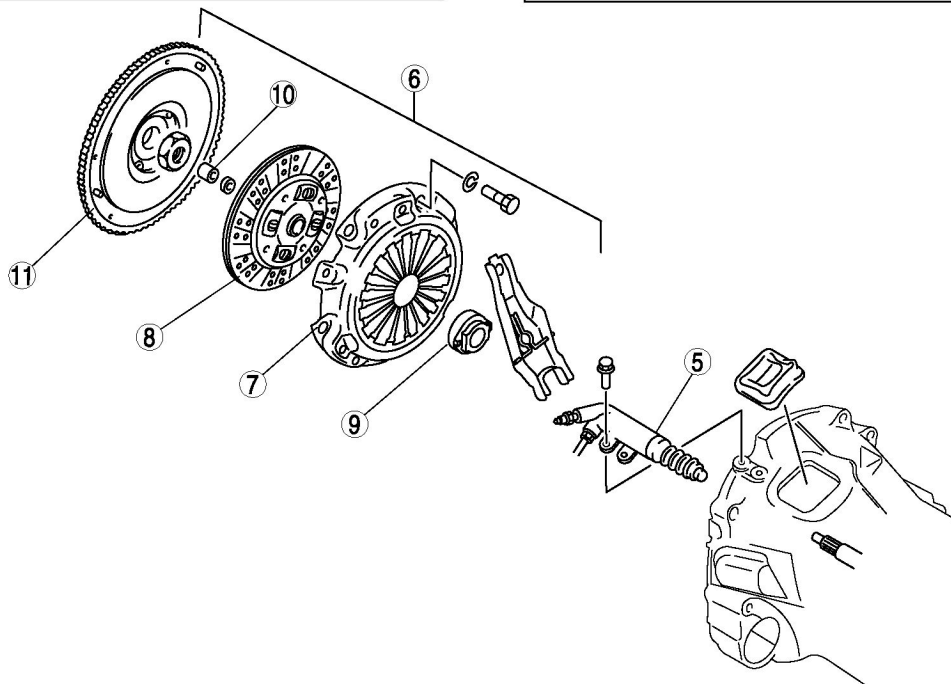
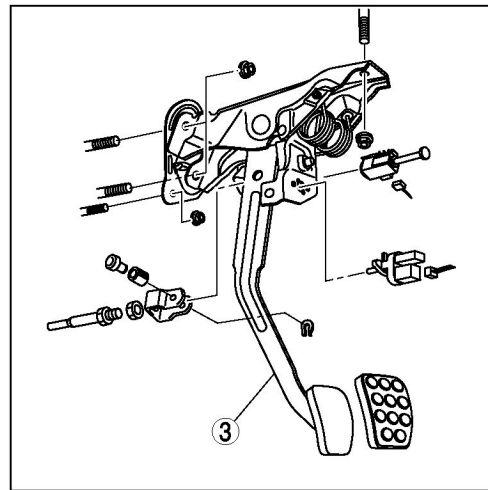
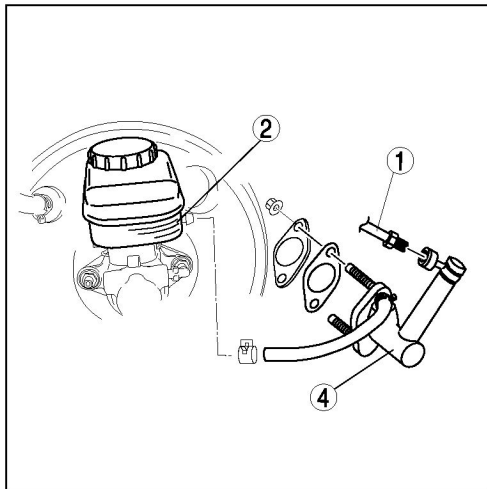


TRANSMISSION (MANUAL & AUTO)

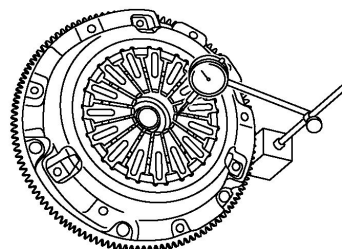
CLUTCH

(w)

CLUTCH LOCATION INDEX



1	Clutch pipe
2	Clutch fluid
3	Clutch pedal
4	Clutch master cylinder
5	Clutch release cylinder
6	Clutch unit
7	Clutch cover
8	Clutch disc



(w)

9	Clutch release collar
10	Pilot bearing
11	Flywheel

GENERAL PROCEDURES (CLUTCH)

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.

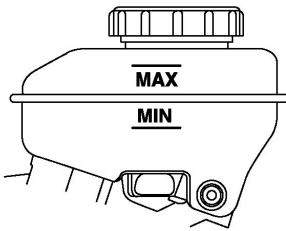
NOTE:

- If any hydraulic related parts of the clutch system are removed during the procedure, add brake fluid, bleed the system and inspect for leakage after the procedure has been completed.
1. Remove the clutch pipe using the **SST** (49 0259 770B).
 2. Install the clutch pipe using a torque wrench and the **SST** (49 0259 770B).

CLUTCH FLUID

CLUTCH FLUID INSPECTION

1. Inspect whether the fluid level in the reserve tank is between MIN and MAX.



CLUTCH FLUID REPLACEMENT

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.
- Keep the fluid level in the reserve tank at 3/4 full or more during air bleeding.

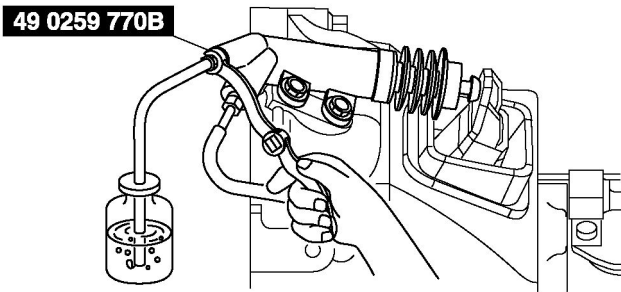
NOTE:

- When replacing the fluid, drain the old fluid, fill the reserve tank with new fluid and then perform Steps 1—6 below.

Specified fluid

- SAE J1703, FMVSS 116 DOT-3

1. Remove the bleeder cap from the clutch release cylinder, and connect a vinyl hose to the bleeder plug.
2. Place the other end of the vinyl tube in a clear container, and fill fluid in the container during air bleeding.
3. Working with two people, one should depress the clutch pedal a few times and then depress and hold the pedal down.
4. While the clutch pedal is being held down, the other person should loosen the bleeder screw using the **SST** , and bleed any fluid containing air bubbles. Once completed, tighten the bleeder screw.
5. Continue to perform Steps 3 and 4 until no air comes from the vinyl hose.
6. Tighten the bleeder screw using the **SST** .



Tightening torque

- 5.9—8.8 N·m
{61—89 kgf·cm, 53—77 in·lbf}

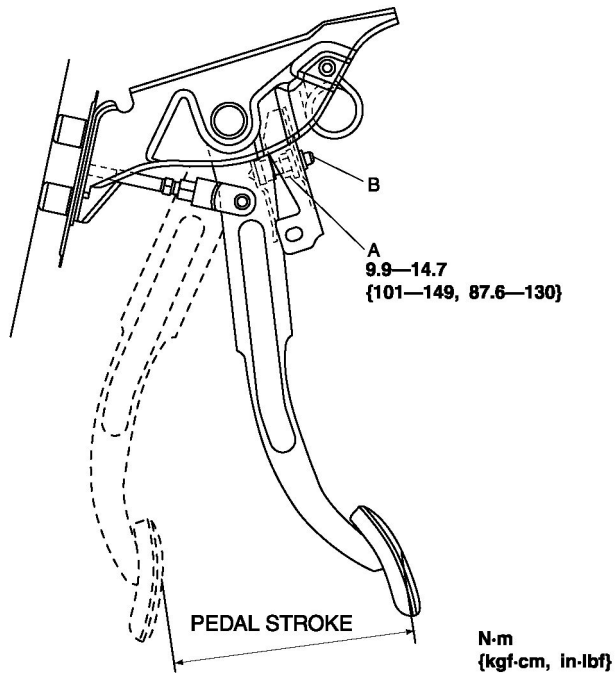
7. Fill the reserve tank to MAX with the recommended fluid.
8. Perform the following inspections:
 - Brake operation
 - Fluid leakage
 - Fluid level

CLUTCH PEDAL

CLUTCH PEDAL ADJUSTMENT

Clutch Pedal Stroke Inspection/Adjustment

1. Measure the clutch pedal stroke.



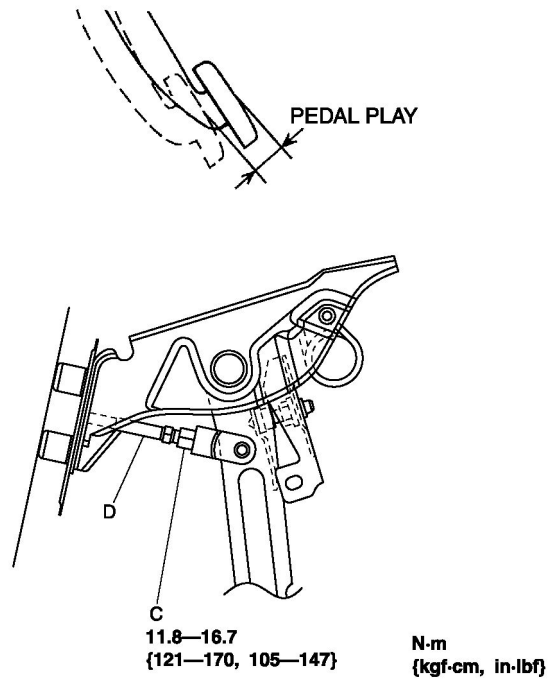
- If there is any malfunction, loosen locknut A and adjust the pedal stroke with adjusting bolt B. Tighten locknut A after adjustment.

Standard pedal stroke

- 130 mm {5.12 in}

Clutch Pedal Play Inspection/Adjustment

1. Lightly depress the clutch pedal by hand until clutch resistance is felt and then measure the pedal play.



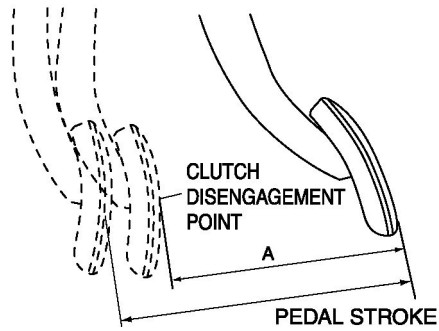
Standard

- Clutch pedal play
5—15 mm {0.20—0.59 in}
- Clutch pedal push rod play
At push rod setting line :
0.1—0.5 mm {0.004—0.020 in}
(Reference value)
At pedal pad :
0.5—2.9 mm {0.020—0.110 in}

2. If it is not within the specification, loosen locknut C and turn push rod D to adjust the pedal play.
3. Remeasure the pedal play and, if it is within the specification, tighten locknut C.

Clutch Disengagement Point Inspection

1. Start the engine.
2. Without depressing the clutch pedal, move the shift lever slowly to the reverse position until gear noise is heard and hold the lever in that position.
3. Slowly depress the clutch pedal and hold at the point where the gear noise stops (clutch disengagement point).
4. Measure distance A (from pedal not depressed to clutch disengagement point) and verify that it is within the specification.

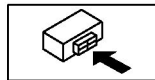
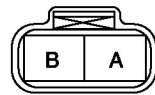


Clutch disengagement stroke (Reference value)

- A: 111.8 mm {4.402 in}

Clutch Switch Inspection

1. Remove the engine cover.
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Disconnect the clutch switch connector.
5. Verify continuity as indicated in the table.



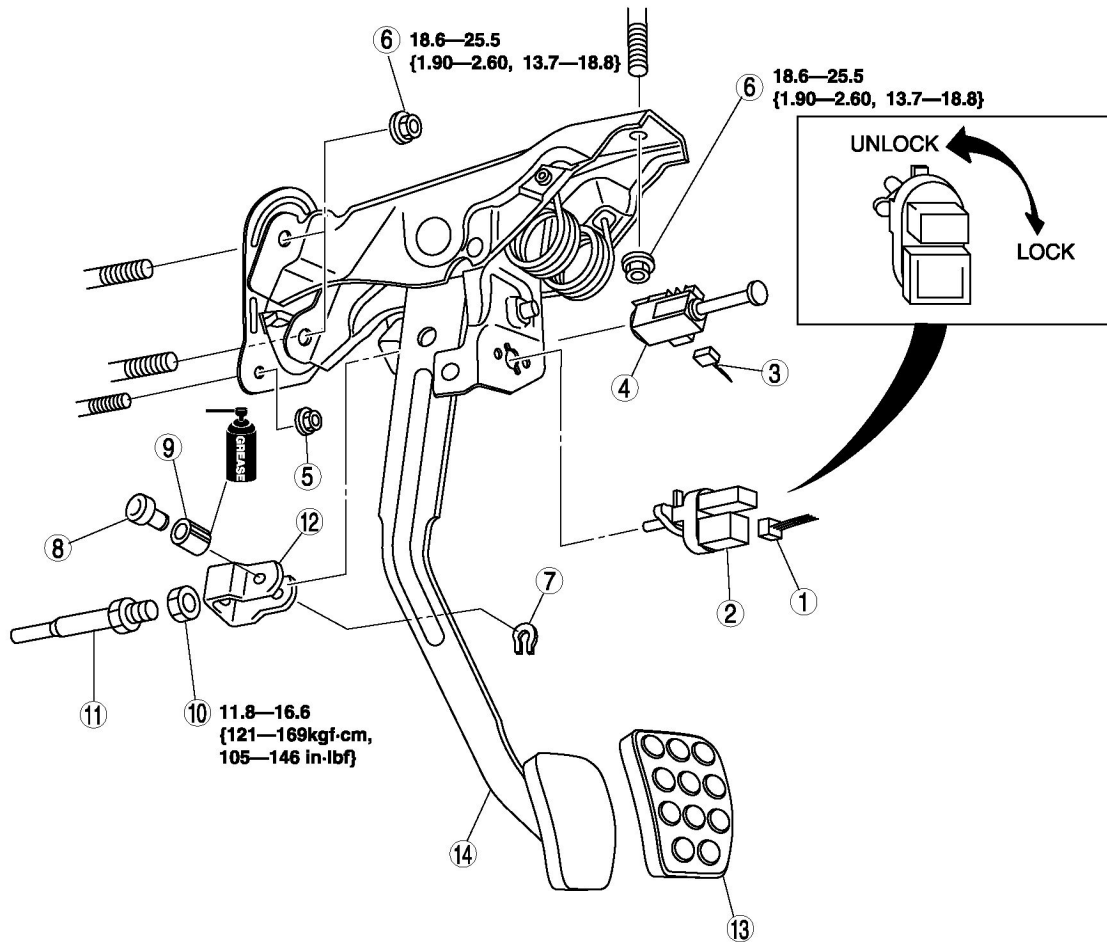
○—○ : Continuity

Condition	Terminal	
	A	B
Clutch pedal depressed	○—○	○—○
Clutch pedal released		

- If there is any malfunction, replace the clutch switch.

CLUTCH PEDAL REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Inspect and adjust the clutch pedal.



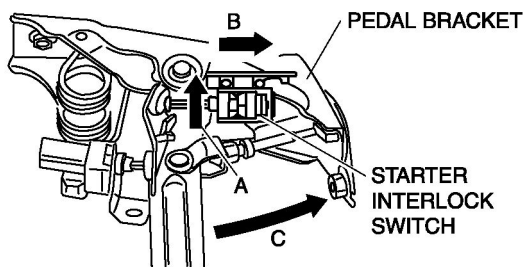
N-m {kgf-m, ft-lbf}

1	Clutch switch connector
2	Clutch switch
3	Starter interlock switch connector
4	Starter interlock switch
5	Nut cap
6	Nut
7	Retaining ring
8	Joint pin
9	Bush
10	Nut
11	Push rod
12	Fork
13	Pedal pad

Starter Interlock Switch Installation Note

CAUTION:

- If the rod is pushed in, it may not operate properly. Be careful not to push the rod in when installing the starter interlock switch.
1. Insert a new starter interlock switch into the pedal bracket hole in direction A.
 2. While pushing the starter interlock switch in direction A, slide it in direction B until it locks securely.
 3. Move the clutch in a fully open stroke in direction C and securely fit the terminal of the starter interlock switch.



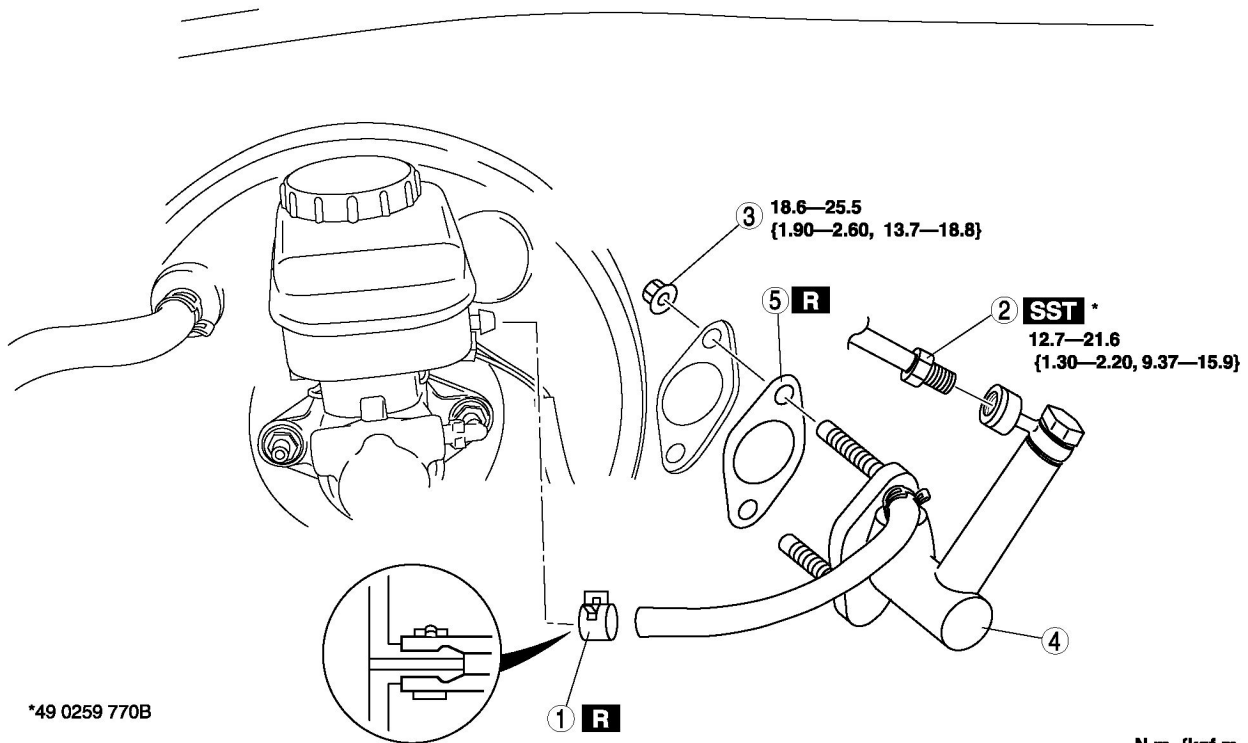
Notes:

CLUTCH MASTER CYLINDER

CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION

CAUTION:

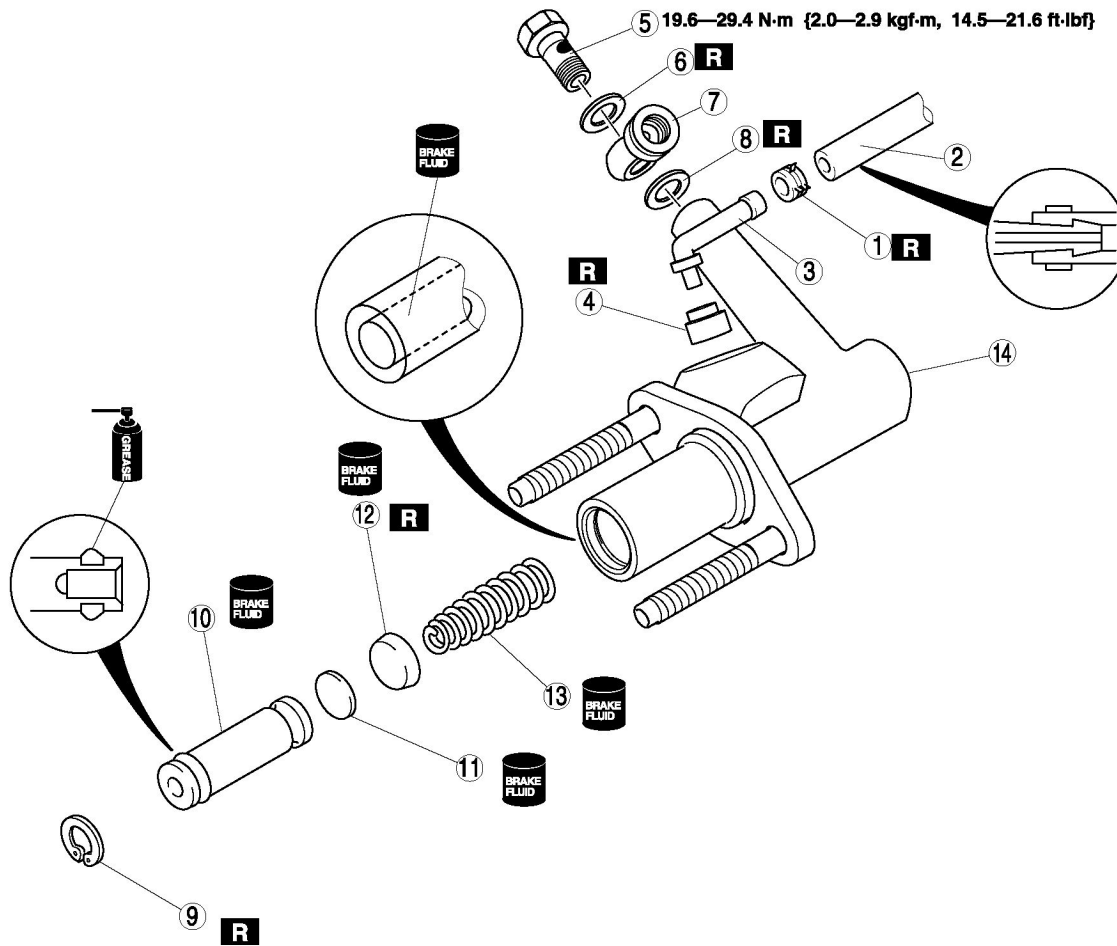
- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Bleed the air from the system.
 4. Inspect and adjust the clutch pedal.



1	Hose clip
2	Clutch pipe
3	Nut
4	Clutch master cylinder
5	Packing

CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY

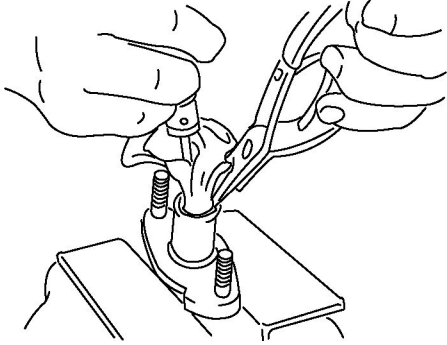
1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1	Hose clip
2	Reserve tank hose
3	Joint
4	Bushing
5	Bolt
6	Packing
7	Connector
8	Packing
9	Snap ring
10	Piston, secondary cup component
11	Spacer
12	Primary cup
13	Return spring

Snap Ring Disassembly/Assembly Note

1. While pressing the piston in with a cloth-wrapped pin punch to protect the push rod contacting surface, remove/install the snap ring.



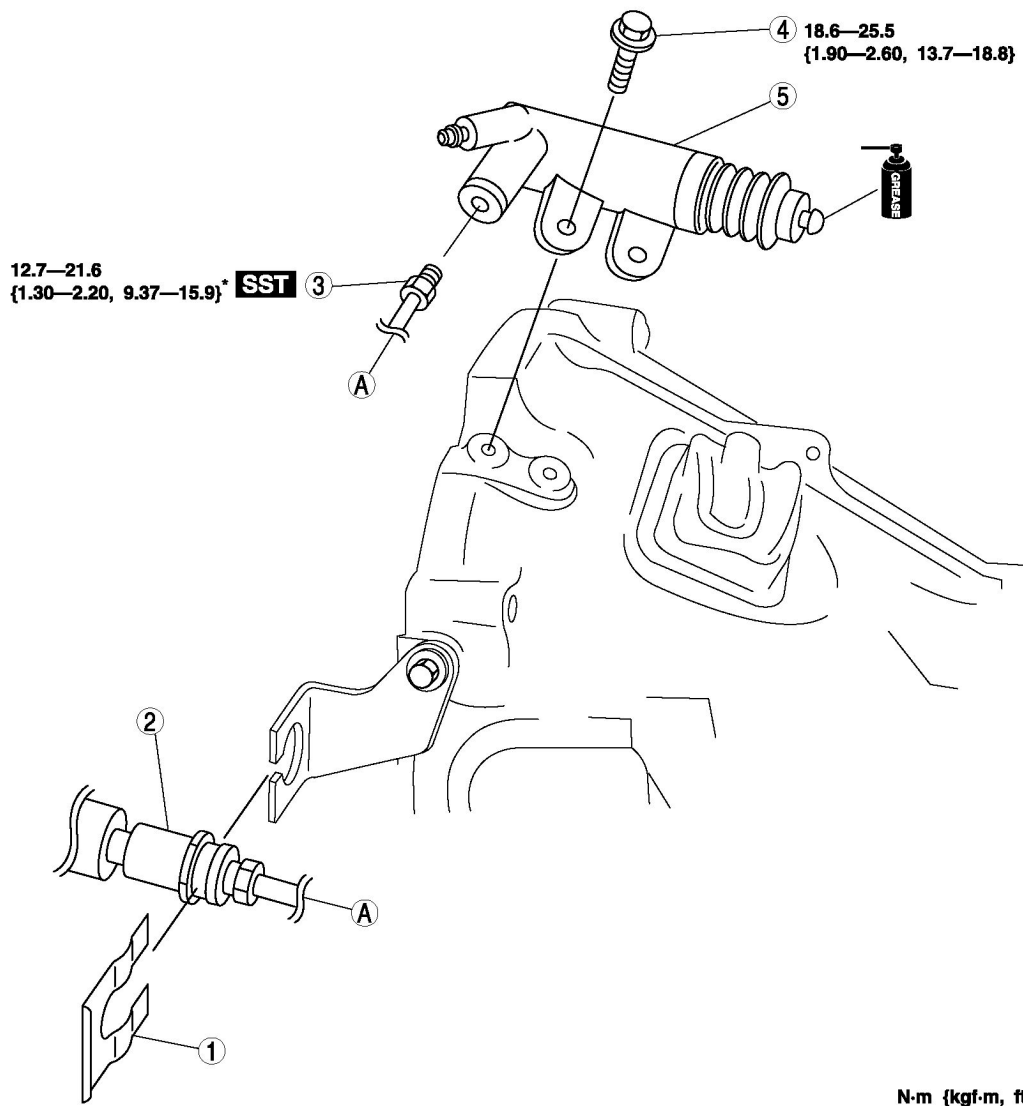
Notes:

CLUTCH RELEASE CYLINDER

CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Bleed the air from the system.
 4. Inspect and adjust the clutch pedal.



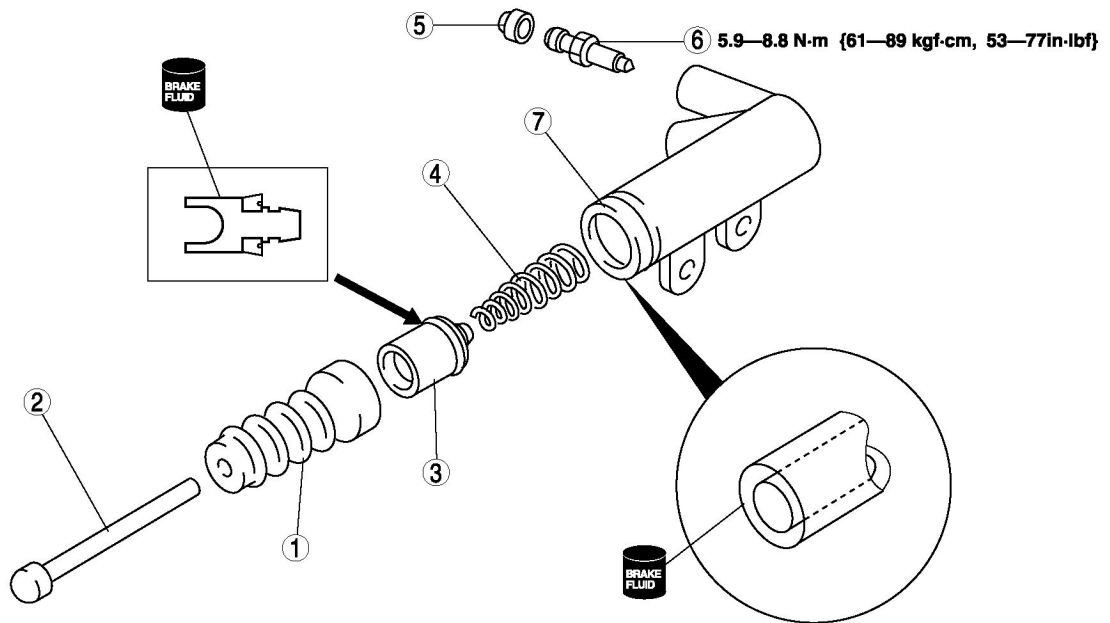
*49 0259 770B

1	Clip
2	Clutch pipe, clutch hose

3	Clutch pipe
4	Bolt
5	Clutch release cylinder

CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

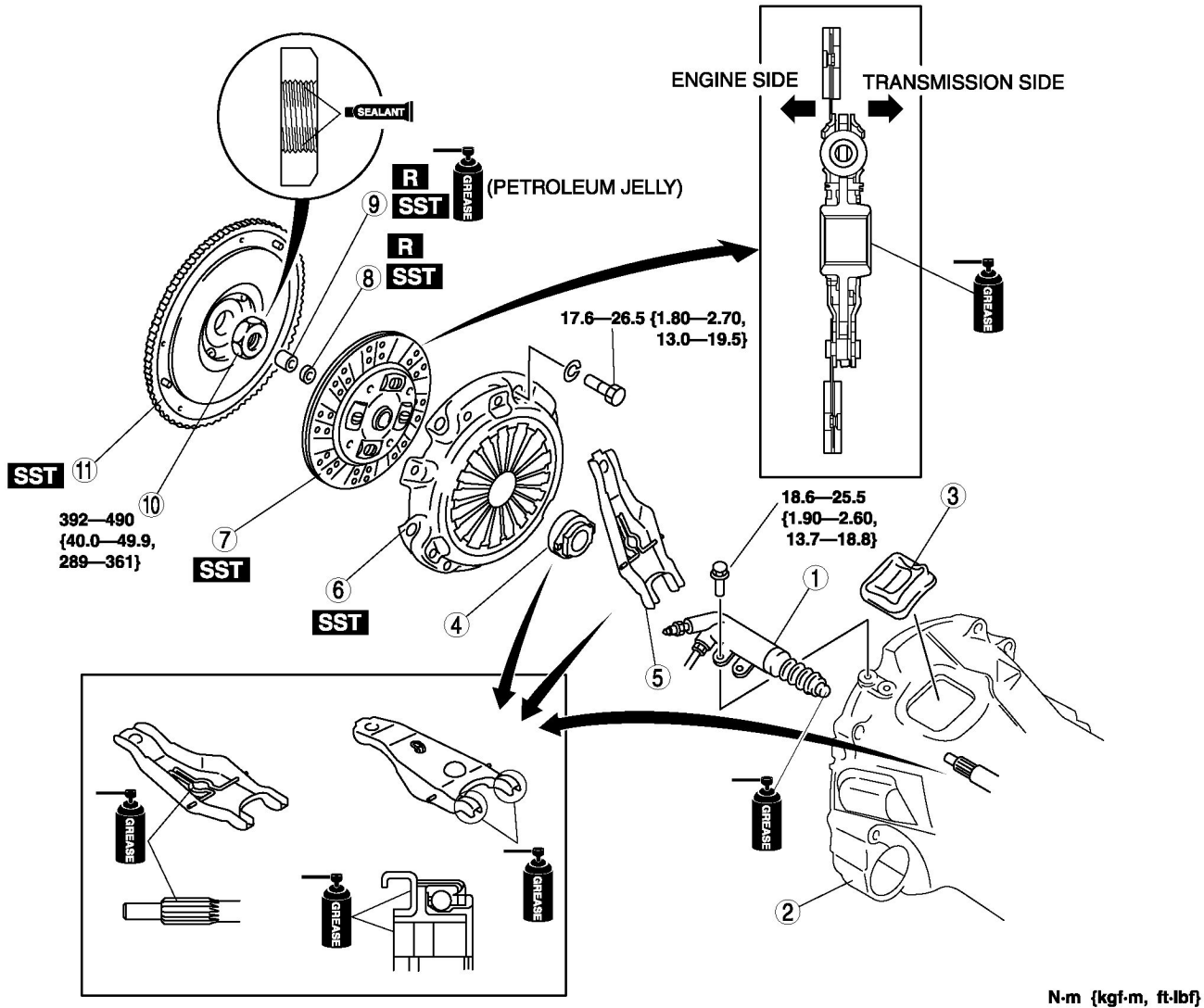


1	Boot
2	Push rod
3	Piston, piston cup component
4	Return spring
5	Bleeder cap
6	Bleeder screw
7	Clutch release cylinder body

CLUTCH UNIT

CLUTCH UNIT REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.



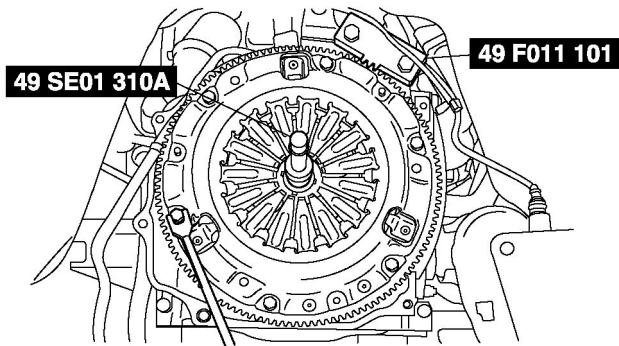
N·m {kgf·m, ft·lbf}

1	Clutch release cylinder
2	Manual Transmission
3	Boot
4	Clutch release collar
5	Clutch release fork
6	Clutch cover
7	Clutch disc

8	Oil seal
9	Pilot bearing
10	Locknut
11	Flywheel

Clutch Cover, Clutch Disc Removal Note

1. Install the SSTs .

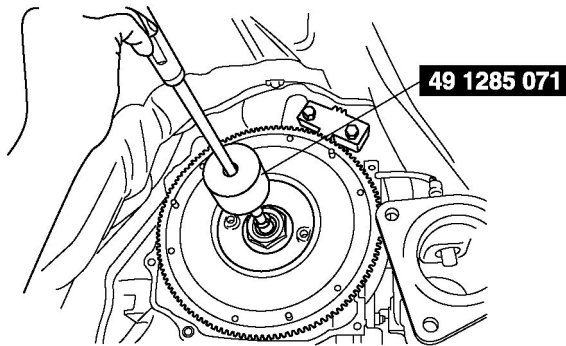


2. In criss-cross pattern, loosen the bolts one rotation at a time until there is no remaining spring pressure.
3. Remove the clutch cover and the clutch disc.

Oil Seal, Pilot Bearing Removal Note

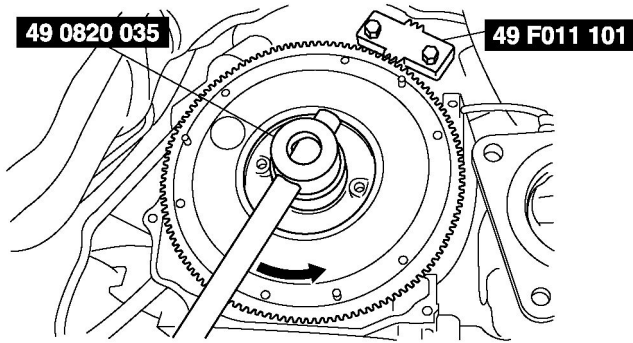
NOTE:

- Remove the pilot bearing only if there is a malfunction.
1. Remove the pilot bearing and the oil seal together using the SST .



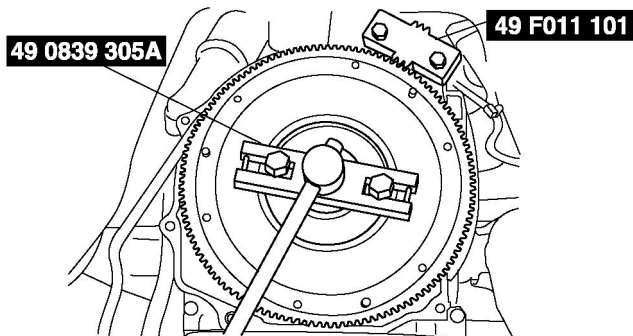
Flywheel Removal Note

1. Install the SST to the flywheel.
2. Remove the locknut using the SST .



NOTE:

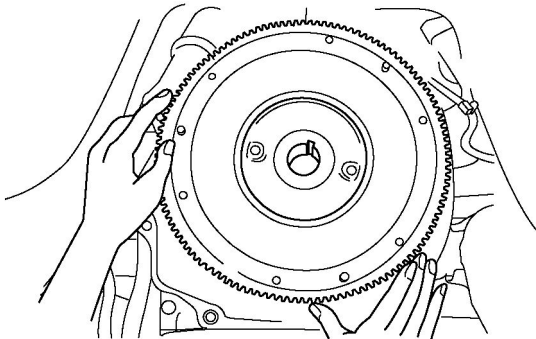
- Inspect the eccentric shaft for oil leakage after removing the flywheel. If necessary, replace the oil seal.
3. Remove the flywheel using the SST .



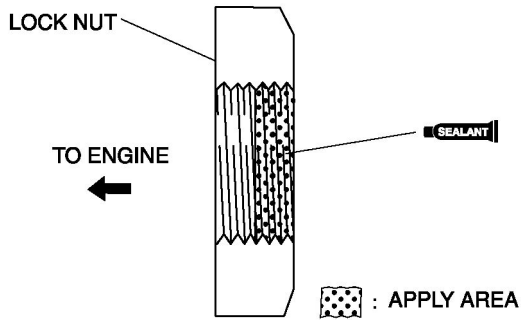
4. Remove the key from the eccentric shaft.

Flywheel Installation Note

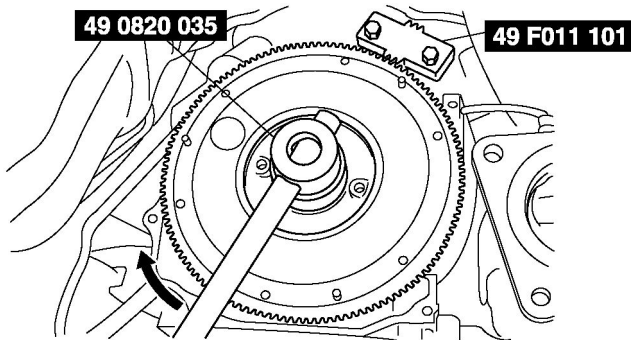
1. Install the key to the eccentric shaft.
2. Align the flywheel key groove with the eccentric shaft key and install.



3. Install the **SST** to the flywheel.
4. Apply silicone sealant to the locknut thread.



5. Tighten the locknut using the SST .



Tightening torque

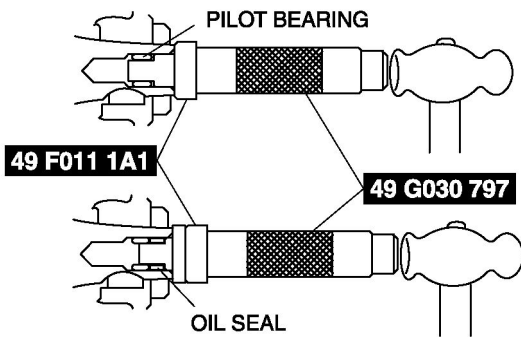
- 392—490 N·m
{40.0—49.9 kgf·m, 289—361 ft·lbf}

CAUTION:

- Remove the seal protruding from the threads without it becoming caught in the pilot bearing.

Pilot Bearing, Oil Seal Installation Note

1. Install the pilot bearing using the SSTs .



NOTE:

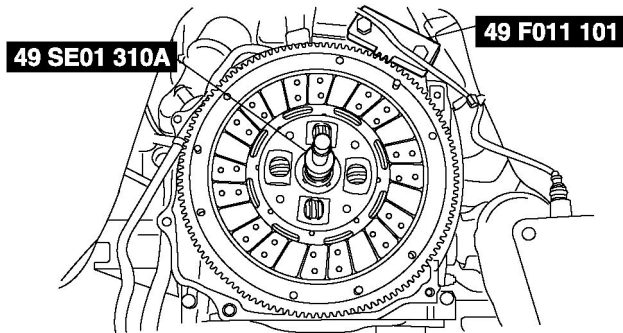
- Bearing outer diameter: **20 mm {0.787 in}**
- Press-in depth:

11.5—12.25 mm {0.453—0.482 in}

2. Install a new oil seal using the SSTs .

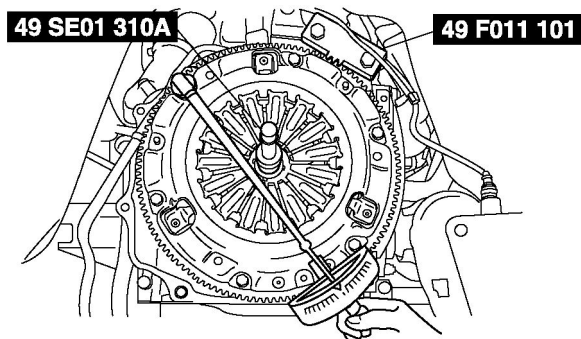
Clutch Disc Installation Note

1. Clean the splines of the clutch disc and the main drive gear with a brush.
2. Spread a thin layer of clutch grease on the splines.
3. Secure the clutch disc to the flywheel using the SSTs .



Clutch Cover Installation Note

1. Align the clutch cover with the flywheel knock pin and install.
2. Tighten the bolts evenly and gradually in the order shown in the figure.



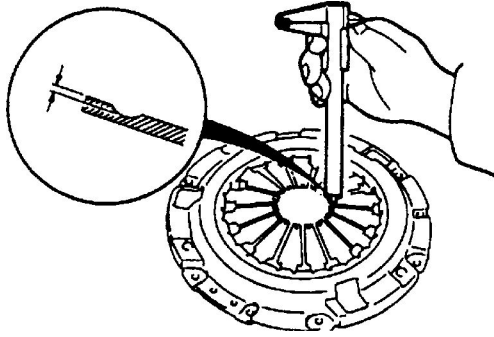
Tightening torque

- 17.6—26.5 N·m
{1.80—2.70 kgf·m, 13.0—19.5 ft·lbf}

CLUTCH COVER

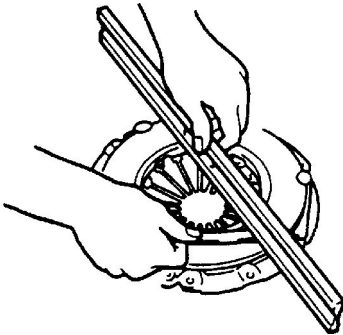
CLUTCH COVER INSPECTION

1. Remove the clutch cover.
2. Measure the wear of the diaphragm spring fingers using a vernier caliper.



Maximum wear

- 0.6 mm {0.024 in}
 - If it exceeds the maximum specification, replace the clutch cover.
3. Measure the pressure plate flatness using a straight edge and a feeler gauge.

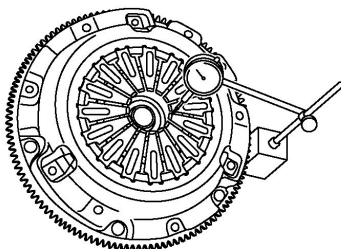


NOTE:

- Measure the pressure plate flatness across the center.

Maximum flatness

- 0.5 mm {0.020 in}
 - If it exceeds the maximum specification, replace the clutch cover.
4. Attach a dial gauge to the rear housing, rotate the flywheel, then inspect for height difference between the diaphragm spring fingers.



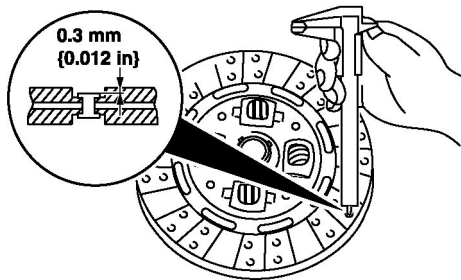
Maximum height difference

- 1.0 mm {0.039 in}
- If it exceeds the maximum specification, replace the clutch cover.

CLUTCH DISC

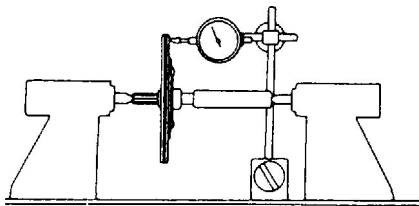
CLUTCH DISC INSPECTION

1. Remove the clutch disc.
2. Inspect the lining surface for discoloration and grease adhesion.
3. Inspect the torsion spring for weakness and the rivet for looseness.
4. Using a vernier caliper, measure the depth between the lining surface and the rivet head.



Minimum depth

- 0.3 mm {0.012 in}
 - If it is less than the minimum specification, replace the clutch disc.
5. Measure the clutch disc runout using a dial gauge.



Maximum runout

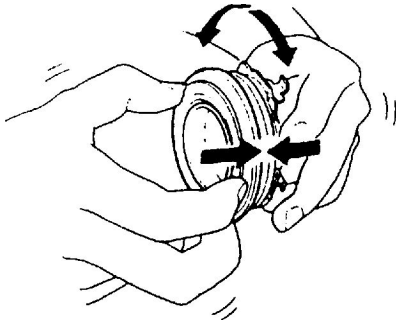
- 0.7 mm {0.028 in}
 - If it exceeds the maximum specification, replace the clutch disc.
6. Install the clutch disc.

CLUTCH RELEASE COLLAR

CLUTCH RELEASE COLLAR INSPECTION

CAUTION:

- Do not clean the clutch release collar with cleaning fluids or a steam cleaner because it is filled with grease.
1. Remove the clutch release collar.
 2. Turn the collar while applying force in the axial direction, and inspect for sticking, excessive resistance, and an abnormal noise.
 - If there is any malfunction, replace the clutch release collar.



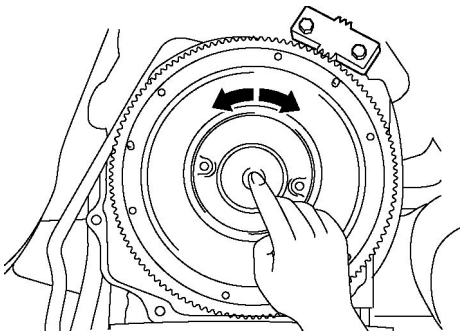
3. Install the clutch release collar.

PILOT BEARING

PILOT BEARING INSPECTION

NOTE:

- Inspect the pilot bearing when it is installed to the eccentric shaft.
1. Remove the clutch unit so that the pilot bearing can be inspected.
 2. Inspect the pilot bearing for damage, wear, and proper rotation.



- If there is any malfunction, replace the pilot bearing.
3. Install the clutch unit.

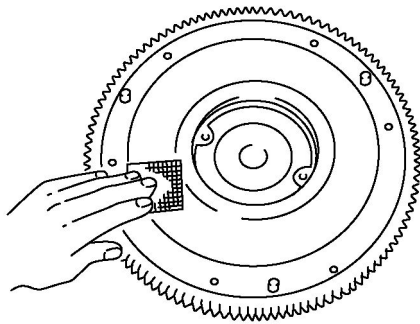
FLYWHEEL

FLYWHEEL INSPECTION

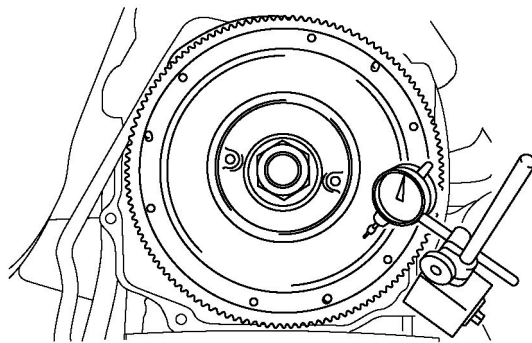
1. Remove the flywheel.

NOTE:

- Correct slight scratches and discoloration using sandpaper.



- Inspect the runout of the surface that contacts the clutch disc with the flywheel installed to the eccentric shaft.
2. Inspect the surface that contacts the clutch disc for scratches, nicks, and discoloration.
 3. Inspect the ring gear teeth for damage and wear.
 4. Install the flywheel.
 5. Measure the runout of the surface that contacts the clutch disc using a dial gauge.



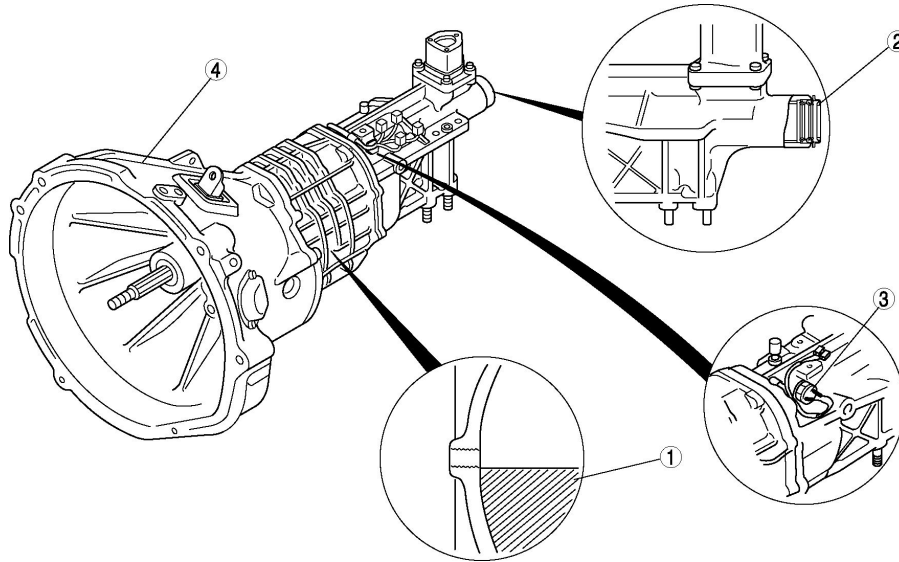
Maximum runout

- 0.2 mm {0.008 in}
- If it exceeds the maximum specification, replace the flywheel.

MANUAL TRANSMISSION [Y16M-D]

TRANSMISSION/TRANSAXLE

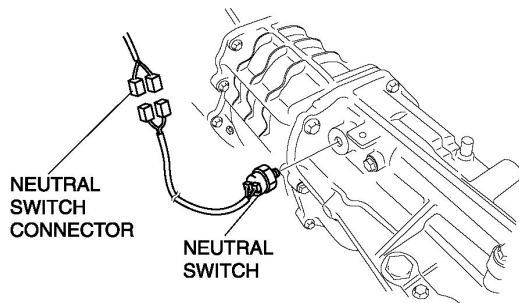
MANUAL TRANSMISSION LOCATION INDEX



1	Transmission oil
2	Oil seal (extension housing)
3	Neutral switch
4	Transmission

NEUTRAL SWITCH REMOVAL/INSTALLATION

1. Remove the neutral switch.



2. Install the neutral switch to the transmission case.

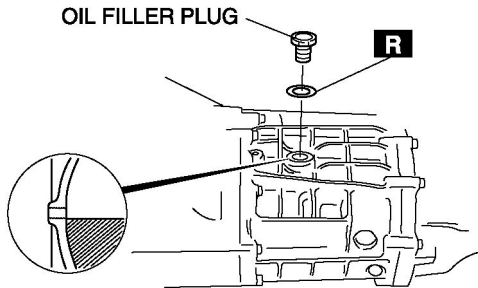
Tightening torque

- 30—39 N·m
{3.1—3.9 kgf·m, 23—28 ft·lbf}

TRANSMISSION/TRANSAXLE OIL

TRANSMISSION OIL INSPECTION

1. Position the vehicle on level ground.
2. Remove oil filler plug.



3. Verify that the oil is near the brim of the plug port.
 - If the oil is not near the brim of the plug port, add the specified amount and type of oil.

Specified oil grade

- API Service GL-4 or GL-5

Specified oil viscosity

- SAE 75W-90

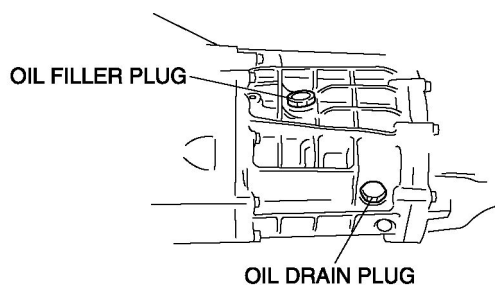
4. Install oil filler plug and a new washer.

Tightening torque

- 27—48 N·m {2.8—4.9 kgf·m, 20—35 ft·lbf}

TRANSMISSION OIL REPLACEMENT

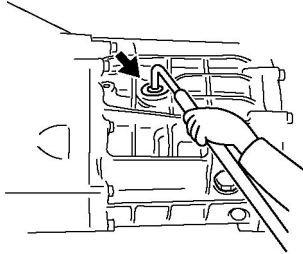
1. Position the vehicle on level ground.
2. Remove oil filler plug and drain plug, and then drain the oil.



3. Clean drain plug.
4. Install drain plug and a new washer.

Tightening torque

- 27—48 N·m {2.8—4.9 kgf·m, 20—35 ft·lbf}
5. Add the specified amount and type of oil through the plug port for oil filler plug to near the brim of the port.



Specified oil grade

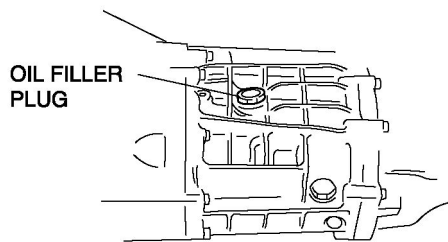
- API Service GL-4 or GL-5

Specified oil viscosity

- SAE 75W-90

Capacity (approx. quantity)

- 1.75 L {1.85 US qt, 1.54 Imp qt}
6. Install oil filler plug and a new washer.



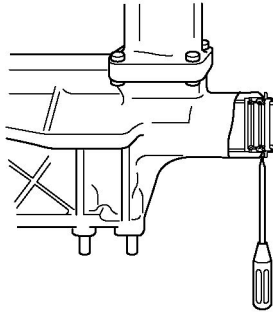
Tightening torque

- 27—48 N·m {2.8—4.9 kgf·m, 20—35 ft·lbf}

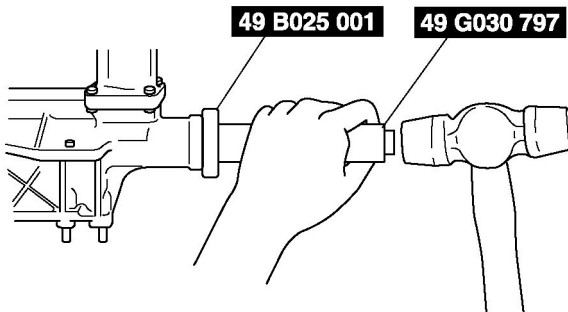
OIL SEAL (EXTENSION HOUSING)

OIL SEAL (EXTENSION HOUSING) REPLACEMENT

1. Drain the transmission oil.
2. Remove the following parts:
 - a. Front tunnel member
 - b. Rear tunnel member
 - c. Catalytic converter, middle pipe, main silencer
 - d. Heat insulator
 - e. Propeller shaft
3. Remove the oil seal using a flathead screwdriver.



4. Tap a new oil seal into the case using the SSTs .



5. Apply the specified oil to the oil seal lip.
6. Install in the reverse order of removal.
7. Add transmission oil.

MANUAL TRANSMISSION

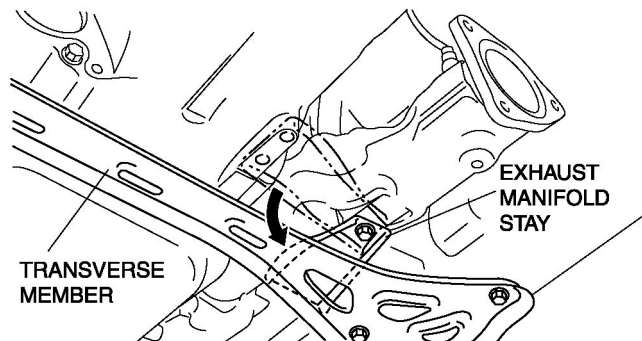
TRANSMISSION REMOVAL/INSTALLATION

1. Remove the engine cover.
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the transmission oil.
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Add transmission oil.

3	Shift insulator component (outer)
4	Shift insulator component (inner)
5	Shift lever component
6	Front tunnel member
7	Rear tunnel member
8	Heated oxygen sensor connector
9	Heated oxygen sensor connector bracket
10	Catalytic converter, middle pipe, main silencer
11	Exhaust manifold stay
12	Heat insulator
13	Starter
14	Clutch release cylinder
15	Power plant frame
16	Propeller shaft
17	Back-up light switch connector
18	Neutral switch connector
19	Wire
20	Transmission installation bolt
21	Transmission
22	Stopper
23	Bolt
24	Dynamic damper

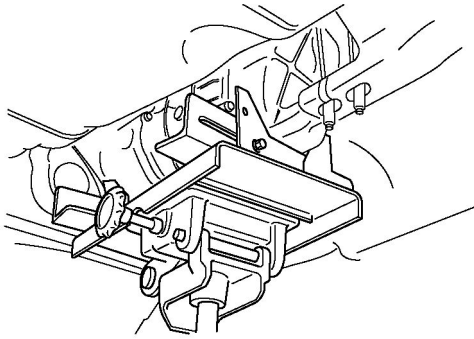
Exhaust Manifold Stay Removal Note

1. Remove the exhaust manifold stay from the transmission.
2. Rotate the exhaust manifold stay and place it on the transverse member.



Power Plant Frame Removal Note

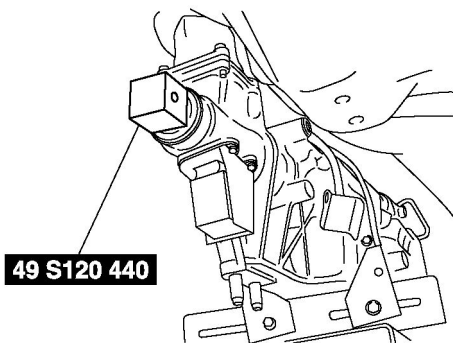
1. Support the transmission using a transmission jack.



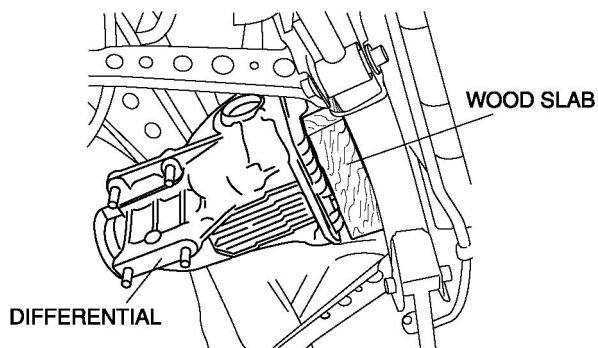
2. Remove the power plant frame.

Propeller Shaft Removal Note

1. Install the **SST** to the main shaft.



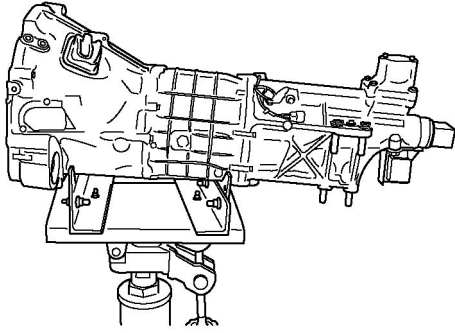
2. Insert a slab of wood behind the rear differential, and remove the propeller shaft.



Transmission Removal Note

WARNING:

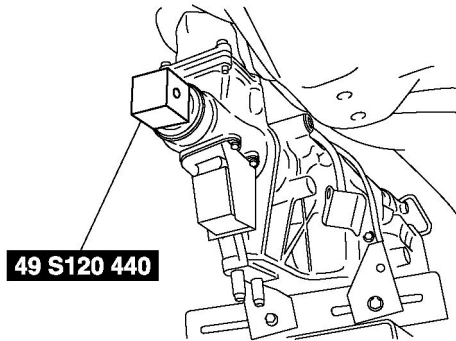
- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.
1. Support the transmission securely using a transmission jack.



2. Remove the transmission installation bolt.
3. Remove the transmission.

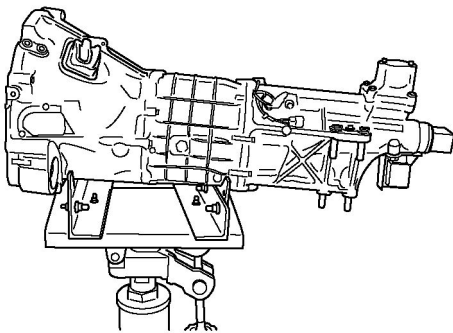
Transmission Installation Note

1. Shift to any gear position.
2. Install the **SST** to the main shaft.



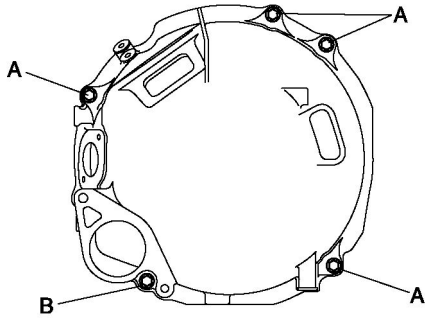
WARNING:

- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.
3. Place the transmission on the transmission jack and raise it.



NOTE:

- Slowly rotate the **SST** to engage the clutch with the main drive gear spline, and install the transmission.
4. Install the transmission.
 5. Tighten the transmission installation bolt.



Bolt length

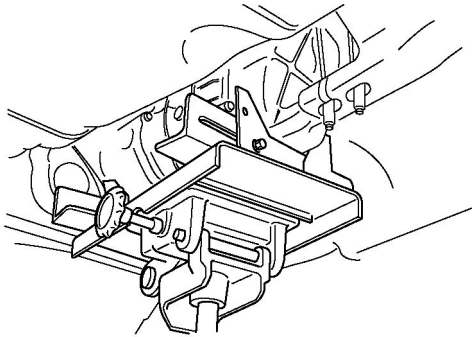
- A: 55 mm {2.1 in}
- B: 90 mm {3.5 in}

Tightening torque

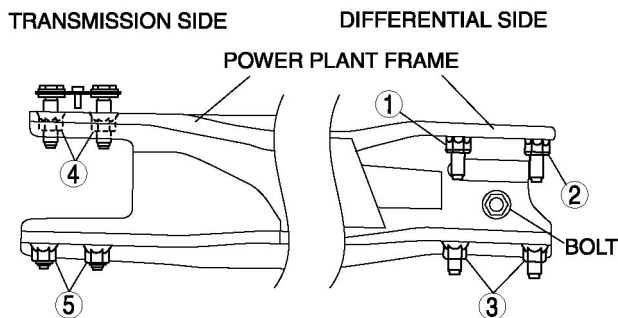
- 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

Power Plant Frame Installation Note

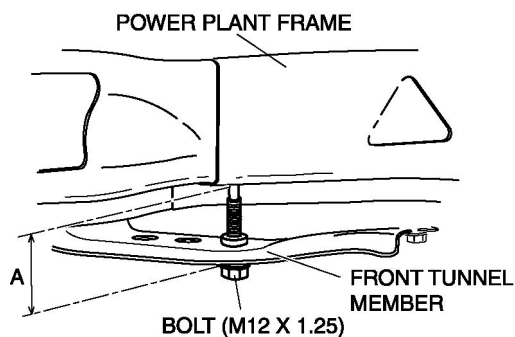
1. Support the transmission using a transmission jack.



2. Install the power plant frame.
3. Temporarily tighten the nuts in the order shown in the figure.



4. Tighten nut 1 until the power plant frame is seated in the rear differential.
5. Install the heat insulator, exhaust manifold stay, exhaust pipe, silencer and front tunnel member.
6. Raise the front end of the power plant frame (transmission side) with the transmission jack and adjust dimension A to the standard (lower end of power plant frame—lower end of the front tunnel member) as shown in the figure.



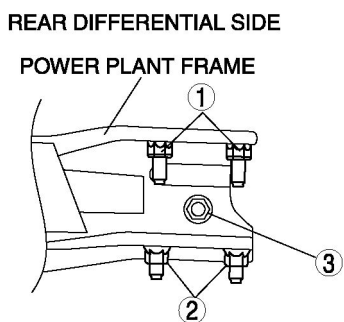
Standard dimension A

- 48.4—56.4 mm {1.91—2.22 in}

NOTE:

- When raising power plant frame without a transmission jack, use bolts with a thread length of **55 mm {2.16 in}** or more (**M12 x 1.25**). Tighten bolts from the underside of the front tunnel member as shown in the figure and raise power plant frame.
- When using bolts, the undersurface of the power plant frame could be damaged. Wrap tape to the undersurface of the frame to prevent damage.

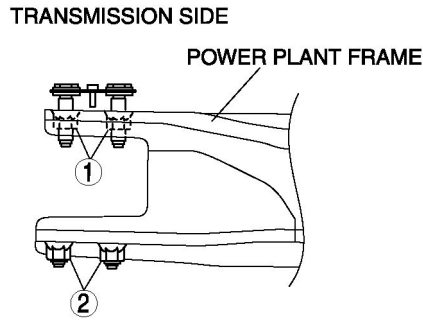
7. Tighten the nuts and bolts on the rear differential side in the order shown in the figure.



N·m {kgf·m, ft·lbf}

Bolt, nut number	Tightening torque
1, 2	126.0—154.0 {12.9—15.7, 93.0—113}
3	74.5—93.2 {7.60—9.50, 55.0—68.7}

8. Tighten the nuts on the rear differential side in the order shown in the figure.



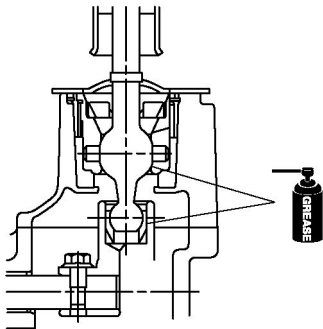
Tightening torque

- 126.0—154.0 N·m
{12.9—15.7 kgf·m, 93.0—113 ft·lbf}

9. Verify again that dimension A is within the specification.
 - If it is not within the specification, adjust dimension A again.

Shift Lever Component Installation Note

1. Apply grease to the areas of the shift lever component as shown in the figure.



INSPECTION AFTER TRANSMISSION INSTALLATION

1. After warming up the engine, perform a road test and inspect the following items:
 - a. No abnormal noise in each shift position.
 - b. Smooth shift operation when shifting gears.
 - c. No gear slipout after shifting gears.
 - d. Back-up light switch operates correctly.

TRANSMISSION/TRANSAXLE

TRANSMISSION/TRANSAXLE TECHNICAL DATA

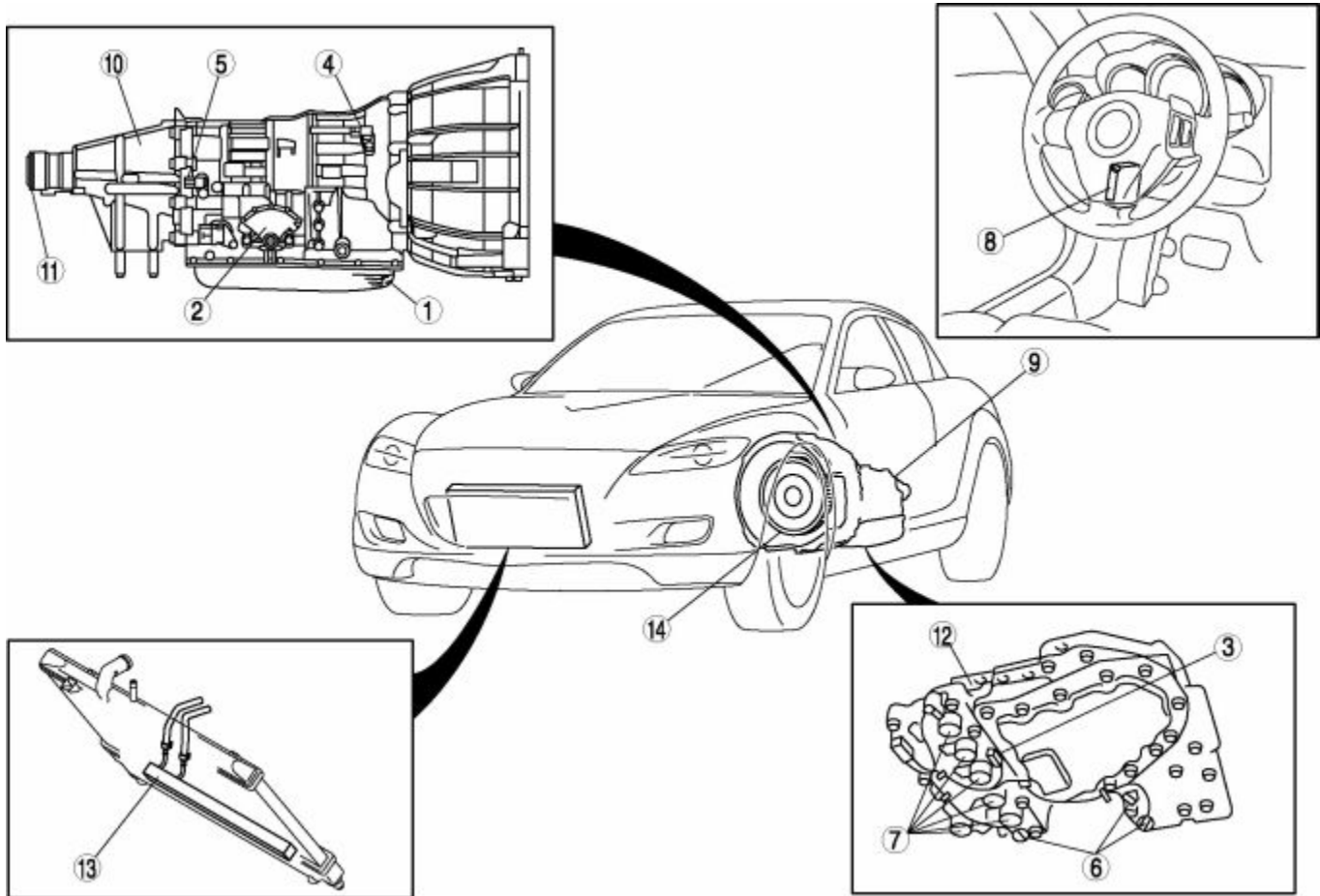
Item				Specifications
CLUTCH				
Clutch pedal	Free play	Pedal free play		(mm {in}) 5—15 {0.20—0.59}
		Push rod free play	At push rod setting line	(mm {in}) 0.1—0.5 {0.004—0.02} (Reference value)
			At clutch pedal pad	(mm {in}) 0.5—2.9 {0.02—0.11}
	Disengagement point	Disengagement stroke		(mm {in}) 111.8 {4.402} (Reference value)
		Pedal stroke		(mm {in}) 130 {5.12} (Reference value)
Clutch cover	Diaphragm spring fingers	Depth		(mm {in}) 0.6 {0.024}
		Maximum height difference		(mm {in}) 1.0 {0.039}
	Maximum clearance of flatness of the pressure plate		(mm {in}) 0.5 {0.020}	
Clutch disc	Minimum thickness		(mm {in}) 0.3 {0.012}	
	Run out limit		(mm {in}) 0.7 {0.028}	
Flywheel	Run out limit		(mm {in}) 0.2 {0.008}	
Clutch fluid	Type			SAE J1703, FMVSS 116 DOT-3
MANUAL TRANSMISSION				
Manual transmission type				Y16M-D
Oil	Grade			API Service GL-4 or GL-5
	Viscosity	All-season		SAE 75W-90
	Capacity (Approx. quantity)			1.75 {1.85, 1.54}
	(L {US qt, Imp qt})			
AUTOMATIC TRANSMISSION				
Automatic transmission type				RC4A-EL

ATF	Type		ATF M-III or equivalent (e.g. Dexron® III)
	Capacity (Approx. quantity)		8.7 {9.2, 7.7}
	(L {US qt, Imp qt})		
Line pressure	D, M range	Idle	320—450 {3.3—4.6, 46—65}
		Stall	1,130—1,330 {11.5—13.6, 164—193}
(kPa {kgf/cm ² , psi})	R position	Idle	380—580 {3.9—5.9, 55—84}
		Stall	1,470—1,700 {15.0—17.3, 213—247}
	P, N position	Idle	380—580 {3.9—5.9, 55—84}
Engine stall speed	(rpm)	D, M range	2,400—2,900
		R position	
Time lag	(s)	N position → D range	approx. 0.2—1.3
		N position → R position	approx. 0.2—1.3
Transmission fluid temperature (TFT) sensor	(kilohm)	ATF temperature: -20 °C {-4 °F}	15.87—17.54
		ATF temperature: 0 °C {32 °F}	5.727—6.329
		ATF temperature: 20 °C {68 °F}	2.375—2.625
		ATF temperature: 40 °C {104 °F}	1.102—1.218
		ATF temperature: 60 °C {140 °F}	0.561—0.620
		ATF temperature: 80 °C {176 °F}	0.308—0.341
		ATF temperature: 100 °C {212 °F}	0.181—0.200
		ATF temperature: 120 °C {248 °F}	0.112—0.123

		ATF temperature: 130 °C {266 °F}	0.089—0.099
Turbine sensor	(ohm)	M range, 1st gear at 20 km/h {12 mph}	7
Vehicle speedometer sensor (VSS)	(ohm)	M range, 1st gear at 20 km/h {12 mph}	7
Solenoid valves ATF temperature: 20—80 °C {68—176 °F}	(ohm)	Shift solenoid A	2.7—4.4
		Shift solenoid B	2.7—4.4
		Shift solenoid C	2.7—4.4
		Shift solenoid F	2.7—4.4
		Pressure control solenoid	12.3—16.3
		TCC solenoid	12.1—16.0

AUTOMATIC TRANSMISSION

AUTOMATIC TRANSMISSION LOCATION INDEX



1	<p>Automatic transmission fluid (ATF)</p> <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)</p> <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)</p>
2	<p>Transmission range (TR) switch</p> <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)</p> <p>(See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION .)</p> <p>(See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)</p>
3	<p>Transmission fluid temperature (TFT) sensor</p> <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)</p>
4	<p>Turbine sensor</p>

	(See TURBINE SENSOR INSPECTION .) (See TURBINE SENSOR REMOVAL/INSTALLATION .)
5	Vehicle speed sensor (VSS) (See VEHICLE SPEED SENSOR (VSS) INSPECTION .) (See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION .)
6	Oil pressure switch (See OIL PRESSURE SWITCH INSPECTION .) (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
7	Solenoid valve (See SOLENOID VALVE INSPECTION .) (See SOLENOID VALVE REMOVAL/INSTALLATION .)
8	TCM (See TCM INSPECTION .) (See TCM REMOVAL/INSTALLATION .)
9	Automatic transmission (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)
10	Extension housing (See EXTENSION HOUSING, PARKING MECHANISM REMOVAL/INSTALLATION .)
11	Oil seal (See OIL SEAL REPLACEMENT .)
12	Control valve body (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
13	Oil cooler (See OIL COOLER FLUSHING .) (See OIL COOLER REMOVAL/INSTALLATION .) (See OIL COOLER DISASSEMBLY/ASSEMBLY .)
14	Drive plate (See DRIVE PLATE REMOVAL/INSTALLATION .)

MECHANICAL SYSTEM TEST

Mechanical System Test Preparation

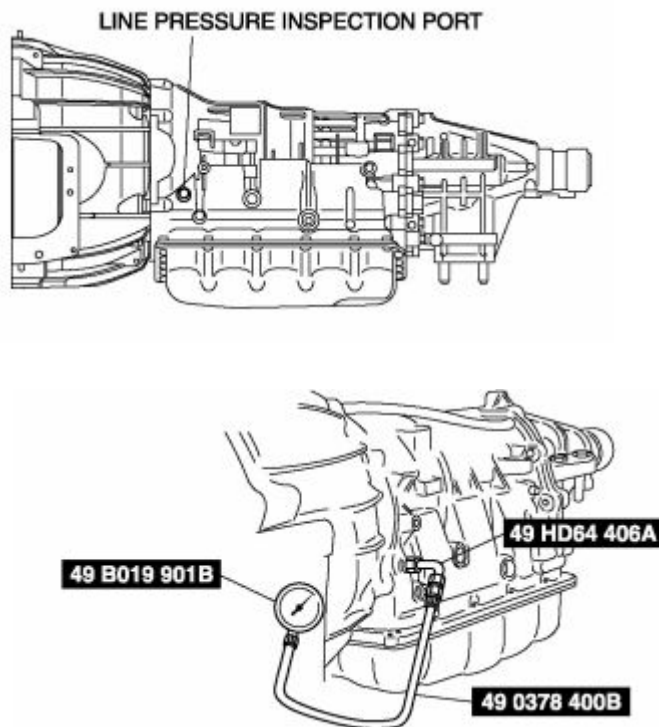
1. Engage the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant level. (See ENGINE COOLANT LEVEL INSPECTION .)
3. Inspect the engine oil level. (See ENGINE OIL LEVEL INSPECTION .)
4. Inspect the ATF level. (See Automatic Transmission Fluid (ATF) Level Inspection .)
5. Inspect the idle speed and ignition timing in the P position. (See ENGINE TUNE-UP .)
6. Wait until the engine and transmission reach normal operating temperature.

Line Pressure Test

1. Perform mechanical system test preparation. (See Mechanical System Test Preparation .)

WARNING:

- Removing the square head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square head plug, allow the ATF to cool.
2. Connect the SSTs (49 HD64 406A, 49 0378 400B) to the line pressure inspection port and replace the gauge of the SST (49 0378 400B) with the SST (49 B019 901B).



3. Start the engine and warm it up until the ATF reaches **60—70 °C {140—158 °F}** .
4. Shift the selector lever to the D range.
5. Read the line pressure while the engine is idling for the D range.
6. Read the line pressure while the engine is idling for the P, R, N positions and M range in the same manner as in Steps 4—5.
7. Stop the engine, then replace the SST (49 B019 901B) with the gauge of the SST (49 0378 400B).
8. Start the engine.

9. Firmly depress the brake pedal with the left foot.
10. Shift the selector lever to the D range.

CAUTION:

- If the accelerator pedal is pressed for more than 5 s while the brake pedal is pressed, the transmission could be damaged. Therefore, perform Steps 11 and 12 within 5 s.
11. Gradually depress the accelerator pedal with the right foot.
 12. When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
 13. Shift the selector lever to the N position and idle the engine for **1 min or more** to cool the ATF.
 14. Read the line pressure at the engine stall speed for the M range and R position in the same manner as in Steps 9—13. Line pressure

Position/Range		Line pressure (kPa {kgf/cm ² , psi})
D, M	Idle	320—450 {3.3—4.6, 46—65}
	Stall	1,130—1,330 {11.5—13.6, 164—193}
R	Idle	380—580 {3.9—5.9, 55—84}
	Stall	1,470—1,700 {15.0—17.3, 213—247}
P, N	Idle	380—580 {3.9—5.9, 55—84}

15. **WARNING:**

- Removing the square head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square head plug, allow the ATF to cool.
16. Remove the SSTs .
 17. Install a new square head plug and O-ring in the inspection port.

Tightening torque

- 10.8—12.7 N·m {110—130 kgf·cm, 96—112 in·lbf}

Evaluation of line pressure test

Condition			Possible cause
Idle	Below specification	Low pressure in all ranges	<p>Worn oil pump</p> <p>Poor operation of each solenoid</p> <p>Fluid leakage from oil strainer, oil pump, pressure regulator valve, torque converter relief valve, or pressure relief valve</p> <p>Pressure regulator valve or pilot valve sticking</p> <p>Damaged pressure regulator valve spring or pilot valve spring</p>

		Low pressure in D and M ranges only	Fluid leakage from hydraulic circuit of low clutch
		Low pressure in R position only	Fluid leakage from hydraulic circuit of reverse clutch
		Low pressure in M range and R position only	Fluid leakage from hydraulic circuit of low and reverse brake
	Above specification	High pressure in all ranges	Throttle position sensor improper adjustment TFT sensor malfunction Poor operation of shift solenoid A Pilot valve sticking Pressure regulator valve or plug sticking
Stall	Below specification	Low pressure in all ranges	Throttle position sensor improper adjustment Pressure control solenoid malfunction Poor operation of shift solenoid A Pilot valve sticking Pressure regulator valve or plug sticking

Stall Speed Test

1. Perform mechanical system test preparation. (See Mechanical System Test Preparation .)
2. Start the engine.
3. Firmly depress the brake pedal with the left foot.
4. Shift the selector lever to the D range.

CAUTION:

- If the accelerator pedal is pressed for more than 5 s while the brake pedal is pressed, the transmission could be damaged. Therefore, perform Steps 5 and 6 within 5 s.
5. Gently depress the accelerator pedal with the right foot.
 6. When the engine speed no longer increases, quickly read the engine speed and release the accelerator pedal.
 7. Shift the selector lever to the N position and idle the engine for **1 min or more** to cool the ATF.
 8. Perform a stall test of the M range and R position in the same manner as in Steps 3—7.
 9. Turn off the engine. Engine stall speed

Position/Range	Engine stall speed (rpm)
D, R, M	2,400—2,900

Evaluation of stall test

Condition		Possible cause
Above specification	In all forward ranges and R position	Insufficient line pressure Worn oil pump Poor operation of low clutch Poor adjustment or malfunction of TR switch Oil leakage from oil pump, control valve, or transmission case Pressure regulator valve or pilot valve sticking
	In all forward ranges	Low clutch slippage Low one-way clutch slippage
	In R position	Low and reverse brake slippage Reverse clutch slippage Perform road test to determine whether problem is low and reverse clutch or reverse clutch <ul style="list-style-type: none"> • Engine braking felt in the M range first gear: Reverse clutch • Engine braking not felt in M range first gear: Low and reverse brake
Below specification	In all forward ranges and R position	Engine out of tune One-way clutch slippage within torque converter

Time Lag Test

1. Perform mechanical system test preparation. (See Mechanical System Test Preparation .)
2. Start the engine.
3. Warm up the engine until the ATF temperature reaches **60—70°C {140—158°F}** .
4. Shift the selector lever from the N position to D range.
5. Use a stopwatch to measure the time it takes from shifting until shock is felt. Take three measurements for each test and average from the results using the following formula.

Formula

- Average time lag = (Time 1 + Time 2 + Time 3) / 3
6. Perform the test for the following shifts in the same manner Step 5.
 - N position → R position

Time lag

- N position → D range: approx. 0.2—1.3 s

- N position → R position: approx. 0.2— 1.3 s

Evaluation of time lag test

Condition		Possible Cause
Above specification	N → D shift	Insufficient line pressure in all forward ranges
		Low clutch slippage
	N → R shift	Low one-way clutch slippage
		Insufficient line pressure in R position
		Low and reverse brake slippage
		Reverse clutch slippage

ROAD TEST

WARNING:

- When performing a road test, be aware of other vehicles, people, impediments to avoid an accident.

NOTE:

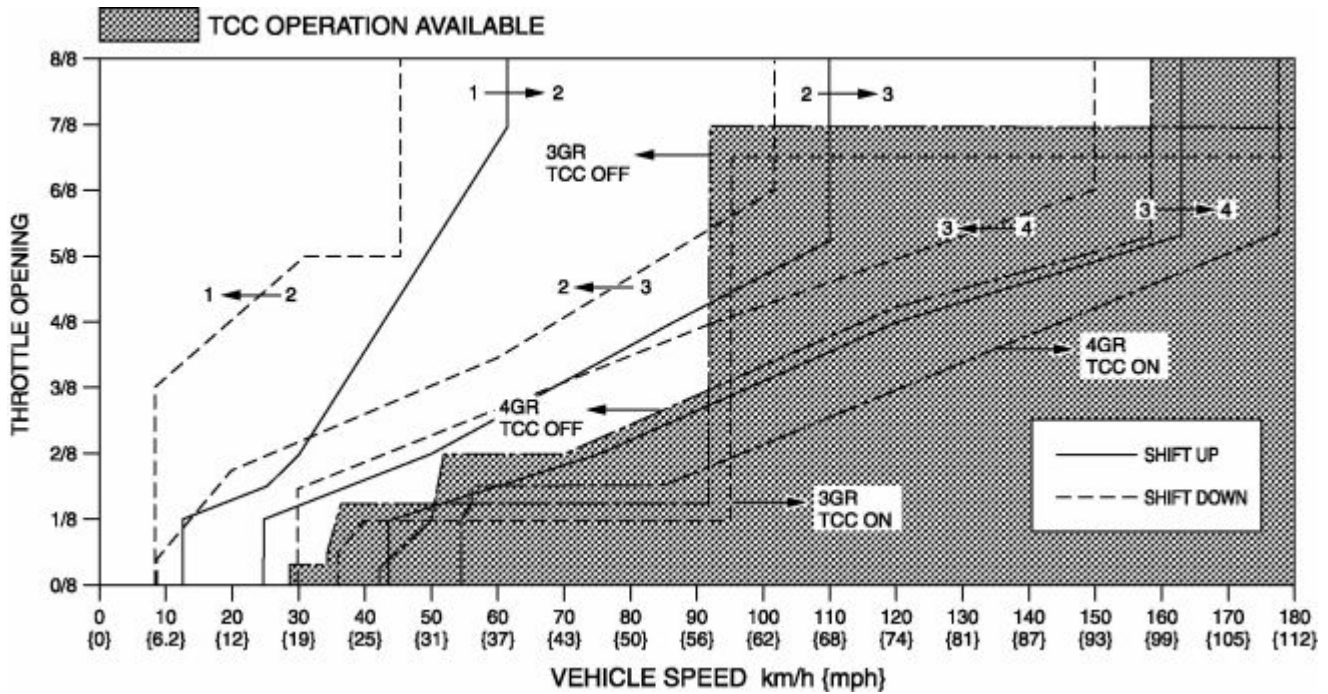
- When the legal speed limit must be exceeded, use a chassis dynamometer instead of performing a road test.

Road Test Preparation

1. Inspect the engine coolant level. (See ENGINE COOLANT LEVEL INSPECTION .)
2. Inspect the engine oil level. (See ENGINE OIL LEVEL INSPECTION .)
3. Inspect the ATF level. (See Automatic Transmission Fluid (ATF) Level Inspection .)
4. Inspect the idle speed and ignition timing in the P position. (See ENGINE TUNE-UP .)
5. Wait until the engine and transmission reach normal operating temperature.

Shift Diagram

D range (normal mode)



D Range Test

1. Perform road test preparation. (See Road Test Preparation .)
2. Shift the selector lever to the D range.
3. Accelerate with the throttle half and then wide open.
4. Verify that 1→2, 2→3, and 3→4 upshifts can be obtained. The shift points must be as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
5. Drive the vehicle in 4GR, 3GR, and 2GR and verify that kickdown occurs for 4→3, 3→2, 2→1 downshifts, and that the shift points are as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
6. Decelerate the vehicle and verify that engine braking effect is felt in 2GR, 3GR, and 4GR.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
7. Drive the vehicle and verify that TCC operation is obtained. The operation points must be as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)

Shift point table

Range	Mode	Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
D	NORMAL	Wide open	D ₁ → D ₂	60—66 {38—40}	6,300—6,850
			D ₂ → D ₃	108—116 {67—71}	6,250—6,700
			D ₃ → D ₄	160—170 {100—105}	6,000—6,350
			TCC ON (D ₄)	175—185 {109—114}	4,550—4,800

POWER	Half open	D ₁ → D ₂	39—48 {25—29}	4,100—5,000	
		D ₂ → D ₃	76—97 {48—60}	4,400—5,600	
		TCC ON (D ₃)	89—101 {56—62}	3,350—3,750	
		D ₃ → D ₄	89—164 {56—101}	3,350—6,100	
		TCC ON (D ₄)	132—162 {82—100}	3,450—4,200	
		Closed	D ₄ → D ₃	27—33 {17—20}	750—850
			D ₃ → D ₁	5—11 {4—6}	200—400
		Kickdown	D ₄ → D ₃	145—155 {90—96}	3,800—4,000
			D ₃ → D ₂	98—106 {61—65}	3,700—3,950
			D ₂ → D ₁	42—48 {27—29}	2,450—2,750
		Wide open	D ₁ → D ₂	60—66 {38—40}	6,300—6,850
			D ₂ → D ₃	108—116 {67—71}	6,250—6,700
	D ₃ → D ₄		160—170 {100—105}	6,000—6,350	
	TCC ON (D ₄)		175—185 {109—114}	4,550—4,800	
	Half open		D ₁ → D ₂	34—53 {22—32}	3,550—5,500
			D ₂ → D ₃	84—114 {53—70}	4,900—6,550
			TCC ON (D ₃)	89—101 {56—62}	3,350—3,750
			D ₃ → D ₄	139—162 {87—100}	5,200—6,050
			TCC ON (D ₄)	132—162 {82—100}	3,450—4,200
	Closed		D ₄ → D ₃	57—63 {36—39}	1,500—1,600
			D ₃ → D ₁	5—11 {4—6}	200—400
	Kickdown		D ₄ → D ₃	145—155 {90—96}	3,800—4,000
		D ₃ → D ₂	98—106 {61—65}	3,700—3,950	
		D ₂ → D ₁	42—48 {27—29}	2,450—2,750	

M Range Test

1. Perform road test preparation. (See Road Test Preparation .)
2. Shift the selector lever to M range.
3. Verify that 1→2, 2→3, and 3→4 upshifts and 4→3, 3→2, and 2→1 downshifts are obtained by manual shifting.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
4. Decelerate the vehicle and verify that 4→3, 3→2, and 3→1 downshifts are obtained. The shift points must be as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
5. Decelerate the vehicle and verify that engine braking effect is felt in all gears.
 - If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
6. Drive the vehicle and verify that TCC operation is obtained in 3GR and 4GR. The operation points must be as shown in the table below.

- If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)
7. Drive the vehicle in 4GR, 3GR, and 2GR and verify that kickdown occurs for 4→3 and 3→2 downshifts, and that the shift points are as shown in the table below.
- If there is any malfunction, inspect the TCM and AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)

Vehicle speed at shift point table

Range	Mode	Throttle condition	Shift	Vehicle speed	Turbine speed
				km/h {mph}	(rpm)
M	Manual	Any condition	M ₄ → M ₃	28—34 {18—21}	750—850
			M ₃ → M ₁	5—11 {4—6}	200—400
		Kickdown	M ₄ → M ₃	144—154 {90—95}	3,750—3,950
			M ₃ → M ₂	52—60 {33—37}	1,950—2,200
		Closed	TCC ON (M ₃)	31—41 {20—25}	1,200—1,500
		Wide open	TCC ON (M ₄)	173—183 {108—113}	4,500—4,750

P Position Test

- Shift into the P position on a gentle slope. Release the brake, and verify that the vehicle does not roll.
 - If there is any malfunction, inspect the AT. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)

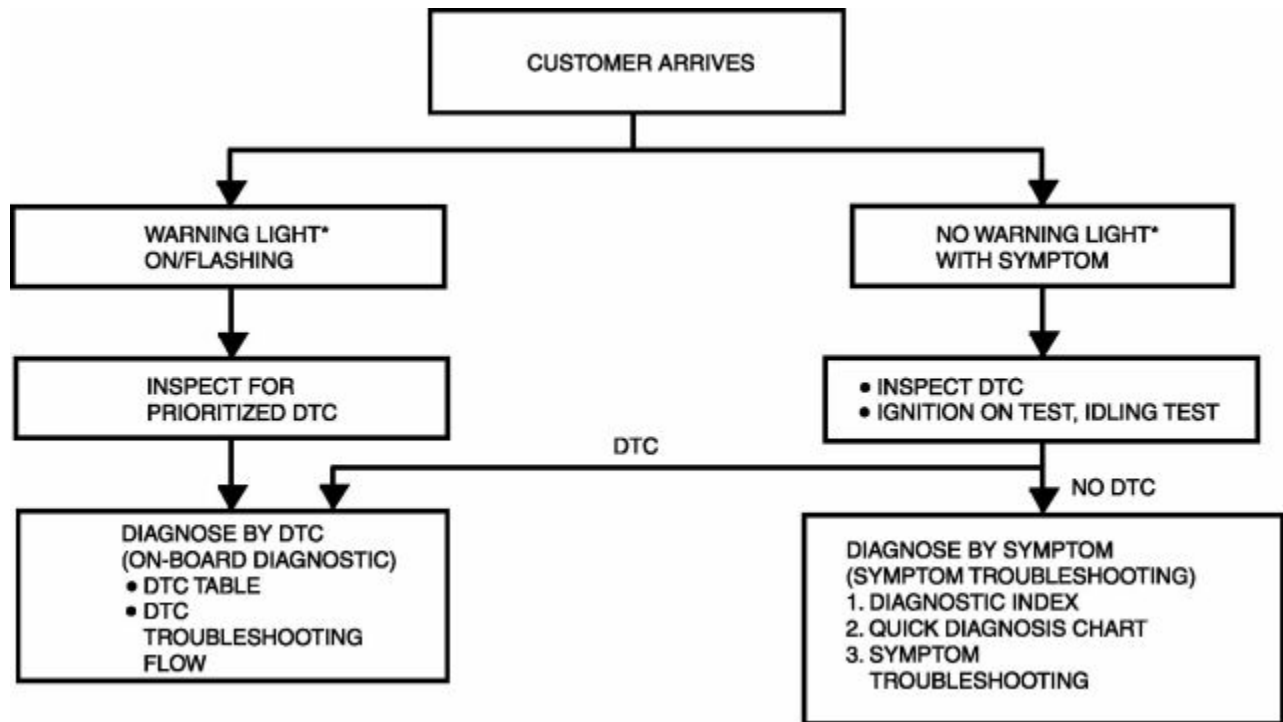
Incorrect Gear Ratio (Slippage) Test

NOTE:

- If a gear ratio is incorrect but is not detected accurately, it will not be output as a DTC. In order to be output, after shifting into each gear position, the gear position must be held while the vehicle is driven at a speed of **10 km/h {6.2 mph} or more for at least 7 s**.
 - An incorrect gear ratio refers to a situation in which, due to clutch slippage in the AT, the input and output rotation of the AT differs from a certain value.
- Perform road test preparation. (See Road Test Preparation .)
 - Perform the following steps.
 - Shift into the D range (1GR) and drive for **7 s or more**.
 - Shift into the D range (2GR) and drive for **7 s or more**.
 - Shift into the D range (3GR) and drive for **7 s or more**.
 - Shift into the D range (4GR) and drive for **7 s or more**.
 - Stop the vehicle.
 - Inspect for a DTC.
 - If any DTC is present, repair according to the inspection procedure for the applicable DTC.

FOREWORD

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL) indication, AT warning light flash, and diagnostic trouble code (DTC), then diagnose the malfunction according to the following flowchart.
 - If a DTC exists, diagnose the applicable DTC inspection. (See DTC TABLE .)
 - If no DTC exists, the MIL does not illuminate and AT warning light illuminate. Diagnose the applicable symptom troubleshooting. (See SYMPTOM TROUBLESHOOTING ITEM TABLE .)



*: Malfunction Indicator Lamp (MIL), AT warning light

BASIC INSPECTION

STEP	INSPECTION	ACTION	
1	Perform mechanical system test. (See MECHANICAL SYSTEM TEST .) Is mechanical system normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
2	Turn the ignition switch to the ON position. When the selector lever is moved, does the selector illumination indicate synchronized position to the lever location? Also, when other ranges are selected from N or P during idling, does the vehicle move within 1—2 s ?	Yes	Go to the next step.
		No	Inspect the selector lever and TR switch. Repair or replace malfunctioning parts. (See SELECTOR LEVER INSPECTION .) (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .) If the selector lever and TR switch are normal, go to the next step.
3	Inspect ATF color and condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .) Are ATF color and odor normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result. Flush AT and cooler line if necessary.
4	Perform the line pressure test. (See Line Pressure Test .) Is the line pressure normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
5	Perform the stall test. (See Stall Speed Test .) Is the stall speed normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
6	Inspect the voltage at the following TCM terminals.	Yes	Go to the next step.

	<p>(See TCM INSPECTION .)</p> <ul style="list-style-type: none"> • Terminal 2J (TFT sensor) • Terminals 1D, 2B, 2C, 2E (TR switch) • Terminal 2G (turbine sensor) • Terminal 2D (down switch) • Terminal 2I (up switch) • Terminal 1E (M range switch) • Terminal 1W (steering shift switch) <p>Is the voltage normal?</p>		<p>No</p> <p>Repair or replace any malfunctioning parts according to the inspection result.</p>
7	<p>Inspect the value at the following PCM PIDs using the WDS or equivalent.</p> <p>(See PCM INSPECTION .)</p> <ul style="list-style-type: none"> • B+ • APP1 • APP2 • ECT • RPM • TP_REL • VSS <p>Are PID values normal?</p>	<p>Yes</p>	<p>Perform the symptom troubleshooting and follow the procedures.</p>
		<p>No</p>	<p>Repair or replace any malfunctioning parts according to the inspection result.</p>

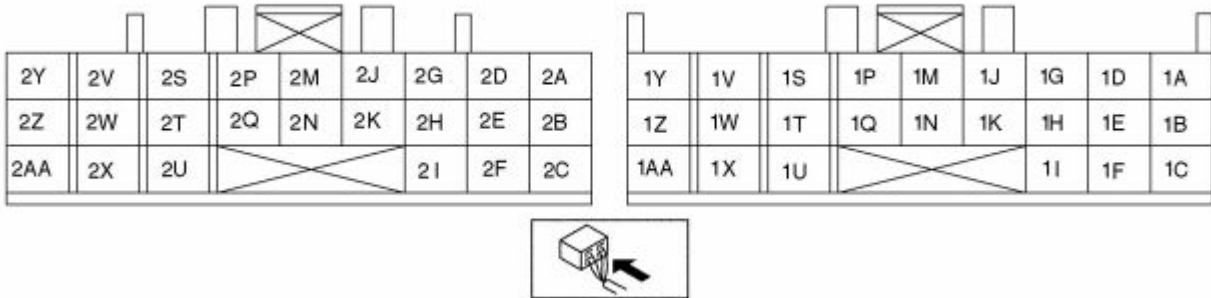
TCM

TCM INSPECTION

Terminal Voltage Table (Reference)

NOTE:

- Use the ground of terminal 2M and 2Q of the TCM when measuring terminal voltage, as an error may occur when connecting the negative circuit tester to ground.



Terminal	Signal	Connected to	Test Condition	Voltage (V)	Action
1A	Battery back up supply	Battery	Constant	B+	<ul style="list-style-type: none"> Inspect related harness
1B	—	—	—	—	—
1C	—	—	—	—	—
1D	TR switch (P position)	TR switch	P position	Below 1.0	<ul style="list-style-type: none"> Inspect TR switch <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
			Other positions, all ranges	B+	
1E			M range	Below 1.0	

	M range switch	M range switch	Other positions, all ranges	B+	<ul style="list-style-type: none"> Inspect Selector lever component <p>(See SELECTOR LEVER COMPONENT INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
1F	—	—	—	—	—
1G	Brake switch	Brake switch	Brake pedal depressed	B+	<ul style="list-style-type: none"> Inspect Brake switch <p>(See BRAKE SWITCH INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
			Brake pedal released	Below 1.0	
1H	—	—	—	—	—
1I	—	—	—	—	—
1J	—	—	—	—	—
1K	—	—	—	—	—
1M	—	—	—	—	—
1N	—	—	—	—	—
1P	—	—	—	—	—
1Q	—	—	—	—	—
1S	—	—	—	—	—
1T	—	—	—	—	—
1U	—	—	—	—	—
1V	CAN_H	PCM	Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible. Carry out inspection according to DTCs.	—	<ul style="list-style-type: none"> Inspect related harness
1W	Shift up/Shift down signal	Steering shift switch	Up switch operated (Steering shift switch)	2.0	

	(Steering shift switch)		Down switch operated (Steering shift switch)	2.5	<ul style="list-style-type: none"> Inspect steering shift switch (See STEERING SHIFT SWITCH INSPECTION)
			Others	4.0	
1Y	CAN_L	PCM	Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible. Carry out inspection according to DTCs.	—	<ul style="list-style-type: none"> Inspect related harness
2A	Oil pressure switch B	Oil pressure switch B	2GR or 4GR	Below 1.0	<ul style="list-style-type: none"> Inspect oil pressure switch B (See OIL PRESSURE SWITCH INSPECTION)
			Others	Above 10	
2B	TR switch (N position)	TR switch	N position	B+	<ul style="list-style-type: none"> Inspect TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION)
			Other positions, all ranges	Below 1.0	
2C	TR switch	TR switch	R position	Below 1.0	

	(R position)		Other ranges, all positions	B+	<ul style="list-style-type: none"> Inspect TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION) Inspect related harness
2D	Down switch (Selector lever component)	Down switch (Selector lever component)	Shift down (M range)	Below 1.0	<ul style="list-style-type: none"> Inspect Selector lever component (See SELECTOR LEVER COMPONENT INSPECTION) Inspect related harness
			Other ranges, all positions	B+	
2E	TR switch (D range)	TR switch	D range	Below 1.0	<ul style="list-style-type: none"> Inspect TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION) Inspect related harness
			Other ranges, all positions	B+	
2F			3GR or 4GR	Below 1.0	

	Oil pressure switch C	Oil pressure switch C	Others	Above 10	<ul style="list-style-type: none"> Inspect oil pressure switch C <p>(See OIL PRESSURE SWITCH INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
2G	Turbine sensor	Turbine sensor	<ul style="list-style-type: none"> Inspect using the wave profile. <p>(See Inspection Using An Oscilloscope (Reference) .)</p>		<ul style="list-style-type: none"> Inspect turbine sensor <p>(See TURBINE SENSOR INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
2H	Oil pressure switch F	Oil pressure switch F	R position or L range, 1GR	Below 1.0	<ul style="list-style-type: none"> Inspect oil pressure switch F <p>(See OIL PRESSURE SWITCH INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
			Others	Above 10	
2I	Up switch (Selector lever component)	Up switch (Selector lever component)	Shift up (M range)	Below 1.0	<ul style="list-style-type: none"> Inspect Selector lever component <p>(See SELECTOR LEVER COMPONENT INSPECTION)</p> <ul style="list-style-type: none"> Inspect related harness
			Other ranges, all positions	B+	

2J	TFT sensor	TFT sensor	ATF temperature 20°C {68°F}	Approx. 1.55	<ul style="list-style-type: none"> Inspect TFT sensor (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION)
			ATF temperature 40°C {104°F}	Approx. 1.08	
			ATF temperature 60°C {140°F}	Approx. 0.7	
2K	Vehicle speed	VSS	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Inspect TFT sensor (See VEHICLE SPEED SENSOR (VSS) INSPECTION)
2M	System GND	GND	Constant	Continuity	<ul style="list-style-type: none"> Inspect related harness
2N	TFT sensor GND	TFT sensor	Constant	Continuity	<ul style="list-style-type: none"> Inspect related harness
2P	Shift solenoid F control	Shift solenoid F	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Inspect shift solenoid F (See SOLENOID VALVE INSPECTION)

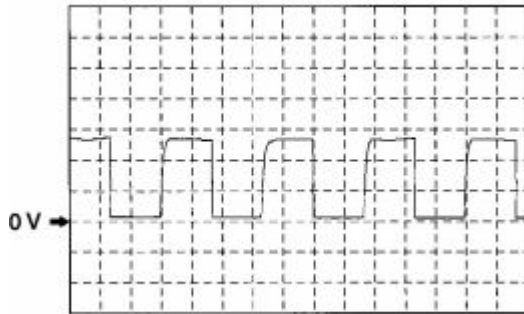
2Q	System GND	GND	Constant	Continuity	<ul style="list-style-type: none"> Inspect related harness
2S	Shift solenoid B control	Shift solenoid B	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .) 		<ul style="list-style-type: none"> Inspect shift solenoid B (See SOLENOID VALVE INSPECTION) Inspect related harness
2T	—	—	—	—	—
2U	GND return (solenoid ground)	Solenoid valve	Constant	Continuity	<ul style="list-style-type: none"> Inspect related harness
2V	Shift solenoid C control	Shift solenoid C	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .) 		<ul style="list-style-type: none"> Inspect shift solenoid C (See SOLENOID VALVE INSPECTION) Inspect related harness
2W	TCC solenoid control	TCC solenoid	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .) 		<ul style="list-style-type: none"> Inspect shift solenoid C (See SOLENOID VALVE INSPECTION) Inspect related harness
2X			N position	B+	

	Pressure control solenoid control	Pressure control solenoid	D range stall	Below 1.0	<ul style="list-style-type: none"> Inspect pressure control solenoid (See SOLENOID VALVE INSPECTION) Inspect related harness
2Y	Shift solenoid A control	Shift solenoid A	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .) 		<ul style="list-style-type: none"> Inspect shift solenoid C (See SOLENOID VALVE INSPECTION) Inspect related harness
2Z	Power supply	Main relay	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect main relay Inspect related harness
			Ignition switch OFF	Below 1.0	
2AA	Power supply	Main relay	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect main relay Inspect related harness
			Ignition switch OFF	Below 1.0	

Inspection Using An Oscilloscope (Reference)

Turbine sensor

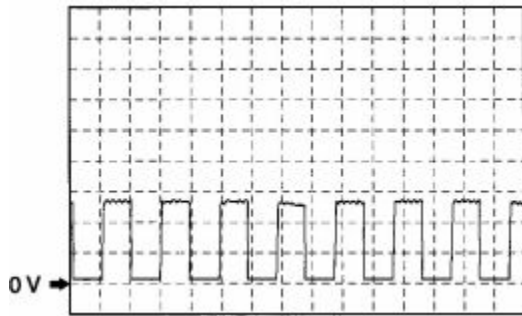
- TCM terminal: 2G (+)—2M (-)



- Oscilloscope setting: 5 V/DIV (Y) 250 microseconds/DIV (X)
- Measuring condition: Vehicle speed at 20 km/h {12 mph} (M range 1GR)

Vehicle speed

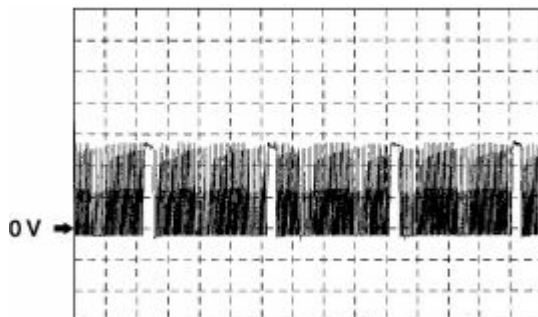
- TCM terminal: 2K (+)—2M (-)



- Oscilloscope setting: 5 V/DIV (Y) 2.5 ms/DIV (X)
- Measuring condition: Vehicle speed at 20 km/h {12 mph} (M range 1GR)

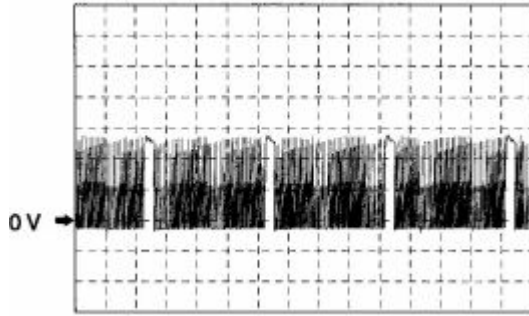
Shift solenoid F control

- TCM terminal: 2P (+)—2U (-)
- Oscilloscope setting: 5 V/DIV (Y) 10 ms/DIV (X)
- Measuring condition: P, N position, Idle



Shift solenoid B control

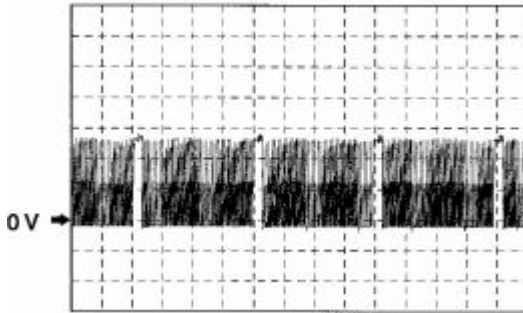
- TCM terminal: 2S (+)—2U (-)



- Oscilloscope setting: 5 V/DIV (Y) 10 ms/DIV (X)
- Measuring condition: P, N position, Idle

Shift solenoid C control

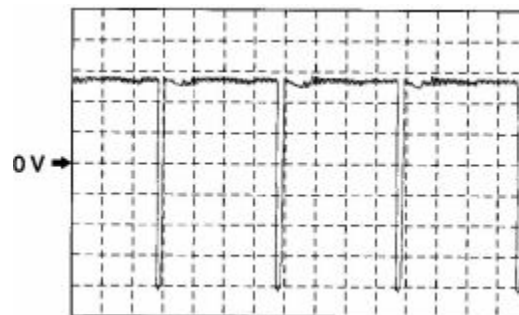
- TCM terminal: 2V (+)—2U (-)



- Oscilloscope setting: 5 V/DIV (Y) 10 ms/DIV (X)
- Measuring condition: P, N position, Idle

TCC solenoid control (TCC on)

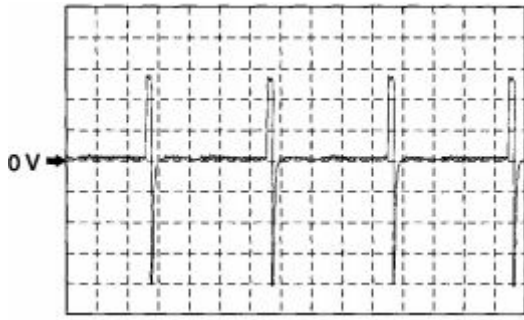
- TCM terminal: 2W (+)—2M (-)



- Oscilloscope setting: 5 V/DIV (Y) 5 ms/DIV (X)
- Measuring condition: D range, TCC on (60 km/h {37 mph} or more)

TCC solenoid control (TCC off)

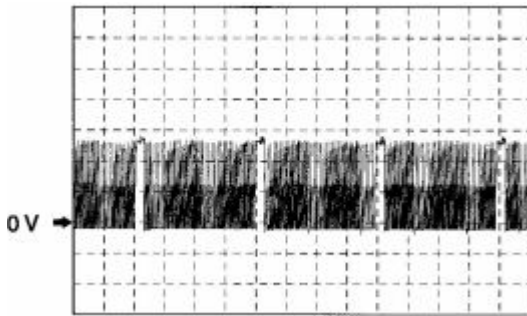
- TCM terminal: 2W (+)—2M (-)



- Oscilloscope setting: 5 V/DIV (Y) 5 ms/DIV (X)
- Measuring condition: P, N position, Idle

Shift solenoid A control

- TCM terminal: 2Y (+)—2U (-)



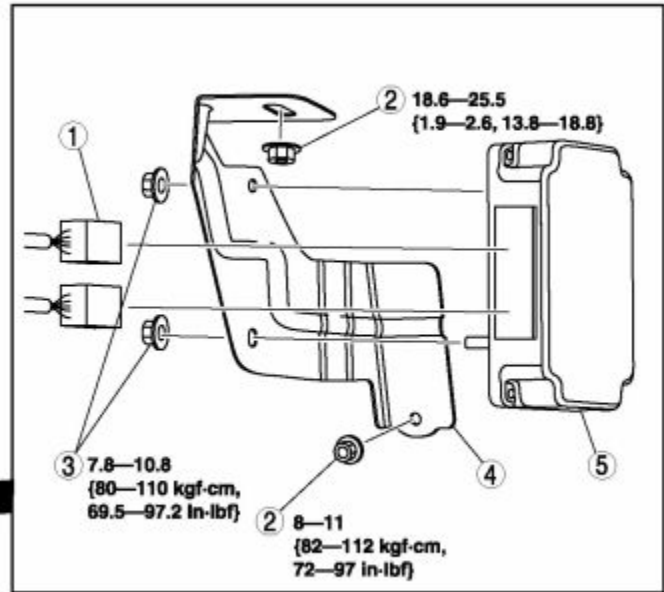
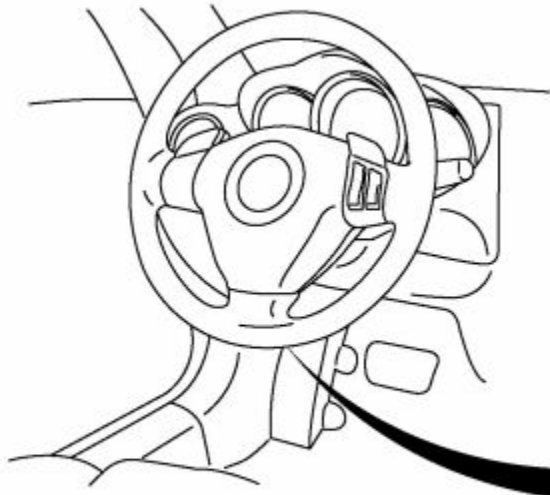
- Oscilloscope setting: 5 V/DIV (Y) 10 ms/DIV (X)
- Measuring condition: D range, 4GR

TCM REMOVAL/INSTALLATION

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



N·m {kgf·m, ft·lbf}

1	TCM connector
2	Nut
3	Nut
4	Bracket
5	TCM

PID/DATA MONITOR INSPECTION

1. Connect the WDS or equivalent to the DLC-2.
2. Measure the PID value.

NOTE:

- Perform part inspection for the output device after TCM inspection.
- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the TCM. Therefore, if a monitored value of an output device is not within specification, it is necessary to inspect the monitored value of the input device related to the output device control. Since an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device, it is necessary to inspect the output device individually using the simulation function.

Monitor item (Definition)	Unit/Condition	Condition/Specification	Action	TCM terminal
24B_Duty (Shift solenoid B)	%	<ul style="list-style-type: none"> • 2 or 4GR: 0% • Other: 99% 	<ul style="list-style-type: none"> • Inspect the shift solenoid valve B. <p>(See SOLENOID VALVE INSPECTION .)</p>	2S
BOO_TCM (Brake switch)	ON/OFF	<ul style="list-style-type: none"> • Brake pedal is depressed: ON • Brake pedal is released: OFF 	<ul style="list-style-type: none"> • Adjust the brake pedal. • Inspect the brake switch. <p>(See BRAKE SWITCH INSPECTION .)</p>	1G
CPP/PNP (P/N position switch)	Drive/Neutral	<ul style="list-style-type: none"> • P or N position: Neutral • R, D or M range: Drive 	<ul style="list-style-type: none"> • Inspect the TR switch. <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)</p>	1D, 2B
DTC_CNT (Number of DTCs detected)	N/A	<ul style="list-style-type: none"> • DTCs is detected: 1—255 • No DTCs are detected: 0 	<ul style="list-style-type: none"> • Inspect the DTCs. <p>(See DTC TABLE .)</p>	N/A
DWN SW (Down switch)	ON/OFF	<ul style="list-style-type: none"> • M range, downshift: ON 	<ul style="list-style-type: none"> • Inspect the selector lever 	2D

		<ul style="list-style-type: none"> Other: OFF 	<p>component.</p> <p>(See SELECTOR LEVER COMPONENT INSPECTION .)</p>	
ECT TCM (ECT sensor)	°C, °F	<ul style="list-style-type: none"> Indicates engine coolant temperature 	<ul style="list-style-type: none"> Inspect the ECT sensor. Inspect the PCM. 	N/A
FDPDTC	N/A	<ul style="list-style-type: none"> Pending code that caused FFD storage 	N/A	N/A
GEAR	1st/2nd/3rd/4th	<ul style="list-style-type: none"> 1GR: 1st 2GR: 2nd 3GR: 3rd 4GR: 4th 	<ul style="list-style-type: none"> Inspect the following PIDs: 24B_Duty, HC_Duty, LRB_Duty, TCCC 	N/A
GEAR_RA (Gear ratio)	N/A	<ul style="list-style-type: none"> 1GR: 2.785 2GR: 1.545 3GR: 1.000 4GR: 0.694 Reverse: 2.272 	<ul style="list-style-type: none"> Inspect the following PIDs: 24B_Duty, HC_Duty, LRB_Duty, OP_SW_24B, OP_SW_HC, OP_SW_LRB, TCCC 	N/A
HC_Duty (Shift solenoid C)	%	<ul style="list-style-type: none"> 3 or 4GR: 0% Other: 99% 	<ul style="list-style-type: none"> Inspect the shift solenoid valve C. <p>(See SOLENOID VALVE INSPECTION .)</p>	2V
LRB_Duty (Shift solenoid F)	%	<ul style="list-style-type: none"> R position or 1GR at M range: 0% Others: 99% 	<ul style="list-style-type: none"> Inspect the shift solenoid valve F. <p>(See SOLENOID VALVE INSPECTION .)</p>	2P
LU_Duty (TCC solenoid)	%	<ul style="list-style-type: none"> TCC operation off: 0% TCC operation on: 	<ul style="list-style-type: none"> Inspect the TCC shift solenoid valve. 	2W

		99%	(See SOLENOID VALVE INSPECTION .)	
MNL SW (M range switch)	ON/OFF	<ul style="list-style-type: none"> • M range: ON • Other: OFF 	<ul style="list-style-type: none"> • Inspect the selector lever component. (See SELECTOR LEVER COMPONENT INSPECTION .)	1E
OP_SW_24B (Oil pressure switch B)	ON/OFF	<ul style="list-style-type: none"> • 2 or 4GR: ON • N position: OFF 	<ul style="list-style-type: none"> • Inspect the oil pressure switch B. (See OIL PRESSURE SWITCH INSPECTION .)	2A
OP_SW_HC (Oil pressure switch C)	ON/OFF	<ul style="list-style-type: none"> • 3 or 4GR: ON • N position: OFF 	<ul style="list-style-type: none"> • Inspect the oil pressure switch C. (See OIL PRESSURE SWITCH INSPECTION .)	2F
OP_SW_LRB (Oil pressure switch F)	ON/OFF	<ul style="list-style-type: none"> • R position: ON • N position: OFF 	<ul style="list-style-type: none"> • Inspect the oil pressure switch F. (See OIL PRESSURE SWITCH INSPECTION .)	2H
OSS (Output shaft speed signal)	rpm	<ul style="list-style-type: none"> • Indicates output shaft speed 	<ul style="list-style-type: none"> • Inspect the vehicle speed sensor (See VEHICLE SPEED SENSOR (VSS) INSPECTION .)	2K
PCSV (Pressure control solenoid)	ON/OFF	<ul style="list-style-type: none"> • Line pressure high: ON • Line pressure low: OFF 	<ul style="list-style-type: none"> • Inspect the pressure control solenoid valve. (See SOLENOID VALVE INSPECTION .)	2X
RPM (Engine speed)	rpm	<ul style="list-style-type: none"> • Engine speed 1,000 		N/A

		rpm: 1,000 rpm	<ul style="list-style-type: none"> Inspect the TCM. (See TCM INSPECTION .)	
TCCC (Shift solenoid A)	%	<ul style="list-style-type: none"> 4GR: 99% Other: 0% 	<ul style="list-style-type: none"> Inspect the shift solenoid valve A. (See SOLENOID VALVE INSPECTION .)	2Y
TFT (ATF temperature)	°C, °F	<ul style="list-style-type: none"> ATF 20 °C {68 °F}: 20 °C {68 °F} ATF 80 °C {176 °F}: 80 °C {176 °F} 	<ul style="list-style-type: none"> Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)	2J
TFTV (ATF temperature signal voltage)	V	<ul style="list-style-type: none"> ATF 20 °C {68 °F}: 1.55 V ATF 60 °C {140 °F}: 0.7 V 	<ul style="list-style-type: none"> Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)	2J
THOP (Throttle position)	%	<ul style="list-style-type: none"> CTP: 0% WOT: 100% 	<ul style="list-style-type: none"> Inspect the TCM. (See TCM INSPECTION .)	N/A
TR (Transmission range)	R/N/D	<ul style="list-style-type: none"> R position: R N position: N D range: D 	<ul style="list-style-type: none"> Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)	2B, 2C, 2E
TRD (D range switch)	ON/OFF	<ul style="list-style-type: none"> D range: ON Except D range: OFF 	<ul style="list-style-type: none"> Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)	2E
TRR (R position)	ON/OFF	<ul style="list-style-type: none"> R position: ON 		2C

switch)		<ul style="list-style-type: none"> • Except R position: OFF 	<ul style="list-style-type: none"> • Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .) 	
TSS (Turbine sensor)	rpm	<ul style="list-style-type: none"> • Ignition switch at ON position (engine off): 0 rpm • Idle: 700—800 rpm 	<ul style="list-style-type: none"> • Inspect the turbine sensor (See TURBINE SENSOR INSPECTION .) 	2G
UP SW (Up switch)	ON/OFF	<ul style="list-style-type: none"> • M range, upshift: ON • Other: OFF 	<ul style="list-style-type: none"> • Inspect the selector lever component. (See SELECTOR LEVER COMPONENT INSPECTION .) 	2I
VPWR (Battery voltage)	V	<ul style="list-style-type: none"> • Ignition switch at ON position: B+ • Engine running: B+ 	<ul style="list-style-type: none"> • Inspect the ignition switch. (See IGNITION SWITCH INSPECTION .) • Inspect the battery. (See BATTERY INSPECTION .) 	1A, 2Z, 2AA
VSS (Vehicle speed)	km/h, mph	<ul style="list-style-type: none"> • Indicates vehicle speed 	<ul style="list-style-type: none"> • Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION .) • Inspect ABS HU/CM. • Inspect DSC HU/CM. • Inspect PCM. 	N/A

SYMPTOM TROUBLESHOOTING ITEM TABLE

- Use the chart below to verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
1	Vehicle does not move in D range, or in R position	Vehicle does not move when accelerator pedal is depressed.	(See NO.1 VEHICLE DOES NOT MOVE IN D RANGE, OR IN R POSITION .)
2	Vehicle does not move in R position	Vehicle does not move in R position only. Vehicle moves in D and M ranges.	(See NO.2 VEHICLE DOES NOT MOVE IN R POSITION .)
3	Vehicle does not move in D and M ranges	Vehicle does not move in D and M ranges. Vehicle moves in R position.	(See NO.3 VEHICLE DOES NOT MOVE IN D AND M RANGES .)
4	Vehicle moves in N position	Vehicle creeps in N position. Vehicle creeps if brake pedal is not depressed in N position.	(See NO.4 VEHICLE MOVES IN N POSITION .)
5	Vehicle moves in P position, or parking gear does not disengage when shifted out of P position	Vehicle rolls when on a downward slope and tires do not lock in P position. Tires lock when shifted out of P position. Vehicle does not move in D range and R position when accelerator pedal is depressed, and engine remains in stall condition.	(See NO.5 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN SHIFTED OUT OF P POSITION .)
6	Excessive creep	Vehicle accelerates in D range and R position when accelerator pedal is not depressed.	(See NO.6 EXCESSIVE CREEP .)
7	No creep at all	Vehicle does not move in D range or R position when idling on flat paved road.	(See NO.7 NO CREEP AT ALL .)
8	Low maximum speed and poor acceleration	Vehicle acceleration poor at start. Delayed acceleration when accelerator pedal is depressed while driving.	(See NO.8 LOW MAXIMUM SPEED AND POOR ACCELERATION .)
9	No shifting	Single shift range only. Sometimes shifts correctly.	(See NO.9 NO SHIFTING .)
10	Does not shift to 4GR	Vehicle does not upshift from 3GR to 4GR even though vehicle speed is increased.	(See NO.10 DOES NOT SHIFT TO 4GR .)

		Vehicle does not shift to 4GR even though accelerator pedal is released in D range at 60 km/h {37 mph} .	
11	Abnormal shifting	Shifts incorrectly (incorrect shift pattern).	(See NO.11 ABNORMAL SHIFTING .)
12	Frequent shifting	Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range .	(See NO.12 FREQUENT SHIFTING .)
13	Shift point is high or low	Shift point considerably different from automatic shift diagram. Shift delays when accelerating. Shift occurs suddenly when accelerating and engine speed does not increase.	(See NO.13 SHIFT POINT IS HIGH OR LOW .)
14	Torque converter clutch (TCC) non-operation	TCC does not operate when vehicle reaches TCC operation range.	(See NO.14 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION .)
15	No kickdown	Does not downshift when accelerator pedal is fully depressed within kickdown range.	(See NO.15 NO KICKDOWN .)
16	Engine flares up or slips when upshifting or downshifting	When accelerator pedal is depressed, engine speed increases normally but vehicle speed increases slowly. When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not.	(See NO.16 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING .)
17	Engine flares up or slips when accelerating vehicle	Engine flares up when accelerator pedal is depressed for upshifting. Engine flares up suddenly when accelerator pedal is depressed for downshifting.	(See NO.17 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE .)
18	Judder upon torque converter clutch (TCC) operation	Vehicle jolts when TCC is engaged.	(See NO.18 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION .)
19	Excessive shift shock from N to D or N to R position/range	Strong shock is felt when shifting from N to D or N to R position/range at idle.	(See NO.19 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE .)
20	Excessive shift shock is felt when upshifting and downshifting	Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting.	(See NO.20 EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND

		During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.	DOWNSHIFTING .)
21	Excessive shift shock on torque converter clutch (TCC)	Strong shock is felt when TCC is engaged.	(See NO.21 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) .)
22	Noise occurs at idle when vehicle is stopped in all positions/ranges	Transmission is noisy in all positions and ranges when vehicle is idling.	(See NO.22 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES .)
23	Noise occurs at idle when vehicle is stopped in D range, or in R position	Transmission is noisy in driving ranges when vehicle is idling.	(See NO.23 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D RANGE, OR IN R POSITION .)
24	No engine braking in 1GR position of M range	Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in 1GR position of M range at low vehicle speed.	(See NO.24 NO ENGINE BRAKING IN 1GR POSITION OF M RANGE .)
25	Transmission overheats	Burnt smell is emitted from transmission. Smoke is emitted from transmission.	(See NO.25 TRANSMISSION OVERHEATS .)
26	Engine stalls when shifted to D range, or in R position	Engine stalls when shifting from N or P position to D range or R position at idle.	(See NO.26 ENGINE STALLS WHEN SHIFTED TO D RANGE, OR IN R POSITION .)
27	Engine stalls when driving at slow speeds or stopping	Engine stalls when brake pedal is depressed while driving at low speed or stopping.	(See NO.27 ENGINE STALLS WHEN DRIVING AT SLOW SPEEDS OR STOPPING .)
28	Starter does not work	Starter does not work even when in P or N position.	(See NO.28 STARTER DOES NOT WORK .)
29	Gear position indicator light does not illuminate in M range	Gear position indicator light in instrument cluster does not illuminate in M range with ignition switch at ON.	(See NO.29 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE .)
30	Gear position indicator light illuminates in D range or P, N, R positions	Gear position indicator light in instrument cluster illuminates in D range or P, N, R positions with ignition switch at ON.	(See NO.30 GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS .)
31	Does not upshift in M range	Gear position indicator light in dashboard illuminates but vehicle does not upshift when selector lever is pushed to "+" side or steering shift switch "UP" is pulled.	(See NO.31 DOES NOT UPSHIFT IN M RANGE .)

32	Does not downshift in M range	Gear position indicator light in dashboard illuminates but vehicle does not downshift when selector lever is pushed to "-" side or steering shift switch "DOWN" is pushed.	(See NO.32 DOES NOT DOWNSHIFT IN M RANGE .)
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Notes:

NO.1 VEHICLE DOES NOT MOVE IN D RANGE, OR IN R POSITION

1	Vehicle does not move in D range, or in R position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move when accelerator pedal is depressed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low clutch, low one-way clutch, low and reverse brake). <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Insufficient or improper ATF • Reduced line pressure • Control valve body malfunction (improper operation, stuck, clogged oil passage) • Insufficient torque • Torque converter malfunction (improper operation, stuck), insufficient engine output • Improper operation of parking device <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	When the vehicle is stopped on a flat, level road and the engine is off, does the vehicle move when pushed? (in D range or N, R positions with the brake pedal released)	Yes	Go to the next step.
		No	Inspect for parking mechanism. (See SOLENOID VALVE INSPECTION .) Is it normal?
		Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See TCM REMOVAL/INSTALLATION .)

NO.2 VEHICLE DOES NOT MOVE IN R POSITION

2	Vehicle does not move in R position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move in R position only. • Vehicle moves in D and M ranges.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low clutch, low one-way clutch, low and reverse brake). <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Improper adjustment of TR switch • Open or short circuit in TR switch • Shift solenoid F or related circuit malfunction • Shift solenoid F solenoid hydraulic circuit clogging • Control valve body malfunction (improper operation, stuck, clogged oil passage) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Disconnect the TCM connector. Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open ground circuit.
3	Inspect shift solenoid F and pressure control solenoid circuit.	Yes (See TCM REMOVAL/INSTALLATION .)	

	<p>(See SOLENOID VALVE INSPECTION .)</p> <p>Are they normal?</p>		
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Notes:

NO.3 VEHICLE DOES NOT MOVE IN D AND M RANGES

3	Vehicle does not move in D and M ranges
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move in D and M ranges. • Vehicle moves in R position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low clutch, low one-way clutch, low and reverse brake). <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Shift solenoid A or related circuit malfunction • Shift solenoid A hydraulic circuit clogging • Control valve body malfunction (improper operation, stuck, clogged oil passage). <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Disconnect the TCM connector. Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open ground circuit.
3	Inspect shift solenoid A and pressure control solenoid circuit. (See SOLENOID VALVE INSPECTION .) Are they normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See TCM REMOVAL/INSTALLATION .)

NO.4 VEHICLE MOVES IN N POSITION

4	Vehicle moves in N position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch burned (low clutch, low one-way clutch, low and reverse brake). • Control valve body malfunction (improper operation, stuck, clogged oil passage). <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Does the vehicle creep when the selector lever is moved slightly in N position?	Yes	Go to the next step.
		No	Inspect the selector lever and TR switch. (See SELECTOR LEVER COMPONENT INSPECTION .) (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)
2	Disconnect the TCM connector. Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less?	Yes	Go to the next step.
		No	Repair open ground circuit. Reconnect the TCM.
3	Inspect the pressure control solenoid circuit. (See SOLENOID VALVE INSPECTION .) Is it normal?	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See TCM REMOVAL/INSTALLATION .)

NO.5 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN SHIFTED OUT OF P POSITION

<p>5</p>	<p>Vehicle moves in P position, or parking gear does not disengage when shifted out of P position</p>
<p>DESCRIPTION</p>	<ul style="list-style-type: none"> • Vehicle rolls on a downward slope in P position. • Tires lock when shifted out of P position. Vehicle does not move in D range and R position when accelerator pedal is depressed, and engine remains in stall condition.
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> • Parking mechanism malfunction (May have effect on noise or shock from transmission) • Improper adjustment of selector lever • If vehicle moves in N position, perform No.4 "VEHICLE MOVES IN N POSITION"

NO.6 EXCESSIVE CREEP

6	Excessive creep
DESCRIPTION	<ul style="list-style-type: none">• Vehicle accelerates in D range and R position when accelerator pedal is not depressed.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Engine idle speed high (transmission system is not cause of problem)• Go to No.9 "FAST IDLE/RUNS ON" (See NO.9 FAST IDLE/RUNS ON .)

NO.7 NO CREEP AT ALL

7	No creep at all
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not move in D range and R position when idling on flat paved road.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low clutch, low one-way clutch, low and reverse brake) <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Insufficient engine output (low idle speed, inaccurate ignition timing, reduced compression). • Insufficient or improper ATF • Not within line pressure specification • Shift solenoid A or related circuit malfunction • Shift solenoid B or related circuit malfunction • Shift solenoid C or related circuit malfunction • Shift solenoid F or related circuit malfunction • Control valve spool malfunction • Shift solenoid A solenoid hydraulic circuit malfunction • Shift solenoid B solenoid hydraulic circuit malfunction • Shift solenoid C solenoid hydraulic circuit malfunction • Shift solenoid F solenoid hydraulic circuit malfunction • Improper ground of GND return circuit in AT <ul style="list-style-type: none"> ▪ If there is improper ground of GND return circuit, clutch pressure may decrease, causing clutch slippage. • Torque converter malfunction (improper operation) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Does the vehicle creep in any range/position?	Yes	Go to the next step.
		No	Inspect the selector lever and TR switch. (See SELECTOR LEVER COMPONENT INSPECTION .) (See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)

2	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between terminal 2U at the TCM connector and terminal J at the solenoid valve wiring harness-side connector 5.0 ohms or less ?	No	Repair open circuit.
3	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair open ground circuit.
4	Inspect shift solenoid A, B, C, F and pressure control solenoid circuits. (See SOLENOID VALVE INSPECTION .)	Yes	Go to the next step.
	Are they normal?	No	Repair or replace any malfunctioning parts.
5	Remove the torque converter. Inspect the torque converter. (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)	6	<p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>
	(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)		

NO.8 LOW MAXIMUM SPEED AND POOR ACCELERATION

8	Low maximum speed and poor acceleration
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Engine malfunction <ul style="list-style-type: none"> ▪ Clogged air cleaner, inaccurate ignition timing, ignition leak, reduced compression, incorrect engine torque signal, etc. • AT malfunction <ul style="list-style-type: none"> ▪ Transmission fixed in 3GR (operating fail-safe function) ▪ Input/output signal malfunction (VSS, turbine sensor, TFT sensor, pressure control solenoid, TCC solenoid, shift solenoids A, B, C and F) <ul style="list-style-type: none"> • Maximum speed is low or acceleration is poor because 3GR is fixed as a fail-safe. In such cases, DTC is stored. ▪ Improper TCM ground <ul style="list-style-type: none"> • Transmission is mechanically fixed in 3GR if TCM stops operating due to improper TCM ground. In such cases, DTC is stored. ▪ Improper ground of GND return circuit at AT <ul style="list-style-type: none"> • If there is improper ground of GND return circuit, clutch pressure may decrease, causing clutch slippage. ▪ Improper adjustment TR switch ▪ Incorrect characteristic of accelerator position sensor, accelerator position signal, TP sensor, or throttle opening angle signal (CAN communication) <ul style="list-style-type: none"> • TP sensor and throttle opening angle signal (CAN communication) do not change in proportion to throttle opening angle. Due to this, high or low gear is fixed, resulting in low maximum speed and poor acceleration. (Refer to improper accelerator position sensor, accelerator position signal, TP sensor, throttle opening angle signal (CAN communication) in "No.11 Abnormal shifting".) ▪ Clutch slippage (low clutch and high clutch) <ul style="list-style-type: none"> • In the event of clutch slippage, a DTC (incorrect gear ratio) is stored. ▪ Reduced line pressure ▪ Control valve body malfunction (improper operation, stuck, clogged oil passage) <ul style="list-style-type: none"> • Hydraulic circuit clogging (Shift solenoid A, B, C and F, and TCC solenoid) • Control valve spool malfunction ▪ No torque generated. <ul style="list-style-type: none"> • Torque converter malfunction (improper operation) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection

are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Go to No.12 "LACK/LOSS OF POWER-ACCELERATION/CRUISE". (See NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE .) Is the CIS system normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3	Disconnect the solenoid valve connector. Does the vehicle operate as follows? <ul style="list-style-type: none"> ○ D range: 3GR (fixed) ○ R position: Reverse 	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See PCM INSPECTION .) (See TCM INSPECTION .) <ul style="list-style-type: none"> ○ PCM PIDs (using WDS or equivalent): <ul style="list-style-type: none"> • APP1 • APP2 • TP_REL • VSS ○ TCM terminal voltage: <ul style="list-style-type: none"> • 2G (turbine sensor) • 1D (TR switch, P position) • 2B (TR switch, N position) • 2C (TR switch, R position) • 2E (TR switch, D range) • 2K (VSS) Repair or replace any malfunctioning parts.
5	Disconnect the TCM connector.	Yes	Go to the next step.

	Is the resistance between terminal 2U at the TCM connector and terminal J at solenoid valve wiring harness-side connector 5.0 ohms or less ?	No	Repair open circuit.
6	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open ground circuit.
7	<p>Stop the engine.</p> <p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between the following solenoid valve connector terminals.</p> <p>(See SOLENOID VALVE INSPECTION .)</p> <ul style="list-style-type: none"> • Terminals E—J (shift solenoid A) • Terminals F—J (shift solenoid B) • Terminals H—J (shift solenoid C) • Terminals I—J (shift solenoid F) • Terminals G—J (TCC solenoid) <p>Are the resistances normal?</p>	Yes	Go to the next step.
		No	<p>Inspect for open circuit in the malfunctioning solenoid related wiring harnesses.</p> <ul style="list-style-type: none"> • If the wiring harnesses are okay, inspect if the solenoids are stuck mechanically.
8	<p>Perform the stall test. (See Stall Speed Test .)</p> <p>Is the stall speed normal?</p>	Yes	Reverify symptoms of malfunction.
		No	Overhaul the transmission and repair or replace any malfunction parts. (See TCM REMOVAL/INSTALLATION .)

NO.9 NO SHIFTING

9	No shifting
DESCRIPTION	<ul style="list-style-type: none"> • Single shift range only. • Sometimes shifts correctly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low clutch, high clutch) <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Reduced line pressure • Transmission fixed in 3GR (operating fail-safe function) <ul style="list-style-type: none"> ▪ Input/output signal malfunction (VSS, turbine sensor, shift solenoids A, B, C and F, oil pressure switches B, C and F) <ul style="list-style-type: none"> • Maximum speed is low or acceleration is poor because transmission is fixed in 3GR as a fail-safe. In such a case, DTC is stored. ▪ Improper TCM ground. <ul style="list-style-type: none"> • Transmission is mechanically fixed in 3GR if TCM stops operating due to Improper TCM ground. In such a case, DTC is not stored. • Transmission fixed in 1GR or 2GR <ul style="list-style-type: none"> ▪ If VSS and turbine sensor malfunction simultaneously, transmission is fixed in 2GR while D range or 1GR, 2GR of M range. In such a case, DTC is not stored. • Incorrect characteristics of accelerator position sensor, accelerator position signal, TP sensor, or throttle opening angle signal (CAN communication) <ul style="list-style-type: none"> ▪ Accelerator position sensor, accelerator position signal, TP sensor and throttle opening angle signal (CAN communication) do not change in proportion to throttle opening angle. In such a case, high or low gear is fixed, resulting in low maximum speed and poor acceleration. (Refer to improper accelerator position sensor, accelerator position signal, TP sensor, or throttle opening angle signal (CAN communication) in "No.11 Abnormal shifting".) • Control valve body malfunction (improper operation, stuck, clogged oil passage). <ul style="list-style-type: none"> ▪ Hydraulic circuit clogging (Shift solenoids B, C and F). ▪ Control valve spool malfunctions • Improper adjustment of TR switch • Torque converter malfunction (TCC piston is cracking or peeling.) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
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1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS". (See SELECTOR LEVER COMPONENT INSPECTION .)
2	Disconnect the solenoid valve connector. Does the vehicle operate as follows? D range: 3GR (fixed) R position: Reverse	Yes	Go to the next step.
		No	Overhaul the control valve body and repair or replace any malfunctioning parts. (See PCM INSPECTION .) (See TCM INSPECTION .) ○ PCM PIDs (using WDS or equivalent): • APP1 • APP2 • TP_REL • VSS ○ TCM terminal voltage: • 2G (turbine sensor) • 1D (TR switch, P position) • 2B (TR switch, N position) • 2C (TR switch, R position) • 2E (TR switch, D range) • 2K (VSS) Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector. Is the resistance between terminal 2U at the TCM connector and terminal J at solenoid valve wiring harness-side connector 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open circuit.
5	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open ground circuit.
6	Stop the engine.	Yes	Go to the next step.

	<p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between the following solenoid valve connector terminals.</p> <p>(See SOLENOID VALVE INSPECTION .)</p> <ul style="list-style-type: none"> • Terminals E—J (shift solenoid A) • Terminals F—J (shift solenoid B) • Terminals H—J (shift solenoid C) • Terminals I—J (shift solenoid F) • Terminals G—J (TCC solenoid) <p>Are the resistances normal?</p>		<p>Inspect for open circuit in the malfunctioning solenoid related wiring harnesses.</p> <ul style="list-style-type: none"> • If the wiring harnesses are okay, inspect if the solenoids are stuck mechanically.
7	<p>Inspect for continuity between the following solenoid valve connector terminals.</p> <p>(See OIL PRESSURE SWITCH INSPECTION .)</p> <ul style="list-style-type: none"> • Terminals B—J (oil pressure switch B) • Terminals A—J (oil pressure switch C) • Terminals L—J (oil pressure switch F) <p>Are the continuity normal?</p>	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Inspect for open circuit in the malfunctioning pressure switch related wiring harnesses.</p> <ul style="list-style-type: none"> • If the wiring harnesses are okay, inspect if the pressure switch are stuck mechanically.
8	<p>Remove the torque converter.</p> <p>Inspect the torque converter.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>	9	<p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>

NO.10 DOES NOT SHIFT TO 4GR

10	Does not shift to 4GR
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not upshift from 3GR to 4GR even though vehicle speed is increased. • Vehicle does not shift to 4GR even though accelerator pedal is released in D range at 60 km/h {37 mph} .
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Oil temperature of TFT sensor is low (4GR is inhibited when temperature is 5 °C {41 °F} or below .) • Improper adjustment of TR switch • Control valve body malfunction (improper operation, stuck, clogged oil passage) <ul style="list-style-type: none"> ▪ Hydraulic circuit clogging (shift solenoid A) ▪ Control valve spool malfunction • TFT sensor malfunction <ul style="list-style-type: none"> ▪ Short or open circuit in wiring ▪ Poor connection of connector ▪ Sensor malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Inspect the voltages at the following TCM terminals. (See TCM INSPECTION .) <ul style="list-style-type: none"> • Terminals 2J and 2N (TFT sensor) Are voltages normal?	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
3		Yes	Go to the next step.

	<p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between terminals E and J at solenoid valve connector.</p> <p>(See SOLENOID VALVE INSPECTION .)</p> <p>Is the resistance normal?</p>	No	Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair open ground circuit. Reconnect the TCM.
5	<p>Inspect the following valves.</p> <p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <p>PCM PID (using WDS or equivalent):</p> <ul style="list-style-type: none"> • VSS <p>TCM terminal voltage:</p> <ul style="list-style-type: none"> • 2K (VSS) <p>Are they normal?</p>	Yes	<p>Overhaul the control valve body and repair or replace any malfunctioning parts.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

NO.11 ABNORMAL SHIFTING

11	Abnormal shifting
DESCRIPTION	<ul style="list-style-type: none"> • Shifts incorrectly (incorrect shift pattern).
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper adjustment of TR switch • Transmission fixed in 3GR (fail-safe function) <ul style="list-style-type: none"> ▪ Input/output signal malfunction (VSS, TCC solenoid, shift solenoids A, B, C and F) <ul style="list-style-type: none"> • Maximum speed is low or acceleration is poor because 3GR is fixed as a fail-safe. In such a case, DTC is stored. ▪ Improper TCM ground <ul style="list-style-type: none"> • Transmission is mechanically fixed in 3GR if TCM stops operating due to improper TCM ground. In such a case DTC is not stored. • Clutch spillage <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Control valve body malfunction (improper operation, stuck, clogged oil passage) <ul style="list-style-type: none"> ▪ Hydraulic circuit clogging (TCC solenoid, shift solenoids A, B, C and F) ▪ Control valve spool malfunction • Torque converter malfunction (TCC piston is cracking or peeling.) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.29 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Disconnect the solenoid valve connector.	Yes	Go to the next step.

	<p>Does the vehicle operate as follows?</p> <p>D range: 3GR (fixed)</p> <p>R position: Reverse</p>		<p>Overhaul the control valve body and repair or replace any malfunctioning parts.</p> <p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <p>PCM PID (using WDS or equivalent):</p> <p>No</p> <ul style="list-style-type: none"> • APP1 • APP2 • TR_REL <p>TCM terminal voltage:</p> <ul style="list-style-type: none"> • 2G (turbine sensor) • 2K (VSS) <p>Repair or replace any malfunctioning parts.</p>
4	<p>Disconnect the TCM connector.</p> <p>Is the resistance between terminal 2U at the TCM connector and terminal J at the solenoid valve wiring harness-side connector 5.0 ohms or less ?</p>	Yes	Go to the next step.
		No	Repair open circuit.
5	<p>Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?</p>	Yes	Go to the next step.
		No	Repair open ground circuit.
6	<p>Stop the engine.</p> <p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between the following solenoid valve connector terminals.</p> <p>(See SOLENOID VALVE INSPECTION .)</p> <ul style="list-style-type: none"> • Terminals E—J (shift solenoid A) • Terminals F—J (shift solenoid B) • Terminals H—J (shift solenoid C) • Terminals I—J (shift solenoid F) • Terminals G—J (TCC solenoid) <p>Are the resistances normal?</p>	Yes	Go to the next step.
		No	<p>Inspect for open circuit in the malfunctioning solenoid and/or pressure switch related wiring harnesses.</p> <ul style="list-style-type: none"> • If the wiring harnesses are okay, inspect if the solenoids and/or pressure switch are stuck mechanically.

7	<p>Remove the torque converter.</p> <p>Inspect the torque converter.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>	
		<p>8</p> <p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>

NO.12 FREQUENT SHIFTING

12	Frequent shifting
DESCRIPTION	<ul style="list-style-type: none">Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range .
POSSIBLE CAUSE	<ul style="list-style-type: none">The malfunctioning circuit is basically the same as No.11 "ABNORMAL SHIFTING". However, a malfunction of the input signal to the TP sensor, VSS, TR switch or improper TCM power supply, ground, GND return, or clutch slippage, malfunction of control valve body may also be the cause.

NO.13 SHIFT POINT IS HIGH OR LOW

13	Shift point is high or low
DESCRIPTION	<ul style="list-style-type: none">• Shift point is considerably different from automatic shift diagram.• Shift delays when accelerating.• Shift occurs suddenly when accelerating and engine speed does not increase.
POSSIBLE CAUSE	<ul style="list-style-type: none">• If the transmission shifts normally, there is a malfunction of the input signal to the TP sensor or VSS.• If the engine speed is high or low regardless normal shifting, inspect the tachometer.• Verify that the output signal of the TP sensor changes linearly.

NO.14 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION

14	Torque converter clutch (TCC) non-operation
DESCRIPTION	<ul style="list-style-type: none"> TCC does not operate when vehicle reaches TCC operation range.
POSSIBLE CAUSE	<p>CAUTION:</p> <ul style="list-style-type: none"> If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. While performing the driving test, monitor output signal to TCC solenoid. If output signal is sent normally to TCC solenoid and TCC does not occur, oil passage of TCC solenoid is clogged or TCC piston is operating improperly. If output signal is not sent to TCC solenoid normally, TFT sensor governing TCC is malfunctioning. <p>(TCC does not occur when ATF temperature is 10 °C {50 °F} or less.)</p> <ul style="list-style-type: none"> Improper adjustment of TR switch <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.27 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.30 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	Inspect the following values.	Yes	Go to the next step.

	<p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <ul style="list-style-type: none"> ○ PCM PIDs (using WDS or equivalent): <ul style="list-style-type: none"> • APP1 • APP2 • TP_REL • VSS ○ TCM terminal voltage: <ul style="list-style-type: none"> • 2G (turbine sensor) • 2K (VSS) <p>Are they normal?</p>	No	Repair or replace any malfunctioning parts.
3	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair the wiring harness.
4	Inspect the TFT sensor.	Yes	Go to the next step.
	<p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <p>Is the TFT sensor normal?</p>	No	Replace the TFT sensor.
5	Inspect the TCC solenoid.	Yes	Go to the next step.
	Is the TCC solenoid normal?	No	Replace the TCC solenoid.

6	<p>Remove the torque converter.</p> <p>Inspect the torque converter.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>	
		<p>7</p> <p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>

NO.15 NO KICKDOWN

15	No kickdown
DESCRIPTION	<ul style="list-style-type: none">• Does not downshift when accelerator pedal is fully depressed within kickdown range.
POSSIBLE CAUSE	<ul style="list-style-type: none">• If transmission does not downshift though shifting is normal, malfunction is in TP sensor circuit (including sensor GND, sensor wiring harness and connector).

NO.16 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING

16	Engine flares up or slips when upshifting or downshifting
DESCRIPTION	<ul style="list-style-type: none"> When accelerator pedal is depressed for driveway, engine speed increases normally but vehicle speed increases slowly. When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clutch slippage (low clutch, high clutch). <ul style="list-style-type: none"> In the event of clutch slippage, a DTC (incorrect gear ratio) is output. Reduced line pressure Input/output signal malfunction (VSS, turbine sensor, throttle opening angle (CAN communication), TFT sensor, pressure control solenoid, shift solenoids A, B, C and F, oil pressure switches B, C and F). Control valve body malfunction (improper operation, stuck, clogged oil passage). <ul style="list-style-type: none"> Hydraulic circuit clogging (Pressure control solenoid, shift solenoids B, C and F). Control valve spool malfunction Improper TCM ground Improper ground of GND return line at AT <ul style="list-style-type: none"> If there is improper ground of GND return line, clutch pressure may decrease, causing clutch slippage. <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Is the shift point normal?	Yes Go to the next step.
		No Go to No.11 "ABNORMAL SHIFTING".
2	Inspect the following values.	Yes Go to the next step.

	<p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <p>PCM PIDs (using WDS or equivalent):</p> <ul style="list-style-type: none"> • APP1 • APP2 • TP_REL • VSS <p>TCM terminal voltage:</p> <ul style="list-style-type: none"> • 2G (turbine sensor) • 2K (VSS) <p>Are the values normal?</p>	No	Repair or replace any malfunctioning parts.
3	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between terminal 2U at the TCM connector and terminal J at the solenoid valve wiring harness-side connector 5.0 ohms or less ?	No	Repair open circuit.
4	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair the wiring harness. Reconnect the TCM.
5	Inspect the TFT sensor.	Yes	Go to the next step.
	<p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <p>Is the TFT sensor normal?</p>	No	Replace the TFT sensor.
6	Stop the engine.	Yes	<p>Overhaul the control valve body and repair or replace any malfunctioning parts.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

Disconnect the solenoid valve connector.

Measure the resistance between the following solenoid valve connector terminals.

(See SOLENOID VALVE INSPECTION .)

- Terminals E—J (shift solenoid A)
- Terminals F—J (shift solenoid B)
- Terminals H—J (shift solenoid C)
- Terminals I—J (shift solenoid F)
- Terminals K—J (pressure control solenoid)

Are the resistances normal?

NO.17 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE

17	Engine flares up or slips when accelerating vehicle
DESCRIPTION	<ul style="list-style-type: none">• Engine flares up when accelerator pedal is depressed for upshifting.• Engine flares up suddenly when accelerator pedal is depressed for downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none">• The malfunction is basically the same as for No.16 "ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING". If conditions for No.16 worsen, the malfunction will develop to No.17.

NO.18 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION

18	Judder upon torque converter clutch (TCC) operation
DESCRIPTION	<ul style="list-style-type: none">• Vehicle jolts when TCC is engaged.
POSSIBLE CAUSE	<p>CAUTION:</p> <ul style="list-style-type: none">• If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF.• TCC piston slips due to burning.• The malfunction is basically the same as for No.14 "TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION".

NO.19 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE

19	Excessive shift shock from N to D or N to R position/range
DESCRIPTION	<ul style="list-style-type: none"> • Strong shock felt when shifting from N to D or N to R position/range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Idle speed high. • Poor hydraulic operation (range change malfunction) <ul style="list-style-type: none"> ▪ Improper adjustment of TR switch • Poor tightening torque of engine mount, exhaust mount, PPF, and/or differential mount • Suspension looseness • Clutch burned • Line pressure low/high • Input/output signal malfunction (VSS, turbine sensor, TR switch, CAN communication signals (engine speed, throttle opening angle, engine torque), TFT sensor, pressure control solenoid, shift solenoids A and F) • Control valve body malfunction (improper operation of accumulator, stuck accumulator) <ul style="list-style-type: none"> ▪ Hydraulic circuit clogging (Pressure control solenoid, shift solenoids A and F) ▪ Control valve spool malfunction ▪ Improper operation of accumulators (Low clutch solenoid, low and reverse clutch solenoid) • Improper TCM ground • Improper ground of GND return line at AT <ul style="list-style-type: none"> ▪ If there is improper ground of GND return line, clutch pressure may decrease, causing clutch slippage. <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Perform the idle speed inspection. (See ENGINE TUNE-UP .) Is the idle speed normal?	Yes Go to the next step.
		No Perform the engine symptom troubleshooting No.9 "FAST IDLE/RUNS ON". (See NO.9 FAST IDLE/RUNS ON .)
2		Yes Go to the next step.

	<p>Inspect the following installation conditions (poor tightening torque, looseness):</p> <ul style="list-style-type: none"> • Engine mount • Transmission mount • PPF • Differential mount • Exhaust mount • Suspension <p>Are they normal?</p>	No	Retighten and install any malfunctioning parts correctly.
3	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair open ground circuit.
4	Is the resistance between terminal 2U at the TCM connector and terminal J at the solenoid valve wiring harness-side connector 5.0 ohms or less ?	Yes	Go to the next step.
		No	Repair open circuit.
5	<p>Inspect the following values:</p> <p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <p>PCM PIDs (using WDS or equivalent):</p> <ul style="list-style-type: none"> • APP1 • APP2 • TP_REL • VSS • RPM • ECT <p>TCM terminal voltage:</p> <ul style="list-style-type: none"> • 2G (turbine sensor) • 2K (VSS) • 1D (TR switch, P position) • 2B (TR switch, N position) • 2C (TR switch, R position) • 2E (TR switch, D position) <p>Are the values normal?</p>	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts.
6	<p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between the following solenoid valve connector terminals.</p>	Yes	<p>Overhaul the control valve body and repair or replace any malfunctioning parts.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

solenoid valve connector terminals.

(See SOLENOID VALVE INSPECTION .)

- Terminals E—J (shift solenoid A)
- Terminals F—J (shift solenoid B)
- Terminals H—J (shift solenoid C)
- Terminals I—J (shift solenoid F)
- Terminals G—J (TCC solenoid)

Are the resistances normal?

NO.20 EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND DOWNSHIFTING

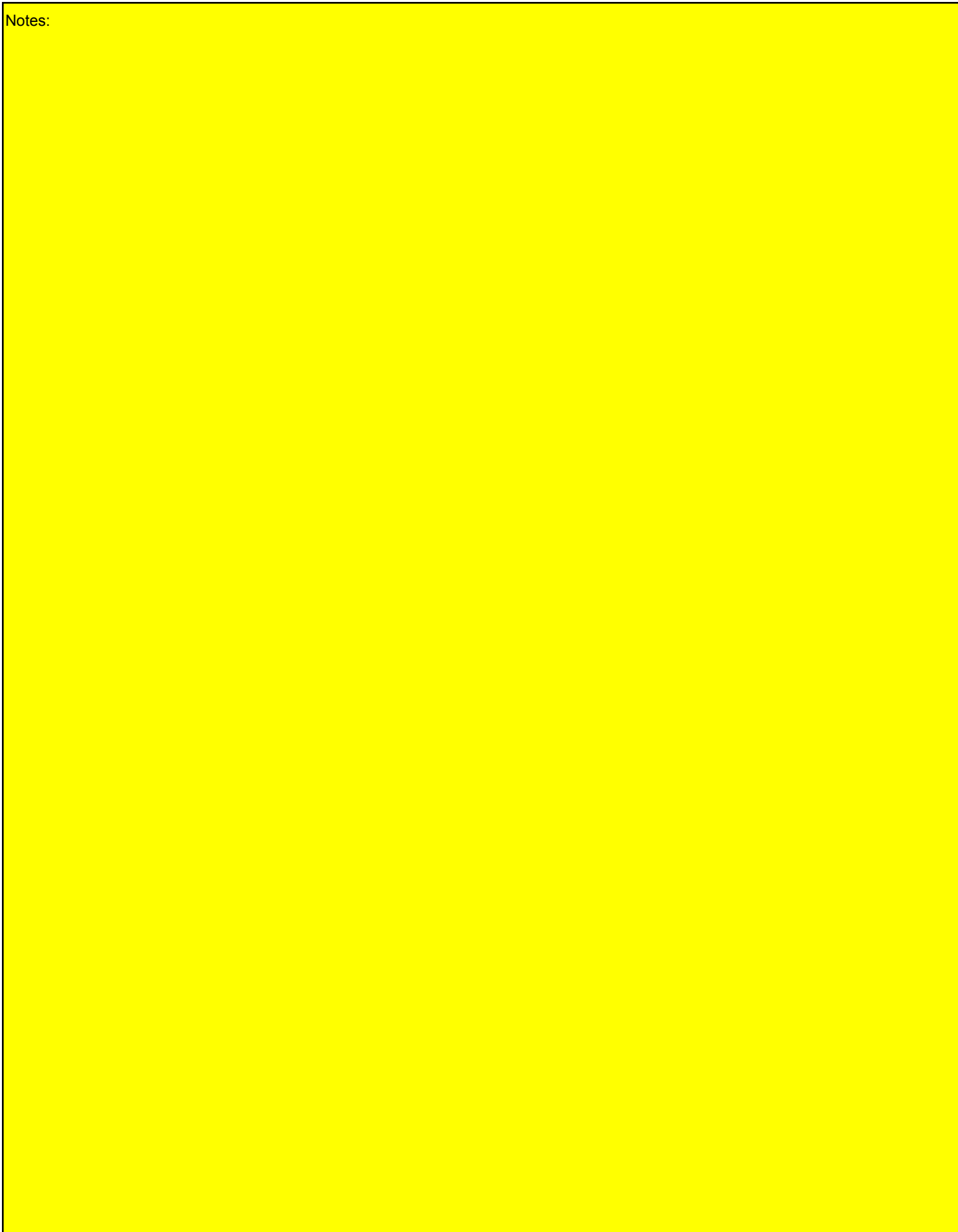
20	Excessive shift shock is felt when upshifting and downshifting
DESCRIPTION	<ul style="list-style-type: none"> Excessive shift shock is felt when depressing accelerator pedal at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clutch slippage (low clutch, high clutch) <ul style="list-style-type: none"> In the event of clutch slippage, a DTC (incorrect gear ratio) is output. Reduced line pressure Input/output signal malfunction (VSS, turbine sensor, throttle opening angle (CAN communication), TFT sensor, pressure control solenoid, shift solenoids A, B, C and F, oil pressure switches B, C and F). Control valve body malfunction (improper operation, stuck, clogged oil passage) <ul style="list-style-type: none"> Hydraulic circuit clogging (Pressure control solenoid, shift solenoids B, C and F) Control valve spool malfunction Improper operation of accumulator (Low solenoid, 2-4 brake solenoid, high clutch solenoid, low and reverse brake solenoid, 2-4 brake, high clutch) Improper TCM ground Improper ground of GND return line in AT <ul style="list-style-type: none"> If there is improper ground of GND return line, clutch pressure may decrease, causing clutch slippage. <p>NOTE:</p> <ul style="list-style-type: none"> The malfunction is basically the same as for No.16 "ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING". Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Perform the stall test. (See Stall Speed Test .)	Yes	Go to the next step.
	Is the stall speed normal?	No	Repair or replace any malfunctioning parts.
2	Inspect the following values.	Yes	Go to the next step.

	<p>(See PCM INSPECTION .)</p> <p>(See TCM INSPECTION .)</p> <ul style="list-style-type: none"> • APP1 • APP2 <p>PCM PIDs (using WDS or equivalent)</p> <ul style="list-style-type: none"> • TP_REL • VSS <p>TCM terminal voltage:</p> <ul style="list-style-type: none"> • 2G (turbine sensor) • 2K (VSS) <p>Are the values normal?</p>	No	Repair or replace any malfunctioning parts.
3	<p>Disconnect the TCM connector.</p> <p>Is the resistance between terminal 2U at the TCM connector and terminal J at the solenoid valve wiring harness-side connector 5.0 ohms or less ?</p>	Yes	Go to the next step.
		No	Repair open circuit.
4	<p>Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?</p>	Yes	Go to the next step.
		No	Repair the wiring harness. Reconnect the TCM.
5	<p>Inspect the TFT sensor.</p> <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <p>Is the TFT sensor normal?</p>	Yes	Go to the next step.
		No	Replace the TFT sensor.
6	<p>Stop the engine.</p> <p>Disconnect the solenoid valve connector.</p> <p>Measure the resistance between the following solenoid valve connector terminals.</p> <p>(See SOLENOID VALVE INSPECTION .)</p> <ul style="list-style-type: none"> • Terminals E—J (shift solenoid A) • Terminals F—J (shift solenoid B) • Terminals H—J (shift solenoid C) • Terminals I—J (shift solenoid F) • Terminals K—J (pressure control solenoid) <p>Are the resistances normal?</p>	Yes	Overhaul the control valve body and repair or replace any malfunctioning parts. (See TCM REMOVAL/INSTALLATION .)

Notes:



NO.21 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC)

21	Excessive shift shock on torque converter clutch (TCC)
DESCRIPTION	<ul style="list-style-type: none">• Strong shock is felt when TCC is engaged.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Incorrect characteristics of input signal or malfunction of TCC piston pressure adjustment <p>(when there is open or short circuit, shock does not occur because fail-safe prevents TCC operation.) Inspection procedure is basically the same as No.14 "TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION".</p>

NO.22 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES

22	Noise occurs at idle when vehicle is stopped in all positions/ranges
DESCRIPTION	<ul style="list-style-type: none"> • Transmission is noisy in all positions and ranges when vehicle is idling.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • High-pitched noise emitted from AT at idle may be caused by pressure control solenoid or oil pump. • There may also be engine noise (idle speed mis adjustment and/or V belt noise) <p>NOTE:</p> <ul style="list-style-type: none"> • If a noise is emitted during shifting only, the malfunction is in solenoid. If a noise is emitted during shifting at certain gears only or during deceleration only, it is gear noise. • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

NO.23 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D RANGE, OR IN R POSITION

23	Noise occurs at idle when vehicle is stopped in D range, or in R position
DESCRIPTION	<ul style="list-style-type: none"> • Transmission is noisy in driving ranges when vehicle is idling.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunctions unrelated to AT: <ul style="list-style-type: none"> ▪ Abnormal noise from differential ▪ Abnormal noise from propeller shaft ▪ Vibration caused by unbalanced or uneven tires <p>NOTE:</p> <ul style="list-style-type: none"> • Although the malfunction is basically the same as No.22 "NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES", other causes may be selector lever position disparity or TR switch position disparity. • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

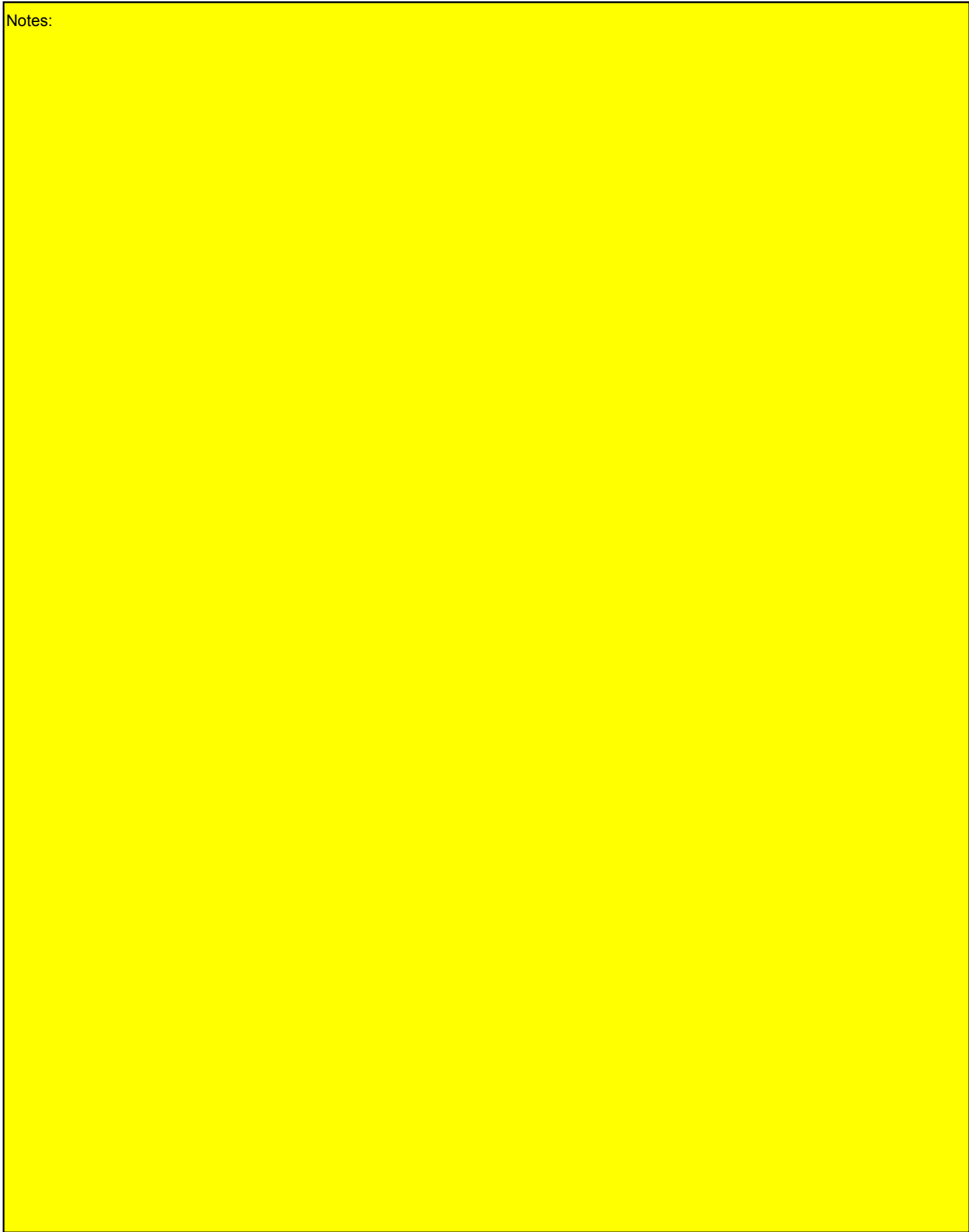
NO.24 NO ENGINE BRAKING IN 1GR POSITION OF M RANGE

24	No engine braking in 1GR position of M range
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in 1GR of M range at low vehicle speed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage (low and reverse brake) <ul style="list-style-type: none"> ▪ In the event of clutch slippage, a DTC (incorrect gear ratio) is output. • Input/output signal malfunction <ul style="list-style-type: none"> ▪ M range switch (short or open circuit, poor connection) ▪ Shift solenoid F • Control valve body malfunction (improper operation, stuck) <ul style="list-style-type: none"> ▪ Hydraulic circuit clogging (Shift solenoid F) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>Do the following symptoms concurrently occur?</p> <ul style="list-style-type: none"> • Engine flares up or slips during acceleration. • Engine flares up or slips when shifting. 	<p>Yes</p> <p>Go to symptom troubleshooting NO.16 "ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING" or No.17 "ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE".</p> <hr/> <p>No</p> <p>Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result.</p> <p>(See BASIC INSPECTION .)</p>
2	<p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>	

Notes:



NO.25 TRANSMISSION OVERHEATS

25	Transmission overheats
DESCRIPTION	<ul style="list-style-type: none"> • Burnt smell is emitted from transmission. • Smoke is emitted from transmission.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunction is restricted to hindrance of coolant at the oil cooler. In addition, overheating of the transmission may be caused by a malfunction of the transmission fluid temperature sensor. • The malfunction is restricted to hindrance of coolant at the cooler. <ul style="list-style-type: none"> ▪ Oil cooler malfunction ▪ Excessive amount of ATF ▪ Torque converter malfunction ▪ Clutch slippage <ul style="list-style-type: none"> • In the event of clutch slippage, a DTC (incorrect gear ratio) is output. ▪ TCC piston malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	Inspect the oil cooler pipes for bends, damage, corrosion or kinks.	Yes	Go to the next step.
	Are the oil cooler pipes normal?	No	Replace any malfunctioning parts.
2	Perform the stall test.	Yes	Go to the next step.
	(See Stall Speed Test .) Is the stall speed normal?	No	Repair or replace any malfunctioning parts.
3		Yes	Go to the next step.

	<p>Inspect the following PCM PIDs using the WDS or equivalent.</p> <p>(See PCM INSPECTION .)</p> <ul style="list-style-type: none"> • APP1 • APP2 • TP_REL <p>Are the PID values normal?</p>	No	Repair or replace any malfunctioning parts.
4	Disconnect the TCM connector.	Yes	Go to the next step.
	Is the resistance between ground terminal 2M or 2Q at the TCM connector and body ground 5.0 ohms or less ?	No	Repair the wiring harness. Reconnect the TCM.
5	Inspect the pressure control solenoid circuit.	Yes	Go to the next step.
	(See SOLENOID VALVE INSPECTION .) Is it normal?	No	Repair or replace any malfunctioning parts.
6	Remove the torque converter.	7	<p>Verify the test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>
	Inspect the torque converter. (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .) (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)		

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NO.26 ENGINE STALLS WHEN SHIFTED TO D RANGE, OR IN R POSITION

26	Engine stalls when shifted to D range, or in R position
DESCRIPTION	<ul style="list-style-type: none"> • Engine stalls when shifting from N or P position to D range or R position at idle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Idle speed is not within specification. • Improper idle increase • Insufficient engine output • Oil cooler malfunction (Foreign material mixed in with ATF) • ATF level is low. • TCC solenoid malfunction • TCC piston malfunction (improper operation, clogged oil passage) <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Go to symptom troubleshooting No.10 "LOW IDLE/STALLS DURING DECELERATION". (See NO.10 LOW IDLE/STALLS DURING DECELERATION .) Is the engine control system normal?	Yes Go to the next step.
		No Repair or replace any malfunctioning parts according to the inspection results.
2	Inspect the TCC solenoid. (See SOLENOID VALVE INSPECTION .)Is the TCC solenoid normal?	Yes Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result. (See BASIC INSPECTION .)
		No Repair the TCC solenoid.
3	Verify the test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace 	

	<p>the TCM.</p>
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(See TCM REMOVAL/INSTALLATION .)

NO.27 ENGINE STALLS WHEN DRIVING AT SLOW SPEEDS OR STOPPING

27	Engine stalls when driving at slow speeds or stopping
DESCRIPTION	<ul style="list-style-type: none"> Engine stalls when brake pedal is depressed while driving at low speed or stopping.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in engine control system (e.g. fuel injection control, electronic throttle control system) Otherwise, the malfunction is in the control valve body, and/or TCC solenoid.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Go to symptom troubleshooting No.10 "LOW IDLE/STALLS DURING DECELERATION". (See NO.10 LOW IDLE/STALLS DURING DECELERATION .)	Yes Go to the next step.
	Is the engine control system normal?	No Repair or replace any malfunctioning parts according to inspection results.
2	Go to symptom troubleshooting No.5 "ENGINE STALLS-AFTER START/AT IDLE". (See NO.5 ENGINE STALLS-AFTER START/AT IDLE .)	Yes Repeat the basic inspection and repair or replace any malfunctioning parts according to the inspection result. (See BASIC INSPECTION .)
	Is the engine control system normal?	No Repair or replace any malfunctioning parts according to the inspection results.
3	Verify the test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See TCM REMOVAL/INSTALLATION .)	

NO.28 STARTER DOES NOT WORK

28	Starter does not work
DESCRIPTION	<ul style="list-style-type: none">• Starter does not work even when in P or N position.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Selector lever mis adjustment• TR switch mis adjustment• Open or short circuit in TR switch

NO.29 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE

29	Gear position indicator light does not illuminate in M range
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates in M range with ignition switch at ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • M range switch, gear position indicator light or related wiring harness malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Are other indicator lights illuminated with the ignition switch at the ON position?	Yes	Go to the next step.
		No	Inspect the meter fuse.
2	Inspect the voltage at TCM terminal 1E. (See TCM INSPECTION .) Is the voltage normal?	Yes	Inspect the instrument cluster.
		No	Repair or replace any malfunctioning part.
3	Verify the test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. <p>(See TCM REMOVAL/INSTALLATION .)</p>		

NO.30 GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS

30	Gear position indicator light illuminates when in D range or P, N, R positions
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates in D range or P, N, R positions with ignition switch at ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • M range switch or related wiring harness malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	Inspect the voltage at TCM terminal 1E. (See TCM INSPECTION .) Is the voltage normal?	Yes	Inspect the instrument cluster.
		No	Repair or replace any malfunctioning parts.
2	Verify the test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See TCM REMOVAL/INSTALLATION .)		

NO.31 DOES NOT UPSHIFT IN M RANGE

31	Does not upshift in M range
DESCRIPTION	<ul style="list-style-type: none"> • Gear position indicator light in dashboard illuminates, but vehicle does not upshift when selector lever is pushed to "+" side or steering shift switch "UP" is pulled.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Up switch or related wiring harness malfunction • Steering shift switch or related circuit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION .)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Inspect the voltage at TCM terminals 1W and 2I. (See TCM INSPECTION .) Are the voltages normal?	Yes Inspect the instrument cluster. (See MULTIPLEX COMMUNICATION SYSTEM .)
		No If terminal 2I voltage is abnormal, inspect the up switch. <ul style="list-style-type: none"> • If up switch is normal, inspect for continuity between the up switch and TCM terminal 2I. Inspect the steering shift switch. <ul style="list-style-type: none"> • If the steering shift switch is normal, inspect for continuity between the steering shift switch and TCM terminal 1W.
2	Verify the test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. (See TCM REMOVAL/INSTALLATION .)	

DTC TABLE

×: Available

DTC No.	Condition	MIL	AT warning light illuminated	DC	Monitor item	Memory function	Page
P0705	Transmission range (TR) switch circuit malfunction (short to power supply)	ON	YES	2	CCM	×	(See DTC P0705 .)
P0706	Transmission range (TR) switch circuit malfunction (open circuit/short to ground)	ON	YES	2	CCM	×	(See DTC P0706 .)
P0707	M range switch, up switch or down switch circuit malfunction (open circuit/short to ground)	OFF	YES	1	CCM	×	(See DTC P0707 .)
P0708	Steering shift switch circuit malfunction (open circuit/short to ground)	OFF	YES	1	CCM	×	(See DTC P0708 .)
P0711	Transmission fluid temperature (TFT) sensor malfunction (stuck)	ON	NO	2	CCM	×	(See DTC P0711 .)
P0712	Transmission fluid temperature (TFT) sensor circuit malfunction (short to ground)	ON	YES	1	CCM	×	(See DTC P0712 .)
P0713	Transmission fluid temperature (TFT) sensor circuit malfunction (open circuit/short to power supply)	ON	YES	1	CCM	×	(See DTC P0713 .)
P0715	Turbine sensor circuit malfunction	ON	YES	1	CCM	×	(See DTC P0715 .)
P0720	Vehicle speed sensor (VSS) malfunction (open circuit/short to ground)	ON	YES	1	CCM	×	(See DTC P0720 .)
P0731	Gear 1 incorrect (incorrect gear ratio detected)	OFF	NO	1	CCM	×	(See DTC P0731 .)
P0732	Gear 2 incorrect (incorrect gear ratio detected)	OFF	NO	1	CCM	×	(See DTC P0732 .)
P0733	Gear 3 incorrect (incorrect gear ratio detected)	OFF	NO	1	CCM	×	(See DTC P0733 .)
P0734	Gear 4 incorrect (incorrect gear ratio detected)	OFF	NO	1	CCM	×	(See DTC P0734 .)

P0740	Torque converter clutch (TCC) system malfunction	ON	NO	2	CCM	×	(See DTC P0740 .)
P0743	Torque converter clutch (TCC) solenoid valve circuit malfunction (open circuit/short to ground or power supply)	ON	YES	1	CCM	×	(See DTC P0743 .)
P0748	Pressure control solenoid circuit malfunction (open circuit/short to ground or power supply)	OFF	YES	1	CCM	×	(See DTC P0748 .)
P0751	Shift solenoid A malfunction (stuck off)	ON	NO	2	CCM	×	(See DTC P0751 .)
P0753	Shift solenoid A circuit malfunction (open circuit/short to ground or power supply)	ON	YES	1	CCM	×	(See DTC P0753 .)
P0758	Shift solenoid F circuit malfunction (open circuit/short to ground or power supply)	ON	YES	1	CCM	×	(See DTC P0758 .)
P0761	Shift solenoid B malfunction (stuck off)	ON	NO	2	CCM	×	(See DTC P0761 .)
P0762	Shift solenoid B malfunction (stuck on)	ON	NO	2	CCM	×	(See DTC P0762 .)
P0763	Shift solenoid B circuit malfunction (open circuit/short to ground or power supply)	ON	YES	1	CCM	×	(See DTC P0763 .)
P0766	Shift solenoid C malfunction (stuck off)	ON	NO	2	CCM	×	(See DTC P0766 .)
P0767	Shift solenoid C malfunction (stuck on)	ON	NO	2	CCM	×	(See DTC P0767 .)
P0768	Shift solenoid C circuit malfunction (open circuit/short to ground or power supply)	ON	YES	1	CCM	×	(See DTC P0768 .)
P0841	Oil pressure switch B circuit malfunction	OFF	YES	2	CCM	×	(See DTC P0841 .)
P0846	Oil pressure switch C circuit malfunction	OFF	YES	2	CCM	×	(See DTC P0846 .)
P0871	Oil pressure switch F circuit malfunction	OFF	YES	2	CCM	×	(See DTC P0871 .)

P0882	TCM B+ low	ON	NO	1	CCM	×	(See DTC P0882 .)
P0960	GND return circuit malfunction	ON	YES	1	CCM	×	(See DTC P0960 .)
P1759	2-4 brake fail-safe valve malfunction	OFF	YES	2	CCM	×	(See DTC P1759 .)
P1764	Low and reverse brake fail-safe valve malfunction	OFF	YES	2	CCM	×	(See DTC P1764 .)
U0073	CAN bus off	(See DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM] .)					
U0100	TCM cannot receive any signals from PCM	(See DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM] .)					

MIL

Malfunction Indicator Lamp

DC

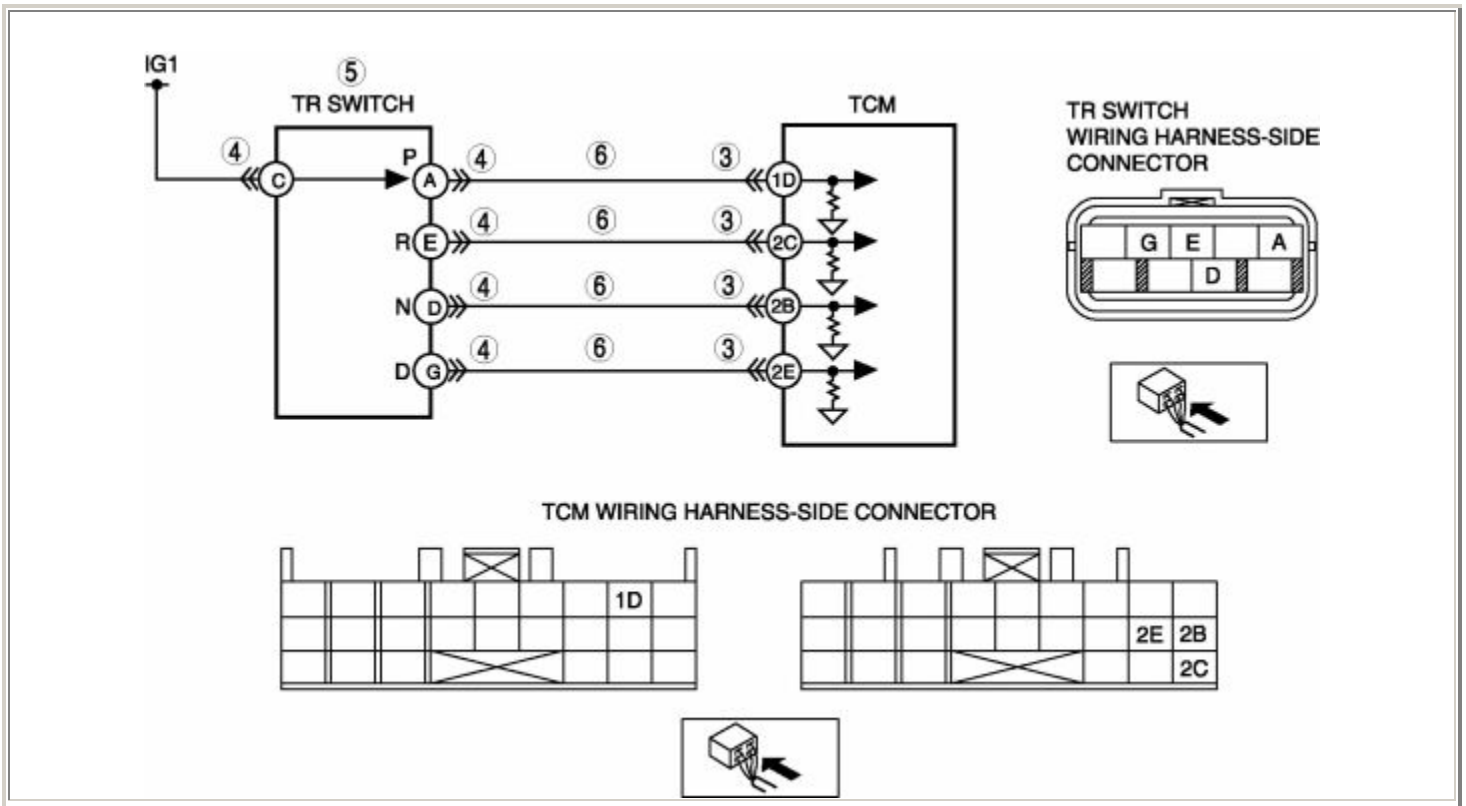
Drive Cycle

CCM

Comprehensive Component Monitor

DTC P0705

DTC P0705	Transmission range (TR) switch circuit malfunction (short to power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Two or more range signals are input from the TR switch for 12 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM malfunction• Short to power supply in wiring harness between TR switch terminal A and TCM terminal 1D• Short to power supply in wiring harness between TR switch terminal E and TCM terminal 2C• Short to power supply in wiring harness between TR switch terminal D and TCM terminal 2B• Short to power supply in wiring harness between TR switch terminal G and TCM terminal 2E• Damaged connector between TR switch and TCM• TR switch malfunction



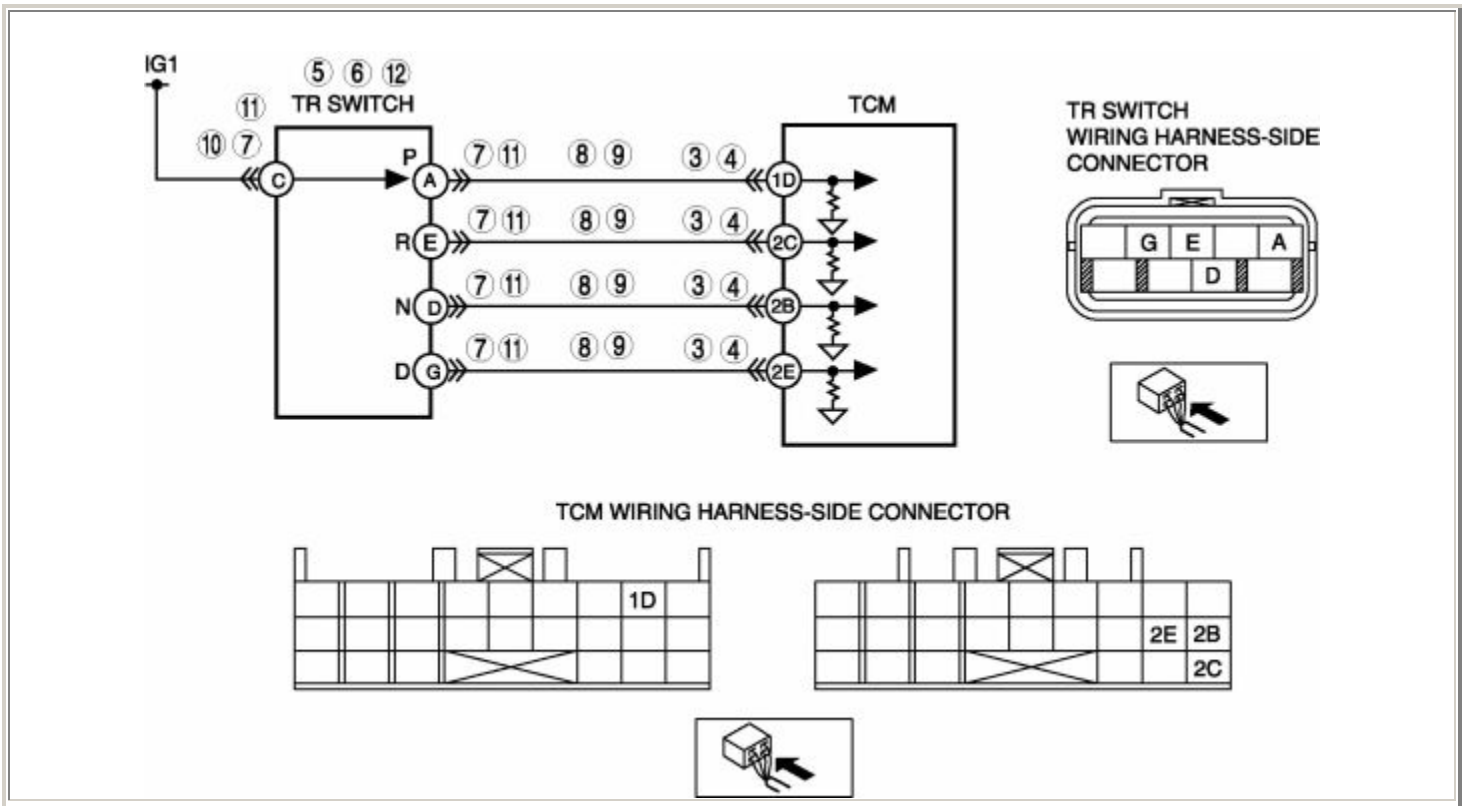
Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

6	<p>INSPECT TR SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Measure the voltage at TR switch (wiring harness-side) terminals A, E, D, and G. • Is there 0 V at the TR switch harness-side connector terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to the next step.
7	<p>VERIFY TROUBLESHOOTING OF DTC P0705 COMPLETED</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Turn the ignition switch to the START position (engine on). • Drive the vehicle in each range (P, R, N, and D) for 12 s or more . • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0706

DTC P0706	Transmission range (TR) switch circuit malfunction (open circuit/short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• No range signal is input from the TR switch for 100 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TR switch malfunction• TR switch misadjustment• Short to ground in wiring harness between TR switch terminal A and TCM terminal 1D• Short to ground in wiring harness between TR switch terminal E and TCM terminal 2C• Short to ground in wiring harness between TR switch terminal D and TCM terminal 2B• Short to ground in wiring harness between TR switch terminal G and TCM terminal 2E• Open circuit in wiring harness between TR switch terminal A and TCM terminal 1D• Open circuit in wiring harness between TR switch terminal E and TCM terminal 2C• Open circuit in wiring harness between TR switch terminal D and TCM terminal 2B• Open circuit in wiring harness between TR switch terminal G and TCM terminal 2E• Open circuit in wiring harness between TR switch terminal C and ignition switch (IG1)• Short to ground between TR switch terminal C and ignition switch (IG1)• Damaged connector between TR switch and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.

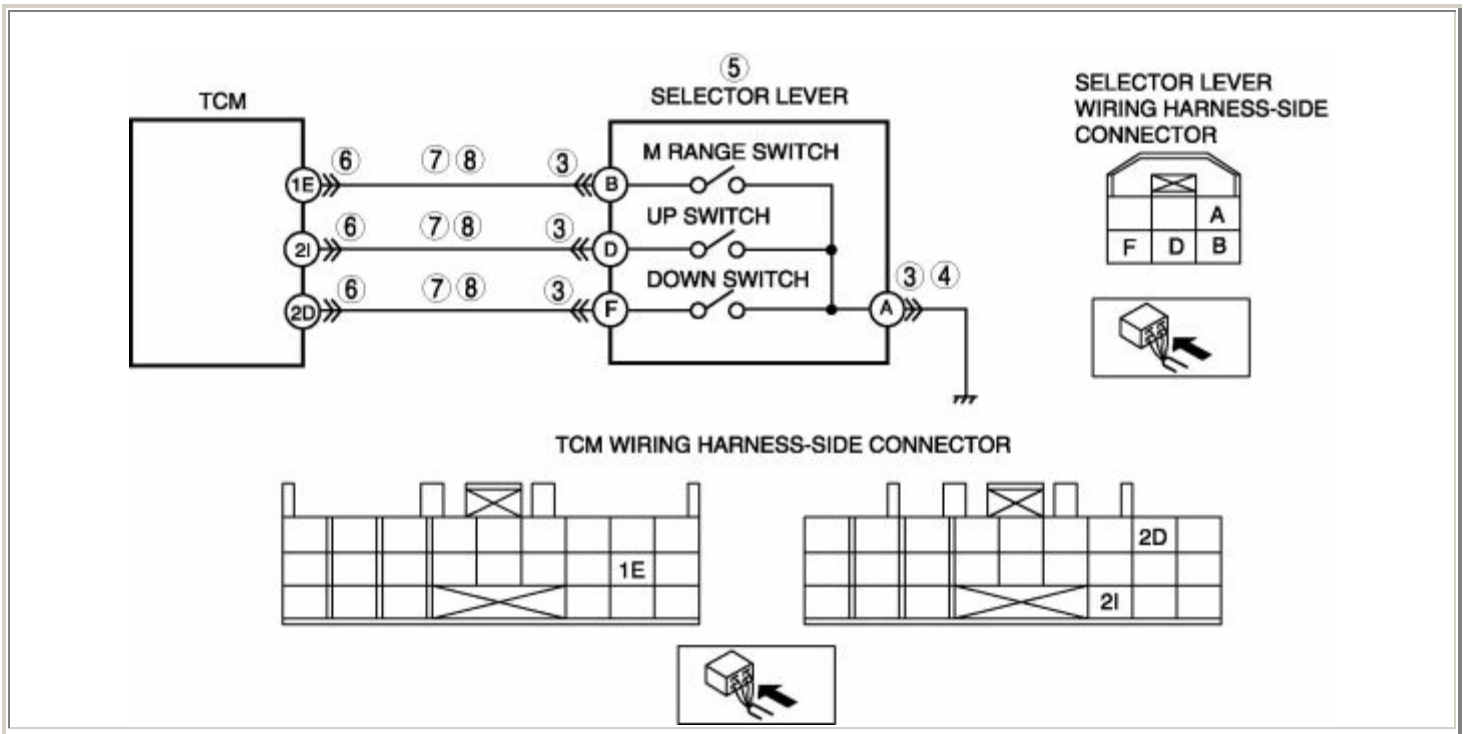
4	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Disconnect the TCM connector. • Turn the ignition switch to the ON position (engine off). • Inspect each TCM (wiring harness-side) terminal voltage. <ul style="list-style-type: none"> ▪ 1D <ul style="list-style-type: none"> • P position: B+ • Other positions and all ranges: 0 V ▪ 2C <ul style="list-style-type: none"> • R position: B+ • Other position and all ranges: 0 V ▪ 2B <ul style="list-style-type: none"> • N position: B+ • Other position and all range: 0 V ▪ 2E <ul style="list-style-type: none"> • D range: B+ • Other ranges and all positions: 0 V • Are the above voltage indicated when the selector lever is shifted from P position to D range? 	Yes	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Connect the TCM connector. • Go to the intermittent concern troubleshooting procedure, then go to Step 13. <p>(See INTERMITTENT CONCERN TROUBLESHOOTING .)</p>
		No	Go to the next step.
5	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Are all terminal voltage 0 V in Step 4? 	Yes	Go to Step 10.
		No	Go to the next step.
6	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Are there two or more terminals where the voltage is abnormal in Step 4? 	Yes	Adjust the TR switch, then go to Step 13. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)
		No	Go to the next step.
7	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	INSPECT TR SWITCH CIRCUIT FOR SHORT TO GROUND	Yes	Repair or replace the wiring harness, then go to Step 13.

	<ul style="list-style-type: none"> • Disconnect the TR switch connector. • Inspect for continuity between the TCM (wiring harness-side) and body ground. <ul style="list-style-type: none"> ▪ P position: terminal 1D and body ground ▪ R position: terminal 2C and body ground ▪ N position: terminal 2B and body ground ▪ D range: terminal 2E and body ground • Is there continuity? 	No	Go to the next step.
9	<p>INSPECT TR SWITCH CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the TR switch (wiring harness-side) and TCM (wiring harness-side). <ul style="list-style-type: none"> ▪ P position: terminal A and terminal 1D ▪ R position: terminal E and terminal 2C ▪ N position: terminal D and terminal 2B ▪ D range: terminal G and terminal 2E • Is there continuity? 	Yes	Go to Step 12.
		No	Repair or replace the wiring harness, then go to Step 13.
10	<p>INSPECT TR SWITCH POWER CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the TR switch connector. • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at TR switch (wiring harness-side) terminal C. • Is there B+ at TR switch (wiring harness-side) terminal C? 	Yes	Go to the next step.
		No	<p>Inspect the main fuse.</p> <ul style="list-style-type: none"> • If normal, repair or replace the wiring harness, then go to Step 13.
11		Yes	Go to the next step.

	<p>INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
12	<p>INSPECT TR SWITCH</p> <ul style="list-style-type: none"> • Inspect the TR switch. <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION .)</p> <ul style="list-style-type: none"> • Is the TR switch normal? 	Yes	Go to the next step.
		No	<p>Replace the TR switch, then go to the next step.</p> <p>(See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION .)</p>
13	<p>VERIFY TROUBLESHOOTING OF DTC P0706 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Turn the ignition switch to the START position (engine on). • Drive the vehicle in each range (P, R, N, and D) for 100 s or more . • Is the same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>
		No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE .)</p>
		No	DTC troubleshooting completed.

DTC P0707

DTC P0707	M range switch, up switch or down switch circuit malfunction (open circuit/short to ground)
DETECTION CONDITION	<p>M range switch circuit malfunction</p> <ul style="list-style-type: none">• M range switch off with up or down switch on.• M range switch remains on for 10 s or more except in D range. <p>Up switch or down switch circuit malfunction</p> <ul style="list-style-type: none">• When all of the following conditions are met:<ul style="list-style-type: none">▪ M range switch off .▪ Except D range▪ Up or down switch remains on for 10 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• M range switch malfunction• Up switch malfunction• Down switch malfunction.• Open circuit in wiring harness between selector lever terminal B and TCM terminal 1E• Short to ground in wiring harness between selector lever terminal B and TCM terminal 1E• Open circuit in wiring harness between selector lever terminal D and TCM terminal 2I• Short to ground in wiring harness between selector lever terminal D and TCM terminal 2I• Open circuit in wiring harness between selector lever terminal F and TCM terminal 2D• Short to ground in wiring harness between selector lever terminal F and TCM terminal 2D• Open circuit in wiring harness between selector lever terminal A and ground• Damaged connector between selector lever and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT SELECTOR LEVER CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the selector lever connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 9.
4		Yes Go to the next step.

	<p>INSPECT SELECTOR LEVER GROUND CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the selector lever (wiring harness-side) terminal A and body ground. Is there continuity? 	No	Repair or replace the wiring harness, then go to Step 9.
5	<p>INSPECT M RANGE SWITCH, UP SWITCH, AND DOWN SWITCH</p> <ul style="list-style-type: none"> Inspect the M range switch, up switch, and down switch. <p>(See SELECTOR LEVER INSPECTION)</p> <ul style="list-style-type: none"> Are the switches normal? 	Yes	Go to the next step.
		No	Replace the selector lever, then go to Step 9. (See SELECTOR LEVER REMOVAL/INSTALLATION .)
6	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
7	<p>INSPECT SELECTOR LEVER SIGNAL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the selector lever (wiring harness-side) and TCM (wiring harness-side). <ul style="list-style-type: none"> M range switch position: terminal B and terminal 1E Up switch position: terminal D and terminal 2I Down switch position: terminal F and terminal 2D Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 9.
8	<p>INSPECT SELECTOR LEVER SIGNAL CIRCUIT FOR SHORT TO GROUND</p>	Yes	Repair or replace the wiring harness, then go to Step 9.

	<ul style="list-style-type: none"> Inspect for continuity between the selector lever (wiring harness-side) and body ground. <ul style="list-style-type: none"> M range switch position: terminal B and body ground Up switch position: terminal D and body ground Down switch position: terminal F and body ground Is there continuity? 	No	Go to the next step.
9	<p>VERIFY TROUBLESHOOTING OF DTC P0707 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle in M range, and change gears by shifting the selector lever (operating the up and down switches). Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	No concern is detected. Go to the next step.
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0708

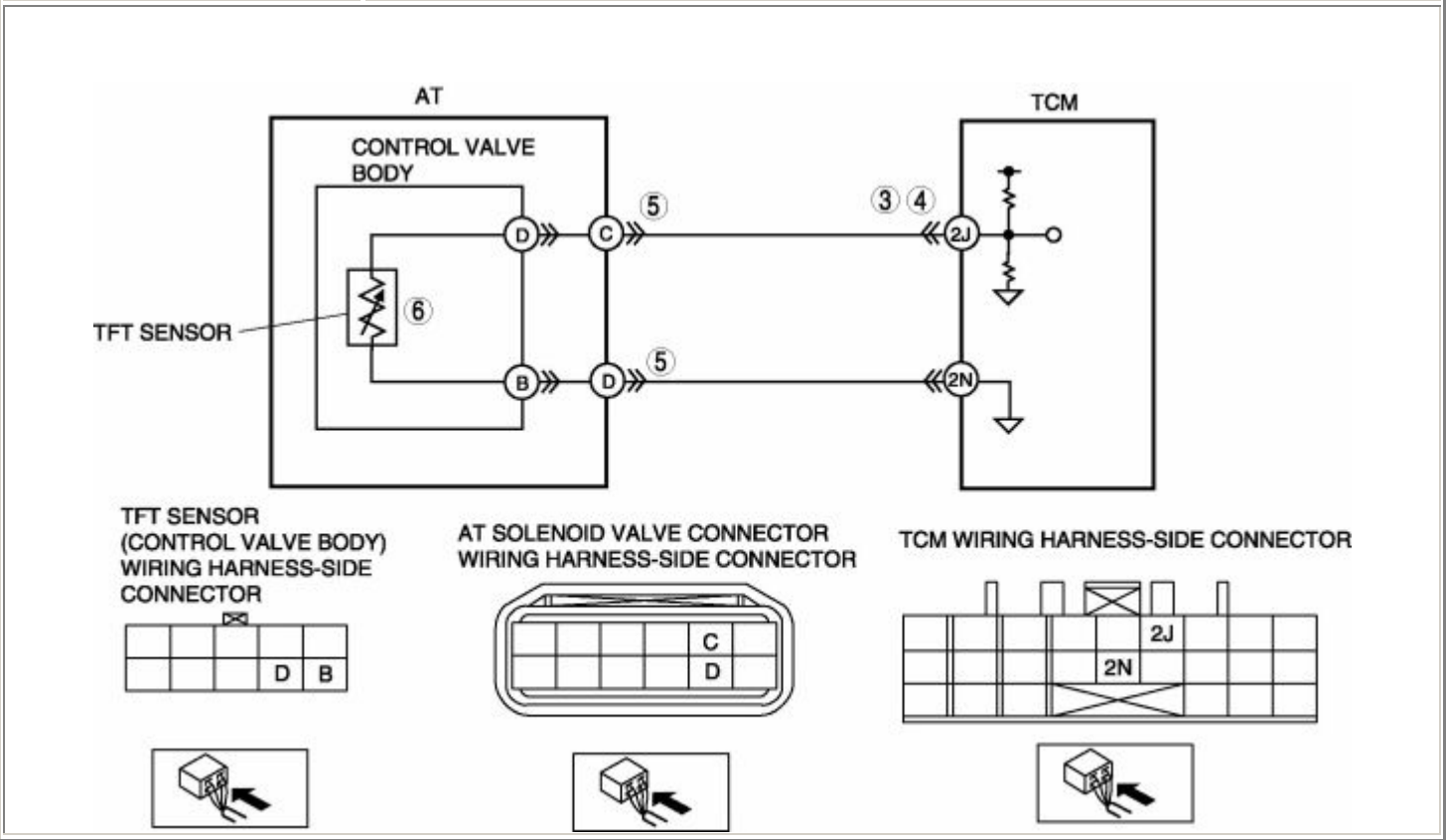
DTC P0708	Steering shift switch circuit malfunction (open circuit/short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• Signal from steering shift switch is 0.5 V or less , or 4.7 V or more for 10 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Steering shift switch malfunction• Open circuit in wiring harness between steering shift switch terminal 2F and TCM terminal 1W• Short to ground in wiring harness between steering shift switch terminal 2F and TCM terminal 1W• Open circuit in wiring harness between steering shift switch terminal 2C and ground• Damaged connector between steering shift switch and TCM• Clock spring malfunction• TCM malfunction

4	INSPECT CLOCK SPRING GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the clock spring (wiring harness-side) terminal 5C and body ground. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
5	INSPECT STEERING SHIFT SWITCH <ul style="list-style-type: none"> Inspect the steering shift switch. (See STEERING SHIFT SWITCH INSPECTION .) <ul style="list-style-type: none"> Is the steering shift switch normal? 	Yes	Go to the next step.
		No	Replace the steering shift switch, then go to Step 10. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION .)
6	INSPECT CLOCK SPRING <ul style="list-style-type: none"> Inspect the clock spring. (See CLOCK SPRING INSPECTION .) <ul style="list-style-type: none"> Is the clock spring normal? 	Yes	Go to the next step.
		No	Replace the clock spring, then go to Step 10. (See CLOCK SPRING REMOVAL/INSTALLATION .)
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
8	INSPECT SHIFT CONTROL SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the clock spring (wiring harness-side) terminal 5F and TCM (wiring harness-side) terminal 1W. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
9	INSPECT SHIFT CONTROL SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the clock spring (wiring harness-side) terminal 5F and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 10.
		No	Go to the next step.

10	VERIFY TROUBLESHOOTING OF DTC P0708 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in M range, and change gears by operating the steering shift switch. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0711

DTC P0711	Transmission fluid temperature (TFT) sensor malfunction (stuck)
<p>DETECTION CONDITION</p>	<ul style="list-style-type: none"> ATF temperature remains 20 ° C {68 ° F} or less for 6.5 min or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). MIL illuminates if TCM detects the above malfunction condition in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. AT warning light does not illuminate. DTC is stored in TCM memory.
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> TFT sensor malfunction Connector corrosion TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TFT SENSOR VOLTAGE <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at TCM (wiring harness-side) terminal 2J. Is the terminal voltage 1.55 V or less ? 	Yes	Go to the next step.
		No	Go to the intermittent concern troubleshooting procedure, then go to Step 7. (See INTERMITTENT CONCERN TROUBLESHOOTING .)
4	VERIFY CURRENT INPUT SIGNAL STATUS: IS CONCERN INTERMITTENT OR CONSTANT? <ul style="list-style-type: none"> Start the engine. Drive the vehicle at 60 km/h {37 mph} or more for 6.5 min or more . Inspect the voltage at TCM (wiring harness-side) terminal 2J. Is the terminal voltage 1.55 V or less ? 	Yes	Go to the next step.
		No	Go to Step 7.
5	INSPECT TFT SENSOR CONNECTOR TERMINAL CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the AT solenoid valve connector. Inspect the AT solenoid valve connector terminals for corrosion. Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminals, then go to Step 7.
6	INSPECT TFT SENSOR	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the TFT sensor. <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <ul style="list-style-type: none"> • Is the TFT sensor normal? 	No	<p>Replace the TFT sensor, then go to the next step.</p> <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)</p>
7	<p>VERIFY TROUBLESHOOTING OF DTC P0711 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Decrease ATF temperature to 20 ° C {68 ° F} or less . • Start the engine. • Drive the vehicle for 6.5 min or more . • Is the same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>
		No	<p>Go to the next step.</p>
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE .)</p>
		No	<p>DTC troubleshooting completed.</p>

DTC P0712

DTC P0712 Transmission fluid temperature (TFT) sensor circuit malfunction (short to ground)

DETECTION CONDITION

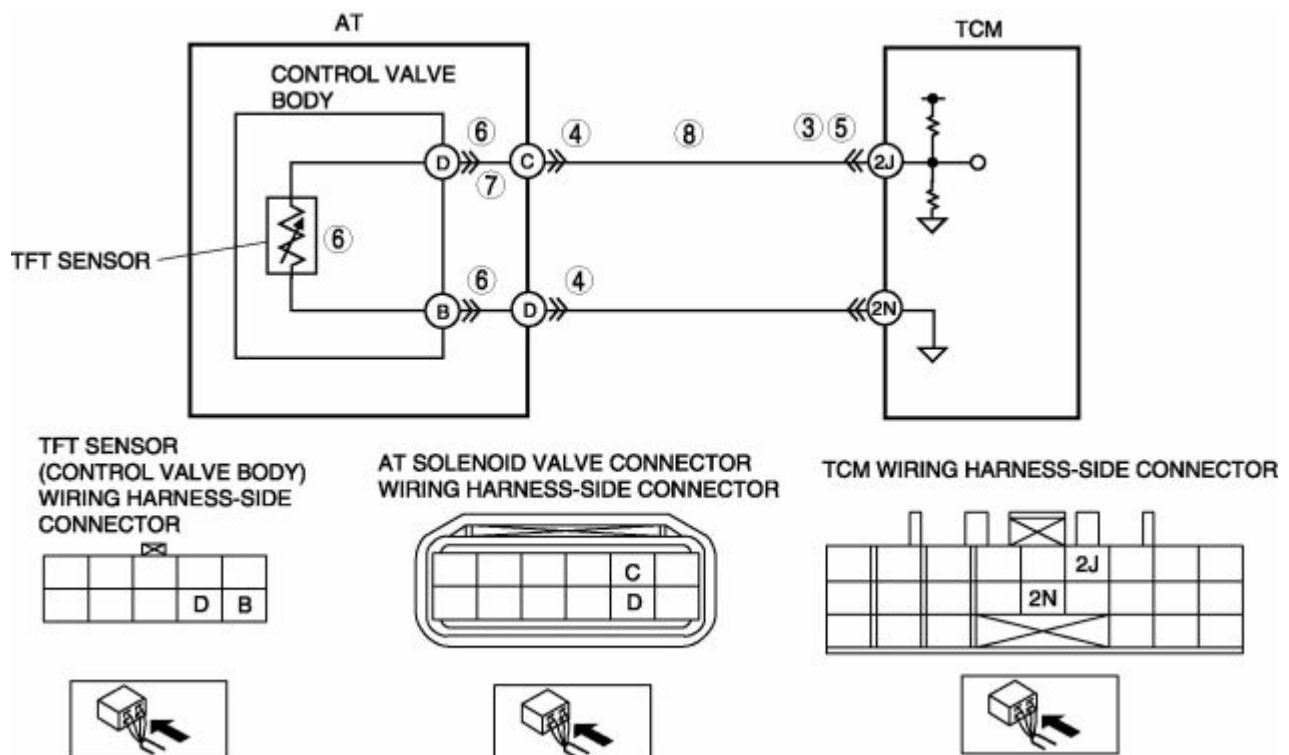
- Signal from TFT sensor is **0.1 V or less** for **150 s or more**.

Diagnostic support note:

- This is a continuous monitor (CCM).
- MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.
- PENDING CODE is not available.
- FREEZE FRAME DATA is available.
- AT warning light illuminates.
- DTC is stored in TCM memory.

POSSIBLE CAUSE

- TFT sensor malfunction
- Short to ground in wiring harness between TFT sensor terminal D and TCM terminal 2J
- Damaged connectors between TFT sensor and TCM
- TCM malfunction



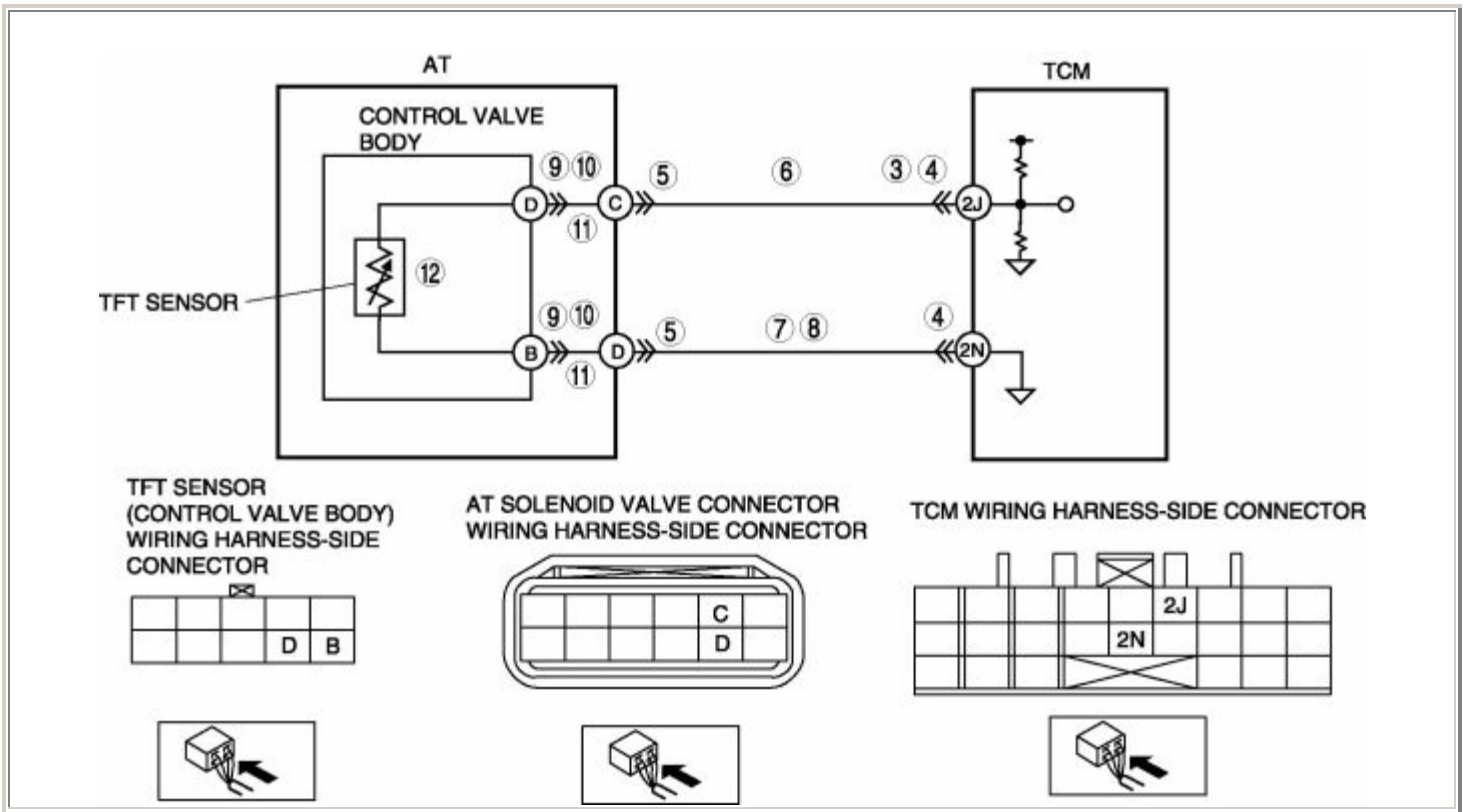
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS: IS CONCERN INTERMITTENT OR CONSTANT? <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at TCM (wiring harness-side) terminal 2J. Is the terminal voltage within 0.2—4.9 V ? 	Yes	Go to the intermittent concern troubleshooting procedure, then go to Step 9. (See INTERMITTENT CONCERN TROUBLESHOOTING .)
		No	Go to the next step.
4	INSPECT TERMINAL CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the AT solenoid valve connector. Inspect for bent terminals. Is there any malfunction? 	Yes	Repair or replace the terminals, then go to Step 9. <ul style="list-style-type: none"> If the terminals cannot be repaired, replace the wiring harness, then go to Step 9.
		No	Go to the next step.
5	INSPECT TFT SENSOR CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Verify if the TCM (wiring harness-side) terminal 2J voltage changes to 4.9 V or more when the AT solenoid valve connector is disconnected. Does the TCM (wiring harness-side) terminal voltage change? 	Yes	Go to the next step.
		No	Go to Step 8.
6		Yes	Go to the next step.

	<p>INSPECT CONTROL VALVE BODY CONNECTOR TERMINALS CONDITION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the control valve body connector. • Inspect for bent control valve body connector terminals. • Are the terminals normal? 	No	Repair or replace the connector and/or terminal, then go to the next step.
7	<p>INSPECT CONTROL VALVE BODY CONNECTOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the control valve body (wiring harness-side) terminal D and body ground. • Is there continuity? 	Yes	Replace the TFT sensor, then go to Step 9. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)
		No	Repair or replace the wiring harness, then go to Step 9.
8	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for continuity between the AT solenoid valve connector (wiring harness-side) terminal C and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
9	<p>VERIFY TROUBLESHOOTING OF DTC P0712 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle for 150 s or more . • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0713

DTC P0713	Transmission fluid temperature (TFT) sensor circuit malfunction (open circuit/short to power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Vehicle speed is 20 km/h {12.4 mph} or more , and signal from TFT sensor is 2.4 V or more for 150 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TFT sensor malfunction• Open circuit in wiring harness between TFT sensor terminal D and TCM terminal 2J• Open circuit in wiring harness between TFT sensor terminal B and TCM terminal 2N• Short to power supply in wiring harness between TFT sensor terminal D and TCM terminal 2J• Short to power supply in wiring harness between TFT sensor terminal B and TCM terminal 2N• Damaged connectors between TFT sensor and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS: IS CONCERN INTERMITTENT OR CONSTANT? <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at TCM (wiring harness-side) terminal 2J. Is the terminal voltage within 0.2—4.9 V ? 	Yes	Go to the intermittent concern troubleshooting procedure, then go to Step 13. (See INTERMITTENT CONCERN TROUBLESHOOTING .)
		No	Go to the next step.

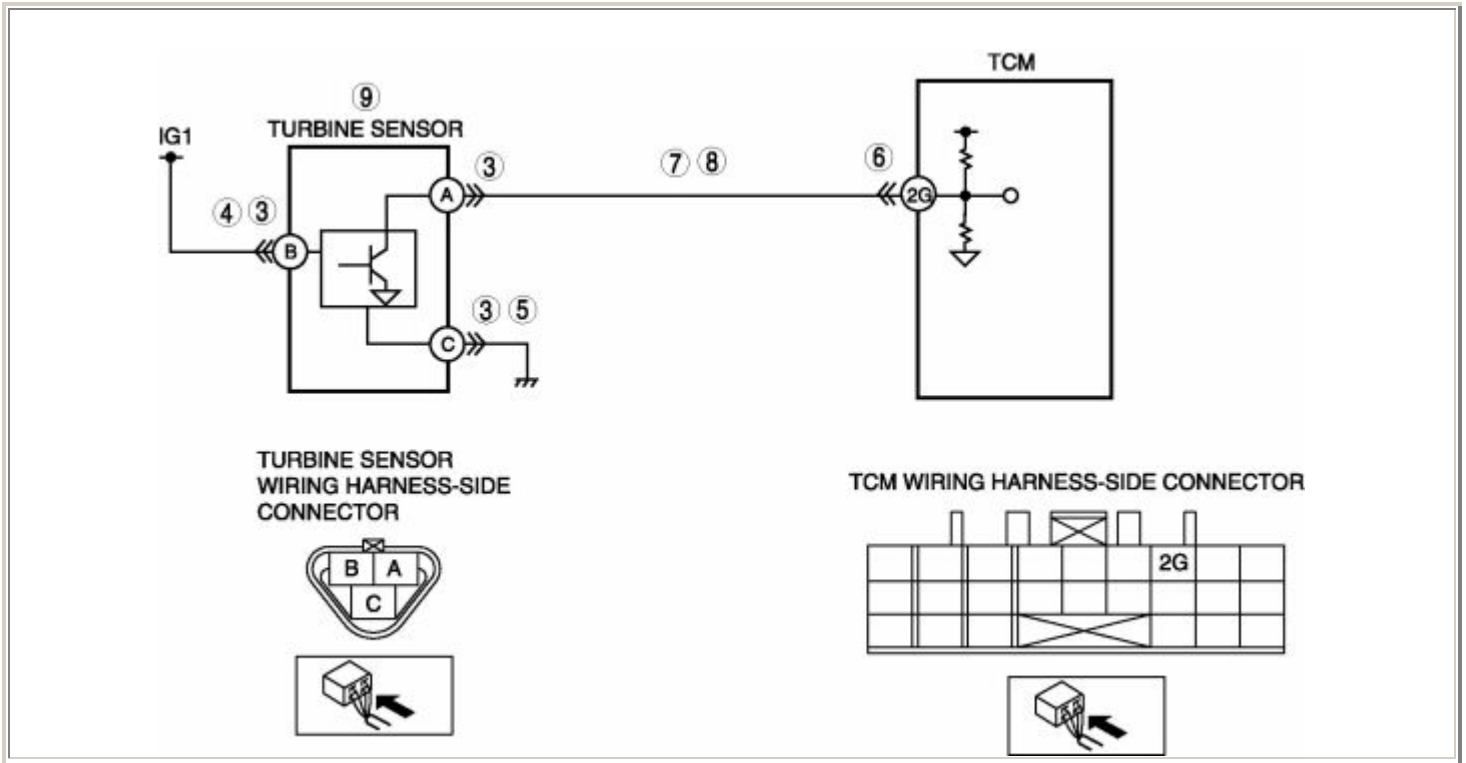
4	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
5	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT OR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal C. • Is the terminal voltage within 4.0—5.0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
7	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal D. • Is the terminal voltage B+ ? 	Yes	Repair or replace the wiring harness, then go to Step 13.
		No	Go to the next step.
8	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the TCM connector. • Inspect for continuity between the AT solenoid valve connector (wiring harness-side) terminal D and TCM (wiring harness-side) terminal 2N. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
9		Yes	Go to the next step.

	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT CONTROL VALVE BODY CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at control valve body (wiring harness-side) terminals B and D. • Is the terminal voltage B+ ? 	Yes	Repair or replace the wiring harness, then go to Step 13.
		No	Go to the next step.
11	<p>INSPECT CONTROL VALVE BODY CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the control valve body connector. • Inspect for continuity between the AT solenoid valve connector (wiring harness-side) and control valve body connector (wiring harness-side). <ul style="list-style-type: none"> ▪ Terminal C and terminal D ▪ Terminal D and terminal B • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TFT SENSOR</p> <ul style="list-style-type: none"> • Inspect the TFT sensor. <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION .)</p> <ul style="list-style-type: none"> • Is the TFT sensor normal? 	Yes	Go to the next step.
		No	Replace the TFT sensor, then go to the next step. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)
13	<p>VERIFY TROUBLESHOOTING OF DTC P0713 COMPLETED</p>	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle for 150 s or more . • Is the same DTC present? 	No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0715

DTC P0715	Turbine sensor circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• The following condition is detected twice:<ul style="list-style-type: none">▪ Turbine sensor signal is 300 rpm or less while engine speed is 1,500 rpm or more and vehicle speed is 40 km/h {25 mph} or more in D range for 2 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Turbine sensor malfunction• Short to ground in wiring harness between turbine sensor terminal A and TCM terminal 2G• Open circuit in wiring harness between turbine sensor terminal A and TCM terminal 2G• Open circuit in wiring harness between turbine sensor terminal B and ignition switch (IG1)• Open circuit in wiring harness between turbine sensor terminal C and body ground• Damaged connectors between turbine sensor and TCM• TCM malfunction



Diagnostic procedure

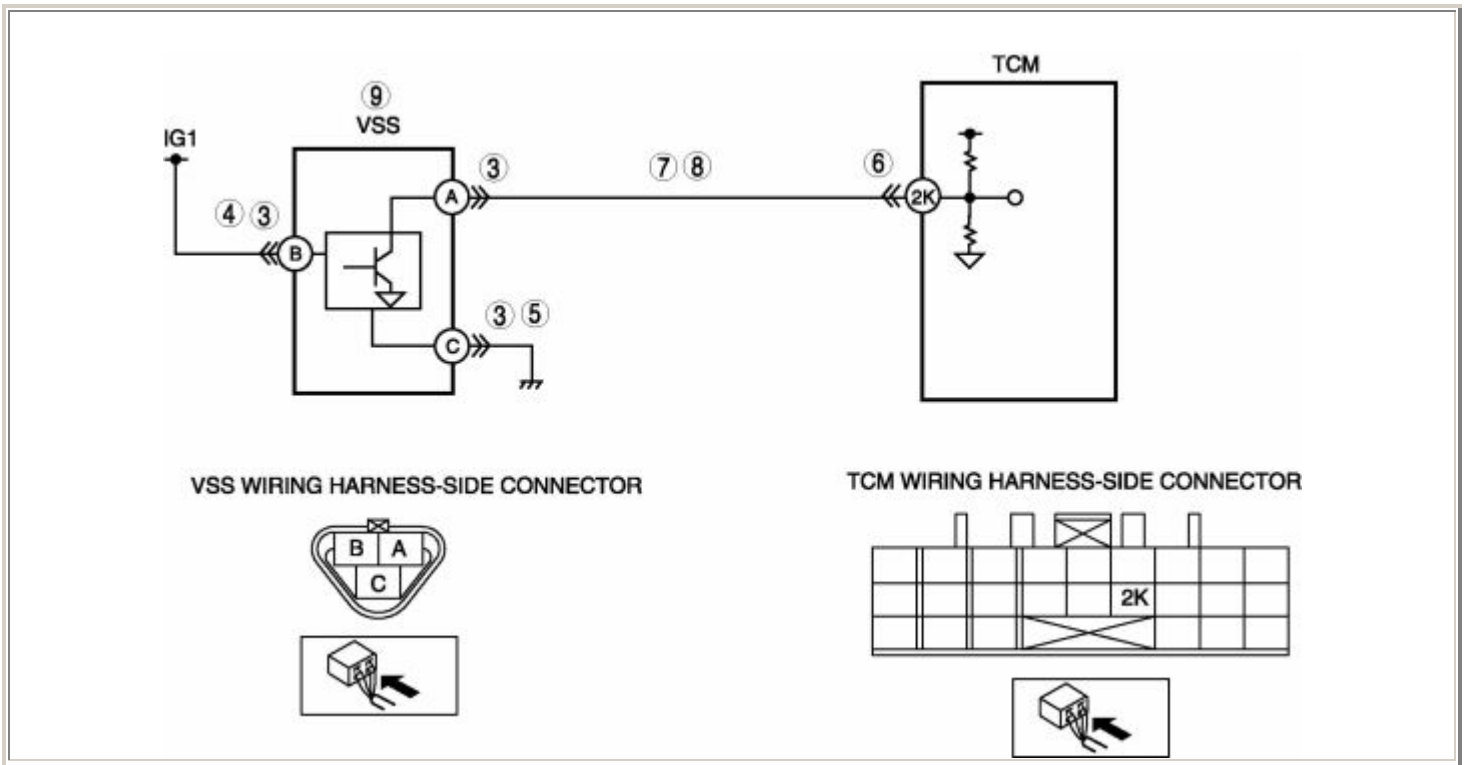
STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TURBINE SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the turbine sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
4		Yes	Go to the next step.

	<p>INSPECT TURBINE SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at turbine sensor connector terminal B. • Is the terminal voltage B+ ? 	No	Repair or replace the wiring harness, then go to Step 10.
5	<p>INSPECT TURBINE SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for continuity between the turbine sensor (wiring harness-side) terminal C and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
6	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
7	<p>INSPECT TURBINE SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the turbine sensor (wiring harness-side) terminal A and TCM (wiring harness-side) terminal 2G. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
8	<p>INSPECT TURBINE SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the turbine sensor (wiring harness-side) terminal A and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
9	INSPECT TURBINE SENSOR	Yes	Go to the next step.

	<ul style="list-style-type: none"> Inspect the turbine sensor. (See TURBINE SENSOR INSPECTION .) Is the turbine sensor normal? 	No	<p>Replace the turbine sensor, then go to Step 10. (See TURBINE SENSOR REMOVAL/INSTALLATION .)</p>
10	<p>VERIFY TROUBLESHOOTING OF DTC P0715 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle with vehicle speed of 40 km/h {25 mph} or more and engine speed of 1,500 rpm or more for 2 s or more . Is the same DTC present? 	Yes	<p>Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)</p>
		No	<p>Go to the next step.</p>
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection. (See DTC TABLE .)</p>
		No	<p>DTC troubleshooting completed.</p>

DTC P0720

DTC P0720	Vehicle speed sensor (VSS) malfunction (open circuit/short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• While driving in D range at turbine speed of 2,000 rpm or more (25.5 s or more after shifting to D range), vehicle speed signal is 5 km/h {3 mph} or less for 3.5 s or more . <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• VSS malfunction• Short to ground in wiring harness between VSS terminal A and TCM terminal 2K• Open circuit in wiring harness between VSS terminal A and TCM terminal 2K• Open circuit in wiring harness between VSS terminal B and ignition switch (IG1)• Open circuit in wiring harness between VSS terminal C and body ground• Damaged connectors between VSS and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT VSS CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the VSS connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
4		Yes	Go to the next step.

	<p>INSPECT VSS POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at VSS connector terminal B. • Is the terminal voltage B+ ? 	No	Repair or replace the wiring harness, then go to Step 10.
5	<p>INSPECT VSS GROUND CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for continuity between the VSS (wiring harness-side) terminal C and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
6	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
7	<p>INSPECT VSS SIGNAL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the VSS (wiring harness-side) terminal A and TCM (wiring harness-side) terminal 2K. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
8	<p>INSPECT VSS SIGNAL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the VSS (wiring harness-side) terminal A and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
9	INSPECT VSS	Yes	Go to the next step.

	<ul style="list-style-type: none"> Inspect the VSS. <p>(See VEHICLE SPEED SENSOR (VSS) INSPECTION .)</p> <ul style="list-style-type: none"> Is the VSS normal? 	No	<p>Replace the VSS, then go to the next step.</p> <p>(See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION .)</p>
10	<p>VERIFY TROUBLESHOOTING OF DTC P0720 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle with vehicle speed of 5 km/h {3 mph} or less and turbine speed of 2,000 rpm or more for 3.5 s or more Is the same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>
		No	<p>Go to the next step.</p>
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE .)</p>
		No	<p>DTC troubleshooting completed.</p>

DTC P0731

DTC P0731	Gear 1 incorrect (incorrect gear ratio detected)
DETECTION CONDITION	<ul style="list-style-type: none">• TCM monitors rotation ratio of the parking gear rotation compared to reverse and high clutch drum rotation when the following monitoring conditions are met. If the rotation ratio is 2.283 or less , or 3.287 or more , the TCM determines that there is malfunction. <p style="text-align: center;">Monitoring condition:</p> <ul style="list-style-type: none">▪ 2 s or more after shifting to D range▪ Vehicle speed 10 km/h {6 mph} or more .▪ Engine speed 1,000 rpm or more▪ Turbine speed 400 rpm or more▪ Ratio between engine speed and turbine speed less than 1.1▪ Throttle opening angle 12.5% or more .▪ Engine torque 80 N·m {8.2 kgf·m, 59 ft·lbf} or more▪ ATF temperature within 20—150 °C {68—302 °F}▪ None of the following are present: DTC P0705, P0706, P0711, P0712, P0713, P0715, P0720, P0751, P0753, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0882, P0960, U0073, U0100. <p style="text-align: center;">Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL does not illuminate.• AT warning light does not illuminates.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• DTC stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ATF level low• Deteriorated ATF• Shift solenoid B, C, or F malfunction• Pressure control solenoid malfunction• Line pressure low• Low clutch slipping• Low one-way clutch slipping• Control valve malfunction• Oil pump malfunction• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect ATF condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
		No	Replace ATF, then go to Step 10.
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up AT. Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10.
5	INSPECT SHIFT SOLENOID VALVE B, C AND F <ul style="list-style-type: none"> Inspect the shift solenoid valves B, C and F. (See SOLENOID VALVE INSPECTION .) <ul style="list-style-type: none"> Are the shift solenoid valves normal? 	Yes	Go to the next step.
		No	Replace the shift solenoid valve, then go to Step 10. (See SOLENOID VALVE REMOVAL/INSTALLATION .)
6	INSPECT LINE PRESSURE	Yes	Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure each line pressure. <p>Specification</p> <p>D, M range</p> <ul style="list-style-type: none"> Idle: 320—450 kPa {3.3—4.6 kgf/cm², 46—65 psi} Stall: 1,130—1,330 kPa {11.5—13.6 kgf/cm², 164—193 psi} <p>R position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} Stall: 1,470—1,700 kPa {15.0—17.3 kgf/cm², 213—247 psi} <p>P, N position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} <ul style="list-style-type: none"> Are the line pressure measurements within the specifications? <p>(See Line Pressure Test .)</p>		
7	<p>INSPECT STALL SPEED</p> <ul style="list-style-type: none"> Measure the stall speed in D range. <p>(See Stall Speed Test .)</p> <p>Specification</p> <p>2,400—2,900 rpm</p> <ul style="list-style-type: none"> Is the stall speed within the specification? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Inspect or replace the applicable part according to the stall test result, then go to Step 10.</p>

8	<p>INSPECT FREQUENCY OF TURBINE SENSOR WHEN DRIVING VEHICLE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Connect the WDS or equivalent. • Start the engine. • Measure the frequency of the turbine sensor while driving the vehicle under the following conditions: <ul style="list-style-type: none"> ▪ Vehicle speed (VSS PID): 20 km/h {12 mph} ▪ Drive in D range, 1GR • Is the turbine sensor frequency approx. 1,100 Hz ? 	Yes	Go to Step 10.
		No	Go to the next step.
9	<p>INSPECT EACH SHIFT VALVE AND RETURN SPRING CONDITION OF CONTROL VALVE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the control valve body. • Disassemble the control valve body. • Inspect the following: <ul style="list-style-type: none"> ▪ Each valve condition ▪ Each return spring condition ▪ Oil passage clogging • Is the control valve body normal? 	Yes	<p>Replace the automatic transmission, then go to the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>
		No	Repair or replace any malfunctioning shift valves and/or return springs, then go to the next step.
10	<p>VERIFY TROUBLESHOOTING OF DTC P0731 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear DTC using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle under the following conditions at least 4 times for 1 s or more . <ul style="list-style-type: none"> ▪ ATF temperature: 20 °C {68 °F} or more ▪ Drive in D range, 1GR ▪ Throttle opening angle (TOHP PID): 12.5% or more ▪ Vehicle speed (VSS PID): 10 km/h {6 mph} or more • Is the same DTC present? 	No	Go to the next step.
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0732

DTC P0732	Gear 2 incorrect (incorrect gear ratio detected)
DETECTION CONDITION	<ul style="list-style-type: none">• TCM monitors rotation ratio of the parking gear rotation compared to the reverse and high clutch drum rotation when the following monitoring conditions are met. If the rotation ratio is 1.266 or less , or 1.824 or more , the TCM determines that there is malfunction. <p style="text-align: center;">Monitoring condition:</p> <ul style="list-style-type: none">▪ 2 s or more after shifting to D range▪ Vehicle speed 10 km/h {6 mph} or more▪ Engine speed 1,000 rpm or more▪ Turbine speed 1,000 rpm or more▪ Ratio between engine speed and turbine speed less than 1.1▪ Throttle opening angle 12.5% or more▪ Engine torque 65 N·m {6.6 kgf·m, 48 ft·lbf} or more▪ ATF temperature within 20—150 °C {68—302 °F}▪ None of the following are present: DTC P0705, P0706, P0711, P0712, P0713, P0715, P0720, P0751, P0753, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0882, P0960, U0073, U0100. <p style="text-align: center;">Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL does not illuminate.• AT warning light does not illuminates.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• DTC stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ATF level low• Deteriorated ATF• Shift solenoid C, or F malfunction• Pressure control solenoid malfunction• Line pressure low• Low clutch slipping• 2-4 brake slipping• Control valve malfunction• Oil pump malfunction• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect ATF condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
		No	Replace ATF, then go to Step 10.
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up AT. Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10.
5	INSPECT SHIFT SOLENOID VALVE C AND F <ul style="list-style-type: none"> Inspect the shift solenoid valves C and F. (See SOLENOID VALVE INSPECTION .) <ul style="list-style-type: none"> Are the shift solenoid valves normal? 	Yes	Go to the next step.
		No	Replace the shift solenoid valve, then go to Step 10. (See SOLENOID VALVE REMOVAL/INSTALLATION .)
6	INSPECT LINE PRESSURE	Yes	Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure each line pressure. <p>Specification</p> <p>D, M range</p> <ul style="list-style-type: none"> Idle: 320—450 kPa {3.3—4.6 kgf/cm², 46—65 psi} Stall: 1,130—1,330 kPa {11.5—13.6 kgf/cm², 164—193 psi} <p>R position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} Stall: 1,470—1,700 kPa {15.0—17.3 kgf/cm², 213—247 psi} <p>P, N position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} <ul style="list-style-type: none"> Are the line pressure measurements within the specifications? <p>(See Line Pressure Test .)</p>		
7	<p>INSPECT STALL SPEED</p> <ul style="list-style-type: none"> Measure the stall speed in D range. <p>(See Stall Speed Test .)</p> <p>Specification</p> <p>2,400—2,900 rpm</p> <ul style="list-style-type: none"> Is the stall speed within the specification? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Inspect or replace the applicable part according to the stall test result, then go to Step 10.</p>

8	<p>INSPECT FREQUENCY OF TURBINE SENSOR WHEN DRIVING VEHICLE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Connect the WDS or equivalent. • Start the engine. • Measure the frequency of the turbine sensor while driving the vehicle under the following conditions: <ul style="list-style-type: none"> ▪ Vehicle speed (VSS PID): 20 km/h {12 mph} ▪ Drive in D range, 1GR • Is the turbine sensor frequency approx. 1,100 Hz ? 	Yes	Go to Step 10.
		No	Go to the next step.
9	<p>INSPECT EACH SHIFT VALVE AND RETURN SPRING CONDITION OF CONTROL VALVE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the control valve body. • Disassemble the control valve body. • Inspect the following: <ul style="list-style-type: none"> ▪ Each valve condition ▪ Each return spring condition ▪ Oil passage clogging • Is the control valve body normal? 	Yes	<p>Replace the automatic transmission, then go to the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>
		No	Repair or replace any malfunctioning shift valves and/or return springs, then go to the next step.
10	<p>VERIFY TROUBLESHOOTING OF DTC P0732 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear DTC using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle under the following conditions at least 4 times for 1 s or more . <ul style="list-style-type: none"> ▪ ATF temperature: 20 °C {68 °F} or more ▪ Drive in D range, 2GR ▪ Throttle opening angle (TOHP PID): 12.5% or more ▪ Vehicle speed (VSS PID): 10 km/h {6 mph} or more • Is the same DTC present? 	No	Go to the next step.
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0733

DTC P0733	Gear 3 incorrect (incorrect gear ratio detected)
DETECTION CONDITION	<ul style="list-style-type: none">• TCM monitors rotation ratio of the parking gear rotation compared to the reverse and high clutch drum rotation when the following monitoring conditions are met. If the rotation ratio is 0.819 or less , or 1.181 or more , the TCM determines that there is malfunction. <p style="text-align: center;">Monitoring condition:</p> <ul style="list-style-type: none">▪ 2 s or more after shifting to D range▪ Vehicle speed 20 km/h {12 mph} or more▪ Engine speed 1,000 rpm or more▪ Turbine speed 1,000 rpm or more▪ Ratio between engine speed and turbine speed less than 1.1▪ Throttle opening angle 12.5% or more▪ Engine torque 50 N·m {5.1 kgf·m, 37 ft·lbf} or more▪ ATF temperature within 20—150 °C {68—302 °F}▪ None of the following are present: DTC P0705, P0706, P0711, P0712, P0713, P0715, P0720, P0751, P0753, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0882, P0960, U0073, U0100. <p style="text-align: center;">Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL does not illuminate.• AT warning light does not illuminates.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• DTC stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ATF level low• Deteriorated ATF• Shift solenoid B or F malfunction• Pressure control solenoid malfunction• Line pressure low• Low clutch slipping• High clutch slipping• Control valve malfunction• Oil pump malfunction• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect ATF condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
		No	Replace ATF, then go to Step 10.
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up AT. Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10.
5	INSPECT SHIFT SOLENOID VALVE B AND F <ul style="list-style-type: none"> Inspect the shift solenoid valves B and F. (See SOLENOID VALVE INSPECTION .) <ul style="list-style-type: none"> Are the shift solenoid valves normal? 	Yes	Go to the next step.
		No	Replace the shift solenoid valve, then go to Step 10. (See SOLENOID VALVE REMOVAL/INSTALLATION .)
6	INSPECT LINE PRESSURE	Yes	Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure each line pressure. <p>Specification</p> <p>D, M range</p> <ul style="list-style-type: none"> Idle: 320—450 kPa {3.3—4.6 kgf/cm², 46—65 psi} Stall: 1,130—1,330 kPa {11.5—13.6 kgf/cm², 164—193 psi} <p>R position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} Stall: 1,470—1,700 kPa {15.0—17.3 kgf/cm², 213—247 psi} <p>P, N position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} <ul style="list-style-type: none"> Are the line pressure measurements within the specifications? <p>(See Line Pressure Test .)</p>		
7	<p>INSPECT STALL SPEED</p> <ul style="list-style-type: none"> Measure the stall speed in D range. <p>(See Stall Speed Test .)</p> <p>Specification</p> <p>2,400—2,900 rpm</p> <ul style="list-style-type: none"> Is the stall speed within the specification? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Inspect or replace the applicable part according to the stall test result, then go to Step 10.</p>

8	<p>INSPECT FREQUENCY OF TURBINE SENSOR WHEN DRIVING VEHICLE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Connect the WDS or equivalent. • Start the engine. • Measure the frequency of the turbine sensor while driving the vehicle under the following conditions: <ul style="list-style-type: none"> ▪ Vehicle speed (VSS PID): 20 km/h {12 mph} ▪ Drive in D range, 1GR • Is the turbine sensor frequency approx. 1,100 Hz ? 	Yes	Go to Step 10.
		No	Go to the next step.
9	<p>INSPECT EACH SHIFT VALVE AND RETURN SPRING CONDITION OF CONTROL VALVE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the control valve body. • Disassemble the control valve body. • Inspect the following: <ul style="list-style-type: none"> ▪ Each valve condition ▪ Each return spring condition ▪ Oil passage clogging • Is the control valve body normal? 	Yes	<p>Replace the automatic transmission, then go to the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>
		No	Repair or replace any malfunctioning shift valves and/or return springs, then go to the next step.
10	<p>VERIFY TROUBLESHOOTING OF DTC P0733 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear DTC using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle under the following conditions at least 3 times for 1 s or more . <ul style="list-style-type: none"> ▪ ATF temperature: 20 °C {68 °F} or more ▪ Drive in D range, 3GR ▪ Throttle opening angle (TOHP PID): 12.5% or more ▪ Vehicle speed (VSS PID): 20 km/h {12 mph} or more • Is the same DTC present? 	No	Go to the next step.
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0734

DTC P0734	Gear 4 incorrect (incorrect gear ratio detected)
DETECTION CONDITION	<ul style="list-style-type: none">• TCM monitors rotation ratio of the parking gear rotation compared to the reverse and high clutch drum rotation when the following monitoring conditions are met. If the rotation ratio is 0.568 or less , or 0.819 or more , the TCM determines that there is malfunction. <p style="text-align: center;">Monitoring condition:</p> <ul style="list-style-type: none">▪ 2 s or more after shifting to D range▪ Vehicle speed 40 km/h {25 mph} or more▪ Engine speed 1,000 rpm or more▪ Turbine speed 1,000 rpm or more▪ Ratio between engine speed and turbine speed less than 1.1▪ Throttle opening angle 12.5% or more▪ Engine torque 50 N·m {5.1 kgf·m, 37 ft·lbf} or more▪ ATF temperature within 20—150 °C {68—302 °F}▪ None of the following are present: DTC P0705, P0706, P0711, P0712, P0713, P0715, P0720, P0751, P0753, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0882, P0960, U0073, U0100. <p style="text-align: center;">Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL does not illuminate.• AT warning light does not illuminates.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• DTC stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ATF level low• Deteriorated ATF• Shift solenoid A or F malfunction• Pressure control solenoid malfunction• Line pressure low• High clutch slipping• 2-4 brake slipping• Control valve malfunction• Oil pump malfunction• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Inspect ATF condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
		No	Replace ATF, then go to Step 10.
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up AT. Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 10.
5	INSPECT SHIFT SOLENOID VALVE A AND F <ul style="list-style-type: none"> Inspect the shift solenoid valves A and F. (See SOLENOID VALVE INSPECTION .) <ul style="list-style-type: none"> Are the shift solenoid valves normal? 	Yes	Go to the next step.
		No	Replace the shift solenoid valve, then go to Step 10. (See SOLENOID VALVE REMOVAL/INSTALLATION .)
6	INSPECT LINE PRESSURE	Yes	Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure each line pressure. <p>Specification</p> <p>D, M range</p> <ul style="list-style-type: none"> Idle: 320—450 kPa {3.3—4.6 kgf/cm², 46—65 psi} Stall: 1,130—1,330 kPa {11.5—13.6 kgf/cm², 164—193 psi} <p>R position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} Stall: 1,470—1,700 kPa {15.0—17.3 kgf/cm², 213—247 psi} <p>P, N position</p> <ul style="list-style-type: none"> Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} <ul style="list-style-type: none"> Are the line pressure measurements within the specifications? <p>(See Line Pressure Test .)</p>		
7	<p>INSPECT STALL SPEED</p> <ul style="list-style-type: none"> Measure the stall speed in D range. <p>(See Stall Speed Test .)</p> <p>Specification</p> <p>2,400—2,900 rpm</p> <ul style="list-style-type: none"> Is the stall speed within the specification? 	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Inspect or replace the applicable part according to the stall test result, then go to Step 10.</p>

8	<p>INSPECT FREQUENCY OF TURBINE SENSOR WHEN DRIVING VEHICLE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Connect the WDS or equivalent. • Start the engine. • Measure the frequency of the turbine sensor while driving the vehicle under the following conditions: <ul style="list-style-type: none"> ▪ Vehicle speed (VSS PID): 20 km/h {12 mph} ▪ Drive in D range, 1GR • Is the turbine sensor frequency approx. 1,100 Hz ? 	Yes	Go to Step 10.
		No	Go to the next step.
9	<p>INSPECT EACH SHIFT VALVE AND RETURN SPRING CONDITION OF CONTROL VALVE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the control valve body. • Disassemble the control valve body. • Inspect the following: <ul style="list-style-type: none"> ▪ Each valve condition ▪ Each return spring condition ▪ Oil passage clogging • Is the control valve body normal? 	Yes	<p>Replace the automatic transmission, then go to the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>
		No	Repair or replace any malfunctioning shift valves and/or return springs, then go to the next step.
10	<p>VERIFY TROUBLESHOOTING OF DTC P0734 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear DTC using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle under the following conditions at least 1 times for 1 s or more . <ul style="list-style-type: none"> ▪ ATF temperature: 20 °C {68 °F} or more ▪ Drive in D range, 4GR ▪ Throttle opening angle (TOHP PID): 12.5% or more ▪ Vehicle speed (VSS PID): 40 km/h {25 mph} or more • Is the same DTC present? 	No	Go to the next step.
11	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0740

DTC P0740	Torque converter clutch (TCC) system malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• Difference between the engine speed and turbine speed remains "vehicle speed/2+40" rpm or more for 10 s or more during TCC operation in 3GR or 4GR while driving. <p>(Ex. When driving at a vehicle speed of 100 km/h, the difference will be $100/2+40 = 90$ rpm. Therefore, a malfunction will be detected if a speed difference of 90 rpm continues for 10 s or more.)</p> <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ATF level low• Deteriorated ATF• TCC solenoid valve and pressure control solenoid valve stuck• Line pressure low• Oil pump malfunction• Control valve stuck• Torque convert clutch malfunction• TCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Clear red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? <p>(See Automatic Transmission Fluid (ATF) Condition Inspection .)</p>	Yes	Go to the next step.
		No	If the ATF color milky or reddish brown, replace ATF, then go to Step 5. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up AT. Is the ATF level within the specification? <p>(See Automatic Transmission Fluid (ATF) Level Inspection .)</p>	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See Automatic Transmission Fluid (ATF) Level Inspection .)
5	INSPECT LINE PRESSURE	Yes	Go to the next step.

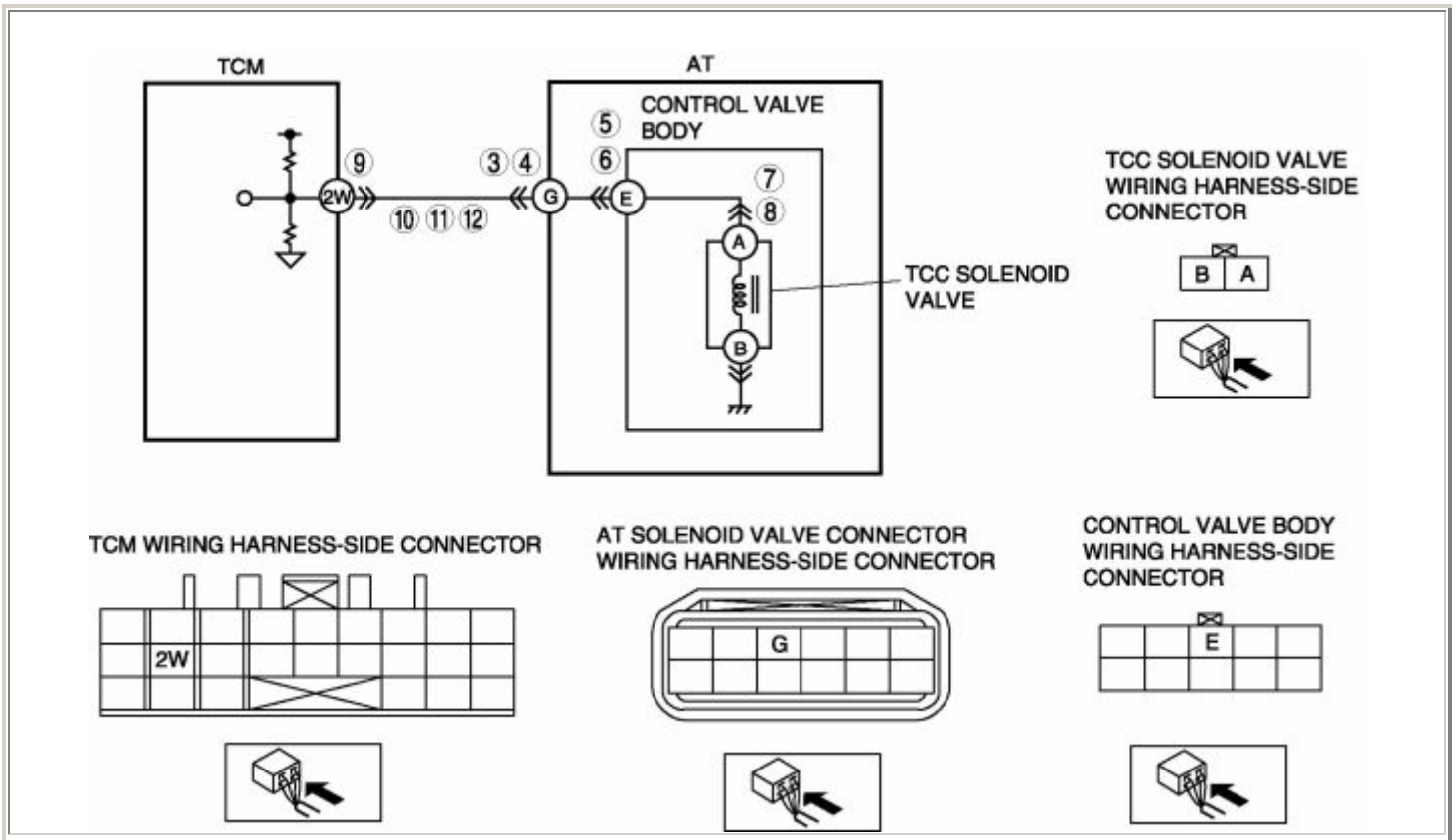
	<ul style="list-style-type: none"> • Start the engine. • Measure each line pressure. <p>Specification</p> <p>D, M range</p> <ul style="list-style-type: none"> ○ Idle: 320—450 kPa {3.3—4.6 kgf/cm², 46—65 psi} ○ Stall: 1,130—1,330 kPa {11.5—13.6 kgf/cm², 164—193 psi} <p>R position</p> <ul style="list-style-type: none"> ○ Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} ○ Stall: 1,470—1,700 kPa {15.0—17.3 kgf/cm², 213—247 psi} <p>P, N position</p> <ul style="list-style-type: none"> ○ Idle: 380—580 kPa {3.9—5.9 kgf/cm², 55—84 psi} <ul style="list-style-type: none"> • Are the line pressure measurements within the specifications? <p>(See Line Pressure Test .)</p>		
6	CLICK TEST OF SOLENOID VALVES	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Apply battery voltage to the AT solenoid valve connector terminals. <ul style="list-style-type: none"> ▪ TCC solenoid valve: G ▪ pressure control solenoid valve: A • Verify the click sounds of the TCC solenoid valve and pressure control solenoid valve. • Are there click sounds? 	No	<p>Replace the TCC solenoid valve or the pressure control solenoid valve, then go to Step 9.</p> <p>(See CONTROL VALVE BODY REMOVAL .)</p> <p>(See CONTROL VALVE BODY INSTALLATION .)</p>
7	<p>INSPECT DIFFERENCE BETWEEN ENGINE SPEED AND TURBINE SPEED</p> <ul style="list-style-type: none"> • Inspect difference between the engine speed and turbine speed during TCC operation in 4GR. • Drive the vehicle under the following conditions: <ul style="list-style-type: none"> ▪ TR switch position: D range ▪ Gear position: 4GR ▪ TCC solenoid valve: ON • Is difference between the engine speed (RPM PID) and turbine speed normal? <ul style="list-style-type: none"> ▪ Difference <p>99 rpm or less</p> 	Yes	Go to the next step.
		No	<p>Replace the torque converter, then go to Step 9.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)</p>
8	<p>INSPECT OPERATION OF EACH VALVE AND SPRING</p> <ul style="list-style-type: none"> • Remove the control valve body. • Disassemble the control valve body. • Is operation of each valve and return spring normal? 	Yes	Replace the torque converter, then go to the next step.
		No	<p>Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL .)</p> <p>(See CONTROL VALVE BODY INSTALLATION .)</p>
9	<p>VERIFY TROUBLESHOOTING OF DTC P0740 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle under the following conditions for 10 s or more . <ul style="list-style-type: none"> ▪ Vehicle speed (VSS PID): Within 10—87 km/h {6—54 mph} ▪ Gear position: 4GR ▪ TR switch position: D range ▪ TCC solenoid valve: ON • Is the same DTC present? 	No	Go to the next step.
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0743

DTC P0743	Torque converter clutch (TCC) solenoid valve circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in TCC solenoid signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected) <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCC solenoid valve malfunction• Open circuit in wiring harness between TCC solenoid valve terminal A and TCM terminal 2W• Short to ground in wiring harness between TCC solenoid valve terminal A and TCM terminal 2W• Short to power supply in wiring harness between TCC solenoid valve terminal A and TCM terminal 2W• Damaged connector between TCC solenoid valve and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3		Yes	Go to the next step.

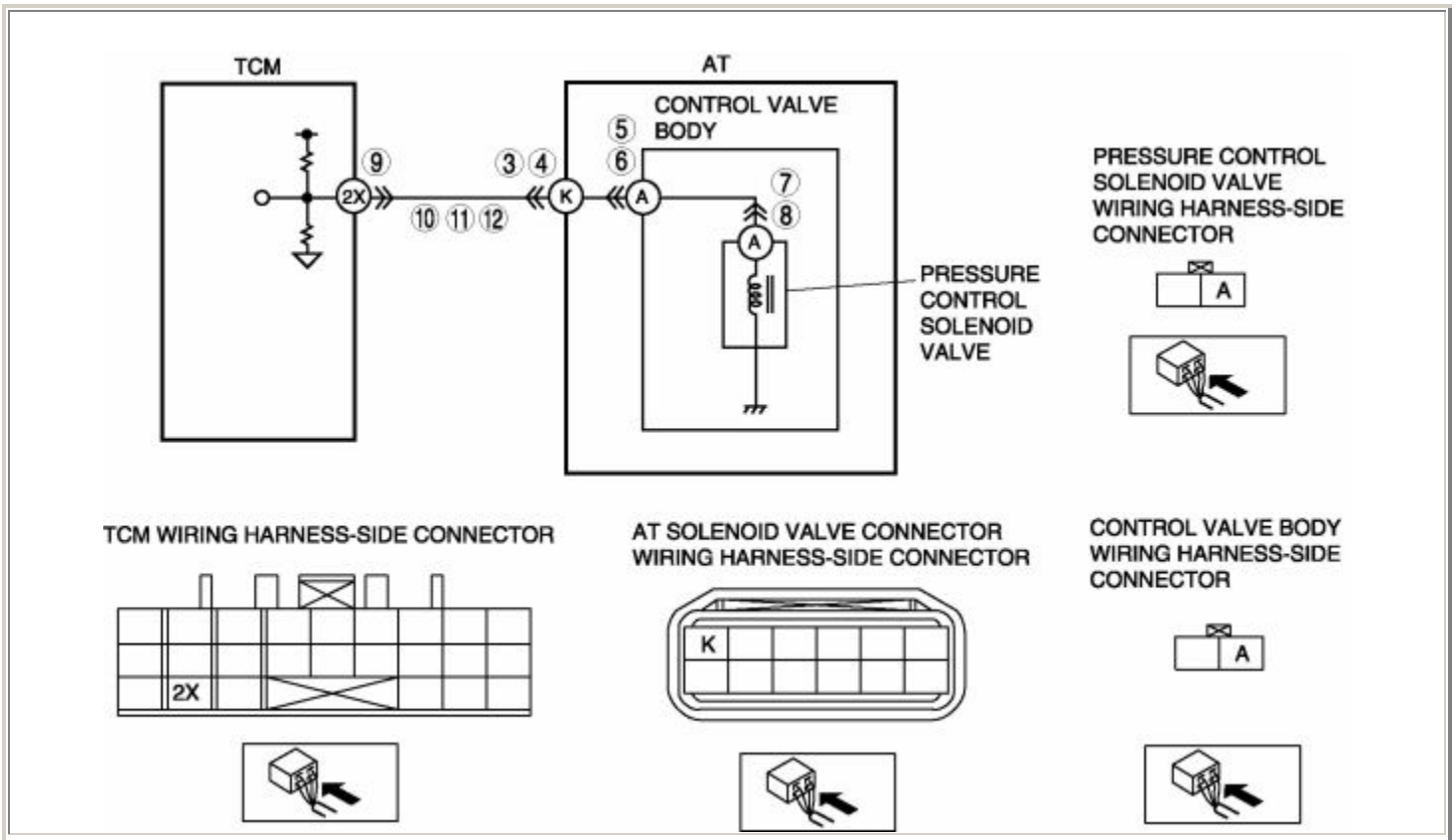
	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF TCC SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal G and body ground. • Is the resistance within 11.6—16.6 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF TCC SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal E and body ground. • Is the resistance within 11.6—16.6 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7	<p>INSPECT TCC SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCC solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.

8	<p>INSPECT RESISTANCE OF TCC SOLENOID VALVE</p> <ul style="list-style-type: none"> Inspect the resistance between TCC solenoid valve (part-side) terminal A and body ground. Is the resistance within 11.6—16.6 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.
		No	<p>Verify the TCC solenoid valve installation.</p> <ul style="list-style-type: none"> If the TCC solenoid valve is installed correctly, replace the TCC solenoid valve, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2W and AT solenoid valve connector (wiring harness-side) terminal G. Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal G. Is the voltage 0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for continuity between the TCM (wiring harness-side) terminal 2W and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.

13	<p>VERIFY TROUBLESHOOTING OF DTC P0743 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>
		No	<p>Go to the next step.</p>
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE .)</p>
		No	<p>DTC troubleshooting completed.</p>

DTC P0748

DTC P0748	Pressure control solenoid circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in pressure control solenoid signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected) <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL does not illuminate.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminate if TCM detects the above malfunction condition during first drive cycle.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Pressure control solenoid valve malfunction• Open circuit in wiring harness between pressure control solenoid valve terminal A and TCM terminal 2X• Short to ground in wiring harness between pressure control solenoid valve terminal A and TCM terminal 2X• Short to power supply in wiring harness between pressure control solenoid valve terminal A and TCM terminal 2X• Damaged connector between pressure control solenoid valve and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF PRESSURE CONTROL SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal K and body ground. • Is the resistance within 11.9—16.9 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF PRESSURE CONTROL SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal A and body ground. • Is the resistance within 11.9—16.9 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7		Yes	Go to the next step.

	<p>INSPECT PRESSURE CONTROL SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the pressure control solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF PRESSURE CONTROL SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the resistance between pressure control solenoid valve (part-side) terminal A and body ground. • Is the resistance within 11.9—16.9 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.
		No	<p>Verify the pressure control solenoid valve installation.</p> <ul style="list-style-type: none"> • If the pressure control solenoid valve is installed correctly, replace the pressure control solenoid valve, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2X and AT solenoid valve connector (wiring harness-side) terminal K. • Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11		Yes	Go to the next step.

	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage at AT solenoid valve connector terminal K (wiring harness-side). • Is the voltage 0 V ? 	No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect for continuity between the TCM (wiring harness-side) terminal 2X and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
13	<p>VERIFY TROUBLESHOOTING OF DTC P0748 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0751

DTC P0751	Shift solenoid A malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none">• Large difference between actual gear ratio and gear ratio set in TCM. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid A malfunction• Shift valve A stuck• TCM malfunction

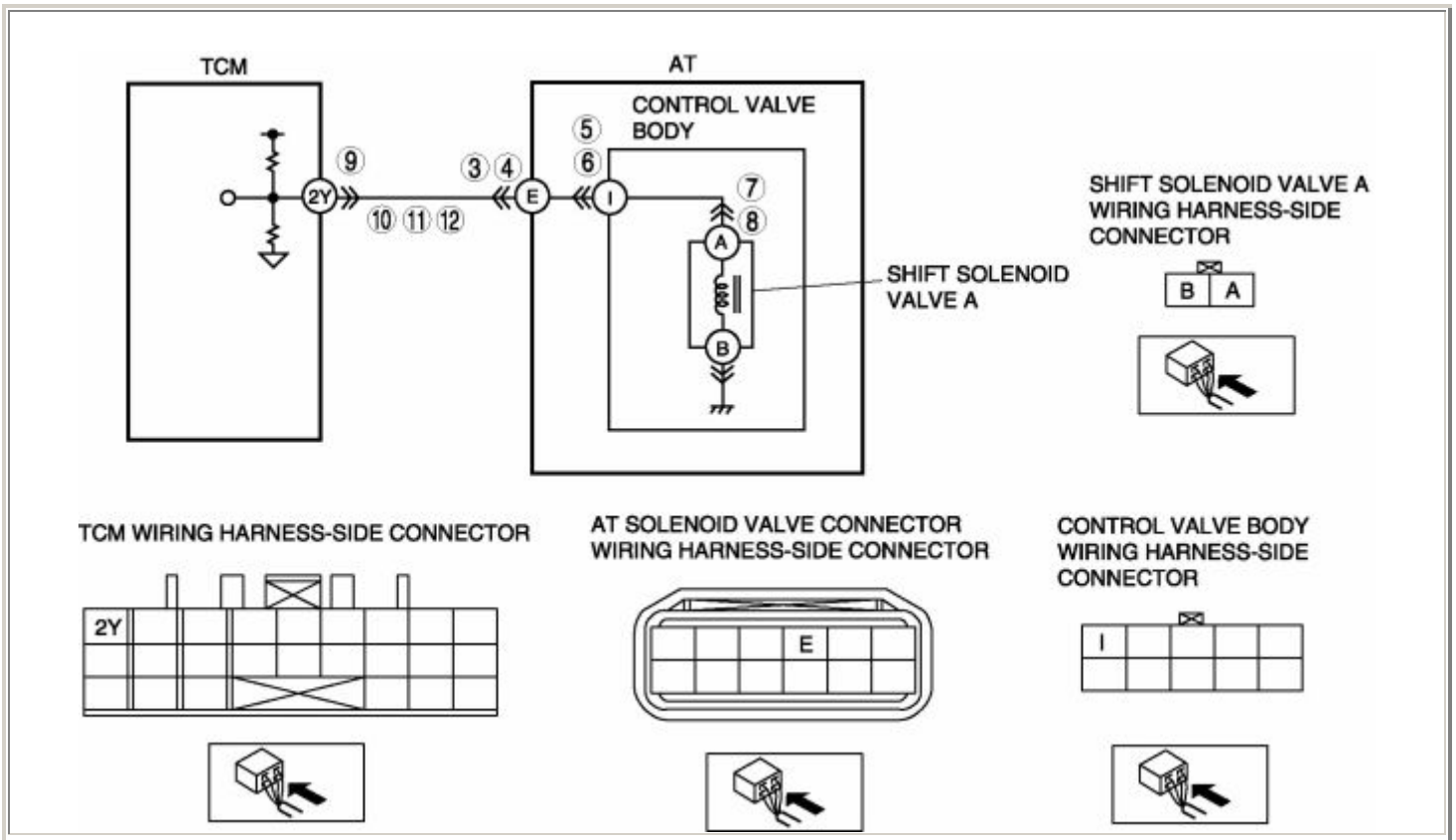
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0751 COMPLETED	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .)	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
	<ul style="list-style-type: none"> • Are any DTCs present? 	No	DTC troubleshooting completed.

DTC P0753

DTC P0753	Shift solenoid A circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid A signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected) <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid A malfunction• Open circuit in wiring harness between shift solenoid A terminal A and TCM terminal 2Y• Short to ground in wiring harness between shift solenoid A terminal A and TCM terminal 2Y• Short to power supply in wiring harness between shift solenoid A terminal A and TCM terminal 2Y• Damaged connector between shift solenoid A and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

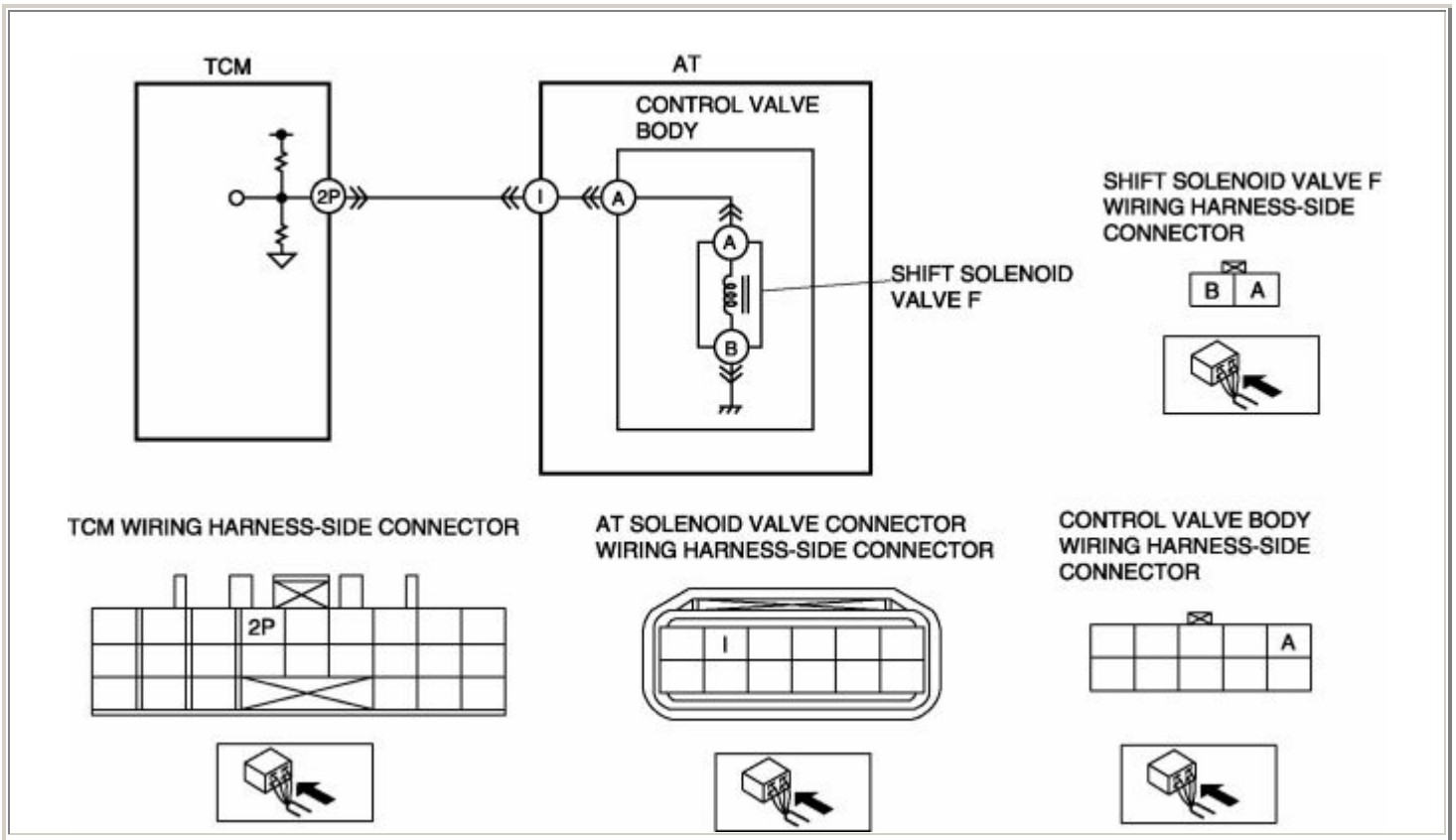
	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE A</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal E and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE A</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal I and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7	<p>INSPECT SHIFT SOLENOID VALVE A CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the shift solenoid valve A connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE A</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.

	<ul style="list-style-type: none"> Inspect the resistance between shift solenoid valve A (part-side) terminal A and body ground. Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	No	<p>Verify shift solenoid valve A installation.</p> <ul style="list-style-type: none"> If shift solenoid valve A is installed correctly, replace shift solenoid valve A, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2Y and AT solenoid valve connector (wiring harness-side) terminal E. Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal E. Is the voltage 0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for continuity between the TCM (wiring harness-side) terminal 2Y and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
13	<p>VERIFY TROUBLESHOOTING OF DTC P0753 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE .)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0758

DTC P0758	Shift solenoid F circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid F signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid F malfunction• Open circuit in wiring harness between shift solenoid F terminal A and TCM terminal 2P• Short to ground in wiring harness between shift solenoid F terminal A and TCM terminal 2P• Short to power in wiring harness between shift solenoid F terminal A and TCM terminal 2P• Damaged connector between shift solenoid F and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE F</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal I and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE F</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal A and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7	<p>INSPECT SHIFT SOLENOID VALVE F CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the shift solenoid valve F connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE F</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.

	<ul style="list-style-type: none"> Inspect the resistance between shift solenoid valve F (part-side) terminal A and body ground. Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	No	<p>Verify shift solenoid valve F installation.</p> <ul style="list-style-type: none"> If shift solenoid valve F is installed correctly, replace shift solenoid valve F, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2P and AT solenoid valve connector (wiring harness-side) terminal I. Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal I. Is the voltage 0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for continuity between the TCM (wiring harness-side) terminal 2P and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
13	<p>VERIFY TROUBLESHOOTING OF DTC P0758 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0761

DTC P0761	Shift solenoid B malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none">• Large difference between actual gear ratio and gear ratio set in TCM. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid B malfunction• Shift valve B stuck• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0761 COMPLETED	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .)	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
	<ul style="list-style-type: none"> • Are any DTCs present? 	No	DTC troubleshooting completed.

DTC P0762

DTC P0762	Shift solenoid B malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none">• Large difference between actual gear ratio and gear ratio set in TCM. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid B malfunction• Shift valve B stuck• TCM malfunction

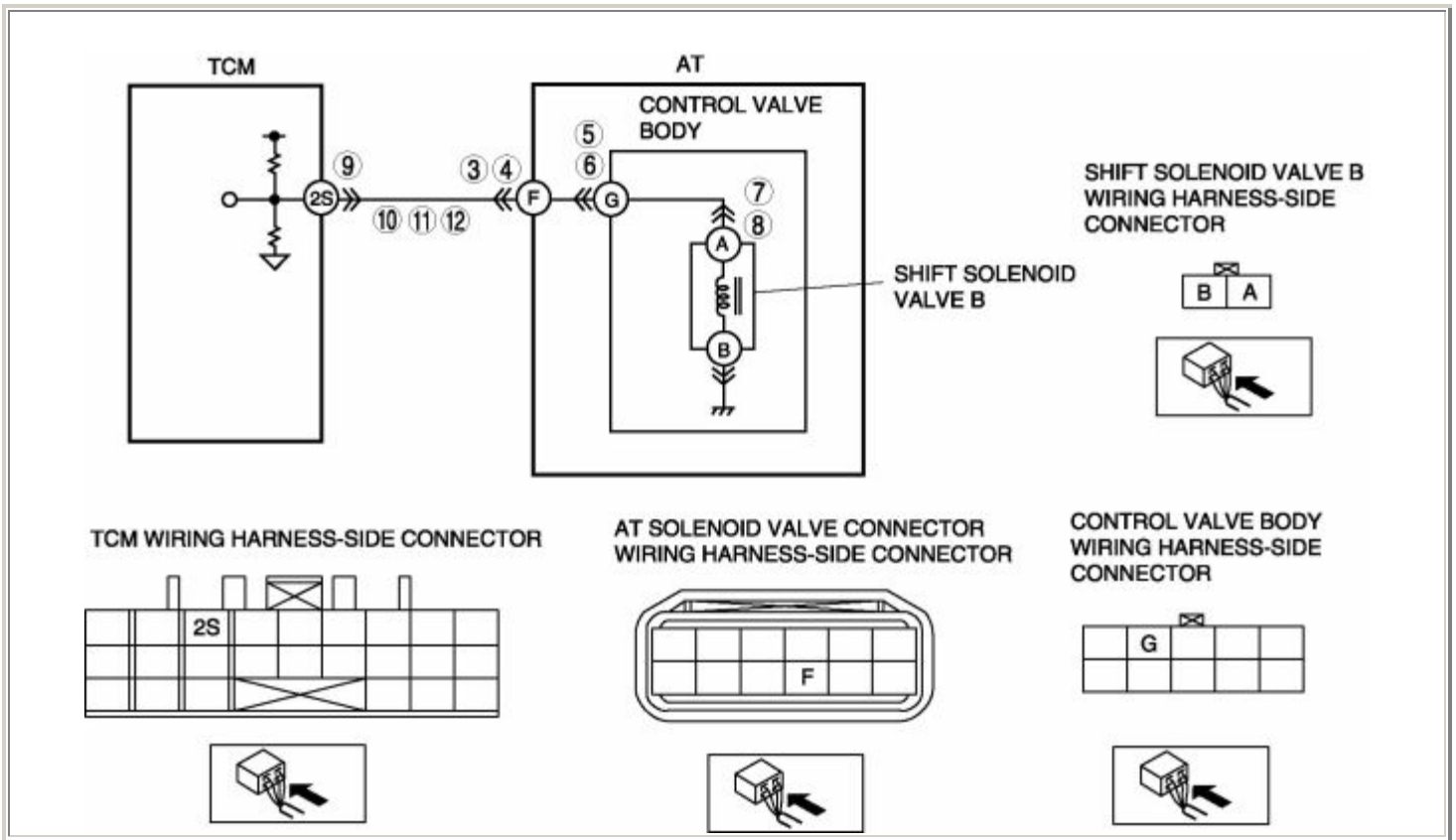
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0762 COMPLETED	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .)	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
	<ul style="list-style-type: none"> • Are any DTCs present? 	No	DTC troubleshooting completed.

DTC P0763

DTC P0763	Shift solenoid B circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid B signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid valve B malfunction• Open circuit in wiring harness between shift solenoid valve B terminal A and TCM terminal 2S• Short to ground in wiring harness between shift solenoid valve B terminal A and TCM terminal 2S• Short to power supply in wiring harness between shift solenoid valve B terminal A and TCM terminal 2S• Damaged connector between shift solenoid valve B and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE B</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal F and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE B</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal G and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7	<p>INSPECT SHIFT SOLENOID VALVE B CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the shift solenoid valve B connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE B</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.

	<ul style="list-style-type: none"> Inspect the resistance between shift solenoid valve B (part-side) terminal A and body ground. Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	No	<p>Verify shift solenoid valve B installation.</p> <ul style="list-style-type: none"> If shift solenoid valve B is installed correctly, replace shift solenoid valve B, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2S and AT solenoid valve connector (wiring harness-side) terminal F. Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal F. Is the voltage 0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for continuity between the TCM (wiring harness-side) terminal 2S and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
13	<p>VERIFY TROUBLESHOOTING OF DTC P0763 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0766

DTC P0766	Shift solenoid C malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none">• Large difference between actual gear ratio and gear ratio set in TCM. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid C malfunction• Shift valve C stuck• TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0766 COMPLETED	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .)	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
	<ul style="list-style-type: none"> • Are any DTCs present? 	No	DTC troubleshooting completed.

DTC P0767

DTC P0767	Shift solenoid C malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none">• Large difference between actual gear ratio and gear ratio set in TCM. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• AT warning light does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid C malfunction• Shift valve C stuck• TCM malfunction

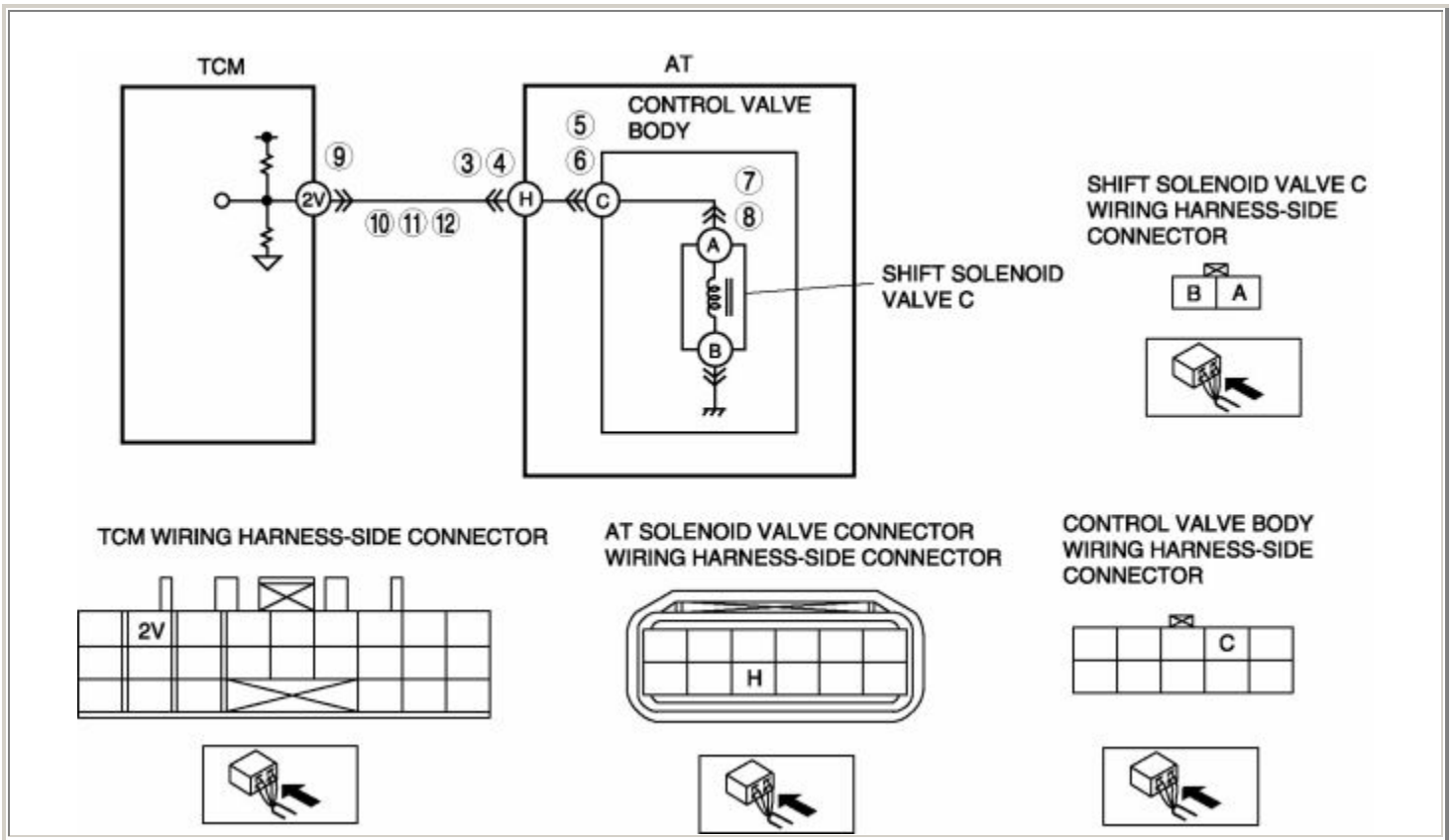
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0767 COMPLETED	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Start the engine. • Warm up AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .)	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
	<ul style="list-style-type: none"> • Are any DTCs present? 	No	DTC troubleshooting completed.

DTC P0768

DTC P0768	Shift solenoid C circuit malfunction (open circuit/short to ground or power supply)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid C signal system (when the TCM monitors solenoid output voltage, voltage that differs from the ON/OFF signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminates.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Shift solenoid valve C malfunction• Open circuit in wiring harness between shift solenoid valve C terminal A and TCM terminal 2V• Short to ground in wiring harness between shift solenoid valve C terminal A and TCM terminal 2V• Short to power supply in wiring harness between shift solenoid valve C terminal A and TCM terminal 2V• Damaged connector between shift solenoid valve C and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3		Yes Go to the next step.

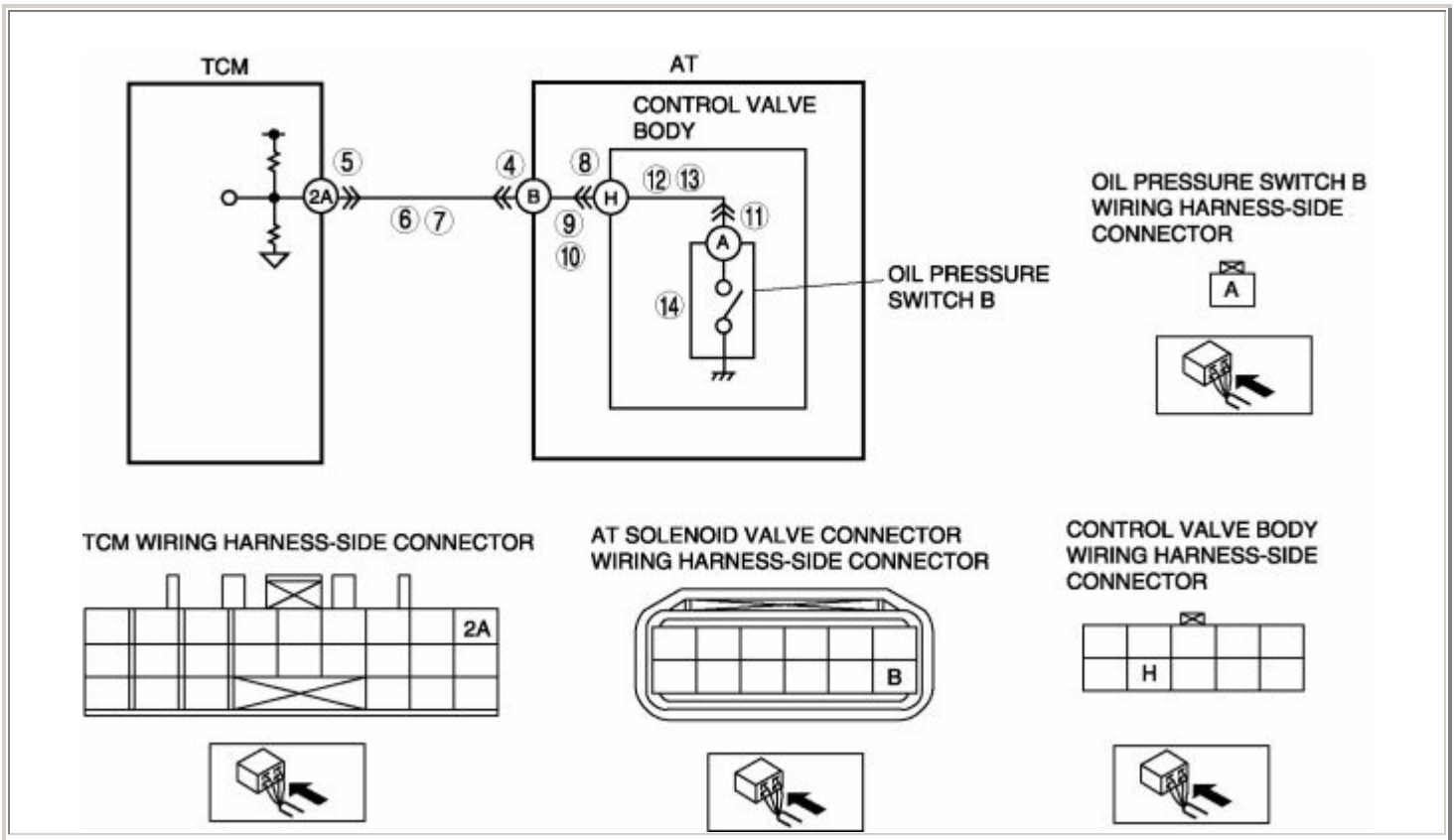
	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE C</p> <ul style="list-style-type: none"> • Inspect the resistance between AT solenoid valve connector (transmission case side) terminal H and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE C</p> <ul style="list-style-type: none"> • Inspect the resistance between control valve body (part-side) terminal C and body ground. • Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	Yes	Repair or replace the AT solenoid valve connector harness, then go to Step 13.
		No	Go to the next step.
7	<p>INSPECT SHIFT SOLENOID VALVE C CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the shift solenoid valve C connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF SHIFT SOLENOID VALVE C</p>	Yes	Repair or replace the control valve body connector harness, then go to Step 13.

	<ul style="list-style-type: none"> Inspect the resistance between shift solenoid valve C (part-side) terminal A and body ground. Is the resistance within 2.2—5.0 ohms ? <p>(See SOLENOID VALVE INSPECTION .)</p>	No	<p>Verify shift solenoid valve C installation.</p> <ul style="list-style-type: none"> If shift solenoid valve C is installed correctly, replace shift solenoid valve C, then go to Step 13. <p>(See SOLENOID VALVE REMOVAL/INSTALLATION .)</p>
9	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
10	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2V and AT solenoid valve connector (wiring harness-side) terminal H. Is there continuity between the terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
11	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect the voltage at AT solenoid valve connector (wiring harness-side) terminal H. Is the voltage 0 V ? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 13.
12	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect for continuity between the TCM (wiring harness-side) terminal 2V and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to the next step.
		No	Go to the next step.
13	<p>VERIFY TROUBLESHOOTING OF DTC P0768 COMPLETED</p>	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION .)</p>

	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
14	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0841

DTC P0841	Oil pressure switch B circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• When driving, hydraulic pressure should be generated in the 2-4 brake, but oil pressure switch B does not turn on.• When driving, hydraulic pressure should not be generated in the 2-4 brake, but oil pressure switch B does not turn off. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Oil pressure switch B malfunction• Open circuit in wiring harness between oil pressure switch B terminal A and TCM terminal 2A• Short to ground in wiring harness between oil pressure switch B terminal A and TCM terminal 2A• Damaged connector between oil pressure switch B and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure. (See DTC TABLE .)
		No Go to the next step.
4		Yes Go to the next step.

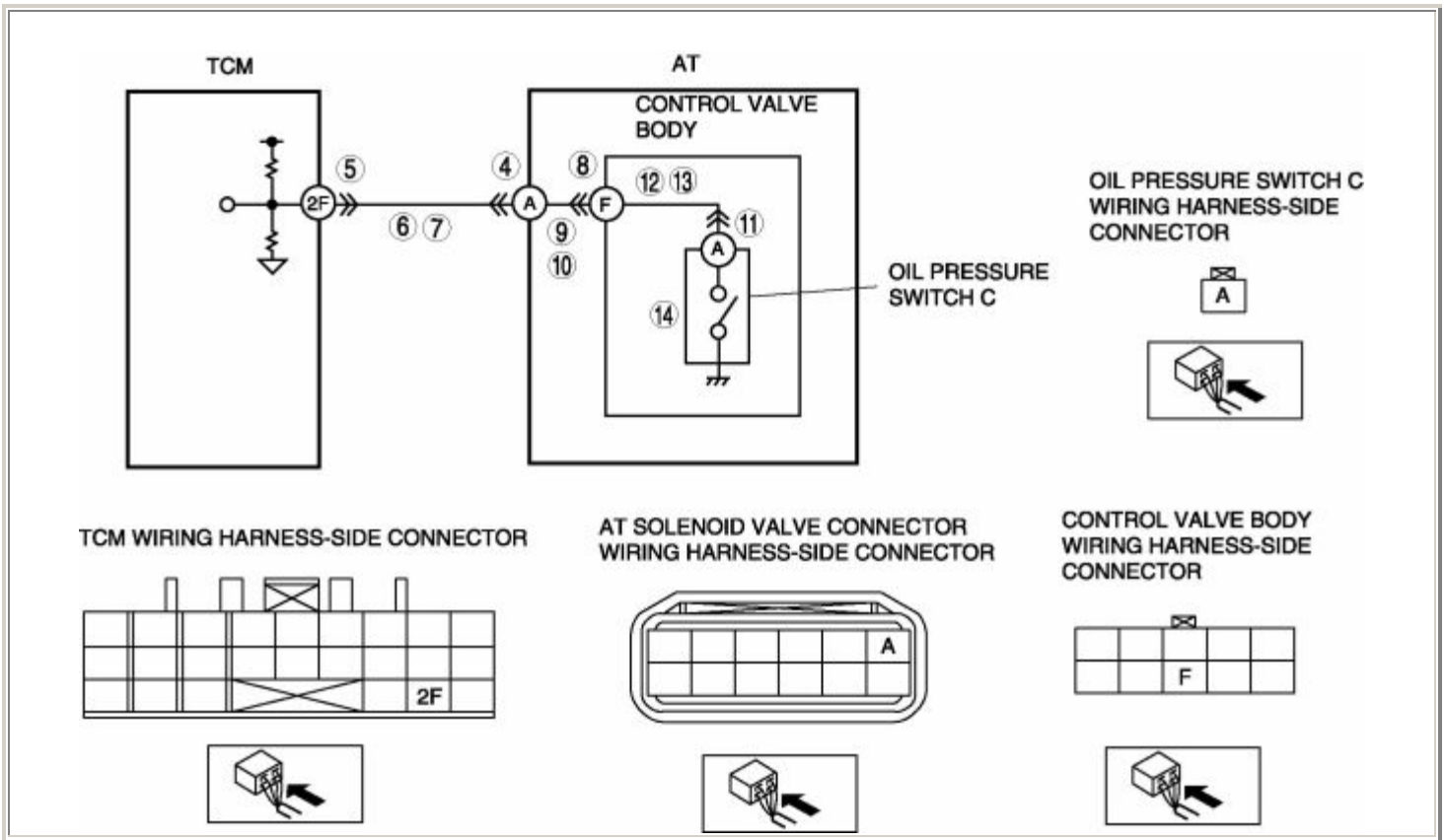
	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 15.
5	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
6	<p>INSPECT TCM CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2A and AT solenoid valve connector (wiring harness-side) terminal B. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
7	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2A and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
8	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
9	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the AT solenoid valve connector (transmission case side) terminal B and control valve body (wiring harness-side) terminal H. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.

10	INSPECT TCM CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the AT solenoid valve connector (transmission case-side) terminal B and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
11	INSPECT OIL PRESSURE SWITCH B CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the oil pressure switch B connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
12	INSPECT CONTROL VALVE BODY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the control valve body (part-side) terminal H and oil pressure switch B (wiring harness-side) terminal A. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
13	INSPECT CONTROL VALVE BODY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the control valve body connector (wiring harness-side) terminal B and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
14	INSPECT OIL PRESSURE SWITCH B <ul style="list-style-type: none"> Inspect oil pressure switch B. (See OIL PRESSURE SWITCH INSPECTION .) Is the oil pressure switch B normal? 	Yes	Go to the next step.
		No	Replace the oil pressure switch B, then go to the next step. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
15	VERIFY TROUBLESHOOTING OF DTC P0841 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
16	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0846

DTC P0846	Oil pressure switch C circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• When driving, hydraulic pressure should be generated in the high clutch, but oil pressure switch C does not turn on.• When driving, hydraulic pressure should not be generated in the high clutch, but oil pressure switch C does not turn off. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Oil pressure switch C malfunction• Open circuit in wiring harness between oil pressure switch C terminal A and TCM terminal 2F• Short to ground in wiring harness between oil pressure switch C terminal A and TCM terminal 2F• Damaged connector between oil pressure switch C and TCM• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure. (See DTC TABLE .)
		No	Go to the next step.
4		Yes	Go to the next step.

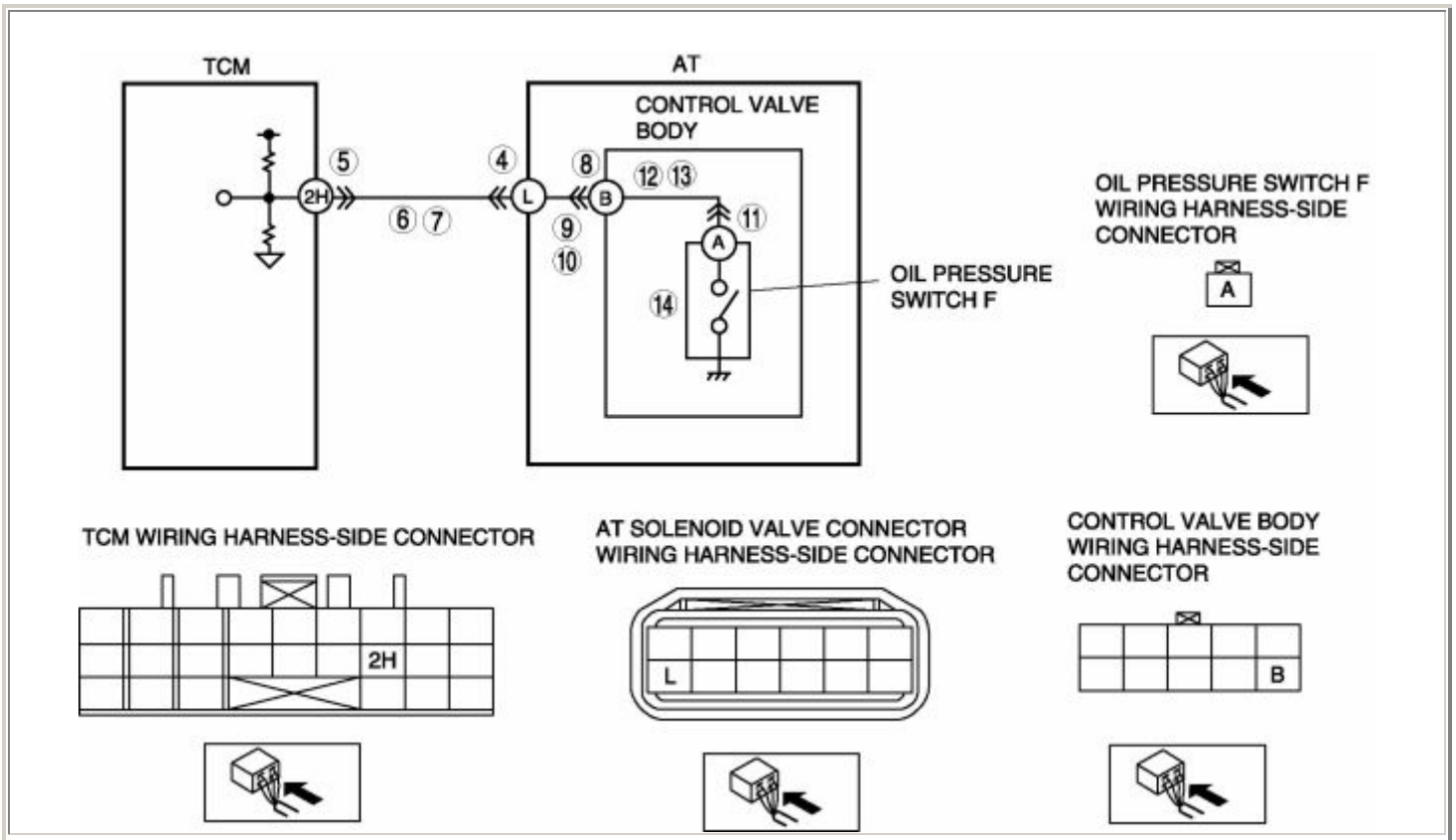
	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 15.
5	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
6	<p>INSPECT TCM CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2F and AT solenoid valve connector (wiring harness-side) terminal A. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
7	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2F and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
8	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
9	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the AT solenoid valve connector (transmission case side) terminal A and control valve body (wiring harness-side) terminal F. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.

10	INSPECT TCM CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the AT solenoid valve connector terminal A (transmission case-side) and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
11	INSPECT OIL PRESSURE SWITCH C CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the oil pressure switch C connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
12	INSPECT CONTROL VALVE BODY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the control valve body (part-side) terminal F and oil pressure switch C (wiring harness-side) terminal A. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
13	INSPECT CONTROL VALVE BODY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the control valve body connector (wiring harness-side) terminal A and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
14	INSPECT OIL PRESSURE SWITCH C <ul style="list-style-type: none"> Inspect oil pressure switch C. (See OIL PRESSURE SWITCH INSPECTION .) <ul style="list-style-type: none"> Is the oil pressure switch C normal? 	Yes	Go to the next step.
		No	Replace the oil pressure switch C, then go to the next step. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
15	VERIFY TROUBLESHOOTING OF DTC P0846 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
16	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0871

DTC P0871	Oil pressure switch F circuit malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• When driving, hydraulic pressure should be generated in the low and reverse brake, but oil pressure switch F does not turn on.• When driving, hydraulic pressure should not be generated in the low and reverse brake, but oil pressure switch F does not turn off. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Oil pressure switch F malfunction• Open circuit in wiring harness between oil pressure switch F terminal A and TCM terminal 2H• Short to ground in wiring harness between oil pressure switch F terminal A and TCM terminal 2H• Damaged connector between oil pressure switch F and TCM• TCM malfunction



Diagnostic procedure

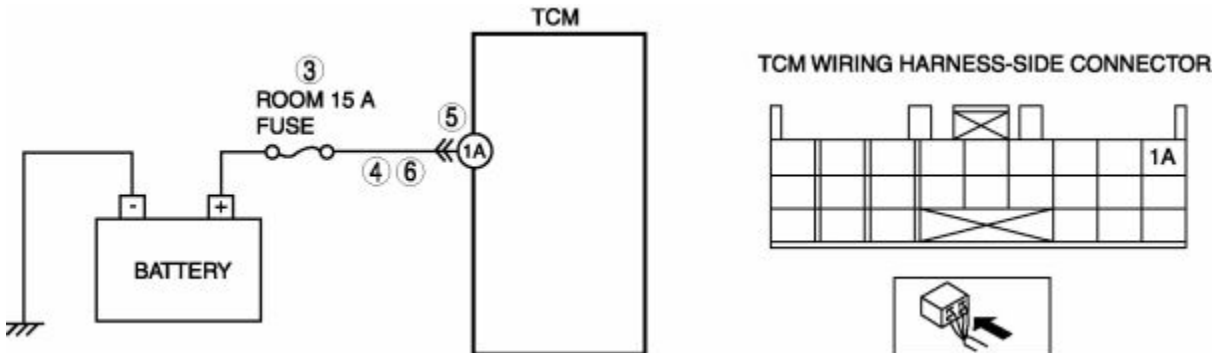
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure. (See DTC TABLE .)
		No Go to the next step.
4		Yes Go to the next step.

	<p>INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the AT solenoid valve connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 15.
5	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
6	<p>INSPECT TCM CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2H and AT solenoid valve connector (wiring harness-side) terminal L. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
7	<p>INSPECT TCM CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between the TCM (wiring harness-side) terminal 2H and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
8	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the control valve body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
9	<p>INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between the AT solenoid valve connector (transmission case side) terminal L and control valve body (wiring harness-side) terminal B. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.

10	INSPECT TCM CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the AT solenoid valve connector (transmission case-side) terminal L and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
11	INSPECT OIL PRESSURE SWITCH F CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the oil pressure switch F connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 15.
12	INSPECT CONTROL VALVE BODY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the control valve body connector terminal B (part-side) and oil pressure switch F (wiring harness-side) terminal A. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 15.
13	INSPECT CONTROL VALVE BODY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the control valve body connector (wiring harness-side) terminal L and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 15.
		No	Go to the next step.
14	INSPECT OIL PRESSURE SWITCH F <ul style="list-style-type: none"> Inspect oil pressure switch F. (See OIL PRESSURE SWITCH INSPECTION .) <ul style="list-style-type: none"> Is the oil pressure switch F normal? 	Yes	Go to the next step.
		No	Replace the oil pressure switch F, then go to the next step. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
15	VERIFY TROUBLESHOOTING OF DTC P0871 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)

	<ul style="list-style-type: none"> • Clear the DTC from the TCM memory using the WDS or equivalent. • Drive the vehicle and make sure that the gears shift smoothly from 1GR to 4GR. • Is the same DTC present? 	No	Go to the next step.
16	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0882

DTC P0882	TCM B+ low
<p>DETECTION CONDITION</p>	<ul style="list-style-type: none"> The TCM monitors the voltage of back-up battery positive terminal at TCM terminal 1A. If the TCM detects battery positive terminal voltage 4 V or less for 100 s or more, the TCM determines that the backup voltage circuit has malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is continuous monitor (CCM). MIL illuminates if TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is not available. FREEZE FRAME DATA is available. AT warning light does not illuminate. DTC is stored in TCM memory.
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> Melted ROOM 15 A fuse Open circuit i in wiring harness between ROOM 15 A fuse and TCM terminal 1A Short to ground in wiring harness between ROOM 15 A fuse and TCM terminal 1A Poor connection of TCM connector TCM malfunction
 <p>The diagram illustrates the electrical circuit for the TCM B+ low condition. On the left, a battery is connected to ground. The positive terminal of the battery is connected to a 15 A fuse (labeled 'ROOM 15 A FUSE'). The circuit then passes through a 1A fuse (labeled '1A') before reaching the TCM terminal 1A. The TCM is represented as a rectangular box. To the right, a 'TCM WIRING HARNESS-SIDE CONNECTOR' is shown as a grid of terminals. The terminal labeled '1A' is highlighted. Below the connector, a small inset shows a hand plugging a connector into the TCM.</p>	

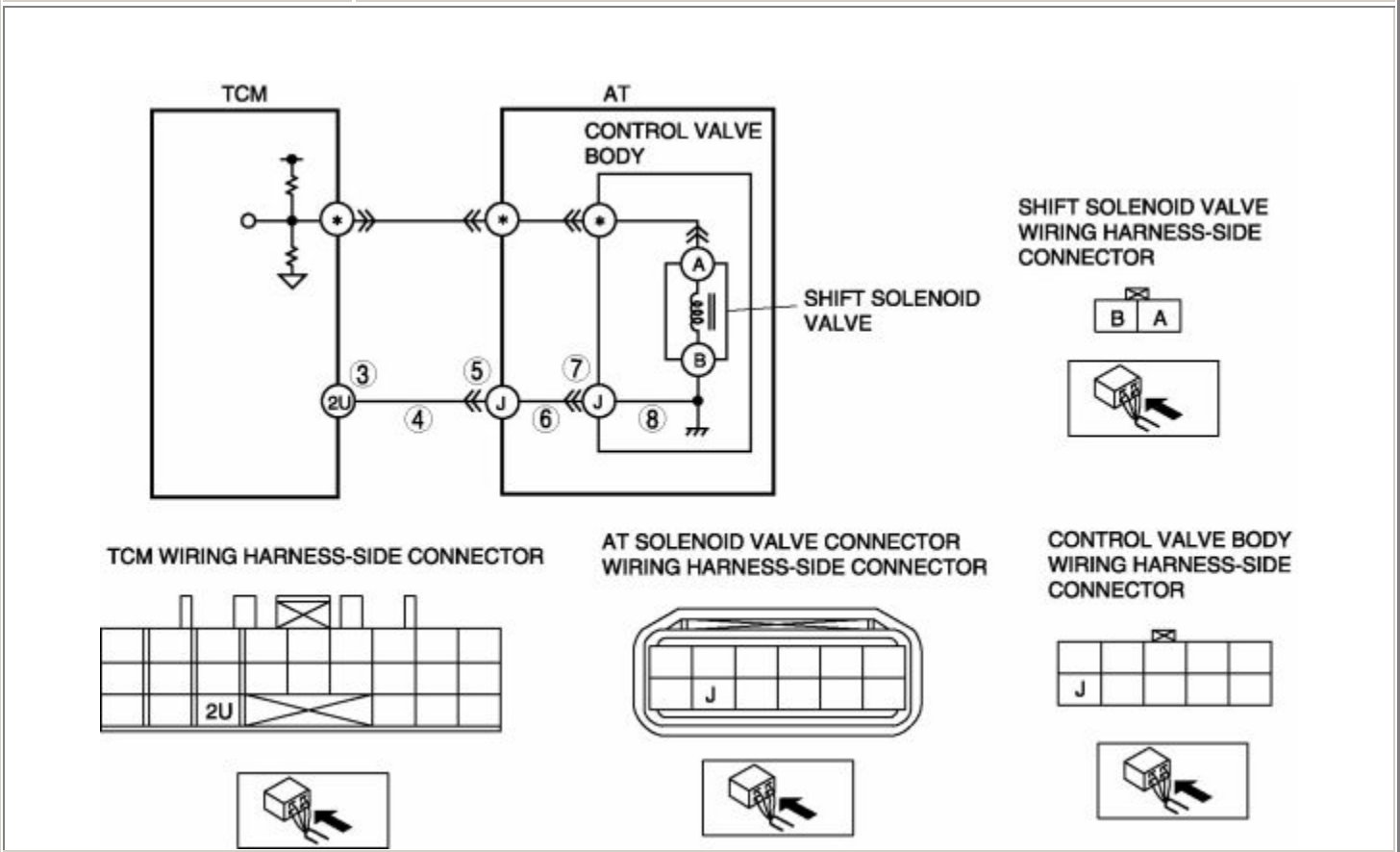
Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT ROOM 15 A FUSE <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ROOM 15 A fuse for malfunction. Is it normal? 	Yes	Go to step 5.
		No	<ul style="list-style-type: none"> If ROOM 15 A fuse has been melted, go to the next step. If ROOM 15 A fuse is not installed correctly, install it correctly, then go to Step 7.
4	INSPECT MONITOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the positive battery cable. Inspect for continuity between the ROOM 15 A fuse terminal and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness and install new fuse, then go to Step 7.
		No	Go to Step 7.
5	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the battery cables. Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 7.
6	INSPECT B+ CIRCUIT FOR OPEN CIRCUIT	Yes	Go to the next step.

	<ul style="list-style-type: none"> Inspect for continuity between the ROOM 15 A fuse terminal and TCM (wiring harness-side) terminal 1A. Is there continuity? 	No	Repair or replace the wiring harness, then go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0882 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Turn the ignition switch to the ON position (engine off). Clear DTC from TCM memory using the WDS or equivalent. Start the engine and warm it up completely. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTC present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P0960

DTC P0960	GND return circuit malfunction
<p>DETECTION CONDITION</p>	<ul style="list-style-type: none"> TCM detects an open circuit in GND return signal line from the solenoid valve. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). MIL illuminates if TCM detects the above malfunction condition during the first drive cycle. PENDING CODE is not available. FREEZE FRAME DATA is available. AT warning light illuminates. DTC is stored in TCM memory.
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> Open circuit in wiring harness between duty type solenoid valve terminal and TCM terminal 2U Damaged connector between solenoid valve and TCM TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the TCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
4	INSPECT TCM CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the TCM (wiring harness-side) terminal 2U and body ground. Is there continuity? 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT AT SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the AT solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
6	INSPECT AT SOLENOID VALVE CONNECTOR CIRCUIT FOR SHORT TO	Yes	Repair or replace the wiring harness, then go to Step 9.

	<p>CONNECTOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Inspect for continuity between the AT solenoid valve connector (transmission case side) terminal J and body ground. Is there continuity? 	No	Go to the next step.
7	<p>INSPECT CONTROL VALVE BODY CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the control valve body connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
8	<p>INSPECT CONTROL VALVE BODY CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Inspect for continuity between the control valve body (part-side) terminal J and body ground. Is there continuity? 	Yes	Repair or replace AT solenoid valve connector wiring harness, then go to the next step.
		No	Repair or replace the control valve body wiring harness, then go to the next step.
9	<p>VERIFY TROUBLESHOOTING OF DTC P0960 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P1759

DTC P1759	2–4 brake fail-safe valve malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• TCM detects 2–4 brake fail-safe valve malfunction. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Stuck 2–4 brake fail-safe valve• Oil pressure switch B stuck on• Short to ground in oil pressure B system wiring harness• Poor connection of connectors in oil pressure switch B system wiring harness

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P1759 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

DTC P1764

DTC P1764	Low and reverse brake fail-safe valve malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• TCM detects low and reverse brake fail-safe valve malfunction. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• This is continuous monitor (CCM).• AT warning light illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Stuck low and reverse brake fail-safe valve• Oil pressure switch F stuck on• Short to ground in oil pressure F system wiring harness• Poor connection of connectors in oil pressure switch F system wiring harness

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure. (See DTC TABLE .)
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See Automatic Transmission Fluid (ATF) Condition Inspection .)	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL .) (See CONTROL VALVE BODY INSTALLATION .)
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P1764 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the WDS or equivalent. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR. Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION .)
		No	Go to the next step.

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE .) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE .)
		No	DTC troubleshooting completed.

AFTER REPAIR PROCEDURE

CAUTION:

- After repairing a malfunction, perform the following procedure to verify that the malfunction has been corrected.
 - When performing this procedure, be sure to drive the vehicle at lawful speed and pay attention to the other vehicles.
1. Connect the WDS or equivalent to the DLC-2.
 2. Turn the ignition switch to the ON position (engine off).
 3. Select the clear code function and clear the DTC.
 4. Perform the following DTC inspections to ensure that the DTCs have been resolved:
 - For P0705
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Depress the brake pedal, and shift the selector lever between P to D for **12 s or more** .
 - Go to Step 5.
 - For P0706
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Depress the brake pedal, and shift the selector lever between P to D for **100 s or more** .
 - Go to Step 5.
 - For P0707
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in M range, and shift the selector lever (operate up and down switches) between 1GR to 4 GR for **10 s or more** .
 - Go to Step 5.
 - For P0708
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in M range, and push the steering shift switch between 1GR to 4GR for **10 s or more** .
 - Go to Step 5.
 - For P0711
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range for **6.5 min** .
 - Go to Step 5.

- For P0712
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range for **150 s or more** .
 - Go to Step 5.

- For P0713
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range at **20 km/h {12.4 mph}** or more for **150 s or more** .
 - Go to Step 5.

- For P0715
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range at **40 km/h {25 mph}** or more for **2 s or more** .
 - Go to Step 5.

- For P0720
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range, at **5 km/h {3 mph}** or more for **3.5 s or more** .
 - Go to Step 5.

- For P0731, P0732
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range, at **10 km/h {6 mph}** or more for **2 s or more** .
 - Go to Step 5.

- For P0733
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range, at **20 km/h {12 mph}** or more for **2 s or more** .
 - Go to Step 5.

- For P0734
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range, at **40 km/h {25 mph}** or more for **2 s or more** .
 - Go to Step 5.

- For P0740
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range and gradually accelerate the vehicle to verify that the TCC operates.
 - Go to Step 5.

 - For P0743, P0748, P0751, P0753, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0743, P0841, P0846, P0871, P0882, P0960, P1759, P1764, U0073, U0100
 - Start the engine.
 - Warm up the engine to normal operating temperature.
 - Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 4GR .
 - Go to Step 5.
5. Gradually slow down and stop the vehicle.
6. Make sure that the repaired DTC does not recur.

AUTOMATIC TRANSMISSION

AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)
8. Inspect selector lever operation. (See SELECTOR LEVER INSPECTION .)
9. Inspect for leakage of ATF from all connecting points.
10. Perform the mechanical system test. (See MECHANICAL SYSTEM TEST .)

Service item	Test item		
	Line pressure test	Stall speed test	Time lag test
Automatic transmission replacement	×		
Automatic transmission overhaul	×	×	×
Torque converter replacement	×	×	
Oil pump replacement	×		
Clutch system replacement	×		×

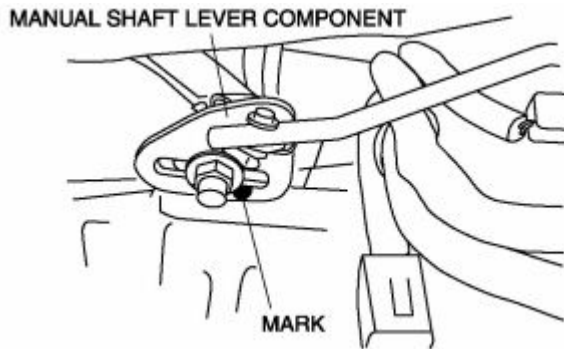
11. Perform the road test. (See ROAD TEST .)

4	Catalytic converter, middle pipe, main silencer (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
5	Exhaust manifold stay
6	Manual shaft lever component (See Manual Shaft Lever Component Removal Note .) (See Manual Shaft Lever Component Installation Note .)
7	Heat insulator
8	Transverse member
9	Starter (See STARTER REMOVAL/INSTALLATION .)
10	Under cover
11	Torque converter installation nuts (See Torque Converter Installation Nuts Removal Note .) (See Torque Converter Installation Nuts Installation Note .)
12	Connector bolt
13	Washer
14	Oil pipe, oil hose (See OIL COOLER REMOVAL/INSTALLATION .)
15	Insulator
16	Oil filter tube, Dipstick
17	TR switch connector
18	Solenoid valve connector
19	VSS connector
20	Turbine sensor connector
21	Wire
22	Power plant frame (See Power Plant Frame Removal Note .) (See Power Plant Frame Installation Note .)
23	Propeller shaft (See Propeller Shaft Removal Note .) (See PROPELLER SHAFT REMOVAL/INSTALLATION .)
24	Transmission installation bolt
25	Transmission

	(See Transmission Removal Note .)
	(See Transmission Installation Note .)
26	Stopper
27	Bolt
28	Dynamic dumper
29	Driven plate

Manual Shaft Lever Component Removal Note

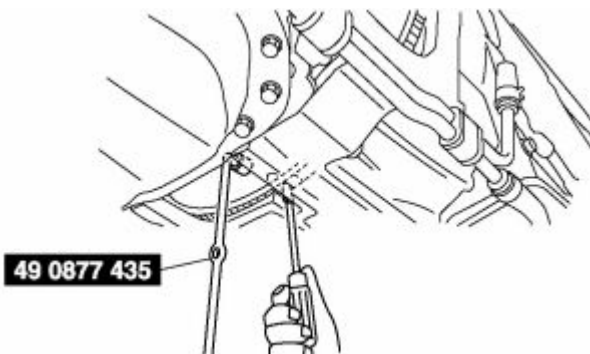
1. Mark the manual shaft lever component as shown in the figure.



2. Remove the manual shaft lever component installation nut.

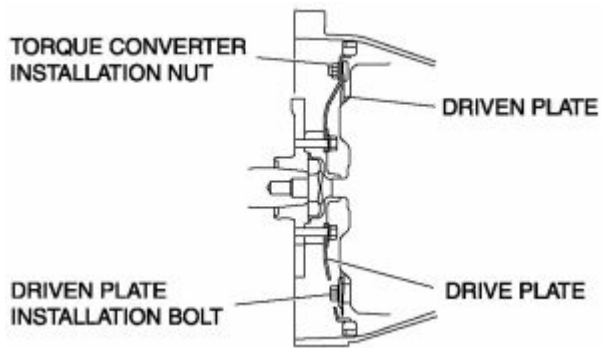
Torque Converter Installation Nuts Removal Note

1. Lock the drive plate using a flathead screwdriver as shown in the figure.
2. Remove the torque converter installation nuts using a SST .



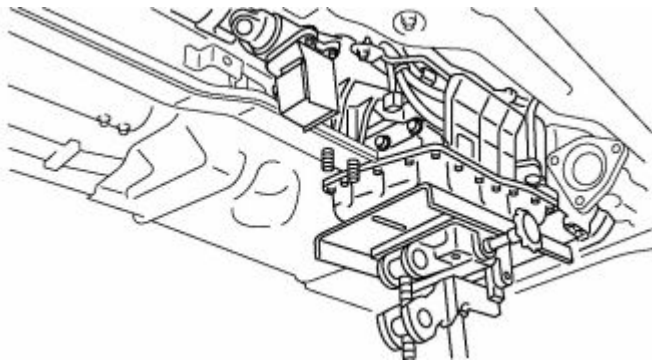
NOTE:

- After separate the transmission from engine, remove the driven plate.
3. Loosen the driven plate installation bolts.



Power Plant Frame Removal Note

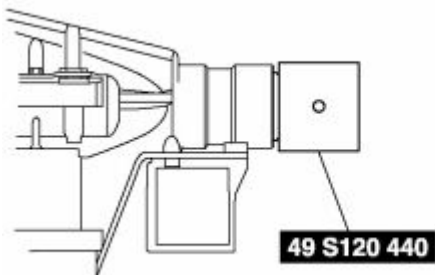
1. Support the transmission using a transmission jack.



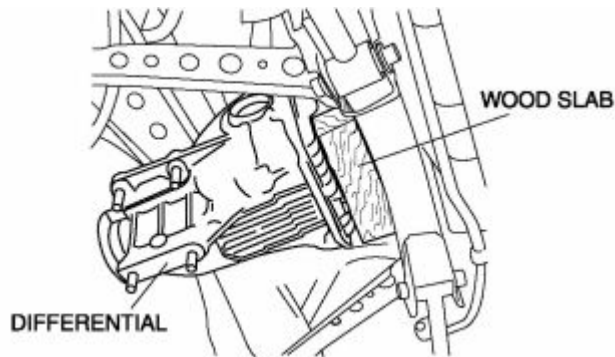
2. Remove the power plant frame.

Propeller Shaft Removal Note

1. Install the SST to the output shaft.



2. Insert a slab of wood behind the differential and remove the propeller shaft.



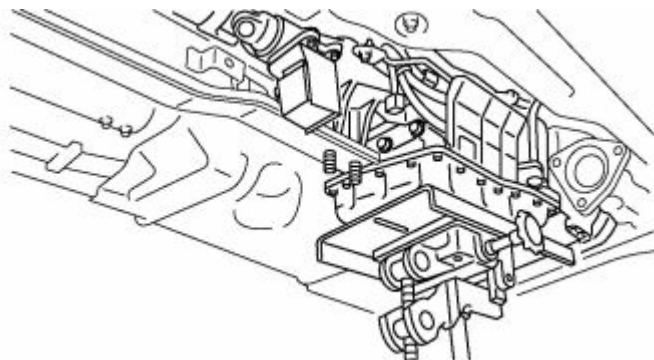
Transmission Removal Note

WARNING:

- Verify that the transmission is securely supported by the jack. If the transmission falls, serious injury or death and damage to the vehicle could result. Before removing the transmission make sure that the jack is securely supporting the transmission.

CAUTION:

- To prevent the torque converter and transmission from separating, remove the transmission without tilting it toward the torque converter.
1. Support the transmission securely using a transmission jack.



2. Remove the transmission installation bolt.

Transmission Installation Note

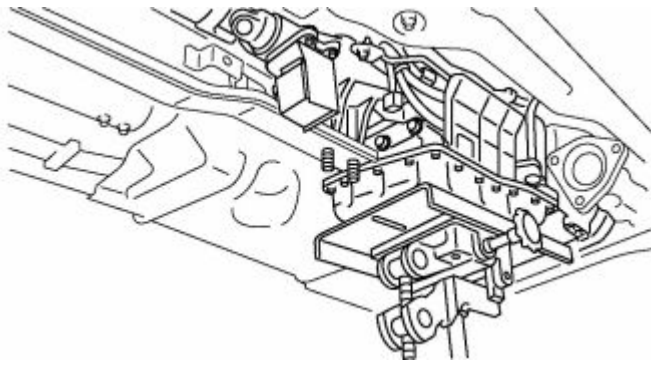
WARNING:

- Verify that the transmission is securely supported by the jack. If the transmission falls, serious injury or death and damage to the vehicle could result. Before removing the transmission make sure that the jack is securely supporting the transmission.

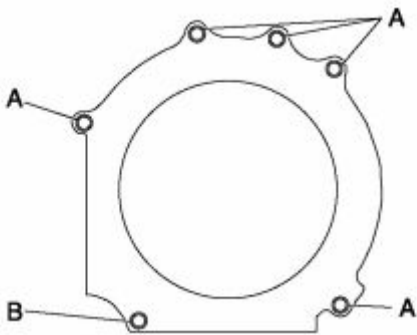
CAUTION:

- To prevent the torque converter and transmission from separating, remove the transmission without tilting it toward the torque converter

1. Support the transmission securely using a transmission jack.



2. Install the driven plate to the transmission (torque converter), and temporarily tighten.
3. Tighten the transmission mounting bolts.



Bolt length

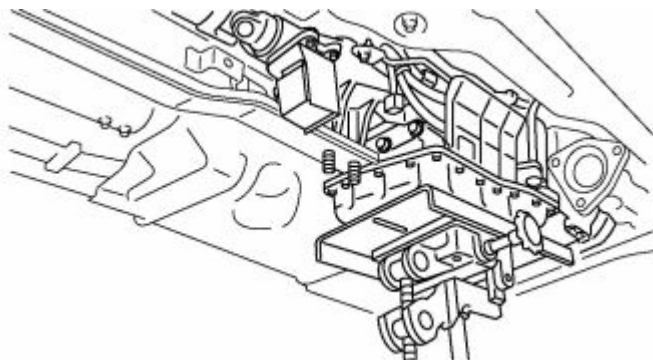
- A: 55 mm {2.2 in}
- B: 90 mm {3.5 in}

Tightening torque

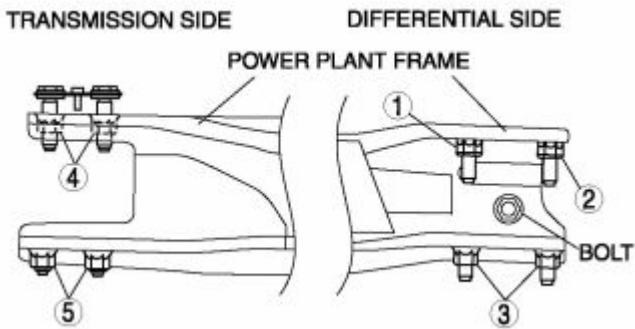
- 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

Power Plant Frame Installation Note

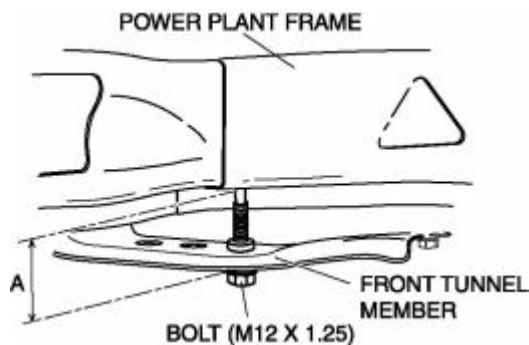
1. Support the transmission and differential so that they are level using a transmission jack.



2. Install the power plant frame.
3. Temporarily tighten the nuts in the order shown in the figure.



4. Tighten nut 1 until the power plant frame is seated in the differential.
5. Install the heat insulator, exhaust manifold stay, catalytic converter, main silencer and front tunnel member.
6. Raise the front end of the power plant frame (transmission side) with the transmission jack and adjust dimension A to the standard (lower end of power plant frame—lower end of the front tunnel member) as shown in the figure.

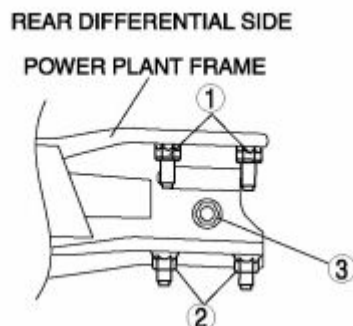


Standard dimension A

- 48.4—56.4 mm {1.91—2.22 in}

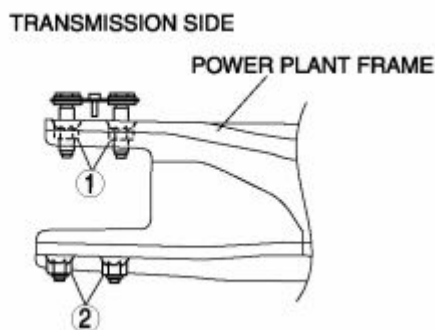
NOTE:

- When raising the power plant frame without a transmission jack, use bolts (M12x1.25) with a thread length of **55 mm {2.2 in} or more**. Tighten the bolts from the underside of the front tunnel member as shown in the figure and raise the power plant frame.
 - When using bolts, the underside of the power plant frame could be damaged. Affix tape to the underside of the frame to prevent damage.
7. Tighten the nuts and bolts on the differential side in the order shown in the figure.



Bolt, nut number	Tightening torque (N·m {kgf·m, ft·lbf})
1, 2	126.0—154.0 {12.9—15.7, 93.0—113.5}
3	74.5—93.2 {12.9—15.7, 55.0—68.7}

8. Tighten the nuts on the transmission side in the order shown in the figure.



Tightening torque

- 126.0—154.0 N·m
{12.9—15.7 kgf·m, 93.0—113.5 ft·lbf}

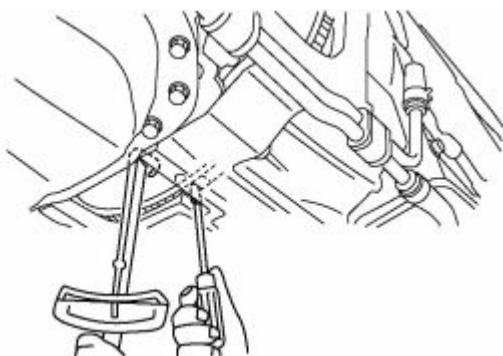
9. Verify again that dimension A is within the specification.
- If not within the specification, adjust dimension A again.

Torque Converter Installation Nuts Installation Note

1. Align the holes by turning the torque converter.
2. Lock the drive plate using a flathead screwdriver.

CAUTION:

- Loosely and equally tighten the torque converter nuts, then further tighten them to the specified tightening torque.
3. Tighten the torque converter installation nuts.



Tightening torque

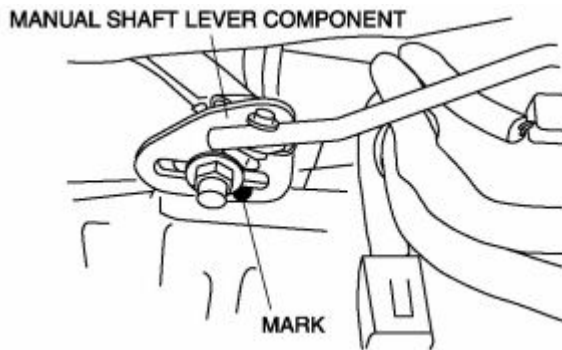
- 34—49 N·m {3.5—4.9 kgf·m, 26—36 ft·lbf}
4. Tighten the driven plate installation bolts.

Tightening torque

- 34—49 N·m {3.5—4.9 kgf·m, 26—36 ft·lbf}

Manual Shaft Lever Component Installation Note

1. Align the mark of the manual shaft lever component as shown in the figure.



2. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m
{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

AUTOMATIC TRANSMISSION FLUID

AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION

Automatic Transmission Fluid (ATF) Condition Inspection

1. Inspect the ATF for the following to determine whether the transmission should be disassembled.

- The ATF is muddy.
- The ATF smells strange or unusual.

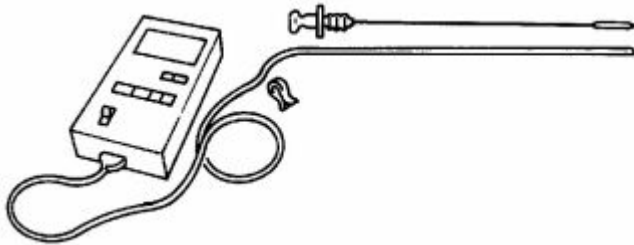
ATF Condition

Condition		Possible cause
Clear dark red	Normal	—
Light red (pink)	Contaminated with water	<ul style="list-style-type: none"> • Damaged oil cooler inside of the radiator • Poor filler tube installation: <p>Problem could occur to parts inside the transmission by water contamination. It is necessary to overhaul the transmission and detect defected parts.</p> <p>If necessary, replace the transmission.</p>
Reddish brown	Has burnt smell and metal particles are found	<p>Defective the powertrain components inside the transmission:</p> <p>Particles cause wide range of problems by plugging up in oil pipe, control valve body and oil cooler in radiator.</p> <ul style="list-style-type: none"> • When large amount of metal particles are found, overhaul the transmission and inspect for defective parts. <p>If necessary, replace the transmission.</p> <ul style="list-style-type: none"> • Implement flushing operation as there is a possibility to have particles plugging up the oil pipe or oil cooler inside the radiator.
	Has no burnt smell	<p>Normal</p> <ul style="list-style-type: none"> • Discoloration by oxidation

Automatic Transmission Fluid (ATF) Level Inspection

CAUTION:

- The ATF amount varies according to ATF's temperature. Therefore, when inspecting the ATF level or replacing the ATF, use a thermometer to measure the temperature then adjust the ATF amount to the specified level according to the specified temperature.
1. Place the vehicle on level ground.
 2. Apply the parking brake and position wheel chocks securely to prevent the vehicle from rolling.
 3. Adjust the length of the thermistor probe measure to the measure same as the dipstick and hold the probe with a paper holder.
 4. Insert into the filler tube and measure the temperature.



5. Warm up the engine until the ATF reaches (**60—70 °C {140—158 °F}**).

CAUTION:

- Do not warm the transmission by stall speed test. This will damage the torque converter.

NOTE:

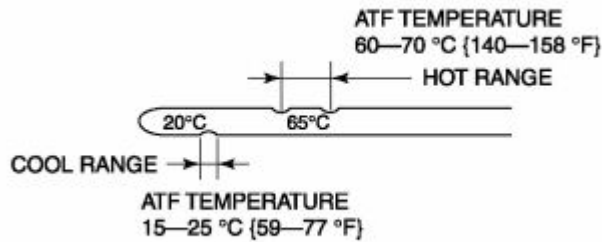
- In some cases it may be necessary to inspect the ATF in the cool range **15—25 °C {59—77 °F}** before warming up the engine.
6. While depressing the brake pedal, shift the selector lever to each range (P—D), pausing momentarily in each range.
 7. Shift back to the P position.

NOTE:

- If the ATF level is too high or too low when the engine is hot, the following malfunctions may occur.

ATF level	Condition	Malfunction
Too low	Line pressure is lower than the specification.	Air in the transmission oil passage causes slipping or damages clutch mechanism.
Too high	ATF is hot.	ATF deterioration causes slipping clutch or stuck valve.

8. While the engine is idling, verify that the ATF level is in the HOT (**65 °C {149 °F}**) range. Add the specified type of ATF if necessary. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)



ATF type

- ATF M-III or equivalent (e.g. Dexron[®] III)

AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT

WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.
1. Remove the oil dipstick.
 2. Loosen the oil pan mounting bolts.
 3. Drain the ATF into a container.
 4. Remove the oil pan and gasket.
 5. Eliminate the sealant dust from the bolt hole.
 6. Install the oil pan and a new gasket with new bolts.

Tightening torque

- 7.0—9.0 N·m {72—91 kgf·cm, 63—78 in·lbf}
7. Add the specified type of ATF through the oil filler tube until ATF level reaches lower notch of dipstick.

ATF type

- ATF M-III or equivalent (e.g. Dexron[®] III)

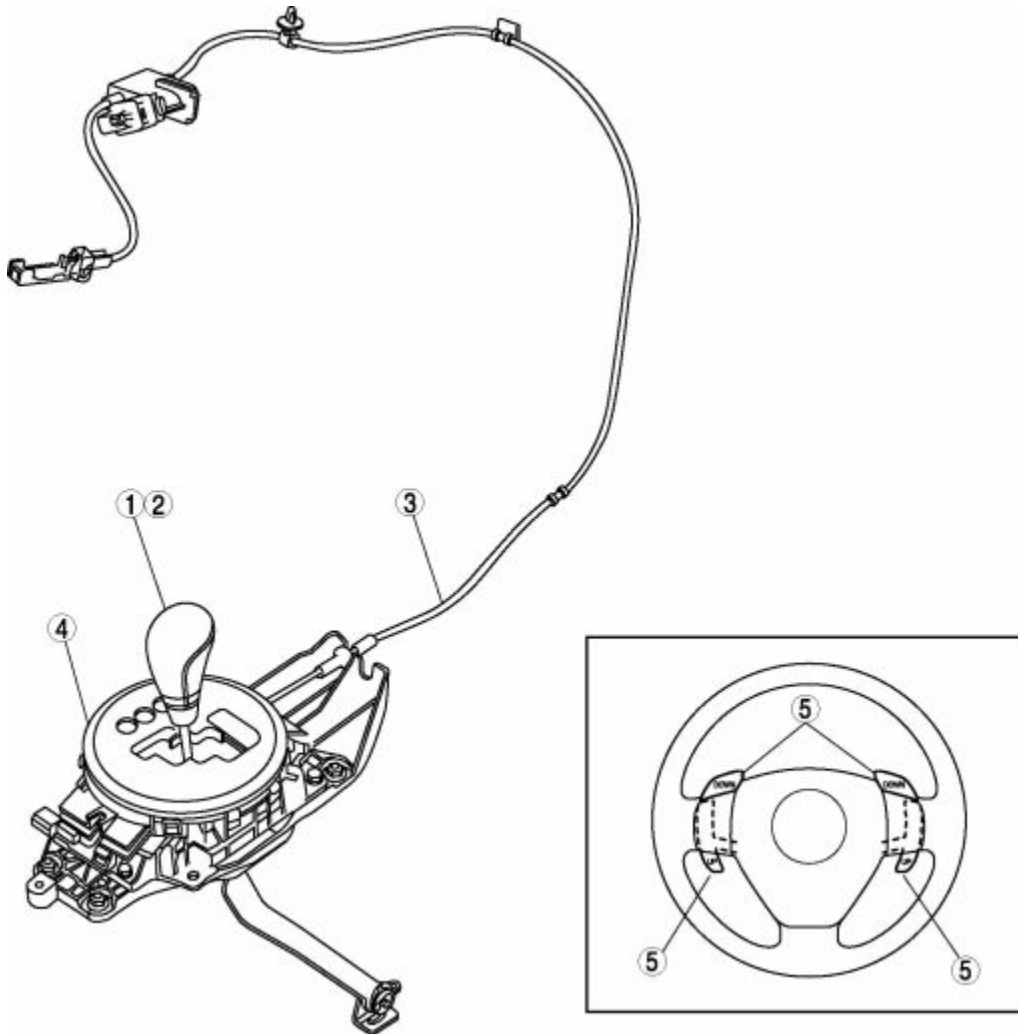
Capacity (approx. quantity)

- 8.7 L {9.2 US qt, 7.7 Imp qt}
8. Verify that the ATF level is in the HOT (**65 °C {149 °F}**) range.
 - Add ATF to the specified level if necessary.

AUTOMATIC TRANSMISSION SHIFT MECHANISM

SHIFT MECHANISM

AUTOMATIC TRANSMISSION SHIFT MECHANISM LOCATION INDEX



1	Shift lock (See SHIFT LOCK INSPECTION .)
2	Key interlock (See KEY INTERLOCK INSPECTION .)
3	Interlock cable (See INTERLOCK CABLE INSPECTION .) (See INTERLOCK CABLE ADJUSTMENT .)
4	Selector lever

(See SELECTOR LEVER INSPECTION .)

(See SELECTOR LEVER COMPONENT INSPECTION .)

(See SELECTOR LEVER REMOVAL/INSTALLATION .)

Steering shift switch

5 (See STEERING SHIFT SWITCH REMOVAL/INSTALLATION .)

(See STEERING SHIFT SWITCH INSPECTION .)

SHIFT LOCK SYSTEM

SHIFT LOCK INSPECTION

1. Turn the ignition switch to the ON position.
2. Verify that the selector lever is in the P position.
3. Depress the brake pedal and verify that the selector lever can be shifted from the P position.
 - If there is any malfunction, adjust the interlock cable.

(See INTERLOCK CABLE ADJUSTMENT .)

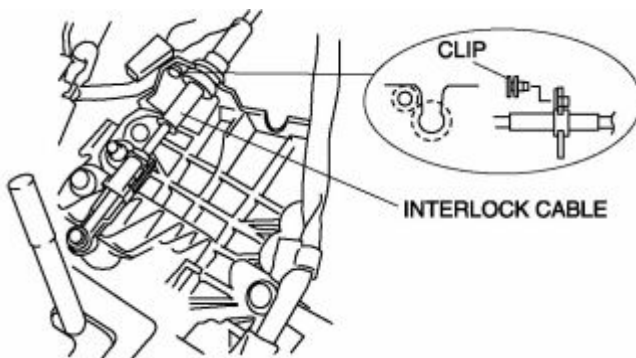
KEY INTERLOCK SYSTEM

KEY INTERLOCK INSPECTION

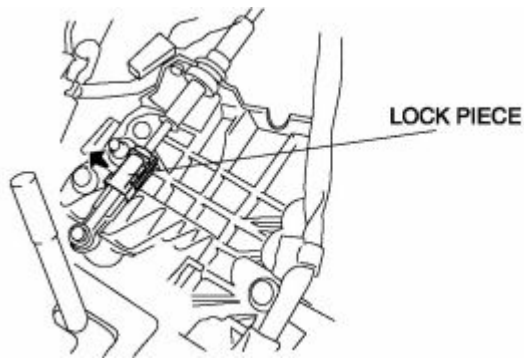
1. Verify that the key cannot be pulled out except in the P position.
 - If there is any malfunction, inspect the interlock cable. (See INTERLOCK CABLE INSPECTION .)

INTERLOCK CABLE INSPECTION

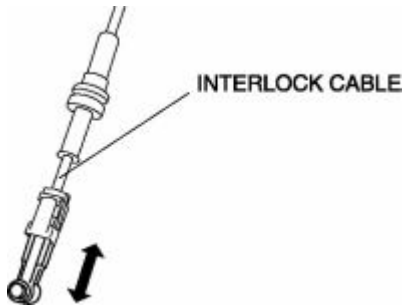
1. Turn the ignition switch to ON position. (engine OFF)
2. Remove the clip of the selector lever base plate, then remove the interlock cable from the U-groove.



3. Remove the interlock cable from the selector lever.



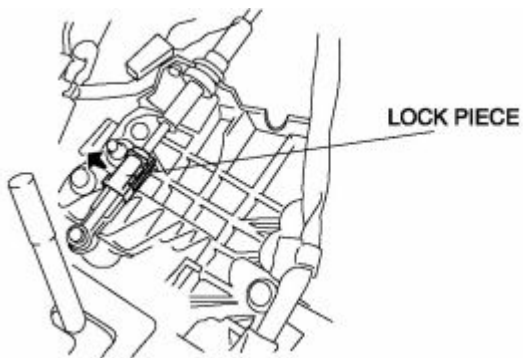
4. Verify that the interlock cable moves freely with the brake pedal depressed.



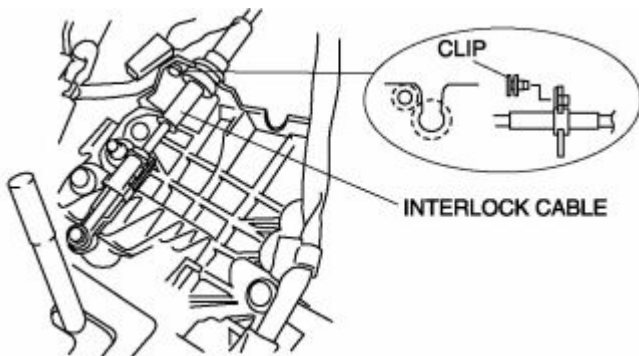
- If there is any malfunction, replace the interlock cable.

INTERLOCK CABLE ADJUSTMENT

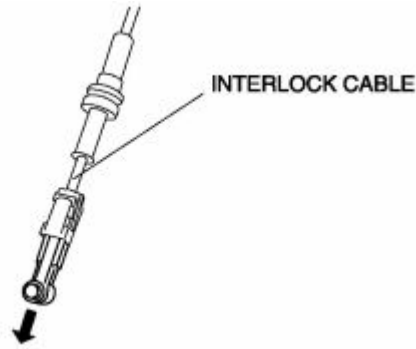
1. Turn the ignition switch to ON position. (engine OFF)
2. Pull up the lock piece of the interlock cable to release the lock.



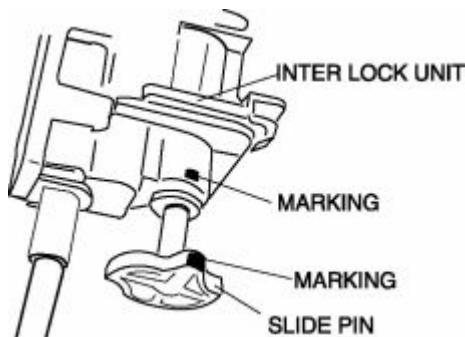
3. Remove the clip of the selector lever base plate, then remove the interlock cable from the U-groove.



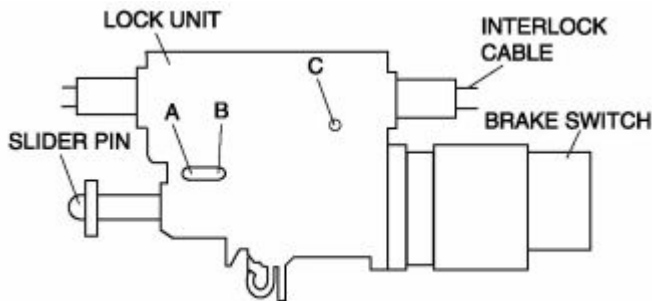
4. Remove the interlock cable from the selector lever.
5. Fully pull the end of the interlock cable to the selector lever.



6. Remove the lock unit from the bracket.
7. Verify that the markings on the slider pin and the lock unit are aligned.



8. Push the snap pin (or a $\phi 1.5$ round bar or similar.) into hole A by fully pushing the slider pin in.

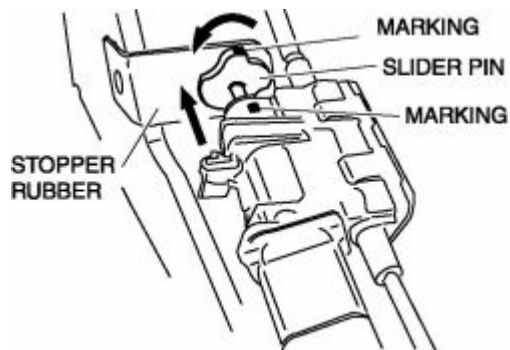


9. Push the snap pin into hole B and hole C of the lock unit until it passes through.
10. Disconnect the brake switch connector.
11. Remove the brake switch. (See BRAKE PEDAL REMOVAL/INSTALLATION .)
12. Install the new brake switch. (See BRAKE PEDAL REMOVAL/INSTALLATION .)

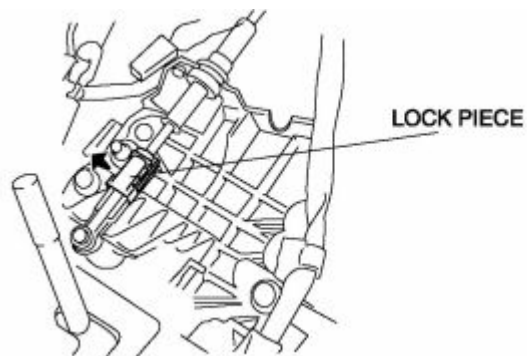
CAUTION:

- Do not connect the brake switch connector until the interlock cable adjustment is completed.

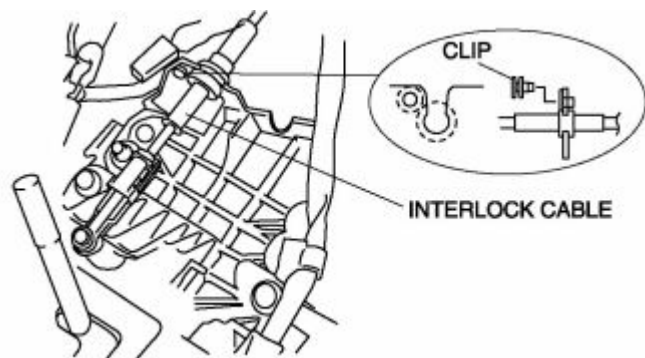
13. Install the lock unit to the bracket. (See Interlock Cable Installation Note .)
14. Rotate the slider pin to release the lock, and verify that it slides freely.
15. Verify that the slider pin contacts the brake pedal stopper rubber and rotate the slider pin to lock.



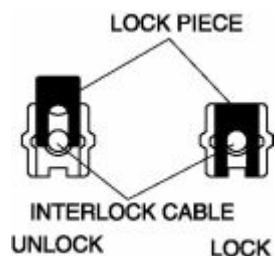
16. Install the interlock cable end to the interlock link on the selector lever.



17. Fit the interlock cable in the U-groove in the selector lever base plate and install the clip.



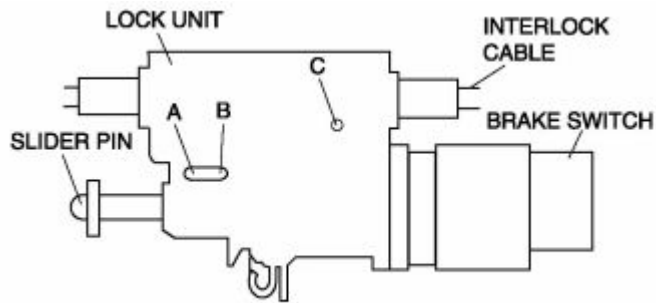
18. Press the interlock cable lock piece in until it is locked.



CAUTION:

- Applying a load to the interlock cable while pressing the lock piece in can affect the lock unit operation.

19. Remove the snap pin from the lock unit hole A, B and C.



20. Connect the brake switch connector with the brake pedal released.

CAUTION:

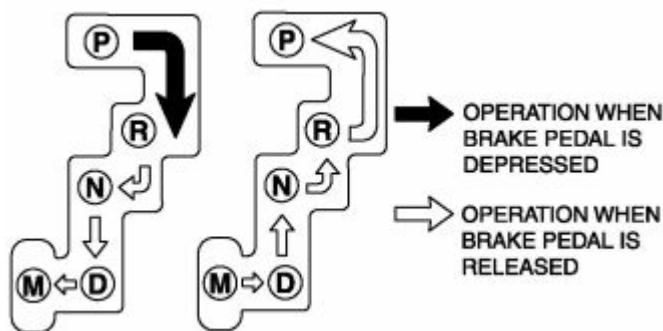
- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch connector is connected after the brake switch has been properly installed. If the brake switch is not properly installed or the connector is connected before installation, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake switch is properly installed before connecting the connector.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.

21. Inspect shift lock operation. (See SHIFT LOCK INSPECTION .)

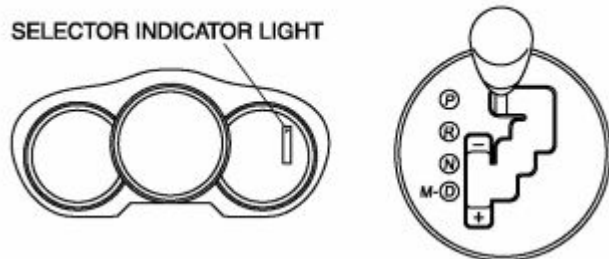
SELECTOR LEVER COMPONENT

SELECTOR LEVER INSPECTION

1. Turn the ignition switch to the ON position (engine OFF).
2. With the brake pedal depressed, verify that there is a "click" at each range when shifted.



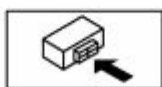
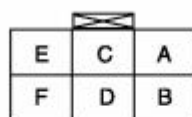
3. Verify that the selector lever can be shifted.
4. Verify that there is a "click" at each position when shifted from the P position to the M range.
5. Verify that the positions of the selector lever and the indicator are aligned.



- If there is any malfunction, adjust the TR switch. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)
6. Verify that the vehicle operates in each selected range.

SELECTOR LEVER COMPONENT INSPECTION

1. Remove the engine cover.
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the ashtray. (See CONSOLE REMOVAL/INSTALLATION .)
5. Remove the shift knob. (See SELECTOR LEVER REMOVAL/INSTALLATION .)
6. Remove the console panel and indicator assembly. (See SELECTOR LEVER REMOVAL/INSTALLATION .)
7. Disconnect the selector lever component connector.
8. Verify continuity as indicated in the table.



- If there is any malfunction, replace the selector lever. (See SELECTOR LEVER REMOVAL/INSTALLATION .)

○—○ : Continuity

Selector lever position/range		Connector terminal					
		A	B	C	D	E	F
M range	Up switch	○—○			○		
	Down switch	○—○					○
	Other	○—○					
Other							

SELECTOR LEVER REMOVAL/INSTALLATION

1. Remove the engine cover.
2. Remove the battery cover.

3. Disconnect the negative battery cable.

4. Remove the following parts.

a. Ashtray

(See CONSOLE REMOVAL/INSTALLATION .)

b. Console

(See CONSOLE REMOVAL/INSTALLATION .)

c. Glove compartment

(See GLOVE COMPARTMENT REMOVAL/INSTALLATION .)

d. Side panel

(See SIDE PANEL REMOVAL/INSTALLATION .)

e. Lower panel

(See LOWER PANEL REMOVAL/INSTALLATION .)

f. Column cover

(See COLUMN COVER REMOVAL/INSTALLATION .)

g. Driver-side air bag module

(See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION .)

h. Steering shaft

(See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION .)

i. Instrument cluster

(See INSTRUMENT CLUSTER REMOVAL/INSTALLATION .)

j. A-pillar trim

(See A-PILLAR TRIM REMOVAL/INSTALLATION .)

k. Dashboard

(See DASHBOARD REMOVAL/INSTALLATION .)

l. SAS control module

(See SAS CONTROL MODULE REMOVAL/INSTALLATION .)

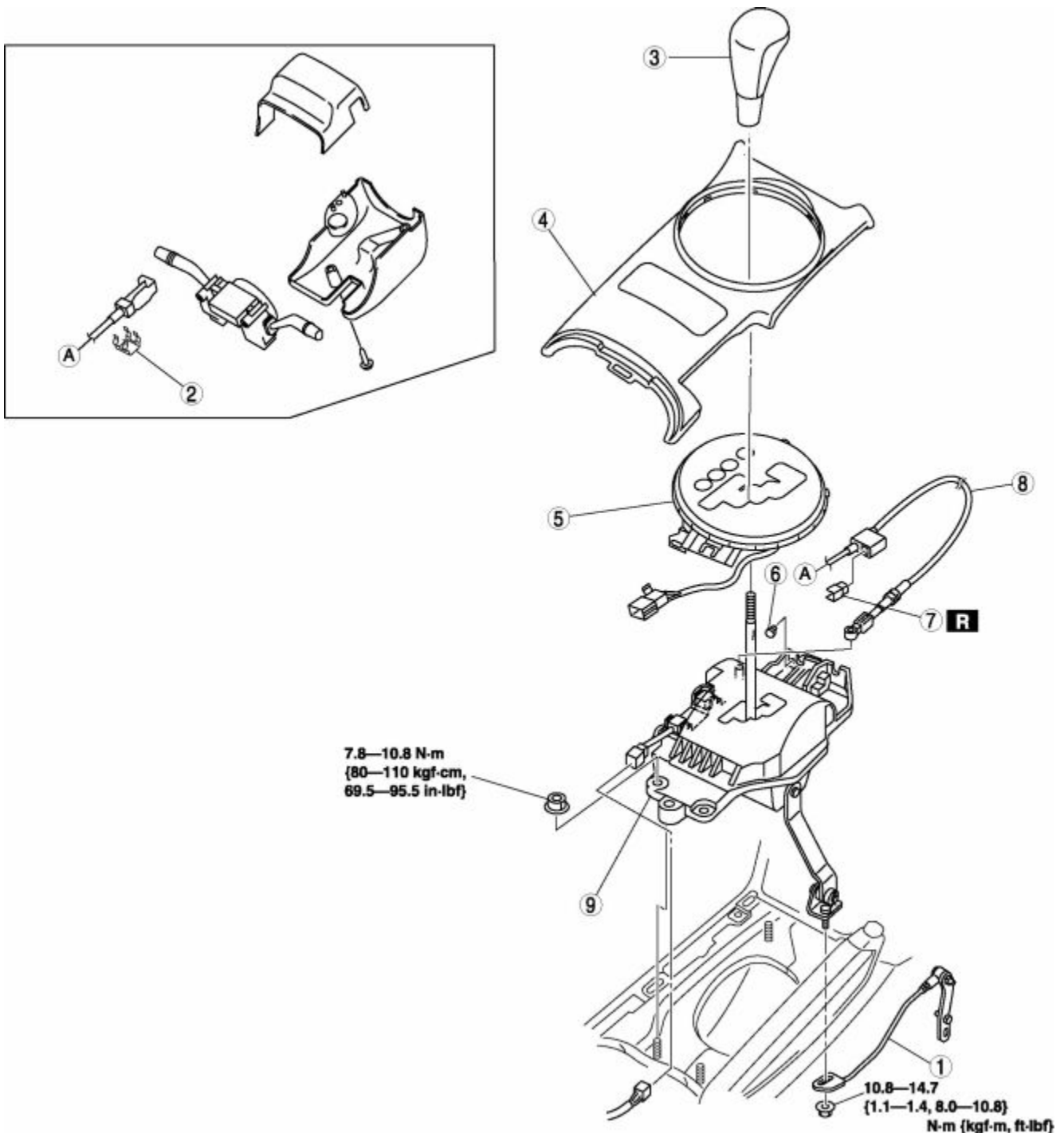
m. Exhaust pipe

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

5. Shift the selector lever to the P position.
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. After installation, carry out the shift lock inspection and key interlock inspection.

(See SHIFT LOCK INSPECTION .)

(See KEY INTERLOCK INSPECTION .)

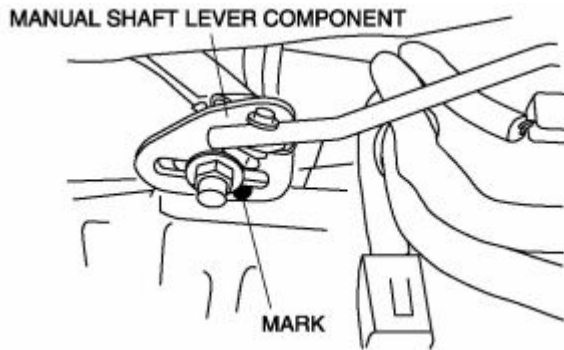


1 Manual shaft lever component

	(See Manual Shaft Lever Component Removal Note .)
	(See Manual Shaft Lever Component Installation Note .)
2	Clip
3	Shift knob
4	Console panel
5	Indicator component
6	Clip
7	Brake switch (See Brake Switch Installation Note .)
8	Interlock cable (See Interlock Cable Installation Note .)
9	Selector lever

Manual Shaft Lever Component Removal Note

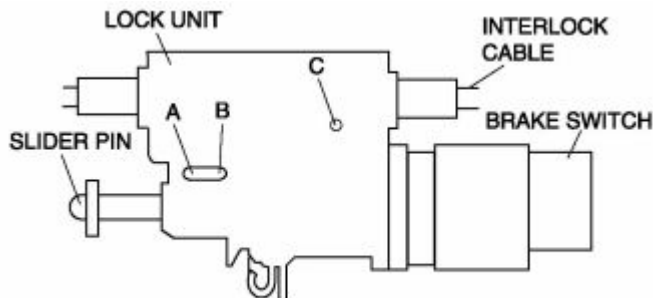
1. Mark the manual shaft lever component as shown in the figure.



2. Remove the manual shaft lever component installation nut.

Interlock Cable Installation Note

1. Push the snap pin (or a $\phi 1.5$ round bar or similar.) into hole A by fully pushing the slider pin in.

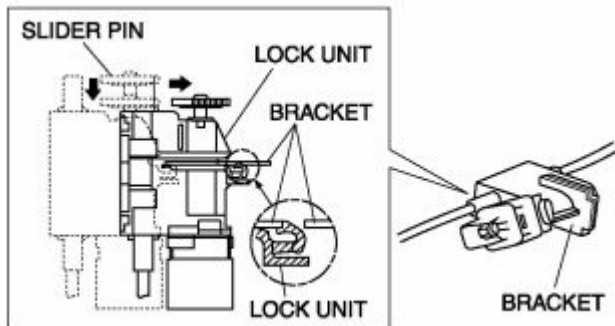


2. Push the snap pin into hole B and hole C of the lock unit until it passes through.
3. Disconnect the brake switch connector.
4. Remove the brake switch. (See BRAKE PEDAL REMOVAL/INSTALLATION .)
5. Install the new brake switch. (See BRAKE PEDAL REMOVAL/INSTALLATION .)

CAUTION:

- Do not connect the brake switch connector until the interlock cable is installed.

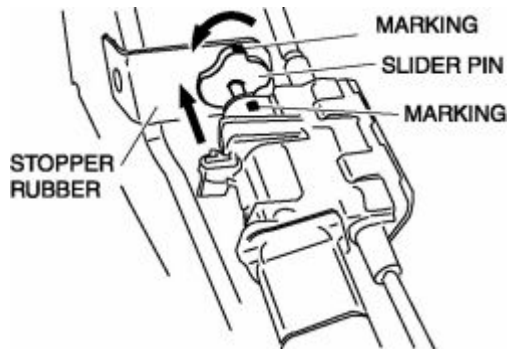
6. With the slider pin pressed, slide the lock unit to fix the lock unit hook into the bracket hole securely as shown in the figure.



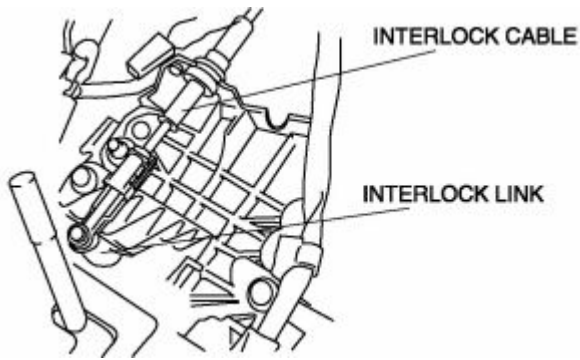
CAUTION:

- Allowing the interlock cable to be bent or twisted during installation can affect the lock unit operation.

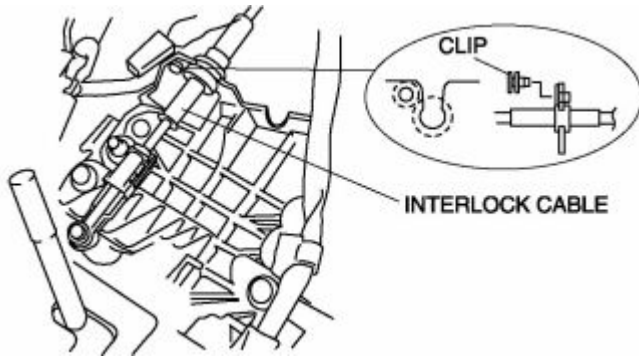
7. Rotate the slider pin to release the lock, and verify that it slides freely.
8. Pull the slider pin outward until it contacts the brake pedal stopper rubber and rotate the slider pin to lock.



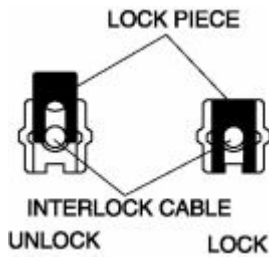
9. Verify that the shift selector lever is in P position.
10. Install the interlock cable end to the cam pin on the selector lever.



11. Fit the interlock cable in the U-groove in the selector lever base plate, and install the clip.



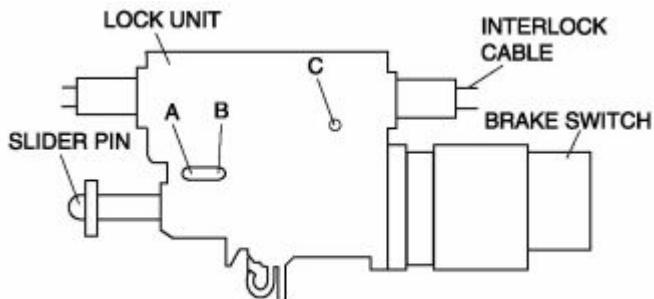
12. Press the interlock cable lock piece in until it is locked.



CAUTION:

- Applying a load to the interlock cable while pressing the lock piece in can affect the lock unit operation.

13. Remove the snap pin from the lock unit hole A, B and C.



14. Connect the brake switch connector with the brake pedal released.

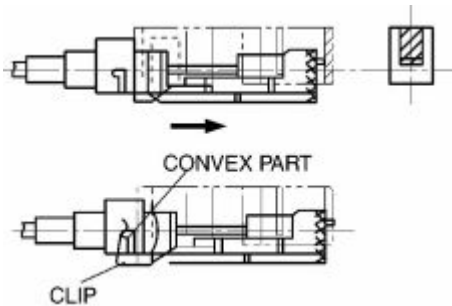
CAUTION:

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch connector is connected after the brake switch has been properly installed. If the brake switch is not properly installed or the connector is connected before installation, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake switch is properly installed before connecting the connector.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.

15. Turn the ignition switch to ON position.

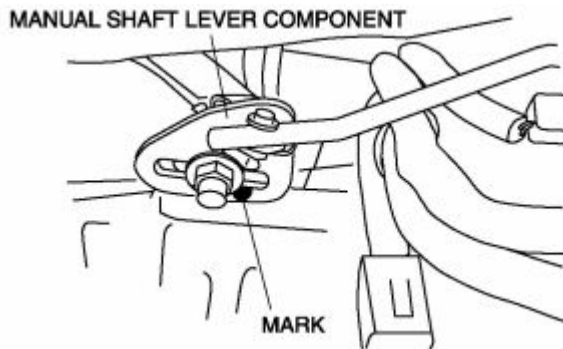
16. Install the interlock cable to the key cylinder.

17. Slide the outer casing to the key cylinder, and insert the clip over the convex part of the outer casing.



Manual Shaft Lever Component Installation Note

1. Align the mark of the manual shaft lever component as shown in the figure.



2. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m

{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

STEERING SHIFT SWITCH REMOVAL/INSTALLATION

NOTE:

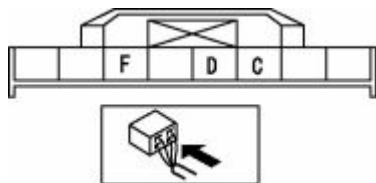
- The down switch is built into the audio control and cruise control switches. (For vehicles without cruise control, there is only a down switch.)

1. Remove the steering shift switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION .)
2. Install in the reverse order of removal.

STEERING SHIFT SWITCH INSPECTION

1. Remove the driver-side air bag module. (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION .)
2. Connect the connector to the steering shift switch.
3. Connect the negative battery cable.
4. Measure the voltage at the steering shift switch.
 - When inspecting terminal C for continuity, disconnect the steering shift switch connector.
5. If the value are not as specified in the Terminal Voltage List (Reference), inspect the parts under "Action" and related wiring harnesses.
6. If the parts inspected under "ACTION" are found to be normal but the system still does not operate normally, replace the up or down switch according to the following conditions:
 - The voltage is normal when the up switch is on and is abnormal when the down switch is on: Replace the down switch.
 - The voltage is normal when the down switch is on and is abnormal when the up switch is on: Replace the up switch.

Terminal Voltage List (Reference)



Terminal	Signal	Connected to	Test condition		Voltage (V)/ Continuity	Action
C	Steering shift switch ground	GND	Under any condition: inspect for continuity to ground		Yes	<ul style="list-style-type: none"> • Inspect GND
D	TNS	<ul style="list-style-type: none"> • Clock spring • Headlight switch 	Headlight switch TNS or on		B+	<ul style="list-style-type: none"> • Inspect clock spring • Inspect headlight switch • Inspect related harness
			Headlight switch off		Below 1.0	
F	Shift change signal	<ul style="list-style-type: none"> • Clock 	M range	Up switch and down switch off	3.96	<ul style="list-style-type: none"> • Inspect clock
				Up switch on	1.95	

		<ul style="list-style-type: none"> spring TCM 		Down switch on	2.48	<ul style="list-style-type: none"> spring Inspect TCM Inspect related harness
				Up switch and down switch on	1.50	

Notes:

OIL SEAL (DIFFERENTIAL)

OIL SEAL REPLACEMENT

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Clean the transmission exterior thoroughly using a steam cleaner or cleaning solvent.
5. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
6. Remove the following parts.
 - a. Front tunnel member
 - b. Rear tunnel member
 - c. Catalytic converter, middle pipe, main silencer

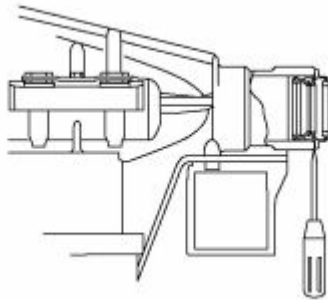
(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

- d. Heat insulator
- e. Propeller shaft

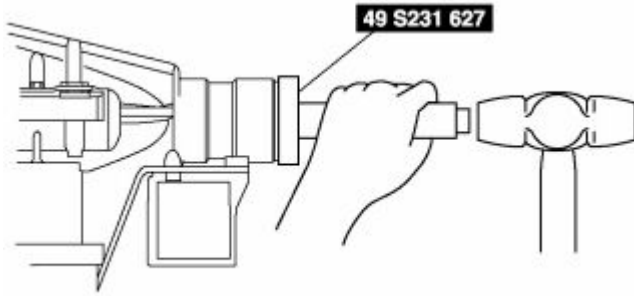
(See PROPELLER SHAFT REMOVAL/INSTALLATION .)

CAUTION:

- Do not scratch or damage the extension housing and output shaft.
7. Remove the oil seal using a flathead screwdriver.



8. Using the **SST** and a hammer, tap the new oil seal in evenly until the **SST** contacts the extension housing.



9. Coat the lip of the oil seal with ATF.
10. Install in the reverse order of removal.
11. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)

CONTROL VALVE BODY

CONTROL VALVE BODY REMOVAL

On-Vehicle Removal

WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.
- Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.

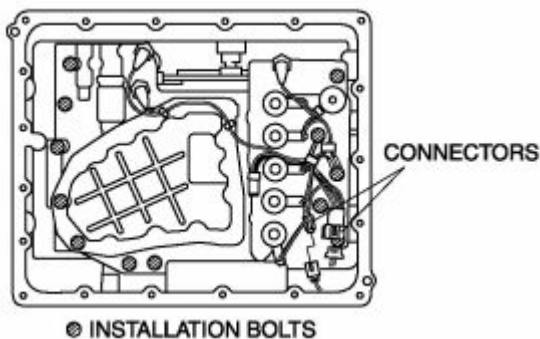
CAUTION:

- Clean the transmission exterior thoroughly with a steam cleaner or cleaning solvents before removal.
- If any old sealant gets into the transmission during installation of the oil pan, trouble may occur in the transmission case and oil pan. Clean with cleaning fluids.

1. Clean the transmission exterior thoroughly with a steam cleaner or cleaning solvents.
2. Remove the engine cover.

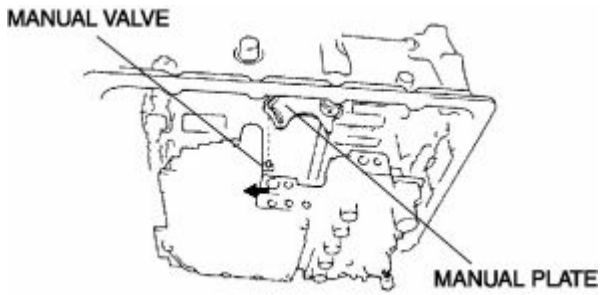
(See ENGINE COVER REMOVAL/INSTALLATION .)

3. Remove the battery cover.
4. Disconnect the negative battery cable.
5. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
6. Remove the oil pan and gasket.
7. Disconnect the connectors and remove the installation bolts as shown in the figure.



CAUTION:

- Do not move the manual valve in the direction of arrow to prevent the pin for manual valve rotation prevention from falling from the control valve body.
8. Remove the control valve body.



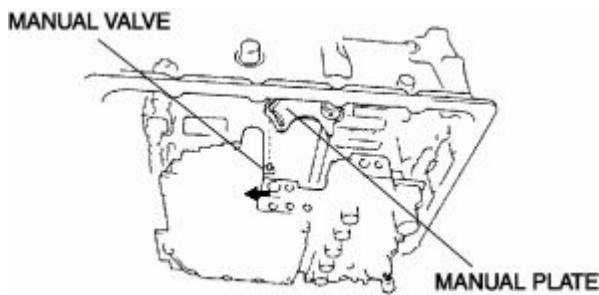
CONTROL VALVE BODY INSTALLATION

On-Vehicle Installation

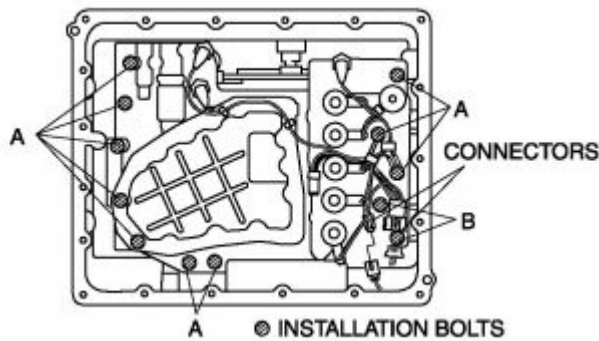
CAUTION:

- Do not move the manual valve in the direction of arrow to prevent the pin for manual valve rotation prevention from falling from the control valve body.

- Align the manual valve and the manual plate and install the control valve body.



- Install the installation bolts and connect the connectors as shown in the figure.



Bolt	Bolt length below the head (mm {in})
A	30 {1.181}
B	40 {1.575}

Tightening torque

- 6.9—8.8 N·m {71—89 kgf·cm, 62—77 in·lbf}
- Install the oil pan and a new gasket to a new oil pan installation bolts.

Tightening torque

- 7.0—9.0 N·m {72—91 kgf·cm, 63—78 in·lbf}
4. Connect the negative battery cable.
 5. Install the battery cover.
 6. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

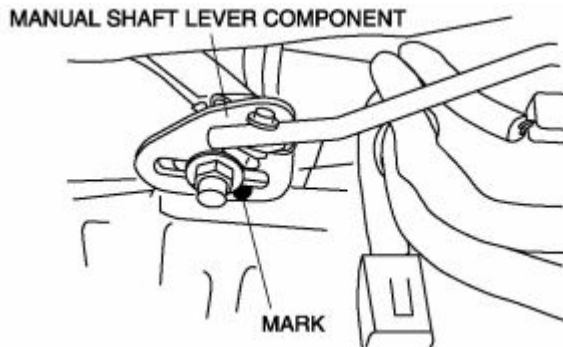
7. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)
8. Perform the mechanical system test. (See MECHANICAL SYSTEM TEST .)
9. Perform the road test. (See ROAD TEST .)

Notes:

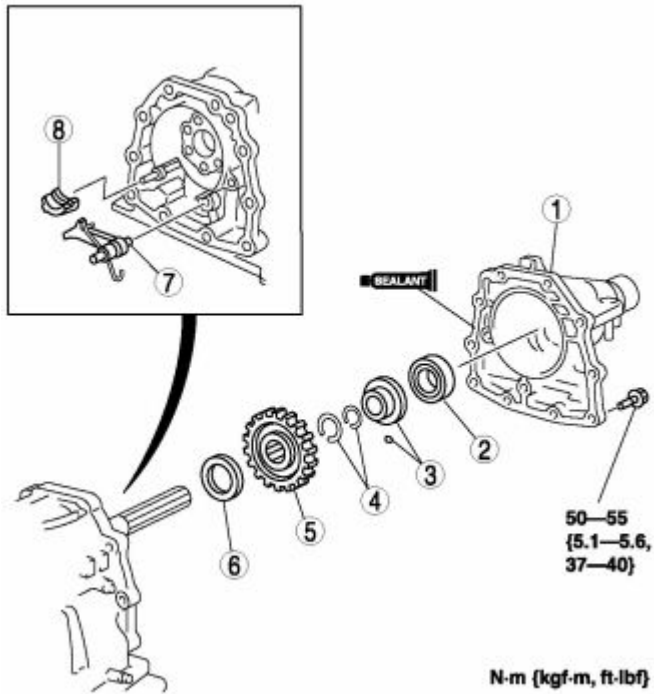
EXTENSION HOUSING AND PARKING MECHANISM

EXTENSION HOUSING, PARKING MECHANISM REMOVAL/INSTALLATION

1. Remove the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Clean the transmission exterior thoroughly using a steam cleaner or cleaning solvent.
5. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
6. Mark the manual shaft lever component as shown in the figure.



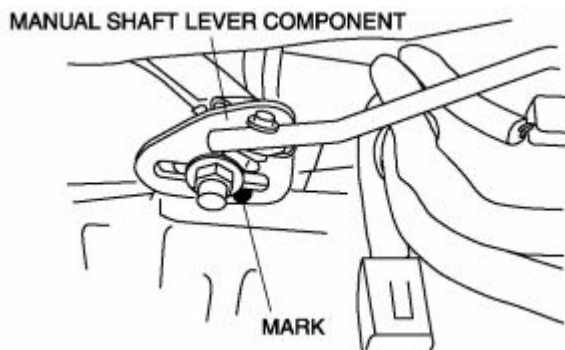
7. Separate the manual shaft lever component from the selector lever.
8. Remove the following parts.
 - a. Front tunnel member
 - b. Rear tunnel member
 - c. Catalytic converter, middle pipe, main silencer (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
 - d. Heat insulator
 - e. Power plant frame (See Power Plant Frame Removal Note .) (See Power Plant Frame Installation Note .)
 - f. Propeller shaft (See PROPELLER SHAFT REMOVAL/INSTALLATION .)
9. Remove in the order indicated in the table.



	Extension housing
1	(See Extension Housing Removal Note .) (See Extension Housing Installation Note .)
2	Bearing
3	Spacer, ball
4	Snap ring
5	Parking gear
6	Bearing
7	Parking pawl component
8	Actuator support

10. Install in the reverse order of removal.

11. Align the mark of the manual shaft lever component as shown in the figure.



12. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m

{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

13. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)
14. Connect the negative battery cable.
15. Install the battery cover.
16. Install the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)

Extension Housing Removal Note

CAUTION:

- Use caution when removing the extension housing as the output shaft may fall out and become damaged.
 - If the output shaft falls out, install it securely to the transmission.
1. Hold the output shaft so that it does not fall out, and remove the extension housing.

Extension Housing Installation Note

1. Apply sealant to the extension housing.
2. Make sure that the output shaft is installed securely and install the extension housing.

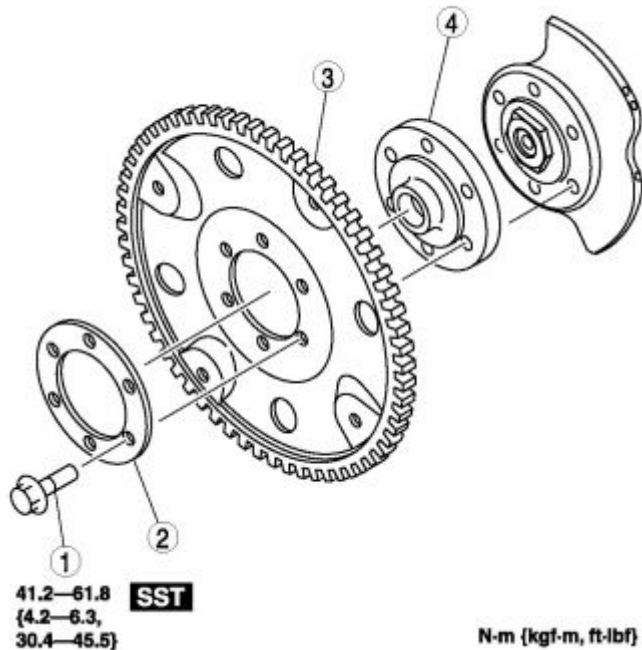
Tightening torque

- 50—55 N·m {5.1—5.6 kgf·m, 37—40 ft·lbf}

FLYWHEEL AND DRIVE PLATE

DRIVE PLATE REMOVAL/INSTALLATION

1. Remove the transmission (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)
2. Remove in the order indicated in the table.

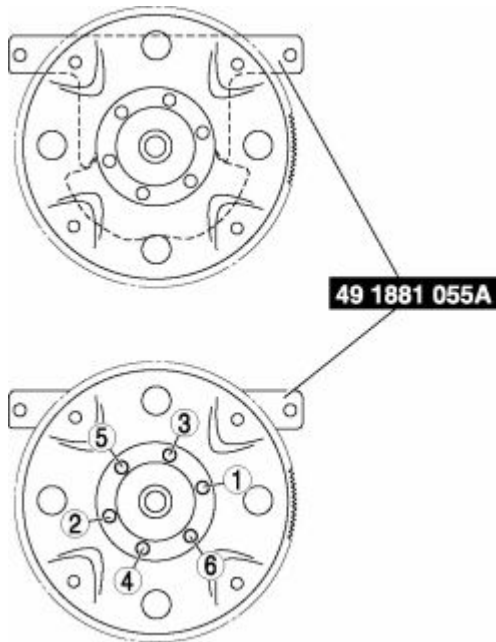


1	Bolt
2	Backing plate
	Drive plate
3	(See Drive Plate Removal Note .) (See Drive Plate Installation Note .)
4	Adapter

3. Install in the reverse order of removal.

Drive Plate Removal Note

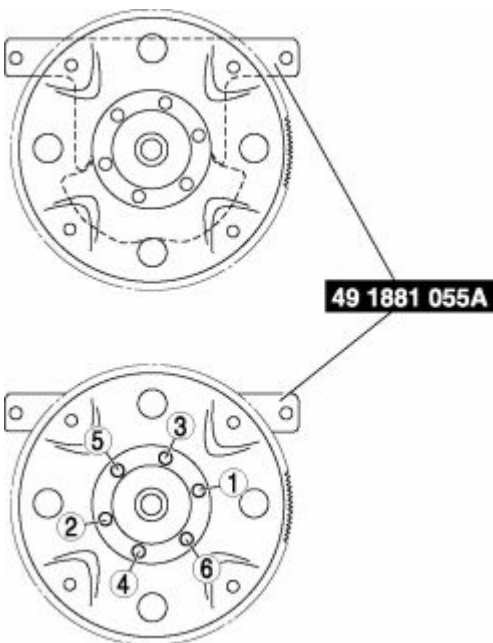
1. Set the **SST** against the engine.



2. Remove the bolts and the drive plate.

Drive Plate Installation Note

1. Set the **SST** against the engine.



2. Tighten the drive plate mounting bolts in two or three steps in the order as shown in the figure.

Tightening torque

- 41.2—61.8 N·m

{4.2—6.3 kgf·m, 30.4—45.5 ft·lbf}

3. Install the transmission. (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION .)

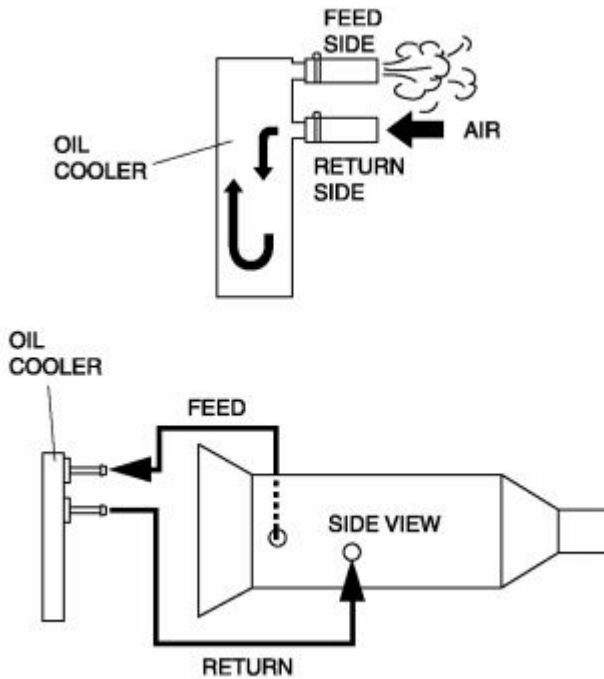
Notes:

OIL COOLER

OIL COOLER FLUSHING

NOTE:

- The contaminated cooler line (oil pipes and hoses) and auxiliary cooler must be flushed completely when AT is overhauled or replaced.
- Remove the two oil cooler line hoses and apply air pressure of **196 kPa {2.0 kgf/cm², 28 psi}** from the return hose (pipe) side.



CAUTION:

- Power flushing should be performed very carefully when removing the accumulated debris from the fluid baffle, otherwise the debris cannot be removed or the problem becomes even worse.

NOTE:

- Performing back and reverse power flushing two times each does not work because debris or particles flow out from the feed pipe side of AT.
- If there is no air blown out the feed side, flush the oil cooler lines using the power-flushing tool. (See Power Flushing .)Recommended power-flushing manufacturer

Manufacturer	Part number	Description
Kent Moore	J35944-AMAZ	Flushing kit or equivalent
OTC	60081	Portable torque converter, oil cooler cleaner or equivalent

Power Flushing

Repair procedure

1. Before power flushing, inspect the hoses/lines and clamps. Power flushing must begin with back flushing followed by forward flushing to quickly dislodge the restriction. If back flushing is not performed before forward flushing, the restriction could further reduce the ATF flow through the internal mesh type baffle of the cooler and flushing will not be effective or possible.

Inspecting oil lines and clamps

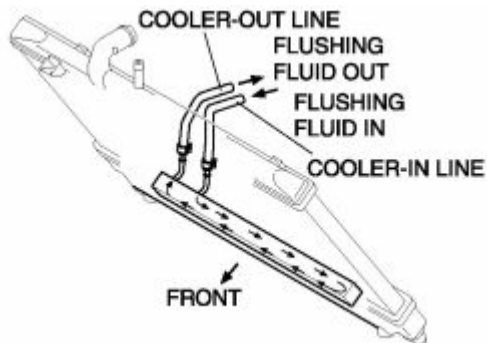
1. Be sure to inspect the lines (hoses/pipes) for cuts, crimps (pinched), cracks or any other damage before reusing them.
 - If there is any malfunction, replace lines and clamps.

CAUTION:

- Always use new clamps when replacing hoses.

Back flushing

1. Using the power flushing equipment manufacturer's instructions, connect equipment so the flushing fluid flows in the opposite direction of normal fluid flow.



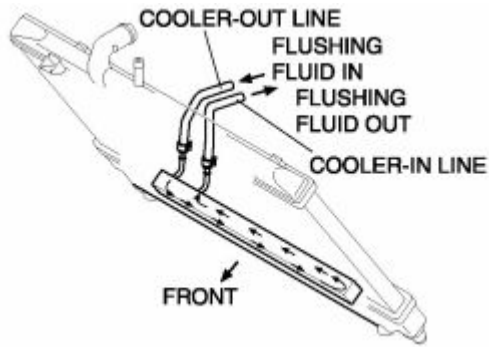
2. Flush oil cooler/lines until discharge fluid is clean.

CAUTION:

- If the cooler can not be properly flushed using recommended equipment, send the radiator out for sublet cleaning or replace.

Forward flushing

1. Connect power flushing equipment so the flushing fluid flows in the direction of normal fluid flow.



2. Flush oil cooler/lines until discharged fluid is clean.

OIL COOLER REMOVAL/INSTALLATION

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

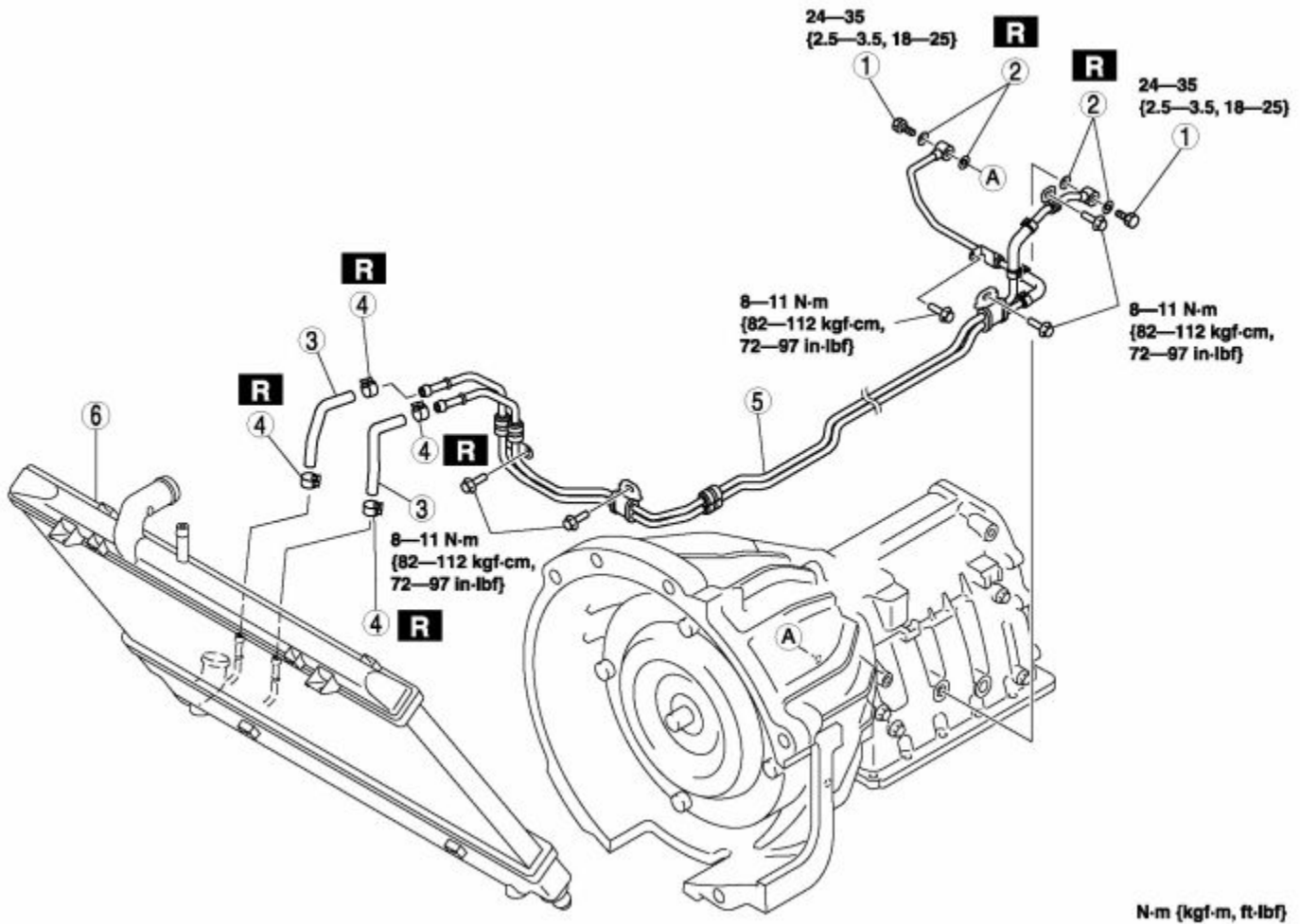
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove the following parts.
 - a. Splash shield
 - b. Under cover
 - c. Battery tray, battery duct

(See BATTERY REMOVAL/INSTALLATION .)

- d. Air cleaner duct, air cleaner, air cleaner bracket
- e. PCM duct
- f. Catalytic converter

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. Add ATF to the specified level. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
9. Inspect for oil leakage from the oil pipes and oil hoses.
10. Inspect for coolant from the hoses.
11. Inspect the ATF level and condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION .)
12. Perform the line pressure test. (See Line Pressure Test .)
13. Perform the road test. (See ROAD TEST .)



1	Connector bolt
2	Washer
3	Oil hose (See Oil Pipe, Hose clamp, Oil hose Installation Note .)
4	Hose clamp (See Oil Pipe, Hose clamp, Oil hose Installation Note .)
5	Oil pipe, oil hose (See Oil Pipe, Hose clamp, Oil hose Installation Note .)
6	Radiator (in tank oil cooler) (See RADIATOR REMOVAL/INSTALLATION .) (See Radiator (In Tank Oil Cooler) Installation Note .)

Radiator (In Tank Oil Cooler) Installation Note

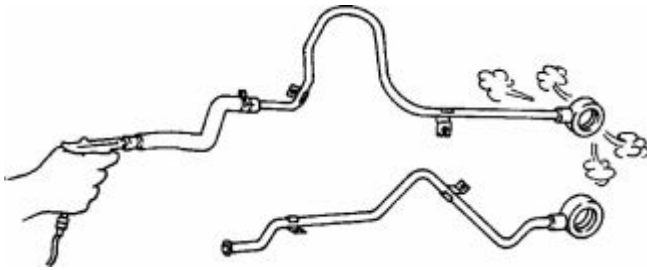
1. The automatic transmission oil cooler flushing must be performed whenever a transmission is removed for service because the existing fluid may be contaminated, and to prevent contamination of new fluid.

NOTE:

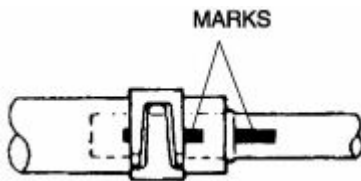
- Flushing must be performed after installation of the overhauled or replaced transmission.
2. Follow the instructions in the manufacturer's publication for flushing operation.

Oil Pipe, Hose clamp, Oil hose Installation Note

1. Apply compressed air to cooler-side opening, and blow any remaining grime and foreign material from the cooler pipes. Compressed air should be applied for **more than 1 min** .



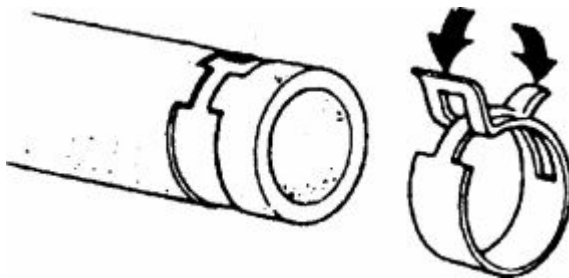
2. Align the marks, and slide the oil hose onto the oil pipe until it is fully seated as shown.



3. Install the hose clamp onto the hose.

NOTE:

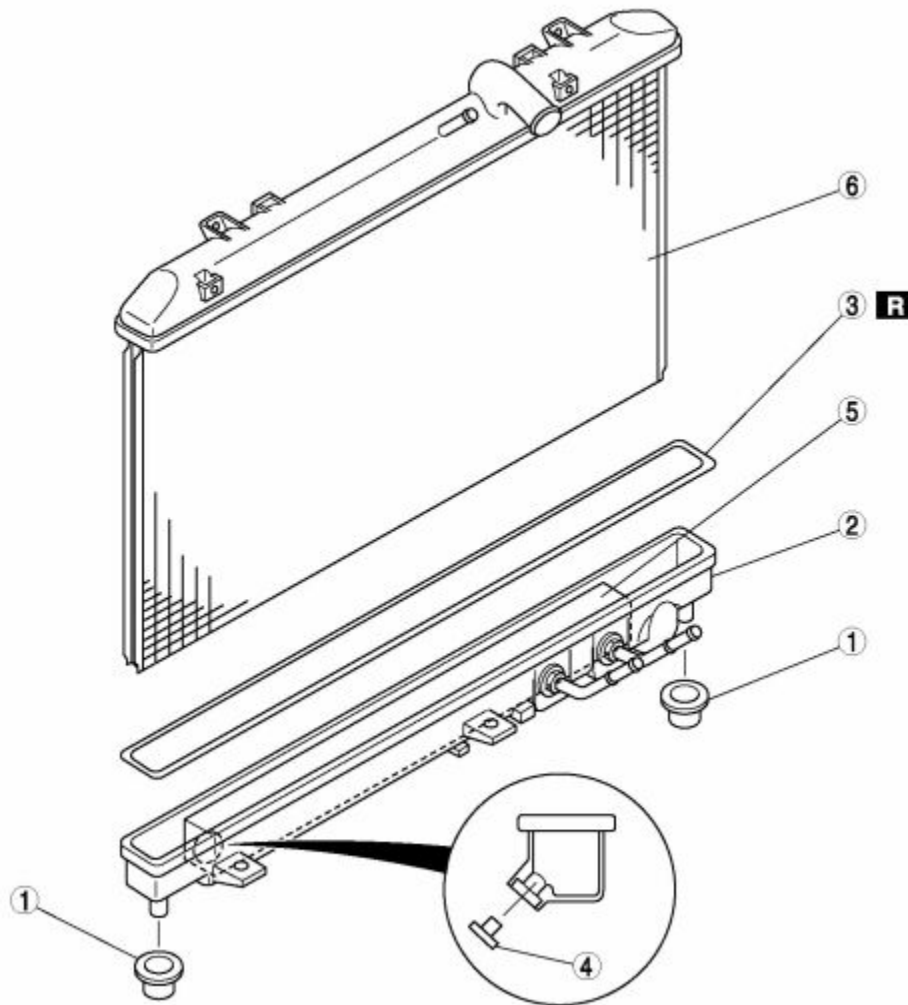
- If reusing the hose, install the new hose clamp exactly on the mark left by the previous hose clamp. Then apply force to the hose clamp in the direction of the arrow in order to fit the clamp in place.



4. Verify that the hose clamp does not interfere with any other components.

OIL COOLER DISASSEMBLY/ASSEMBLY

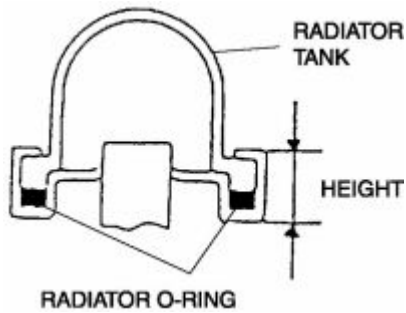
1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1	Mount rubber
	Radiator outer tank (in-tank oil cooler)
2	(See Radiator Outer Tank (In-Tank Oil Cooler) Disassembly Note .) (See Radiator Outer Tank (In Tank Oil Cooler) Assembly Note .)
3	O-ring
4	Drain cock
5	ATF cooler
6	Radiator

Radiator Outer Tank (In-Tank Oil Cooler) Disassembly Note

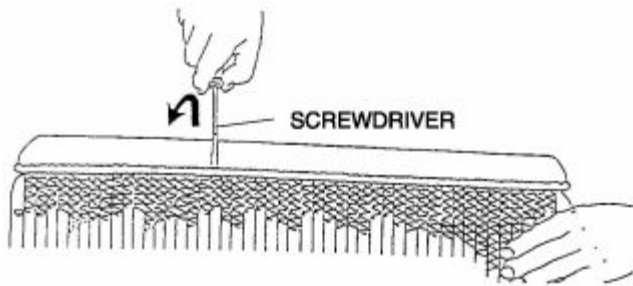
1. Inspect the height of the header tabs.



2. Insert the end of a medium tip screwdriver between the end of the header tab and the outer tank.

NOTE:

- Do not open more tabs than necessary for tank removal.
3. Pivot the screwdriver to pry the tab away from the tank and repeat the procedure for each tab.

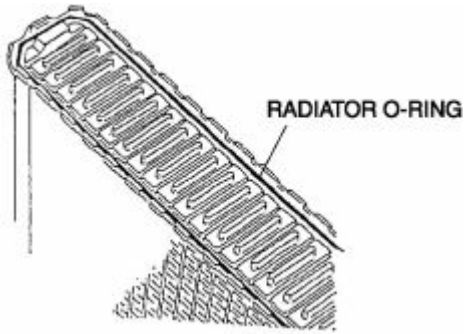


NOTE:

- If any header tabs are missing from the core, replace the radiator.
4. Remove the radiator outer tank and O-ring (gasket) from the core header when all of the tabs are opened.
 5. Inspect the gasket surface of the radiator core header to ensure it is clean and free of foreign material or damage.
 6. Inspect the radiator outer tank for warping. If it is warped, replace the radiator tank.

Radiator Outer Tank (In Tank Oil Cooler) Assembly Note

1. Install a new O-ring and ensure it is not twisted.

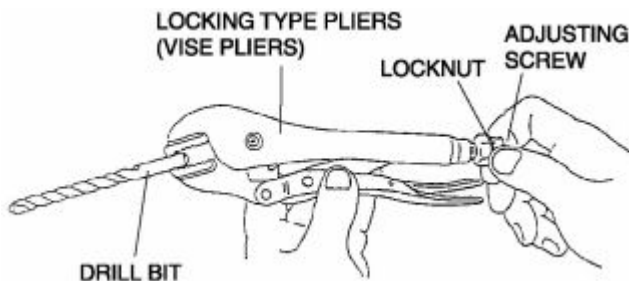


NOTE:

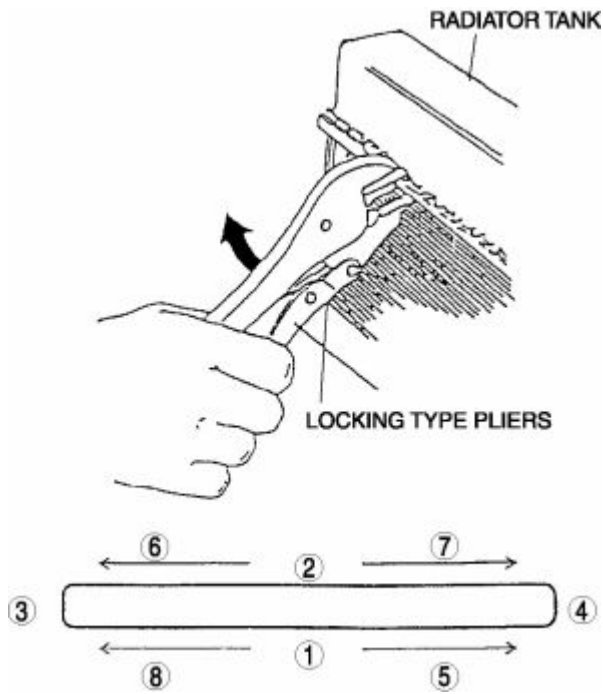
- The old O-ring must be replaced.
2. Position the radiator tank in the original direction to the core using care not to scratch the tank sealing surface with the header tabs.

NOTE:

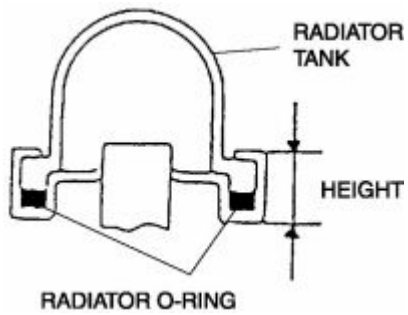
- Step 3 will set jaw opening to the correct specification.
3. With the jaws of locking-type pliers (vise grips) closed and locked, turn the adjusting screw to position the jaws against the drill bit with the diameter measured (height) in removal procedure 1. Tighten the lock nut on the adjusting screw against the handle to lock the adjustment in place.



4. Squeeze the header tabs down in the order as shown in the figure against the lip of the radiator outer tank base with the locking-type pliers while rotating the pliers toward the tank.

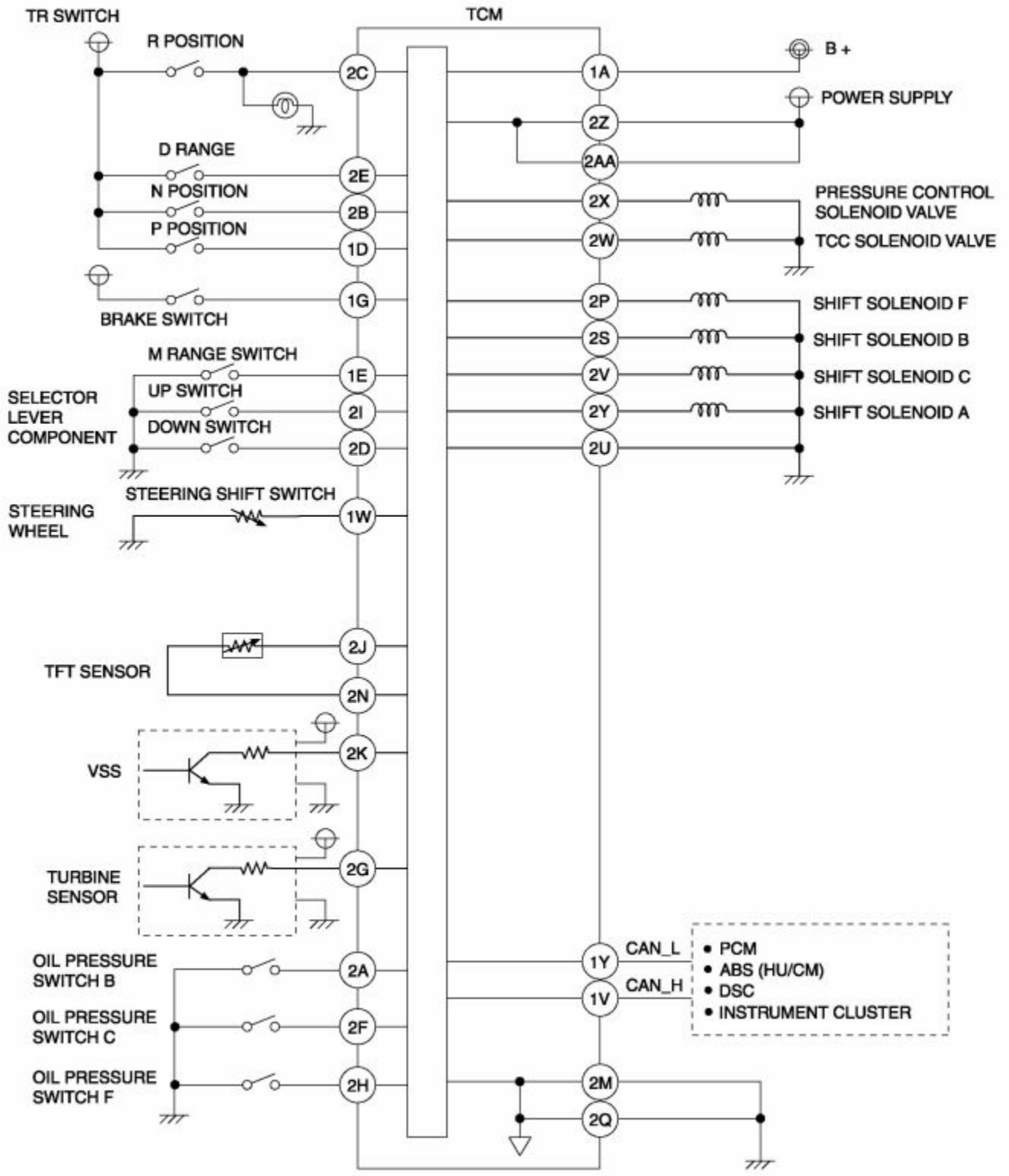


5. Verify that the height of the header tabs is same as the height before removal.



6. Inspect for leakage from radiator. (See ENGINE COOLANT LEAKAGE INSPECTION .)

AUTOMATIC TRANSMISSION CONTROL SYSTEM WIRING DIAGRAM

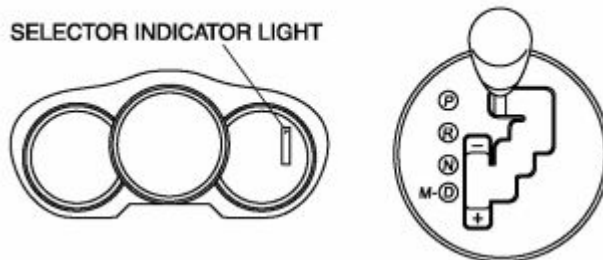


AUTOMATIC TRANSMISSION INPUT (SENSOR/SWITCH)

TRANSMISSION RANGE (TR) SWITCH INSPECTION

Operating inspection

1. Verify that the starter operates only when the ignition switch is turned to the START position with the selector lever in the P or N position.
 - If there is any malfunction, adjust the TR switch. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)
2. Verify that the back-up lights illuminate when shifted to the R position with the ignition switch at the ON position.
 - If there is any malfunction, adjust the TR switch. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)
3. Verify that the positions of the selector lever and the indicator are aligned.



- If there is any malfunction, adjust the TR switch. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)

Continuity Inspection

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

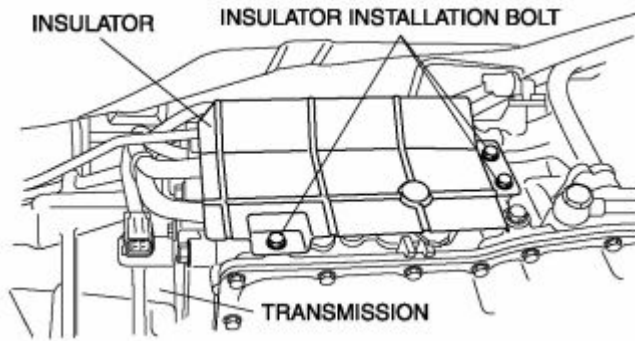
1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

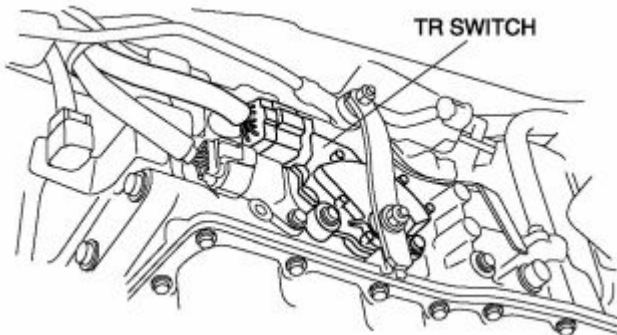
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

5. Remove the insulator.



6. Disconnect the TR switch connector.

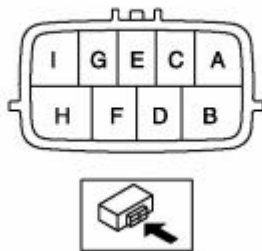


7. Verify continuity as indicated in the table.

- If there is any malfunction, adjust the TR switch. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT .)

○—○ : Continuity

Position/ Range	Terminal								
	A	B	C	D	E	F	G	H	I
P		○						○	
R	○		○		○				
N		○						○	
D			○	○				○	



8. Reinspect for continuity at TR switch.

- If there is any malfunction, replace the TR switch. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION .)

9. Connect the TR switch connector.

10. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

11. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

12. Connect the negative battery cable.

13. Install the battery cover.

14. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

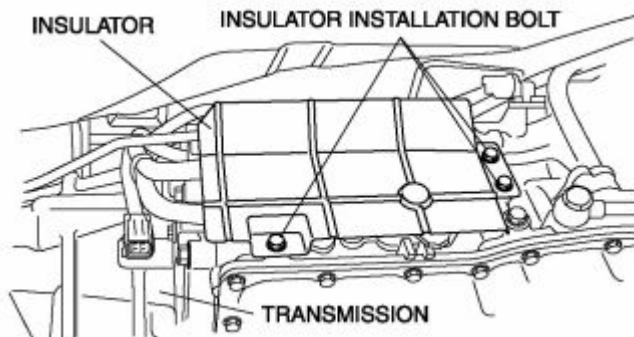
2. Remove the battery cover.

3. Disconnect the negative battery cable.

4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

5. Remove the insulator.

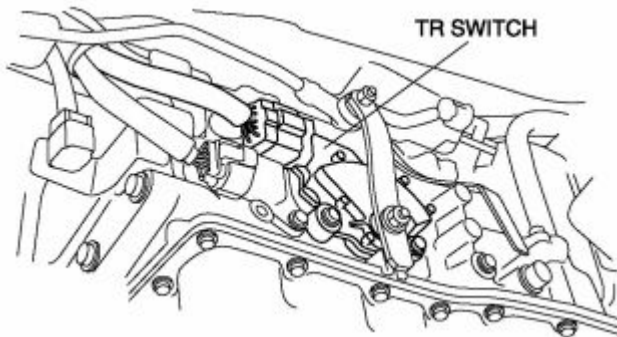


6. Mark the manual shaft lever component as shown in the figure.

MANUAL SHAFT LEVER COMPONENT



7. Separate the manual shaft lever component from selector lever.
8. Disconnect the TR switch connector.

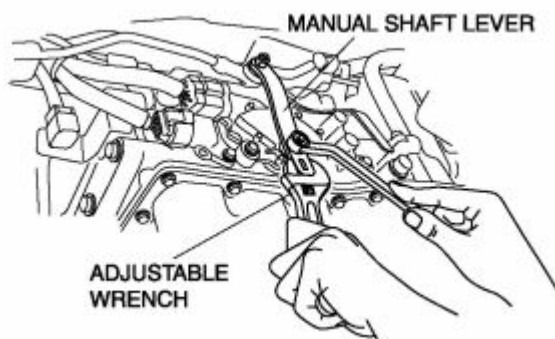


9. Rotate the manual shaft to the N position.

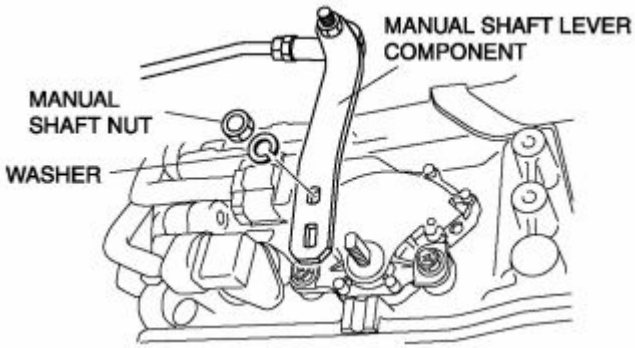
CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, otherwise the transmission may be damaged.

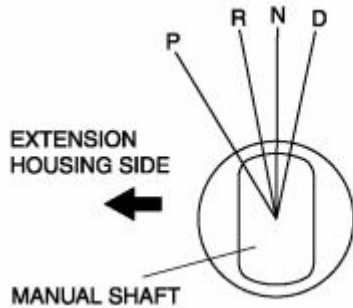
10. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



11. Remove the manual shaft nut.
12. Remove the washer and manual shaft lever component.



13. Remove the TR switch.
14. Rotate the manual shaft to the extension housing side fully and return two notches to set the N position.

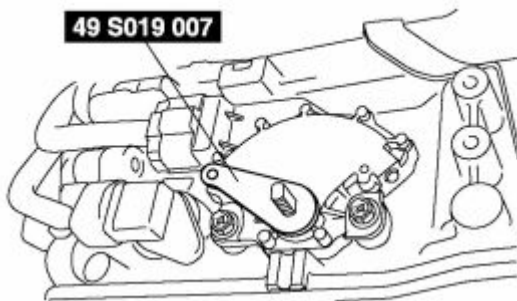


15. Install the TR switch and hand-tighten the mounting bolts.

CAUTION:

- Improper adjustment of the TR switch will cause abnormal operation of the automatic transmission. Be sure to use the SST to adjust the TR switch correctly.

16. Using the SST and by turning the TR switch, adjust the positions of the manual shaft and the TR switch neutral hole.

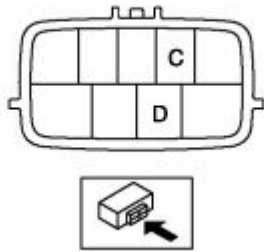


17. Tighten the TR switch mounting bolts.

Tightening torque

- 4.4—6.5 N·m
{45—66 kgf·cm, 40—57 in·lbf}

18. Inspect for continuity between TR switch terminals C and D.



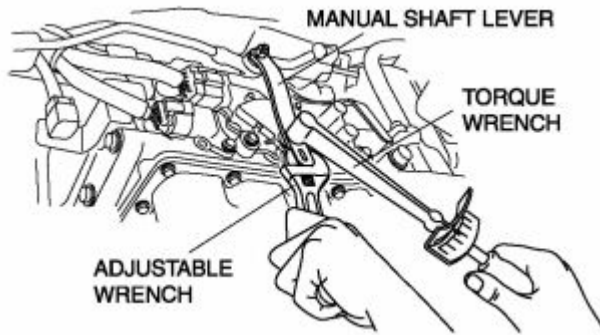
19. Remove the SST .

20. Install the manual shaft lever component and washer.

CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when tightening the manual shaft nut, otherwise the transmission may be damaged.

21. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



22. Tighten the manual shaft nut using a torque wrench.

Tightening torque

- 23—33 N·m {2.3—3.4 kgf·m, 17—24 ft·lbf}

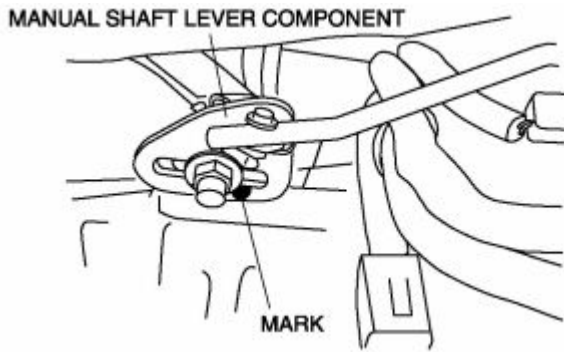
23. Shift the selector lever to the P position.

24. Turn the manual shaft lever to the P position.

25. Inspect TR switch continuity. (See Continuity Inspection .)

26. Connect the TR switch connector.

27. Align the mark of the manual shaft lever component as shown in the figure.



28. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m
{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

29. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

30. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

31. Connect the negative battery cable.

32. Install the battery cover.

33. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

34. Inspect TR switch operation. (See Operating inspection .)

TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

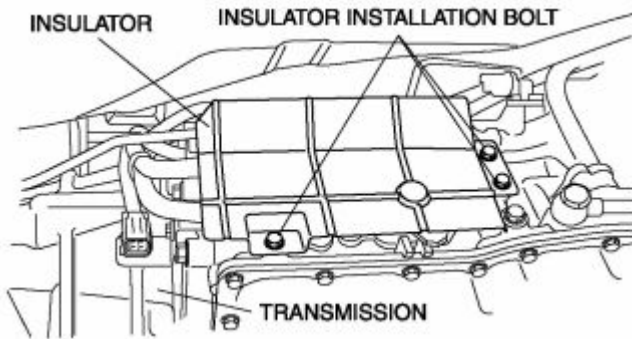
2. Remove the battery cover.

3. Disconnect the negative battery cable.

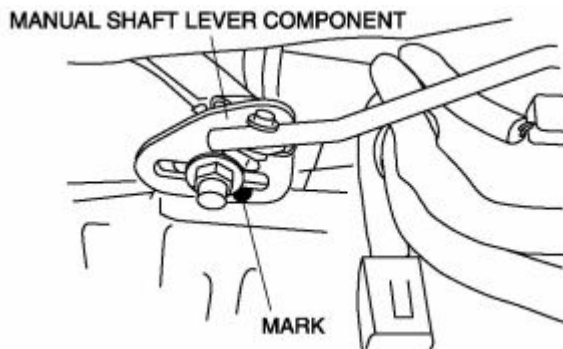
4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

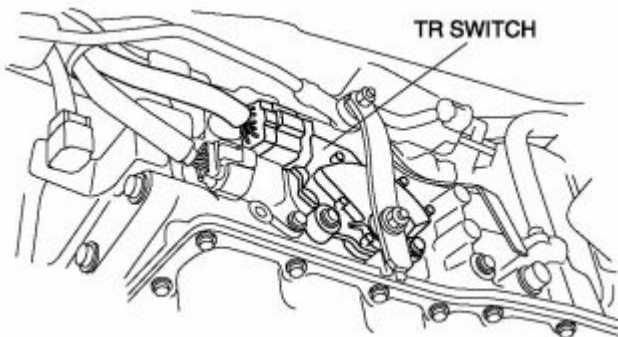
5. Remove the insulator.



6. Mark the manual shaft lever component as shown in the figure.



7. Separate the manual shaft lever component from selector lever.
8. Disconnect the TR switch connector.

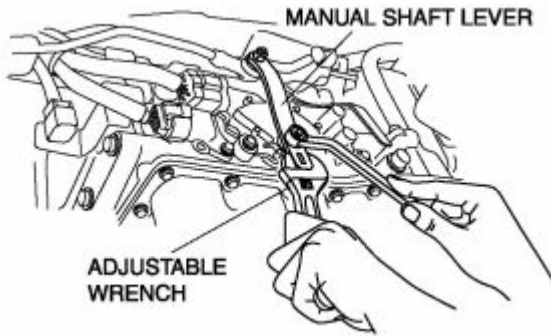


9. Rotate the manual shaft to the N position.

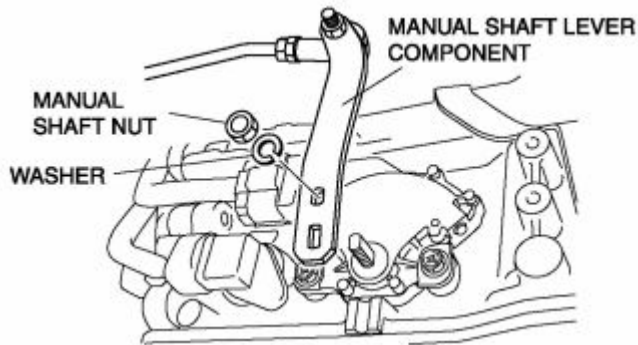
CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, otherwise the transmission may be damaged.

10. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



11. Remove the manual shaft nut.
12. Remove the washer and manual shaft lever component.

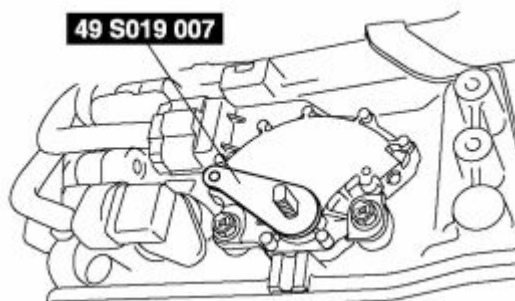


13. Loosen the TR switch mounting bolts.

CAUTION:

- Improper adjustment of the TR switch will cause abnormal operation of the automatic transmission. Be sure to use the SST to adjust the TR switch correctly.

14. Using the SST and by turning the TR switch, adjust the positions of the manual shaft and the TR switch neutral hole.

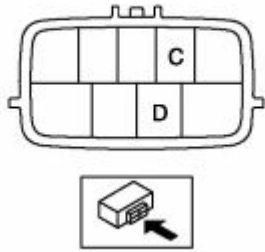


15. Tighten the TR switch mounting bolts.

Tightening torque

- 4.4—6.5 N·m
{45—66 kgf·cm, 40—57 in·lbf}

16. Inspect for continuity between TR switch terminals C and D.



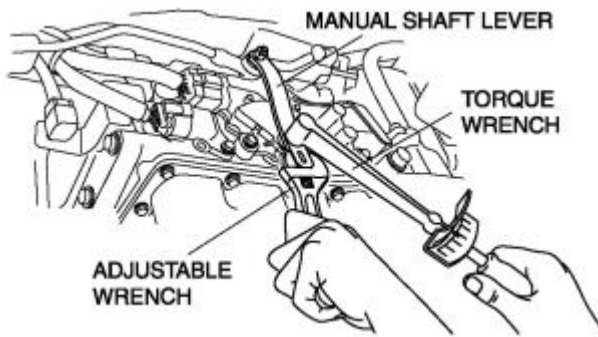
17. Remove the **SST** .

18. Install the manual shaft lever component and washer.

CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when tightening the manual shaft nut, otherwise the transmission may be damaged.

19. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



20. Tighten the manual shaft nut using a torque wrench.

Tightening torque

- 23—33 N·m {2.3—3.4 kgf·m, 17—24 ft·lbf}

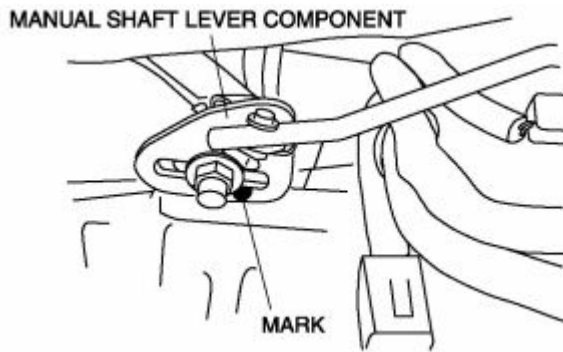
21. Shift the selector lever to P position.

22. Turn the manual shaft lever to P position.

23. Inspect TR switch continuity. (See Continuity Inspection .)

24. Connect the TR switch connector.

25. Align the mark of the manual shaft lever component as shown in the figure.



26. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m
{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

27. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

28. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

29. Connect the negative battery cable.

30. Install the battery cover.

31. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

32. Inspect TR switch operation. (See Operating inspection .)

TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

On-Vehicle Inspection

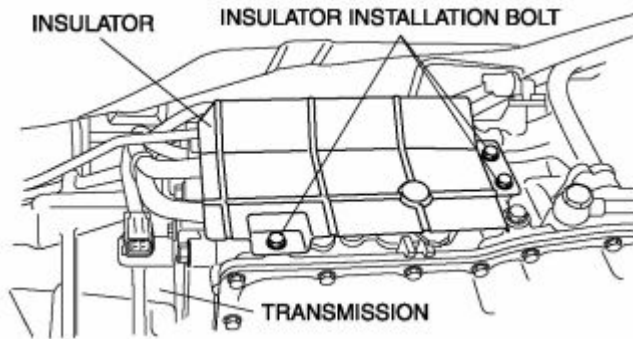
1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

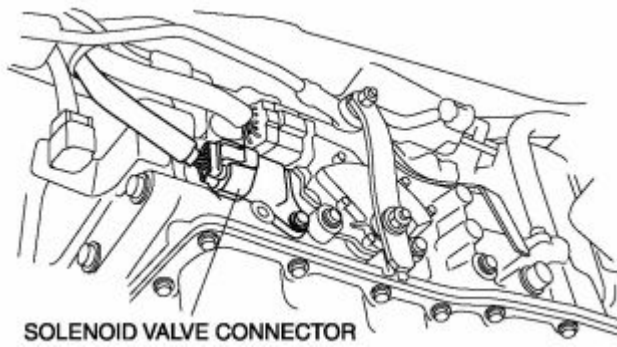
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

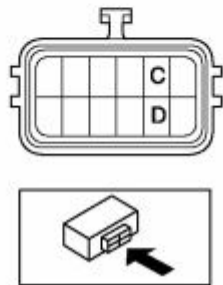
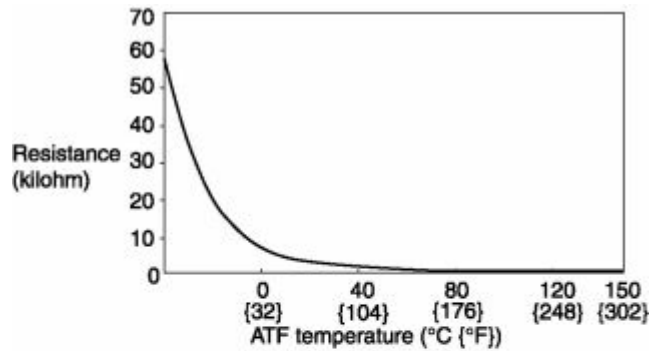
5. Remove the insulator.



6. Disconnect the solenoid valve connector.



7. Measure resistance between the terminals C and D.



- If there is any malfunction, perform the off-vehicle inspection for TFT sensor. (See Off-Vehicle Inspection .)

ATF temperature (°C {°F})	Resistance (kilohm)
-20 {-4}	15.87—17.54
0 {32}	5.727—6.329
20 {68}	2.375—2.625
40 {104}	1.102—1.218
60 {140}	0.561—0.620
80 {176}	0.308—0.341
100 {212}	0.181—0.200
120 {248}	0.112—0.123
130 {266}	0.089—0.099

8. Connect the solenoid valve connector.
9. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

10. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

11. Connect the negative battery cable.
12. Install the battery cover.
13. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

Off-Vehicle Inspection

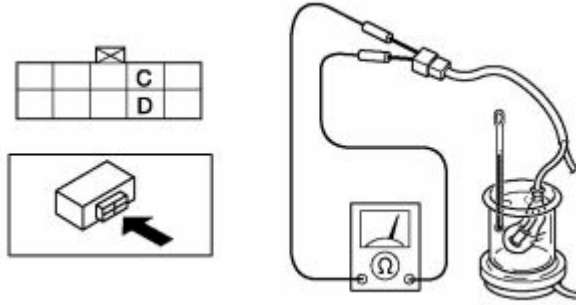
WARNING:

- A hot the transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.

1. Remove the TFT sensor.

(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)

2. Place the TFT sensor and a thermometer in ATF as shown in the figure, and heat the ATF gradually.
3. Measure the resistance between the TFT sensor terminals.



- If there is any malfunction, replace the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)

ATF temperature (°C {°F})	Resistance (kilohm)
-20 {-4}	15.87—17.54
0 {32}	5.727—6.329
20 {68}	2.375—2.625
40 {104}	1.102—1.218
60 {140}	0.561—0.620
80 {176}	0.308—0.341
100 {212}	0.181—0.200
120 {248}	0.112—0.123
130 {266}	0.089—0.099

4. Install the TFT sensor.

(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION .)

TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION

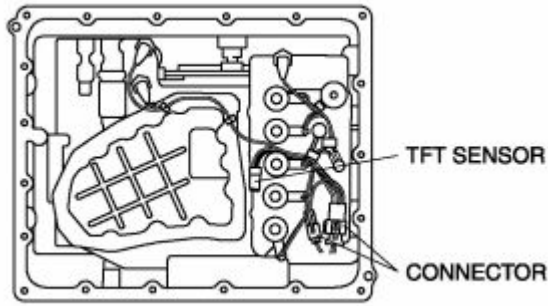
WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove the oil pan and gasket.
6. Remove the solenoid valve wiring harness component (with TFT sensor).



7. Install a new solenoid valve wiring harness (with TFT sensor).
8. Install the oil pan and new gasket to a new oil pan installation bolts.

Tightening torque

- 7.0—9.0 N·m
{72—91 kgf·cm, 63—78 in·lbf}

9. Connect the negative battery cable.
10. Install the battery cover.
11. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

12. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)

TURBINE SENSOR INSPECTION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

Visual Inspection

1. Remove the turbine sensor. (See TURBINE SENSOR REMOVAL/INSTALLATION .)
2. Make sure that the turbine sensor is free of any metal shavings or particles.
 - If there is any malfunction, clean them off.
3. Install the turbine sensor. (See TURBINE SENSOR REMOVAL/INSTALLATION .)

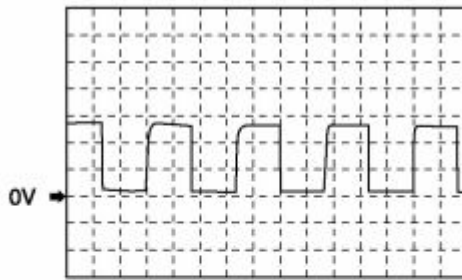
Element inspection

1. Verify using an oscilloscope that the wave pattern for the turbine sensor signal that is input to TCM terminal 2G is the same as the reference wave pattern.
 - If the actual pattern of the turbine sensor signal is not the same as the reference pattern, inspect and repair the following items:

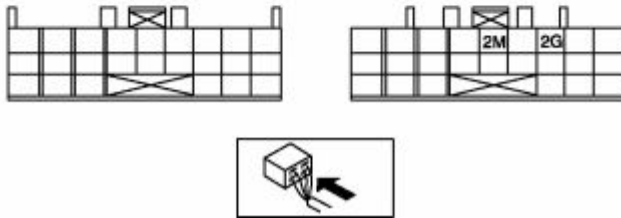
Wave pattern	Malfunction cause
No wave pattern (fixed at HI)	<ul style="list-style-type: none"> • Open circuit between turbine sensor terminal (A)—TCM terminal 2G • Open/Short circuit between turbine sensor terminal (B)—battery
No wave pattern (fixed at LO)	<ul style="list-style-type: none"> • Short circuit between turbine sensor terminal (A)—TCM terminal 2G
Wave pattern HI is too low	<ul style="list-style-type: none"> • Harness malfunction between turbine sensor terminal (A)—TCM terminal 2G • Insufficient output from the turbine sensor
Wave pattern LO is too high	<ul style="list-style-type: none"> • Poor connection (loose GND) between turbine sensor terminal (C)—TCM terminal 2G
Wave pattern too wide/narrow	<ul style="list-style-type: none"> • Metal shavings (foreign material) on turbine sensor • Reverse and high clutch drum rotation fluctuation

- Connected terminals: 2G (+) and 2M (-)

REFERENCE WAVE PATTERN

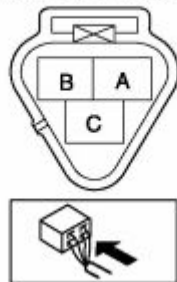


TCM HARNESS SIDE CONNECTOR



- Equipment setting: 5V/DIV (Y): 250 microseconds/DIV (X)
 - Measuring conditions: M range, 1st gear at 20 km/h {12 mph}
2. Verify the wave pattern of the turbine sensor signal again, and if the malfunction is not resolved, replace turbine sensor.

TURBINE SENSOR HARNESS SIDE CONNECTOR



TURBINE SENSOR REMOVAL/INSTALLATION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
- If foreign material is stuck to the turbine sensor, disturbance by magnetic flux can cause sensor output to be abnormal and there by negatively affect control. Make sure that foreign material such as iron particles is not stuck to the turbine sensor during installation.

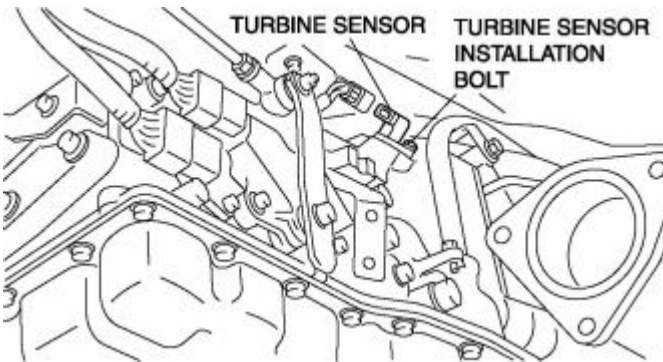
1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

5. Disconnect the turbine sensor connector.
6. Remove the turbine sensor.



7. Apply ATF to a new O-ring and install it on a turbine sensor.
8. Install the turbine sensor.

Tightening torque

- 5.0—7.0 N·m {51—71 kgf·cm, 43—61 in·lbf}

9. Connect the turbine sensor connector.
10. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

11. Connect the negative battery cable.
12. Install the battery cover.
13. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

VEHICLE SPEED SENSOR (VSS) INSPECTION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

Visual Inspection

1. Remove the VSS. (See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION .)
2. Make sure that the VSS is free of any metal shavings or particles.
 - If there is any malfunction, clean them off.
3. Install the VSS. (See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION .)

Element inspection

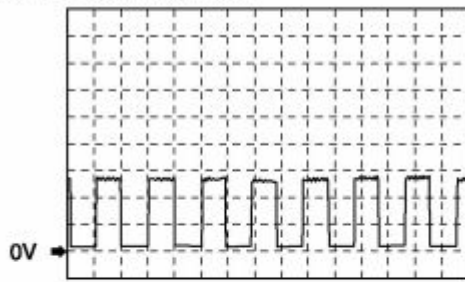
1. Verify using an oscilloscope that the wave pattern for the VSS signal that is input to TCM terminal 2K is the same as the reference wave pattern.

- If the actual pattern of the VSS signal is not the same as the reference pattern, inspect and repair the following items:

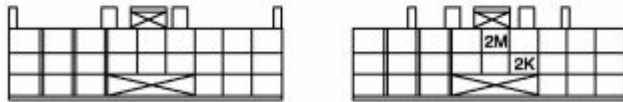
Wave pattern	Malfunction cause
No wave pattern (fixed at HI)	<ul style="list-style-type: none"> • Open circuit between VSS terminal (A)—TCM terminal 2K • Open/Short circuit between VSS terminal (B)—battery
No wave pattern (fixed at LO)	<ul style="list-style-type: none"> • Short circuit between VSS terminal (A)—TCM terminal 2K
Wave pattern HI is too low	<ul style="list-style-type: none"> • Harness malfunction between VSS terminal (A)—TCM terminal 2K • Insufficient output from the VSS
Wave pattern LO is too high	<ul style="list-style-type: none"> • Poor connection (loose GND) between VSS terminal (C)—TCM terminal 2K
Wave pattern too wide/narrow	<ul style="list-style-type: none"> • Metal shavings (foreign material) on VSS • Parking gear rotation fluctuation

- Connected terminals: 2K (+) and 2M (–)

REFERENCE WAVE PATTERN



TCM HARNESS SIDE CONNECTOR



- Equipment setting: 5V/DIV (Y): 2.5 ms/DIV (X)
 - Measuring conditions: M range, 1st gear at 20 km/h {12 mph}
2. Verify the wave pattern of the VSS signal again, and if the malfunction is not resolved, replace the VSS.

VSS HARNESS SIDE CONNECTOR



VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
- If foreign material is stuck to the VSS, disturbance by magnetic flux can cause sensor output to be abnormal and thereby negatively affect control. Make sure that foreign material such as iron particles is not stuck to the VSS during installation.

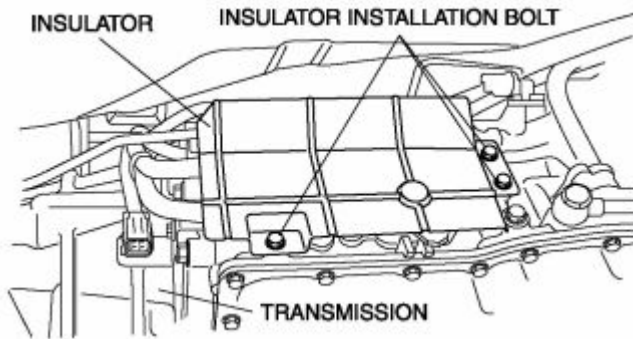
1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

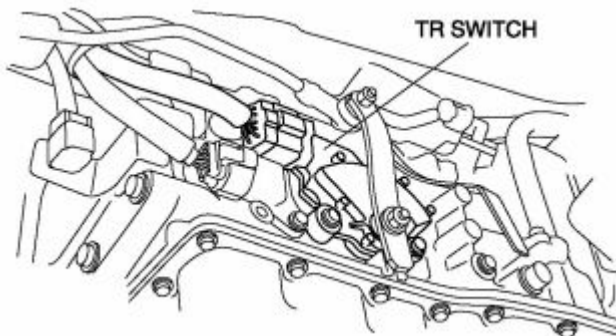
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

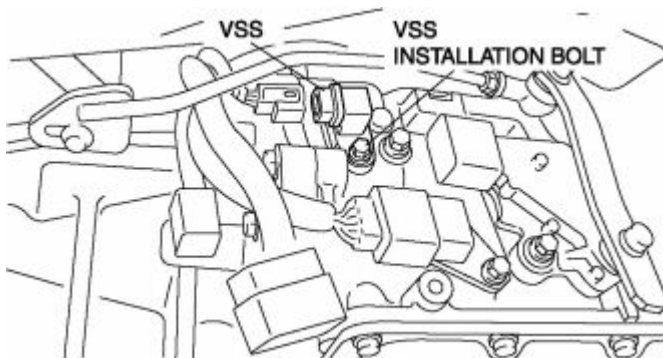
5. Remove the insulator.



6. Disconnect the TR switch connector.



7. Disconnect the VSS connector.
8. Remove the VSS.



9. Apply ATF to a new O-ring and install it on a VSS.
10. Install the VSS.

Tightening torque

- 5.0—7.0 N·m {51—71 kgf·cm, 43—61 in·lbf}

11. Connect the VSS connector.
12. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

13. Install the catalytic converter.

(See EXHAUST SYSTEM REMOVAL/INSTALLATION .)

14. Connect the negative battery cable.

15. Install the battery cover.

16. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

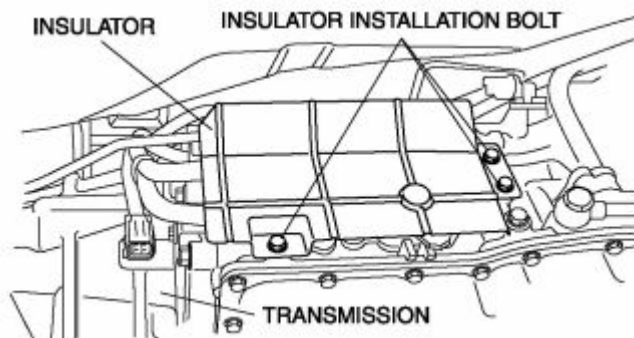
OIL PRESSURE SWITCH INSPECTION

CAUTION:

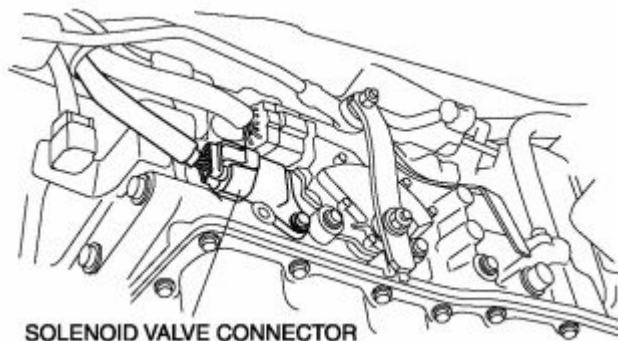
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

On-Vehicle Inspection

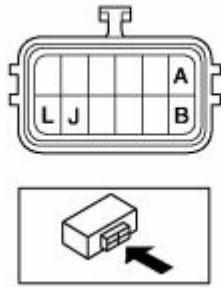
1. Remove the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
5. Remove the insulator.



6. Disconnect the solenoid valve connector.



7. Inspect for continuity between the following terminals.



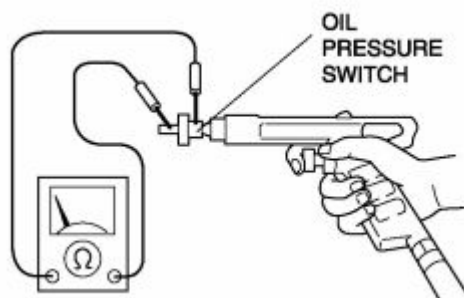
- Terminal B and J (oil pressure switch B)
 - Terminal A and J (oil pressure switch C)
 - Terminal L and J (oil pressure switch F)
 - If there is continuity, inspect the wiring harness between the solenoid connector and oil pressure switches. If there are no malfunctions with the harnesses, inspect the oil pressure switches. (See Off-Vehicle Inspection .)
 - If there is no continuity, inspect the oil pressure switches for verify the oil pressure switches are no malfunctions. (See Off-Vehicle Inspection .)
8. Connect the solenoid valve connector.
 9. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}
10. Install the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
 11. Connect the negative battery cable.
 12. Install the battery cover.
 13. Install the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)

Off-Vehicle Inspection

1. Remove the oil pressure switch. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
2. Apply **393—490 kPa {4.0—5.0 kgf/cm², 57—71 psi}** of air pressure to the oil pressure switch, and inspect for continuity between the oil pressure switch connector and the oil pressure switch screw.



- If there is no continuity, replace the oil pressure switch. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
3. Not apply of air pressure to the oil pressure switches, and verify for no continuity between the oil pressure switch connector and the oil pressure switch screw.

- If there is continuity, replace the oil pressure switch. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)
4. Install the oil pressure switch. (See OIL PRESSURE SWITCH REMOVAL/INSTALLATION .)

OIL PRESSURE SWITCH REMOVAL/INSTALLATION

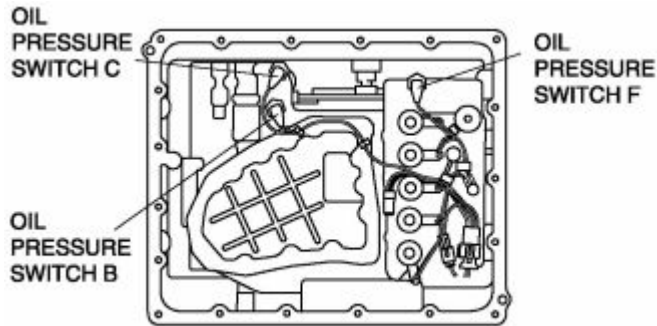
WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove the oil pan and gasket.
6. Disconnect the oil pressure switch connector.
7. Remove the oil pressure switch.



8. Install the oil pressure switch to the control valve body.

Tightening torque

- 4.0—4.9 N·m {40—50 kgf·cm, 35—43 in·lbf}
9. Connect the oil pressure switch connector.
 10. Install the oil pan and new gasket to a new oil pan installation bolts.

Tightening torque

- 7.0—9.0 N·m
{72—91 kgf·cm, 63—78 in·lbf}

11. Connect the negative battery cable.
12. Install the battery cover.
13. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

14. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)

Notes:

AUTOMATIC TRANSMISSION OUTPUT (SOLENOID/INDICATOR LIGHT)

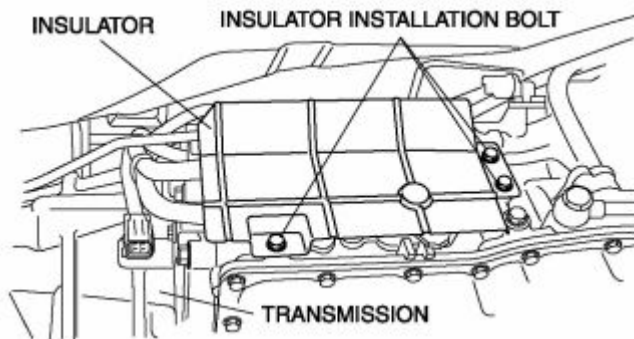
SOLENOID VALVE INSPECTION

CAUTION:

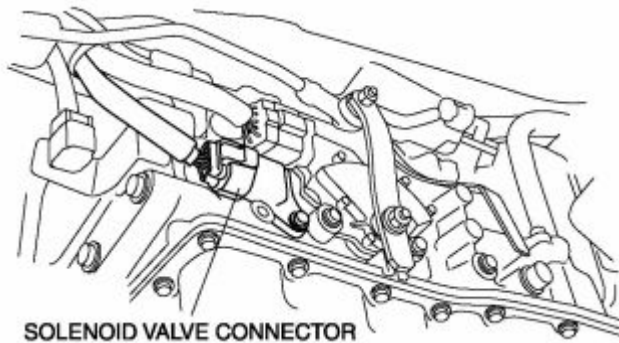
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

Resistance Inspection (On-Vehicle)

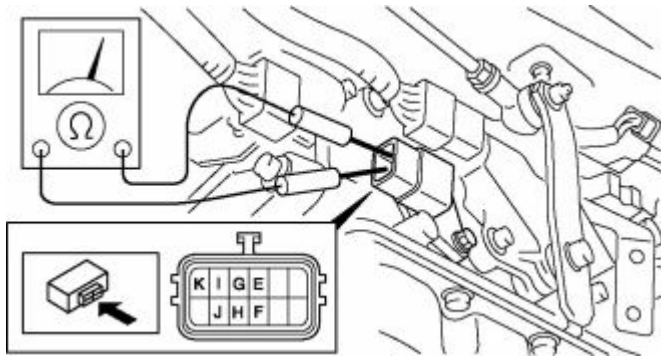
1. Remove the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
5. Remove the insulator.



6. Disconnect the solenoid valve connector.



7. Measure the resistance between the following terminals.



- If not within the specification, perform the operating inspection. (See Operating Inspection .)

ATF temperature: 20—80 °C {68—176 °F}

Terminals	Solenoid valve	Resistance (ohm) (Reference value)
E—J	Shift solenoid A	2.7—4.4
F—J	Shift solenoid B	2.7—4.4
G—J	TCC solenoid	12.1—16.0
H—J	Shift solenoid C	2.7—4.4
I—J	Shift solenoid F	2.7—4.4
K—J	Pressure control solenoid	12.3—16.3

8. Connect the solenoid valve connector.
9. Install the insulator.

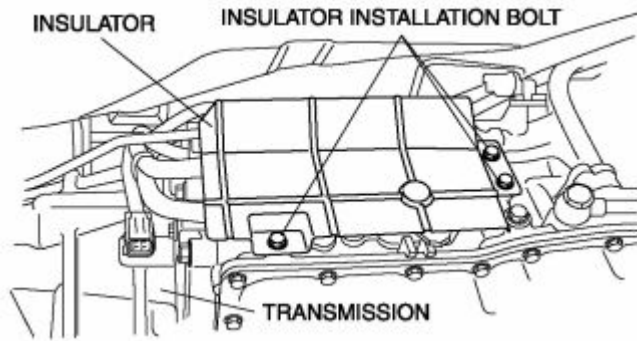
Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

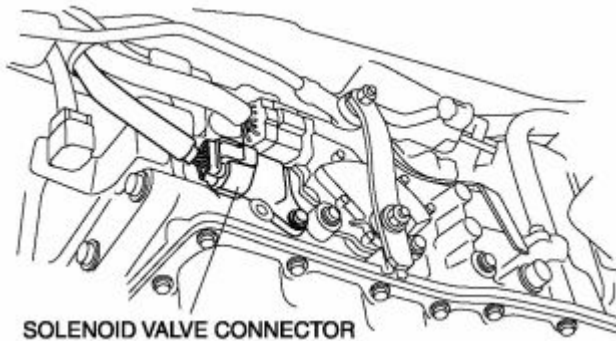
10. Install the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
11. Connect the negative battery cable.
12. Install the battery cover.
13. Install the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)

Operating Inspection

1. Remove the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
5. Remove the insulator.



6. Disconnect the solenoid valve connector.

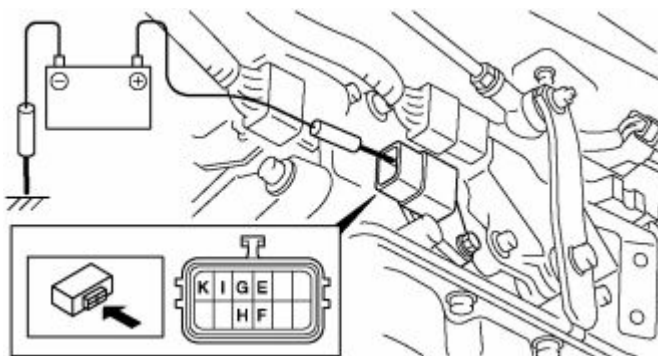


CAUTION:

- Do not apply the battery positive voltage to terminals E, F, G, H, I and K for more than 3 s.

NOTE:

- Because the operation sound of the valves is not strong, inspect in a quiet place.
7. Apply battery positive voltage to terminals E, F, G, H, I or K and battery negative voltage to GND, and verify that operation sound is heard from solenoid.



- If the "click" is not heard, inspect the transmission wiring harness.
 - If the transmission wiring harness is normal, perform the resistance inspection (off-vehicle inspection).
 - If there is a problem, repair or replace the transmission wiring harness.
8. Connect the solenoid valve connector.
 9. Install the insulator.

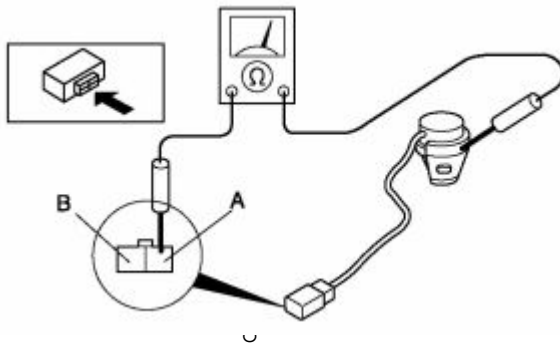
Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}
10. Install the catalytic converter. (See EXHAUST SYSTEM REMOVAL/INSTALLATION .)
 11. Connect the negative battery cable.
 12. Install the battery cover.
 13. Install the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)

Resistance Inspection (Off-Vehicle)

1. Remove each solenoid valve. (See SOLENOID VALVE REMOVAL/INSTALLATION .)
2. Measure the resistance of each solenoid valve individually.
 - If not within the specification, replace the solenoid valve. (See SOLENOID VALVE REMOVAL/INSTALLATION .)

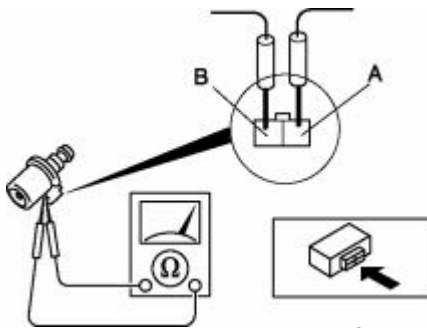
Pressure control solenoid



Resistance (reference value)

- 12.3—16.3 ohms

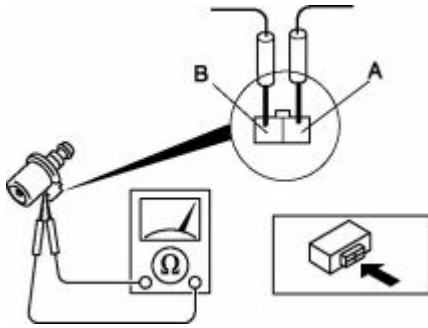
Shift solenoid A, B, C and F



Resistance (reference value)

- 2.7—4.4 ohms

TCC solenoid



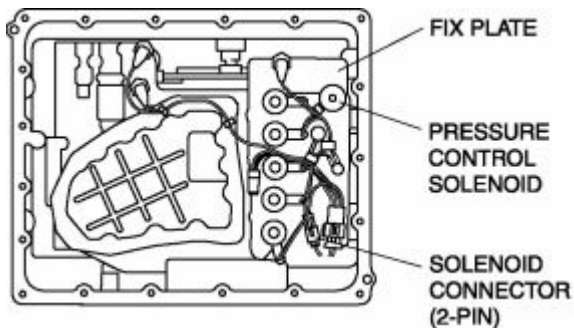
Resistance (reference value)

- 12.1—16.0 ohms
3. Install each solenoid valve. (See SOLENOID VALVE REMOVAL/INSTALLATION .)

SOLENOID VALVE REMOVAL/INSTALLATION

Pressure Control Solenoid

1. Remove the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove the oil pan and gasket.
6. Disconnect the solenoid connector (2-pin).
7. Remove the fix plate.



8. Remove the pressure control solenoid.
9. Apply ATF to a new O-ring and install it on the solenoid valve.
10. Install the pressure control solenoid in the control valve body.

Tightening torque

- 6.9—8.8 N·m
{71—89 kgf·cm, 62—77 in·lbf}

11. Install the fix plate.

Tightening torque

- 6.9—8.8 N·m

{71—89 kgf·cm, 62—77 in·lbf}

12. Connect the solenoid connector (2-pin).
13. Install the oil pan and new gasket to a new oil pan installation bolts.

Tightening torque

- 7.0—9.0 N·m

{72—91 kgf·cm, 63—78 in·lbf}

14. Connect the negative battery cable.
15. Install the battery cover.
16. Install the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

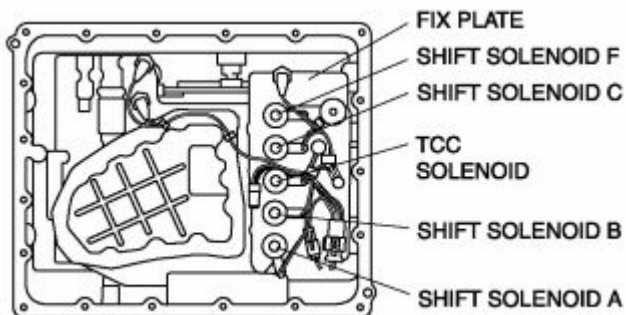
17. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)
18. Perform the time lag test and line pressure test. (See MECHANICAL SYSTEM TEST .)
19. Perform the road test. (See ROAD TEST .)

Except Pressure Control Solenoid

1. Remove the engine cover.

(See ENGINE COVER REMOVAL/INSTALLATION .)

2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .)
5. Remove the oil pan and gasket.
6. Disconnect the solenoid valve connector.
7. Remove the fix plate.



8. Remove the solenoid valve.
9. Apply ATF to a new O-ring and install it on the solenoid valve.
10. Install the solenoid valve in the control valve body.

Solenoid valve	Harness color
Shift solenoid A	Orange
Shift solenoid B	Blue
Shift solenoid C	Green
Shift solenoid F	Red
TCC solenoid	Yellow

11. Install the fix plate.

Tightening torque

- 6.9—8.8 N·m
{71—89 kgf·cm, 62—77 in·lbf}

12. Connect the solenoid valve connector.

13. Install the oil pan and new gasket to a new oil pan installation bolts.

Tightening torque

- 7.0—9.0 N·m
{72—91 kgf·cm, 63—78 in·lbf}

14. Connect the negative battery cable.

15. Install the battery cover.

16. Install the engine cover. (See ENGINE COVER REMOVAL/INSTALLATION .)

17. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT .) (See Automatic Transmission Fluid (ATF) Level Inspection .)

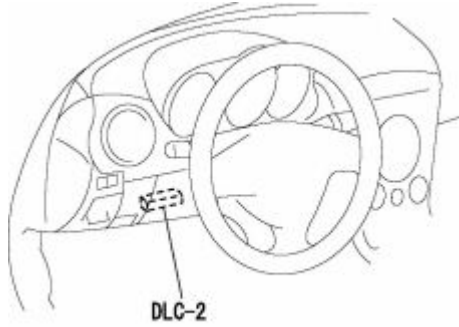
18. Perform the time lag test and line pressure test. (See MECHANICAL SYSTEM TEST .)

19. Perform the road test. (See ROAD TEST .)

AUTOMATIC TRANSMISSION ON-BOARD DIAGNOSTIC FUNCTION

DTC Reading Procedure

1. Perform the necessary vehicle preparation and visual inspection.
2. Connect the WDS or equivalent to the vehicle DLC-2 16-pin connector located at the left side of the dashboard.



3. Retrieve DTCs using the WDS or equivalent.