SECTION TM
TRANSAXLE & TRANSMISSION

CONTENTS

6MT: RS6F52A

CVT: RE0F09B

CVT: RE0F10A

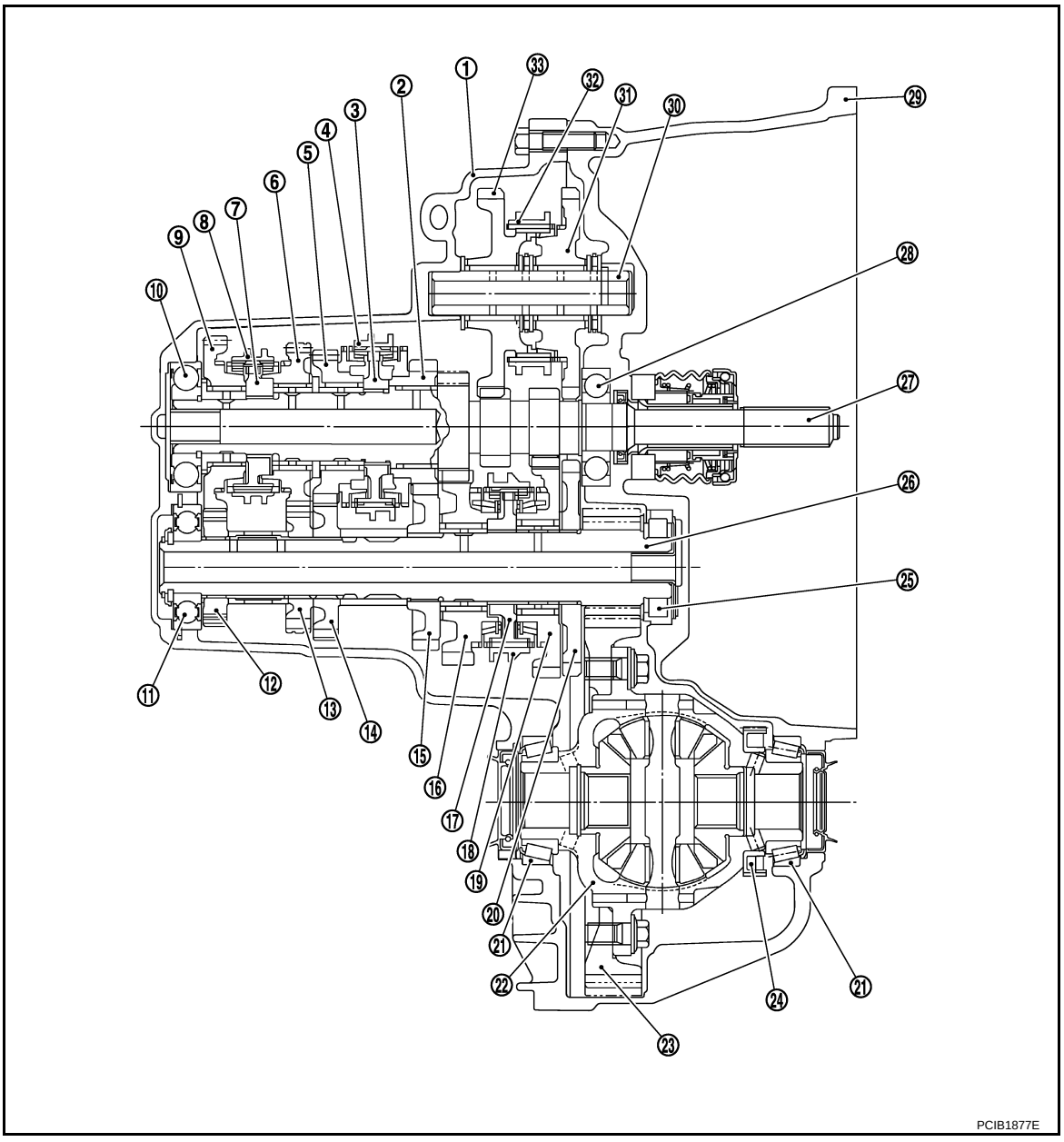
FUNCTION DIAGNOSIS

M/T SYSTEM

System Diagram

INFOID:0000000000991868

CROSS-SECTIONAL VIEW



1. Transaxle case
2. 3rd input gear
3. 3rd-4th synchronizer hub
4. 3rd-4th coupling sleeve
5. 4th input gear
6. 5th input gear
7. 5th-6th synchronizer hub
8. 5th-6th coupling sleeve
9. 6th input gear
10. Input shaft rear bearing
11. Mainshaft rear bearing
12. 6th main gear
13. 5th main gear
14. 4th main gear
15. 3rd main gear
16. 2nd main gear
17. 1st-2nd synchronizer hub
18. 1st-2nd coupling sleeve
19. 1st main gear
20. Reverse main gear
21. Differential side bearing
22. Differential case assembly
23. Final gear
24. Speedometer drive gear
25. Mainshaft front bearing
26. Mainshaft
27. Input shaft

28. Input shaft front bearing
29. Clutch housing
30. Reverse idler shaft
31. Reverse idler gear (Front)
32. Reverse coupling sleeve
33. Reverse idler gear (Rear)

System Description

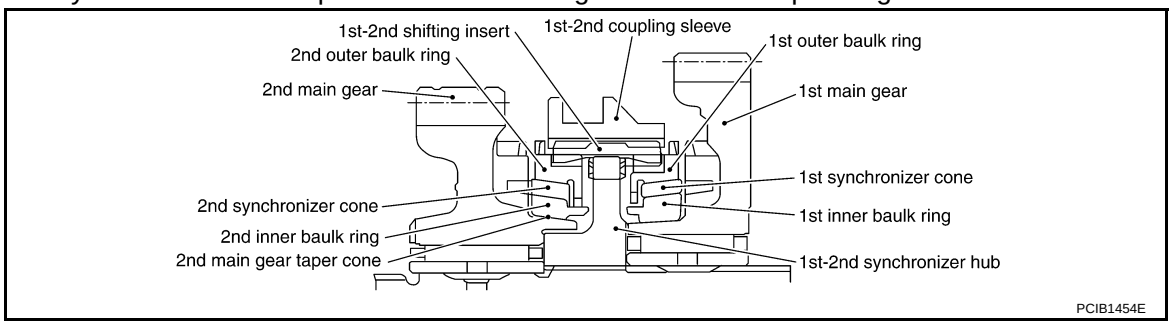
INFOID:0000000000991869

DOUBLE-CONE SYNCHRONIZER

Double-cone synchronizer is adopted for 3rd gear to reduce operating force of the shift lever.

TRIPLE-CONE SYNCHRONIZER

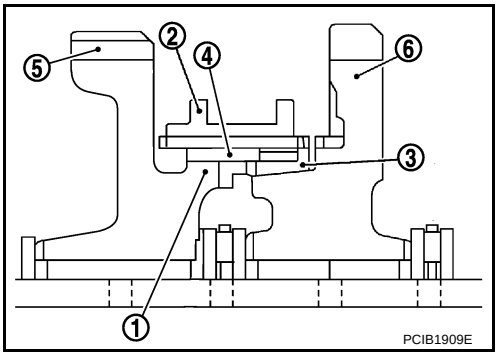
Triple-cone synchronizer are adopted for 1st and 2nd gears to reduce operating force of the shift lever.



REVERSE GEAR NOISE PREVENTION FUNCTION (SYNCHRONIZING METHOD)

Reverse gear can be matched smoothly in a structure by setting synchronizer hub (1) of reverse idler gear (Rear), reverse coupling sleeve (2), reverse baulk ring (3), and reverse insert spring (4) to reverse idler gears, and letting reverse gear be synchronized.

5 : Reverse idler gear (Rear)
6 : Reverse idler gear (Front)



SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000000991870

Use the chart below to help you find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

Reference page		MA-11			TM-28			TM-21	TM-32		TM-28			
SUSPECTED PARTS (Possible cause)		OIL (Oil level is low.)	OIL (Wrong oil.)	OIL (Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	CHECK PLUG RETURN SPRING AND CHECK BALL (Worn or damaged)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)
Symptoms	Noise	1	2								3	3		
	Oil leakage		3	1	2	2	2							
	Hard to shift or will not shift		1	1				2					3	3
	Jumps out of gear							1	2	3	3			

PRECAUTION

PRECAUTIONS

Service Notice or Precautions

INFOID:0000000000991871

- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace oil with vehicle on level surface.
- During removal or installation, keep inside of transaxle clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they do not interfere with the function of the parts they are applied.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Be careful not to damage sliding surfaces and mating surfaces.

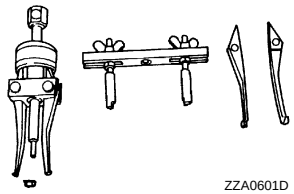
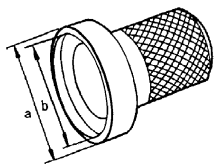
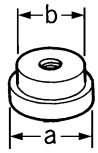
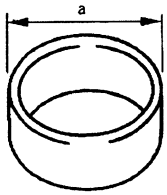
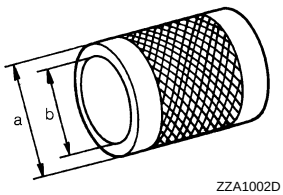
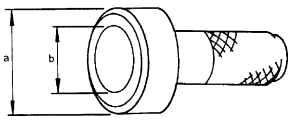
PREPARATION

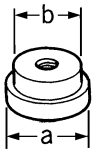
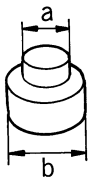
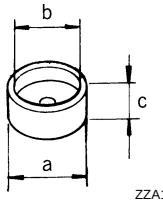
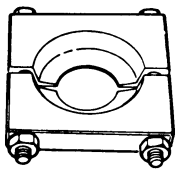
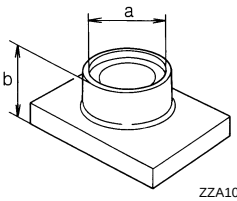
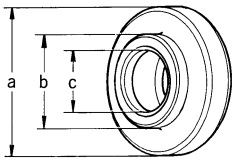
PREPARATION

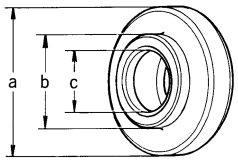
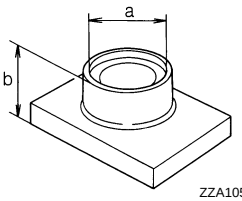
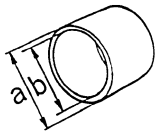
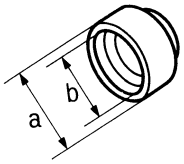
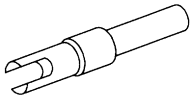
Special Service Tools

INFOID:0000000000991872

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

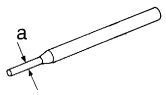
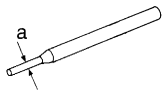
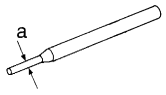
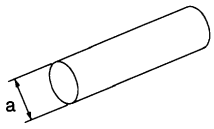
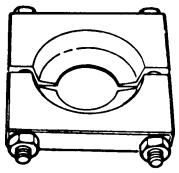
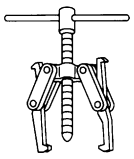
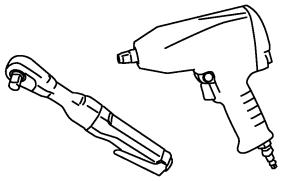
Tool number (Kent-Moore No.) Tool name	Description
KV381054S0 (J-34286) Puller  ZZA0601D	• Removing differential side bearing outer race • Removing mainshaft front bearing
ST33400001 (J-26082) Drift  ZZA0814D	Installing differential side oil seal (clutch housing side) **a: 60 mm (2.36 in) dia.** **b: 47 mm (1.85 in) dia.**
ST35321000 (—) Drift  ZZA1000D	• Installing input shaft oil seal • Installing reverse main gear • Installing 1st main gear bushing • Installing 1st-2nd synchronizer hub assembly • Installing 2nd main gear bushing • Installing 3rd main gear **a: 49 mm (1.93 in) dia.** **b: 41 mm (1.61 in) dia.**
KV40105320 (—) Drift  ZZA0898D	Installing differential side bearing outer race (clutch housing side) **a: 88 mm (3.46 in) dia.**
ST33200000 (J-26082) Drift  ZZA1002D	• Installing mainshaft front bearing • Installing 6th input gear bushing • Installing 4th main gear • Installing 5th main gear • Installing 6th main gear **a: 60 mm (2.36 in) dia.** **b: 44.5 mm (1.752 in) dia.**
ST30720000 (J-25405) Drift  ZZA0811D	• Installing differential side oil seal (transaxle case side) • Installing differential side bearing outer race (transaxle case side) • Installing mainshaft rear bearing • Installing differential side bearing **a: 77 mm (3.03 in) dia.** **b: 55.5 mm (2.185 in) dia.**

Tool number (Kent-Moore No.) Tool name	Description
ST33061000 (J-8107-2) Drift  ZZA1000D	• Installing bore plug • Removing differential side bearing (transaxle case side) • Removing differential side bearing (clutch housing side) **a: 38 mm (1.50 in) dia.** **b: 28.5 mm (1.122 in) dia.**
ST33052000 (—) Drift  ZZA1023D	• Removing input shaft rear bearing • Removing 5th input gear bushing, 4th input gear, 4th input gear bushing, 3rd-4th synchronizer hub assembly, and 3rd input gear • Installing input shaft front bearing • Removing mainshaft rear bearing • Removing 6th main gear • Removing 4th main gear and 5th main gear **a: 22 mm (0.87 in) dia.** **b: 28 mm (1.10 in) dia.**
KV40105020 (—) Drift  ZZA1133D	• Removing 5th input gear and 5th-6th synchronizer hub assembly • Removing 3rd main gear, 2nd main gear, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st main gear bushing, and reverse main gear **a: 39.7 mm (1.563 in) dia.** **b: 35 mm (1.38 in) dia.** **c: 15 mm (0.59 in)**
ST30031000 (J-22912-01) Puller  ZZA0537D	Measuring wear of inner baulk ring
KV40105710 (—) Press stand  ZZA1058D	• Installing 3rd-4th synchronizer hub assembly • Installing 4th input gear bushing • Installing 5th input gear bushing • Installing 5th-6th synchronizer hub assembly • Installing 2nd main gear bushing • Installing 3rd main gear **a: 46 mm (1.81 in) dia.** **b: 41 mm (1.61 in)**
ST30901000 (J-26010-01) Drift  ZZA0978D	• Installing input shaft rear bearing • Installing 4th main gear • Installing 5th main gear • Installing 6th main gear • Installing mainshaft rear bearing **a: 79 mm (3.11 in) dia.** **b: 45 mm (1.77 in) dia.** **c: 35.2 mm (1.386 in) dia.**

Tool number (Kent-Moore No.) Tool name	Description
ST30032000 (J-26010-01) Drift  ZZA0978D	Installing input shaft front bearing **a: 80 mm (3.15 in) dia.** **b: 38 mm (1.50 in) dia.** **c: 31 mm (1.22 in) dia.**
ST38220000 (—) Press stand  ZZA1058D	• Installing reverse main gear • Installing 1st main gear bushing • Installing 1st-2nd synchronizer hub assembly **a: 63 mm (2.48 in) dia.** **b: 65 mm (2.56 in)**
KV40101630 (J-35870) Drift  ZZA1003D	Installing reverse main gear **a: 68 mm (2.68 in) dia.** **b: 60 mm (2.36 in) dia.**
KV38102510 (—) Drift  ZZA0838D	• Installing 1st main gear bushing • Installing 1st-2nd synchronizer hub assembly • Installing differential side bearing (transaxle case side) • Installing differential side bearing (clutch housing side) **a: 71 mm (2.80 in) dia.** **b: 65 mm (2.56 in) dia.**
(J-39713) Preload adapter  NT087	Measuring end play of side gear

Commercial Service Tools

INFOID:0000000000991873

Tool name	Description
Pin punch  NT410	Removing and installing retaining pin **a: 4.5 mm (0.177 in) dia.**
Pin punch  NT410	Removing and installing retaining pin of selector lever **a: 5.5 mm (0.217 in) dia.**
Pin punch  NT410	Removing and installing retaining pin of each shifter lever **a: 7.5 mm (0.295 in) dia.**
Drift  S-NT063	Installing striking rod oil seal and shifter lever oil seal **a: 24.5 mm (0.965 in) dia.**
Puller  ZZA0537D	Removing each bearing, gear, and bushing
Puller  NT077	Removing each bearing, gear, and bushing
Power tool  PBIC0190E	Loosening bolts and nuts

ON-VEHICLE MAINTENANCE

M/T OIL

Draining

INFOID:0000000000991874

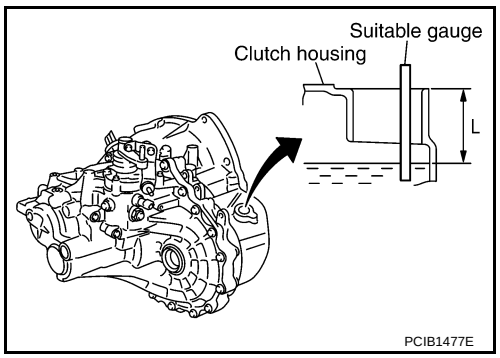
1. Start engine and let it run to warm up transaxle oil.
2. Stop engine and remove the drain plug to drain the oil.
3. Install the drain plug with a new gasket to the transaxle case. Tighten the drain plug to the specified torque. Refer to TM-28, "Exploded View".
   CAUTION:
   Do not reuse gasket.

Refilling

INFOID:0000000000991875

1. Remove the plug and fill transaxle with new oil.

   Oil grade and capacity: Refer to MA-11, "Fluids and Lubricants".



2. After refilling oil, measure oil level to check if it is within the specification using suitable gauge as shown.
   CAUTION:
   Do not start engine while checking oil level.

   Oil level "L": 55.0 - 61.0 mm (2.17 - 2.40 in)

3. Install the plug with a new O-ring to the clutch housing.
   CAUTION:
   Do not reuse O-ring.
4. Tighten plug to the specified torque. Refer to TM-28, "Exploded View".

Inspection

INFOID:0000000000991876

LEAKAGE

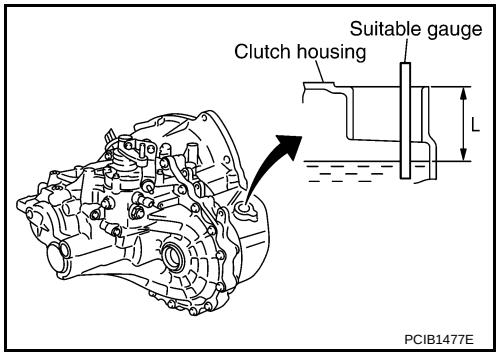
- Make sure that oil is not leaking from transaxle or around it.

LEVEL

- Remove the plug.
- Measure oil level to check if it is within the specification using a suitable gauge as shown.
  CAUTION:
  Do not start engine while checking oil level.

-

Oil level "L": 55.0 - 61.0 mm (2.17 - 2.40 in)



- Install the plug with a new O-ring to the clutch housing.
  CAUTION:
  Do not reuse O-ring.
- Tighten plug to the specified torque. Refer to TM-28, "Exploded View".

ON-VEHICLE REPAIR

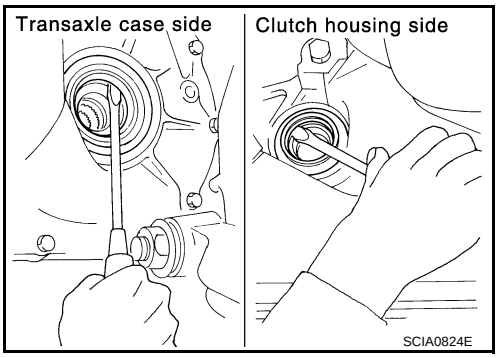
SIDE OIL SEAL

Removal and Installation

INFOID:0000000000991877

REMOVAL

1. Remove the drive shaft. Refer to FAX-9, "Removal and Installation (Left Side)", FAX-10, "Removal and Installation (Right Side)".
2. Remove oil seal using suitable tool.
   CAUTION:
   Do not damage the transaxle case surface when removing oil seal.



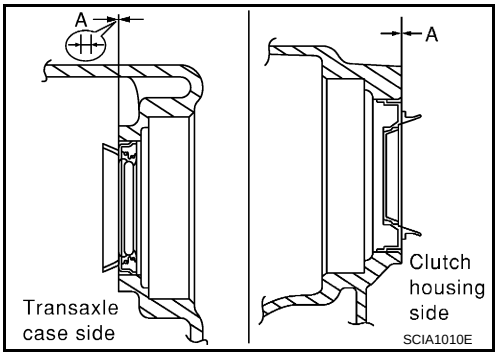
INSTALLATION

1. Drive the oil seal straight in until it protrudes from the case end equal to dimension "A" shown using Tool.

   Dimension "A" : Within 0.5 mm (0.020 in) of flush with the case.

   Tool number : ST30720000 (J–25405)

   CAUTION:
   - **Apply multi-purpose grease onto oil seal lip.**
   - **Do not reuse oil seal.**



2. Install the drive shaft. Refer to FAX-9, "Removal and Installation (Left Side)", FAX-10, "Removal and Installation (Right Side)".
3. Check the transaxle fluid level. Refer to TM-17, "Inspection".

BACK-UP LAMP SWITCH

Removal and Installation

INFOID:0000000000991878

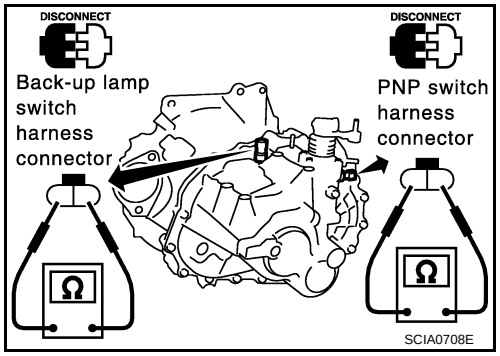
For removal and installation of back-up lamp switch, refer to TM-28, "Exploded View".

Inspection

INFOID:0000000000991879

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No



PARK/NEUTRAL POSITION SWITCH

Removal and Installation

INFOID:0000000000991880

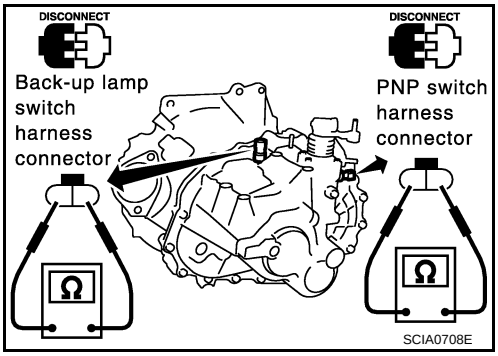
For removal and installation of park/neutral position switch, refer to TM-28, "Exploded View".

Inspection

INFOID:0000000000991881

- Check continuity.

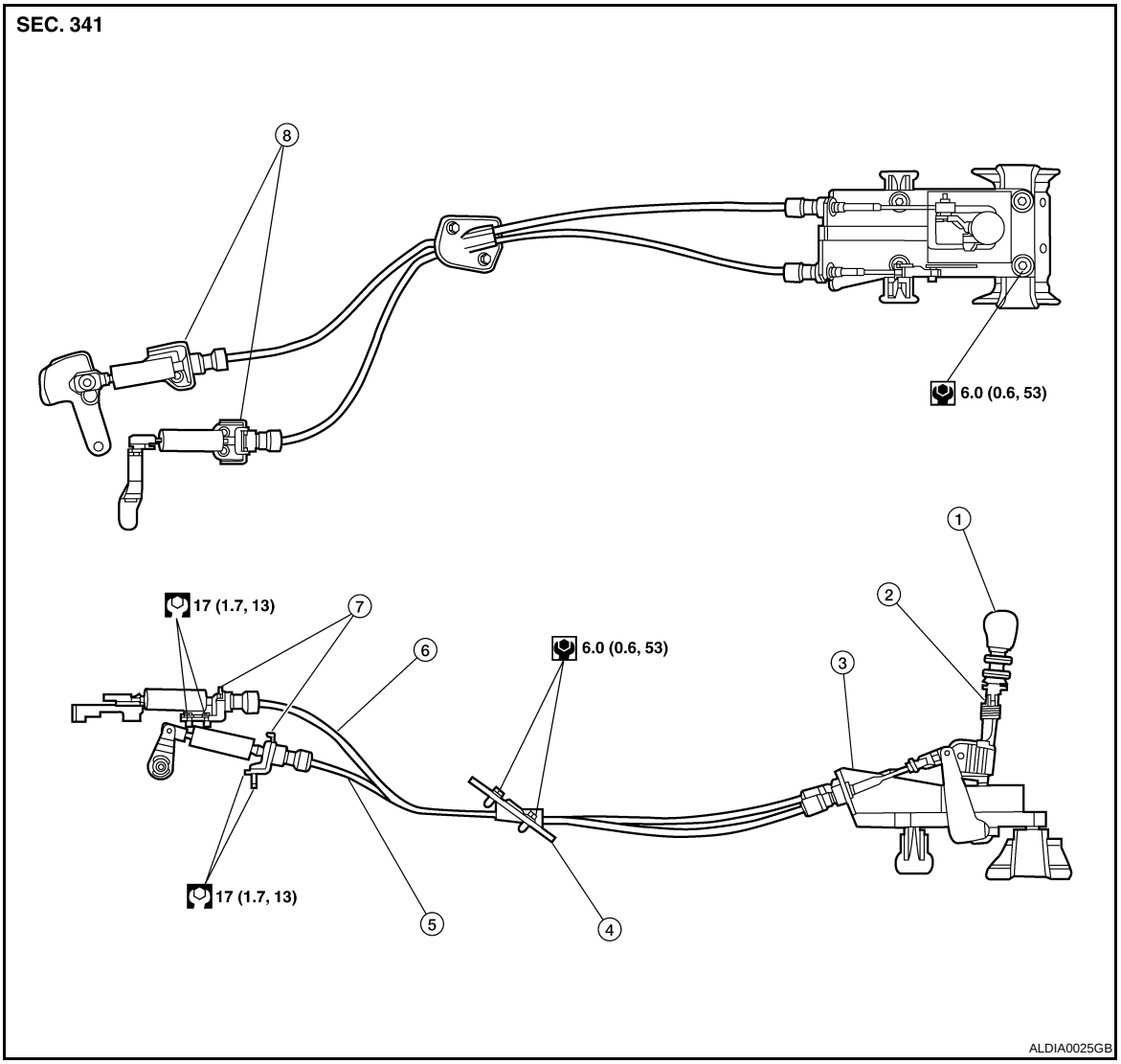
Gear position	Continuity
Neutral	Yes
Except neutral	No



CONTROL LINKAGE

Exploded View

INFOID:0000000000991882



1. Control lever knob
2. Control lever
3. Control device assembly
4. Retainer grommet
5. Select cable
6. Shift cable
7. Lock plate
8. Cable bracket

Removal and Installation

INFOID:0000000000991883

REMOVAL

1. Shift control lever to the neutral position.
2. Remove the air filter assembly. Refer to EM-18, "Removal and Installation".
3. Remove the shift cable from the CVT shift lever and cable bracket.
4. Remove the select cable from the CVT select lever and cable bracket.
5. Remove the center console. Refer to IP-16, "Disassembly and Assembly".
6. Remove the shift cable from the control device assembly.
7. Remove the select cable from the control device assembly.
8. Remove the bracket covering the retainer grommet.
9. Remove the retainer grommet bolts and retainer grommet.

10. Remove the shift cable and select cable from the vehicle.
11. Remove the control device assembly bolts and the control device assembly.

INSTALLATION

Installation is in the reverse order of removal.

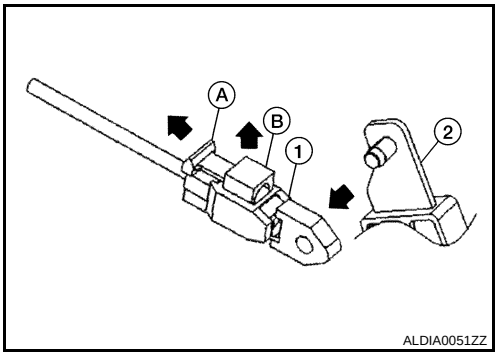
- After assembly, make sure control lever automatically returns to Neutral when it is moved to 1st, 2nd, or Reverse.
- When control lever is shifted to each position, make sure there is no binding or disconnection at each connection.

Adjustment

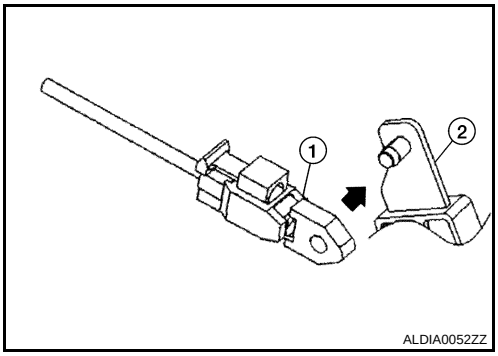
INFOID:0000000000991884

SELECT CABLE ADJUSTMENT

1. Remove the select cable eye end (1) from the select lever (2) of the control device.
2. Slide the lock (A) on the select cable eye end (1) away from the cable end.
3. Turn the select cable eye end (1) over and push the stopper (B) to release the adjustment.

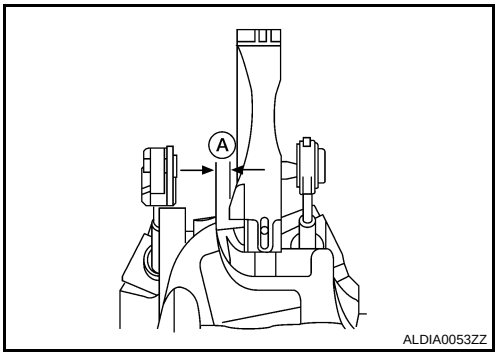


4. Install the select cable eye end (1) to the select lever (2) of the control device

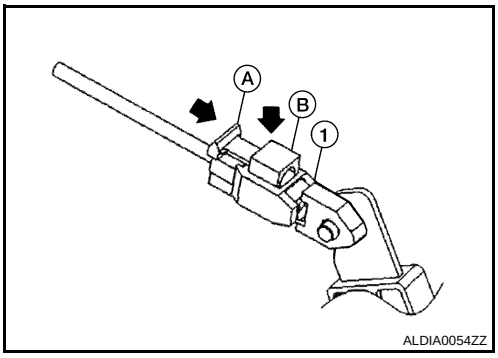


5. Hold the shift lever with the gap between the reverse gate stopper and the shifter base at the specified distance (A).

Distance "A" : 6.3 – 7.0 mm (0.25 – 0.28 in)



6. Push the stopper (B) into the cable eye end housing (1).
7. Slide the lock (A) over the stopper (B).
8. Check for smooth gear select operation.

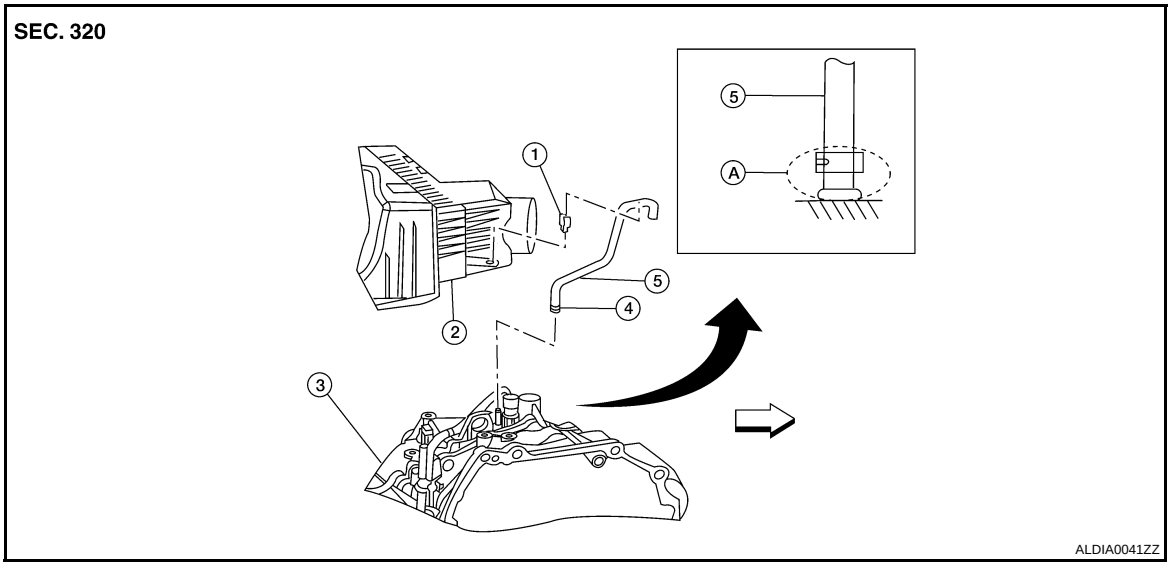


AIR BREATHER HOSE

Exploded View

INFOID:0000000000991885

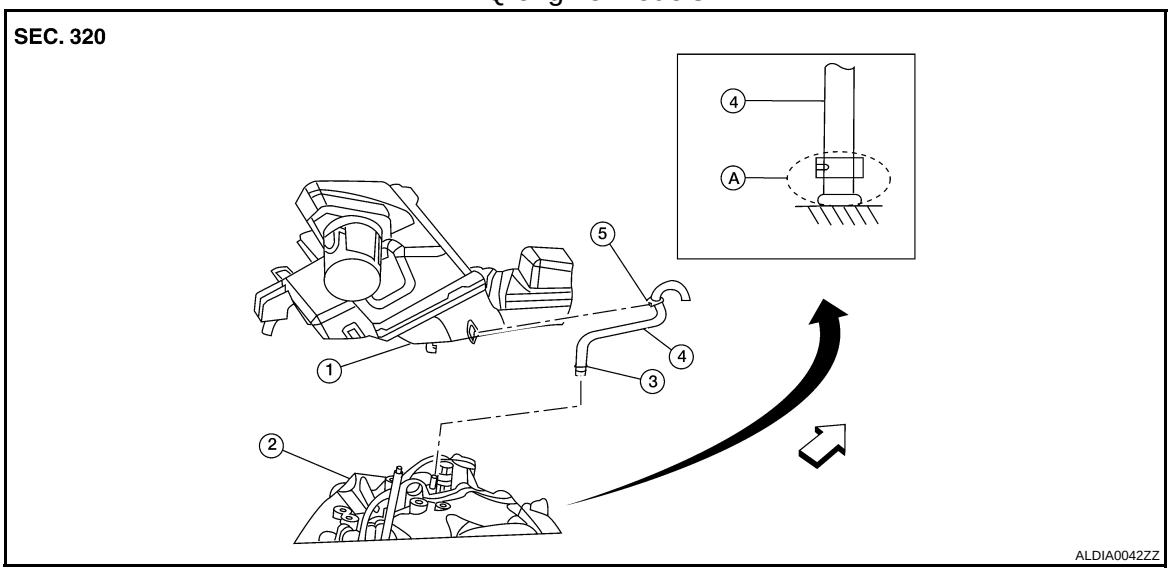
QR engine models



1. Clip
2. Air cleaner case
3. Transaxle assembly
4. Clip
5. Air breather hose
A. Set paint mark and clip at front side

⇐: Front

VQ engine models



1. Air cleaner case
2. Transaxle assembly
3. Clip
4. Air breather hose
5. Clip
A. Set paint mark and clip at front side

⇐: Front

Removal and Installation

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Refer to the figure for air breather hose removal and installation information.

CAUTION:

- **Install air breather hose with paint mark and clip facing front.**
- **Install air breather hose onto air breather tube until overlap area reaches the spool.**
- **Install air breather hose to air cleaner case by fully inserting the clip.**

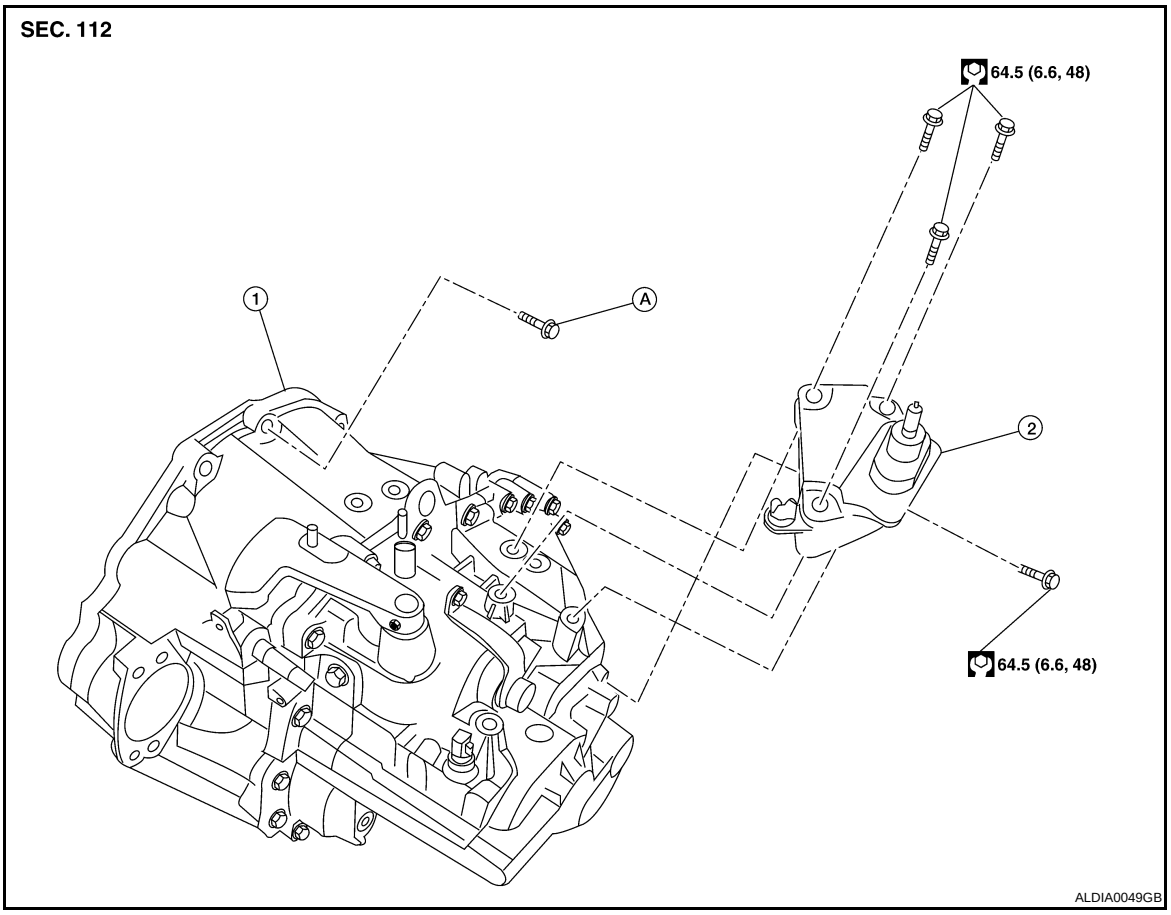
- **Make sure there are no pinched or restricted areas on air breather hose caused by bending or winding when installing it.**

REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000000991887



1. Transaxle assembly
2. LH engine mounting bracket
A. Refer to TM-25, "Removal and Installation"

Removal and Installation

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CAUTON:
If transaxle assembly is removed from the vehicle, always replace CSC (Concentric Slave Cylinder). Inserted CSC returns to the original position when removing transaxle assembly. Dust on clutch disc sliding parts may damage CSC seal and may cause clutch fluid leakage.

REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to EM-72, "Removal and Installation" (QR25DE), EM-199, "Removal and Installation" (VQ35DE).
   CAUTION:
   Do not depress clutch pedal during removal procedure.
2. Disconnect the electrical connectors from the following:
   - Back-up lamp switch
   - Park/neutral position switch
3. Remove the harness from the transaxle.
4. Remove the starter motor. Refer to STR-19, "Removal and Installation" (QR25DE), STR-37, "Removal and Installation" (VQ35DE).
5. Remove the transaxle to engine and engine to transaxle bolts.

6. Separate the transaxle from the engine.
7. If necessary remove the following:
   - Air breather hose
   - Switches
   - LH engine mount
   - Brackets

INSTALLATION

Installation is in the reverse order of removal.

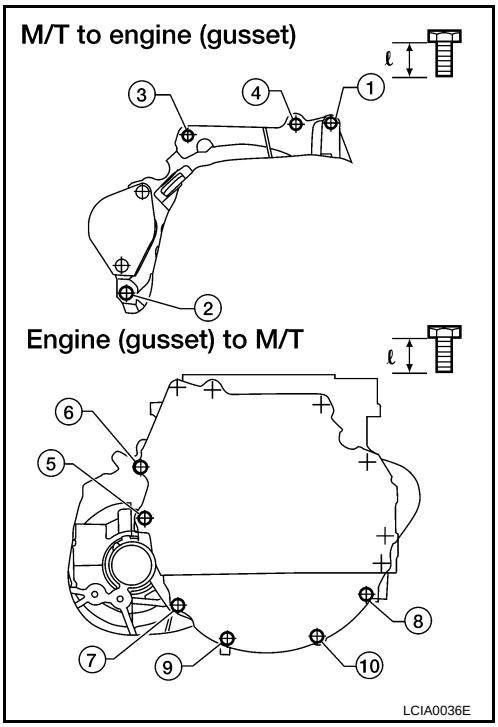
- If transaxle is removed from the vehicle, always replace CSC. Refer to CL-12, "Removal and Installation".
- When installing the transaxle assembly to the engine, install the bolts following the standard below.

CAUTION:
When installing transaxle assembly do not bring transaxle input shaft into contact with clutch cover.

QR engine models

-

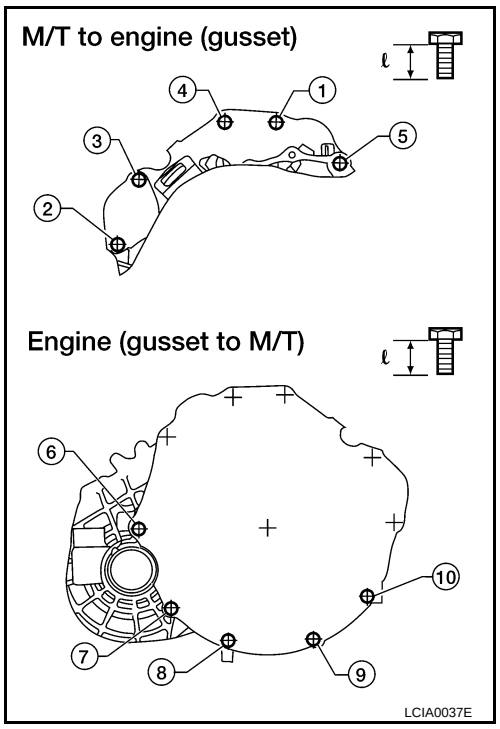
Bolt No.	1	2	3	4	5	6	7	8	9	10
Bolt length "ℓ" mm (in)	40 (1.57)	82 (3.23)	47 (1.85)	47 (1.85)	52 (2.05)	40 (1.57)	40 (1.57)	40 (1.57)	30 (1.18)	30 (1.18)
Tightening torque N·m (kg - m, ft- lb)	30 - 40 (3.1 - 4.1, 22 - 29)	70 - 80 (7.1 - 8.1, 52 - 59)				30 - 40 (3.1 - 4.1, 22 - 29)				



VQ engine models

-

Bolt No.	1	2	3	4	5	6	7	8	9	10
Bolt length "ℓ" mm (in)	52 (2.17)	113 (2.76)	113 (4.72)	52 (1.77)	52 (1.57)	52 (1.38)	40 (1.57)	40 (1.57)	40 (1.57)	40 (1.57)
Tightening torque N·m (kg - m, ft- lb)	70 - 80 (7.1 - 8.1, 52 - 59)						30 - 40 (3.1 - 4.1, 22 - 29)			



- Bleed the air from the clutch hydraulic system. Refer to CL-6, "Air Bleeding Procedure".
- After installation, check oil level, and check for leaks and loose mechanisms. Refer to TM-17, "Inspection".

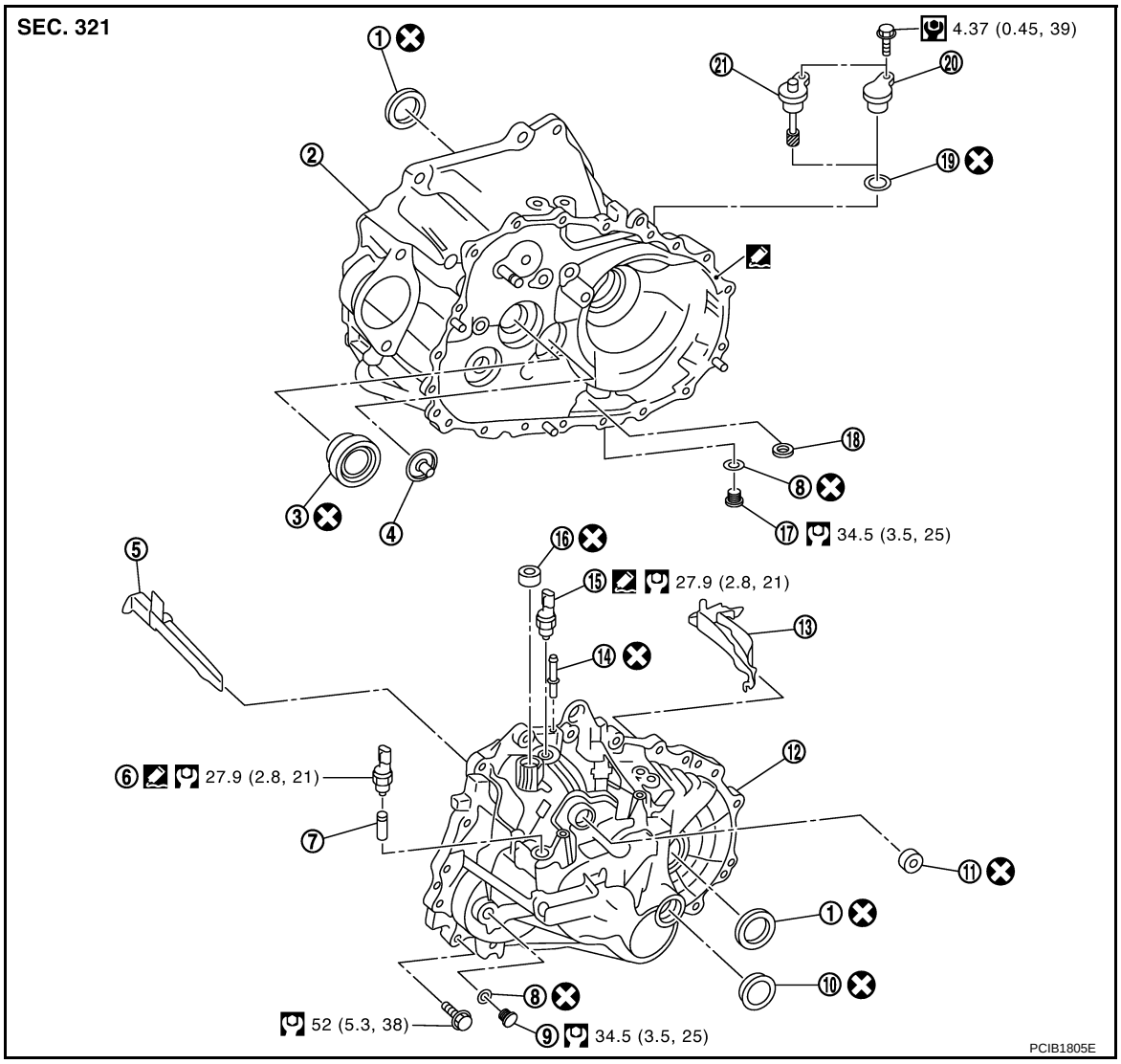
DISASSEMBLY AND ASSEMBLY

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000000991889

CASE AND HOUSING

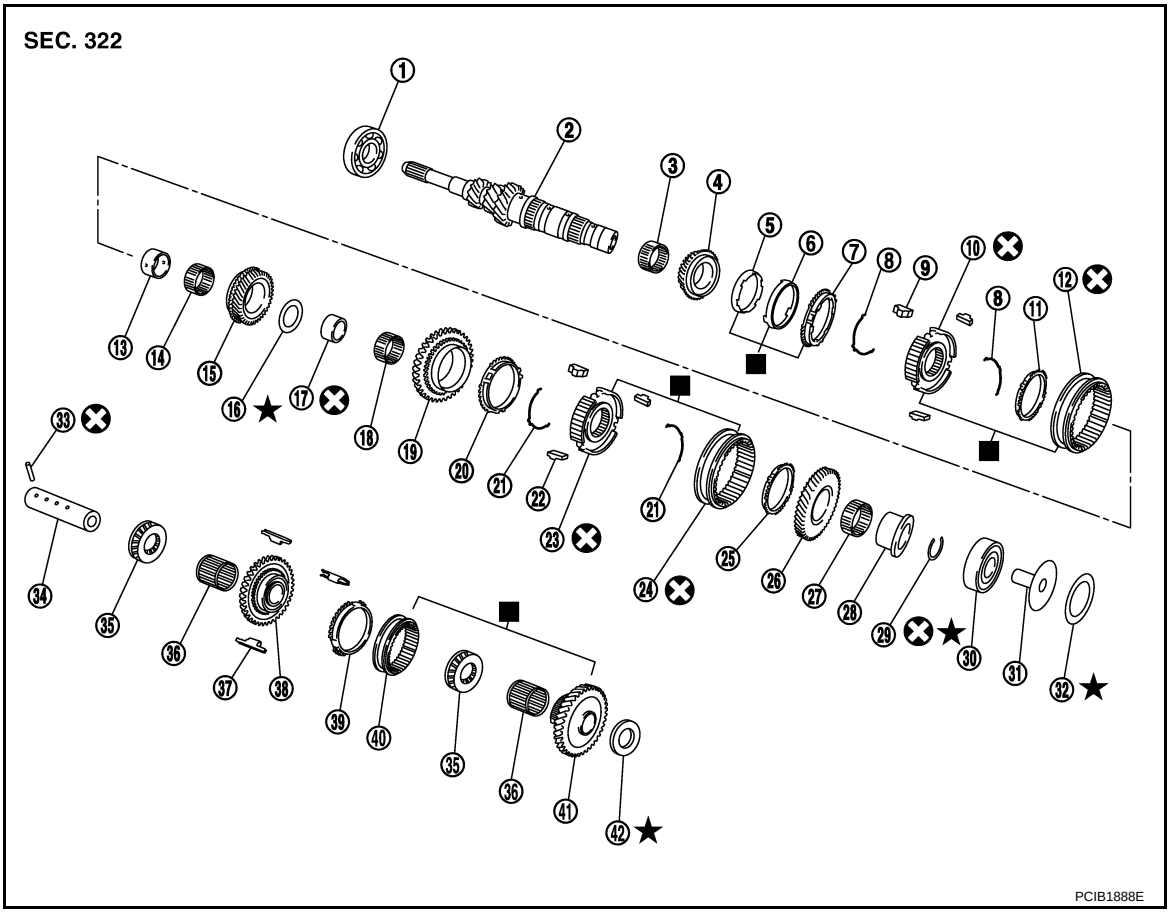


1. Differential side oil seal
2. Clutch housing
3. Input shaft oil seal
4. Oil channel
5. Oil gutter A
6. Back-up lamp switch
7. Plunger
8. Gasket
9. Plug
10. Bore plug
11. Striking rod oil seal
12. Transaxle case
13. Oil gutter B
14. Air breather tube
15. Park/Neutral position (PNP) switch
16. Shifter lever oil seal
17. Drain plug
18. Magnet
19. O-ring
20. Plug (With ABS models)
21. Speedometer pinion gear (Without ABS models)

: Apply Genuine Silicone RTV or an equivalent. Refer to GI-15, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.

SHAFT AND GEAR

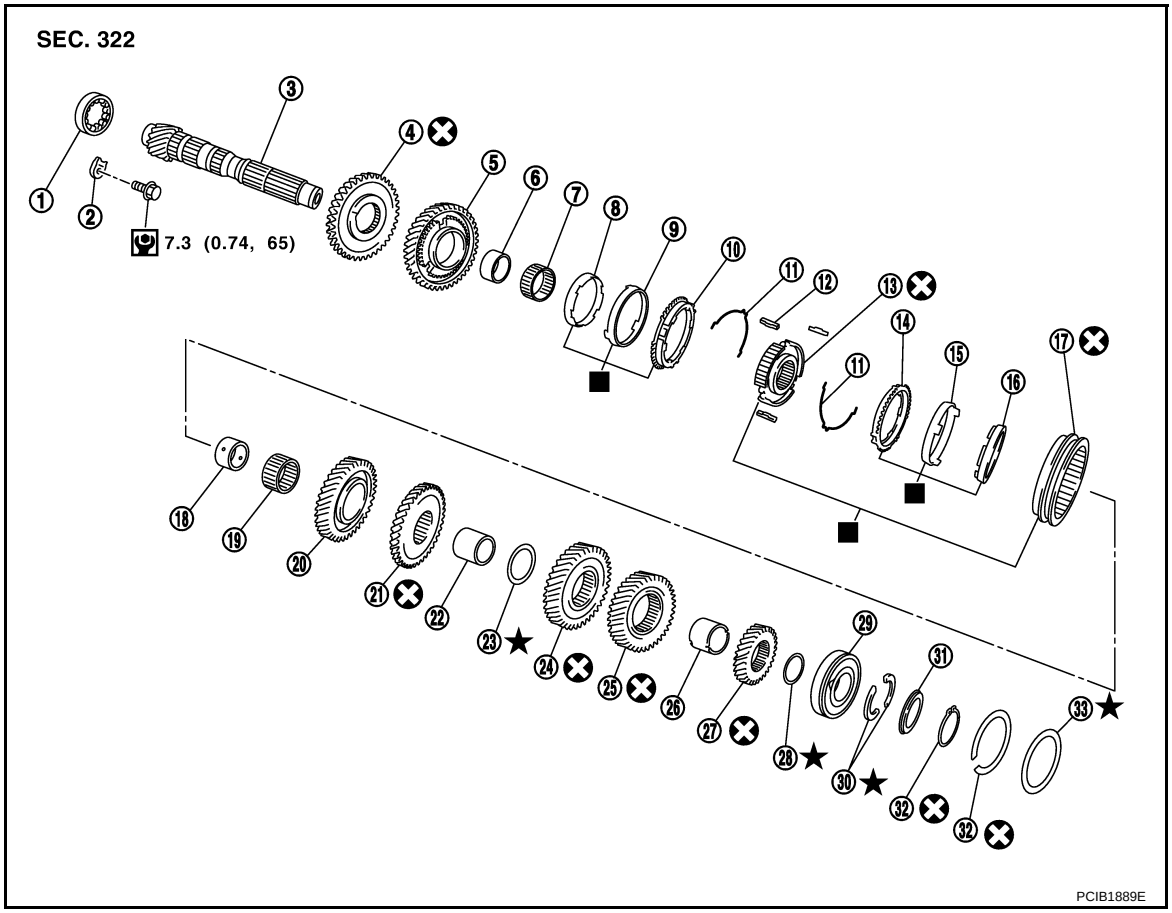


1. Input shaft front bearing
2. Input shaft
3. 3rd needle bearing
4. 3rd input gear
5. 3rd inner baulk ring
6. 3rd synchronizer cone
7. 3rd outer baulk ring
8. 3rd-4th spread spring
9. 3rd-4th shifting insert
10. 3rd-4th synchronizer hub
11. 4th baulk ring
12. 3rd-4th coupling sleeve
13. 4th input gear bushing
14. 4th needle bearing
15. 4th input gear
16. Thrust washer
17. 5th input gear bushing
18. 5th needle bearing
19. 5th input gear
20. 5th baulk ring
21. 5th-6th spread spring
22. 5th-6th shifting insert
23. 5th-6th synchronizer hub
24. 5th-6th coupling sleeve
25. 6th baulk ring
26. 6th input gear
27. 6th needle bearing
28. 6th input gear bushing
29. Snap ring
30. Input shaft rear bearing
31. Oil channel
32. Input shaft rear bearing adjusting shim
33. Retaining pin
34. Reverse idler shaft
35. Thrust needle bearing
36. Reverse idler gear needle bearing
37. Reverse insert spring
38. Reverse idler gear (Front)
39. Reverse balk ring
40. Reverse coupling sleeve
41. Reverse idler gear (Rear)
42. Reverse idler gear adjusting shim

■: Replace the parts as a set.

Refer to GI-4, "Components" for symbols not described on the above.

- Apply gear oil to gears, shafts, synchronizers, and bearings when assembly.



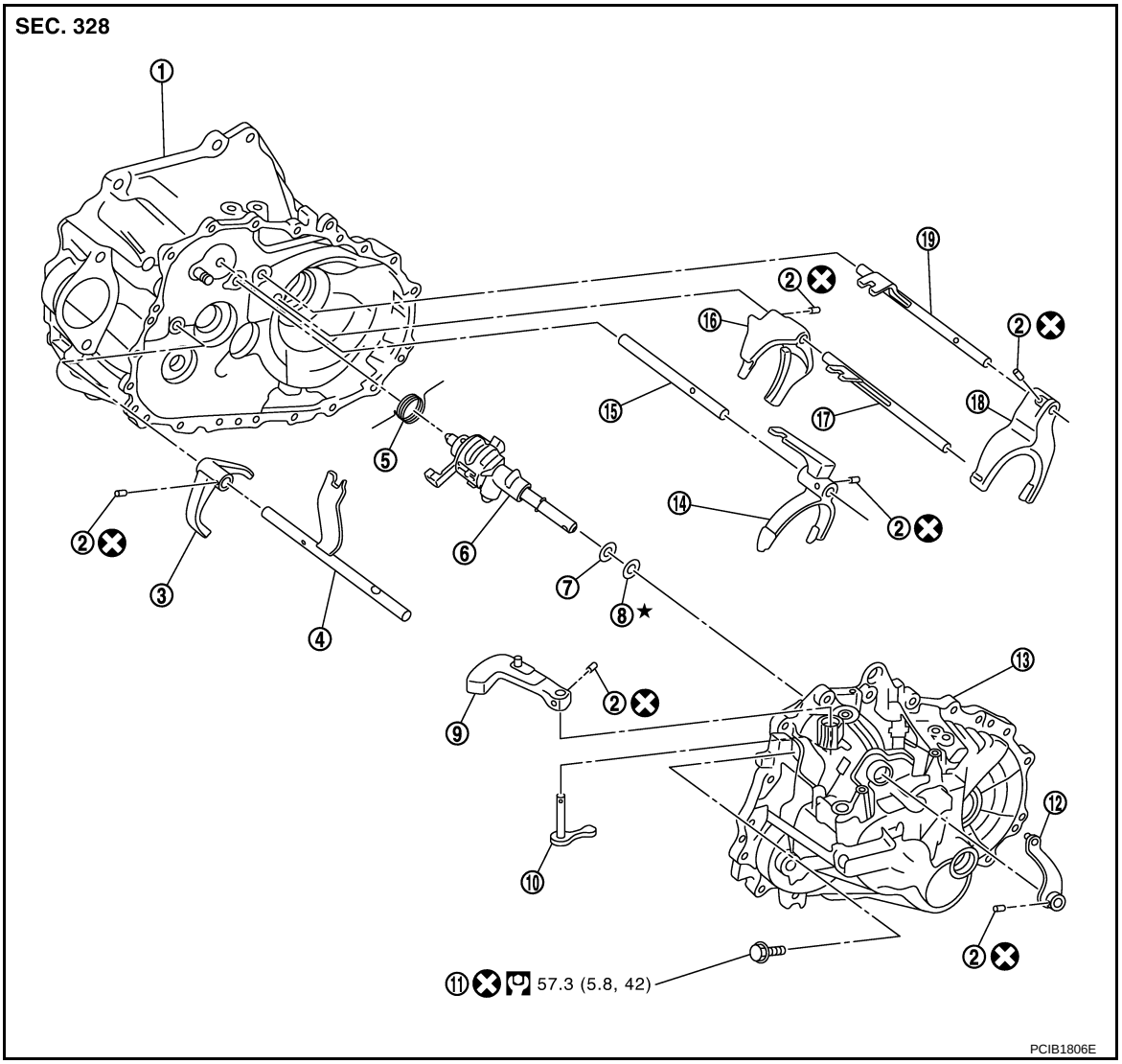
1. Mainshaft front bearing
2. Mainshaft bearing retainer
3. Mainshaft
4. Reverse main gear
5. 1st main gear
6. 1st main gear bushing
7. 1st needle bearing
8. 1st inner baulk ring
9. 1st synchronizer cone
10. 1st outer baulk ring
11. 1st-2nd spread spring
12. 1st-2nd shifting insert
13. 1st-2nd synchronizer hub
14. 2nd outer baulk ring
15. 2nd synchronizer cone
16. 2nd inner baulk ring
17. 1st-2nd coupling sleeve
18. 2nd main gear bushing
19. 2nd needle bearing
20. 2nd main gear
21. 3rd main gear
22. 3rd-4th mainshaft spacer
23. 4th main adjusting shim
24. 4th main gear
25. 5th main gear
26. 5th-6th mainshaft spacer
27. 6th main gear
28. 6th main gear adjusting shim
29. Mainshaft rear bearing
30. Mainshaft C-ring
31. C-ring holder
32. Snap ring
33. Mainshaft rear bearing adjusting shim

■: Replace the parts as a set.

Refer to GI-4, "Components" for symbols not described on the above.

- Apply gear oil to gears, shafts, synchronizers, and bearings when assembly.

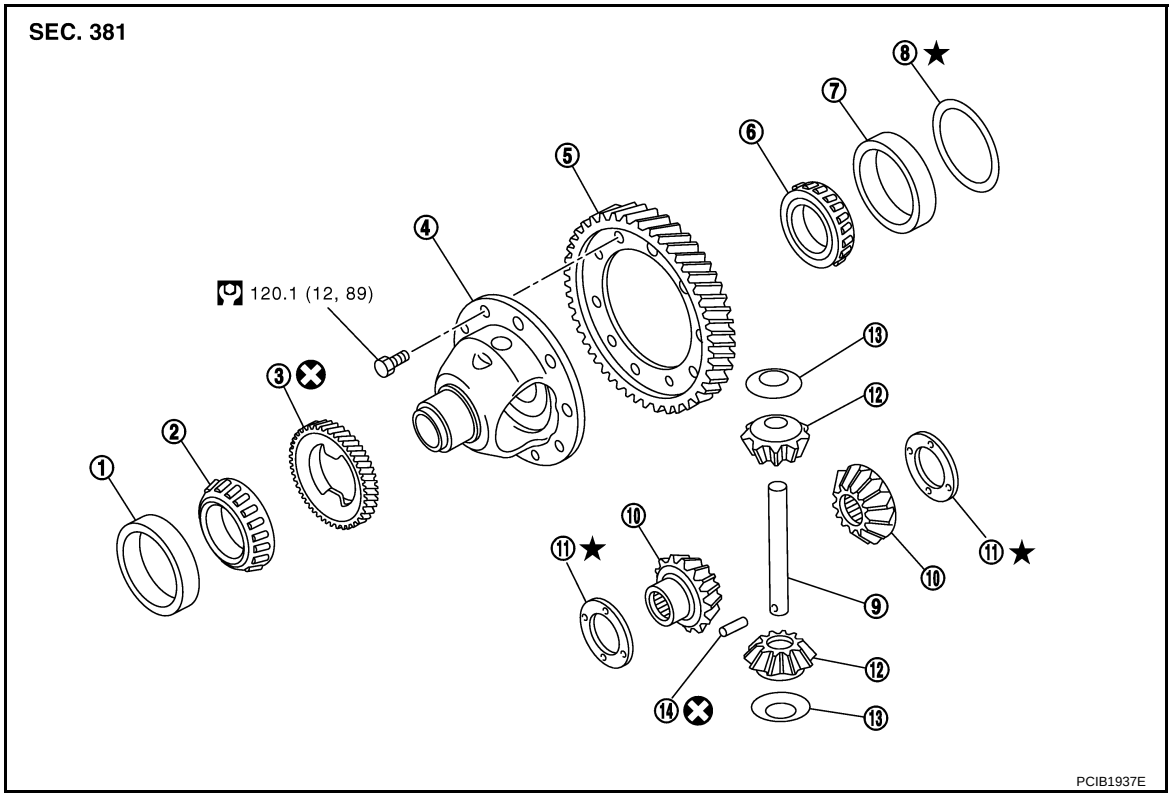
SHIFT FORK AND FORK ROD



1. Clutch housing
2. Retaining pin
3. Reverse shift fork
4. Reverse fork rod
5. Return spring
6. Striking rod assembly
7. Striking rod shim
8. Striking rod adjusting shim
9. Shifter lever A
10. Shifter lever B
11. Guide bolt
12. Selector lever
13. Transaxle case
14. 3rd-4th shift fork
15. 3rd-4th fork rod
16. 1st-2nd shift fork
17. 1st-2nd fork rod
18. 5th-6th shift fork
19. 5th-6th fork rod

Refer to GI-4, "Components" for the symbols in the figure.

FINAL DRIVE



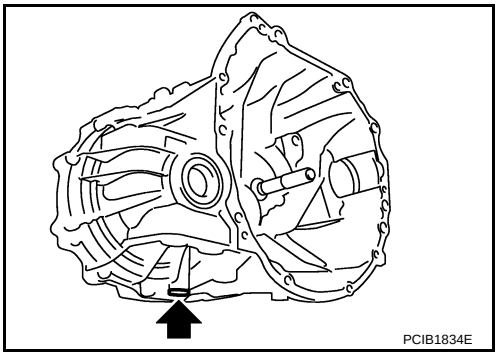
1. Differential side bearing outer race (clutch housing side)
2. Differential side bearing (clutch housing side)
3. Speedometer drive gear
4. Differential case
5. Final gear
6. Differential side bearing (transaxle case side)
7. Differential side bearing outer race (transaxle case side)
8. Differential side bearing adjusting shim
9. Pinion mate shaft
10. Side gear
11. Side gear thrust washer
12. Pinion mate gear
13. Pinion mate thrust washer
14. Retaining pin

Refer to GI-4, "Components" for the symbols in the figure.

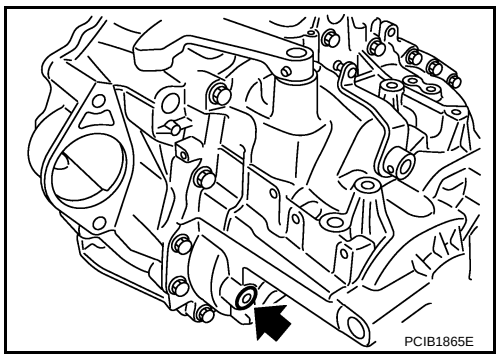
Disassembly

INFOID:0000000000991890

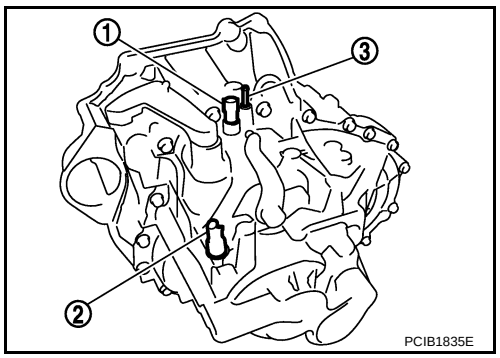
1. Remove drain plug and gasket from clutch housing.
2. Remove plug mounting bolt and then plug (with ABS models) or speedometer pinion gear (without ABS models) and O-ring from clutch housing.



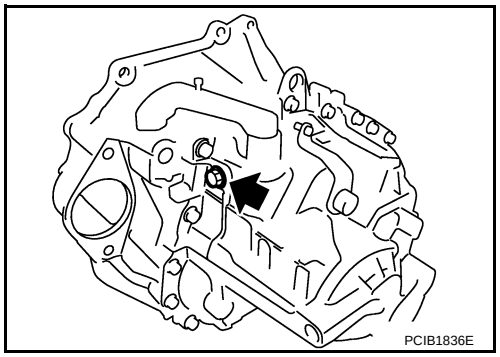
3. Remove plug and gasket from transaxle case.



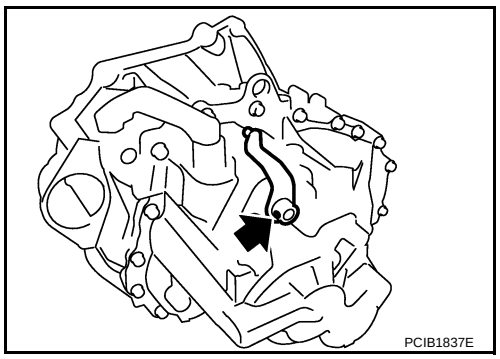
4. Remove park/neutral position (PNP) switch (1) from transaxle case.
5. Remove back-up lamp switch (2) and plunger from transaxle case.
   CAUTION:
   Be careful not to lose plunger.
6. Remove air breather tube (3) from transaxle case.



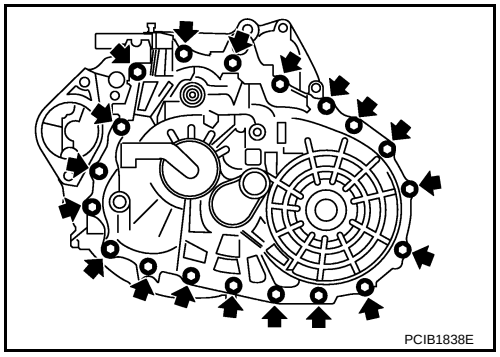
7. Remove guide bolt from transaxle case.



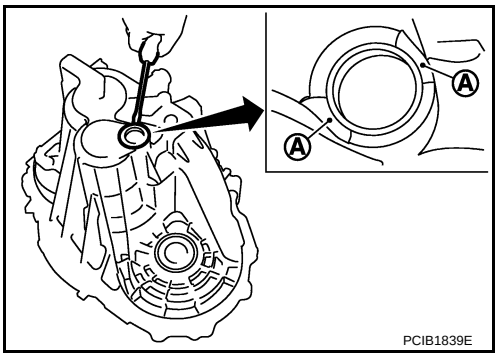
8. Remove retaining pin using a pin punch and then remove selector lever from transaxle case.



9. Remove transaxle case mounting bolts.

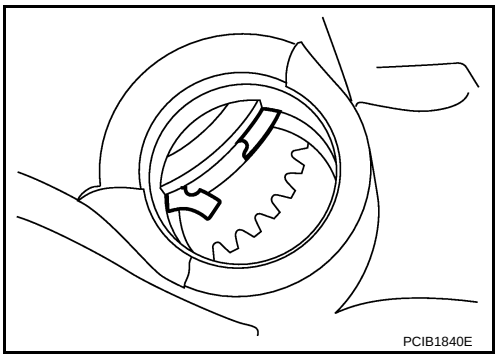


10. Remove bore plug from transaxle case.
CAUTION:
- **Be careful not to damage transaxle case.**
- **Access bore plug from cutout (A) of transaxle case when removing.**

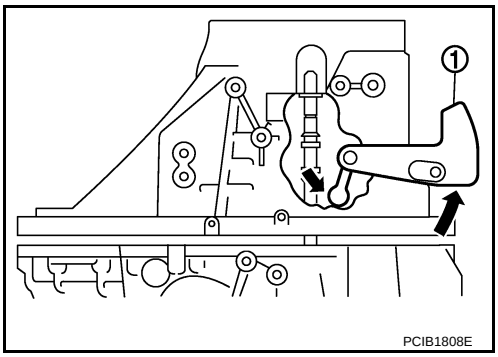


11. Remove transaxle case following the procedures below.

a. Expand snap ring at mainshaft rear bearing accessing from the bore plug hole. Then pull up transaxle case from clutch housing until snap ring comes off.

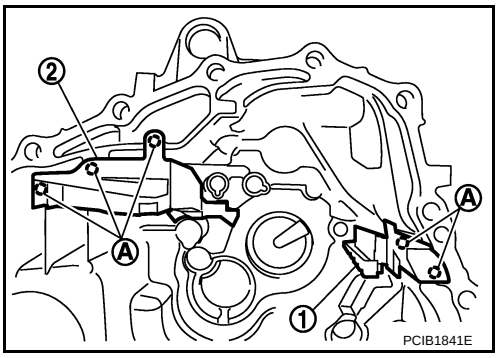


b. With shifter lever A (1) held in the position shown in the figure, remove transaxle case from clutch housing.
CAUTION:
Do not drop each adjusting shim.
NOTE:
Make sure to hold shifter lever A in the position shown in the figure. Otherwise transaxle case cannot be removed from clutch housing.

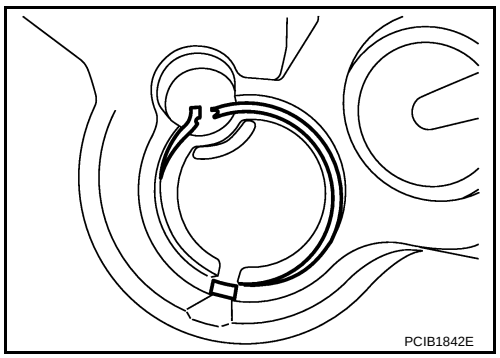


12. Remove oil gutter A (1) and oil gutter B (2) from transaxle case.

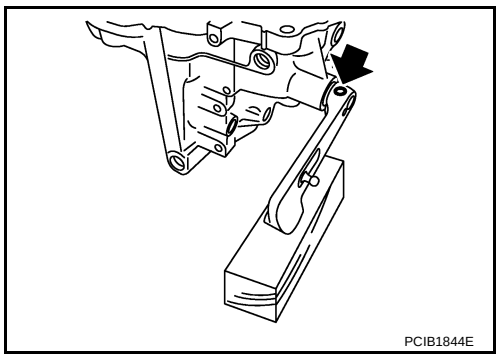
A : Tab of oil gutter



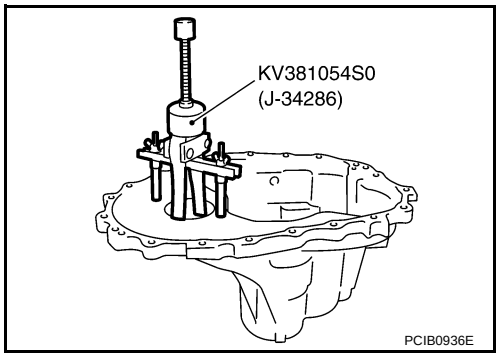
13. Remove snap ring from transaxle case.



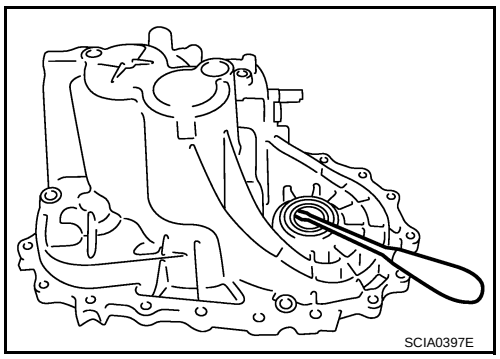
14. Remove retaining pin using a pin punch and then remove shifter lever A and shifter lever B from transaxle case.



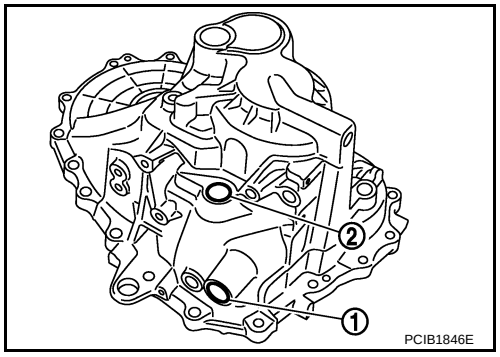
15. Remove differential side bearing outer race from transaxle case using the puller and then remove differential side bearing adjusting shim from transaxle case.
CAUTION:
Be careful not to damage transaxle case.



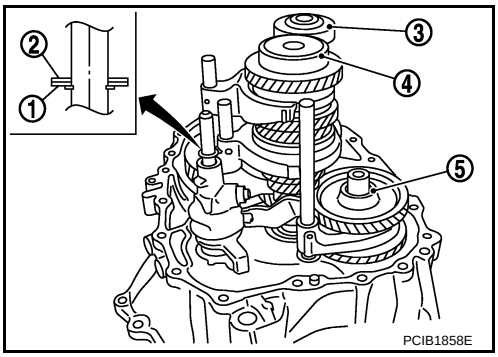
16. Remove differential side oil seal from transaxle case.
CAUTION:
Be careful not to damage transaxle case.



17. Remove shifter lever oil seal (1) and striking rod oil seal (2) from transaxle case.
CAUTION:
Be careful not to damage transaxle case.

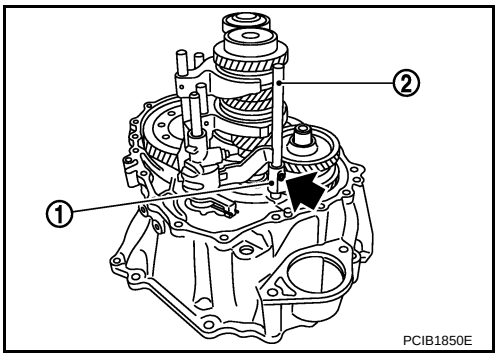


18. Remove striking rod shim (1), striking rod adjusting shim (2), mainshaft rear bearing adjusting shim (3), input shaft rear bearing adjusting shim (4), and reverse idler gear adjusting shim (5).

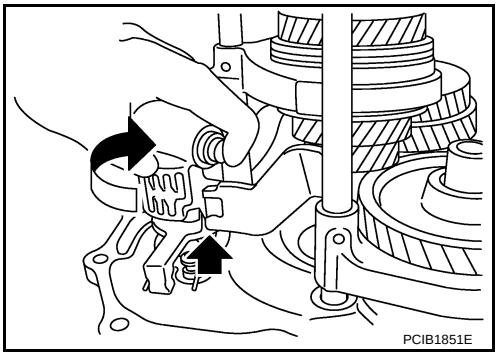


19. Remove retaining pin of reverse shift fork (1) using a pin punch.

    2 : Reverse fork rod

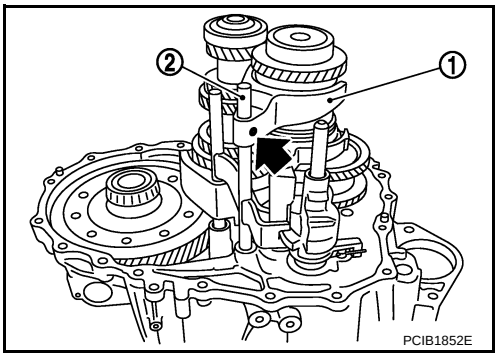


20. Rotate striking lever of striking rod assembly as shown in the figure. Then rotate reverse fork rod to a position where bracket of reverse fork rod does not interfere with striking lever of striking rod assembly.
21. Pull out reverse shift fork and reverse fork rod.

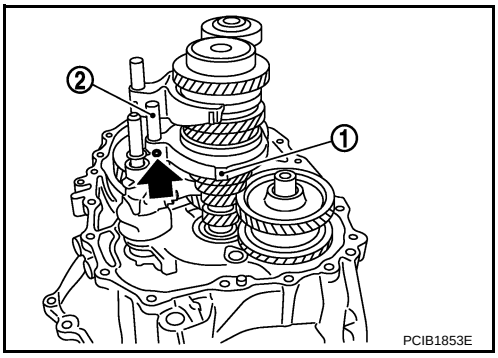


22. Remove retaining pin of 5th-6th shift fork (1) using a pin punch.

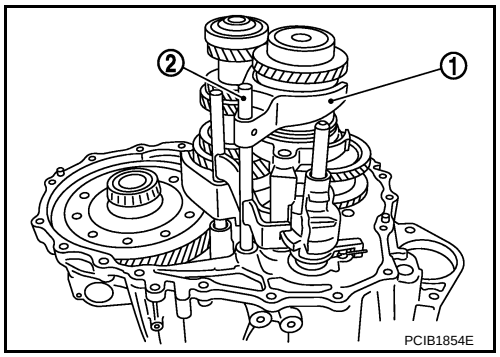
    2 : 5th-6th fork rod



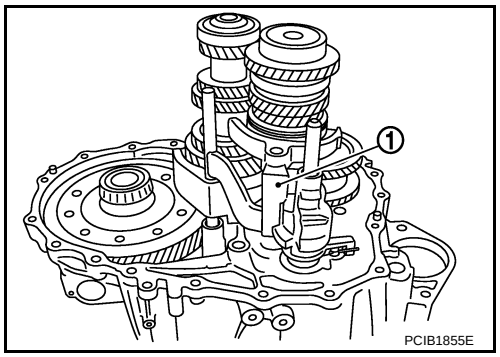
23. Remove retaining pin of 3rd-4th shift fork (1) using a pin punch.
24. Pull out 3rd-4th fork rod (2).



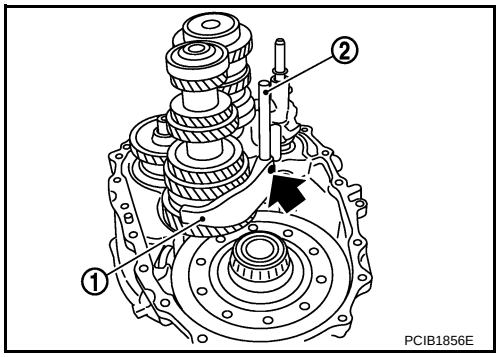
25. Pull out 5th-6th shift fork (1) and 5th-6th fork rod (2).



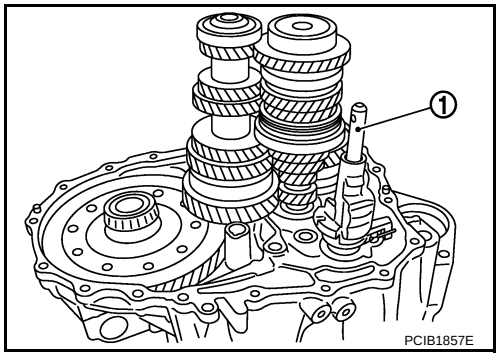
26. Pull out 3rd-4th shift fork (1).



27. Remove retaining pin of 1st-2nd shift fork (1) using a pin punch.
28. Pull out 1st-2nd shift fork and 1st-2nd fork rod (2).



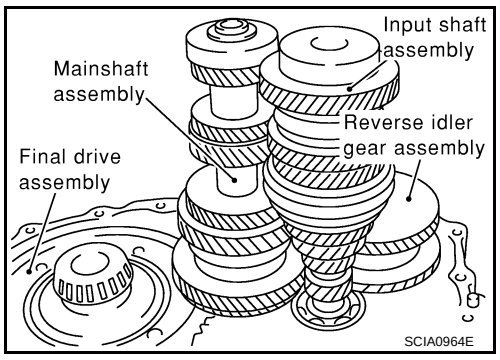
29. Remove striking rod assembly (1).



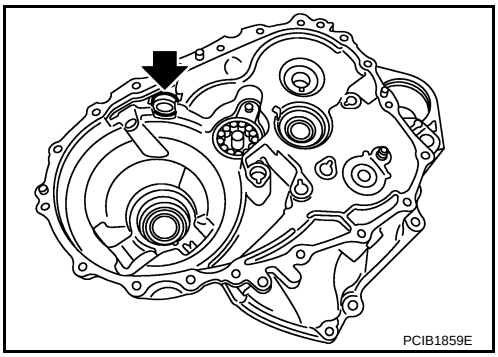
30. Remove gear components from clutch housing in the following procedure.

a. Remove a set of input shaft assembly, main shaft assembly, and reverse idler gear assembly by tapping the tip of input shaft from the back of the clutch housing with a plastic hammer.
CAUTION:
Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.

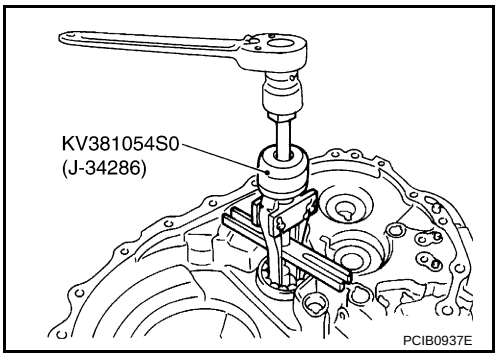
b. Remove final drive assembly.



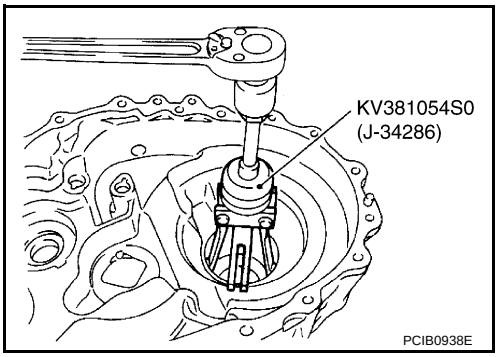
31. Remove magnet from clutch housing.



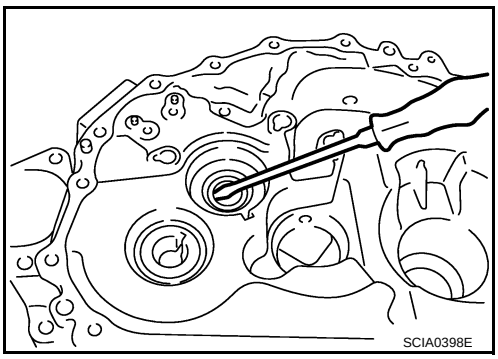
32. Remove mainshaft bearing retainer and then mainshaft front bearing from clutch housing using the puller.
CAUTION:
Be careful not to damage clutch housing, mainshaft front bearing, and oil channel.
33. Remove oil channel from clutch housing.



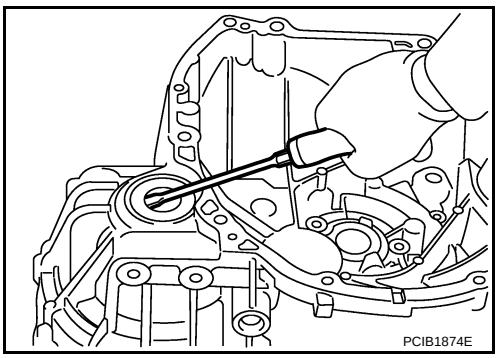
34. Remove differential side bearing outer race from clutch housing using the puller.
CAUTION:
Be careful not to damage clutch housing and differential side bearing outer race.



35. Remove input shaft oil seal from clutch housing.
CAUTION:
Be careful not to damage clutch housing.



36. Remove differential side oil seal from clutch housing.
CAUTION:
Be careful not to damage clutch housing.



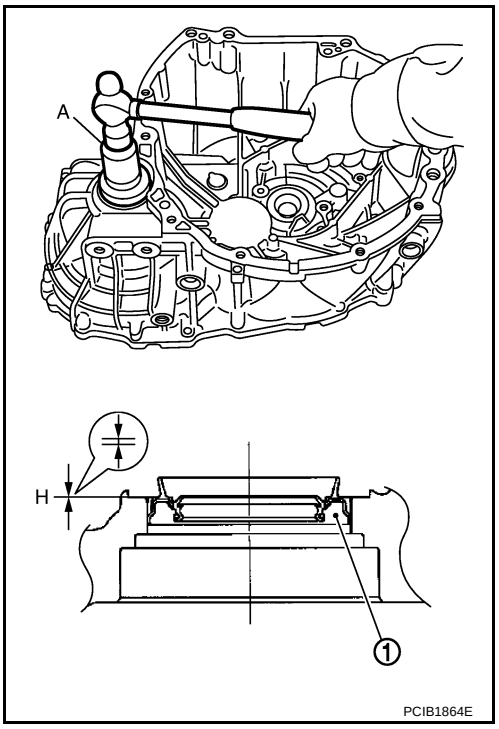
Assembly

INFOID:0000000000991891

1. Install differential side oil seal (1) to clutch housing using the drift (A) [SST: ST33400001 (J-26082)].

Dimension “H” : -0.5 - 0.5 mm (-0.020 - 0.020 in)

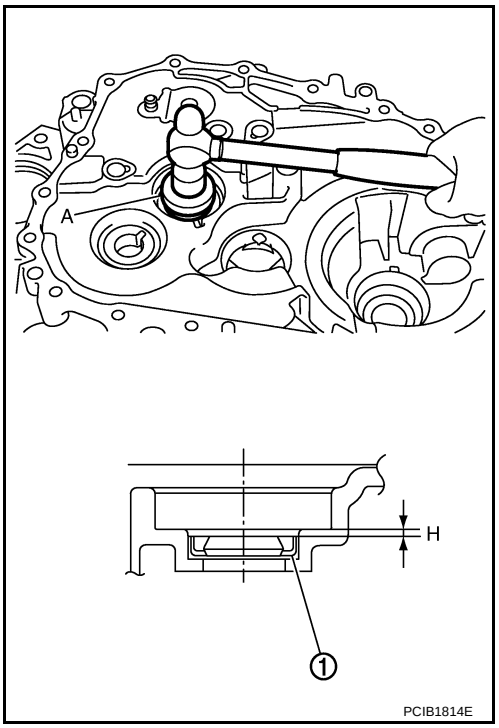
CAUTION:
- **Do not reuse differential side oil seal.**
- **When installing, do not incline differential side oil seal.**
- **Be careful not to damage clutch housing.**



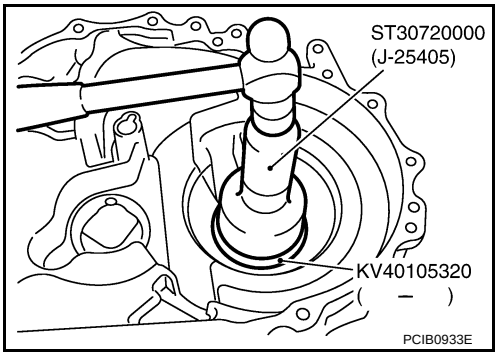
2. Install input shaft oil seal (1) to clutch housing using the drift (A) [SST: ST35321000 (—)].

Dimension “H” : 1.1 - 2.1 mm (0.043 - 0.083 in)

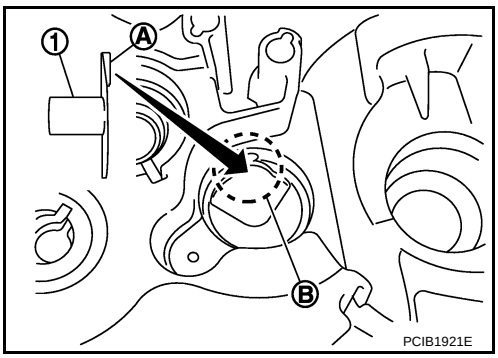
CAUTION:
- **Do not reuse input shaft oil seal.**
- **When installing, do not incline input shaft oil seal.**
- **Be careful not to damage clutch housing.**



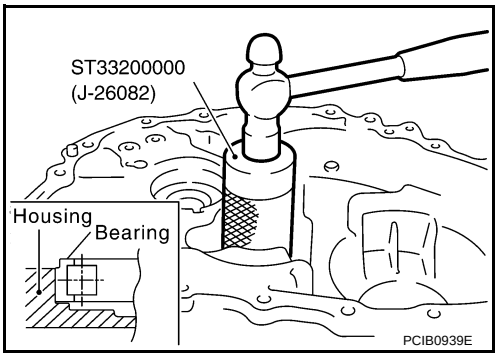
3. Install differential side bearing outer race to clutch housing using the drifts.



4. Install oil channel (1) on mainshaft side.
CAUTION:
When installing oil channel, fit the rib (A) of oil channel into the processed area of the spot facing (B).



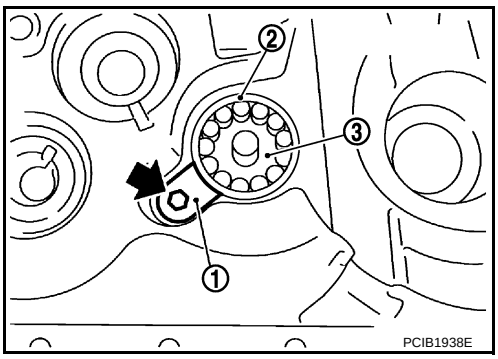
5. Install mainshaft front bearing to clutch housing using the drift.
CAUTION:
Be careful with the orientation of mainshaft front bearing.



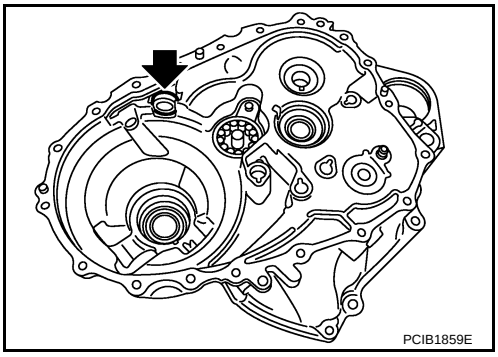
6. Install mainshaft bearing retainer (1) to clutch housing and tighten mounting bolt to the specified torque.

2 : Mainshaft front bearing
3 : Oil channel

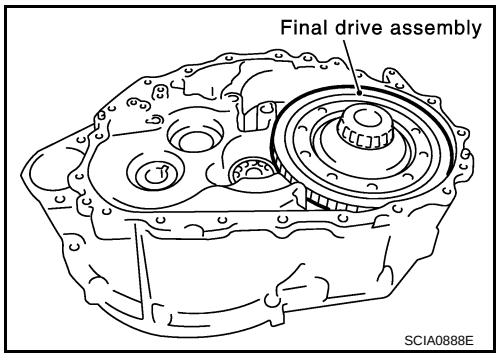
CAUTION:
Install with punched surface facing up.



7. Install magnet to clutch housing.



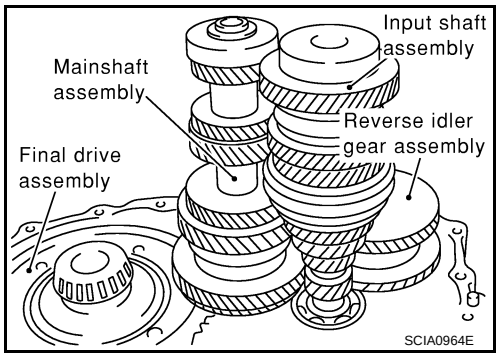
8. Install final drive assembly into clutch housing.



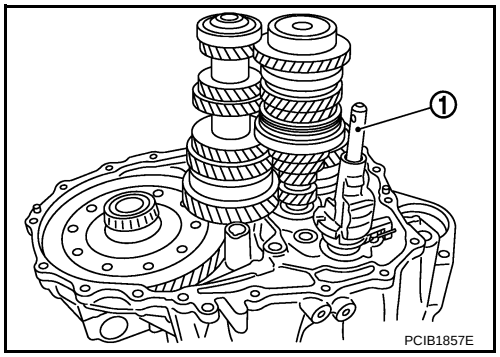
9. Install input shaft assembly, mainshaft assembly, and reverse idler gear assembly into clutch housing.

CAUTION:

- **Wrap a tape, etc. to the spline of input shaft so as not to damage the input shaft oil seal.**
- **Be careful with the orientation of reverse idler shaft.**

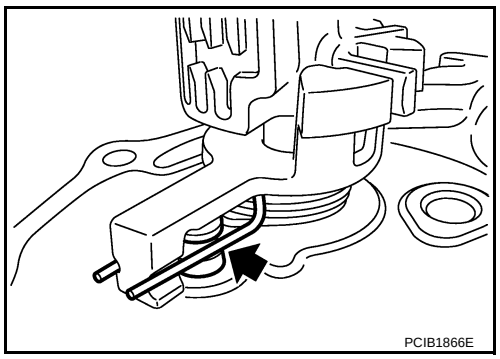


10. Install striking rod assembly (1) into clutch housing.

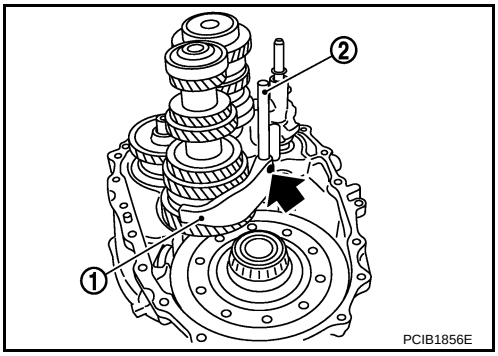


CAUTION:

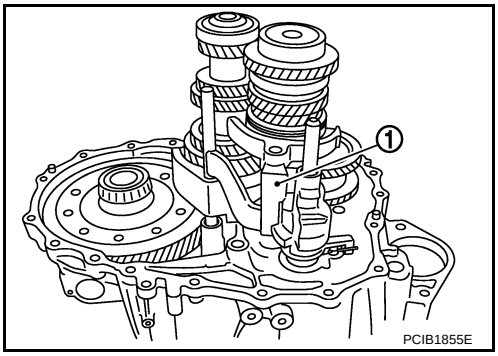
- **Check that return spring is securely seated in the groove on return pin.**



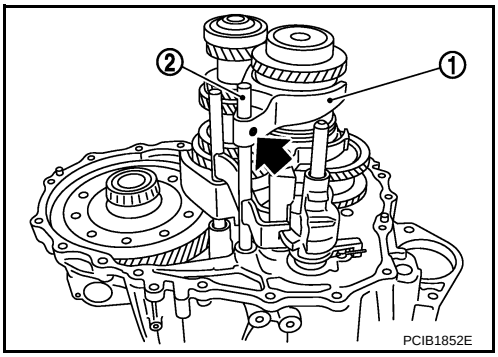
11. Install 1st-2nd shift fork (1) and 1st-2nd fork rod (2) and then install retaining pin to 1st-2nd shift fork.
CAUTION:
- **Do not reuse retaining pin.**
- **Be careful with the orientation of 1st-2nd shift fork and 1st-2nd fork rod.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 1st-2nd shift fork.**



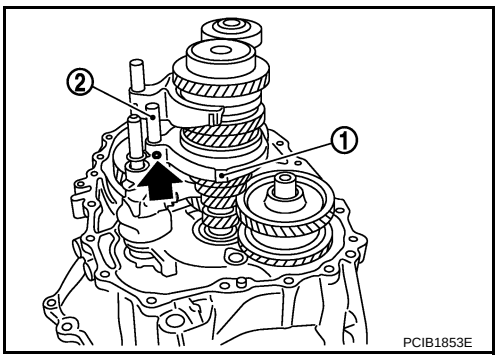
12. Install 3rd-4th shift fork (1) to 3rd-4th coupling sleeve.
CAUTION:
Be careful with the orientation of 3rd-4th shift fork.



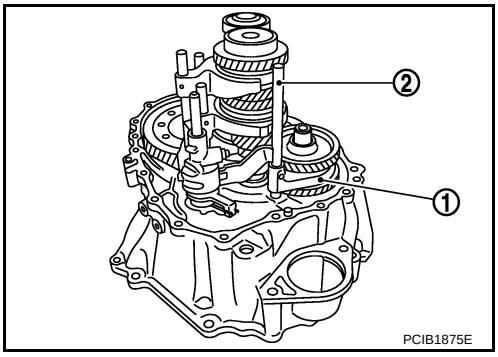
13. Install 5th-6th shift fork (1) and 5th-6th fork rod (2) and then install retaining pin to 5th-6th shift fork.
CAUTION:
- **Do not reuse retaining pin.**
- **Be careful with the orientation of 5th-6th shift fork and 5th-6th fork rod.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 5th-6th shift fork.**



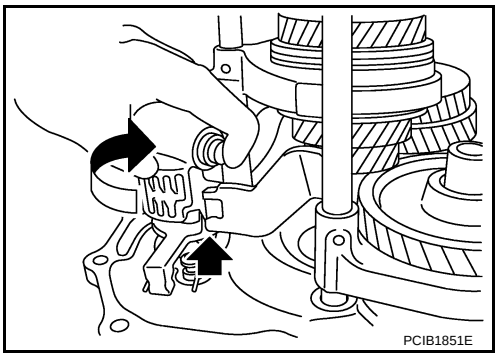
14. Install 3rd-4th fork rod (2) and then install retaining pin to 3rd-4th shift fork (1).
CAUTION:
- **Do not reuse retaining pin.**
- **Be careful with the orientation of 3rd-4th fork rod.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 3rd-4th shift fork.**



15. Install reverse shift fork (1) and reverse fork rod (2).
CAUTION:
Be careful with the orientation of reverse shift fork and reverse fork rod.



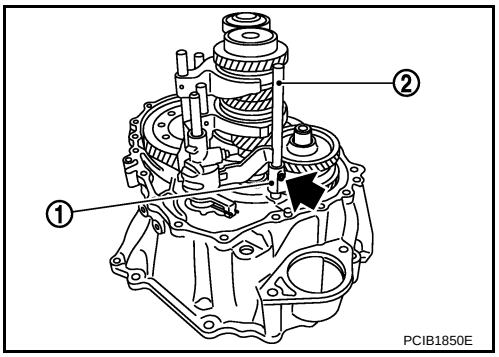
16. Rotate striking lever of striking rod assembly as shown in the figure. Then rotate reverse fork rod to a position where bracket of reverse fork rod does not interfere with striking lever of striking rod assembly.



17. Install retaining pin to reverse shift fork (1).

2 : Reverse fork rod

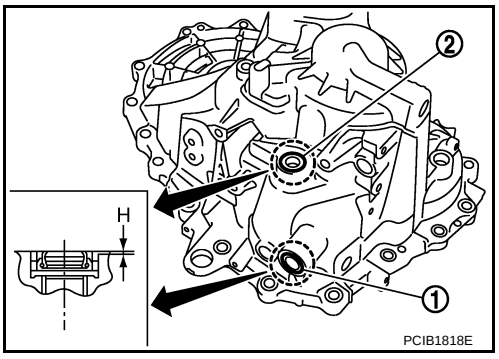
CAUTION:
- **Do not reuse retaining pin.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of reverse shift fork.**



18. Install selected differential side bearing adjusting shim(s) and differential side bearing outer race.
    - For selection of adjusting shim(s), refer to TM-49, "Adjustment".
19. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.
    - For selection of adjusting shim, refer to TM-49, "Adjustment".
20. Install selected input shaft rear bearing adjusting shim onto input shaft.
    - For selection of adjusting shim, refer to TM-49, "Adjustment".
21. Install selected striking rod adjusting shim onto striking rod assembly.
    - For selection of adjusting shim, refer to TM-49, "Adjustment".
22. Install shifter lever oil seal (1) and striking rod oil seal (2) to transaxle case using a suitable drift.

Dimension “H” : 0 - 1.0 mm (0 - 0.039 in)

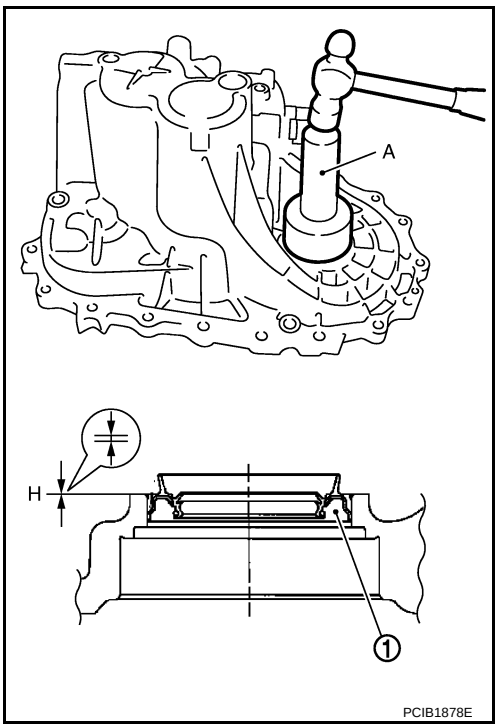
CAUTION:
- **Do not reuse shifter lever oil seal and striking rod oil seal.**
- **When installing, do not incline shifter lever oil seal and striking rod oil seal.**
- **Be careful not to damage transaxle case.**



23. Install differential side oil seal (1) to transaxle case using the drift (A) [SST: ST30720000 (J-25405)].

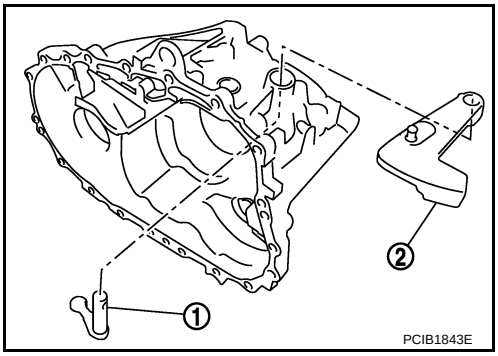
Dimension "H" : -0.5 - 0.5 mm (-0.020 - 0.020 in)

CAUTION:
- **Do not reuse differential side oil seal.**
- **When installing, do not incline differential side oil seal.**
- **Be careful not to damage transaxle case.**



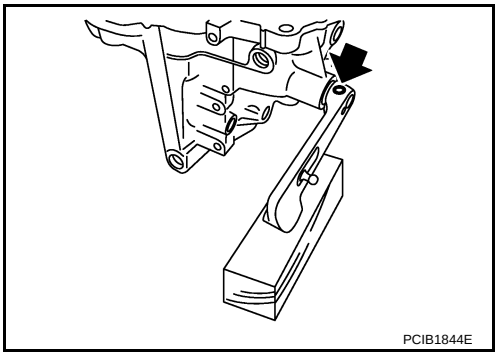
24. Install shifter lever B (1) and shifter lever A (2) to transaxle case.

CAUTION:
Be careful with the orientation of shifter lever B and shifter lever A.



25. Install retaining pin to shifter lever A.

CAUTION:
- **Do not reuse retaining pin.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of shifter lever A.**



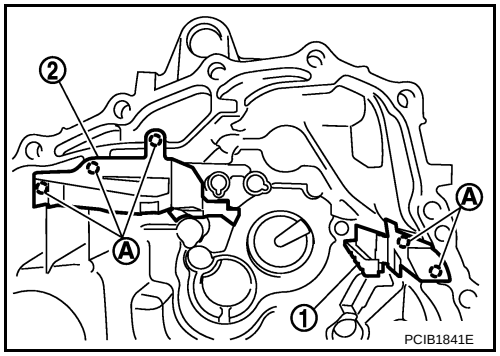
26. Install transaxle case following the procedures below.

a. Install selected mainshaft rear bearing adjusting shim into transaxle case.
- For selection of adjusting shim, refer to TM-49, "Adjustment".

b. Install oil gutter A (1) and oil gutter B (2) to transaxle case.

CAUTION:

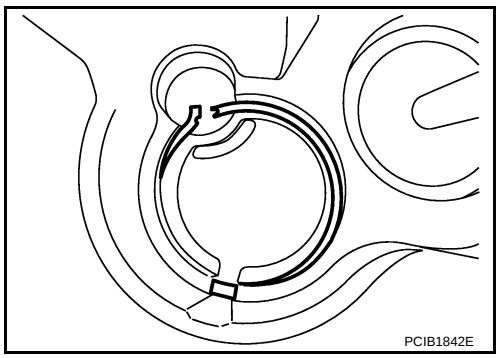
Insert the tab (A) of oil gutter A and oil gutter B into transaxle case.



c. Temporarily install snap ring of mainshaft rear bearing into transaxle case.

CAUTION:

Do not reuse snap ring.

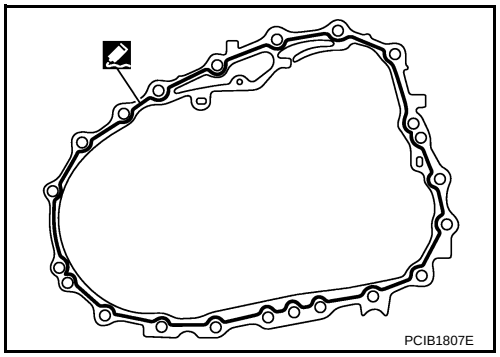


d. Apply recommended sealant to mating surface of clutch housing as shown in the figure.

- **Use Genuine Silicone RTV or an equivalent. Refer to GI-15, "Recommended Chemical Products and Sealants".**

CAUTION:

- **Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.**
- **Apply sealant so as not to break the bead.**
- **The width of sealant bead is 1 - 2 mm (0.04 - 0.08 in).**
- **The height of sealant bead is 0.4 - 1 mm (0.016 - 0.04 in).**
- **The overlap length of both ends of sealant bead is 3 - 5 mm (0.12 - 0.20 in).**



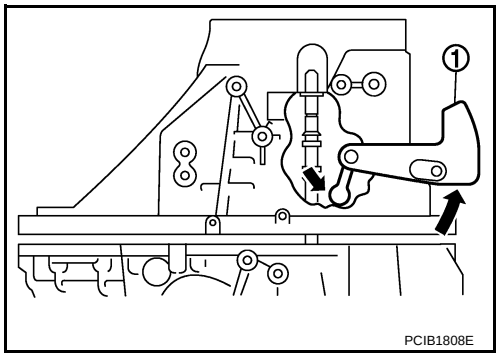
e. With shifter lever A (1) held in the position shown in the figure, temporarily assemble transaxle case to clutch housing.

CAUTION:

Be careful not to damage striking rod oil seal.

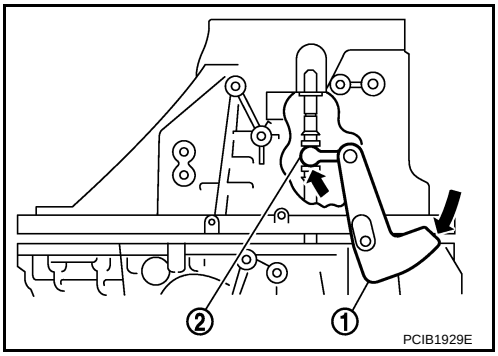
NOTE:

Make sure to hold shifter lever A in the position shown in the figure. Otherwise transaxle case cannot be installed to clutch housing.



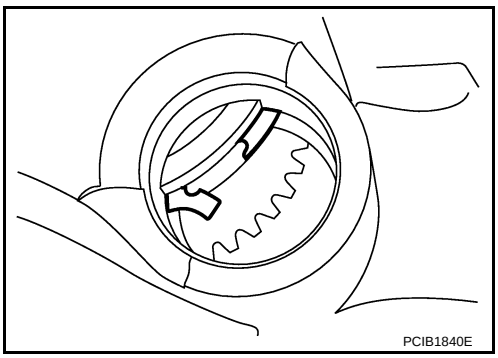
f. While rotating shifter lever A (1) in the direction of the arrow in the figure, assemble transaxle case to clutch housing.

2 : Shifter lever B

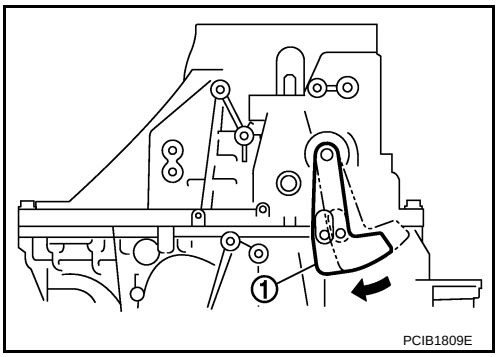


g. Accessing from the bore plug hole, expand snap ring at main-shaft rear bearing so that the ring catches the periphery of main-shaft rear bearing.

h. Temporarily tighten transaxle case mounting bolts.

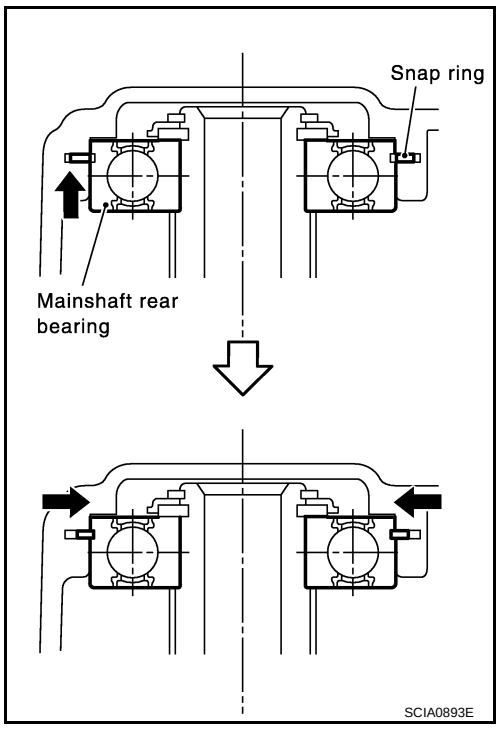


i. Shift the shifter lever A (1) to 2nd gear position.
NOTE:
- The 2nd gear position is attained when shifter lever A is in the position shown in the figure.

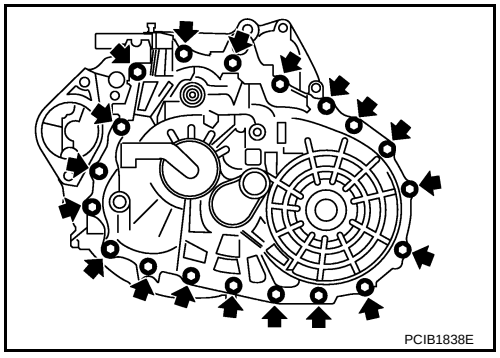


- When transaxle is shifted to the 2nd gear position, mainshaft assembly is lifted.

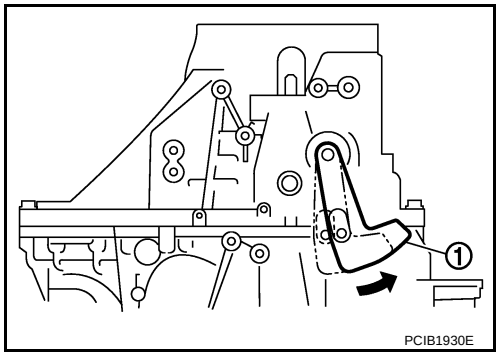
j. Seat snap ring in the groove on mainshaft rear bearing. If snap ring is not seated in the groove on mainshaft rear bearing, remove transaxle case and repeat the procedure from step d.



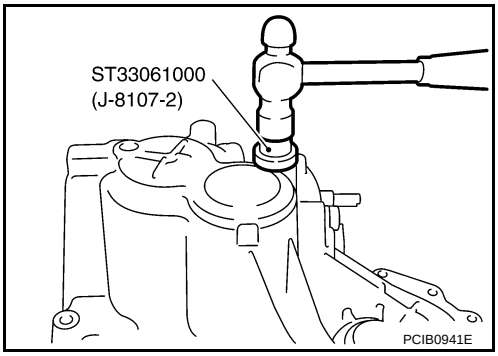
k. Tighten transaxle case mounting bolts to the specified torque.



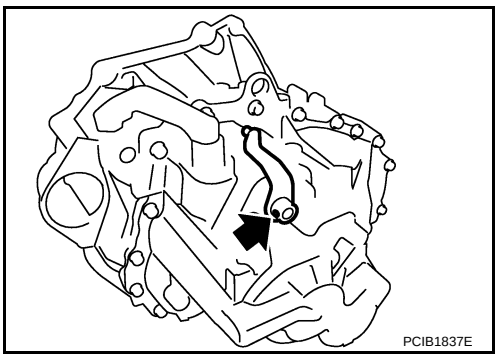
l. Shift the shifter lever A (1) to neutral position.
NOTE:
The neutral position is attained when shifter lever A is in the position shown in the figure.



27. Install bore plug to transaxle case using the drift.
CAUTION:
Do not reuse bore plug.



28. Install selector lever to transaxle case and then install retaining pin to selector lever.
CAUTION:
- **Do not reuse retaining pin.**
- **Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of selector lever.**



29. Install guide bolt following the procedures below.

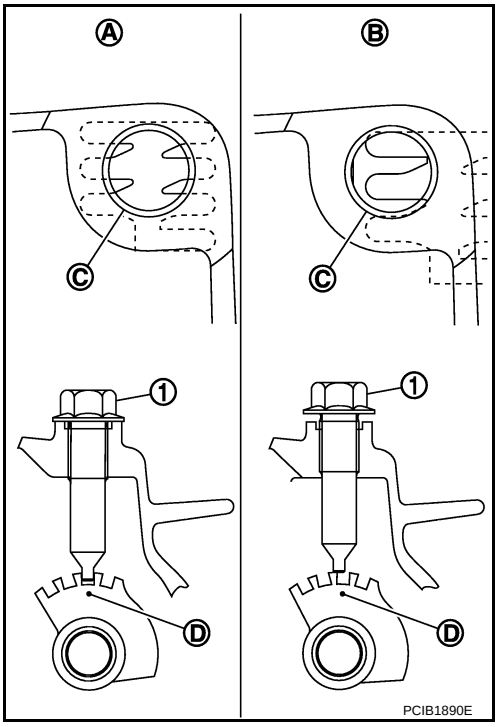
a. Shift the shifter lever A and selector lever to neutral position.

b. Visually confirm from the guide bolt mounting hole (C) that the lever is securely set to neutral position (A). If it is not in the neutral position, repeat the procedure from step a.

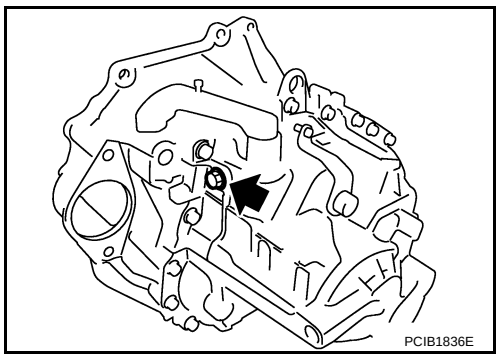
1 : Guide bolt

CAUTION:
The guide groove (D) of striking rod assembly will be damaged when assembling guide bolt with the lever is in except neutral position (B).

c. Check continuity between terminals of park/neutral position (PNP) switch to confirm it in the neutral position. If it is not in the neutral position, remove park/neutral position (PNP) switch and repeat the procedure from step a. Refer to TM-20, "Inspection".



d. Install guide bolt to transaxle case and then tighten guide bolt to the specified torque.
CAUTION:
Do not reuse guide bolt.

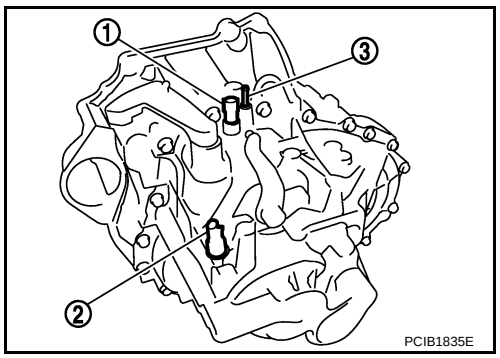

PCIB1836E

30. Apply recommended sealant to threads of park/neutral position (PNP) switch (1). Then install it to transaxle case and tighten to the specified torque.
- **Use Genuine Silicone RTV or an equivalent. Refer to GI-15, "Recommended Chemical Products and Sealants".**

CAUTION:
Remove old sealant and oil adhering to threads.

31. Install plunger to transaxle case.
32. Apply recommended sealant to threads of back-up lamp switch (2). Then install it to transaxle case and tighten to the specified torque.
- **Use Genuine Silicone RTV or an equivalent. Refer to GI-15, "Recommended Chemical Products and Sealants".**

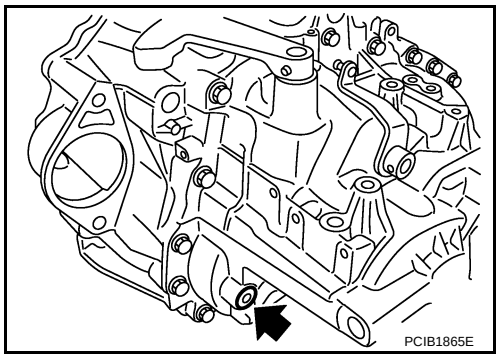
CAUTION:
Remove old sealant and oil adhering to threads.



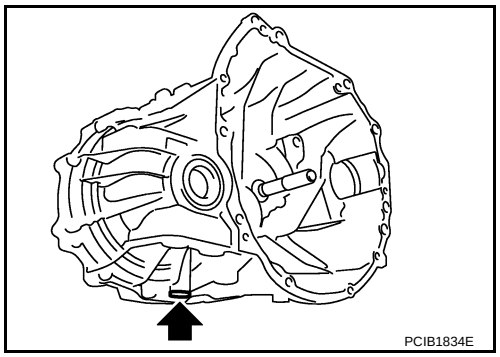
PCIB1835E

33. Install air breather tube (3) to transaxle case.
CAUTION:
- **Do not reuse air breather tube.**
- **Assemble air breather tube until its collar element contacts with transaxle case.**

34. Install gasket onto plug and then install them into transaxle case. Tighten plug to the specified torque.
CAUTION:
Do not reuse gasket.


PCIB1865E

35. Install gasket onto drain plug and then install them into transaxle case. Tighten drain plug to the specified torque.
CAUTION:
Do not reuse gasket.
36. Install O-ring onto plug (with ABS models) or speedometer pinion gear (without ABS models) and then install it into clutch housing. Tighten mounting bolt to the specified torque.
CAUTION:
- **Do not reuse O-ring.**
- **After oil is filled, tighten mounting bolt to specified torque.**

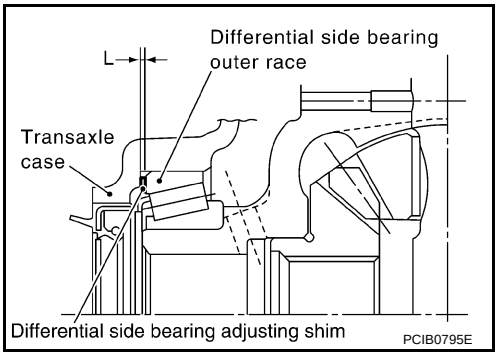

PCIB1834E

Adjustment

INFOID:0000000000991892

DIFFERENTIAL SIDE BEARING PRELOAD

- When adjusting differential side bearing preload, select adjusting shim for differential side bearing. To select adjusting shim, measure clearance “L” between transaxle case and differential side bearing outer race.
  CAUTION:
  Up to 2 adjusting shims can be selected.
- Calculate dimension “L” (thickness of adjusting shim) using the following procedure to satisfy specification of preload for differential side bearing.



Preload : Refer to TM-83, "Differential Side Bearing Preload".

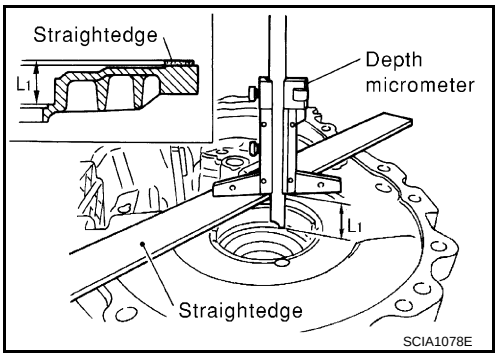
Dimension “L” = (L_1 - L_2) + Preload

L : Thickness of adjusting shim

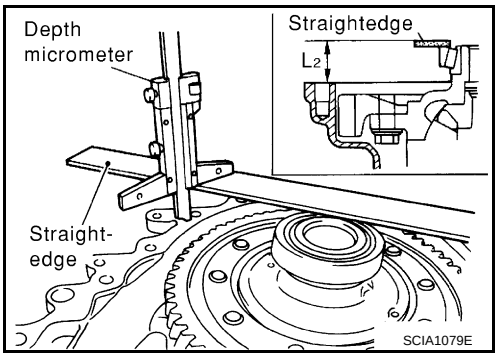
L_1 : Distance between transaxle case end face and mounting face of adjusting shim

L_2 : Distance between differential side bearing outer race and clutch housing end face

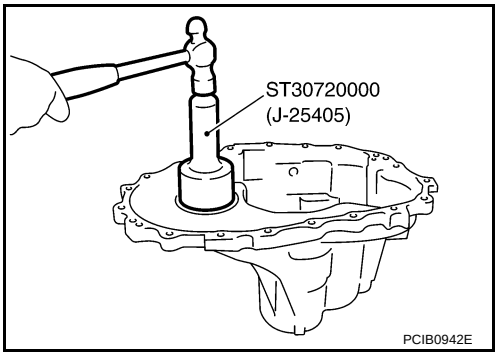
1. Using a depth micrometer and straightedge, measure dimension “L_1” between transaxle case end face and mounting face of adjusting shim.
2. Install differential side bearing outer race onto differential side bearing on final gear side. Holding lightly differential side bearing outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).



3. Using a depth micrometer and straightedge as shown in the figure, measure dimension “L_2” between differential side bearing outer race and clutch housing end face.
   CAUTION:
   “L_2”: Measure at 4 point by approximately 90 degrees and use the average value.

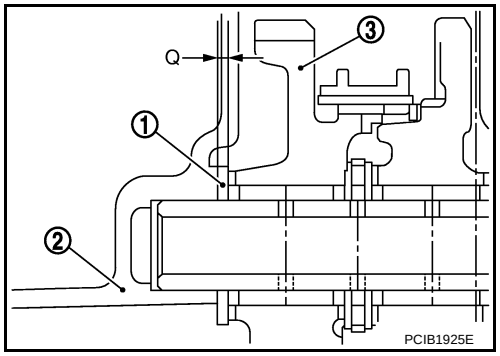


4. Install selected differential side bearing adjusting shim and then install differential side bearing outer race using the drift.



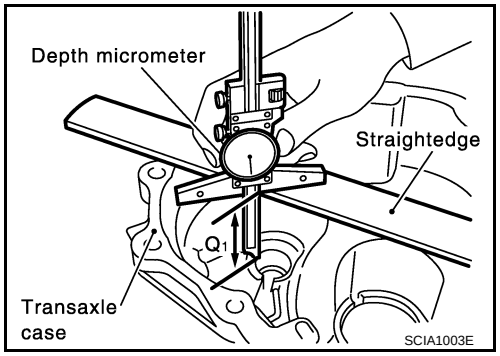
REVERSE IDLER GEAR END PLAY

- When adjusting reverse idler gear end play, select adjusting shim for reverse idler gear. To select adjusting shim (1), measure clearance between transaxle case (2) and reverse idler gear (Rear) (3).
  CAUTION:
  Only 1 adjusting shim can be selected.
- Calculate dimension “Q” (thickness of adjusting shim) using the following procedure to satisfy specification of end play for reverse idler gear.

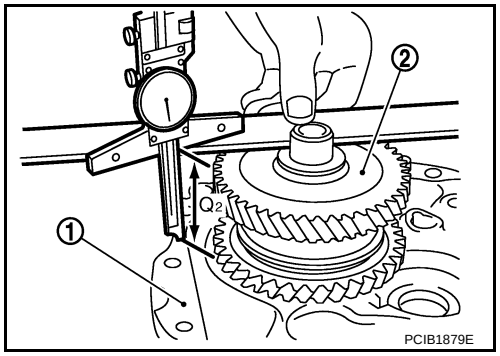


End play : Refer to TM-82, "End Play".
Dimension “Q” = (Q_1 - Q_2) - End play
Q : Thickness of adjusting shim
Q_1 : Distance between transaxle case end face and mounting face of adjusting shim
Q_2 : Distance between clutch housing end face and end face of reverse idler gear (Rear)

1. Using a depth micrometer and straightedge, measure dimension “Q_1” between transaxle case end face and mounting face of adjusting shim.

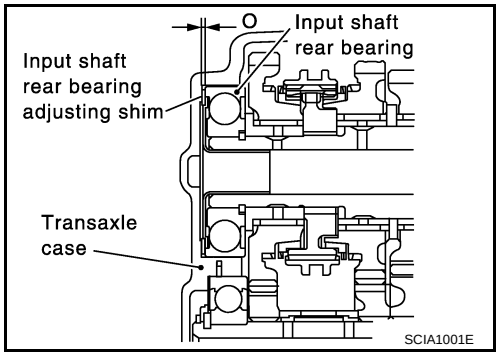


2. Using a depth micrometer and straightedge as shown in the figure, measure dimension “Q_2” between clutch housing (1) end face and end face of reverse idler gear (Rear) (2).
   CAUTION:
   “Q_2”: Measure at 4 point by approximately 90 degrees and use the average value.
3. Install selected reverse idler gear adjusting shim onto reverse idler gear (Rear).



INPUT SHAFT END PLAY

- When adjusting input shaft end play, select adjusting shim for input shaft rear bearing. To select adjusting shim, measure clearance between transaxle case and input shaft rear bearing.
  CAUTION:
  Only 1 adjusting shim can be selected.
- Calculate dimension “O” (thickness of adjusting shim) using the following procedure to satisfy specification of end play for input shaft rear bearing.

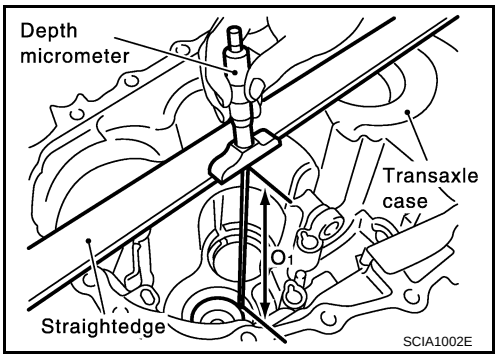


End play : Refer to TM-82, "End Play".
Dimension “O” = (O_1 - O_2) - End play
O : Thickness of adjusting shim

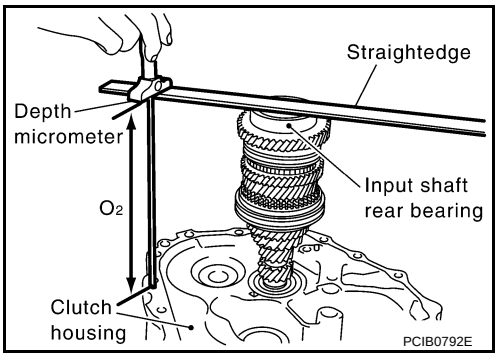
O_1 : Distance between transaxle case end face and mounting face of adjusting shim

O_2 : Distance between clutch housing end face and end face of input shaft rear bearing

1. Using a depth micrometer and straightedge, measure dimension "O_1" between transaxle case end face and mounting face of adjusting shim.
   CAUTION:
   "O_1": Measure at 4 point by approximately 90 degrees and use the average value.

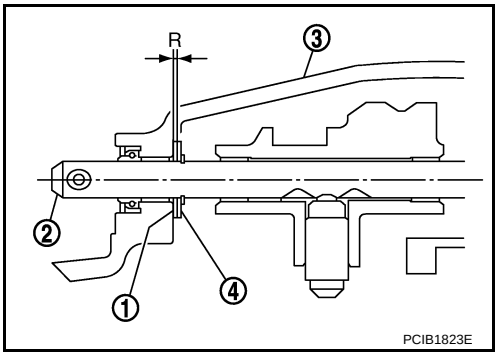


2. Using a depth micrometer and straightedge as shown in the figure, measure dimension "O_2" between clutch housing end face and end face of input shaft rear bearing.
   CAUTION:
   "O_2": Measure at 4 point by approximately 90 degrees and use the average value.
3. Install selected input shaft rear bearing adjusting shim onto input shaft.



STRIKING ROD END PLAY

- When adjusting striking rod end play, select adjusting shim (1) for striking rod (2). To select adjusting shim, measure clearance between transaxle case (3) and striking rod shim (4).
  CAUTION:
  Only 1 adjusting shim can be selected.
- Calculate dimension "R" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for striking rod.



End play : Refer to TM-82, "End Play".

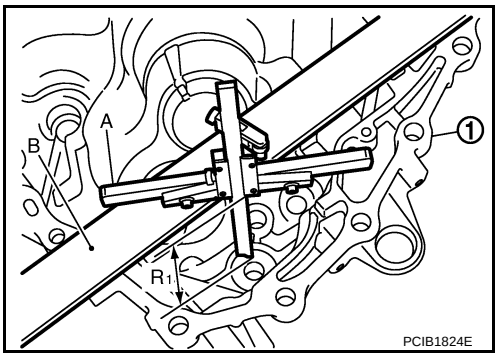
Dimension "R" = (R_1 - R_2) - End play

R : Thickness of adjusting shim

R_1 : Distance between transaxle case end face and mounting face of adjusting shim

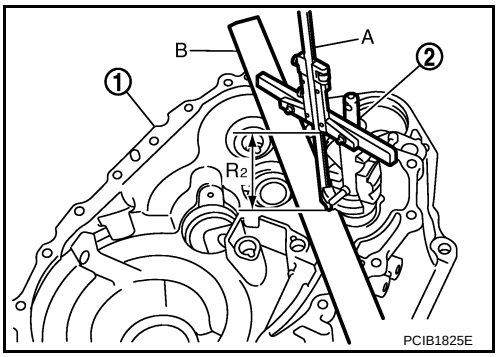
R_2 : Distance between clutch housing end face and end face of striking rod shim

1. Using a depth micrometer (A) and straightedge (B), measure dimension "R_1" between transaxle case (1) end face and mounting face of adjusting shim.
   CAUTION:
   "R_1": Measure at 4 point by approximately 90 degrees and use the average value.



2. Using a depth micrometer (A) and straightedge (B) as shown in the figure, measure dimension "R_2" between clutch housing (1) end face and end face of striking rod shim (2).
CAUTION:
- **"R_2": Measure at 4 point by approximately 90 degrees and use the average value.**
- **When measuring, be careful for the inclination of striking rod assembly and striking rod shim.**

3. Install selected striking rod adjusting shim onto striking rod assembly.



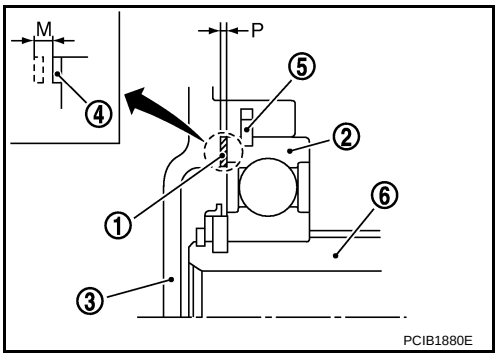
MAINSHAFT END PLAY

- When adjusting mainshaft end play, select adjusting shim (1) for mainshaft rear bearing (2). To select adjusting shim, measure clearance "M" between transaxle case (3) and dummy adjusting shim (4) on mainshaft rear bearing.

5 : Snap ring
6 : Mainshaft

CAUTION:
Only 1 adjusting shim can be selected.

- Calculate dimension "P" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for mainshaft rear bearing.



End play : Refer to TM-82, "End Play".

Dimension "P" = (M + N) - End play

P : Thickness of adjusting shim

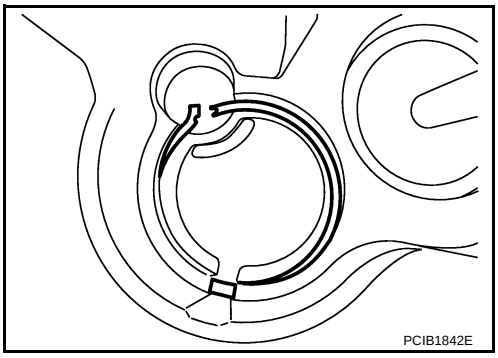
M : Distance between dummy adjusting shim on mainshaft rear bearing end face and transaxle case end face

N* : Thickness of dummy adjusting shim

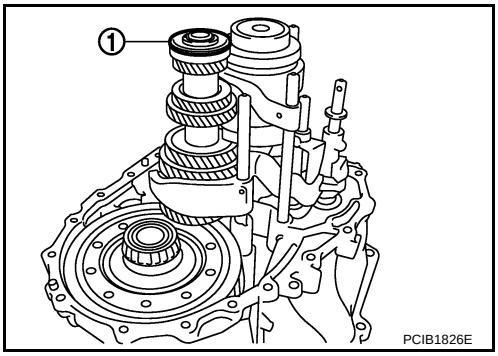
*: Refer to the latest parts information to use a dummy adjusting shim of which part number is the thinnest in thickness.

1. Install transaxle case following the procedures below.

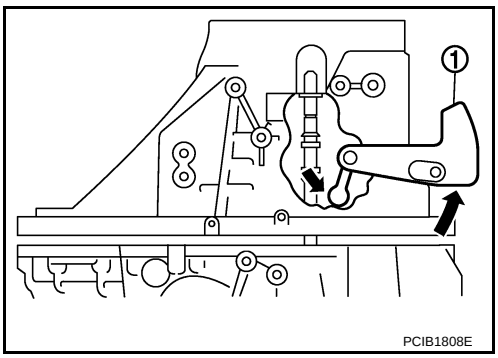
a. Temporarily install snap ring of mainshaft rear bearing into transaxle case.
CAUTION:
Do not reuse snap ring.



b. Install dummy adjusting shim (1) to mainshaft assembly.

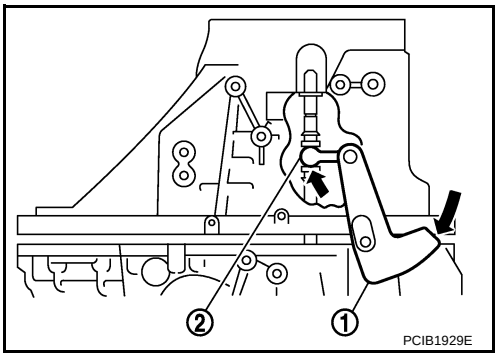


c. With shifter lever A (1) held in the position shown in the figure, temporarily assemble transaxle case to clutch housing.
CAUTION:
Be careful not to damage striking rod oil seal.
NOTE:
Make sure to hold shifter lever A in the position shown in the figure. Otherwise transaxle case cannot be installed to clutch housing.



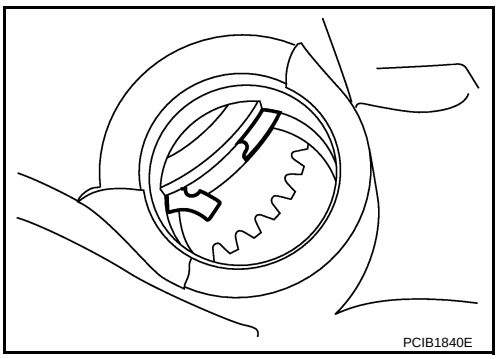
d. While rotating shifter lever A (1) in the direction of the arrow shown in the figure, assemble transaxle case to clutch housing.

2 : Shifter lever B



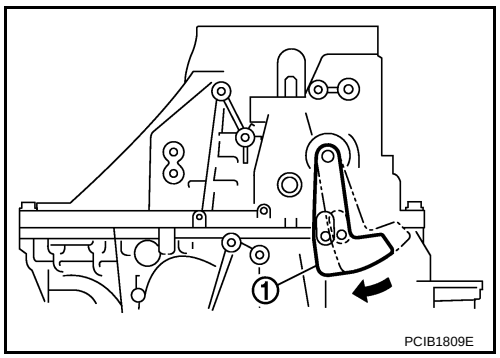
e. Accessing from the bore plug hole, expand snap ring at mainshaft rear bearing so that the ring catches the periphery of mainshaft rear bearing.

f. Temporarily tighten transaxle case mounting bolts.

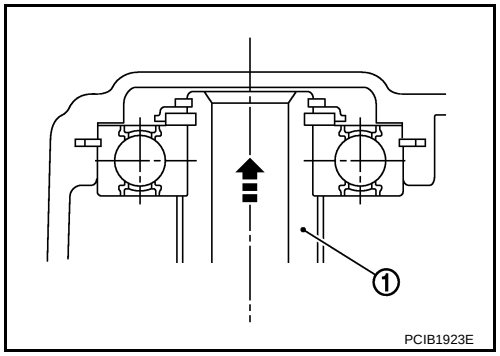


2. Shift the shifter lever A to 2nd gear position.
NOTE:

- The 2nd gear position is attained when shifter lever A (1) is in the position shown in the figure.



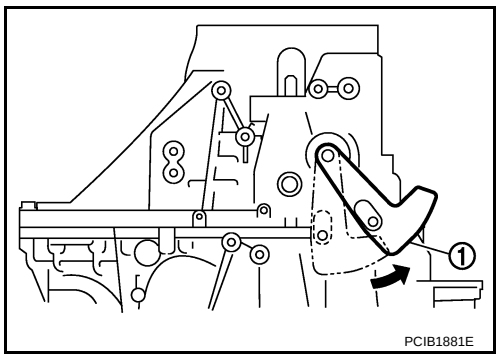
- When transaxle is shifted to the 2nd gear position, mainshaft assembly (1) is lifted.



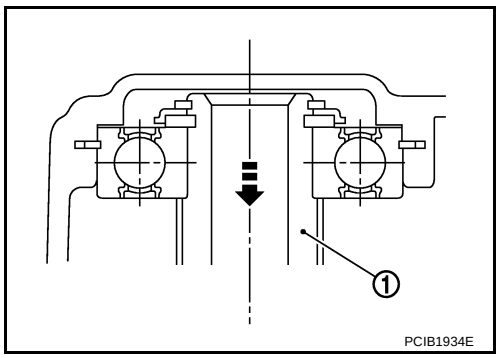
3. Seat snap ring in the groove on mainshaft rear bearing. If snap ring is not seated in the groove on mainshaft rear bearing, remove transaxle case and repeat the procedure 1 from step c.
4. Shift the shifter lever A to 1st gear position, and then shift it to 2nd gear position. Repeat 3 times.

NOTE:

- The mainshaft rear bearing position will be stabilized by shifting between 1st gear position and 2nd gear position alternately.
- The 1st gear position is attained when shifter lever A (1) is in the position shown in the figure.

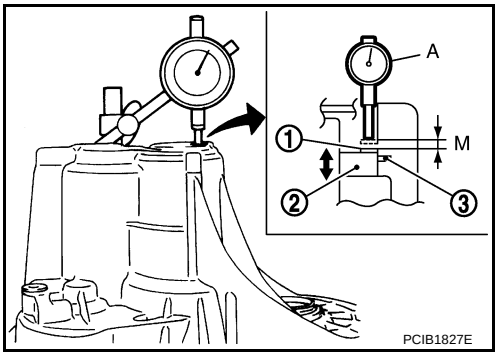


- When transaxle is shifted to the 1st gear position, mainshaft assembly (1) is declined.

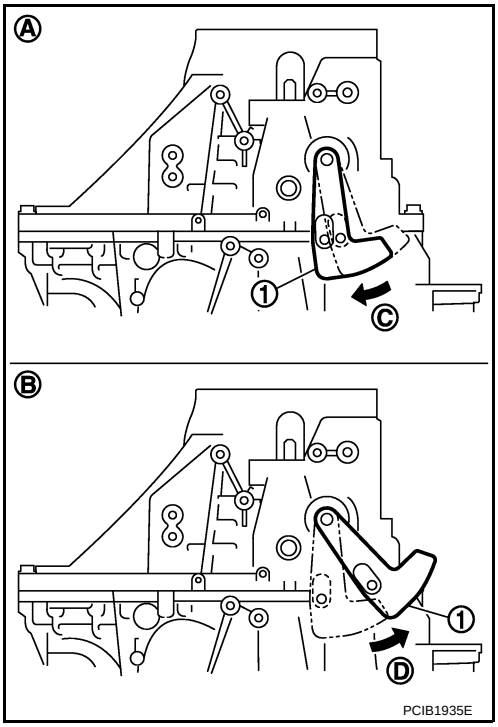


5. Set the dial indicator (A) to dummy adjusting shim (1) through the bore plug mounting hole.

   2 : Mainshaft rear bearing
   3 : Snap ring



6. Shift the shifter lever A (1) to 2nd gear position (A), and then rotate it in the direction of the arrow (C) in the figure until it stops. Using this position as the reference point, measure the amount of movement when shifting shifter lever A to 1st gear position (B) and rotating it in the direction of the arrow (D) in the figure until it stops. This measurement is the "M" dimension.
7. When measurement "M" is 0 - 0.06 mm (0 - 0.0024 in), adjustment terminates, and the dummy adjusting shim becomes regular adjusting shim. Select adjusting shim from the computed expressions when measurement "M" is over 0.06 mm (0.0024 in).



INPUT SHAFT AND GEAR

Exploded View

INFOID:0000000000991893

Refer to TM-28, "Exploded View".

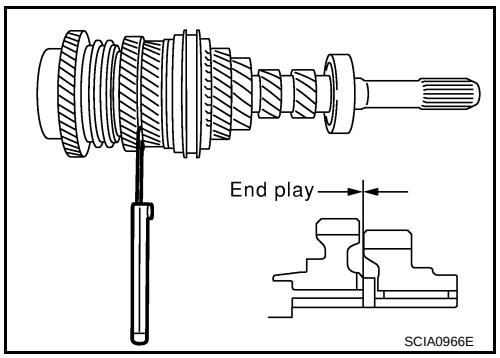
Disassembly

INFOID:0000000000991894

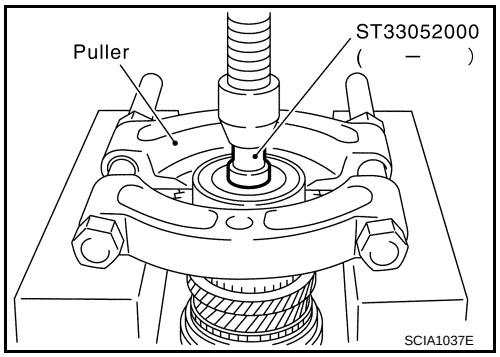
1. Before disassembling, measure end play for 3rd, 4th, 5th, and 6th input gears.

End play standard value : Refer to TM-82, "End Play".

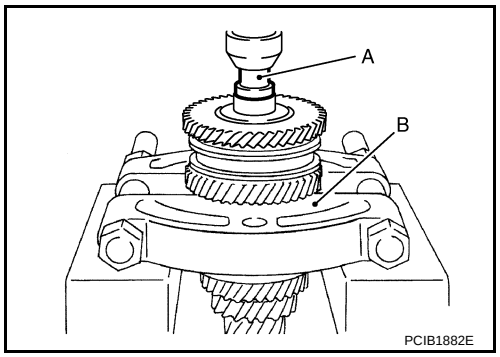
2. Remove oil channel.



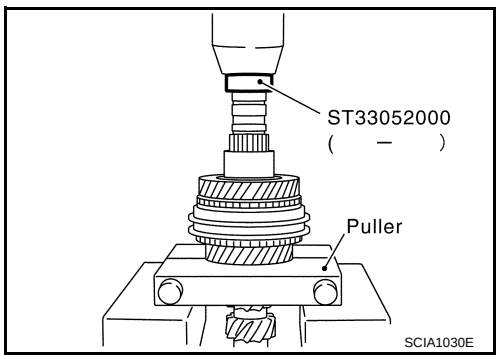
3. Press out input shaft rear bearing using the drift and a puller.
4. Remove snap ring.



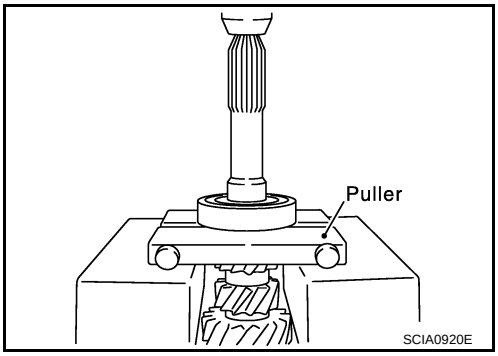
5. Press out 6th input gear, 6th needle bearing, 6th input gear bushing, 5th-6th synchronizer hub assembly, and 5th input gear using the drift (A) [SST: ST33052000 (—)] and a puller (B).
6. Remove 5th needle bearing.



7. Press out 5th input gear bushing, thrust washer, 4th input gear, 4th needle bearing, 4th input gear bushing, 3rd-4th synchronizer hub assembly, and 3rd input gear using the drift and a puller.
8. Remove 3rd needle bearing.



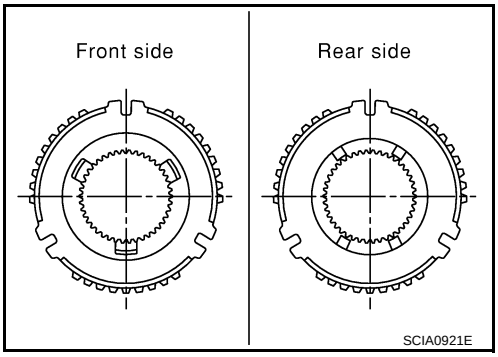
9. Press out input shaft front bearing using a puller.



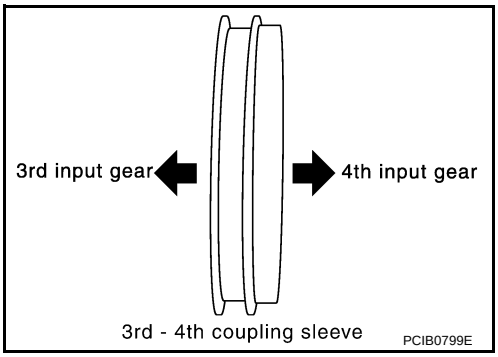
Assembly

INFOID:0000000000991895

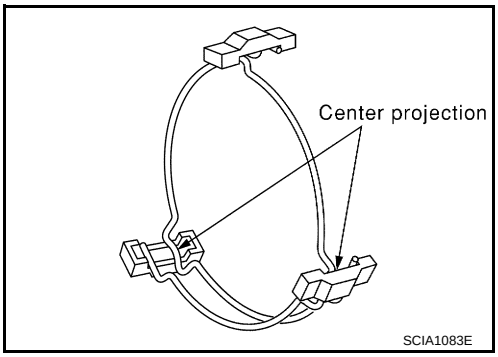
1. Install 3rd needle bearing to input shaft.
2. Install 3rd input gear, 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring to input shaft.
   CAUTION:
   Replace 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring as a set.
3. Install 3rd-4th spread spring, 3rd-4th shifting insert, and 3rd-4th synchronizer hub onto 3rd-4th coupling sleeve.
   CAUTION:
   - **Be careful with orientation of 3rd-4th synchronizer hub.**
   - **Do not reuse 3rd-4th synchronizer hub and 3rd-4th coupling sleeve.**
   - **Replace 3rd-4th synchronizer hub and 3rd-4th coupling sleeve as a set.**



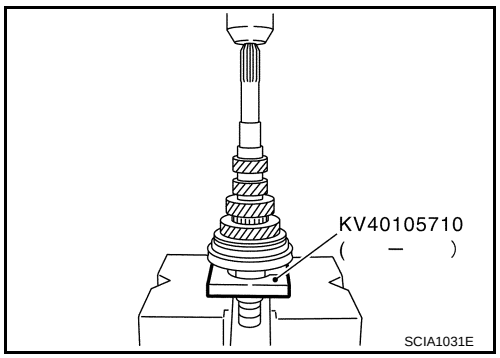
   - **Be careful with orientation of 3rd-4th coupling sleeve.**



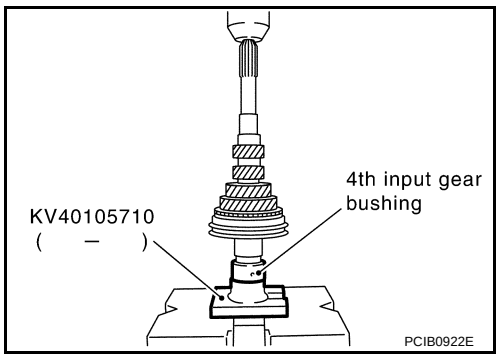
   - **Be sure not to hook center projection of 2 spread springs on same shifting insert.**



4. Press in 3rd-4th synchronizer hub assembly using the press stand.
CAUTION:
Align grooves of 3rd-4th shifting insert and 3rd outer baulk ring.



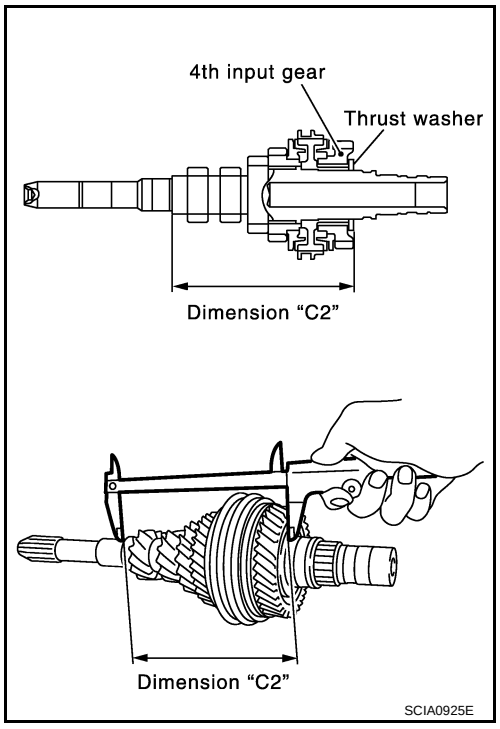
5. Press in 4th input gear bushing using the press stand.
6. Install 4th baulk ring.
7. Install 4th needle bearing and 4th input gear to input shaft.



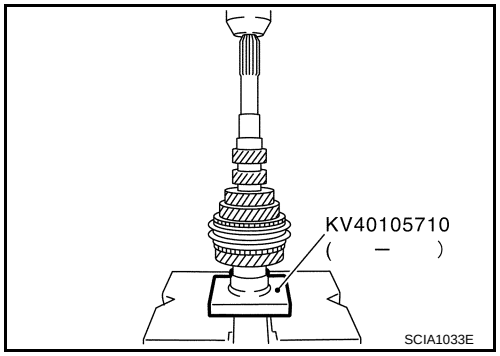
8. Select thrust washer so that dimension “C2” satisfies the standard value below. Then install thrust washer onto input shaft.

Standard value for dimension “C2” **: Refer to TM-83, "Dimension".**

CAUTION:
Only one thrust washer can be selected.



9. Press in 5th input gear bushing using the press stand.
CAUTION:
Do not reuse 5th input gear bushing.
10. Install 5th needle bearing and 5th input gear to input shaft.
11. Install 5th baulk ring.



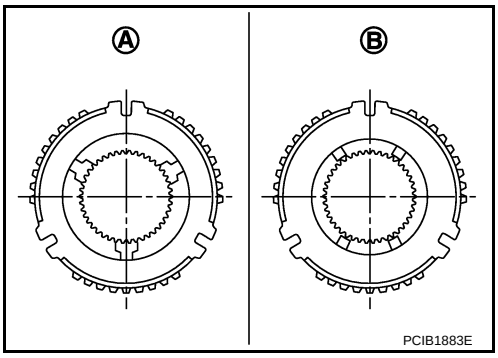
12. Install 5th-6th synchronizer hub, 5th-6th spread spring, and 5th-6th shifting insert onto 5th-6th coupling sleeve.

CAUTION:

- **Be careful with orientation of 5th-6th synchronizer hub.**

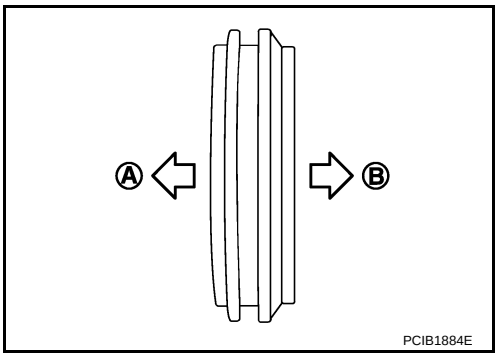
A	: Front side
B	: Rear side

- **Do not reuse 5th-6th synchronizer hub and 5th-6th coupling sleeve.**
- **Replace 5th-6th synchronizer hub and 5th-6th coupling sleeve as a set.**

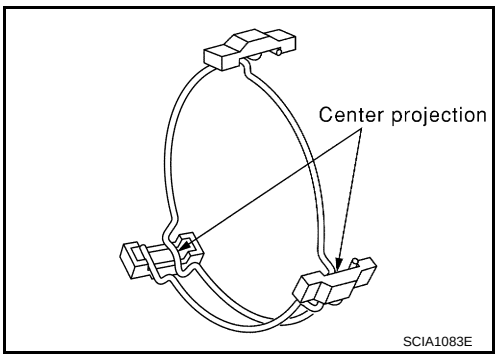


- **Be careful with orientation of 5th-6th coupling sleeve.**

A	: 5th input gear side
B	: 6th input gear side



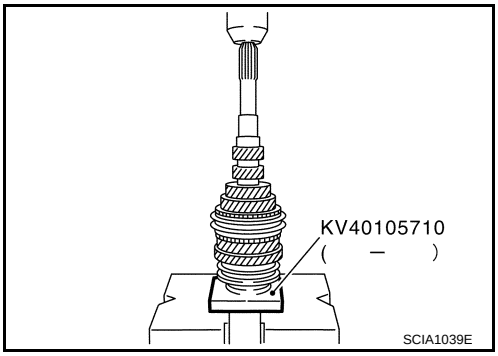
- **Be sure not to hook center projection of 2 spread springs on same shifting insert.**



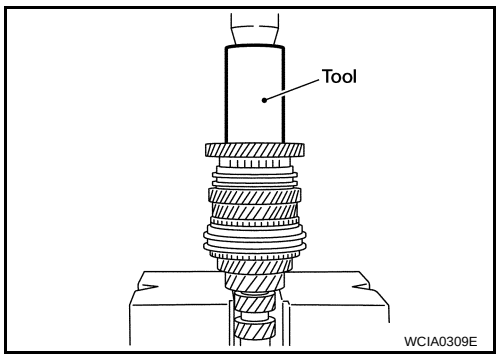
13. Press in 5th-6th synchronizer hub assembly using the press stand.

CAUTION:

Align grooves of 5th-6th shifting insert and 5th baulk ring.



14. Install 6th needle bearing, 6th input gear, 6th baulk ring onto 6th input gear bushing and then press in 6th bushing onto input shaft using the drift [SST: ST33200000 (J-26082)].

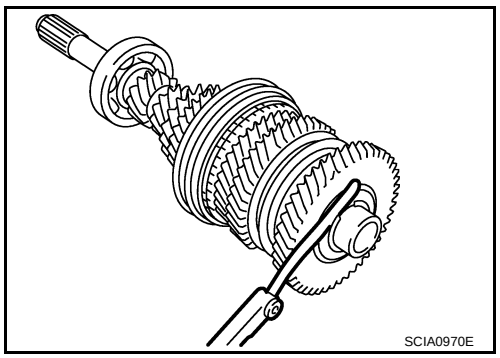


15. Install snap ring onto input shaft and make sure that end play (gap between snap ring and groove) of 6th input gear bushing satisfies the standard value.

End play standard value :Refer to TM-82, "End Play".

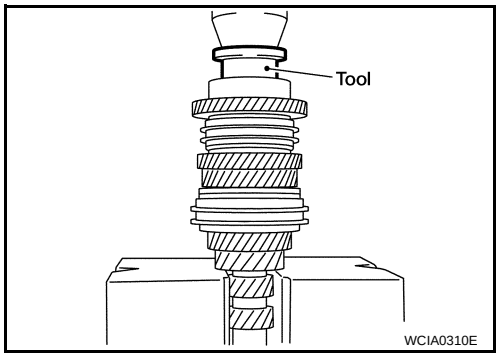
- If measurement is outside the standard range, select snap ring.

CAUTION:
Do not reuse snap ring.



16. Press in input shaft rear bearing using the drift [SST: ST30901000 (J-26010-01)].

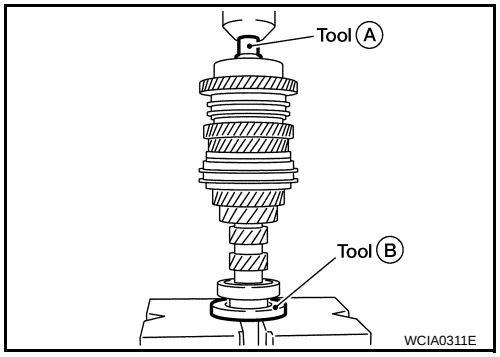
CAUTION:
Install input shaft rear bearing with its brown surface facing the 6th input gear side.



17. Press in input shaft front bearing using the drifts.

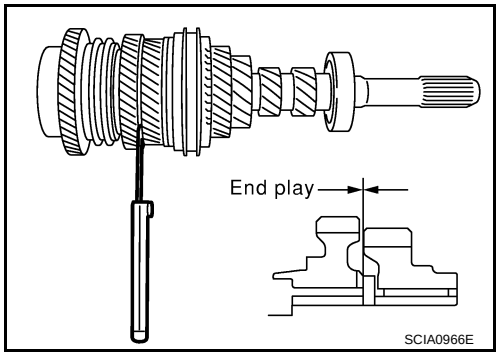
A: Drift [SST: ST33052000 (—)]
B: Drift [SST: ST30032000 (J-26010-01)]

18. Install oil channel onto input shaft.



19. Check end play of 3rd, 4th, 5th, and 6th input gears.

End play standard value : Refer to TM-82, "End Play".

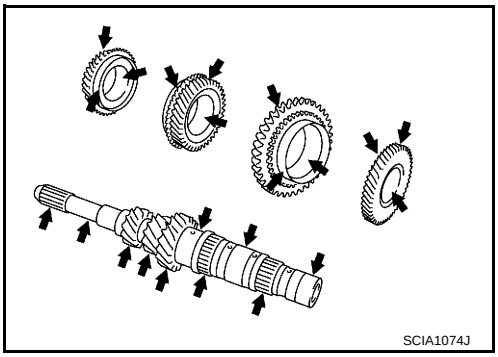


Inspection

INFOID:0000000000991896

INPUT SHAFT AND GEAR

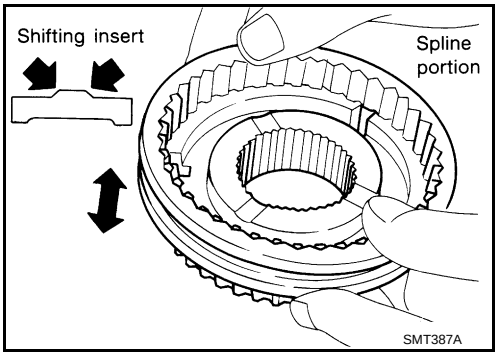
Check items below. If necessary, replace them with new ones.
- Damage, peeling, dent, uneven wear, bending, etc. of shaft
- Excessive wear, damage, peeling, etc. of gears



SYNCHRONIZER

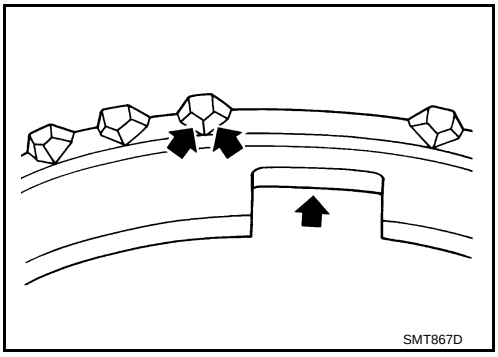
Synchronizer Hub and Coupling Sleeve

Check items below. If necessary, replace them with new ones.
- Damage and excessive wear of contact surfaces of coupling sleeve, synchronizer hub and shifting insert
- Coupling sleeve and synchronizer hub must move smoothly.



Baulk Ring and Spread Spring

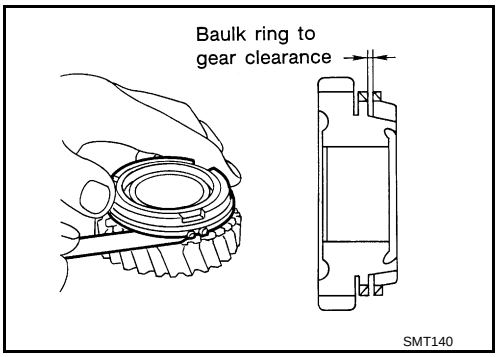
Check items below. If necessary, replace them with new ones.
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.



Baulk Ring Clearance for Single Cone Synchronizer (4th, 5th, and 6th)
- Push baulk ring on the cone and measure the clearance between baulk ring and cone. If measurement is below limit, replace it with a new one.

Clearance

Standard value	**: Refer to TM-82, "Baulk Ring Clearance".**
Limit value	**: Refer to TM-82, "Baulk Ring Clearance".**

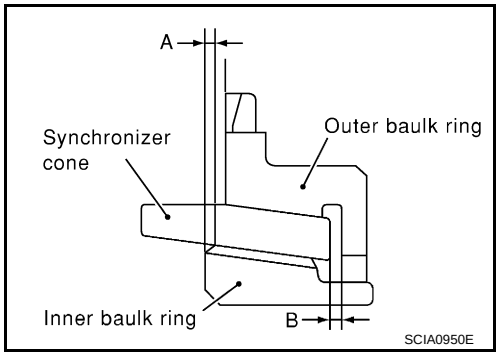


Baulk Ring Clearance for Double Cone Synchronizer (3rd)

- Check the clearance between outer baulk ring, synchronizer cone, and inner baulk ring as follows.

CAUTION:

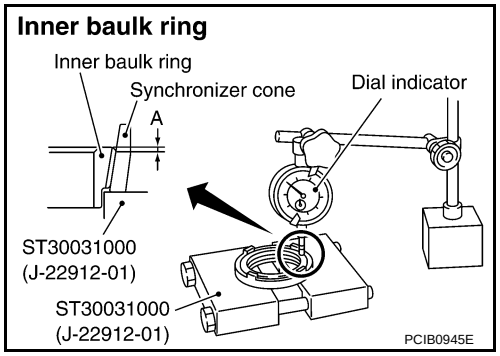
The clearances “A” and “B” are controlled with outer baulk ring, synchronizer cone, and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.



1. Measure the clearance “A” at 2 points or more diagonally opposite using a dial indicator. And then calculate mean value.

Clearance “A”

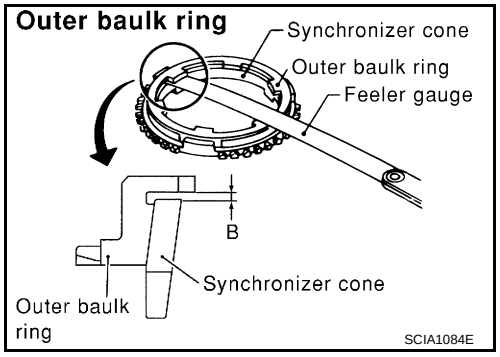
Standard value	**: Refer to TM-82, "Baulk Ring Clearance".**
Limit value	**: Refer to TM-82, "Baulk Ring Clearance".**



2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance “B”

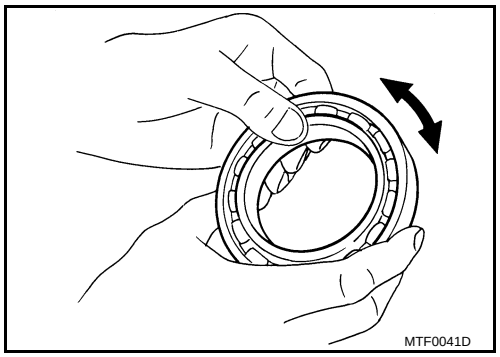
Standard value	**: Refer to TM-82, "Baulk Ring Clearance".**
Limit value	**: Refer to TM-82, "Baulk Ring Clearance".**



BEARING

Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing



MAINSHAFT AND GEAR

Exploded View

INFOID:0000000000991897

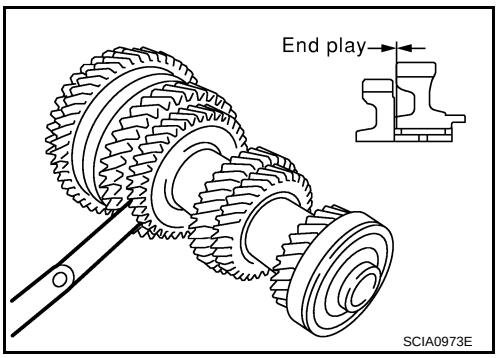
Refer to TM-28, "Exploded View".

Disassembly

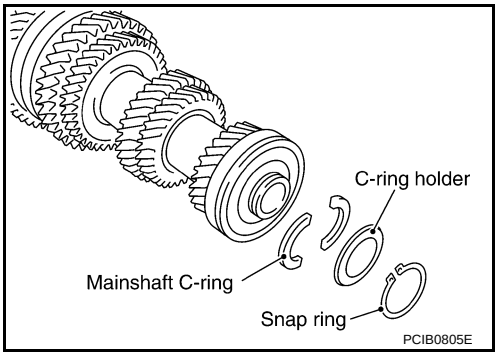
INFOID:0000000000991898

1. Before disassembling, measure the end play of 1st and 2nd main gears.

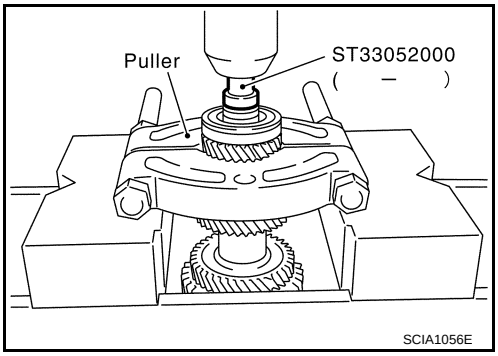
End play standard value : Refer to TM-82, "End Play".



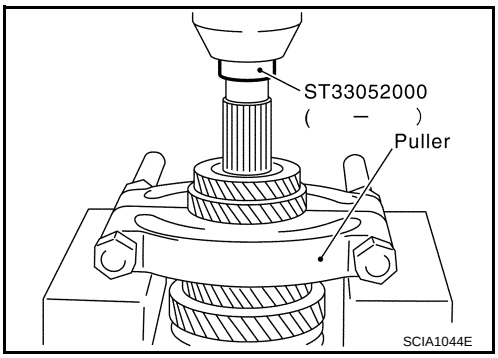
2. Remove snap ring.
3. Remove C-ring holder and then remove mainshaft C-ring.



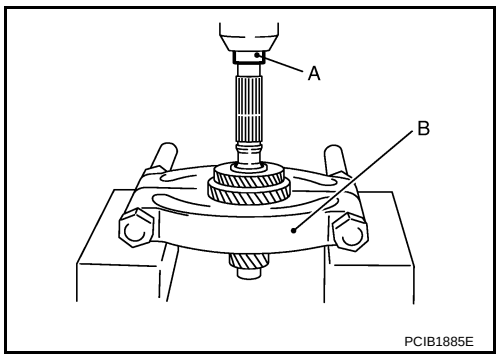
4. Press out mainshaft rear bearing, 6th main gear adjusting shim, and 6th main gear using the drift and a puller.
5. Remove 5th-6th mainshaft spacer.



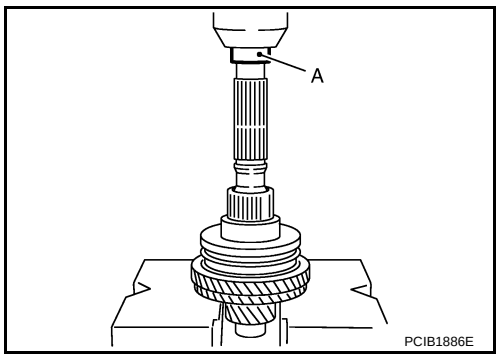
6. Press out 4th main gear and 5th main gear using the drift and a puller.
7. Remove 4th main gear adjusting shim.
8. Remove 3rd-4th mainshaft spacer.



9. Press out 3rd main gear and 2nd main gear using the drift (A) [SST: KV40105020 (—)] and a puller (B).
10. Remove 2nd needle bearing.



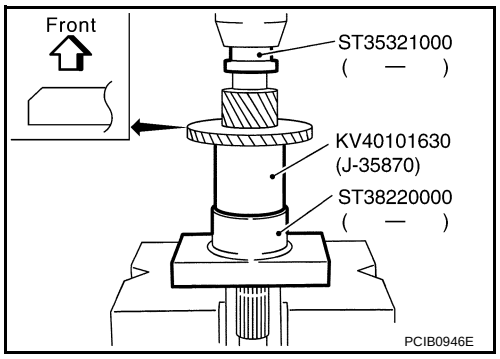
11. Press out 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st needle bearing, 1st main gear bushing, and reverse main gear using the drift [SST: KV40105020 (—)].



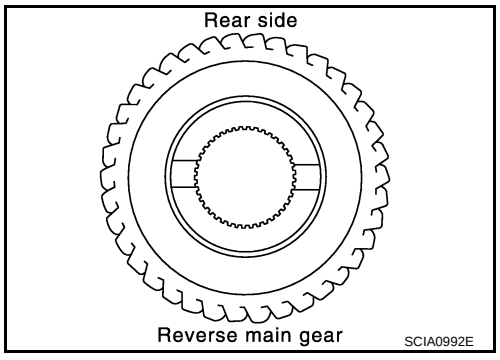
Assembly

INFOID:0000000000991899

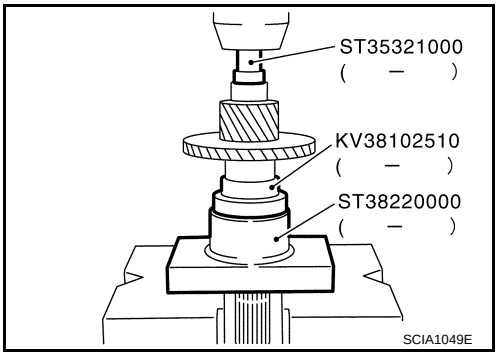
1. Press in reverse main gear using the drifts and the press stand.



CAUTION:
- **Be careful with orientation of reverse main gear.**
- **Do not reuse reverse main gear.**



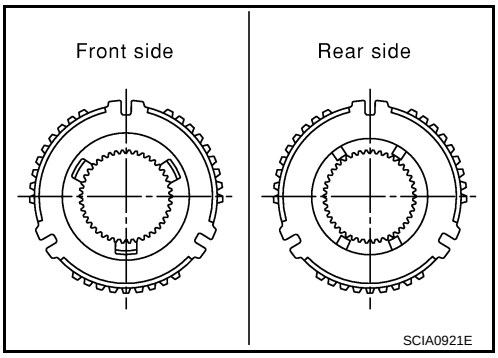
2. Press in 1st main gear bushing using the drifts and the press stand.
3. Install 1st needle bearing and then 1st main gear.



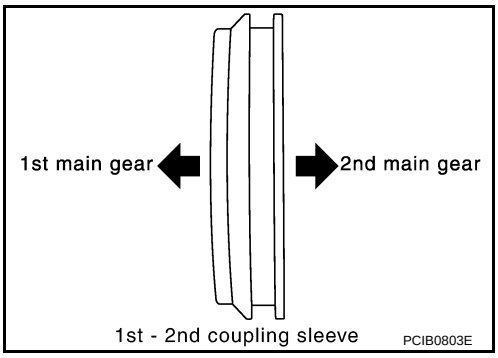
4. Install 1st-2nd spread spring, 1st-2nd shifting insert, and 1st-2nd synchronizer hub onto 1st-2nd coupling sleeve.

CAUTION:

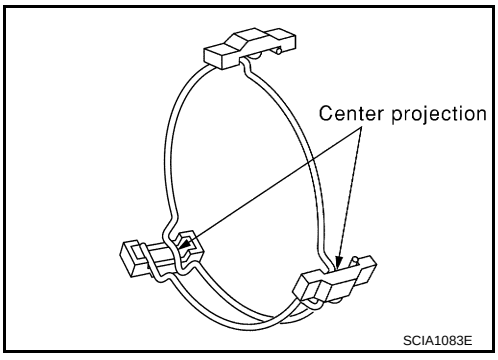
- **Be careful with orientation of 1st-2nd synchronizer hub.**
- **Do not reuse 1st-2nd synchronizer hub and 1st-2nd coupling sleeve.**
- **Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.**



- **Be careful with orientation of 1st-2nd coupling sleeve.**

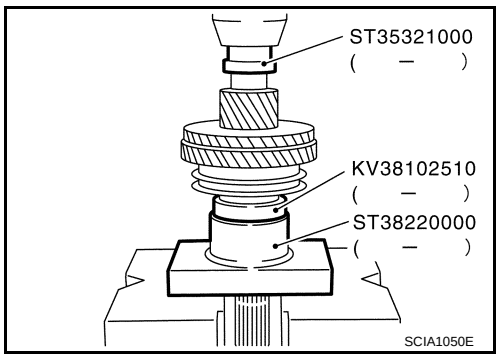


- **Be sure not to hook center projection of 2 spread springs on same 1st-2nd shifting insert.**



5. Install 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring onto mainshaft and then press in 1st-2nd synchronizer hub assembly onto mainshaft using the drifts and the press stand.

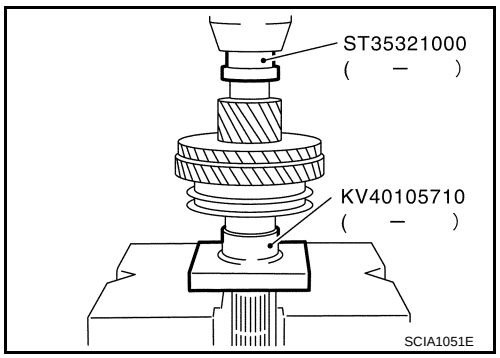
CAUTION:
- **Outer baulk ring, synchronizer cone, and inner baulk ring on 2nd gear-side must have been removed.**
- **Be careful with orientation of coupling sleeve.**
- **Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.**



6. Press in 2nd main gear bushing using the drift and the press stand.
7. Install 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring.

CAUTION:
Replace 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring as a set.

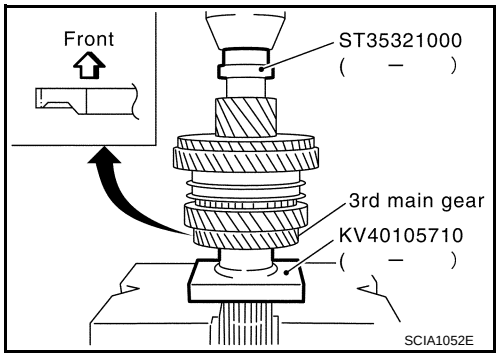
8. Install 2nd needle bearing and 2nd main gear.



9. Press in 3rd main gear using the drift and the press stand.

CAUTION:
- **Be careful with orientation of 3rd main gear.**
- **Do not reuse 3rd main gear.**

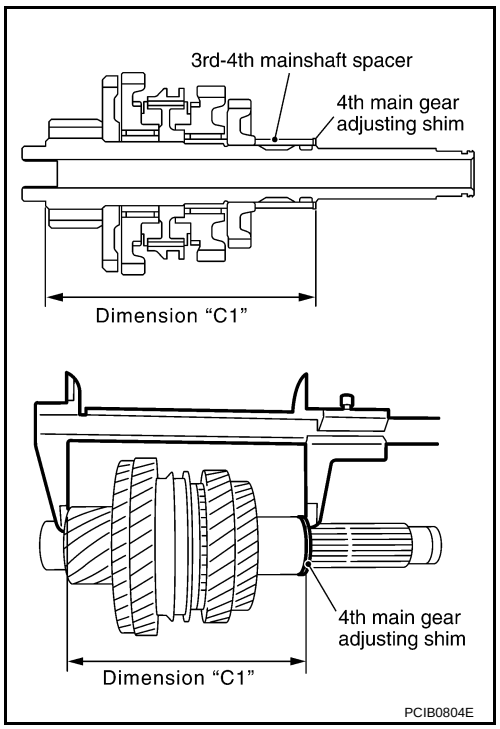
10. Install 3rd-4th mainshaft spacer.



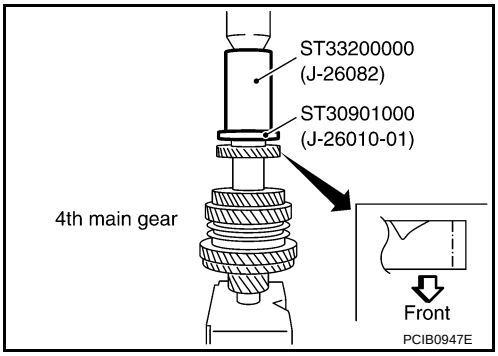
11. Select 4th main gear adjusting shim so that dimension “C1” satisfies the standard value below and install 4th main gear adjusting shim onto mainshaft.

Standard value for dimension “C1” : Refer to TM-83, "Dimension".

CAUTION:
Only one adjusting shim can be selected.

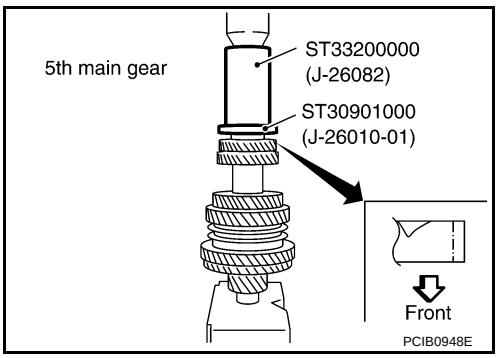


12. Press in 4th main gear using the drifts.
CAUTION:
- **Be careful with orientation of 4th main gear.**
- **Do not reuse 4th main gear.**



13. Press in 5th main gear using the drifts.
CAUTION:
- **Be careful with orientation of 5th main gear.**
- **Do not reuse 5th main gear.**

14. Install 5th-6th mainshaft spacer.

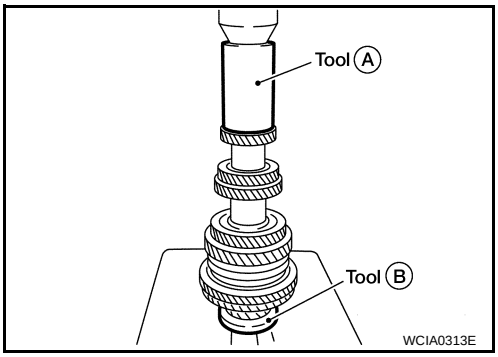


15. Press in 6th main gear using the drifts.

A: Drift [SST: ST33200000 (J-26082)]

B: Drift [SST: ST30901000 (J-26010-01)]

CAUTION:
Do not reuse 6th main gear.



16. Select 6th main gear adjusting shim and then install it onto mainshaft.
- Calculate thickness “S” of 6th main gear adjusting shim following the procedure below so that end play dimension between 6th main gear and mainshaft rear bearing becomes the dimension shown below.

End play :Refer to TM-82, "End Play".

Dimension “S” = (S_1 - S_2) - End play

S : Thickness of adjusting shim

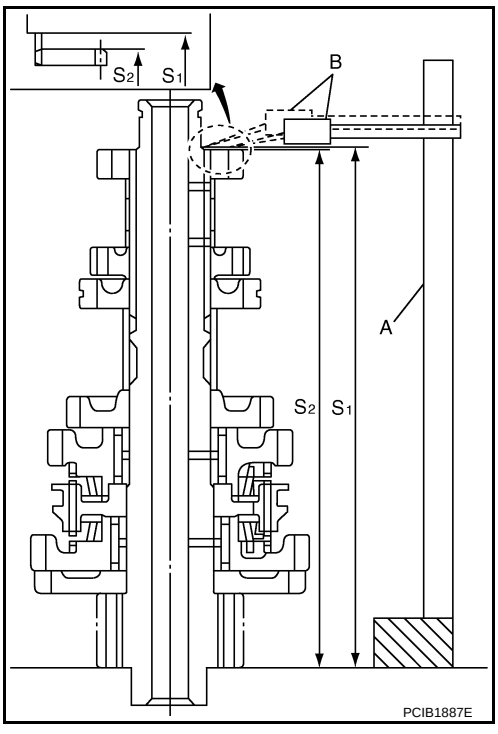
S_1 : Dimension from mainshaft standard face to mainshaft rear bearing press-fit end face

S_2 : Dimension from mainshaft standard face to 6th main gear end face

CAUTION:
Only one adjusting shim can be selected.

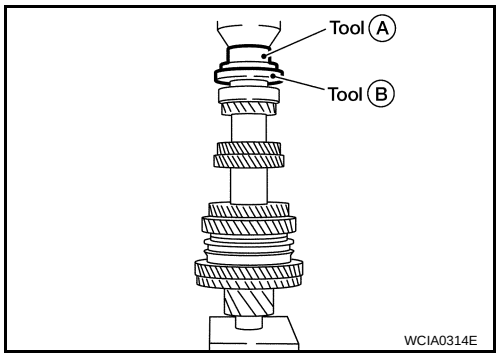
a. Measure dimension “S_1” and “S_2” using a height gauge (A) and pick tester (B).

b. Install selected 6th main gear adjusting shim to mainshaft.



17. Press in mainshaft rear bearing using the drifts.

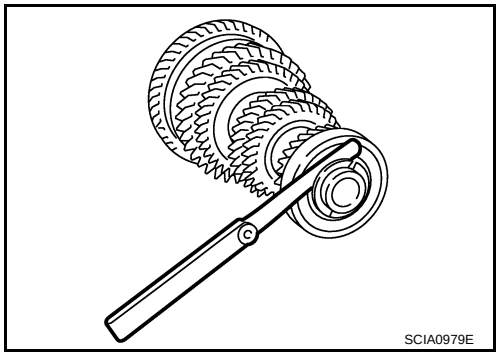
A: Drift [SST: ST30720000 (J-25405)]
B: Drift [SST: ST30901000 (J-26010-01)]



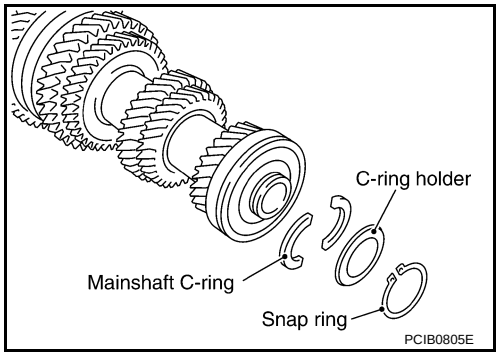
18. Install mainshaft C-ring onto mainshaft and check that end play of mainshaft rear bearing satisfies the standard value.

End play standard value : Refer to TM-82, "End Play".

- If measurement is outside the standard range, reselect mainshaft C-ring.

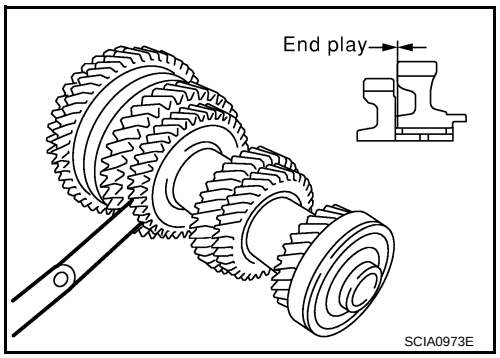


19. Install C-ring holder and then install snap ring.
CAUTION:
Do not reuse snap ring.



20. Check end play of 1st and 2nd main gears.

End play standard value : Refer to TM-82, "End Play".

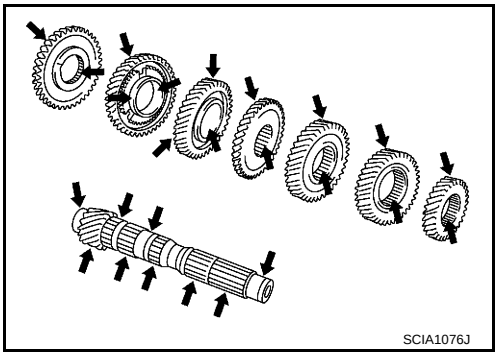


Inspection

INFOID:0000000000991900

MAINSHAFT AND GEAR

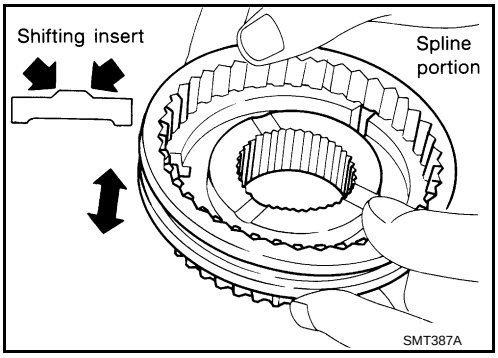
Check items below. If necessary, replace them with new ones.
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.


SCIA1076J

SYNCHRONIZER

Synchronizer Hub and Coupling Sleeve

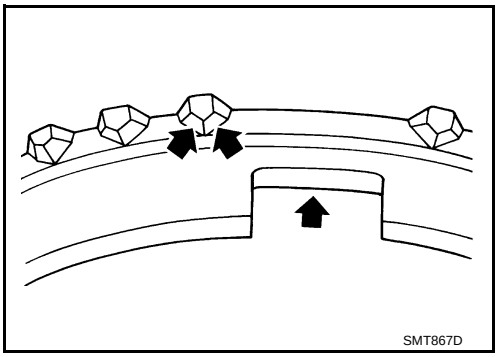
Check items below. If necessary, replace them with new ones.
- Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub and shifting insert.
- Coupling sleeve and synchronizer hub must move smoothly.



SMT387A

Baulk Ring and Spread Spring

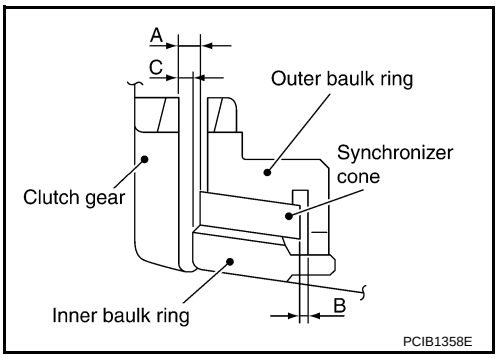
Check items below. If necessary, replace them with new ones.
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.


SMT867D

Baulk Ring Clearance for Triple Cone Synchronizer (1st and 2nd)
- Check the clearance between outer baulk ring, synchronizer cone, and inner baulk ring as follows.

  CAUTION:

  The clearances “A”, “B”, and “C” are controlled with outer baulk ring, synchronizer cone, and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.



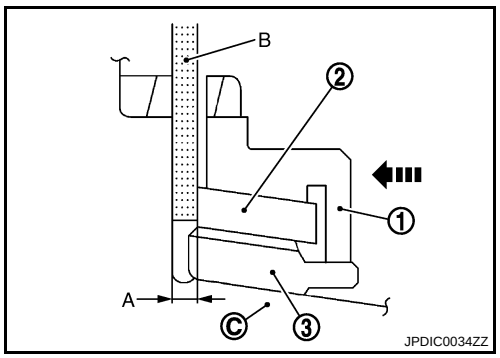
PCIB1358E

1. Measure the clearance “A” at 2 points or more diagonally opposite using a feeler gauge (B) when pressing outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) toward gear taper cone (C). And then calculate mean value.

Clearance “A”

Standard value **: Refer to TM-82, "Baulk Ring Clearance".**

Limit value **: Refer to TM-82, "Baulk Ring Clearance".**

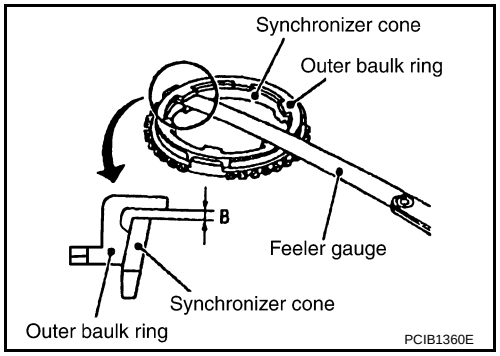


2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance “B”

Standard value **: Refer to TM-82, "Baulk Ring Clearance".**

Limit value **: Refer to TM-82, "Baulk Ring Clearance".**

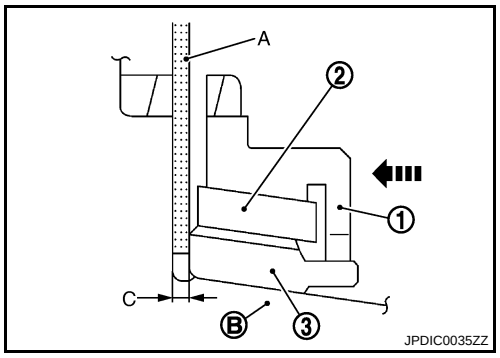


3. Measure the clearance “C” at 2 points or more diagonally opposite using a feeler gauge (A) when pressing outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) toward gear taper cone (B). And then calculate mean value.

Clearance “C”

Standard value **: Refer to TM-82, "Baulk Ring Clearance".**

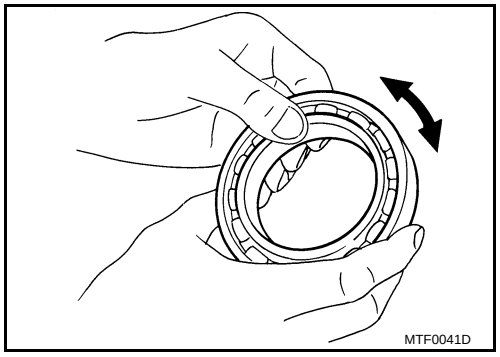
Limit value **: Refer to TM-82, "Baulk Ring Clearance".**



BEARING

Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing



REVERSE IDLER SHAFT AND GEAR

Exploded View

INFOID:0000000000991901

Refer to TM-28, "Exploded View".

Disassembly

INFOID:0000000000991902

1. Remove reverse idler gear (Rear), reverse coupling sleeve, and reverse insert spring simultaneously.
2. Remove reverse idler gear needle bearing.
3. Remove thrust needle bearing.
4. Remove reverse baulk ring.
5. Remove reverse idler gear (Front).
6. Remove reverse idler gear needle bearing.
7. Remove thrust needle bearing.
8. Remove retaining pin from reverse idler shaft.

Assembly

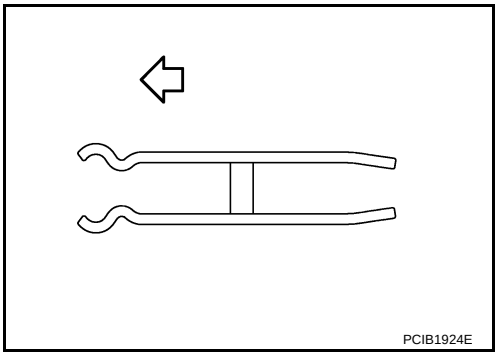
INFOID:0000000000991903

Note the following, and assemble in the reverse order of disassembly.

CAUTION:

- **Be careful with orientation of reverse insert spring.**

⇦ : Front


PCIB1924E

- **Do not reuse retaining pin.**

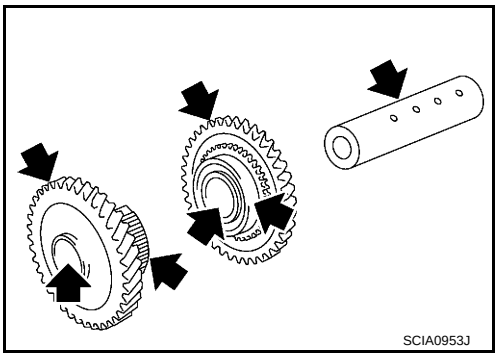
Inspection

INFOID:0000000000991904

REVERSE IDLER SHAFT AND GEAR

Check items below. If necessary, replace them with new ones.

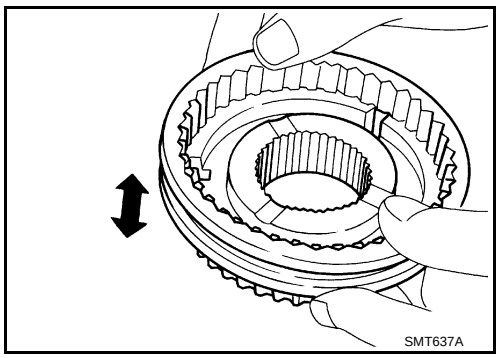
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.


SCIA0953J

SYNCHRONIZER

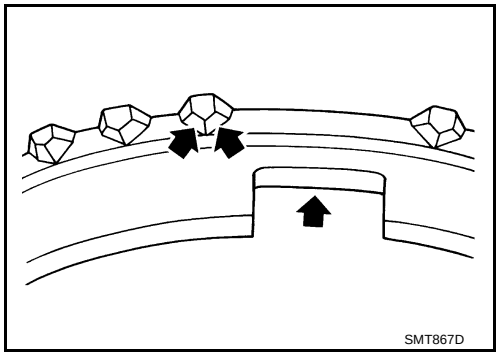
Synchronizer Hub and Coupling Sleeve

Check items below. If necessary, replace them with new ones.
- Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub of reverse idler gear (Rear), and insert spring.
- Coupling sleeve and synchronizer hub of reverse idler gear (Rear) must move smoothly.


SMT637A

Baulk Ring

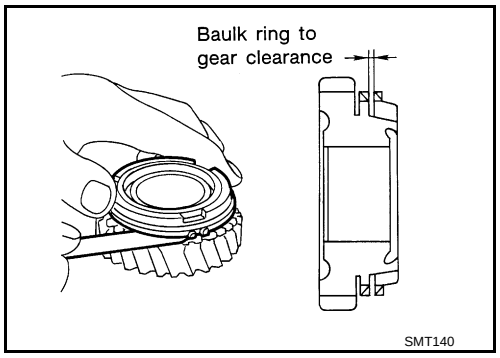
Check items below. If necessary, replace them with new ones.
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.


SMT867D

Baulk Ring Clearance for Single Cone Synchronizer (Reverse)
- Push baulk ring on the cone and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

Clearance

Standard value	**: Refer to TM-82, "Baulk Ring Clearance".**
Limit value	**: Refer to TM-82, "Baulk Ring Clearance".**



SMT140

BEARING

Check items below. If necessary, replace them with new ones.
- Damage and rough rotation of bearing.

FINAL DRIVE

Exploded View

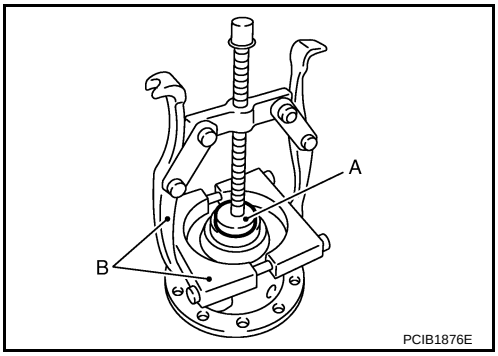
INFOID:0000000000991905

Refer to TM-28, "Exploded View".

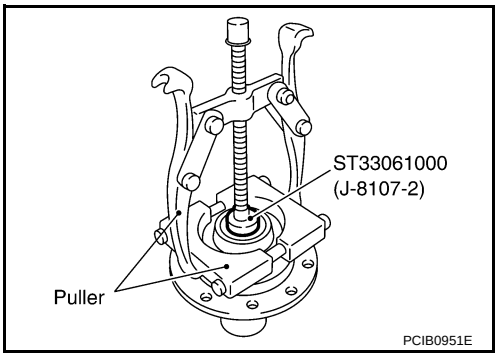
Disassembly

INFOID:0000000000991906

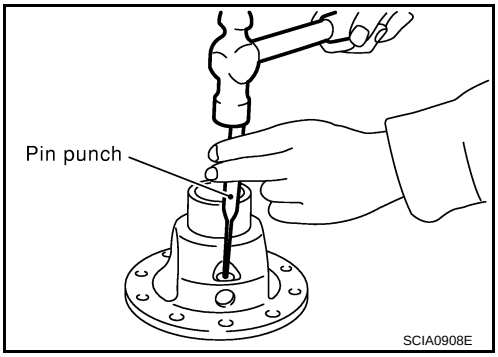
1. Remove final gear mounting bolts and then separate the final gear from differential case.
2. Remove differential side bearing (clutch housing side) using the drift (A) [SST: ST33061000 (J-8107-2)] and pullers (B).



3. Remove differential side bearing (transaxle case side) using the drift and pullers.
4. Remove speedometer drive gear.



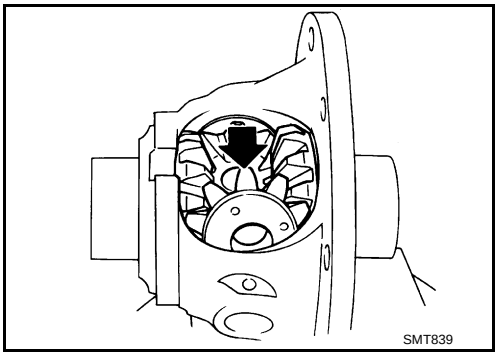
5. Remove retaining pin from differential case using a pin punch and then remove pinion mate shaft.
6. Rotate pinion mate gears and remove pinion mate gears, pinion mate thrust washers, side gears, and side gear thrust washers from differential case.



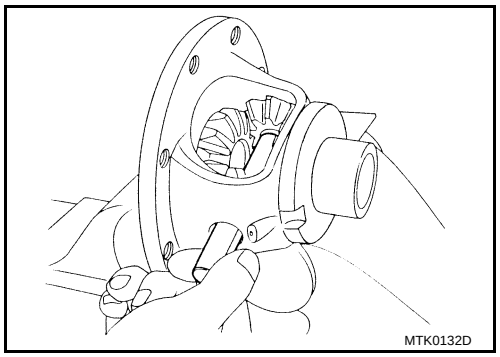
Assembly

INFOID:0000000000991907

1. Apply gear oil to sliding area of differential case, each gear, and thrust washer.
2. Install side gear thrust washers and side gears into differential case.
3. While rotating pinion mate thrust washers and pinion mate gears, aligning them diagonally, install them into differential case.



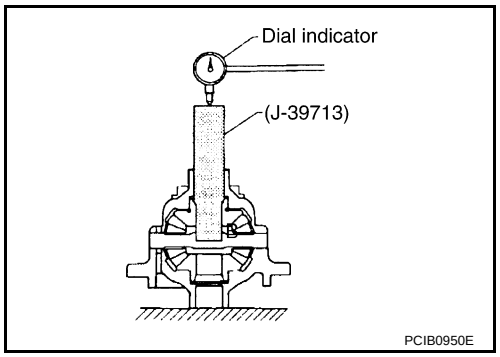
4. Insert pinion mate shaft into differential case.
CAUTION:
Be sure not to damage pinion mate thrust washers.



5. Measure end play of side gears following the procedure below. Then select side gear thrust washer.

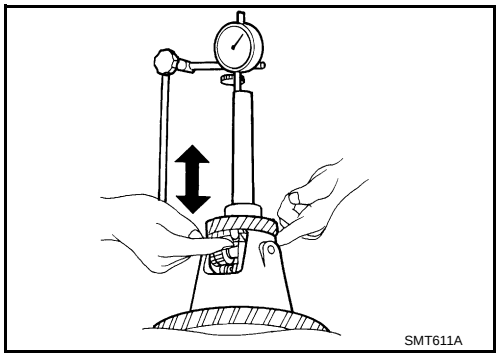
a. Put differential case vertically so that its side gear to be measured faces upward.

b. Place the preload adapter and a dial indicator onto side gears.



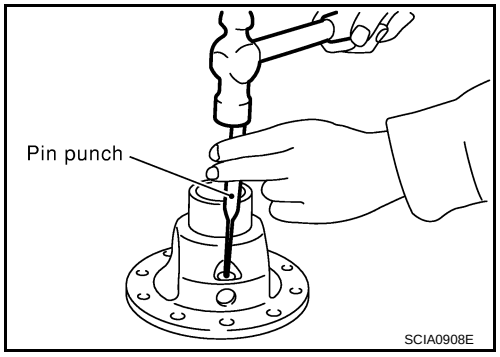
c. Move side gears up and down to measure the clearance and select thrust washer so that it satisfies the standard value.

Allowable Clearance between side gear and differential case with thrust washer	**: Refer to TM-83, "Differential Side Gear Clearance".**

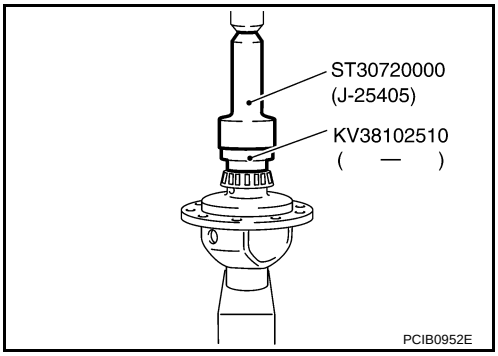


CAUTION:
- **There should be no resistance and gears should rotate freely.**
- **Place differential case upside down. Measure the end play for opposite side-gears likewise securely.**
- **Only one thrust washer can be selected.**

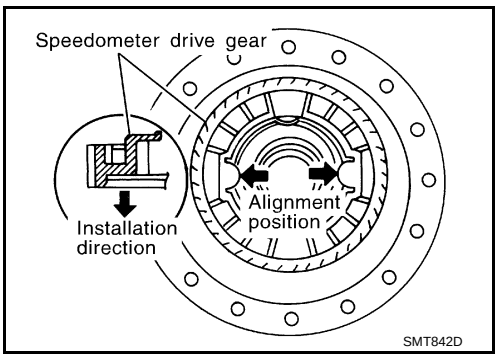
6. Install retaining pin into pinion mate shaft using a pin punch.
CAUTION:
Do not reuse retaining pin.



7. Press in differential side bearing (transaxle case side) to differential case using the drifts.

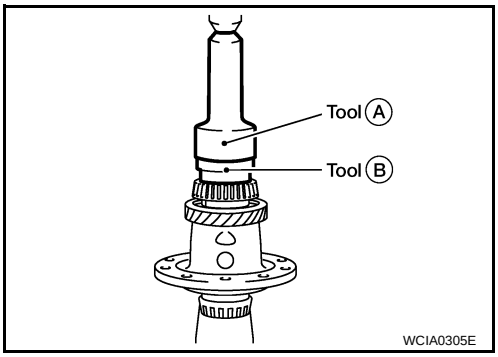


8. Align and install speedometer drive gear onto differential case.

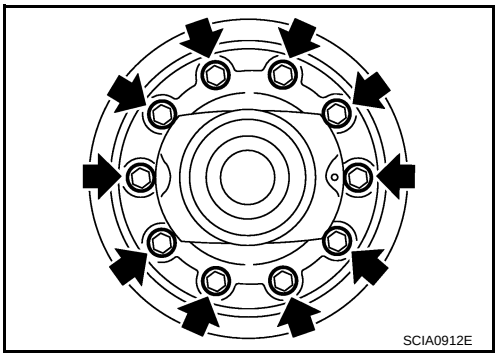


9. Press in differential side bearing (clutch housing side) to differential case using the drifts.

A: Drift [SST: ST30720000 (J-25405)]
B: Drift [SST: KV38102510 (—)]



10. Install final gear into differential case and tighten final gear mounting bolts to the specified torque.



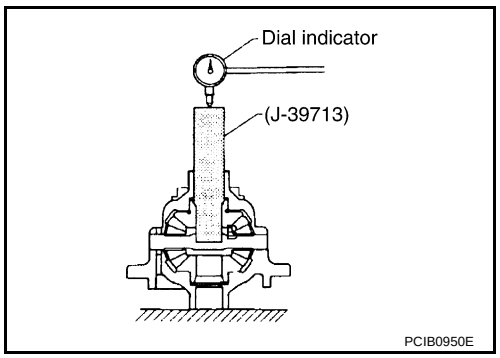
Inspection

INFOID:0000000000991908

INSPECTION BEFORE DISASSEMBLY

- Check the clearance between side gear and differential case as follows.

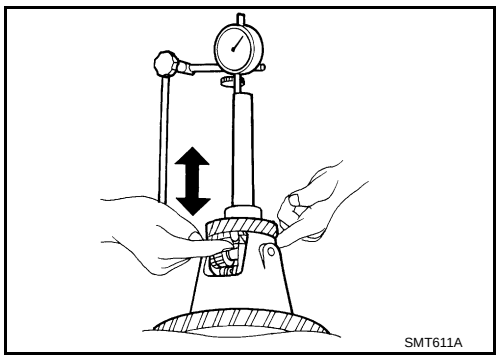
1. Clean final drive assembly sufficiently to prevent side gear thrust washer, differential case, side gear, and other parts from sticking by gear oil.



2. Put differential case vertically so that side gear to be measured faces upward.
3. Place the drift and a dial indicator onto side gear. Move side gear up and down, and measure the clearance.

Allowable Clearance between side gear and differential case with thrust washer	**: Refer to TM-83, "Differential Side Gear Clearance".**

CAUTION:
There should be no resistance and gears should rotate freely.

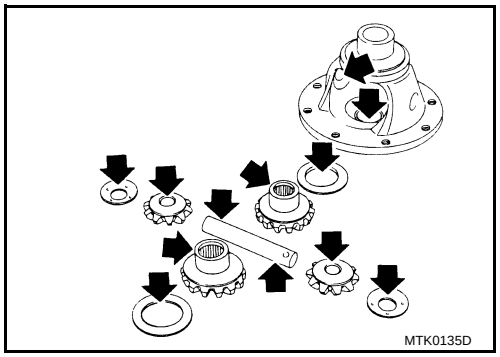


4. If not within specification, adjust the clearance by changing side gear thrust washer thickness.
5. Turn differential case upside down and measure the clearance between side gear and differential case on the other side in the same way.

INSPECTION AFTER DISASSEMBLY

Gear, Washer, Shaft, And Case

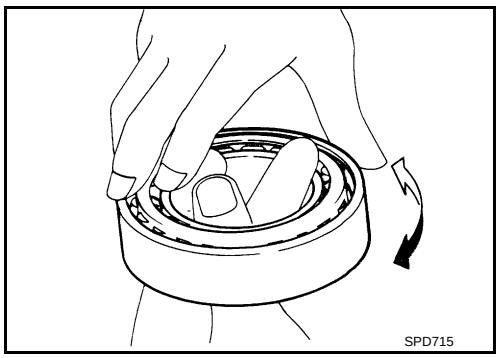
- Check side gears, side gear thrust washers, pinion mate shaft, pinion mate gears, pinion mate thrust washers and differential case. If necessary, replace with a new one.



Bearing

- Check for bearing damage and rough rotation. If necessary, replace with a new one.

CAUTION:
When replacing tapered roller bearing, replace outer and inner races as a set.



SHIFT FORK AND FORK ROD

Exploded View

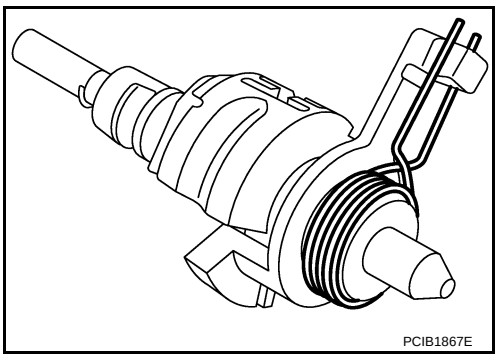
INFOID:0000000000991909

Refer to TM-28, "Exploded View".

Disassembly

INFOID:0000000000991910

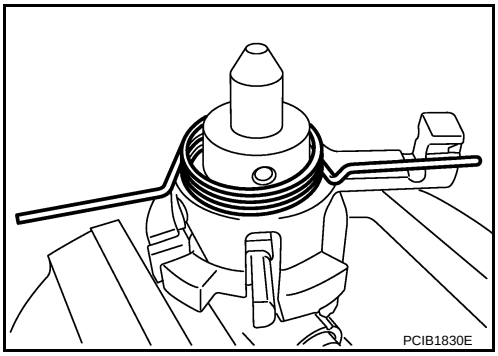
1. Remove return spring to striking rod assembly.


PCIB1867E

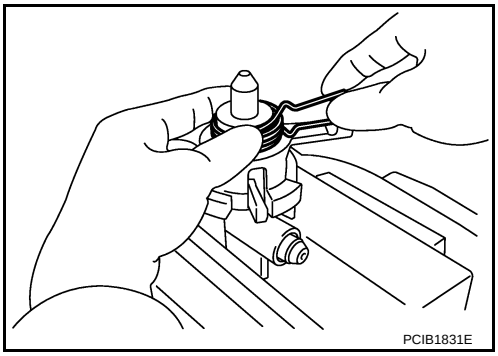
Assembly

INFOID:0000000000991911

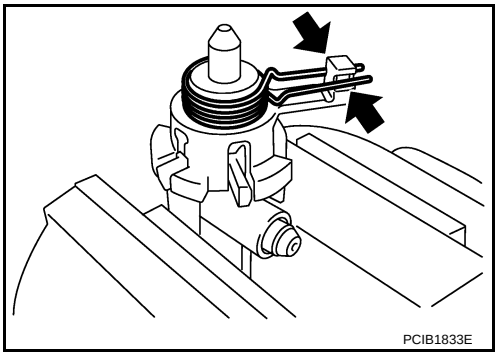
1. Temporarily install return spring to striking rod assembly.
   CAUTION:
   Be careful with the orientation of return spring.


PCIB1830E

2. Attach one end of the return spring to striking interlock of striking rod assembly while holding return spring.


PCIB1831E

CAUTION:
- **When installing, check that return spring is securely seated in the groove of striking interlock of striking rod assembly.**

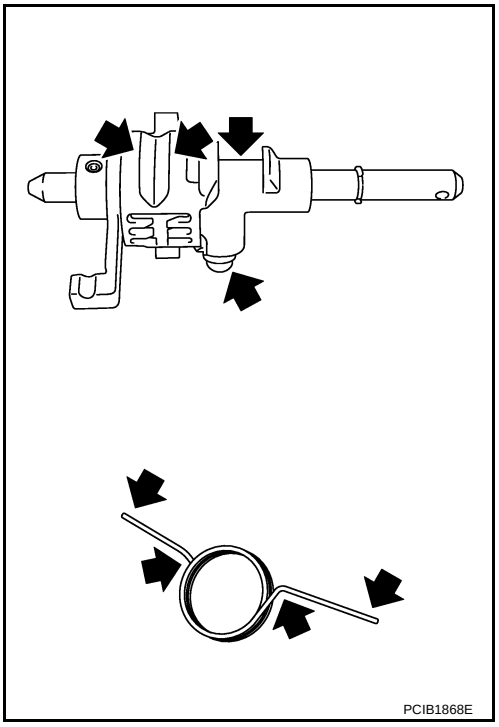

PCIB1833E

Inspection

INFOID:0000000000991912

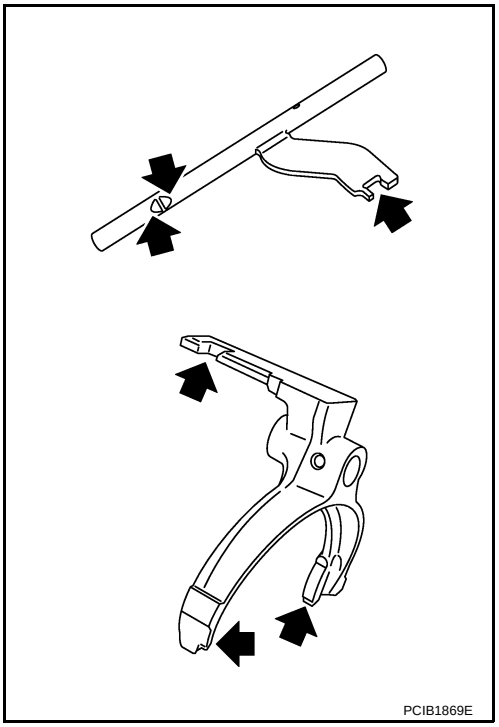
STRIKING ROD ASSEMBLY AND RETURN SPRING

- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



FORK ROD AND SHIFT FORK

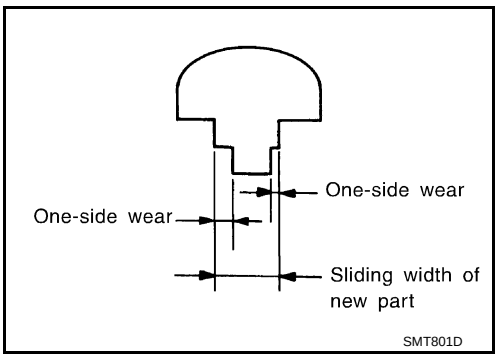
- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



SHIFT FORK

• Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

Item	One-side wear specification	Sliding width of new part
1st-2nd	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
3rd-4th	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
5th-6th	0.2 mm (0.008 in)	6.10 - 6.23 mm (0.2402 - 0.2453 in)
Reverse	0.2 mm (0.008 in)	12.80 - 12.93 mm (0.5039 - 0.5091 in)



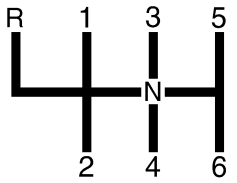
SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000000991913

TRANSAXLE

Engine type			QR25DE	VQ35DE
Transaxle model			RS6F52A	
Model code number			JA60A	JA60B
Number of speed			6	
Synchromesh type			Warner	
Shift pattern			 PCIB1769E	
Gear ratio	1st		3.500	3.154
	2nd		1.950	
	3rd		1.393	
	4th		1.056	
	5th		0.810	
	6th		0.673	0.630
	Reverse		3.375	3.002
Number of teeth	Input gear	1st	14	13
		2nd	20	
		3rd	28	
		4th	36	
		5th	42	
		6th	49	46
		Reverse	14	13
	Main gear	1st	49	41
		2nd	39	
		3rd	39	
		4th	38	
		5th	34	
		6th	33	29
		Reverse	38	
	Reverse idler gear	Front	37	
		Rear	38	
Oil level		mm (in)	61.0 - 67.0 (2.402 - 2.638)	66.5 - 71.5 (2.618 - 2.815)
Oil capacity (Reference)		ℓ (US pt, Imp pt)	1.7 (3-5/8, 3)	
Remarks	Reverse synchronizer		Installed	
	Double-cone synchronizer		3rd	
	Triple-cone synchronizer		1st and 2nd	

FINAL GEAR

Engine type		QR25DE	VQ35DE
Transaxle model		RS6F52A	
Model code number		JA60A	JA60B
Final gear ratio		3.813	4.133
Number of teeth	Final gear/Pinion	61/16	62/15
	Side gear/Pinion mate gear	14/10	

End Play

INFOID:0000000000991914

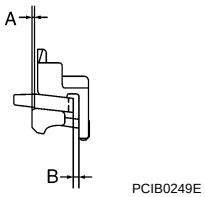
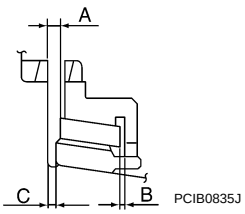
Unit: mm (in)

Items	Standard value
1st main gear	0.20 - 0.30 (0.0079 - 0.0118)
2nd main gear	0.06 - 0.16 (0.0024 - 0.0063)
6th main gear	0 - 0.1 (0 - 0.004)
3rd input gear	0.18 - 0.31 (0.0071 - 0.0122)
4th input gear	0.20 - 0.30 (0.0079 - 0.0118)
5th input gear	0.06 - 0.16 (0.0024 - 0.0063)
6th input gear	0.06 - 0.16 (0.0024 - 0.0063)
Reverse idler gear	0.04 - 0.10 (0.0016 - 0.0039)
6th input gear bushing	0 - 0.1 (0 - 0.004)
Input shaft	0 - 0.06 (0 - 0.0024)
Mainshaft	0 - 0.06 (0 - 0.0024)
Mainshaft C-ring	0 - 0.06 (0 - 0.0024)
Striking rod	0.05 - 0.152 (0.0020 - 0.0060)

Baulk Ring Clearance

INFOID:0000000000991915

Unit: mm (in)

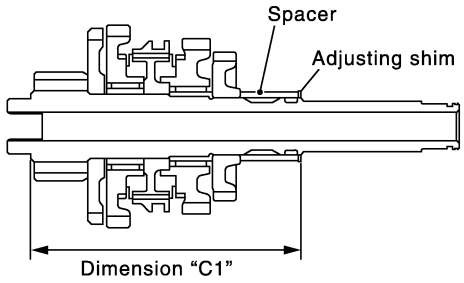
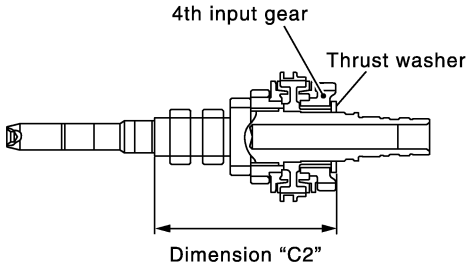
Measurement point		Standard value	Limit value
3rd (Double-cone synchronizer)  PCIB0249E	Clearance between synchronizer cone and inner baulk ring end face “A”	0.6 - 0.8 (0.024 - 0.031)	0.2 (0.008)
	Clearance between outer baulk ring pawl and synchronizer cone “B”	0.6 - 1.1 (0.024 -0.043)	0.2 (0.008)
1st and 2nd (Triple-cone synchronizer)  PCIB0835J	Clearance between synchronizer cone and clutch gear end face “A”	0.6 - 1.2 (0.024 - 0.047)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone “B”	0.6 - 1.1 (0.024 - 0.043)	0.2 (0.008)
	Clearance between inner baulk ring and clutch gear end face “C”	0.7 - 1.1 (0.028 - 0.043)	0.3 (0.012)
4th		0.9 - 1.45 (0.035 - 0.057)	0.7 (0.028)

Measurement point	Standard value	Limit value
5th	0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)
6th	0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)
Reverse	0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)

Dimension

INFOID:0000000000991916

Unit: mm (in)

Measurement point	Standard value
Mainshaft: Dimension “C1”  SCIA1009E	173.85 - 173.95 (6.844 - 6.848)
Input shaft: Dimension “C2”  SCIA1008E	154.7 - 154.8 (6.091 - 6.094)

Differential Side Bearing Preload

INFOID:0000000000991917

Unit: mm (in)

Differential side bearing preload: L*	0.15 - 0.21 (0.0059 - 0.0083)

*: Install shims which are “deflection of differential case” + “L” in thickness.

Differential Side Gear Clearance

INFOID:0000000000991918

Unit: mm (in)

Allowable clearance between side gear and differential case with thrust washer	0.1 - 0.2 (0.004 - 0.008)

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

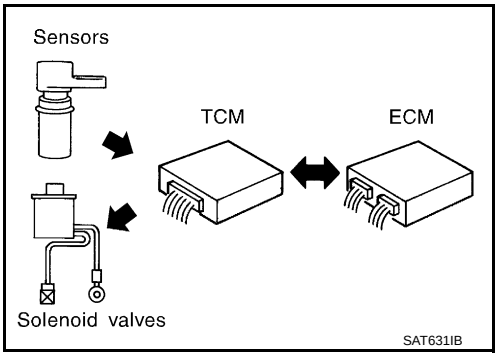
INFOID:0000000000991919

INTRODUCTION

The TCM receives a signal from the vehicle speed sensor, PNP switch and provides shift control or lock-up control via CVT solenoid valves.

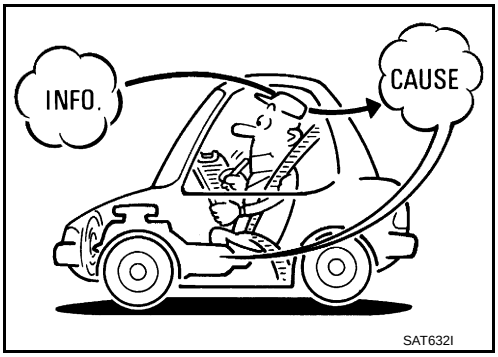
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

Input and output signals must always be correct and stable in the operation of the CVT system. The CVT system must be in good operating condition and be free of valve seizure, solenoid valve malfunction, etc.



It is much more difficult to diagnose an error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

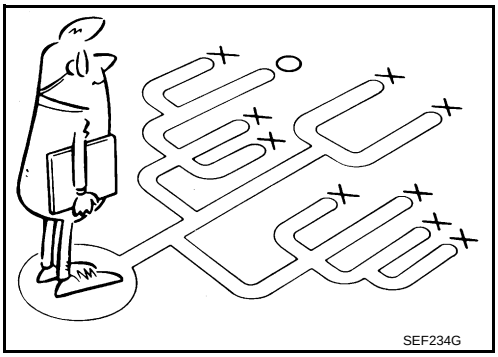
A visual check only may not find the cause of the errors. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the “DETAILED FLOW”.



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A “Diagnostic Work Sheet” as shown on the example (Refer to TM-85) should be used.

Start your diagnosis by looking for “conventional” errors first. This will help troubleshoot driveability errors on an electronically controlled engine vehicle.

Also check related Service bulletins.



DETAILED FLOW

1.COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using diagnosis worksheet. Refer to TM-85, "Diagnostic Work Sheet".

>> GO TO 2..

2.CHECK SYMPTOM 1

Check the following items based on the information obtained from the customer.

- Fail-safe. Refer to TM-193, "Fail-safe".
- CVT fluid inspection. Refer to TM-214, "Inspection".
- Line pressure test. Refer to TM-221, "Inspection and Judgment".

• Stall test. Refer to TM-219, "Inspection and Judgment".

>> GO TO 3..

3.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

• Record DTC.
• Erase DTC. Refer to TM-110, "Diagnosis Description".

Is any DTC detected?

YES >> GO TO 4..
NO >> GO TO 5..

4.PERFORM DIAGNOSTIC PROCEDURE

Perform “Diagnostic Procedure” for the displayed DTC.

>> GO TO 5..

5.CHECK SYMPTOM 2

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 6..
NO >> **INSPECTION END**

6.RODE TEST

1. Perform “RODE TEST”. Refer to TM-223, "Description".

>> GO TO 7..

7.CHECK SYMPTOM 3

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 2..
NO >> **INSPECTION END**

Diagnostic Work Sheet

INFOID:0000000000991920

INFORMATION FROM CUSTOMER

KEY POINTS

• **WHAT**..... Vehicle & CVT model
• **WHEN**..... Date, Frequencies
• **WHERE**..... Road conditions
• **HOW**..... Operating conditions, Symptoms

Customer name MR/MS	Model & Year	VIN
Trans. Model	Engine	Mileage
malfunction Date	Manuf. Date	In Service Date
Frequency	❑ Continuous ❑ Intermittent (times a day)	

Symptoms	❑ Vehicle does not move. (❑ Any position ❑ Particular position)	
	❑ No shift	
	❑ Lock-up malfunction	
	❑ Shift shock or slip (❑ N → D ❑ N → R ❑ Lock-up ❑ Any drive position)	
	❑ Noise or vibration	
	❑ No pattern select	
	❑ Others ( )	
Malfunction indicator lamp (MIL)	❑ Continuously lit	❑ Not lit

DIAGNOSTIC WORK SHEET

1	❑ Read the item on cautions concerning fail-safe and understand the customer's complaint.			TM-193
2	❑ CVT fluid inspection, stall test and line pressure test			
		❑ CVT fluid inspection		TM-214
			❑ Leak (Repair leak location.) ❑ State ❑ Amount	
		❑ Stall test		TM-219, TM-221
			❑ Torque converter one-way clutch ❑ Reverse brake ❑ Forward clutch ❑ Steel belt	❑ Engine ❑ Line pressure low ❑ Primary pulley ❑ Secondary pulley
		❑ Line pressure inspection - Suspected part:		
3	❑ Perform self-diagnosis.			TM-112
		Enter checks for detected items.		
4	❑ Perform road test.			TM-223
	4-1.	Check before engine is started		TM-223
	4-2.	Check at idle		TM-224
	4-3.	Cruise test		TM-225
5	❑ Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.			
6	❑ Perform all road tests and enter the checks again for the required items.			TM-223
7	❑ For any remaining NG items, perform the “diagnosis procedure” and repair or replace the malfunctioning parts.			
8	❑ Erase the results of the self-diagnosis from the TCM and the ECM.			TM-110, TM-112

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Precaution for TCM and CVT Assembly Replacement

INFOID:0000000000991921

CAUTION:

- **Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-III, and then turn ignition switch OFF.)**
- **When replacing CVT assembly or TCM, refer to the pattern table below and erase the EEPROM in the TCM if necessary.**

EEPROM ERASING PATTERNS

CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

METHOD FOR ERASING THE EEPROM IN THE TCM

1. Turn ignition switch ON. Confirm that CONSULT-III is turned ON.
2. Move selector lever to “R” position.
3. Select “SELF-DIAG RESULTS”.
4. Press the brake pedal and turn the brake switch ON.
5. Press the accelerator pedal (0.5/8 - 4/8 throttle) not to exceed the half, and hold it in the half or less open position. (This will set the closed throttle position signal to OFF and the wide open throttle position signal to OFF.)
6. Touch “ERASE” on CONSULT-III, and then touch “YES”.
7. Wait 3 seconds and then release the accelerator pedal.
8. Turn ignition switch OFF.

METHOD FOR WRITING DATA FROM THE ROM ASSEMBLY IN THE TRANSAXLE

In the following procedure, the TCM reads data from the ROM assembly and writes it to the EEPROM in the TCM.

1. Erase the EEPROM in the TCM.
2. Move selector lever to “P” position.
3. Turn ignition switch ON.

CHECK METHOD

- Standard: About 2 seconds after the ignition switch ON, the CVT indicator lamp lights up for 2 seconds.
- Non-standard: Even after the ignition switch ON, the CVT indicator lamp does not light up after 2 seconds or illuminates immediately.

  CAUTION:

  Perform in the “P” or “N” position.

Action for Non-standard

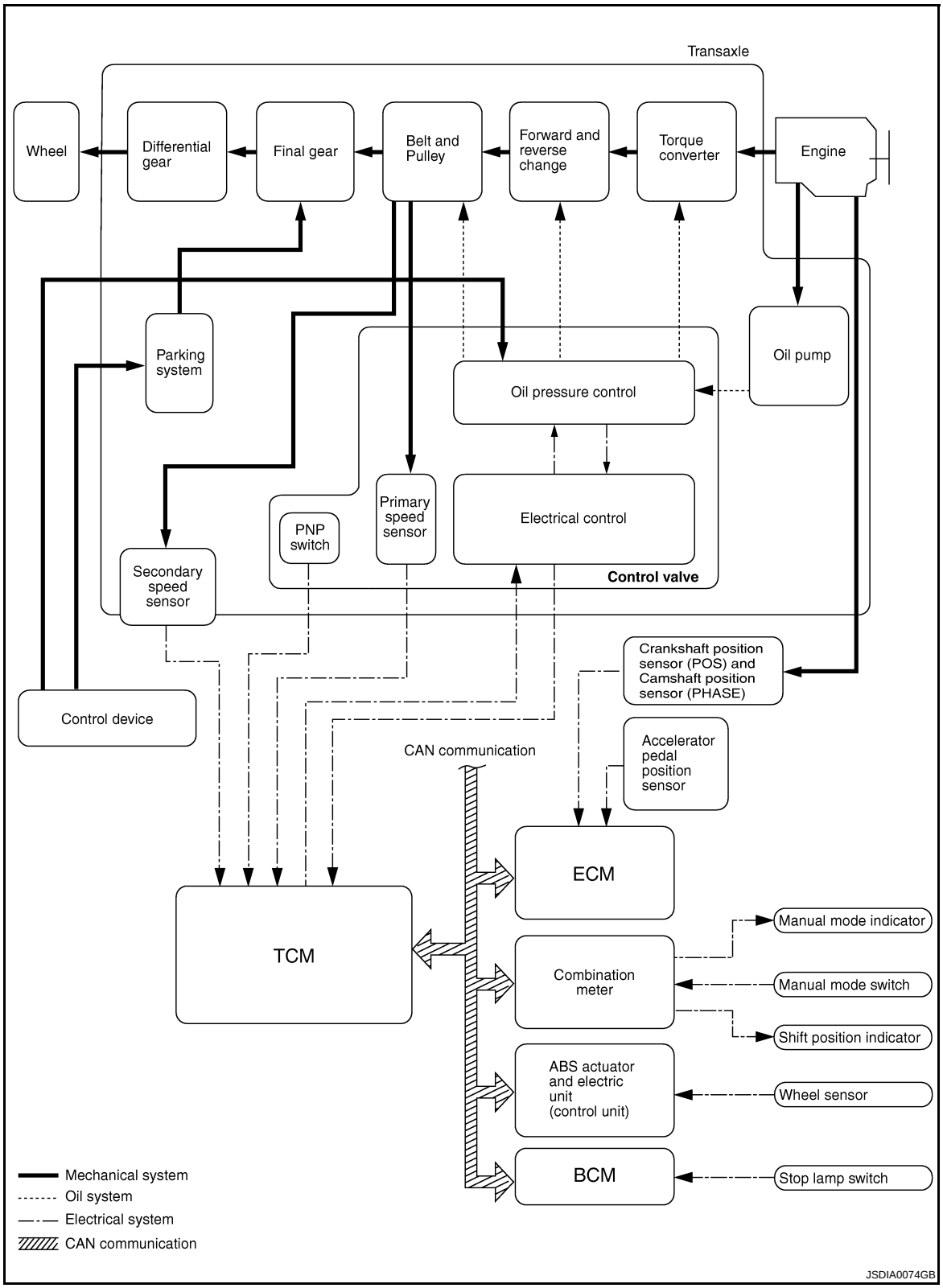
- Replace the CVT assembly.
- Replace the TCM.

FUNCTION DIAGNOSIS

CVT SYSTEM

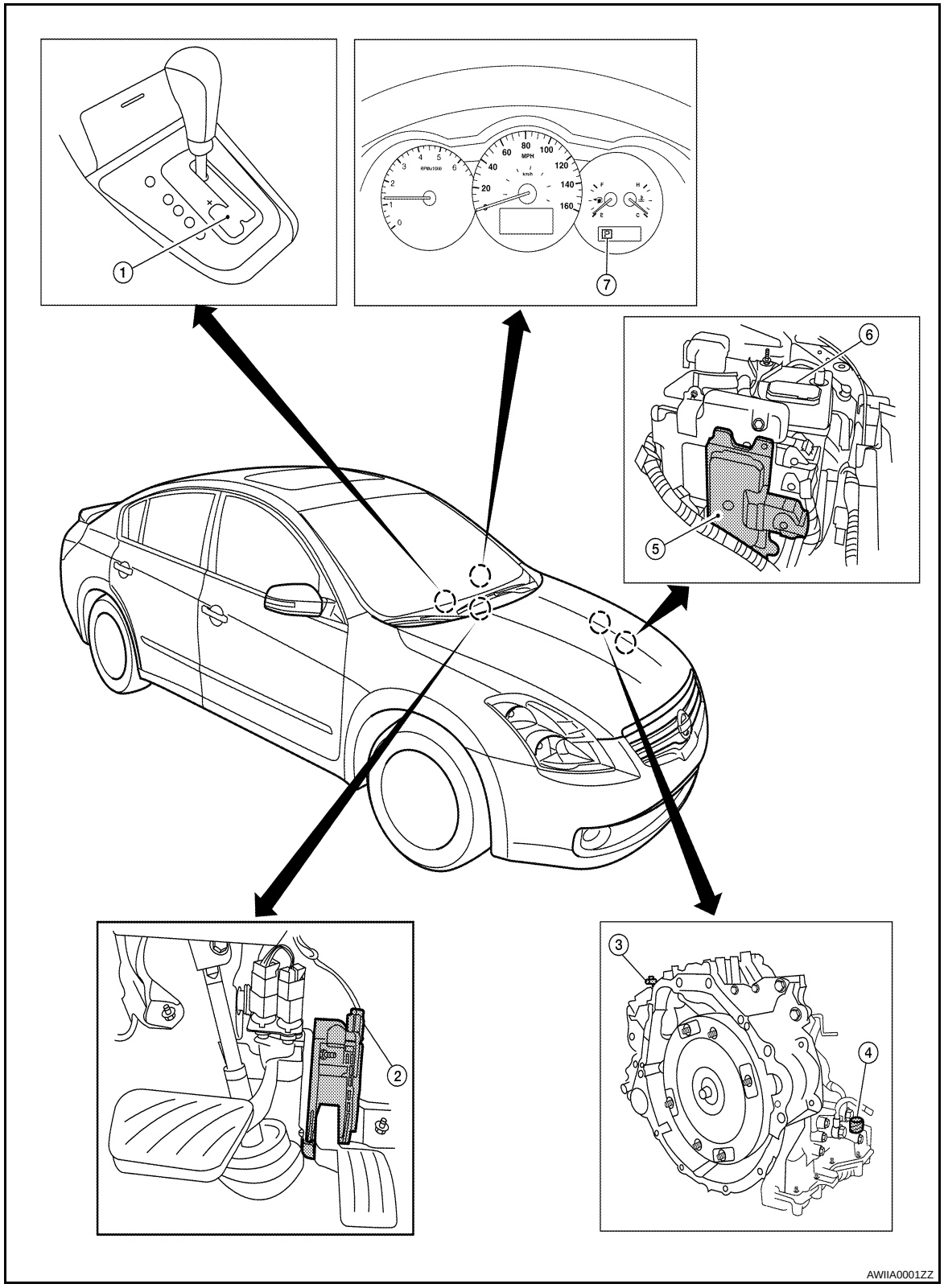
System Diagram

INFOID:0000000000991922



Component Parts Location

INFOID:0000000000991923

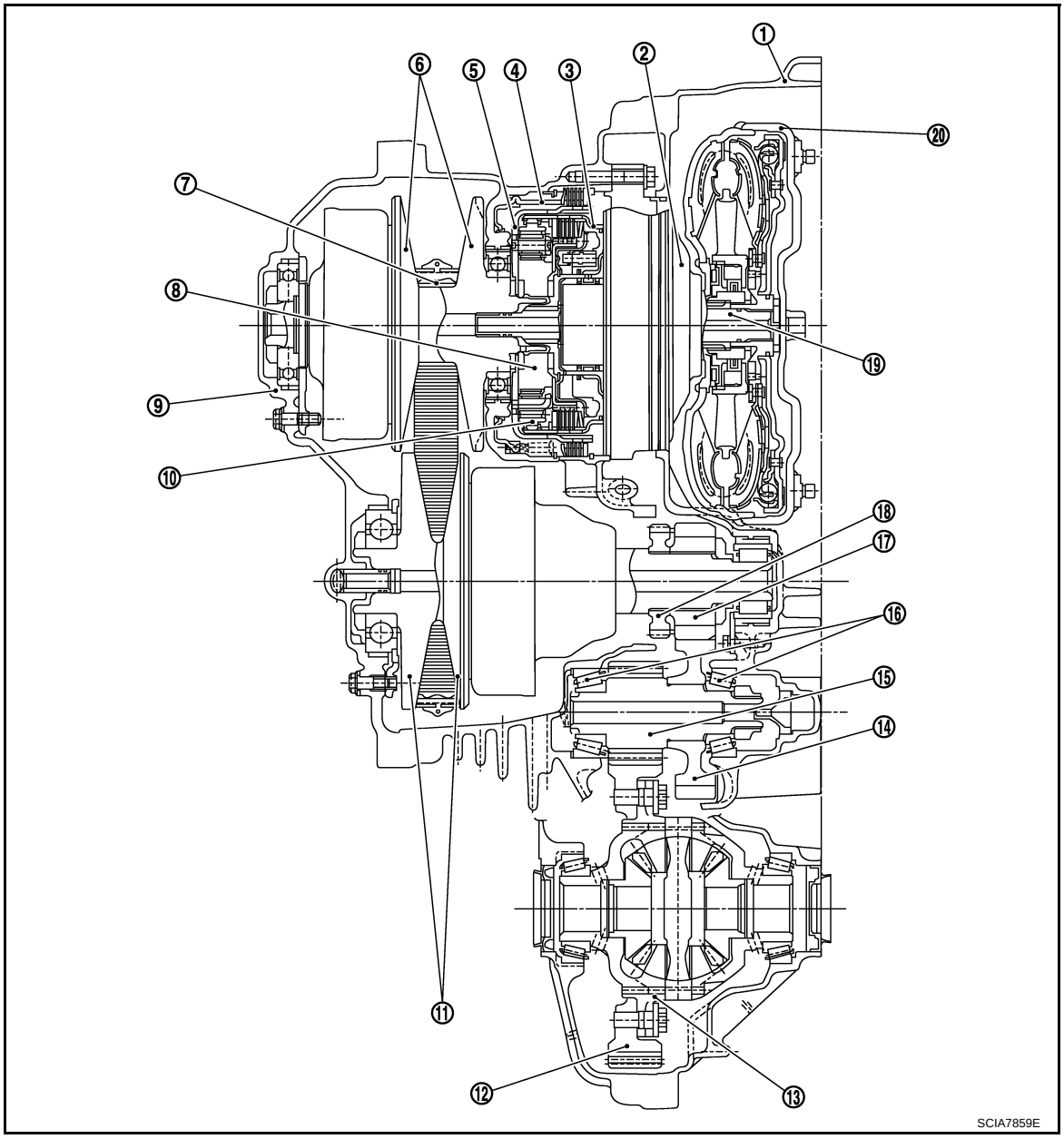


1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

MECHANICAL SYSTEM

Cross-Sectional View

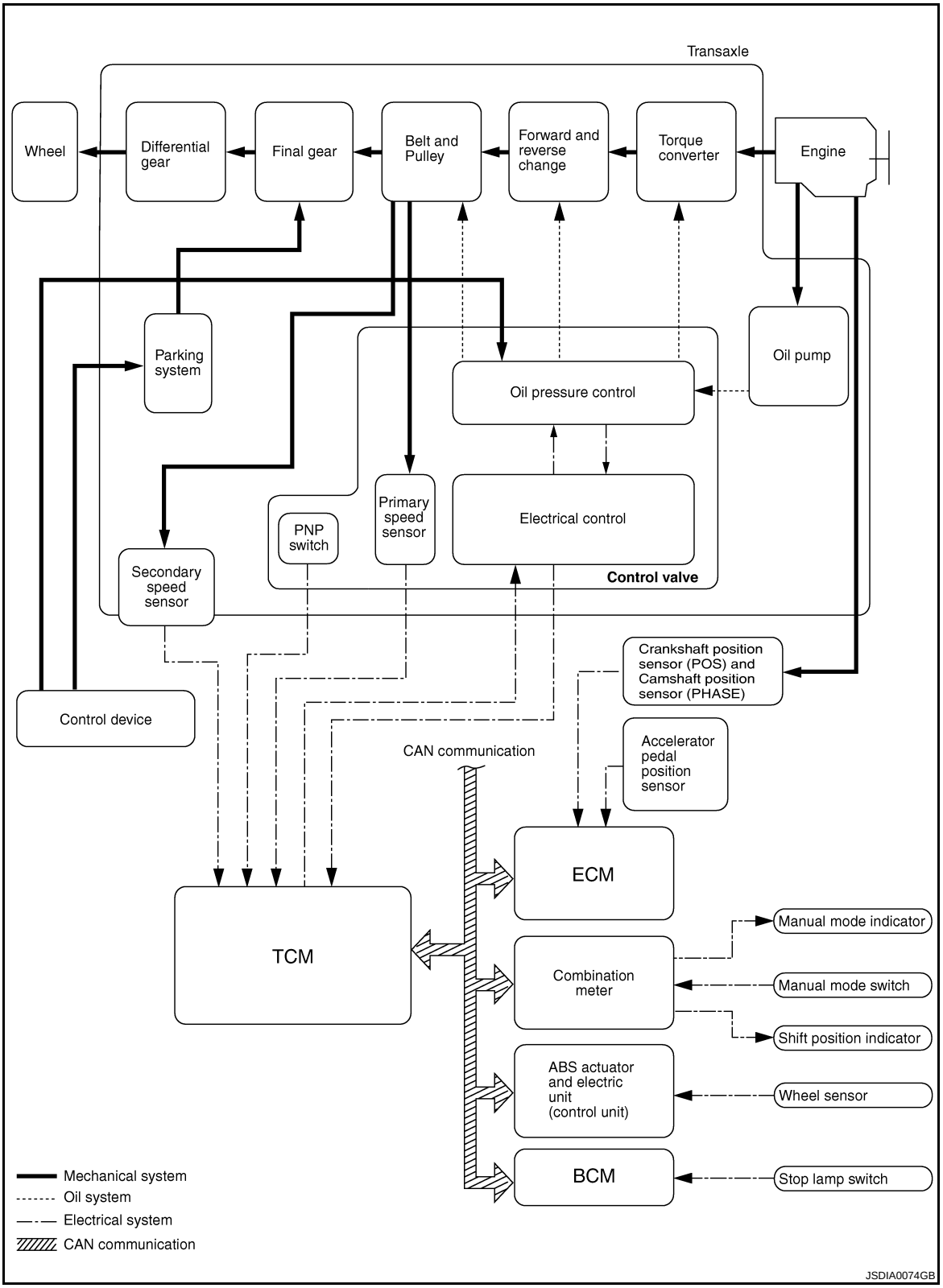
INFOID:0000000000991924



1. Converter housing
2. Oil pump
3. Forward clutch
4. Reverse brake
5. Planetary carrier
6. Primary pulley
7. Steel belt
8. Sun gear
9. Side cover
10. Internal gear
11. Secondary pulley
12. Final gear
13. Differential case
14. Idler gear
15. Reduction gear
16. Taper roller bearing
17. Output gear
18. Parking gear
19. Input shaft
20. Torque converter

System Diagram

INFOID:0000000000991925



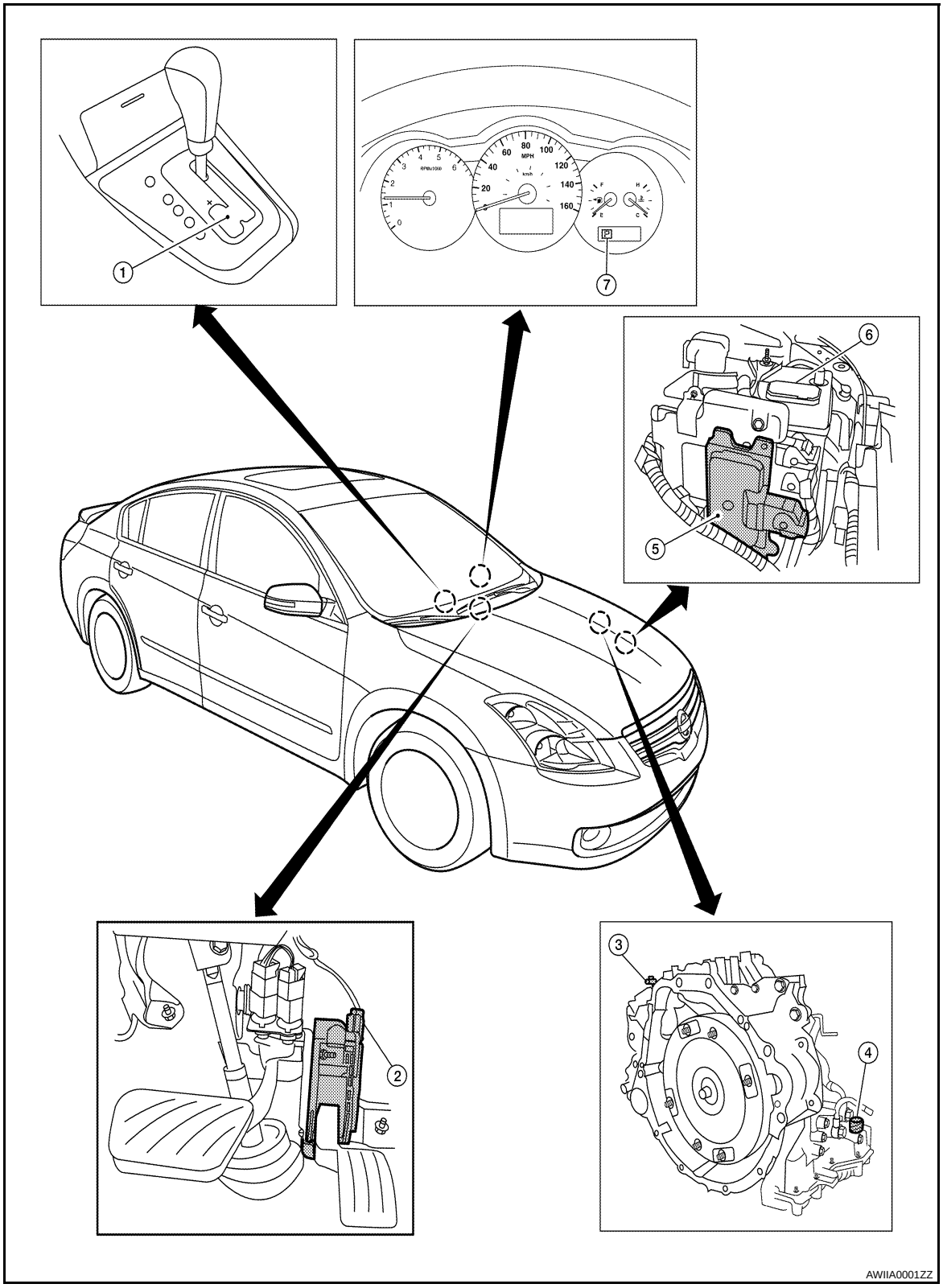
System Description

INFOID:0000000000991926

Transmits the power from the engine to the drive wheel.

Component Parts Location

INFOID:0000000000991927



1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

Component Description

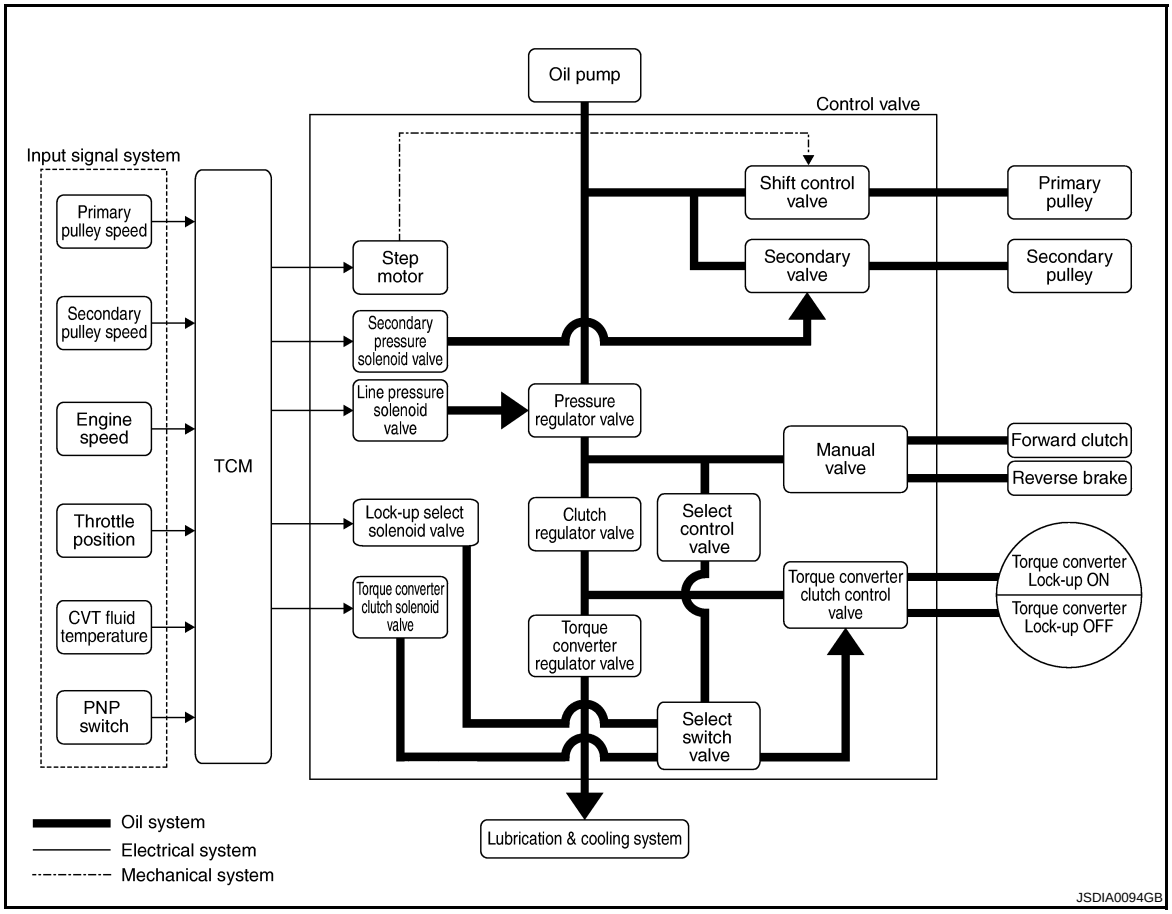
INFOID:0000000000991928

Item	Function
Torque converter	The torque converter is the device that increases the engine torque as well as the conventional A/T and transmits it to the transaxle.
Oil pump	It is a parachoid type oil pump with the flow control valve directly controlled by the engine. Discharged oil from oil pump is transmitted to the control valve. It is used as the oil of primary and secondary pulley operation and the oil of clutch operation and the lubricant for each part.
Planetary gear	Perform the transmission of drive power and the switching of forward/backward movement.
Forward clucth	
Reverse brake	
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel star wheels are placed continuously and the belt is guided with the multilayer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.
Secondary pulley	
Steel belt	
Output gear	The drive power from the secondary pulley returns the deceleration gears [primary deceleration (output gear/idler gear pair) and secondary deceleration (reduction gear/final gear pair)]. It is transmitted from differential to drive wheel.
Idler gear	
Reduction gear	
Final gear	
Differential	
Manual shaft	The parking rod rotates the parking pole and the parking pole engages with the parking gear when the manual shaft is in P position. As a result the parking gear and the output axis are fixed.
Parking rod	
Parking pawl	
Parking gear	

HYDRAULIC CONTROL SYSTEM

System Diagram

INFOID:0000000000991929



System Description

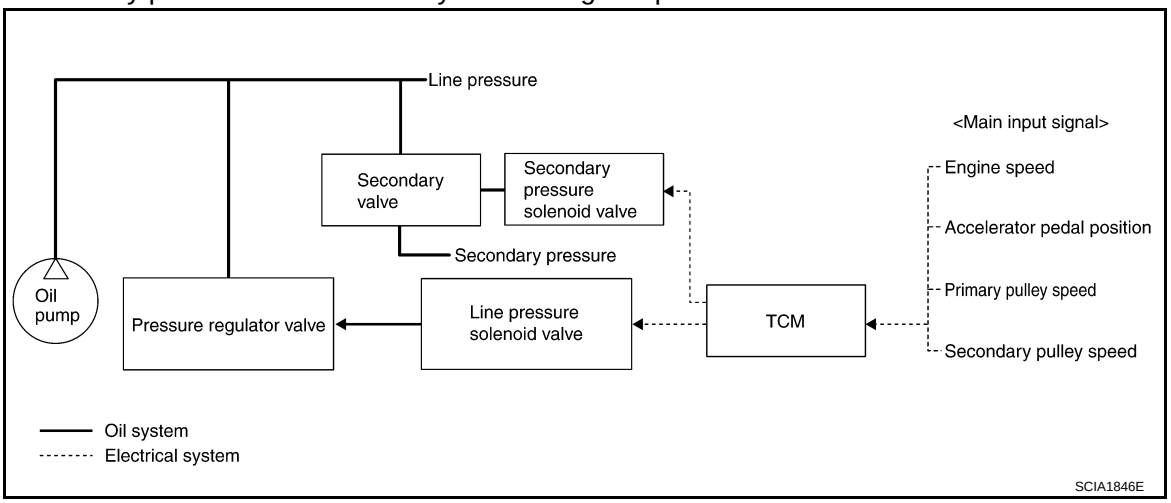
INFOID:0000000000991930

The hydraulic control mechanism consists of the oil pump directly driven by the engine, the hydraulic control valve that controls line pressure and transmission, and the input signal line.

LINE PRESSURE AND SECONDARY PRESSURE CONTROL

- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid valve and secondary pressure solenoid valve.

- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state. Secondary pressure is controlled by decreasing line pressure.



Nomal Control

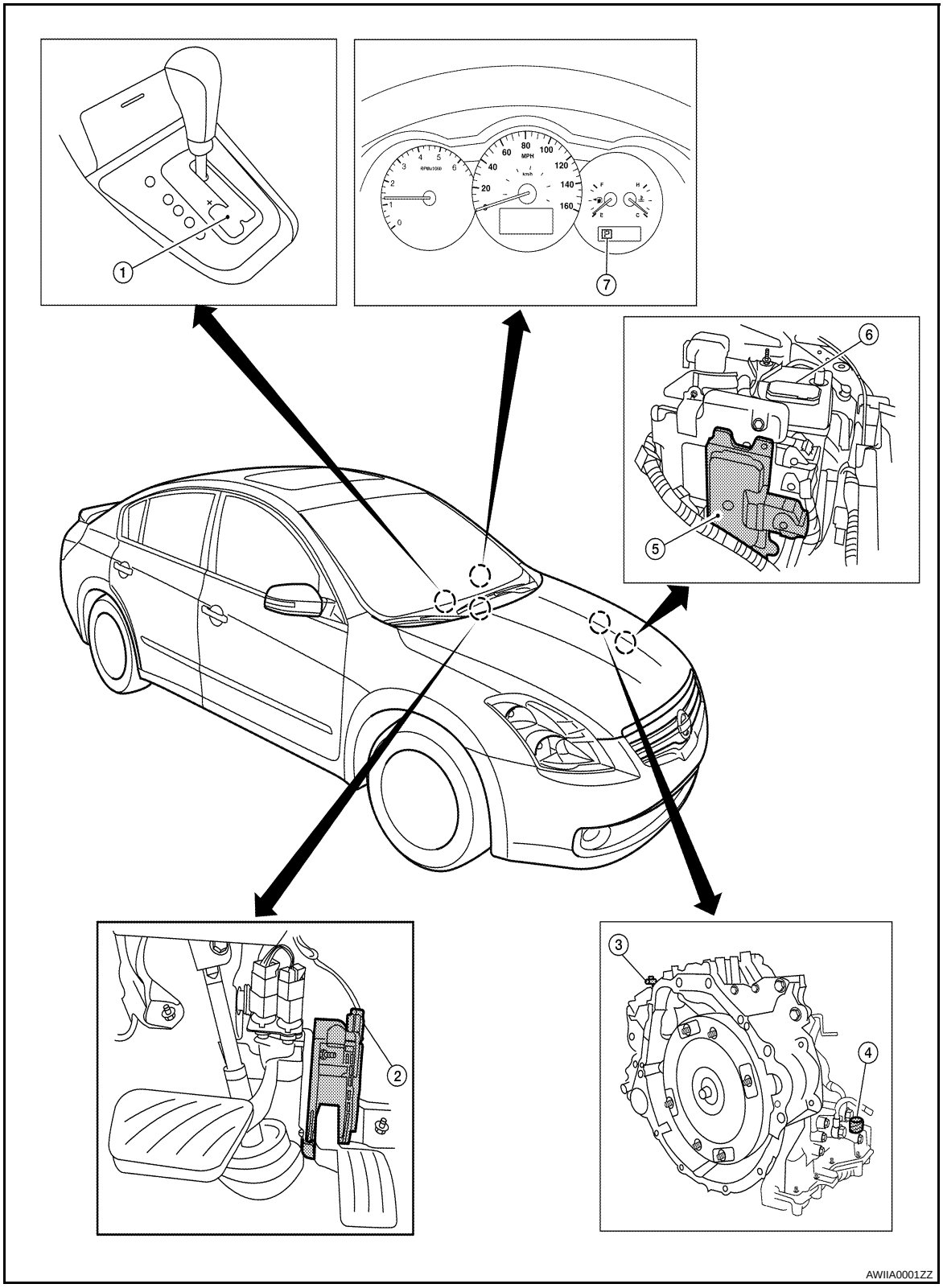
Optimize the line pressure and secondary pressure, depending on driving conditions, on the basis of the throttle position, the engine speed, the primary pulley (input) revolution speed, the secondary pulley (output) revolution speed, the brake signal, the PNP switch signal, the lock-up signal, the voltage, the target gear ratio, the fluid temperature, and the fluid pressure.

Feedback Control

When controlling the normal fluid pressure or the selected fluid pressure, the secondary pressure can be set more accurately by using the fluid pressure sensor to detect the secondary pressure and controlling the feedback.

Component Parts Location

INFOID:0000000000991931



1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

Component Description

INFOID:0000000000991932

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.
TCC control valve	• Activates or deactivate the lock-up. • Lock-up smoothly by opening lock-up operation excessively.
TCC solenoid valve	TM-137
Shift control valve	Controls flow-in/out of line pressure from the primary pulley depending on the stroke difference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
Secondary pressure solenoid valve	TM-147
Line pressure solenoid valve	TM-141
Step motor	TM-172
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	Switches torque converter clutch solenoid valve control pressure use to torque converter clutch control valve or select control valve.
Lockup select solenoid valve	TM-169
Primary speed sensor	TM-128
Secondary speed sensor	TM-130
PNP switch	TM-123
Primary pulley	TM-92
Secondary pulley	
Forward clutch	
Torque converter	

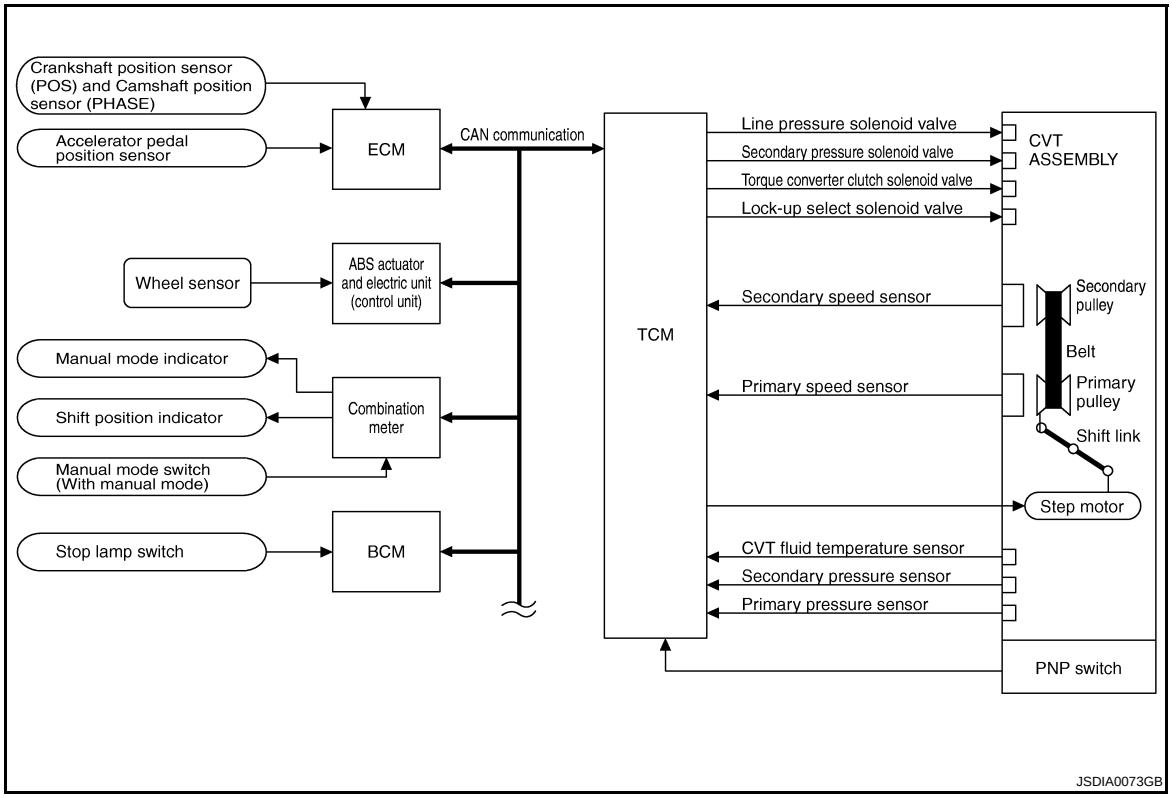
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Judges the vehicle driving status according to the signal from each sensor and controls the non-step transmission mechanism properly.
Accelerator pedal position sensor	TM-162

CONTROL SYSTEM

System Diagram

INFOID:0000000000991933



System Description

INFOID:0000000000991934

The function of the TCM is to:
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, and lock-up operation.
- Send required output signals to the step motor and the respective solenoids.

CONTROL SYSTEM OUTLINE

The CVT senses vehicle operating conditions through various sensors. It always controls the optimum shift position and reduces shifting and lock-up shocks.

SENSORS (or SIGNAL)		TCM		ACTUATORS
PNP switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Manual mode signal Stop lamp switch signal Primary speed sensor Secondary speed sensor Primary pressure sensor Secondary pressure sensor	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system On board diagnosis	⇒	Step motor Torque converter clutch solenoid valve Lock-up select solenoid valve Line pressure solenoid valve Secondary pressure solenoid valve Manual mode indicator Shift position indicator CVT indicator lamp Starter relay

INPUT/OUTPUT SIGNAL OF TCM

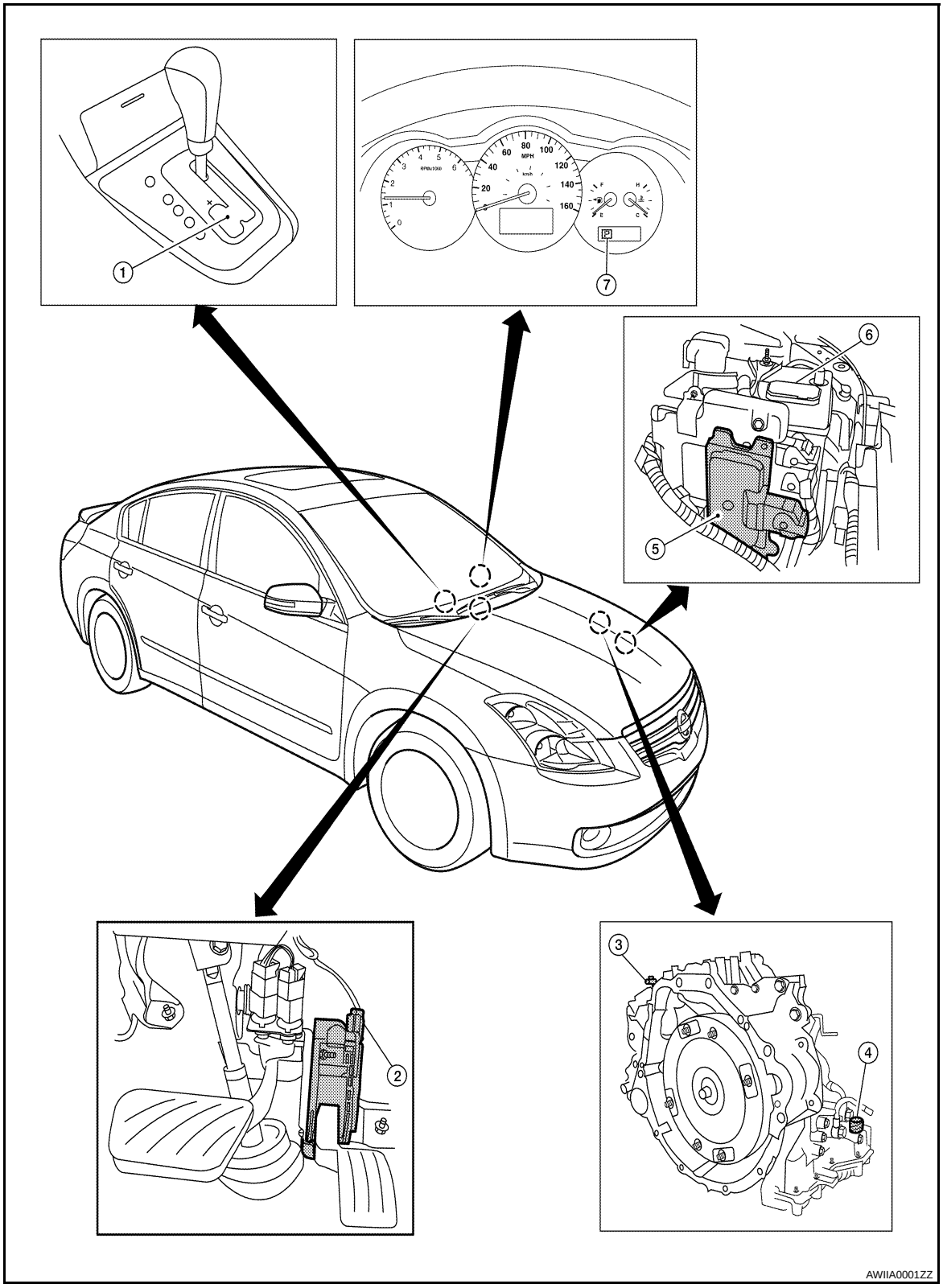
Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function(*2)
Input	PNP switch	X	X	X	X	X	X
	Accelerator pedal position signal (*1)	X	X	X	X	X	X
	Closed throttle position signal(*1)	X		X	X	X	
	Engine speed signal(*1)	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Manual mode signal(*1)	X		X	X	X	X
	Stop lamp switch signal(*1)	X		X	X	X	
	Primary speed sensor	X		X	X	X	X
	Secondary speed sensor	X	X	X	X	X	X
	Primary pressure sensor	X		X			
	Secondary pressure sensor	X		X			X
	TCM power supply voltage signal	X	X	X	X	X	X
Output	Step motor			X			X
	TCC solenoid valve		X		X		X
	Lock-up select solenoid valve		X		X		X
	Line pressure solenoid valve	X	X	X			X
	Secondary pressure solenoid valve	X		X			X

*1: Input by CAN communications.

*2: If these input and output signals are different, the TCM triggers the fail-safe function.

Component Parts Location

INFOID:0000000000991935



1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

Component Description

INFOID:0000000000991936

TRANSAXLE ASSEMBLY

Name	Function
PNP switch	TM-123
CVT fluid temperature sensor	TM-126
Primary speed sensor	TM-128
Secondary speed sensor	TM-130
Primary pressure sensor	TM-130
Secondary pressure sensor	TM-152
Step motor	TM-172
TCC solenoid valve	TM-137
Lock-up select solenoid valve	TM-169
Line pressure solenoid valve	TM-141
Secondary pressure solenoid valve	TM-147

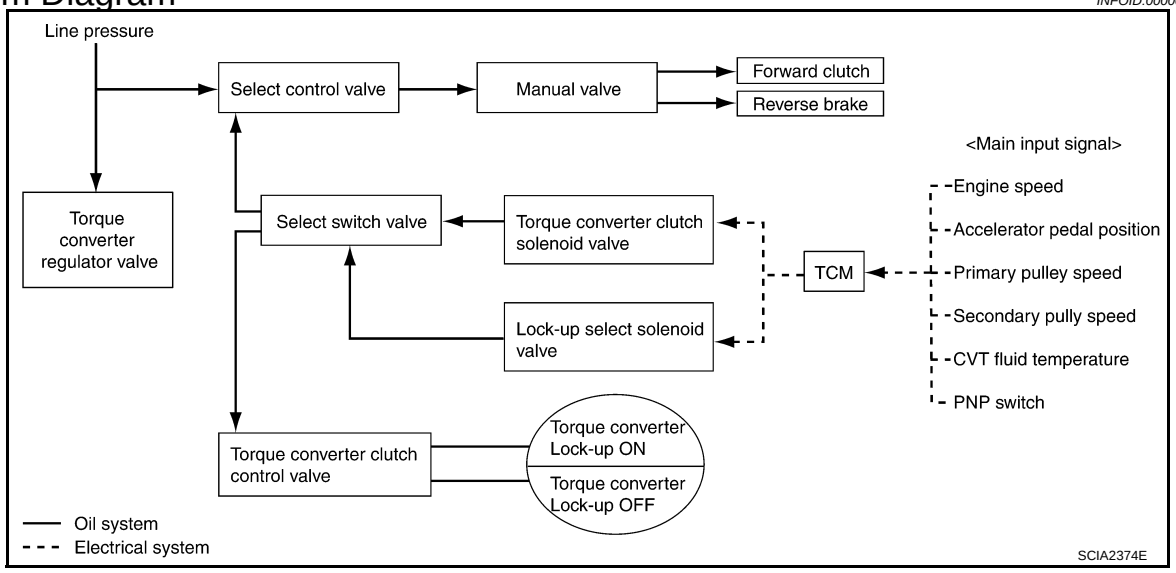
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Optimally controls continuously variable transmission system by judging driving conditions based on signals from each sensor.
Stop lamp switch	TM-121

LOCK-UP AND SELECT CONTROL SYSTEM

System Diagram

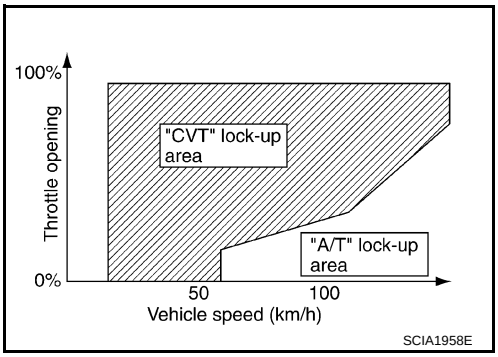
INFOID:0000000000991937



System Description

INFOID:0000000000991938

- The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
- The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM. The torque converter clutch control valve engages or releases the torque converter clutch piston.
- When shifting between “N” (“P”) ⇔ “D” (“R”), torque converter clutch solenoid controls engagement power of forward clutch and reverse brake.
- The lock-up applied gear range was expanded by locking up the torque converter at a lower vehicle speed than conventional CVT models.



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock-up Released

In the lock-up released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lock-up apply pressure is drained.
In this way, the torque converter clutch piston is not coupled.

Lock-up Applied

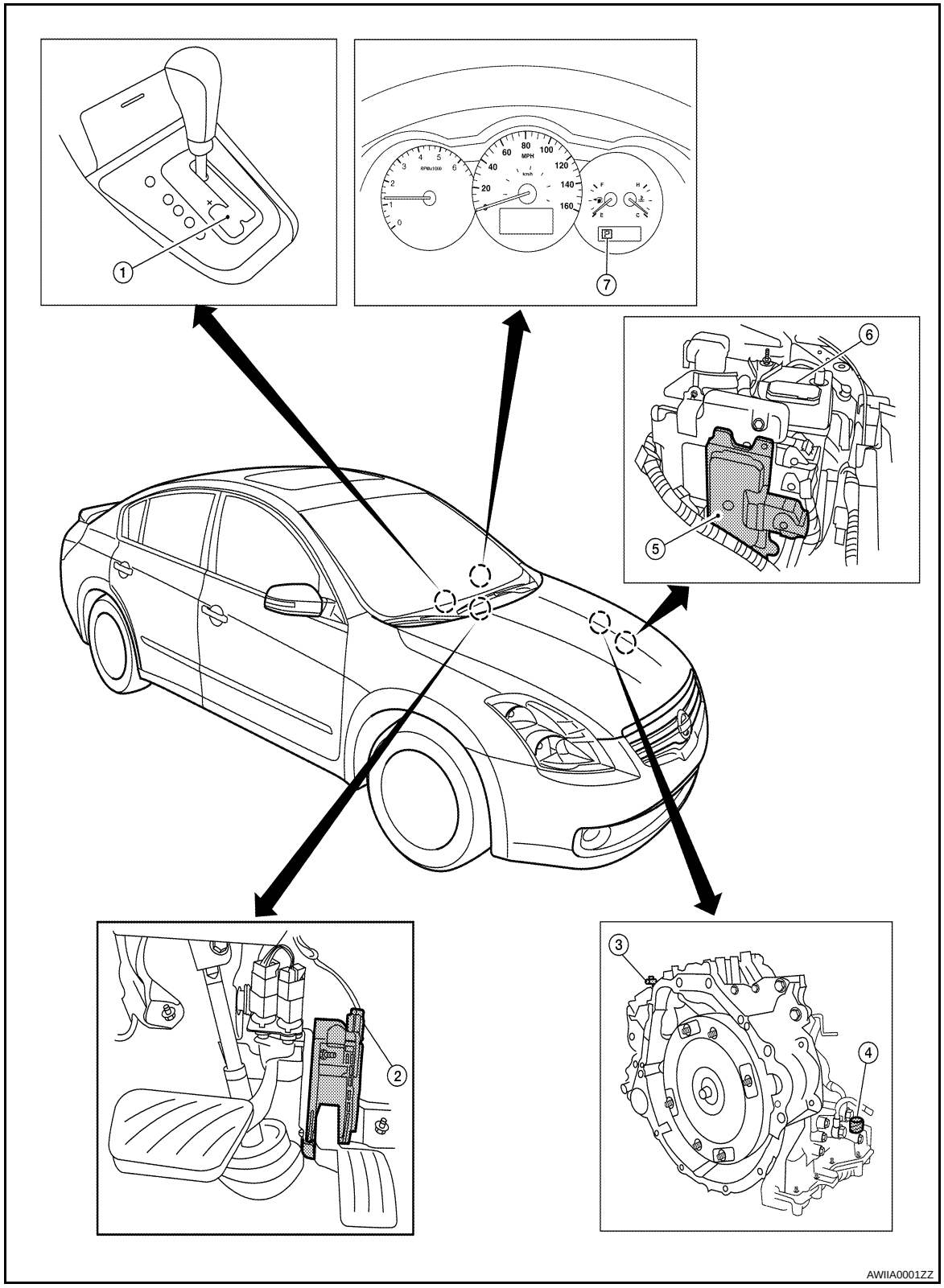
In the lock-up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid and lock-up apply pressure is generated.
In this way, the torque converter clutch piston is pressed and coupled.

Select Control

When shifting between “N” (“P”) ⇔ “D” (“R”), optimize the operating pressure on the basis of the throttle position, the engine speed, and the secondary pulley (output) revolution speed to lessen the shift shock.

Component Parts Location

INFOID:0000000000991939



1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

Component Description

INFOID:0000000000991940

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	TM-96
TCC control valve	
Select control valve	
Select switch valve	
Manual valve	
TCC solenoid valve	TM-137
Lock-up select solenoid valve	TM-169
Primary speed sensor	TM-128
Secondary speed sensor	TM-130
CVT fluid temperature sensor	TM-126
PNP switch	TM-123
Forward clutch	TM-96
Reverse brake	
Torque converter	

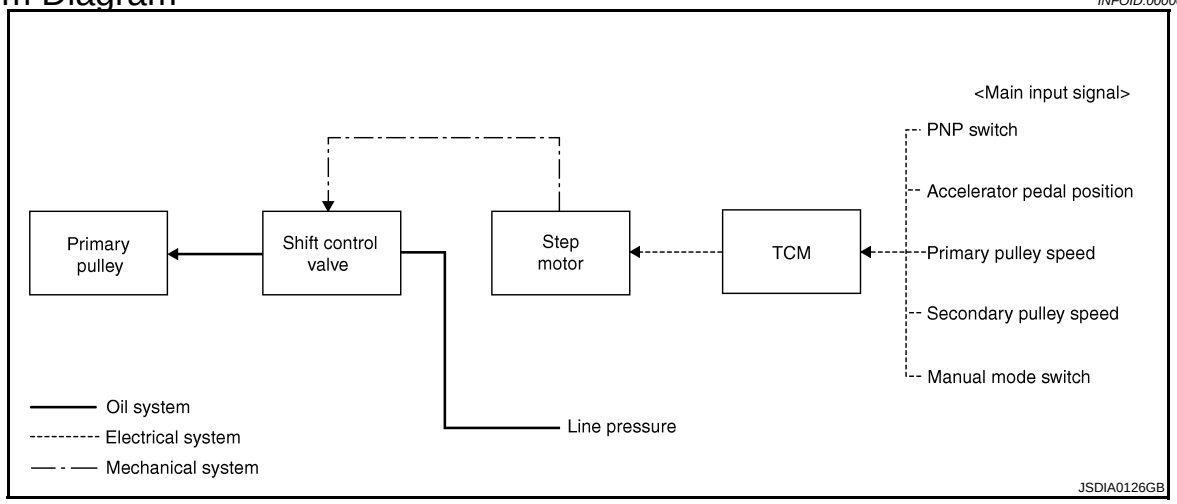
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-96
Accelerator pedal position sensor	TM-162

SHIFT MECHANISM

System Diagram

INFOID:0000000000991941



NOTE:
The gear ratio is set for every position separately.

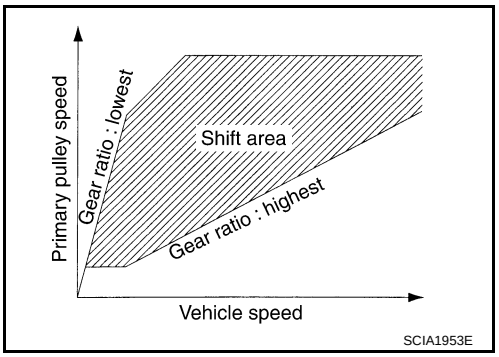
System Description

INFOID:0000000000991942

In order to select the gear ratio which can obtain the driving force in accordance with driver's intention and the vehicle condition, TCM monitors the driving conditions, such as the vehicle speed and the throttle position and selects the optimum gear ratio, and determines the gear change steps to the gear ratio. Then send the command to the step motor, and control the flow-in/flow-out of line pressure from the primary pulley to determine the position of the moving-pulley and control the gear ratio.

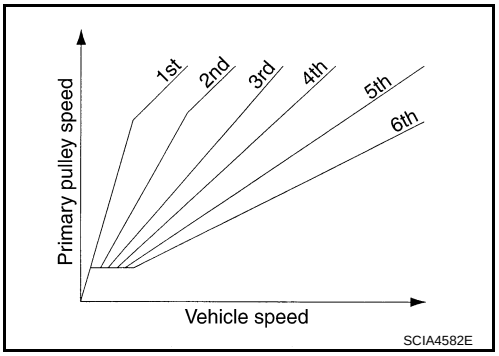
“D” POSITION

Shifting over all the ranges of gear ratios from the lowest to the highest.



“M” POSITION

When the selector lever is put in the manual shift gate side, the fixed changing gear line is set. By moving the selector lever to + side or - side, the manual mode switch is changed over, and shift change like M/T becomes possible following the changing gear set line step by step.



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

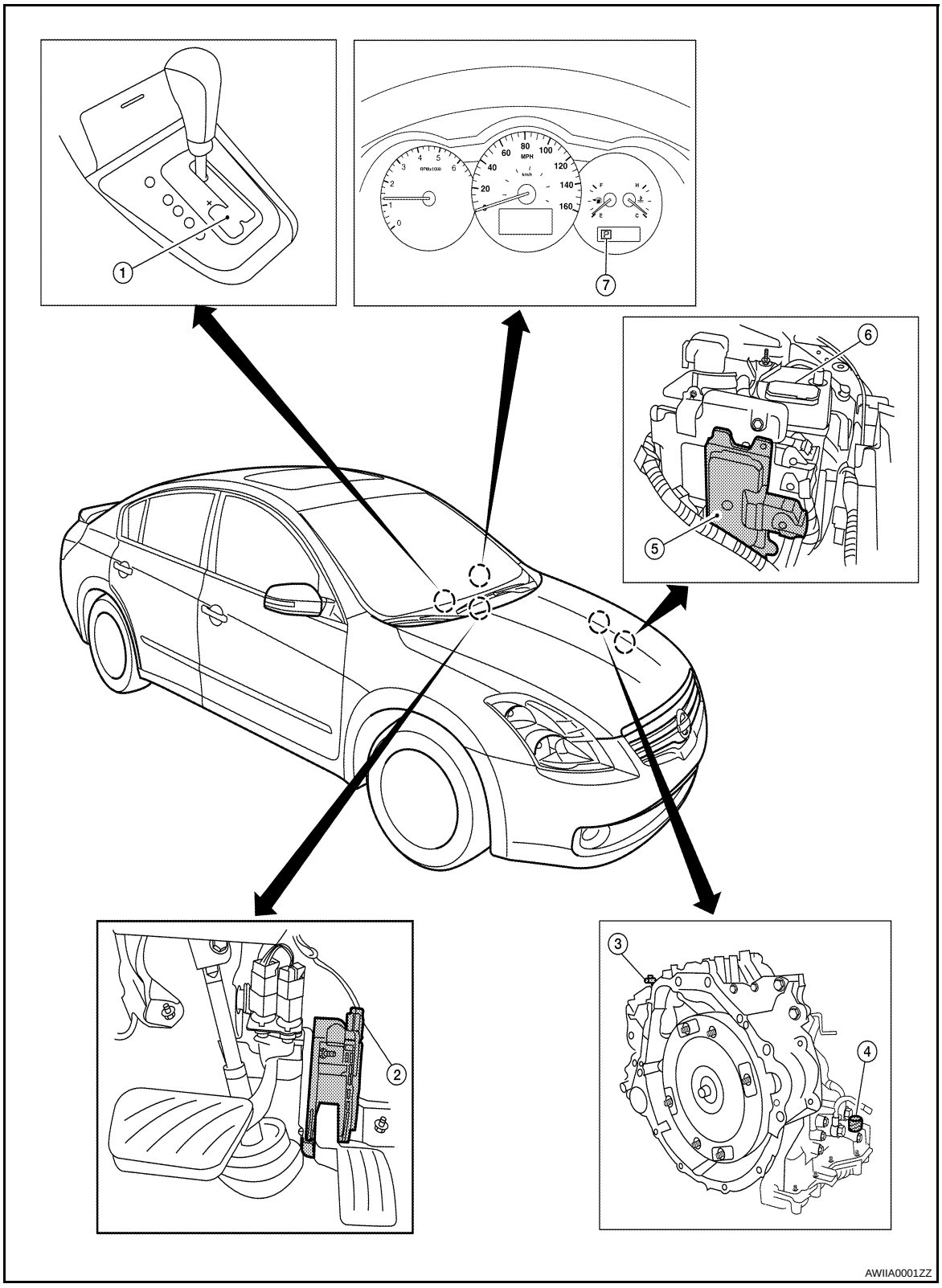
When downhill is detected with the accelerator pedal released, the engine brake will be strengthened up by downshifting so as not to accelerate the vehicle more than necessary.

ACCELERATION CONTROL

According to vehicle speed and a change of accelerator pedal angle, driver's request for acceleration and driving scene are judged. This function assists improvement in acceleration feeling by making the engine speed proportionate to the vehicle speed. And a shift map which can gain a larger driving force is available for compatibility of mileage with driveability.

Component Parts Location

INFOID:0000000000991943



1. Control device assembly (Manual mode select switch and manual mode position select switch)
2. Accelerator pedal position (APP) sensor
3. Secondary speed sensor
4. CVT unit harness connector
5. TCM
6. Battery
7. Shift position indicator

Component Description

INFOID:0000000000991944

TRANSAXLE ASSEMBLY

Item	Functoin
PNP switch	TM-123
Primary speed sensor	TM-128
Secondry speed sensor	TM-130
Step motor	TM-172
Shift control valve	TM-96
Primary pulley	TM-92
Secondary pulley	TM-92

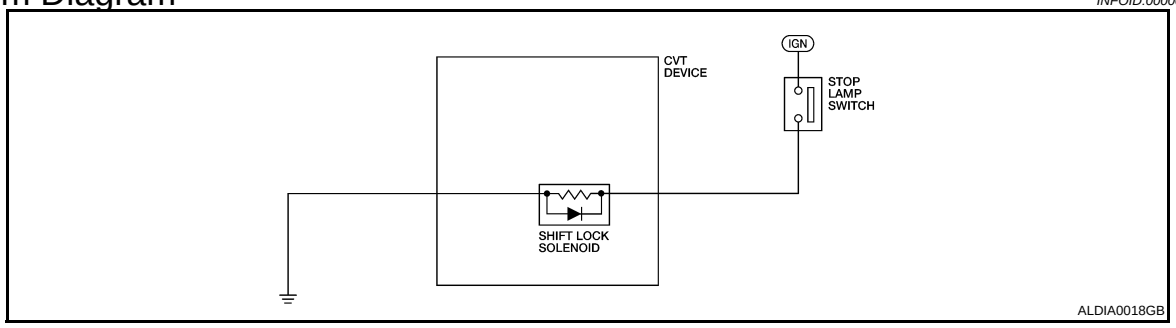
EXCEPT TRANSAXLE ASSEMBLY

Item	Functoin
TCM	TM-96

SHIFT LOCK SYSTEM

System Diagram

INFOID:0000000000991945



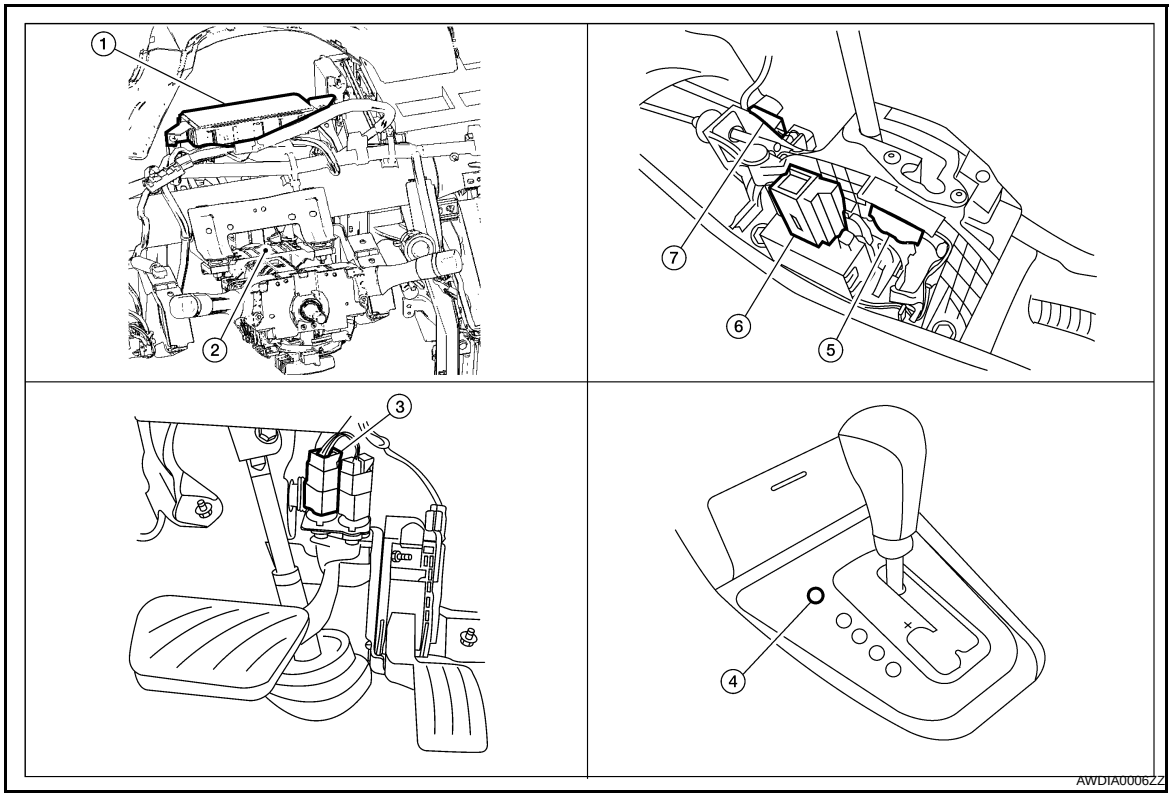
System Description

INFOID:0000000000991946

The selector lever cannot be shifted from “P” position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Component Parts Location

INFOID:0000000000991947



1. BCM (view with instrument panel removed)
2. Steering column
3. Stop lamp switch
4. Shift lock release button
5. Detention switch (for manual shift)
6. Shift lock solenoid/Detent switch (key)
7. CVT device connector

Component Description

INFOID:0000000000991948

Component			Function
CVT device	Shift lock solenoid	Shift lock solenoid	TM-108, "System Description"
		Lock plate	The lock plate restricts the position pin stroke by selector button operation according to the shift lock unit status.
		Position pin	The position pin, linking with the selector button, restricts the selector lever movement.
	Shift lock release button		Pressing the shift lock release button cancels the shift lock forcibly.
Stop lamp switch			TM-121, "Description"

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000000991949

DESCRIPTION

The CVT system has two self-diagnostic systems.
The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. The malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory, and the TCM memory.
The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

OBD-II FUNCTION

The ECM provides emission-related on board diagnostic (OBD-II) functions for the CVT system. One function is to receive a signal from the TCM used with OBD-related parts of the CVT system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part. The other function is to indicate a diagnostic result by means of the MIL (malfunction indicator lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.
The MIL automatically illuminates in “One or Two Trip Detection Logic” when a malfunction is sensed in relation to CVT system parts.

ONE OR TWO TRIP DETECTION LOGIC OF OBD-II

One Trip Detection Logic

If a malfunction is sensed during the first test drive, the MIL will illuminate and the malfunction will be stored in the ECM memory as a DTC. The TCM is not provided with such a memory function.

Two Trip Detection Logic

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. — 1st trip
If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — 2nd trip
The “trip” in the “One or Two Trip Detection Logic” means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

How to Read DTC and 1st Trip DTC

DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-III or GST) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by SAE J2012.
(CONSULT-III also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal.**
  CONSULT-III can identify them as shown below, therefore, CONSULT-III (if available) is recommended.

- DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for “ENGINE” with CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.
- If the DTC is being detected currently, the time data will be “0”.
- If a 1st trip DTC is stored in the ECM, the time data will be “1t”.

Freeze Frame Data and 1st Trip Freeze Frame Data

- The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.
  Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For details, refer to EC-130, "CONSULT-III Function".

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data, and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items	
1	Freeze frame data	Misfire — DTC: P0300 - P0306 Fuel Injection System Function — DTC: P0171, P0172, P0174, P0175
2		Except the above items (Includes CVT related items)
3	1st trip freeze frame data	

Both 1st trip freeze frame data and freeze frame data (along with the DTC) are cleared when the ECM memory is erased.

How to Erase DTC

- The diagnostic trouble code can be erased by CONSULT-III, GST or ECM DIAGNOSTIC TEST MODE as described following.
- **If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.**
- **When you erase the DTC, using CONSULT-III or GST is easier and quicker than switching the mode selector on the ECM.**
- The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD-II. For details, refer to EC-502, "DTC Index".
- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**
- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

How to Erase DTC (With CONSULT-III)

The emission related diagnostic information in the TCM and ECM can be erased by selecting “ALL Erase” in the “Description” of “FINAL CHECK” mode with CONSULT-III.

How to Erase DTC (With GST)

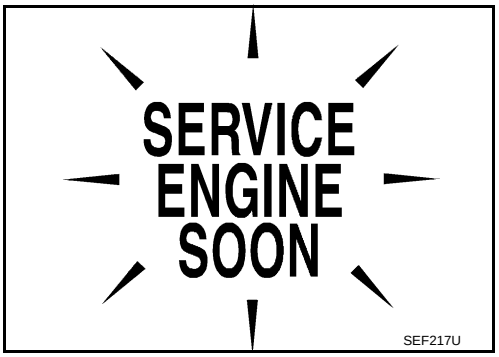
1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-140, "Diagnosis Tool Function".

MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
   - If the MIL does not light up, refer to MWI-11, "WARNING LAMPS/INDICATOR LAMPS : System Diagram".
2. When the engine is started, the MIL should go off.
   If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:0000000000991950

CONSULT-III can display each diagnostic item using the diagnostic test modes shown below.

FUNCTION

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read. Do not use, but displayed.
Function test	Performed by CONSULT-III instead of a technician to determine whether each system is “OK” or “NG”.
ECU part number	TCM part number can be read.

WORK SUPPORT MODE

Display Item List

Item name	Description
ENGINE BRAKE ADJ.	The engine brake level setting can be canceled.
CONFORM CVTF DETERIORTN	The CVT fluid deterioration level can be checked.

Engine Brake Adjustment

“ENGINE BRAKE LEVEL”

0 :Initial set value (Engine brake level control is activated)

OFF :Engine brake level control is deactivated.

CAUTION:

Mode of “+1” “0” “–1” “–2” “OFF” can be selected by pressing the “UP” “DOWN” on CONSULT-III screen. However, do not select mode other than “0” and “OFF”. If the “+1” or “–1” or “–2” is selected, that might cause the irregular driveability.

Check CVT Fluid Deterioration Date

“CVTF DETERIORATION DATE”

More than 210000 :It is necessary to change CVT fluid.

Less than 210000 :It is not necessary to change CVT fluid.

CAUTION:

Touch “CLEAR” after changing CVT fluid, and then erase “CVTF DETERIORATION DATE”.

SELF-DIAGNOSTIC RESULT MODE

After performing self-diagnosis, place check marks for results on the TM-85, "Diagnostic Work Sheet". Reference pages are provided following the items.

Display Items List

X: Applicable —: Not applicable

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL*, "ENGINE" with CONSULT-III or GST	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	U1000	U1000	TM-118
STARTER RELAY/CIRC	If this signal is ON other than in "P" or "N" position, this is judged to be a malfunction. (And if it is OFF in "P" or "N" position, this is judged to be a malfunction too.)	P0615	—	TM-119
BRAKE SW/CIRC	When the brake switch does not switch to ON or OFF.	P0703	—	TM-121
PNP SW/CIRC	• PNP switch 1-4 signals input with impossible pattern. • PNP switch 3 monitor terminal open or short circuit.	P0705	P0705	TM-123
ATF TEMP SEN/CIRC	During running, the CVT fluid temperature sensor signal voltage is excessively high or low.	P0710	P0710	TM-126
INPUT SPD SEN/CIRC	• Input speed sensor (primary speed sensor) signal is not input due to an open circuit. • An unexpected signal is input when vehicle is being driven.	P0715	P0715	TM-128
VEH SPD SEN/CIR AT	• Signal from vehicle speed sensor CVT [Output speed sensor (Secondary speed sensor)] not input due to open or short circuit. • Unexpected signal input during running.	P0720	P0720	TM-130
ENGINE SPEED SIG	TCM does not receive the CAN communication signal from the ECM.	P0725	—	TM-133
BELT DAMG	Unexpected gear ratio detected.	P0730	—	TM-135
TCC SOLENOID/CIRC	Normal voltage not applied to solenoid due to open or short circuit.	P0740	P0740	TM-137
A/T TCC S/V FNCTN	• CVT cannot perform lock-up even if electrical circuit is good. • TCM detects as irregular by comparing difference value with slip rotation. • There is a great difference between engine speed and primary speed when TCM lock-up signal is on.	P0744	P0744	TM-139
L/PRESS SOL/CIRC	• Normal voltage not applied to solenoid due to open or short circuit. • TCM detects as irregular by comparing target value with monitor value.	P0745	P0745	TM-141
PRS CNT SOL/A FCTN	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	P0746	P0746	TM-143
PRS CNT SOL/B FCTN	Secondary pressure is too high or too low compared with the commanded value while driving.	P0776	P0776	TM-145
PRS CNT SOL/B CIRC	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P0778	P0778	TM-147
MANUAL MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P0826	—	TM-149
TR PRS SENS/A CIRC	Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	P0840	P0840	TM-152
PRESS SEN/FNCTN	Correlation between the values of the transmission fluid pressure sensor A (secondary pressure sensor) and the transmission fluid pressure sensor B (primary pressure sensor) is out of specification.	P0841	—	TM-154

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL*, "ENGINE" with CONSULT-III or GST	
TR PRS SENS/B CIRC	Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	P0845	P0845	TM-156
SEC/PRESS DOWN	Secondary fluid pressure is too low compared with the commanded value while driving.	P0868	—	TM-158
TCM-POWER SUPPLY	• When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops. • This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen).	P1701	—	TM-160
TP SEN/CIRC A/T	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	—	TM-162
ESTM VEH SPD SIG	• CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. • There is a great difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit), and the vehicle speed sensor signal.	P1722	—	TM-164
CVT SPD SEN/ FNCTN	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor. **CAUTION:** **One of the "P0720 VEH SPD SEN/CIR AT", the "P0715 INPUT SPD SEN/CIRC" or the "P0725 ENGINE SPEED SIG" is displayed with the DTC at the same time.**	P1723	—	TM-166
ELEC TH CONTROL	The electronically controlled throttle for ECM is malfunctioning.	P1726	—	TM-168
LU-SLCT SOL/ CIRC	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1740	P1740	TM-169
L/PRESS CONTROL	TCM detects the unexpected line pressure.	P1745	—	TM-171
STEP MOTR CIRC	Each coil of the step motor is not energized properly due to an open or a short.	P1777	P1777	TM-172
STEP MOTR/FNC	There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	P1778	P1778	TM-175
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X	—

*: Refer to TM-110, "Diagnosis Description".

DATA MONITOR MODE

Display Items List

X: Standard, —: Not applicable, ▼: Option

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VSP SENSOR (km/h)	X	—	▼	Output speed sensor (secondary speed sensor)
ESTM VSP SIG (km/h)	X	—	▼	—
PRI SPEED SEN (rpm)	X	—	▼	—
ENG SPEED SIG (rpm)	X	—	▼	—
SEC HYDR SEN (V)	X	—	▼	—
PRI HYDR SEN (V)	X	—	▼	—
ATF TEMP SEN (V)	X	—	▼	CVT fluid temperature sensor
VIGN SEN (V)	X	—	▼	—
VEHICLE SPEED (km/h)	—	X	▼	Vehicle speed recognized by the TCM.
PRI SPEED (rpm)	—	X	▼	Primary pulley speed
SEC SPEED (rpm)	—	—	▼	Secondary pulley speed
ENG SPEED (rpm)	—	X	▼	—
SLIP REV (rpm)	—	X	▼	Difference between engine speed and primary pulley speed.
GEAR RATIO	—	X	▼	—
G SPEED (G)	—	—	▼	—
ACC PEDAL OPEN (0.0/8)	X	X	▼	Degree of opening for accelerator recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
TRQ RTO	—	—	▼	—
SEC PRESS (MPa)	—	X	▼	—
PRI PRESS (MPa)	—	X	▼	—
ATF TEMP	—	X	▼	—
DSR REV (rpm)	—	—	▼	—
DGEAR RATIO	—	—	▼	—
DSTM STEP (step)	—	—	▼	—
STM STEP (step)	—	X	▼	—
LU PRS (MPa)	—	—	▼	—
LINE PRS (MPa)	—	—	▼	—
TGT SEC PRESS (MPa)	—	—	▼	—
ISOLT1 (A)	—	X	▼	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3 (A)	—	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) output current

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
SOLMON1 (A)	X	X	▼	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3 (A)	X	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
INH SW3M (ON/OFF)	X	—	▼	PNP switch 3 ON-OFF status monitor
INH SW4 (ON/OFF)	X	—	▼	PNP switch 4 ON-OFF status
INH SW3 (ON/OFF)	X	—	▼	PNP switch 3 ON-OFF status
INH SW2 (ON/OFF)	X	—	▼	PNP switch 2 ON-OFF status
INH SW1 (ON/OFF)	X	—	▼	PNP switch 1 ON-OFF status
BRAKE SW (ON/OFF)	X	X	▼	Stop lamp switch (Signal input with CAN communications)
FULL SW (ON/OFF)	X	X	▼	Signal input with CAN communications
IDLE SW (ON/OFF)	X	X	▼	
SPORT MODE SW (ON/OFF)	X	X	▼	Not mounted but displayed.
STRDWNSW (ON/OFF)	X	—	▼	
STRUPSW (ON/OFF)	X	—	▼	
DOWNLVR (ON/OFF)	X	—	▼	—
UPLVR (ON/OFF)	X	—	▼	—
NONMMODE (ON/OFF)	X	—	▼	—
MMODE (ON/OFF)	X	—	▼	—
INDLRNG (ON/OFF)	—	—	▼	Not mounted but displayed.
INDDRNG (ON/OFF)	—	—	▼	“D” position indicator output
INDNRNG (ON/OFF)	—	—	▼	“N” position indicator output
INDRRNG (ON/OFF)	—	—	▼	“R” position indicator output
INDPRNG (ON/OFF)	—	—	▼	“P” position indicator output
CVT LAMP (ON/OFF)	—	—	▼	—
SPORT MODE IND (ON/OFF)	—	—	▼	Not mounted but displayed.
MMODE IND (ON/OFF)	—	—	▼	—
SMCOIL D (ON/OFF)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C (ON/OFF)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B (ON/OFF)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A (ON/OFF)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT (ON/OFF)	—	—	▼	—
REV LAMP (ON/OFF)	—	X	▼	—
STRTR RLY OUT (ON/OFF)	—	—	▼	Starter relay

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
LUSEL SOL MON (ON/OFF)	—	—	▼	—
STRTR RLY MON (ON/OFF)	—	—	▼	Starter relay
VDC ON (ON/OFF)	X	—	▼	—
TCS ON (ON/OFF)	X	—	▼	—
ABS ON (ON/OFF)	X	—	▼	—
ACC ON (ON/OFF)	X	—	▼	Not mounted but displayed.
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	—	X	▼	—
Voltage (V)	—	—	▼	Displays the value measured by the voltage probe.
Frequency (Hz)	—	—	▼	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	▼	
DUTY-LOW (low) (%)	—	—	▼	
PLS WIDTH-HI (ms)	—	—	▼	
PLS WIDTH-LOW (ms)	—	—	▼	

Diagnostic Tool Function

INFOID:0000000000991951

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-118, "Diagnosis Description".

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000000991952

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

INFOID:0000000000991953

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “U1000 CAN COMM CIRCUIT” with CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

- Harness or connectors
  (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “WITH CONSULT-III”.

Is “U1000 CAN COMM CIRCUIT” detected?

YES >> Go to TM-118, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to .GI-39, "Intermittent Incident"

Diagnosis Procedure

INFOID:0000000000991954

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Select “SELF-DIAG RESULTS”.

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Go to LAN section. Refer to LAN-25, "CAN System Specification Chart".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

P0615 START SIGNAL

Description

INFOID:0000000000991955

- TCM controls starter relay in IPDM E/R.
- TCM switches starter relay ON at “P” or “N” position and allows to crank engine.
- Then it prohibits cranking other than at “P” or “N” position.

DTC Logic

INFOID:0000000000991956

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0615 STARTER RELAY/CIRC” with CONSULT-III is detected when starter relay switched ON other than at “P” or “N” position. (Or when switched OFF at “P” or “N” position).

Possible Cause

- Harness or connectors
  (Starter relay and TCM circuit is open or shorted.)
- Starter relay

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is “P0615 STARTER RELAY/CIRC” detected?

YES >> Go to TM-119, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991957

1.CHECK STARTER RELAY SIGNAL

1. Turn ignition switch ON.
2. Check voltage between the TCM connector terminal and ground.

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	20		Selector lever in “N” and “P” positions	Battery voltage
			Selector lever in other positions	0 V

Is the inspection result normal?

YES >> GO TO 2..
NO >> GO TO 4..

2.CHECK HARNESS BEWEEN TCM AND IPDM E/R

1. Turn ignition switch OFF.
2. Disconnect TCM connector and IPDM E/R harness connector.
3. Check continuity between TCM connector terminals and IPDM E/R harness connector terminal.

TCM connector		IPDM E/R harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	20	F10	72	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK STARTER RELAY

Starter relay. Refer to PG-60, "Description".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View"

P0703 STOP LAMP SWITCH

Description

INFOID:0000000000991958

ON, OFF status of the stop lamp switch is sent via the CAN communication from the BCM to TCM using the signal.

DTC Logic

INFOID:0000000000991959

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0703 BRAKE SW/CIRC” with CONSULT-III is detected when the stop lamp switch does not switch to ON and OFF.
- The stop lamp switch does not switch to ON, OFF.

Possible Cause

- Harness or connectors
  (Stop lamp switch, and BCM circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Stop lamp switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Start vehicle for at least 3 consecutive seconds.
4. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is “P0703 BRAKE SW/CIRC” detected?

YES >> Go to TM-123, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991960

1. CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to TM-121, "Component Inspection".

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO >> Repair or replace the stop lamp switch. Refer to BR-16, "Exploded View".

Component Inspection

INFOID:0000000000991961

1. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch		Condition	Continuity
Connector	Terminal		

E38	1	2	When brake pedal is depressed	Existed
			When brake pedal is released	Not existed

Check stop lamp switch after adjusting brake pedal — refer to BR-12, "Inspection and Adjustment".

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO >> Repair or replace the stop lamp switch. Refer to BR-16, "Exploded View".

P0705 PARK/NEUTRAL POSITION SWITCH

Description

INFOID:0000000000991962

- The PNP switch is included in the control valve assembly.
- The PNP switch includes 4 transmission position switches.
- TCM judges the selector lever position by the PNP switch signal.

Shift position	PNP switch 1	PNP switch 2	PNP switch 3	PNP switch 4	PNP switch 3 (monitor)
P	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
N	ON	ON	OFF	OFF	OFF
D	ON	ON	ON	ON	ON

DTC Logic

INFOID:0000000000991963

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0705 PNP SW/CIRC” with CONSULT-III is detected under the following conditions.
- When TCM does not receive the correct voltage signal from the PNP switches 1, 2, 3 and 4 based on the gear position.
- When the signal from monitor terminal of PNP switch 3 is different from PNP switch 3.

Possible Cause

- Harness or connectors
  (PNP switches 1, 2, 3, 4 and TCM circuit is open or shorted.)
- PNP switches 1, 2, 3, 4
- PNP switch 3 monitor terminal is open or shorted

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

VEHICLE SPEED	**: More than 10 km/h (6 MPH)**
ENG SPEED	**: More than 450 rpm**
ACC PEDAL OPEN	**: More than 1.0/8**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0705 PNP SW/CIRC” detected?

YES >> Go to TM-123, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991964

1. CHECK HARNESS BETWEEN TCM AND PNP SWITCH

1. Turn ignition switch OFF.

2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	1	F46	5	Existed
	2		14	Existed
	3		15	Existed
	4		18	Existed
	11		4	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

OK >> GO TO 2..
NG >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Check PNP switch. Refer to TM-124, "Component Inspection".

Is the inspection result normal?

OK >> GO TO 3..
NG >> Repair or replace damaged parts.

3.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000991965

1.CHECK PNP SWITCH

Change selector lever to various positions to check the continuity between terminals on the PNP switch and ground.

SW No.	Shift position	PNP SW		Ground	Continuity
		Connector	Terminal		
SW 1	“R”, “N”, “D”	F46	4	Ground	Existed
	Other positions				Not existed
SW 2	“N”, “D”		5		Existed
	Other positions				Not existed
SW 3	“D”		14		Existed
	Other positions				Not existed
SW 4	“R”, “D”		15		Existed
	Other positions				Not existed
SW 3 Monitor	“D”		18		Existed
	Other positions				Not existed

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> GO TO 2

2.CHECK CVT POSITION

Check continuity with control cable disconnected. (Refer to step 1 above.)

Is the inspection result normal?

YES >> Adjust CVT position. Refer to TM-227, "Inspection and Adjustment".
NO >> Replace transaxle assembly. Refer to TM-233, "Exploded View".

P0710 CVT FLUID TEMPERATURE SENSOR

Description

INFOID:0000000000991966

The CVT fluid temperature sensor detects the CVT fluid temperature and sends a signal to the TCM.

DTC Logic

INFOID:0000000000991967

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0710 ATF TEMP SEN/CIRC” with CONSULT-III is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 minutes (Total).

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ENG SPEED	**: 450 rpm more than**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0710 ATF TEMP SEN/CIRC” detected?

YES >> Go to TM-126, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991968

1. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminals.

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal	Terminal		
F16	13	25	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-127, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

3. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect the TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	13	F46	17	Exsited
	25		19	Exsited

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

OK >> GO TO 4..
NG >> Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000991969

CVT FLUID TEMPERATURE SENSOR

1. CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminals.

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal	Terminal		
F46	17	19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace transaxle assembly. Refer to TM-233, "Exploded View".

P0715 INPUT SPEED SENSOR (PRI SPEED SENSOR)

Description

INFOID:0000000000991970

The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000000991971

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0715 INPUT SPD SEN/CIRC” with CONSULT-III is detected when TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0715 INPUT SPD SEN/CIRC” detected?

YES >> Go to TM-128, "Diagnosis Procedure".
NO >> Check itermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991972

1. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

1. Start engine.
2. Check voltage between TCM connector terminals.

TCM connector			Data (Approx.)
Connector	Terminal		
F16	25	26	5.0 V

3. Check the pulse with CONSULT-III or oscilloscope, when vehicle cruises.

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	33	When running at 20 km/h (12 MPH) in "M1" position with the closed throttle position signal OFF, use the CONSULT-III pulse frequency measuring function. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**	660 Hz

Is the inspection result normal?

OK >> GO TO 5..
NG - 1 >> Battery voltage is not supplied: GO TO 2..
NG - 2 >> Battery voltage is supplied, but there is a malfunction in the frequency: GO TO 3..

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR [INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)]

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	33	F46	22	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [10 km/h (6 MPH) or more], perform self-diagnosis check. Refer to TM-128, "DTC Logic".

Is the "P0715 INPUT SPD SEN/CIRC" detected again?

YES >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

5. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)

Description

INFOID:0000000000991973

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of the CVT output shaft and emits a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.

DTC Logic

INFOID:0000000000991974

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0720 VEH SPD SEN/CIR AT” with CONSULT-III is detected TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

4. If DTC is detected,

With GST

Follow the procedure “With CONSULT-III”.

Is “P0720 VEH SPD SEN/CIR AT” detected?

YES >> Go to TM-130, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991975

1. CHECK SECONDARY SPEED SENSOR

With CONSULT-III

1. Start engine.
2. Check power supply to output speed sensor (secondary speed sensor) by voltage between TCM connector terminals.

TCM connector		Data (Approx.)
Connector	Terminal	

F16	45	7	Battery voltage
	48		

3. If OK, check the pulse when vehicle cruises.

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	34	When running at 20 km/h (12 MPH) in “D” position, use the CONSULT-III pulse frequency measuring function. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**	400 Hz

Is the inspection result normal?

YES >> GO TO 7..
NO >> GO TO 2..

2. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the output speed sensor (secondary speed sensor) harness connector.
3. Turn ignition switch ON.
4. Check voltage between output speed sensor (secondary speed sensor) harness connector terminals.

Output speed sensor (Secondary speed sensor) harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F23	1	3	Battery voltage

5. Check voltage between output speed sensor (secondary speed sensor) harness connector terminal and ground.

Output speed sensor (Secondary speed sensor) harness connector		Ground	Data (Approx.)
Connector	Terminal		
F23	3		Battery voltage

6. If OK, check harness for short to ground and short to power.
7. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO - 1 >> Battery voltage is not supplied between terminals 1 and 3, terminals 3 and ground: GO TO 5..
NO - 2 >> Battery voltage is not supplied between terminals 1 and 3 only: GO TO 6..

3. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	34	F23	2	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to TM-130, "DTC Logic".

Is “P0720 VEH SPD SEN/CIR AT” detected again?

YES >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

5. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (POWER)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminals and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	46	F23	3	Existed
	48			

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> 10 A fuse (No. 34, located in the IPDM E/R) or ignition switch are malfunctioning.
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	7	F23	1	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 7..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P0725 ENGINE SPEED SIGNAL

Description

INFOID:0000000000991976

The engine speed signal is sent from the ECM to the TCM.

DTC Logic

INFOID:0000000000991977

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0725 ENGINE SPEED SIG” with CONSULT-III is detected when TCM does not receive the engine speed signal (input by CAN communication) from ECM.

Possible Cause
Harness or connectors
(The ECM to the TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:
Be careful not to rev engine into the red zone on the tachometer.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.

PRI SPEED SEN	**: More than 1000 rpm**

“P0725 ENGINE SPEED SIG” detected?

YES >> Go to TM-133, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991978

1. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-130, "CONSULT-III Function".

Is the inspection result normal?

OK >> GO TO 2..
NG >> Check the DTC detected item. Refer to EC-130, "CONSULT-III Function".

2. CHECK DTC WITH TCM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

OK >> GO TO 3..
NG >> Check the DTC detected item. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

3. CHECK INPUT SIGNALS

With CONSULT-III
1. Start engine.

2. Select “DATA MONITOR”.
3. While monitoring “ENG SPEED SIG”, check for engine speed change corresponding to “ACC PEDAL OPEN”.

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
ACC PEDAL OPEN	Released accelerator pedal – Fully depressed accelerator pedal	0.0/8 – 8.0/8

Is the inspection result normal?

OK >> GO TO 4..
NG >> Check ignition signal circuit. Refer to EC-442, "Description".

4. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-228, "Exploded View".

P0730 BELT DAMAGE

Description

INFOID:0000000000991979

TCM selects the gear ratio using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal. Then it changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley.

DTC Logic

INFOID:0000000000991980

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- TCM calculates the actual gear ratio with input speed sensor (primary speed sensor) and output speed sensor (secondary speed sensor).
- Diagnostic trouble code “P0730 BELT DAMG” with CONSULT-III is detected, when TCM receives an unexpected gear ratio signal.

Possible Cause

Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 sec or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

Is “P0730 BELT DAMG” detected?

YES >> Go to TM-135, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991981

1.CHECK DTC

Perform TM-135, "DTC Logic".

Are any DTC displayed?

YES - 1>> DTC except for “P0730 BELT DAMG” is displayed: Go to Check the DTC detected item. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

YES - 2>> DTC for “P0730 BELT DAMG” is displayed: Replace the transaxle assembly. Refer to TM-233, "Exploded View".

NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Description

INFOID:0000000000991982

- The torque converter clutch solenoid valve is activated by the TCM in response to signals sent from the vehicle speed and accelerator pedal position sensors. Lock-up piston operation will then be controlled.
- Lock-up operation, however, is prohibited when CVT fluid temperature is too low.
- When the accelerator pedal is depressed (less than 2.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

INFOID:0000000000991983

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0740 TCC SOLENOID/CIRC” with CONSULT-III is detected under the following conditions.
- TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

- Torque converter clutch solenoid valve
- Harness or connectors
  (Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0740 TCC SOLENOID/CIRC” detected?

YES >> Go to TM-137, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991984

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	38		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	38	F46	12	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-138, "Component Inspection"

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000991985

TORQUE CONVERTER CLUTCH SOLENOID VALVE

1.TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	12		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

P0744 A/T TCC S/V FUNCTION (LOCK -UP)

Description

INFOID:0000000000991986

This malfunction is detected when the torque converter clutch does not lock-up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted), but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:0000000000991987

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0744 A/T TCC S/V FNCTN” with CONSULT-III is detected under the following conditions.

- When CVT cannot perform lock-up even if electrical circuit is good.
- When TCM compares difference value with slip revolution and detects an irregularity.

Possible Cause

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following condition for at least 30 seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
VEHICLE SPEED	**: Constant speed of more than 40 km/h (25 MPH)**

4. If DTC is detected

With GST

Follow the procedure “With CONSULT-III”.

Is “P0744 A/T TCC S/V FNCTN” detected?

YES >> Go to TM-139, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991988

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-221, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-221, "Inspection and Judgment".

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-138, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-170, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-130, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-128, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 6..
NO >> Repair or replace damaged parts.

6. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

P0745 LINE PRESSURE SOLENOID VALVE

Description

INFOID:0000000000991989

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000991990

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745 L/PRESS SOL/CIRC” with CONSULT-III is detected under the following conditions.
- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve A (Line pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait at least 5 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0745 L/PRESS SOL/CIRC” detected?

YES >> Go to TM-141, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991991

1.CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	40		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2.CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control sorenoid valve A (Line pressure solenoid valve). Refer to TM-138, "Component Inspection"

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

3. CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector and TCM connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	40	F46	2	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000991992

PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000991993

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000991994

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0746 PRS CNT SOL/A FCTN” with CONSULT-III is detected under the following conditions.
- Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.

Possible Cause

- Line pressure control system
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0746 PRS CNT SOL/A FCTN” detected?

YES >> Go to TM-143, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991995

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-221, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-221, "Inspection and Judgment".

2. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-142, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-130, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-128, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

P0776 PRESSURE CONTROL SOLENOID B PERFORMANCE (SEC PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000991996

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000991997

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0776 PRS CNT SOL/B FCTN” with CONSULT-III is detected when secondary pressure is too high or too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve system)
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 30 consecutive seconds.

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0776 PRS CNT SOL/B FCTN” detected?

YES >> Go to TM-145, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000991998

1.CHECK LINE PRESSURE

Perform line pressure test. Refer toTM-221, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-221, "Inspection and Judgment".

2.CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to TM-148, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to TM-142, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-152, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000991999

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992000

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0778 PRS CNT SOL/B CIRC” with CONSULT-III is detected under the following conditions.

- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
4. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0778 PRS CNT SOL/B CIRC” detected?

YES >> Go to TM-147, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992001

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	39		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-148, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	39	F46	3	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000992002

PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1.PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

P0826 MANUAL MODE SWITCH

Description

INFOID:0000000000992003

Manual mode switch is installed in CVT control device. The manual mode switch sends shift up and shift down switch signals to TCM.
TCM sends the switch signals to combination meter via CAN communication line. Then manual mode switch position is indicated on the CVT position indicator.

DTC Logic

INFOID:0000000000992004

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0826 MANUAL MODE SWITCH” with CONSULT-III is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and then detects irregular with impossible input pattern for 1 second or more.

Possible Cause

- Harness or connectors
  (These switches circuit is open or shorted.)
  (TCM, and combination meter circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Manual mode select switch (Built into CVT control device)
- Manual mode position select switch (Built into CVT control device)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.

MMODE	**: ON**

Is “P0826 MANUAL MODE SWITCH” detected?

YES >> Go to TM-149, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992005

1. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Read out ON/OFF switching action of the “MMODE”, “NON M-MODE”, “UPLVR”, “DOWNLVR”.

Item name	Condition	Display value
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF

Item name	Condition	Display value
NON MMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF

Without CONSULT-III

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “+ (up)” or “- (down)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to TM-151, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

Perform self-diagnosis check. Refer to MWI-16, "CONSULT-III Function (METER)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 4..

4.CHECK MANUAL MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT device connector and combination meter connector.
3. Check continuity between CVT device harness connector terminals and combination meter harness connector terminals.

CVT device harness connector		Combination meter harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M23	1	M24	40	Existed
	2		38	Existed
	3		39	Existed
	5		37	Existed

4. Check continuity between CVT device harness connector terminal and ground.

CVT device harness connector		Ground	Continuity
Connector	Terminal		
M23	4		Existed

5. If OK, check harness for short to ground and short to power.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000992006

MANUAL MODE SWITCH

1. MANUAL MODE SWITCH

Check continuity between CVT device harness connector terminals.

Item	Position	CVT device harness connector			Continuity
		Connector	Terminal	Terminal	
Manual mode select switch	Auto	M23	4	5	Existed
	Manual		1	4	Existed
Manual mode position select switch	Up		3	4	Existed
	Down		2	4	Existed

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Repair or replace damaged parts.

P0840 TRANSMISSION FLUID PRESSURE SENSOR A (SEC PRESSURE SENSOR)

Description

INFOID:0000000000992007

The transmission fluid pressure sensor A (secondary pressure sensor) detects secondary pressure of CVT and sends TCM the signal.

DTC Logic

INFOID:0000000000992008

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0840 TR PRS SENS/A CIRC” with CONSULT-III is detected when TCM detects an improper voltage drop when it receives the sensor signal.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Harness or connectors
  (Switch circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

WITH CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure “WITH CONSULT-III”.

Is “P0840 TR PRS SENS/A CIRC”detected?

YES >> Go to TM-152, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992009

1.CHECK INPUT SIGNAL

1. Start engine.
2. Check voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	15		“N” position idle	1.0 V

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR)

1. Turn ignition switch OFF.

2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	15	F46	23	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminals.

CVT unit harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".
NO >> GO TO 5..

5. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P0841 PRESSURE SENSOR FUNCTION

Description

INFOID:0000000000992010

Using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal, TCM changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley to control the gear ratio.

DTC Logic

INFOID:0000000000992011

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0841 PRESS SEN/FNCTN” with CONSULT-III is detected when correlation between the values of the secondary pressure sensor and the primary pressure sensor is out of specification.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors
  (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

VEHICLE SPEED	**: 40 km/h (25 MPH) More than**
RANGE	**: “D” position**

Is “P0841 PRESS SEN/FNCTN” detected?

YES >> Go to TM-154, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992012

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-221, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-221, "Inspection and Judgment".

2.CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-152, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor B (primary pressure sensor) system. Refer to TM-156, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-142, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-148, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6..
NO >> Repair or replace damaged parts.

6. CHECK STEP MOTOR

Step motor. Refer to TM-173, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7..
NO >> Repair or replace damaged parts.

7. CHECK TCM

Check input /output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Repair or replace damaged parts.

P0845 TRANSMISSION FLUID PRESSURE SENSOR B (PRI PRESSURE SENSOR)

Description

INFOID:0000000000992013

The transmission fluid pressure sensor B (primary pressure sensor) detects primary pressure of CVT and sends TCM the signal.

DTC Logic

INFOID:0000000000992014

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0845 TR PRS SENS/B CIRC” with CONSULT-III is detected under the following conditions.

- When TCM detects an improper voltage drop when it receives the sensor signal.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors
  (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure “WITH CONSULT-III”.

Is “P0845 TR PRS SENS/B CIRC” detected?

YES >> Go to TM-156, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992015

1.CHECK INPUT SIGNAL

1. Start engine.
2. Check voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	14		“N” position idle	0.7 – 3.5 V

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY

PRESSURE SENSOR)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	14	F46	25	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminals.

CVT unit harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".
NO >> GO TO 5..

5. CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P0868 SECONDARY PRESSURE DOWN

Description

INFOID:0000000000992016

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992017

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0868 SEC/PRESS DOWN” with CONSULT-III is detected when secondary fluid pressure is too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve) system
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**
If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)	

4. Start engine and maintain the following conditions for at least 10 consecutive seconds.

VEHICLE SPEED (accelerate slowly)	**: 0 → 50 km/h (31 MPH)**
ACC PEDAL OPEN	**: 0.5/8 – 1.0/8**
RANGE	**: “D” position**

Is “P0868 SEC/PRESS DOWN” detected?

YES >> Go to TM-158, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992018

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-221, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-221, "Inspection and Judgment".

2.CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to TM-148, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to TM-142, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-152, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check input/output signal. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

Description

INFOID:0000000000992019

When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops, malfunction is detected.

NOTE:

Since “P1701 TCM-POWER SUPPLY” will be indicated when replacing TCM, perform diagnosis after erasing “SELF-DIAG RESULTS”

DTC Logic

INFOID:0000000000992020

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1701 TCM-POWER SUPPLY” with CONSULT-III is detected when TCM does not receive the voltage signal from the battery power supply.
- This is not a malfunction message. (Whenever shutting OFF a power supply to the TCM, this message appears on the screen.)

Possible Cause
Harness or connectors
(Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is “P1701 TCM-POWER SUPPLY” detected?

YES >> Go to TM-160, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992021

1.CHECK TCM POWER SOURCE

Check voltage between TCM connector terminals and ground.

Name	TCM connector		Ground	Condition	Data (Approx.)
	Connector	Terminal			
Power supply	F16	46	Ground	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
		48		Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
Power supply (memory back-up)		45		Always	Battery voltage
		47			

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 2..

2.DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and TCM connector terminal 45, 47
- Harness for short or open between ignition switch and TCM connector terminal 46, 48
- 10 A fuse (No. 34, located in the IPDM E/R)
- 10 A fuse (No. 11, located in the J/B)
- Ignition switch. Refer to PG-5.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TCM GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM connector terminals and ground.

TCM Connector		Ground	Continuity
Connector	Terminal		
F16	5		Existed
	42		Existed

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK TCM

1. Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

P1705 THROTTLE POSITION SENSOR

Description

INFOID:0000000000992022

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000000992023

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1705 TP SEN/CIRC A/T” with CONSULT-III is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

- ECM
- Harness or connectors
  (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Depress accelerator pedal fully and release it, then wait for 5 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is “P1705 TP SEN/CIRC A/T” detected?

YES >> Go to TM-162, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992024

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Read out the value of “ACC PEDAL OPEN”.

Item name	Condition	Display value (Approx.)
ACC PEDAL OPEN	Release accelerator pedal. ↓ Fully depressed accelerator pedal	0.0/8 ↓ 8.0/8

OK or NG

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> GO TO 2..

2.CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-130, "CONSULT-III Function".

OK or NG

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NG >> Check the DTC Detected Item. Go to EC-130, "CONSULT-III Function".

P1722 ESTM VEHICLE SPEED SIGNAL

Description

INFOID:0000000000992025

The vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) to TCM by CAN communication line.

DTC Logic

INFOID:0000000000992026

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1722 ESTM VEH SPD SIG” with CONSULT-III is detected when TCM does not receive the proper vehicle speed signal (input by CAN communication) from ABS actuator and electric unit (control unit).

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

ACC PEDAL OPEN	**: 1.0/8 or less**
VEHICLE SPEED	**: 30 km/h (19 MPH) or more**

Is “P1722 ESTM VEH SPD SIG”detected?

YES >> Go to TM-164, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992027

1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform “SELF-DIAG RESULTS”. Refer to BRC-71, "CONSULT-III Function (ABS)" (TCS/ABS models), BRC-138, "CONSULT-III Function (ABS)" (VDC/TCS/ABS models).

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts.

2.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “DATA MONITOR”.
3. Drive vehicle and read out the value of “VEHICLE SPEED” and “ESTM VSP SIG”.

Item name	Condition	Display value
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
VEHICLE SPEED		

4. Check if there is a great difference between the two values.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> GO TO 3..

3.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

P1723 CVT SPEED SENSOR FUNCTION

Description

INFOID:0000000000992028

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of parking gear and generates a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.
The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000000992029

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1723 CVT SPD SEN/FNCTN” with CONSULT-III is detected when there is a great difference between the vehicle speed signal and the secondary speed sensor signal.

CAUTION:
One of the “P0720 VEH SPD SEN/CIR AT”, the “P0715 INPUT SPD SEN/CIRC” or the “P0725 ENGINE SPEED SIG“ is displayed with the DTC at the same time.
NOTE:
When the vehicle is driven fixed in 2nd gear, a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)
- Engine speed signal system

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED SE	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

Is “P1723 CVT SPD SEN/FNCTN”detected?

YES >> Go to TM-166, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992030

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is a malfunction in the step motor function indicated in the results?

YES >> Repair or replace damaged parts. (Check the step motor function. Refer to TM-175, "DTC Logic".)
NO >> GO TO 2..

2. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-130, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 3..
NG >> Repair or replace damaged parts.

3. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-128, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 4..
NG >> Repair or replace damaged parts.

4. CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to TM-133, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 5..
NG >> Repair or replace damaged parts. Refer to EC-442, "Description".

5. CHECK TCM

Check TCM input/output signals.

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-228, "Exploded View".

P1726 ELECTRIC THROTTLE CONTROL SYSTEM

Description

INFOID:0000000000992031

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000000992032

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1726 ELEC TH CONTROL” with CONSULT-III is detected when the electronically controlled throttle for ECM is malfunctioning.

Possible Cause
Harness or connectors
(Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine and let it idle for 5 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is “P1726 ELEC TH CONTROL” detected?

YES >> Go to TM-168, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992033

1.CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-130, "CONSULT-III Function".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Check the DTC Detected Item. Go to EC-130, "CONSULT-III Function".

2.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

P1740 LOCK-UP SELECT SOLENOID VALVE

Description

INFOID:0000000000992034

- Lock-up select solenoid valve controls lock-up clutch pressure or forward clutch pressure (reverse brake pressure).
- When controlling lock-up clutch, the valve is turned OFF. When controlling forward clutch, it is turned ON.

DTC Logic

INFOID:0000000000992035

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1740 LU-SLCT SOL/CIRC” with CONSULT-III is detected under the following conditions.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Lock-up select solenoid valve
- Harness or connectors
  (Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

RANGE : “D” position and “N” position

(At each time, wait for 5 seconds.)

With GST

Follow the procedure “With CONSULT-III”.

Is “P1740 LU-SLCT SOL/CIRC” detected?

YES >> Go to TM-169, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992036

1. CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	37		6 – 19 Ω

Is the inspection result normal?

YES >> GO TO .4.
NO >> GO TO 2..

2. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-233, "Removal and Installation".

3.CHECK HARNESS BETWEEN TCM AND LOCK-UP SELECT SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	37	F46	13	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000992037

LOCK-UP SELECT SOLENOID VALVE

1.LOCK-UP SELECT SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	13		6 – 19 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000000992038

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992039

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1745 L/PRESS CONTROL” with CONSULT-III is detected when TCM detects the unexpected line pressure.

Possible Cause
TCM

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

Is “P1745 L/PRESS CONTROL” detected?

YES >> Go to TM-171, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992040

1. CHECK DTC

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS”.
3. Erase self-diagnostic results. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is the “P1745 L/PRESS CONTROL” displayed?

YES >> Replace TCM. Refer to TM-228, "Exploded View".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

P1777 STEP MOTOR

Description

INFOID:0000000000992041

The step motor changes the step with turning 4 coils ON/OFF according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.

DTC Logic

INFOID:0000000000992042

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1777 STEP MOTR CIRC” with CONSULT-III is detected under the following conditions.

- When operating step motor ON and OFF, there is no proper change in the voltage of TCM terminal which corresponds to it.

Possible Cause

- Step motor
- Harness or connectors
  (Step motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Drive vehicle for at least 5 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P1777 STEP MOTR CIRC” detected?

YES >> Go to TM-172, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992043

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “DATA MONITOR”.
3. Start vehicle and read out the value of “STM STEP”, “SMCOIL A”, “SMCOIL B”, “SMCOIL C”, and “SMCOIL D”.

Item name	Condition	Display value (Approx.)
STM STEP	During driving	–20 step – 190 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

Is the inspection result normal?

YES >> GO TO 4..

NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND STEP MOTOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector and TCM connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	27	F46	9	Existed
	28		8	
	29		7	
	30		6	

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between body ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK STEP MOTOR

Check step motor. Refer to TM-173, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-181, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-228, "Exploded View".

Component Inspection

INFOID:0000000000992044

STEP MOTOR

1.STEP MOTOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminals and ground.

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal	Terminal	
F46	6	7	30 Ω
	8	9	

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	6		15 Ω
	7		
	8		
	9		

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Transaxle assembly. Refer to TM-233, "Exploded View".

P1778 STEP MOTOR - FUNCTION

Description

INFOID:0000000000992045

- The step motor's 4 aspects of ON/OFF change according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.
- This diagnosis item is detected when electrical system is OK, but mechanical system is NG.
- This diagnosis item is detected when the state of the changing the speed mechanism in unit does not operate normally.

DTC Logic

INFOID:0000000000992046

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1778 STEP MOTR/FNC” with CONSULT-III is detected under the following conditions.
- When not changing the pulley ratio according to the instruction of TCM.

Possible Cause
Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting “DTC CONFIRMATION PROCEDURE”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation occurred, go to TM-175, "Diagnosis Procedure".**

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**
If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)	

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 sec or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

With GST
Follow the procedure “With CONSULT-III”.

Is “P1778 STEP MOTR/FNC” detected?

YES >> Go to TM-175, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992047

1. CHECK STEP MOTOR

With CONSULT-III

It is monitoring whether “GEAR RATIO: 2.37 – 0.43” changes similarly to “STM STEP: –20 – 190” by “DATA MONITOR” mode. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Without CONSULT-III

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to TM-235, "Vehicle Speed When Shifting Gears".

OK or NG

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the transaxle assembly. Refer to TM-233, "Exploded View".

SHIFT LOCK SYSTEM

Description

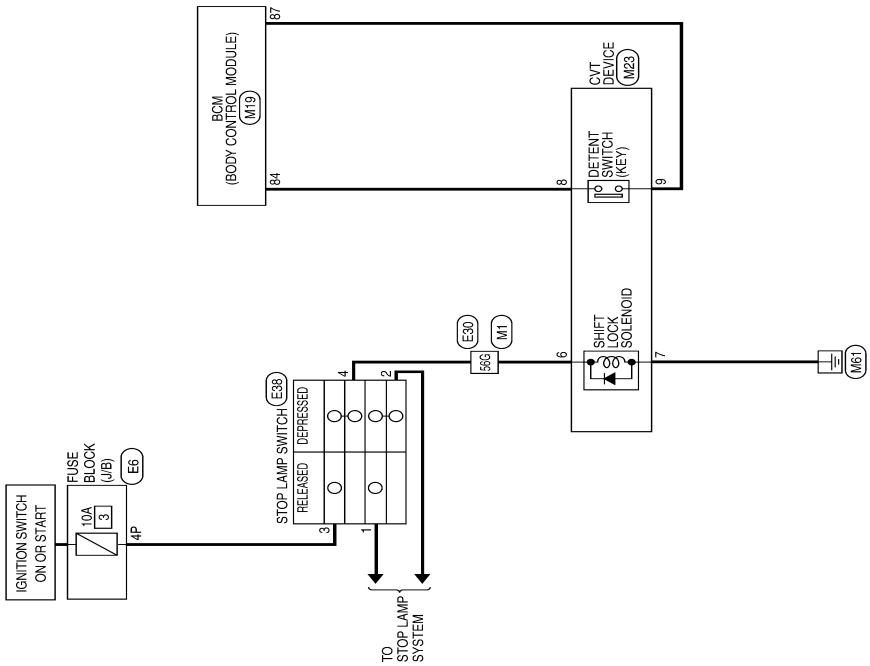
INFOID:0000000000992048

The selector lever cannot be shifted from “P” position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Wiring Diagram

INFOID:0000000000992049

CVT SHIFT LOCK SYSTEM (VQ35DE)



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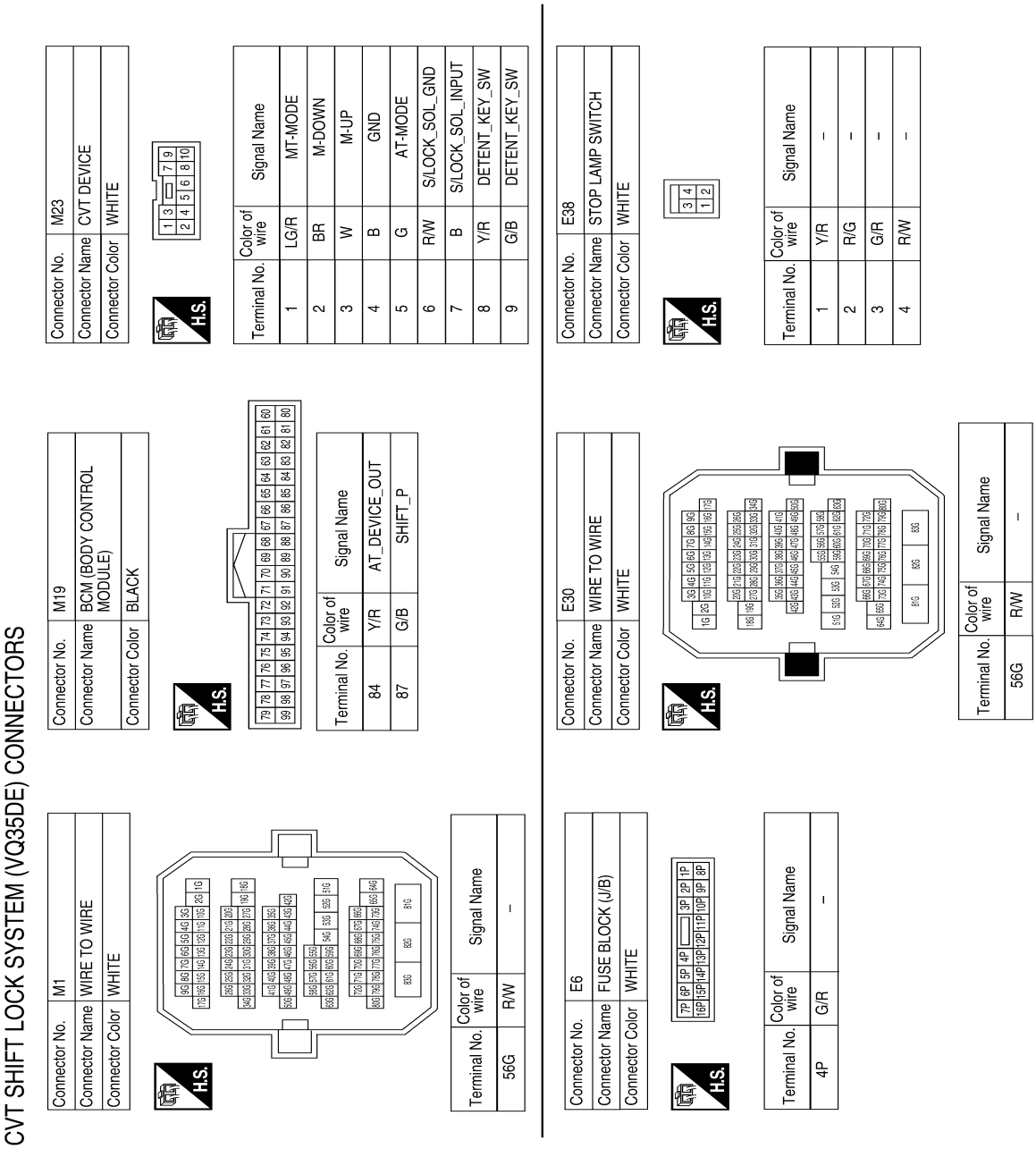

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Diagnosis Procedure

INFOID:0000000000992050

DIAGNOSTIC PROCEDURE

SYMPTOM 1:

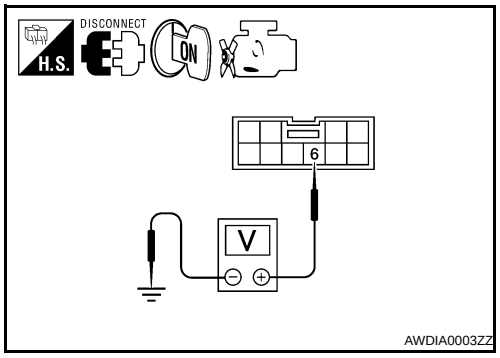
- **Selector lever cannot be moved from "P" position with ignition switch in ON position and brake pedal depressed.**

SYMPTOM 2:

- **Selector lever can be moved from "P" position with ignition key in ON position and brake pedal released.**

1. CHECK POWER SOURCE

1. Disconnect CVT device harness connector.
2. Turn ignition switch ON (Do not start engine).
3. Check voltage between CVT device harness connector M23 terminal 6 and ground.



Voltage:

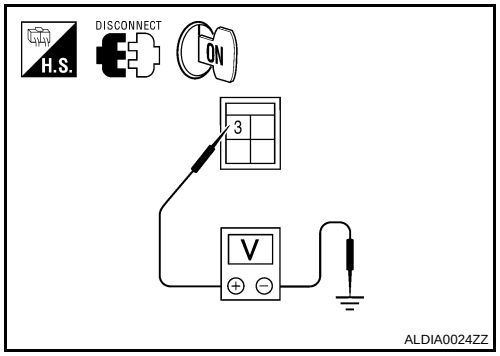
Brake pedal depressed:	**Battery voltage**
Brake pedal released:	**0V**

OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

2. CHECK POWER SOURCE AT STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector.
3. Turn ignition switch ON (Do not start engine).
4. Check voltage between stop lamp switch harness connector E38 terminal 3 and ground.



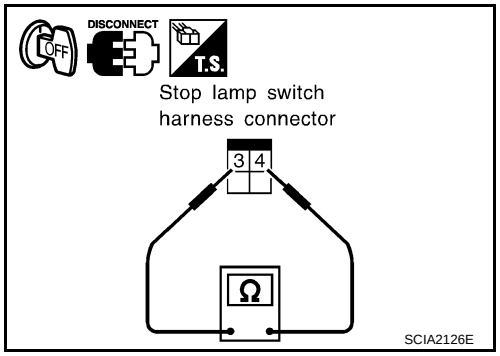
Voltage: **Battery voltage**

OK or NG

OK >> GO TO 3.
NG >> Check the following items for damage, repair or replace damaged parts:
- 10A fuse [No. 3, located in the fuse block (J/B)].
- Harness for open between ignition switch and stop lamp switch harness connector.
- Ignition switch, refer to XX POWER SUPPLY ROUTING CIRCUIT.

3. CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector E38.
3. Check continuity between stop lamp switch terminals 3 and 4.



Condition	Continuity
Manually depress stop lamp switch	YES
Stop lamp switch released	NO

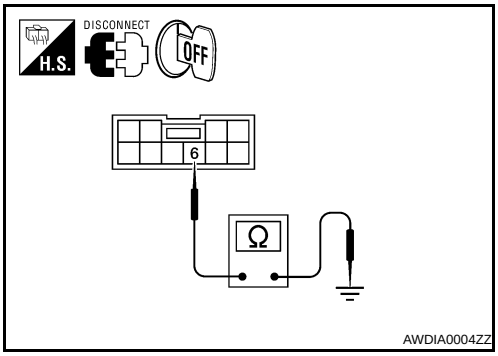
OK or NG

OK >> Adjust stop lamp switch. Refer to XX BRAKE PEDAL - ADJUSTMENT.
NG >> Replace stop lamp switch.

4. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between CVT device harness connector M23 terminal 6 and ground.

Continuity should exist.



OK or NG

OK >> Replace shift lock solenoid and park position switch assembly.

NG >> Repair open circuit in harness or connectors.

ECU DIAGNOSIS

TCM

Reference Value

INFOID:0000000000992051

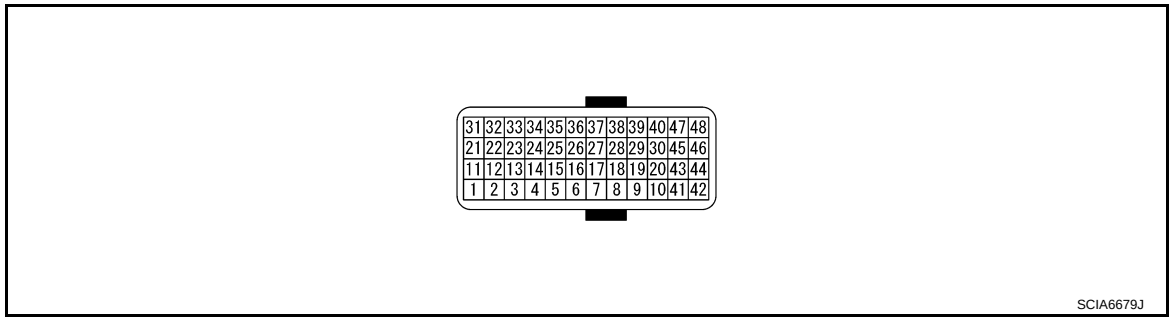
VALUES ON THE DIAGNOSIS TOOL

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	0.8 - 1.0 V
PRI HYDR SEN	“N” position idle	0.7 - 3.5 V
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F).	1.8 - 2.0 V
	When CVT fluid temperature is 80°C (176°F).	0.6 - 1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.37 - 0.43
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8
SEC PRESS	“N” position idle	0.5 - 0.9 MPa
PRI PRESS	“N” position idle	0.3 - 0.9 MPa
STM STEP	During driving	-20 step – 190 step
ISOLT1	Lock-up OFF	0.0 A
	Lock-up ON	0.7 A
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A
ISOLT3	Secondary pressure low - Secondary pressure high.	0.8 - 0.0 A
SOLMON1	Lock-up OFF	0.0 A
	Lock-up ON	0.6 - 0.7 A
SOLMON2	“N” position idle	0.8 A
	When stalled	0.3 - 0.6 A
SOLMON3	“N” position idle	0.6 - 0.7 A
	When stalled	0.4 - 0.6 A
INH SW3M	Selector lever in “D” position	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW4	Selector lever in “R” and “D” positions	ON
	Selector lever in “P” and “N” positions	OFF

Item name	Condition	Display value (Approx.)
INH SW3	Selector lever in “D” position	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW2	Selector lever in “N” and “D” positions	ON
	Selector lever in “P” and “R” positions	OFF
INH SW1	Selector lever in “R”, “N” and “D” positions	ON
	Selector lever in “P” position	OFF
BRAKE SW	Depressed brake pedal	ON
	Released brake pedal	OFF
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
IDLE SW	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
NONMMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF
INDDRNG	Selector lever in “D” position	ON
	Selector lever in other positions	OFF
INDNRNG	Selector lever in “N” position	ON
	Selector lever in other positions	OFF
INDRRNG	Selector lever in “R” position	ON
	Selector lever in other positions	OFF
INDPRNG	Selector lever in “P” position	ON
	Selector lever in other positions	OFF
SMCOIL D	During driving	Changes ON ⇔ OFF.
SMCOIL C	During driving	Changes ON ⇔ OFF.
SMCOIL B	During driving	Changes ON ⇔ OFF.
SMCOIL A	During driving	Changes ON ⇔ OFF.
LUSEL SOL OUT	Selector lever in “P” and “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R” and “D” positions	OFF
STRTR RLY OUT	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
STRTR RLY MON	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
VDC ON	VDC operate	ON
	Other conditions	OFF
TCS ON	TCS operate	ON
	Other conditions	OFF
ABS ON	ABS operate	ON
	Other conditions	OFF

Item name	Condition	Display value (Approx.)
RANGE	Selector lever in “N” and “P” position.	N·P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
1 (P/B)	Ground	PNP switch 2	Output	Ignition switch ON	Selector lever in “N”, “D” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
2 (P/L)	Ground	PNP switch 3	Output		Selector lever in “D” position	0 V
					Selector lever in other positions	8.0 V – Battery voltage
3 (G/O)	Ground	PNP switch 4	Output		Selector lever in “R”, “D” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
4 (GR)	Ground	PNP switch 3 (monitor)	Output		Selector lever in “D” position	0 V
					Selector lever in other positions	8.0 V – Battery voltage
5 (B)	Ground	Ground	Output	Always		0 V
6 (O)	Ground	K-LINE	Inout/Output	—		—
7 (W)	Ground	Sensor ground	Input	Always		0 V
8 (G/W)	—	CLOCK	—	—		—
9 (L/R)	—	CHIP SELECT	—	—		—
10 (BR/R)	—	DATA I/O	—	—		—

Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
11 (BR/W)	Ground	PNP switch 1	Output	Ignition switch ON	Selector lever in “R”, “N”, “D” positions	0 V
					Selector lever in other position	Battery voltage
13 (V)	Ground	CVT fluid temperature sensor	Output	Ignition switch ON	When CVT fluid temperature is 20°C (68°F)	2.0 V
					When CVT fluid temperature is 80°C (176°F)	1.0 V
14 (R/W)	Ground	Transmission fluid pressure sensor B (Primary pressure sensor)	Input	“N” position idle		0.7 – 3.5 V
15 (V/W)	Ground	Transmission fluid pressure sensor A (Secondary pressure sensor)	Input			1.0 V
19 (SB)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in “R” position	0 V
					Selector lever in other positions	Battery voltage
20 (R/B)	Ground	Starter relay	Input	Ignition switch ON	Selector lever in “N”, “P” positions	Battery voltage
					Selector lever in other positions	0 V
25 (W/R)	Ground	Sensor ground	Input	Always		0 V
26 (L/O)	Ground	Sensor power	Input	Ignition switch ON	—	5.0 V
				Ignition switch OFF	—	0 V
27 (R/G)	Ground	Step motor D	Input	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-III.*1 CAUTION: **Connect the diagnosis data link cable to the vehicle diagnosis connector.**		10.0 msec
28 (R)	Ground	Step motor C	Input			30.0 msec
29 (O/B)	Ground	Step motor B	Input			10.0 msec
30 (G/R)	Ground	Step motor A	Input			30.0 msec
31 (P)	—	CAN-L	Inout/Output	—		—
32 (L)	—	CAN-H	Inout/Output	—		—
33 (LG)	Ground	Input speed sensor (Primary speed sensor)	Input	When driving [“M1” position, 20 km/h (12 MPH)]		660 Hz
34 (LG/R)	Ground	Output speed sensor (Secondary speed sensor)	Input	When driving [“D” position, 20 km/h (12 MPH)]		400 Hz
37 (L/B)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Selector lever in “P”, “N” positions	Battery voltage
					Wait at least for 5 seconds with the selector lever in “R”, “D” positions.	0 V
38 (L/W)	Ground	Torque converter clutch solenoid valve	Output	When vehicle cruises in “D” position	When CVT performs lock-up	6.0 V
					When CVT does not perform lock-up	1.0 V

Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
39 (W/B)	Ground	Pressure control solenoid valve B (Secondary pressure solenoid valve)	Output	“P”, “N” position idle	Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	3.0 – 4.0 V
40 (R/Y)	Ground	Pressure control solenoid valve A (Line pressure solenoid valve)	Output		Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	1.0 – 3.0 V
42 (B)	Ground	Ground	Output	Always		0 V
45 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
46 (Y)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V
47 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
48 (Y)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V

*1: A circuit tester cannot be used to test this item.

Wiring Diagram — CVT CONTROL SYSTEM —

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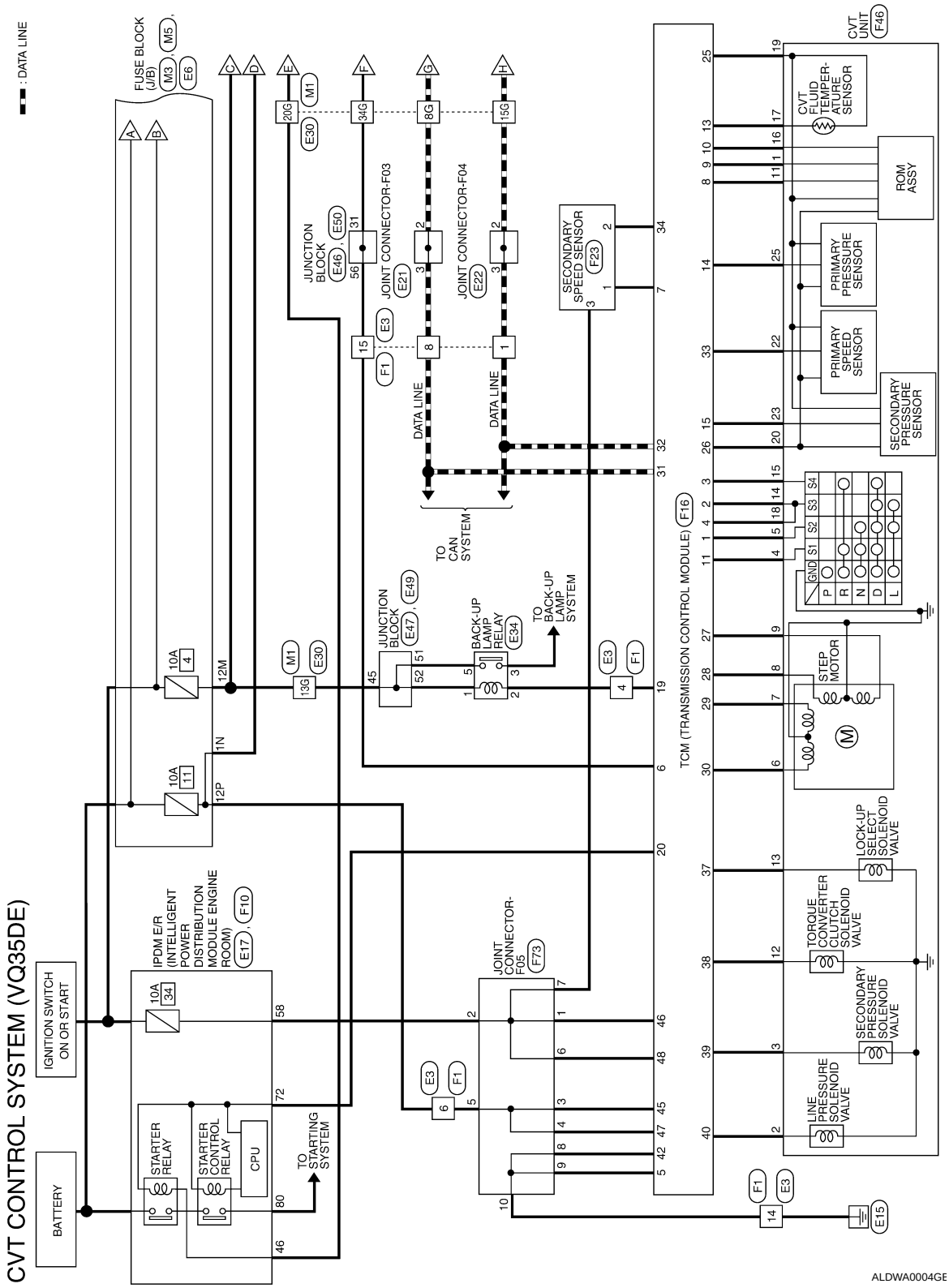

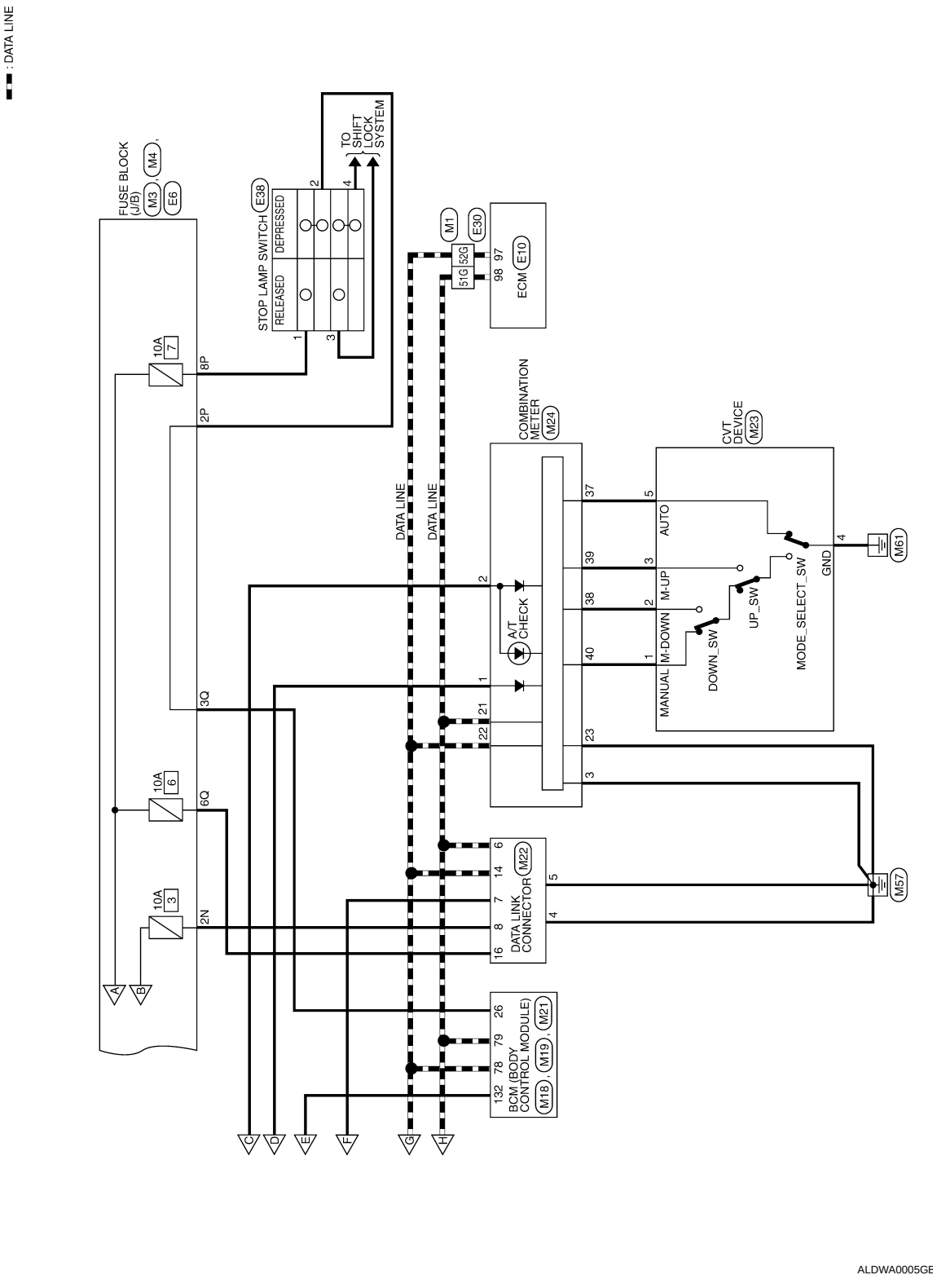

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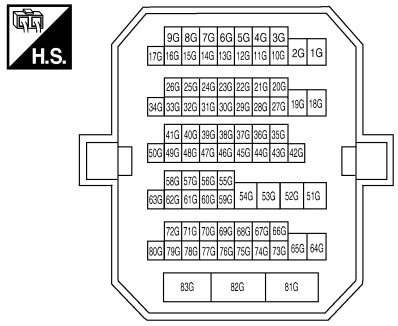
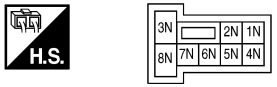
CVT CONTROL SYSTEM (VQ35DE) CONNECTORS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE



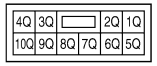
Terminal No.	Color of wire	Signal Name
8G	P	–
13G	O	–
15G	L	–
51G	L	–
52G	P	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



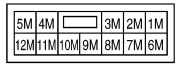
Terminal No.	Color of wire	Signal Name
2N	G	–

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



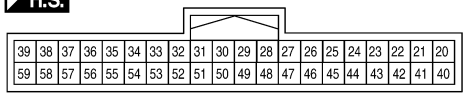
Terminal No.	Color of wire	Signal Name
3Q	O/L	–
6Q	Y/R	–

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of wire	Signal Name
12M	P	–

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN



Terminal No.	Color of wire	Signal Name
26	O/L	STOP_LAMP_HIGH _ SW

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Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80

Terminal No.	Color of wire	Signal Name
78	P	CAN-L
79	L	CAN-H

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.

131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132

Terminal No.	Color of wire	Signal Name
132	R	ST_CONT_USM

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of wire	Signal Name
4	B	GND
5	B	GND
6	L	CAN-H
7	O	K-LINE
8	G	IGN_SW
14	P	CAN-L
16	Y/R	BATT

Connector No.	M23
Connector Name	CVT DEVICE
Connector Color	WHITE

H.S.

1	3	7	9
2	4	5	6	8	10
---	---	---	---	---	---

Terminal No.	Color of wire	Signal Name
1	LG/R	MT_MODE
2	BR	M_DOWN
3	W	M_UP
4	B	GND
5	G	AT_MODE

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of wire	Signal Name
1	W/L	BAT
2	O	IGN
3	B	GND
14	V/Y	ACC
21	L	CAN-H
22	P	CAN-L
23	B	GND
37	G	NOT M RANGE
38	BR	AT SHIFT DOWN
39	W	AT SHIFT UP
40	LG/R	M RANGE

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Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3		4	5	6	7
8	9	10	11	12	13	14	15	16

Terminal No.	Color of wire	Signal Name
1	L	–
4	G/B	–
6	L/R	–
8	P	–
14	B	–
15	O	–

Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

7P	6P	5P	4P		3P	2P	1P
16P	15P	14P	13P	12P	11P	10P	9P	8P

Terminal No.	Color of wire	Signal Name
1P	SB	–
4P	G/R	–
6P	Y	–
8P	Y/R	–
12P	L/R	–

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of wire	Signal Name
97	P	CAN-L
98	L	CAN-H

Connector No.	E17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of wire	Signal Name
41	B	S-GND
46	R	START_CONT

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of wire	Signal Name
2	L	–
3	L	–

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of wire	Signal Name
2	P	–
3	P	–

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Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
1	Y/R	–
2	R/G	–
3	G/R	–
4	R/W	–

Connector No.	E34
Connector Name	BACK-UP LAMP RELAY
Connector Color	BLUE

H.S.

Terminal No.	Color of wire	Signal Name
1	O/B	–
2	G/B	–
3	P/B	–
5	O	–

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
8G	P	–
13G	O	–
15G	L	–
51G	L	–
54G	P	–

Connector No.	E49
Connector Name	JUNCTION BLOCK
Connector Color	BROWN

H.S.

Terminal No.	Color of wire	Signal Name
51	O	–
52	O/B	–

Connector No.	E47
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
45	O	–

Connector No.	E46
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
31	O	–

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Connector No.	E50
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

56	55

Terminal No.	Color of Wire	Signal Name
56	O	—

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

7	6	5	4	3	2	1
16	15	14	13	12	11	10	9	8

Terminal No.	Color of Wire	Signal Name
1	L	—
4	G/B	—
6	L/R	—
8	P	—
14	B	—
15	O	—

Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

53	54	55	56	57	58	69	70	71	72	73	74	75	76	77	78	81	82
47	48	49	50	51	52	59	60	61	62	63	64	65	66	67	68	79	80

Terminal No.	Color of Wire	Signal Name
58	Y	AT_ECU
72	R/B	NPSW
74	Y	START_IG-EGI
80	B/W	STARTER_MOTOR

Terminal No.	Color of Wire	Signal Name
31	P	CAN-L
32	L	CAN-H
33	LG	PRI_SPEED_SENSOR
34	LG/R	SEC_SPEED_SENSOR
37	L/B	L/U&SEL–ON/OFF_SOL
38	L/W	L/U&SEL–LINER_SOL
39	W/B	SEC-LINER-SOL
40	R/Y	PL_LINER_SOL
42	B	GND
45	L/R	BATT
46	Y	VIGN
47	L/R	BATT
48	Y	VIGN

Connector No.	F16
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	BLACK

H.S.

31	32	33	34	35	36	37	38	39	40	47	48
21	22	23	24	25	26	27	28	29	30	45	46
11	12	13	14	15	16	17	18	19	20	43	44
1	2	3	4	5	6	7	8	9	10	41	42

Terminal No.	Color of Wire	Signal Name
1	P/B	R_RANGE_SW
2	P/L	N_RANGE_SW
3	G/O	D_RANGE_SW
4	GR	L_RANGE_SW
5	B	GND
6	O	K–LINE

Terminal No.	Color of Wire	Signal Name
7	W	SENSOR_GND
8	G/W	CLOCK (SEL2)
9	L/R	CHIP_SELECT (SEL1)
10	BR/R	DATA_I/O (SEL3)
11	BR/W	P_RANGE_SW
13	V	ATF_TEMP_SENS
14	LG	PRI_OIL_PRESS_SENS
15	V/W	SEC_OIL_PRESS_SENS
19	G/B	REV LAMP RLY
20	—	—
25	W/R	SENSOR_GND
26	L/O	SENS_POWER_SOURCE
27	R/G	S/M-D
28	R	S/M-C
29	O/B	S/M-B
30	G/R	S/M-A

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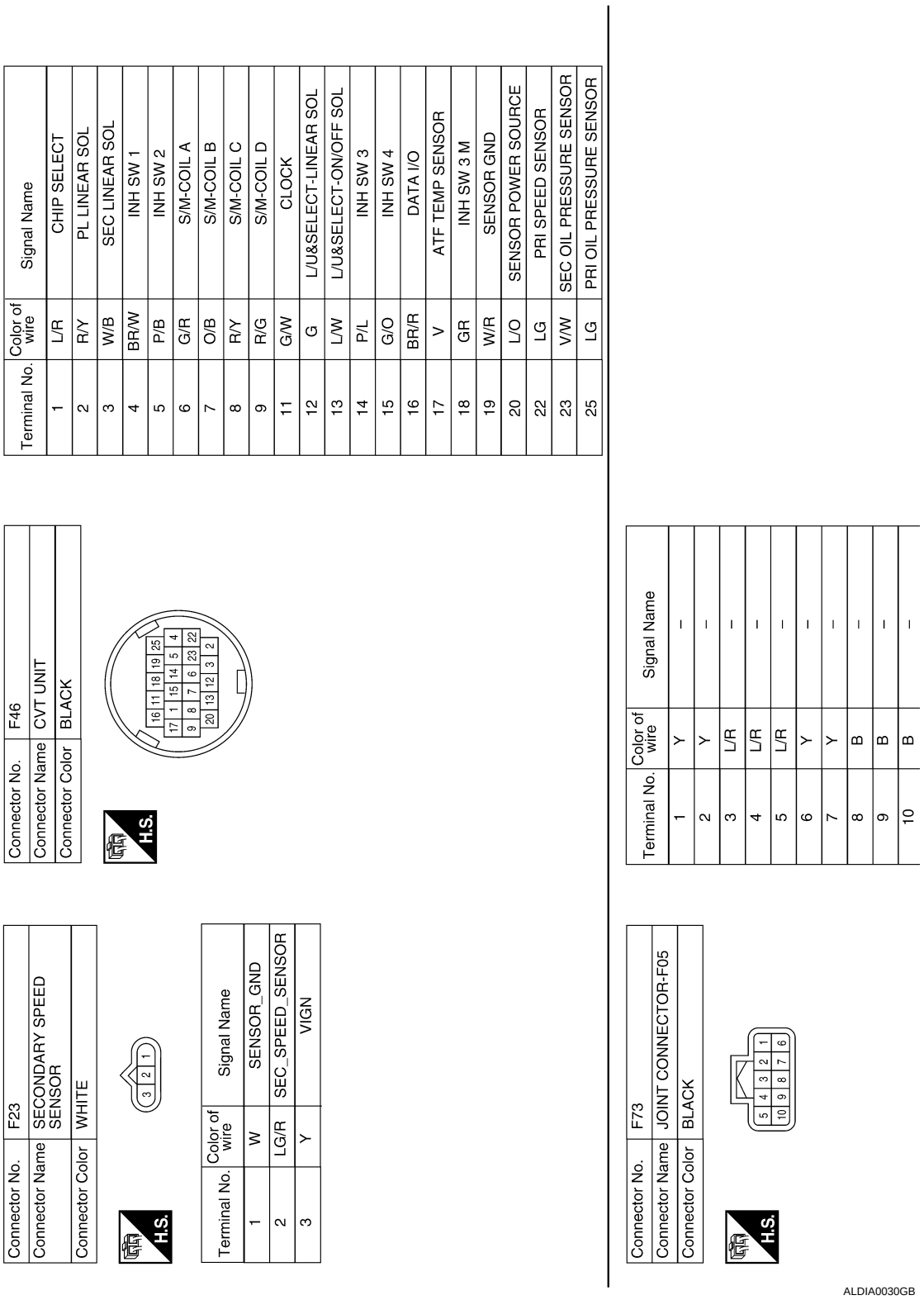

Fail-safe

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The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is an error in a main electronic control input/output signal circuit.

FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the CVT to make driving possible.

Output Speed Sensor (Secondary Speed Sensor)

The shift pattern is changed in accordance with throttle position when an unexpected signal is sent from the output speed sensor (secondary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in “D”.

Input Speed Sensor (Primary Speed Sensor)
The shift pattern is changed in accordance with throttle position and secondary speed (vehicle speed) when an unexpected signal is sent from the input speed sensor (primary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in “D”.

PNP Switch
If an unexpected signal is sent from the PNP switch to the TCM, the transaxle is put in “D”.

Manual Mode Switch
If an unexpected signal is sent from the manual mode switch to the TCM, the transaxle is put in “D”.

CVT Fluid Temperature Sensor
If an unexpected signal is sent from the CVT fluid temperature sensor to the TCM, the gear ratio in use before receiving the unexpected signal is maintained or the gear ratio is controlled to keep engine speed under 2,800 rpm.

Transmission Fluid Pressure Sensor A (Secondary Pressure Sensor)
- If an unexpected signal is sent from the transmission fluid pressure sensor A (secondary pressure sensor) to the TCM, the secondary pressure feedback control is stopped and the offset value obtained before the non-standard condition occurs is used to control line pressure.
- If transmission fluid pressure sensor A (secondary pressure sensor) error signal is input to TCM, secondary pressure feedback control stops, but line pressure is controlled normally.

Pressure Control Solenoid A (Line Pressure Solenoid)
If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid A (line pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Pressure Control Solenoid B (Secondary Pressure Solenoid)
If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid B (secondary pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Torque Converter Clutch Solenoid
If an unexpected signal is sent from the solenoid to the TCM, the torque converter clutch solenoid is turned OFF to cancel the lock-up.

Step Motor
If an unexpected signal is sent from the step motor to the TCM, the step motor coil phases “A” through “D” are all turned OFF to hold the gear ratio used right before the non-standard condition occurred.

CVT Lock-up Select Solenoid
If an unexpected signal is sent from the solenoid to the TCM, the CVT lock-up select solenoid is turned OFF to cancel the lock-up.

TCM Power Supply (Memory Back-up)
Transaxle assembly is protected by limiting the engine torque when the memory back-up power supply (for controlling) from the battery is not supplied to TCM. Normal statues is restored when turning the ignition switch OFF to ON after the normal power supply.

DTC Inspection Priority Chart

INFOID:0000000000992054

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

NOTE:
If DTC “U1000 CAN COMM CIRCUIT” is displayed with other DTCs, first perform the trouble diagnosis for “DTC U1000 CAN COMMUNICATION LINE”. Refer to TM-118.

Priority	Detected items (DTC)
1	U1000 CAN communication line
2	Except above

DTC Index

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NOTE:
If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to TM-118.

DTC		Items (CONSULT-III screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-III GST*	CONSULT-III only "TRANSMISSION"		
—	P0615	STARTER RELAY/CIRC	TM-119
—	P0703	BRAKE SW/CIRC	TM-121
P0705	P0705	PNP SW/CIRC	TM-123
P0710	P0710	ATF TEMP SEN/CIRC	TM-126
P0715	P0715	INPUT SPD SEN/CIRC	TM-128
P0720	P0720	VEH SPD SEN/CIR AT	TM-130
—	P0725	ENGINE SPEED SIG	TM-133
—	P0730	BELT DAMG	TM-135
P0740	P0740	TCC SOLENOID/CIRC	TM-137
P0744	P0744	A/T TCC S/V FNCTN	TM-139
P0745	P0745	L/PRESS SOL/CIRC	TM-141
P0746	P0746	PRS CNT SOL/A FCTN	TM-143
P0776	P0776	PRS CNT SOL/B FCTN	TM-145
P0778	P0778	PRS CNT SOL/B CIRC	TM-147
—	P0826	MANUAL MODE SWITCH	TM-149
P0840	P0840	TR PRS SENS/A CIRC	TM-152
—	P0841	PRESS SEN/FNCTN	TM-154
P0845	P0845	TR PRS SENS/B CIRC	TM-156
—	P0868	SEC/PRESS DOWN	TM-158
—	P1701	TCM-POWER SUPPLY	TM-160
—	P1705	TP SEN/CIRC A/T	TM-162
—	P1722	ESTM VEH SPD SIG	TM-164
—	P1723	CVT SPD SEN/FNCTN	TM-166
—	P1726	ELEC TH CONTROL	TM-168
P1740	P1740	LU-SLCT SOL/CIRC	TM-169
—	P1745	L/PRESS CONTROL	TM-171
P1777	P1777	STEP MOTR CIRC	TM-172
P1778	P1778	STEP MOTR/FNC	TM-175
U1000	U1000	CAN COMM CIRCUIT	TM-118

*: These numbers are prescribed by SAE J2012.

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000000992056

The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. (“N”→ “D” position)	ON vehicle	1. Engine idle speed	EC-28
				2. Engine speed signal	TM-133
				3. Accelerator pedal position sensor	TM-162
				4. CVT position	TM-227
				5. CVT fluid temperature sensor	TM-126
				6. CAN communication line	TM-118
				7. CVT fluid level and state	TM-214
				8. Line pressure test	TM-221
				9. Torque converter clutch solenoid valve	TM-137
				10. Lock-up select solenoid valve	TM-169
				11. PNP switch	TM-123
			OFF vehicle	12. Forward clutch	TM-233
				13. Control valve	
2		Large shock. (“N”→ “R” position)	ON vehicle	1. Engine idle speed	EC-28
				2. Engine speed signal	TM-133
				3. Accelerator pedal position sensor	TM-162
				4. CVT position	TM-227
				5. CVT fluid temperature sensor	TM-126
				6. CAN communication line	TM-118
				7. CVT fluid level and state	TM-214
				8. Line pressure test	TM-221
				9. Torque converter clutch solenoid valve	TM-137
				10. Lock-up select solenoid valve	TM-169
				11. PNP switch	TM-123
			OFF vehicle	12. Reverse brake	TM-233
				13. Control valve	
3		Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-227
				2. Engine speed signal	TM-133
				3. CAN communication line	TM-118
				4. CVT fluid level and state	TM-214
			OFF vehicle	5. Torque converter	TM-233
				6. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
4	Slips/Will Not Engage	Vehicle cannot be started from “D” position.	ON vehicle	1. CVT fluid level and state	TM-214
				2. CVT position	TM-227
				3. CAN communication line	TM-118
				4. Line pressure test	TM-221
				5. Stall test	TM-219
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Accelerator pedal position sensor	TM-162
				10. CVT fluid temperature sensor	TM-126
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Oil pump assembly	TM-233
				14. Forward clutch	
				15. Control valve	
				16. Parking components	
5		Vehicle cannot be started from “R” position.	ON vehicle	1. CVT fluid level and state	TM-214
				2. CVT position	TM-227
				3. CAN communication line	TM-118
				4. Line pressure test	TM-221
				5. Stall test	TM-219
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Accelerator pedal position sensor	TM-162
				10. CVT fluid temperature sensor	TM-126
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Oil pump assembly	TM-233
				14. Reverse brake	
				15. Control valve	
				16. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
6	Slips/Will Not Engage	Does not lock-up.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Engine speed signal	TM-133
				4. Primary speed sensor	TM-128
				5. Torque converter clutch solenoid valve	TM-137
				6. CAN communication line	TM-118
				7. Stall test	TM-219
				8. Step motor	TM-172
				9. PNP switch	TM-123
				10. Lock-up select solenoid valve	TM-169
				11. CVT fluid temperature sensor	TM-126
				12. Secondary speed sensor	TM-130
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-233
				15. Oil pump assembly	
				16. Control valve	
7		Does not hold lock-up condition.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Engine speed signal	TM-133
				4. Primary speed sensor	TM-128
				5. Torque converter clutch solenoid valve	TM-137
				6. CAN communication line	TM-118
				7. Stall test	TM-219
				8. Step motor	TM-172
				9. PNP switch	TM-123
				10. Lock-up select solenoid valve	TM-169
				11. CVT fluid temperature sensor	TM-126
				12. Secondary speed sensor	TM-130
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-233
				15. Oil pump assembly	
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
8	Slips/Will Not Engage	Lock-up is not released.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Engine speed signal	TM-133
				4. Primary speed sensor	TM-128
				5. Torque converter clutch solenoid valve	TM-137
				6. CAN communication line	TM-118
				7. Stall test	TM-219
			OFF vehicle	8. Torque converter	TM-233
				9. Oil pump assembly	
				10. Control valve	
9		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Stall test	TM-219
				4. Accelerator pedal position sensor	TM-162
				5. CAN communication line	TM-118
				6. PNP switch	TM-123
				7. CVT position	TM-227
				8. Step motor	TM-172
				9. Primary speed sensor	TM-128
				10. Secondary speed sensor	TM-130
				11. Accelerator pedal position sensor	TM-162
				12. Primary pressure sensor	TM-156
				13. Secondary pressure sensor	TM-152
				14. CVT fluid temperature sensor	TM-126
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-233
				17. Oil pump assembly	
				18. Forward clutch	
				19. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
10	Slips/Will Not Engage	With selector lever in “R” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Stall test	TM-219
				4. Accelerator pedal position sensor	TM-162
				5. CAN communication line	TM-118
				6. PNP switch	TM-123
				7. CVT position	TM-227
				8. Step motor	TM-172
				9. Primary speed sensor	TM-128
				10. Secondary speed sensor	TM-130
				11. Accelerator pedal position sensor	TM-162
				12. Primary pressure sensor	TM-156
				13. Secondary pressure sensor	TM-152
				14. CVT fluid temperature sensor	TM-126
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-233
				17. Oil pump assembly	
				18. Reverse brake	
				19. Control valve	
11		Slips at lock-up.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Engine speed signal	TM-133
				4. Primary speed sensor	TM-128
				5. Torque converter clutch solenoid valve	TM-137
				6. CAN communication line	TM-118
				7. Stall test	TM-219
				8. Step motor	TM-172
				9. PNP switch	TM-123
				10. Lock-up select solenoid valve	TM-169
				11. CVT fluid temperature sensor	TM-126
				12. Secondary speed sensor	TM-130
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-233
				15. Oil pump assembly	
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
12	Other	No creep at all.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Accelerator pedal position sensor	TM-162
				4. PNP switch	TM-123
				5. CAN communication line	TM-118
				6. Stall test	TM-219
				7. CVT position	TM-227
				8. Step motor	TM-172
				9. Primary speed sensor	TM-128
				10. Secondary speed sensor	TM-130
				11. Accelerator pedal position sensor	TM-162
				12. CVT fluid temperature sensor	TM-126
				13. Primary pressure sensor	TM-156
				14. Secondary pressure sensor	TM-152
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-233
				17. Oil pump assembly	
				18. Gear system	
				19. Forward clutch	
				20. Reverse brake	
				21. Control valve	
13		Vehicle cannot run in all positions.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. PNP switch	TM-123
				4. Stall test	TM-219
				5. CVT position	TM-227
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Accelerator pedal position sensor	TM-162
				10. CVT fluid temperature sensor	TM-126
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-233
				14. Oil pump assembly	
				15. Gear system	
				16. Forward clutch	
				17. Reverse brake	
				18. Control valve	
				19. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
14	Other	With selector lever in “D” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. PNP switch	TM-123
				4. Stall test	TM-219
				5. CVT position	TM-227
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Accelerator pedal position sensor	TM-162
				10. CVT fluid temperature sensor	TM-126
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-233
				14. Oil pump assembly	
				15. Gear system	
				16. Forward clutch	
				17. Control valve	
				18. Parking components	
15		With selector lever in “R” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. PNP switch	TM-123
				4. Stall test	TM-219
				5. CVT position	TM-227
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Accelerator pedal position sensor	TM-162
				10. CVT fluid temperature sensor	TM-126
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-233
				14. Oil pump assembly	
				15. Gear system	
				16. Reverse brake	
				17. Control valve	
				18. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
16	Other	Judder occurs during lock-up.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. Primary speed sensor	TM-128
				4. Secondary speed sensor	TM-130
				5. Accelerator pedal position sensor	TM-162
				6. CAN communication line	TM-118
				7. Torque converter clutch solenoid valve	TM-137
			OFF vehicle	8. Torque converter	TM-233
				9. Control valve	
17		Strange noise in “D” position.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. CAN communication line	TM-118
			OFF vehicle	4. Torque converter	TM-233
				5. Oil pump assembly	
				6. Gear system	
				7. Forward clutch	
				8. Control valve	
				9. Bearing	
18		Strange noise in “R” position.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. CAN communication line	TM-118
			OFF vehicle	4. Torque converter	TM-233
				5. Oil pump assembly	
				6. Gear system	
				7. Reverse brake	
				8. Control valve	
19		Strange noise in “N” position.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. CAN communication line	TM-118
			OFF vehicle	4. Torque converter	TM-233
				5. Oil pump assembly	
				6. Gear system	
				7. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
20	Other	Vehicle does not decelerate by engine brake.	ON vehicle	1. CVT fluid level and state	TM-214
				2. CVT position	TM-227
				3. CAN communication line	TM-118
				4. Step motor	TM-172
				5. Primary speed sensor	TM-128
				6. Secondary speed sensor	TM-130
				7. Line pressure test	TM-221
				8. Engine speed signal	TM-133
				9. Accelerator pedal position sensor	TM-162
			OFF vehicle	10. Control valve	TM-233
21		Maximum speed low.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Line pressure test	TM-221
				3. Accelerator pedal position sensor	TM-162
				4. CAN communication line	TM-118
				5. Stall test	TM-219
				6. Step motor	TM-172
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Primary pressure sensor	TM-156
				10. Secondary pressure sensor	TM-152
				11. CVT fluid temperature sensor	TM-126
			OFF vehicle	12. Torque converter	TM-233
				13. Oil pump assembly	
				14. Gear system	
				15. Forward clutch	
				16. Control valve	
22		With selector lever in “P” position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.	ON vehicle	1. PNP switch	TM-123
				2. CVT position	TM-227
			OFF vehicle	3. Parking components	TM-233
23		Vehicle runs with CVT in “P” position.	ON vehicle	1. PNP switch	TM-123
				2. CVT fluid level and state	TM-214
				3. CVT position	TM-227
			OFF vehicle	4. Parking components	TM-233
				5. Gear system	
				6. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
24	Other	Vehicle runs with CVT in “N” position.	ON vehicle	1. PNP switch	TM-123
				2. CVT fluid level and state	TM-214
				3. CVT position	TM-227
			OFF vehicle	4. Gear system	TM-233
				5. Forward clutch	
				6. Reverse brake	
				7. Control valve	
25		Engine stall.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. Primary speed sensor	TM-128
				4. Torque converter clutch solenoid valve	TM-137
				5. CAN communication line	TM-118
				6. Stall test	TM-219
				7. Secondary pressure sensor	TM-152
			OFF vehicle	8. Torque converter	TM-233
				9. Control valve	
26		Engine stalls when selector lever shifted “N”→“D”or “R”.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Engine speed signal	TM-133
				3. Primary speed sensor	TM-128
				4. Torque converter clutch solenoid valve	TM-137
				5. CAN communication line	TM-118
				6. Stall test	TM-219
			OFF vehicle	7. Torque converter	TM-233
				8. Control valve	
27		Engine speed does not return to idle.	ON vehicle	1. CVT fluid level and state	TM-214
				2. Accelerator pedal position sensor	TM-162
				3. Secondary speed sensor	TM-130
				4. CAN communication line	TM-118
			OFF vehicle	5. Control valve	TM-233
28		CVT does not shift.	ON vehicle	1. CVT fluid level and state	TM-214
				2. CVT position	TM-227
				3. Line pressure test	TM-221
				4. Engine speed signal	TM-133
				5. Accelerator pedal position sensor	TM-162
				6. CAN communication line	TM-118
				7. Primary speed sensor	TM-128
				8. Secondary speed sensor	TM-130
				9. Step motor	TM-172
			OFF vehicle	10. Control valve	TM-233
				11. Oil pump assembly	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
29	Other	Engine does not start in “N” or “P” position.	ON vehicle	1. Ignition switch and starter	PG-5, STR-3
				2. CVT position	TM-227
				3. PNP switch	TM-123
30		Engine starts in positions other than “N” or “P”.	ON vehicle	1. Ignition switch and starter	PG-5, STR-3
				2. CVT position	TM-227
				3. PNP switch	TM-123

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000000992057

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

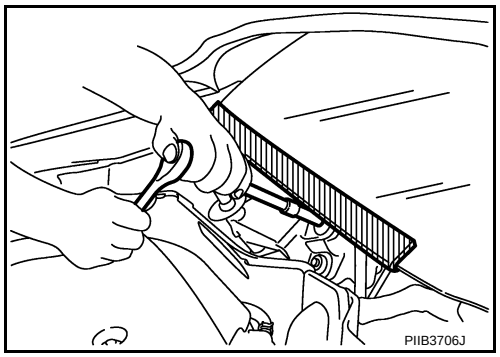
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000000992058

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000000992059

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the ″LOCK″ position.
- Always use CONSULT-II to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-II.

Precaution for On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000000992060

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

- **Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to an open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)**
- **Be sure to route and secure the harnesses properly after work. Interference of the harness with a bracket, etc. may cause the MIL to light up due to a short circuit.**
- **Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to a malfunction of the EVAP system or fuel injection system, etc.**
- **Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.**

Precaution for TCM and CVT Assembly Replacement

INFOID:0000000000992061

CAUTION:

- **Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-III, and then turn ignition switch OFF.)**
- **When replacing CVT assembly or TCM, refer to the pattern table below and erase the EEPROM in the TCM if necessary.**

EEPROM ERASING PATTERNS

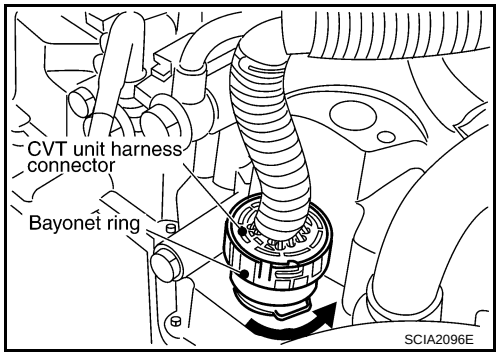
CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000000992062

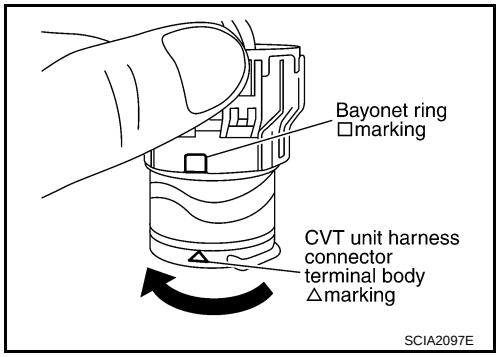
REMOVAL

Rotate bayonet ring counterclockwise, pull out CVT unit harness connector upward and remove it.

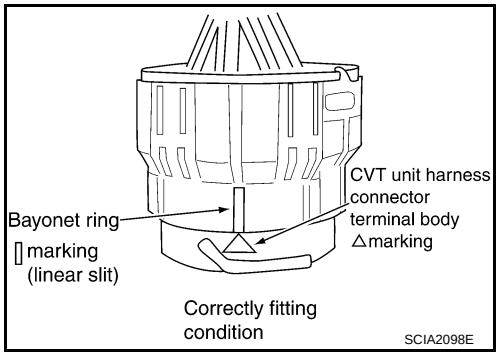


INSTALLATION

1. Align CVT unit harness connector terminal body marking with bayonet ring marking, insert CVT unit harness connector, and then rotate bayonet ring clockwise.

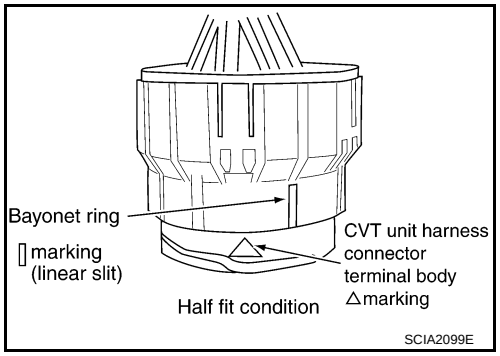


2. Rotate bayonet ring clockwise until CVT unit harness connector terminal body marking is aligned with the bayonet ring marking (linear slit) as shown.



CAUTION:

- **Securely align △ marking on CVT unit harness connector terminal body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.**
- **Do not mistake the slit of bayonet ring for other dent portion.**

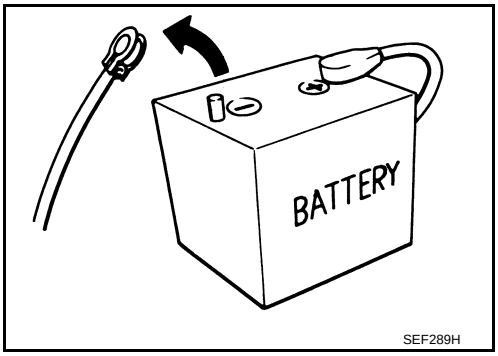


Precaution

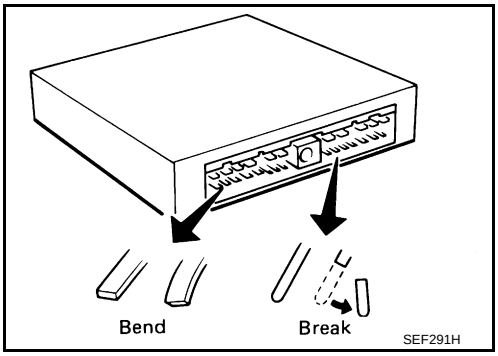
INFOID:0000000000992063

NOTE:
If any malfunction occurs in the RE0F09A model transaxle, replace the entire transaxle assembly.

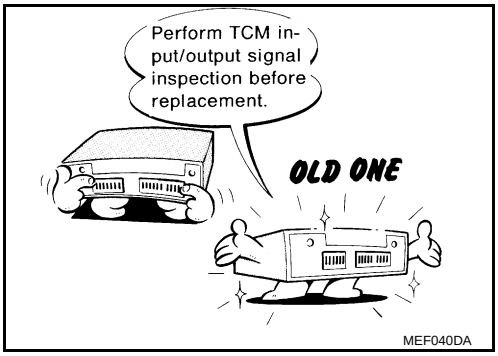
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



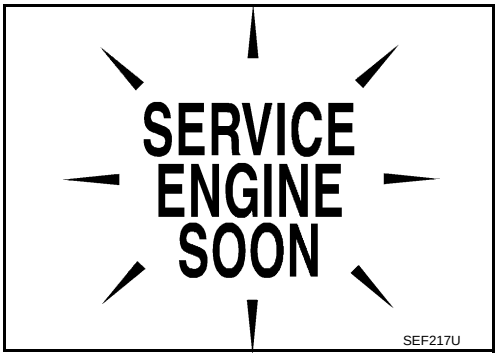
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not.** **TM-181, "Reference Value"**.



- **After performing each TROUBLE DIAGNOSIS, perform “DTC Confirmation Procedure”.**
  If the repair is completed the DTC should not be displayed in the “DTC Confirmation Procedure”.
- Always use the specified brand of CVT fluid. Refer to TM-235, "General Specification".
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.



Service Notice or Precaution

INFOID:0000000000992064

CVT FLUID COOLER SERVICE

If CVT fluid contains friction material (clutches, brakes, etc.), or if a CVT is replaced, inspect and clean the CVT fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For CVT fluid cooler cleaning procedure, refer to TM-216, "Cleaning". For radiator replacement, refer to CO-36, "Removal and Installation".

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator lamp (MIL). Refer to the table on TM-112, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-110, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-118, "Diagnosis Description".

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-58.**

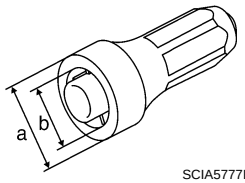
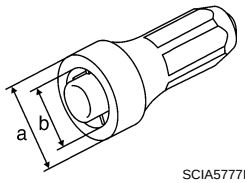
PREPARATION

PREPARATION

Special Service Tool

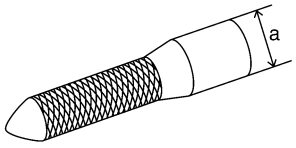
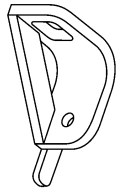
INFOID:0000000000992065

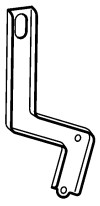
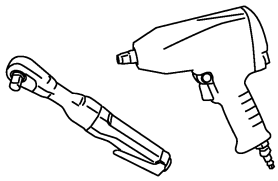
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
— (OTC3492) Oil pressure gauge set  SCIA7531E	Measuring line pressure
— (J-47244) Drift a: 65.83 mm (2.59 in) dia. b: 53.85 mm (2.12 in) dia.  SCIA5777E	Installing differential side oil seal • Transaxle case side (left)
ST33400001 (J-47005) Drift a: 69.85 mm (2.75 in) dia. b: 49.53 mm (1.95 in) dia.  SCIA5777E	Installing differential side oil seal • Converter housing side (right)

Commercial Service Tool

INFOID:0000000000992066

Tool number Tool name	Description
31197CA000 Drive plate location guide a: 14 mm (0.55 in) dia.  SCIA2013E	Installing transaxle assembly
31093CA000 Slinger  SCIA2014E	Removing and installing transaxle assembly

Tool number Tool name	Description
31092CA000 Slinger  SCIA2015E	Removing and installing transaxle assembly
Power tool  PBIC0190E	Loosening nuts and bolts

ON-VEHICLE MAINTENANCE

CVT FLUID

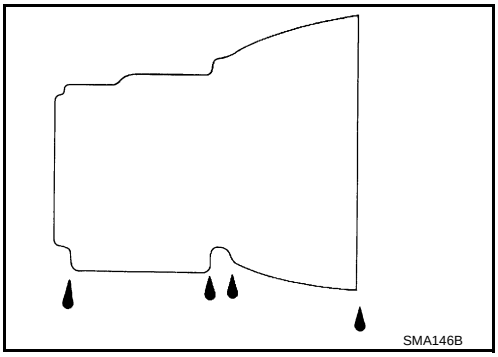
Inspection

INFOID:0000000000992067

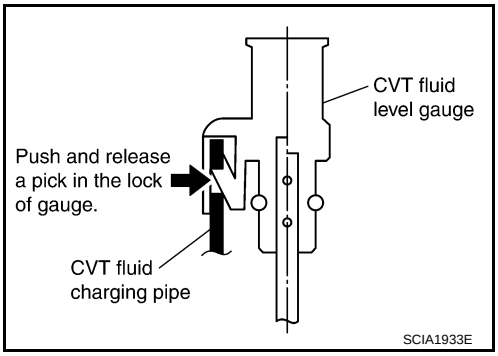
CHECKING CVT FLUID

Fluid level should be checked with the fluid warmed up to 50 to 80°C (122 to 176°F). The fluid level check procedure is as follows:

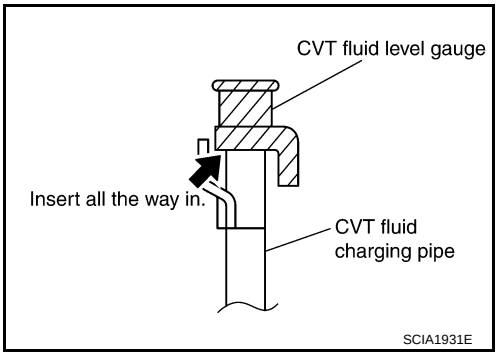
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
3. Park the vehicle on a level surface.
4. Apply parking brake firmly.
5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.



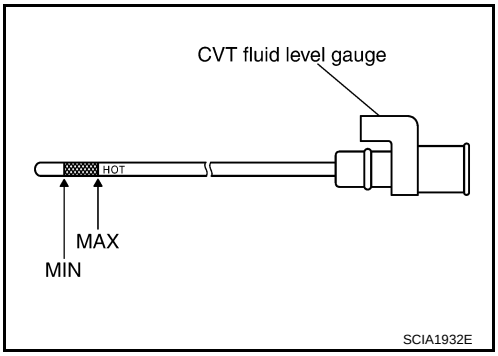
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



7. Wipe fluid off the CVT fluid level gauge. Insert the CVT fluid level gauge rotating 180° from the originally installed position, then securely push the CVT fluid level gauge until it meets the top end of the CVT fluid charging pipe.
   CAUTION:
   When wiping away the CVT fluid level gauge, always use lint-free paper, not a cloth rag.



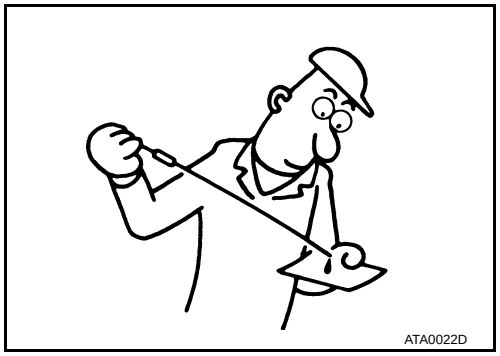
8. Place the selector lever in “P” or “N” and make sure the fluid level is within the specified range.
   CAUTION:
   When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until it is securely locked.



CVT FLUID CONDITION

Check CVT fluid condition.

- If CVT fluid is very dark or smells burned, check operation of CVT. Flush cooling system after repair of CVT.
- If CVT fluid contains frictional material (clutches, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to CO-36, "Removal and Installation" and TM-216, "Cleaning".



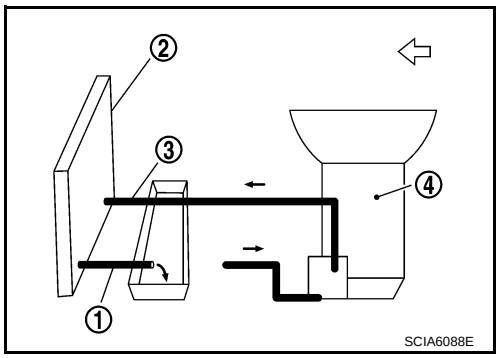
Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within CVT	Replace the CVT fluid and check for improper operation of the CVT.

Changing

INFOID:0000000000992068

1. Warm up CVT fluid by driving the vehicle for 10 minutes.

- ⇦: Vehicle front
- Radiator (2)
- CVT fluid cooler hose (inlet side) (3)
- Transaxle assembly (4)



2. Drain CVT fluid from CVT fluid cooler hose (outlet side) (1) and refill with new CVT fluid at CVT fluid charging pipe with the engine running at idle speed.
3. Refill until new CVT fluid comes out from CVT fluid cooler hose (outlet side) (1).
   About 30 to 50% extra fluid will be required for this procedure.

CVT fluid:

Genuine NISSAN CVT Fluid NS-2

Fluid capacity:

Approx. 10.2 ℓ (10-6/8 US qt, 9 Imp qt)

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".**

4. Check fluid level and condition. Refer to TM-214, "Inspection".

FLUID CLOOR CLEANING

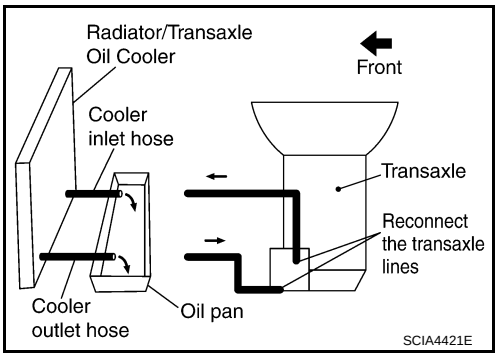
Cleaning

INFOID:0000000000992069

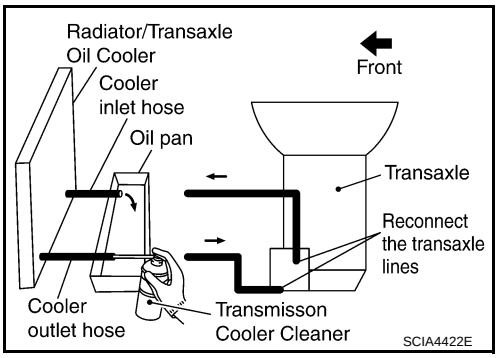
Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.
Metal debris and friction material, if present, can be trapped or become deposit in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

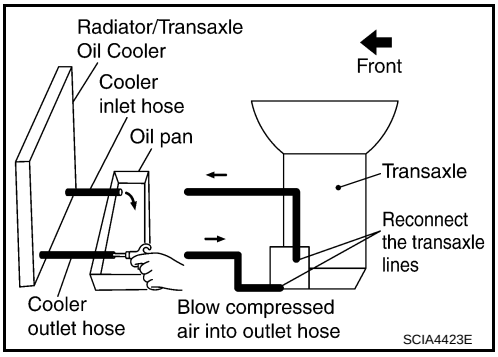
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
   NOTE:
   Replace the cooler hoses if rubber material from the hose remains on the tube fitting.
4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.



5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**
6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.



7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
9. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
12. Remove the banjo bolts.



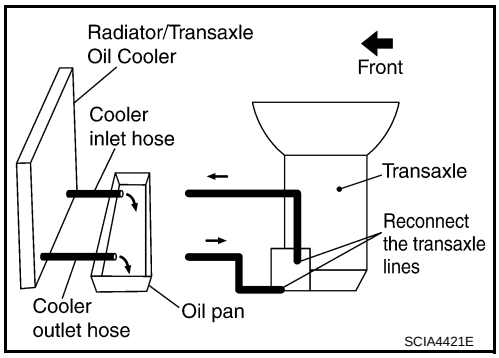
13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.

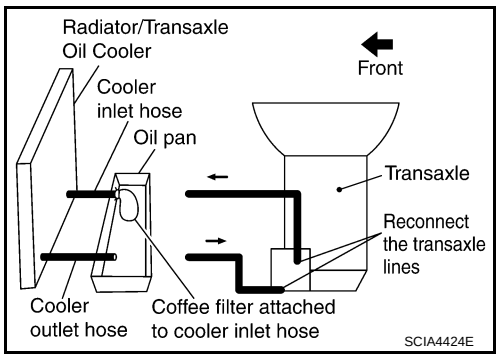
17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

CVT FLUID COOLER DIAGNOSIS PROCEDURE

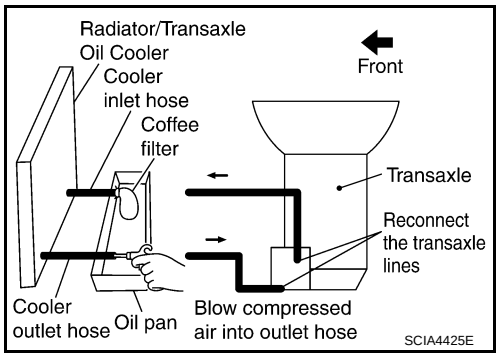
NOTE:
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**
4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.





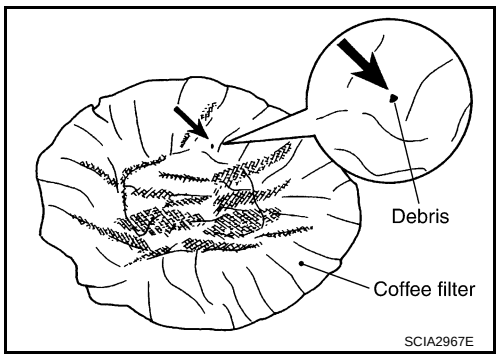
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".



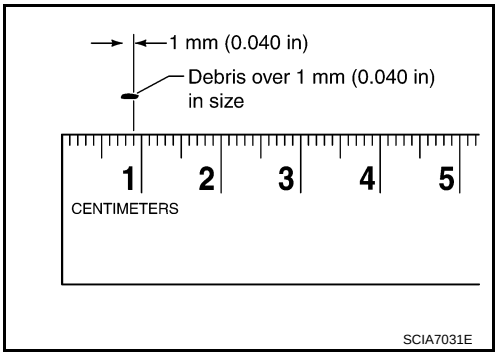
CVT FLUID COOLER INSPECTION PROCEDURE

1. Inspect the coffee filter for debris.

a. If small metal debris less than 1 mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the CVT fluid cooler/radiator can be re-used and the procedure is ended.



b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the fluid cooler is not serviceable. The radiator/ fluid cooler must be replaced and the inspection procedure is ended.



CVT FLUID COOLER FINAL INSPECTION

After performing all procedures, ensure that all remaining oil is cleaned from all components.

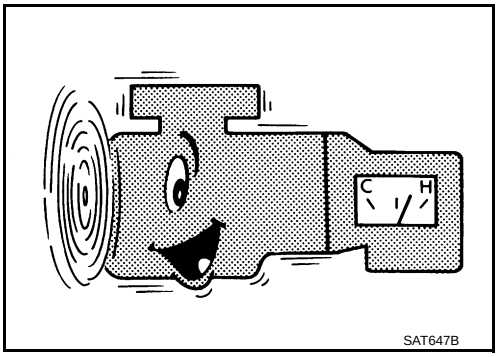
STALL TEST

Inspection and Judgment

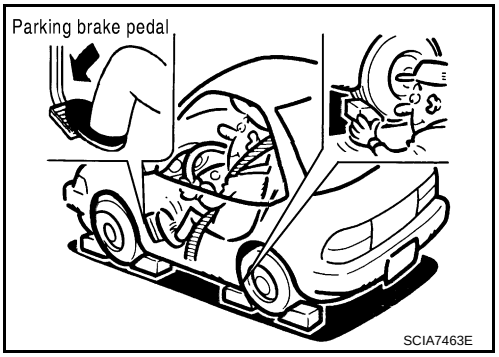
INFOID:0000000000992070

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of CVT fluid. Replenish if necessary.

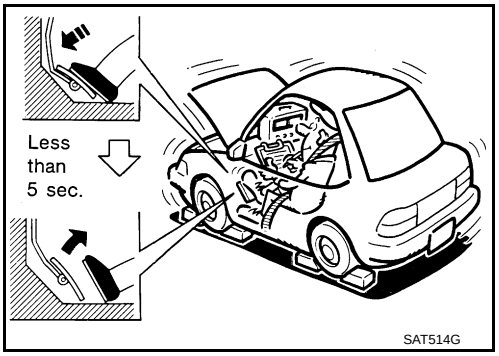


3. Securely engage the parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   - **It is good practice to mark the point of specified engine rpm on indicator.**
5. Start engine, apply foot brake, and place selector lever in “D” position.



6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.
   CAUTION:
   Do not hold down the accelerator pedal for more than 5 seconds during this test.

   Stall speed: 2,700 – 3,250 rpm



8. Move the selector lever to the “N” position.
9. Cool down the CVT fluid.
   CAUTION:
   Run the engine at idle for at least 1 minute.
10. Repeat steps 6 through 9 with selector lever in “R” position.

JUDGMENT

	Selector lever position		Expected problem location
	"D"	"R"	
Stall rotation	H	O	• Forward clutch
	O	H	• Reverse brake
	L	L	• Engine and torque converter one-way clutch
	H	H	• Line pressure low • Primary pulley • Secondary pulley • Steel belt

O: Stall speed within standard value position.

H: Stall speed is higher than standard value.

L: Stall speed is lower than standard value.

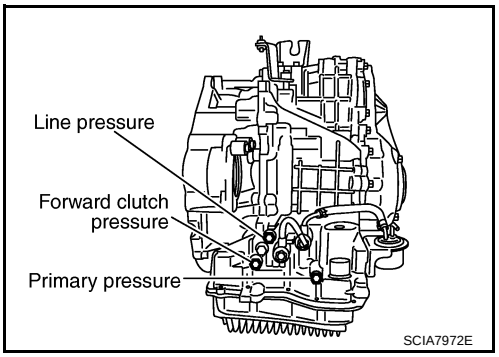
LINE PRESSURE TEST

Inspection and Judgment

INFOID:0000000000992071

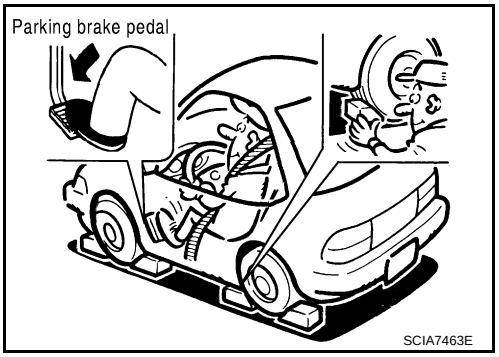
INSPECTION

Line Pressure Test Port

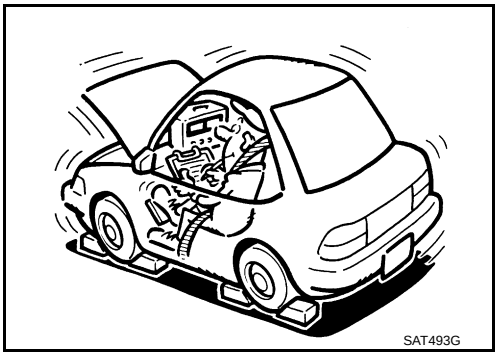


Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary.
   NOTE:
   The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.
3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge [special service tool: — (OTC3492)].
   CAUTION:
   When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.
4. Securely engage the parking brake so that the tires do not turn.



5. Start the engine, and then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to "STALL TEST".**
6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.



: 7.5 N·m (0.77 kg-m, 66 in-lb)

CAUTION:
- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Line Pressure

Engine speed	Line pressure kPa (kg/cm^2, psi)
	"R", "D" positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)*1

*1: Reference values

JUDGMENT

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example • Accelerator pedal position signal malfunction • CVT fluid temperature sensor malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking in OFF state, filter clog, cut line) • Pressure regulator valve or plug sticking
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • TCM malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (shorting, sticking in ON state) • Pressure regulator valve or plug sticking
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

ROAD TEST

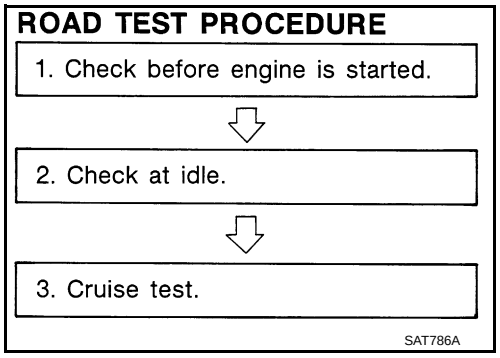
Description

INFOID:0000000000992072

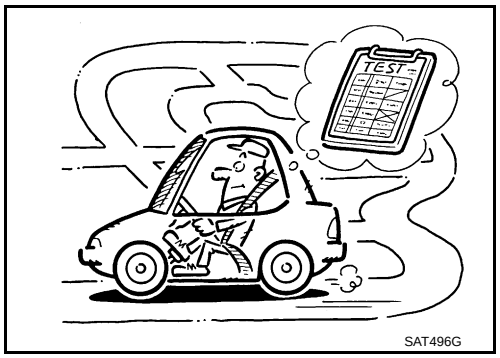
DESCRIPTION

- The purpose of the test is to determine overall performance of CVT and analyze causes of problems.
- The road test consists of the following three parts:

1. “Check Before Engine Is Started” TM-223.
2. “Check at Idle” TM-224.
3. “Cruise Test” TM-225.



- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test.



CONSULT-III SETTING PROCEDURE

- Using CONSULT-III, perform a cruise test and record the result.
- Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Touch “MAIN SIGNALS” to set recording condition.
3. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
4. Touch “START”.
5. When performing cruise test. Refer to TM-225, "Cruise Test".
6. After finishing cruise test part, touch “RECORD”.
7. Touch “STORE”.
8. Touch “BACK”.
9. Touch “DISPLAY”.
10. Touch “PRINT”.
11. Check the monitor data printed out.

Check before Engine Is Started

INFOID:0000000000992073

1. CHECK CVT INDICATOR LAMP

1. Park vehicle on flat surface.
2. Move selector lever to “P” position.
3. Turn ignition switch OFF. Wait at least 5 seconds.
4. Turn ignition switch ON. (Do not start engine.)

Does shift position indicator come on for about 2 seconds?

YES >> 1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items.
Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".
3. Go to TM-224, "Check at Idle".

NO >> Stop “Road Test”. Refer to TM-196, "Symptom Table".

Check at Idle

INFOID:0000000000992074

1.CHECK STARTING THE ENGINE

1. Park vehicle on flat surface.
2. Move selector lever to “P” or “N” position.
3. Turn ignition switch OFF.
4. Turn ignition switch to “START” position.

Is engine started?

YES >> GO TO 2..
NO >> Stop “Road Test”. Refer to TM-196, "Symptom Table".

2.CHECK STARTING THE ENGINE

1. Turn ignition switch ON.
2. Move selector lever to “D”, “M” or “R” position.
3. Turn ignition switch to “START” position.

Is engine started?

YES >> Stop “Road Test”. Refer to TM-196, "Symptom Table".
NO >> GO TO 3..

3.CHECK “P” POSITION FUNCTION

1. Move selector lever to “P” position.
2. Turn ignition switch OFF.
3. Release parking brake.
4. Push vehicle forward or backward.
5. Apply parking brake.

Does vehicle move when it is pushed forward or backward?

YES >> Refer to TM-196, "Symptom Table". Continue “Road Test”.
NO >> GO TO 4..

4.CHECK “N” POSITION FUNCTION

1. Start engine.
2. Move selector lever to “N” position.
3. Release parking brake.

Does vehicle move forward or backward?

YES >> Refer to TM-196, "Symptom Table". Continue “Road Test”.
NO >> GO TO 5..

5.CHECK SHIFT SHOCK

1. Apply foot brake.
2. Move selector lever to “R” position.

Is there large shock when changing from “N” to “R” position?

YES >> Refer to TM-196, "Symptom Table". Continue “Road Test”.
NO >> GO TO 6..

6.CHECK “R” POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7..
NO >> Refer toTM-196, "Symptom Table". Continue “Road Test”.

7.CHECK “D” POSITION FUNCTION

Move selector lever to “D” position and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to TM-225, "Cruise Test".
NO >> Stop “Road Test”. Refer to TM-196, "Symptom Table".

Cruise Test

INFOID:0000000000992075

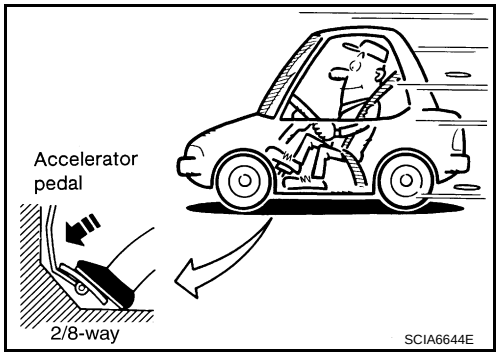
1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

1. Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature.

CVT fluid operating temperature: 50 – 80°C (122 – 176°F)

2. Park vehicle on flat surface.
3. Move selector lever to “P” position.
4. Start engine.
5. Move selector lever to “D” position.
6. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to TM-235, "Vehicle Speed When Shifting Gears".



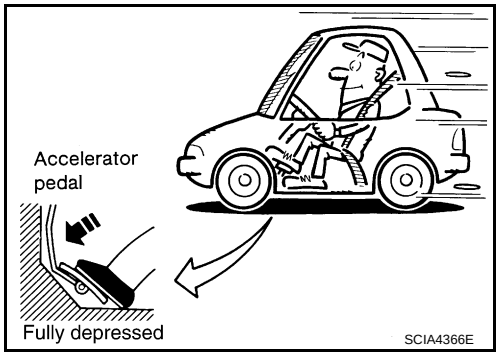
OK or NG

OK >> GO TO 2..
NG >> Refer to TM-196, "Symptom Table". Continue “Road Test”.

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to TM-235, "Vehicle Speed When Shifting Gears".



OK or NG

OK >> GO TO 3..
NG >> Refer to TM-196, "Symptom Table". Continue “Road Test”.

3. CHECK MANUAL MODE FUNCTION

Move to manual mode from “D” position.

Does it switch to manual mode?

YES >> GO TO 4..
NO >> Refer to TM-196, "Symptom Table". Continue “Road Test”.

4. CHECK SHIFT-UP FUNCTION

During manual mode driving, is upshift from M1 → M2 → M3 → M4 → M5 → M6 performed?

Read the gear position. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 5..
NO >> Refer to TM-196, "Symptom Table". Continue “Road Test”.

5. CHECK SHIFT-DOWN FUNCTION

During manual mode driving, is downshift from M6 → M5 → M4 → M3 → M2 → M1 performed?

Read the gear position. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 6..
NO >> Refer to TM-196, "Symptom Table". Continue “Road Test”.

6.CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to TM-112, "CONSULT-III Function (TRANSMISSION)".

NO >> Refer to TM-196, "Symptom Table". then continue trouble diagnosis.

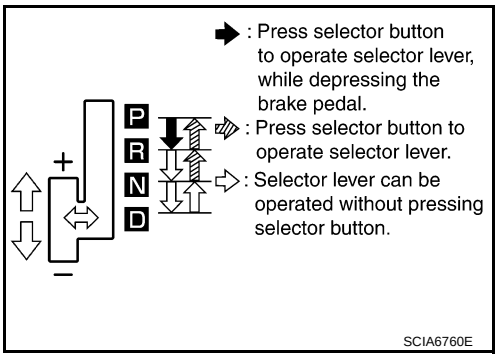
CVT POSITION

Inspection and Adjustment

INFOID:0000000000992076

INSPECTION

1. Place selector lever in “P” position, and turn ignition switch ON (engine stop).
2. Make sure that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in “P”, “R”, or “N” position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when selector lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the “R” position when in the “P” or “N” position.
8. Confirm the engine can only be started with the selector lever in the “P” and “N” positions.



9. Make sure transaxle is locked completely in “P” position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “-” sides, and check that set shift position changes.

ADJUSTMENT

CAUTION:

Apply parking brake before adjustment.

1. Loosen the control cable nut.
2. Place the manual lever and the selector lever in “P” position.
3. Tighten control cable nut to specified torque.

Control cable nut: **Refer to TM-230, "Exploded View".**

CAUTION:

Secure the manual lever when tightening control cable nut. Make sure the manual lever stays in the "P" position.

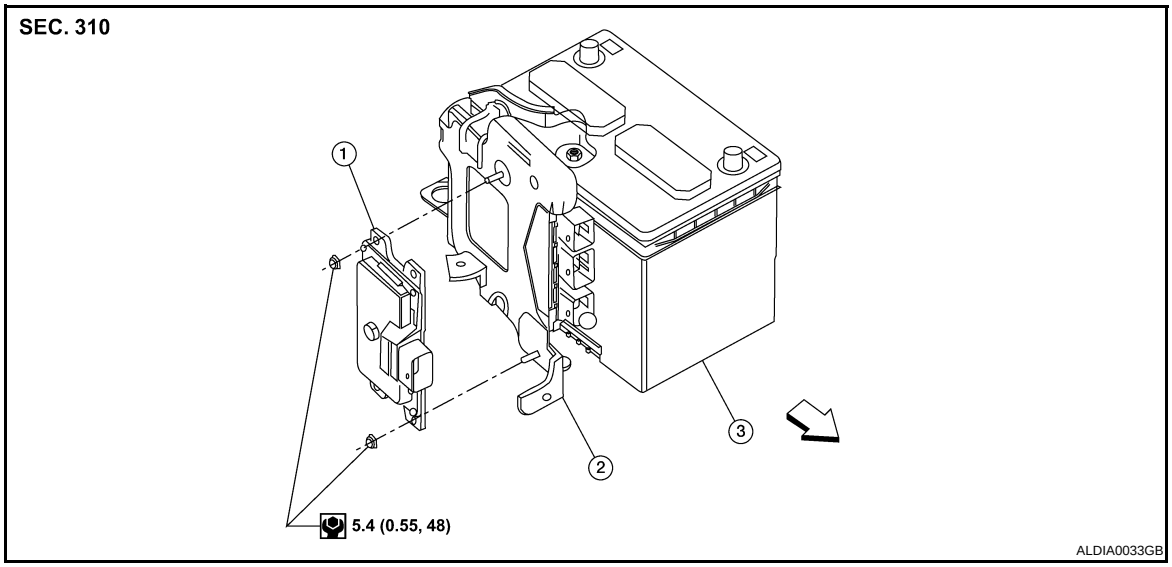
4. Check the operation of the CVT.

ON-VEHICLE REPAIR

TRANSMISSION CONTROL MODULE

Exploded View

INFOID:0000000000992077



1. TCM
2. Bracket
3. Battery

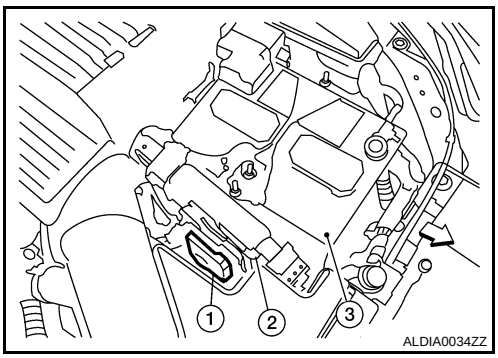
⇐: Front

Removal and Installation

INFOID:0000000000992078

REMOVAL

1. Disconnect the battery negative terminal. Refer to PG-66, "Removal and Installation".
2. Remove the fresh air intake tube (upper) EM-24, "Removal and Installation".
3. Disconnect the TCM harness connector.
4. Remove the TCM (1) from the bracket (2).
   - ⇦: Front
   - Battery (3)



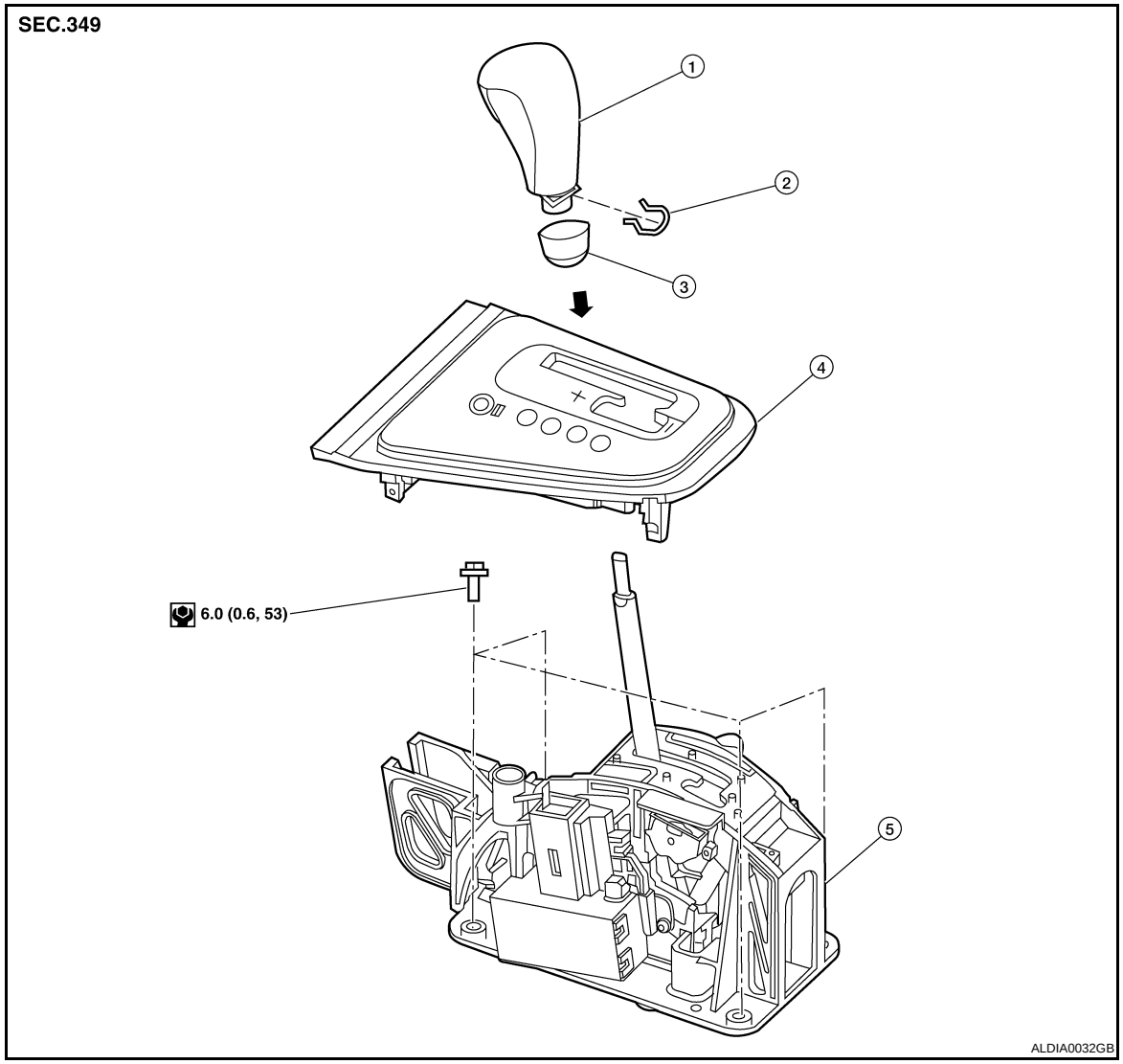
INSTALLATION

Installation is in the reverse order of removal.

CONTROL DEVICE

Exploded View

INFOID:0000000000992079



1. Control lever knob
2. Lock pin
3. Knob cover
4. Control device selector plate
5. Control device assembly

Removal and Installation

INFOID:0000000000992080

REMOVAL

1. Remove the center console assembly. Refer to IP-16, "Disassembly and Assembly".
2. Disconnect the control cable from the control device assembly.
3. Disconnect the CVT device harness connector from the control device assembly.
4. Remove the control device assembly bolts and the control device assembly.

INSTALLATION

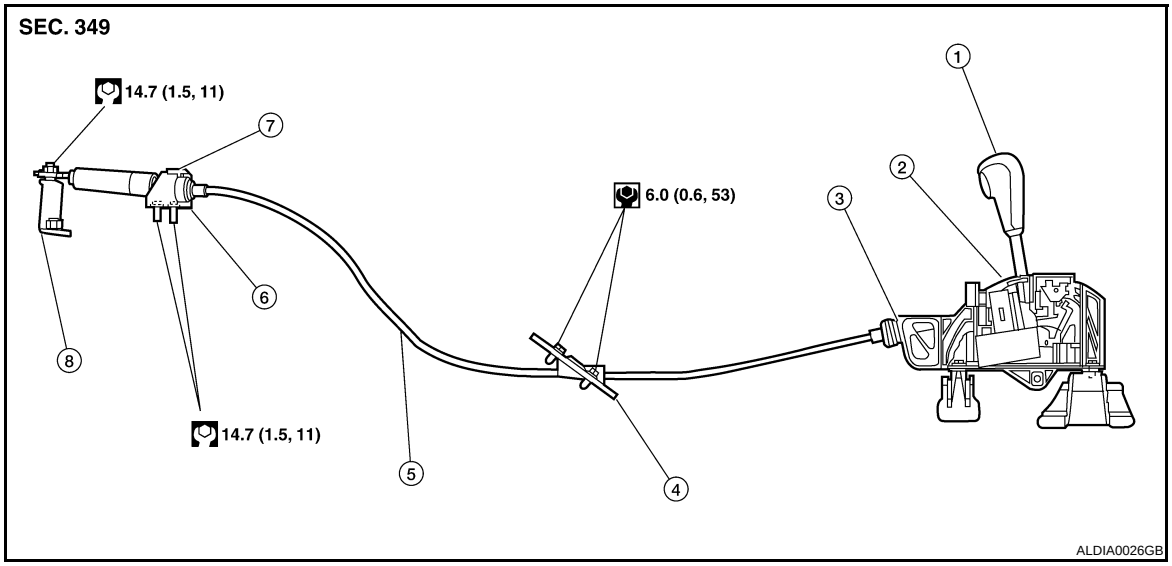
Installation is in the reverse order of removal.

- When installing the control cable to the control device assembly, make sure that the control cable is fully pressed in with the ribbed surface facing upward.
- After installation is completed, adjust and check CVT position. Refer to TM-227, "Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000000992081



1. Control lever
2. Control device assembly
3. Control cable socket
4. Retainer grommet
5. Control cable
6. Bracket
7. Lock plate
8. Manual lever

Removal and Installation

INFOID:0000000000992082

REMOVAL

1. Shift control lever to "P".
2. Remove the air filter assembly. Refer to EM-24, "Removal and Installation".
3. Remove the control cable nut and control cable from the manual lever.
4. Remove the lock plate and the control cable from the bracket.
5. Remove the center console. Refer to IP-16, "Disassembly and Assembly".
6. Remove the bracket covering the retainer grommet.
7. Remove the retainer grommet bolts and the retainer grommet.
8. Remove the control cable from the control device assembly.
9. Remove the control cable from the vehicle.

INSTALLATION

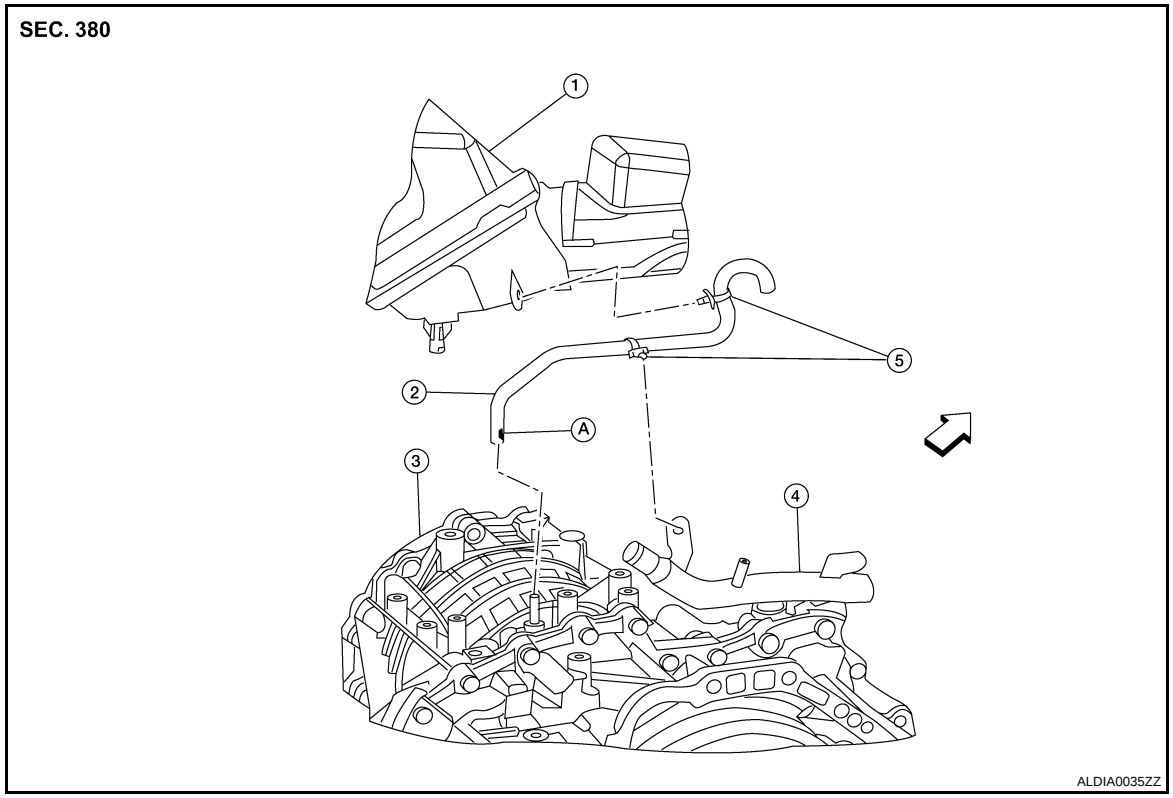
Installation is in the reverse order of removal.

- When installing the control cable to the control device assembly, make sure that the control cable socket is fully pressed into the control device assembly, and the control cable end is fully pressed in with the ribbed surface facing upward.
- After installation is complete, adjust and check the CVT position. Refer to TM-227, "Inspection and Adjustment".

AIR BREATHER HOSE

Exploded View

INFOID:0000000000992083



1. Air cleaner
2. Air breather hose
3. Transaxle assembly
4. Heater pipe
5. Clip
A. Paint mark

⇐: Front

Removal and Installation

INFOID:0000000000992084

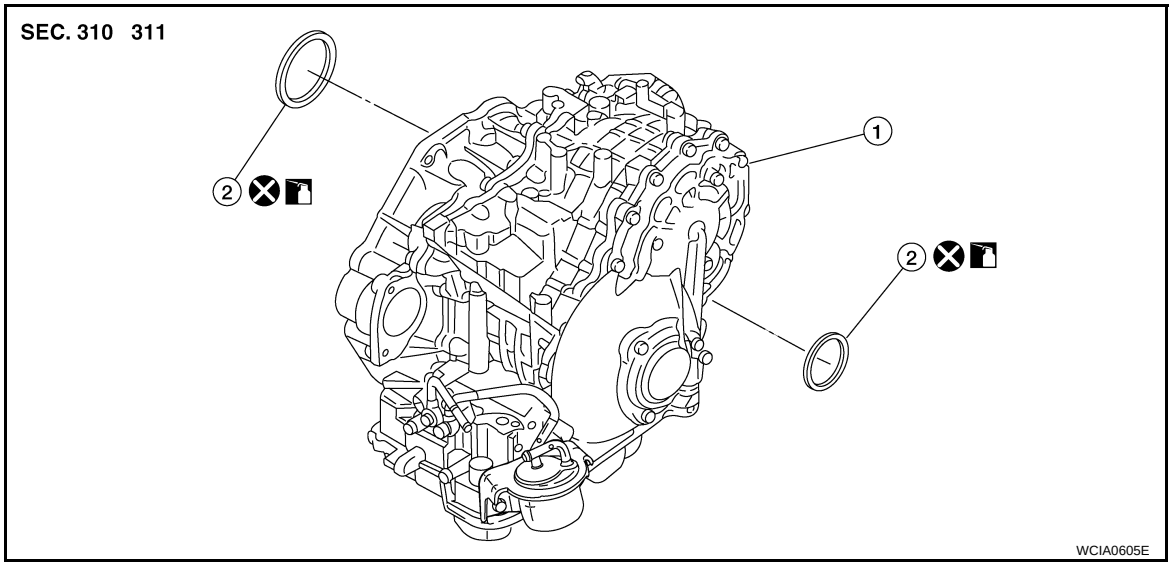
CAUTION:

- **Install air breather hose with paint mark facing front.**
- **Insert air breather hose onto air breather tube until overlap area reaches the spool.**
- **Install air breather hose to heater pipe and air cleaner case by fully inserting the clip.**
- **Make sure there are no pinched or restricted areas on air breather hose caused by bending or winding when installing it.**

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:0000000000992085



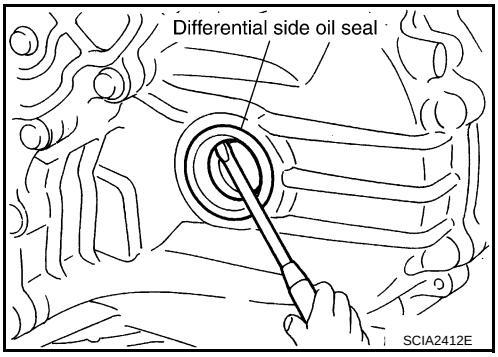
1. Transaxle assembly
2. Differential side oil seal
:NISSAN CVT Fluid NS-2

Removal and Installation

INFOID:0000000000992086

REMOVAL

1. Remove drive shaft assembly. Refer to FAX-9, "Removal and Installation (Left Side)" and FAX-10, "Removal and Installation (Right Side)".
2. Remove the differential side oil seal using suitable tool
CAUTION:
Do not scratch transaxle case or converter housing.



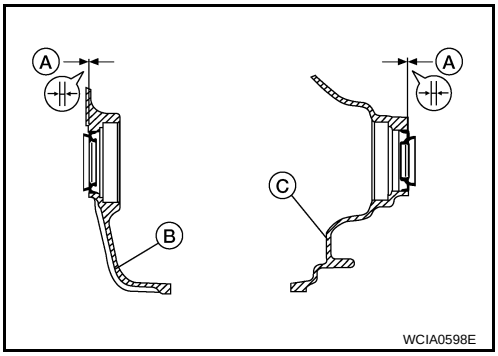
INSTALLATION

1. Drive the new differential side oil seal into the transaxle case side (B) and converter housing side (C) until it is flush using suitable tool.

Dimension A : 0 ± 0.5 (0 ± 0.02)

CAUTION:
- **Do not reuse differential side oil seals.**
- **Apply specified NISSAN CVT fluid to side oil seals.**

2. Install drive shaft assembly. Refer to FAX-9, "Removal and Installation (Left Side)" and FAX-10, "Removal and Installation (Right Side)".
3. Check CVT fluid level. Refer to TM-214, "Inspection".

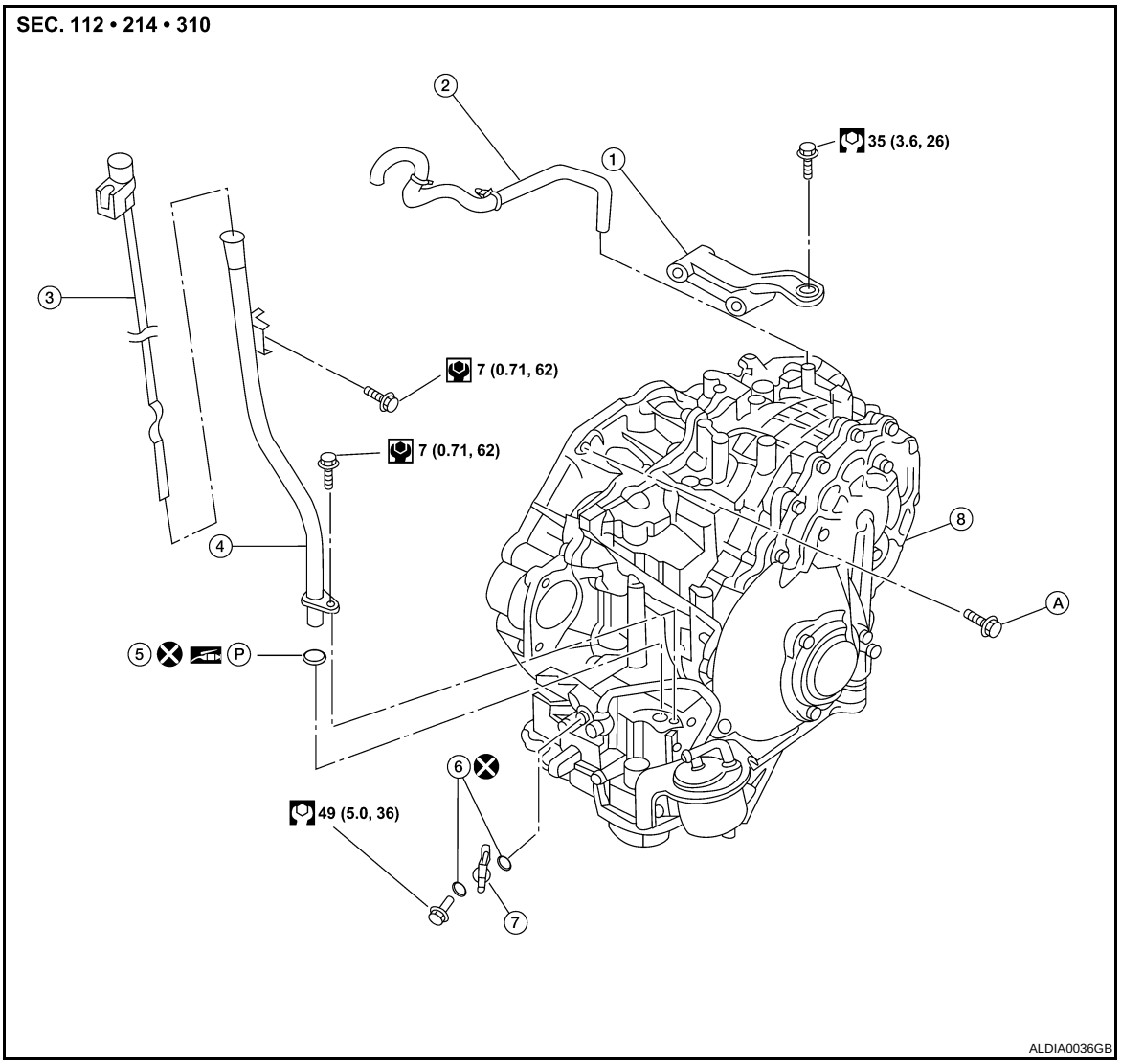


REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000000992087



1. Rear gusset
2. Air breather hose
3. CVT fluid level gauge
4. CVT fluid charging pipe
5. O-ring
6. Copper washer
7. Fluid cooler tube
8. Transaxle assembly
A. Refer to TM-233, "Removal and Installation".

Removal and Installation

INFOID:0000000000992088

REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to EM-72, "Removal and Installation".
   NOTE:
   Using paint, put matching marks on the drive plate and torque converter when removing the torque converter to drive plate nuts.
2. Disconnect the electrical connectors from the following:
   - CVT unit harness connector. Refer to TM-208, "Removal and Installation Procedure for CVT Unit Connector".
   - Secondary speed sensor

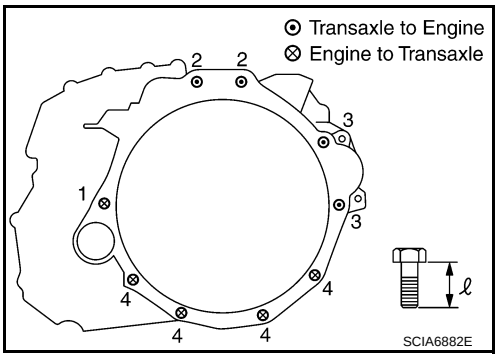
3. Remove the harness from the transaxle.
4. Remove the transaxle to engine and engine to transaxle bolts.
5. Remove the CVT fluid charging pipe.
6. Separate the transaxle from the engine.
7. If necessary, remove the following from the CVT:
   - Fluid cooler tube
   - Air breather hose
   - Brackets

INSTALLATION

Installation is in the reverse order of removal.

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 drive train components.**
- **Do not reuse O-rings.**
- **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 EM-51, "Removal and Installation".**
- **After 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.**
- When installing CVT assembly to the engine assembly, attach the bolts in accordance with the following standard.



Bolt No.	1	2	3	4
Number of bolts	1	2	2	4
Bolt length “ℓ”mm (in)	55 (2.17)	34 (1.54)	108 (4.25)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)			43 (4.4, 32)

- When installing the drive plate to torque converter nuts, tighten them temporarily. then tighten the nuts to the specified torque.
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to TM-214, "Inspection" and TM-227, "Inspection and Adjustment".
- When replacing the CVT assembly, erase EEP ROM in TCM.

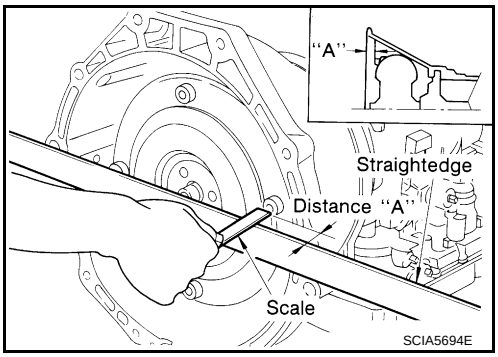
Inspection

INFOID:0000000000992089

Installation and Inspection of Torque Converter

- After inserting the torque converter to the CVT, be sure to check distance “A” to ensure it is within specifications.

Distance “A” : 14.0 mm (0.55 in) or more



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000000992090

Applied model		VQ35DE engine
		2WD
CVT model		RE0F09B
CVT assembly	Model code number	1XE0A
Transmission gear ratio	D position	Variable
	Reverse	1.766
	Final drive	5.173
Recommended fluid		NISSAN CVT Fluid NS-2*1
Fluid capacity		10.2 liter (10-6/8 US qt, 9 Imp qt)

CAUTION:
- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**

*1: Refer to MA-11, "Fluids and Lubricants".

Vehicle Speed When Shifting Gears

INFOID:0000000000992091

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
VQ35DE	8/8	“D” position	2,900 – 4,100	3,900 – 5,600
	2/8		900 – 2,000	1,000 – 2,000

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000000992092

Stall speed	2,700 – 3,250 rpm

Line Pressure

INFOID:0000000000992093

Engine speed	Line pressure kPa (kg/cm^2, psi)
	“R”, “D” positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)*1

*1: Reference values

Solenoid Valves

INFOID:0000000000992094

Name	Resistance (Approx.)	Terminal
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0 – 9.0 Ω	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	6 – 19 Ω	13

CVT Fluid Temperature Sensor

INFOID:0000000000992095

Name	Condition	CONSULT-III “DATA MONITOR” (Approx.)	Resistance (Approx.)
ATF TEMP SEN	20°C (68°F)	1.8 – 2.0 V	6.5 kΩ
	80°C (176°F)	0.6 – 1.0 V	0.9 kΩ

Primary Speed Sensor

INFOID:0000000000992096

Name	Condition	Data (Approx.)
Primary speed sensor	When driving [“M1” position, 20 km/h (12 MPH)]	660 Hz

Secondary Speed Sensor

INFOID:0000000000992097

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving [“D” position, 20 km/h (12 MPH)]	400 Hz

Removal and Installation

INFOID:0000000000992098

Distance between end of converter housing and torque converter	14.0 mm (0.55 in) or more

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

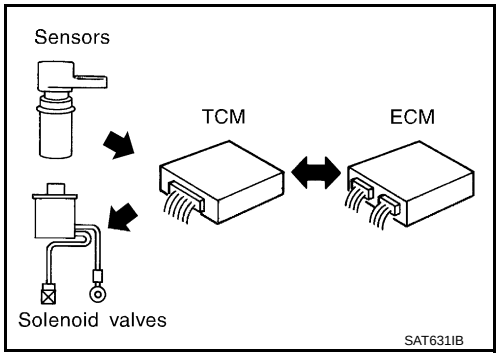
INFOID:0000000000992099

INTRODUCTION

The TCM receives a signal from the vehicle speed sensor, PNP switch and provides shift control or lock-up control via CVT solenoid valves.

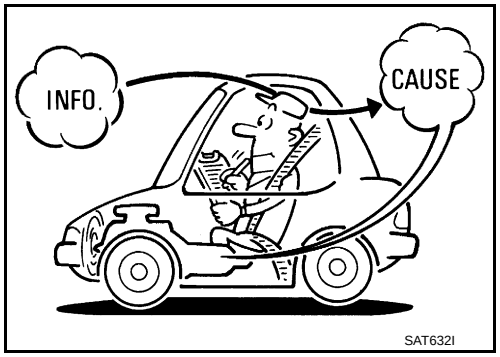
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

Input and output signals must always be correct and stable in the operation of the CVT system. The CVT system must be in good operating condition and be free of valve seizure, solenoid valve malfunction, etc.



It is much more difficult to diagnose an error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

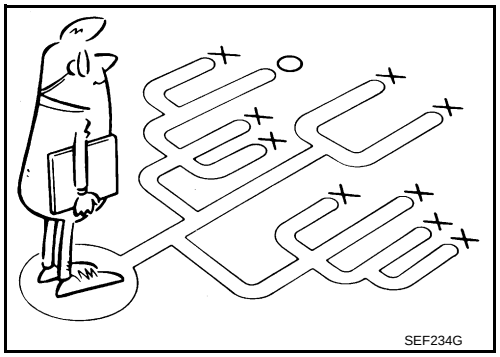
A visual check only may not find the cause of the errors. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the “DETAILED FLOW”.



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A “Diagnostic Work Sheet” as shown on the example (Refer to TM-238) should be used.

Start your diagnosis by looking for “conventional” errors first. This will help troubleshoot driveability errors on an electronically controlled engine vehicle.

Also check related Service bulletins.



DETAILED FLOW

1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using diagnosis worksheet. Refer to TM-238, "Diagnostic Work Sheet".

>> GO TO 2..

2. CHECK SYMPTOM 1

Check the following items based on the information obtained from the customer.

- Fail-safe. Refer to TM-347, "Fail-safe".
- CVT fluid inspection. Refer to TM-368, "Inspection".
- Line pressure test. Refer to TM-375, "Inspection and Judgment".

• Stall test. Refer to TM-373, "Inspection and Judgment".

>> GO TO 3..

3.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

• Record DTC.
• Erase DTC. Refer to TM-264, "Diagnosis Description".

Is any DTC detected?

YES >> GO TO 4..
NO >> GO TO 5..

4.PERFORM DIAGNOSTIC PROCEDURE

Perform “Diagnostic Procedure” for the displayed DTC.

>> GO TO 5..

5.CHECK SYMPTOM 2

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 6..
NO >> **INSPECTION END**

6.RODE TEST

1. Perform “RODE TEST”. Refer to TM-377, "Description".

>> GO TO 7..

7.CHECK SYMPTOM 3

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 2..
NO >> **INSPECTION END**

Diagnostic Work Sheet

INFOID:0000000000992100

INFORMATION FROM CUSTOMER

KEY POINTS

• **WHAT**..... Vehicle & CVT model
• **WHEN**..... Date, Frequencies
• **WHERE**..... Road conditions
• **HOW**..... Operating conditions, Symptoms

Customer name MR/MS	Model & Year	VIN
Trans. Model	Engine	Mileage
malfunction Date	Manuf. Date	In Service Date
Frequency	❑ Continuous ❑ Intermittent (times a day)	

Symptoms	❑ Vehicle does not move. (❑ Any position ❑ Particular position)	
	❑ No shift	
	❑ Lock-up malfunction	
	❑ Shift shock or slip (❑ N → D ❑ N → R ❑ Lock-up ❑ Any drive position)	
	❑ Noise or vibration	
	❑ No pattern select	
	❑ Others ( )	
Malfunction indicator lamp (MIL)	❑ Continuously lit	❑ Not lit

DIAGNOSTIC WORKSHEET

1	❑ Read the item on cautions concerning fail-safe and understand the customer's complaint.			TM-347
2	❑ CVT fluid inspection, stall test and line pressure test			
		❑ CVT fluid inspection		TM-368
			❑ Leak (Repair leak location.) ❑ State ❑ Amount	
		❑ Stall test		TM-373, TM-375
			❑ Torque converter one-way clutch ❑ Reverse brake ❑ Forward clutch ❑ Steel belt	❑ Engine ❑ Line pressure low ❑ Primary pulley ❑ Secondary pulley
		❑ Line pressure inspection - Suspected part:		
3	❑ Perform self-diagnosis.			TM-266
		Enter checks for detected items.		
4	❑ Perform road test.			TM-377
	4-1.	Check before engine is started		TM-377
	4-2.	Check at idle		TM-378
	4-3.	Cruise test		TM-379
5	❑ Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.			
6	❑ Perform all road tests and enter the checks again for the required items.			TM-377
7	❑ For any remaining NG items, perform the “diagnosis procedure” and repair or replace the malfunctioning parts.			
8	❑ Erase the results of the self-diagnosis from the TCM and the ECM.			TM-264, TM-266

INSPECTION AND ADJUSTMENT
ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT
ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Service After Replacing TCM and Transaxle Assembly

INFOID:0000000000992101

SERVICE AFTER REPLACING TCM AND TRANSAXLE ASSEMBLY

Perform the applicable service in the following sheet when replacing TCM or transaxle assembly.

CAUTION:

- **Do not start the engine until the service is completed.**
- **"TCM- POWER SUPPLY [P1701]" may be indicated soon after replacing TCM or transaxle assembly (after erasing the memory at the pattern B). Restart the self-diagnosis after erasing the self-diagnosis result. Check that no error is detected.**

TCM	CVT assembly	Service pattern
Replace the new unit.	Do not replace the unit.	"PATTERN A"
Do not replace the unit.	Replace the new or old unit.	"PATTERN B"
Replace the old unit.	Do not replace the unit.	
	Replace the new or old unit.	
Replace the new unit.	Replace the new or old unit.	"PATTERN C"

NOTE:

Old unit means that the unit has been already used for another vehicle.

PATTERN A

1. Shift the selector lever to "P" position after replacing TCM. Turn the ignition switch ON.
2. Check that the shift position indicator in the combination meter turns ON (It indicates approximately 1 or 2 seconds after turning the ignition switch ON.)
   - Check the following items if the shift position indicator does not turn ON. Repair or replace the shift position indicator if necessary.
   - The harness between TCM and ROM ASSY in the transaxle assembly is open or short.
   - Cable disconnected, loosen, or bent from the connector housing.

PATTERN B

1. Turn the ignition switch ON after replacing each part.
2. Start engine.
   CAUTION:
   Do not start the driving.
3. Select "DATA MONITOR".
4. Warm up the transaxle assembly until "ATF TEMP" indicates 48 (approximately 20°C) or more. Turn the ignition switch OFF.
5. Turn the ignition switch ON.
   CAUTION:
   Do not start engine.
6. Select "SELF-DIAG RESULTS".
7. Shift the selector lever to "R" position.
8. Depress slightly the accelerator pedal (Pedal angle: 2/8) while depressing the brake pedal.
9. Perform "ERASE".
10. Shift the selector lever to "R" position after replacing TCM. Turn the ignition switch OFF.
11. Wait approximately 10 minutes after turning the ignition switch OFF.
12. Turn the ignition switch ON while shifting the selector lever to "R" position.
    CAUTION:
    Do not start engine.
13. Select "Special function".
14. Check that the value on "CALIBRATION DATA" is same as the data after erasing "Calibration Data".

- Restart the procedure from step 3 if the values are not same.

15. Shift the selector lever to “P” position.
16. Check that the shift position indicator in the combination meter turns ON (It indicates approximately 1 or 2 seconds after shifting the selector lever to “P” position.)
    - Check the following items if the shift position indicator does not turn ON. Repair or replace the shift position indicator if necessary.
    - The harness between TCM and ROM ASSY in the transaxle assembly is open or short.
    - Cable disconnected, loosen, or bent from the connector housing.
    - Power supply and ground of TCM. Refer to TM-314.

Calibration Data

Data after deletion

Item name	Display value	Item name	Display value
UNIT CLB ID 1	0000	GAIN PL	256
UNIT CLB ID 2	0000	OFFSET PL	40
UNIT CLB ID 3	0000	OFFSET2 PL	0
UNIT CLB ID 4	0000	MAP NO SEC	32
UNIT CLB ID 5	0000	GAIN SEC	256
UNIT CLB ID 6	0000	OFFSET SEC	40
MAP NO LU	33	OFFSET2 SEC	0
GAIN LU	256	MAP NO SL	32
OFFSET LU	40	GAIN SL	256
OFFSET2 LU	0	OFFSET SL	40
MAP NO PL	32	OFFSET2 SL	0

PATTERN C

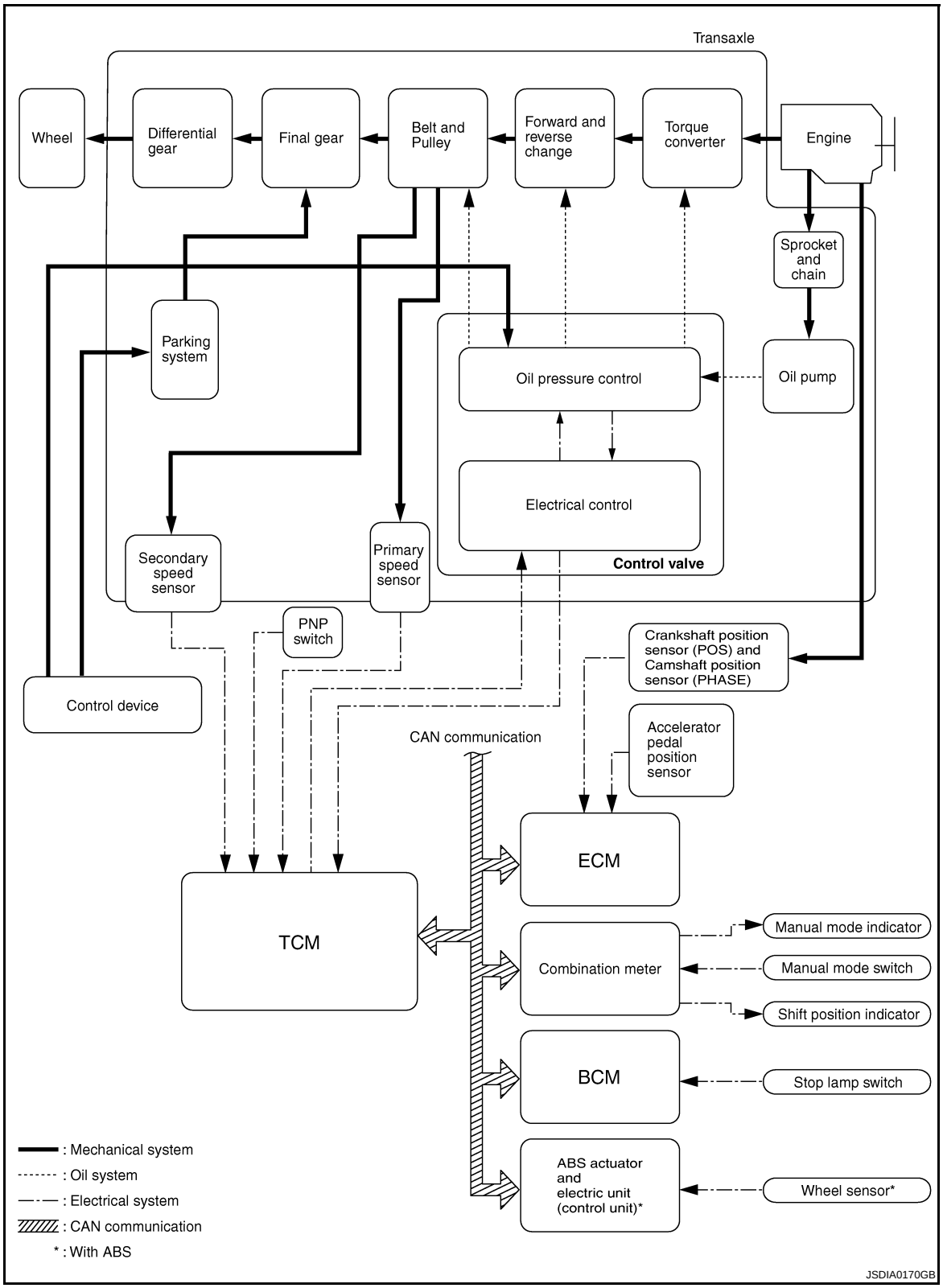
1. Replace the transaxle assembly first, and then replace TCM.
2. Perform the service of “PATTERN A”.
   (Perform the service of “PATTERN B” if TCM is replaced first.)

FUNCTION DIAGNOSIS

CVT SYSTEM

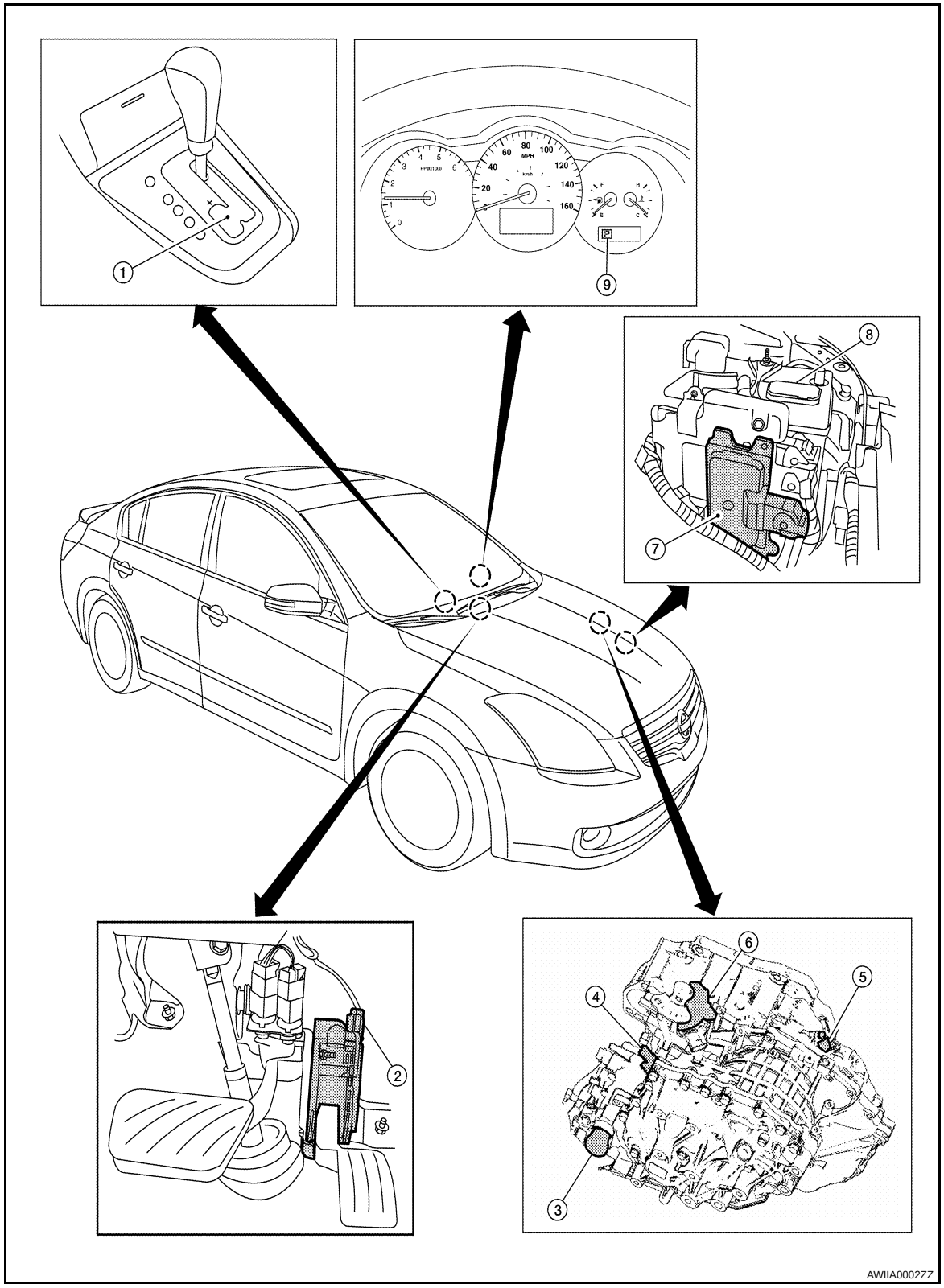
System Diagram

INFOID:0000000000992102



Component Parts Location

INFOID:0000000000992103

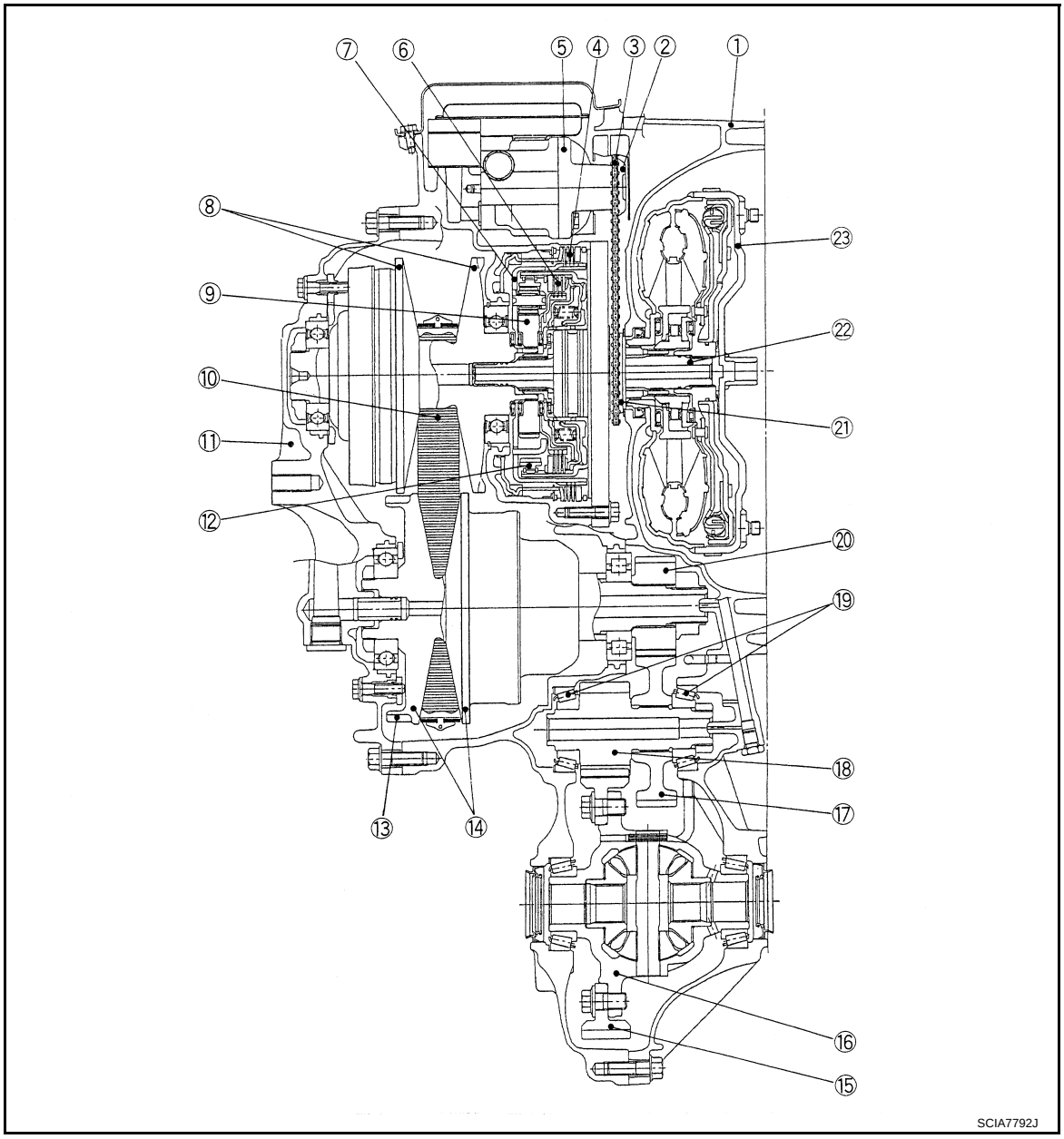


1. Control device assembly
2. Accelerator pedal position (APP) sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

MECHANICAL SYSTEM

Cross-Sectional View

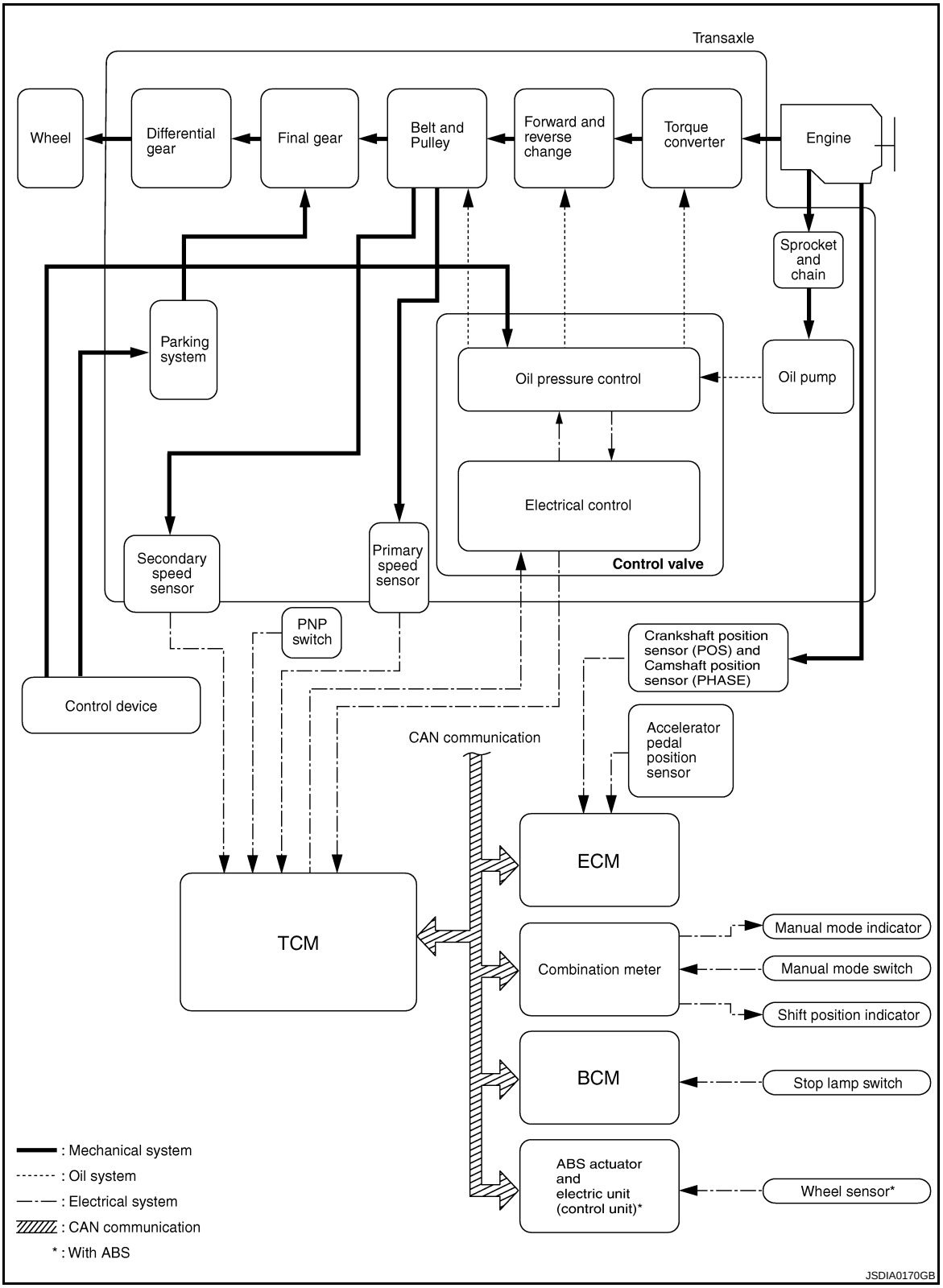
INFOID:0000000000992104



1. Converter housing
2. Driven sprocket
3. Chain
4. Reverse brake
5. Oil pump
6. Forward clutch
7. Planetary carrier
8. Primary pulley
9. Sun gear
10. Steel belt
11. Side cover
12. Internal gear
13. Parking gear
14. Secondary pulley
15. Final gear
16. Differential case
17. Idler gear
18. Reduction gear
19. Taper roller bearing
20. Output gear
21. Drive sprocket
22. Input shaft
23. Torque converter

System Diagram

INFOID:0000000000992105



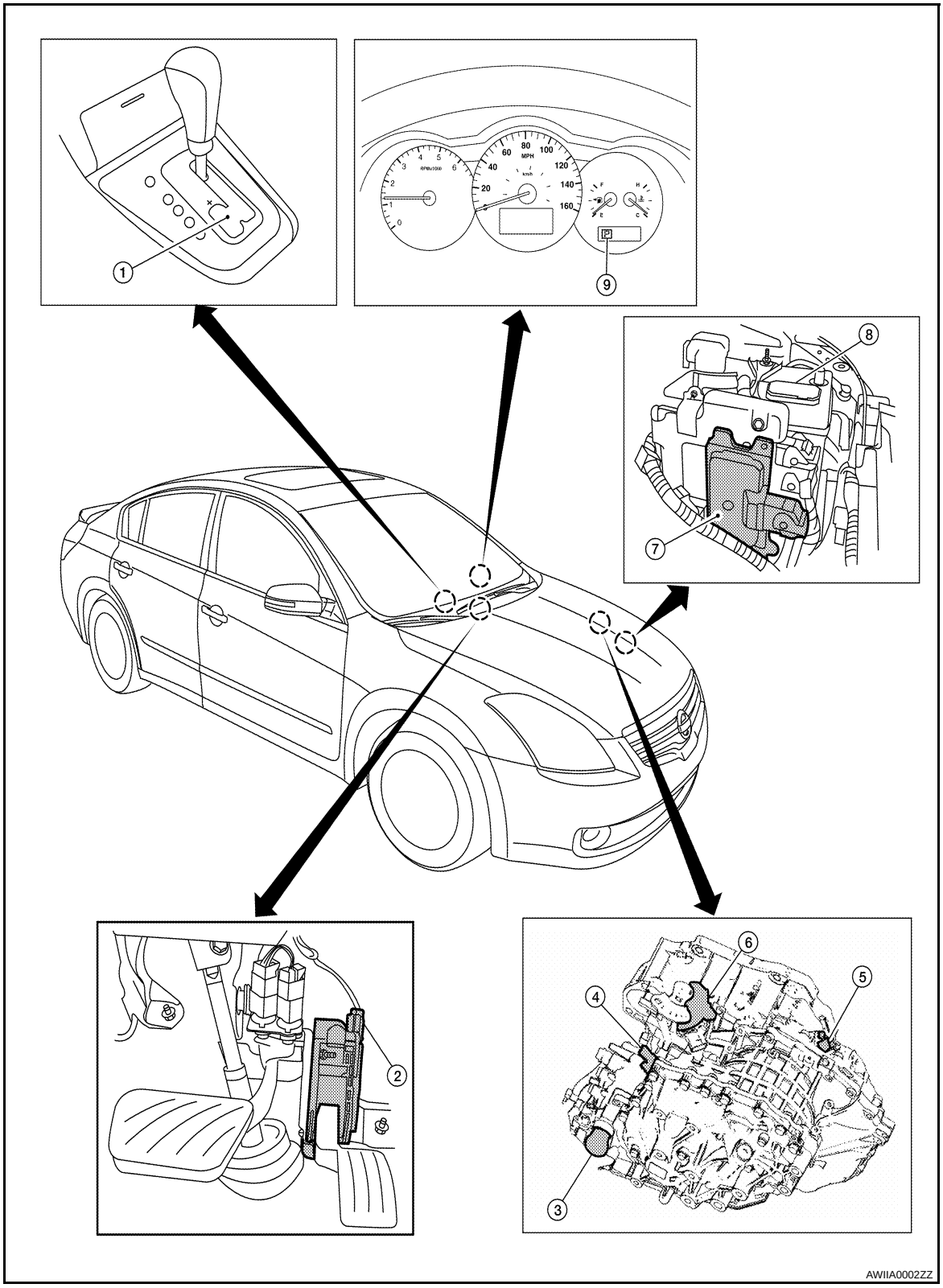
System Description

INFOID:0000000000992106

Transmits the power from the engine to the drive wheel.

Component Parts Location

INFOID:0000000000992107



1. Control device assembly
2. Accelerator pedal position sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

Component Description

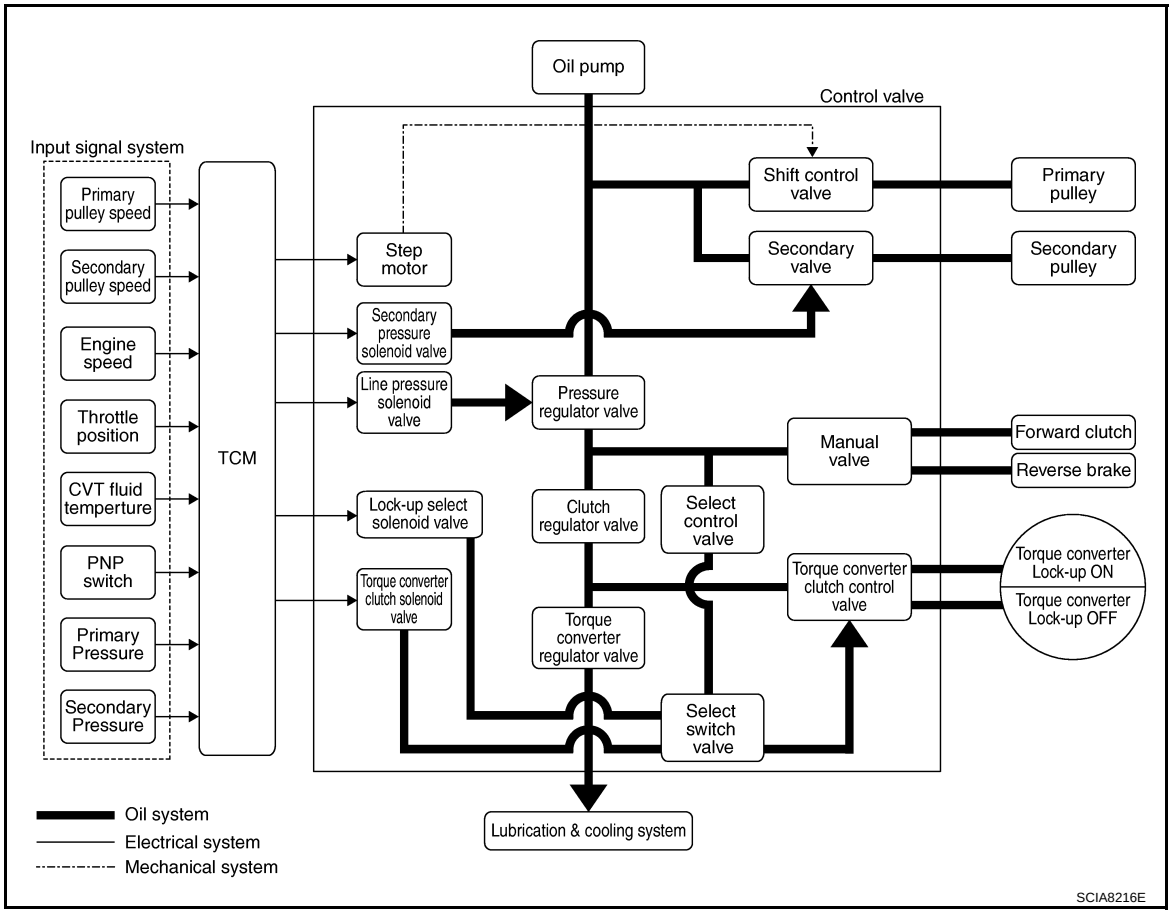
INFOID:0000000000992108

Item	Function
Torque converter	The torque converter is the device that increases the engine torque as well as the conventional A/T and transmits it to the transaxle.
Oil pump	The efficiency of pump discharge rate at low-rpm and the optimization at high-rpm have been increased through the oil pump drive chain by adopting a vane-type oil pump controlled by the engine. Discharged oil from oil pump is transmitted to the control valve. It is used as the oil of primary and secondary pulley operation and the oil of clutch operation and the lubricant for each part.
Planetary gear	Perform the transmission of drive power and the switching of forward/backward movement.
Forward clucth	
Reverse brake	
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel star wheels are placed continuously and the belt is guided with the multilayer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.
Secondary pulley	
Steel belt	
Output gear	The drive power from the secondary pulley returns the deceleration gears [primary deceleration (output gear/idler gear pair) and secondary deceleration (reduction gear/final gear pair)]. It is transmitted from differential to drive wheel.
Idler gear	
Reduction gear	
Final gear	
Differential	
Manual shaft	The parking rod rotates the parking pole and the parking pole engages with the parking gear when the manual shaft is in P position. As a result the parking gear and the output axis are fixed.
Parking rod	
Parking pawl	
Parking gear	

HYDRAULIC CONTROL SYSTEM

System Diagram

INFOID:0000000000992109



System Description

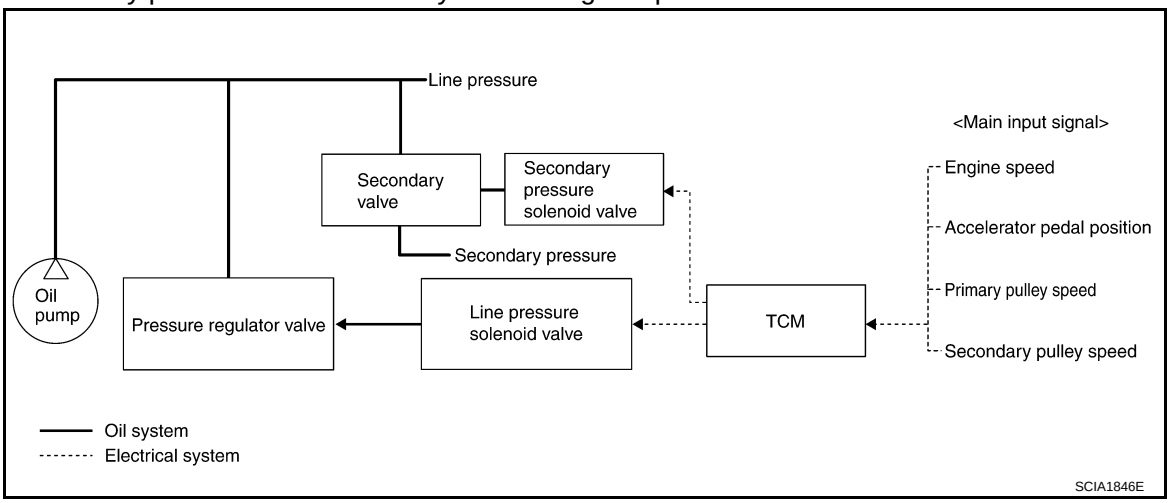
INFOID:0000000000992110

The hydraulic control mechanism consists of the oil pump directly driven by the engine, the hydraulic control valve that controls line pressure and transmission, and the input signal line.

LINE PRESSURE AND SECONDARY PRESSURE CONTROL

- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid valve and secondary pressure solenoid valve.

- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state. Secondary pressure is controlled by decreasing line pressure.



Nomal Control

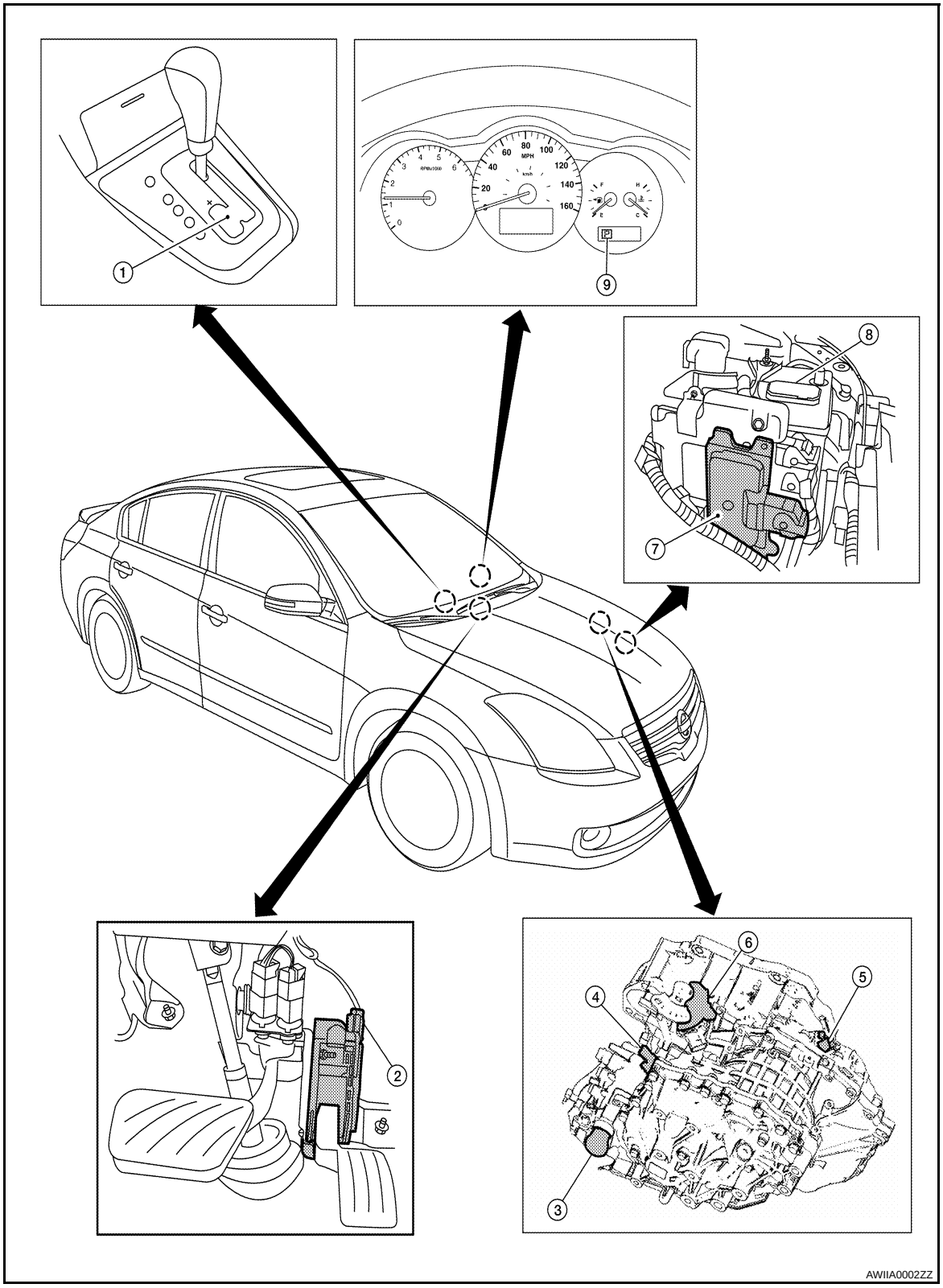
Optimize the line pressure and secondary pressure, depending on driving conditions, on the basis of the throttle position, the engine speed, the primary pulley (input) revolution speed, the secondary pulley (output) revolution speed, the brake signal, the PNP switch signal, the lock-up signal, the voltage, the target gear ratio, the fluid temperature, and the fluid pressure.

Feedback Control

When controlling the normal fluid pressure or the selected fluid pressure, the secondary pressure can be set more accurately by using the fluid pressure sensor to detect the secondary pressure and controlling the feedback.

Component Parts Location

INFOID:0000000000992111



1. Control device assembly
2. Accelerator pedal position sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

Component Description

INFOID:0000000000992112

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.
TCC control valve	• Activates or deactivate the lock-up. • Lock-up smoothly by opening lock-up operation excessively.
TCC solenoid valve	TM-293
Shift control valve	Controls flow-in/out of line pressure from the primary pulley depending on the stroke difference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
Secondary pressure solenoid valve	TM-301
Line pressure solenoid valve	TM-295
Step motor	TM-326
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	Switches torque converter clutch solenoid valve control pressure use to torque converter clutch control valve or select control valve.
Lock-up select solenoid valve	TM-323
Primary speed sensor	TM-281
Secondary speed sensor	TM-284
PNP switch	TM-281
Primary pulley	TM-246
Secondary pulley	
Forward clutch	
Torque converter	

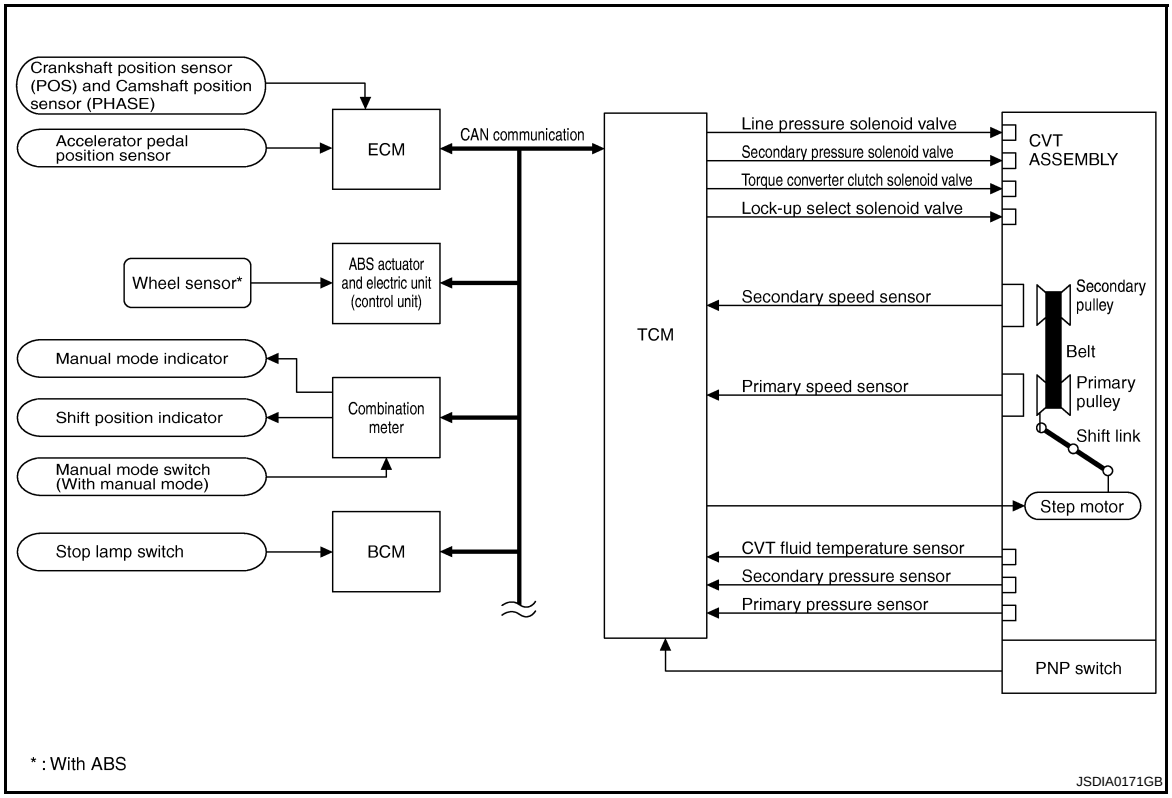
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Judges the vehicle driving status according to the signal from each sensor and controls the non-step transmission mechanism properly.
Accelerator pedal position sensor	TM-316

CONTROL SYSTEM

System Diagram

INFOID:0000000000992113



System Description

INFOID:0000000000992114

The function of the TCM is to:
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, and lock-up operation.
- Send required output signals to the step motor and the respective solenoids.

CONTROL SYSTEM OUTLINE

The CVT senses vehicle operating conditions through various sensors. It always controls the optimum shift position and reduces shifting and lock-up shocks.

SENSORS (or SIGNAL)		TCM		ACTUATORS
PNP switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Manual mode signal Stop lamp switch signal Primary speed sensor Secondary speed sensor Primary pressure sensor Secondary pressure sensor	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system On board diagnosis	⇒	Step motor Torque converter clutch solenoid valve Lock-up select solenoid valve Line pressure solenoid valve Secondary pressure solenoid valve Manual mode indicator Shift position indicator CVT indicator lamp Starter relay

*: Without manual mode.

INPUT/OUTPUT SIGNAL OF TCM

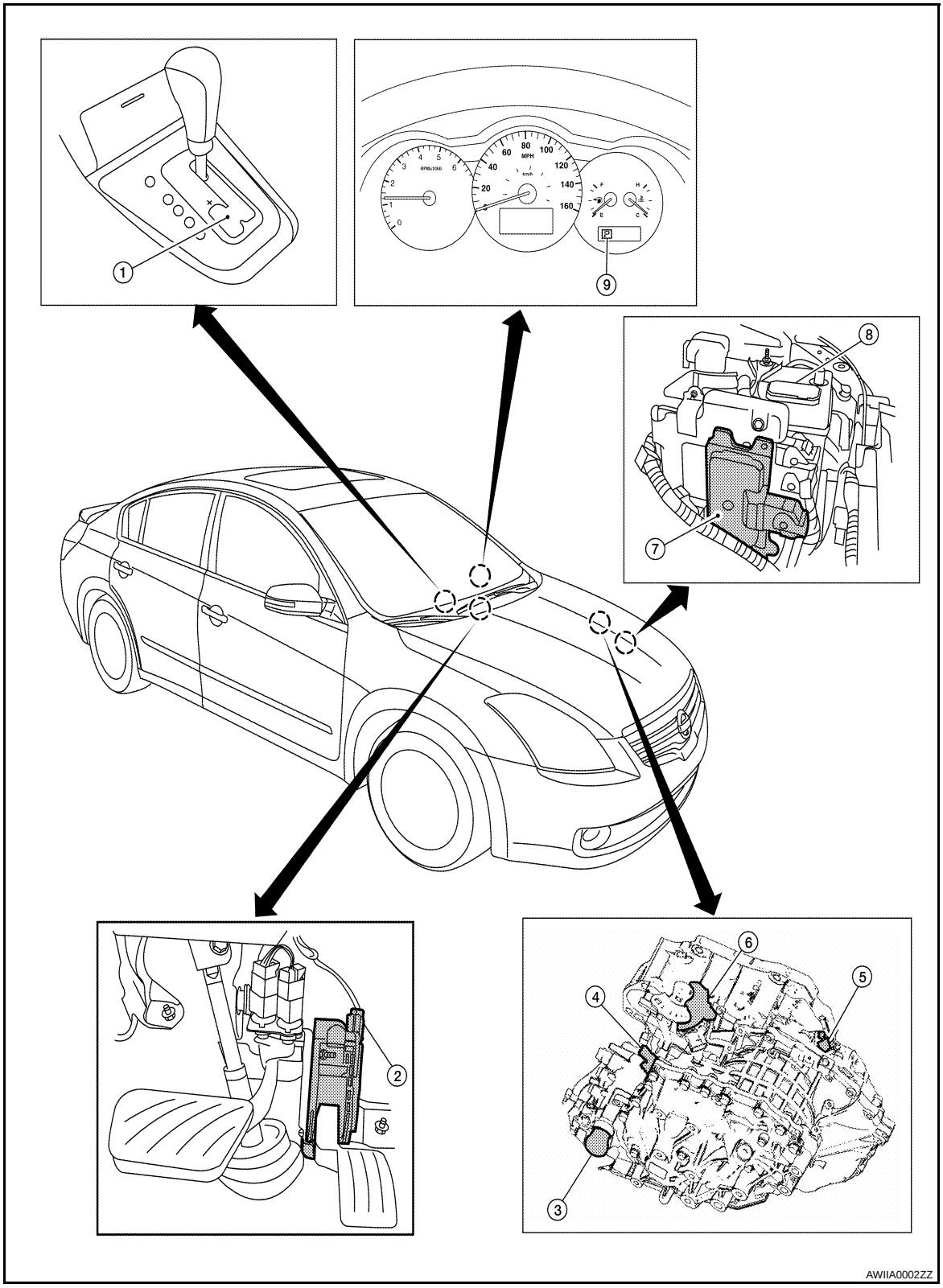
Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function(*2)
Input	PNP switch	X	X	X	X	X	X
	Accelerator pedal position signal (*1)	X	X	X	X	X	X
	Closed throttle position signal(*1)	X		X	X	X	
	Engine speed signal(*1)	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Manual mode signal(*1)	X		X	X	X	X
	Stop lamp switch signal(*1)	X		X	X	X	
	Primary speed sensor	X		X	X	X	X
	Secondary speed sensor	X	X	X	X	X	X
	Primary pressure sensor	X		X			
	Secondary pressure sensor	X		X			X
Output	Step motor			X			X
	TCC solenoid valve		X		X		X
	Lock-up select solenoid valve		X		X		X
	Line pressure solenoid valve	X	X	X			X
	Secondary pressure solenoid valve	X		X			X

*1: Input by CAN communications.

*2: If these input and output signals are defferent, the TCM triggers the fail-safe function.

Component Parts Location

INFOID:0000000000992115



1. Control device assembly
2. Accelerator pedal position sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

Component Description

INFOID:0000000000992116

TRANSAXLE ASSEMBLY

Name	Function
PNP switch	TM-276
CVT fluid temperature sensor	TM-279
Primary speed sensor	TM-281
Secondary speed sensor	TM-284
Primary pressure sensor	TM-310
Secondary pressure sensor	TM-306
Step motor	TM-326
TCC solenoid valve	TM-291
Lock-up select solenoid valve	TM-323
Line pressure solenoid valve	TM-295
Secondary pressure solenoid valve	TM-299

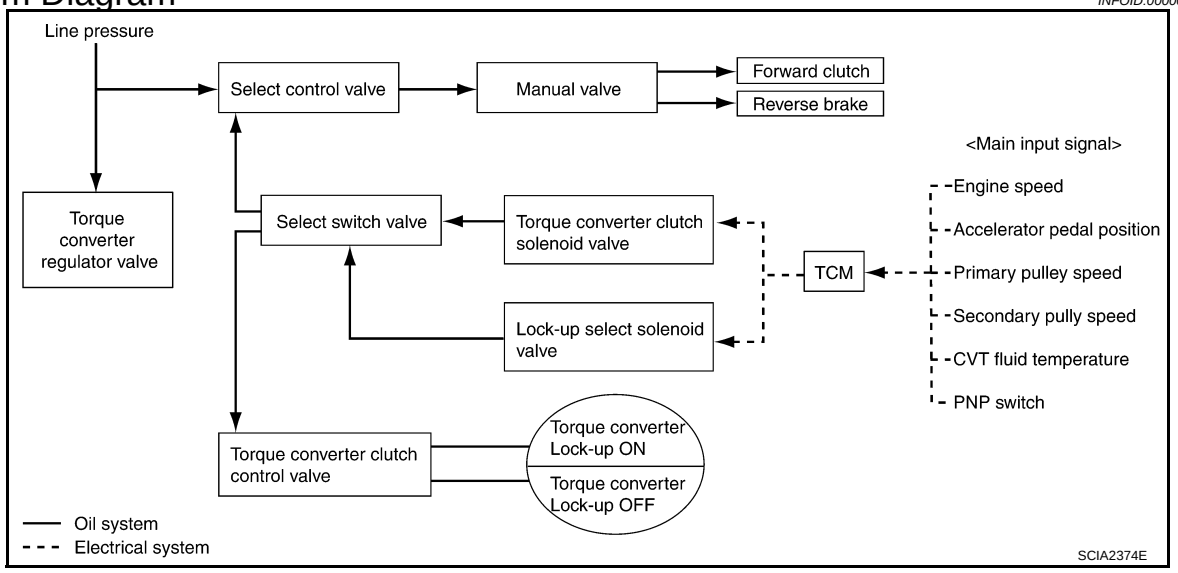
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Optimally controls continuously variable transmission system by judging driving conditions based on signals from each sensor.
Stop lamp switch	TM-274

LOCK-UP AND SELECT CONTROL SYSTEM

System Diagram

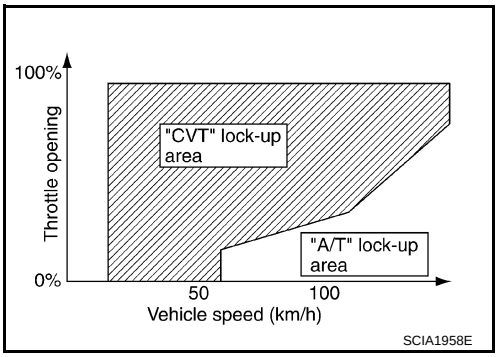
INFOID:0000000000992117



System Description

INFOID:0000000000992118

- The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
- The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM. The torque converter clutch control valve engages or releases the torque converter clutch piston.
- When shifting between “N” (“P”) ⇔ “D” (“R”), torque converter clutch solenoid controls engagement power of forward clutch and reverse brake.
- The lock-up applied gear range was expanded by locking up the torque converter at a lower vehicle speed than conventional CVT models.



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock-up Released

In the lock-up released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lock-up apply pressure is drained.
In this way, the torque converter clutch piston is not coupled.

Lock-up Applied

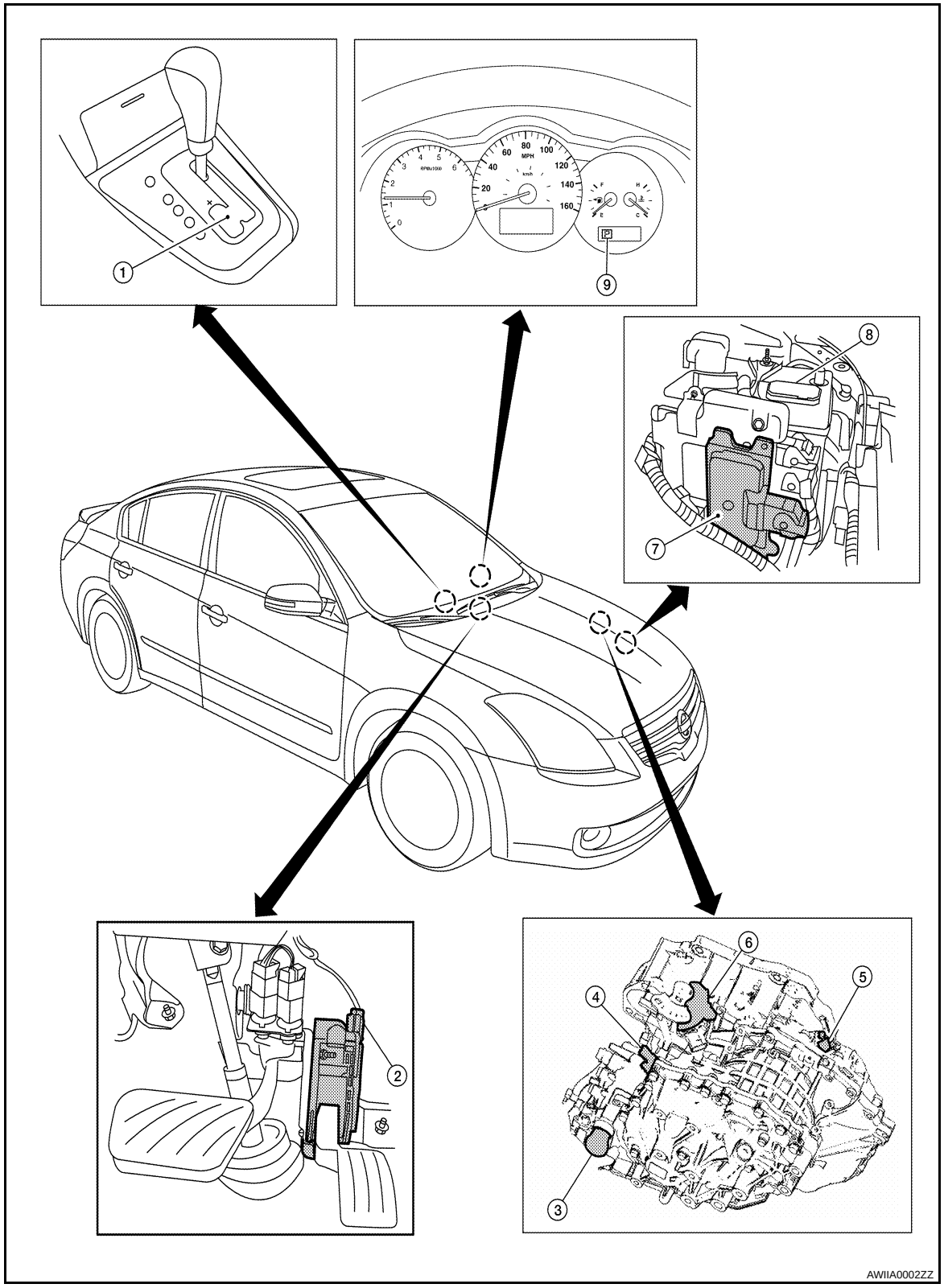
In the lock-up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid and lock-up apply pressure is generated.
In this way, the torque converter clutch piston is pressed and coupled.

Select Control

When shifting between “N” (“P”) ⇔ “D” (“R”), optimize the operating pressure on the basis of the throttle position, the engine speed, and the secondary pulley (output) revolution speed to lessen the shift shock.

Component Parts Location

INFOID:0000000000992119



1. Control device assembly
2. Accelerator pedal position sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

Component Description

INFOID:0000000000992120

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	TM-250
TCC control valve	
Select control valve	
Select switch valve	
Manual valve	
TCC solenoid valve	TM-291
Lock-up select solenoid valve	TM-323
Primary speed sensor	TM-281
Secondary speed sensor	TM-284
CVT fluid temperature sensor	TM-279
PNP switch	TM-276
Forward clutch	TM-246
Reverse brake	
Torque converter	

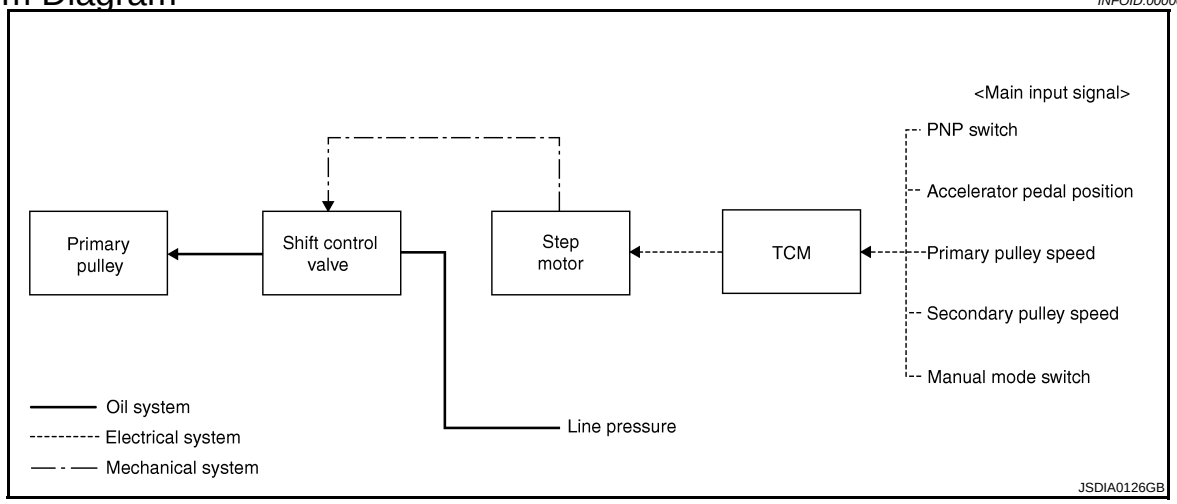
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-254
Accelerator pedal position sensor	TM-316

SHIFT MECHANISM

System Diagram

INFOID:0000000000992121



NOTE:
The gear ratio is set for every position separately.

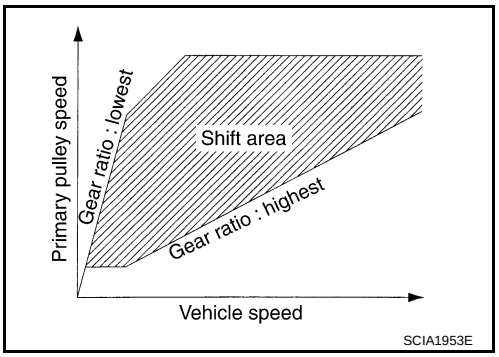
System Description

INFOID:0000000000992122

In order to select the gear ratio which can obtain the driving force in accordance with driver's intention and the vehicle condition, TCM monitors the driving conditions, such as the vehicle speed and the throttle position and selects the optimum gear ratio, and determines the gear change steps to the gear ratio. Then send the command to the step motor, and control the flow-in/flow-out of line pressure from the primary pulley to determine the position of the moving-pulley and control the gear ratio.

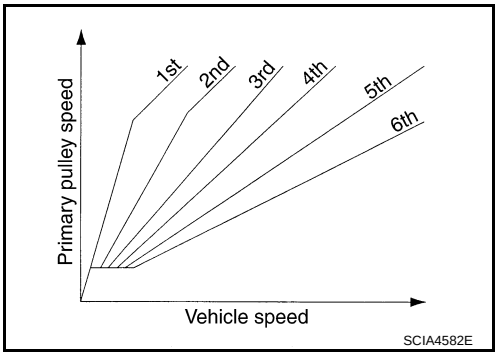
“D” POSITION

Shifting over all the ranges of gear ratios from the lowest to the highest.



“M” POSITION

When the selector lever is put in the manual shift gate side, the fixed changing gear line is set. By moving the selector lever to + side or - side, the manual mode switch is changed over, and shift change like M/T becomes possible following the changing gear set line step by step.



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

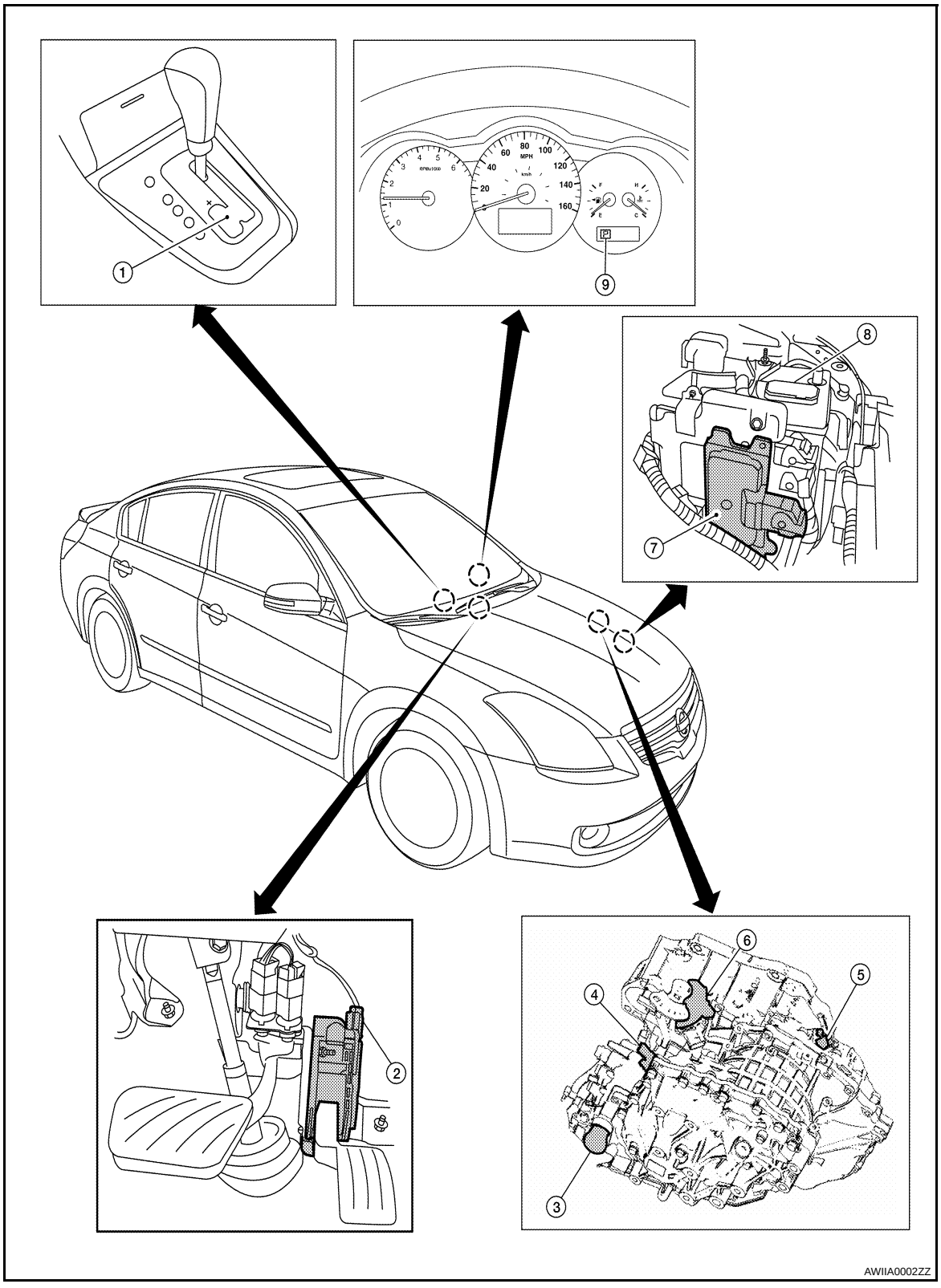
When downhill is detected with the accelerator pedal released, the engine brake will be strengthened up by downshifting so as not to accelerate the vehicle more than necessary.

ACCELERATION CONTROL

According to vehicle speed and a change of accelerator pedal angle, driver's request for acceleration and driving scene are judged. This function assists improvement in acceleration feeling by making the engine speed proportionate to the vehicle speed. And a shift map which can gain a larger driving force is available for compatibility of mileage with driveability.

Component Parts Location

INFOID:0000000000992123



1. Control device assembly
2. Accelerator pedal position sensor
3. CVT unit harness connector
4. Primary speed sensor
5. Secondary speed sensor
6. PNP switch
7. TCM
8. Battery
9. Shift position indicator

Component Description

INFOID:0000000000992124

TRANSAXLE ASSEMBLY

Item	Functoin
PNP switch	TM-276
Primary speed sensor	TM-281
Secondry speed sensor	TM-284
Step motor	TM-326
Shift control valve	TM-250
Primary pulley	TM-246
Secondary pulley	TM-246

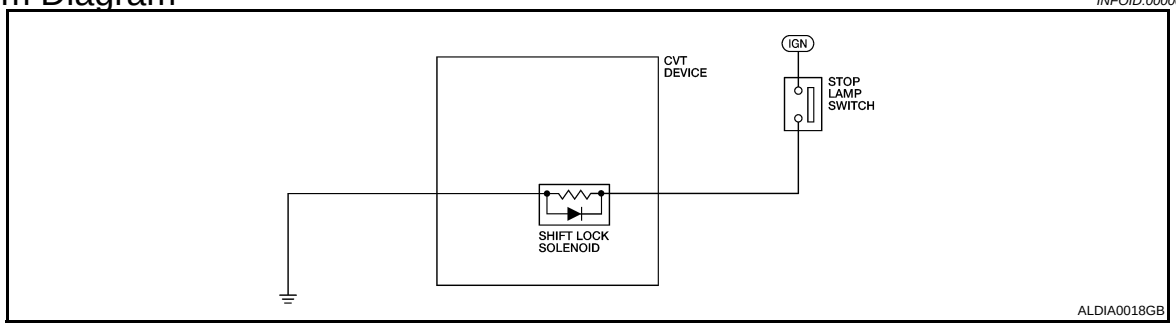
EXCEPT TRANSAXLE ASSEMBLY

Item	Functoin
TCM	TM-254

SHIFT LOCK SYSTEM

System Diagram

INFOID:0000000000992125



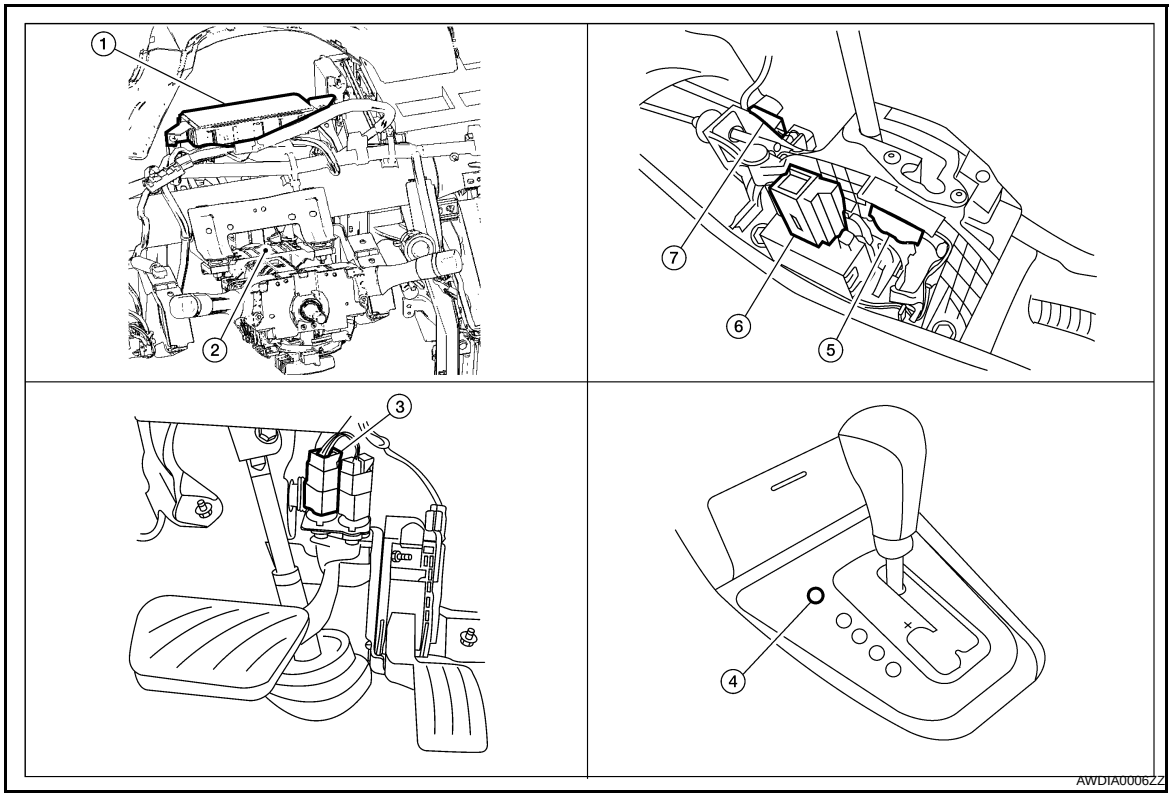
System Description

INFOID:0000000000992126

The selector lever cannot be shifted from “P” position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Component Parts Location

INFOID:0000000000992127



1. BCM (view with instrument panel removed)
2. Steering column
3. Stop lamp switch
4. Shift lock release button
5. Detention switch (for manual shift)
6. Shift lock solenoid/Detent switch (key)
7. CVT device connector

Component Description

INFOID:0000000000992128

Component			Function
CVT device	Shift lock solenoid	Shift lock solenoid	TM-262, "System Description"
		Lock plate	The lock plate restricts the position pin stroke by selector button operation according to the shift lock unit status.
		Position pin	The position pin, linking with the selector button, restricts the selector lever movement.
	Shift lock release button		Pressing the shift lock release button cancels the shift lock forcibly.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000000992129

DESCRIPTION

The CVT system has two self-diagnostic systems.
The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. The malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory, and the TCM memory.
The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

OBD-II FUNCTION

The ECM provides emission-related on board diagnostic (OBD-II) functions for the CVT system. One function is to receive a signal from the TCM used with OBD-related parts of the CVT system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part. The other function is to indicate a diagnostic result by means of the MIL (malfunction indicator lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.
The MIL automatically illuminates in “One or Two Trip Detection Logic” when a malfunction is sensed in relation to CVT system parts.

ONE OR TWO TRIP DETECTION LOGIC OF OBD-II

One Trip Detection Logic

If a malfunction is sensed during the first test drive, the MIL will illuminate and the malfunction will be stored in the ECM memory as a DTC. The TCM is not provided with such a memory function.

Two Trip Detection Logic

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. — 1st trip
If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — 2nd trip
The “trip” in the “One or Two Trip Detection Logic” means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

How to Read DTC and 1st Trip DTC

DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-III or GST) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by SAE J2012.
(CONSULT-III also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal.**
  CONSULT-III can identify them as shown below, therefore, CONSULT-III (if available) is recommended.

- DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for “ENGINE” with CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.
- If the DTC is being detected currently, the time data will be “0”.
- If a 1st trip DTC is stored in the ECM, the time data will be “1t”.

Freeze Frame Data and 1st Trip Freeze Frame Data

- The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.
  Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For details, refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data, and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items	
1	Freeze frame data	Misfire — DTC: P0300 - P0306 Fuel Injection System Function — DTC: P0171, P0172, P0174, P0175
2		Except the above items (Includes CVT related items)
3	1st trip freeze frame data	

Both 1st trip freeze frame data and freeze frame data (along with the DTC) are cleared when the ECM memory is erased.

How to Erase DTC

- The diagnostic trouble code can be erased by CONSULT-III, GST or ECM DIAGNOSTIC TEST MODE as described following.
- **If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.**
- **When you erase the DTC, using CONSULT-III or GST is easier and quicker than switching the mode selector on the ECM.**
- The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD-II. For details, refer to EC-632, "CONSULT-III Function" (for california), EC-1488, "DTC Index" (except for california).
- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**
- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

How to Erase DTC (With CONSULT-III)

The emission related diagnostic information in the TCM and ECM can be erased by selecting “ALL Erase” in the “Description” of “FINAL CHECK” mode with CONSULT-III.

How to Erase DTC (With GST)

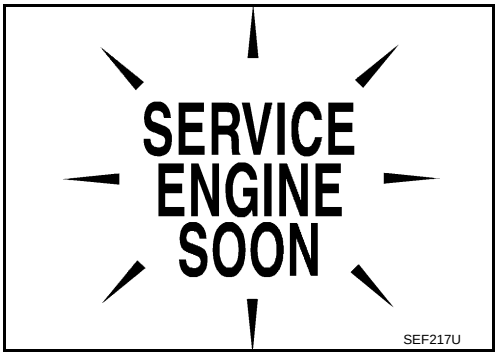
1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
   - If the MIL does not light up, refer to MWI-11, "WARNING LAMPS/INDICATOR LAMPS : System Diagram" (for california), MWI-11, "WARNING LAMPS/INDICATOR LAMPS : System Diagram" (except for california).
2. When the engine is started, the MIL should go off.
   If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:0000000000992130

CONSULT-III can display each diagnostic item using the diagnostic test modes shown below.

FUNCTION

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read. Do not use, but displayed.
Function test	Performed by CONSULT-III instead of a technician to determine whether each system is “OK” or “NG”.
ECU part number	TCM part number can be read.

WORK SUPPORT MODE

Display Item List

Item name	Description
ENGINE BRAKE ADJ.	The engine brake level setting can be canceled.
CONFORM CVTF DETERIORTN	The CVT fluid deterioration level can be checked.

Engine Brake Adjustment

“ENGINE BRAKE LEVEL”

0: Initial set value (Engine brake level control is activated)

OFF: Engine brake level control is deactivated.

CAUTION:

Mode of “+1” “0” “–1” “–2” “OFF” can be selected by pressing the “UP” “DOWN” on CONSULT-III screen. However, do not select mode other than “0” and “OFF”. If the “+1” or “–1” or “–2” is selected, that might cause the irregular driveability.

Check CVT Fluid Deterioration Date

“CVTF DETERIORATION DATE”

More than 210000:

It is necessary to change CVT fluid.

Less than 210000:

It is not necessary to change CVT fluid.

CAUTION:

Touch “CLEAR” after changing CVT fluid, and then erase “CVTF DETERIORATION DATE”.

SELF-DIAGNOSTIC RESULT MODE

After performing self-diagnosis, place check marks for results on the TM-238, "Diagnostic Work Sheet". Reference pages are provided following the items.

Display Items List

X: Applicable —: Not applicable

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL[*1], "ENGINE" with CONSULT-III or GST	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	U1000	U1000	TM-272
CONTROL UNIT (CAN)	When detecting error during the initiol disgnosis of CAN controller to TCM.	U1010	U1010	TM-273
BRAKE SW/CIRC	When the brake switch does not switch to ON or OFF.	P0703	—	TM-274
PNP SW/CIRC	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	P0705	P0705	TM-276
ATF TEMP SEN/CIRC	During running, the CVT fluid temperature sensor signal voltage is excessively high or low.	P0710	P0710	TM-279
INPUT SPD SEN/CIRC	• Input speed sensor (primary speed sensor) signal is not input due to an open circuit. • An unexpected signal is input when vehicle is being driven.	P0715	P0715	TM-281
VEH SPD SEN/CIR AT	• Signal from vehicle speed sensor CVT [Output speed sensor (Secondary speed sensor)] not input due to open or short circuit. • Unexpected signal input during running.	P0720	P0720	TM-284
ENGINE SPEED SIG	• TCM does not receive the CAN communication signal from the ECM. • Engine speed is too low while driving.	P0725	—	TM-287
BELT DAMG	Unexpected gear ratio detected.	P0730	—	TM-289
TCC SOLENOID/CIRC	Normal voltage not applied to solenoid due to open or short circuit.	P0740	P0740	TM-291
A/T TCC S/V FNCTN	• CVT cannot perform lock-up even if electrical circuit is good. • TCM detects as irregular by comparing difference value with slip rotation. • There is big difference engine speed and primary speed when TCM lock-up signal is on.	P0744	P0744	TM-293
L/PRESS SOL/CIRC	• Normal voltage not applied to solenoid due to open or short circuit. • TCM detects as irregular by comparing target value with monitor value.	P0745	P0745	TM-295
PRS CNT SOL/A FCTN	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	P0746	P0746	TM-297
PRS CNT SOL/B FCTN	Secondary pressure is too high or too low compared with the commanded value while driving.	P0776	P0776	TM-299
PRS CNT SOL/B CIRC	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P0778	P0778	TM-301
MANUAL MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P0826	—	TM-303
TR PRS SENS/A CIRC	Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	P0840	P0840	TM-306
PRESS SEN/FNCTN	Correlation between the values of the transmission fluid pressure sensor A (secondary pressure sensor) and the transmission fluid pressure sensor B (primary pressure sensor) is out of specification.	P0841	—	TM-308

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL[*1], "ENGINE" with CONSULT-III or GST	
TR PRS SENS/B CIRC	Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	P0845	P0845	TM-310
SEC/PRESS DOWN	Secondary fluid pressure is too low compared with the commanded value while driving.	P0868	—	TM-312
TCM-POWER SUPPLY	• When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops. • This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen).	P1701	—	TM-314
TP SEN/CIRC A/T	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	—	TM-316
ESTM VEH SPD SIG[*2]	• CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. • There is a great difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit), and the vehicle speed sensor signal.	P1722	—	TM-318
CVT SPD SEN/ FNCTN	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor. **CAUTION:** **One of the "P0720 VEH SPD SEN/CIR AT", the "P0715 INPUT SPD SEN/CIRC" or the "P0725 ENGINE SPEED SIG" is displayed with the DTC at the same time.**	P1723	—	TM-320
ELEC TH CONTROL	The electronically controlled throttle for ECM is malfunctioning.	P1726	—	TM-322
LU-SLCT SOL/ CIRC	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1740	P1740	TM-323
L/PRESS CONTROL	TCM detects the unexpected line pressure.	P1745	—	TM-325
STEP MOTR CIRC	Each coil of the step motor is not energized properly due to an open or a short.	P1777	P1777	TM-326
STEP MOTR/FNC	There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	P1778	P1778	TM-329
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X	—

[*1]: Refer to TM-264, "Diagnosis Description".

[*2]: Models without ABS does not indicate.

DATA MONITOR MODE

Display Items List

X: Standard, —: Not applicable, ▼: Option

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VSP SENSOR (km/h)	X	—	▼	Output speed sensor (secondary speed sensor)
ESTM VSP SIG (km/h)	X	—	▼	Models without ABS dose not indicate.
PRI SPEED SEN (rpm)	X	—	▼	—
ENG SPEED SIG (rpm)	X	—	▼	—
SEC HYDR SEN (V)	X	—	▼	—
PRI HYDR SEN (V)	X	—	▼	—
ATF TEMP SEN (V)	X	—	▼	CVT fluid temperature sensor
VIGN SEN (V)	X	—	▼	—
VEHICLE SPEED (km/h)	—	X	▼	Vehicle speed recognized by the TCM.
PRI SPEED (rpm)	—	X	▼	Primary pulley speed
SEC SPEED (rpm)	—	—	▼	Secondary pulley speed
ENG SPEED (rpm)	—	X	▼	—
SLIP REV (rpm)	—	X	▼	Difference between engine speed and primary pulley speed.
GEAR RATIO	—	X	▼	—
G SPEED (G)	—	—	▼	—
ACC PEDAL OPEN (0.0/8)	X	X	▼	Degree of opening for accelerator recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
TRQ RTO	—	—	▼	—
SEC PRESS (MPa)	—	X	▼	—
PRI PRESS (MPa)	—	X	▼	—
ATF TEMP	—	X	▼	—
DSR REV (rpm)	—	—	▼	—
DGEAR RATIO	—	—	▼	—
DSTM STEP (step)	—	—	▼	—
STM STEP (step)	—	X	▼	—
LU PRS (MPa)	—	—	▼	—
LINE PRS (MPa)	—	—	▼	—
TGT SEC PRESS (MPa)	—	—	▼	—
ISOLT1 (A)	—	X	▼	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3 (A)	—	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) output current

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
SOLMON1 (A)	X	X	▼	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3 (A)	X	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
P POSITION SW (ON/OFF)	X	—	▼	—
R POSITION SW (ON/OFF)	X	—	▼	—
N POSITION SW (ON/OFF)	X	—	▼	—
D POSITION SW (ON/OFF)	X	—	▼	—
L POSITION SW (ON/OFF)	X	—	▼	—
BRAKE SW (ON/OFF)	X	X	▼	Stop lamp switch (Signal input with CAN communications)
FULL SW (ON/OFF)	X	X	▼	Signal input with CAN communications
IDLE SW (ON/OFF)	X	X	▼	
SPORT MODE SW (ON/OFF)	X	X	▼	
STRDWNSW (ON/OFF)	X	—	▼	Not mounted but displayed.
STRUPSW (ON/OFF)	X	—	▼	
DOWNLVR (ON/OFF)	X	—	▼	
UPLVR (ON/OFF)	X	—	▼	
NONMMODE (ON/OFF)	X	—	▼	
MMODE (ON/OFF)	X	—	▼	
INDLRNG (ON/OFF)	—	—	▼	—
INDDRNG (ON/OFF)	—	—	▼	“D” position indicator output
INDNRNG (ON/OFF)	—	—	▼	“N” position indicator output
INDRRNG (ON/OFF)	—	—	▼	“R” position indicator output
INDPRNG (ON/OFF)	—	—	▼	“P” position indicator output
CVT LAMP (ON/OFF)	—	—	▼	—
SPORT MODE IND (ON/OFF)	—	—	▼	—
MMODE IND (ON/OFF)	—	—	▼	—
SMCOIL D (ON/OFF)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C (ON/OFF)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B (ON/OFF)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A (ON/OFF)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT (ON/OFF)	—	—	▼	—
REV LAMP (ON/OFF)	—	X	▼	—
LUSEL SOL MON (ON/OFF)	—	—	▼	—

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VDC ON (ON/OFF)	X	—	▼	—
TCS ON (ON/OFF)	X	—	▼	—
ABS ON (ON/OFF)	X	—	▼	Models without ABS dose not indicate.
ACC ON (ON/OFF)	X	—	▼	Not mounted but displayed.
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	—	X	▼	—
Voltage (V)	—	—	▼	Displays the value measured by the voltage probe.
Frequency (Hz)	—	—	▼	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	▼	
DUTY-LOW (low) (%)	—	—	▼	
PLS WIDTH-HI (ms)	—	—	▼	
PLS WIDTH-LOW (ms)	—	—	▼	

Diagnostic Tool Function

INFOID:0000000000992131

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-641, "Diagnosis Tool Function" (for california), EC-1150, "Diagnosis Tool Function" (except for california)

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000000992132

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

INFOID:0000000000992133

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “U1000 CAN COMM CIRCUIT” with CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

- Harness or connectors
  (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “WITH CONSULT-III”.

Is “U1000 CAN COMM CIRCUIT” detected?

YES >> Go to TM-272, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992134

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Select “SELF-DIAG RESULTS”.

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Go to LAN section. Refer to LAN-25, "CAN System Specification Chart".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000000992135

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

INFOID:0000000000992136

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “U1010 CONTROL UNIT(CAN)” with CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

- Harness or connectors
  (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Perform “SELF-DIAG RESULTS”.

With GST

Follow the procedure “WITH CONSULT-III”.

Is “U1010 CONTROL UNIT(CAN)” detected?

YES >> Go to TM-273, "Diagnosis Procedure".
NO >> Checke intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992137

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Select “SELF-DIAG RESULTS”.

Is any malfunction of the “U1010 CONTROL UNIT(CAN)” indicated?

YES >> Print out CONSULT-III screen, go to LAN section. Refer to LAN-25, "CAN System Specification Chart".
NO >> Checke intermittent incident. Refer to GI-39, "Intermittent Incident".

P0703 STOP LAMP SWITCH

Description

INFOID:0000000000992138

ON, OFF status of the stop lamp switch is sent via the CAN communication from the BCM to TCM using the signal.

DTC Logic

INFOID:0000000000992139

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0703 BRAKE SW/CIRC” with CONSULT-III is detected when the stop lamp switch does not switch to ON and OFF.

- The stop lamp switch does not switch to ON, OFF.

Possible Cause

- Harness or connectors
  (Stop lamp switch, and BCM circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Stop lamp switch

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Start vehicle for at least 3 consecutive seconds.
4. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is “P0703 BRAKE SW/CIRC” detected?

YES >> Go to TM-274, "Diagnosis Procedure".
NO >> Checke intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992140

1.CHECK STOP LAMP SWITCH

Check stop lamp switch.

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO >> Repair or replace the stop lamp switch.

Component Inspection

INFOID:0000000000992141

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch		Condition	Continuity
Connector	Terminal		

E38	1	2	When brake pedal is depressed	Existed
			When brake pedal is released	Not existed

Check stop lamp switch after adjusting brake pedal — refer to BR-16.

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO >> Repair or replace the stop lamp switch.

P0705 PARK/NEUTRAL POSITION SWITCH

Description

INFOID:0000000000992142

- The PNP switch assembly includes a transaxle range switch.
- The transaxle range switch detects the selector lever position and sends a s”ignal to the TCM.

Item name	Condition	Display value
P POSITION SW	Selector lever in “P”position	ON
	When setting selector lever to other positions.	OFF
R POSITION SW	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
N POSITION SW	Selector lever in “N” position	ON
	When setting selector lever to other positions.	OFF
D POSITION SW	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D

DTC Logic

INFOID:0000000000992143

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0705 PNP SW/CIRC” with CONSULT-III is detected when TCM dose notreceive the correct voltage signal from the switch based on the gear position.

Possible Cause

- Harness or connectors
  (PNP switches circuit is open or shorted.)
- PNP switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

VEHICLE SPEED	**: More than 10 km/h (6 MPH)**
ENG SPEED	**: More than 450 rpm**
ACC PEDAL OPEN	**: More than 1.0/8**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0705 PNP SW/CIRC” detected?

YES >> Go to TM-277, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992144

1. CHECK HARNESS BETWEEN TCM AND PNP SWITCH

1. Turn ignition switch OFF.
2. Disconnect TCM connector and PNP switch connector.
3. Check continuity between TCM connector terminals and PNP switch connector terminals.

TCM connector		PNP switch connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	1	F25	5	Existed
	2		6	Existed
	3		7	Existed
	4		8	Existed
	11		4	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

OK >> GO TO 2..
NG >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Check the following items..
- Harness for short or open between ignition switch and PNP switch.
- 10A fuse (No.4, located in the J/B).
- Ignition switch.

Is the inspection result normal?

OK >> GO TO 3..
NG >> Repair or replace damaged parts.

3. CHECK PNP SWITCH

Check PNP switch. Refer to TM-277, "Component Inspection".

Is the inspection result normal?

OK >> GO TO 4..
NG >> Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992145

1. CHECK PNP SWITCH

Change selector lever to various positions to check the continuity between terminals on the PNP switch and ground.

Selector lever position	PNP switch connector			Continuity
	Connector	Terminal	Terminal	

P	F25	1	2	Existed
		3	4	Existed
R		3	5	Existed
N		1	2	Existed
		3	6	Existed
D		3	7	Existed
L		3	8	Existed

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> GO TO 2..

2.CHECK CVT POSITION

1. Disconnect control cable.
2. Check PNP switch. (Refer to step 1 above.)

Is the inspection result normal?

YES >> Adjust CVT position. Refer to TM-384, "Inspection and Adjustment".
NO >> GO TO 3..

3.CHECK CVT POSITION

1. Remove PNP switch from CVT. Refer to TM-389, "Removal and Installation".
2. Check PNP switch. (Refer to step 1 above.)

Is the inspection result normal?

YES >> Adjust PNP switch. Refer to TM-381, "Inspection and Adjustment".
NO >> Replace PNP switch. Refer to TM-389, "Removal and Installation".

P0710 CVT FLUID TEMPERATURE SENSOR

Description

INFOID:0000000000992146

The CVT fluid temperature sensor detects the CVT fluid temperature and sends a signal to the TCM.

DTC Logic

INFOID:0000000000992147

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0710 ATF TEMP SEN/CIRC” with CONSULT-III is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 minutes (Total).

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ENG SPEED	**: 450 rpm more than**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0710 ATF TEMP SEN/CIRC” detected?

YES >> Go to TM-279, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992148

1. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminals.

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal			
F16	13	25	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-280, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

3. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect the TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	13	F46	17	Existed
	25		19	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

OK >> GO TO 4..
NG >> Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992149

CVT FLUID TEMPERATURE SENSOR

1. CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminals.

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal			
F46	17	19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-382, "Exploded View".

P0715 INPUT SPEED SENSOR (PRI SPEED SENSOR)

Description

INFOID:0000000000992150

The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000000992151

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0715 INPUT SPD SEN/CIRC” with CONSULT-III is detected when TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-II”.

Is “P0715 INPUT SPD SEN/CIRC” detected?

YES >> Go to TM-281, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992152

1. CHECK PRIMARY SPEED SENSOR

With CONSULT-III

1. Start engine.
2. Check power supply to input speed sensor (primary speed sensor) by voltage between TCM connector terminals.

TCM connector			Data (Approx.)
Connector	Terminal	Terminal	

F16	25	45	Battery voltage
		48	

3. If OK, check the pulse when vehicle cruises.

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	33	When running at 20 km/h (12 MPH) in "M1" position, use the CONSULT-III pulse frequency measuring function. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**	610 Hz

Is the inspection result normal?

YES >> GO TO 7..
NO >> GO TO 2..

2. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the input speed sensor (primary speed sensor) harness connector.
3. Turn ignition switch ON.
4. Check voltage between input speed sensor (primary speed sensor) harness connector terminals.

Input speed sensor (primary speed sensor) harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F8	1	3	Battery voltage

5. Check voltage between input speed sensor (primary speed sensor) harness connector terminal and ground.

Input speed sensor (primary speed sensor) harness connector		Ground	Data (Approx.)
Connector	Terminal		
F8	3		Battery voltage

6. If OK, check harness for short to ground and short to power.
7. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO - 1 >> Battery voltage is not supplied between terminals 1 and 3, terminal 3 and ground: GO TO 5..
NO - 2 >> Battery voltage is not supplied between terminals 1 and 3 only: GO TO 6..

3. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and input speed sensor (primary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and input speed sensor (primary speed sensor) harness connector terminal.

TCM connector		Input speed sensor (primary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	33	F8	2	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to TM-281, "DTC Logic".

Is "P0720 VEH SPD SEN/CIR AT" detected again?

YES >> Replace the primary speed sensor. Refer to TM-390, "Removal and Installation".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

5. CHECK HARNESS BETWEEN TCM AND INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) (POWER)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and input speed sensor (primary speed sensor) harness connector.
3. Check continuity between TCM connector terminals and input speed sensor (primary speed sensor) harness connector terminal.

TCM connector		Input speed sensor (primary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	46	F8	3	Existed
	48			Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> 10 A fuse (No. 34, located in the IPDM E/R) or ignition switch are malfunctioning.
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and input speed sensor (primary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and input speed sensor (primary speed sensor) harness connector terminal.

TCM connector		Input speed sensor (primary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F8	1	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 7..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)

Description

INFOID:0000000000992153

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of the CVT output shaft and emits a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.

DTC Logic

INFOID:0000000000992154

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0720 VEH SPD SEN/CIR AT” with CONSULT-III is detected TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DCT DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

4. If DTC is detected,

With GST

Follow the procedure “With CONSULT-III”.

Is “P0720 VEH SPD SEN/CIR AT” detected?

YES >> Go to TM-284, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992155

1. CHECK SECONDARY SPEED SENSOR

With CONSULT-III

1. Start engine.
2. Check power supply to output speed sensor (secondary speed sensor) by voltage between TCM connector terminals.

TCM connector			Data (Approx.)
Connector	Terminal	Terminal	

F16	46	7	Battery voltage
	48		

3. If OK, check the pulse when vehicle cruises.

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	34	When running at 20 km/h (12 MPH) in “D” position, use the CONSULT-III pulse frequency measuring function. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**	480 Hz

Is the inspection result normal?

YES >> GO TO 7..
NO >> GO TO 2..

2. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the output speed sensor (secondary speed sensor) harness connector.
3. Turn ignition switch ON.
4. Check voltage between output speed sensor (secondary speed sensor) harness connector terminals.

Output speed sensor (Secondary speed sensor) harness connector			Data (Approx.)
Connector	Connector	Terminal	
F23	1	3	Battery voltage

5. Check voltage between output speed sensor (secondary speed sensor) harness connector terminal and ground.

Output speed sensor (Secondary speed sensor) harness connector		Ground	Data (Approx.)
Connector	Terminal		
F23	3		Battery voltage

6. If OK, check harness for short to ground and short to power.
7. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO - 1 >> Battery voltage is not supplied between terminals 1 and 3, terminals 3 and ground: GO TO 5..
NO - 2 >> Battery voltage is not supplied between terminals 1 and 3 only: GO TO 6..

3. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	34	F23	2	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to TM-284, "DTC Logic".

Is “P0720 VEH SPD SEN/CIR AT” detected again?

YES >> Replace the secondary speed sensor. Refer to TM-391, "Removal and Installation".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

5. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (POWER)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminals and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	46	F23	3	Existed
	48			Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> 10 A fuse (No. 34, located in the IPDM E/R) or ignition switch are malfunctioning.
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	7	F23	1	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 7..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P0725 ENGINE SPEED SIGNAL

Description

INFOID:0000000000992156

The engine speed signal is sent from the ECM to the TCM.

DTC Logic

INFOID:0000000000992157

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0725 ENGINE SPEED SIG” with CONSULT-III is detected when TCM does not receive the engine speed signal (input by CAN communication) from ECM.

Possible Cause
Harness or connectors
(The ECM to the TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.

PRI SPEED SEN : More than 1000 rpm

Is “P0725 ENGINE SPEED SIG” detected?

YES >> Go to TM-287, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992158

1. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

Is the inspection result normal?

OK >> GO TO 2..
NG >> Check the DTC detected item. Refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

2. CHECK DTC WITH TCM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

OK >> GO TO 3..
NG >> Check the DTC detected item. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

3. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “DATA MONITOR”.
3. While monitoring “ENG SPEED SIG”, check for engine speed change corresponding to “ACC PEDAL OPEN”.

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
ACC PEDAL OPEN	Released accelerator pedal – Fully depressed accelerator pedal	0.0/8 – 8.0/8

Is the inspection result normal?

OK >> GO TO 4..
NG >> Check ignition signal circuit. Refer to EC-967, "Description" (for california), EC-1439, "Description" (except for california).

4. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-382, "Exploded View".

P0730 BELT DAMAGE

Description

INFOID:0000000000992159

TCM selects the gear ratio using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal. Then it changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley.

DTC Logic

INFOID:0000000000992160

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- TCM calculates the actual gear ratio with input speed sensor (primary speed sensor) and output speed sensor (secondary speed sensor).
- Diagnostic trouble code “P0730 BELT DAMG” with CONSULT-III is detected, when TCM receives an unexpected gear ratio signal.

Possible Cause

Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 sec or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

Is “P0730 BELT DAMG” detected?

YES >> Go to TM-289, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992161

1.CHECK DTC

Perform TM-289, "DTC Logic".

Are any DTC displayed?

YES - 1>> DTC except for “P0730 BELT DAMG” is displayed: Go to Check the DTC detected item. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

YES - 2>> DTC for “P0730 BELT DAMG” is displayed: Replace the transaxle assembly. Refer to TM-393, "Exploded View".

NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Description

INFOID:0000000000992162

- The torque converter clutch solenoid valve is activated by the TCM in response to signals sent from the vehicle speed and accelerator pedal position sensors. Lock-up piston operation will then be controlled.
- Lock-up operation, however, is prohibited when CVT fluid temperature is too low.
- When the accelerator pedal is depressed (less than 2.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

INFOID:0000000000992163

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0740 TCC SOLENOID/CIRC” with CONSULT-III is detected under the following conditions.
- TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

- Torque converter clutch solenoid valve
- Harness or connectors
  (Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0740 TCC SOLENOID/CIRC” detected?

YES >> Go to TM-291, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992164

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	38		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	38	F46	12	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992165

TORQUE CONVERTER CLUTCH SOLENOID VALVE

1.TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	12		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

P0744 A/T TCC S/V FUNCTION (LOCK -UP)

Description

INFOID:0000000000992166

This malfunction is detected when the torque converter clutch does not lock-up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted), but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:0000000000992167

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0744 A/T TCC S/V FNCTN” with CONSULT-III is detected under the following conditions.

- When CVT cannot perform lock-up even if electrical circuit is good.
- When TCM compares difference value with slip revolution and detects an irregularity.

Possible Cause

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following condition for at least 30 seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
Vehicle speed	**: Constant speed of more than 40 km/h (25 MPH)**

4. If DTC is detected

With GST

Follow the procedure “With CONSULT-III”.

Is “P0744 A/T TCC S/V FNCTN” detected?

YES >> Go to TM-293, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992168

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-375, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-375, "Inspection and Judgment".

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-324, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-284, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-281, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 6..
NO >> Repair or replace damaged parts.

6. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

P0745 LINE PRESSURE SOLENOID VALVE

Description

INFOID:0000000000992169

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992170

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745 L/PRESS SOL/CIRC” with CONSULT-III is detected under the following conditions.
- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve A (Line pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DCT DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait at least 5 seconds.
3. Perform “SELF-DIAG RESULTS”TM-266, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0745 L/PRESS SOL/CIRC” detected?

YES >> Go to TM-295, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992171

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	40		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control sorenoid valve A (Line pressure solenoid valve). Refer to TM-296, "Component Inspection"

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-382, "Exploded View".

3. CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector and TCM connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	40	F46	2	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992172

PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000992173

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992174

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0746 PRS CNT SOL/A FCTN” with CONSULT-III is detected under the following conditions.
- Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.

Possible Cause

- Line pressure control system
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0746 PRS CNT SOL/A FCTN” detected?

YES >> Go to TM-297, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992175

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-375, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-375, "Inspection and Judgment".

2. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-296, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-284, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-281, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

P0776 PRESSURE CONTROL SOLENOID B PERFORMANCE (SEC PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000992176

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992177

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0776 PRS CNT SOL/B FCTN” with CONSULT-III is detected when secondary pressure is too high or too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve system)
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 30 consecutive seconds.

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure “With CONSULT-III”.

Is “P0776 PRS CNT SOL/B FCTN” detected?

YES >> Go to TM-299, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992178

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-375, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-375, "Inspection and Judgment".

2.CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to TM-302, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to TM-296, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-306, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE)

Description

INFOID:0000000000992179

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992180

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0778 PRS CNT SOL/B CIRC” with CONSULT-III is detected under the following conditions.

- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
4. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

Is “P0778 PRS CNT SOL/B CIRC” detected?

YES >> Go to TM-301, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992181

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	39		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 4..
NO >> GO TO 2..

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-302, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	39	F46	3	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992182

PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1.PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

P0826 MANUAL MODE SWITCH

Description

INFOID:0000000000992183

Manual mode switch is installed in CVT control device. The manual mode switch sends shift up and shift down switch signals to TCM.
TCM sends the switch signals to combination meter via CAN communication line. Then manual mode switch position is indicated on the CVT position indicator.

DTC Logic

INFOID:0000000000992184

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0826 MANUAL MODE SWITCH” with CONSULT-III is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and then detects irregular with impossible input pattern for 1 second or more.

Possible Cause

- Harness or connectors
  (These switches circuit is open or shorted.)
  (TCM, and combination meter circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Manual mode select switch (Built into CVT control device)
- Manual mode position select switch (Built into CVT control device)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.

MMODE	**: ON**

Is “P0826 MANUAL MODE SWITCH” detected?

YES >> Go to TM-303, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992185

1. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Read out ON/OFF switching action of the “MMODE”, “NON M-MODE”, “UPLVR”, “DOWNLVR”.

Item name	Condition	Display value
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF

Item name	Condition	Display value
NONMMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF

Without CONSULT-III

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “+ (up)” or “- (down)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to TM-305, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

Perform self-diagnosis check. Refer to MWI-16, "CONSULT-III Function (METER)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 4..

4.CHECK MANUAL MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT device connector and combination meter connector.
3. Check continuity between CVT device harness connector terminals and combination meter harness connector terminals.

CVT device harness connector		Combination meter harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M23	1	M24	40	Existed
	2		38	Existed
	3		39	Existed
	5		37	Existed

4. Check continuity between CVT device harness connector terminal and ground.

CVT device harness connector		Ground	Continuity
Connector	Terminal		
M23	4		Existed

5. If OK, check harness for short to ground and short to power.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992186

MANUAL MODE SWITCH

1. MANUAL MODE SWITCH

Check continuity between CVT device harness connector terminals.

Item	Position	CVT device harness connector			Continuity
		Connector	Terminal	Terminal	
Manual mode select switch	Auto	M23	4	5	Existed
	Manual		1	4	
Manual mode position select switch	Up		3	4	
	Down		2	4	

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Repair or replace damaged parts.

P0840 TRANSMISSION FLUID PRESSURE SENSOR A (SEC PRESSURE SENSOR)

Description

INFOID:0000000000992187

The transmission fluid pressure sensor A (secondary pressure sensor) detects secondary pressure of CVT and sends TCM the signal.

DTC Logic

INFOID:0000000000992188

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0840 TR PRS SENS/A CIRC” with CONSULT-III is detected when TCM detects an improper voltage drop when it receives the sensor signal.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Harness or connectors
  (Switch circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure “WITH CONSULT-III”.

Is “P0840 TR PRS SENS/A CIRC” detected?

YES >> Go to TM-306, "Diagnosis Procedure".
NO >> Check intermitent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992189

1.CHECK INPUT SIGNAL

1. Start engine.
2. Check voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	15		“N”position idle	1.0 V

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR)

1. Turn ignition switch OFF.

2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	15	F46	23	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between TCM connector terminals.

CVT unit harness connector			Data (Approx.)
Connector	Terminal		
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".
NO >> GO TO 5..

5. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P0841 PRESSURE SENSOR FUNCTION

Description

INFOID:0000000000992190

Using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal, TCM changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley to control the gear ratio.

DTC Logic

INFOID:0000000000992191

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0841 PRESS SEN/FNCTN” with CONSULT-III is detected when correlation between the values of the secondary pressure sensor and the primary pressure sensor is out of specification.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors
  (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

VEHICLE SPEED	**: 40 km/h (25 MPH) More than**
RANGE	**: “D” position**

Is “P0841 PRESS SEN/FNCTN” detected?

YES >> Go to TM-308, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992192

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-375, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-375, "Inspection and Judgment".

2.CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-306, "Description".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor B (primary pressure sensor) system. Refer to TM-310, "Description".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-296, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-302, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6..
NO >> Repair or replace damaged parts.

6. CHECK STEP MOTOR

Step motor. Refer to TM-327, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7..
NO >> Repair or replace damaged parts.

7. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P0845 TRANSMISSION FLUID PRESSURE SENSOR B (PRI PRESSURE SENSOR)

Description

INFOID:0000000000992193

The transmission fluid pressure sensor B (primary pressure sensor) detects primary pressure of CVT and sends TCM the signal.

DTC Logic

INFOID:0000000000992194

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0845 TR PRS SENS/B CIRC” with CONSULT-III is detected under the following conditions.

- When TCM detects an improper voltage drop when it receives the sensor signal.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors
  (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure “WITH CONSULT-III”.

“P0845 TR PRS SENS/B CIRC” detected?

YES >> Go to TM-310, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992195

1.CHECK INPUT SIGNAL

1. Start engine.
2. Check voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	14		“N” position idle	0.7 – 3.5 V

Is the inspection result normal?

YES >> GO TO 5..
NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY

PRESSURE SENSOR)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	14	F46	25	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit harness connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminals.

CVT unit harness connector			Data (Approx.)
Connector	Terminal		
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".
NO >> GO TO 5..

5. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P0868 SECONDARY PRESSURE DOWN

Description

INFOID:0000000000992196

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992197

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0868 SEC/PRESS DOWN” with CONSULT-III is detected when secondary fluid pressure is too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors
  (Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve) system
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DCT DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**
If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)	

4. Start engine and maintain the following conditions for at least 10 consecutive seconds.

VEHICLE SPEED (accelerate slowly)	**: 0 → 50 km/h (31 MPH)**
ACC PEDAL OPEN	**: 0.5/8 – 1.0/8**
RANGE	**: “D” position**

“P0868 SEC/PRESS DOWN”

YES >> Go to TM-312, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992198

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-375, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts. Refer to TM-375, "Inspection and Judgment".

2.CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to TM-302, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to TM-296, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-306, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5..
NO >> Repair or replace damaged parts.

5. CHECK TCM

Check input/output signal. Refer to TM-335, "Reference Value"

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

Description

INFOID:0000000000992199

When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops, malfunction is detected.

NOTE:

Since “P1701 TCM-POWER SUPPLY” will be indicated when replacing TCM, perform diagnosis after erasing “SELF-DIAG RESULTS”

DTC Logic

INFOID:0000000000992200

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1701 TCM-POWER SUPPLY” with CONSULT-III is detected when TCM does not receive the voltage signal from the battery power supply.
- This is not a malfunction message. (Whenever shutting OFF a power supply to the TCM, this message appears on the screen.)

Possible Cause
Harness or connectors
(Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is“P1701 TCM-POWER SUPPLY” detected?

YES >> Go to TM-314, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992201

1.CHECK TCM POWER SOURCE

Check voltage between TCM connector terminals and ground.

Name	TCM connector		Ground	Condition	Data (Approx.)
	Connector	Terminal			
Power supply	F16	46	Ground	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
		48		Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
Power supply (memory back-up)		45		Always	Battery voltage
		47			

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 2..

2.DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and TCM connector terminal 45, 47
- Harness for short or open between ignition switch and TCM connector terminal 46, 48
- 10 A fuse (No. 34, located in the IPDM E/R)
- 10 A fuse (No. 11, located in the J/B)
- Ignition switch. Refer to PG-5.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair or replace damaged parts.

3.CHECK TCM GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM connector terminals and ground.

TCM connector		Ground	Continuity
Connector	Terminal		
F16	5		Existed
	42		Existed

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK TCM

1. Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

P1705 THROTTLE POSITION SENSOR

Description

INFOID:0000000000992202

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000000992203

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1705 TP SEN/CIRC A/T” with CONSULT-III is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

- ECM
- Harness or connectors
  (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Depress accelerator pedal fully and release it, then wait for 5 seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

“P1705 TP SEN/CIRC A/T”

YES >> Go to TM-316, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992204

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Read out the value of “ACC PEDAL OPEN”.

Item name	Condition	Display value (Approx.)
ACC PEDAL OPEN	Release accelerator pedal. ↓ Fully depressed accelerator pedal	0.0/8 ↓ 8.0/8

OK or NG

OK >> Intermittent incident.
NG >> GO TO 2..

2.CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

OK or NG

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NG >> Check the DTC Detected Item. Go to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

P1722 ESTM VEHICLE SPEED SIGNAL

Description

INFOID:0000000000992205

The vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) to TCM by CAN communication line.

DTC Logic

INFOID:0000000000992206

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1722 ESTM VEH SPD SIG” with CONSULT-III is detected when TCM does not receive the proper vehicle speed signal (input by CAN communication) from ABS actuator and electric unit (control unit).

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

ACC PEDAL OPEN	**: 1.0/8 or less**
VEHICLE SPEED	**: 30 km/h (19 MPH) or more**

Is “P1722 ESTM VEH SPD SIG” detected?

YES >> Go to TM-318, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992207

1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform “SELF-DIAG RESULTS”. Refer to BRC-12, "CONSULT-III Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2..
NO >> Repair or replace damaged parts.

2.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “DATA MONITOR”.
3. Drive vehicle and read out the value of “VEHICLE SPEED” and “ESTM VSP SIG”.

Item name	Condition	Display value
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
VEHICLE SPEED		

4. Check if there is a great difference between the two values.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> GO TO 3..

3. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

P1723 CVT SPEED SENSOR FUNCTION

Description

INFOID:0000000000992208

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of parking gear and generates a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.
The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000000992209

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1723 CVT SPD SEN/FNCTN” with CONSULT-III is detected when there is a great difference between the vehicle speed signal and the secondary speed sensor signal.

CAUTION:
One of the “P0720 VEH SPD SEN/CIR AT”, the “P0715 INPUT SPD SEN/CIRC” or the “P0725 ENGINE SPEED SIG“ is displayed with the DTC at the same time.
NOTE:
When the vehicle is driven fixed in 2nd gear, a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.

Possible Cause

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)
- Engine speed signal system

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

“P1723 CVT SPD SEN/FNCTN”

YES >> Go to TM-320, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992210

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is a malfunction in the step motor function indicated in the results?

YES >> Repair or replace damaged parts. (Check the step motor function. Refer to TM-329, "DTC Logic".)
NO >> GO TO 2..

2. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to TM-284, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 3..
NG >> Repair or replace damaged parts.

3. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to TM-281, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 4..
NG >> Repair or replace damaged parts.

4. CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to TM-287, "DTC Logic".

Is the inspection result normal?

OK >> GO TO 5..
NG >> Repair or replace damaged parts. Refer to EC-967, "Description" (for california), EC-1439, "Description" (except for california).

5. CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the TCM. Refer to TM-382, "Exploded View".

P1726 ELECTRIC THROTTLE CONTROL SYSTEM

Description

INFOID:0000000000992211

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000000992212

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1726 ELEC TH CONTROL” with CONSULT-III is detected when the electronically controlled throttle for ECM is malfunctioning.

Possible Cause
Harness or connectors
(Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine and let it idle for 5 seconds.
3. Perform “SELF-DIAG RESULTS”.

“P1726 ELEC TH CONTROL” detected?

YES >> Go to TM-322, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992213

1.CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california).

Is the inspection result normal?

YES >> GO TO 2..
NO >> Check the DTC Detected Item. Go to EC-632, "CONSULT-III Function" (for california), EC-1141, "CONSULT-III Function" (except for california)..

2.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

P1740 LOCK-UP SELECT SOLENOID VALVE

Description

INFOID:0000000000992214

- Lock-up select solenoid valve controls lock-up clutch pressure or forward clutch pressure (reverse brake pressure).
- When controlling lock-up clutch, the valve is turned OFF. When controlling forward clutch, it is turned ON.

DTC Logic

INFOID:0000000000992215

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1740 LU-SLCT SOL/CIRC” with CONSULT-III is detected under the following conditions.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Lock-up select solenoid valve
- Harness or connectors
  (Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

RANGE : “D” position and “N” positions

(At each time, wait for 5 seconds.)

With GST

Follow the procedure “With CONSULT-III”.

Is “”

YES >> Go to TM-323, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992216

1. CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	37		17 – 38 Ω

Is the inspection result normal?

YES >> GO TO .4.

NO >> GO TO 2..

2. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

3.CHECK HARNESS BETWEEN TCM AND LOCK-UP SELECT SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	37	F46	13	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992217

LOCK-UP SELECT SOLENOID VALVE

1.LOCK-UP SELECT SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	13		17 – 38 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000000992218

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000000992219

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1745 L/PRESS CONTROL” with CONSULT-III is detected when TCM detects the unexpected line pressure.

Possible Cause
TCM

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

“P1745 L/PRESS CONTROL”

YES >> Go to TM-325, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992220

1. CHECK DTC

With CONSULT-III
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS”.
3. Erase self-diagnostic results. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is the “P1745 L/PRESS CONTROL” displayed?

YES >> Replace TCM. Refer to TM-382, "Exploded View".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

P1777 STEP MOTOR

Description

INFOID:0000000000992221

The step motor changes the step with turning 4 coils ON/OFF according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled

DTC Logic

INFOID:0000000000992222

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1777 STEP MOTR CIRC” with CONSULT-III is detected under the following conditions.

- When operating step motor ON and OFF, there is no proper change in the voltage of TCM terminal which corresponds to it.

Possible Cause

- Step motor
- Harness or connectors
  (Step motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Drive vehicle for at least 5 consecutive seconds.
3. Perform “SELF-DIAG RESULTS”. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

With GST

Follow the procedure “With CONSULT-III”.

“P1777 STEP MOTR CIRC”

YES >> Go to TM-326, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992223

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “DATA MONITOR”.
3. Start vehicle and read out the value of “STM STEP”, “SMCOIL A”, “SMCOIL B”, “SMCOIL C”, and “SMCOIL D”.

Item name	Condition	Display value (Approx.)
STM STEP	During driving	0 step – 177 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

Is the inspection result normal?

YES >> GO TO 4..

NO >> GO TO 2..

2.CHECK HARNESS BETWEEN TCM AND STEP MOTOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector and TCM connector.
3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	27	F46	9	Existed
	28		8	Existed
	29		7	Existed
	30		6	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between body ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3..
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK STEP MOTOR

Check step motor. Refer to TM-327, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4..
NO >> Repair or replace damaged parts.

4.CHECK TCM

Check TCM input/output signals. Refer to TM-335, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-382, "Exploded View".

Component Inspection

INFOID:0000000000992224

STEP MOTOR

1.STEP MOTOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit harness connector.
3. Check resistance between CVT unit harness connector terminals and ground.

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal	Terminal	
F46	6	7	30 Ω
	8	9	

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal		
F46	6	Ground	15 Ω
	7		
	8		
	9		

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

P1778 STEP MOTOR - FUNCTION

Description

INFOID:0000000000992225

- The step motor's 4 aspects of ON/OFF change according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.
- This diagnosis item is detected when electrical system is OK, but mechanical system is NG.
- This diagnosis item is detected when the state of the changing the speed mechanism in unit does not operate normally.

DTC Logic

INFOID:0000000000992226

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1778 STEP MOTR/FNC” with CONSULT-III is detected under the following conditions.
- When not changing the pulley ratio according to the instruction of TCM.

Possible Cause
Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting “DTC CONFIRMATION PROCEDURE”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation occurred, go to TM-329, "Diagnosis Procedure".**

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**
If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)	

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 sec or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

With GST.
Follow the procedure “With CONSULT-III”.
“P1778 STEP MOTR/FNC”

YES >> Go to TM-329, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000000992227

1. CHECK STEP MOTOR

With CONSULT-III

It is monitoring whether “GEAR RATIO: 2.34 – 0.39” changes similarly to “STM STEP: 0 – 177” by “DATA MONITOR” mode. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Without CONSULT-III

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to TM-397, "Vehicle Speed When Shifting Gears".

OK or NG

OK >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
NG >> Replace the transaxle assembly. Refer to TM-393, "Exploded View".

SHIFT LOCK SYSTEM

Description

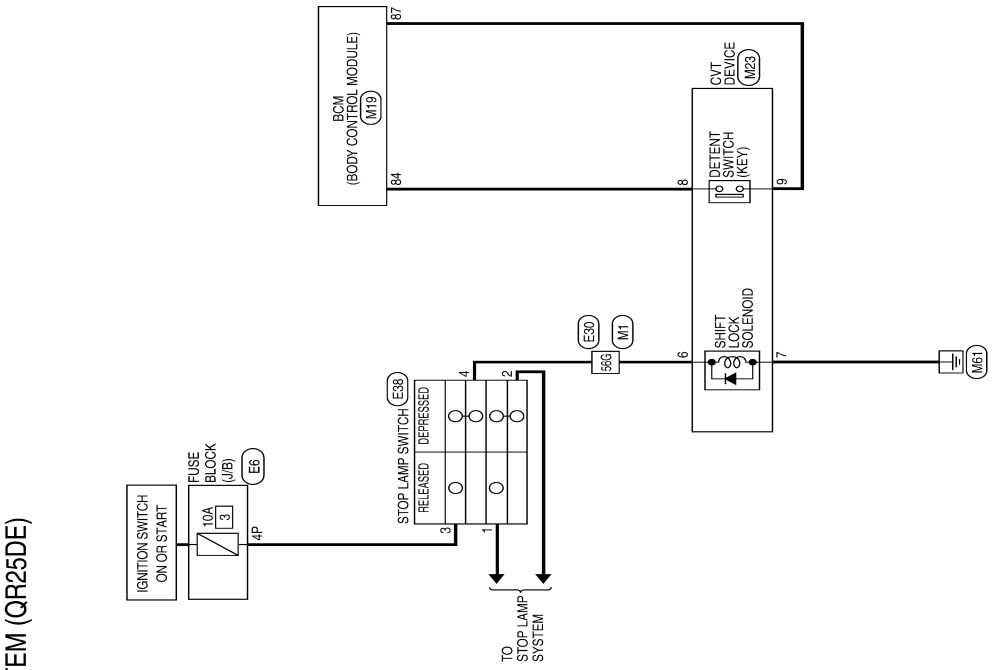
INFOID:0000000000992228

The selector lever cannot be shifted from “P” position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Wiring Diagram

INFOID:0000000000992229

CVT SHIFT LOCK SYSTEM (QR25DE)



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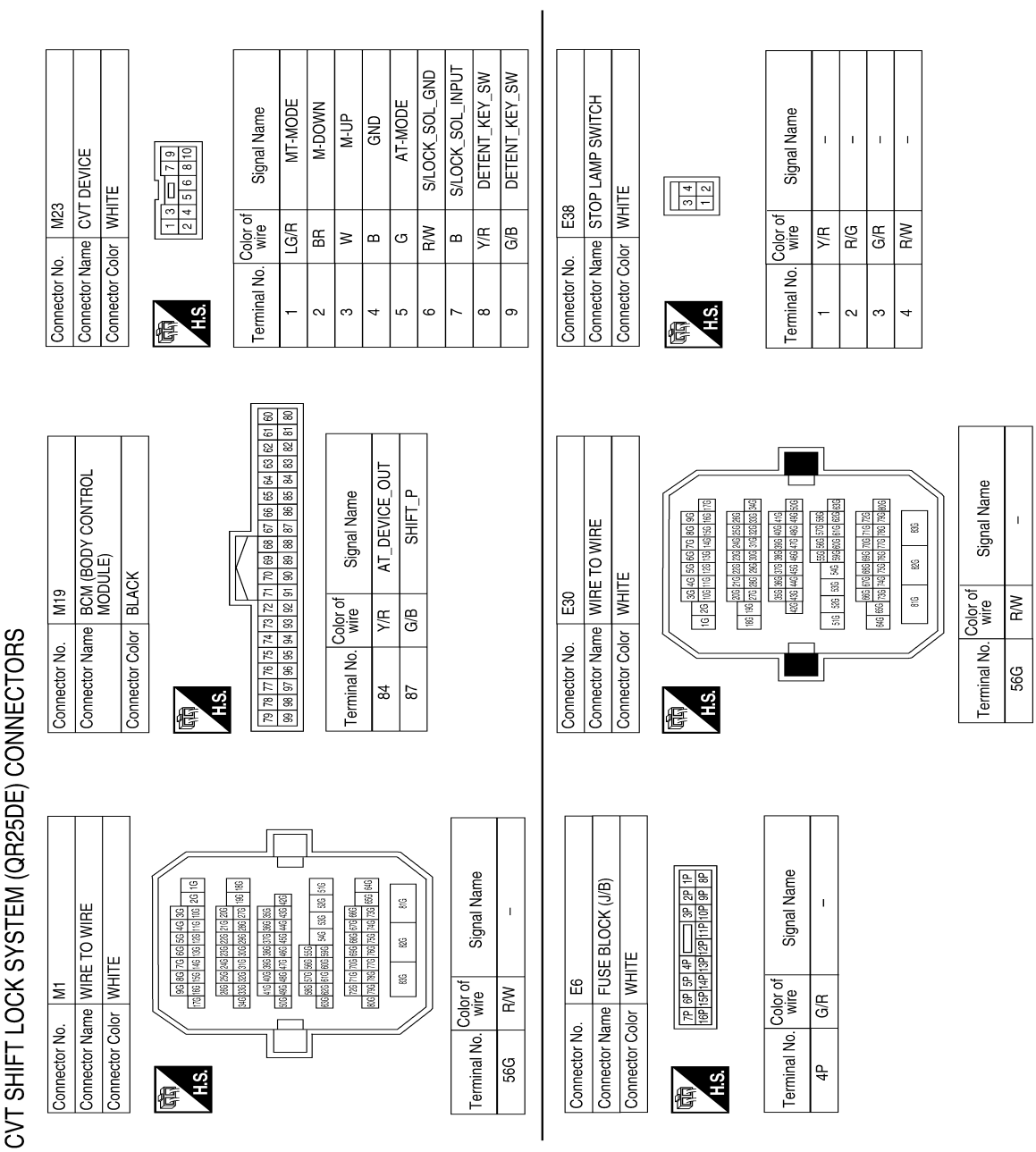
CVT SHIFT LOCK SYSTEM (QR25DE) CONNECTORS



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Diagnosis Procedure

INFOID:0000000000992230

DIAGNOSTIC PROCEDURE

SYMPTOM 1:

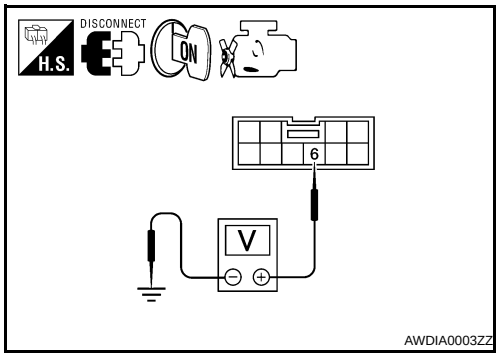
- **Selector lever cannot be moved from "P" position with ignition switch in ON position and brake pedal depressed.**

SYMPTOM 2:

- **Selector lever can be moved from "P" position with ignition key in ON position and brake pedal released.**

1. CHECK POWER SOURCE

1. Disconnect CVT device harness connector.
2. Turn ignition switch ON (Do not start engine).
3. Check voltage between CVT device harness connector M23 terminal 6 and ground.



Voltage:

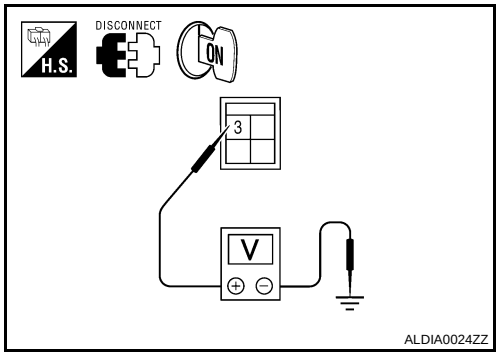
Brake pedal depressed:	**Battery voltage**
Brake pedal released:	**0V**

OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

2. CHECK POWER SOURCE AT STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector.
3. Turn ignition switch ON (Do not start engine).
4. Check voltage between stop lamp switch harness connector E38 terminal 3 and ground.



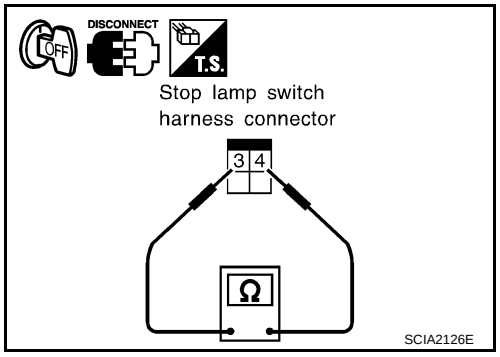
Voltage: **Battery voltage**

OK or NG

OK >> GO TO 3.
NG >> Check the following items for damage, repair or replace damaged parts:
- 10A fuse [No. 3, located in the fuse block (J/B)].
- Harness for open between ignition switch and stop lamp switch harness connector.
- Ignition switch, refer to XX POWER SUPPLY ROUTING CIRCUIT.

3. CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector E38.
3. Check continuity between stop lamp switch terminals 3 and 4.



Condition	Continuity
Manually depress stop lamp switch	YES
Stop lamp switch released	NO

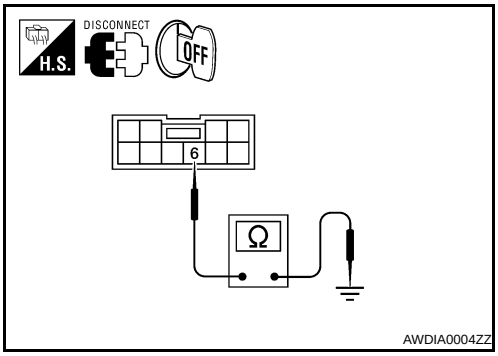
OK or NG

OK >> Adjust stop lamp switch. Refer to XX BRAKE PEDAL - ADJUSTMENT.
NG >> Replace stop lamp switch.

4. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between CVT device harness connector M23 terminal 6 and ground.

Continuity should exist.



OK or NG

OK >> Replace shift lock solenoid and park position switch assembly.

NG >> Repair open circuit in harness or connectors.

ECU DIAGNOSIS

TCM

Reference Value

INFOID:0000000000992231

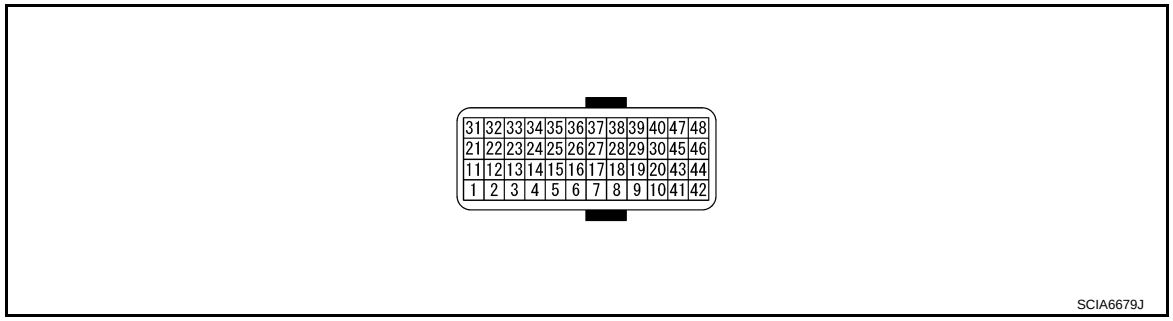
VALUES ON THE DIAGNOSIS TOOL

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG*	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	1.0 V
PRI HYDR SEN	“N” position idle	0.7 - 3.5 V
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F)	2.0 V
	When CVT fluid temperature is 80°C (176°F)	1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.34 - 0.39
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8
SEC PRESS	“N” position idle	1.3 MPa
PRI PRESS	“N” position idle	0.6 - 0.8 MPa
STM STEP	During driving	0 step – 177 step
ISOLT1	Lock-up “OFF”	0.0 A
	Lock-up “ON”	0.7 A
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0 A
SOLMON1	Lock-up “OFF”	0.0 A
	Lock-up “ON”	0.7 A
SOLMON2	“N” position idle	0.8 A
	When stalled	0.3 - 0.6 A
SOLMON3	“N” position idle	0.6 - 0.7 A
	When stalled	0.4 - 0.6 A
P POSITION SW	Selector lever in “P” position	ON
	When setting selector lever to other positions.	OFF
R POSITION SW	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
N POSITION SW	Selector lever in “N“ position	ON
	When setting selector lever to other positions.	OFF

Item name	Condition	Display value (Approx.)
D POSITION SW	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
BRAKE SW	Depressed brake pedal	ON
	Released brake pedal	OFF
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
IDLE SW	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
INDDRNG	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
INDNRNG	Selector lever in “N“ position	ON
	When setting selector lever to other positions.	OFF
INDRRNG	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
INDPRNG	Selector lever in “P” position	ON
	When setting selector lever to other positions.	OFF
SMCOIL D	During driving	Changes ON ⇔ OFF.
SMCOIL C	During driving	Changes ON ⇔ OFF.
SMCOIL B	During driving	Changes ON ⇔ OFF.
SMCOIL A	During driving	Changes ON ⇔ OFF.
LUSEL SOL OUT	Selector lever in “P”, “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D” position	OFF
LUSEL SOL MON	Selector lever in “P”, “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D” or position	OFF
ABS ON*	ABS operate	ON
	Other conditions	OFF
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
NONMMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

*: Models without ABS does not indicate.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
1 (P/B)	Ground	R RANGE SW	Output	Ignition switch ON	Selector lever in “R” position	Battery voltage
					When setting selector lever to other positions	0 V
2 (P/L)	Ground	N RANGE SW	Output		Selector lever in “N” position	Battery voltage
					When setting selector lever to other positions	0 V
3 (G/O)	Ground	D RANGE SW	Output		Selector lever in “D” positions	Battery voltage
					When setting selector lever to other positions	0 V
4 (GR)	Ground	L RANGE SW	Output		Selector lever in “L” position	Battery voltage
					When setting selector lever to other positions	0 V
5 (B)	Ground	Ground	Output	Always		0 V
6 (O)	Ground	K-LINE	Input/Output	—		—
7 (W)	Ground	Sensor ground	Input	Always		0 V
8 (G/W)	—	CLOCK	—	—		—
9 (L/R)	—	CHIP SELECT	—	—		—
10 (BR/R)	—	DATA I/O	—	—		—
11 (BR/W)	Ground	P RANGE SW	Output	Ignition switch ON	Selector lever in “P” position	Battery voltage
					When setting selector lever to other positions	0 V
13 (V)	Ground	CVT fluid temperature sensor	Output	Ignition switch ON	When CVT fluid temperature is 20°C (68°F)	2.0 V
					When CVT fluid temperature is 80°C (176°F)	1.0 V

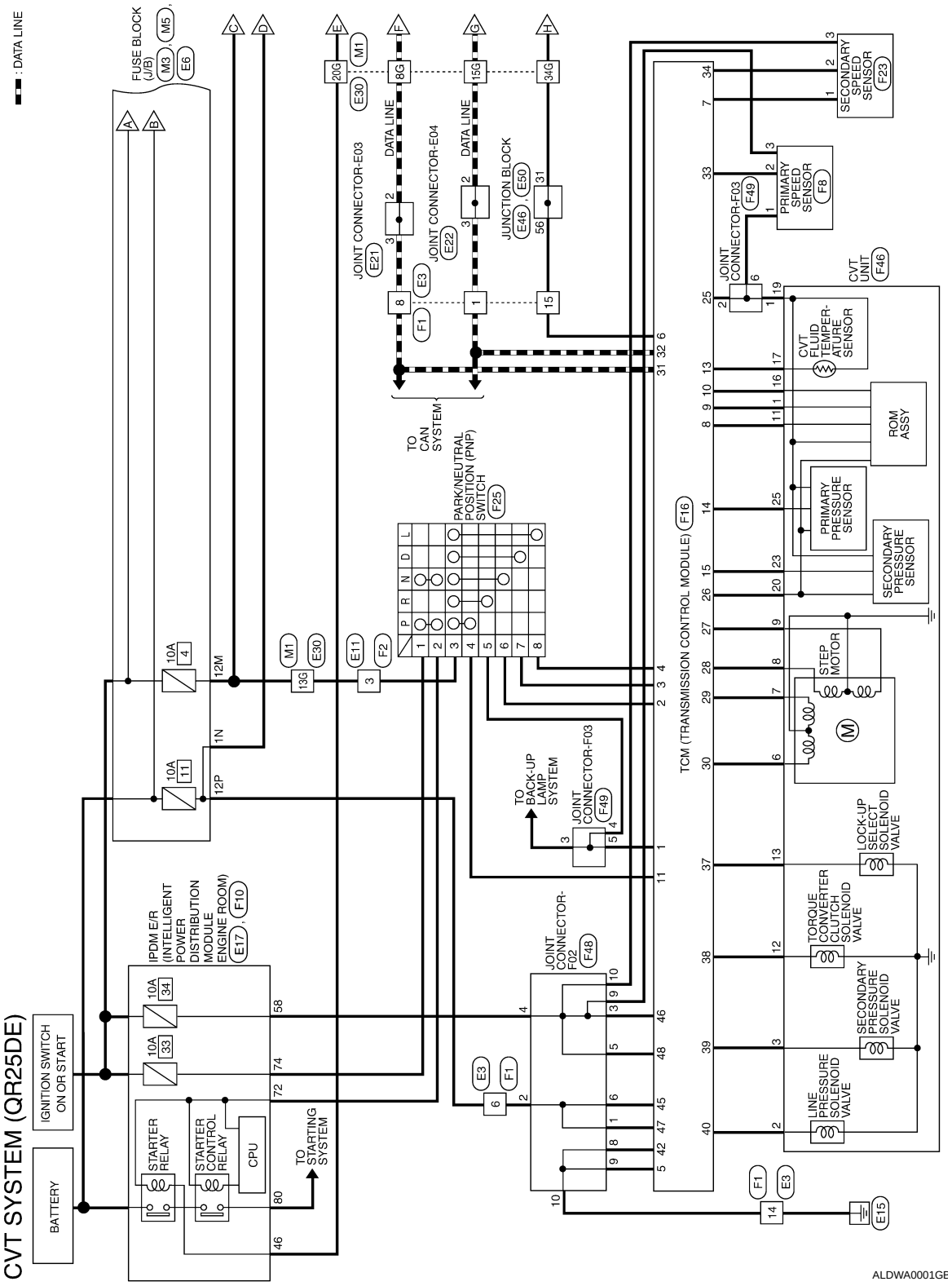
Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
14 (LG)	Ground	Transmission fluid pressure sensor B (Primary pressure sensor)	Input	"N" position idle		0.7 – 3.5 V
15 (V/W)	Ground	Transmission fluid pressure sensor A (Secondary pressure sensor)	Input			1.0 V
25 (W/R)	Ground	Sensor ground	Input	Always		0 V
26 (L/O)	Ground	Sensor power	Input	Ignition switch ON	—	5.0 V
				Ignition switch OFF	—	0 V
27 (R/G)	Ground	Step motor D	Input	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-III.*1 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.**		10.0 msec
28 (R)	Ground	Step motor C	Input			30.0 msec
29 (O/B)	Ground	Step motor B	Input			10.0 msec
30 (G/R)	Ground	Step motor A	Input			30.0 msec
31 (P)	—	CAN-L	Input/Output	—		—
32 (L)	—	CAN-H	Input/Output	—		—
33 (LG/W)	Ground	Input speed sensor (Primary speed sensor)	Input	When driving ["M1" position, 20 km/h (12 MPH)]		610 Hz
34 (LG/R)	Ground	Output speed sensor (Secondary speed sensor)	Input	When driving ["D" position, 20 km/h (12 MPH)]		480 Hz
37 (L/W)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Selector lever in "P" or "N" positions	Battery voltage
					Wait at least for 5 seconds with the selector lever in "R" or "D" positions.	0 V
38 (G)	Ground	Torque converter clutch solenoid valve	Output	When vehicle cruises in "D" position	When CVT performs lock-up	6.0 V
					When CVT does not perform lock-up	1.0 V
39 (W/B)	Ground	Pressure control solenoid valve B (Secondary pressure solenoid valve)	Output	"P" or "N" position idle	Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	3.0 – 4.0 V
40 (R/Y)	Ground	Pressure control solenoid valve A (Line pressure solenoid valve)	Output		Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	1.0 – 3.0 V
42 (B)	Ground	Ground	Output	Always		0 V
45 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
46 (Y)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V
47 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage

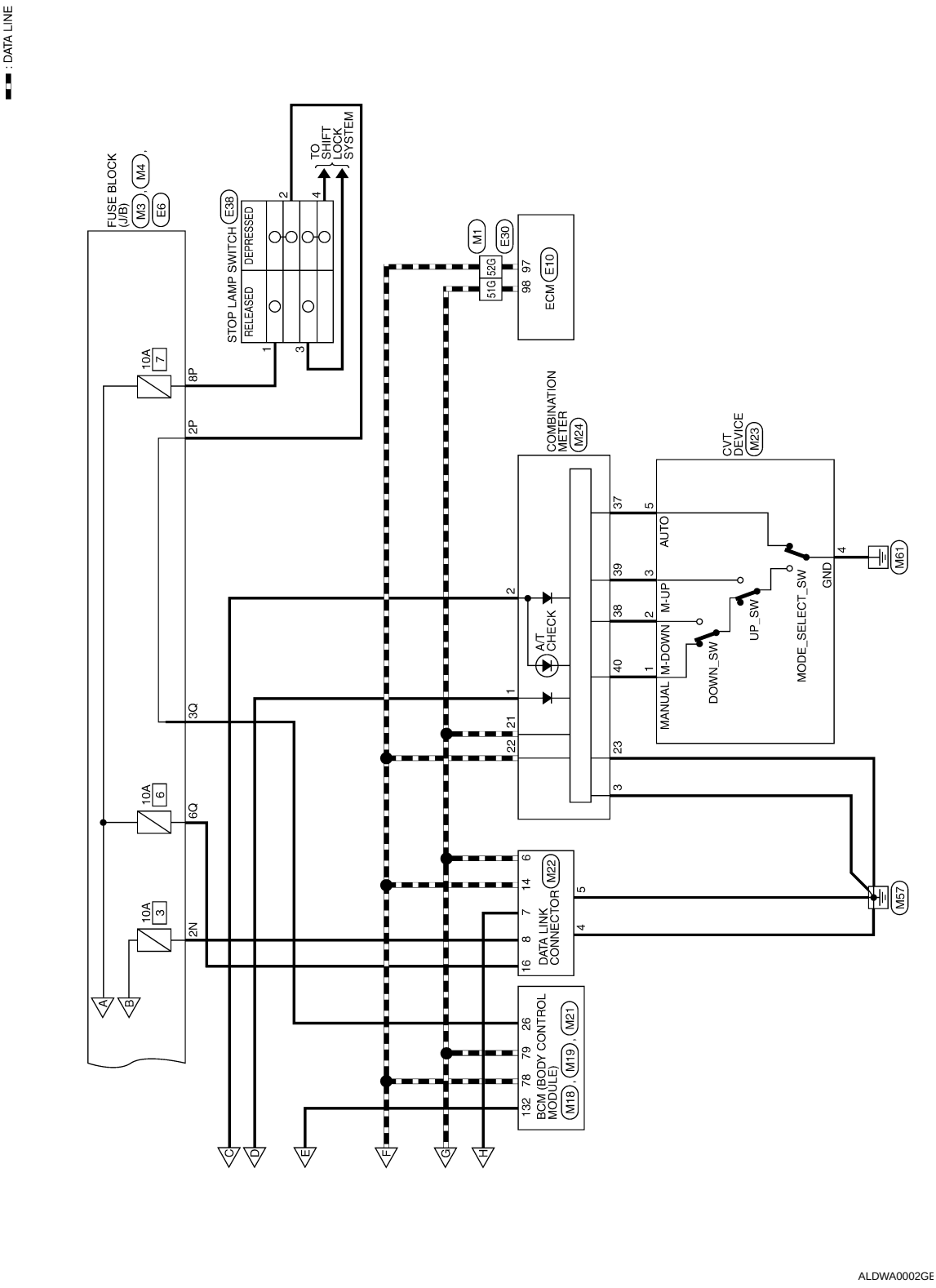
Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
48 (Y)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V

*1: A circuit tester cannot be used to test this item.

Wiring Diagram — CVT CONTROL SYSTEM —

INFOID:0000000000992232

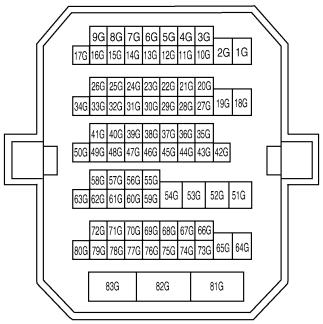



: DATA LINE
FUSE BLOCK (J/B)
M3
M4
E6
STOP LAMP SWITCH
E38
DEPRESSED
RELEASED
TO SHIFT LOCK SYSTEM
10A 7
10A 6
10A 3
8P
2P
3Q
6Q
2N
M1
E30
51G
52G
97
98
ECM
E10
COMBINATION METER
M24
A/T CHECK
CVT DEVICE
M23
AUTO
M-UP
M-DOWN
MANUAL
DOWN_SW
UP_SW
MODE_SELECT_SW
GND
M61
M57
DATA LINK CONNECTOR
M22
BCM (BODY CONTROL MODULE)
M18
M19
M21
A
B
C
D
E
F
G
H
ALDWA0002GE

CVT CONTROL SYSTEM (QR25DE) CONNECTORS

Connector No.	M1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

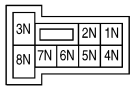
H.S.



Terminal No.	Color of wire	Signal Name
8G	P	–
13G	O	–
15G	L	–
51G	L	–
52G	P	–

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

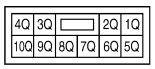
H.S.



Terminal No.	Color of wire	Signal Name
2N	G	–

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

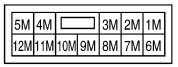
H.S.



Terminal No.	Color of wire	Signal Name
3Q	O/L	–
6Q	Y/R	–

Connector No.	M5
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

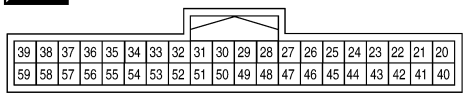
H.S.



Terminal No.	Color of wire	Signal Name
12M	P	–

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.



Terminal No.	Color of wire	Signal Name
26	O/L	STOP_LAMP_HIGH_SW

ALDIA0001GB

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK

H.S.

79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80

Terminal No.	Color of wire	Signal Name
78	P	CAN-L
79	L	CAN-H

Connector No.	M21
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GREEN

H.S.

131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132

Terminal No.	Color of wire	Signal Name
132	R	ST_CONT_USM

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of wire	Signal Name
4	B	GND
5	B	GND
6	L	CAN-H
7	O	K-LINE
8	G	IGN_SW
14	P	CAN-L
16	Y/R	BATT

Connector No.	M23
Connector Name	CVT DEVICE
Connector Color	WHITE

H.S.

1	3		7	9
2	4	5	6	8	10

Terminal No.	Color of wire	Signal Name
1	LG/R	MT_MODE
2	BR	M_DOWN
3	W	M_UP
4	B	GND
5	G	AT_MODE

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

1	2	3	4	5		6	7	8	9	10	11	12	13	14	15		16	17	18	19	20
21	22	23	24	25		26	27	28	29	30	31	32	33	34	35		36	37	38	39	40

Terminal No.	Color of wire	Signal Name
1	W/L	BAT
2	O	IGN
3	B	GND
14	V/Y	ACC
21	L	CAN-H
22	P	CAN-L
23	B	GND
37	G	NOT M RANGE
38	BR	AT SHIFT DOWN
39	W	AT SHIFT UP
40	LG/R	M RANGE

ALDIA0002GB

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3		4	5	6	7
8	9	10	11	12	13	14	15	16

Terminal No.	Color of wire	Signal Name
1	L	–
4	G/B	–
6	L/R	–
8	P	–
14	B	–
15	O	–

Connector No.	E6
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

H.S.

7P	6P	5P	4P		3P	2P	1P
16P	15P	14P	13P	12P	11P	10P	9P	8P

Terminal No.	Color of wire	Signal Name
1P	SB	–
4P	G/R	–
6P	Y	–
8P	Y/R	–
12P	L/R	–

Connector No.	E10
Connector Name	ECM
Connector Color	BLACK

H.S.

81	85	89	93	97	101	105	109
82	86	90	94	98	102	106	110
83	87	91	95	99	103	107	111
84	88	92	96	100	104	108	112

Terminal No.	Color of wire	Signal Name
97	P	CAN-L
98	L	CAN-H

Connector No.	E17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

42	41	40	39
46	45	44	43

Terminal No.	Color of wire	Signal Name
41	B	S-GND
46	R	START_CONT

Connector No.	E21
Connector Name	JOINT CONNECTOR-E03
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of wire	Signal Name
2	L	–
3	L	–

Connector No.	E22
Connector Name	JOINT CONNECTOR-E04
Connector Color	WHITE

H.S.

4	3	2	1

Terminal No.	Color of wire	Signal Name
2	P	–
3	P	–

ALDIA0003GB

Connector No.	E30
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
8G	P	–
13G	O	–
15G	L	–
51G	L	–
52G	P	–

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
1	Y/R	–
2	R/G	–
3	G/R	–
4	R/W	–

Connector No.	E46
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
31	O	–

Connector No.	E50
Connector Name	JUNCTION BLOCK
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
56	O	–

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
1	L	–
4	G/B	–
6	L/R	–
8	P	–
14	B	–
15	O	–

ALDIA0004GB

Connector No.	F8
Connector Name	PRIMARY SPEED SENSOR
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
1	W/R	SENSOR_GND
2	LG/W	PRI_SPEED_SENSOR
3	Y	VIGN

Connector No.	F10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
58	Y	AT_ECU
72	R/B	NPSW
74	Y	START_IG_EGI
80	B/W	STARTER_MOTOR

Terminal No.	Color of wire	Signal Name
28	R	S/M-C
29	O/B	S/M-B
30	G/R	S/M-A
31	P	CAN-L
32	L	CAN-H
33	LG/W	PRI SPEED SENSOR
34	LG/R	SEC SPEED SENSOR
37	L/W	L/U&SELECT-ON/OFF SOL
38	G	L/U&SELECT-LINER SOL
39	W/B	SEC LINER SOL
40	R/Y	PL LINER SOL
42	B	GND
45	L/R	BATT
46	Y	VIGN
47	L/R	BATT
48	Y	VIGN

Connector No.	F16
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	BLACK

H.S.

Terminal No.	Color of wire	Signal Name
1	P/B	R RANGE SW
2	P/L	N RANGE SW
3	G/O	D RANGE SW
4	GR	L RANGE SW
5	B	GND
6	O	K-LINE
7	W	SENSOR GND
8	G/W	CLOCK (SEL2)
9	L/R	CHIP SELECT (SEL1)
10	BR/R	DATA I/O (SEL3)
11	BR/W	P RANGE SW
13	V	ATF TEMP SENS
14	LG	PRI OIL PRESS SENS
15	V/W	SEC OIL PRESS SENS
25	W/R	SENSOR GND
26	L/O	SENS POWER SOURCE
27	R/G	S/M-D

ALDIA0005GB

Connector No.	F23
Connector Name	SECONDARY SPEED SENSOR
Connector Color	WHITE

H.S.

Terminal No.	Color of wire	Signal Name
1	W	SENSOR_GND
2	LG/R	SEC_SPEED_SENSOR
3	Y	VIGN

Connector No.	F25
Connector Name	PARK/NEUTRAL POSITION (PNP) SWITCH
Connector Color	BLACK

H.S.

Terminal No.	Color of wire	Signal Name
1	Y	IGN_P_N
2	R/B	P_N_OUTPUT
3	O	IGN
4	BR/W	P_OUTPUT
5	P/B	R_OUTPUT
6	P/L	N_OUTPUT
7	G/O	D_OUTPUT
8	G/R	L_OUTPUT

Connector No.	F46
Connector Name	CVT UNIT
Connector Color	BLACK

H.S.

Terminal No.	Color of wire	Signal Name
1	L/R	CHIP_SELECT_(SEL1)
2	R/Y	PL_LINEAR_SOL
3	W/B	SEC_LINEAR_SOL
6	G/R	S/M-A
7	O/B	S/M-B
8	R/Y	S/M-C
9	R/G	S/M-D
11	G/W	CLOCK_(SEL2)
12	G	L/U&SELECT-LINEAR_SOL
13	L/W	L/U&SELECT-ON/OFF_SOL
16	BR/R	DATA_I/O_(SEL3)
17	V	ATF_TEMP_SENSOR
19	W/R	SENSOR_GND
20	L/O	SENSOR_POWER_SOURCE
23	V/W	SEC_OIL_PRESSURE_SENSOR
25	LG	PRI_OIL_PRESSURE_SENSOR

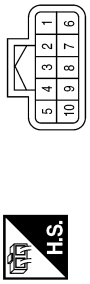
Connector No.	F48
Connector Name	JOINT-CONNECTOR-F02
Connector Color	BLACK

H.S.

Terminal No.	Color of wire	Signal Name
1	L/R	–
2	L/R	–
3	Y	–
4	Y	–
5	Y	–
6	L/R	–
9	Y	–
10	Y	–

ALDIA0028GB

Connector No.	F49
Connector Name	JOINT CONNECTOR-F03
Connector Color	BLACK



Terminal No.	Color of wire	Signal Name
1	W/R	–
2	W/R	–
3	G/W	–
4	P/B	–
5	P/B	–
6	W/R	–
8	B	–
9	B	–
10	B	–

ALDIA0056GB

Fail-safe

INFOID:0000000000992233

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is an error in a main electronic control input/output signal circuit.

FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the CVT to make driving possible.

Output Speed Sensor (Secondary Speed Sensor)

The shift pattern is changed in accordance with throttle position when an unexpected signal is sent from the output speed sensor (secondary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in “D”.

Input Speed Sensor (Primary Speed Sensor)
The shift pattern is changed in accordance with throttle position and secondary speed (vehicle speed) when an unexpected signal is sent from the input speed sensor (primary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in “D”.

PNP Switch
If an unexpected signal is sent from the PNP switch to the TCM, the transaxle is put in “D”.

Manual Mode Switch
If an unexpected signal is sent from the manual mode switch to the TCM, the transaxle is put in “D”.

CVT Fluid Temperature Sensor
If an unexpected signal is sent from the CVT fluid temperature sensor to the TCM, the gear ratio in use before receiving the unexpected signal is maintained or the gear ratio is controlled to keep engine speed under 3,400 rpm.

Transmission Fluid Pressure Sensor A (Secondary Pressure Sensor)
- If an unexpected signal is sent from the transmission fluid pressure sensor A (secondary pressure sensor) to the TCM, the secondary pressure feedback control is stopped and the offset value obtained before the non-standard condition occurs is used to control line pressure.
- If transmission fluid pressure sensor A (secondary pressure sensor) error signal is input to TCM, secondary pressure feedback control stops, but line pressure is controlled normally.

Pressure Control Solenoid A (Line Pressure Solenoid)
If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid A (line pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Pressure Control Solenoid B (Secondary Pressure Solenoid)
If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid B (secondary pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Torque Converter Clutch Solenoid
If an unexpected signal is sent from the solenoid to the TCM, the torque converter clutch solenoid is turned OFF to cancel the lock-up.

Step Motor
If an unexpected signal is sent from the step motor to the TCM, the step motor coil phases “A” through “D” are all turned OFF to hold the gear ratio used right before the non-standard condition occurred.

CVT Lock-up Select Solenoid
If an unexpected signal is sent from the solenoid to the TCM, the CVT lock-up select solenoid is turned OFF to cancel the lock-up.

TCM Power Supply (Memory Back-up)
Transaxle assembly is protected by limiting the engine torque when the memory back-up power supply (for controlling) from the battery is not supplied to TCM. Normal statues is restored when turning the ignition switch OFF to ON after the normal power supply.

DTC Inspection Priority Chart

INFOID:0000000000992234

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

NOTE:
If DTC “U1000 CAN COMM CIRCUIT” is displayed with other DTCs, first perform the trouble diagnosis for “DTC U1000 CAN COMMUNICATION LINE”. Refer to TM-272.

Priority	Detected items (DTC)
1	U1000 CAN communication line
2	Except above

DTC Index

INFOID:0000000000992235

NOTE:
If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to TM-272.

DTC		Items (CONSULT-III screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-III GST*1	CONSULT-III only "TRANSMISSION"		
—	P0703	BRAKE SW/CIRC	TM-274
P0705	P0705	PNP SW/CIRC	TM-276
P0710	P0710	ATF TEMP SEN/CIRC	TM-279
P0715	P0715	INPUT SPD SEN/CIRC	TM-281
P0720	P0720	VEH SPD SEN/CIR AT	TM-284
—	P0725	ENGINE SPEED SIG	TM-287
—	P0730	BELT DAMG	TM-289
P0740	P0740	TCC SOLENOID/CIRC	TM-291
P0744	P0744	A/T TCC S/V FNCTN	TM-293
P0745	P0745	L/PRESS SOL/CIRC	TM-295
P0746	P0746	PRS CNT SOL/A FCTN	TM-297
P0776	P0776	PRS CNT SOL/B FCTN	TM-299
P0778	P0778	PRS CNT SOL/B CIRC	TM-301
—	P0826	MANUAL MODE SWITCH	TM-303
P0840	P0840	TR PRS SENS/A CIRC	TM-306
—	P0841	PRESS SEN/FNCTN	TM-308
P0845	P0845	TR PRS SENS/B CIRC	TM-310
—	P0868	SEC/PRESS DOWN	TM-312
—	P1701	TCM-POWER SUPPLY	TM-314
—	P1705	TP SEN/CIRC A/T	TM-316
—	P1722*2	ESTM VEH SPD SIG	TM-318
—	P1723	CVT SPD SEN/FNCTN	TM-320
—	P1726	ELEC TH CONTROL	TM-322
P1740	P1740	LU-SLCT SOL/CIRC	TM-323
—	P1745	L/PRESS CONTROL	TM-325
P1777	P1777	STEP MOTR CIRC	TM-326
P1778	P1778	STEP MOTR/FNC	TM-329
U1000	U1000	CAN COMM CIRCUIT	TM-272
U1010	U1010	CONTROL UNIT(CAN)	TM-273

*1: These numbers are prescribed by SAE J2012.
*2: Models without ABS does not indicate.

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000000992236

The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. (“N”→ “D” position)	ON vehicle	1. Engine idle speed	EC-536 (For california), EC-1051 (Except for california)
				2. Engine speed signal	TM-287
				3. Accelerator pedal position sensor	TM-316
				4. CVT position	TM-381
				5. CVT fluid temperature sensor	TM-279
				6. CAN communication line	TM-272
				7. CVT fluid level and state	TM-368
				8. Line pressure test	TM-375
				9. Torque converter clutch solenoid valve	TM-291
				10. Lock-up select solenoid valve	TM-323
				11. PNP switch	TM-276
			OFF vehicle	12. Forward clutch	TM-393
				13. Control valve	
2		Large shock. (“N”→ “R” position)	ON vehicle	1. Engine idle speed	EC-536 (For california), EC-1051 (Except for california)
				2. Engine speed signal	TM-287
				3. Accelerator pedal position sensor	TM-316
				4. CVT position	TM-381
				5. CVT fluid temperature sensor	TM-279
				6. CAN communication line	TM-272
				7. CVT fluid level and state	TM-368
				8. Line pressure test	TM-375
				9. Torque converter clutch solenoid valve	TM-291
				10. Lock-up select solenoid valve	TM-323
				11. PNP switch	TM-276
			OFF vehicle	12. Reverse brake	TM-393
				13. Control valve	
3		Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-381
				2. Engine speed signal	TM-287
				3. CAN communication line	TM-272
				4. CVT fluid level and state	TM-368
			OFF vehicle	5. Torque converter	TM-393
				6. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
4	Slips/Will Not Engage	Vehicle cannot be started from “D” position.	ON vehicle	1. CVT fluid level and state	TM-368
				2. CVT position	TM-381
				3. CAN communication line	TM-272
				4. Line pressure test	TM-375
				5. Stall test	TM-373
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Accelerator pedal position sensor	TM-316
				10. CVT fluid temperature sensor	TM-279
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Oil pump assembly	TM-393
				14. Forward clutch	
				15. Control valve	
				16. Parking components	
5		Vehicle cannot be started from “R” position.	ON vehicle	1. CVT fluid level and state	TM-368
				2. CVT position	TM-381
				3. CAN communication line	TM-272
				4. Line pressure test	TM-375
				5. Stall test	TM-373
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Accelerator pedal position sensor	TM-316
				10. CVT fluid temperature sensor	TM-279
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Oil pump assembly	TM-393
				14. Reverse brake	
				15. Control valve	
				16. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
6	Slips/Will Not Engage	Does not lock-up.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Engine speed signal	TM-287
				4. Primary speed sensor	TM-281
				5. Torque converter clutch solenoid valve	TM-291
				6. CAN communication line	TM-272
				7. Stall test	TM-373
				8. Step motor	TM-326
				9. PNP switch	TM-276
				10. Lock-up select solenoid valve	TM-323
				11. CVT fluid temperature sensor	TM-279
				12. Secondary speed sensor	TM-284
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-393
				15. Oil pump assembly	
				16. Control valve	
7		Does not hold lock-up condition.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Engine speed signal	TM-287
				4. Primary speed sensor	TM-281
				5. Torque converter clutch solenoid valve	TM-291
				6. CAN communication line	TM-272
				7. Stall test	TM-373
				8. Step motor	TM-326
				9. PNP switch	TM-276
				10. Lock-up select solenoid valve	TM-323
				11. CVT fluid temperature sensor	TM-279
				12. Secondary speed sensor	TM-284
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-393
				15. Oil pump assembly	
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
8	Slips/Will Not Engage	Lock-up is not released.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Engine speed signal	TM-287
				4. Primary speed sensor	TM-281
				5. Torque converter clutch solenoid valve	TM-291
				6. CAN communication line	TM-272
				7. Stall test	TM-373
			OFF vehicle	8. Torque converter	TM-393
				9. Oil pump assembly	
				10. Control valve	
9		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Stall test	TM-373
				4. Accelerator pedal position sensor	TM-316
				5. CAN communication line	TM-272
				6. PNP switch	TM-276
				7. CVT position	TM-381
				8. Step motor	TM-326
				9. Primary speed sensor	TM-281
				10. Secondary speed sensor	TM-284
				11. Accelerator pedal position sensor	TM-316
				12. Primary pressure sensor	TM-156
				13. Secondary pressure sensor	TM-152
				14. CVT fluid temperature sensor	TM-279
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-393
				17. Oil pump assembly	
				18. Forward clutch	
				19. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
10	Slips/Will Not Engage	With selector lever in “R” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Stall test	TM-373
				4. Accelerator pedal position sensor	TM-316
				5. CAN communication line	TM-272
				6. PNP switch	TM-276
				7. CVT position	TM-381
				8. Step motor	TM-326
				9. Primary speed sensor	TM-281
				10. Secondary speed sensor	TM-284
				11. Accelerator pedal position sensor	TM-316
				12. Primary pressure sensor	TM-156
				13. Secondary pressure sensor	TM-156
				14. CVT fluid temperature sensor	TM-279
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-393
				17. Oil pump assembly	
				18. Reverse brake	
				19. Control valve	
11		Slips at lock-up.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Engine speed signal	TM-287
				4. Primary speed sensor	TM-281
				5. Torque converter clutch solenoid valve	TM-291
				6. CAN communication line	TM-272
				7. Stall test	TM-373
				8. Step motor	TM-326
				9. PNP switch	TM-276
				10. Lock-up select solenoid valve	TM-323
				11. CVT fluid temperature sensor	TM-279
				12. Secondary speed sensor	TM-284
				13. Secondary pressure sensor	TM-152
			OFF vehicle	14. Torque converter	TM-393
				15. Oil pump assembly	
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
12	Other	No creep at all.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Accelerator pedal position sensor	TM-316
				4. PNP switch	TM-276
				5. CAN communication line	TM-272
				6. Stall test	TM-373
				7. CVT position	TM-381
				8. Step motor	TM-326
				9. Primary speed sensor	TM-281
				10. Secondary speed sensor	TM-284
				11. Accelerator pedal position sensor	TM-316
				12. CVT fluid temperature sensor	TM-279
				13. Primary pressure sensor	TM-156
				14. Secondary pressure sensor	TM-152
				15. Power supply	TM-160
			OFF vehicle	16. Torque converter	TM-393
				17. Oil pump assembly	
				18. Gear system	
				19. Forward clutch	
				20. Reverse brake	
				21. Control valve	
13		Vehicle cannot run in all positions.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. PNP switch	TM-276
				4. Stall test	TM-373
				5. CVT position	TM-381
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Accelerator pedal position sensor	TM-316
				10. CVT fluid temperature sensor	TM-279
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-393
				14. Oil pump assembly	
				15. Gear system	
				16. Forward clutch	
				17. Reverse brake	
				18. Control valve	
				19. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
14	Other	With selector lever in “D” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. PNP switch	TM-276
				4. Stall test	TM-373
				5. CVT position	TM-381
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Accelerator pedal position sensor	TM-316
				10. CVT fluid temperature sensor	TM-279
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-393
				14. Oil pump assembly	
				15. Gear system	
				16. Forward clutch	
				17. Control valve	
				18. Parking components	
15		With selector lever in “R” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. PNP switch	TM-276
				4. Stall test	TM-373
				5. CVT position	TM-381
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Accelerator pedal position sensor	TM-316
				10. CVT fluid temperature sensor	TM-279
				11. Secondary pressure sensor	TM-152
				12. Power supply	TM-160
			OFF vehicle	13. Torque converter	TM-393
				14. Oil pump assembly	
				15. Gear system	
				16. Reverse brake	
				17. Control valve	
				18. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
16	Other	Judder occurs during lock-up.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. Primary speed sensor	TM-281
				4. Secondary speed sensor	TM-284
				5. Accelerator pedal position sensor	TM-316
				6. CAN communication line	TM-272
				7. Torque converter clutch solenoid valve	TM-291
			OFF vehicle	8. Torque converter	TM-393
				9. Control valve	
17		Strange noise in “D” position.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. CAN communication line	TM-272
			OFF vehicle	4. Torque converter	TM-393
				5. Oil pump assembly	
				6. Gear system	
				7. Forward clutch	
				8. Control valve	
				9. Bearing	
18		Strange noise in “R” position.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. CAN communication line	TM-272
			OFF vehicle	4. Torque converter	TM-393
				5. Oil pump assembly	
				6. Gear system	
				7. Reverse brake	
				8. Control valve	
19		Strange noise in “N” position.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. CAN communication line	TM-272
			OFF vehicle	4. Torque converter	TM-393
				5. Oil pump assembly	
				6. Gear system	
				7. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
20	Other	Vehicle does not decelerate by engine brake.	ON vehicle	1. CVT fluid level and state	TM-368
				2. CVT position	TM-381
				3. CAN communication line	TM-272
				4. Step motor	TM-326
				5. Primary speed sensor	TM-281
				6. Secondary speed sensor	TM-284
				7. Line pressure test	TM-375
				8. Engine speed signal	TM-287
				9. Accelerator pedal position sensor	TM-316
			OFF vehicle	10. Control valve	TM-393
21		Maximum speed low.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Line pressure test	TM-375
				3. Accelerator pedal position sensor	TM-316
				4. CAN communication line	TM-272
				5. Stall test	TM-373
				6. Step motor	TM-326
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Primary pressure sensor	TM-156
				10. Secondary pressure sensor	TM-152
				11. CVT fluid temperature sensor	TM-279
			OFF vehicle	12. Torque converter	TM-393
				13. Oil pump assembly	
				14. Gear system	
				15. Forward clutch	
				16. Control valve	
22		With selector lever in “P” position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.	ON vehicle	1. PNP switch	TM-276
				2. CVT position	TM-381
			OFF vehicle	3. Parking components	TM-393
23		Vehicle runs with CVT in “P” position.	ON vehicle	1. PNP switch	TM-276
				2. CVT fluid level and state	TM-368
				3. CVT position	TM-381
			OFF vehicle	4. Parking components	TM-393
				5. Gear system	
				6. Control valve	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
24	Other	Vehicle runs with CVT in “N” position.	ON vehicle	1. PNP switch	TM-276
				2. CVT fluid level and state	TM-368
				3. CVT position	TM-381
			OFF vehicle	4. Gear system	TM-393
				5. Forward clutch	
				6. Reverse brake	
				7. Control valve	
25		Engine stall.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. Primary speed sensor	TM-281
				4. Torque converter clutch solenoid valve	TM-291
				5. CAN communication line	TM-272
				6. Stall test	TM-373
				7. Secondary pressure sensor	TM-152
			OFF vehicle	8. Torque converter	TM-393
				9. Control valve	
26		Engine stalls when selector lever shifted “N” →“D”or “R”.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Engine speed signal	TM-287
				3. Primary speed sensor	TM-281
				4. Torque converter clutch solenoid valve	TM-291
				5. CAN communication line	TM-272
				6. Stall test	TM-373
			OFF vehicle	7. Torque converter	TM-393
				8. Control valve	
27		Engine speed does not return to idle.	ON vehicle	1. CVT fluid level and state	TM-368
				2. Accelerator pedal position sensor	TM-316
				3. Secondary speed sensor	TM-284
				4. CAN communication line	TM-272
			OFF vehicle	5. Control valve	TM-393
28		CVT does not shift	ON vehicle	1. CVT fluid level and state	TM-368
				2. CVT position	TM-381
				3. Line pressure test	TM-375
				4. Engine speed signal	TM-287
				5. Accelerator pedal position sensor	TM-316
				6. CAN communication line	TM-272
				7. Primary speed sensor	TM-281
				8. Secondary speed sensor	TM-284
				9. Step motor	TM-326
			OFF vehicle	10. Control valve	TM-393
				11. Oil pump assembly	

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
29	Other	Engine does not start in “N” or “P” position.	ON vehicle	1. Ignition switch and starter	STR-3, STR-21
				2. CVT position	TM-381
				3. PNP switch	TM-276
30		Engine starts in positions other than “N” or “P”.	ON vehicle	1. Ignition switch and starter	STR-3, STR-21
				2. CVT position	TM-381
				3. PNP switch	TM-276

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000000992237

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted.
Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

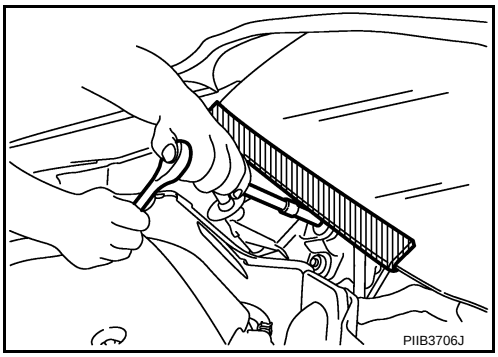
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000000992238

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000000992239

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the ″LOCK″ position.
- Always use CONSULT-II to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-II.

Precaution for On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000000992240

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

- **Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to an open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)**
- **Be sure to route and secure the harnesses properly after work. Interference of the harness with a bracket, etc. may cause the MIL to light up due to a short circuit.**
- **Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to a malfunction of the EVAP system or fuel injection system, etc.**
- **Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.**

Precaution for TCM and CVT Assembly Replacement

INFOID:0000000000992241

CAUTION:

- **Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-III, and then turn ignition switch OFF.)**
- **When replacing CVT assembly or TCM, refer to the pattern table below and erase the EEPROM in the TCM if necessary.**

EEPROM ERASING PATTERNS

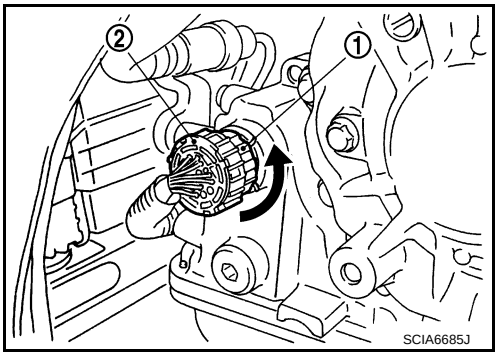
CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000000992242

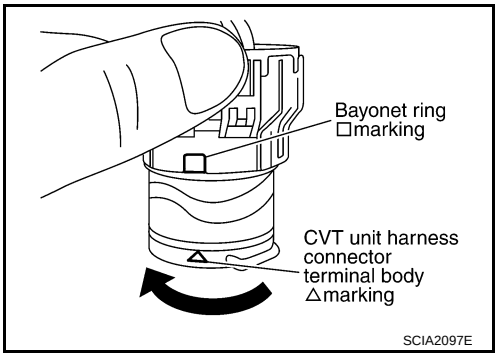
REMOVAL

Rotate bayonet ring (1) counterclockwise, pull out CVT unit harness connector (2) upward and remove it.

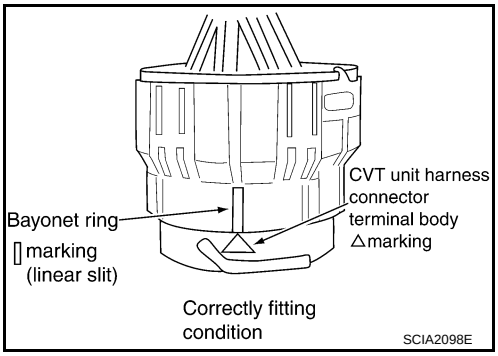


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with ❑ marking on bayonet ring, insert CVT unit harness connector, and then rotate bayonet ring clockwise.

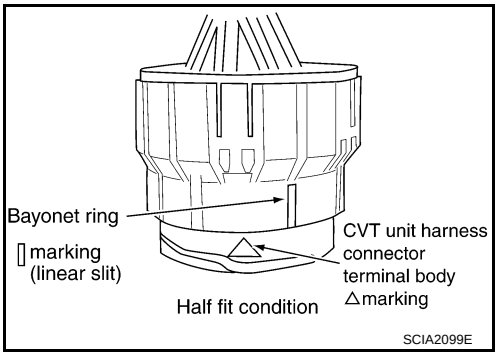


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition), install CVT unit harness connector to CVT unit harness connector terminal body.



CAUTION:

- **Securely align Δ marking on CVT unit harness connector terminal body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.**
- **Do not mistake the slit of bayonet ring for other dent portion.**

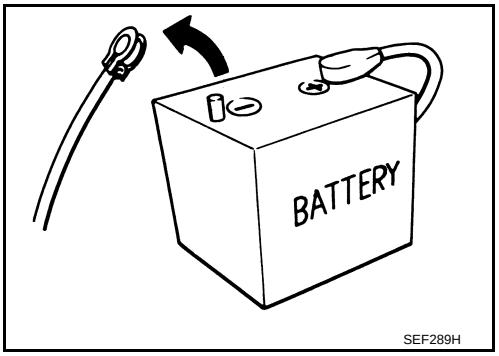


Precaution

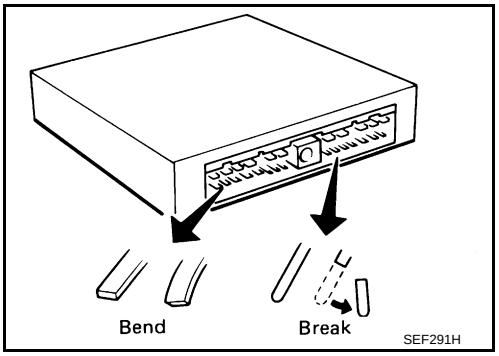
INFOID:0000000000992243

NOTE:
If any malfunction occurs in the RE0F09A model transaxle, replace the entire transaxle assembly.

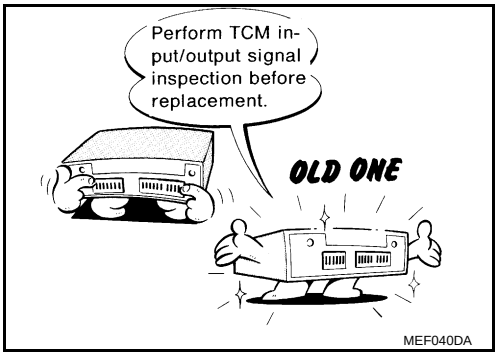
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



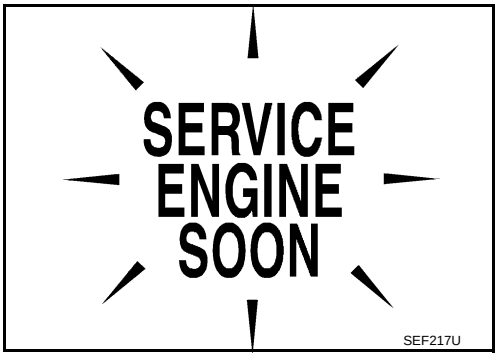
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. TM-335, "Reference Value"**.



- **After performing each TROUBLE DIAGNOSIS, perform “DTC Confirmation Procedure”.**
  If the repair is completed the DTC should not be displayed in the “DTC Confirmation Procedure”.
- Always use the specified brand of CVT fluid. Refer to MA-11, "Fluids and Lubricants".
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.



Service Notice or Precaution

INFOID:0000000000992244

CVT FLUID COOLER SERVICE

If CVT fluid contains friction material (clutches, brakes, etc.), or if a CVT is replaced, inspect and clean the CVT fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For CVT fluid cooler cleaning procedure, refer to TM-370, "Cleaning". For radiator replacement, refer to CO-15, "Removal and Installation".

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator lamp (MIL). Refer to the table on TM-266, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-264, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-619, "Diagnosis Description" (for california), EC-1141, "CONSULT-III Function" (except for california).

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-58.**

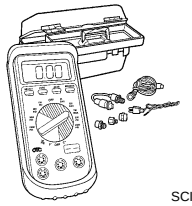
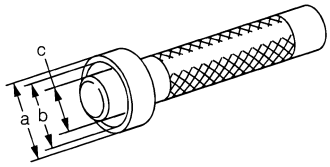
PREPARATION

PREPARATION

Special Service Tool

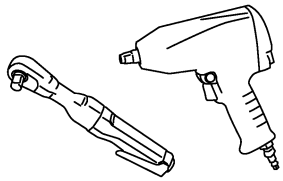
INFOID:0000000000992245

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
— (OTC3492) Oil pressure gauge set  SCIA7531E	Measuring line pressure
KV38100300 (—) Drift  ZZA1046D	Installing differential side oil seal a: ϕ 54 mm (2.13 in) b: ϕ 32 mm (1.26 in)

Commercial Service Tool

INFOID:0000000000992246

Tool number Tool name	Description
Power tool  PBIC0190E	Loosening nuts and bolts

ON-VEHICLE MAINTENANCE

CVT FLUID

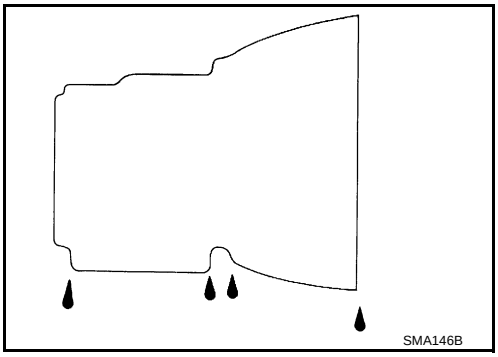
Inspection

INFOID:0000000000992247

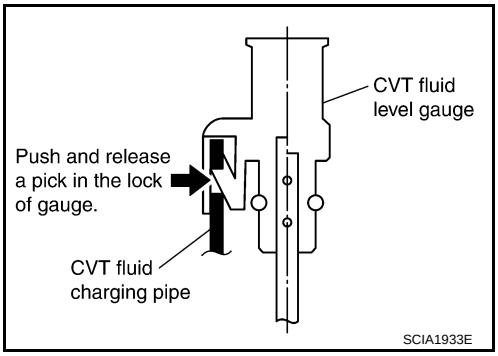
CHECKING CVT FLUID

Fluid level should be checked with the fluid warmed up to 50 to 80°C (122 to 176°F). The fluid level check procedure is as follows:

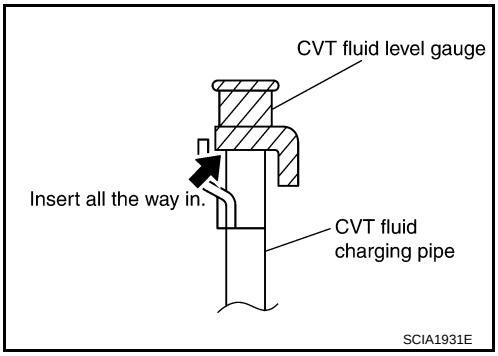
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
3. Park the vehicle on a level surface.
4. Apply parking brake firmly.
5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.



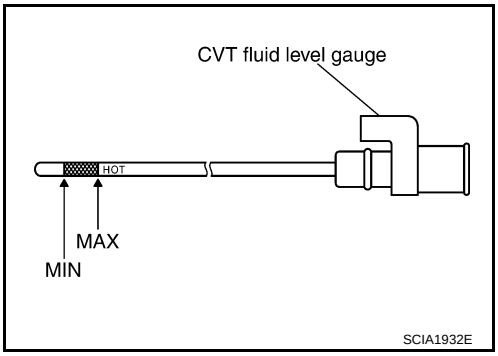
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



7. Wipe fluid off the CVT fluid level gauge. Insert the CVT fluid level gauge rotating 180° from the originally installed position, then securely push the CVT fluid level gauge until it meets the top end of the CVT fluid charging pipe.
   CAUTION:
   When wiping away the CVT fluid level gauge, always use lint-free paper, not a cloth rag.



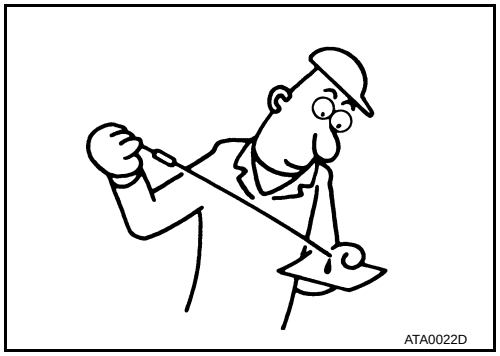
8. Place the selector lever in “P” or “N” and make sure the fluid level is within the specified range.
   CAUTION:
   When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until it is securely locked.



CVT FLUID CONDITION

Check CVT fluid condition.

- If CVT fluid is very dark or smells burned, check operation of CVT. Flush cooling system after repair of CVT.
- If CVT fluid contains frictional material (clutches, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to CO-15, "Removal and Installation" and TM-370, "Cleaning".



Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	CVT fluid become degraded due to high temperatures.	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within CVT	Replace the CVT fluid and check for improper operation of the CVT.

Changing

INFOID:0000000000992248

1. Remove drain plug, and then drain CVT fluid from oil pan.
2. Install drain plug to oil pan.
   CAUTION:
   Do not reuse drain plug gasket.

   : 34.3 N·m (3.5 kg-m, 25 ft-lb)
3. Fill CVT fluid from CVT fluid charging pipe to the specified level.
4. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
5. Check CVT fluid level and condition.
6. Repeat steps 1 to 5 if CVT fluid has been contaminated.

CVT fluid:

Genuine NISSAN CVT Fluid NS-2

Fluid capacity:

Approx. 8.3 ℓ (7-1/4 Imp qt)

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Sufficiently shake the container of CVT fluid before using.**
- **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid.**

CVT FLUID COOLER SYSTEM

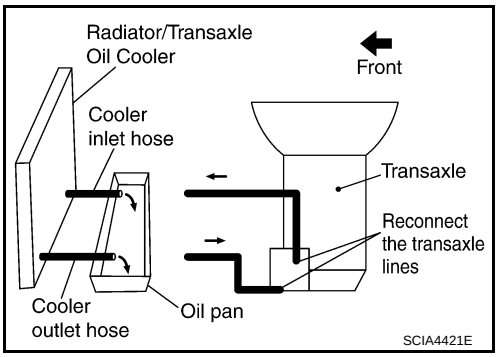
Cleaning

INFOID:0000000000992249

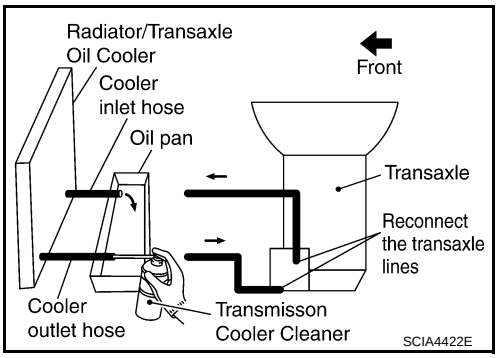
Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.
Metal debris and friction material, if present, can be trapped or become deposit in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

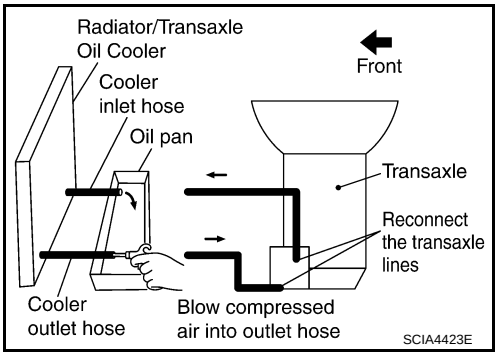
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
   NOTE:
   Replace the cooler hoses if rubber material from the hose remains on the tube fitting.
4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.



5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**
6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.



7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
9. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
12. Remove the banjo bolts.



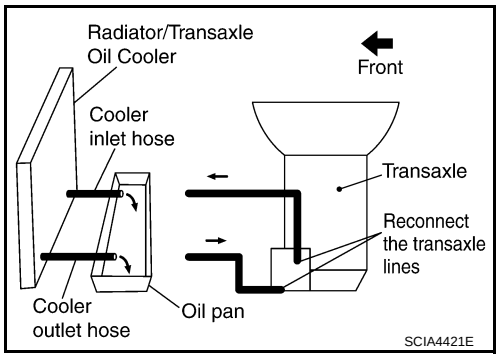
13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.

17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

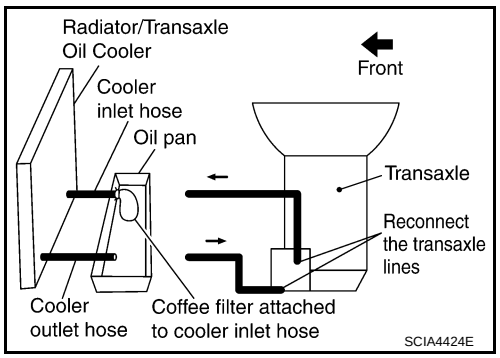
CVT FLUID COOLER DIAGNOSIS PROCEDURE

NOTE:
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

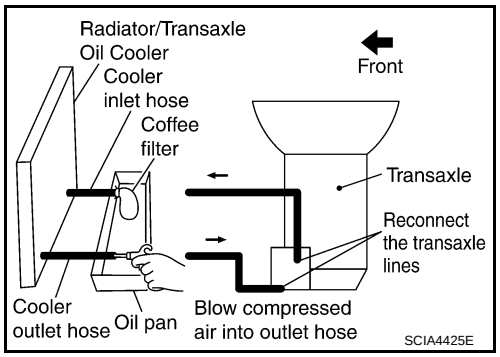
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**



4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.



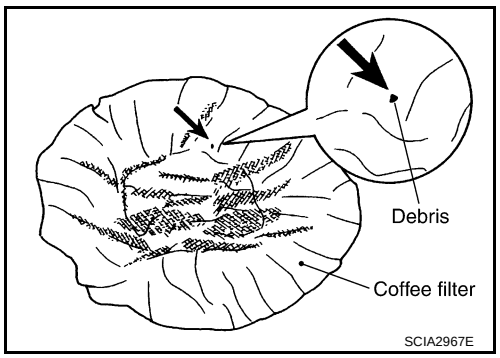
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".



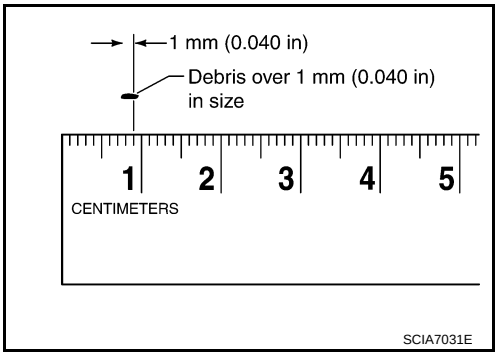
CVT FLUID COOLER INSPECTION PROCEDURE

1. Inspect the coffee filter for debris.

a. If small metal debris less than 1 mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the CVT fluid cooler/radiator can be re-used and the procedure is ended.



b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the fluid cooler is not serviceable. The radiator/ fluid cooler must be replaced and the inspection procedure is ended.



CVT FLUID COOLER FINAL INSPECTION

After performing all procedures, ensure that all remaining oil is cleaned from all components.

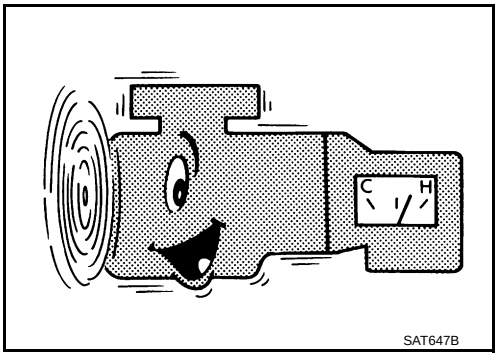
STALL TEST

Inspection and Judgment

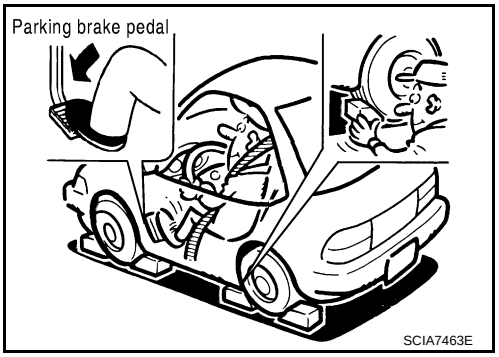
INFOID:0000000000992250

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of CVT fluid. Replenish if necessary.

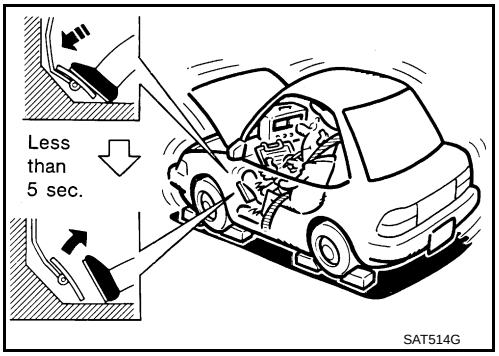


3. Securely engage the parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   - **It is good practice to mark the point of specified engine rpm on indicator.**
5. Start engine, apply foot brake, and place selector lever in “D” position.



6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.
   CAUTION:
   Do not hold down the accelerator pedal for more than 5 seconds during this test.

   Stall speed: 2,500 – 3,000 rpm



8. Move the selector lever to the “N” position.
9. Cool down the CVT fluid.
   CAUTION:
   Run the engine at idle for at least 1 minute.
10. Repeat steps 6 through 9 with selector lever in “R” position.

JUDGMENT

	Selector lever position		Expected problem location
	"D"	"R"	
Stall rotation	H	O	• Forward clutch
	O	H	• Reverse brake
	L	L	• Engine and torque converter one-way clutch
	H	H	• Line pressure low • Primary pulley • Secondary pulley • Steel belt

O: Stall speed within standard value position.

H: Stall speed is higher than standard value.

L: Stall speed is lower than standard value.

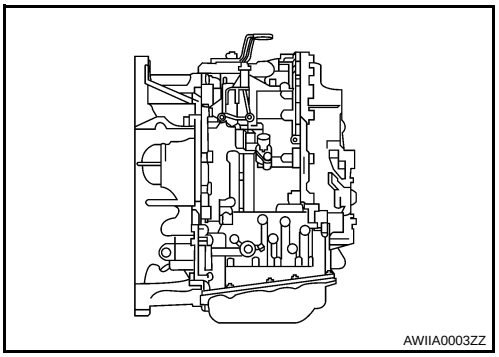
LINE PRESSURE TEST

Inspection and Judgment

INFOID:0000000000992251

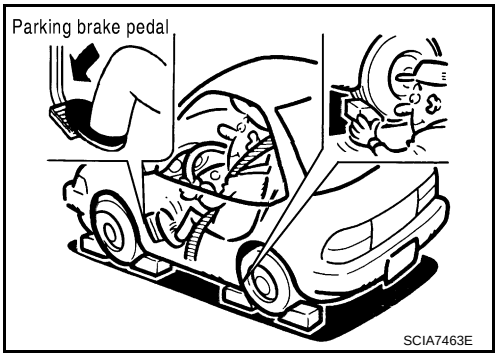
INSPECTION

Line Pressure Test Port (A)

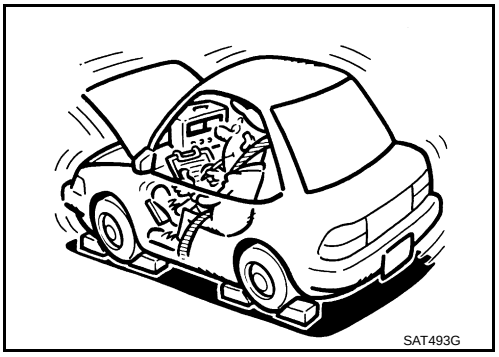


Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary.
   NOTE:
   The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.
3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge [special service tool: — (OTC3492)].
   CAUTION:
   When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.
4. Securely engage the parking brake so that the tires do not turn.



5. Start the engine, and then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to "STALL TEST".**
6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.



: 7.5 N·m (0.77 kg-m, 66 in-lb)

CAUTION:
- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Line Pressure

Engine speed	Line pressure kPa (kg/cm^2, psi)
	"R", "D" positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)*2

*1: Without manual mode

*2: Reference values

JUDGMENT

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example • Accelerator pedal position signal malfunction • CVT fluid temperature sensor malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking in OFF state, filter clog, cut line) • Pressure regulator valve or plug sticking
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • TCM malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (shorting, sticking in ON state) • Pressure regulator valve or plug sticking
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

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ROAD TEST

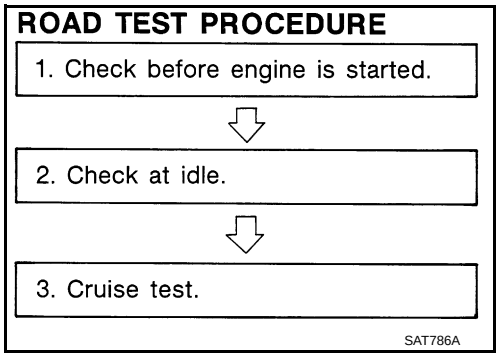
Description

INFOID:0000000000992252

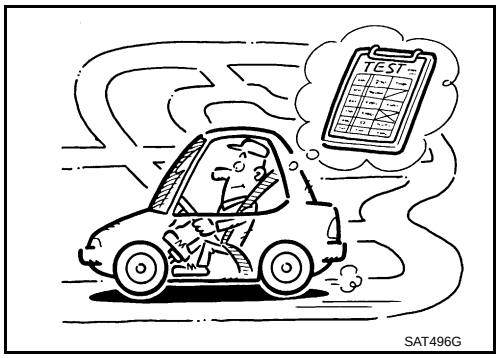
DESCRIPTION

- The purpose of the test is to determine overall performance of CVT and analyze causes of problems.
- The road test consists of the following three parts:

1. “Check Before Engine Is Started” TM-377.
2. “Check at Idle” TM-378.
3. “Cruise Test” TM-379.



- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test.



CONSULT-III SETTING PROCEDURE

- Using CONSULT-III, perform a cruise test and record the result.
- Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Touch “MAIN SIGNALS” to set recording condition.
3. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
4. Touch “START”.
5. When performing cruise test. Refer to TM-379, "Cruise Test".
6. After finishing cruise test part, touch “RECORD”.
7. Touch “STORE”.
8. Touch “BACK”.
9. Touch “DISPLAY”.
10. Touch “PRINT”.
11. Check the monitor data printed out.

Check before Engine Is Started

INFOID:0000000000992253

1. CHECK CVT INDICATOR LAMP

1. Park vehicle on flat surface.
2. Move selector lever to “P” position.
3. Turn ignition switch OFF. Wait at least 5 seconds.
4. Turn ignition switch ON. (Do not start engine.)

Does shift position indicator come on for about 2 seconds?

YES >> 1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items.
Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".
3. Go to TM-378, "Check at Idle".

NO >> Stop “Road Test”. Refer to TM-350, "Symptom Table".

Check at Idle

INFOID:0000000000992254

1.CHECK STARTING THE ENGINE

1. Park vehicle on flat surface.
2. Move selector lever to “P” or “N” position.
3. Turn ignition switch OFF.
4. Turn ignition switch to “START” position.

Is engine started?

YES >> GO TO 2..
NO >> Stop “Road Test”. Refer to TM-350, "Symptom Table".

2.CHECK STARTING THE ENGINE

1. Turn ignition switch ON.
2. Move selector lever to “D”, “M” or “R” position.
3. Turn ignition switch to “START” position.

Is engine started?

YES >> Stop “Road Test”. Refer to TM-350, "Symptom Table".
NO >> GO TO 3..

3.CHECK “P” POSITION FUNCTION

1. Move selector lever to “P” position.
2. Turn ignition switch OFF.
3. Release parking brake.
4. Push vehicle forward or backward.
5. Apply parking brake.

Does vehicle move when it is pushed forward or backward?

YES >> Refer to TM-350, "Symptom Table". Continue “Road Test”.
NO >> GO TO 4..

4.CHECK “N” POSITION FUNCTION

1. Start engine.
2. Move selector lever to “N” position.
3. Release parking brake.

Does vehicle move forward or backward?

YES >> Refer to TM-350, "Symptom Table". Continue “Road Test”.
NO >> GO TO 5..

5.CHECK SHIFT SHOCK

1. Apply foot brake.
2. Move selector lever to “R” position.

Is there large shock when changing from “N” to “R” position?

YES >> Refer to TM-350, "Symptom Table". Continue “Road Test”.
NO >> GO TO 6..

6.CHECK “R” POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7..
NO >> Refer toTM-350, "Symptom Table". Continue “Road Test”.

7.CHECK “D” POSITION FUNCTION

Move selector lever to “D” position and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to TM-379, "Cruise Test".
NO >> Stop “Road Test”. Refer to TM-350, "Symptom Table".

Cruise Test

INFOID:0000000000992255

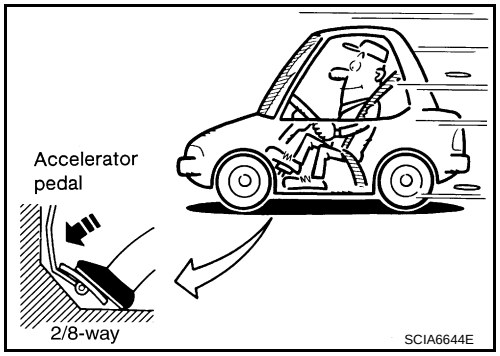
1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

1. Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature.

CVT fluid operating temperature: 50 – 80°C (122 – 176°F)

2. Park vehicle on flat surface.
3. Move selector lever to “P” position.
4. Start engine.
5. Move selector lever to “D” position.
6. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to TM-397, "Vehicle Speed When Shifting Gears".



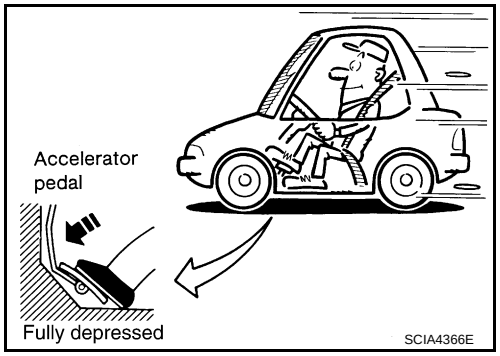
OK or NG

OK >> GO TO 2..
NG >> Refer to TM-350, "Symptom Table". Continue “Road Test”.

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to TM-397, "Vehicle Speed When Shifting Gears".



OK or NG

OK >> GO TO 3..
NG >> Refer to TM-350, "Symptom Table". Continue “Road Test”.

3. CHECK MANUAL MODE FUNCTION

Move to manual mode from “D” position.

Does it switch to manual mode?

YES >> GO TO 4..
NO >> Refer to TM-350, "Symptom Table". Continue “Road Test”.

4. CHECK SHIFT-UP FUNCTION

During manual mode driving, is upshift from M1 → M2 → M3 → M4 → M5 → M6 performed?

Read the gear position. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 5..
NO >> Refer to TM-350, "Symptom Table". Continue “Road Test”.

5. CHECK SHIFT-DOWN FUNCTION

During manual mode driving, is downshift from M6 → M5 → M4 → M3 → M2 → M1 performed?

Read the gear position. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 6..
NO >> Refer to TM-350, "Symptom Table". Continue “Road Test”.

6. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to TM-266, "CONSULT-III Function (TRANSMISSION)".

NO >> Refer to TM-350, "Symptom Table". then continue trouble diagnosis.

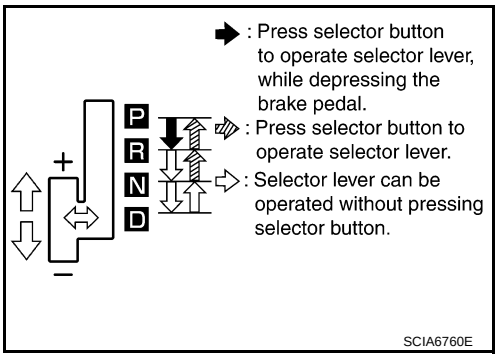
CVT POSITION

Inspection and Adjustment

INFOID:0000000000992256

INSPECTION

1. Place selector lever in “P” position, and turn ignition switch ON (engine stop).
2. Make sure that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in “P”, “R”, or “N” position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when selector lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the “R” position when in the “P” or “N” position.
8. Confirm the engine can only be started with the selector lever in the “P” and “N” positions.



9. Make sure transaxle is locked completely in “P” position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “-” sides, and check that set shift position changes.

ADJUSTMENT

CAUTION:

Apply parking brake before adjustment.

1. Loosen the control cable nut.
2. Place the manual lever and the selector lever in “P” position.
3. Tighten control cable nut to specified torque.

Control cable nut: Refer to TM-385, "Exploded View".

CAUTION:

Secure the manual lever when tightening control cable nut. Make sure the manual lever stays in the "P" position.

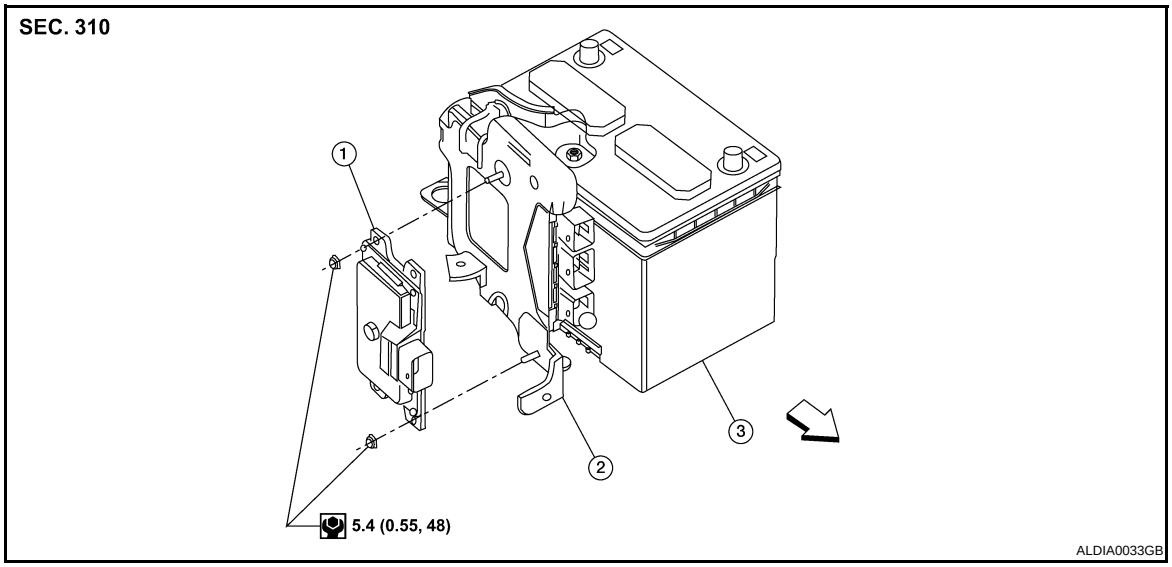
4. Check the operation of the CVT.

ON-VEHICLE REPAIR

TRANSMISSION CONTROL MODULE

Exploded View

INFOID:0000000000992257



1. TCM
2. Bracket
3. Battery

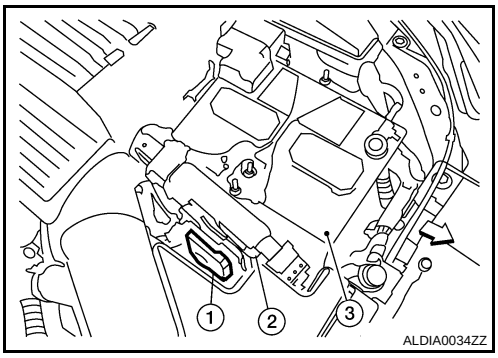
⇐: Front

Removal and Installation

INFOID:0000000000992258

REMOVAL

1. Disconnect the battery negative terminal.
2. Remove the fresh air intake tube (upper).
3. Disconnect the TCM harness connector.
4. Remove the TCM (1) from the bracket (2).
   - ⇦: Front
   - Battery (3)



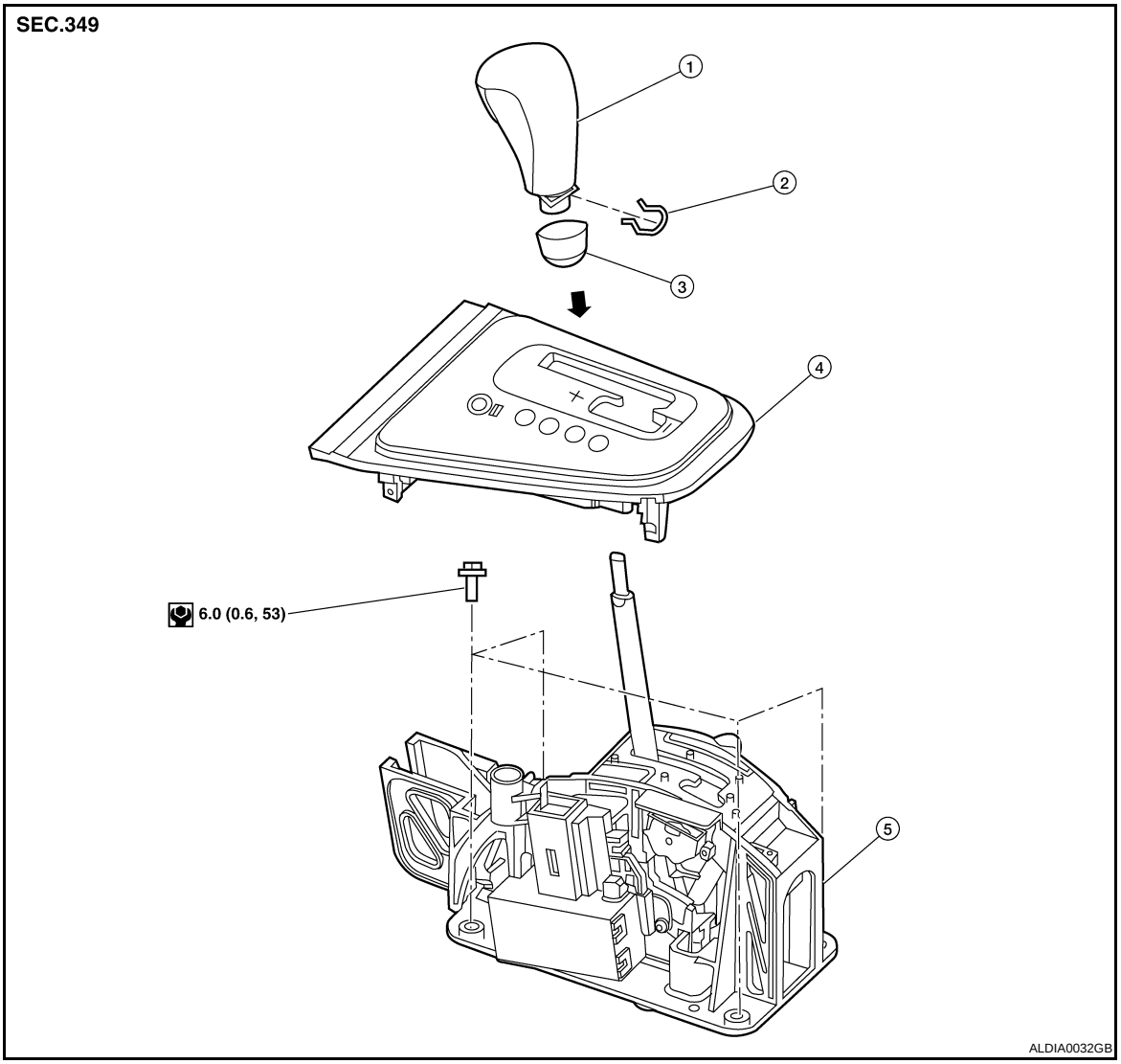
INSTALLATION

Installation is in the reverse order of removal.

CONTROL DEVICE

Exploded View

INFOID:0000000000992259



1. Control lever knob
2. Lock pin
3. Knob cover
4. Control device selector plate
5. Control device assembly

Removal and Installation

INFOID:0000000000992260

REMOVAL

1. Remove the center console assembly. Refer to IP-11, "Removal and Installation".
2. Disconnect the control cable from the control device assembly.
3. Disconnect the CVT device harness connector from the control device assembly.
4. Remove the control device assembly bolts and the control device assembly.

INSTALLATION

Installation is in the reverse order of removal.

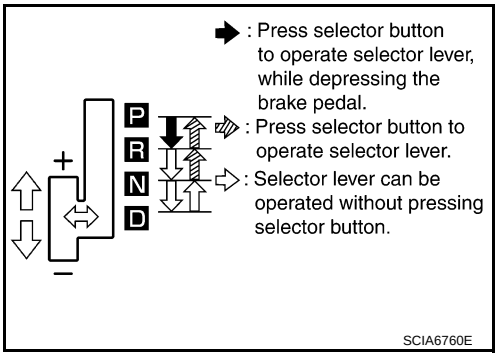
- When installing the control cable to the control device assembly, make sure that the control cable is fully pressed in with the ribbed surface facing upward.
- After installation is completed, adjust and check CVT position. Refer to TM-381, "Inspection and Adjustment".

Inspection and Adjustment

INFOID:0000000000992261

INSPECTION

1. Place selector lever in “P” position, and turn ignition switch ON (engine stop).
2. Make sure that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in “P”, “R”, or “N” position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when selector lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the “R” position when in the “P” or “N” position.
8. Confirm the engine can only be started with the selector lever in the “P” and “N” positions.



9. Make sure transaxle is locked completely in “P” position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “-” sides, and check that set shift position changes.

ADJUSTMENT

CAUTION:

Apply parking brake before adjustment.

1. Loosen the control cable nut.
2. Place the manual lever and the selector lever in “P” position.
3. Tighten control cable nut to specified torque.

Control cable nut: **Refer to TM-385, "Exploded View".**

CAUTION:

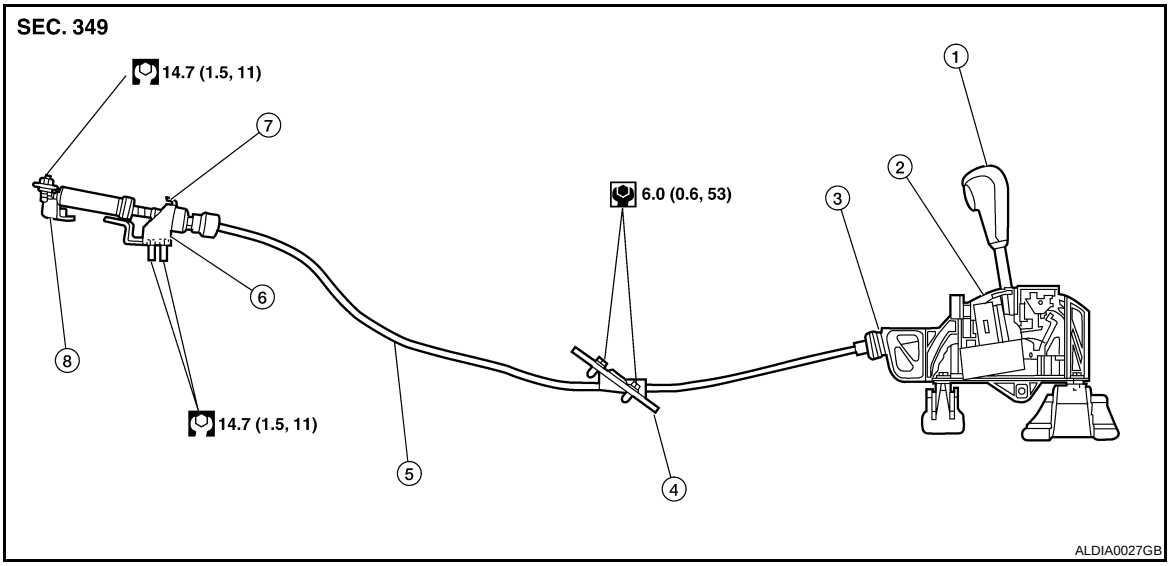
Secure the manual lever when tightening control cable nut. Make sure the manual lever stays in the "P" position.

4. Check the operation of the CVT. Refer to TM-384, "Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000000992262



1. Control lever
2. Control device assembly
3. Control cable socket
4. Retainer grommet
5. Control cable
6. Bracket
7. Lock plate
8. Manual lever

Removal and Installation

INFOID:0000000000992263

REMOVAL

1. Shift control lever to "P".
2. Remove the air filter assembly. Refer to EM-24, "Removal and Installation".
3. Remove the control cable nut and control cable form the manual lever.
4. Remove the lock plate and the control cable from the bracket.
5. Remove the center console. Refer to IP-11, "Removal and Installation".
6. Remove the bracket covering the retainer grommet.
7. Remove the retainer grommet bolts and the retainer grommet.
8. Remove the control cable from the control device assembly.
9. Remove the control cable from the vehicle.

INSTALLATION

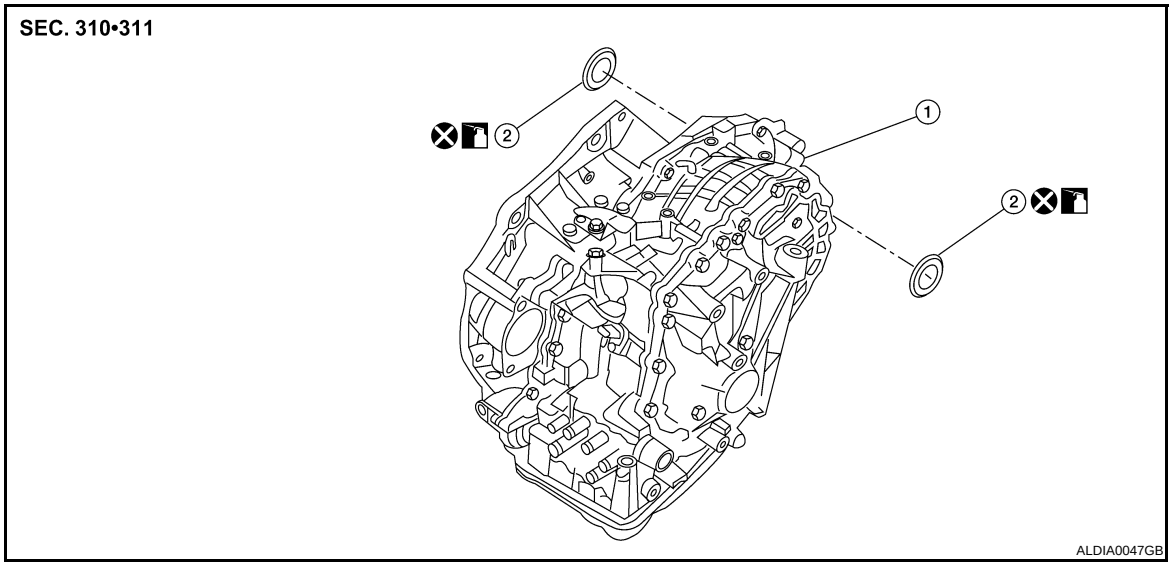
Installation is in the reverse order of removal.

- When installing the control cable to the control device assembly, make sure that the control cable socket is fully pressed into the control device assembly, and the control cable end is fully pressed in with the ribbed surface facing upward.
- After installation is complete, adjust and check the CVT position. Refer to TM-384, "Inspection and Adjustment".

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:0000000000992264



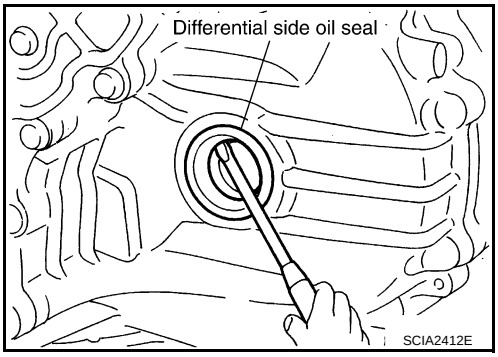
1. CVT assembly
2. Differential side oil seal
:NISSAN CVT Fluid NS-2

Removal and Installation

INFOID:0000000000992265

REMOVAL

1. Remove drive shaft assembly. Refer to FAX-9, "Removal and Installation (Left Side)" and FAX-10, "Removal and Installation (Right Side)".
2. Remove the differential side oil seal using suitable tool
CAUTION:
Do not scratch transaxle case or converter housing.



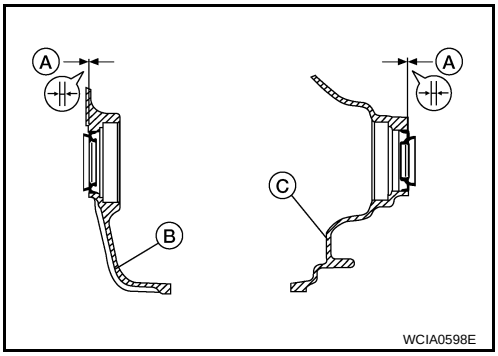
INSTALLATION

1. Drive the new differential side oil seal into the transaxle case side (B) and converter housing side (C) until it is flush using suitable tool.

Dimension A : 0 ± 0.5 mm (0 ± 0.020 in)

CAUTION:
- **Do not reuse differential side oil seals.**
- **Apply specified NISSAN CVT fluid to side oil seals.**

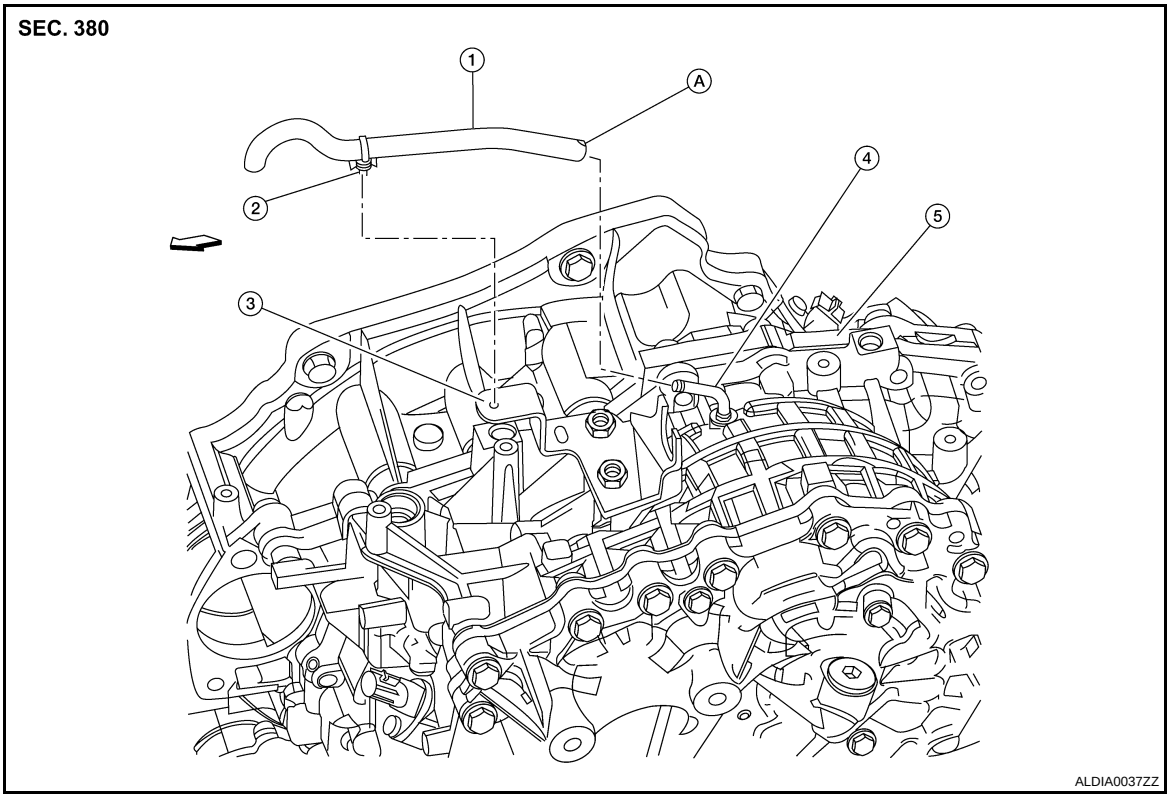
2. Install drive shaft assembly. Refer to FAX-9, "Removal and Installation (Left Side)" and FAX-10, "Removal and Installation (Right Side)".
3. Check CVT fluid level. Refer to TM-368, "Inspection".



AIR BREATHER HOSE

Exploded View

INFOID:0000000000992266



1. Air breather hose
2. Clip
3. Bracket
4. Air breather tube
5. CVT assembly
A. Paint mark

⇐: Front

Removal and Installation

INFOID:0000000000992267

Refer to the figure for removal and installation.

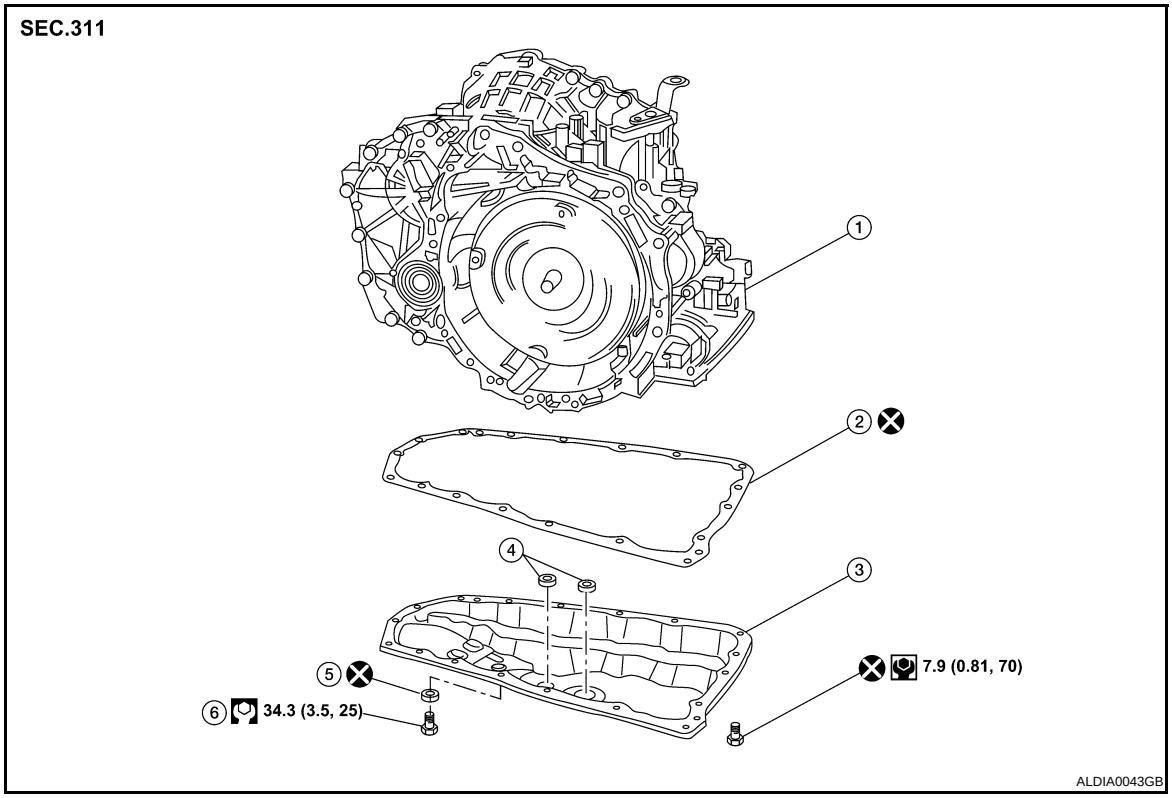
CAUTION:

- **Install air breather hose with paint mark facing upward.**
- **Insert air breather hose a minimum of 17mm (0.67 in) onto air breather tube (to end of air breather tubes radius end).**
- **Install air breather hose to bracket by fully inserting the clip.**
- **Make sure there are no pinched or restricted areas on air breather hose caused by bending or winding when installing it.**

OIL PAN

Exploded View

INFOID:0000000000992268



1. CVT assembly
2. Oil pan gasket
3. Oil pan
4. Magnet
5. Drain plug gasket
6. Drain plug

Removal and Installation

INFOID:0000000000992269

Refer to the figure for removal and installation.

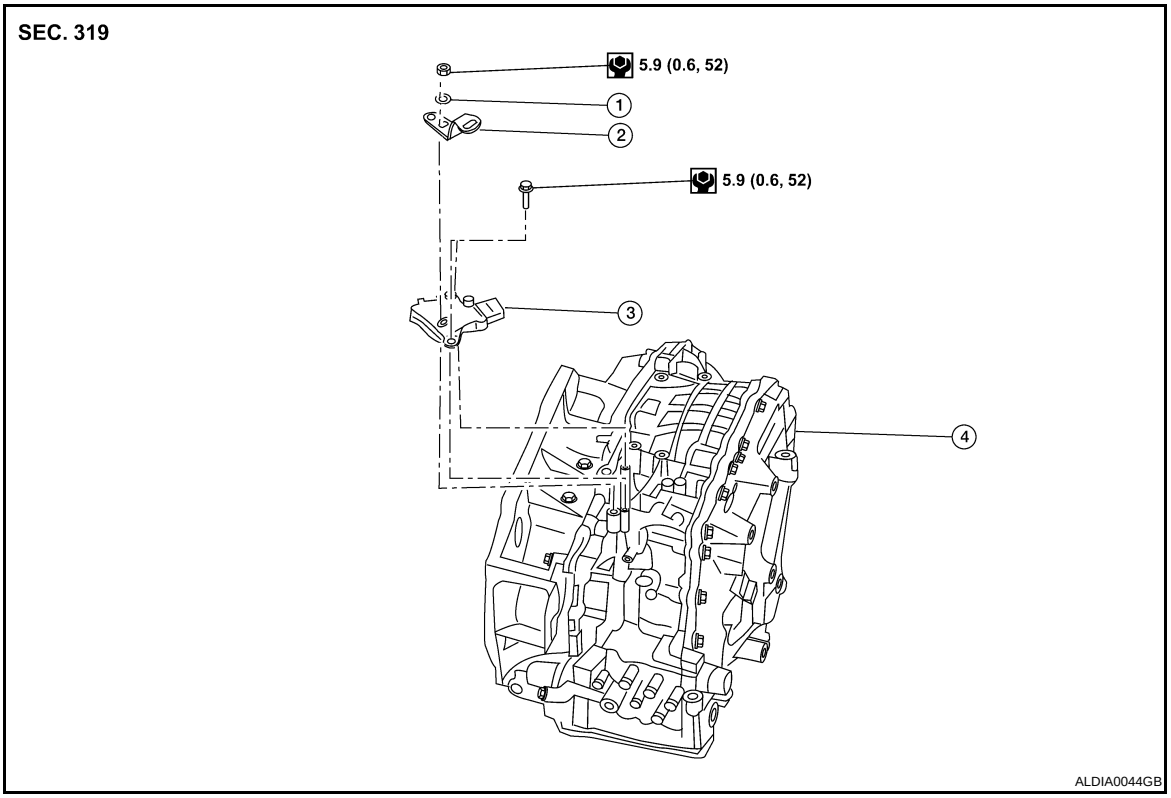
CAUTION:

- **Check for foreign materials in the oil pan to help determine the cause of any malfunction. If the CVT fluid is very dark, smells burned, or contains foreign particles, frictional material (clutches) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves to stick and can inhibit pump pressure.**
- **Completely remove all moisture, oil, old gasket and any foreign material from the gasket mounting surface of the CVT case and oil pan.**
- **Do not reuse oil pan gasket and oil pan bolts.**
- **After installation is complete, fill CVT with recommended CVT fluid and check for CVT fluid leakage and CVT fluid level. Refer to TM-369, "Changing" and TM-368, "Inspection".**

PARK/NEUTRAL POSITION (PNP) SWITCH

Exploded View

INFOID:0000000000992270



1. Washer
2. Manual lever
3. PNP switch
4. CVT assembly

Removal and Installation

INFOID:0000000000992271

Refer to the figure for removal and installation.

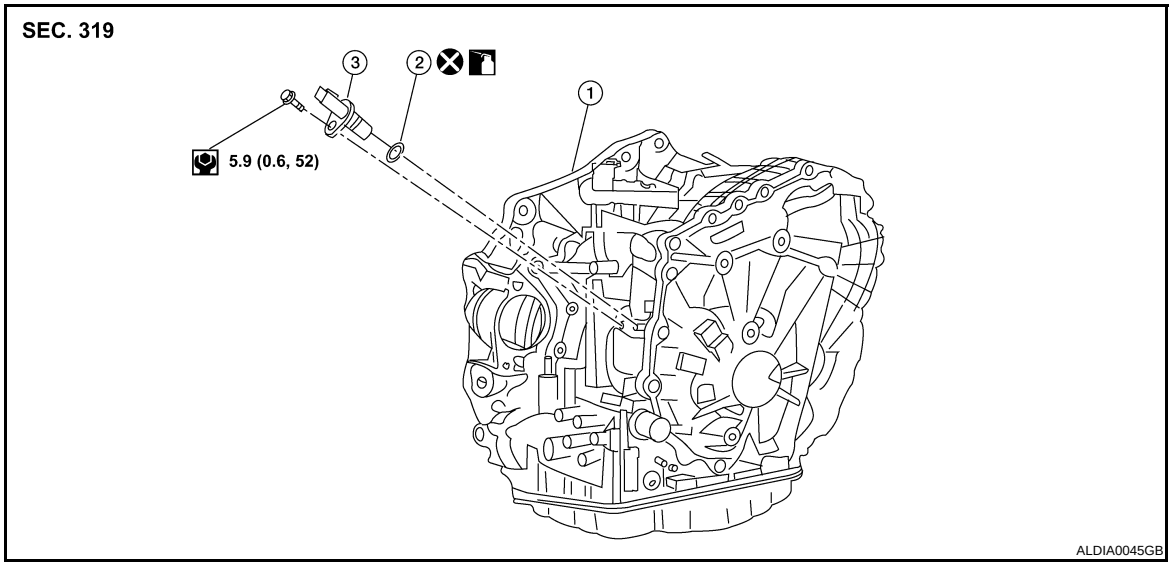
NOTE:

- Align PNP switch position when installing.
- After installation of PNP switch, check the continuity of PNP switch.
- After installation is complete, adjust and check CVT position. Refer to TM-381, "Inspection and Adjustment".

PRIMARY SPEED SENSOR

Exploded View

INFOID:0000000000992272



1. CVT assembly
2. O-ring
3. Primary speed sensor

: Nissan CVT Fluid NS-2

Removal and Installation

INFOID:0000000000992273

Refer to the figure for removal and installation.

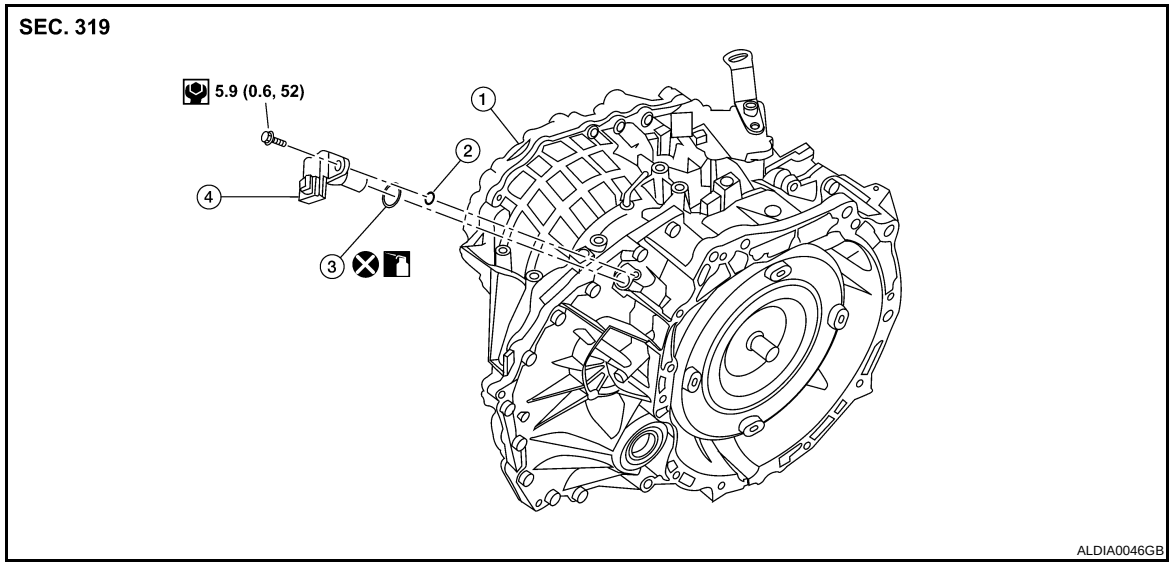
CAUTION:

- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to TM-368, "Inspection".**

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000000992274



1. CVT assembly
2. Shim
3. O-ring
4. Secondary Speed Sensor
: Nissan CVT Fluid NS-2

Removal and Installation

INFOID:0000000000992275

Refer to the figure for removal and installation.

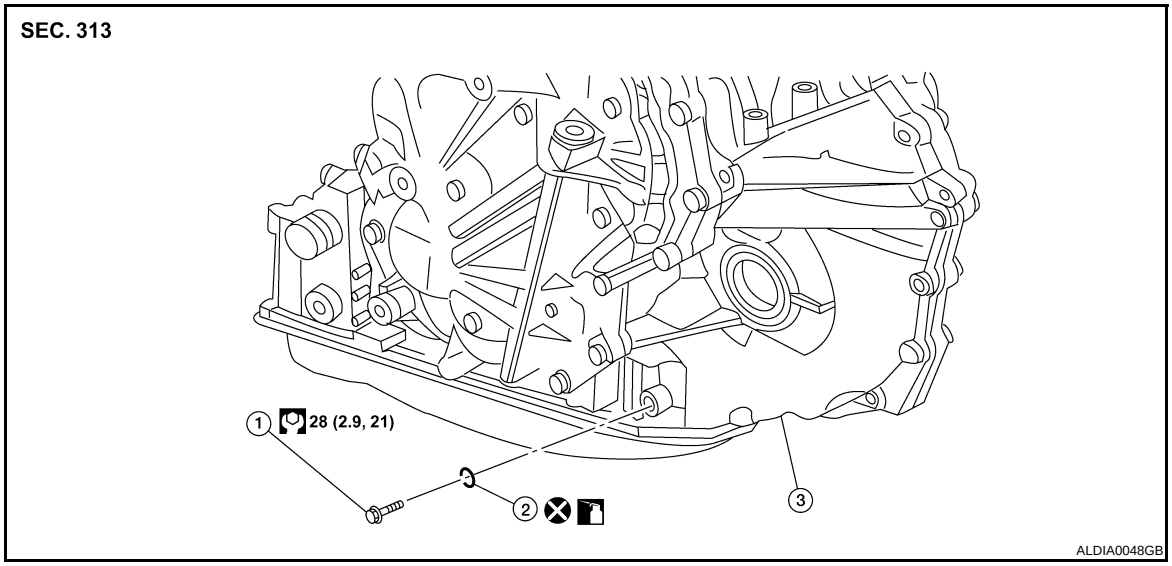
CAUTION:

- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **Insert the shim.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level Refer to TM-368, "Inspection".**

OIL PUMP FITTING BOLT

Exploded View

INFOID:0000000000992276



1. Oil pump fitting bolt
2. O-ring
3. CVT assembly

: Nissan CVT Fluid NS-2

Removal and Installation

INFOID:0000000000992277

Refer to the figure for removal and installation.

CAUTION:

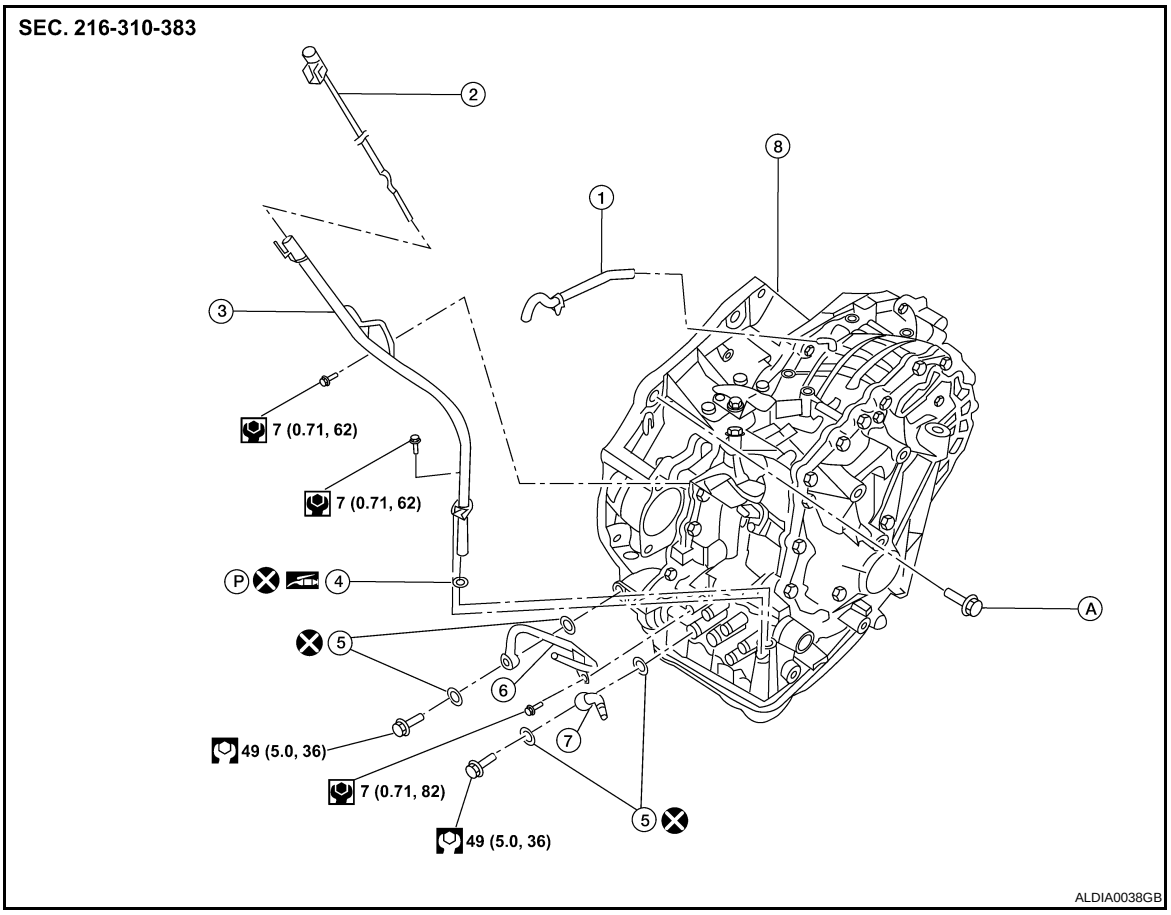
- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to TM-368, "Inspection".**

REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000000992278



1. Air breather hose
2. CVT fluid level gauge
3. CVT fluid charging pipe
4. O-ring
5. Copper washer
6. Fluid cooler tube
7. Fluid cooler tube
8. CVT assembly

A. Refer to TM-393, "Removal and Installation".

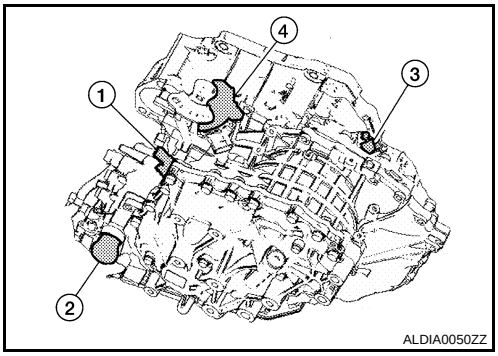
Removal and Installation

INFOID:0000000000992279

REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to EM-72, "Removal and Installation".
   NOTE:
   Using paint, put matching marks on the drive plate and torque converter when removing the torque converter to drive plate nuts.

2. Disconnect the electrical connectors from the following:
   - Primary speed sensor (1)
   - Secondary speed sensor (3)
   - CVT unit connector (2)
   - PNP switch (4)
3. Remove the harness from the CVT.
4. Remove the CVT to engine and engine to CVT bolts.
5. Separate the CVT from the engine.
6. If necessary, remove the following from the CVT:
   - Primary speed sensor
   - Secondary speed sensor
   - PNP switch
   - CVT fluid charging pipe
   - Water tube and hoses
   - Air breather hose
   - Any necessary brackets



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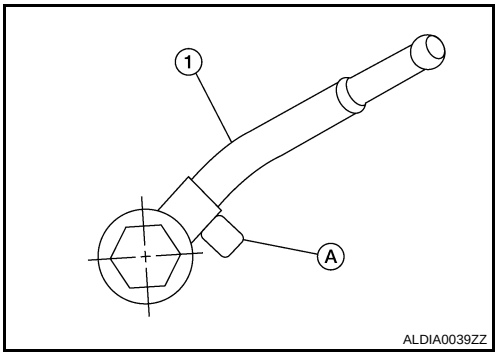
INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **When installing fluid cooler tube align the tube against the rib as shown.**
- **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.**
- **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 EM-51, "Removal and Installation".**



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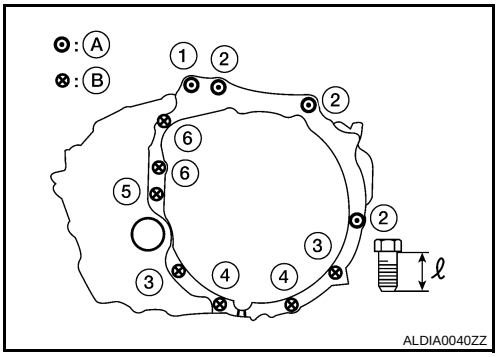
- **After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.**
- **When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.**
- When installing the CVT to the engine, attach the bolts in accordance with the following standard.

Bolt No.	A	B	C	D	E	F
Number of bolts	1	3	2	2	1	2
Bolt length " ℓ " mm (in)	45 (1.77)	45 (1.77)	45 (1.77)	35 (1.38)	45 (1.77)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	35 (3.6, 26)	75 (7.7, 55)	43 (4.4, 32)	43 (4.4, 32)	48 (4.9, 35)	48 (4.9, 35)



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- When installing the drive plate to torque converter nuts, tighten them temporarily. then tighten the nuts to the specified torque.
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to TM-368, "Inspection" and TM-381, "Inspection and Adjustment".
- When replacing the CVT assembly, erase EEP ROM in TCM.

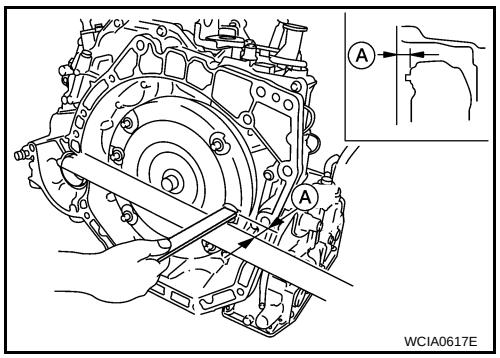
Inspection

INFOID:0000000000992280

Installation and Inspection of Torque Converter

- After installing the torque converter to the CVT, be sure to check distance “A” to ensure it is within specifications.

Distance "A" : 14.4 mm (0.567 in)

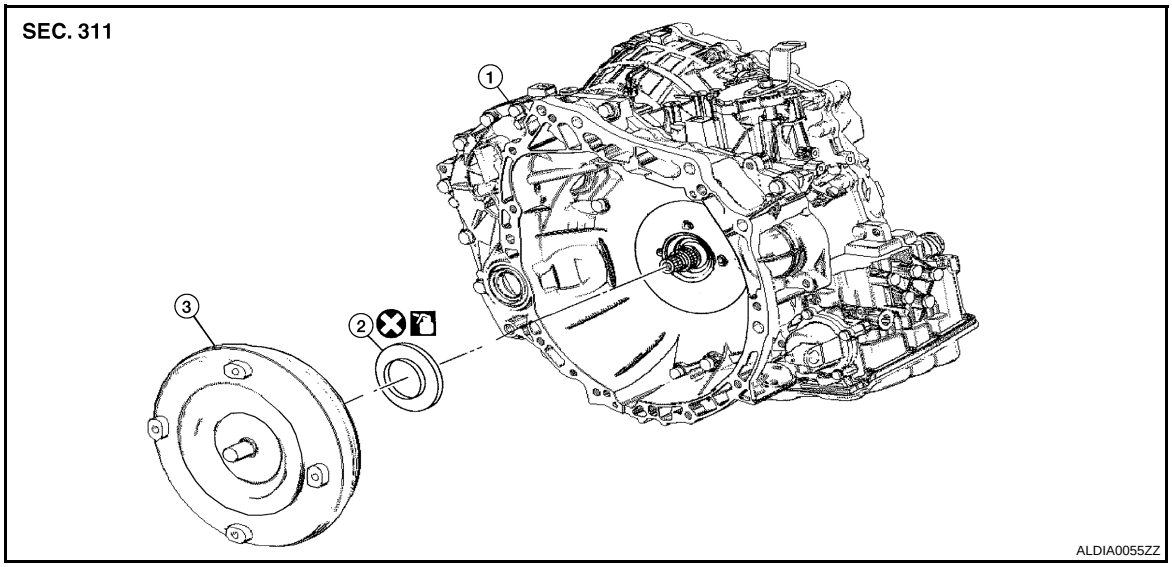


DISASSEMBLY AND ASSEMBLY

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View

INFOID:0000000000992281



1. CVT assembly
2. Converter housing oil seal
3. Torque converter

: Apply CVT Fluid. Refer to MA-11, "Fluids and Lubricants".

Disassembly

INFOID:0000000000992282

1. Remove torque converter.
2. Remove the converter housing oil seal using suitable tool.
   CAUTION:
   Do not scratch converter housing.

Assembly

INFOID:0000000000992283

1. Drive the converter housing oil seal (1) in evenly using suitable tool as shown.
   • CVT (2)
   CAUTION:
   • **Do not reuse converter housing oil seal.**
   • **Apply CVT fluid to converter housing oil seal.**
2. Install the torque converter.

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000000992284

Applied model		QR25DE engine
		2WD
CVT model		RE0F10A
CVT assembly	Model code number	1XF5A
Transmission gear ratio	D range	2.349 – 0.394
	Reverse	1.750
	Final drive	5.798
Recommended fluid		NISSAN CVT Fluid NS-2*1
Fluid capacity		8.3 liter (8-3/4 US qt, 7-1/4 Imp qt)

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**

*1: Refer to MA-11, "Fluids and Lubricants".

Vehicle Speed When Shifting Gears

INFOID:0000000000992285

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
QR25DE	8/8	“D” position	3,400 – 4,200	4,300 – 5,100
	2/8	“D” position	1,400 – 2,200	1,600 – 2,400

*: Without manual mode

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000000992286

Stall speed	2,500 – 3,000 rpm

Line Pressure

INFOID:0000000000992287

Engine speed	Line pressure kPa (kg/cm^2, psi)
	“R” or “D” positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)*1

*1: Reference values

Solenoid Valves

INFOID:0000000000992288

Name	Resistance (Approx.)	Terminal
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0 – 7.0 Ω	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	17.0 – 38.0 Ω	13

CVT Fluid Temperature Sensor

INFOID:0000000000992289

Name	Condition	CONSULT-II “DATA MONITOR” (Approx.)	Resistance (Approx.)
ATF TEMP SEN	20°C (68°F)	2.0 V	6.5 kΩ
	80°C (176°F)	1.0 V	0.9 kΩ

Primary Speed Sensor

INFOID:0000000000992290

Name	Condition	Data (Approx.)
Primary speed sensor	When driving [“M1” position, 20 km/h (12 MPH)]	610 Hz

Secondary Speed Sensor

INFOID:0000000000992291

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving [“D” position, 20 km/h (12 MPH)]	480 Hz

Removal and Installation

INFOID:0000000000992292

Distance between end of converter housing and torque converter	14.4 mm (0.567 in)