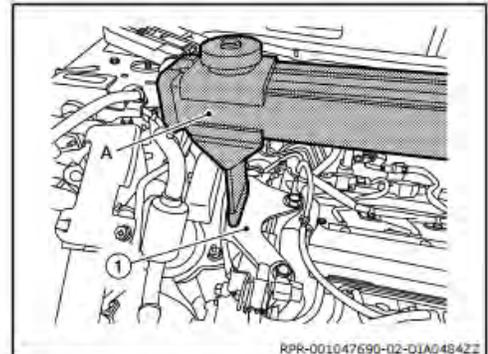
28. Install Tool (A) to drivers side frame rail (1) as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



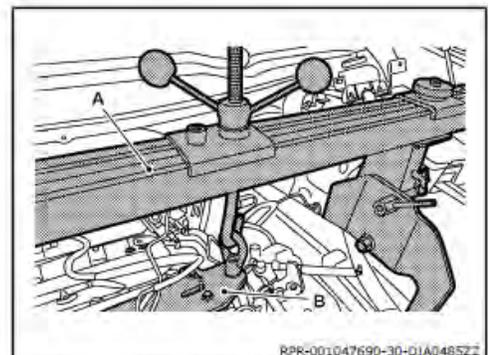
29. Install Tool (A) on top of engine mounting insulator [RH (1)] as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



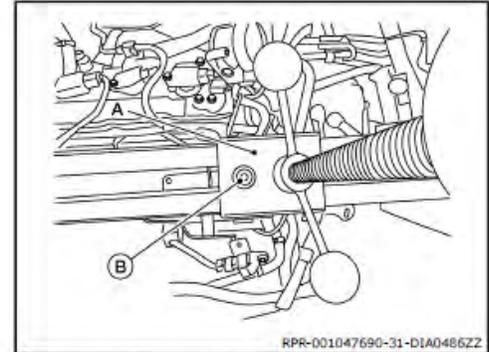
30. Install Tool (A) to Tool (B). Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)  
Tool (B) : (J-52604)

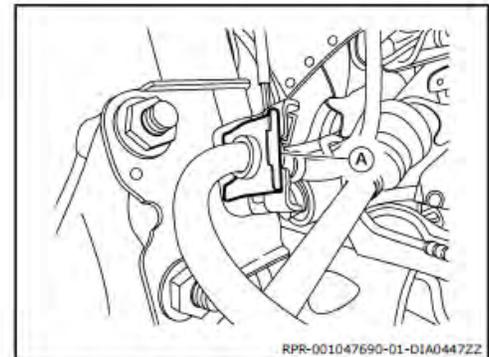


31. Using bubble level (B) on Tool (A) level Tool as shown. Refer to Engine Support Tool Operating Instructions.

Tool (A) : (J-52389)



32. Remove nut from engine mounting insulator (rear). Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.
33. Remove front under cover. Refer to "Removal and Installation" in the Exterior section of the ESM.
34. Remove the front wheels and tires using power tool (LH/RH).
35. Remove the lock plates [A (LH/RH)] and remove brake hoses from struts.



36. Remove nuts and separate stabilizer connecting rods from struts (LH/RH). Refer to Front Stabilizer "Exploded View" in the Front Suspension section of the ESM.
37. Remove the brake caliper torque member bolts, leaving brake hoses attached. Position the brake calipers aside with wire (LH/RH). Refer to Brake Caliper Assembly "Exploded View" in the Brake System section of the ESM.

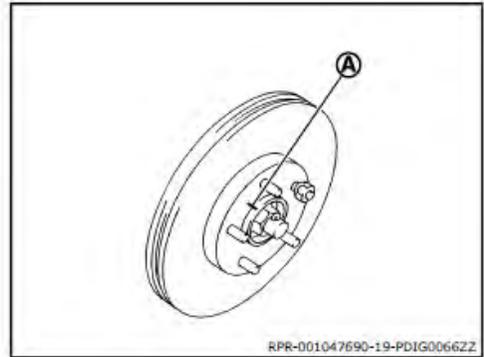
**CAUTION:**

**Do not depress brake pedal while brake calipers are removed.**

38. Put alignment (A) marks on disc brake rotors and on the wheel hub and bearings. Remove the disc brake rotors (LH/RH).

**CAUTION:**

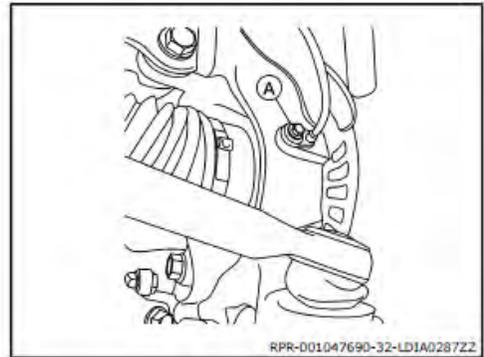
**Do not drop the disc brake rotors.**



39. Remove wheel sensor bolts (A) and position wheel sensors aside (LH/RH).

**CAUTION:**

**Do not pull on wheel sensor harness.**



40. Remove cotter pins from front drive shafts (LH/RH).

41. Remove the nut retainers from front drive shafts (LH/RH).

42. Loosen the wheel hub lock nuts from the drive shafts using power tool (LH/RH).

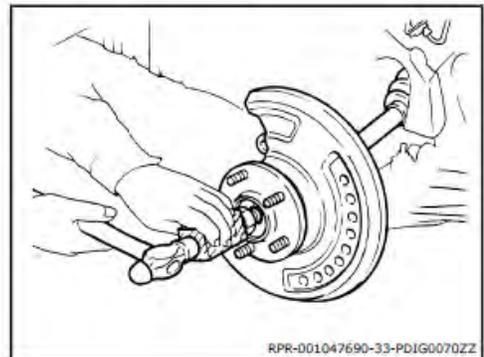
43. Using a piece of wood and a suitable tool, tap on the wheel hub lock nuts to disengage the drive shafts from the wheel hub and bearings (LH/RH).

**CAUTION:**

- Do not place drive shaft joints at an extreme angle. Be careful not to over extend slide joints.
- Do not allow drive shafts to hang without support.

**NOTE:**

**Use suitable puller if drive shafts cannot be separated from wheel hub and bearings.**



44. Remove the wheel hub lock nuts (LH/RH).

**CAUTION:**

**Do not reuse wheel hub lock nuts.**

45. Remove the lower strut bolts and nuts. Separate the steering knuckles from the struts (LH/RH). Refer to Front Coil Spring and Strut "Exploded View" in the Front Suspension section of the ESM.

46. Remove bearing retainer to support bearing bracket bolts (RH only).

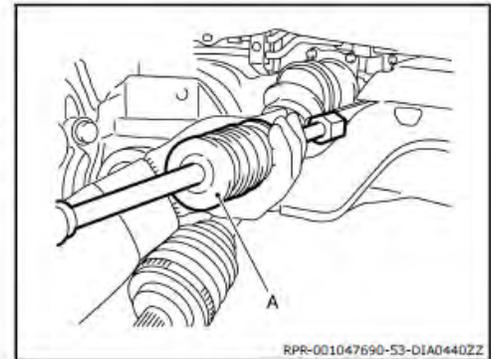
47. Insert suitable tool (A) between the drive shafts and transaxle. Remove the drive shafts from the transaxle (LH/RH).

**CAUTION:**

- Confirm that the circular clips are attached to the drive shafts.
- Do not place drive shaft joints at extreme angles when removing drive shafts. Also be careful not to overextend slide joints.
- Do not reuse circular clips.

Tool (A)

Drive shaft joint puller (Commercially available)

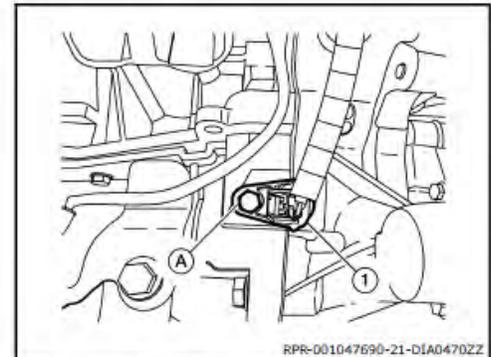


48. Remove the differential side oil seals (LH/RH).

**CAUTION:**

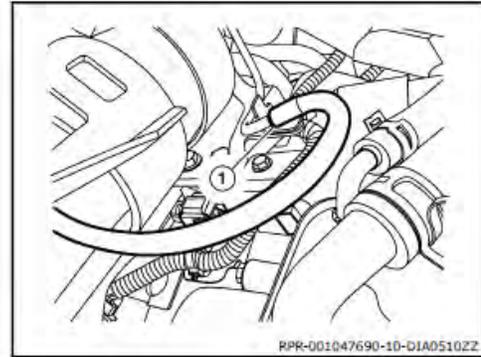
**Do not reuse differential side oil seals.**

49. Remove front fender protector side covers (LH/RH). Refer to Fender Protector "Exploded View" in the Exterior section of the ESM.
50. Remove the front half of front fender protectors (LH/RH). Refer to Fender Protector "Exploded View" in the Exterior section of the ESM.
51. Remove bolt (A) and position crankshaft position sensor (1) aside.

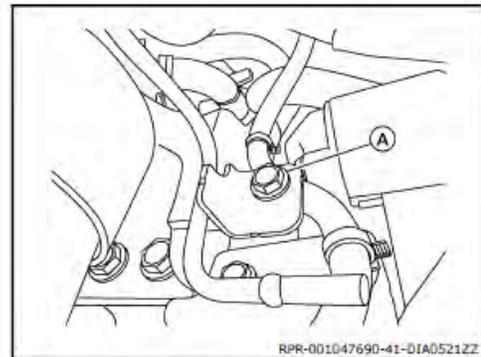


52. Remove the front exhaust tube. Refer to Exhaust System "Exploded View" in the Exhaust System section of the ESM.

53. Disconnect the front engine mount insulator vacuum hose (1).

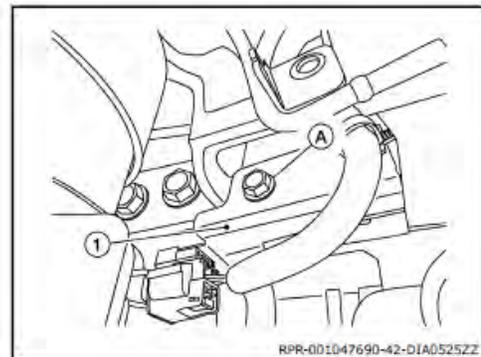


54. Remove bolt (A) from engine mounting insulator (front) pipe bracket.



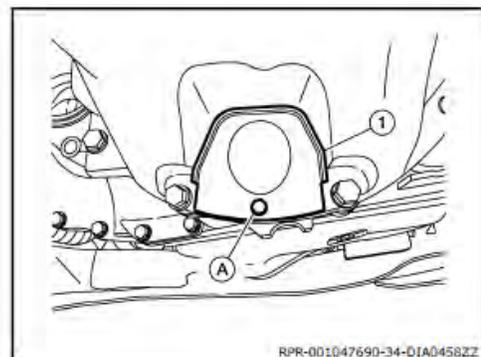
55. Remove engine mounting insulator (front). Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.

56. Remove bolt (A) and set bracket (1) aside.



57. Remove bolt (B) and position bracket aside.

58. Remove bolt (A) and remove rear plate cover (1).

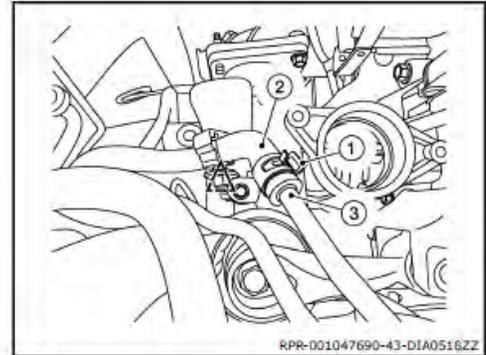


59. Hold drive plate with a suitable tool and remove torque converter nuts. Refer to Transmission Assembly "Exploded View" in the Transaxle and Transmission section of the ESM.

60. Using a suitable tool, release clip.



: Clip



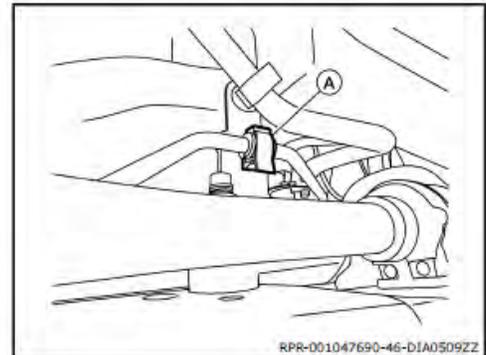
61. Release hose clamp (1) and separate the high pressure piping [lower (2)] from the low pressure piping [upper (3)].

62. Remove the power steering tube bracket bolts. Refer to Hydraulic Line "Exploded View" in the Steering System section of the ESM.

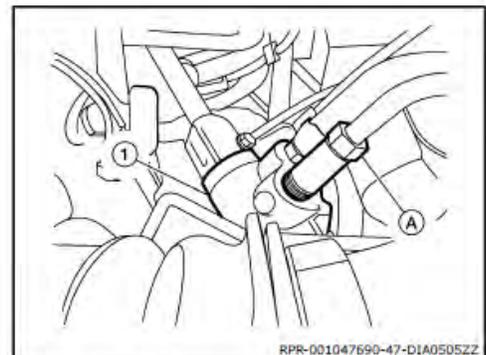
**NOTE:**

**There are 3 bolts on the suspension member for the power steering tubes.**

63. Using a suitable tool, release the retainer (A).



64. Separate the high pressure piping (A) from the steering gear (1).

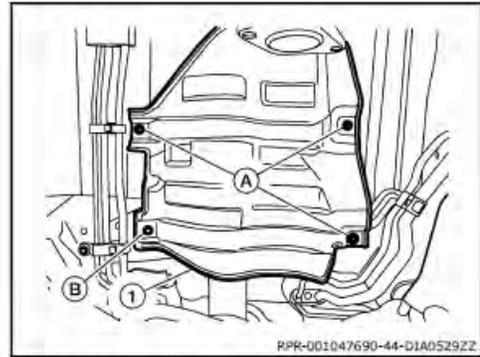


65. Remove lower bolt and separate the steering intermediate shaft from the steering gear.

**CAUTION:**

**With the steering linkage disconnected, the spiral cable may snap by turning the steering wheel beyond the limited number of turns. Secure the steering wheel during removal.**

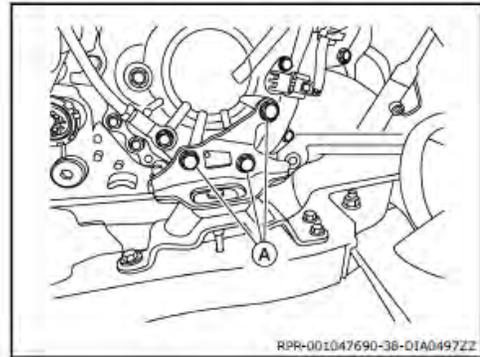
66. Remove rear propeller shaft heat shield.



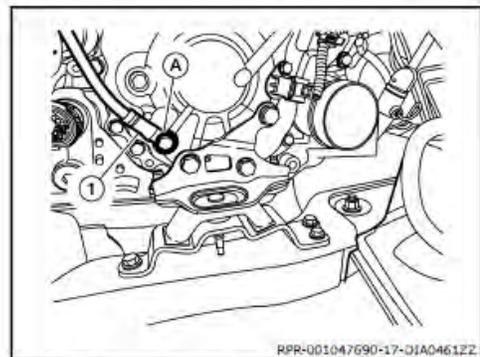
67. Remove bolts and disconnect rear propeller shaft from transfer assembly. Refer to Rear Propeller Shaft "Exploded View" in the Driveline section of the ESM.

68. Using suitable wire, secure the rear propeller shaft.

69. Remove bolts (A) from transaxle mount.

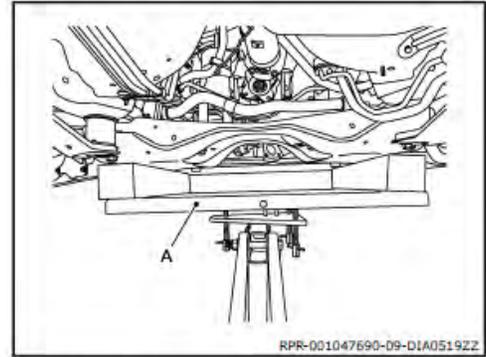


70. Remove bolt (A) and position ground (1) aside.



71. Remove rear torque rod bolt. Refer to Engine Assembly "Exploded View" in the Engine Mechanical section of the ESM.

72. Set hydraulic lift table (A) or equivalent tool under front suspension member.

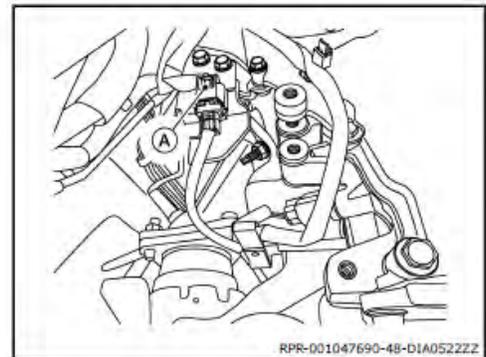


73. Remove front suspension member bolts and front suspension member stays. Refer to Front Suspension Member "Exploded View" in the Front Suspension section of the ESM.

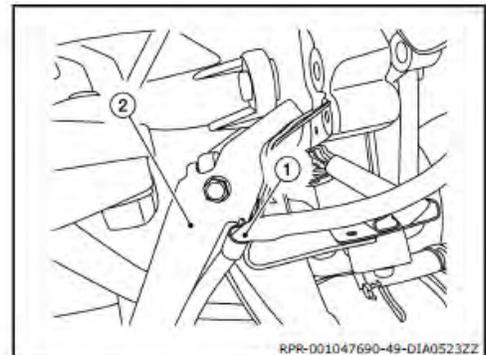
**CAUTION:**

**Secure front suspension member to hydraulic lift table (or equivalent tool) while removing it.**

74. Lower the front suspension member.
75. Remove bolt from heater thermostat bracket. Refer to Water Hose "Exploded View" in the Transmission and Transaxle section of the ESM.
76. Drain coolant. Refer to "Changing Engine Coolant" in the Engine Cooling System section of the ESM.
77. Remove CVT fluid cooler hose A and CVT fluid cooler hose D from the CVT oil warmer. Refer to CVT Fluid Cooler System "Exploded View" in the Transaxle and Transmission section of the ESM.
78. Remove CVT water hose A and CVT water hose B from CVT oil warmer. Refer to Water Hose "Exploded View" in the Transaxle and Transmission section of the ESM.
79. Disconnect the harness connector (A) from heated oxygen sensor 2 (bank 2).



80. Separate the harness (1) from the bracket (2).

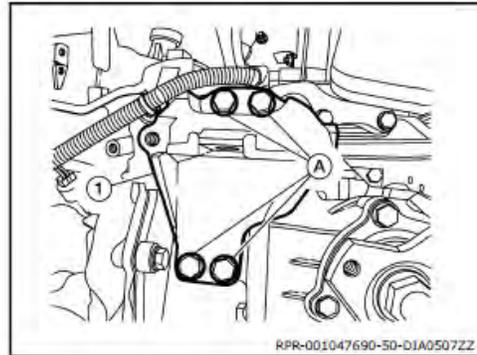


81. Remove the Three way catalyst (bank 1). Refer to Exhaust Manifold and Three Way Catalyst "Exploded View" in the Engine Mechanical section of the ESM.

**NOTE:**

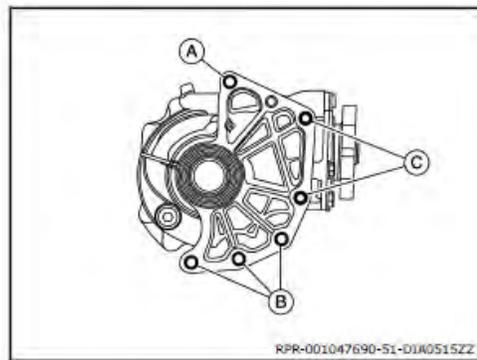
**Removal of the exhaust manifold is not necessary.**

82. Remove bolts (A) and remove engine mount bracket [rear (1)].



83. Remove rear gusset and transfer gusset. Refer to Transfer Assembly "Exploded View" in the Driveline section of the ESM.  
84. Remove bolts (A), (B) and (C).

**CAUTION:**  
Do not damage oil seal inside of CVT.



85. Remove transfer assembly from the vehicle.  
86. Using Tools lower engine and transaxle assembly until the transaxle assembly is low enough to clear driver's side frame rail.

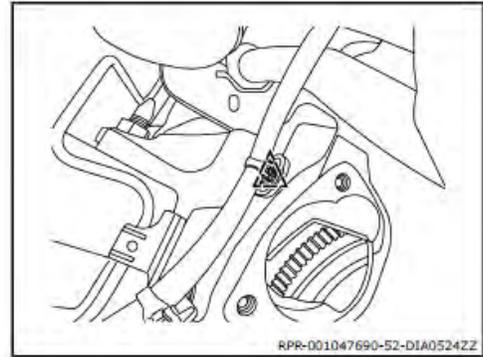
Tool numbers : (J-52389, J-52604)

87. Disconnect the harness connector from the starter motor "S" terminal. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.  
88. Remove nut and remove "B" terminal harness and position aside. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.  
89. Remove starter motor bolts and remove starter motor. Refer to Starter Motor "Exploded View" in the Starting System section of the ESM.

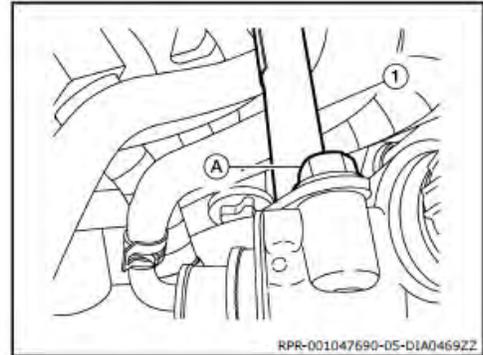
90. Using a suitable tool, release the clip.



: Clip

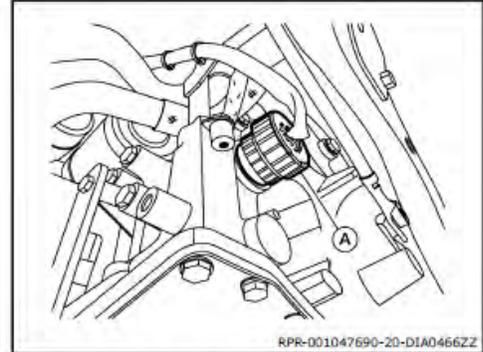


91. Remove bolt (A) and remove CVT fluid charging pipe (1).



92. Separate the harness retainers from the transaxle assembly.

93. Disconnect the harness connector (A) from the transaxle assembly.



94. Disconnect the harness connector from the output speed sensor. Refer to Output Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.

95. Disconnect the harness connector from the primary speed sensor. Refer to Primary Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.

96. Disconnect the harness connector from the input speed sensor. Refer to Input Speed Sensor "Exploded View" in the Transaxle and Transmission section of the ESM.

97. Support transaxle assembly using a suitable transmission jack and Tool.

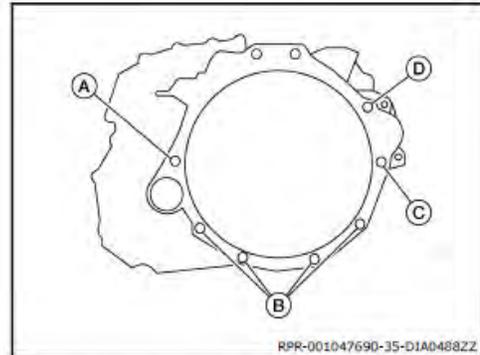
Tool number

: (J-51307)

**CAUTION:**

- Always secure transaxle assembly to transmission jack.
- Do not lift or support transaxle assembly using the bottom of oil pan or damage can occur.

98. Remove bolts (A), (B), (C), and (D).



99. Separate the transaxle assembly from the engine assembly and lower transaxle assembly.

**CAUTION:**

Secure the torque converter to the transaxle while removing transaxle to prevent torque converter from falling.

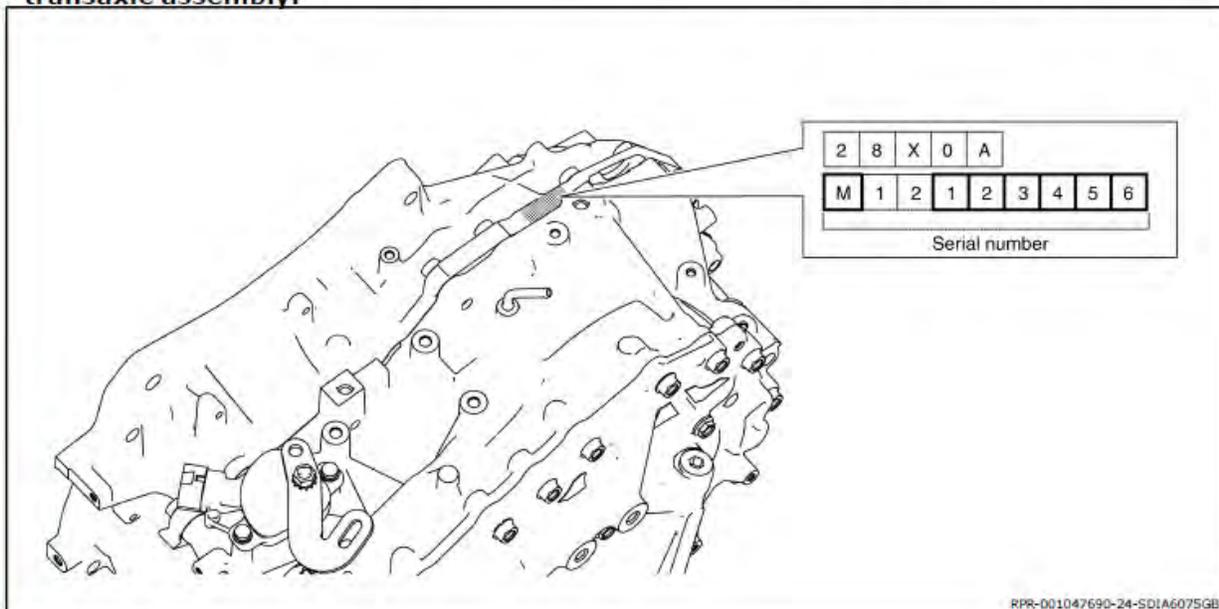
**INSTALLATION**

Installation is in the reverse order of removal.

Perform inspection before installation. Refer to "Inspection Before Installation" below.

**NOTE:**

- If the same transaxle assembly will be reinstalled, replace differential side oil seals (LH/RH). Refer to Differential Side Oil Seal "Exploded View" in the Transaxle and Transmission section of the ESM.
- If a new transaxle assembly is being installed, write down the serial number of the new transaxle assembly.



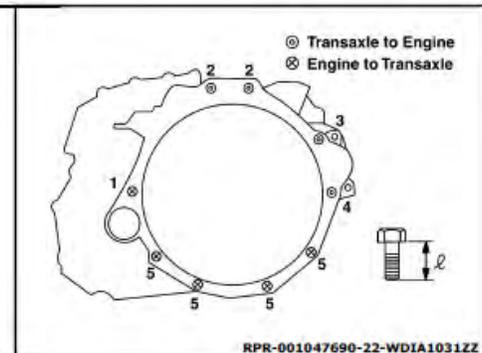
**CAUTION:**

- When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drivetrain components.
- Do not reuse O-rings or copper sealing washers.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to front timing chain case "Removal and Installation" in the Engine Mechanical section of the ESM.
- After torque converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.
- Do not reuse differential side oil seals.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.

**NOTE:**

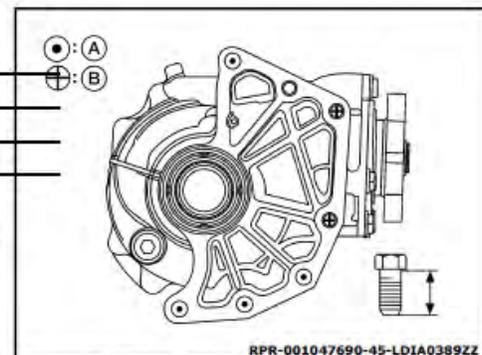
- When installing the drive plate to torque converter nuts, tighten them temporarily, then tighten the nuts to the specified torque. Refer to "Exploded View" in the Transaxle and Transmission section of the ESM.
- Install the transaxle assembly and engine assembly mounting bolts according to the following standards.

Bolt No.	1	2	3	4	5
Number of bolts	1	2	1	1	4
Bolt length "ℓ" mm (in)	55 (2.17)	39 (1.54)	35 (1.38)	50 (1.97)	45 (1.77)
Tightening torque N·m (kg·m, ft·lb)	74.5 (7.6, 55)				50.0 (5.1, 37)



- When installing the transfer to the transaxle, install the bolts following the standard below.

Bolt No.	(A)	(B)
Quantity	4	2
Bolt length "ℓ" mm (in)	40 (1.57)	40 (1.57)

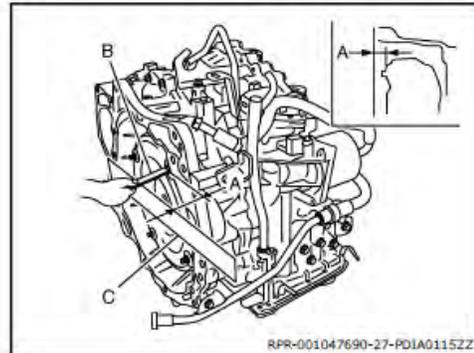


**CAUTION:**

- When installing transfer assembly to transaxle, be careful not to damage oil seal inside of CVT.
- Do not reuse transfer assembly side oil seal.
- Do not reuse transfer assembly O-ring.
- Perform adjustment after installation. Refer to "Adjustment After Installation" below.
- Perform inspection after installation. Refer to "Inspection After Installation" below.

## INSPECTION BEFORE INSTALLATION

After inserting a torque converter to the CVT, check that dimension (A) is within the reference value limit.



B : Scale

C : Straightedge

Dimension (A) : Refer to "Service Data and Specifications (SDS)" in the Transaxle and Transmission section of the ESM.

## Adjustment After Installation

Perform the following.

- Adjust CVT position. Refer to "Adjustment" in the Transaxle and Transmission section of the ESM.
- Check and adjust power steering fluid. Refer to "Periodic Maintenance" in the Steering System section of the ESM.
- Check and adjust transfer case fluid. Refer to "Periodic Maintenance" in the Driveline section of the ESM.
- Check and adjust the engine coolant level. Refer to "Changing Engine Coolant" in the Engine Cooling System section of the ESM.
- Adjust the CVT fluid level. Refer to "Adjustment" in the Transaxle and Transmission section of the ESM.
- Perform accelerator pedal released position learning. Refer to "Description" in the Engine Control section of the ESM.
- Perform throttle valve closed position learning. Refer to "Description" in the Engine Control section of the ESM.
- Perform front wheel alignment. Refer to "Wheel Alignment" in the Front Suspension section of the ESM.
- Perform adjustment of steering angle sensor neutral position. Refer to "Description" in the Brake Control System section of the ESM.

## INSPECTION AFTER INSTALLATION

Check the following items:

- CVT fluid leakage, refer to "Inspection" in the Transaxle and Transmission section of the ESM.
- Check transfer assembly for leaks, refer to "Inspection" in the Driveline section of the ESM.
- Check power steering system for leaks, refer to "Inspection" in the Steering System section of the ESM.
- For CVT shifter position, refer to "Inspection" in the Transaxle and Transmission section of the ESM.
- Start the engine and check for coolant leaks.

## CLAIMS INFORMATION

DESCRIPTION	OP CODE	FRT
CVT R&I	JD01AA	(1)

- (1) The new procedure in the bulletin will alter the Flat Rate Time (FRT) for operations involving removal of the CVT from the vehicle. Refer to the current Nissan Warranty Flat Rate Manual for current FRTs.

## AMENDMENT HISTORY

PUBLISHED DATE	REFERENCE	DESCRIPTION
June 14, 2019	NTB19-046	Original bulletin published

